ANTELOPE VALLEY COLLEGE

CAMPUS DESIGN HANDBOOK

FEBRUARY 23, 2018

Gensler

CAMPUS DESIGN HANDBOOK

ANTELOPE VALLEY COLLEGE

DESIGN TEAM:

ARCHITECTURE
BRANDING
SIGNAGE
WAYFINDING
Gensler

LANDSCAPE
BrightViewDesignGroup

CIVIL
KPFF Consulting Engineers

MECHANICAL
ELECTRICAL
PLUMBING
S&K Engineers

TECHNOLOGY
SECURITY
AUDIO/VISUAL
Vantage Technology Consulting Group

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01

PURPOSE + PROCEDURES

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INTRODUCTION

The Campus Design Handbook for Antelope Valley College has been created to serve as a guide for campus development and to provide planning and design parameters for all design teams working on campus. The guidelines and standards presented in this Handbook are not exhaustive, but intended to provide general parameters for campus improvements and to work in conjunction with applicable building codes and regulations.

Antelope Valley College understands and encourages sustainability as an integral part of the design process. Therefore, key sustainable design principles are incorporated into each of the sections.

HANDBOOK PURPOSE + USE

The purpose of this Handbook is to describe the long-range vision for Antelope Valley College, identify a clear direction for its physical evolution and establish a road map to the future. This document seeks to both provide boundaries ensuring a cohesive campus identity while supporting creative expression and innovative design solutions unique to individual projects. This handbook will serve as a reference for architects, engineers, consultants, graphic designers, college representatives and others to inform procedures and design directions during the future campus development.

DESIGN GUIDELINES

Sections 1 through 7 of this handbook clarify the natural, built, and social environments intended to support AVC's academic mission. The adoption of these Standards will provide a clear and integrated framework within which future decisions about development of the campus can be effectively made.

PERFORMANCE STANDARDS

Section 8 of this handbook describes the pragmatic aspects of capital improvements and implementation of the Facilities Master Plan (FMP). 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 product, system and/or manufacturer criteria specific to AVC. Implementation of recommendations presented herein will require the development of architectural/ engineering design and specifications by design teams.

HANDBOOK UPDATES

The handbook will be updated on a periodic basis to incorporate approved revisions. Recommended modifications by design teams are to be submitted to the college for review and evaluation for appropriateness. Approved modifications will be incorporated on an annual basis, revisions will be noted and updated sections will be amended.

PROJECT PARTICIPANTS

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

BOARD OF TRUSTEES

- Provides oversight for all major capital plans and policy decisions affecting the district.
- Sets policy and acts upon President's recommendation

PRESIDENT

- Reviews project designs

STRATEGIC PLANNING FACILITIES SUB GROUP (FSG)

- Reviews projects affecting campus facilities

MASTER PLAN ARCHITECT

- Develops and updates The Facilities Master Plan (FMP)
- Advises campus on developing and coordinating site and facilities projects with the approved FMP
- Develops space program for each project to align with the overall FMP
- Assists in the development of project scopes (space, budget, and schedule)
- Reviews projects for FMP continuity and campus standards compliance at key milestones

FACILITIES SERVICES (FS)

- Provides oversight to all design and construction projects
- Includes Executive Director of Facilities Planning and Services and Assistant Director of Maintenance and Operations + Program Manager

CONSTRUCTION MANAGER (CM)

- Acts as "Owner's Representative" and intermediary between District and Contractors
- Provides constructability reviews of design documents at key milestones

PROJECT DESIGN TEAM

- Led by Project Architect under contract with the College
- May be led by Project Engineer for project with small design scope
- Includes other design consultants contracted to Project Architect / Architect of Record (AoR)

USER GROUP

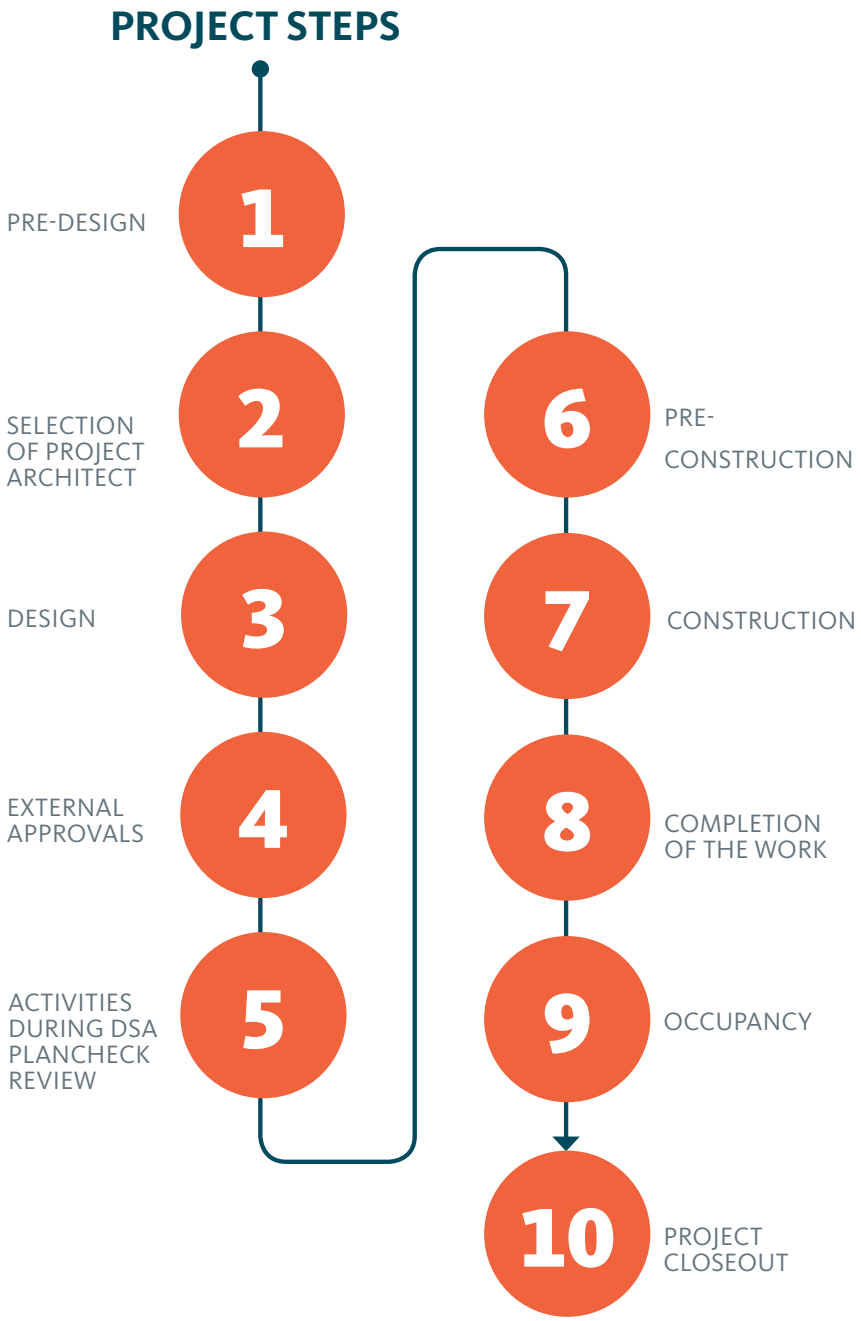
- Responsible for providing input during project programming and design

EXECUTIVE TEAM

- Facilities Services
- Master Plan Architect

PROJECT PROCESS

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 on the campus. From programming, through construction and occupancy, this section will provide a procedural basis and facilitate a mutual understanding of expectations and requirements for all projects within the campus. The following pages breakdown each step into its critical components.



STEP 1

PRE-DESIGN

A. DEVELOP PROJECT PARAMETERS

PARTICIPANTS

Facilities Services

Master Plan Architect

1. Site Considerations

- Location of Service Utilities
- Determine Project Boundaries
- Define Key Master Plan elements

2. Building Program Summary

- Total Space Allocation by space type (ASF)

3. Basis of Building Systems Design

4. Budget

- Develop level of detail equal to JCAF 32

5. Schedule

- Develop level of detail equal to JCAF 32

B. DEFINE PROJECT DELIVERY METHOD

PARTICIPANTS

Facilities Services

Construction Manager

1. Design, Bid, Build

- C.M. multiple prime
- General Contractor

2. Design Build

C. DETERMINE USE OF OWNER CONTROLLED INSURANCE PROGRAM (OCIP)

PARTICIPANTS

Facilities Services

1. Statewide Educational Wrap Up Program (SEWUP)

- SEWUP Joint Power Authority (JPA) will provide the OCIP on behalf of the owner

STEP 1

D. COLLEGE SITE INFORMATION	PARTICIPANTS
1. Soils Report	Facilities Services
2. Site Survey	
3. Tree Survey	

E. SELECTION OF USER GROUP	PARTICIPANTS
1. Responsible administrator and Executive Director of Facilities establishes User Group	Facilities Services VP, Dean or Executive Director
User Group to include: • Representative of major building users • AV/ IT representatives • Risk Manager • Maintenance and Operations Representative • Executive Director of Facilities • Construction Manager	

STEP 2 SELECTION OF PROJECT DESIGN TEAM

A. SOLICIT A POOL OF FIRMS	PARTICIPANTS
1. Executive Director FPS solicits RFQ responses **2. Interview and select firms for pool**	Facilities Services

B. REVIEW & RANK SUBMISSIONS	PARTICIPANTS
1. Request RFP responses from pool of architects **2. Review & Rank** • Select 2-3 firms to interview	Facilities Services

C. INTERVIEW TOP-RANKED FIRM(S)	PARTICIPANTS
1. Develop Interview Information Sheet. Include: • Members of the Interview Panel • Date, time and location • Instructions for interviewees **2. Interview Firms** • Facilities Services • Representatives of the relevant division and relevant support departments **3. Final Selection Recommendation**	Facilities Services Selection Committee

D. CONTRACT DEVELOPMENT & APPROVAL	PARTICIPANTS
1. Develop PAA Under Master Agreement **2. Board Recommendation** • Director to prepare Board agenda item recommending entering into an agreement • Contract Approvals **3. Award Contract**	Facilities Services

STEP 3 DESIGN

A. PROGRAMING / SCHEMATIC DESIGN	PARTICIPANTS
1. Review As-Built Conditions **2. Coordinate with Campus Standards Handbook** **3. Coordinate Fire Lanes and Hydrants** **4. Consult with Utility Providers** • Edison • So Cal Gas • LA County Waterworks **5. Develop Conceptual Design** **6. Start DSA Collaborative Process** **7. Perform Automated Wind Analysis** **8. Program/Schematic Design Review & Approval (100%) *** **9. Cost Estimate (100%)**	Facilities Services Construction Manager Project Design Team Master Plan Architect User Group

B. DESIGN DEVELOPMENT (PRELIMINARY PLANS)	PARTICIPANTS
1. Develop Comprehensive Design Solution **2. Review and Approvals (100%) *** **3. Cost Estimate (50% and 100%)**	Facilities Services Construction Manager Project Design Team Master Plan Architect User Group

C. CONSTRUCTION DOCUMENTS	PARTICIPANTS
1. Develop Construction Documents **2. Review and Approval (50%) *** **3.Cost Estimate (50% and 95%)** *** Coordination of reviews and approvals by AoR. Review forms are included on page 01-20 - 01-22 of this handbook.**	Facilities Services Construction Manager Project Design Team Master Plan Architect User Group

STEP 4

EXTERNAL APPROVALS

STATE FUNDED PROJECTS ONLY

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. LA County Fire Authority

2. Department of Health Services

3. AQMD

4. SWPP

5. LA County Waterworks

6. City of Lancaster

C. CHANCELLOR'S OFFICE (CCCCO)

1. Space Utilization

2. Approvals

Release of funds for:

- Preliminary plans
- Working drawings
- Release of equipment funds

Approval of working drawings & proceed to bid

- Owner Controlled Insurance Program to be included in construction amount

Request for bid approval

STEP 5

ACTIVITIES DURING DSA PLANCHECK REVIEW

A. PROGRAMING / SCHEMATIC DESIGN	PARTICIPANTS
1. Select IOR + Lab of Record	Facilities Services Construction Manager Project Architect

B. CONTRACTOR RECRUITMENT	PARTICIPANTS
1. Coordinate with Master Contractor List	Construction Manager Procurement

C. FF+E SPECS AND PROCUREMENT	PARTICIPANTS
1. Coordinate with Furniture installation • Add language to bid documents regarding coordination of furniture and data sub-contractor	AoR Facilities Services Procurement

STEP 6 PRE-CONSTRUCTION

A. ADVERTISEMENT	PARTICIPANTS
	Construction Manager

B. JOB WALK	PARTICIPANTS
	Construction Manager

C. RFI'S & ADDENDA	PARTICIPANTS
	Construction Manager

D. BID OPENING	PARTICIPANTS
	Construction Manager

E. BID REVIEW	PARTICIPANTS
	Construction Manager

F. BID RECOMMENDATION	PARTICIPANTS
	Construction Manager

G. APPROVAL TO AWARD BID	PARTICIPANTS
	Construction Manager

H. CONTRACT EXECUTION	PARTICIPANTS
	Construction Manager

I. NOTICE TO PROCEED	PARTICIPANTS
1. Copy to DSA on Category 1 & 2 Projects	Construction Manager

STEP 7 CONSTRUCTION

A. GROUNDBREAKING CEREMONY	PARTICIPANTS
1. Set Up **2. Project Information** **3. Public Notice**	Facilities Services Public Relations

B. MOBILIZATION	PARTICIPANTS
1. Campus Notification of Changes **2. Parking Requirements** • Disabled access • Staff **3. Roadway and Walkway Closures** **4. College Public Information Signs**	Facilities Services Construction Manager Public Relations

C. CONSTRUCTION PHASE	PARTICIPANTS
1. Management and Oversight	Facilities Services Construction Manager

STEP 8

COMPLETION OF THE WORK

A. DETERMINATION OF SUBSTANTIAL COMPLETION

1. Stage in the process 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 Architect of Record (AoR) and Project Inspector upon request by the Contractor

B. JOINT INSPECTION OF WORK

1. Commences upon achievement of Substantial Completion of the work

2. All involved parties participate in inspection

C. JOINT PREPARATION OF THE "PUNCH LIST"

1. "Punch List" is prepared by AoR

- Comprehensive list of items of The Work to be corrected or completed by the contractor
- 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

D. TIME FOR COMPLETING "PUNCH LIST" ITEMS

1. Established jointly by FS, CM, AOR and the Contractor

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

E. FINAL ACCEPTANCE

1. Contract has been fully performed by the Contractor

2. Determined by the AOR, CM and Project Inspector upon request by the Contractor

STEP 9

OCCUPANCY

A. GRAND OPENING	PARTICIPANTS
	Facilities Services

C. POST-OCCUPANCY EVALUATION	PARTICIPANTS
	Facilities Services

STEP 10 PROJECT CLOSEOUT

A. DSA	PARTICIPANTS
1. Certification Letter	AoR

B. MANUALS	PARTICIPANTS
	Construction Manager

C. WARRANTIES	PARTICIPANTS
	Construction Manager

D. TRAINING	PARTICIPANTS
	Construction Manager

E. AS-BUILT DRAWINGS	PARTICIPANTS
	AoR Construction Manager

F. FINAL SPACE INVENTORY	PARTICIPANTS
1. AoR to prepare Program detail required for space inventory 2. Facilities Services to update space inventory	AoR Facilities Services

FF+E PROCESS

FURNITURE, FIXTURES & EQUIPMENT (FF&E) PROCESS

ANTELOPE VALLEY COLLEGE'S PREFERRED SYSTEMS FURNITURE IS BY KNOLL OR ALLSTEEL. DISTRICT WILL MAKE FINAL SELECTION.

1 INTERIOR DESIGN

- Coordinate During Schematic Design
- Electrical locations and requirements
- Telecom locations and requirements
- Backing requirements
- Accessibility guidelines

2 PROCUREMENT

- Coordinate During Design Development
- Furniture Requirement Discussions
- Specific needs
- Accessibility requirements
- Ergonomic requirements
- Determine Furniture Dealer
- Supports Interior Designer efforts

3 AOR TO WORK WITH BUILDING COLOR PALETTE

- Coordinate During Design Development
- Select Appropriate Fabric and Furniture Type
- Documentation & Specification of Furniture Package
- Furniture Dealer to develop specifications
- Prepare Final Furniture Package
- Prepare Final Sample Boards

4 FURNITURE SCHEDULE/ SPECIFICATIONS

- Coordinate During Design Development (FS, Project Architect, User Group)
- Furniture Dealer Prepares Final Specifications
- Review & distribute for approval
- Approval of Furniture Package

5 FURNITURE

- Acquisition
- Contracted Through AVC Procurement
- FS & CM may opt to do bidding

6 AWARD OF FURNITURE CONTRACT

7 ISSUE PURCHASE ORDER

8 FURNITURE INSTALLATION OVERSIGHT

- Contracted with FS
- Data sub-contractor to test and certify cabling and connections
- Furniture punch list
- Invoices to be submitted to FS or CM for auditing purposes

PROGRAMMING / SCHEMATIC DESIGN (SD) REVIEW

AVCCD CAMPUS DESIGN STANDARDS APPROVAL

PROJECT: _____

ARCHITECT of RECORD (AoR): _____

MASTER PLAN ARCHITECT: Gensler

MASTER PLAN ARCHITECT REVIEW EXCEPTIONS:

_____

_____

_____

_____

Approval for 100% Programming/Schematic Design (SD) Drawings with Corrective Action for Noted Exceptions

MASTER PLAN ARCHITECT APPROVAL: _____ _____
Name *Signature*

ARCHITECT of RECORD APPROVAL: _____ _____
Name *Signature*

AVCCD EXECUTIVE DIRECTOR, FACILITIES SERVICES: _____
Signature

PROJECT CORE TEAM: *Names & Signatures*

_____

_____

_____

_____

_____

DATE: _____

FINAL PRELIMINARY PLANS / DESIGN DEVELOPMENT (DD) REVIEW

AVCCD CAMPUS DESIGN STANDARDS APPROVAL

PROJECT: _____

ARCHITECT of RECORD (AoR): _____

MASTER PLAN ARCHITECT: Gensler

MASTER PLAN ARCHITECT REVIEW EXCEPTIONS:

_____

_____

_____

_____

Approval for 100% Preliminary Plans (DD) Drawings with Corrective Action for Noted Exceptions

MASTER PLAN ARCHITECT APPROVAL: _____ _____
Name *Signature*

ARCHITECT of RECORD APPROVAL: _____ _____
Name *Signature*

AVCCD EXECUTIVE DIRECTOR, FACILITIES SERVICES: _____
Signature

AVCCD SUPERINTENDENT/PRESIDENT: _____
Signature

PROJECT CORE TEAM: *Names & Signatures*

_____

_____

_____

_____

_____

DATE: _____

CONSTRUCTION DOCUMENTS (CDs) - 50% REVIEW

AVCCD CAMPUS DESIGN STANDARDS APPROVAL

PROJECT: _____

ARCHITECT of RECORD (AoR): _____

MASTER PLAN ARCHITECT: Gensler

MASTER PLAN ARCHITECT REVIEW EXCEPTIONS:

_____

_____

_____

_____

Approval for 50% Construction Documents (CDs) with Corrective Action for Noted Exceptions

MASTER PLAN ARCHITECT APPROVAL: _____ _____
Name *Signature*

ARCHITECT of RECORD APPROVAL: _____ _____
Name *Signature*

AVCCD EXECUTIVE DIRECTOR, FACILITIES SERVICES: _____
Signature

AVCCD SUPERINTENDENT/PRESIDENT: _____
Signature

PROJECT CORE TEAM: *Names & Signatures*

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02

MASTER PLAN OVERVIEW

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INTRODUCTION

The 2016 Facilities Master Plan for Antelope Valley College (AVC) was approved in September of 2016. It establishes the long-range vision for the college and is the basis for all future development. This section includes a summary of portions of the Facilities Master Plan (FMP) that are most relevant to the development of the physical campus. The complete document can be found at https://www.avc.edu/administration/organizations/fmp.

AVC has been a part of the Lancaster community since the late 1950's. With the development of the campus from its early inception to today it continues to provide essential services to the local community. However, the physical appearance of many of the buildings and grounds are dated and rundown and in many instances no longer support the services and teaching methods needed to prepare students for the 21st century. With the implementation of the 2016 Facilities Master Plan (FMP) this condition will change and the physical campus environment will become a symbol for the students, staff and community at large - one that promotes a strong sense of pride in the institution as well as the local region it reflects.

EXISTING SITE PLAN

EXISTING CAMPUS

The existing 135-acre campus includes 205 buildings (including permanent and temporary).

EXISTING FACILITIES
TEMPORARY FACILITIES

PRINCIPLES + CONCEPTS

FACILITIES PLANNING PRINCIPLES

A set of Facilities Planning Principles provide the basis for all projects identified in this FMP. The recommendations for site and facility improvements will strengthen the Antelope Valley College campus community and support the long term vision and goals.

PROMOTE STUDENT LEARNING AND SUCCESS

- Improve access to student support services
- Develop indoor and outdoor spaces to encourage collaboration and support student engagement
- Develop campus as a welcoming and nurturing community

PLAN CAMPUS TO ADDRESS PROGRAM NEEDS

- Improve infrastructure and technology to support evolving learning environments
- Right size facilities to align with state guidelines
- Position AVC to maximize state and local funding

ENHANCE COMMUNITY ENGAGEMENT

- Increase visibility of AVC within the community
- Create welcoming gateways to the campus
- Develop campus to enhance a sense of community

IMPROVE EFFICIENCY / UTILIZATION

- Improve facilities to support current and future program
- Replace inefficient and under performing facilities
- Improve functional zoning and operational efficiencies
- Develop flexible, multi-purpose facilities that can adapt over time

IMPROVE CIRCULATION AND CONNECTIONS

- Promote safe and universally accessible circulation
- Enhance connections and campus wayfinding
- Develop AVC as an inviting learning oasis

PROMOTE STEWARDSHIP FOR RESOURCES

- Improve energy conservation and generation
- Establish continuous monitoring and on-line reporting
- Educate and engage campus community

DEVELOPMENT CONCEPTS

Creating a distinct sense of place requires an understanding of the unique forces that shape a particular environment. This includes the physical characteristics of a given site along with the cultural values and behaviors of its inhabitants. The development concepts form the basis for the FMP recommendations that will create a campus environment that celebrates the native characteristics of the area, supports a robust and diverse population, enables the campus community to flourish and demonstrates the importance of sustainability and resource management within the Mojave Desert setting.

The development concepts are predicated on three main concepts that support the overarching facilities planning principles:

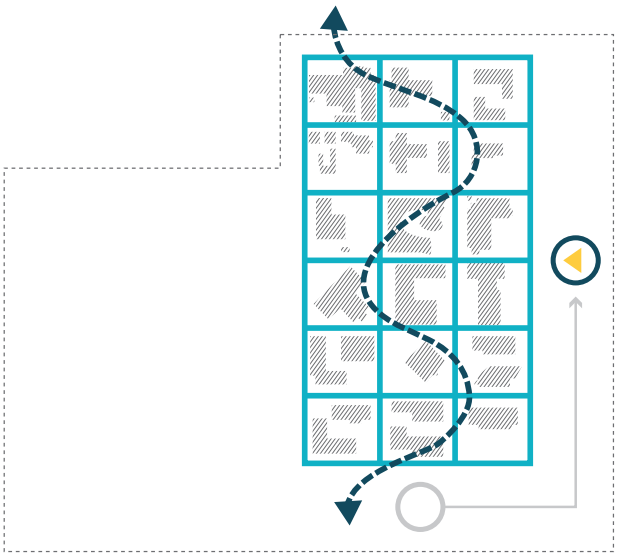
- The re-centered student support services activate the campus core.
- The orthogonal grid represents the campus history and frames future development.
- The curvilinear gardens connect the campus to its regional context.

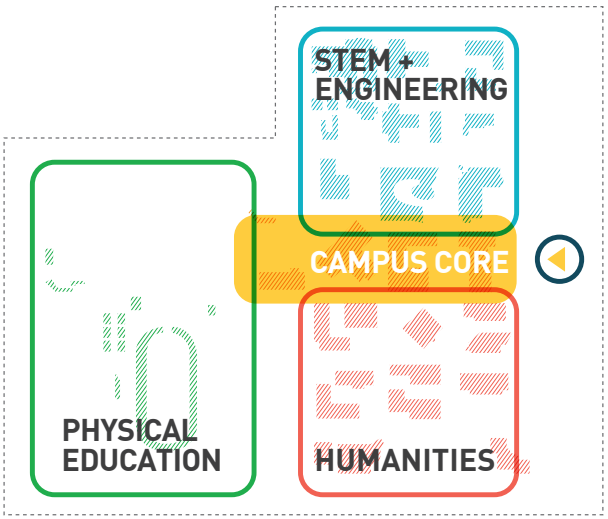
The existing pedestrian pathway system establishes a strong orthogonal grid and an organized framework for campus development that sets the tone for future building geometry. This grid of pathways is original to the campus and serves as a connector to AVC's history. The dominance of the grid is also a major influence in the broader regional structure and helps connect the campus to the community. This grid is the backbone to the FMP planning structure.

A secondary system is inspired by the natural patterns of the river washes inherent to the Antelope Valley floor and adds a counterpoint to the strong orthogonal grid - similar to how the colorful poppies contrast the local earth toned desert scape. This ribbon of native and low water fauna creates a framework for exterior spaces for multiple scaled gatherings promoting social and learning interaction. The ribbon with its contrasting form and native plants binds the campus to its regional surroundings and celebrates its unique characteristics.

The many decades of development on campus have shifted the campus center to the north, while the core student support services remain on the south, near the existing campus entry. This has disconnected many of the students on the north side of campus from the vital services on the south side. The FMP takes the bold step of relocating the core student support services to the center of the campus, activating the campus core and developing a new campus entry on 30th street.

A new Student Services building and Student Center building will welcome visitors to the AVC campus and define a clear organization of core services. The campus core will be centrally located and adjacent to the STEM + Engineering Zone to the north, Humanities Zone to the south, and Physical Education Zone to the West. This re-organization of the overall campus will improve connectivity, enhance collaboration and enhance student success.





FACILITIES MASTER PLAN

2016 FACILITIES MASTER PLAN

The FMP for Antelope Valley College presents an overall picture of the future developed campus and includes recommendations for new construction, building renovations, change of use and site development projects. While drawings appear specific, the forms are conceptual sketches that highlight the location and purpose for the proposed improvements.

The FMP recommends the demolition and replacement of a number of the oldest buildings on the campus. These are identified in the Planning Data section of this document. Functions currently housed in these facilities will be relocated to new or existing facilities and will be designed to support the new campus zoning diagram and address projected instructional program needs. A complete list of all program moves is included in the Appendix of this document.

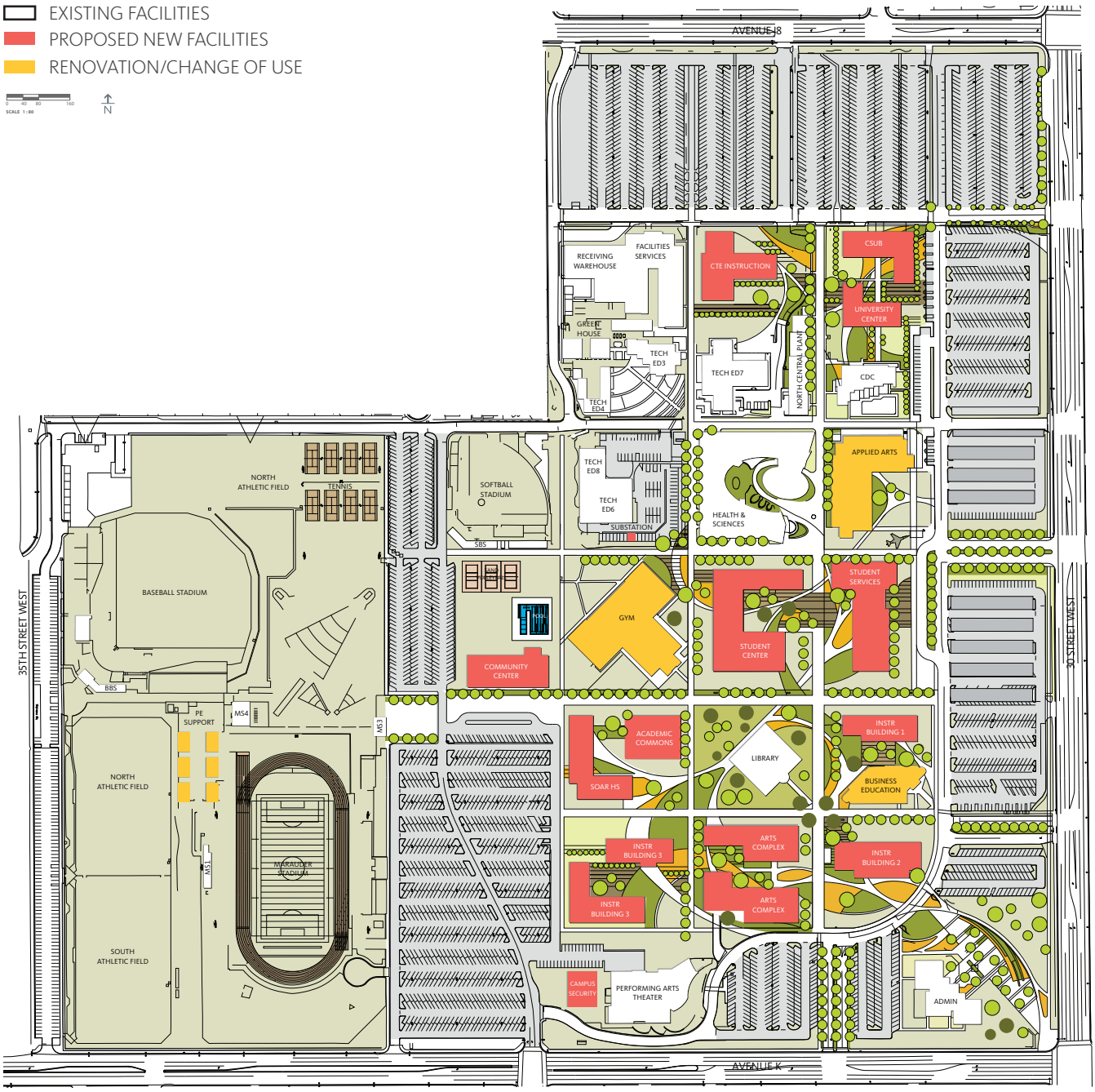
The project list to the right summarizes the key FMP projects that are illustrated on the campus plan and described on the following pages.

PROJECT LIST

NEW CONSTRUCTION

- **Academic Commons**
- **Arts Complex**
- **Campus Security**
- **Community Center**
- **CSUB + University Center**
- **CTE Instruction**
- **Field House**
- **Instructional Building 1 (IB1)**
- **Instructional Building 2 (IB2)**
- **Instructional Building 3 (IB3)**
- **SOAR High School**
- **Student Center**
- **Student Services**

EXISTING FACILITIES
PROPOSED NEW FACILITIES
RENOVATION/CHANGE OF USE



2016 FACILITIES MASTER PLAN

VEHICULAR CIRCULATION

OVERVIEW

The proposed vehicular circulation plan establishes a framework for improved access, circulation and safety throughout the campus. As student support services shift to the center of campus, the new 30th Street entry will welcome first time visitors, students and community members to the AVC campus.

Two new drop-offs are planned to improve safety and traffic flow within the campus core. On the east side of campus, a new drop off area is proposed adjacent to the new entry in front of the new Student Services building. On the west side, a new drop off is proposed between the new Community Center and SOAR High School to support access from K Avenue and the west parking lots.

POINTS OF ACCESS

The development of two main entrances for preferred drop-off and access points will help define college identity and control both vehicular and pedestrian circulation. The focus for the two primary gateways into the campus will be focused at the intersections with signals; 30th Street West and Avenue K. Each entrance should be developed with an improved drive, a pedestrian walkway, an associated drop-off area and be improved branding through signage and landscaping.

A distinct and unified landscape will create an identity to enhance the entrances. A tree lined experience with (5) five rows of trees, one down a central median, and one on each side of the pedestrian walkways that line the drive aisles is one of the main features to create a bold entrance. The trees shall be a flowering variety standard in form, and approximately at a minimum 20' tall and wide. Pedestrian paths must be at a minimum of 8' wide on both sides of the entrance road with a minimum 5' wide planted parkway area on either side of the pedestrian paths and the central median.

TRAFFIC ROUTES

The primary vehicular route is defined by the existing ring that separates the inner and outer campus limits. The road is intended to remain as the primary vehicular circulation route with improvements being limited to traffic calming strategies, including clearly defined pedestrian crossings, and signage.

DROP-OFF AREAS

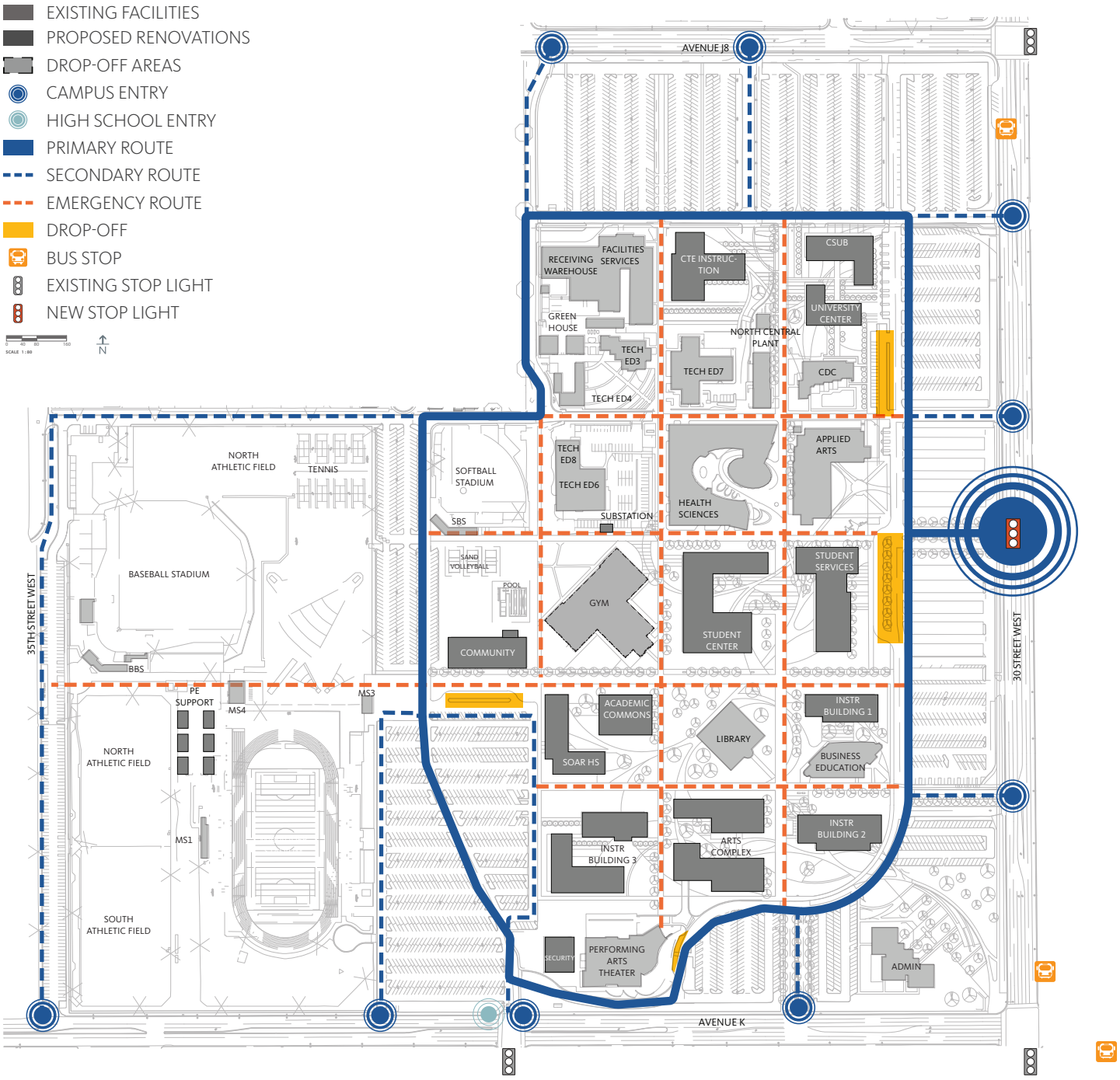
In combination with the existing drop-off areas, two new areas are proposed. All drop-offs should have adequate waiting areas with shaded seating options. These could be architectural elements with potential for signage and the architectural elements should also function as a wind break if needed. A change in paving materials are recommended to enhance the flow of traffic and improve clarity of pedestrian drop off zones.

PARKING

Existing surface parking lots surrounds the campus and will remain in place. However, as resurfacing and re-striping becomes necessary some improvements are suggested. These include adding shade, either by tree plantings or constructed canopies, adding planted islands that can double as storm water infiltration areas, and increasing pedestrian safety by incorporating pedestrian walks between key drive lanes.

BUS STOPS

A new prominent bus stop on 30th Street West will be developed in coordination with the city. It should have an architectural shade structure or semi-deciduous tree to provide shade for people waiting and to create a sense of place for the users. An architectural shade structure should also act as a wind break.



VEHICULAR CIRCULATION

PEDESTRIAN CIRCULATION

THE GRID AND WALKS

The proposed pedestrian circulation utilizes the existing grid framework as its foundation. The proposed FMP builds upon the existing framework to enhance pedestrian connectivity, and ease campus navigation. Within the newly proposed Grid, primary and secondary spines are emphasized with new alignment, paving patterns and site amenity enhancements. While a tertiary network of walks supplements the formal axial grid and enhances campus flow, connects courtyard spaces, creates social gathering areas, and provides opportunities for education about the natural environment.

THE GRID

Recognized as the existing north-south, east-west pedestrian axis, the Grid will be maintained as the primary circulation framework. Its well-established axial language will be reinforced through a series of design interventions including realignment - to ensure consistent axial connections, enhancement - new distinct paving, and site amenities, and landscape upgrade - to provide unique experiences on each of the networks corridors. Providing a series of consistent and convenient interventions along the axial corridors are necessary as a place making strategy and can occur in the form of seating opportunities, linear plantings, large shade trees, consistent paving materials, and consistent lighting patterns.

To assist in further defining the Grid system, its corridors can be divided into two categories, the Primary Spines and the Secondary Spines. All Spines shall be wide enough for not only for large amounts of students and visitors but wide enough to accommodate fire and emergency vehicles. Since this pathway is capable of being used by multiple users, designing multiple functions onto this pathway is required.

PRIMARY SPINES

A pair of intersecting pathways acts as the primary north-south, and east-west corridors. These Spines will enable pedestrian circulation, but will also serve as transit access for emergency and service vehicles. The Spines serve as a physical social network for the campus community. With an aim to facilitate social activity, the Primary Spines will be distinct from the Secondary Spines in their physical width, paving method, and seating features.

Although some aspects of the Primary Spine shall be distinct, site amenities will be consistent. Bike racks, electric lighting, and waste receptacles will remain consistent with the overall pedestrian grid.

INTERIOR WALKS

In addition to the Grid, the FMP calls for a third, less formal set of walkways. These walks provide a direct connection between the courtyard spaces and are considered part of meandering landscape typology, the Garden Ribbon. The Ribbon, which showcases the desert landscape, provides an alternative from the formal axial grid, affording the pedestrian a more intimate, and passive circulation experience. The walks are intended to attract pedestrians with their unique colorful aesthetics, and their casual ambiance. They also provide an opportunity for the college to educate the public: thematic programming and signage can celebrate native species and desert ecologies exemplified within the Garden Ribbon typology.

PERIMETER WALK

On the exterior of the campus and parking lots the sidewalk is programmed as a health and wellness path with the idea that a route can be programmed to circumnavigate the campus and be a resource to the adjacent community and the campus alike. Programming the walk with amenities such as measurable points for distance tracking, fitness equipment, and educational signage about plants, habitat, health and wellness the walk can be designed for a wide range of multiple users. Attention to where these elements get introduced will be critical to ensure safety and access to the intended users.

CROSSWALKS

All parking lots will need clear, consistent and concise signage throughout the campus. Clear pedestrian crossing zones with proper signage, a change in surface materials, and a supportive landscape will improve access and safety.

- EXISTING FACILITIES
- PROPOSED RENOVATIONS
- DROP-OFF AREAS
- CAMPUS ENTRY
- PRIMARY PATHS
- SECONDARY PATHS
- TERTIARY PATHS
- AREAS OF STUDENT GATHERING
- BICYCLE PARKING
- DROP-OFF
- BUS STOP
- EXISTING STOP LIGHT
- NEW STOP LIGHT

PEDESTRIAN CIRCULATION

SITE DESIGN OVERVIEW

OVERVIEW

The goal of the FMP is to create an outdoor environment that complements and embodies the college's identity and provides an outdoor experience that supports and fosters education, social interaction, and passive recreation. The process of creating such an environment is aided by seizing opportunities presented by the existing campus structure and by introducing a series of new site typologies and features. Numerous initiatives shaped the proposed recommendations. They address key concerns, such as reuse of existing spaces, facility maintainability, and an overall emphasis on conservation of natural resources.

At the core of the recommendations is the desire to create a new campus identity. Of equal consideration is long term sustainability, placing an emphasis on the unique ecological environment of the Mojave Desert environment. To help understand the site and its various components, the FMP organizes the campus into a series of areas and typologies. Starting at a high-level the campus can be categorized into two components. The Outer Campus will present the college to the neighboring community, while the Inner Campus will serve as its functional core. Each part is composed of a series of areas, components, and typologies, all of which are described in detail throughout these guidelines.

OUTER CAMPUS

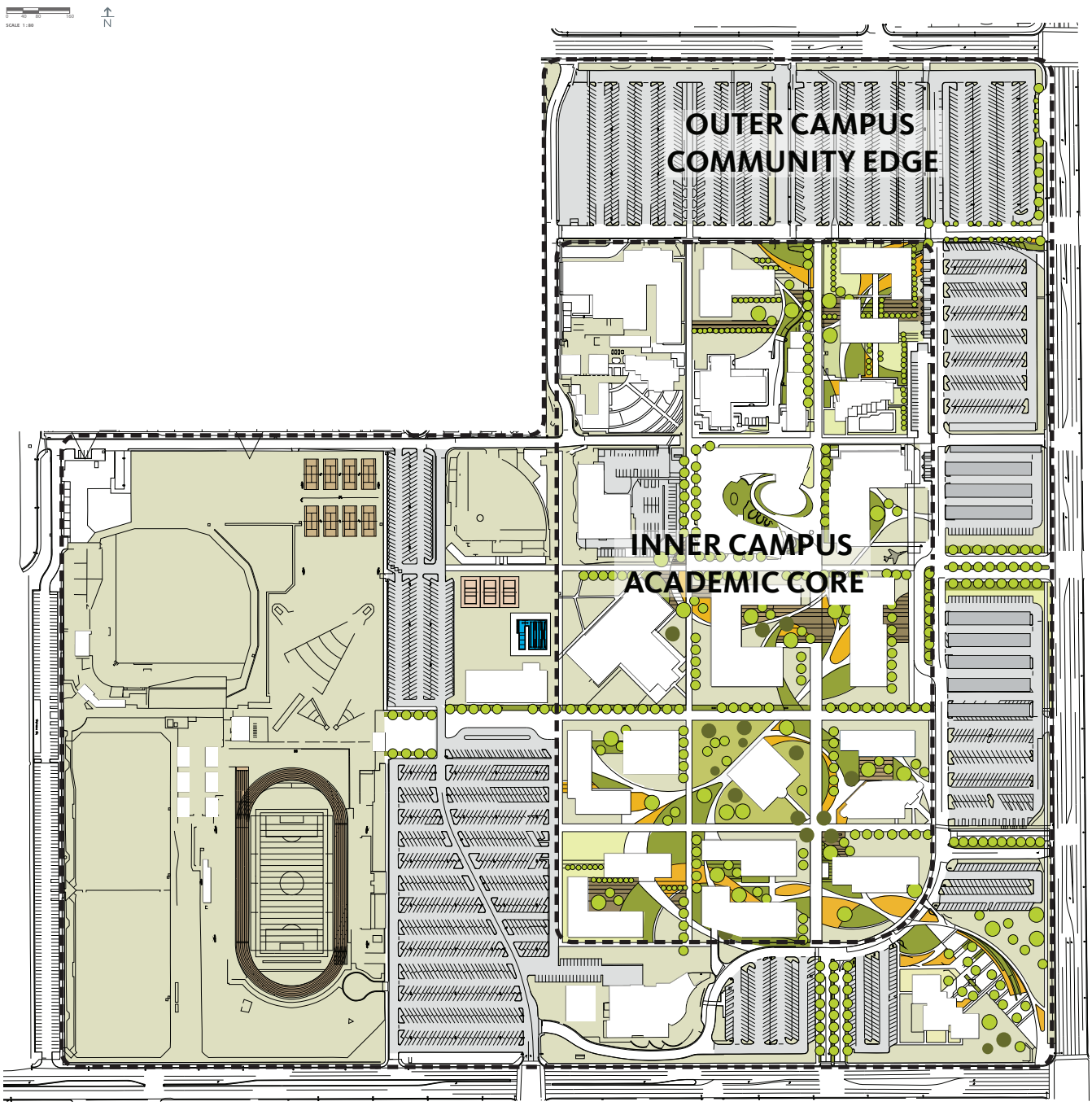
The Outer Campus is the front door to the adjacent community, and its appearance and character are important in exemplifying the college's identity and its commitment to sustainability and to the overall community. The components found within the Outer Campus are the primary vehicular and pedestrian gateways, a landscaped edge with a planned health and wellness perimeter walk, the parking areas, perimeter road and athletic fields. While the majority of the buildings are found within the Inner Core of the campus, a few buildings are located within Outer Campus. These structures are an invaluable resource to both the college and the overall community of the Antelope Valley. Chief among them are the Performing Arts Theatre, new offices for the county sheriff station, sports stadium, administration offices, and a new community meeting center.

INNER CAMPUS

The Inner Campus is the heart of student life and academic function on campus. Its appearance and character play a critical role in defining the campus experience. The components found within the Inner Campus are the Grid - a circulation pedestrian network, the Academic Buildings and their Courtyards, the Historic Commons, and the general Public Commons open space areas. The FMP defines these open space areas:

- The Garden Ribbon is an ornamental landscape amenity that meanders across the campus and showcases desert species, creating a series of connected courtyards across the campus.
- The Landscape Field is a background landscape that is inspired by the native plant communities of the desert, and showcases the beauty of a naturalized design aesthetic.

BOUNDARIES



Landscape Zones

OUTER CAMPUS: A COMMUNITY RESOURCE

Despite having a role that is ultimately utilitarian in function, Outer Campus plays a significant role in defining the college's brand and identity. The school faces the surrounding community through Outer Campus - its fascia is essential to defining the public image of the college. Exemplifying the goals of the FMP through the design of these area's appearance and character becomes important, while also ensuring they remain highly functional.

Outer Campus consists of a series of functional and physical components that are meant to provide geographic links. Taken as a whole, these parts bridge the divide between the college and neighboring communities. As previously noted, these components include a combination of the site's primary vehicular and pedestrian gateways, a landscaped edge with a planned health and wellness perimeter walk, the parking lots, and a perimeter loop road with its associated drop-off areas.

GATEWAYS

The FMP identifies (3) three primary gates that should be improved through a series of site enhancements, including re-alignment, if necessary and new parkway and median planting. These include the driveways on Avenue K, 30th Street, and the existing driveway at Avenue J. By providing recognizable and memorable gateways, visitors will be warmly greeted and welcomed with a unique experience, one in which visitors are introduced to campus culture, college pride and student life. Enhanced gateways will also help the campus functionally, with wayfinding and direction.

LANDSCAPE EDGE

The Landscape Edge is the green perimeter that wraps the campus. Albeit a narrow planting area, this edge is important in demonstrating the college's commitment to sustainability and its use of climate appropriate plants. Considered part of the Landscape Field typology, which is described in detail under the Open Space section on this chapter, the Landscape Edge should showcase a desert appropriate species palette and exemplify the campus' commitment to sustainability and education of the desert ecosystem. Additionally, as a gesture to demonstrate the college's commitment to health and wellness, the FMP proposes a measured perimeter walk within the Landscape Edge that is intended to promote walking and exercise by the students and facility of the college, and the residents within the Antelope Valley community.

PARKING LOTS

The existing perimeter parking lots, for the most part, will remain as is. If the opportunity arises for improvements, additional shade, planting, and pedestrian walkways are highly recommended within the FMP. The overall goal with any parking lot enhancement should be to lessen the environmental and climatic impact of surface parking lots while providing efficient parking, vehicular circulation and safe pedestrian access.

ROADS

The primary vehicular circulation will remain as is and any future interventions are intended to be minimal. When feasible and applicable, any enhancements to improve pedestrian safety should be considered. The primary purpose of any roadway enhancement should be to provide safe access to campus parking facilities with as little impact as possible on internal pedestrian circulation within the Campus.

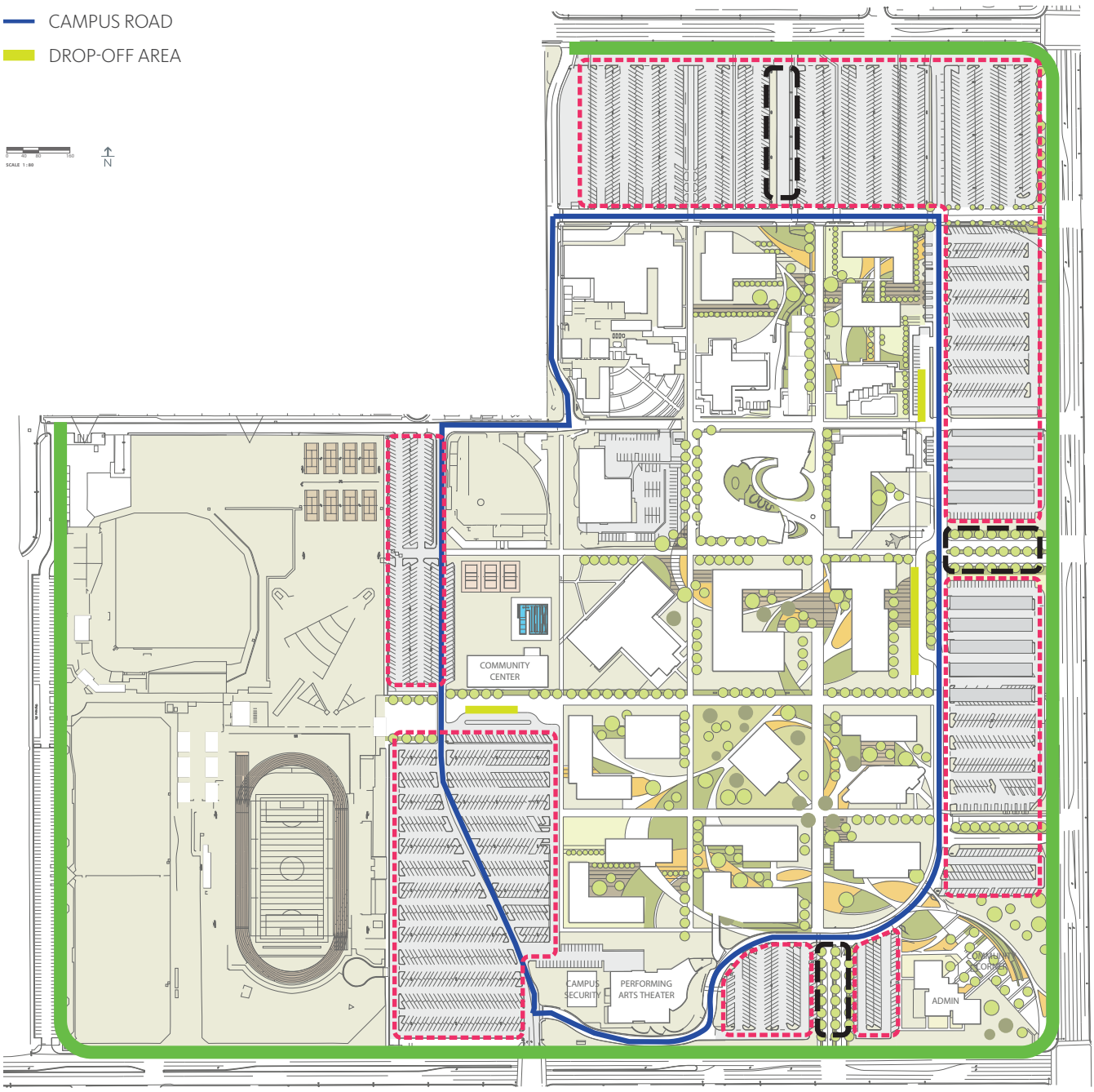
DROP-OFFS

The purpose of drop-offs are to provide specific locations for cars to quickly drop people off, but also to be meeting places for students and visitors to the campus. Creating comfortable areas for people to wait will be important and providing an architectural solution, like shade canopies and seating areas will help enhance spaces beyond merely pick-up and drop-off points.

COMMUNITY CORNER

Within the Outer Core, the FMP creates a new community space at the corner of 30th Street and Avenue K, coined during the planning process as "The Community Corner". This space is intended to host a variety of functions that should be open to the college and the adjacent community, such as community ceremonies, farmer's market, health fairs, and neighborhood celebrations. It is envisioned to be an amphitheater-like area with terraced seating, a performance deck, and plaza spaces that can host a range of group sizes.

LANDSCAPE EDGE
PARKING LOTS
GATEWAYS
CAMPUS ROAD
DROP-OFF AREA



OUTER CAMPUS

INNER CAMPUS: AN ACADEMIC CORE

The Inner Campus, consider the academic core plays a fundamental role in successfully preserving the collegiate character and spirit of the college. It should be designed to attract students and faculty members for a range of activities including passive recreation, social interactions and academic purposes. At its heart, is the "Historic Commons", a piece of the old campus that will be memorialized and preserved. Other elements of the Inner Campus include the Grid, the campus circulation infrastructure, and the Garden Ribbon, a newly introduced feature within the FMP that will add character and uniqueness to the campus. The Garden Ribbon will also connect the Courtyards, the main outdoor socializing space proposed within the FMP.

THE GRID

The Grid acts as the primary circulation infrastructure, and is made up of linear north-south and east-west spines. These are envisioned as the social spines of the campus and should be wide enough to accommodate large groups of students as well as maintenance and emergency vehicles. The spines provide direct transects across the campus and should be designed with a linear planting of shade trees, pedestrian lighting, and a variety of seating opportunities. To give the Grid hierarchy, the FMP proposes a primary spine in each direction that will be enhanced and widened to make them the main thoroughfare of student activity.

GARDEN RIBBON

Unlike the Grid which is primary circulation system, the Garden Ribbon is a landscape element that meanders through the Campus and showcases the beauty of the desert landscape planted in an architectural way, highlighting showy natives. Smaller decomposed granite walks should follow the Ribbon and provide a tertiary pedestrian option between the proposed courtyard spaces. This tertiary circulation system should organically layer itself across the grid, and meander through the campus to support student's exploration and interaction. In addition to being an informal circulation between the courtyards, the Ribbon should be themed to provide educational narrative and resource about the unique desert ecosystem.

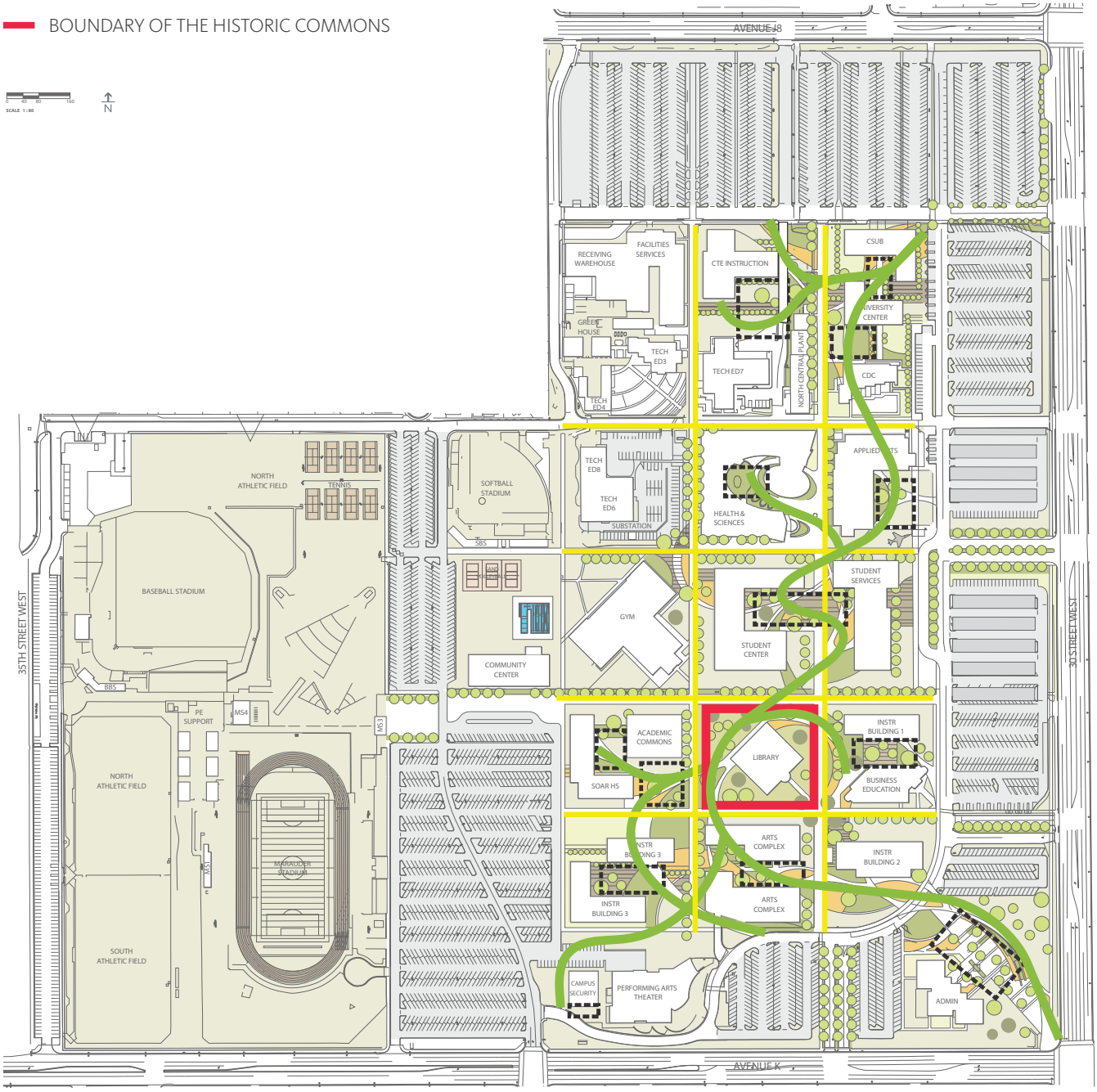
COURTYARDS

Enclosed within each building cluster the FMP proposes a exterior courtyard space, similar to the existing courtyard at the existing Arts Building. These small exterior spaces should be programmed in direct relationship with the adjacent building program and provide opportunities that support outdoor gathering, education and socializing. Designed around opportunities for convergence, these places should create a variety of settings intended for both individual and group activities such as outdoor classes, special events, and informal gatherings.

HISTORIC COMMONS

The existing park-like setting, generally characterized as open wide lawn spaces with large canopy trees is a cherished typology by the community and the college. Despite its inherent conflict with the goal to reduce water consumption, the FMP preserves the single block of lawn area around the Library building. Located at the heart of the campus, it speaks to the history of the Campus while simultaneously creating an open green core.

GENERAL ROUTE OF THE GARDEN RIBBON
THE GRID
GENERAL LOCATION OF COURTYARD
BOUNDARY OF THE HISTORIC COMMONS



INNER CAMPUS

OPEN SPACE

The Open Space is described within the FMP as everything on campus, other than the buildings. A variety of open spaces differing in sizes, typologies, functionalities and purposes have been proposed within FMP - from the historic core, to multiple small gathering courtyard spaces, to the community event and gathering area. Each type of space offers a different type of environment for different degrees of experiences, catering to a wide variety of users and interests. The aesthetic character of these spaces is important in building a unified look for the campus and showcasing the desert typology. In general the FMP has set up two open space typologies, the Landscape Field, which provides a backdrop to the buildings and includes most of the perimeter planting areas around campus. And the Garden Ribbon, an element which meanders through the site and has a much more structured and ornamental character. Both typologies showcase native, and climate appropriate plants species. In addition to these, the FMP outlines two additional distinct areas within the campus that can be considered open space, the Historic Commons, which preserves the existing turf area around the Library, and the Courtyards, outdoor gathering areas associated with each new building project.

LANDSCAPE FIELD

The Landscape Field is the predominant landscape on the campus and is considered as a backdrop in comparison to the proposed Garden Ribbon. It planned for all the campus edges, and the building perimeters, and many of pedestrian spine corridors. The Landscape Field is envisioned to use drought tolerant grasses and shrubs and have more naturalized feel and character. It symbolizes the endemic landscape that surrounds the area and utilizes plants that are climate appropriate, durable, non-hazardous, and contribute to the low maintenance goals of the campus.

GARDEN RIBBON

Unlike the Grid which is circulation system, the Garden Ribbon is a landscape element that meanders through the Campus and showcases the beauty of the desert landscape planted in an architectural way, highlighting some of our showy natives. Species would be selected to create habitat rich gardens that encourages, attracts and supports native birds, bees, butterflies and other wildlife. And the gardens areas should be designed as an educational resource to both the campus and the community for learning about the areas regional ecology. Juxtaposed to the Landscape Field, the Garden Ribbon plantings should be ornamental in style while still being climate appropriate.

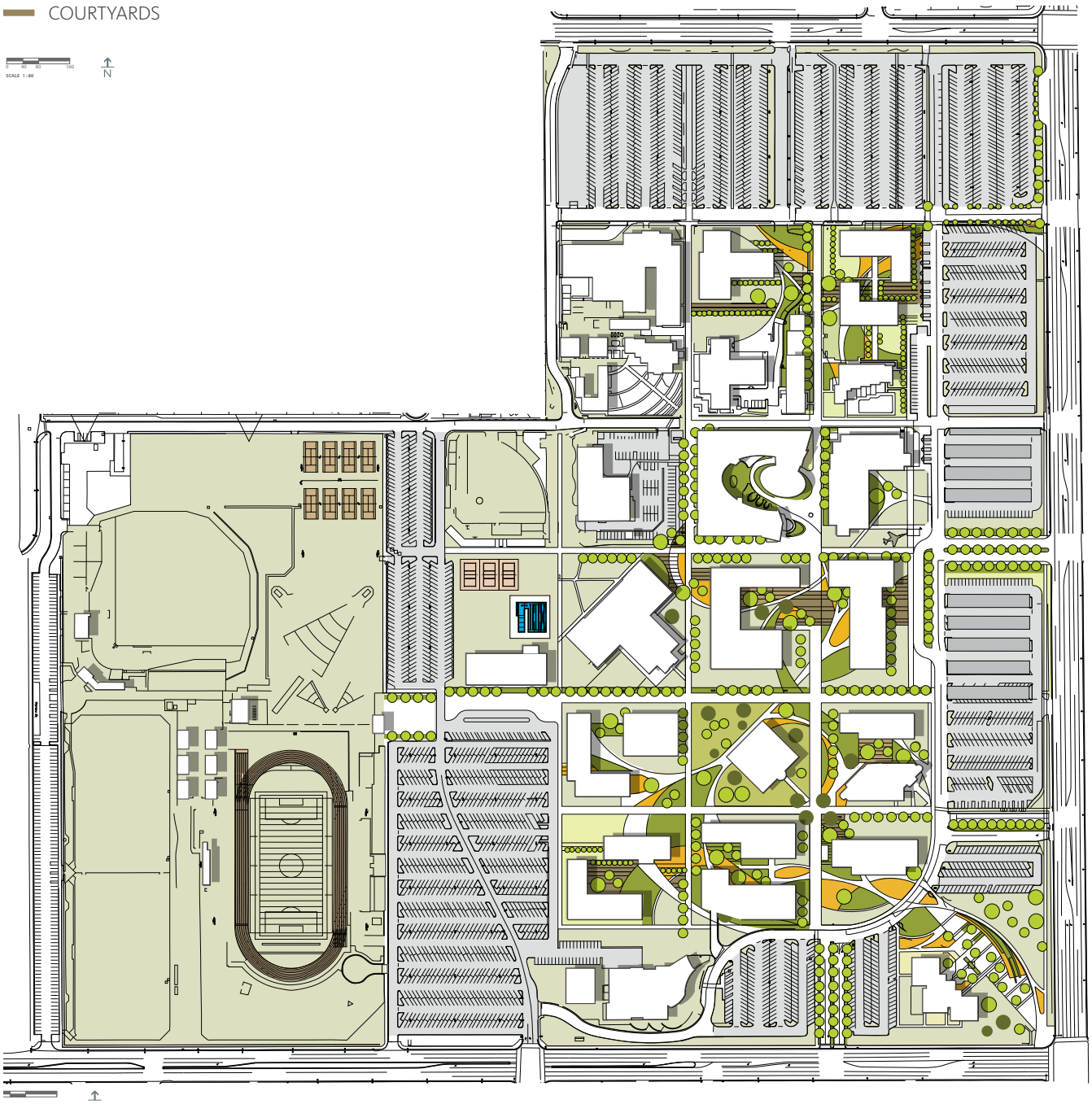
COURTYARDS

The Courtyards are a key component to the FMP, and are intended to be an extension of the building architecture. These spaces are a primary outdoor space and should provide opportunities for interaction and fit the needs of both students and faculty by offering the greatest degree of seating flexibility. To ensure these spaces are occupied there should be reliable sun protection and wind barrier through plant material and building alignment. The Courtyards should create an atmosphere that entices everyone to stay on campus and study or socialize.

HISTORIC COMMONS

As previously noted the Historic Commons will preserve the existing lawn area and large canopy trees at the core of the campus despite its high-water use footprint. This would be the only remaining planting area, other than the athletic fields that would remain high-water turf/lawn.

LANDSCAPE FIELD
HISTORIC COMMONS
GARDEN RIBBON
COURTYARDS



Open Space

03
INFRASTRUCTURE

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INTRODUCTION

Recommendations for campus-wide infrastructure improvements were developed as part of the 2016 Facilities Master Plan and are summarized in this section of the handbook. The existing conditions for each system are described and accompanied by long range recommendations to assist design teams in the planning and design of all campus projects. Since the campus will be developed in phases, the recommendations are outlined as a series of steps that will be implemented with each phase. As the implementation plan for the AVC campus is developed, the sequencing of projects and phased implementation might adjust.

CHILLED WATER HYDRONIC + NATURAL GAS PIPING

EXISTING CONDITIONS

The existing central chilled water plant incorporates (2)-800 ton Trane electric centrifugal chillers with 480v/3-ph VFD's and refrigerant R-123. The (2)-cooling towers are BAC open-circuit cross-flow induced draft type. Space is provided for a future chiller and cooling tower up to 1000 ton size. Pumps are already installed for the future equipment. According to maintenance personnel the existing chillers have experienced up to 80% load to date from the existing connected buildings, a combined existing

load of 1,300 tons. The north central plant building and equipment are no longer in use. The existing chilled water distribution system is an underground radial type configuration.

The existing underground natural gas piping appears to be in good condition according to maintenance personnel at the College. There appears to be adequate capacity to serve the proposed facilities plan.

ANALYSIS AND RECOMMENDATIONS

NATURAL GAS

The existing underground gas piping is adequate to be extended to the future buildings. 5-psig site natural gas can be piped to each building with an automatic seismic and gas shut-off valve.

SPACE HEATING/DOMESTIC HOT WATER

Space heating and domestic hot water are required at each building. This can be provided stand-alone at each building with direct-fired or heat-pump packaged equipment, or with heating water hydronic boiler(s).

CHILLED WATER

The existing chiller plant and underground piping system should be upgraded and extended to serve the entire campus. The underground chilled water piping distribution can be looped at the 8-inch sized main ends to enhance flow and pressure drop. Sectional valves can be added to facilitate future maintenance, and a valve box can be added at each building for individual shut off, vent and drain.

Future buildings connected to the central chilled water plant will be provided with chilled water type air handlers, and VAV terminal boxes for each zone. Remote buildings not connected to plant can be provided with air cooled package heating/cooling equipment.

At each building an energy management system will use standard native BacNet IP/Mstp network controllers, and a Tridium (Niagara/Jace) front end to interface with the legacy Siemens (SNL) system. Other control systems can be utilized depending on the preference of the College.

1,000 tons of future building chilled water cooling load will be added, mainly in phases 1 & 2 of the four phase development plan. 500 tons of existing building load will be removed to make way for the future buildings, a net increase of 500 tons. The new combined future building connected load will be 1,800 tons at the end of phase four.

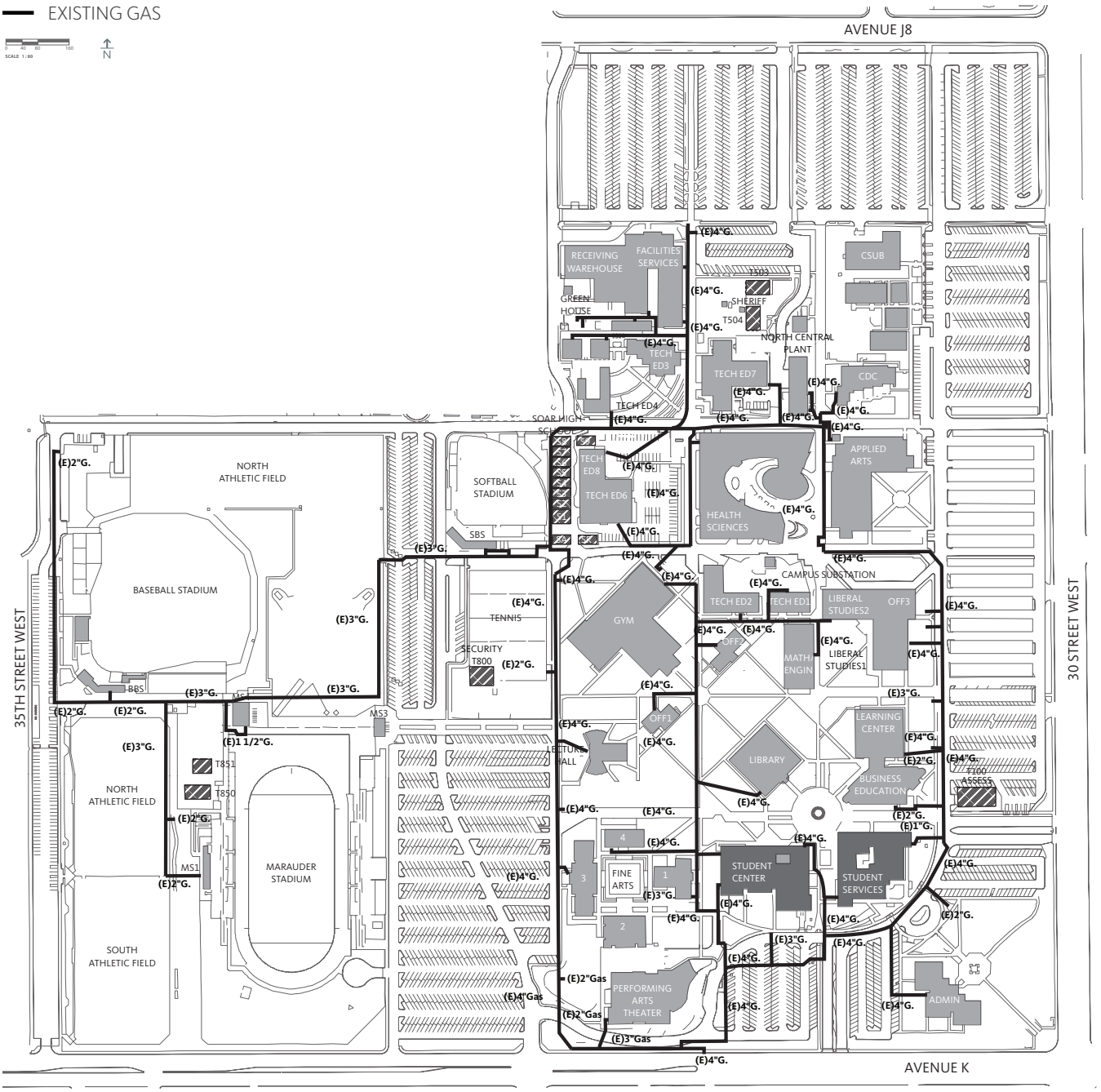
A new chiller and cooling tower must be added at the Central Plant in Phase-1 of the development plan in order to meet the required loads:

- Chiller Option-1: Meet the future load by adding one 800 ton chiller, a combined capacity of 2,400 tons. This meets all cooling requirements for the future campus plan. When one 800 ton chiller is off-line 1,600 tons will remain to serve 1,800 tons, a deficiency of 200 tons.
- Chiller Option-2: Meet future load adding a 400 ton chiller for low-load high-turndown operation with some extra capacity for factor of safety, a combined 2,000 tons of capacity serving 1,800 tons of connected load. This meets all cooling requirements and has better low load efficiency. With an 800 ton chiller off-line, 1,200 tons would remain to serve 1,800 tons, a deficiency of 600 tons.
- Chiller Option-3: Meet future load adding a 1,000 ton chiller to provide standby of one existing chiller, a combined 2,600 tons. This meets all cooling requirements with better chiller redundancy, and 1,800 tons remaining to serve 1,800 tons, unless when the 1,000 ton chiller is off-line, in which case 1,600 tons would remain to serve 1,800 tons, a deficiency of 200 tons.
- Chiller Option-4: Provide for the new chiller and existing plant, hybrid fluid coolers, in lieu of the open-crossflow cooling towers. This will result in significant potable water savings Hybrid fluid coolers are a water, energy and maintenance saving consideration. 80% water savings are possible, the chiller condenser tubes will not need periodic cleaning, the condenser water pumps can have VFD's to vary flow to save energy and will not foul, similar to the chilled water evaporator tubes. If all three towers are hybrid fluid coolers, 173 gpm could be saved at full load, or 2,076,000 gallons per year saved for 2,000 equivalent chiller full load hours per year. The hybrid coolers are all stainless steel so aggressive water treatment can be used, they are much larger and heavier, and are higher installed cost. An all stainless 800 ton tower complete is $200k, the hybrid fluid cooler three times as much at $600k. Saves potable water, saves pumping energy, saves tube cleaning. Over fifty years pays for itself with $40k per year savings, net simple payback ten years. Total net savings over 50 years would be $1,600,000.
- System Option-5: Improve pumping system reliability by inter-connecting the two main runs of the chilled water underground to create a loop at the 8-inch size main ends. Add some sectional valves and vaults in the loop to facilitate service and maintenance; this will allow shutdown of a section of piping without shutting down the entire system at once. Valve boxes can be added at the entrance to each building to facilitate building shutoff, vent and draining.

NATURAL GAS

EXISTING

EXISTING GAS



NATURAL GAS: PHASE 1

EXISTING GAS
NEW GAS
① PROVIDE AUTOMATIC SEISMIC VALVE & LINE SIZE SHUT-OFF VALVE

NATURAL GAS: PHASE 2

EXISTING GAS
NEW GAS
① PROVIDE AUTOMATIC SEISMIC VALVE & LINE SIZE SHUT-OFF VALVE

NATURAL GAS: PHASE 3

EXISTING GAS
NEW GAS
① PROVIDE AUTOMATIC SEISMIC VALVE & LINE SIZE SHUT-OFF VALVE

NATURAL GAS: PHASE 4

EXISTING GAS
NEW GAS
① PROVIDE AUTOMATIC SEISMIC VALVE & LINE SIZE SHUT-OFF VALVE

HEATING HOT WATER

EXISTING

EXISTING HEATING HOT WATER (HHW) & HEATING HOT WATER RETURN (HHWR)

HEATING HOT WATER: PHASE 1

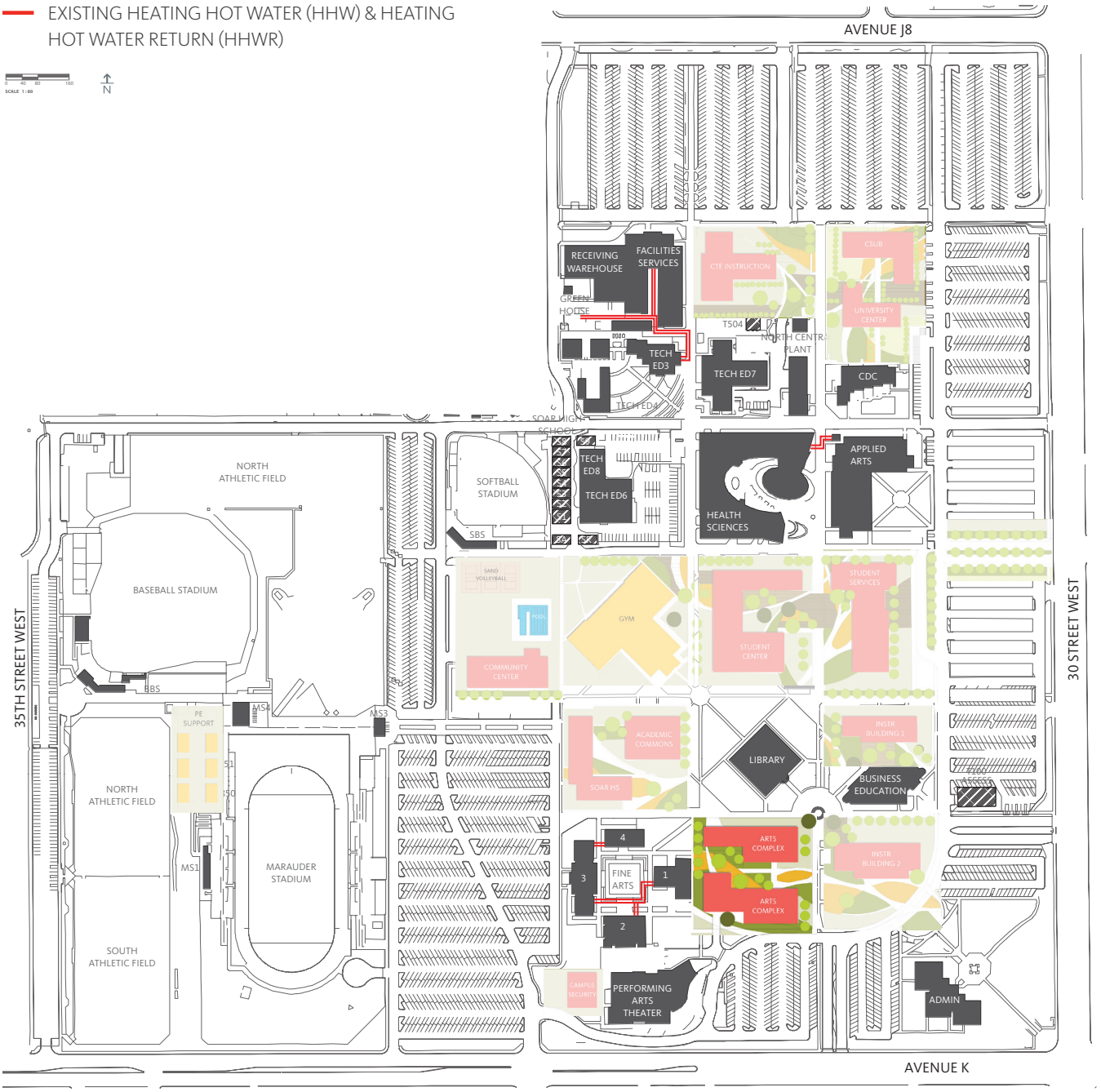
EXISTING HEATING HOT WATER (HHW) & HEATING HOT WATER RETURN (HHWR)

HEATING HOT WATER: PHASE 2

EXISTING HEATING HOT WATER (HHW) & HEATING HOT WATER RETURN (HHWR)

HEATING HOT WATER: PHASE 3

EXISTING HEATING HOT WATER (HHW) & HEATING HOT WATER RETURN (HHWR)



HEATING HOT WATER: PHASE 4

EXISTING HEATING HOT WATER (HHW) & HEATING HOT WATER RETURN (HHWR)

SANITARY SEWER

EXISTING

EXISTING SANITARY SEWER

NOTE: AVAILABLE CAPACITY OF THE EXISTING UTILITY TO BE CONFIRMED

SANITARY SEWER: PHASE 1

- EXISTING SANITARY SEWER
- NEW SANITARY SEWER
- NEW MANHOLE
- ① NEW SANITARY SEWER
- ② NEW SANITARY SEWER REROUTE

NOTE: AVAILABLE CAPACITY OF THE EXISTING UTILITY TO BE CONFIRMED

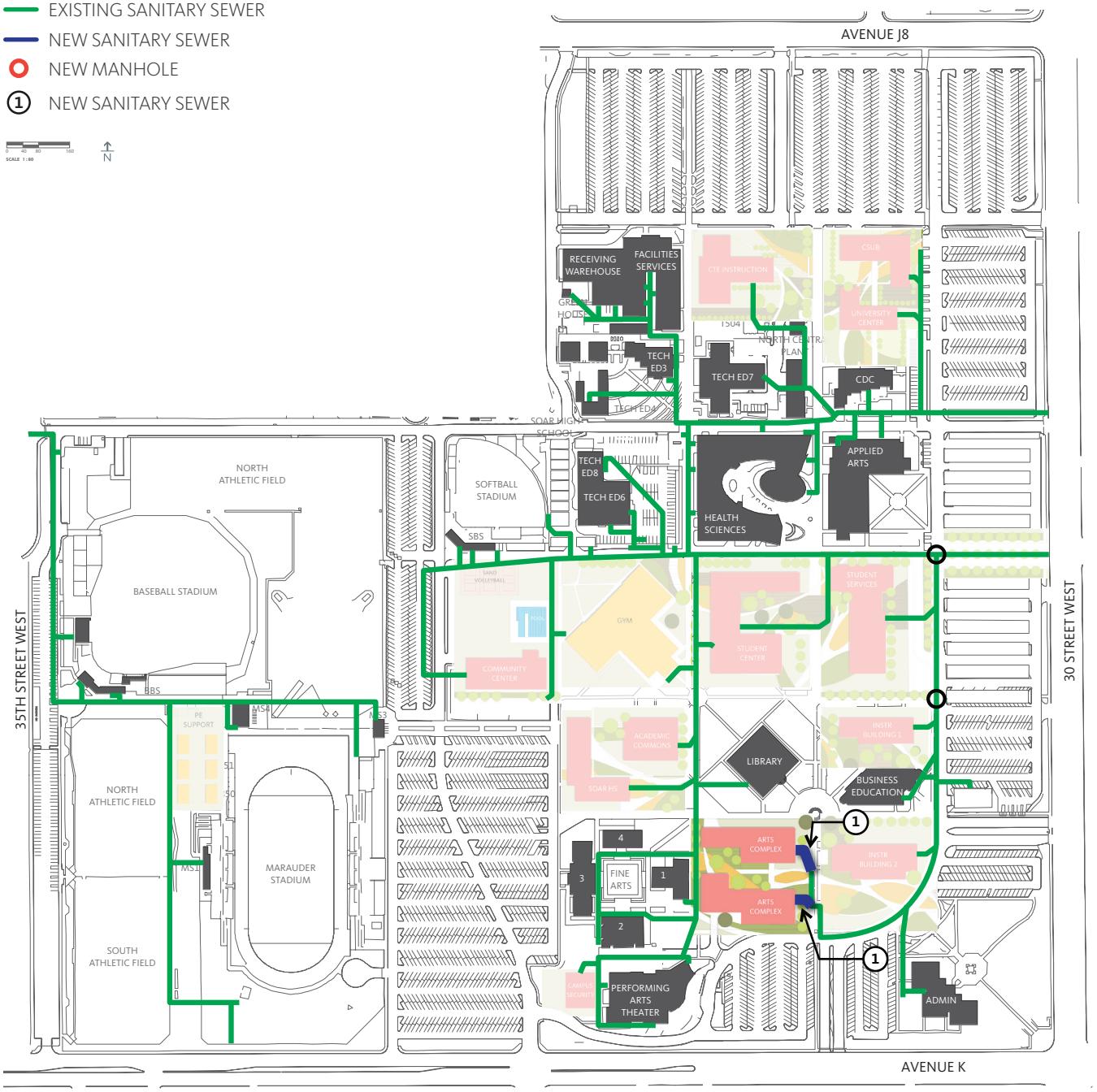
SANITARY SEWER: PHASE 2

- EXISTING SANITARY SEWER
- NEW SANITARY SEWER
- NEW MANHOLE
- ① NEW SANITARY SEWER
- ② NEW SANITARY SEWER REROUTE

NOTE: AVAILABLE CAPACITY OF THE EXISTING UTILITY TO BE CONFIRMED

SANITARY SEWER: PHASE 3

- EXISTING SANITARY SEWER
- NEW SANITARY SEWER
- NEW MANHOLE
- ① NEW SANITARY SEWER



NOTE: AVAILABLE CAPACITY OF THE EXISTING UTILITY TO BE CONFIRMED

SANITARY SEWER: PHASE 4

- EXISTING SANITARY SEWER
- NEW SANITARY SEWER
- NEW MANHOLE
- ① NEW SANITARY SEWER

NOTE: AVAILABLE CAPACITY OF THE EXISTING UTILITY TO BE CONFIRMED

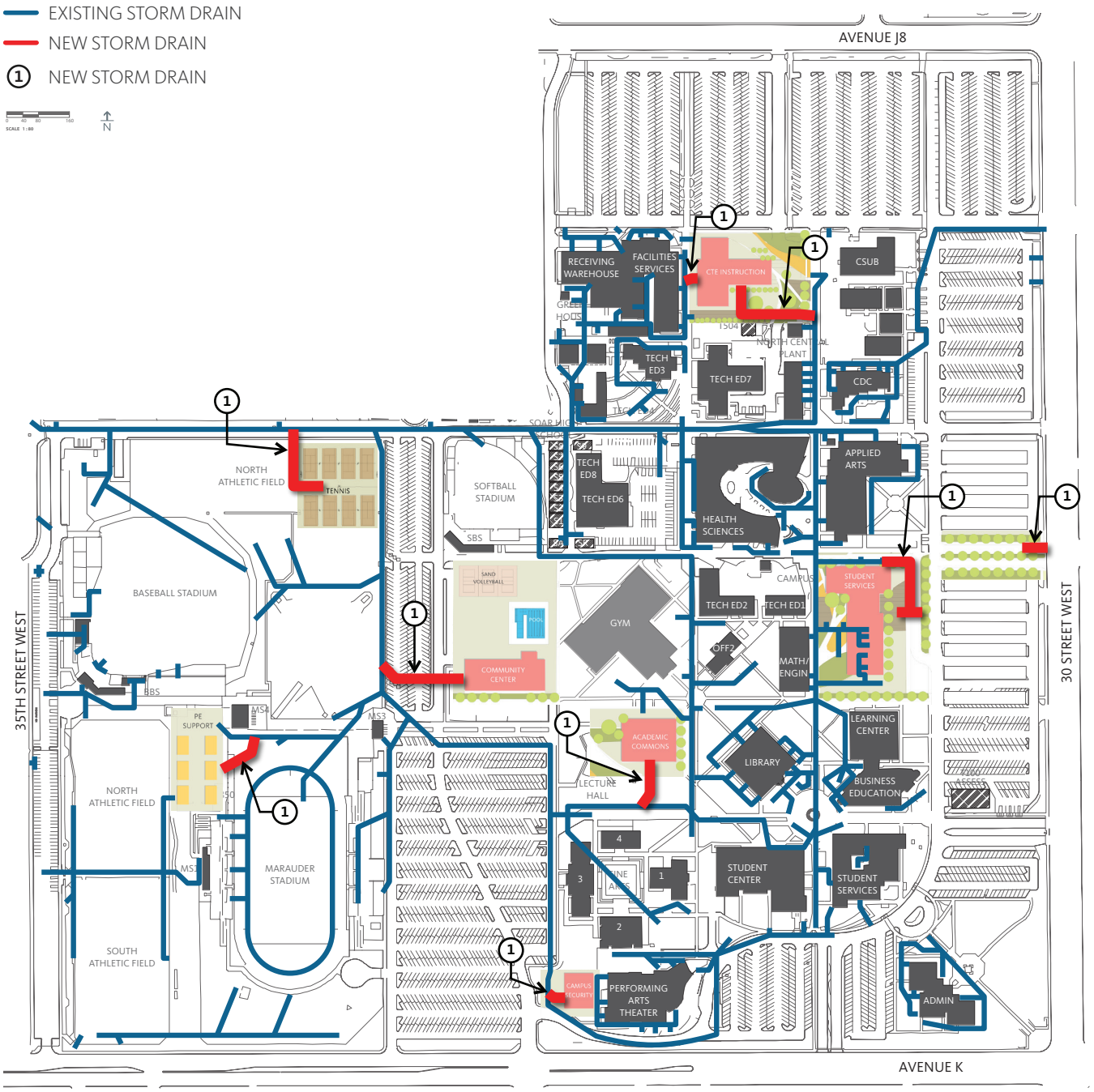
STORM DRAIN

EXISTING

EXISTING STORM DRAIN

NOTE: AVAILABLE CAPACITY OF THE EXISTING UTILITY TO BE CONFIRMED

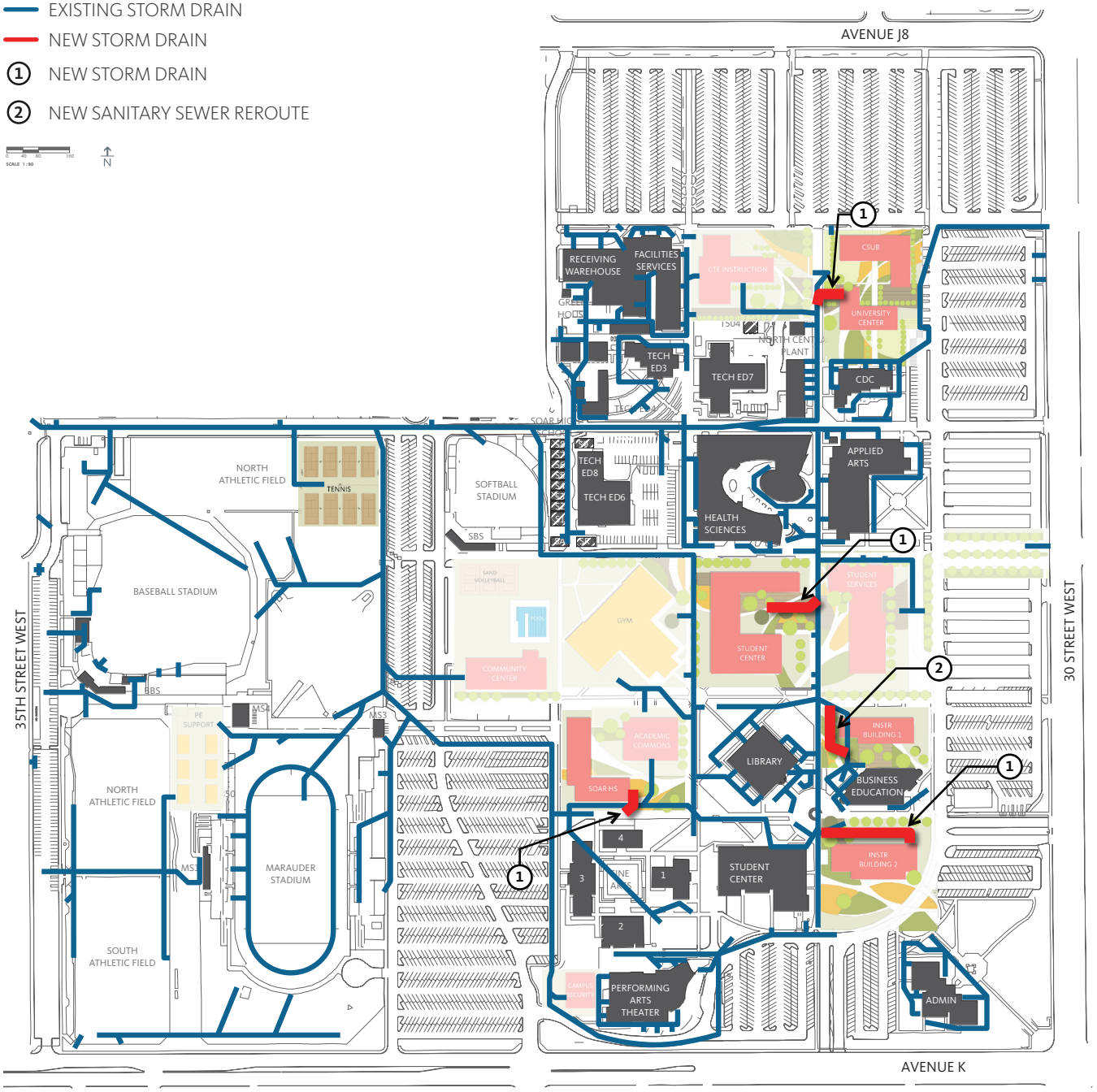
STORM DRAIN: PHASE 1



NOTE: AVAILABLE CAPACITY OF THE EXISTING UTILITY TO BE CONFIRMED

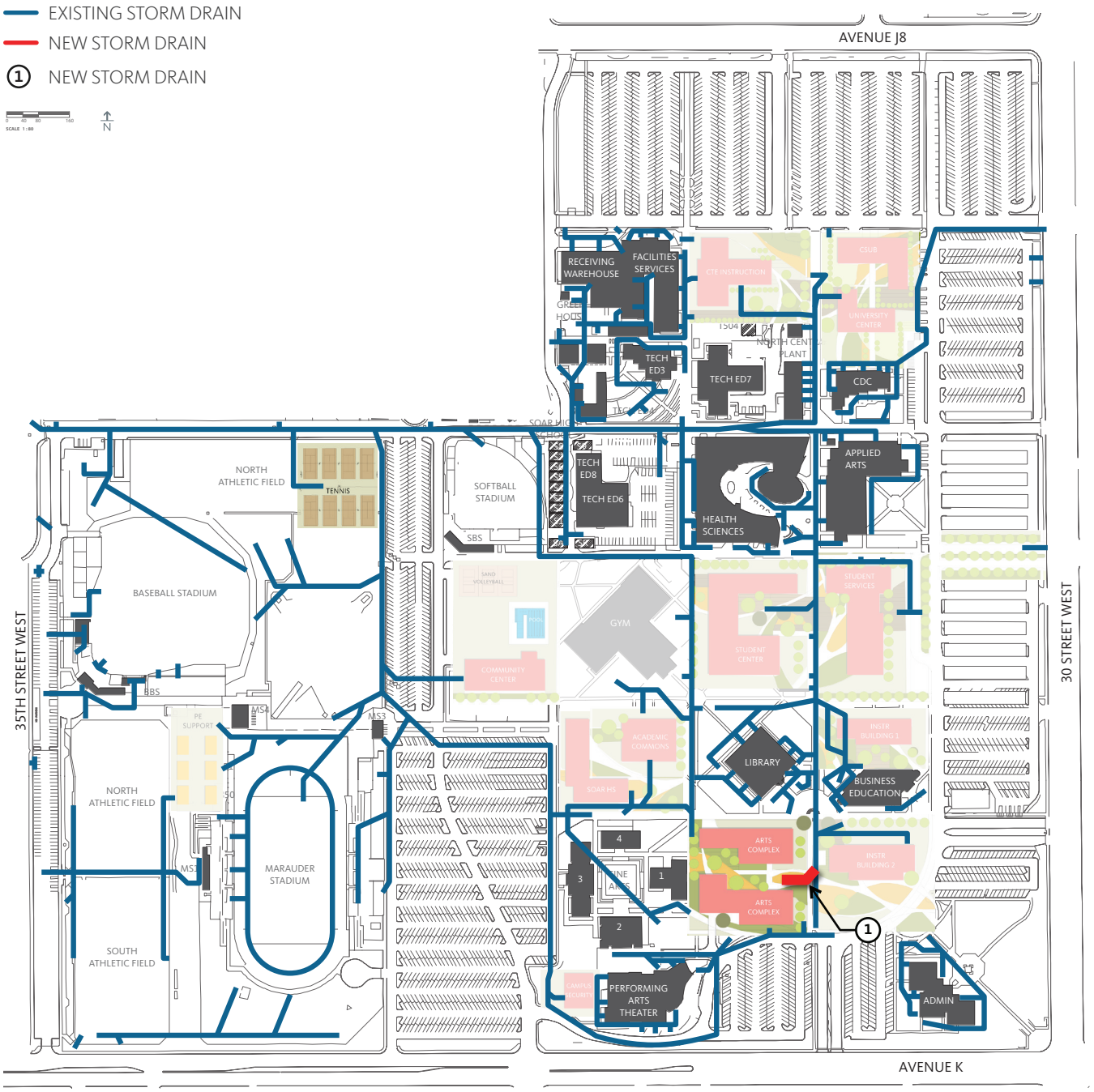
STORM DRAIN: PHASE 2

EXISTING STORM DRAIN
NEW STORM DRAIN
① NEW STORM DRAIN
② NEW SANITARY SEWER REROUTE



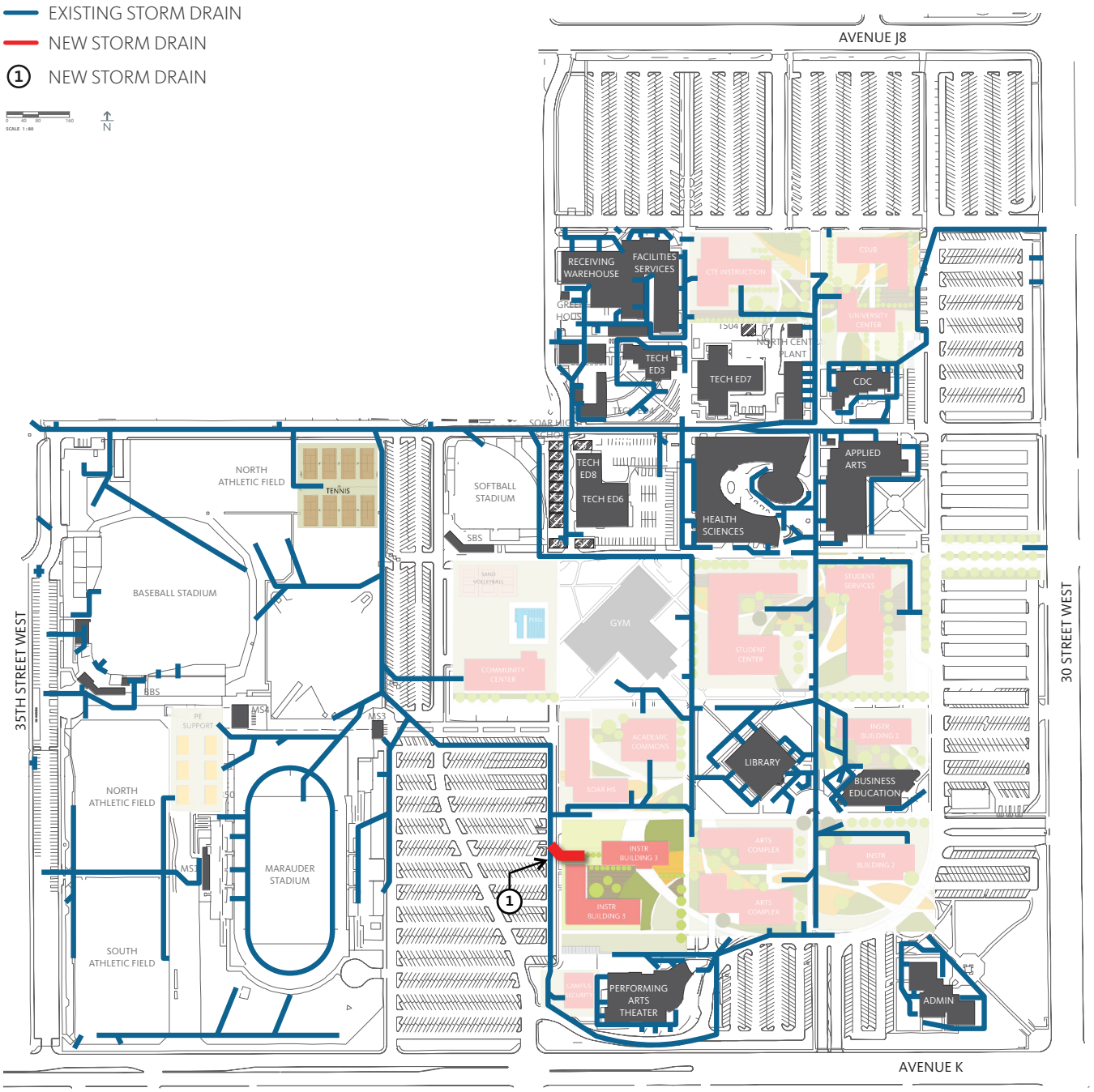
NOTE: AVAILABLE CAPACITY OF THE EXISTING UTILITY TO BE CONFIRMED

STORM DRAIN: PHASE 3



NOTE: AVAILABLE CAPACITY OF THE EXISTING UTILITY TO BE CONFIRMED

STORM DRAIN: PHASE 4

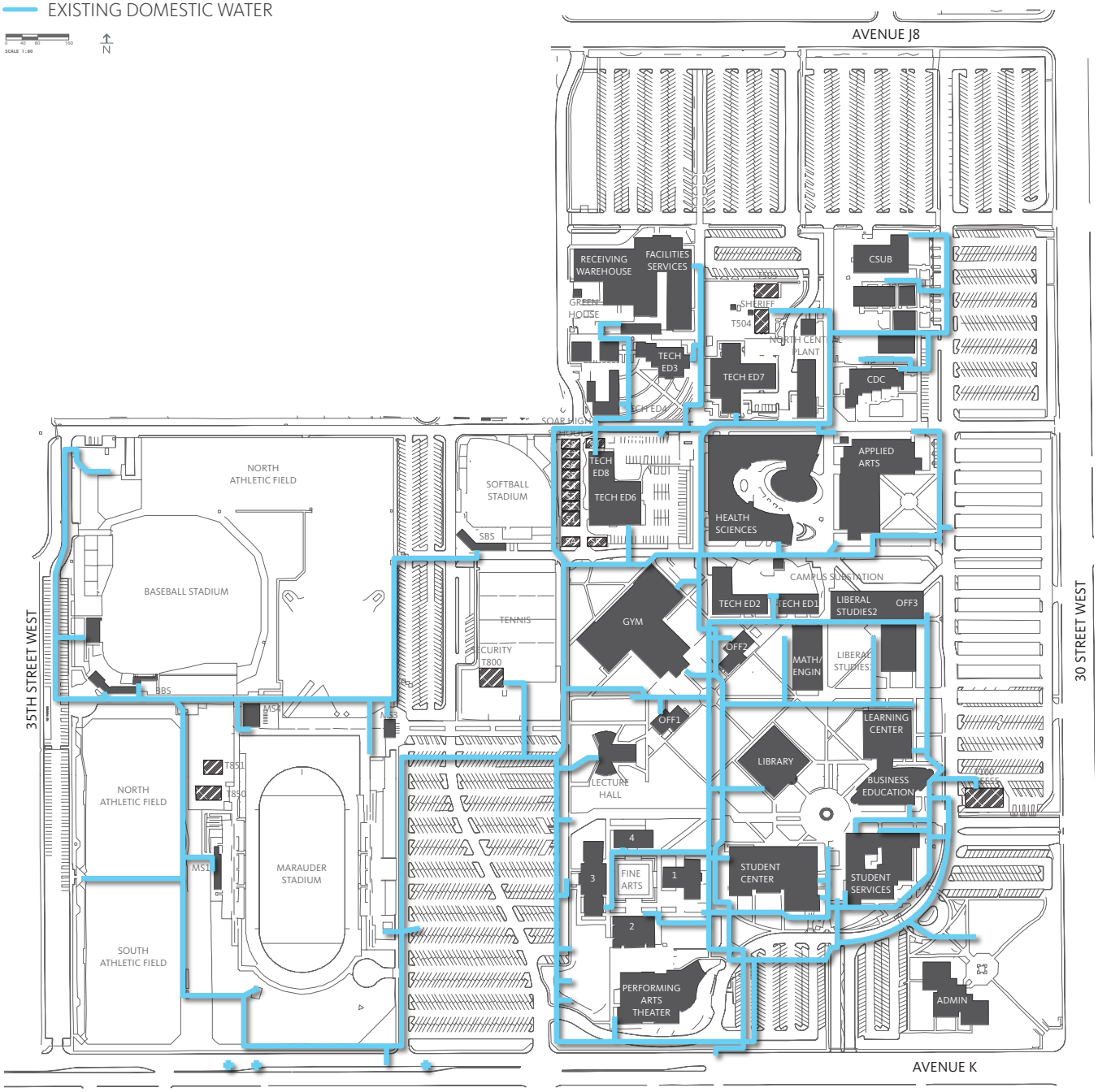


NOTE: AVAILABLE CAPACITY OF THE EXISTING UTILITY TO BE CONFIRMED

DOMESTIC WATER

EXISTING

EXISTING DOMESTIC WATER



NOTE: AVAILABLE CAPACITY OF THE EXISTING UTILITY TO BE CONFIRMED

DOMESTIC WATER: PHASE 1

EXISTING DOMESTIC WATER
NEW DOMESTIC WATER
WATER VALVE
① NEW DOMESTIC WATER
② NEW DOMESTIC REROUTE

NOTE: AVAILABLE CAPACITY OF THE EXISTING UTILITY TO BE CONFIRMED

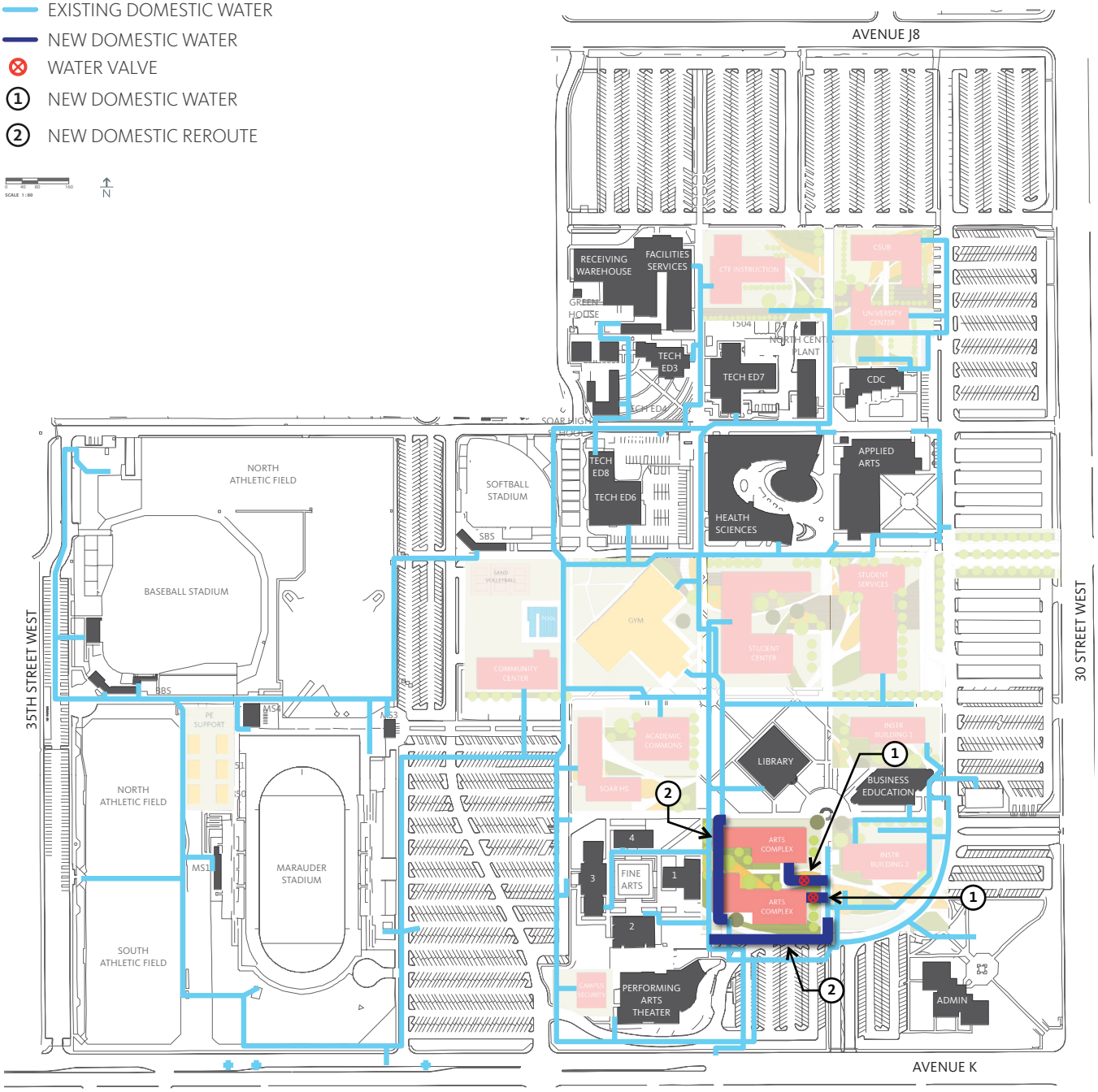
DOMESTIC WATER: PHASE 2

EXISTING DOMESTIC WATER
NEW DOMESTIC WATER
WATER VALVE
1 NEW DOMESTIC WATER

NOTE: AVAILABLE CAPACITY OF THE EXISTING UTILITY TO BE CONFIRMED

DOMESTIC WATER: PHASE 3

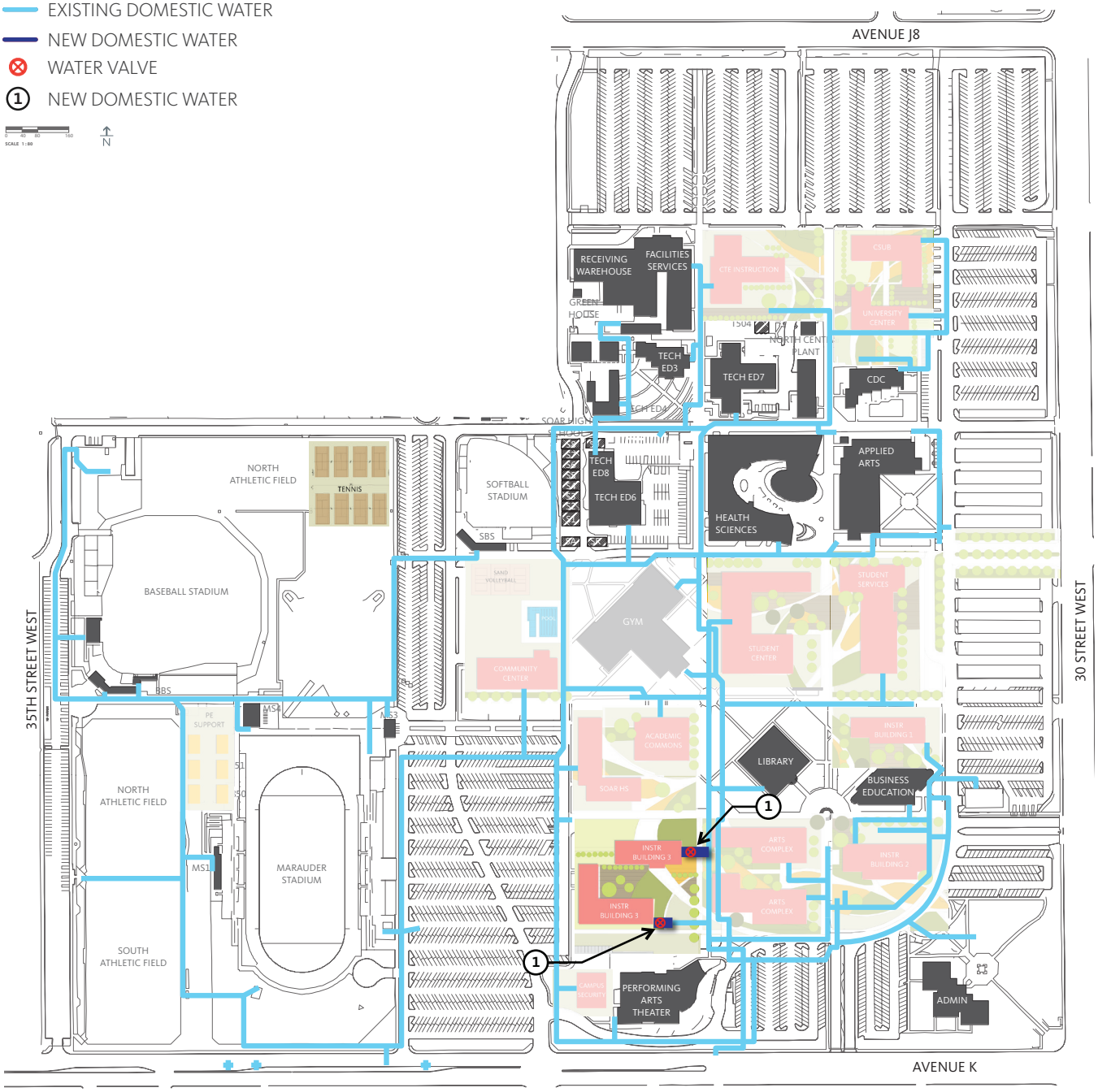
EXISTING DOMESTIC WATER
NEW DOMESTIC WATER
WATER VALVE
① NEW DOMESTIC WATER
② NEW DOMESTIC REROUTE



NOTE: AVAILABLE CAPACITY OF THE EXISTING UTILITY TO BE CONFIRMED

DOMESTIC WATER: PHASE 4

EXISTING DOMESTIC WATER
NEW DOMESTIC WATER
WATER VALVE
1 NEW DOMESTIC WATER

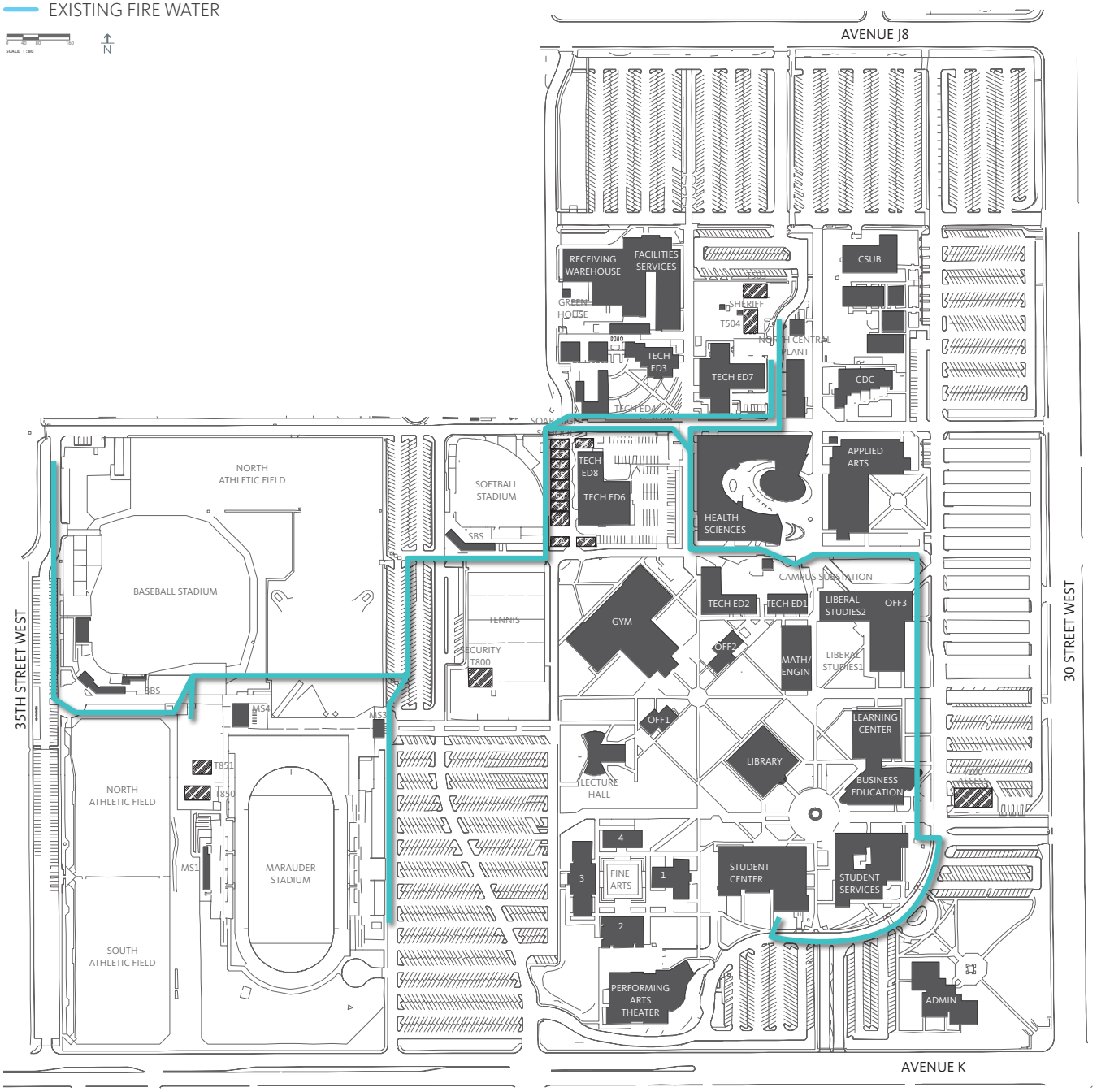


NOTE: AVAILABLE CAPACITY OF THE EXISTING UTILITY TO BE CONFIRMED

FIRE WATER

EXISTING

EXISTING FIRE WATER



NOTE: AVAILABLE CAPACITY OF THE EXISTING UTILITY TO BE CONFIRMED

FIRE WATER: PHASE 1

EXISTING FIRE WATER
NEW FIRE WATER
WATER VALVE
① NEW FIRE WATER

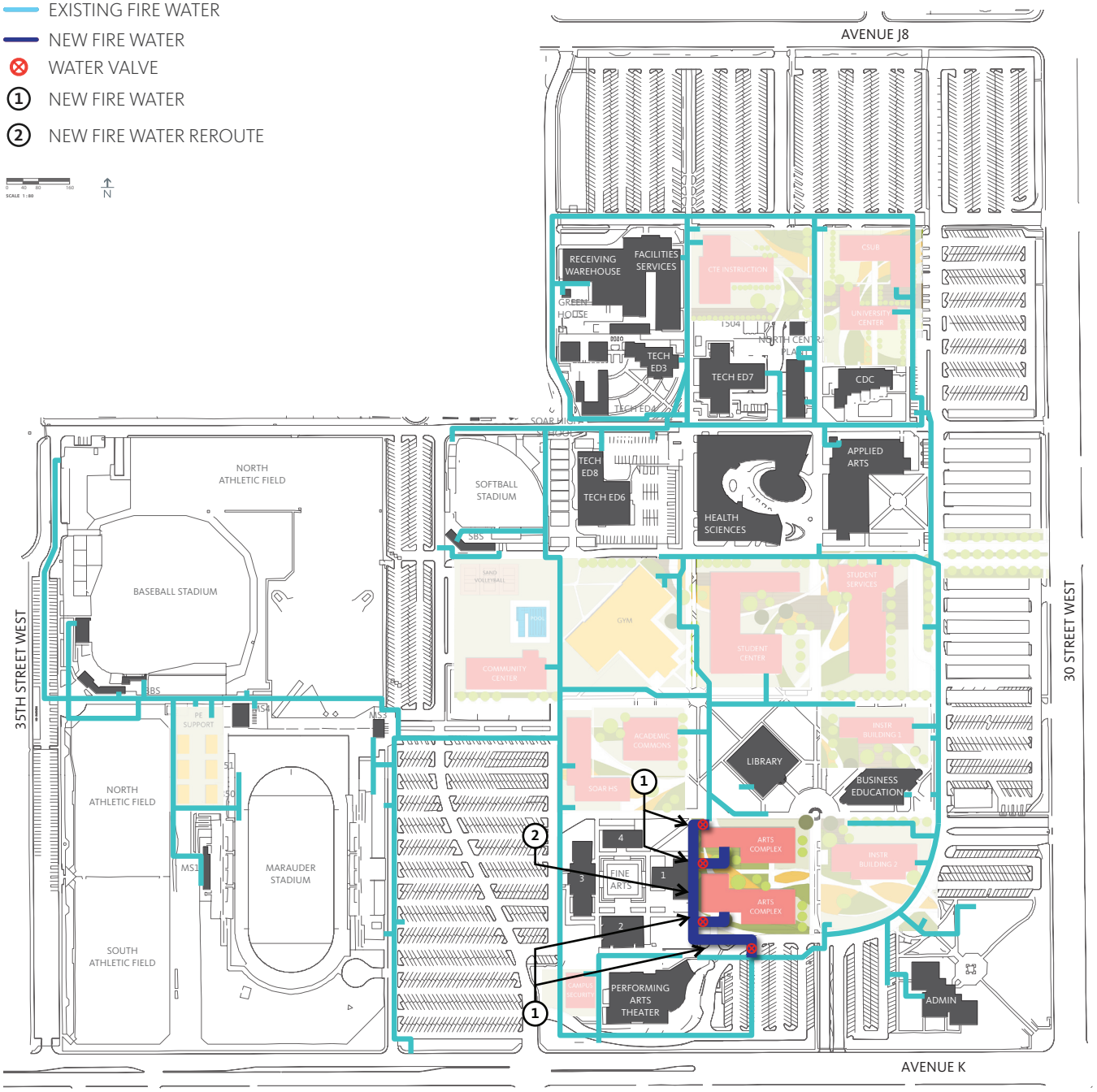
NOTE: AVAILABLE CAPACITY OF THE EXISTING UTILITY TO BE CONFIRMED

FIRE WATER: PHASE 2

NOTE: AVAILABLE CAPACITY OF THE EXISTING UTILITY TO BE CONFIRMED

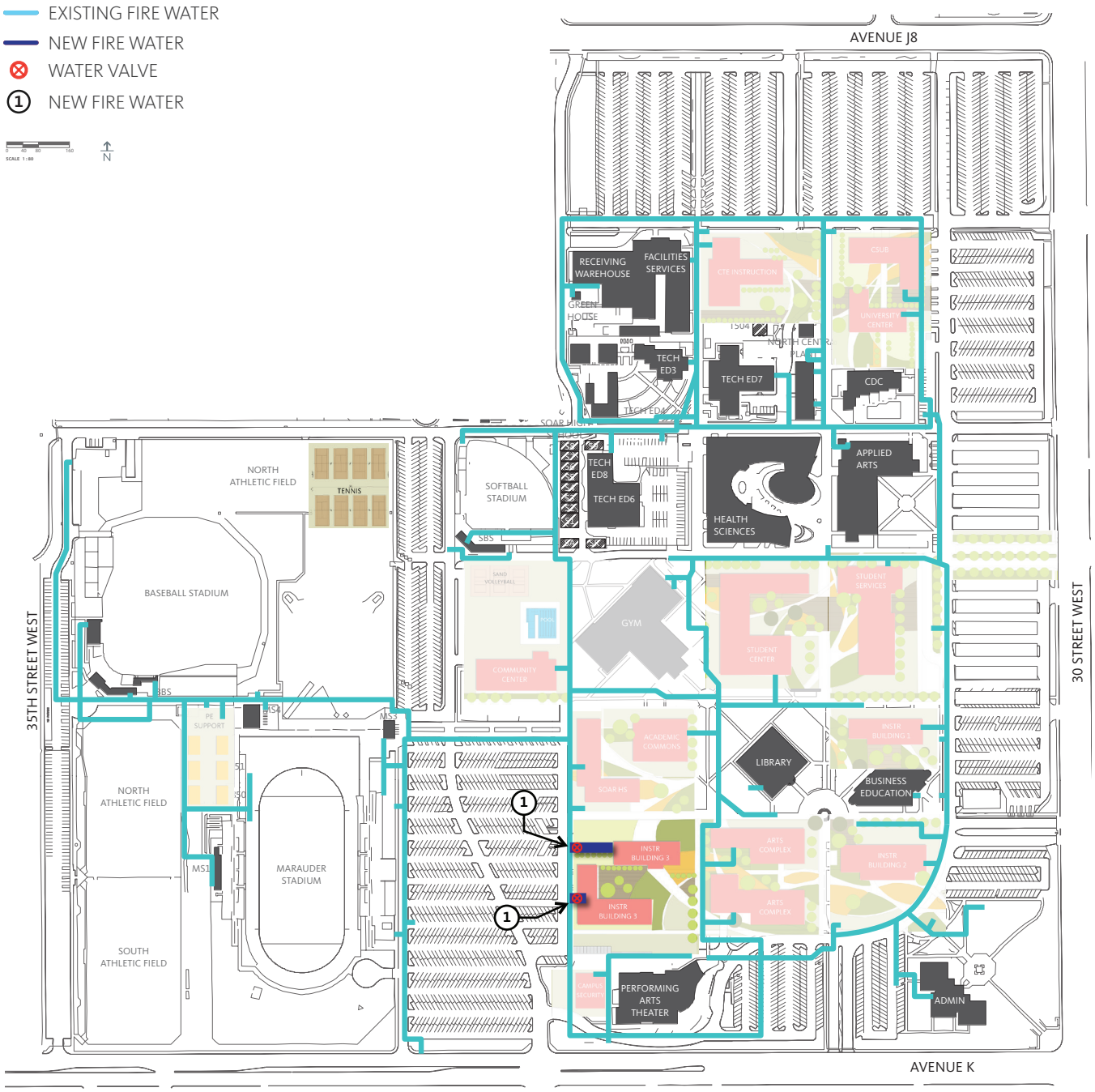
FIRE WATER: PHASE 3

- EXISTING FIRE WATER
- NEW FIRE WATER
- WATER VALVE
- ① NEW FIRE WATER
- ② NEW FIRE WATER REROUTE



NOTE: AVAILABLE CAPACITY OF THE EXISTING UTILITY TO BE CONFIRMED

FIRE WATER: PHASE 4



NOTE: AVAILABLE CAPACITY OF THE EXISTING UTILITY TO BE CONFIRMED

ELECTRICAL SYSTEMS

The college currently has two medium voltage systems, 12kv and 4.16kv serving the campus. The purpose of this report is to make recommendations to consolidate the two systems into a single 12kv system and to make recommendations for necessary changes to the system to accommodate future buildings programmed in the campus master plan.

In addition, the current Southern California Edison (SCE) service equipment is in conflict with the proposed Student Center and will have to be relocated.

EXISTING CONDITIONS

Southern California Edison (SCE) currently serves the entire campus from their transformer room located south of the Health Sciences Building. Service switchboards are 600A at 12,470 volts, 3-phase, and 600A at 4,160 volts, 3-phase.

- A 4,160v feeder extends radially to feed the following buildings:
- Central Plant with (2) 500KVA transformers
- Applied Arts Building with a 750KVA transformer.
- These buildings are fed from SF6 switch SW#11.

- Another 4,160v radial feed serves:
- T6 Automotive with 300KVA transformer
- Gymnasium with 250KVA transformer.
- Both these buildings are served via SF6 switch SW#1

- There is also a 4,160v loop that feeds the following:
- Admin, Library, and Student Services with a 750KVA transformer.
- Student Center with 750KVA transformer.
- Fine Arts (FA1) with 500KVA transformer.
- Fine Arts (FA3, FA4) and Music with 300KVA transformer.
- Building LH with 300KVA transformer.

- The 12,470v system has several radial feeds that serving the following:
- Central Plant with 3750KVA transformer.
- Performing Arts Theater (1000KVA), Business Education, Learning Center, Multimedia Building (750KVA), and SSV (750KVA)
- Health and Science (2000KVA), TE8 (500KVA), TE7 (750KVA), T502, T503, T504, Parking Lots 14, 15 & 16 (750KVA), Facilities Services & TE3 (750KVA), Softball Field, Soars, & Bldg 500 (500KVA),
- Fire Pump (500KVA), Buildings 100, 200, 300, 400, 600, & 700 (1500KVA), and Nursery (500KVA).

RECOMMENDATIONS

It is recommended that (2) main 12.47KV loops be provided:

1. Loop #1 can be formed utilizing the existing 4160 volt loop described above under existing conditions. The existing conductors and switches are shown rated 15kv on as-built documents. Loop #1 will be fed from the new service switchgear to MH#10W on the east side, and to MH#11 on the west side. Some of the transformer are dual wound and can be re-tapped to accept 12kv feeders. Transformers that are 4160v only will have to be replaced.

2. Loop #2 can be formed by running new 15kv conductors from SW#2 to the new service and refeedSW#13 (via MH#18) from the new service.

3. The 12kv radial feed serving Performing Arts and other buildings above can be made into a loop; however, more trenching is required from SW#8 back to the new utility substation.

4. An optional secondary loop can be made at SW#2 and is recommended to be installed at the west end of campus. This loop would serve Softball Field substation, Fire Pump substation, Stadium, and Nursery. These substations are currently long radial feeds from SW#2 forming this loop will provide the ability to feed from alternative feeder.

5. During design, it is recommended that the medium voltage switches be verified for the number of taps to feed new buildings. Some of the switches were not accessible. Designing with a loop system provides the ability feed switches from two different directions in the case of an outage in one on the loop conductors.

RECOMMENDATIONS

PHASE 1

The following work is included in phase 1:

- Construct new campus SCE substation and 12kv service equipment.
- Complete 12kv primary loops from SW#2 back to new service.
- Complete secondary loop from MH#9 to SW#2.
- Connect Student Services from MH#10W.
- Connect Academic Commons from SW#3
- Connect Campus Security from MH#14.
- Connect CTE Instruction from MH#20

PHASE 2

The following work is included in phase 2:

- Connect Instructional Building #1 from MH#9S
- Relocate SW#3. Relocate medium voltage feeders.
- Connect Soar HS from SW#3
- Connect Instructional Building #2 from MH#8S.
- Connect CSUB & University Center from MH#20.
- Connect Student Center from MH#10W.

PHASE 3

The following work is included in phase 3:

Connect Arts Complex from SW#7.

PHASE 4

The following work is included in phase 4:

Renovation of Gym and conversion to 12kv.

ELECTRICAL: EXISTING

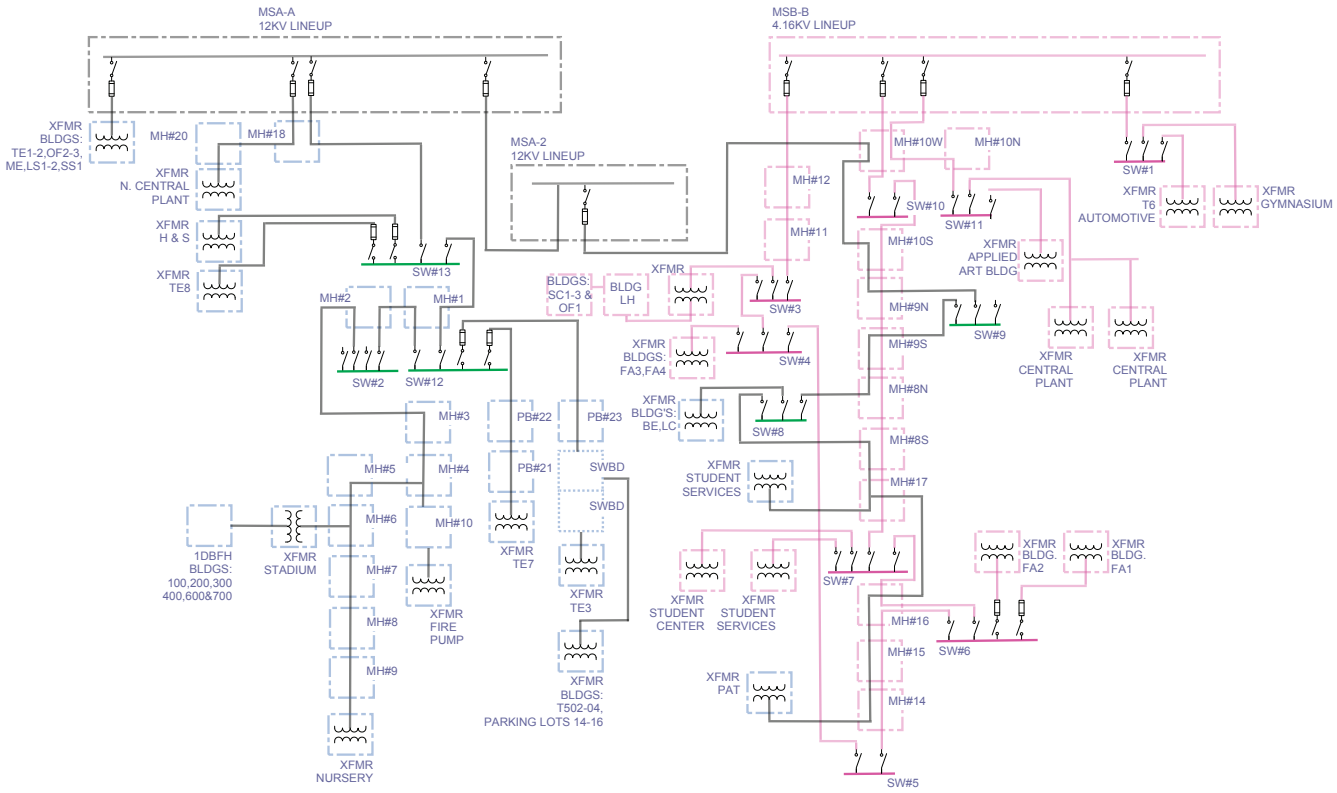
EXISTING BUILDINGS

EXISTING BUILDINGS							
		Area		BUILDING NORMAL POWER			
Building Structure Name	Bldg #	OGSF	ASF	KVA	AMPS	VOLTS-PH	
Administration Building	1	15,425	8,579	31	37.1	(480-3)	
Student Services Building	2	38,958	21,940	78	93.7	(480-3)	
South Central Plant	3	20,000	20,000	1,149	1,382.3	(480-3)	
Student Center Building	4	28,118	23,433	56	67.6	(480-3)	
Performing Arts Theatre	5	32,120	19,560	64	77.3	(480-3)	
Fine Arts - Art	6	7,525	4,897	15	18.1	(480-3)	
Fine Arts - Black Box	7	7,139	6,471	14	17.2	(480-3)	
Fine Arts - Music	8	10,844	6,871	22	26.1	(480-3)	
Fine Arts - General	9	4,200	2,725	8	10.1	(480-3)	
Business Education Building	10	41,889	24,496	84	100.8	(480-3)	
Learning Center Building	11	14,712	10,120	29	35.4	(480-3)	
Library	12	35,604	7,468	71	85.7	(480-3)	
Science Physics Building	13	6,367	5,013	13	15.3	(480-3)	
Science Biology Building	14	6,367	4,769	13	15.3	(480-3)	
Science Chemistry Building	15	6,367	4,971	13	15.3	(480-3)	
Science Greenhouse Building	16	450	430	1	1.1	(480-3)	
Faculty Office Building	17	3,340	2,172	7	8.0	(480-3)	
Lecture Hall Building	18	5,358	4,930	11	12.9	(480-3)	
Liberal Studies Social Science Building	19	11,196	6,845	22	26.9	(480-3)	
Liberal Studies Language Arts Building	20	9,716	6,840	19	23.4	(480-3)	
Faculty Office Building	21	6,060	2,982	12	14.6	(480-3)	
Math & Engineering Building	22	9,350	7,659	19	22.5	(480-3)	
Technical Education Electronics Building	23	4,572	3,331	9	11.0	(480-3)	
Technical Education Welding/Fire Tech Building	24	10,059	8,211	20	24.2	(480-3)	
Campus Substation	25	1,632	1,632	3	3.9	(480-3)	
Faculty Office Building	26	4,135	1,553	8	9.9	(480-3)	
Gymnasium	27	45,010	34,342	90	108.3	(480-3)	
Applied Arts Building	28	56,170	37,085	112	135.1	(480-3)	
Health & Science Building	29	105,085	66,560	210	252.8	(480-3)	
Botony Greenhouse	30	703	703	1	1.7	(480-3)	
Automotive Building	31	12,198	10,733	24	29.3	(480-3)	
Auto Body Building	32	6,448	3,381	13	15.5	(480-3)	
Child Development Center Building	33	8,183	5,340	16	19.7	(480-3)	
Central Plant & MDF Building	34	8,027	8,027	16	19.3	(480-3)	
Technology Building	35	18,579	12,760	37	44.7	(480-3)	
North Substation	36	341	341	1	0.8	(480-3)	
Environmental Horticulture Science Building	37	6,518	3,818	13	15.7	(480-3)	
EHS Equipment Building	38	2,724	2,254	5	6.6	(480-3)	
EHS Material Storage Building	39	1,000	978	2	2.4	(480-3)	
EHS Shade House	40	1,546	931	3	3.7	(480-3)	
Lath House	41	1,040	600	2	2.5	(480-3)	
EHS Greenhouse 1	42	1,152	1,105	2	2.8	(480-3)	
EHS Greenhouse 2	43	1,152	1,105	2	2.8	(480-3)	
EHS Greenhouse 3	44	1,152	1,105	2	2.8	(480-3)	
EHS Greenhouse 4	45	1,152	1,105	2	2.8	(480-3)	
Facilities Services	46	27,932	11,530	56	67.2	(480-3)	
FS Covered Storage	47	2,584	0	5	6.2	(480-3)	
FS Paint Storage	48	160	0	1	1.2	(480-3)	
Hazardous Materials Storage	49	160	0	1	1.2	(480-3)	
FS Boiler Room	50	200	0	1	1.2	(480-3)	
FS Hazardous Waste	51	400	0	1	1.0	(480-3)	
Receiving Warehouse Building	52	17,928	15,933	36	43.1	(480-3)	
Softball Stadium Press Box Concessions	53	1,686	0	3	4.1	(480-3)	
Softball Stadium Ticket Restroom Storage	54	1,800	0	4	4.3	(480-3)	
Softball Stadium Home Dugout	55	144	0	1	1.2	(480-3)	
Softball Stadium Visitor Dugout	56	144	0	1	1.2	(480-3)	
Baseball Stadium Press Box	57	945	0	2	2.3	(480-3)	
Baseball Stadium Ticket Booth	58	256	0	1	0.6	(480-3)	
Baseball Stadium Concessions Restroom	59	1,622	0	3	3.9	(480-3)	
Baseball Stadium Home Dugout Storage	60	2,305	0	5	5.5	(480-3)	
Baseball Stadium Visitor Dugout	61	788	0	2	1.9	(480-3)	
Marauder Stadium Ticket Booth	62	762	0	2	1.8	(480-3)	
Marauder Stadium Cincessions Restroom	63	2,420	0	5	5.8	(480-3)	
Marauder Stadium Visitor Restroom	64	N/A					
Marauder Stadium Causeway Storage Building	65	1,832	0	4	4.4	(480-3)	
Marauder Stadium Press Box	66	1,822	0	4	4.4	(480-3)	
Grounds Support Building	67	N/A					
Assessment & Disabled Students Modular	68	4,220	2,704	8	10.2	(480-3)	
Faculty Offices Modular Building	69	3,518	2,217	7	8.5	(480-3)	
Faculty Offices Modular Building	70	1,440	950	3	3.5	(480-3)	
Faculty Offices Modular Building	71	1,440	950	3	3.5	(480-3)	
Respiratory Therapy Lab Modular Building	72	2,160	1,512	4	5.2	(480-3)	
Sheriff's Academy Lab Modular Building	73	2,160	1,512	4	5.2	(480-3)	
Sheriff's Academy Locker Facility Modular Building	74	2,160	1,512	4	5.2	(480-3)	
Faculty Offices Modular Building	75	1,440	950	3	3.5	(480-3)	
Construction Management Modular Building	76	2,880	2,016	6	6.9	(480-3)	
Field House Modular Building	77	2,268	1,588	5	5.5	(480-3)	
Field House Modular Building	78	1,600	1,120	3	3.8	(480-3)	
Subtotal Operating Load		**710,859**	**454,665**	**2,809**	**3,048.3**	**(480-3)**	

FUTURE BUILDINGS							
		Area		BUILDING NORMAL POWER			
Building Structure Name		OGSF	ASF	VA/SqFt	KVA	AMPS	VOLTS-PH
Future Campus Elec SubStation	79	600	600	5	3	8	(208-3)
Future Solar Thermal Plant	80	20,000	20,000	2	40	48	(480-3)
Student Center	81	40,000	40,000	20	800	962	(480-3)
Student Services	82	35,000	35,000	20	700	842	(480-3)
Learning Resource Center	83	30,000	30,000	22	660	794	(480-3)
Community Building	84	20,000	20,000	17	340	409	(480-3)
SOAR HS	85	20,000	20,000	30	600	722	(480-3)
Arts Complex	86	30,000	30,000	22	660	794	(480-3)
Administration Expansion	87	40,000	40,000	20	800	962	(480-3)
CTE Instructional Building	88	25,000	25,000	17	425	511	(480-3)
Police	89	6,000	6,000	15	90	250	(208-3)
Subtotal Operating Load		**266,600**	**266,600**		**5,118**	**237**	**(12470-3)**

ELECTRICAL: EXISTING

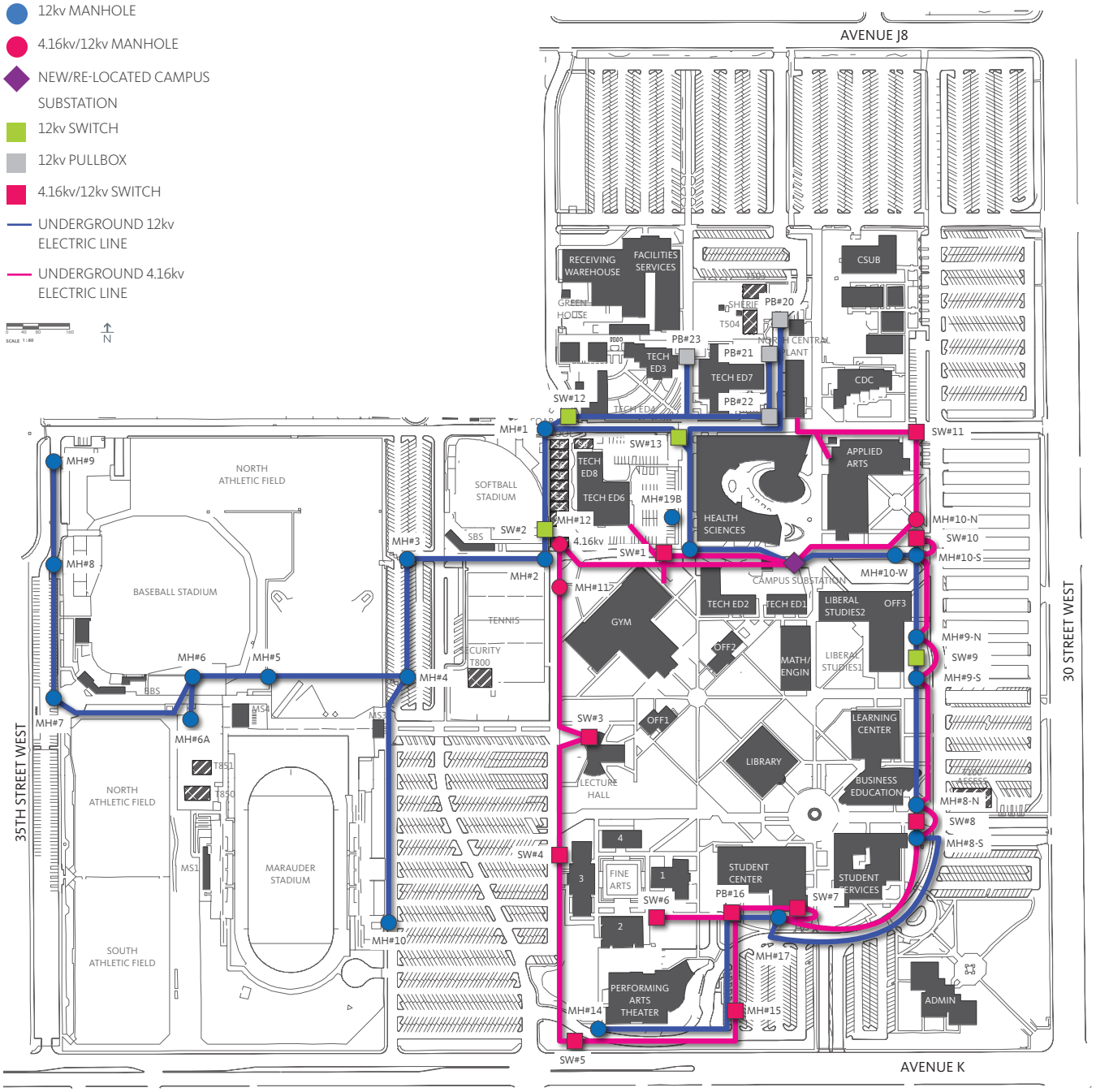
SINGLE LINE DIAGRAM



ELECTRICAL: EXISTING

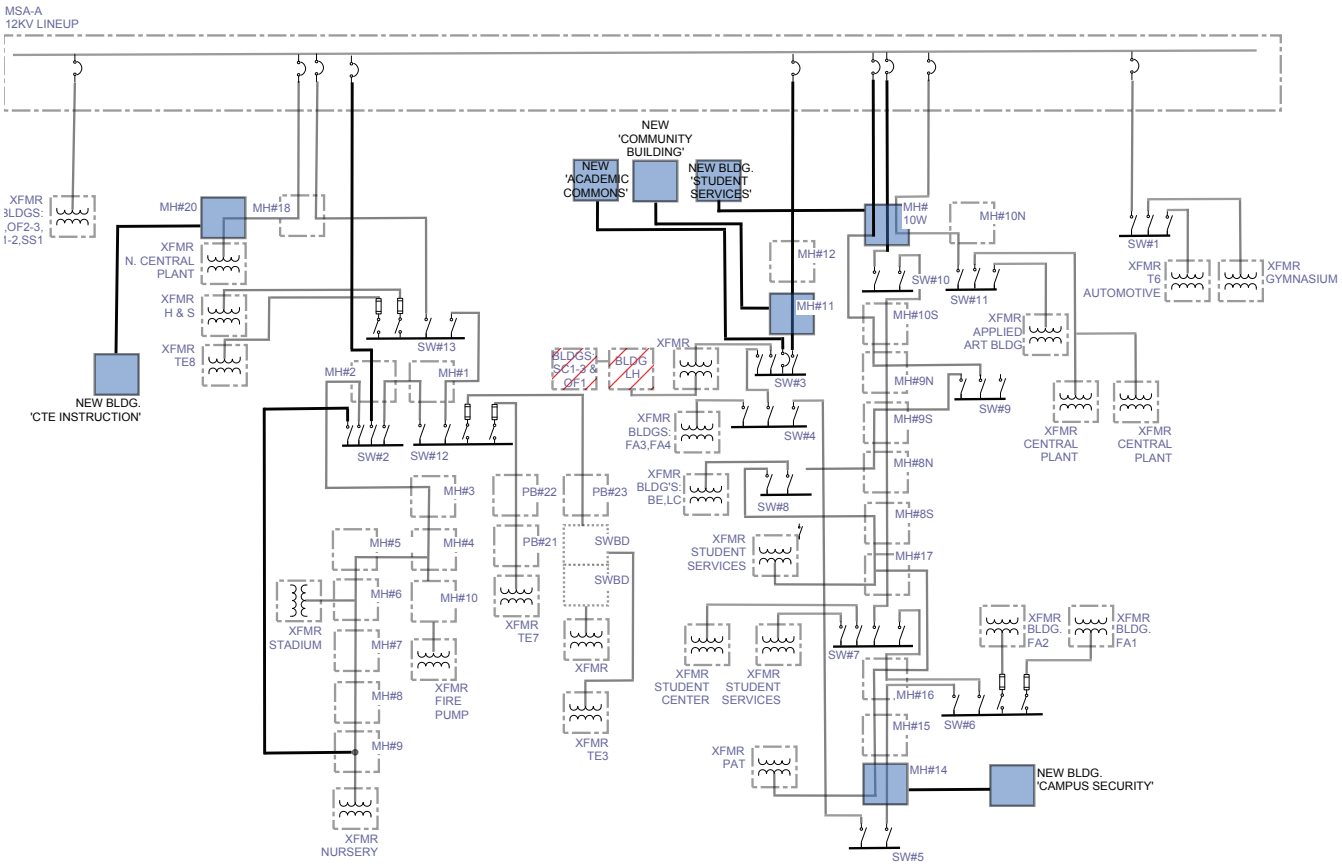
CAMPUS PLAN

- 12kv MANHOLE
- 4.16kv/12kv MANHOLE
- NEW/RE-LOCATED CAMPUS SUBSTATION
- 12kv SWITCH
- 12kv PULLBOX
- 4.16kv/12kv SWITCH
- UNDERGROUND 12kv ELECTRIC LINE
- UNDERGROUND 4.16kv ELECTRIC LINE



ELECTRICAL: PHASE 1

SINGLE LINE DIAGRAM

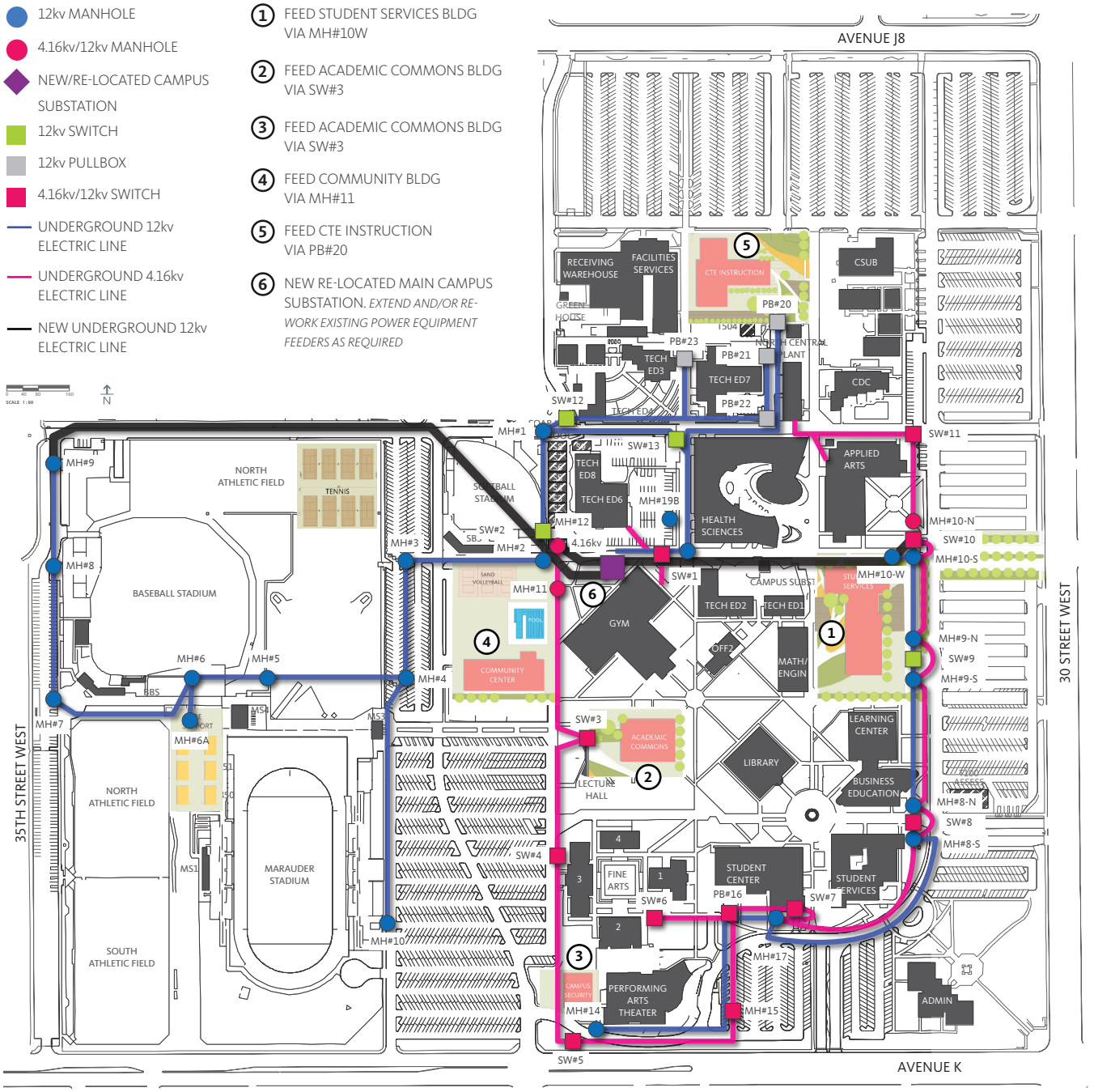


ELECTRICAL: PHASE 1

CAMPUS PLAN

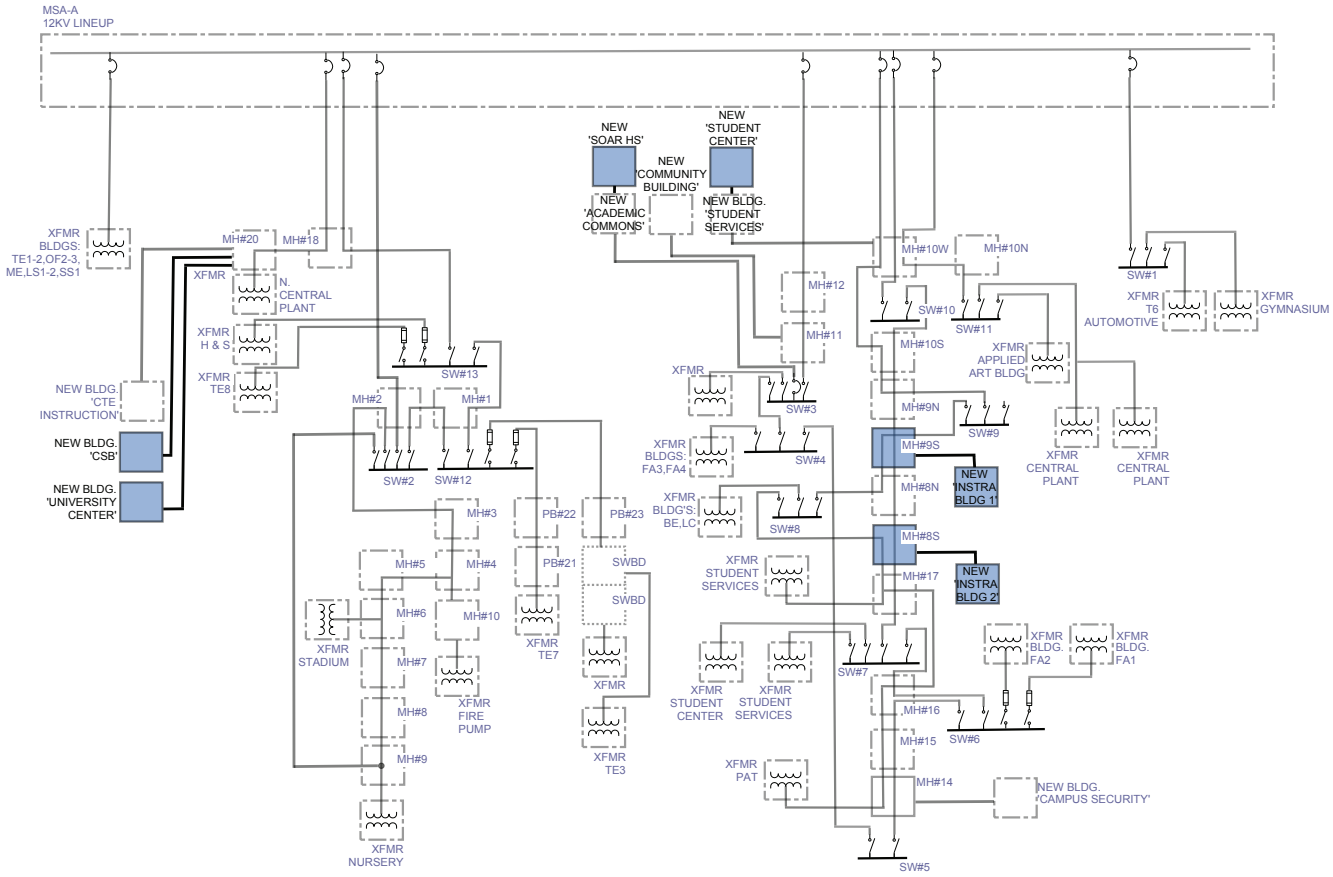
- 12kv MANHOLE
- 4.16kv/12kv MANHOLE
- NEW/RE-LOCATED CAMPUS SUBSTATION
- 12kv SWITCH
- 12kv PULLBOX
- 4.16kv/12kv SWITCH
- UNDERGROUND 12kv ELECTRIC LINE
- UNDERGROUND 4.16kv ELECTRIC LINE
- NEW UNDERGROUND 12kv ELECTRIC LINE

1. FEED STUDENT SERVICES BLDG VIA MH#10W
2. FEED ACADEMIC COMMONS BLDG VIA SW#3
3. FEED ACADEMIC COMMONS BLDG VIA SW#3
4. FEED COMMUNITY BLDG VIA MH#11
5. FEED CTE INSTRUCTION VIA PB#20
6. NEW RE-LOCATED MAIN CAMPUS SUBSTATION. *EXTEND AND/OR RE-WORK EXISTING POWER EQUIPMENT FEEDERS AS REQUIRED*



ELECTRICAL: PHASE 2

SINGLE LINE DIAGRAM

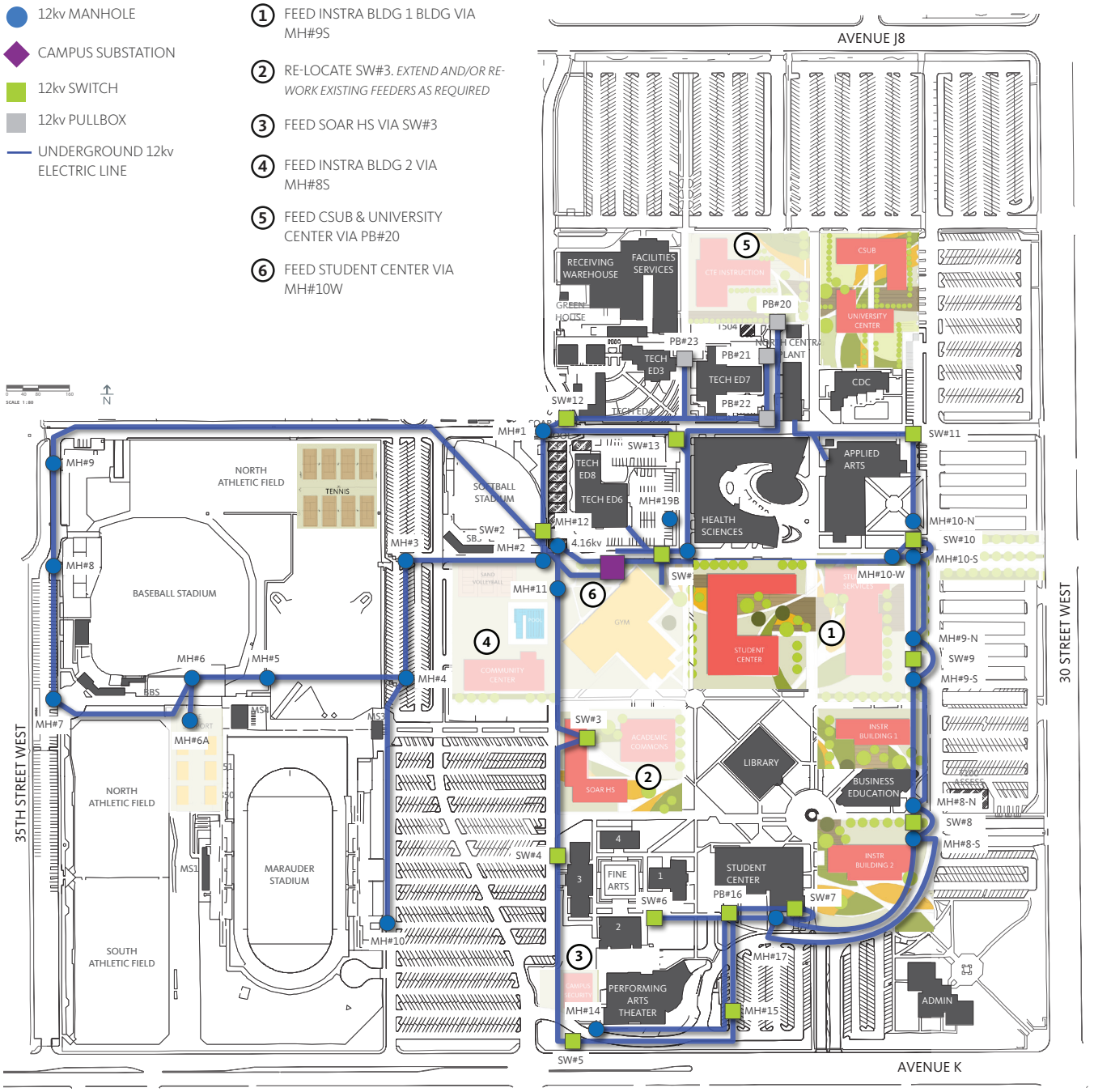


ELECTRICAL: PHASE 2

CAMPUS PLAN

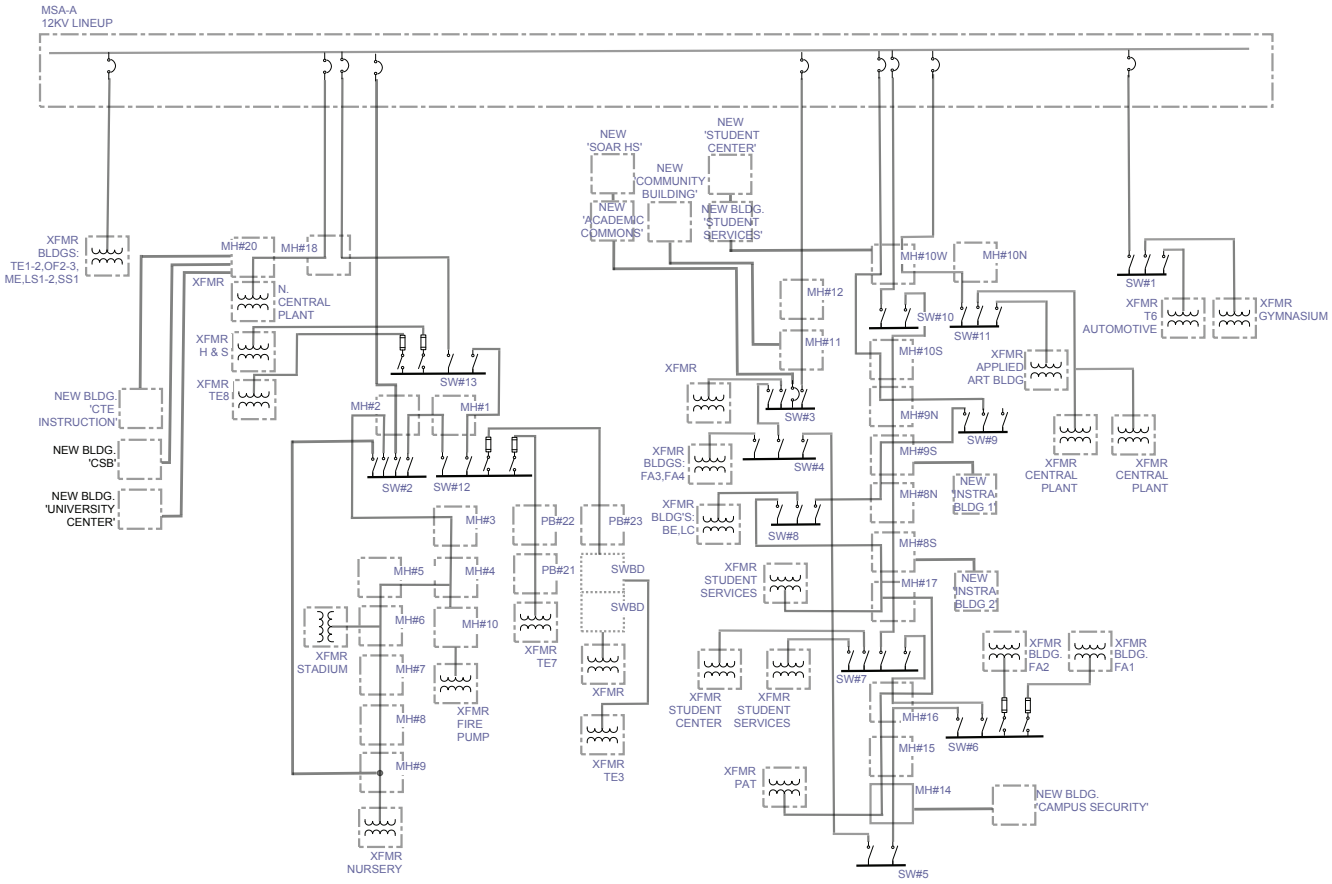
- 12kv MANHOLE
- CAMPUS SUBSTATION
- 12kv SWITCH
- 12kv PULLBOX
- UNDERGROUND 12kv ELECTRIC LINE

1. FEED INSTRA BLDG 1 BLDG VIA MH#9S
2. RE-LOCATE SW#3. *EXTEND AND/OR RE-WORK EXISTING FEEDERS AS REQUIRED*
3. FEED SOAR HS VIA SW#3
4. FEED INSTRA BLDG 2 VIA MH#8S
5. FEED CSUB & UNIVERSITY CENTER VIA PB#20
6. FEED STUDENT CENTER VIA MH#10W



ELECTRICAL: PHASE 3

SINGLE LINE DIAGRAM

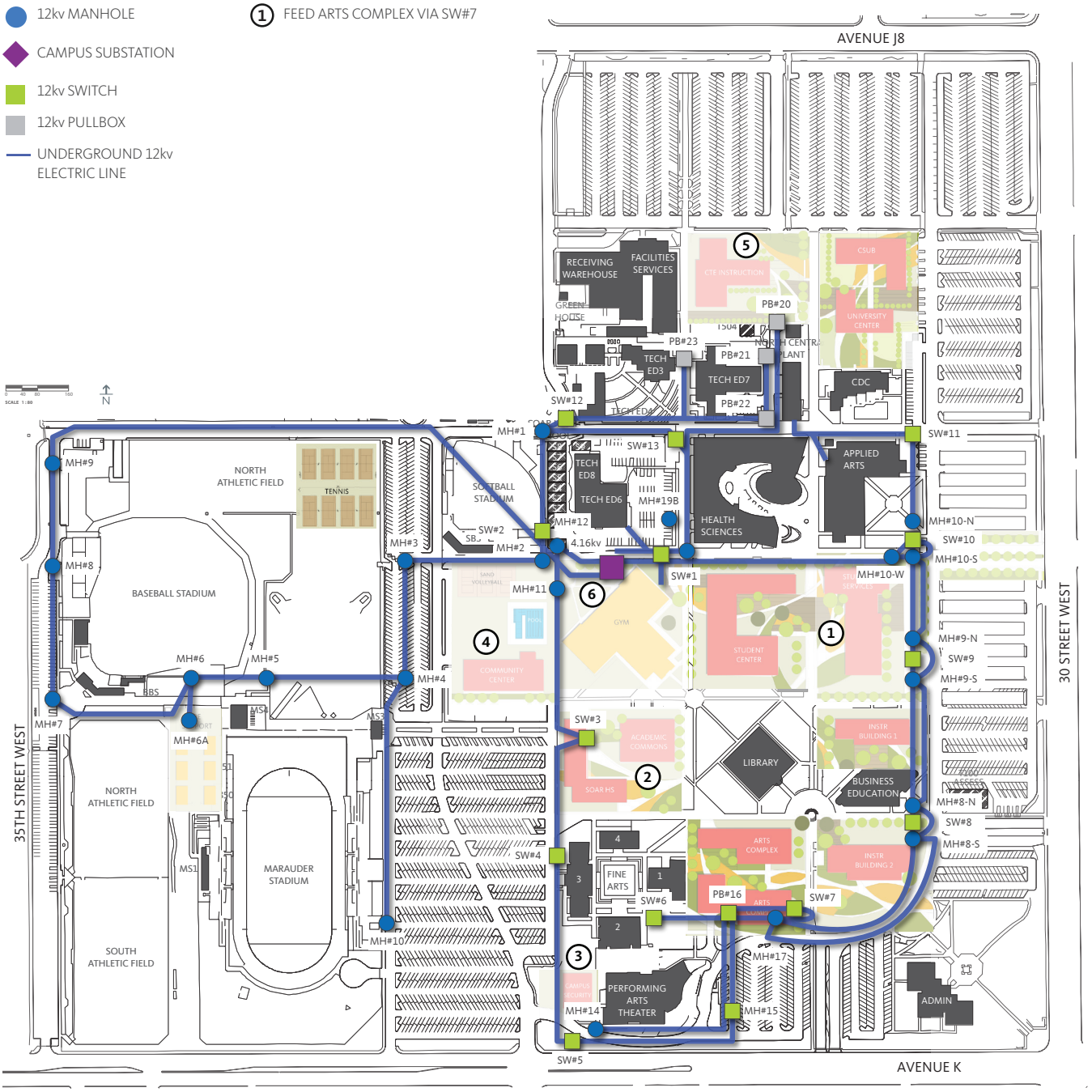


ELECTRICAL: PHASE 3

CAMPUS PLAN

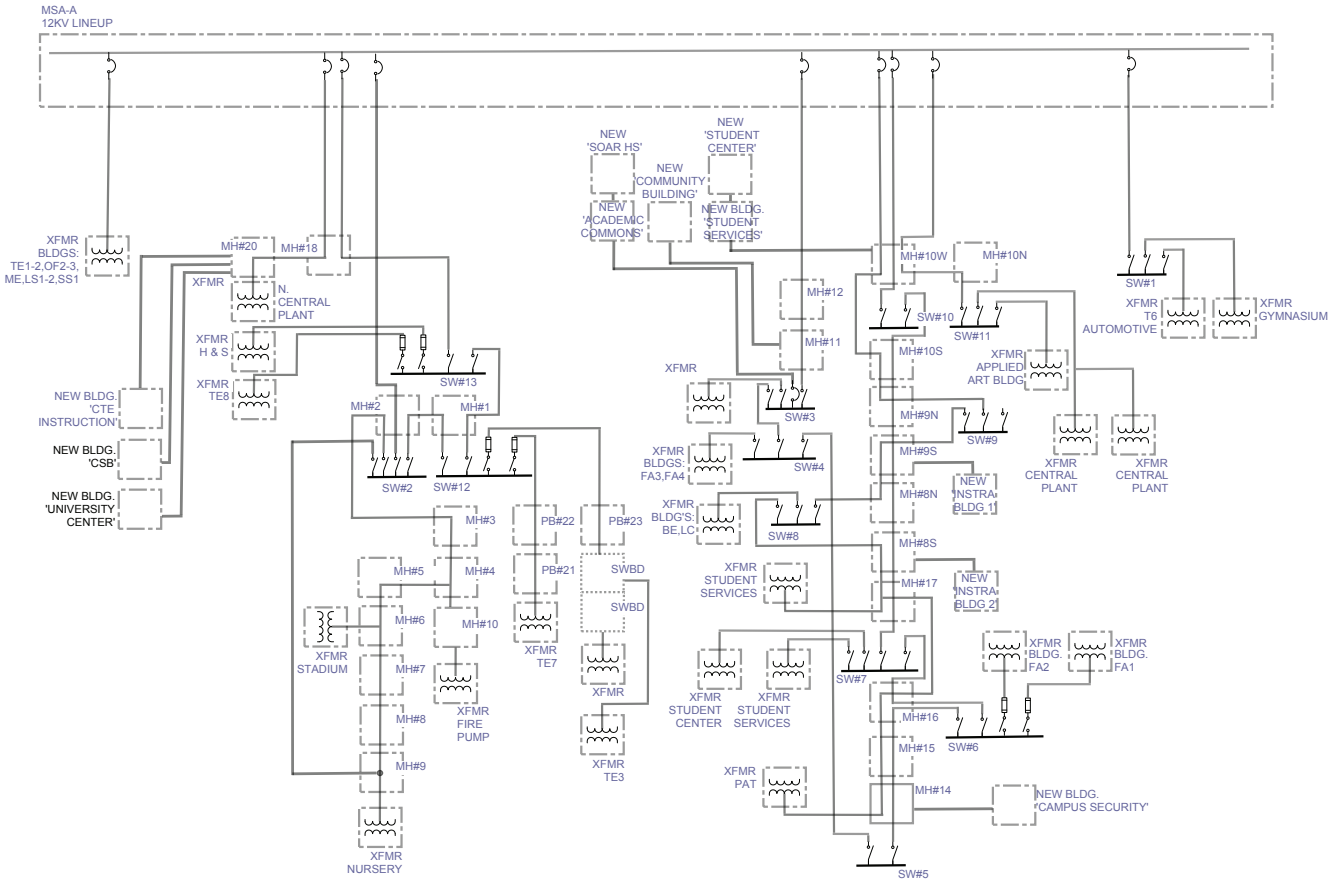
- 12kv MANHOLE
- CAMPUS SUBSTATION
- 12kv SWITCH
- 12kv PULLBOX
- UNDERGROUND 12kv ELECTRIC LINE

(1) FEED ARTS COMPLEX VIA SW#7



ELECTRICAL: PHASE 4

SINGLE LINE DIAGRAM

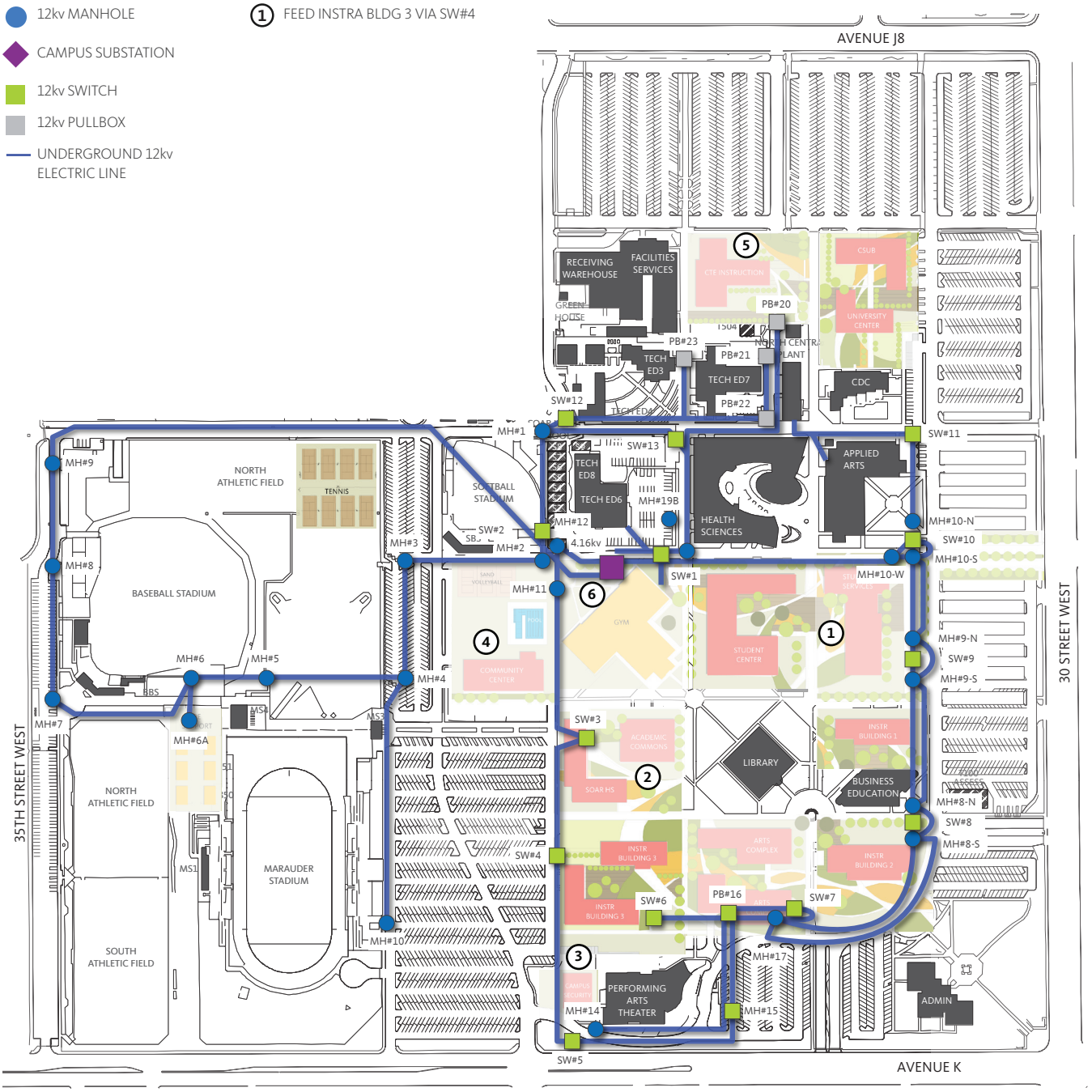


ELECTRICAL: PHASE 4

CAMPUS PLAN

- 12kv MANHOLE
- CAMPUS SUBSTATION
- 12kv SWITCH
- 12kv PULLBOX
- UNDERGROUND 12kv ELECTRIC LINE

① FEED INSTRA BLDG 3 VIA SW#4



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TECHNOLOGY: PHASE 1A

The following buildings and areas require new fiber and copper connectivity to the North Data Center:

- Swing Space area by the existing T100 building
- Swing Space area by Fine Arts
- Swing Space area by CSUB
- Campus Security Building
- Library
- New duct bank to connect to local
- New duct bank to connect to local exchange carriers located on W Ave J
- New (partial) mid-campus duct bank and vault

The following buildings will be removed:

- Lecture Hall
- Office 1

The following buildings will need a new link to the North Data Center:

- Academic Commons
- Campus Security

- EXISTING CAMPUS COPPER & FIBER BACKBONE PATHWAY
- NEW PATHWAY FOR COPPER & FIBER CONNECTIONS TO BACKBONE
- NEW VAULTS & CROSS-CAMPUS DUCT BANK. (COORDINATE CONNECTIONS W/ CONTRACTOR FOR EACH BUILDING)

TECHNOLOGY: PHASE 1B

The following buildings require new cable connections prior to moving adjacent buildings:

- Liberal Studies (LS1, LS2)
- Office 3 (OF3)

The following buildings and areas require new fiber and copper connectivity to the North Data Center:

- T503 & T504
- CTE Instructional Building
- 30 Street Entry
- Student Services
- Adaptive PE Pool + Sand Volleyball

Communications for these buildings will be removed:

- T850 & T851

- EXISTING CAMPUS COPPER & FIBER BACKBONE PATHWAY
- NEW PATHWAY FOR COPPER & FIBER CONNECTIONS TO BACKBONE
- NEW VAULTS & CROSS-CAMPUS DUCT BANK. (COORDINATE CONNECTIONS W/ CONTRACTOR FOR EACH BUILDING)
- VAULT ADDED IN PREVIOUS PHASE

TECHNOLOGY: PHASE 1C

The following buildings and areas require new fiber and copper connectivity to the North Data Center:

- Administration Building
- Agriculture
- Applied Arts / Allied Health
- Autobody
- Business Education / IMC
- Child Development Center
- Facilities Services
- Health & Sciences
- Performing Arts
- Press Box

The following buildings require cable connections prior to moving adjacent buildings:

- Target replacement of Fire Alarm in old buildings by the end of Phase 1c

- EXISTING CAMPUS COPPER & FIBER BACKBONE PATHWAY
- NEW PATHWAY FOR COPPER & FIBER CONNECTIONS TO BACKBONE
- NEW VAULTS & CROSS-CAMPUS DUCT BANK. (COORDINATE CONNECTIONS W/ CONTRACTOR FOR EACH BUILDING)
- VAULT ADDED IN PREVIOUS PHASE

TECHNOLOGY: PHASE 2

The following buildings and areas require new fiber and copper connectivity to the North Data Center:

- TE 1 & TE2
- Math / Engineering (ME)
- Office 2 (OF2)
- Learning Center (LC)
- Student Services (SSV)
- T100
- CSUB
- All Swing Space (LH, LS1, LS2, OFF1, & OFF3)
- CSUB & University Center

The following buildings require new cable connections prior to moving adjacent buildings:

- Gym

The following buildings and areas require new fiber & copper connectivity to the North Data Center:

- Instructional Building 1
- Student Center
- Instructional Building 2 / Admin
- Field House (finish)
- SOAR High School

- EXISTING CAMPUS COPPER & FIBER BACKBONE PATHWAY
- NEW PATHWAY FOR COPPER & FIBER CONNECTIONS TO BACKBONE
- NEW VAULTS & CROSS-CAMPUS DUCT BANK. (COORDINATE CONNECTIONS W/ CONTRACTOR FOR EACH BUILDING)
- VAULT ADDED IN PREVIOUS PHASE

TECHNOLOGY: PHASE 3

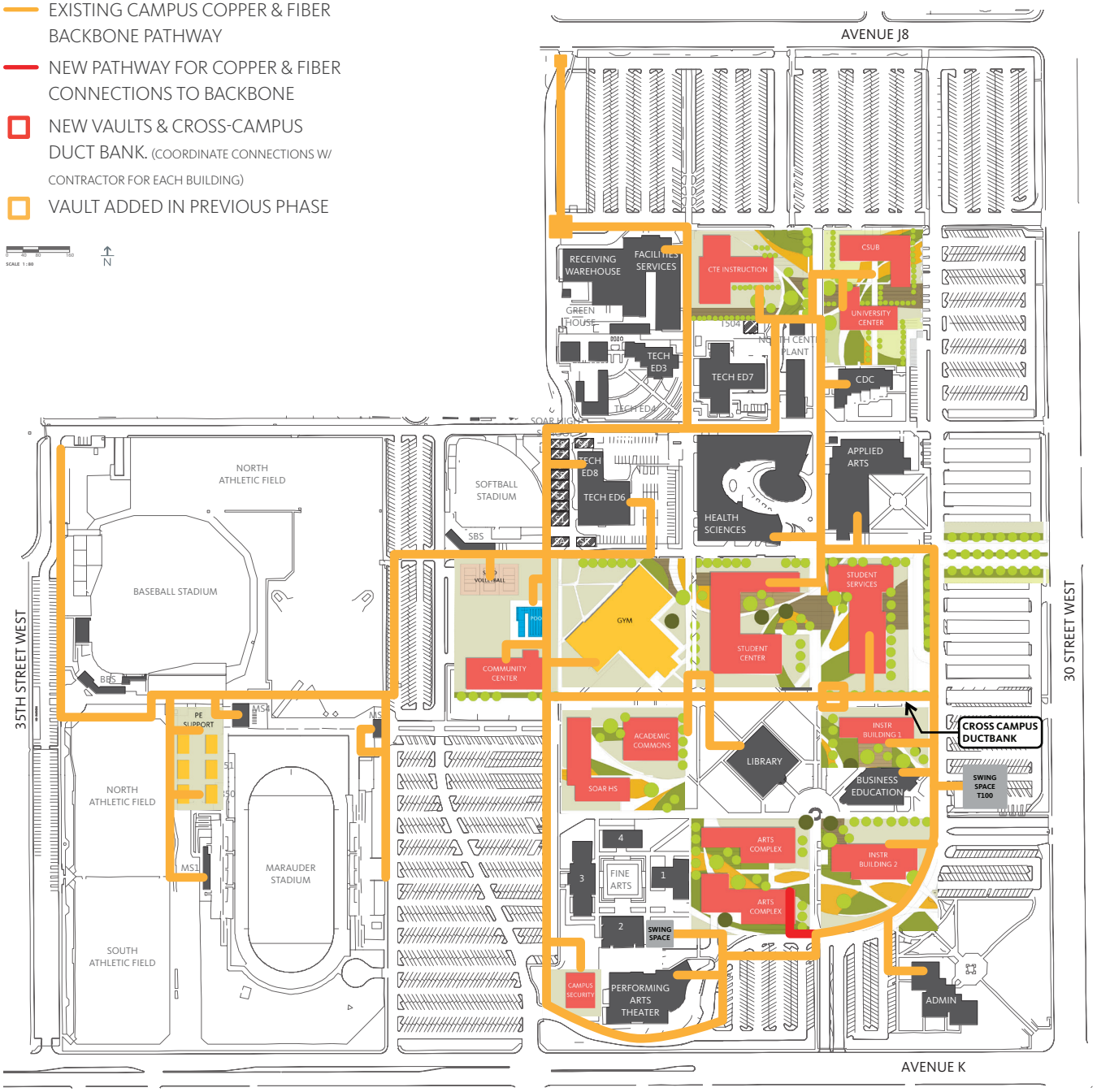
Communications for these buildings will be removed:

- Student Center to New Student Center
- SOAR High School to New SOAR High School

The following buildings & areas require new fiber & copper connectivity to the North Data Center:

- Arts Complex

- EXISTING CAMPUS COPPER & FIBER BACKBONE PATHWAY
- NEW PATHWAY FOR COPPER & FIBER CONNECTIONS TO BACKBONE
- NEW VAULTS & CROSS-CAMPUS DUCT BANK. (COORDINATE CONNECTIONS W/ CONTRACTOR FOR EACH BUILDING)
- VAULT ADDED IN PREVIOUS PHASE



TECHNOLOGY: PHASE 4

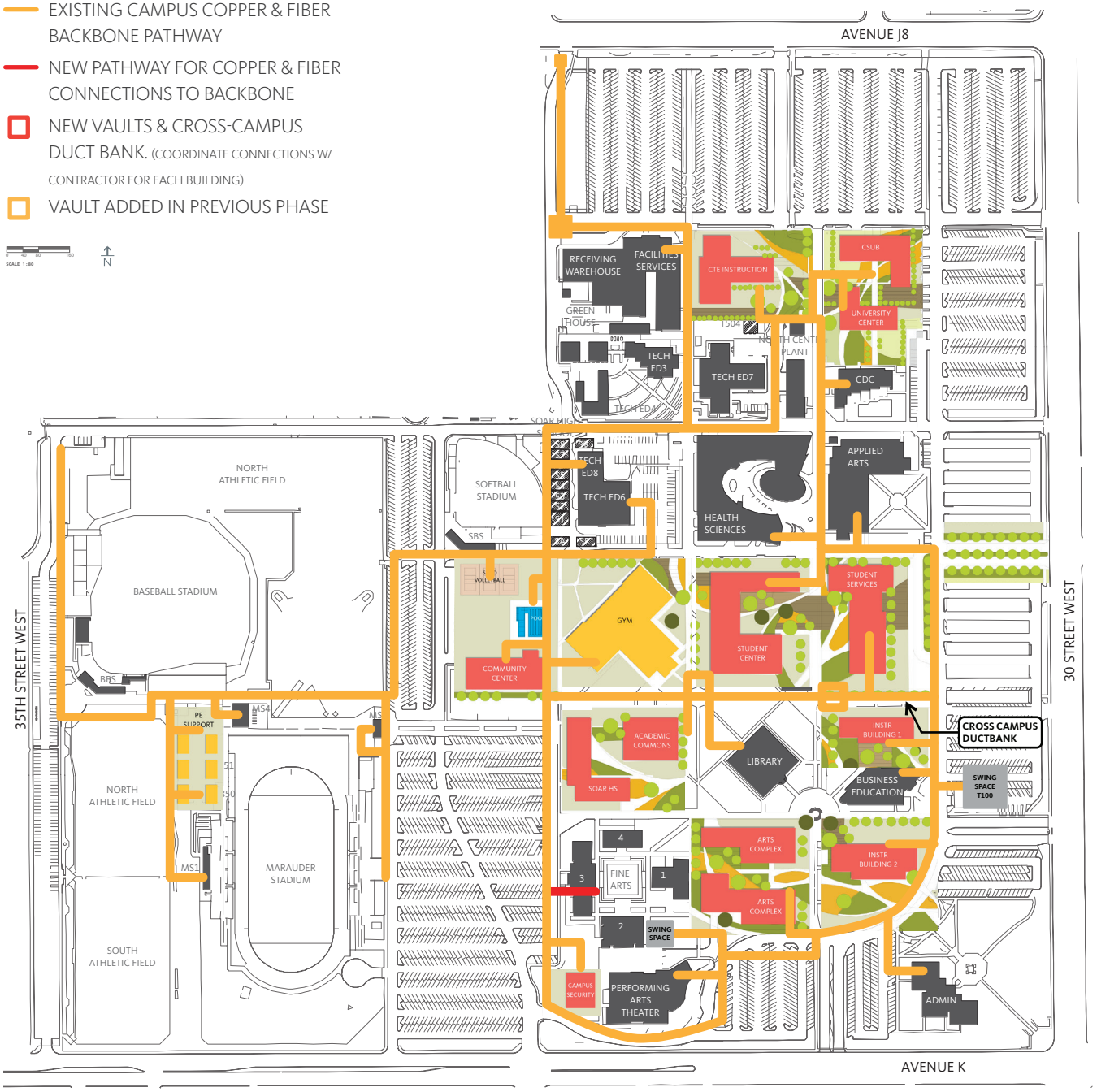
Communications for these buildings will be removed:

- T850 & T851

The following buildings & areas require new fiber & copper connectivity to the North Data Center:

- Instructional Building 3

- EXISTING CAMPUS COPPER & FIBER BACKBONE PATHWAY
- NEW PATHWAY FOR COPPER & FIBER CONNECTIONS TO BACKBONE
- NEW VAULTS & CROSS-CAMPUS DUCT BANK. (COORDINATE CONNECTIONS W/ CONTRACTOR FOR EACH BUILDING)
- VAULT ADDED IN PREVIOUS PHASE



04

SITE DESIGN GUIDELINES

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INTRODUCTION

Section 4 of this Handbook includes design criteria for all outdoor spaces on campus. The recommendations extend the existing grid language of the campus and surrounding community, and overlay it with a secondary system that is inspired by the natural patterns seen within the river washes inherent to the Antelope Valley floor.

Exterior spaces are formed for enhanced use, buildings are organized to create clarity, and the natural environment connects the campus to regional surrounding and celebrate its unique characteristics. The strong grid establishes the primary circulation and organization language for the site, acting as the backbone for the campus infrastructure. The organic secondary system, referred to as the 'garden ribbon', meanders through the grid, defining edges of exterior gathering spaces.

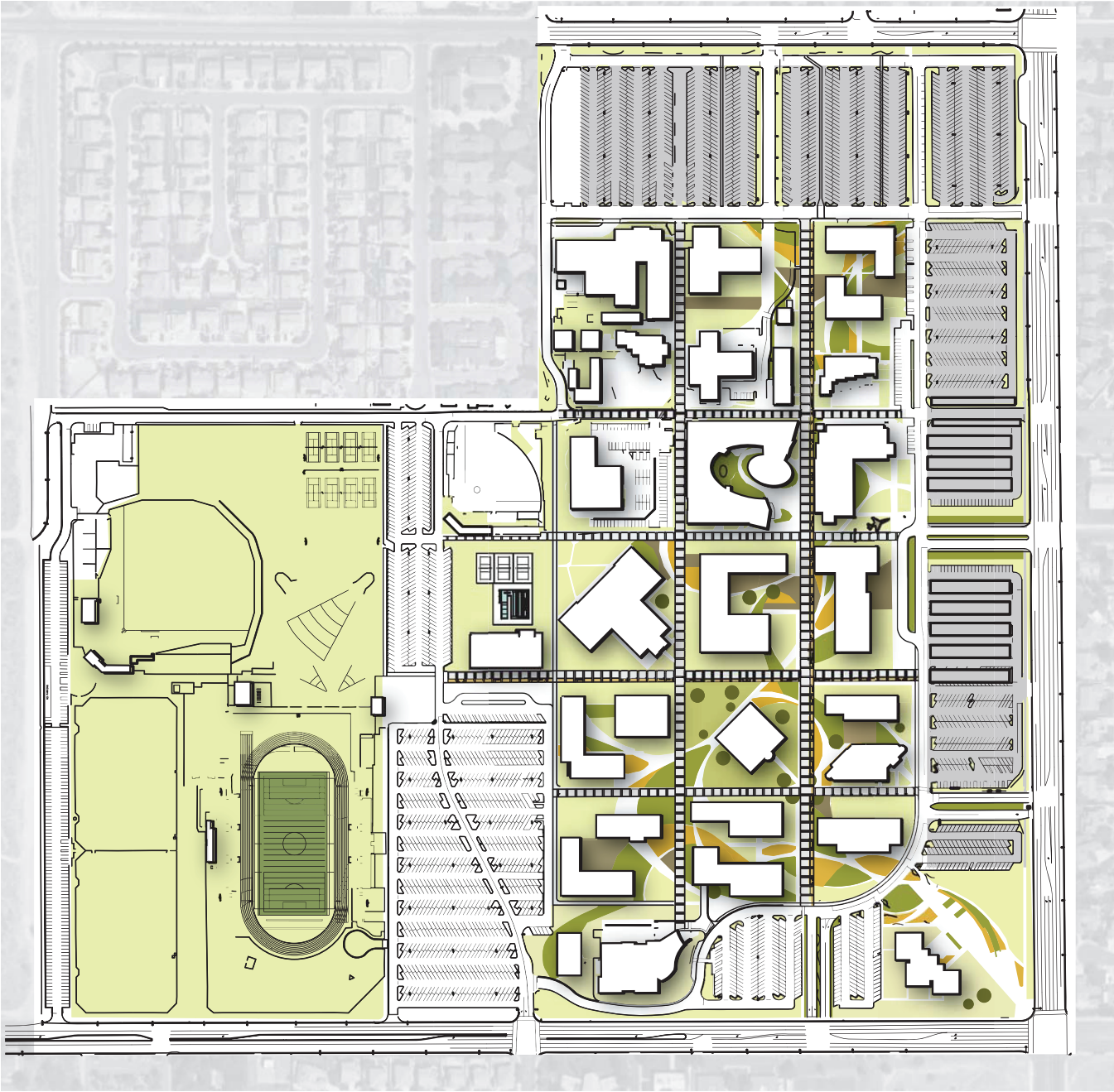
HARDSCAPE DESIGN

A well-designed hierarchy of walks, plazas and other hardscape areas will enrich the campus environment, provide accessible gathering areas, improve visual quality, support way-finding, and reinforce the importance of the pedestrian scale. As outlined in the FMP, the campus has a series of hardscape elements: the Grid, with its primary and secondary spines, the Garden Ribbon's interior walks, the vehicular roadways; service drives and parking areas; and a measurable perimeter walk around the edge of the campus. To create a cohesive campus identity, each of these elements should have a specific hardscape character that follows the guidelines below:

GENERAL GUIDELINES:

- Hardscape areas should be coordinated by type to achieve a unified character.
- Enhanced paving materials, defined as integral color concrete, pre-cast concrete pavers and decomposed granite, should be used to help identify key areas of gathering and pedestrian movement, such as courtyards, crosswalks, and seating areas.
- The color palette should reflect color tones native to the area's natural desert landscape, and compliment the architectural material palettes.
- The use of dark colored paving materials should be limited.
- Local resources, manufacturers, material and suppliers, when feasible, should be utilized.
- To create a cohesive campus identity and connect the architectural style of the campus with hardscape style.
- New hardscape materials should strictly adhere to the material palette and guidelines as defined below.
- All existing hardscapes to remain should be evaluated for potential upgrades in order to tie them into the new campus hardscape additions.
- Exceptions and substitutions may be considered and should be evaluated by the college, and the FMP landscape architect.

HARDSCAPE MASTER PLAN



MATERIALS AND FINISHES

Developing a consistent material and color palette for the campus is important in promoting a strong sense of place and reinforcing AVC's institutional identity within the community. The materials listed below have been carefully chosen for their aesthetic connection to its region and their suitability for the site. Since each project will be built separately consideration of long term maintenance costs versus initial construction costs must be critically evaluated during the building design process. Creating quality architectural concrete that is coordinated across the campus will take the combined efforts of the project designer, concrete batch plant mix engineer who works for the concrete batch plant, and the concrete contractor. Samples of each material should be submitted to the College for approval before specifications are finalized for each project.

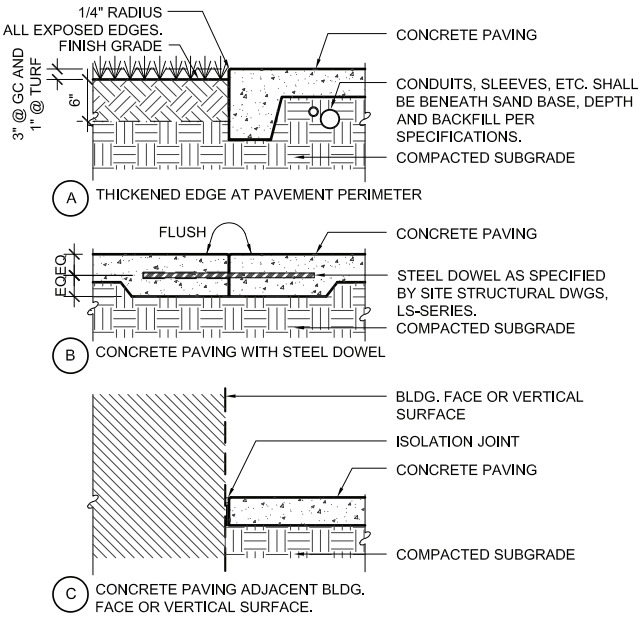
CONCRETE:

CONCRETE PAVING GENERAL

- Concrete paving shall be used for pedestrian circulation routes within the Grid network, building service access located along the Grid, accent areas of the Courtyards, perimeter sidewalks, and drop off areas.
- The concrete section should be designed in accordance with the recommendations set forth in each project's geotechnical report. At a minimum, pedestrian areas should be 4" thick, unless otherwise noted.
- All concrete edges should have a minimum 1/2" radius on all corners, unless they are adjacent to structure or buildings.
- Apply a thickened edge detail on all walks and pedestrian spines that double as vehicular access ways along turf and shrub areas.
- All saw cuts to be a minimum 1/8" wide x 1" depth.
- Colored concrete shall be an integral color. Colored bands shall be perpendicular to the path of travel.
- Aggregates for concrete shall be natural sand and rock conforming to ASTM C33.

CONCRETE MIX DESIGN

- A mix design, prepared by the concrete batch serving the project should be standardized once the first phase of the master plan is implemented.
- All concrete should match the control samples provided by the College.



SUBGRADE PREPARATION

- Subgrade should consist of semi-permeable, non-expansive soil and be graded, compacted and tested in accordance with the project's geotechnical soils report.
- Concrete should be placed over a minimum of 2" of dry compacted, and screeded washed concrete sand.

FORMWORK

- Form lumber should be new, S4S (surfaced four sides) #2 grade Douglas fir or better and should be free of crooks, hooks, warps, or knots
- Formwork layout should be performed with digital transits for precise line layout (wind blowing on a tight layout string can deviate more than 1-inch in a 100-foot run).

JOINTING

- All jointing patterns should be submitted, by the installer, for review, by the landscape architects prior to installation.
- Contraction Joints - installed as soon as the surface allows for their installation, tooled while the paving is still wet and sawcut when the slab can be cut without unsightly spalling.
- Construction Joints - distribute the load between adjacent slab sections and prevent vertical slab displacement. Spacing in concrete flatwork occurs, at a minimum, at all changes in direction and shall not exceed a maximum spacing of 20'-0" on center, or as noted on the project geotechnical report. Construction joint material shall be as approved by the owner (job superintendent).
- Isolation Joints - should be installed with a pre-molded, closed-cell polyurethane joint filler and a 2-part polyurethane joint sealant product, color-matched to adjacent paving color . Then sanded with silica 60 sand in order to reduce sealant sheen.

CURING AND PROTECTION

- Cure slabs immediately after finishing because slabs can lose moisture and change temperature very quickly.
- Concrete should be kept continuously moist for at least 7 days and ideally not put into service for 27 days.
- Refer to the pigment manufacturer for specific curing procedures.

CONCRETE PAVING FIELD

- Natural grey concrete, with Top Cast (or Acid) finish should be used as the primary material for all spines within the pedestrian grid network and as the field within the courtyard areas.
- To reduce overall cost and bring greater emphasis to enhanced paving areas, natural grey concrete is considered the primary paving material for all paths, unless otherwise noted. This will reduce overall cost and bring greater emphasis to special paved areas.
- Broom finish is not an acceptable finish.

INTEGRAL COLOR PAVING

- Enhanced paving should be used as an accent material within the pedestrian grid, gathering nodes, and building entrances and is considered enhanced if it has an added color and/or seed with aggregate.
- All colored concrete should be an integral color.
- Colored bands shall be perpendicular to the path of travel.
- Colored paving should be used as an accent material within the pedestrian grid, gathering nodes, and building entrances.

1 - Natural Grey

Location - Gathering nodes on pedestrian spines

Finish Seeded Aggregate, 1/16" white pebble mix, with 90% coverage

2 - Integral; Padre Brown

Location - Highlight band on pedestrian spines

Finish Top Cast 10

PRE-CAST UNIT PAVERS:

GENERAL

- Pavers are restricted to courtyard areas and should be used for the primary gatherings areas.
- 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.
- Provide a concrete mow curb as an edge restraint when modular paving meets adjacent soil/ planting area.
- 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.
- All pavers should be sealed per manufacturer's recommendations.
- Pavers are restricted to courtyard areas and should be used for the primary gatherings areas.

SPECIFICATION

Manuf: Ackerstone

Model: Architectural Unit Paver Linear (6"x30")

COLOR AND PATTERN

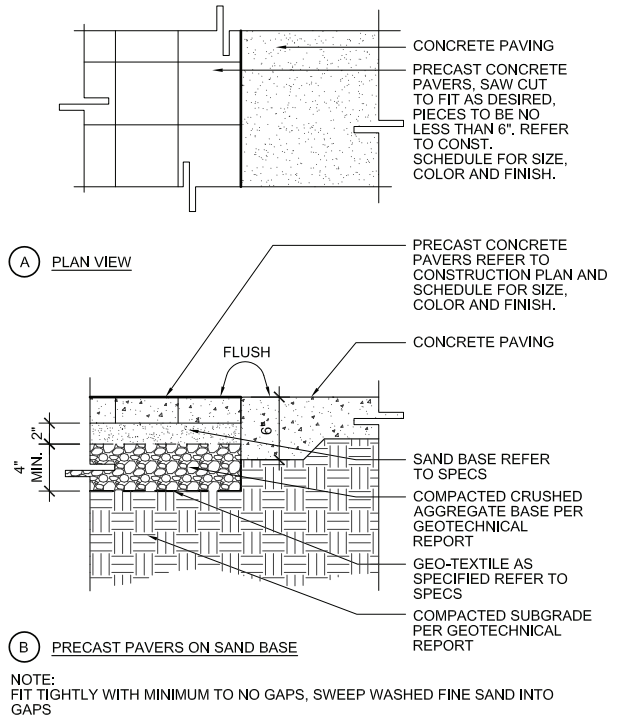
- Monochromatic swatches of color should be avoided and a blend of 2 to 4 colors should be used.
- Color patterns should be specified as a mix with the dark mocha having the lowest percentage.
- Random color mixes are preferred using percent color mixes. For example 45% Ivory, 25% Khaki, 10% dark mocha, 20% Stone Grey

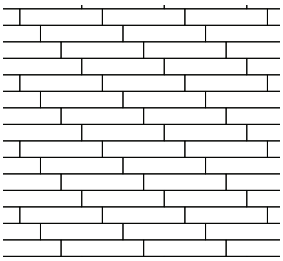

1 - Ivory


2 - Khaki


3 - Dark Mocha

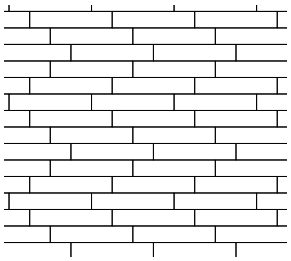

4- Stone Grey





Pattern 01

- Cascade



Pattern 02

- Modified Running Bond

DECOMPOSED GRANITE (DG):

GENERAL

- All accessible decomposed granite (DG) areas shall be stabilized with an organic, no toxic binder.
- DG should be limited to accent areas and low traffic areas within the Courtyard spaces, the accent band along the Primary Pedestrian Spines, and the Interior Walks within the Garden Ribbon.
- Edge detail should be bounded by a concrete mow strip.

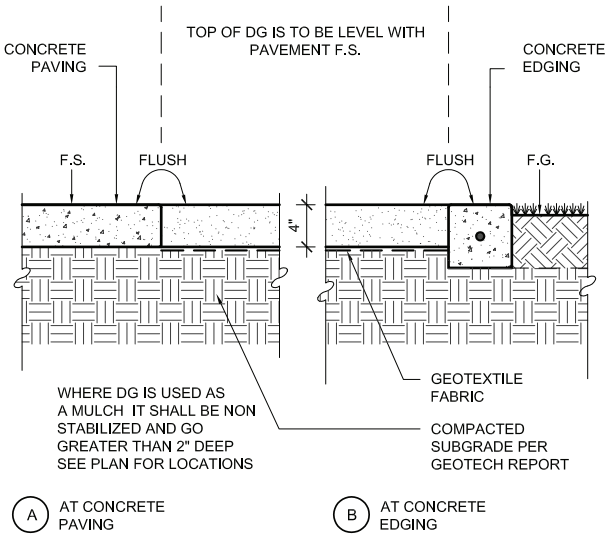
SPECIFICATION

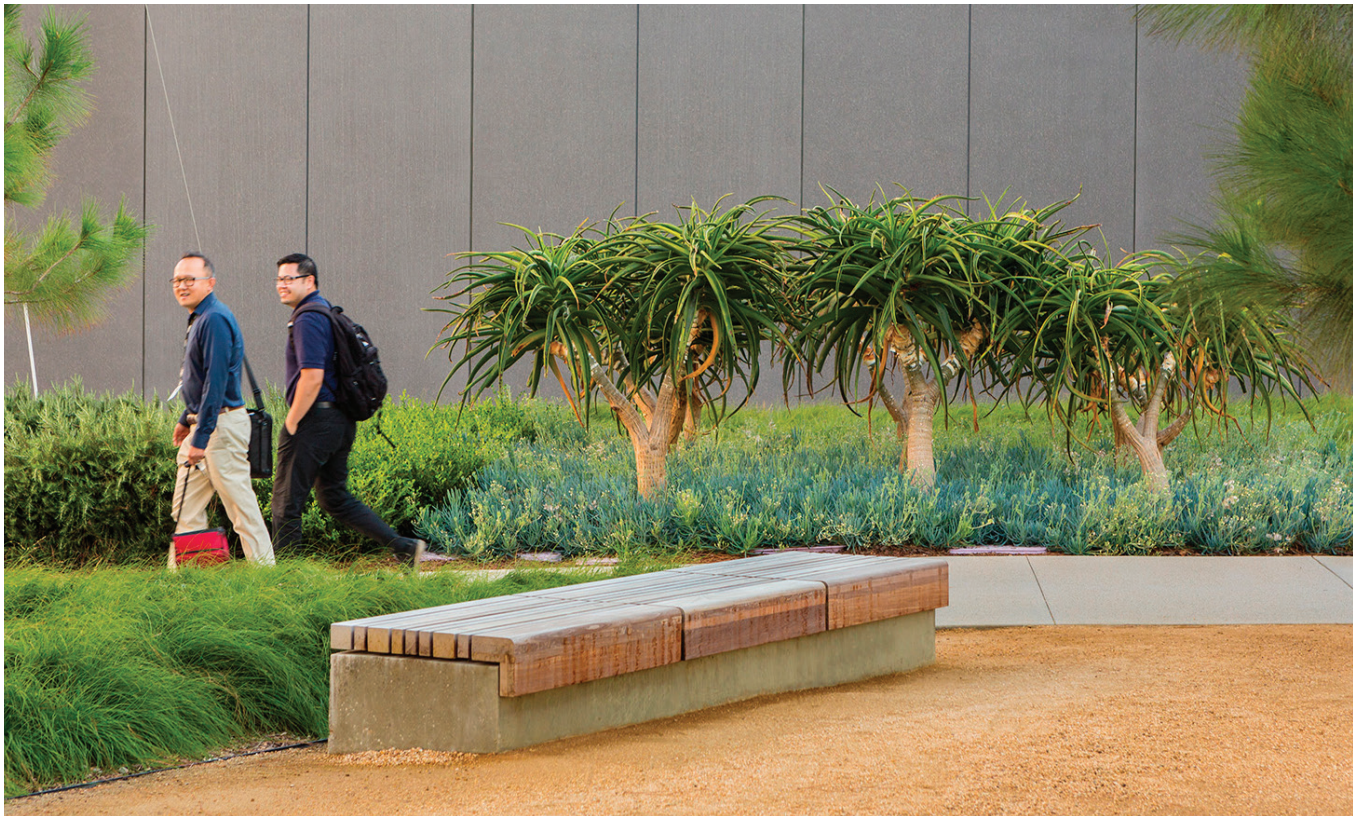
Manuf: KRC Rock

Size: 1/4" minus fines

Color: Desert Gold

1 - Desert Gold





SITE AMENITIES

GENERAL

- A common set of landscape furniture elements have be en selected for use throughout the campus, and specific elements should be restricted to defined areas as outlined below.
- All Site furniture should be placed and oriented to provide refuge and comfort, but not impede access or circulation.
- All site furniture should be mounted in place, with the exception of specific movable elements.
- Custom benches that mimic the look and feel of those specified may be considered as an alternative upon prior approval. Details should be submitted to the College and FMP landscape architect for consideration and approval.
- Seating areas should be arranged to create a variety of seating layouts and gatherings areas.
- Shade should be provided at all seating areas.
- New site furniture specifications can be introduced into the Courtyard areas to help make each Courtyard be unique. These however should supplement, the standard elements, and not be the predominant element within the courtyard space.
- All areas, other than the Courtyards noted above, should use the standard site furniture specifications outlined in this document.
- Review site furniture selections with the College prior t o noting final specifications on drawings, as these standards are subject to change at the discretion of the College.

CONCRETE BENCH

Model: Socrates Bench

Manufacturer: LandscapeForms (Escofet)

Length: two sizes 85" bench (24"x95"x18"), 142" (24"x142"x18")

Color: Beige, Black, or Grey

Finish: Polished

LOCATION

Pedestrian Grid, Walks, Building Entries, and Drop-Off Areas

* Custom benches, or cast-in-place options will be considered as an alternative, however they will need to match the design character of the specified model above.

CONCRETE SEAT

Model: Socrates Bench

Manufacturer: LandscapeForms (Escofet)

Length: 24" bench (24"x24"x18"),

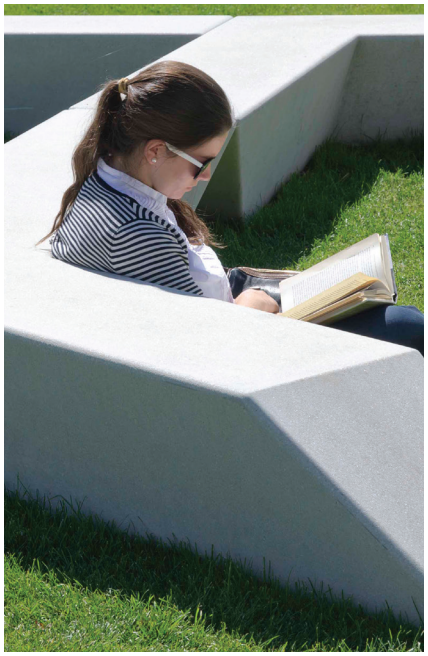
Color: Beige, Black, or Grey

Finish: Polished

LOCATION

Primary Spine within the Pedestrian Grid and Drop-Off Areas

* Custom benches, or cast-in-place options will be considered as an alternative, however they will need to match the design character of the specified model above.



MODULAR CONCRETE BENCH

Model: Milenio Bench

Manufacturer: LandscapeForms (Escofet)

Length: Straight, (18"x99"x18")Angled Right or Left (67"x105"x18")an

Color: Beige, or White

Finish: Polished

LOCATION

Courtyards

DONOR BENCH

The Donor Benches should match the proposed benches on campus, with the addition of a dedication plaque recognizing the donor. The plaques should be small, minimal in design and developed as part of the site branding language.

Concrete Model: Socrates Bench (see concrete bench for specification)

Wood Model: Northlakes Bench Seat, w/ arms, surface-mount foot (NL-0110) (see wood bench for specification)

WOOD BENCH

Model: Northlakes Bench Seat, w/arms, surface-mount foot (NL-0110)

Manufacturer: Tournesol Siteworks

Length: 72" Width: 22.5" Height: 32" Bench Height: 17.75"

Color: Rich dark color that fades to a natural grey

Finish: Boulevard wood, aluminum frame

LOCATION

Courtyards and Drop-off areas

TRASH AND RECYCLING

Model: Street and Garden Bins

Manufacturer: Tournesol Siteworks

Color: MMP Aluminum
Finish: Powder-coated metal

Location:

- 25 feet from building entries
- Unobstructed by other objects
- Near all seating and gather spaces
- Near Transit stops and crosswalks
- Provide locking mechanism with bins

LOCATION

Courtyards, Pathways, Drop-Off Areas, Parking Lots

METAL TABLE AND CHAIRS

Model: Tangent six-seat configuration; backless seats with FSC® 100% Ipé hardwood slats; Manufacturer: Forms + Surfaces

Color: Aluminum Texture powdercoated frame and table top.

LOCATION

Courtyards

SHADE UMBRELLA

Model: Solaris Shade

Manufacturer: Forms + Surfaces

Color: Aluminum Texture powdercoated

LOCATION

Courtyards

EXISTING COURTYARD TABLES

Model: APEX Table ensemble

Width: 48” Height: 29”

Alternative options; Apex table ensemble, three bench ADA option

Manufacturer: Forms + Surfaces

Color: Rich dark color that fades to a natural grey

Finish: Jatoba hardwood with an aluminum pinstripe

LOCATION

Courtyards

LANDSCAPE DESIGN

OVERVIEW

The purpose of the site and landscape planning and design guidelines is to lay out a cohesive vision for site and landscape design as a district and improve the overall aesthetic character and visual unity of the college site. These guidelines represent the college's commitment to create a more cohesive, attractive, productive, and sustainable campus environment. Within the Antelope Valley college campus there are two different landscape condition types, the Garden and the Field. These guidelines create standards that are cohesive, while embracing the unique characteristics of the unique characteristics of the individual teaching sites.

GOALS

- Reduce strain on resources (water consumption and maintenance requirements), by specifying "climate appropriate" plants that are suitable for the college environment and provide a unique identity endemic of the high desert micro-climate.
- Create visible identity through planting and redefine the concept of "park-like" image
- Encourage outdoor use and create outdoor learning opportunities about the natural environment

IMPLEMENTATION

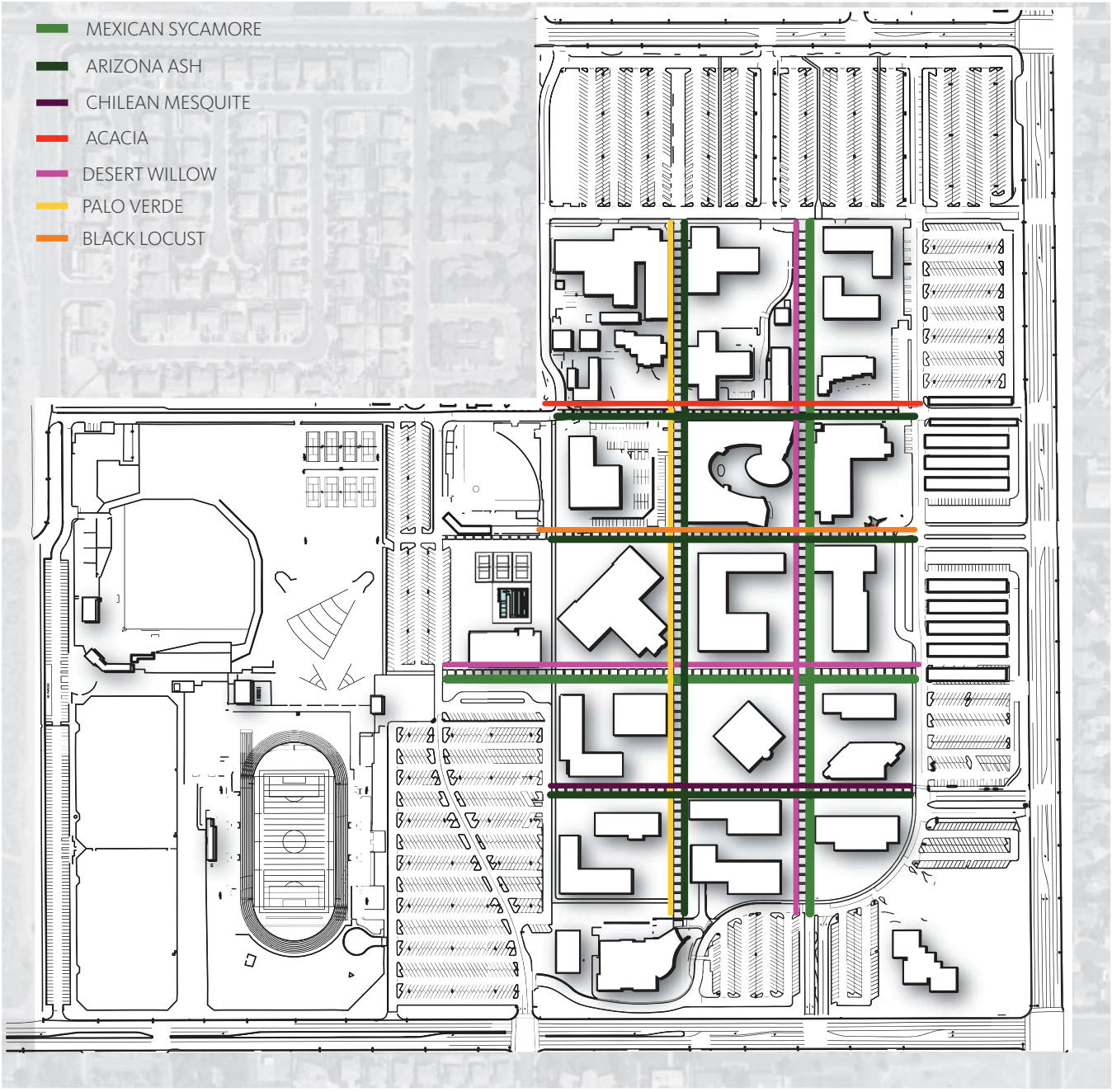
GENERAL PLANTING

- Species selection should encourage drought-tolerant materials and the use of California native plants.
- The use of plant species listed as having high/moderate water needs by WUCOLS III should be restricted to limited areas. Areas where high water use plants are tolerated are the sports fields, entry gardens and passive storm water management areas.
- Plants should be preserved and cared for by a staff that is properly trained for the maintenance of California native landscapes. If the current staff is not familiar with native species, maintenance training is recommended.
- Plant species should be selected for both their visual, educational, habitat, and maintenance qualities.
- Mulch should be provided in all planted areas. Mulch can be both organic and inorganic materials such as pebble or cobble.
- Invasive plants listed by the California Invasive Plant Council in Southern California should not be permitted on campus. Existing invasive species found on campus should be managed carefully and/ or removed.
- Extensive lawn areas should be minimized, with the exception of the area around the Library, planned as the Historic Commons.

TREE MASTER PLAN

- Trees should be installed in a range of container sizes, with the minimum container size of 36" box.
- The two primary spines should be planted with a shade tree within the enhanced DG area and a ornamental desert tree on the other side. The recommended species is Mexican Sycamore for the shade tree, and Desert Willow for the ornamental desert tree.
- The remaining spines should also be planted on a combination of a shade and an ornamental tree.
- All of the shade trees along the secondary spines will be the same species creating a uniform look across the pedestrian circulation. The recommended canopy species is Arizona Ash.
- In contrast the smaller ornamental species will be unique depending on which spine they are planted along. This will help in campus navigation. The recommended species are Acacia, Mesquite, Palo Verde, and Locust.
- All Mulberry trees will be removed over a period of time.
- When feasible, existing trees should be saved and remain in place.

TREE CANOPY MASTER PLAN

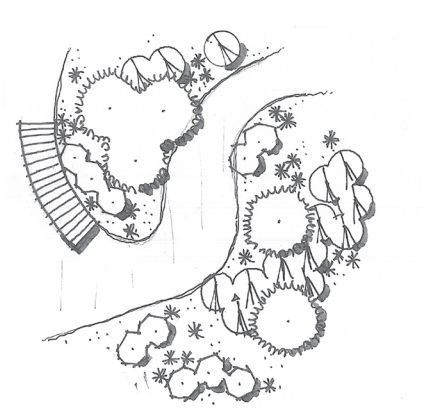


PLANT PALETTE

LANDSCAPE FIELD

TREE LIST

- Low to medium water requirements
- Fast growing trees
- Following a planting palette that is cohesive with the surrounding landscape
- Trees that can resist strong winds.



- Plant very open and spacious between each shrub
- Plantings should be placed in a loose form and not to be placed in any type of rhythmic continuity.

BOTANICAL NAME	COMMON NAME	Campus Entry	Pedestrian Grid	Historical Commons
Acacia farnesiana	Sweet Acacia		●	
Cedrus deodara 'Aurea'	Deodar Cedar	●		
Chilopsis linearis	Desert Willow		●	●
Fraxinus velutina	Arizona Ash		●	
Laurus nobilis	Bay Laurel		●	
Parkinsonia aculeata	Palo Verde	●	●	●
Pinus coulteri	Coulter Pine		●	●
Pinus monophylla	Singleleaf pinon pine		●	
Pinus pinea	Italian Stone Pine	●		
Pinus radiata	Monterey Pine	●	●	
Prosopis alba	Argentine Mesquite	●	●	
Prosopis chilensis	Chilean Mesquite	●		●
Prosopis glandulosa	Texas Honey Mesquite	●	●	
Yucca brevifolia	Joshua Tree		●	●

GRASSES AND SHRUBS PLANTING LIST

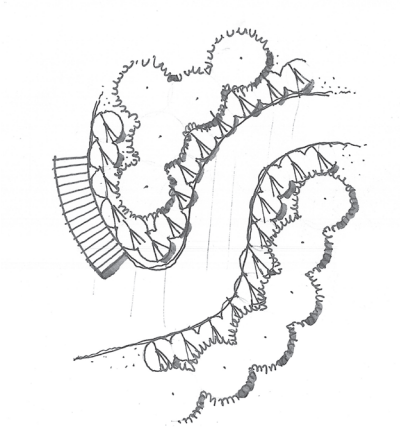
- Grasses, hardy shrubs, and grass-like succulents.
- Low water requirements and low maintenance requirements
- Grass textures and vivid flowers
- 1 to 15 gal. in size
- For groundcover keep at 6 to 18" O.C.
- Shrubs to be spaced at recommended spacing.

BOTANICAL NAME	COMMON NAME	Campus Entry	Pedestrian Grid	Historical Commons
Achillea	Yarrow			●
Achillea ageratifolia	Greek yarrow		●	●
Achillea filipendulina	Goldplate yarrow		●	
Agave geminiflora	Twin flower agave		●	
Arctostaphylos uva-ursi	Manzanita point reyes	●	●	
Arctotheca calendula	Cape weed	●		●
Atriplex lentiformis	Quail bush	●	●	
Baccharis pilularis	Coyote brush		●	
Bulbine frutescans	Stalked Bulbine		●	●
Coreopsis grandiflora	Large flower tickseed		●	●
Dasylirion acrotriche	Green desert spoon	●		●
Dasylirion bigelovii	Nolina biglovii	●		●
Heteromeles arbutifolia	Toyon bush		●	
Juniperus californica	California juniper		●	
Muhlenbergia caprillaris	Pink muhly grass	●	●	
Muhlenbergia rigens	Deer grass	●	●	
Salvia clevelandii	Cleveland sage		●	●
Santolina virens	Green cotton lavender	●	●	●
Sisyrinchium bellum	Blue eyed grass		●	
Sisyrinchium californicum	Golden eyed grass		●	
Teucrium chamaedrys prostratum	Dwarf germander	●	●	
Yucca elata	Soap tree yucca		●	●
Yucca filamentosa	Adam's needle		●	●

GARDEN RIBBON

TREE LIST

- Low to medium water requirements
- Fast growing trees
- Following a planting palette that is cohesive with the surrounding landscape
- Trees that can resist strong winds.



- Create a sense of balance and hierarchy with planting
- Hedges and rows of specific mounding plants

BOTANICAL NAME	COMMON NAME	Campus Entry	Pedestrian Grid	Historical Commons
Acacia farnesiana	Sweet Acacia		●	
Albizia Julibrissin	Silk Tree			●
Cercidium Microphyllum	Foothills Palo Verder	●	●	
Chilopsis linearis	Desert Willow	●	●	●
Parkinsonia aculeata	Palo Verde	●	●	●
Pinus coulteri	Coulter Pine			●
Pinus radiata	Monterey Pine	●		
Prosopis alba	Argentine Mesquite	●	●	
Prosopis glandulosa	Texas Honey Mesquite	●	●	
Robinia Psedoacacia	Black Locust		●	
Yucca brevifolia	Joshua Tree	●		●

GRASSES AND SHRUBS PLANTING LIST

- Plants with fragrance, shade and color
- Showy natives that would be appropriate for a drought tolerant residential garden.
- Ornamental plantings that can be placed in an orderly fashion.
- Low to medium water requirements
- 5 to 15 gal. in size
- Shrubs to be spaced at recommended spacing.

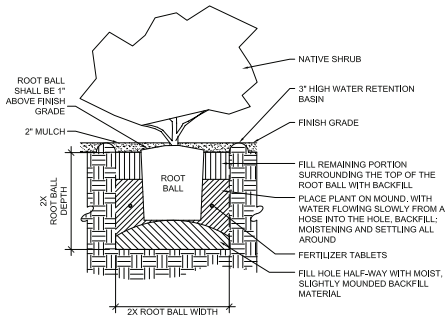
BOTANICAL NAME	COMMON NAME	Campus Entry	Pedestrian Grid	Historical Commons
Achillea filipendulina	Fernleaf yarrow	●		
Agave angustifolia	Marginara	●	●	
Agave desmettiana	Zebra stripe	●	●	
Agave desmettiana variegata	Zebra stripe variegata	●	●	
Anisodontea hypomandarum	Cape mallow	●		●
Baileya multiradiata	Desert marigold	●	●	●
Buddleja davidii	Butterfly bush	●		
Coreopsis auriculata nana	Dwarf coreopsis		●	●
Eriogonum grande rubescens	Red buckwheat		●	●
Eriogonum jamesii	James buckwheat		●	●
Eschscholzia californica	California poppy	●	●	
Fouquieria splendens	Ocotillo	●	●	
Fremontodendron californicum	Flannel bush		●	●
Heuchera sanguinea	Coral bells	●	●	
Leucophyllum frutescen	Green cloud texas ranger		●	●
Leucophyllum laevigatum	Chihuahua sage	●	●	
Opunitia basilaris	Beavertail cactus		●	
Opuntia macroscentra	Purple prickly pear		●	
Romneya coulteri	Matilija poppy	●		●
Rosmarinus officinalis	Rosemary		●	●
Santolina chamaecyparissus	Lavender Cotton	●		●
Salvia greggii	Autumn sage	●	●	●
Yucca gloriosa	Soft tip yucca		●	●

SPECIFICATIONS AND DETAILS

SPACING RECOMMENDATIONS

BOTANICAL NAME	COMMON NAME	SPACING
Achillea ageratifolia	Greek Yarrow	12”
Achillea millefolium	Common Yarrow	18”
Achillea filipendulina	Fern-Leaf Yarrow	18”
Agave angustifolia	Marginara	48”
Agave desmettiana	Zebra stripe	36”
Agave desmettiana variegata	Zebra stripe variegata	36”
Agave geminiflora	Twin flower agave	36”
Anisodontea hypomandarum	Cape mallow	60”
Arctostaphylos uva-ursi	Manzanita point reyes	10’
Arctotheca calendula	Cape weed	18”
Atriplex lentiformis	Quail bush	12’
Baccharis pilularis	Coyote brush	6’
Baileya multiradiata	Desert marigold	24”
Buddleja davidii	Butterfly bush	60”
Bulbine frutescans	Stalked Bulbine	24”
Coreopsis auriculata nana	Dwarf coreopsis	24”
Coreopsis grandiflora	Large flower tickseed	36”
Dasylirion acrotriche	Green desert spoon	6’
Dasylirion bigelovii	Nolina biglovii	48”
Eriogonum grande rubescens	Red buckwheat	8’
Eriogonum jamesii	James buckwheat	12”
Eschscholzia californica	California poppy	18”
Fouquieria splendens	Ocotillo	6’
Fremontodendron californicum	Flannel bush	10’
Heteromeles arbutifolia	Toyon bush	10’
Heuchera sanguinea	Coral bells	12”
Juniperus californica	California juniper	10’
Leucophyllum frutescen	Green cloud texas ranger	6’
Leucophyllum laevigatum	Chihuahua sage	60”
Muhlenbergia caprillaris	Pink muhly grass	60”
Muhlenbergia rigens	Deer grass	60”
Opunitia basilaris	Beavertail cactus	48”
Opuntia macroscentra	Purple prickly pear	6’
Romneya coulteri	Matilija poppy	48”
Rosmarinus officinalis	Rosemary	10’
Salvia clevelandii	Cleveland sage	48”
Salvia greggii	Autumn sage	48”
Santolina chamaecyparissus	Lavender Cotton	24”
Santolina virens	Green cotton lavender	36”
Sisyrinchium bellum	Blue eyed grass	12”
Sisyrinchium californicum	Golden eyed grass	10”
Teucrium chamaedrys prostratum	Dwarf germander	24”
Yucca elata	Soap tree yucca	8’
Yucca filamentosa	Adam’s needle	36”
Yucca gloriosa	Soft tip yucca	36”

DETAILS



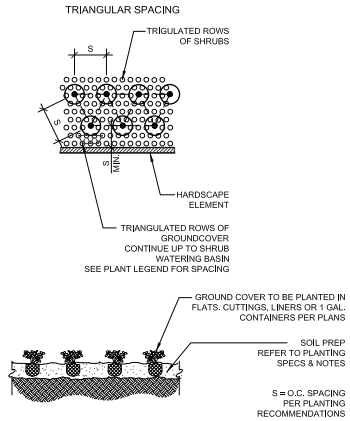
SOIL AMENDMENT

A. WHERE CUT OR NATIVE TOP SOIL IS PRESENT IN PLANTING AREAS, NO SOIL AMENDMENT SHALL BE USED. THE NATIVE SOIL SHOULD BE SOFT AND FRIABLE. ELIMINATE LARGE ROCKS AND CLODS
B. BACKFILL MIX WHERE SOIL HAS BEEN IMPORTED: BLEND 1/3 COMPOSTED OR NITROLIZED FOREST HUMUS TO 2/3 SITE SOIL
C. FERTILIZER:
- SLOW RELEASE FERTILIZER TABS BE INCORPORATED WITH THE BACKFILL. TABS SHALL NOT TOUCH THE ROOT BALL
- A POST PLANT FERTILIZER, APPLICATION RATE SHALL BE LOWER THAN THOSE USED FOR GENERAL LANDSCAPE ORNAMENTALS

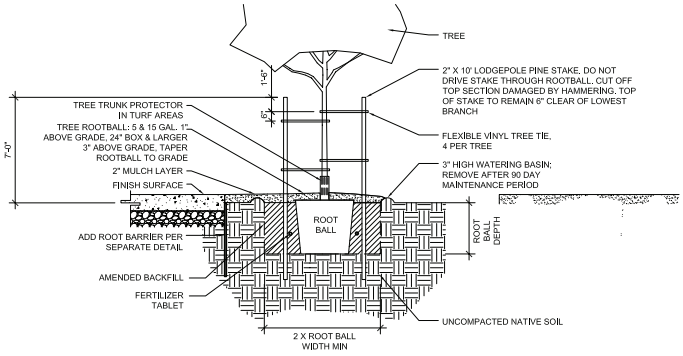
NOTES

A. PRIOR TO ANY BACKFILLING, FILL PLANTING HOLE WITH WATER AND ALLOW TO PERCOLATE (DRAIN) INTO SUBSOIL
B. AFTER PLANTING, WATER THOROUGHLY, FILL BASIN WITH WATER AND SPRINKLING AROUND TO SETTLE BACKFILL, AND BERM
C. ALLOW TO SOAK IN AND REPEAT

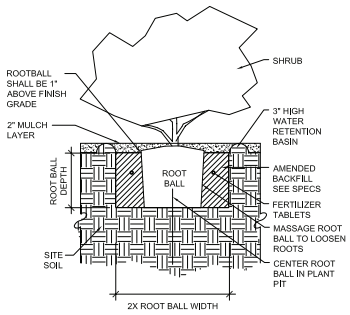
XX NATIVE SHRUB PLANTING
NOT TO SCALE



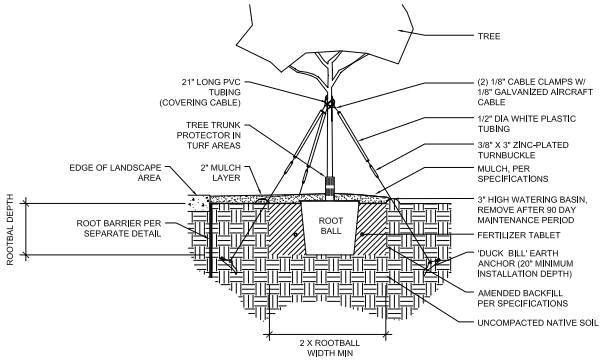
XX GROUNDCOVER SPACING DIAGRAM
NOT TO SCALE



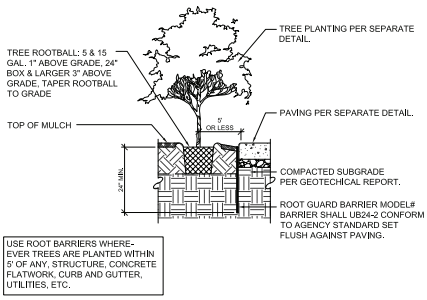
XX TREE PLANTING AND STAKING (TREE SIZE 48" & UNDER)
NOT TO SCALE



XX SHRUB PLANTING
NOT TO SCALE



XX TREE PLANTING AND GUYING (TREE SIZE 60" & ABOVE)
NOT TO SCALE



NOTE:
1. REFER TO APPROPRIATE TREE GUYING OR STAKING DETAIL.

2. ROOT BARRIER SHALL HAVE A MINIMUM DEPTH OF 24" WITH A MINIMUM THICKNESS OF 0.06" BARRIERS SHALL EXTEND 10' ON EITHER SIDE OF ROOTBALL.

XX ROOT BARRIER
NOT TO SCALE

IRRIGATION DESIGN

OVERVIEW

The unusual circumstance of environmental conditions and heavy foot traffic has focused the college's approach to Irrigation on Campus. Antelope Valley College Irrigation Design for campus is based on years of applied experience and has been reduced to a limited number of tried irrigation products and tested installation methods.

GOALS

- To apply irrigation through the use of products proven to save water while reducing overall maintenance.
- Reducing turf areas and the associated water demand to areas on campus where use of the turf is encouraged as a part of the overall landscape design

IMPLEMENTATION

- Unless otherwise noted all irrigation equipment is Rain Bird
- Irrigation Controllers shall be Rain Bird Maxicom
- Irrigation Water Point of Connection, the point of connection for all landscape areas is existing from 2 separate Water Meters and will be identified for each project area by the College Irrigation Technical Staff.
- Turf shall be irrigated with overhead spray
- Shrub areas shall be irrigated with hard pipe point source gph threaded emitters, one to each plant
- Trees shall be irrigated on their own valve, grouped deciduous, evergreen, palms, special accent or specimen trees may be on separate valves
- No heads should be located within 2' of hardscape (impermeable surface)
- Check valves shall be used in conditions where low head drainage occurs
- Quick Couplers shall be provided at 100' on center and 50' from building entries. Locate quick couplers 2' from hardscape
- Ball valves shall be provided at the end of a Mainline and at both sides of a crossing under hardscape
- Sleeves under any hardscape, Provide Irrigation mainline and pipe sleeves shall be two times the pipe diameter, wire sleeves shall be 4" minimum, Provide a spare 4" capped sleeve at every crossing

EQUIPMENT

- Maxicom Irrigation Controllers shall be utilized for all new Irrigation control systems. Kern Turf is the Rain Bird Maxicom representative to the College. At the stare of work in any campus area, the irrigation designer shall contact Kern Turf to determine the location of existing Cluster Control Units (CCU) cable access points and available open irrigation controller stations. The designer shall work with the college Irrigation Maxicom Technician to provide/specify the number of Irrigation stations available for the proposed project campus improvements.
- The Irrigation designer shall also work with Kern Turf and the college Irrigation Maxicom Technician to prepare a interim construction Irrigation/Maxicom bypass system, demolition, and re-routing plan to keep the maximum number of systems operational.

- Contact Vinny Osborn with Kern Turf Supply (vosborn@kurnturf-supply.com 661-978-5315) regarding Antelope Valley College.

MAXICOM CONDUIT

- The irrigation designer shall show on the plans a 1 ¼" grey schedule 40 Irrigation conduit and Grey 9" Round Plastic Elect Boxes marked Irrigation Pull Box (200' on center and at hard-scape crossings) with all new Irrigation Mainline, or as a "Future Connection" installed through renovated campus areas. Exact routing will be as agreed upon with Kern Turf and the college Irrigation Maxicom Technician.
- Maxicom Cable from Satellite Controllers to the CCU – The irrigation designed shall require the General and Landscape contractor to identify and mark the field location of the Maxicom Irrigation Cable and all Irrigation Satellite field wires. All locations shall be protected; damage to these wires is greater than the cost of repair and may result in a failure to the entire irrigation system.
- Maxicom Cable from Satellite controller to CCU , Use Rainbird Maxicom Cable as available from Kern Turf. Follow Kern Turf Requirements for separation form site electrical lines or other site improvements
- Irrigation Control and Common wire, use 12 AWG common wire and 14 AWG Direct Burial

PIPE

- Mainline Pipe – Irrigation Mainline pipe shall be a minimum of 2" class 315. Mainline piping size shall be as required by Kern Turf and the college Irrigation Maxicom Technician who will confirm scheduling requirements and the impact on the mainline size
- Lateral Line Pipe – Minimum Lateral line pipe shall be ¾" schedule 40 PVC to 1 ¼" size. Pipe 1 ½" and larger shall be class 315 PVC
- Irrigation Wire sleeves - Irrigation Wire sleeves shall be schedule 40 PVC (4" Minimum)
- Irrigation Pipe sleeves – Irrigation Pipe sleeves shall be schedule 40 PVC two times the diameter of the supply pipe to be installed. Minimum Mainline Pipe sleeve size is 6"

REMOTE CONTROL VALVES

- Turf – Use Rainbird XCZ Series PRBR Remote Control Valves
- Drip - Use Rainbird XCZ Series PRBR Remote Control Valves with Drip Flow Zone Kit
- Valve Boxes – Use Rainbird Standard Valve Box (Tan in Shrub areas Green in Turf Areas)

QUICK COUPLERS

- Use Rain Bird 44K install in Shrub areas

SHRUB DRIP IRRIGATION

- Use Hard pipe PVC Irrigation Laterals with Schedule 80 double swing Joints and Rain Bird PCT 05 , 07, or 10 Pressure Compensating Threaded Bubblers

TREE IRRIGATION

- Use two per tree Rain Bird 1402 pressure compensating bubblers with Schedule 80 double swing Joints, use 2 heads per tree on 2" riser set outside the rootball within the watering basin

TURF IRRIGATION

- Turf Irrigation Shall be Rain Bird 1800 Series 6" pop-up Bodies with Rain Bird Rotary or HE High Efficient Nozzles or 3500 Series Rotors

LARGE TURF / SPORTS FIELDS

- Use Rain Bird 5000 or 8005 Series Rotors

VEHICULAR AREAS

ROADS

- Lane widths should be a minimum of 12-feet.
- Drainage should be directed to gutters and inlets properly sized to limit the spread of water over traveled lanes.

PARKING LOTS

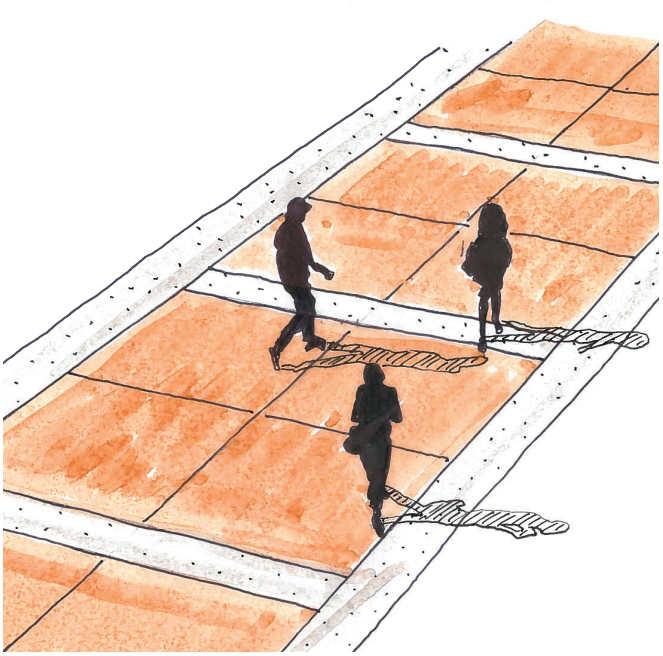
- All areas shall have appropriate bumper guards, wheel stops, steel posts, walls, curbs, and suitable landscaping.
- Shade should be provided, either by a n overhead structure of tree plantings. Trees should be planted with a minimum of one tree per 4 stalls, as well as planting islands to reduce reflective heat gain.
- All landscaped areas should be provided with a permanent and adequate means of irrigation .
- Landscaped areas should be arranged so as not to obscure traffic signs or fire hydrants, or obstruct drivers' sight distance within the parking area and at driveway entrances.
- Drainage should be provided to minimize ponding
- When feasible dedicated pedestrian paths should be incorporated into the parking lot layout.

VEHICULAR MATERIAL GUIDELINES

- Roads and parking Lots should be paved with hard, durable asphaltic paving which has been mixed at a plant and is at least two inches thick after compaction.
- Sections should be designed in accordance with recommendations set forth in the geotechnical report and anticipated vehicle loading.
- Asphalt mix shall be dense, hot laid, hot mix asphalt plan mix III-C3 PG 64- 10 designed in accordance with the Standard Specifications for Public Work Construction (SWPPP).

BUS STOPS

- While Bus Stops are only located within the public right of way, creating a unique bus shelter should be considered as a branding opportunity.
- Provide shade with architectural element or large shade trees. Deciduous trees to allow shade during the hotter summer and sun during colder winters.
- The shelter should be designed to shield the user from the seasonal winds, where necessary.



CROSSWALKS

- Where pedestrian traffic is anticipated to cross with vehicular traffic, well-articulated and enhanced crosswalks should be implemented.
- Contrasting concrete pavement makings, similar to the above diagram should be used at each crosswalk area. The minimum crosswalk width should be 12' wide, with 18" wide natural concrete edges on either side, and an interior field of integral Padre Brown concrete, with 1' bands of natural concrete, running perpendicular to the path of travel, every 8'.

DROP-OFF AREAS

- Drop-off areas should have adequate seating, shade, and light. This will provide the users comfortable options for waiting.
- Paving should use a combination of natural concrete and enhanced paving such as the integral color, seeded concrete or architectural pavers.
- Bollards and/or truncated domes are required to be used at pedestrian vehicular interfaces to reduce the risk of conflict.
- Shade over seating and gathering areas should be provided. It can be created either by an iconic architectural elements and/or by a grove or grid of canopy trees.

GATEWAYS

PRIMARY CAMPUS ENTRY

- The primary entrances on Campus shall match, and have a central planted median with curb adjacent parkways on either side, creating a well planted buffer between the drive aisle and the pedestrian sidewalks.
- Pinus Pinea (Italian Stone Pine) should be planted within the curb adjacent parkways on either side of the drive to create a formal gateway onto campus.
- The pines should be planted at a minimum of 45' on center to provide sufficient space for the tree and to provide opportunities for under-story planting. Under-story planting shall follow the Landscape Field species list described later.
- The central median should planted with a small flowering desert tree such as the Parkinsonia aculeta (Palo Verde).

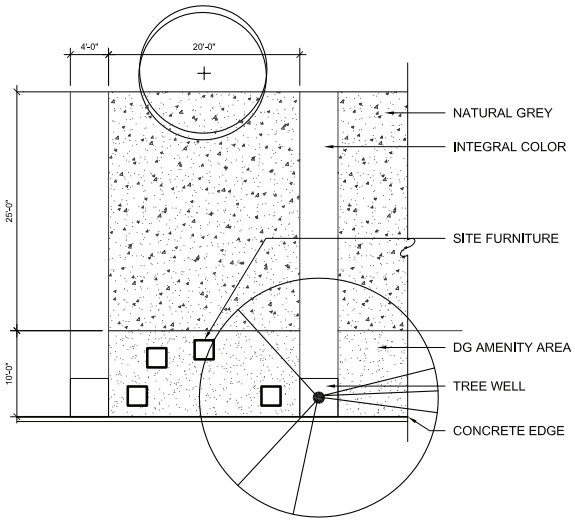
SECONDARY CAMPUS ENTRY

- The remaining entrances shall be smaller and scale and absent of a planted central median.
- To create a pedestrian scale at these entrances, Acacia farnesiana (Sweet Acacia), a small flowering tree with a soft texture should be planted within the parkways at 25' on center.
- Where space is sufficient a double row of flowing trees shall be provided on either side of the pedestrian walks.

PEDESTRIAN AREAS

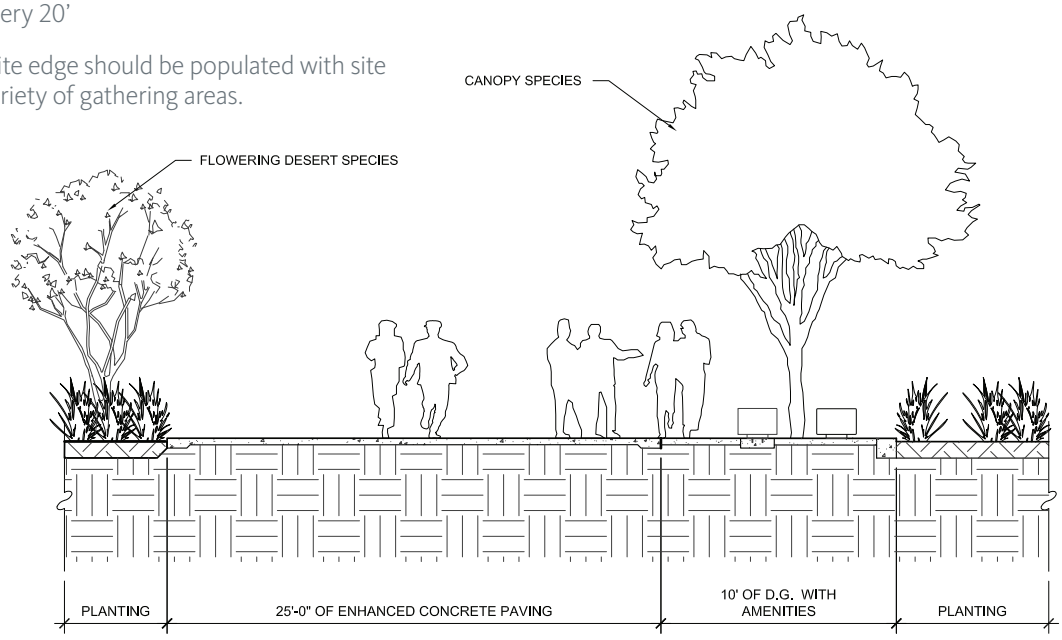
THE GRID

- The Grid will double as a service road and should provide convenient access for maintenance, operations, and emergency vehicles to reach buildings and support facilities on the campus.
- The minimum width to accommodate service vehicles is 10-feet.
- A service pull-off should be incorporated as needed for each individual building design project. Pull-off shall be an additional 3-feet in width along the service path.
- Benches should be placed in shade and oriented to provide refuge and comfort, but not impede access or circulation.
- The two primary spines should be planted with a shade tree within the enhanced DG area and a ornamental desert tree on the other side. The recommended species is Black Locust for the shade tree, and Desert Willow for the ornamental desert tree.
- The remaining spines should also be planted on a combination of a shade and an ornamental tree.
- All of the shade trees along the secondary spines will be the same species creating a uniform look across the pedestrian circulation. The recommended canopy species is Arizona Ash.
- In contrast the smaller ornamental species will be unique depending on which spine they are planted along.



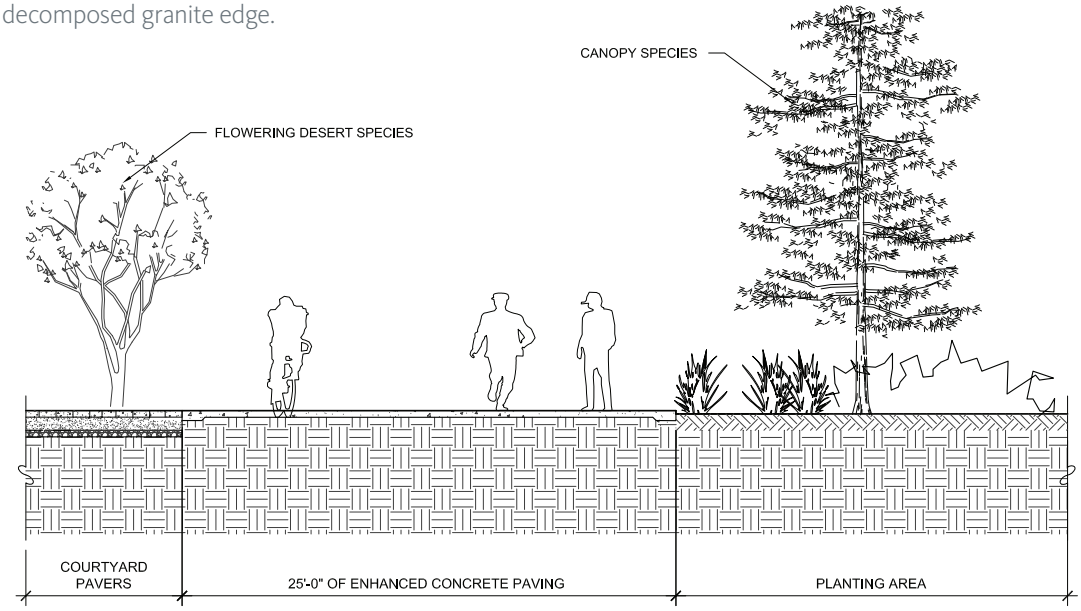
PRIMARY SPINES

- A combination of banded concrete 25' wide of natural gray, and a section of decomposed granite 10' wide, with 4' wide integral color bands every 20'
- The decomposed granite edge should be populated with site furniture and host a variety of gathering areas.



SECONDARY SPINES

- Paving should be of a natural gray color with a 4' integral color band every 20' to match the Primary Pedestrian Spine, with the exception on the decomposed granite edge.



PERIMETER WALK

- The Perimeter Walk provides a dedicated measured walking path for the campus and the adjacent community to enjoy.
- It is intended to circumnavigate the perimeter of the campus and should take advantage of the existing sidewalk. Where feasible signage indicating mileage traveled and periodic fitness stations should be incorporated into the path. Additional planning to create a continuous walk will be required.
- Any additional segments planned within the campus boundary should match the exixting sidewalk; natural concrete per Lancaster City Standards.
- Pull-off areas that host fitness equipment should use resilient surfacing, ADA compliant wood-fiber, or decomposed granite.
- Site amenities planned for the perimeter walk include fitness equipment, signage, and site lighting.
- Planting would follow the Landscape Field typology as described within the FMP.

INTERIOR WALKS ALONG GARDEN RIBBON

- The interior walks provide a casual and more-direct connection between the proposed building courtyards.
- The walks should be programmed to be educational resources highlighting lessons about the natural environment including the desert's unique flora and fauna.
- The programs along the walks should be developed in partnerships with the facility who will ultimately be using them. Suggestions include a pollinator habitat walk, a native plant walk, an art walk, and a tree walk.
- The walks shall range in width with a minimum width of 4' and a maximum width of 8'. They shall be stabilized decomposed granite with a concrete mow strip at planting area edges.
- Along the coarse of the walks, typically within the courtyards areas, small seating areas should be incorporated into the walks edge. Depending where the gatherings areas are planned, the seating should following the site furnishing guidelines outlined previously. Educational signage highlighting the theme of each walk, and standard trash and recycling bins, should be placed when appropriate.
- Planting along these pathways should follow the Garden Ribbon typology. Plants should be arranged to showcase the desert palette and in an architectural style with mass graphic plantings.

COURTYARDS

Enclosed within each building cluster the FMP proposes an exterior courtyard space, similar to the existing courtyard at the existing Arts Building. These small exterior spaces should be programmed in direct relationship with the adjacent building program and provide opportunities that support outdoor gathering, education and socializing. Designed around opportunities for convergence, these places should create a variety of settings intended for both individual and group activities such as outdoor classes, special events, and informal gatherings.

GENERAL

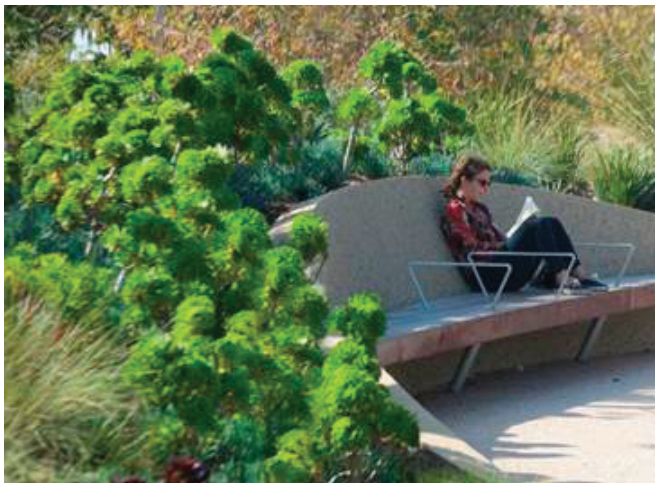
- All Courtyards should be designed for general everyday use and should easily be reached from the Grid circulation system. All spaces should be easily accessible to a large range of users.
- The courtyards should be designed to provide multiple options for seating; individual, pair and groups.
- Unique programing for the courtyards should be developed in partnership with the building programs during the initial stages of each project and vetted with the College for approval.
- When feasible, grade changes should be incorporated into the courtyards to create occupiable edges with terraced seating.
- A clear path of travel between all building entrances and the pedestrian spine will be maintained at all times.

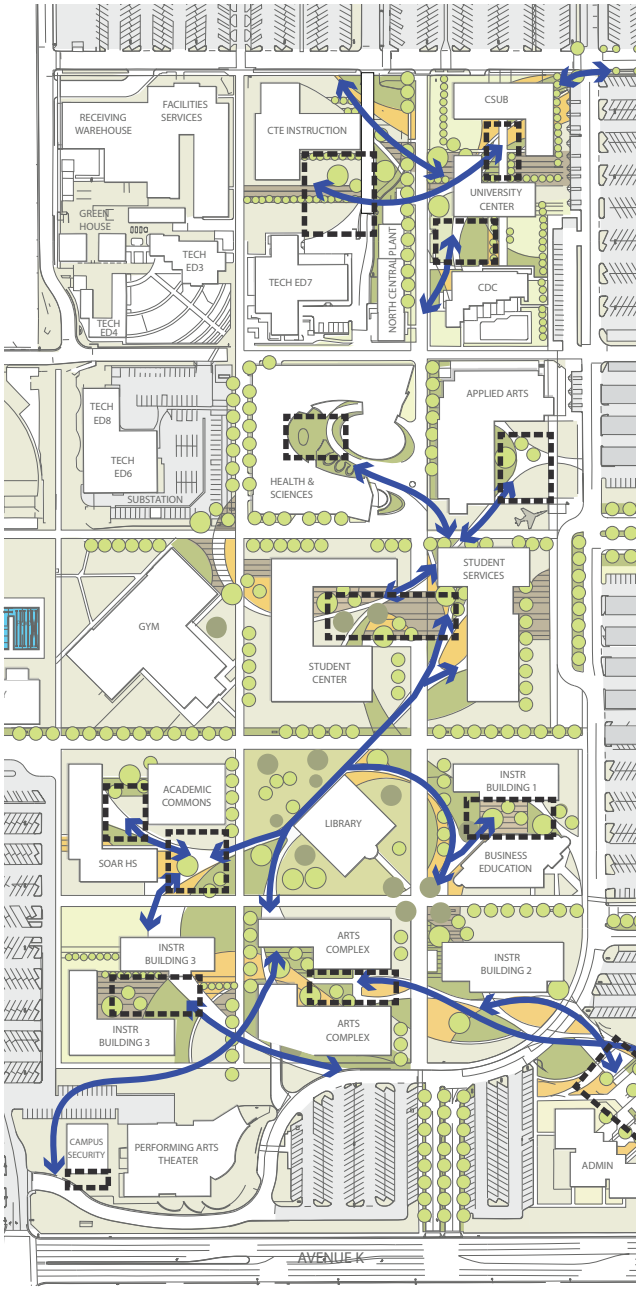
SITE AMENITIES

- Single benches should have the backs along buildings or at least be facing a pleasant view.
- Tables should be able to seat at least groups of 4 - 6, round or square in shape with seating all around. ADA options must be available.
- Umbrellas should be planned for at least half of the tables, or where there is no side for a tree to be functional as shade.
- Poured in place concrete seat walls should be designed to be seatwalls as well as planter edges and/or retaining walls.

PLANTING

- Plant species should be selected from garden ribbon planting palette. And when feasible can be complimented with additional species to make the areas stand out.
- Semi-deciduous trees, should be used to provide shade in the summer and allow sun light for warmth during the winter
- Medium / smaller trees for scale with adjacent buildings to create a warm and sense of place for the courtyards.
- Planting should complement adjacent garden ribbon planting palette, but still have its ornamental features to stand out.
- Maintain an aesthetically cohesive language between buildings and plantings.
- Pavers to be 6”x30” linear pavers that follow potential layouts stated in previous section.
- If concrete pads are needed for surface mounting furnishings, please follow general aesthetic of seatwalls and surrounding hardscape area to not impede to paver layout.
- Grading changes to help define spaces with seatwalls and retaining walls as edges.





- - - GENERAL LOCATION OF COURTYARD

INTERIOR WALK CONNECTIONS BETWEEN COURTYARDS; THE GARDEN RIBBON

COURTYARD HARDSCAPE DESIGN

- Maintain an aesthetically cohesive language between buildings and plantings.
- Pavers to be 6”x30” linear pavers that follow potential layouts stated in previous section.
- If concrete pads are needed for surface mounting furnishings, please follow general aesthetic of seatwalls and surrounding hardscape area to not impede to paver layout.
- Grading changes to help define spaces with seatwalls and retaining walls as edges.

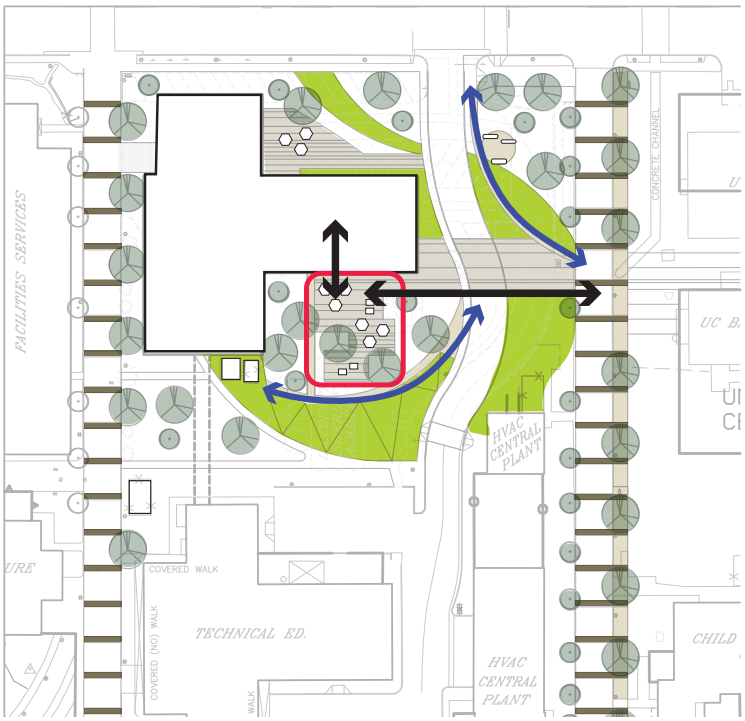
COURTYARD AMENITIES

- Multiple types of seating should be arranged to host a variety of users and group sizes.
- Single benches should have the backs along buildings or at least be facing a pleasant view.
- Tables should be able to seat at least groups of 4 - 6. ADA options must be available in each courtyard.
- Umbrellas should be provided for at least half of the tables, or where there is no side for a tree to be functional as shade.
- Poured in place concrete seat walls should be designed to be seat walls as well as planter edges and/or retaining walls.
- USB changing station and outdoor convenience outlets should be strategically spaced for students use.
- Trash and recycling bins should be placed near the entrance of the buildings and/or at the entrance of the courtyards.
- Proper lighting should be provided for outdoor study, and safety.

COURTYARD LANDSCAPE DESIGN

- Plant species should be selected from garden ribbon typology planting palette. When feasible additional species can be added, however prior approval from the FMP landscape architect and the College is required.
- Semi-deciduous trees, should be used to provide shade in the summer and allow sun light for warmth during the winter

COURTYARD BUBBLE DIAGRAM



GATHERING AREA WITH A RANGE OF SEATING TYPES AND ARRANGEMENTS

CLEAR CONNECTION TO ADJACENT BUILDING AND-DIRECT PHYSICAL CONNECTION TO PEDESTRIAN SPINE NETWORK

THE ORNAMENTAL PLANTINGS OF THE GARDEN RIBBON SHOULD WRAP THE COURTYARDS TO PRO-VIDE VISUAL INTEREST AND SCREENING FROM THE ADJACENT USE

THE INTERIOR WALKS OF THE GARDEN RIBBON SHOULD PROVIDE SECONDARY CIRCULATION AROUND THE COURTYARDS

SCREENING SHOULD BE PROVIDED BETWEEN THE BUILDING EDGE AND THE COURTYARD WHERE PHYSICAL ACCESS IS NOT REQUIRED

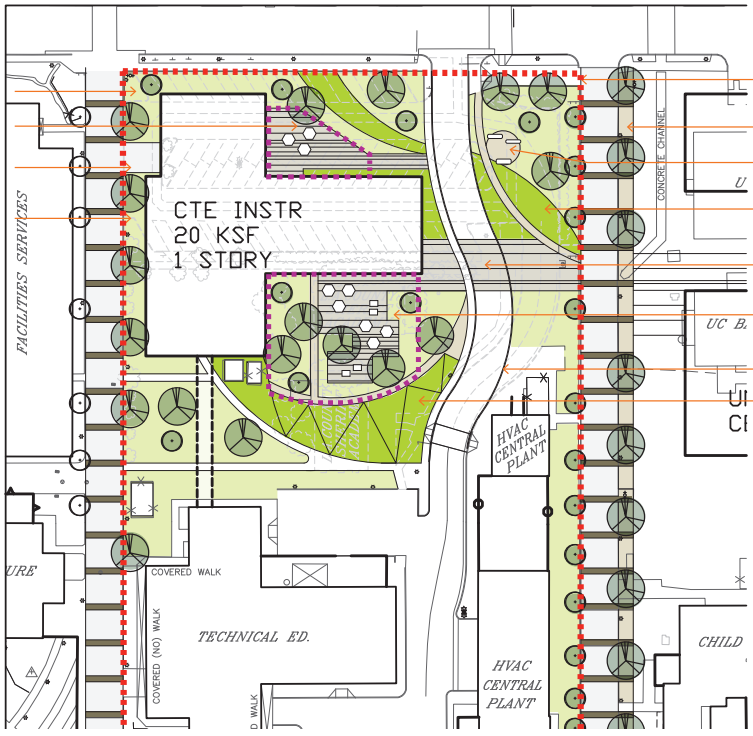
SAMPLE CONCEPTUAL PLAN FOR COURTYARD AREA

NEW FIELD PLANTING

ↄ GATHERING SPACE 2500 SF

/ICE ACCESS ON WEST SIDE OF BUILDING

NEW SECONDARY PEDESTRIAN SPINE ALIGN WITH EXISTING



ALIGN NEW PRIMARY SPINE EDGE W/ EXISTING CURB

NEW PRIMARY SPINE W/ DG BAND ON EAST SIDE

NEW GARDEN RIBBON SEATING AREA AND DG PATH

NEW GARDEN RIBBON ELEMENT THAT CONNECTS THE CAMPUS COURTYARDS

NEW HARDSCAPE CONNECTION TO PRIMARY SPINE TABLETOP OVER ENTRY DRIVE

NEW COURTYARD MIXED USE SPACE 8000 SF

NEW DRIVEWAY ALIGNMENT

NEW GARDEN RIBBON ELEMENT TO WRAP THE COURTYARD. GARDEN SPACE TO BE DEVELOPED WITH SOME EDUCATIONAL PROGRAM RELATED TO ADJACENT BUILDING PROGRAMS.

IDEAS INCLUDE:
- SCULPTURE GARDEN DISPLAYING WELDING
- DEMONSTRATION OF FIRE SAFE PLANTING

NOTE

This is a CONCEPTUAL SAMPLE only. This is for courtyard design intent only, and shows key components to be included in each courtyard space. This area should be designed in coordination with the new CTE facilities.

05

BUILDING DESIGN GUIDELINES

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INTRODUCTION

Section 5 of this Handbook includes design criteria for all future building projects on the AVC campus, including new construction, additions and renovations. These guidelines have been developed to create a cohesive and attractive physical campus that projects a strong visual identity for AVC, fosters intellectual and social exchange, and inspires the entire campus and surrounding community. The following overarching goals provide the foundation for the building design guidelines:

CREATE A COHESIVE IDENTITY

- The eclectic array of architectural styles will be replaced with one that is unified and grounded in the regional context and heritage.
- The majority of outdoor spaces will be refreshed with an updated landscape palette.
- New branding, signage and wayfinding will be incorporated across campus.

PROMOTE AUTHENTIC DESIGN

- The new campus aesthetic will take its cues from the surrounding environment – its colors, climate and cultural history.
- The "garden" motif, a nod to the campus' history, will be limited to the area near the library, while the remainder of the campus will be planted with regionally appropriate drought tolerant planting.
- Buildings will be designed to inherently respond to the specific needs and challenges of the surrounding environment.

FACILITATE INTERCONNECTIVITY

- Relocating the Student Services and Student Center to the center of campus will create the new 'campus core' - a focal point for student life.
- A new 'front door' to the campus from 30th street will direct visitors and students toward the campus core.
- This campus core will encourage interaction and exchange of ideas within the student body, faculty and staff.
- A variety of outdoor gathering spaces will be interspersed throughout campus, creating informal meeting spaces to support collaboration.

BE A MODEL INSTITUTE OF HIGHER LEARNING

- Campus-wide improvements will create a more collegiate environment symbolizing a campus of higher education
- The campus environment will promote a strong sense of pride for AVC students, faculty and staff as well as the surrounding community.

ARCHITECTURAL CHARACTER

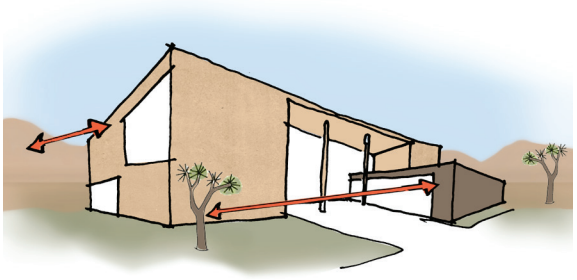
The current AVC campus was developed over the course of many decades, and without a strong, cohesive architectural style. Many of the buildings on campus were designed during the mid-20th century and are dated, rundown, and in many instances no longer support the services and teaching methods needed to prepare students for the 21st century. The building design guidelines in this section aim to unify the AVC campus with a cohesive character or style that is both aesthetically appealing and contextually sensitive.

New buildings on campus will be influenced by the native characteristics of the Mojave Desert region. Large swings in temperature and heavy winds have created a regional tradition of using thick walls which insulate and protect from climate stresses. Additionally, shading elements shade from the strong sun and high heat. Buildings will be responsive to the context through materiality, massing, orientation, and landscaping. Buildings will also be designed to honestly express their program and function. This site-specific design will inherently produce cohesion, as buildings respond to the same climate conditions, yet will also encourage individuality based on a building's specific programmatic needs and user requirements.

KEY BUILDING CHARACTERISTICS

CONTEXTUALLY SENSITIVE

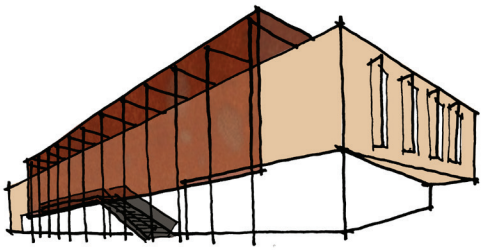
- Building orientation, massing, and façade treatment determined by wind patterns and sun exposure.
- Material and color palette are inspired by the flora and fauna of the Mojave Desert.
- Site-sensitive landscaping across the whole campus creates cohesion between buildings and binds the campus to its regional surroundings.



The material and color palettes are inspired by the flora and fauna of the Mojave Desert.

PROGRAM-DRIVEN

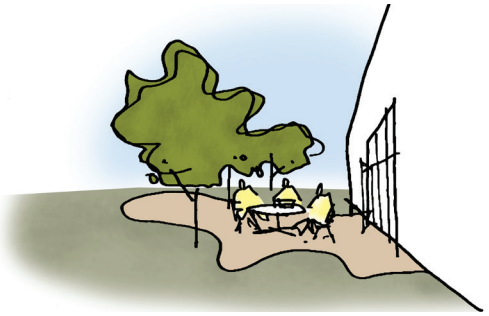
- Building design is a direct expression of structure and program.
- Glazing applied as appropriate to function, considering glare and solar exposure.
- Simple architectural gestures and a clear parti help communicate a building's function.



An exterior stair and a shade canopy are strong architectural gestures based on functionality.

CONNECTED TO THE LANDSCAPE

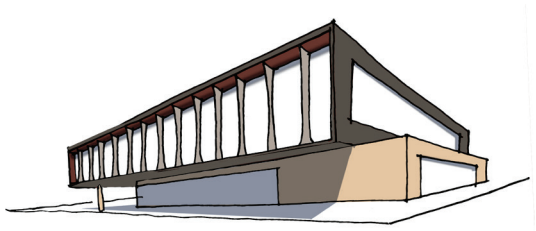
- Architectural elements such as courtyards, outdoor seating, shading elements and walls extend out into the landscape to blur the boundary between architecture and landscape.
- The placement and configuration of a building is designed to promote the use of outdoor gathering spaces.
- The areas directly adjacent to buildings are as important as the internal spaces and should be considered as part of the building design.



Courtyards and outdoor rooms connect buildings to the landscape.

MITIGATED MASSING (HUMAN SCALE)

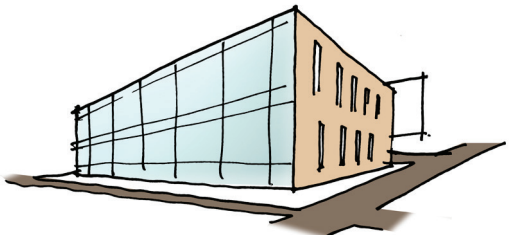
- Low structures (1-2 stories) support the horizontality and human scale of the campus.
- Massing is broken down into geometric compositions, consisting of interlocking volumes and planes that float or use material differentiation to help break the scale and create a more diverse palette of spaces.



Massing is broken down into geometric compositions of interlocking volumes and material differentiation.

SIMPLE, REFINED FORM

- Building form and configuration reinforce the orthogonal campus grid which defines the formal pedestrian corridors.
- Clean and rational lines create a strong juxtaposition to the curvilinear forms found in the landscape design.



Simple, orthogonal forms reinforce the campus grid.

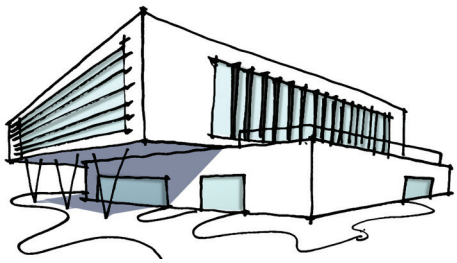
COURTYARDS AND OUTDOOR ROOMS

- Expand learning and social environments beyond the boundaries of buildings out into the landscape.
- Provide multiple scaled and varied use spaces within the landscape to be used as additional teaching and learning environments for the campus.
- Courtyards fill in the space between buildings, linking them together and facilitating student interactions across disciplines .

Courtyards function as outdoor rooms for learning and social interaction.

HEALTHY USER ENVIRONMENT

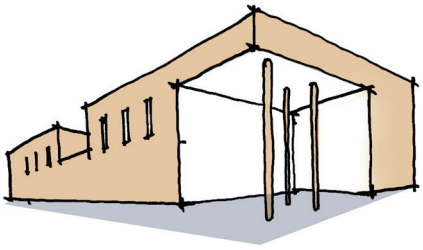
- Buildings utilize strategies to support healthy indoor air quality and provide ample access to daylight.
- Façade design should also consider wind in locating operable windows, exit doors and intake ventilation.
- Building design should plan for water bottle filling stations, bicycle parking, and other such measures to make a more user-friendly environment.



Ample windows provide access to daylight.

ENVIRONMENTALLY RESPONSIVE

- Design buildings to minimize water and energy use.
- Sustainable building practices are utilized from design through construction and throughout a building's life cycle.



Thick concrete walls insluate buildings from fluctuating temperatures to minimize energy expenditure.

FORM

Most existing buildings on the AVC campus share an architectural language that is consistently orthogonal. Future buildings should build on this legacy and use predominantly linear/ orthogonal forms as an expression of efficiency. The curvilinear shapes, found within the design of the landscape, provide a counterpoint to the building forms, strengthening the modern, linear design of the buildings. This primary focus on orthogonal geometry for building structures does not preclude the implementation of massing or material transitions which invoke interest or intrigue.

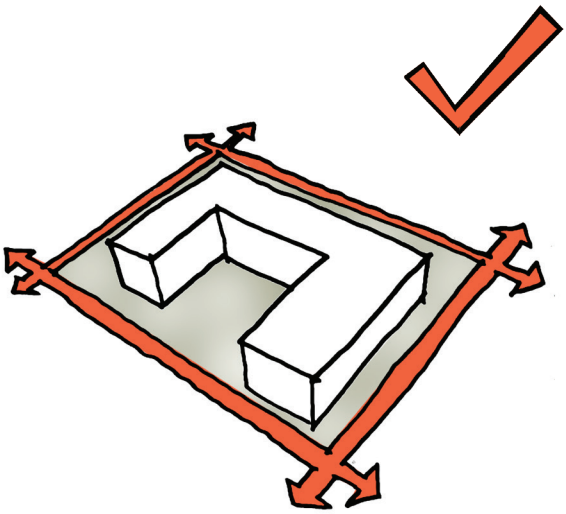
GOALS

- Maintain consistent formal language across campus.
- Efficient and effective building design through simple, clean form.

IMPLEMENTATION

ORTHOGONAL GEOMETRY

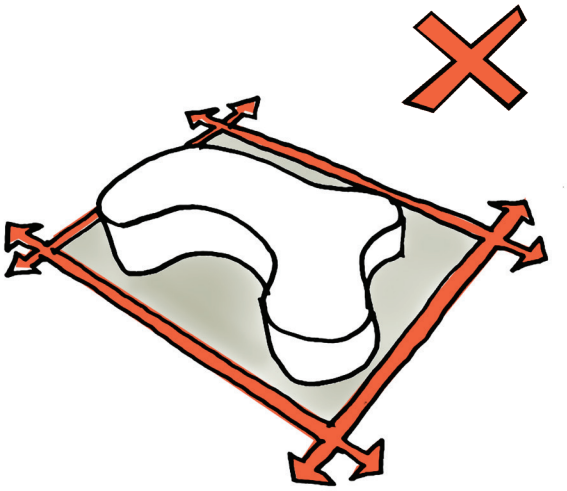
- Building form and configuration should reinforce the orthogonal grid which defines the formal campus pedestrian corridors.
- Simple crisp clean lines.
- Buildings should be designed as efficiently as possible and should be adaptable and flexible for future planning needs.
- Rational patterns and orthogonal application of materials creates a clean aesthetic.
- Applied decor and ornamental motifs are not authentic to the region and are not allowed.
- Angling buildings at 45 degrees to align with the gym or library is not allowed.



Building forms should reinforce orthogonal campus grid.

AVOID CURVILINEAR FORMS

- All new buildings and additions should avoid curvilinear forms.
- Curvilinear forms are not authentic to the region or context and do not provide flexible/adaptable spaces.



Avoid curvilinear forms that do not provide adaptable spaces.

BUILDING SCALE + MASSING

The campus is, and should remain, predominately comprised of 1 and 2 story structures (with the only exception being the Business Education building which is 3 stories). These low structures establish a consistent pedestrian experience and give the campus a relatable human scale. These low structures should be designed to introduce multiple scaled experiences through mitigated massing. Massing should be an honest expression of a building's interior program, and should create architectural interest. Building components such as exterior exit stairs, sun shade structures or second story volumes extended beyond the ground floor are ways to introduce a variety of scale and massing experiences.

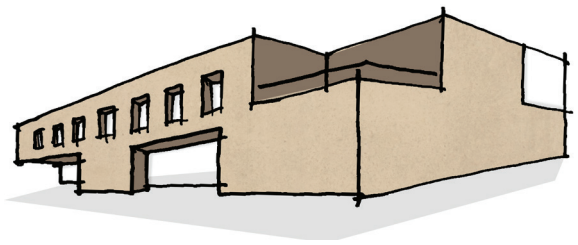
GOALS

- Building design supports the horizontality and human scale of the campus.
- Mitigated massing breaks down the scale of buildings and creates a more diverse palette of spaces and a more visually-appealing architectural composition.

IMPLEMENTATION

ROOF LINE + HORIZONTALITY

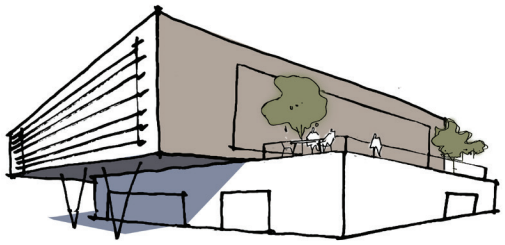
- Building designs should support the horizontality and human scale of the campus. Avoid dominant vertical elements .
- Roof forms are to be flat, not sloped. Incorporate screening of rooftop equipment into the articulation of the building massing when possible.



1-2 story structures and shifts in massing reinforce the pedestrian scale of the campus.

SHADE + TERRACES

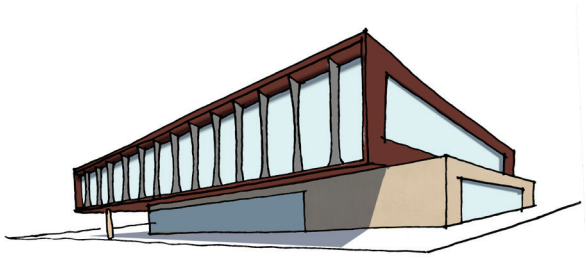
- Incorporate shading devices or building overhangs to provide shade to gathering spaces adjacent to the building.
- When appropriate, consider outdoor functional space at the second level by shifts in the building massing. Protruding balconies are not acceptable.



Overhangs provide shade and shifts in building massing create second-story terraces.

PROPORTION + COMPOSITION

- Building geometry should be influenced by modern architectural principles with cubist geometries, proportioned compositions and floating volumes .
- When buildings are of an appropriate scale, provide variation within the mass of individual buildings to help break the scale and transition spaces from outside to inside.
- Use material differentiation to break up building massing and define program zones.



Proportioned compositions are achieved with variation of mass and material.

ENTRIES

Building entrances help orient students and visitors to the campus and should thus be clearly marked and visible from a distance. It is important that building design supports intuitive wayfinding which improves campus flow and circulation. New buildings should have strong, clear entry points that enhance the pedestrian experience around the building threshold through changes in massing, materiality, transparency, and scale at the ground floor in a welcoming manner. This is done with appropriate building massing, clear articulation, and design of entries that establishes a hierarchy for primary and secondary access points. Additionally, building entries should provide a protected, fluid transition between interior and exterior, and incorporate strategies to support healthy indoor air quality including walk-off mats and vestibules. Entries should reach out, actively engaging and connecting to outdoor space.

GOALS

- Provide clear entry points that enhance the pedestrian experience and actively engage and connect to outdoor space.
- Establish a hierarchy for primary + secondary access points.

IMPLEMENTATION

WAYFINDING

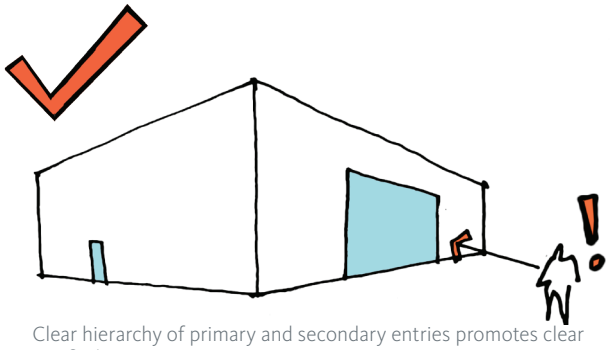
- Demarcate points of entry through changes in massing, materiality, transparency, and scale at the ground floor level.
- Align entries along major pathways.
- Limit entries where possible to focus traffic and promote interaction.

MAIN ENTRANCES

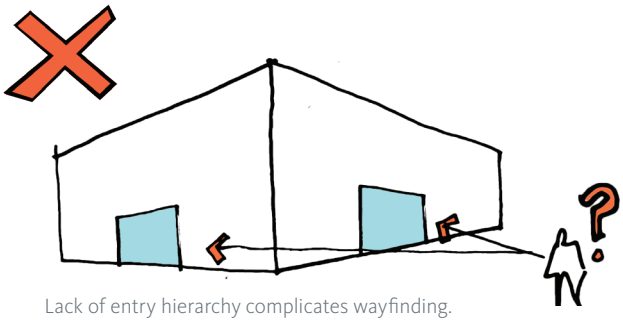
- Provide a clear hierarchy of building entries with an emphasis on the main.
- Incorporate large expanses of glazing and/or grand architectural expressions at main entry ways to clearly differentiate from secondary entrances.
- When appropriate, provide double height volumes at main entry ways, emphasizing public use.
- Secondary entrances should be demarcated, but should be more understated than main entries.

TRANSITIONAL SPACE

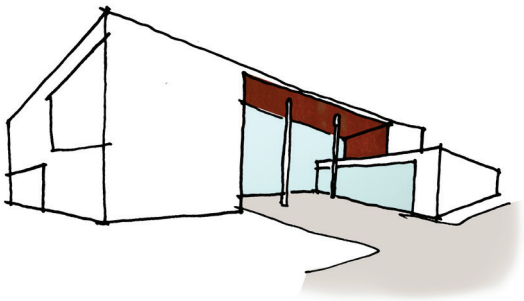
- Incorporate strategies to support healthy indoor air quality, including walk-off mats and vestibules.
- Entries should be oriented outward, actively engaging and connecting to outdoor space.
- Consider appropriate sun and wind mitigation at entries and courtyards and provide protection from environmental stresses.
- Create a depth of experience and gradated transition between indoor and outdoor.



Clear hierarchy of primary and secondary entries promotes clear wayfinding.



Lack of entry hierarchy complicates wayfinding.



Covered entries create a gradated transition between indoor and outdoor space while protecting entries from sun and wind.

EXTERIOR ENCLOSURE

To achieve a strong visual identity for the AVC campus, building exteriors should be in harmony with one another, yet should also express their individuality. A building's articulation should be simple, logical and well-suited to the building program it encloses. Under that same principle, the broad range of building functions and programmatic needs across the campus should inherently generate diversity in each building's exterior enclosure. A consistent design language and shared material palette will help strike a balance between individual building exterior design and overall campus cohesion.

GOALS

- Establish a cohesive architectural expression on campus while leaving room for unique design of individual buildings.

IMPLEMENTATION

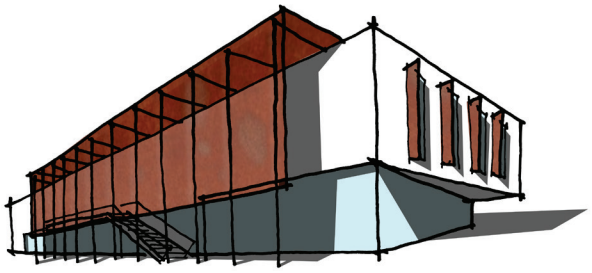
AESTHETICALLY COHESIVE

- Buildings should take design cues from the local context, and utilize building materials and colors from those outlined in these guidelines to contribute to a cohesive AVC campus identity.
- All buildings and surfaces should be articulated in an honest, modern/contemporary style.

A shared material and color palette for all buildings results in a cohesive campus identity.

ENVIRONMENTALLY RESPONSIVE

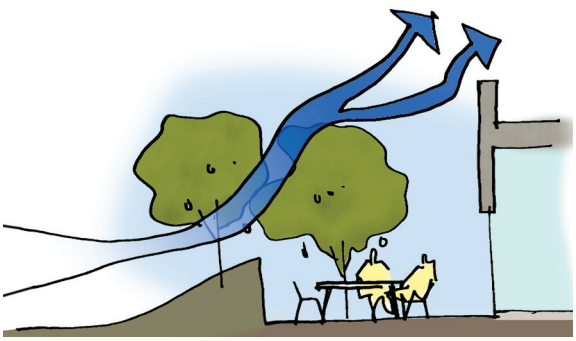
- Consider thick concrete walls to aid in the heating and cooling systems. Perforated metal screens can help dissipate heat quickly in the hotter months and may buffer outdoor spaces from wind.
- Façade design must consider the severe winds of the region and aid in providing protected outdoor areas when possible. Façade design should also consider wind in locating operable windows, exit doors and intake ventilation.
- An automated wind analysis must be performed for each building project and presented to the college representing the findings.
- Sun shade devices and louvers should be consistent with orientation of the sun path and applied as functional elements not as decoration.



Facade design and shade structures should be informed by shade studies and wind analysis.

HONEST EXPRESSION

- The direct expression of structure, program, and honest use of materials is encouraged.
- Glazing use should be appropriate to function, considering glare and solar exposure.
- Applied décor and motifs are not authentic and should not be used.



Outdoor spaces should be designed to protect from strong winds.

EXTERIOR FINISHES + FEEL

The Mojave Desert and its very specific climate is one of the defining regional identifiers of the Antelope Valley. As part of this region the AVC campus should be developed to embrace this unique context and reflect the regional vibrancy and complexity of flora and fauna. The selection of building materials should be sensitive to the overall context of the Lancaster campus as well as the surrounding region. Developing a consistent material and color palette for the campus will promote a strong sense of place and help reinforce AVC's institutional identity within the community. Materials should be carefully chosen for durability, maintainability and connection to its region.

The unique climate of the valley with its large swings in temperature from day to night and periodic heavy winds creates a need for building materials that can stand up to these conditions. Consideration of long term maintenance costs versus initial construction costs must be critically evaluated during the building design process.

GOALS

- Create a cohesive campus identity and experience.
- Connect the architectural style of the campus to the local context.

IMPLEMENTATION

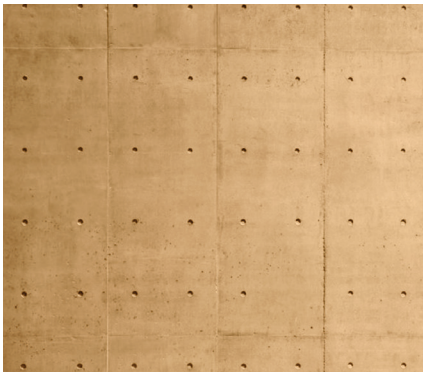
- New buildings are to strictly adhere to the material palette and guidelines as defined below.
- All existing buildings to remain should be evaluated for potential exterior upgrades in order to tie them into the new campus architectural style existing buildings to the architectural style of the newly constructed buildings.

MATERIAL PALETTE

To meet critical durability and maintainability standards, as well as connect to the local region, the following are recommended for exterior building materials:

INTEGRAL COLORED CONCRETE

Concrete is a durable material that works well in the desert climate. It is critical that all concrete materials be integral colored whether it is Cast-in-Place, Precast, or Tilt-up. Adding texture such as sandblasting, panel joints, or grooved patterns to the concrete is acceptable and could help add interest and scale. Textures or patterns should be a subtle accent and not the primary detail. Stamped patterns such as rock, or wood patterns are not acceptable.



Approved Color:

Utilize local aggregates, white cement, and integral color with the following proportions based on pounds per weight of cement: 0.7% yellow, 0.2% black, and 0.07% red. For a mix with 705 lbs of cement, one would add 5 lbs of yellow, 1.5 lbs of black, and 0.5 lbs of red.

CONCRETE MASONRY UNITS

Concrete masonry units (CMU) are a durable cost effective material when used appropriately can be a great material. CMU should not be used for an entire building façade such as the Automotive Building. CMU can be utilized as a feature or component within a composition of materials. Exposed natural grey or painted CMU is not acceptable.

Approved Product: To match:

Manufacturer: Angelus Block Co. Inc.
Color: Summer, utilize white pumice aggregate only
Size: 8"x16"
Finish: Medium Weight Light Shot Blast

RAMMED EARTH

Rammed earth construction is the process of utilizing locally sourced earth along with minimal additives to create walls that are durable, beautiful and uniquely tied to the its locale.

Approved Color:

Use local material

PAINTED STANDING SEAM METAL PANELS

The campus has utilized corrugated metal panels on several of its most resent buildings. Utilizing this material can help tie new construction to the existing campus. However, it is critical that new construction depart from the bright, high glare material such as what is on the Facilities Building and the Horticulture Building. Any metal material should be in a warm tone that fits into the context of the local region.

Guidelines: For use as solid wall panels and perforated screens

Approved Product:

Manufacturer: Kalzip / Product: Standing Seam 65/400

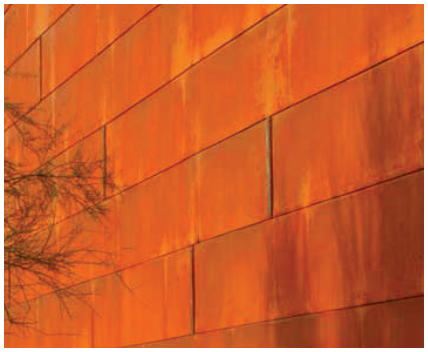
Approved Colors: To match:

1) Duranar - Seawolf - UC109855

3) Duranar - Windswept Smoke - UC121756

2) Duranar - Library Pewter - UC109309

WEATHERED STEEL



Weathered steel is a metal that over time patinas and provides a natural protective coating. This material is appropriate for this climate and creates a direct tie to the climate as its patina weathers naturally.

Guidelines: Use as wall cladding and screens, either solid or perforated.

Approved Product:

Weathering Steel: ASTM A588, A242, or A606 Type 4

INTEGRAL COLORED EXTERIOR PLASTER

The use of exterior plaster as a significant portion of a building envelope is not encouraged. However, in limited amounts, exterior plaster can be a good counterpoint or accent material.

Guidelines: Limit use of integral colored exterior plaster to be no more than 30% of any individual facade. Use metal VV or M Type control joints only. Aluminum profile reveals are not acceptable.

Approved Finish: Smooth

Approved Colors: To match:

1) Texston: Tuscany / VPC-3176G-061209

2) Texston: Tuscany / CM-4039-SMO-SDS7.5-062715

3) La Habra / Product: SBMF / Base: 100 / Color: X18928

4) La Habra / Product: SBMF / Base: 100 / Color: X73

ALUMINUM CURTAIN WALL AND WINDOWS

Establishing the proper amounts and locations of glazing is important for providing the right amount of natural light to the building interiors. Whether it be large expanses of curtain wall, or a series of windows within the façade it is critical to consider the overall composition of materials that make up the building elevation. The composition of glazing within the façade should be the primary focus not the color of the framing system, therefore to maintain consistency, all aluminum curtain wall systems or windows should be a Clear Anodized finish.

Guidelines: When utilizing butt jointing, always use black spacers in the IG units.

Approved Finishes:

Clear Anodized

INSULATED LOW-E COATED GLAZING

The institutional objective of establishing a safe, healthy campus environment inclusive of all supports the approach to buildings where maximized transparency is incorporated into the design. The color and coating of the glazing has a significant effect on the appeared openness and transparency of the institution. Each building should utilize the highest performing glass that provides as much transparency as possible.

Guidelines: Highly reflective coatings are not acceptable and should not be used. Use sunshading on East, West, and South-facing openings to allow for more light transmittance to interior spaces.

Approved Products:

1) PPG / Vitro /Solarban 90 (2) / Clear Glass Insulated Glass Unit / VLT: 51% / Exterior Reflectance: 12% / Interior Reflectance: 19% / U-Value (Winter): Air .29, Argon .24

2) Solarban 72 (2) / Starphire Glass Insulated Glass Unit / VLT: 71% / Exterior Reflectance: 13% / Interior Reflectance: 13% / U-Value (Winter): Air .29, Argon .24

HOLLOW METAL DOORS AND FRAMES

Doors not part of a primary entrance should be a secondary element of a building design and not featured in primary colors. Therefore doors and window systems throughout campus should be consistent in color and the use of accent colors or school colors to highlight doors or windows is prohibited.

Guidelines: Paint doors and frames to match adjacent wall materials.

Approved Colors:

1) Sherwin-Williams - 7024 / Color: Functional Gray

2) Sherwin-Williams - 0038 / Color: Library Pewter

3) Sherwin-Williams - 7645 / Color: Thunder Gray

4) Sherwin-Williams - 9103 / Color: Farro
(Color to be used when adjacent to intergral colored concrete)

EXTERIOR COLOR PALETTE

Sherwin-Williams - 0038
Library Pewter

Sherwin-Williams - 9103
Farro

Sherwin-Williams - 7645
Thunder Gray

Sherwin-Williams - 7024
Functional Gray

RETROFITTING EXISTING BUILDINGS

Addressing existing buildings on campus to fit into the new material palette is critical in order to provide a cohesive campus experience.

GOALS

- Provide guidance for addressing reinvigoration of existing buildings that are to remain on campus.

IMPLEMENTATION

Main field should be painted to appear consistent with the prescribed integral colored concrete. Paint to match:

SW 9103 Farro

Mullions should be painted a dark color to avoid high contrast with dark glass. Paint to match:

SW 7645 Thunder Gray

Paint doors and frames to match adjacent wall materials or adjacent mullions. Paint to match:

SW 7645 Thunder Gray

Paint railings, columns, benches and other existing architectural elements to match:

SW 0038 Library Pewter

SW 7645 Thunder Gray

SW 7024 Functional Gray

Existing corrugated metal panels or other accent materials should be painted over, only when it aids in mitigating building mass or achieving geometric composition. To match:

SW 7645 Thunder Gray

Paint over ornamental details to match main field color or prescribed accent colors. Paint to match:

SW 9103 Farro

Building elements currently painted bright colors or school colors should be painted to match main field color or prescribed accent colors: Paint to match:

SW 0038 Library Pewter

SW 7645 Thunder Gray

SW 7024 Functional Gray

All buildings to remain should be evaluated for potential upgrades, including operable windows, shading structures, or louvers and should utilize the selected material palette.

INTERIOR FINISHES + FEEL

Interior environments conducive to learning are an essential part of the campus vision. Interiors should strive to inspire innovation and cultivate the intellectual and social growth of students, faculty, and staff, but still remain flexible and diverse enough to accommodate a variety of uses and programs. Interior spaces should feel welcoming and socially vibrant while balancing other spaces for retreat and focus as well as create meaningful and highly connected spatial experiences between interior and exterior environments.

GOALS

- Establish a consistent look between buildings with warm, safe and inspiring interior spaces.
- Provide durable, easy to maintain interior environments.

INTERIOR COLOR PALETTE

Building interiors should complement the exterior building color palette, similarly deriving tonal inspiration from Antelope Valley's local flora and fauna. The predominant color for walls should be Dunn-Edwards (DE) and Sherwin Williams (SW), to provide consistency throughout the campus interior. Accent colors should be subtle and earth-toned with hints of bright gold and orange - hues taken from Lancaster's notable poppy fields.

- DEW337 Gardenia
- SW 9056 French Moire
- SW 9140 Blustery Sky
- SW 6165 Connected Gray
- SW 6263 Exclusive Plum
- SW 6349 Pennywise
- SW 9124 Verde Marrón
- SW 7745 Muddled Basil
- SW 0014 Sheraton Sage
- SW 6664 Marigold
- SW 6684 Brittlebush

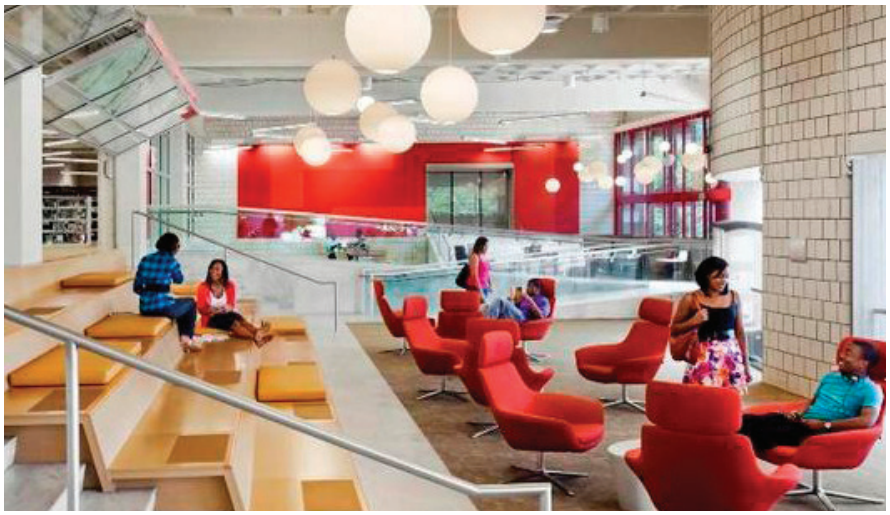
IMPLEMENTATION

DURABLE + EFFICIENT DESIGN

- Building interiors should be sophisticated without feeling excessive.
- Interior finishes should be durable and easy to clean / repair while contributing to a healthy interior environment.
- Furniture should be well integrated, durable, and flexible so that it can be arranged in a variety of ways to accommodate a broad range of applications as needed.

USER-FRIENDLY

- Maximize use of natural daylight and ventilation whenever possible to promote a strong indoor / outdoor connection and healthy indoor air quality.
- Lighting and controls should be efficient, easy to use, and contribute to an engaging learning environment and user experience.
- The Interior environment should be well-lit, bright and airy with feelings of warmth, comfort and safety.



CONTINUITY + CONNECTIVITY

- Promote continuity and accessibility through vertically connected interior public spaces whenever appropriate.
- All spaces should be designed to be: Flexible, Engaging, Dynamic, and Adaptable.
- Circulation spaces should be active engaged places were walking and stair use is promoted and multi scaled group areas provide additional learning and socializing opportunities.
- Incorporate places for formal gathering and casual interaction where possible.

SUSTAINABILITY

Knowing that public institutions of higher education have the ability to influence the ideals and principles of our future decision makers, AVC holds an important role in promoting sustainability. AVC is passionate about our responsibility to strive for the highest achievable sustainability standards to encourage positive change through example. The college is also driven to provide continued leadership in sustainability. From a campus-wide level to individual classrooms, our aim is to model a living laboratory from which everyone can learn.

These guidelines are intended to inform both the day to day operations for all upcoming construction activities including new buildings, renovations and infrastructure projects. AVC regards capital projects as an important opportunity to demonstrate through action our commitment to sustainable design and construction.

To truly embrace the value of sustainability, equal consideration must be given to environmental, social, and economic excellence. The guiding principles described in this section should be taken into account for all day to day operations as well as when designing and constructing capital projects.

GOALS

- Give equal consideration to environmental, social and economic excellence
- Provide continued leadership in sustainability
- Continue to strive for the highest achievable sustainability standards

IMPLEMENTATION

1. SHOWCASE SUSTAINABILITY LEADERSHIP

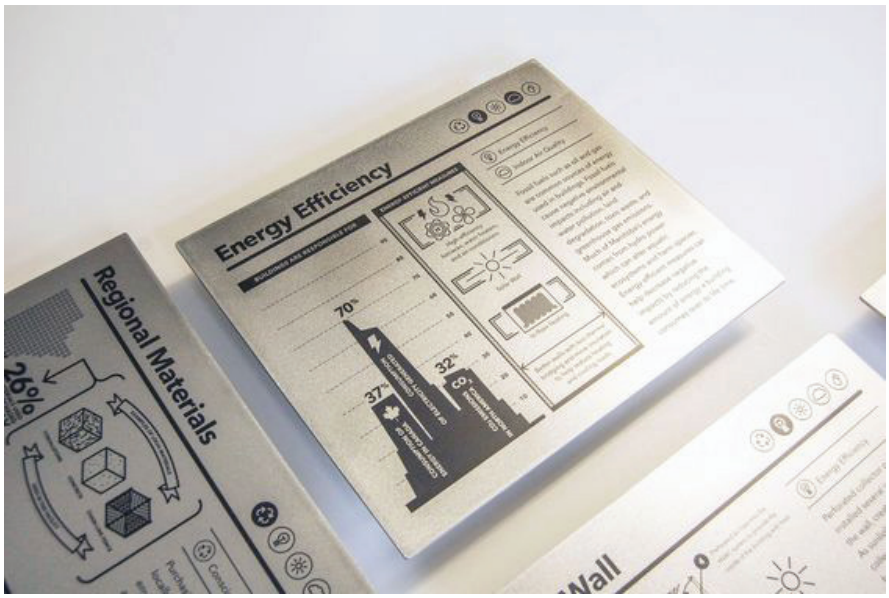
While all elements should be considered, every project will need to prioritize its own specific sustainability goals. When it makes sense, the District shall direct its consultants and contractors to pursue external recognition and/or design to external criteria such as:

- EnergyStar Better Buildings Challenge
- Savings By Design
- Leadership in Energy and Environmental Design (LEED) Silver or higher
- Zero Net Energy Recognition (New Building Institute or Living Future Institute)
- Take stock of new certifications and sustainability standards as they continue to develop in the coming years

2. USE AN INTEGRATED APPROACH TO BUILDING DESIGN, CONSTRUCTION AND OPERATIONS

The best buildings result from continual, organized collaboration among all players. The college should engage in a collaborative and integrated design process for active and continuing participation of users, facilities, operators and design and construction members in building projects.

- In the formative programming phase, identify sustainability priorities and key milestones in the project time line.
- Engage facility maintenance and operations personnel as well as other key AVC stakeholders throughout the design development and construction process.
- Provide a project relevant (20-50 year) Life Cycle Cost Analysis/Total Cost of Ownership assessment for all major building envelope elements and systems as well as value engineering proposals.



3. IMPLEMENT AN ECOLOGICAL SITE DESIGN METHODOLOGY

Land is a crucial component of the built environment. Ecological approaches to site design should be employed to minimize negative environmental impacts and support healthy and natural ecological processes while also ensuring that site and building design fit the campus aesthetic and create a unique sense of place.

- Maintain and restore climate appropriate landscaping.
- Design buildings to make use of climate resources, such as solar income, wind income, and water income from rain and ground water.
- Strive to be a permaculture-rich college, connecting users through experiential garden-based ecological learning and practice.
- Implement landscape based integrated storm water capture including use of bioswales, french drains, mulched basins, pervious pavement and bio retention basins.

4. REDUCE FOSSIL FUEL RELIANCE AND RELATED ENERGY COSTS

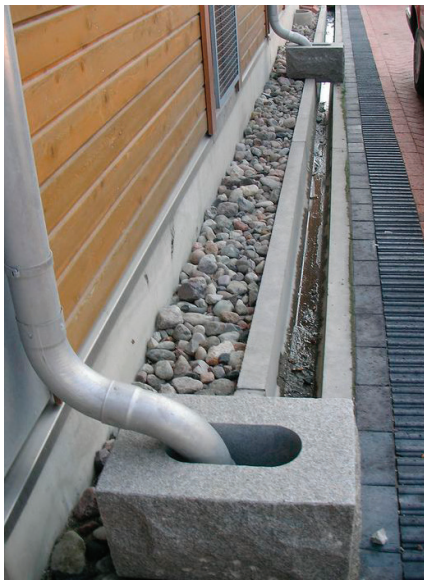
Implementing strategies to save energy and utilizing renewable energy sources will lower greenhouse gas (GHG) emissions, reduce operating costs, and minimize the district's reliance on fossil fuels.

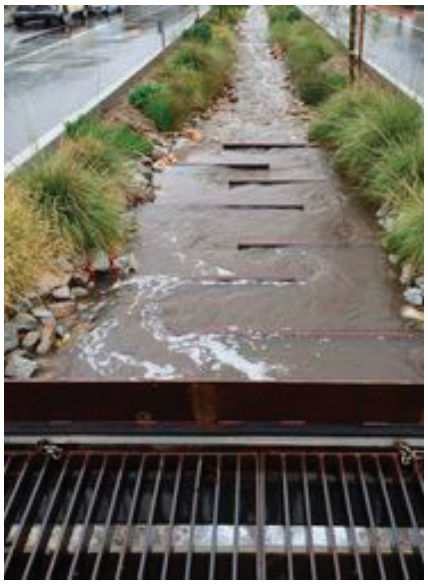
- All new buildings and major renovations shall be modeled to determine what the target Energy Use Intensity (EUI) is for the project.
- All new buildings and major renovations shall be at least 15% more energy efficient than required by current California Title 24 energy requirements.
- Passive design strategies (eg natural daylight, operable windows, and correct solar orientation) shall be the primary focus in order to lower buildings loads as much as possible before active systems are designed.
- All new buildings and deep retrofits to existing buildings must be designed to accommodate roof top renewable energy systems (eg PV, CSP or solar hot water) or green roofs/ terraces for at least 75% of the available roof surface.
- New construction and all retrofit/ renovation projects shall research and apply for all available utility incentives, assist in grant applications, and ensure follow through with all applicable savings programs.

5. MANAGE WATER CAREFULLY

Water is a valuable resource fundamental to our health, the economy and the environment. In California, water is precious and conservation is critical. AVC plans to manage water on its campuses responsibly and conserve wherever possible.

- All new buildings, surrounding pathways and roads must be designed to integrate with the campus storm water management system.
- Provide water bottle filling stations in all buildings.
- All new buildings and existing building renovations must include sub-metering infrastructure that separates out Domestic usage from Irrigation usage and connects to an IP platform that is approved by the Information Technology Department.





6. SOURCE MATERIALS AND SERVICES RESPONSIBLY

Responsible sourcing of goods and services requires a holistic approach to supply chain management, product selection, and procurement criteria transparency. AVC aims to increase efforts to procure goods and services that encompass responsible management across social, economic and environmental dimensions.

- Select materials that maximize recycled content, FSC certified wood and low-emitting materials.
- Prefer materials and services whenever possible that are sourced locally, using local labor and resources.
- Prefer materials that have low embodied energy and carbon footprints.
- Require EnergyStar and WaterSense compliant appliances and fixtures for all new buildings and facility renovations.
- Require that all computers (including desktops, laptops and monitors) meet EPEAT Gold standard.

7. OPTIMIZE OCCUPANT COMFORT, HEALTH AND WELL BEING

People spend a majority of their time indoors and therefore, the indoor environment has a significant influence on their health, well-being, and productivity. Student, faculty, and employee's health and comfort directly impacts ability to learn and work productively.

- Include measures for monitoring Indoor Environmental Quality and thermal comfort.
- Design buildings to promote walking, healthy movement, and exercise whenever possible.
- Include considerations of biophilic design, including access to nature, safety, texture and color.
- Provide building occupants control over their environment (eg move chairs, sit or stand while working).
- Implement green cleaning practices.
- Provide water bottling filling/hydration stations on every floor of each building .
- Work continually to improve public transit and alternative forms of access to the campus.

8. REDUCE WASTE

Construction and demolition generate enormous quantities of solid waste and reducing waste as well as diverting waste from the landfill provides financial savings in addition to environmental benefits. AVC aspires to reduce waste on all of its construction projects and ensure adequate recycling and composting facilities are designed in their new facilities.

- Promote source reduction in all aspects of facility design, construction and operations.
- Exceed statewide landfill diversion goal of 75% by 2020.
- Include building and campus infrastructure for collection and storage of recyclables, including appropriate signage.
- Provide at least one recycling and one composting collection bin in every new building.

9. USE THE BUILT ENVIRONMENT AS A TEACHING TOOL

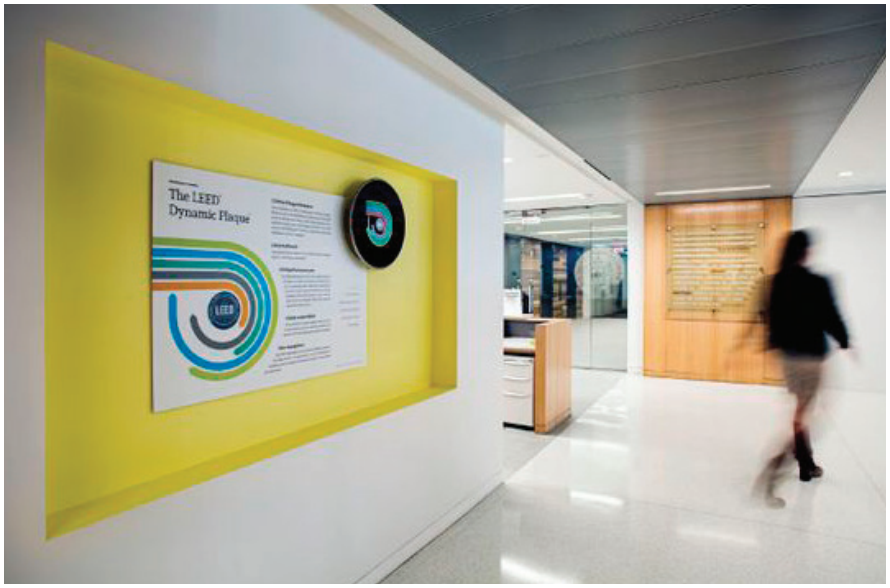
AVC should be a model educational institution for sustainability practice and education. Showcasing green building and site elements provides experiential learning opportunities and positively influences the campus community to champion sustainability. AVC desires the campus to be a teaching tool in order to raise awareness of sustainability issues and efforts to positively influence the behaviors of all campus community members.

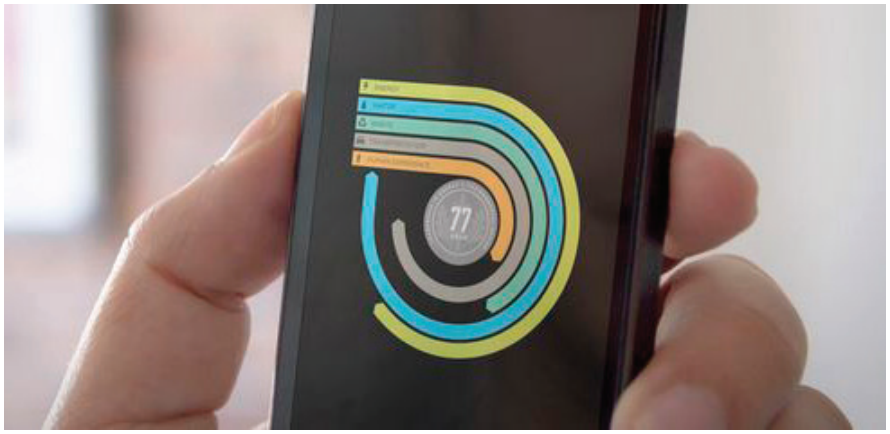
- Create opportunities for learning in the built environment by giving design consideration to how building spaces and systems can be used as a real time teaching tool.
- Provide educational signage and real time dashboards to highlight green building strategies.
- Provide a detailed list and user's guide to the building's green attributes.

10. FACILITATE SUSTAINABLE MANAGEMENT OF CAMPUS OPERATIONS

Regardless of how sustainable a building may have been in its design and construction, it can only remain so if it is operated responsibly and maintained properly. AVC is committed to ongoing monitoring of their facilities and operation for continuous improvement opportunities.

- Install water, gas, electricity and flow BTU meters. Install meters at appropriate locations to monitor ongoing operations.
- Provide on-going commissioning and operational training.
- Require 3 year service contracts for all new HVAC systems and large appliances.
- Include language in RFPs/RFQs requiring the training of facilities staff for operation use of advance high performance building systems.
- Provide regular reports to District leadership on the energy, water, waste, carbon and other sustainability metrics.
- Implement a district wide sustainability dashboard, available for viewing at select site locations and on the district's web site. This dashboard should provide real time as well as trending analyses of the sustainable performance of the district - as a whole and on a site by site basis. Energy consumption, renewable energy generation, recycling and composting diversion rates, water (potable and other) consumption and GHG emissions are just some of the sustainability insights that can be reported on the dashboard.





06

BRANDED SIGNAGE + WAYFINDING

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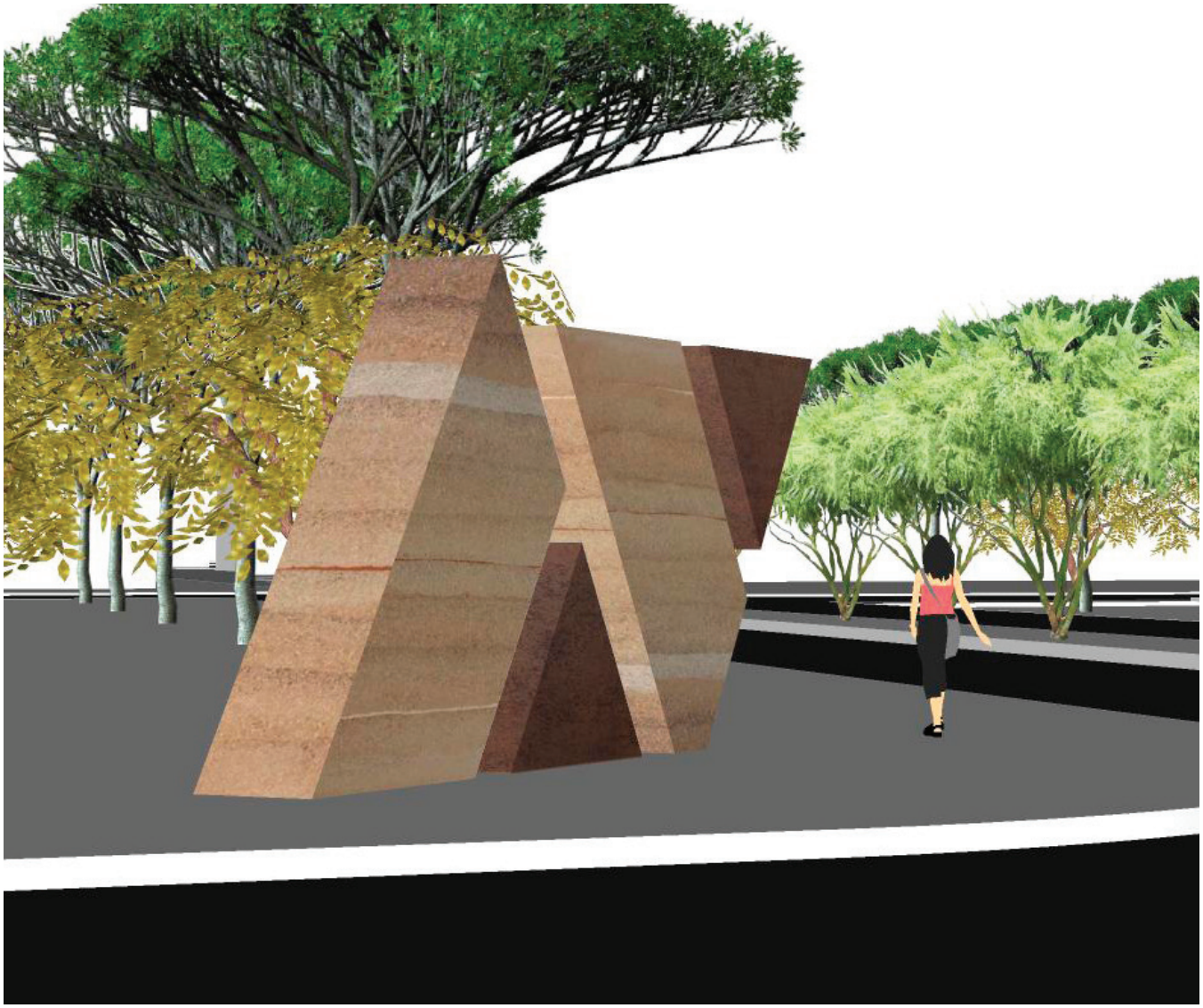
INTRODUCTION



These Signage Standards are issued for use by Antelope Valley College personnel and outside consultants who are involved in specifying, fabricating or installing signage at Antelope Valley College.

These standards apply to all exterior and interior signage that will be seen or used by the students, faculty, administration and visitors.

GOALS

The ultimate goal of the Antelope Valley College Signage Standards is to establish a clear, unified signage system to convey wayfinding for vehicular and pedestrian circulation on campus. Each element of the program has been developed in careful coordination with all other elements, so that together they will function as a unified system.

It is essential, if this wayfinding and signage program is to work effectively, that all participants give special attention not only to consistency of use of each element, but to consistency and quality as each element is reproduced or installed.

Over time as the wayfinding and signage program is implemented, many special conditions will arise that are not fully covered in these standards and guidelines. It will be necessary when concerns or questions arise to consult with the Antelope Valley College Facilities Department. This will maintain the visual integrity of the program and allow for the controlled expansion of the standards.

ADAAG Unless noted otherwise, all signs, where applicable, shall comply with the latest ADAAG (American Disabilities Act Accessibility Guidelines) requirements in respect to type size, proportion, finish, contrast, tactile lettering and braille usage, and mounting heights.

THE AVC BRAND

The AVC brand identity standards include the logo, typography, colors, pattern, symbols and icons. Guidelines for application of the brand elements can be found in the AVC Brand Standards available from the AVC Marketing Department. The Brand Standards include proper and improper use of the identity as well as color specifications, typographic families, and logo lockup rules.

ANTELOPE VALLEY COLLEGE

COLORS & MATERIALS

PAINT COLORS

P1
White
89.5% LRV
MP32071
White Wonder

P2
Light Gray
78.8% LRV
MP02972
Slightly Blue

P3
Medium Gray
34% LRV
MP11292
Grey Siding

P4
Dark Gray
12.8% LRV
MP13915
Neptunian Grey

P5
Black
4.6% LRV
MP32156
Black Magic

P6
AVC Dark Blue
10.6% LRV
MP00375
Guantanamo Teal

P7
AVC Orange
34.9% LRV
MP00170
Moline Orange

P8
AVC Brown
18.1% LRV
MP06031
Smoked Hickory

P9
AVC Tan
66.5% LRV
MP02650
Garbo Silver

P10
AVC Maroon
11.8% LRV
MP03646
Burgundy Bash

P11
AVC Light Blue
41.7% LRV
MP07880
New Borns Eyes

MATERIALS

M1
Rammed
Earth
To match approved control sample

M2
Corten
Steel
To match approved control sample

M3
Acrylic
Not a visible finish, only to be used as a base material and painted

M4
Aluminum
Not a visible finish, only to be used as a base material and painted

FONTS & SYMBOLS

FONTS

Gotham Book

1234567890
ABCDEFGHIJKLMN
OPQRSTUVWXYZ
abcdefghijklmnop
qrstuvwxyz

Gotham Medium

1234567890
ABCDEFGHIJKLMN
OPQRSTUVWXYZ
abcdefghijklmnop
qrstuvwxyz

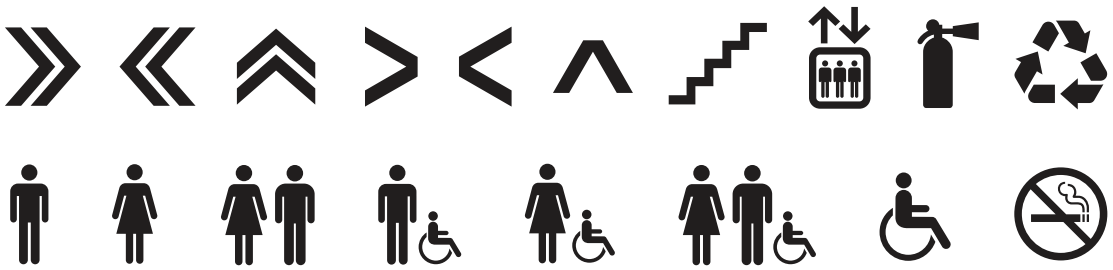
Gotham Book Italic

1234567890
ABCDEFGHIJKLMN
OPQRSTUVWXYZ
abcdefghijklmnop
qrstuvwxyz

Gotham Bold

1234567890
ABCDEFGHIJKLMN
OPQRSTUVWXYZ
abcdefghijklmnop
qrstuvwxyz

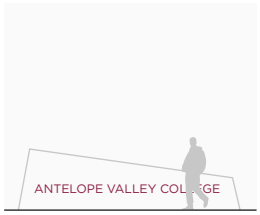
SYMBOLS



SUMMARY OF SIGNS

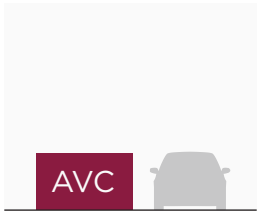
SITEWIDE SIGNAGE

MONUMENT



A1
Monument ID - Corner

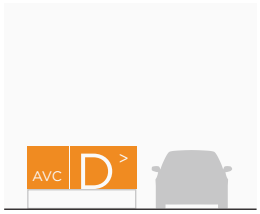
A2
Monument ID - Large



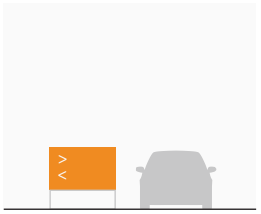
A3
Monument ID - Small

A4
Freestanding AVC Letters

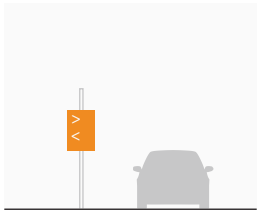
VEHICULAR



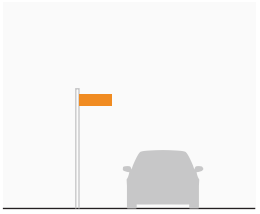
B1
Vehicle Direction - Large



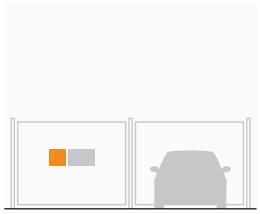
B2
Vehicle Direction - Medium



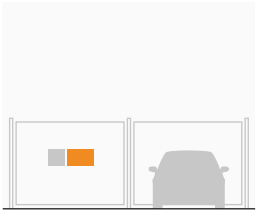
B3
Vehicle Direction - Pole



B4
Street ID

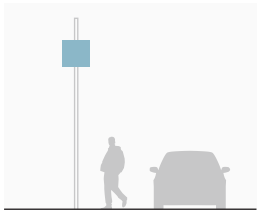


B5
Gate ID

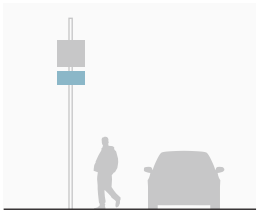


B6
Gate Regulation

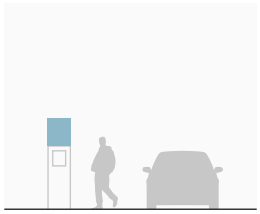
PARKING



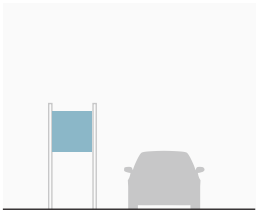
C1
Parking Lot ID



C2
Parking Permit Station ID

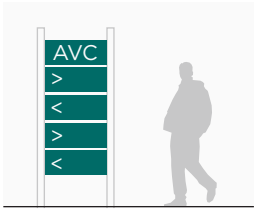


C3
Parking Permit Instruction



C4
Parking Rules

PEDESTRIAN



D1

Pedestrian Direction - Large

D2

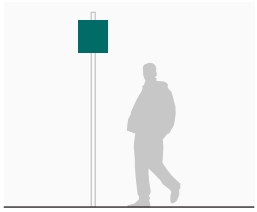
Pedestrian Direction - Medium

D3

Pedestrian Direction - Small

D4

Exterior Digital Campus Directory



D5

Campus Safety Rules

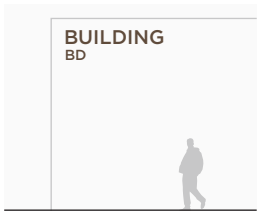
D6

Construction Fence

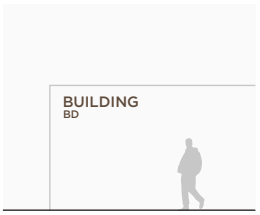
SUMMARY OF SIGNS

BUILDING SIGNAGE

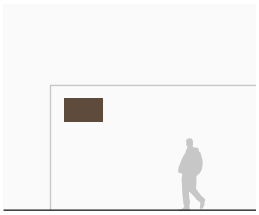
BUILDING EXTERIOR



F1
Building ID - Large



F2
Building ID - Small



F3
Building ID - BOH

F4
Building ID - Entrance Door

BUILDING INTERIOR

G1
Room ID - Number

G2
Room ID Add-on - Name (1-2 lines)

G3
Room ID Add-on - Name (3-4 lines)

G4
Room ID Add-on - Alert (1-2 lines)

G5
Room ID Add-on - Alert (3-4 lines)

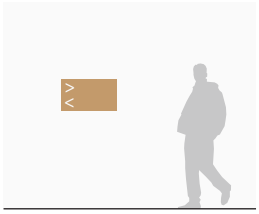
G6
Room ID Add-on - Meeting Room

G7
Room ID Add-on - Office Insert

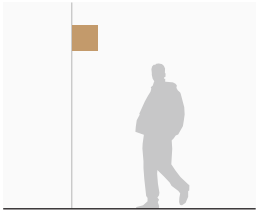
G8
Room ID Add-on - 8.5x11 Insert

G9
Room ID Add-on - Restroom ADA

G10
Restroom ID - Title 24

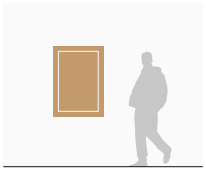


G11
Interior Wall Direction

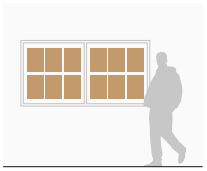


G12
Blade ID - Icon

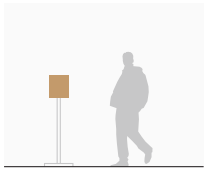
BUILDING SAFETY



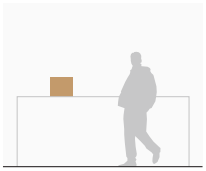
G13
Interior Digital Building Directory



G14
Posting Cabinet



G15
Temporary Interior Pole



G16
Temporary Interior Desktop

H1
Campus Evac Info

H2
Interior Regulation

H3
Symbol Plaque

H4
Exit Route

H5
Elevator Evac Map

H6
Stairwell Evac Map

H7
Stairwell ID - NFPA

H8
Stairwell Exit - ADA

H9
NFPA/OSHA ID

SIGN LEGEND

ALL SIGN TYPES

NOTES

- Electrical Required
- Data Required

MONUMENT

- A1 Monument ID - Corner
- A2 Monument ID - Large
- A3 Monument ID - Small
- A4 Freestanding AVC Letters

VEHICULAR

- B1 Vehicle Direction - Large
- B2 Vehicle Direction - Medium
- B3 Vehicle Direction - Pole
- B4 Street ID
- B5 Gate ID
- B6 Gate Regulation

PARKING

- C1 Parking Lot ID
- C2 Parking Permit Station ID
- C3 Parking Permit Instruction
- C4 Parking Rules

PEDESTRIAN

- D1 Pedestrian Direction - Large
- D2 Pedestrian Direction - Medium
- D3 Pedestrian Direction - Small
- D4 Exterior Digital Campus Directory
- D5 Campus Safety Rules
- D6 Construction Fence

BUILDING EXTERIOR

- F1 Building ID - Large
- F2 Building ID - Small
- F3 Building ID - BOH
- F4 Building ID - Entrance Door

BUILDING INTERIOR

- G1 Room ID - Number
- G2 Room ID Add-on - Name (1-2 lines)
- G3 Room ID Add-on - Name (3-4 lines)
- G4 Room ID Add-on - Alert (1-2 lines)
- G5 Room ID Add-on - Alert (3-4 lines)
- G6 Room ID Add-on - Meeting Room
- G7 Room ID Add-on - Office Insert
- G8 Room ID Add-on - 8.5x11 Insert
- G9 Room ID Add-on - Restroom ADA
- G10 Restroom ID - Title 24
- G11 Interior Wall Direction
- G12 Blade ID - Icon
- G13 Interior Digital Building Directory
- G14 Posting Cabinet
- G15 Temporary Interior Pole
- G16 Temporary Interior Desktop

BUILDING SAFETY

- H1 Campus Evac Info
- H2 Interior Regulation
- H3 Symbol Plaque
- H4 Exit Route
- H5 Elevator Evac Map
- H6 Stairwell Evac Map
- H7 Stairwell ID - NFPA
- H8 Stairwell ID - ADA
- H9 NFPA/OSHA ID

SIGN LOCATION PLAN

MAJOR SIGNAGE

MONUMENT

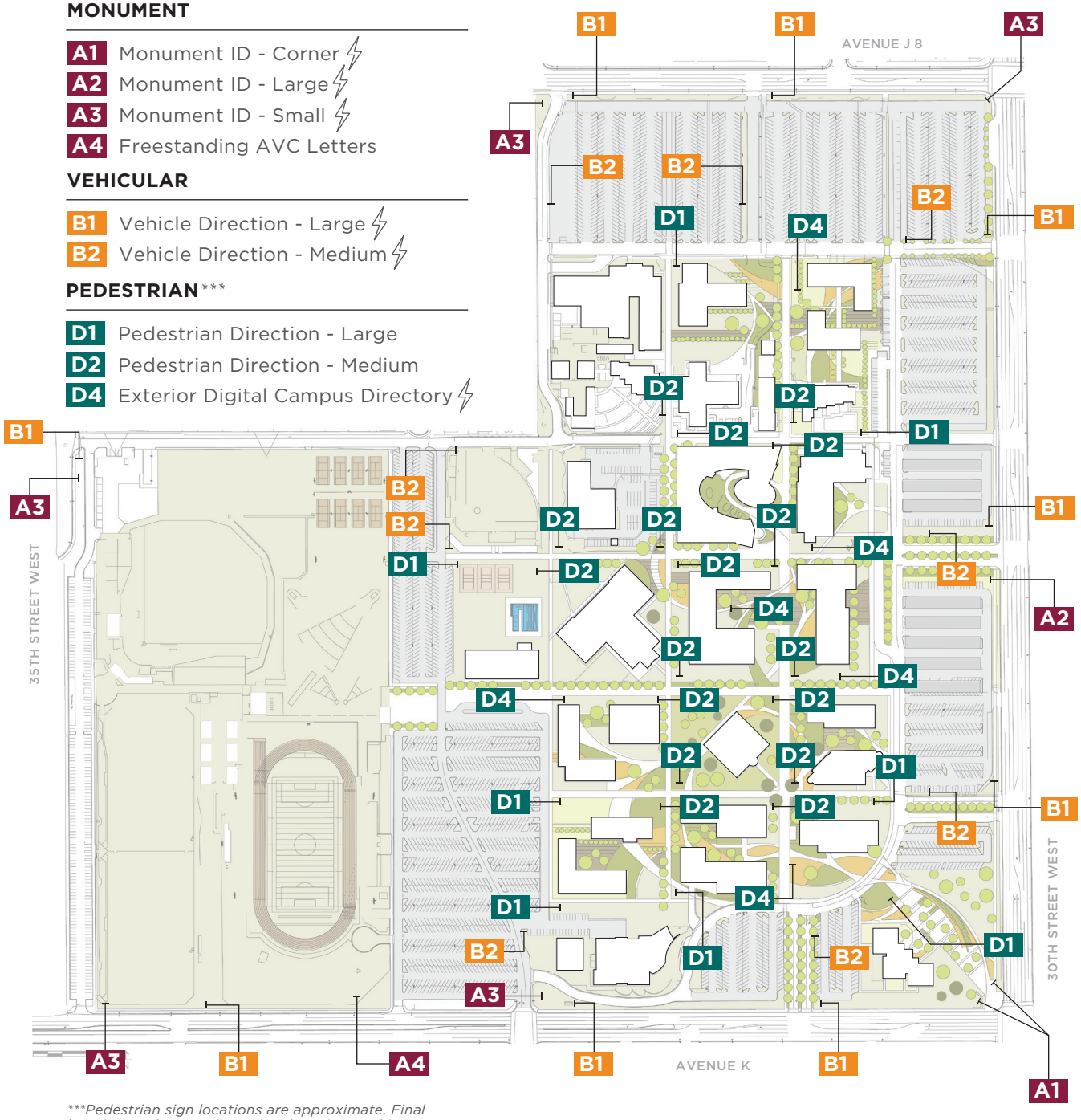
- A1 Monument ID - Corner
- A2 Monument ID - Large
- A3 Monument ID - Small
- A4 Freestanding AVC Letters

VEHICULAR

- B1 Vehicle Direction - Large
- B2 Vehicle Direction - Medium

PEDESTRIAN***

- D1 Pedestrian Direction - Large
- D2 Pedestrian Direction - Medium
- D4 Exterior Digital Campus Directory



****Pedestrian sign locations are approximate. Final locations to be coordinated with project architects.*

SITEWIDE SIGNAGE

DETAIL DRAWINGS

Creating a consistent, cohesive, informative and distinctive signage system not only makes wayfinding easier but also enhances the visual unity of the campus by distinguishing the College from the surrounding community. The AVC Facilities Department is responsible for developing and ensuring adherence to these standards.

GENERAL SPECIFICATIONS

Typeface & Symbols The typeface shall conform with the project typeface specified in the "Font & Symbols" section (page 5). Alternate typefaces will not be accepted. Letter and word spacing shall be optical but in conformance with the examples shown on the drawings. All symbols used should conform with the look and feel of the symbols specified in this section as well. These are defined by solid shapes, with no outlines, simplified international-style human forms, and chevron shaped arrows with no down stems.

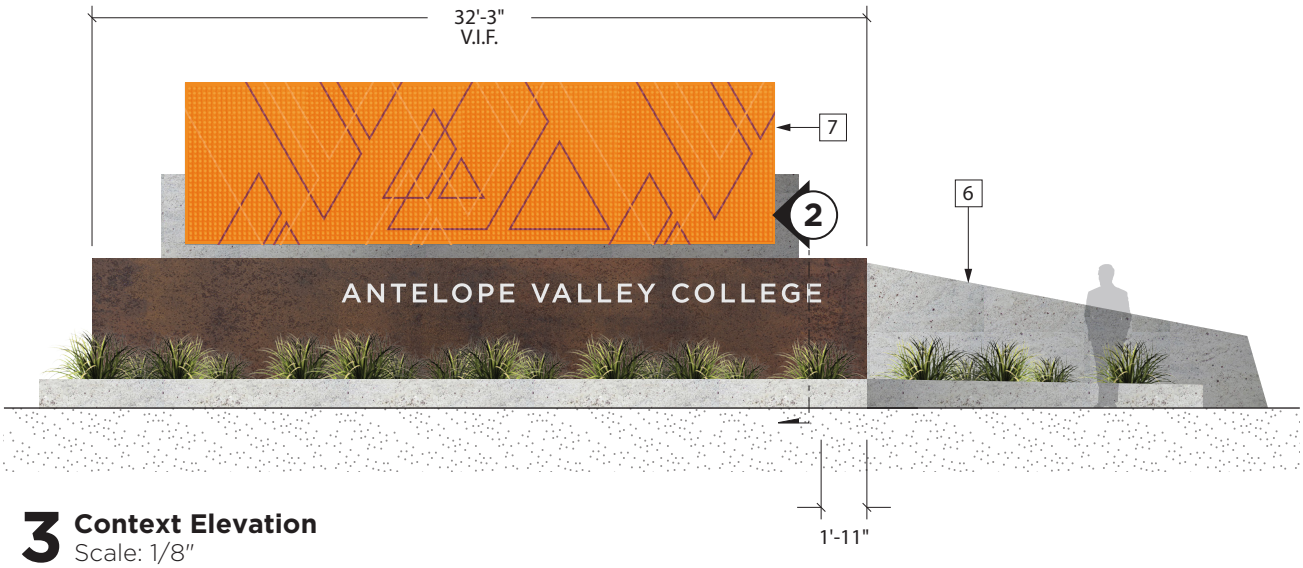
Materials Selection of the rammed earth and corten steel that defines the style of the sitewide signage system should be carefully considered. All materials used, and in particular these two, must be submitted to The AVC Facilities Department for comparison against the control sample, and given formal approval prior to fabrication and installation. An aluminum faux-finish corten steel may be used provided that it closely matches the control sample. All rammed earth will match the color, striations, texture and fabrication processes used in the control sample.

Durability & Climate All materials used shall be of the highest quality to account for the harsh environmental conditions in Antelope Valley. Careful consideration for extreme sun, temperature, and wind is needed when selecting materials, material vendors, and fabrication processes.

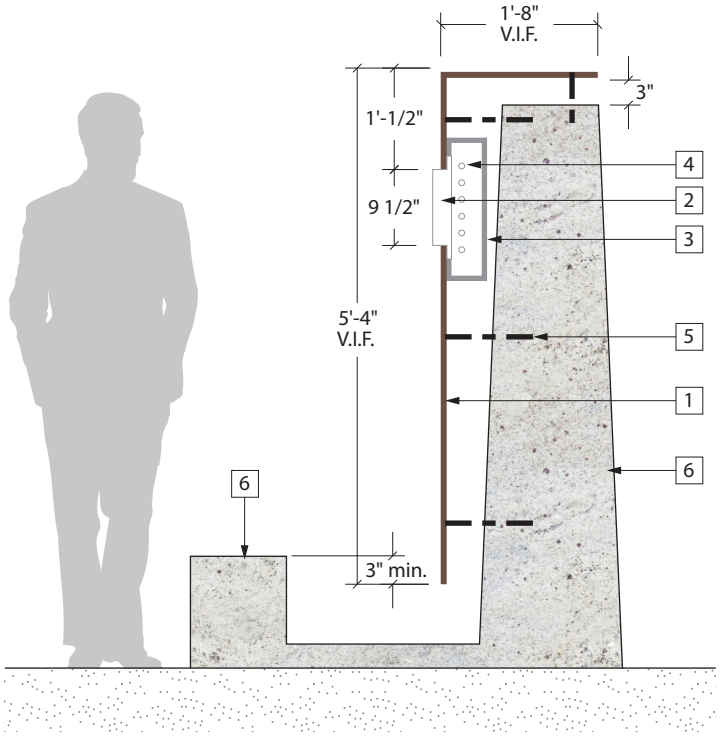
Disclaimer The signage standards enclosed are not fabrication drawings. The Sign Contractor is expected to provide all details necessary to effectively explain, show, and specify the fabrication process. The Sign Contractor is responsible for performing all field measurements prior to submitting shop drawings/layouts/fabrication. Conditions that may prevent the location of signage as specified shall be brought to the General Contractor and/or Owner's representative's attention prior to installation. The Sign Contractor is responsible for any engineering, and meeting any and all applicable local, State, and Federal code requirements when fabricating and installing signs.

A1

MONUMENT ID CORNER



3 Context Elevation
Scale: 1/8"



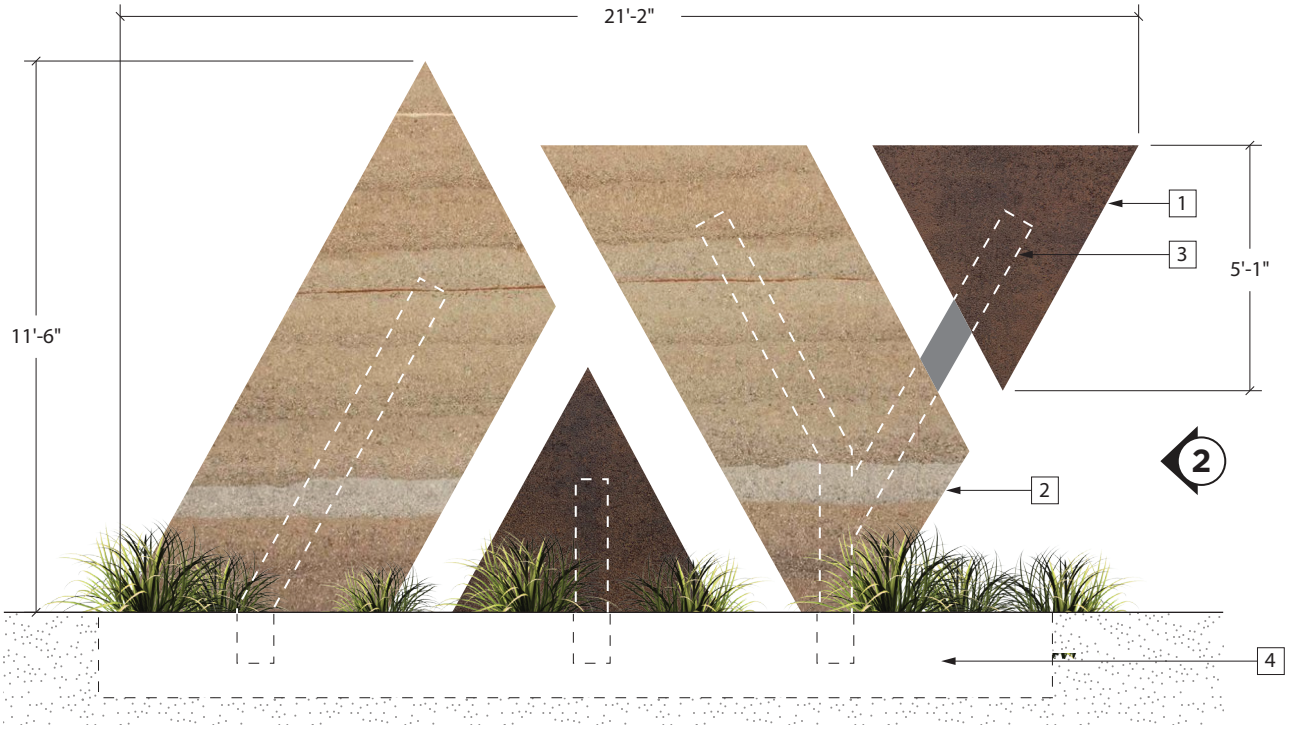
2 Typical Section
Scale: 1/2"

1. 3/4" corten steel or aluminum with a corten faux finish, weld on back only with minimal gaps to make a tight joint
2. White push-through face-lit acrylic letters protruding 1" from corten face; Gotham Medium
3. Concealed lightbox
4. LED lighting element
5. Stud mounted to wall; minumum visibility mounting with no visible standoffs; silicone adhesive to match wall color
6. Exising concrete wall; all dimensions to be verified before fabrication to ensure alignments
7. Existing digital display is set back behind the sign wall

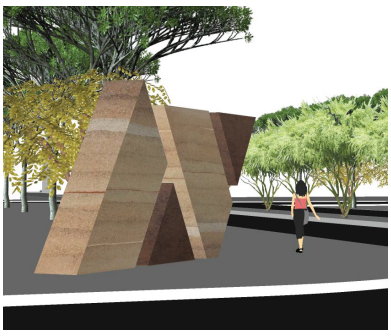
1 Notes
NTS

A2

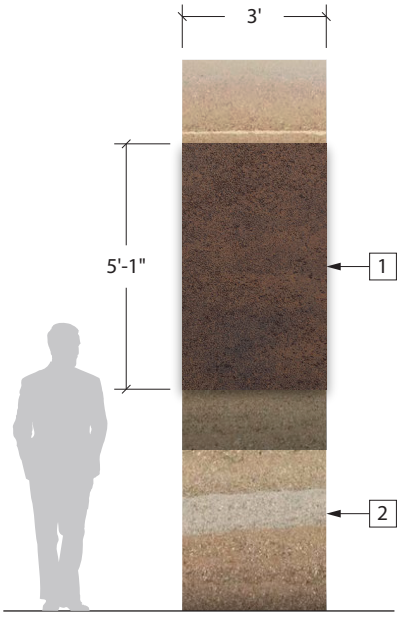
MONUMENT ID - LARGE



4 Front View
Scale: 1/4"



3 Rendering
NTS



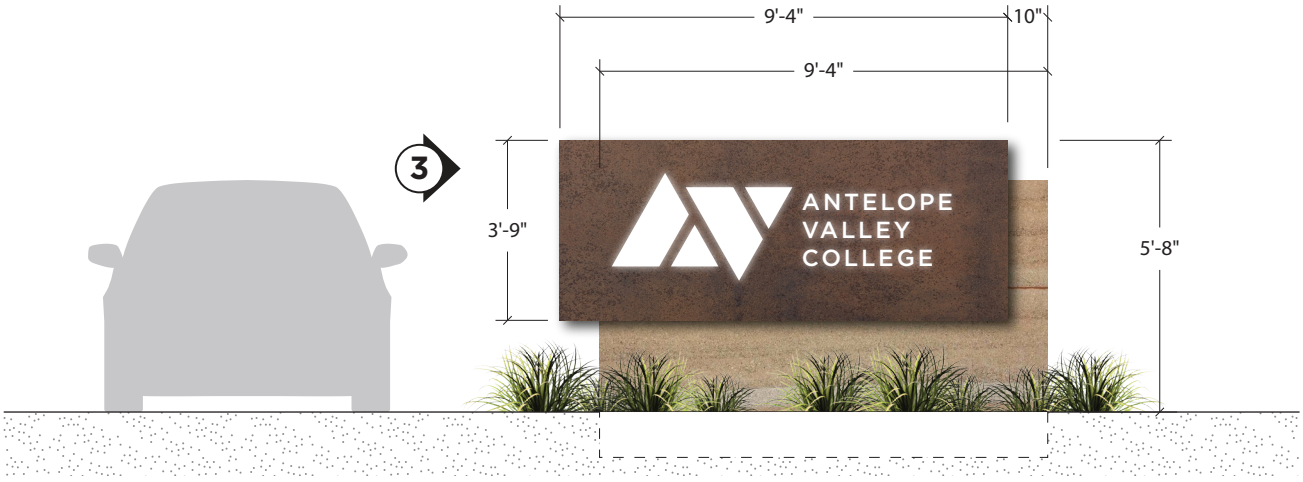
2 Side View
Scale: 1/4"

1. Fabricated cabinet clad in 1/4" corten steel or aluminum with a corten faux finish; no visible fasteners
2. Fabricated forms of 2" pre-cast rammed earth panels; no visible fasteners
3. Internal structure as required by engineering
4. Footing to be engineered and installed by sign contractor

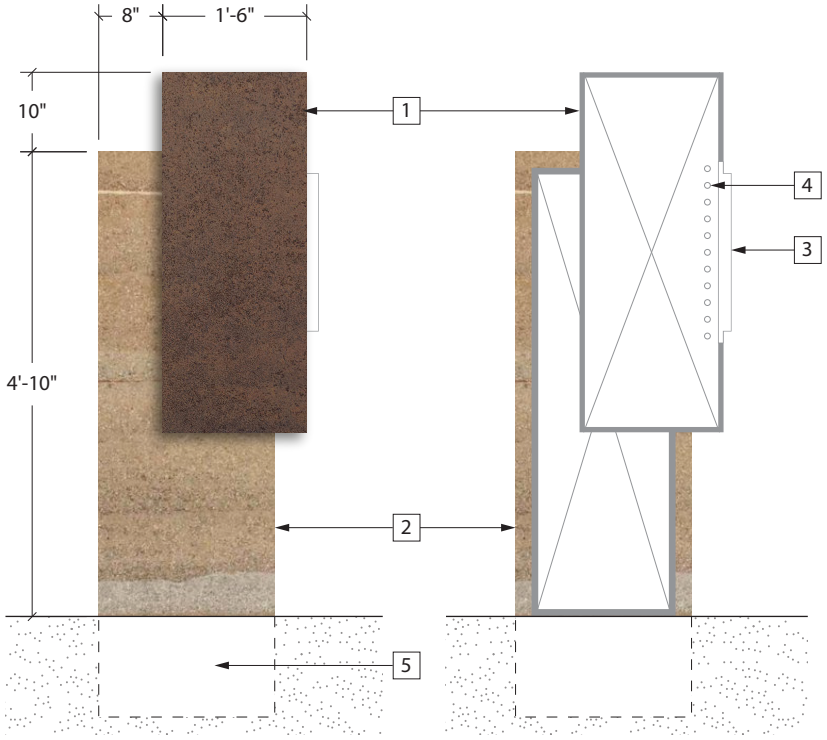
1 Notes
NTS

A3

MONUMENT ID - SMALL



4 Context Elevation
Scale: 1/4"



3 Detail Elevation
Scale: 1/2"

2 Typical Section
Scale: 1/2"

1 Notes
NTS

1. Fabricated cabinet clad in 1/4" corten steel or aluminum with a corten faux finish; no visible fasteners
2. Fabricated forms of 2" pre-cast rammed earth panels; no visible fasteners
3. White push-through face-lit acrylic logo and letters protruding 1" from corten face
4. LED lighting element
5. Footing to be engineered and installed by sign contractor

A4

FREESTANDING AVC LETTERS

3 Existing Condition
NTS

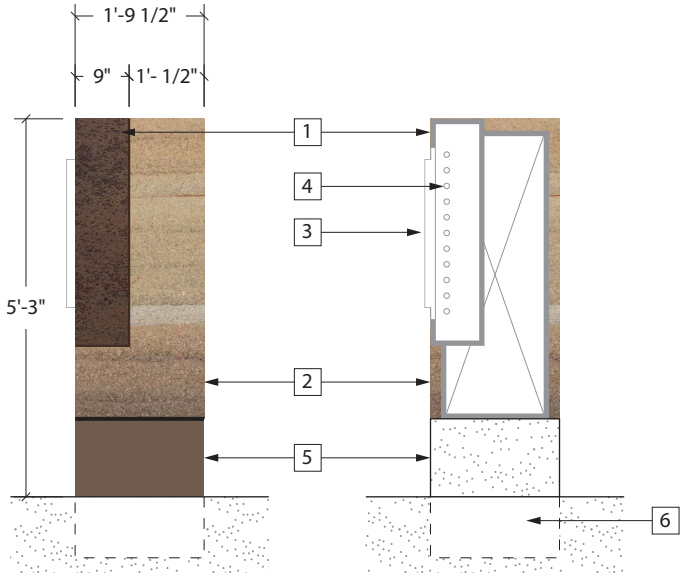
2 New Location
NTS

1. Existing fabricated AVC letters
2. New location of AVC letters; exact location in planter to be coordinated with landscape designer; angles/facing of letters and setback from street to be studied for visibility and confirmed with AVC prior to installation; footing to be engineered and installed by sign contractor

1 Notes
NTS

B1

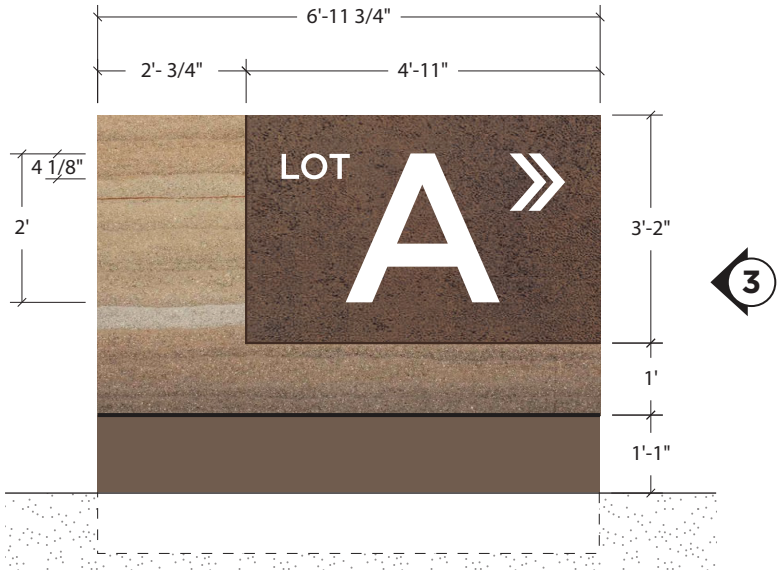
VEHICLE DIRECTION - LARGE



3 Side View
Scale: 3/8"

4 Section
Scale: 3/8"

5 Context Elevation
Scale: 1/8"



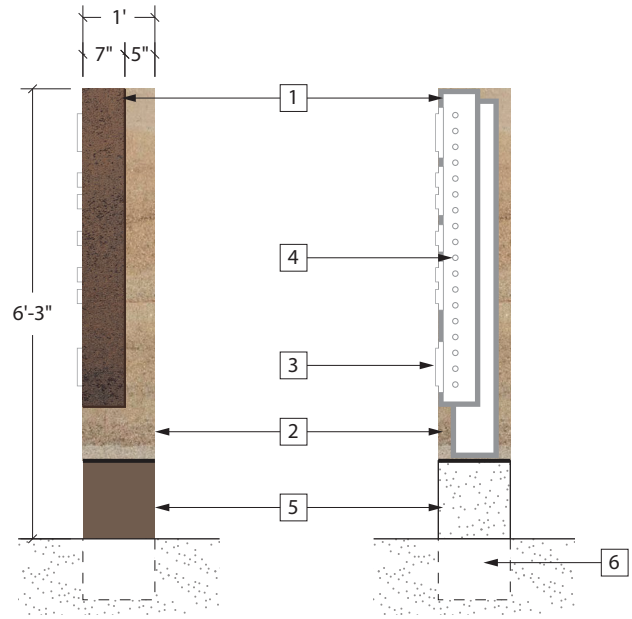
2 Front View
Scale: 3/8"

1. Fabricated cabinet clad in 1/4" corten steel or aluminum with a corten faux finish; no visible fasteners
2. Fabricated forms of 2" pre-cast rammed earth panels; no visible fasteners
3. White push-through face-lit acrylic letters and symbols protruding 1" from corten face; all fonts Gotham Medium
4. LED lighting element
5. Existing foundation; painted brown to match **P8**
6. Existing footing

1 Notes
NTS

B2

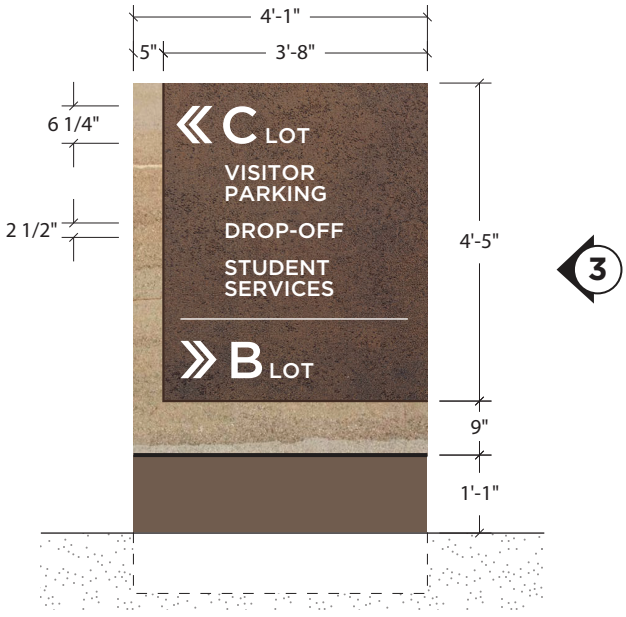
VEHICLE DIRECTION - MEDIUM



3 Side View
Scale: 3/8"

4 Section
Scale: 3/8"

5 Context Elevation
Scale: 1/8"



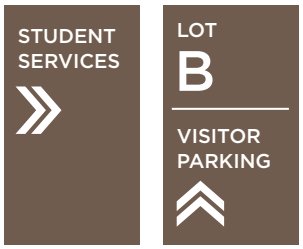
2 Front View
Scale: 3/8"

1. Fabricated cabinet clad in 1/4" corten steel or aluminum with a corten faux finish; no visible fasteners
2. Fabricated forms of 2" pre-cast rammed earth panels; no visible fasteners
3. White push-through face-lit acrylic letters and symbols protruding 1/2" from corten face; all fonts Gotham Medium
4. LED lighting element
5. Existing foundation; painted brown to match **P8**
6. Footing to be engineered and installed by sign contractor

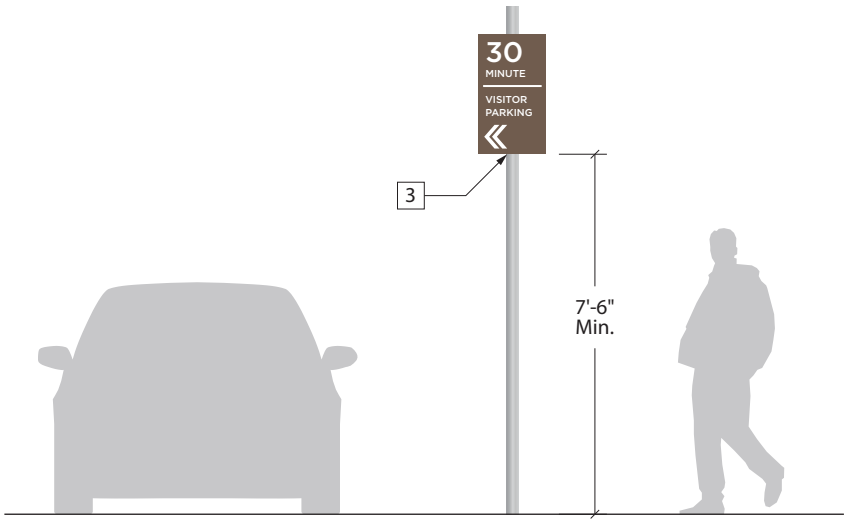
1 Notes
NTS

B3

VEHICLE DIRECTION - POLE



3 Alternate Messages
Scale: 1/2"



4 Context Elevation
Scale: 1/4"

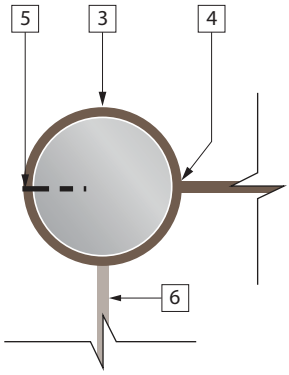
2 Front View
Scale: 1"

1. 1/8" thick aluminum panel painted brown to match **P8**;
2. Letters screened or printed white to match **P1**; all fonts Gotham Medium
3. Secured to pole with concealed metal fasteners

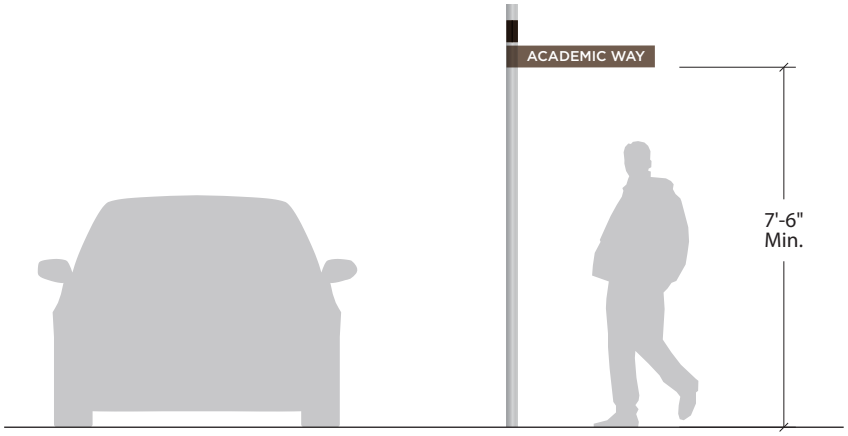
1 Notes
NTS

B4

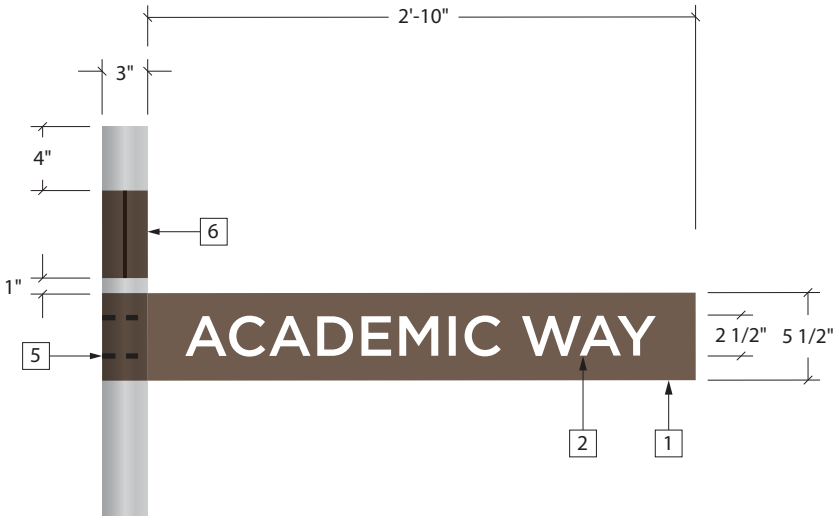
STREET ID



3 Detail Section
Scale: 3″



4 Context Elevation
Scale: 1/4″



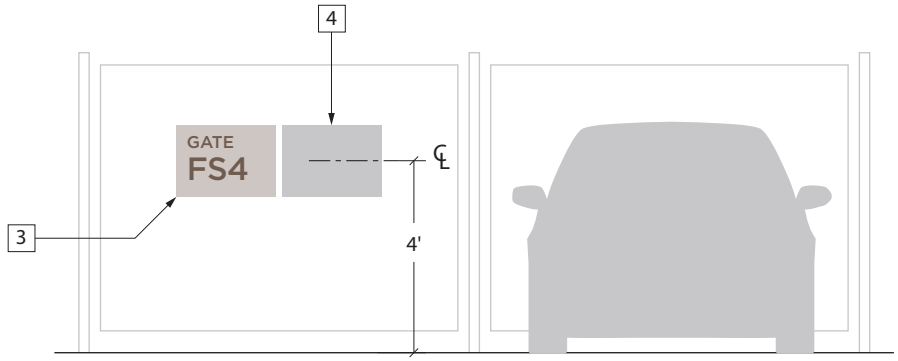
2 Front View
Scale: 1″

1. 1/4" thick aluminum panel; painted brown to match **P8**
2. Letters screened or printed white to match **P1**; Gotham Medium
3. Fabricated pole sheath welded to sign panel; painted brown to match **P8**
4. All welds ground smooth with no visible seams
5. Secured with screws; screwheads painted brown to match **P8**
6. Perpendicular sign panel

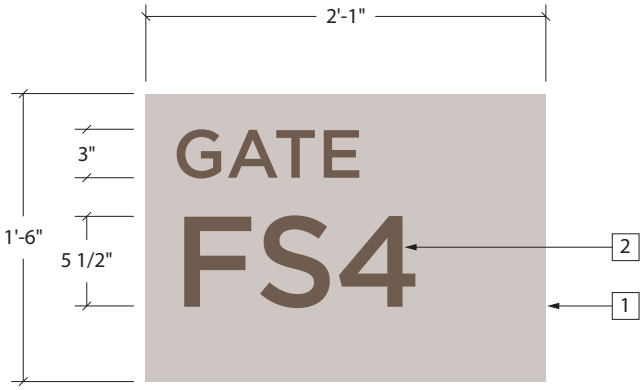
1 Notes
NTS

B5

GATE ID



3 Context Elevation
Scale: 1/4"



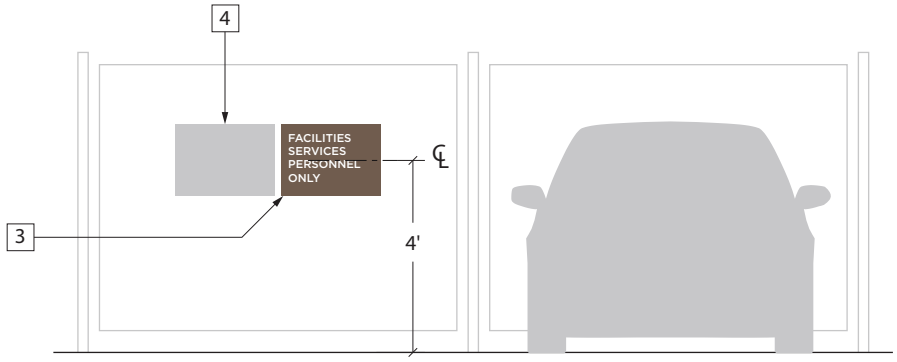
2 Front View
Scale: 3/8"

1. 1/8" thick aluminum panel painted tan to match **P9**;
2. Letters screened or printed brown to match **P8**; Gotham Medium
3. Secured to gate with concealed metal fasteners
4. Location of sign type B6

1 Notes
NTS

B6

GATE REGULATION

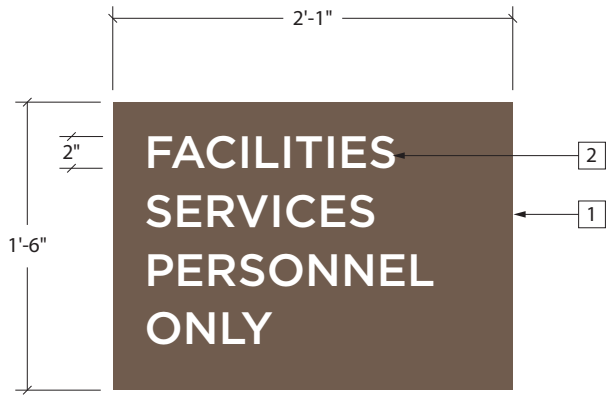


4 Context Elevation
Scale: 1/4"

WAREHOUSE PERSONNEL ONLY

RECEIVING ENTRANCE

3 Alternate Messages
Scale: 1/2"



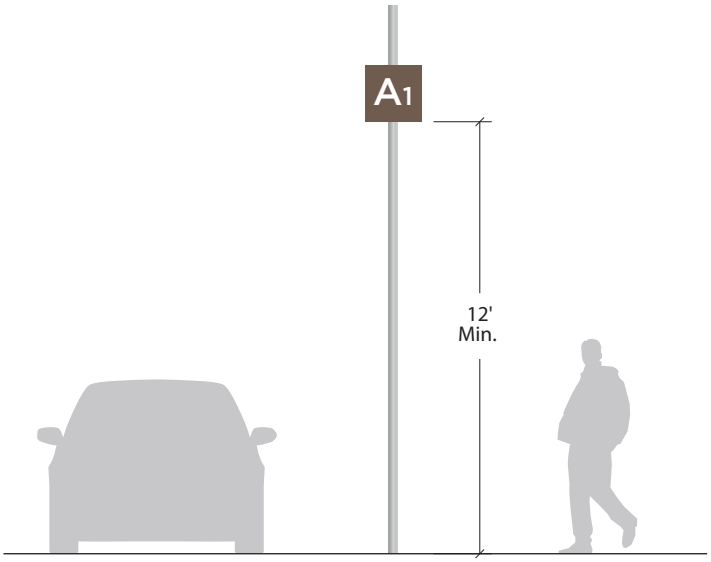
2 Front View
Scale: 1"

1. 1/8" thick aluminum panel painted brown to match **P8**;
2. Letters screened or printed white to match **P1**; Gotham Medium
3. Secured to gate with concealed metal fasteners
4. Location of sign type B5

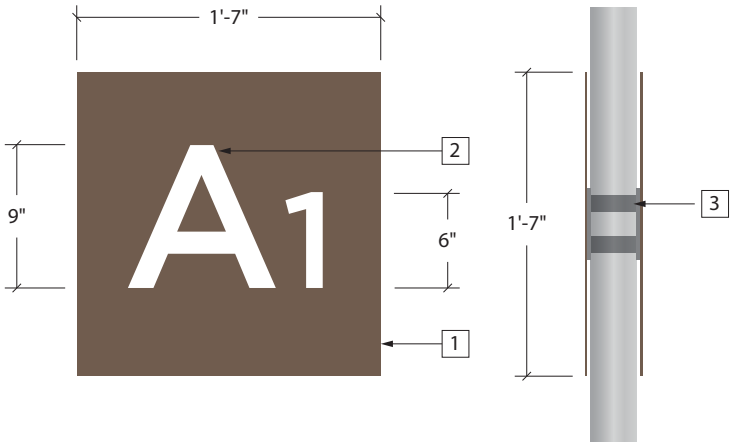
1 Notes
NTS

C1

PARKING LOT ID



4 Context Elevation
Scale: 3/16"



3 Front View
Scale: 1"

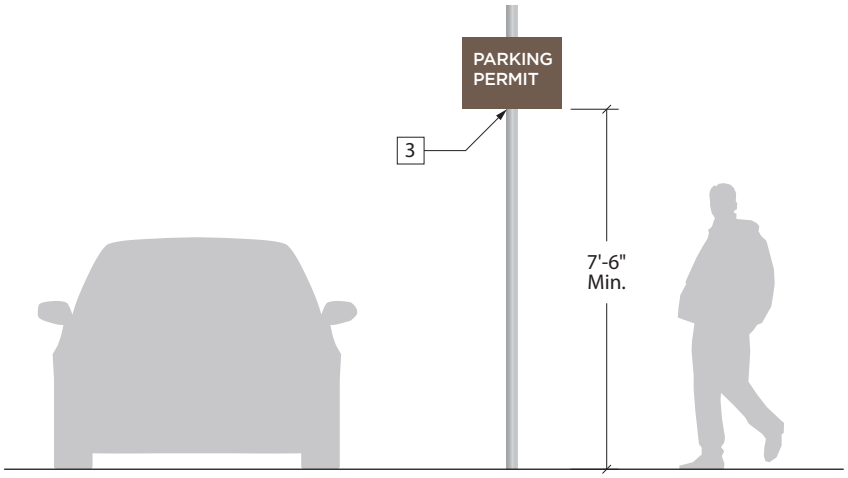
2 Side View
Scale: 1"

1 Notes
NTS

1. 1/8" thick aluminum panel painted brown to match **P8**;
2. Letters screened or printed white to match **P1**; Gotham Medium
3. Secured to pole with concealed metal fasteners

C2

PARKING PERMIT STATION ID

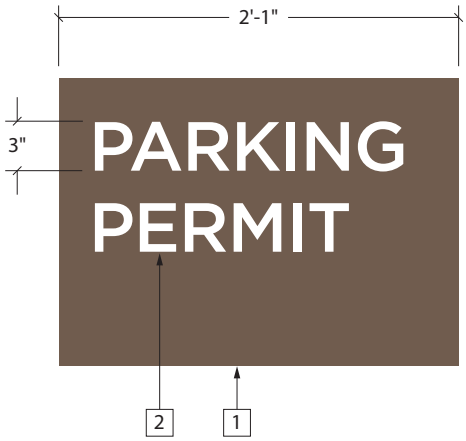


4 Context Elevation
Scale: 1/4"

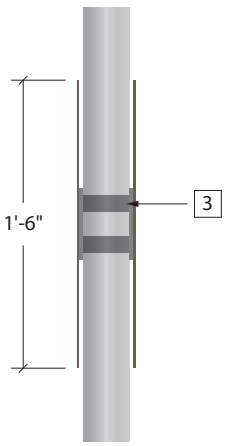
1 1/8" thick aluminum panel painted brown to match **P8**;

2 Letters screened or printed white to match **P1**; Gotham Medium

3 Secured to pole with concealed metal fasteners



3 Front View
Scale: 1"

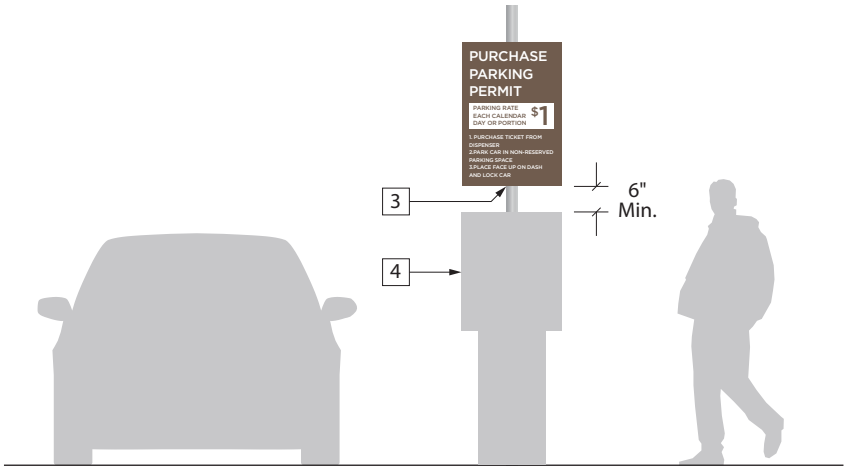


2 Side View
Scale: 1"

1 Notes
NTS

C3

PARKING PERMIT INSTRUCTION



3 Context Elevation
Scale: 1/4″

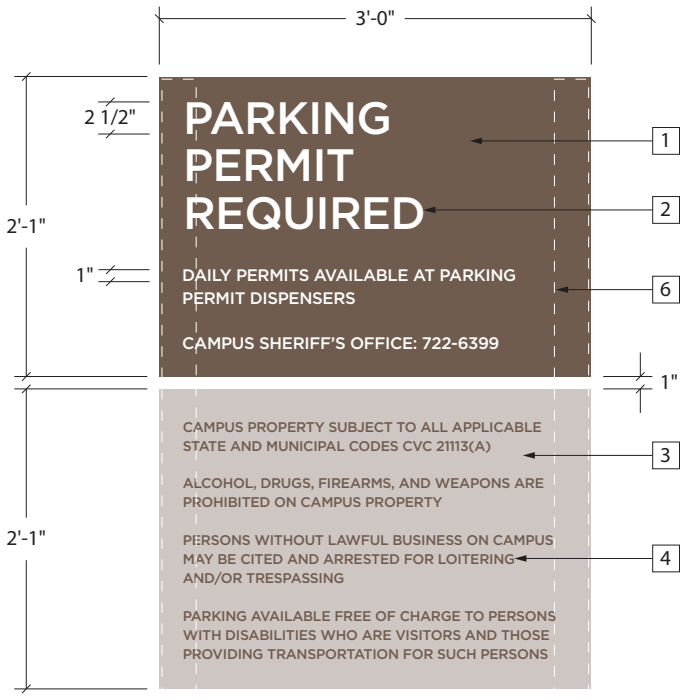
2 Front View
Scale: 1″

1 Notes
NTS

1. 1/8" thick aluminum panel painted brown to match **P8**;
2. Letters screened or printed white to match **P1**; all fonts Gotham Medium
3. Secured to pole with concealed metal fasteners
4. Existing permit pay station

C4
PARKING RULES

3 Context Elevation
Scale: 1/4"



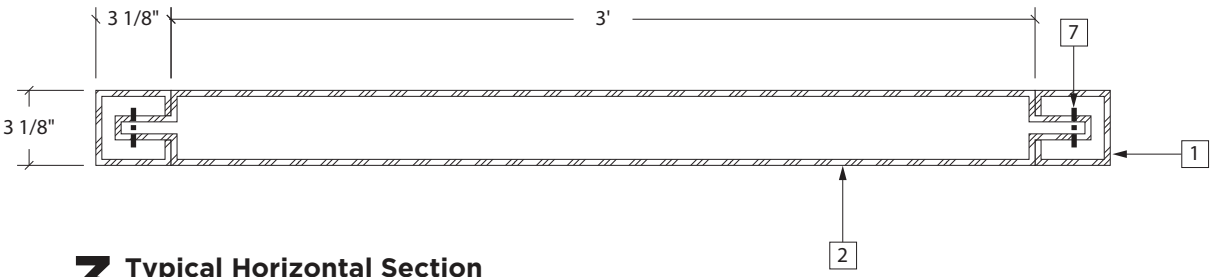
2 Front View
Scale: 3/4"

1. 1/8" thick aluminum panel painted brown to match **P8**;
2. Letters screened or printed white to match **P1**; all fonts Gotham Medium
3. 1/8" thick aluminum panel painted tan to match **P9**;
4. Letters screened or printed brown to match **P8**; Gotham Medium
5. Secured to poles with concealed metal fasteners
6. Location of poles

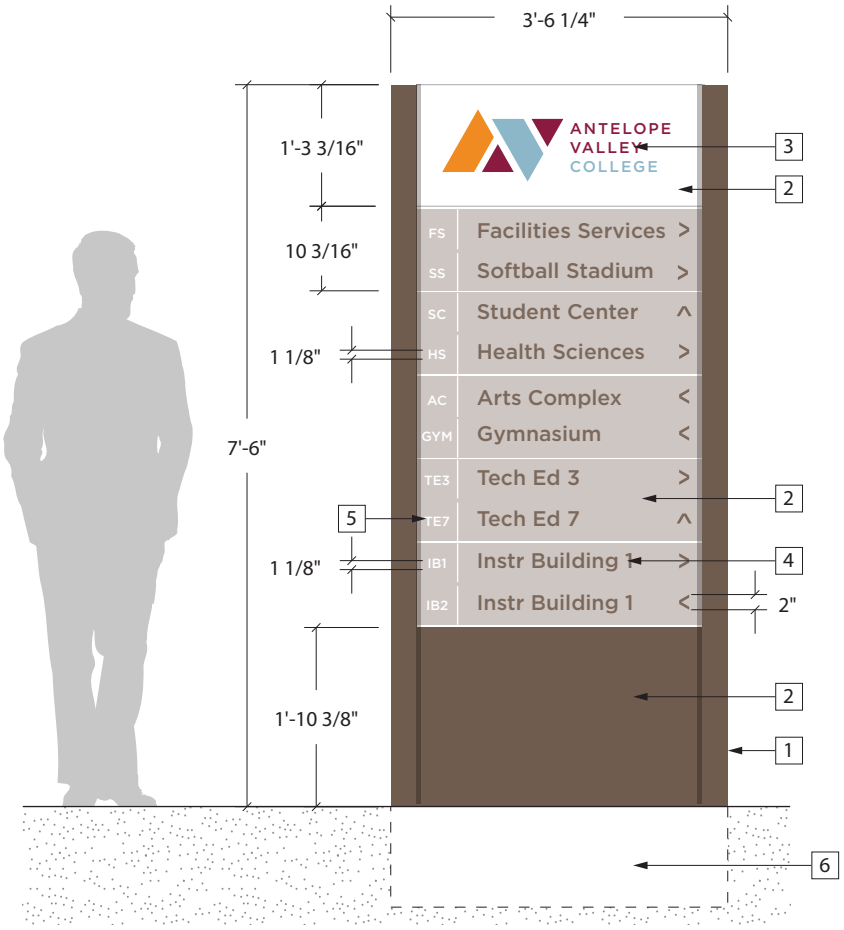
1 Notes
NTS

D1

PEDESTRIAN DIRECTION - LARGE



3 **Typical Horizontal Section**
Scale: 1 1/2"



2 **Front View**
Scale: 1/2"

1 Existing 3 1/8" square aluminum c-channel poles; painted brown to match **P8**

2 Slide-in aluminum panel inserts painted per use:
logo panel to match **P1**,
message panel to match **P9**,
base panel to match **P8**

3 Logo painted to match:
maroon - **P10**, orange - **P7**,
light blue - **P11**

4 2" building names and arrows screened or printed brown to match **P8**; Gotham Medium

5 1 1/8" building codes and vertical rules screened or printed white to match **P1**; Gotham Medium

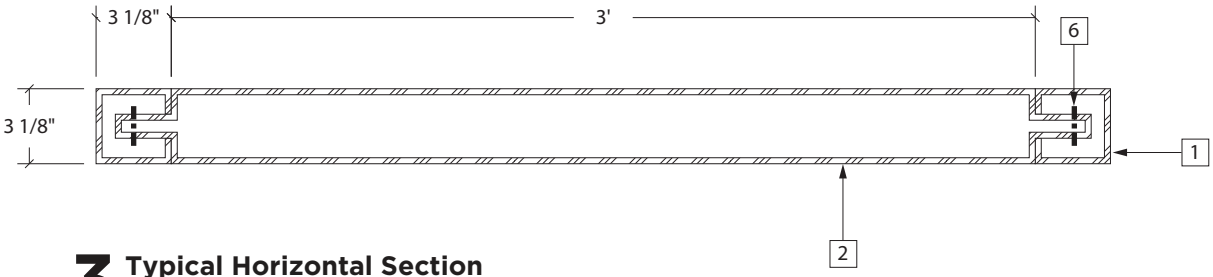
6 Footing to be engineered and installed by sign contractor

7 Secured internally with concealed fasteners

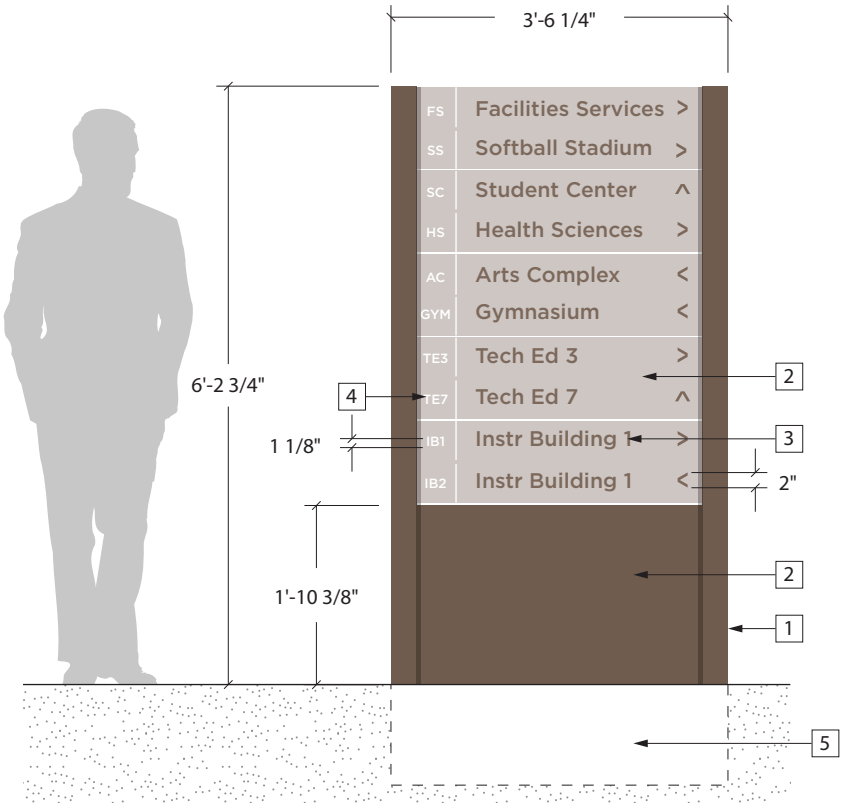
1 **Notes**
NTS

D2

PEDESTRIAN DIRECTION - MEDIUM



3 **Typical Horizontal Section**
Scale: 1 1/2"



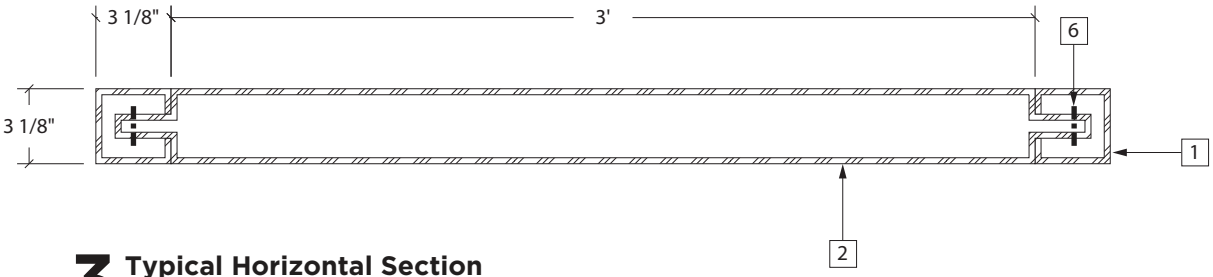
2 **Front View**
Scale: 1/2"

1. 3 1/8" square aluminum c-channel poles; painted brown to match **P8**
2. Slide-in aluminum panel inserts painted per use: message panel to match **P9**, base panel to match **P8**
3. 2" building names and arrows screened or printed brown to match **P8**; Gotham Medium
4. 1 1/8" building codes and vertical rules screened or printed white to match **P1**; Gotham Medium
5. Footing to be engineered and installed by sign contractor
6. Secured internally with concealed fasteners

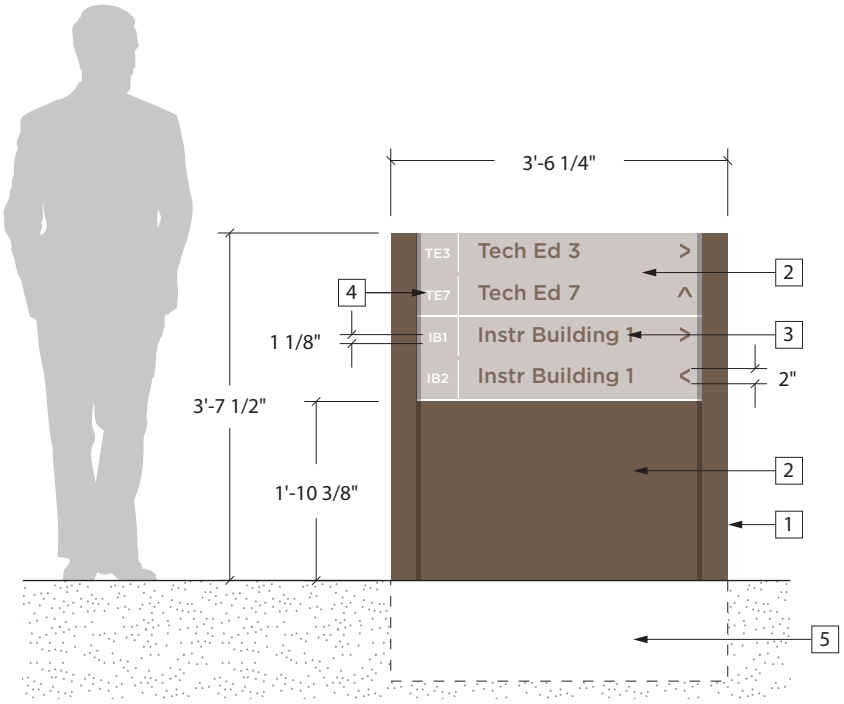
1 **Notes**
NTS

D3

PEDESTRIAN DIRECTION - SMALL



3 Typical Horizontal Section
Scale: 1 1/2"



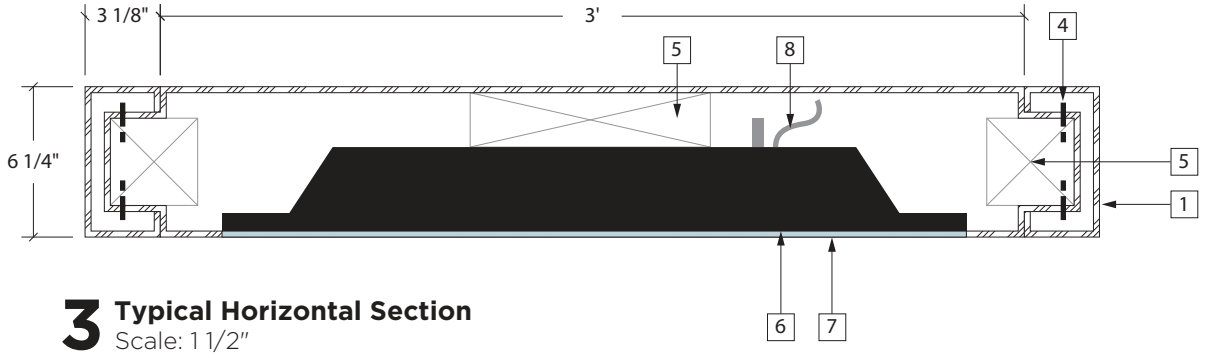
2 Front View
Scale: 1/2"

1. 3 1/8" square aluminum c-channel poles; painted brown to match **P8**
2. Slide-in aluminum panel inserts painted per use: message panel to match **P9**, base panel to match **P8**
3. 2" building names and arrows screened or printed brown to match **P8**; Gotham Medium
4. 1 1/8" building codes and vertical rules screened or printed white to match **P1**; Gotham Medium
5. Footing to be engineered and installed by sign contractor
6. Secured internally with concealed fasteners

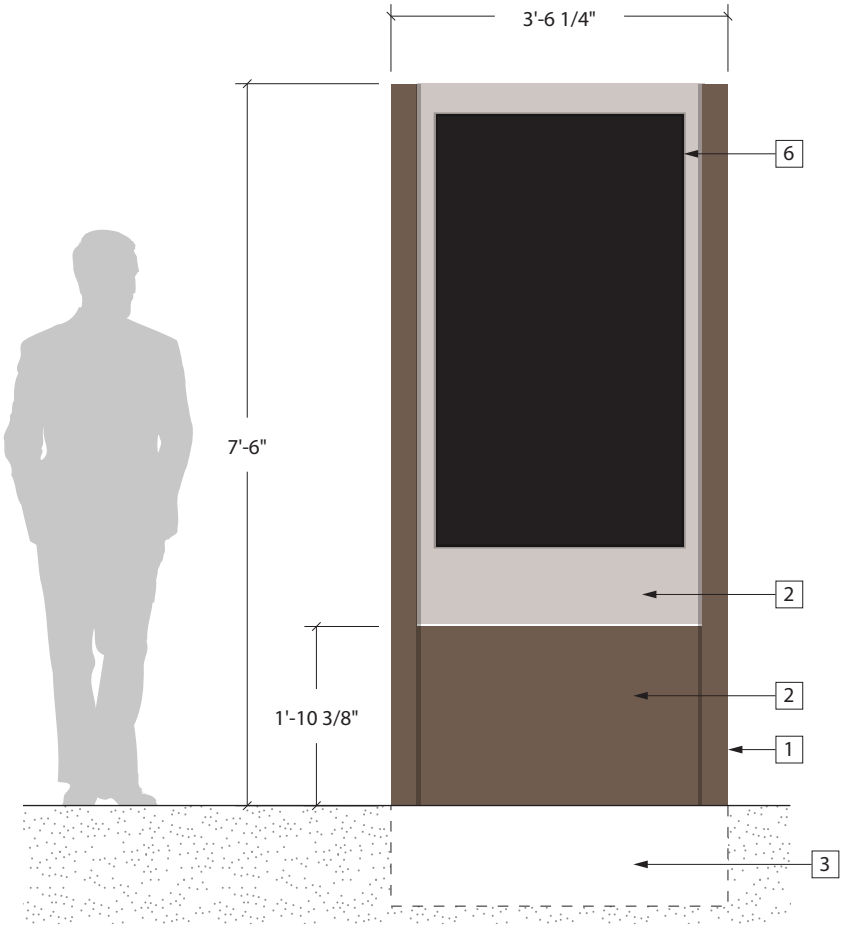
1 Notes
NTS

D4

EXTERIOR DIGITAL CAMPUS DIRECTORY



3 **Typical Horizontal Section**
Scale: 1 1/2"



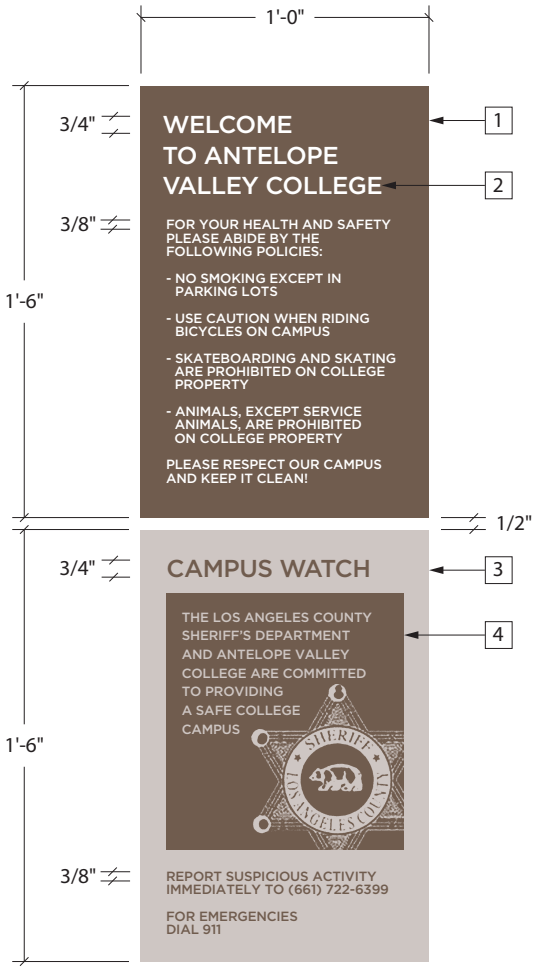
2 **Front View**
Scale: 1/2"

1. Aluminum c-channel poles; painted brown to match **P8**
2. Panels painted per use: digital panel tan to match **P9**, base panel brown to match **P8**
3. Footing to be engineered and installed by sign contractor
4. Secured internally with concealed fasteners
5. Internal structure and mounting as required
6. 60" flatscreen digital display; graded for outdoor use
7. Watertight protective lens
8. Data and electrical as required; data hardware to meet the requirements of the Rise Vision content management platform (risevision.com)

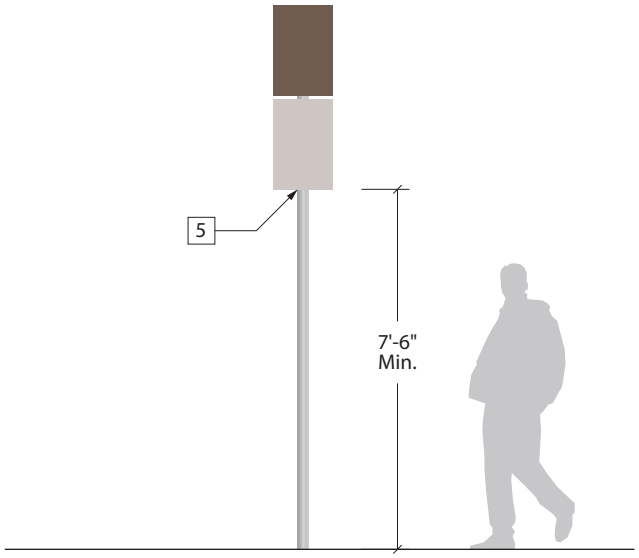
1 **Notes**
NTS

D5

CAMPUS SAFETY RULES



2 Side View
Scale: 3"

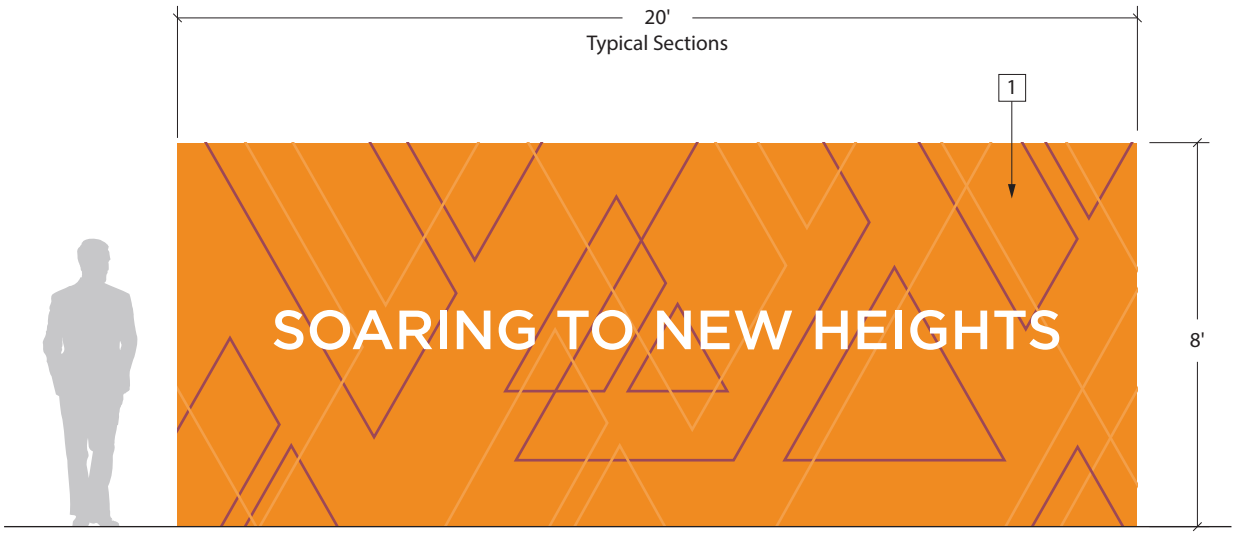


3 Context Elevation
Scale: 1/4"

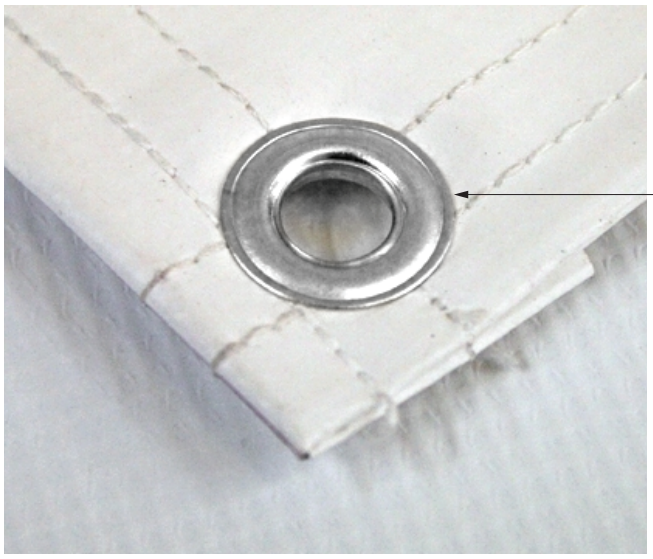
1	1/8" thick aluminum panel painted brown to match **P8**;
2	Letters screened or printed white to match **P1**; all fonts Gotham Medium
3	1/8" thick aluminum panel painted tan to match **P9**;
4	Letters and graphics screened or printed brown to match **P8**; all fonts Gotham Medium
5	Secured to pole with concealed metal fasteners

1 Notes
NTS

D6
CONSTRUCTION FENCE



3 Front View
Scale: 1/4"



2 Mounting Reference
NTS

1 Notes
NTS

1. Printed heavy duty exterior grade vinyl with high performance UV overlayment; graphics are shown for example only, final graphics TBD
2. Sewn edges; mounted with grommets at a minimum of 9" and a maximum of 2' intervals; zip-tied to construction fence or plywood barricade

BUILDING SIGNAGE

DETAIL DRAWINGS

The Building signage system provides people with the necessary information to assist them in finding their way to their destinations around campus. It aids with navigating along chosen routes to and through buildings. The information provided may be verbal (typographic) or nonverbal (pictographic). The AVC Facilities Department is responsible for developing and ensuring adherence to these standards.

GENERAL SPECIFICATIONS

Typeface & Symbols The typeface shall conform with the project typeface specified in the "Font & Symbols" section (page 5). Alternate typefaces will not be accepted. Letter and word spacing shall be optical but in conformance with the examples shown on the drawings. All symbols used should conform with the look and feel of the symbols specified in this section as well. These are defined by solid shapes, with no outlines, simplified international-style human forms, and chevron shaped arrows with no down stems.

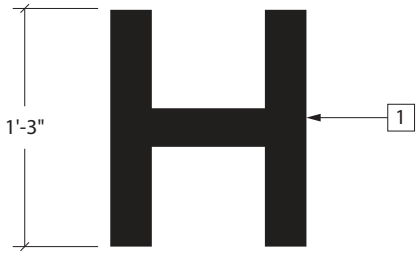
ADAAG Unless noted otherwise, all signs, where applicable, shall comply with the latest ADAAG (American Disabilities Act Accessibility Guidelines) requirements in respect to type size, proportion, finish, contrast, tactile lettering and braille usage, and mounting heights.

Alignment & Durability The interior signage program is designed to be added on as needs evolve. Careful consideration should be taken for precise and parallel alignments during installation. All materials used should be of the highest quality to account for heightened amount of wear and tear they will experience as part of an active college campus. Careful consideration for dings and chips, secure wall fastening, and clean-ability is needed when selecting materials, material vendors, and fabrication processes.

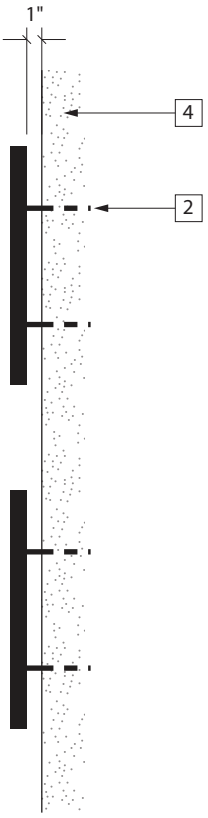
Disclaimer The signage standards enclosed are not fabrication drawings. The Sign Contractor is expected to provide all details necessary to effectively explain, show, and specify the fabrication process. The Sign Contractor is responsible for performing all field measurements prior to submitting shop drawings/layouts/fabrication. Conditions that may prevent the location of signage as specified shall be brought to the General Contractor and/or Owner's representative's attention prior to installation. The Sign Contractor is responsible for any engineering, and meeting any and all applicable local, State, and Federal code requirements when fabricating and installing signs.

F1

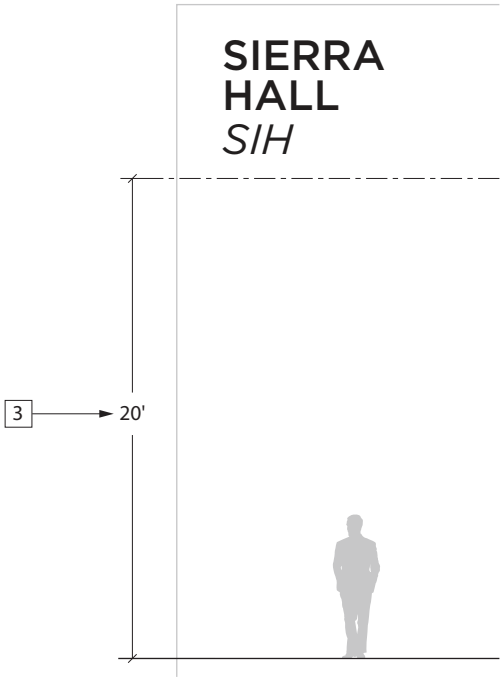
BUILDING ID - LARGE



3 **Detail View**
Scale: 1″



4 **Side View**
Scale: 1″



5 **Context Elevation**
Scale: 1/8″

SIERRA
HALL
SIH

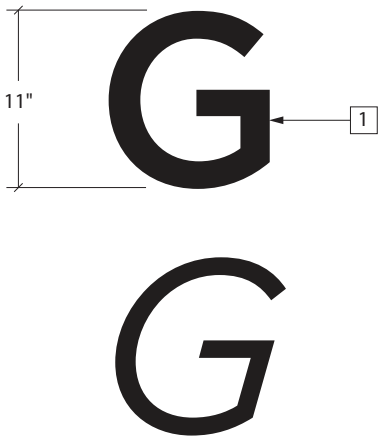
2 **Front View**
Scale: 1/4″

1. 1″ deep, aluminum, water-jet cut letters; painted black to match **P5**; Gotham Medium & Book Italic
2. Stud mounted to wall; minimum visibility mounting with no visible threads on standoffs; painted to match wall color; when applicable, silicone adhesive to match wall color
3. Sign type to be used only for applications above 20 ft.; for applications under 20 ft. use sign type F2
4. Wall conditions vary per building; sign fabricator to verify condition and attachment method prior to fabrication

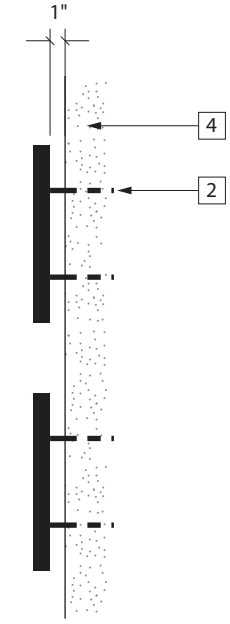
1 **Notes**
NTS

F2

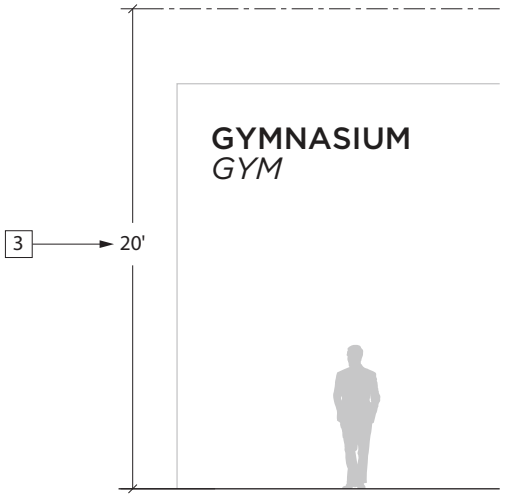
BUILDING ID - SMALL



3 **Detail View**
Scale: 1″



4 **Side View**
Scale: 1″



5 **Context Elevation**
Scale: 1/8″

GYMNASIUM
GYM

2 **Front View**
Scale: 1/4″

1. 1″ deep, aluminum, water-jet cut letters; painted black to match **P5**; Gotham Medium & Book Italic
2. Stud mounted to wall; minimum visibility mounting with no visible threads on standoffs; painted to match wall color; when applicable, silicone adhesive to match wall color
3. Sign type to be used only for applications under 20 ft.; for applications above 20 ft. use sign type F1
4. Wall conditions vary per building; sign fabricator to verify condition and attachment method prior to fabrication

1 **Notes**
NTS

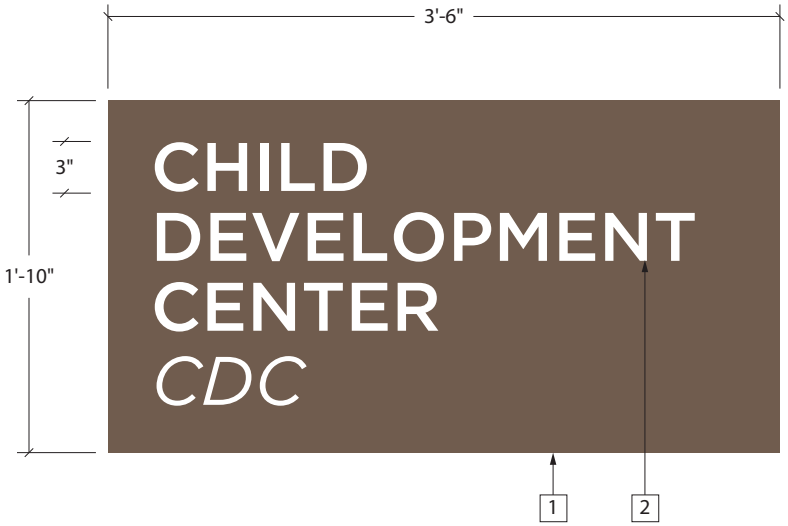
F3

BUILDING ID - BOH

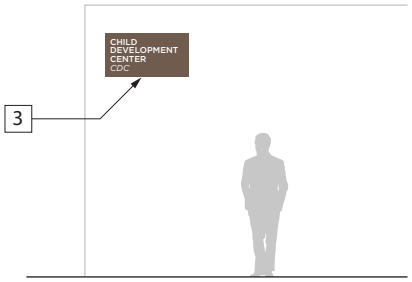
GYMNASIUM
GYM

FACILITIES
SERVICES
FS

3 **Alternate Messaging**
Scale: 3/4"



2 **Side View**
Scale: 1"



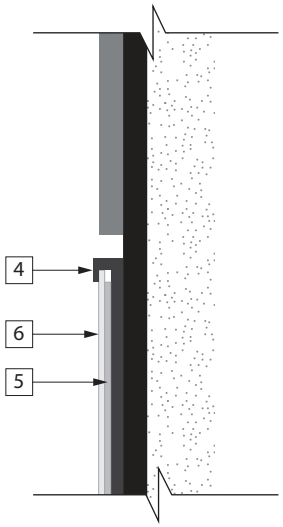
4 **Context Elevation**
Scale: 1/8"

1. 1/8" thick aluminum panel painted brown to match **P8**
2. Letters screened or printed white to match **P1**; Gotham Medium & Book Italic
3. Stud-mounted flush to wall; reinforced with VHB tape and silicone adhesive

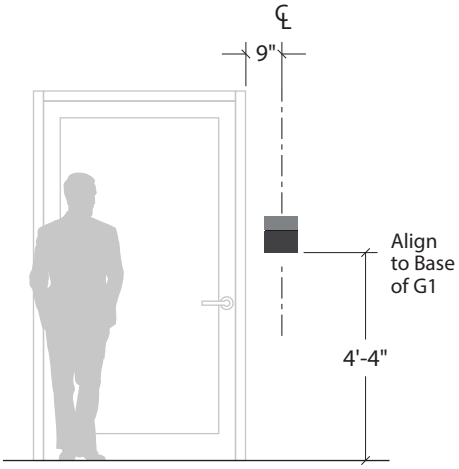
1 **Notes**
NTS

F4

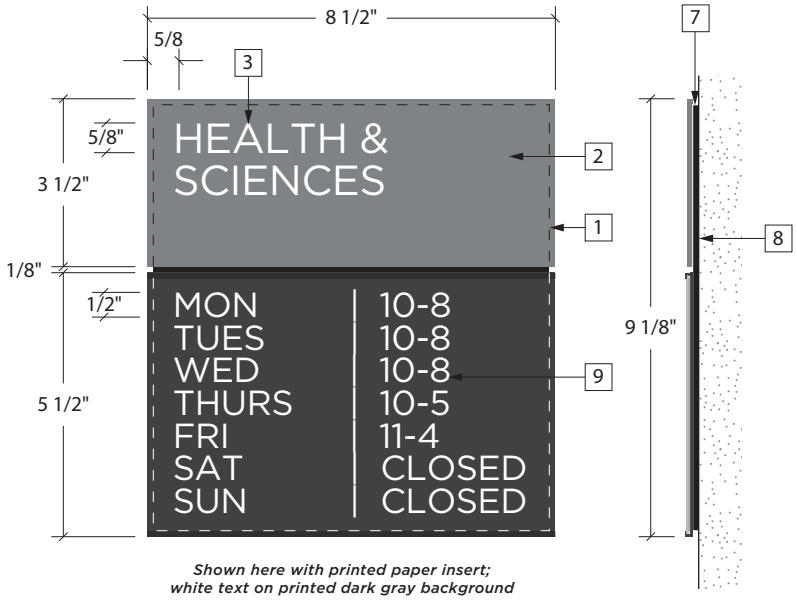
BUILDING ID - ENTRANCE DOOR



5 Detail Elevation
Full Size



6 Context Elevation
Scale: 1/4"



Shown here with printed paper insert; white text on printed dark gray background

3 Front View
Scale: 3"

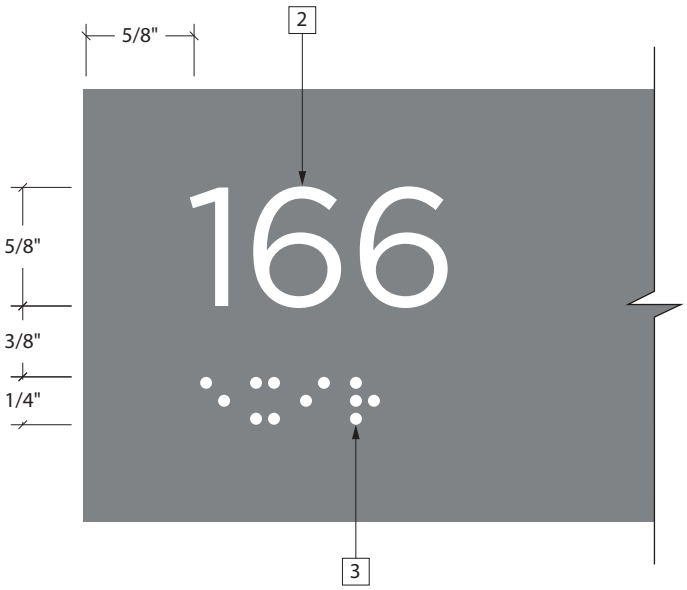
2 Side View
Scale: 3"

1 Notes
NTS

1. Line of spacer location; 1/8" inset on all sides
2. 1/8" thick aluminum panel painted medium gray to match **P3**
3. Letters screened or printed white to match **P1**; Gotham Book
4. 3/16" thick aluminum panel milled with channels on top and bottom for paper inserts; painted dark gray to match **P4**
5. Printed paper insert
6. Acrylic non-glare lens
7. 1/8" thick aluminum spacer painted black to match **P5**
8. Flush-mounted to wall with VHB tape & silicone adhesive
9. Text shown in lower panel as printed on paper insert; not in sign fabricator scope

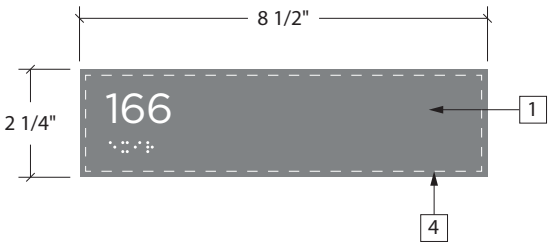
G1

ROOM ID - NUMBER

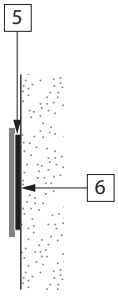


5 Partial Detail View
Full Size

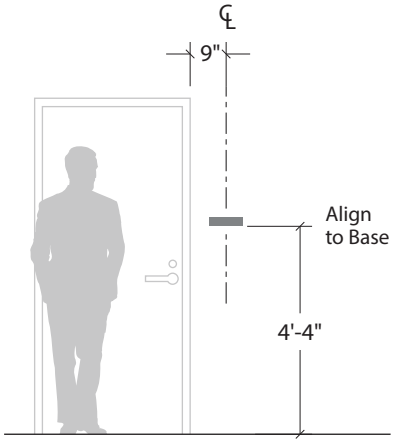
4 Top View
Scale: 3″



3 Front View
Scale: 3″



2 Side View
Scale: 3″

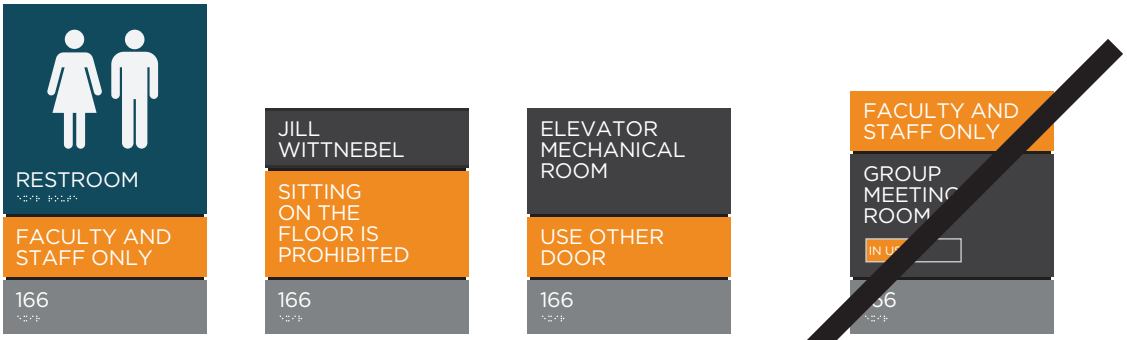


6 Context Elevation
Scale: 1/4″

1 Notes
NTS

1. 1/8" thick panel painted medium gray to match **P3**; Interior material: Acrylic Exterior material: Aluminum
2. Tactile letters painted white to match **P1**; Gotham Book
3. Grade 2 white braille
4. Line of spacer location; 1/8" inset on all sides
5. 1/8" thick spacer painted black to match **P5**; Interior material: Acrylic Exterior material: Aluminum
6. Flush-mounted to wall with VHB tape & silicone adhesive

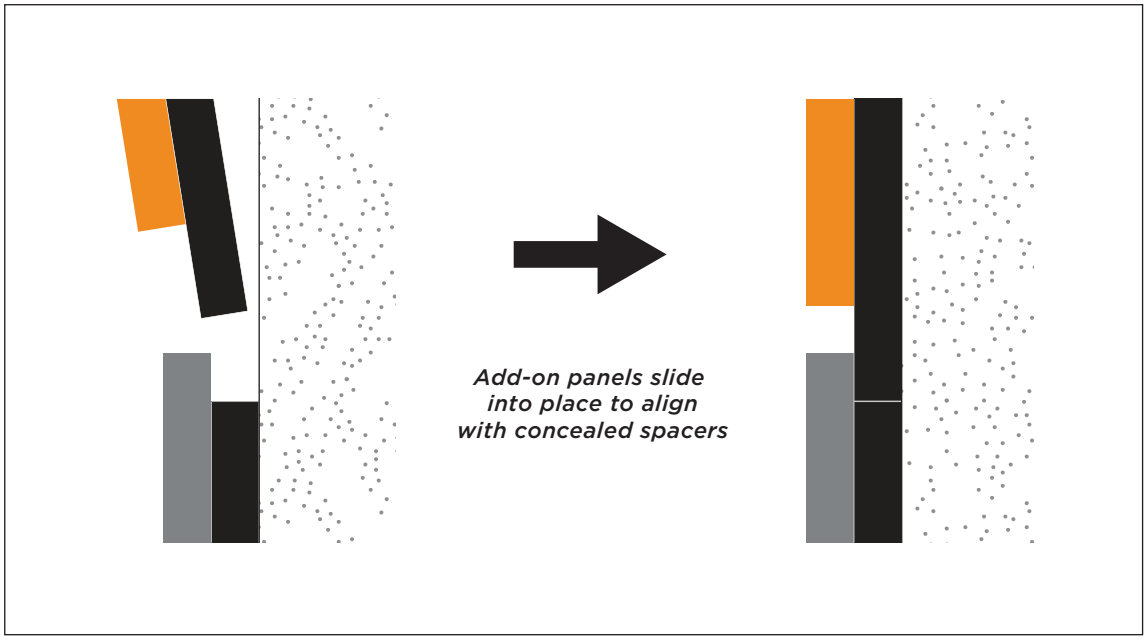
STACKING INSTRUCTION



"Alert" panels are always placed immediately above sign type G1 - Room ID - Number

Example of improper use

2 Front Elevation
Scale: 1 1/2"

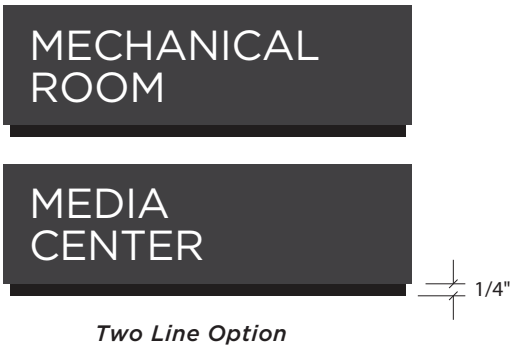


1 Side View
Double Size

G2

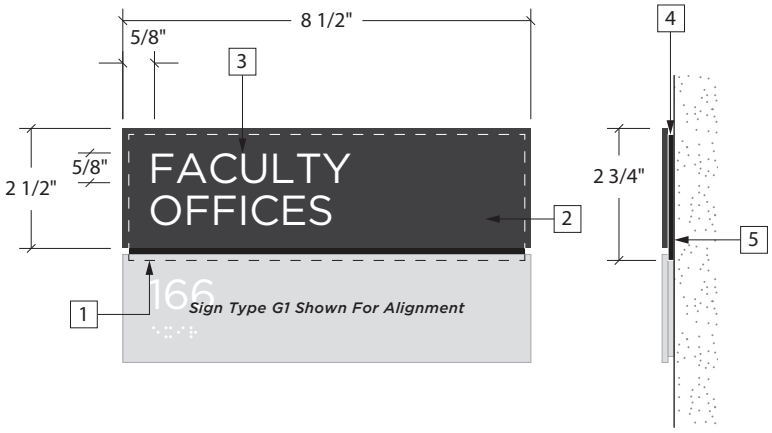
ROOM ID ADD-ON - NAME (1-2 LINES)

One Line Option



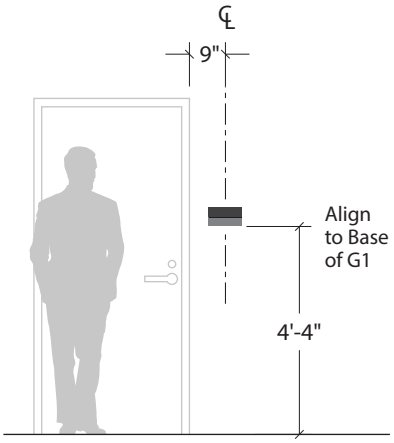
Two Line Option

4 Alternate Messaging
Scale: 3″



3 Front View
Scale: 3″

2 Side View
Scale: 3″



5 Context Elevation
Scale: 1/4″

1 Notes
NTS

1. Line of spacer location; 1/8" inset on left, right & top; extends 1/4" off bottom
2. 1/8" thick panel painted dark gray to match **P4**; Interior material: Acrylic Exterior material: Aluminum
3. Letters screened or printed white to match **P1**; Gotham Book
4. 1/8" thick spacer painted black to match **P5**; Interior material: Acrylic Exterior material: Aluminum
5. Flush-mounted to wall with VHB tape & silicone adhesive; See page 41 for alignment and mounting instructions

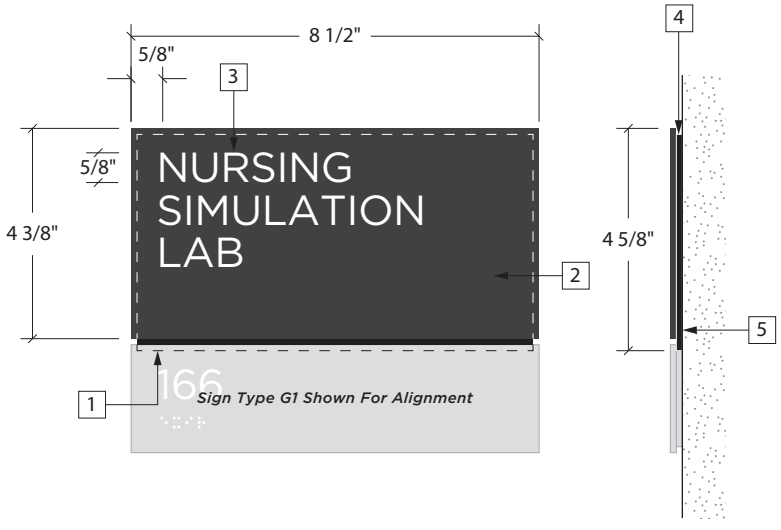
G3

ROOM ID ADD-ON - NAME (3-4 LINES)

Three Line Option

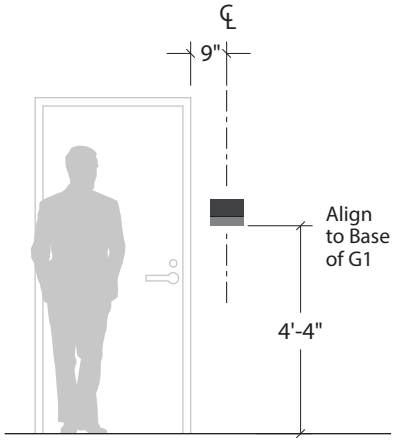
Four Line Option

4 Alternate Messaging
Scale: 3″



3 Front View
Scale: 3″

2 Side View
Scale: 3″



5 Context Elevation
Scale: 1/4″

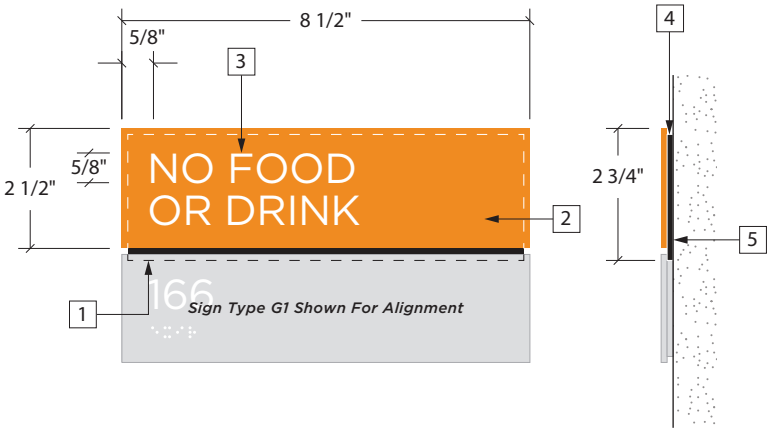
1. Line of spacer location; 1/8" inset on left, right & top; extends 1/4" off bottom
2. 1/8" thick panel painted dark gray to match **P4**; Interior material: Acrylic Exterior material: Aluminum
3. Letters screened or printed white to match **P1**; Gotham Book
4. 1/8" thick spacer painted black to match **P5**; Interior material: Acrylic Exterior material: Aluminum
5. Flush-mounted to wall with VHB tape & silicone adhesive; See page 41 for alignment and mounting instructions

1 Notes
NTS

G4

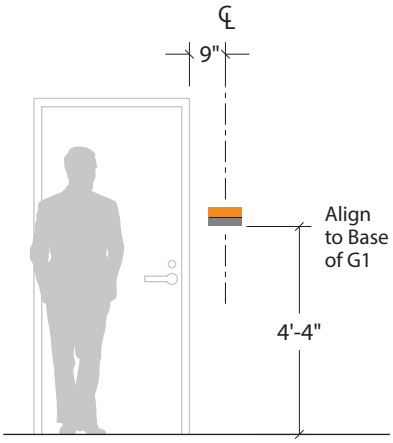
ROOM ID ADD-ON - ALERT (1-2 LINES)

4 Alternate Messaging
Scale: 3"



3 Front View
Scale: 3"

2 Side View
Scale: 3"



5 Context Elevation
Scale: 1/4"

1. Line of spacer location; 1/8" inset on left, right & top; extends 1/4" off bottom
2. 1/8" thick panel painted orange to match **P7**; Interior material: Acrylic Exterior material: Aluminum
3. Letters screened or printed white to match **P1**; Gotham Book
4. 1/8" thick spacer painted black to match **P5**; Interior material: Acrylic Exterior material: Aluminum
5. Flush-mounted to wall with VHB tape & silicone adhesive; See page 41 for alignment and mounting instructions

1 Notes
NTS

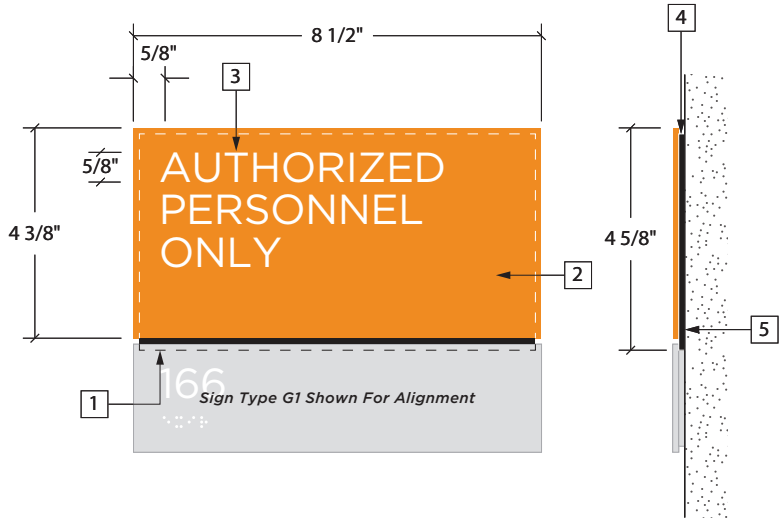
G5

ROOM ID ADD-ON - ALERT (3-4 LINES)

Three Line Option

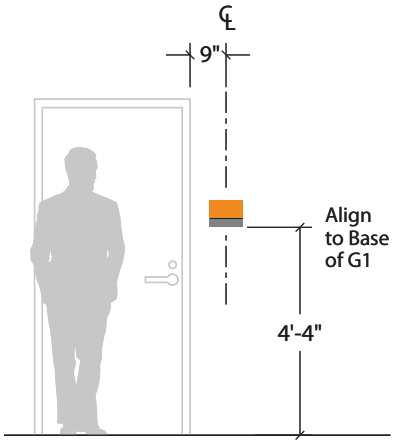
Four Line Option

4 Alternate Messaging
Scale: 3"



3 Front View
Scale: 3"

2 Side View
Scale: 3"



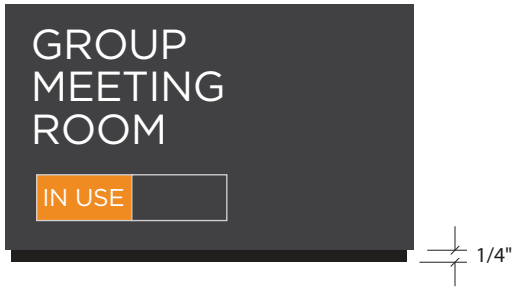
5 Context Elevation
Scale: 1/4"

1. Line of spacer location; 1/8" inset on left, right & top; extends 1/4" off bottom
2. 1/8" thick panel painted orange to match **P7**; Interior material: Acrylic Exterior material: Aluminum
3. Letters screened or printed white to match **P1**; Gotham Book
4. 1/8" thick spacer painted black to match **P5**; Interior material: Acrylic Exterior material: Aluminum
5. Flush-mounted to wall with VHB tape & silicone adhesive; See page 41 for alignment and mounting instructions

1 Notes
NTS

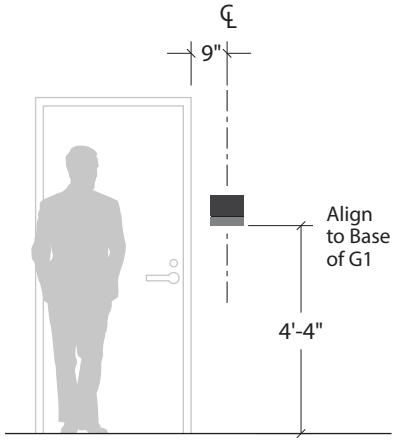
G6

ROOM ID ADD-ON - MEETING ROOM

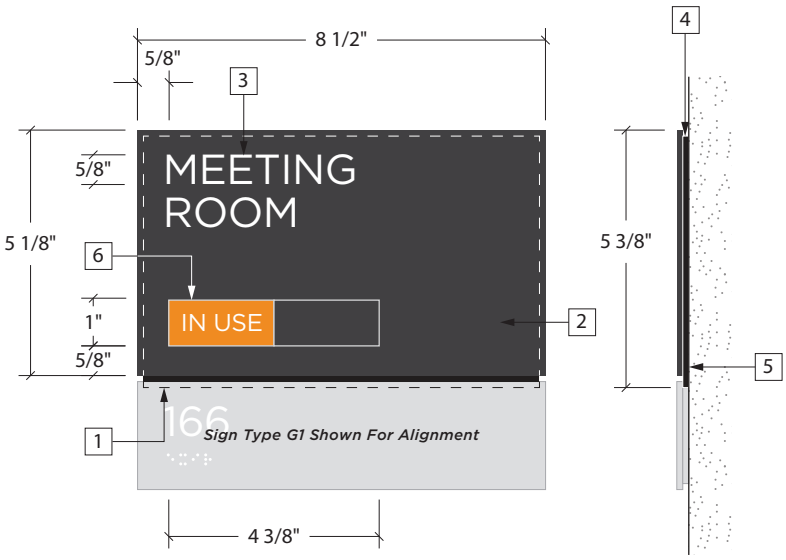


Three Line Option

4 Alternate Messaging
Scale: 3″



5 Context Elevation
Scale: 1/4″



3 Front View
Scale: 3″

2 Side View
Scale: 3″

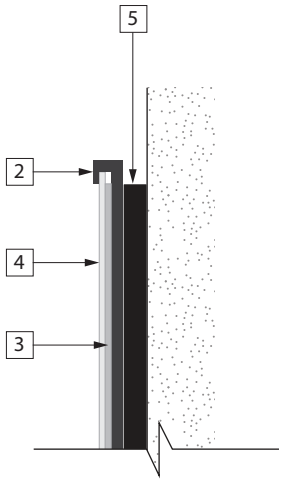
1 Notes
NTS

1. Line of spacer location; 1/8" inset on left, right & top; extends 1/4" off bottom
2. 1/8" thick panel painted dark gray to match **P4**; Interior material: Acrylic Exterior material: Aluminum
3. Letters screened or printed white to match **P1**; Gotham Book
4. 1/8" thick spacer painted black to match **P5**; Interior material: Acrylic Exterior material: Aluminum
5. Flush-mounted to wall with VHB tape & silicone adhesive; See page 41 for alignment and mounting instructions
6. Sliding panel to expose "OPEN" and "IN USE"

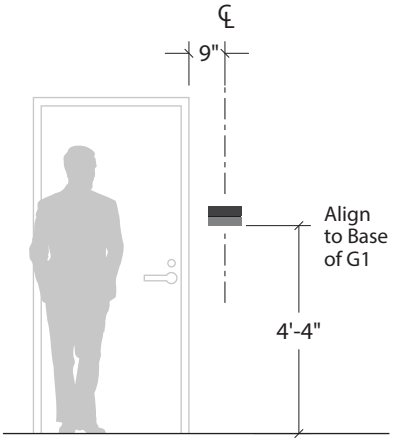
G7

ROOM ID ADD-ON - OFFICE INSERT

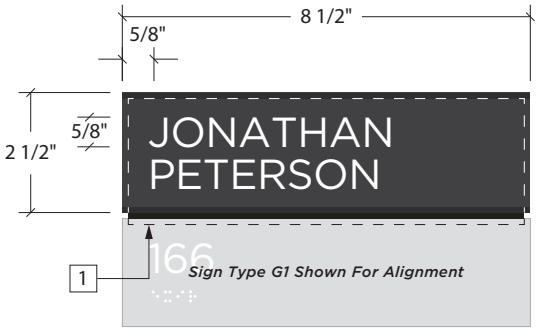
4 **Shared Office Stack**
Scale: 3″



5 **Detail Section**
Full Size

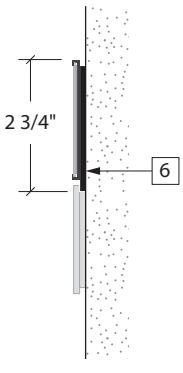


6 **Context Elevation**
Scale: 1/4″



Shown here with printed paper insert; white text on printed dark gray background

3 **Front View**
Scale: 3″



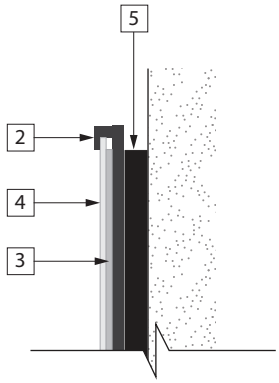
2 **Side View**
Scale: 3″

1. Line of spacer location; 1/8" inset on left, right & top; extends 1/4" off bottom
2. 3/16" thick aluminum panel milled with channels on top and bottom for paper inserts; painted dark gray to match **P4**
3. Printed paper insert
4. Acrylic non-glare lens
5. 1/8" thick spacer painted black to match **P5**; Interior material: Acrylic Exterior material: Aluminum
6. Flush-mounted to wall with VHB tape & silicone adhesive; See page 41 for alignment and mounting instructions

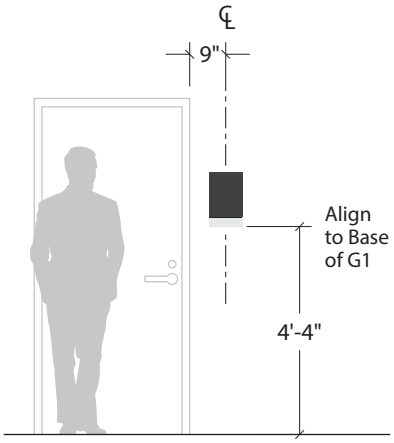
1 **Notes**
NTS

G8

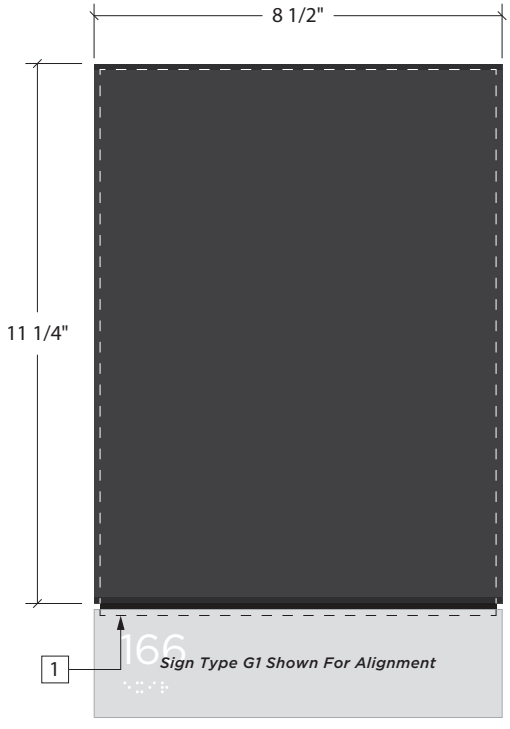
ROOM ID ADD-ON - 8.5X11 INSERT



4 Detail Section
Full Size

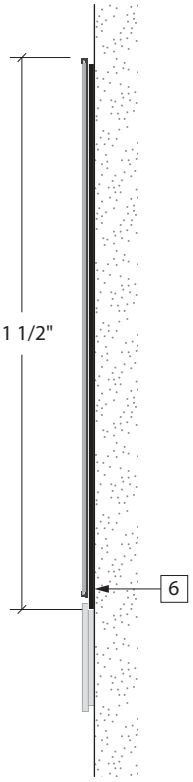


5 Context Elevation
Scale: 1/4"



Shown here without printed paper insert

3 Front View
Scale: 3"



2 Side View
Scale: 3"

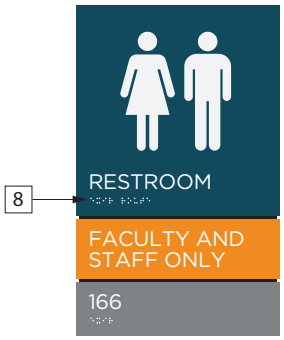
1 Notes
NTS

1. Line of spacer location; 1/8" inset on left, right & top; extends 1/4" off bottom
2. 3/16" thick aluminum panel milled with channels on top and bottom for paper inserts; painted dark gray to match **P4**
3. 8.5" x 11" printed paper insert
4. Acrylic non-glare lens
5. 1/8" thick spacer painted black to match **P5**; Interior material: Acrylic Exterior material: Aluminum
6. Flush-mounted to wall with VHB tape & silicone adhesive; See page 41 for alignment and mounting instructions

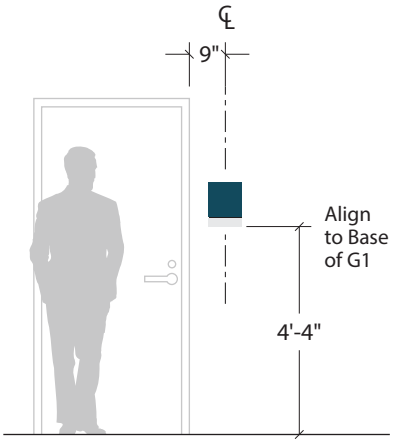
G9

ROOM ID ADD-ON - RESTROOM ADA

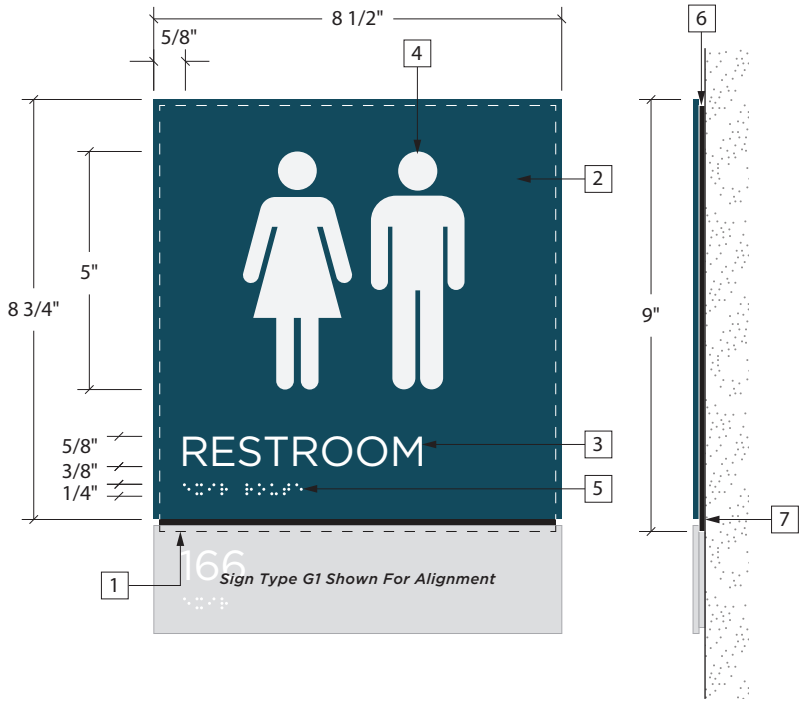
4 **Alternate Messaging**
Scale: 1″



5 **With Alert**
Scale: 1 1/2″



6 **Context Elevation**
Scale: 1/4″



3 **Front View**
Scale: 3″

2 **Side View**
Scale: 3″

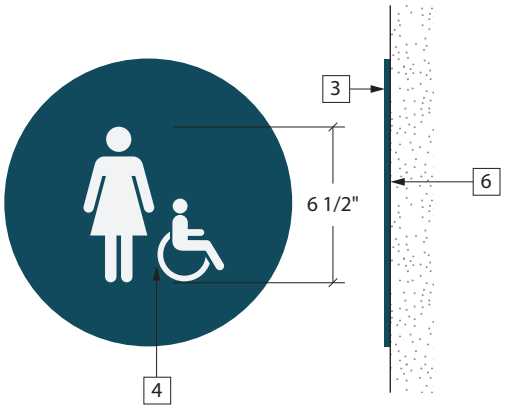
1. Line of spacer location; 1/8" inset on left, right & top; extends 1/4" off bottom
2. 1/8" thick panel painted dark blue to match **P6**; Interior material: Acrylic Exterior material: Aluminum
3. Tactile letters painted white to match **P1**; Gotham Book
4. Tactile symbols painted light gray to match **P2**
5. Grade 2 white braille
6. 1/8" thick spacer painted black to match **P5**; Interior material: Acrylic Exterior material: Aluminum
7. Flush-mounted to wall with VHB tape & silicone adhesive; See page 41 for alignment and mounting instructions
8. Braille not to exceed 60" high from finished floor per ADA

1 **Notes**
NTS

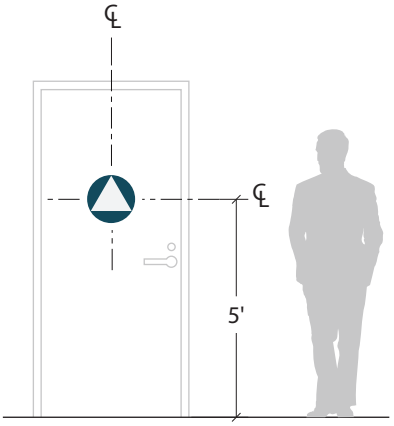
G10

ROOM ID - TITLE 24

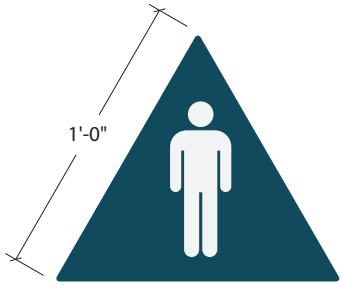
8 Front Views - Female
Scale: 1 1/2"



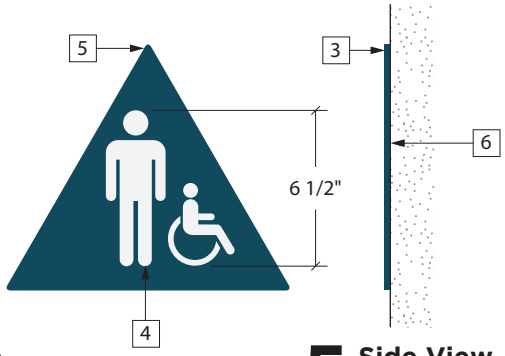
7 Side View
Scale: 1 1/2"



6 Context Elevation
Scale: 1/4"



4 Front Views - Male
Scale: 1 1/2"



5 Side View
Scale: 1 1/2"

1 1/8" thick panel painted dark blue to match **P6**; Interior material: Acrylic Exterior material: Aluminum

2 1/8" thick panel painted light gray to match **P2**; Interior material: Acrylic Exterior material: Aluminum

3 1/4" thick panel painted dark blue to match **P6**; Interior material: Acrylic Exterior material: Aluminum

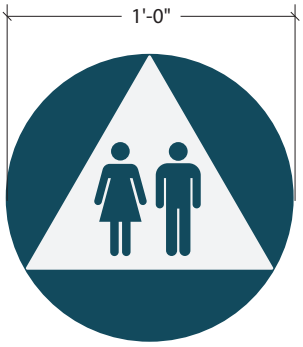
4 Symbols screened or printed light gray to match **P2**

5 1/8" radius on all corners

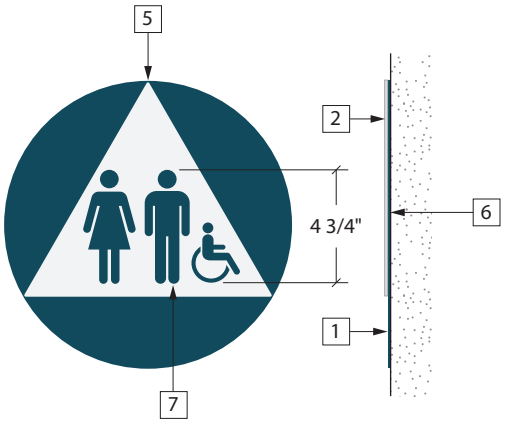
6 Flush-mounted to wall with VHB tape & silicone adhesive

7 Symbols screened or printed dark blue to match **P6**

1 Notes
NTS



3 Front Views - Unisex
Scale: 1 1/2"



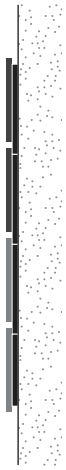
2 Side View
Scale: 3"

G11

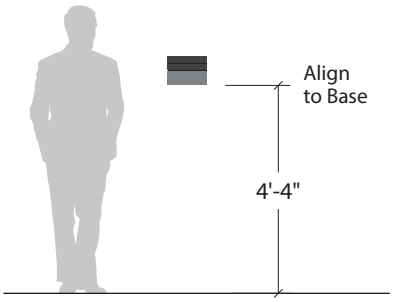
INTERIOR WALL DIRECTION

Stacking Order: All numbered panels grouped at the bottom, and all named panels grouped at the top

6 Front View
Scale: 3″

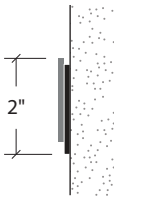


7 Side View
Scale: 3″

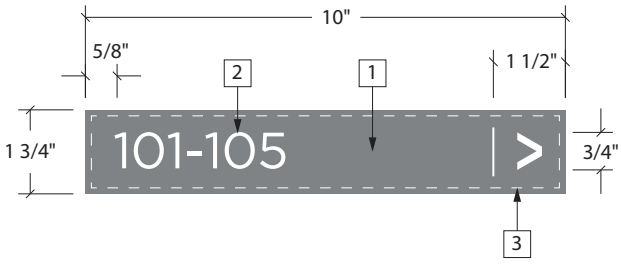


8 Context Elevation
Scale: 1/4″

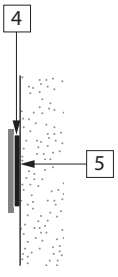
4 Front View - Stacking Add-on
Scale: 3″



5 Side View
Scale: 3″



3 Front View - Base
Scale: 3″



2 Side View
Scale: 3″

1 1/8" thick panel painted per use:
Numbered Panels to match **P3**,
Named Panels to match **P4**;
Interior material: Acrylic
Exterior material: Aluminum

2 Letters and symbols screened or printed white to match **P1**; Gotham Book

3 Line of spacer location; 1/8" inset on all sides; extends 1/4" off bottom when stacking

4 1/8" thick spacer painted black to match **P5**;
Interior material: Acrylic
Exterior material: Aluminum

5 Flush-mounted to wall with VHB tape & silicone adhesive; See page 41 for alignment and mounting instructions

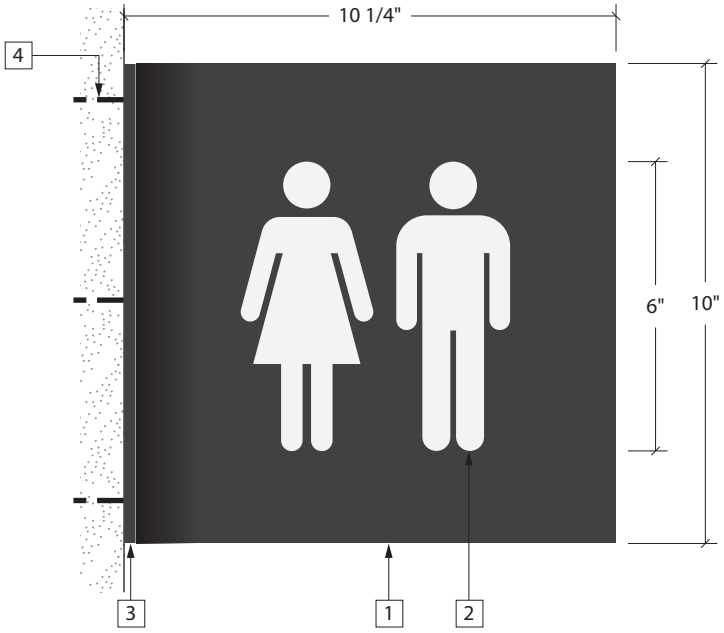
1 Notes
NTS

G12

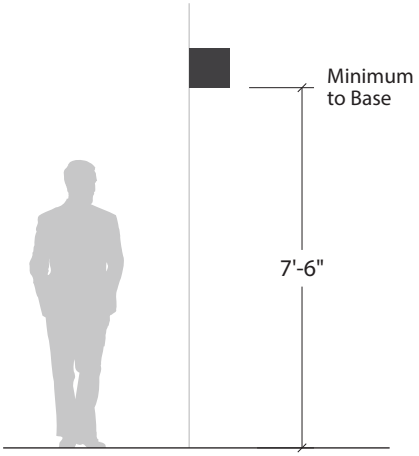
BLADE ID - ICON

4 Alternate Messaging
Scale: 1 1/2″

3 Top View
Scale: 3″



2 Side View
Scale: 3″



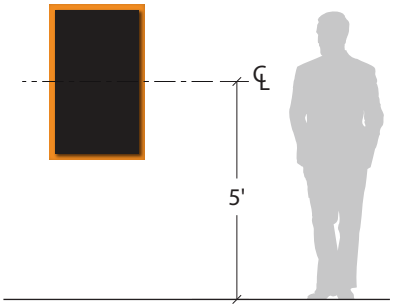
5 Context Elevation
Scale: 1/4″

1. 1/4" thick panel painted dark gray to match **P4**; Interior material: Acrylic Exterior material: Aluminum
2. Symbols screened or printed light gray to match **P2**
3. 1/4" thick mounting bracket painted dark gray to match **P4**; Interior material: Acrylic Exterior material: Aluminum
4. Stud-mounted to wall with screws and secured with VHB tape & silicone adhesive; screwheads painted dark gray to match **P4**

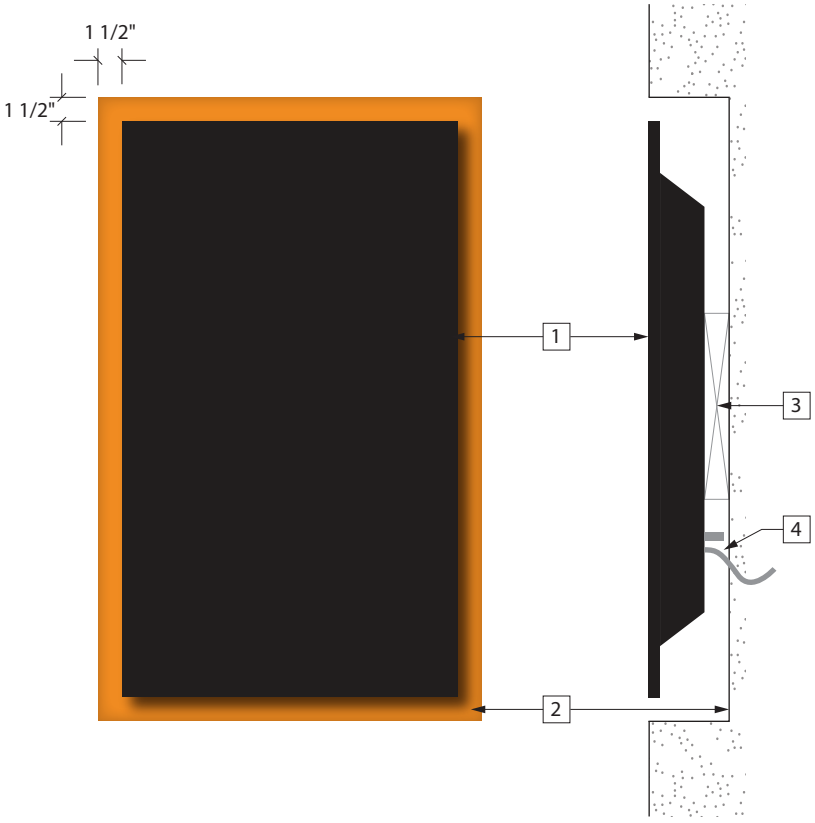
1 Notes
NTS

G13

INTERIOR DIGITAL BUILDING DIRECTORY



4 Context Elevation
Scale: 1/4"



3 Front View
Scale: 1"

2 Section View
Scale: 1"

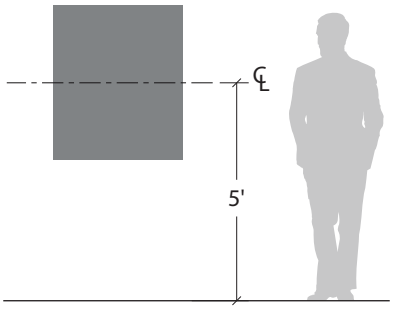
1 Notes
NTS

1. Flatscreen digital display; mounted flush to wall face; protruding is allowable up to 4" if necessary; recommended minimum of 40" display (as shown here)
2. 5" deep finished cove with a 1 1/2" reveal on all sides; painted orange to match **P7** when applicable; wall conditions vary per building; contractor to verify condition prior to installation
3. Floating display mount hardware as required, contractor to verify wall structure and provide additional blocking as required
4. Data and electrical as required; data hardware to meet the requirements of the Rise Vision content management platform (risevision.com)

G14

POSTING CABINET

2 **Reference Image**
NTS



3 **Context Elevation**
Scale: 1/4"

Company
Displays2Go
displays2go.com
1-800-572-2194

SKU
FBTW3036

Available Sizes
12" x 17"
24" x 36"
30" x 36"

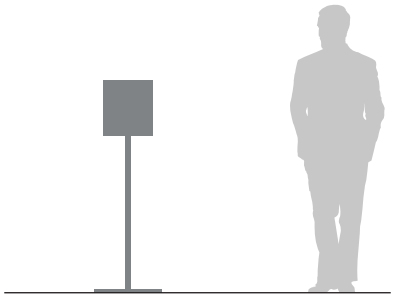
Description
Enclosed Bulletin Board
Locking Door
Silver

1 **Notes**
NTS

G15

TEMPORARY INTERIOR POLE

2 **Reference Image**
NTS



3 **Context Elevation**
Scale: 1/4"

Company
Displays2Go
displays2go.com
1-800-572-2194

SKU
TLSCH

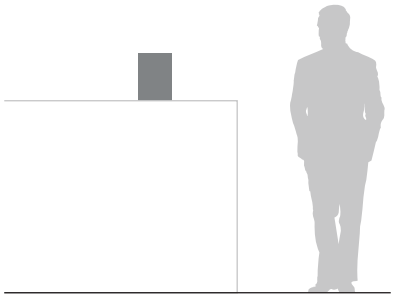
Description
11 x 8.5 Sign Stand for Floor
Double Sided
Top Insert
Adjustable Height
Silver

1 **Notes**
NTS

G16

TEMPORARY INTERIOR DESKTOP

2 Reference Image
NTS



3 Context Elevation
Scale: 1/4"

Company
Displays2Go
displays2go.com
1-800-572-2194

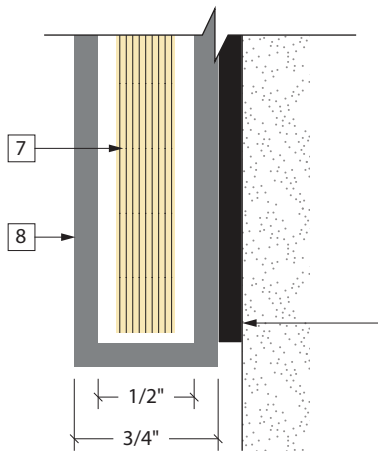
SKU
STSW8511

Description
Workshop Series
8.5 x 11 Acrylic Sign Holder
Aluminum Base
Bottom Insert
Clear

1 Notes
NTS

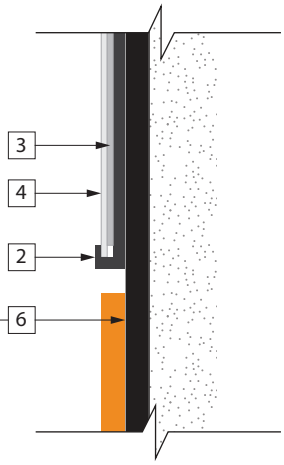
H1

CAMPUS EVAC INFO



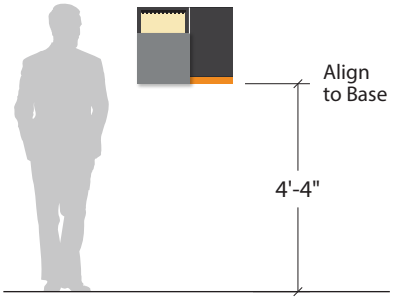
Construction of Booklet Insert Side

3 Detail Section
Full Size

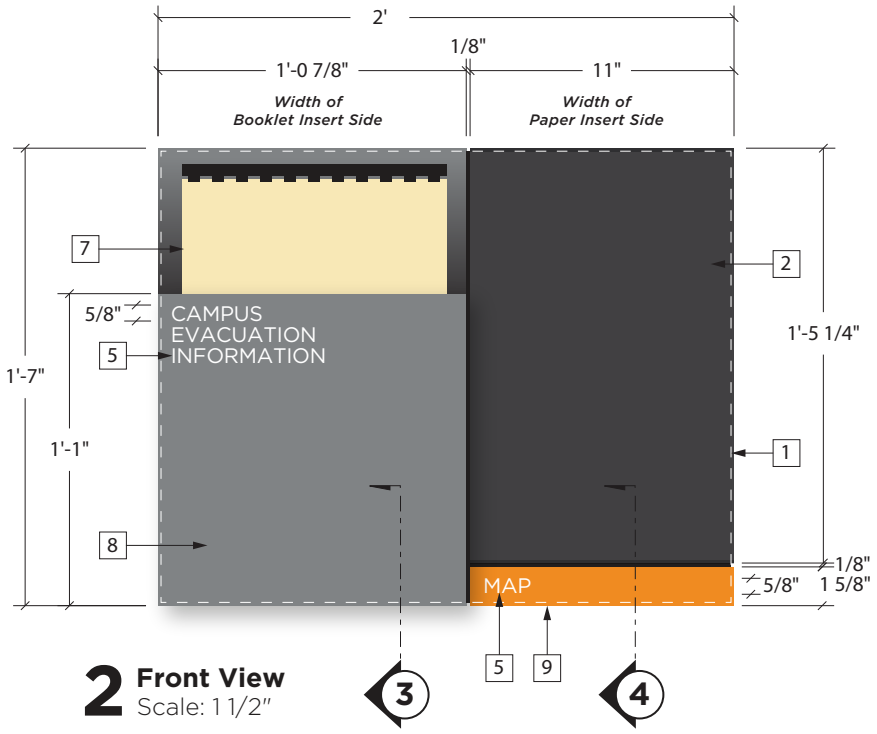


Construction of Paper Insert Side

4 Detail Section
Full Size



5 Context Elevation
Scale: 1/4"



2 Front View
Scale: 1 1/2"

1 Line of spacer location; 1/8" inset on all sides

2 3/16" thick aluminum panel milled with channels on top and bottom for paper inserts; painted dark gray to match **P4**

3 Printed paper insert

4 Acrylic non-glare lens

5 Letters screened or printed white to match **P1**; Gotham Book

6 1/8" thick aluminum spacer painted black to match **P5**

7 Printed booklet insert

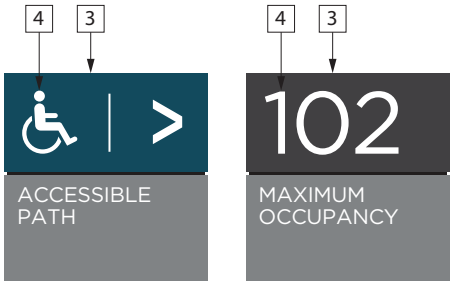
8 Booklet pocket fabricated out of 1/8" thick aluminum; painted medium gray to match **P3**

9 1/8" thick aluminum panel painted orange to match **P7**

1 Notes
NTS

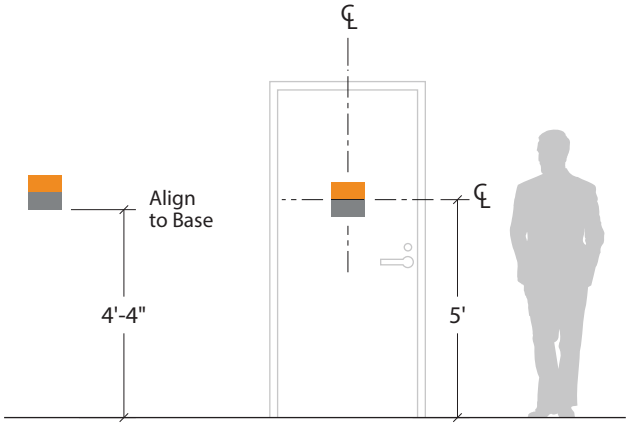
H2

INTERIOR REGULATION

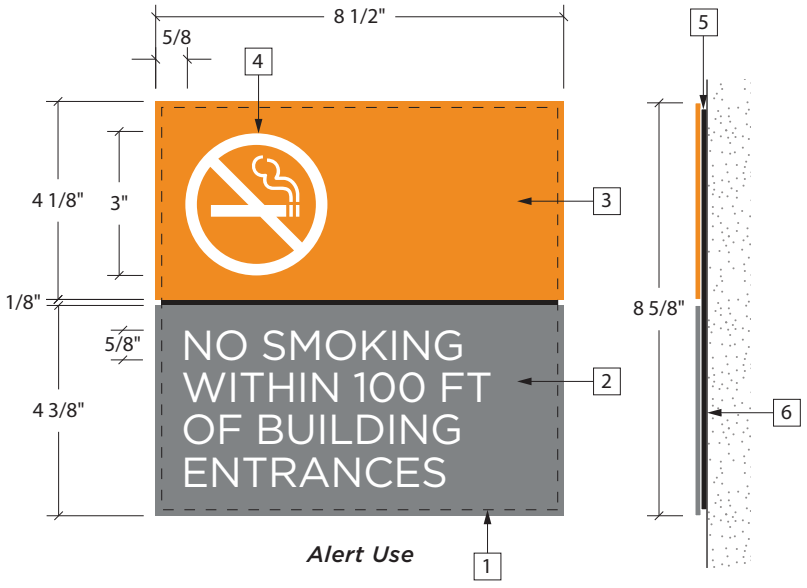


Accessible Use *General Use*

4 Alternate Messaging
Scale: 1 1/2″



5 Context Elevation
Scale: 1/4″



3 Front View
Scale: 3″

2 Side View
Scale: 3″

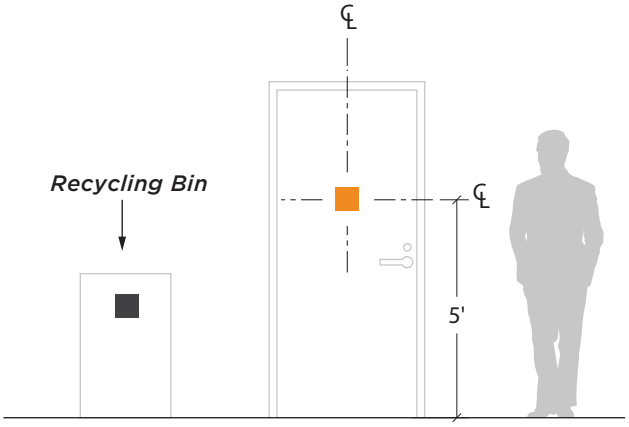
1 Notes
NTS

1. Line of spacer location; 1/8" inset on all sides
2. 1/8" thick panel painted medium gray to match **P3**; Interior material: Acrylic Exterior material: Aluminum
3. 1/8" thick panel painted per use: ***General:*** gray to match **P4**, ***Alert:*** orange to match **P7**, ***Accessible:*** blue to match **P6**; Interior material: Acrylic Exterior material: Aluminum
4. All letters, symbols, and map screened or printed white to match **P1**; Gotham Book
5. 1/8" thick spacer painted black to match **P5**; Interior material: Acrylic Exterior material: Aluminum
6. Flush-mounted to wall with VHB tape & silicone adhesive

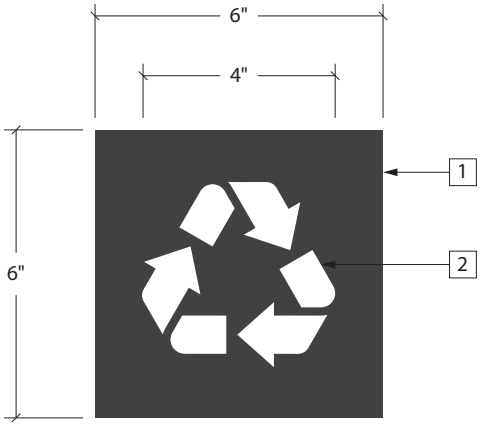
H3

SYMBOL PLAQUE

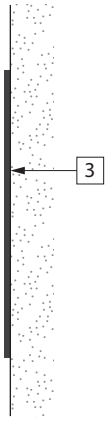
4 **Alternate Messaging**
Scale: 3"



5 **Context Elevation**
Scale: 1/4"



3 **Front View**
Scale: 3"



2 **Side View**
Scale: 3"

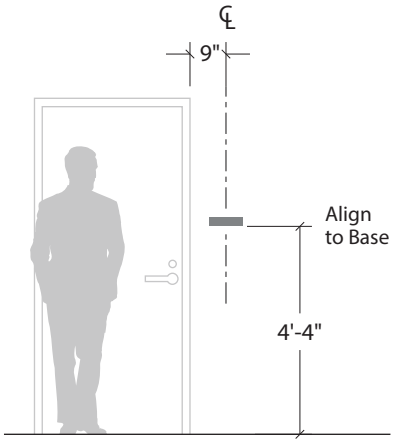
1 **Notes**
NTS

1. 1/8" thick panel painted per use:
   General: gray to match **P4**,
   Alert: orange to match **P7**;
   Interior material: Acrylic
   Exterior material: Aluminum
2. Symbols screened or printed white to match **P1**
3. Flush-mounted to wall with VHB tape & silicone adhesive

H4

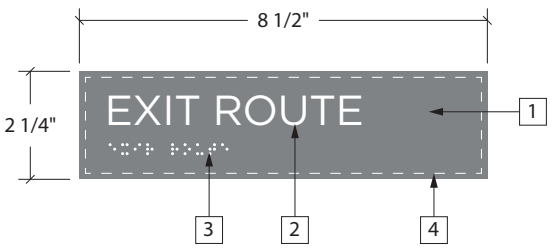
EXTERIOR ROUTE

5 Alternate Messaging
Scale: 3"

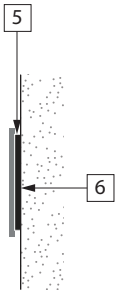


6 Context Elevation
Scale: 1/4"

4 Top View
Scale: 3"



3 Front View
Scale: 3"



2 Side View
Scale: 3"

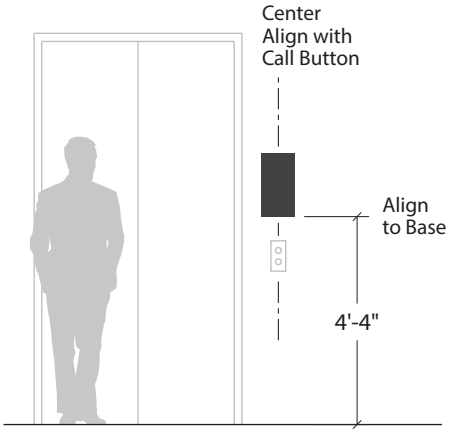
1 Notes
NTS

1. 1/8" thick panel painted medium gray to match **P3**; Interior material: Acrylic Exterior material: Aluminum
2. Tactile letters painted white to match **P1**; Gotham Book
3. Grade 2 white braille
4. Line of spacer location; 1/8" inset on all sides
5. 1/8" thick spacer painted black to match **P5**; Interior material: Acrylic Exterior material: Aluminum
6. Flush-mounted to wall with VHB tape & silicone adhesive

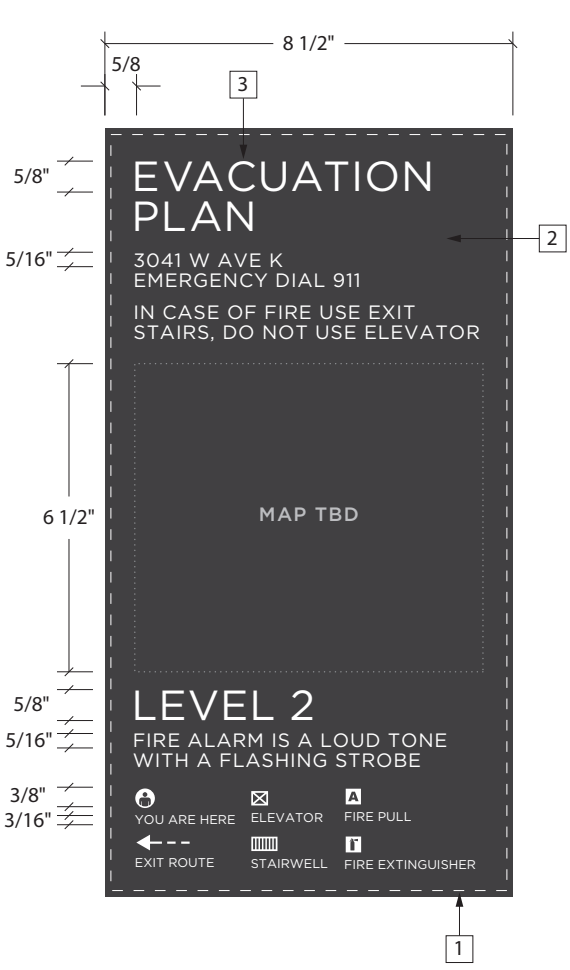
H5

ELEVATOR EVAC MAP

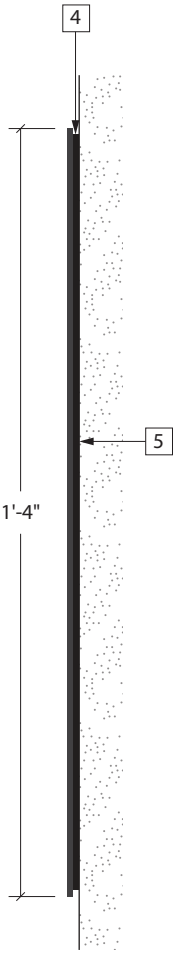
4 Top View
Scale: 3″



5 Context Elevation
Scale: 1/4″



3 Front View
Scale: 3″



2 Side View
Scale: 3″

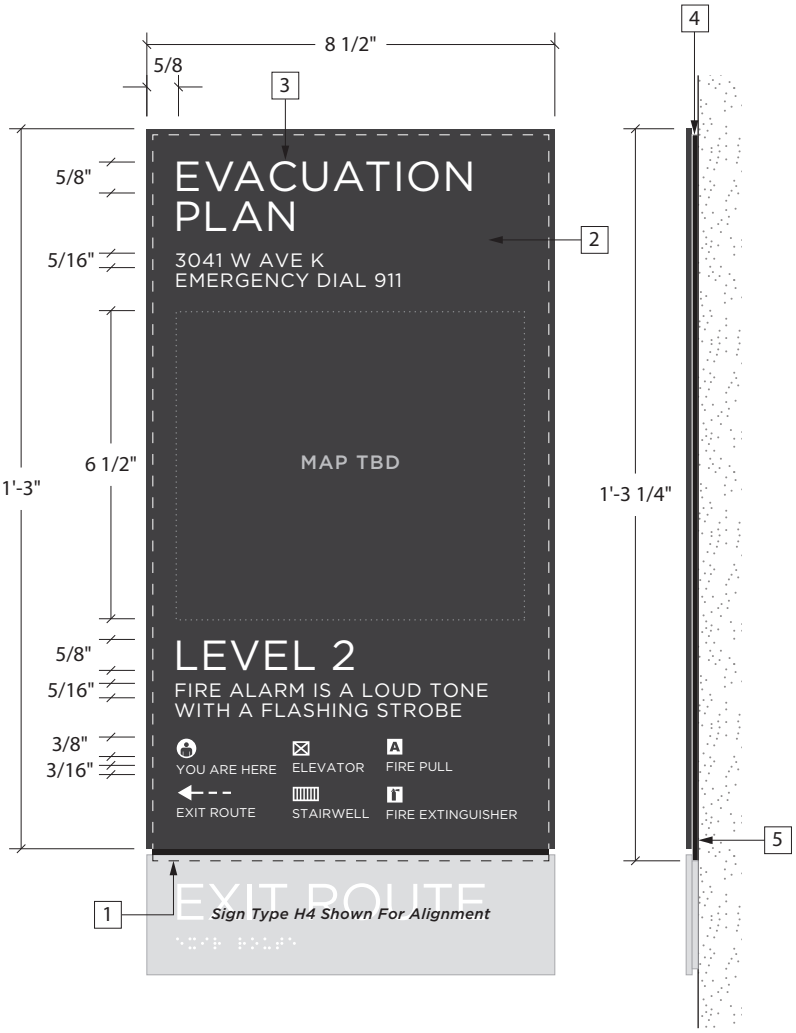
1 Notes
NTS

1. Line of spacer location; 1/8" inset on all sides
2. 1/8" thick panel painted dark gray to match **P4**; Interior material: Acrylic Exterior material: Aluminum
3. All letters, symbols, and map screened or printed white to match **P1**; all fonts Gotham Book
4. 1/8" thick spacer painted black to match **P5**; Interior material: Acrylic Exterior material: Aluminum
5. Flush-mounted to wall with VHB tape & silicone adhesive

H6

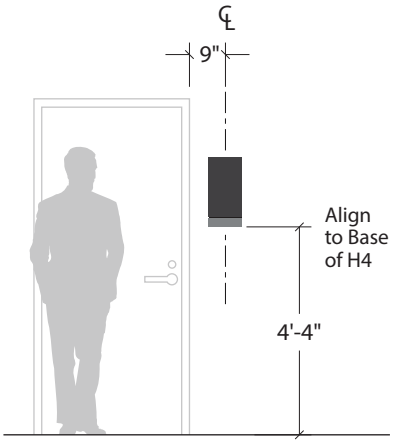
STAIRWELL EVAC MAP

4 Top View
Scale: 3"



3 Front View
Scale: 3"

2 Side View
Scale: 3"



5 Context Elevation
Scale: 1/4"

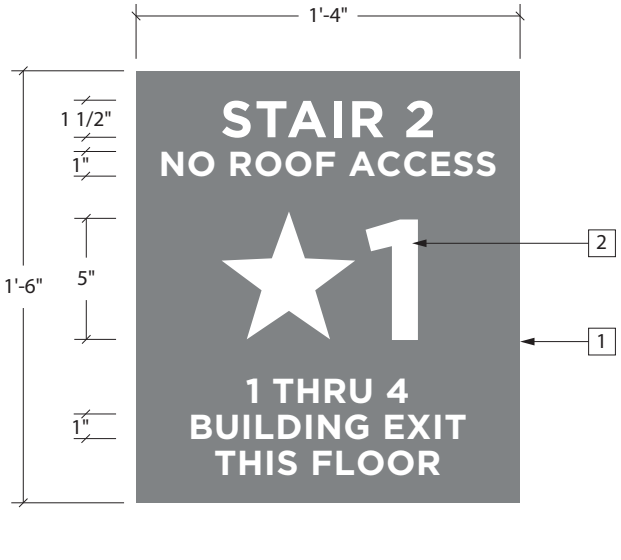
1. Line of spacer location; 1/8" inset on left, right & top; extends 1/4" off bottom
2. 1/8" thick panel painted dark gray to match **P4**; Interior material: Acrylic Exterior material: Aluminum
3. All letters, symbols, and map screened or printed white to match **P1**; all fonts Gotham Book
4. 1/8" thick spacer painted black to match **P5**; Interior material: Acrylic Exterior material: Aluminum
5. Flush-mounted to wall with VHB tape & silicone adhesive; See page 41 for alignment and mounting instructions

1 Notes
NTS

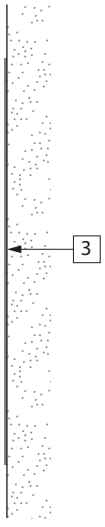
H7

STAIRWELL ID - NFPA

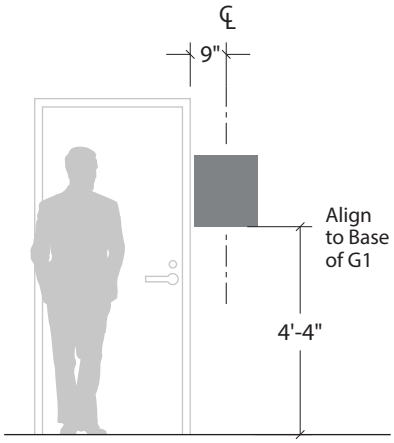
4 **Alternate Messaging**
Scale: 1 1/2"



3 **Front View**
Scale: 1 1/2"



2 **Side View**
Scale: 1 1/2"



5 **Context Elevation**
Scale: 1/4"

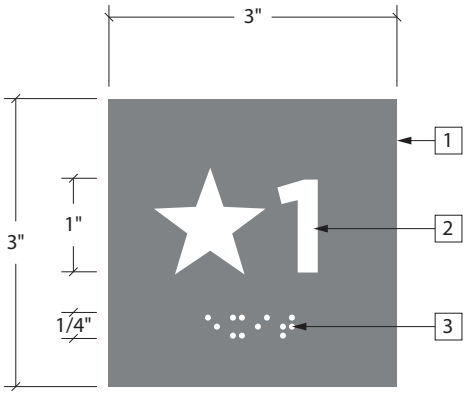
1. 1/8" thick acrylic panel painted medium gray to match **P3**
2. All letters and symbols screened or printed white to match **P1**; all fonts Gotham Bold
3. Flush-mounted to wall with VHB tape & silicone adhesive

1 **Notes**
NTS

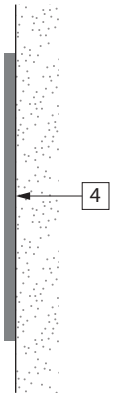
H8

STAIRWELL ID - ADA

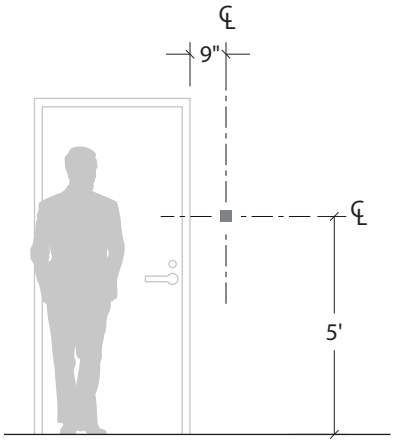
4 Alternate Messaging
Half Size



3 Front View
Half Size



2 Side View
Half Size



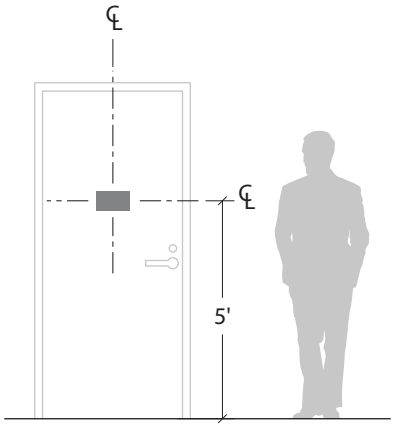
5 Context Elevation
Scale: 1/4"

1 Notes
NTS

1. 1/8" thick panel painted medium gray to match **P3**; Interior material: Acrylic Exterior material: Aluminum
2. Tactile letters painted white to match **P1**; Gotham Bold
3. Grade 2 white braille
4. Flush-mounted to wall with VHB tape & silicone adhesive

H9

NFPA/OSHA ID



3 **Context Elevation**
Scale: 1/4"

GAS SHUT-OFF VALVE

#NHE-13841

FIRE SPRINKLER RISER ROOM

#NHE-16508

FIRE ALARM CONTROL PANEL INSIDE

#NHE-16505

ELECTRICAL ROOM NO STORAGE

#NHE-30165

GAS ROOM ENTRANCE

#NHE-29441

FIRE PUMP MAIN DISCONNECT SWITCH

#NHE-30752

2 **Reference Images**
NTS

Company
Compliance Signs
compliancesigns.com
1-800-578-1245

Note
Only a small sample of the of NFPA/OSHA signs are shown here to demonstrate the desired style when ordering from Compliance Signs

Style
Whenever possible use white text on a red background with no icons or decorative boarders

Mounting Instructions
Flush-mounted to door with VHB tape and silicone adhesive

1 **Notes**
NTS

07

SPACE STANDARDS

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INTRODUCTION

Section 7 of this Handbook includes the Space Standards for a variety of spaces that are commonly found on campus and intended to assist design teams during the programming and early design phases. Diagrams and design criteria are included for each of these spaces to highlight important information.

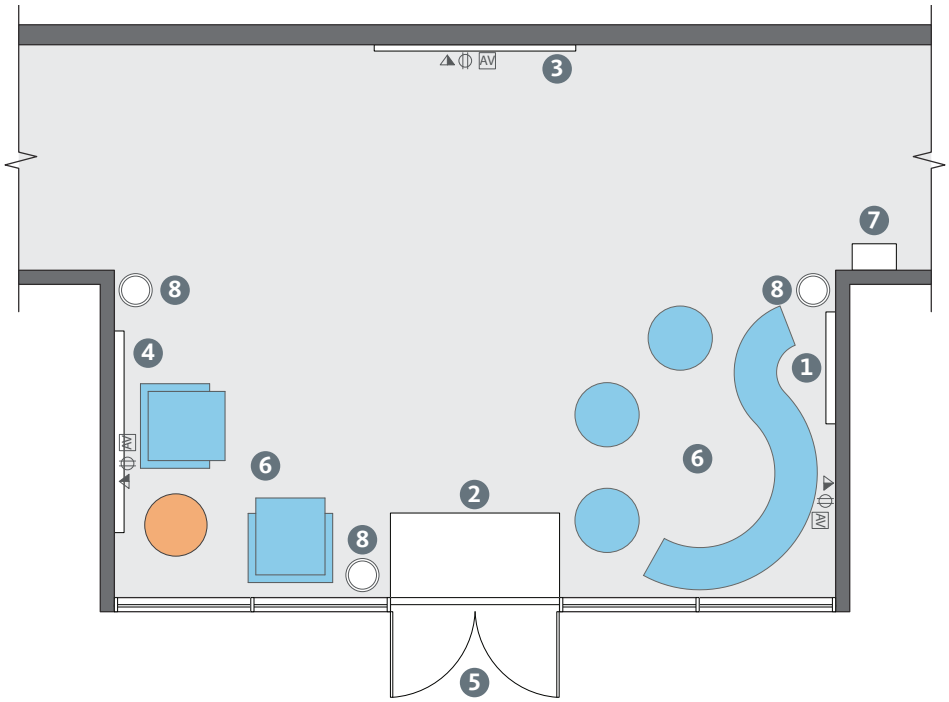
The area assigned for each space type is listed as assignable square feet (ASF), and has been developed in accordance with the California Community College Chancellor's Office (CCCCO) guidelines. Diagrams illustrate sample furniture layouts and approximate room proportions, are intended to serve as a guide. 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.

Antelope Valley College's preferred systems furniture is by Knoll or Allsteel. District will make final selection.

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. Antelope Valley College encourages design teams to incorporate artwork into the fabric of the lobby's design and provide for informal gathering with proper connection to power, data and display.

PLAN



LEGEND

1. Directory
2. Walk-off mat
3. Wall-mounted display
4. Artwork
5. Entrance doors
6. Informal seating area
7. Emergency phone
8. Trash bin

SURFACES

Floor: Terrazzo or polished concrete

Wall: Painted drywall, wood paneling, art

Ceiling Height: Varies

Ceiling Type: Painted drywall, acoustic ceiling tile

LIGHTING

- Refer 'Interior Lighting' Section 07

HVAC

- No manual operated thermostats

SYMBOLS

- Duplex
- Tel/Data
- A/V connections

NOTES:

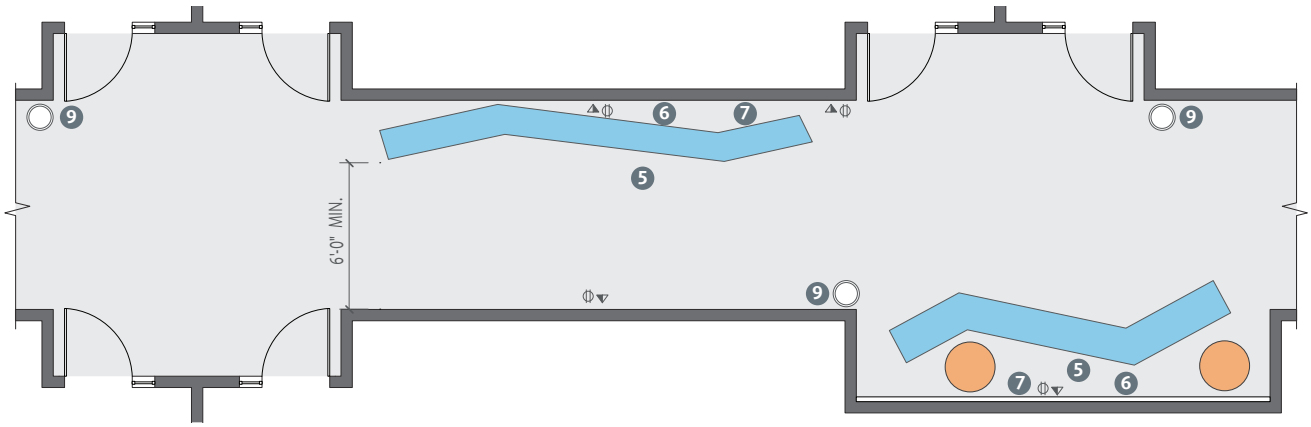
- All clean-outs & access panel types & locations to be coordinated with architect.
- Provide general use duplex receptacles for cleaning, appliances, and seating/work areas.

PUBLIC CORRIDORS

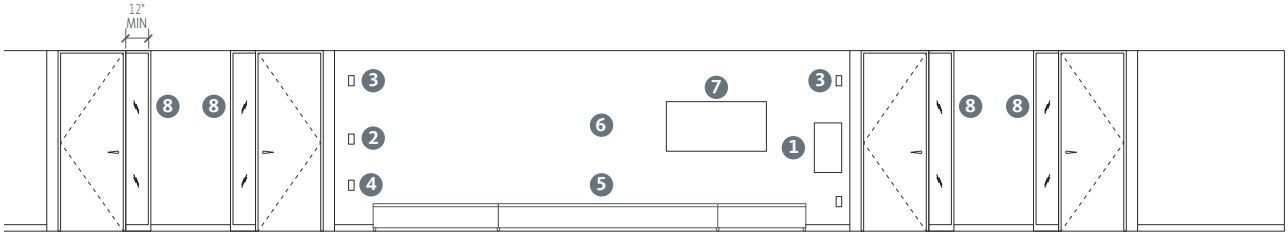
Corridors should be thought of as more than transition space. These spaces should incorporate expanded learning opportunities, advanced engagement, provide seating, power, WiFi and display in strategic locations to promote interaction and social extended learning opportunities.

Public corridors will be comprised of highly durable materials and configured to provide students with opportunities for interaction. Break out spaces encourage informal dialogue and gatherings. Wider areas are created to facilitate expanded learning and teaming opportunities.

PLAN



ELEVATION



LEGEND

1. Fire extinguisher cabinet to be coordinated with architect
2. Light switches, thermostat
3. Strobe
4. Outlet
5. Casual chairs & side tables
6. Markerboard
7. Wall-mounted display
8. Door Sidelight (12" Min.)
9. Waste receptacle

SURFACES

Floor: Terrazzo or sheet vinyl

Wall: Painted drywall

Ceiling Height: Varies

Ceiling Type: Painted drywall / acoustic ceiling tile

LIGHTING

- Refer 'Interior Lighting' Section 07

HVAC

- No manual operated thermostats

SYMBOLS

Duplex

Tel/Data

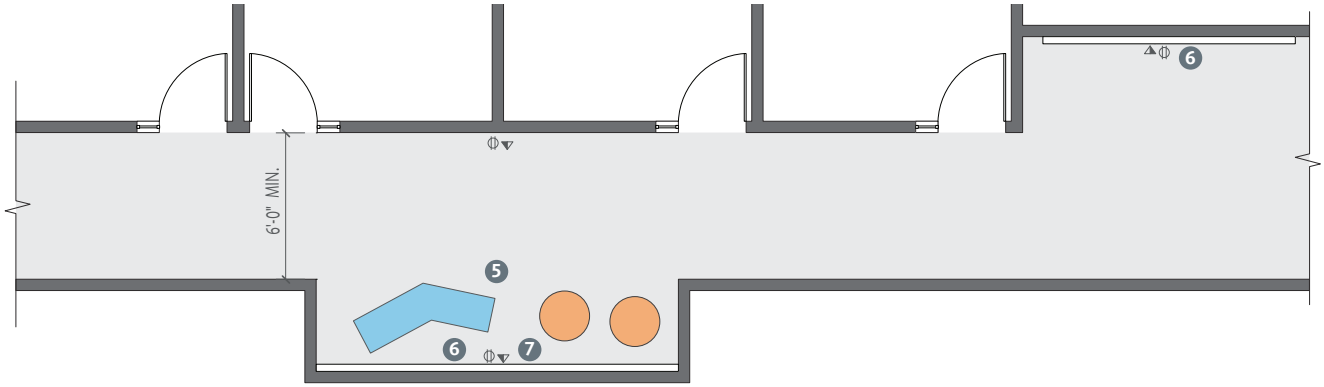
NOTES:

- Align elements as shown in interior elevation.
- All clean-outs & access panel types & locations to be coordinated with architect.
- General use duplex receptacles for cleaning.

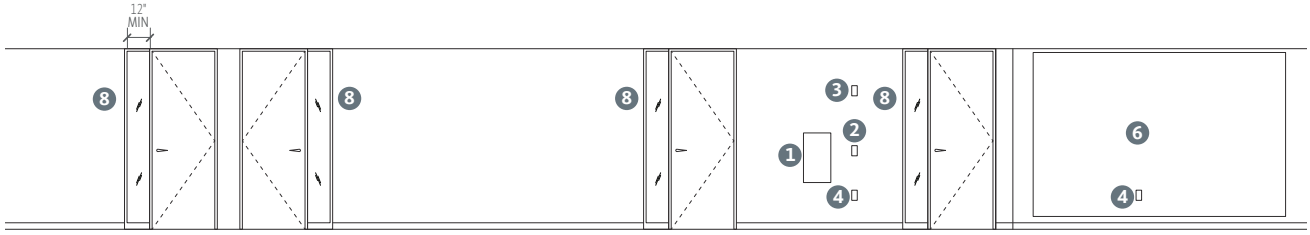
FACULTY SUITE CORRIDORS

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

PLAN



ELEVATION



LEGEND

1. Fire extinguisher cabinet to be coordinated with architect.
2. Light switches, thermostat
3. Strobe
4. Outlet
5. Casual chairs & side tables
6. Markerboard
7. Wall-mounted display
8. Door sidelight (12" min.)

SURFACES

Floor: Carpet

Wall: Painted drywall

Ceiling Type: Acoustic ceiling tile

LIGHTING

- Refer 'Interior Lighting' Section 07

HVAC

- No manual operated thermostats

SYMBOLS

Duplex

Tel/Data

NOTES:

- Align elements as shown in interior elevation.
- All clean-outs & access panel types & locations to be coordinated with architect.
- General use duplex receptacles for cleaning.

CLASSROOMS

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 pedagogy.

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

- Furniture consists of rows of chair desks or movable 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.

TRADITIONAL CLASSROOM

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.

The number of traditional, flexible, and active classrooms included in a building project will be determined by the needs of the specific programs that will occupy the building.

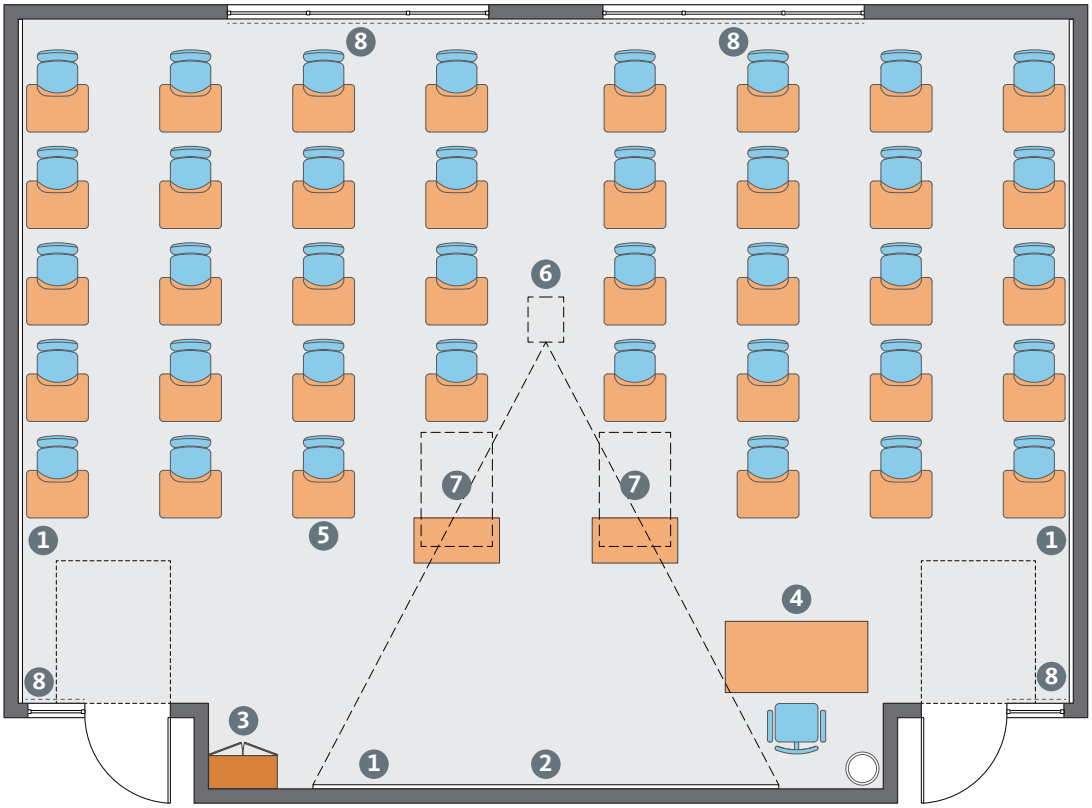
ACTIVE CLASSROOM

FLEXIBLE CLASSROOM

TRADITIONAL CLASSROOM

- 40 Student Stations.
- Antelope Valley College's standard is an average of 20 ASF per student station.
- Average classroom size to be 900 - 1,000 ASF

PLAN



LEGEND

1. Whiteboard
2. Motorized projector screen
3. Lockable storage cabinet
4. Mobile instructor station w/ AV equipment
5. Chair & desk
6. Ceiling mounted projector
7. Accessible desk
8. Double roller shade (window treatment & room darkening)

SURFACES

Floor: Resilient flooring

Wall: Painted drywall

Ceiling Height: 9' min.

Ceiling Type: Acoustic ceiling tile

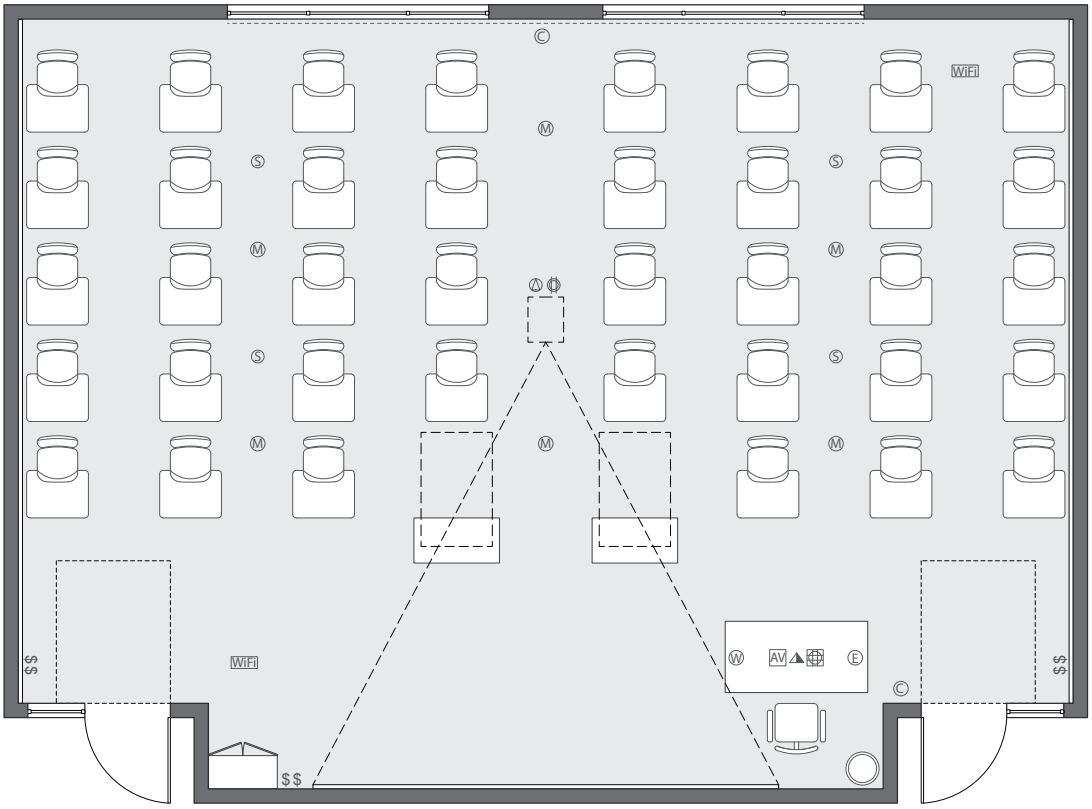
LIGHTING

- Refer 'Interior Lighting' Section 07

HVAC

- No manual operated thermostats

PLAN



SYMBOLS

- Quadruplex
- Tel/Data (duplex)
- Flush floor-mounted quadruplex
- Flush floor-mounted data (6 outlets at instructor station)
- A/V connections
- $ Light switch
- Ceiling data (3 cables)
- Ⓢ Ceiling speaker
- Ceiling duplex

- WiFi Wireless access point
- Ⓔ Extron LCD touchscreen controller
- Ⓜ Ceiling microphone (for distance eduction enabled rooms)
- Ⓒ Camera (for distance education enabled rooms)
- Ⓦ Wireless microphone for instructor (for distance education enabled rooms)

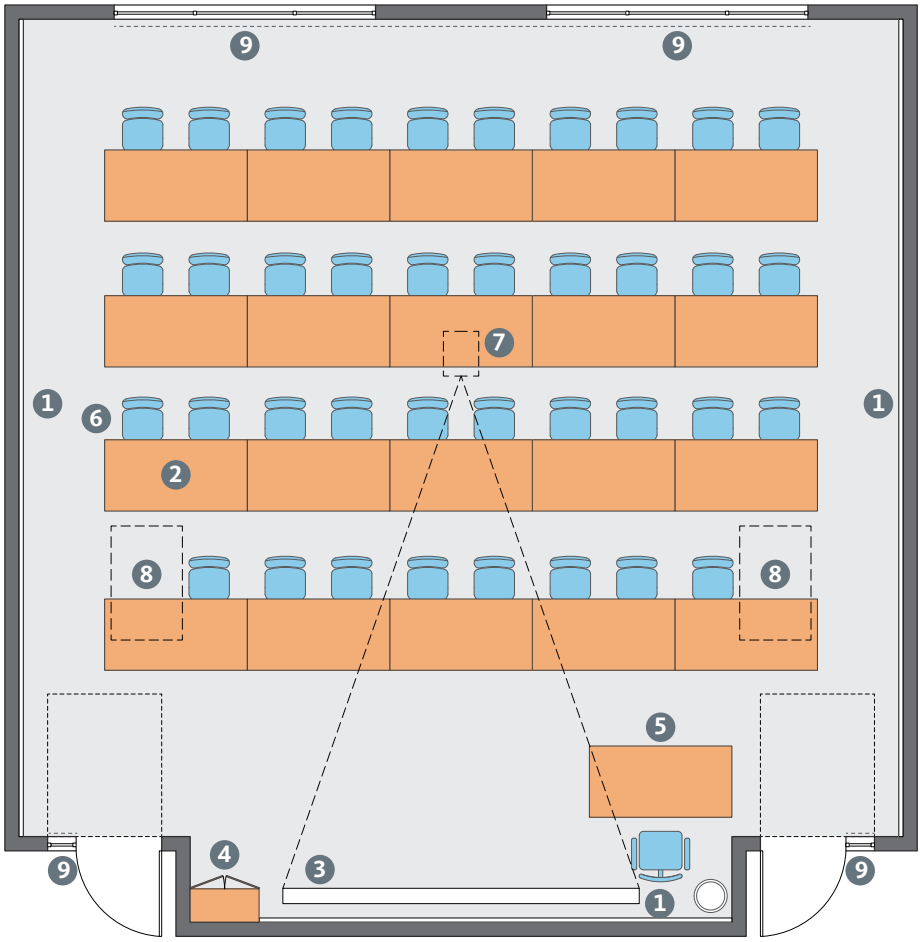
NOTES:

- All clean-outs & access panel types & locations to be coordinated with architect.
- Confirm location of wireless access points w/ AVCCD ITS.
- Instructor station AV & Tel/Data connections to be flush-floor or wall-mounted depending on room configuration.

FLEXIBLE CLASSROOM

- 40 Student Stations.
- Antelope Valley College's standard is an average of 20 ASF per student station.
- Average classroom size to be 900 - 1,000 ASF.

PLAN



LEGEND

1. Whiteboard
2. Stackable, mobile table (24" x 60")
3. Motorized projector screen
4. Lockable storage cabinet
5. Mobile instructor station w/ AV equipment rack
6. Stackable, mobile chairs
7. Ceiling mounted projector
8. Accessible desk
9. Double roller shade (window treatment & room darkening)

SURFACES

Floor: Resilient flooring

Wall: Painted drywall

Ceiling Height: 9'-0" min.

Ceiling Type: Acoustic ceiling tile

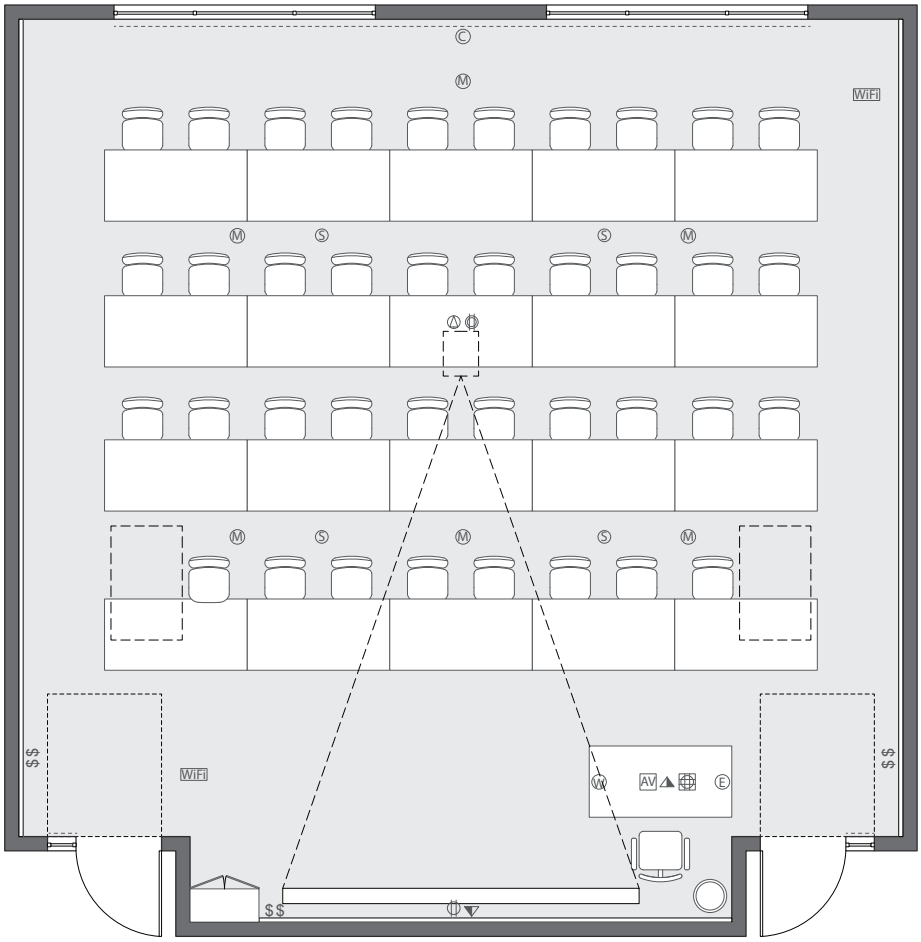
LIGHTING

- Refer 'Interior Lighting' Section 07

HVAC

- No manual operated thermostats

PLAN



SYMBOLS

- Duplex
- Quadruplex
- Tel/Data (duplex)
- Flush floor-mounted quadruplex
- Flush floor-mounted data (6 outlets at instructor station)
- AV A/V connections
- $ Light switch
- Ceiling data (3 cables)
- Ⓢ Ceiling speaker
- Ceiling duplex
- WiFi Wireless access point
- Ⓔ Extron LCD touchscreen controller
- Ⓜ Ceiling microphone (for distance eduction enabled rooms)
- Ⓒ Camera (for distance education enabled rooms)
- Ⓦ Wireless microphone for instructor (for distance education enabled rooms)

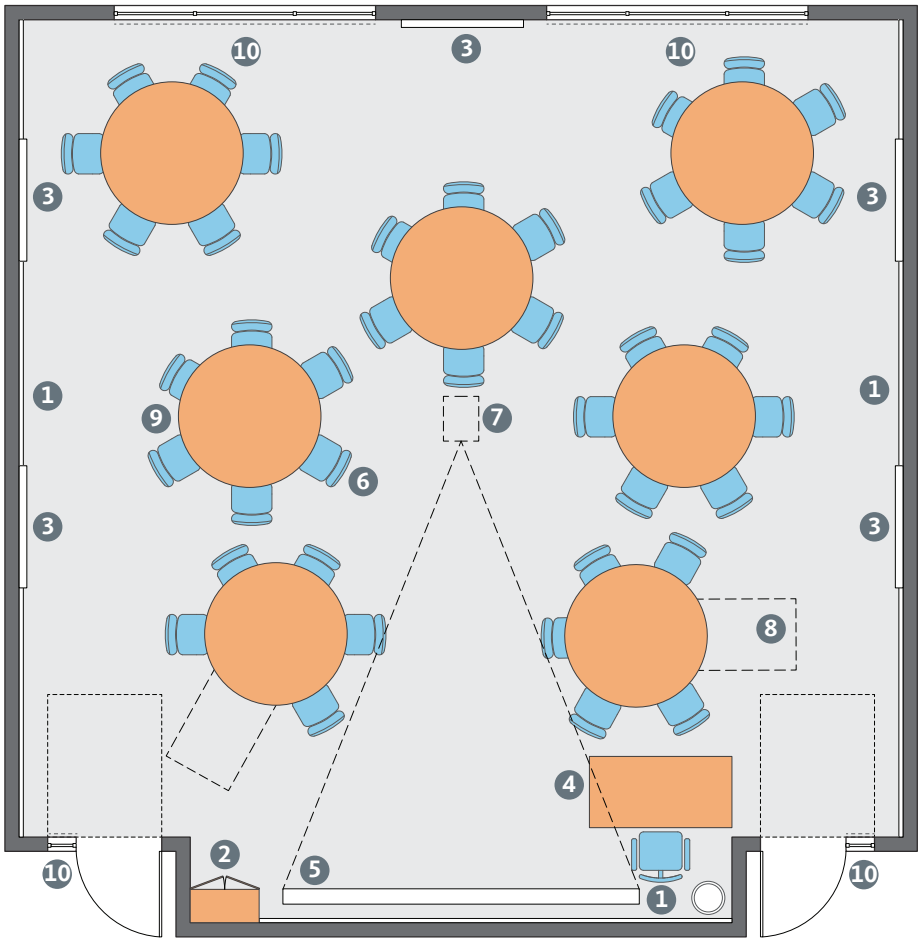
NOTES:

- All clean-outs & access panel types & locations to be coordinated with architect.
- Confirm location of wireless access points w/ AVCCD ITS.
- Instructor station AV & Tel/Data connections to be flush-floor or wall-mounted depending on room configuration.

ACTIVE CLASSROOM

- 40 Student Stations.
- Antelope Valley College's standard is an average of 20 ASF per student station.
- Average classroom size to be 900 - 1,000 ASF.

PLAN



LEGEND

1. Whiteboard
2. Lockable storage cabinet
3. Wall-mounted display w/ connections for student laptops & other devices (Quantity of breakout displays based on eight students per group)
4. Mobile instructor station w/ AV equipment rack
5. Motorized operated projection screen
6. Stackable, mobile chairs
7. Projector - ceiling mounted
8. Accessible station
9. Folding, mobile tables
10. Double roller shade (window treatment & room darkening)

SURFACES

Floor: Resilient flooring

Wall: Painted drywall

Ceiling Height: 9'-0" min.

Ceiling Type: Acoustic ceiling tile

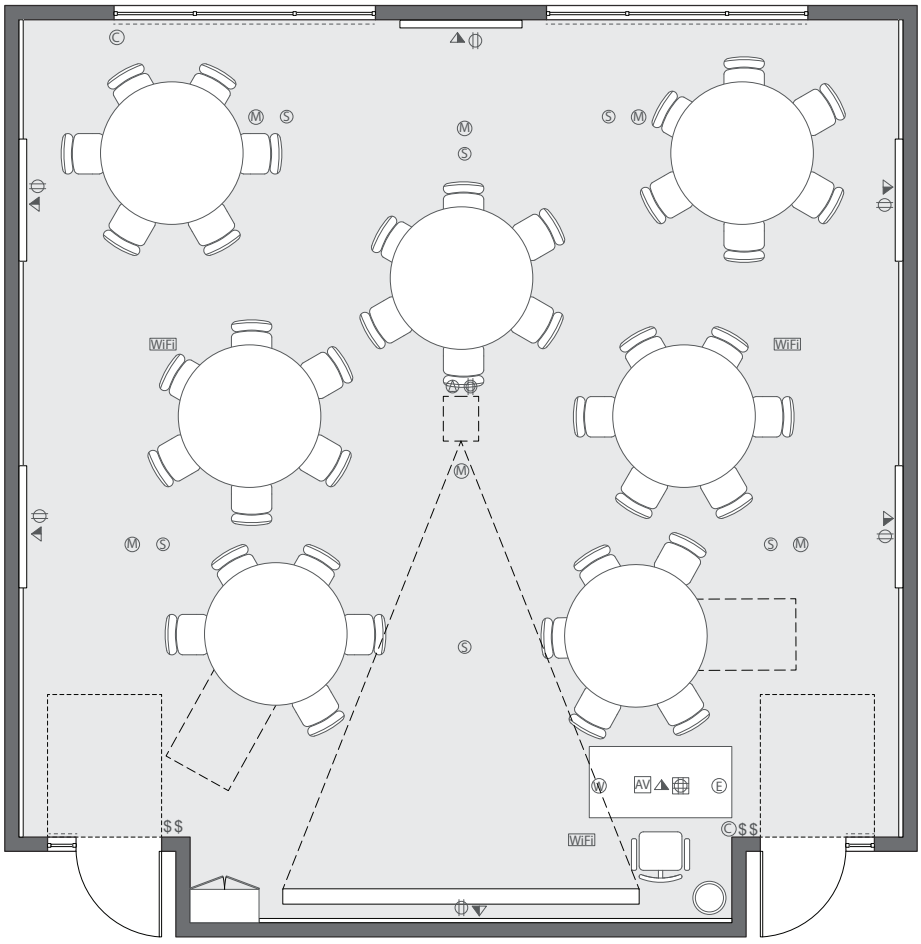
HVAC

- No manual operated thermostats

LIGHTING

- Refer 'Interior Lighting' Section 07

PLAN



SYMBOLS

- Duplex
- Quadruplex
- Tel/Data
- Flush floor-mounted quadruplex
- Flush floor-mounted data (6 outlets at instructor station)
- AV A/V connections
- $ Light switch
- Ceiling data (3 cables)
- Ⓢ Ceiling speaker
- Ceiling duplex
- WiFi Wireless access point
- Ⓔ Extron LCD touchscreen controller
- Ⓜ Ceiling microphone (for distance eduction enabled rooms)
- Ⓒ Camera (for distance education enabled rooms)
- Ⓦ Wireless microphone for instructor (for distance education enabled rooms)

NOTES:

- All clean-outs & access panel types & locations to be coordinated with architect.
- Confirm location of wireless access points w/ AVCCD ITS.
- Instructor station AV & Tel/Data connections to be flush-floor or wall-mounted depending on room configuration.

OFFICES

OFFICE SIZES

POSITION	SPACE SIZE
Deans / Executive Directors	*200 ASF Private Office*
Managers / Directors	*150 ASF Private Office*
Supervisor	*110-120 ASF Private Office*
Faculty	*90 ASF Private Office*
Staff	*90 ASF Private Office*
Staff	*64-100 ASF Workstation*

Office spaces should combine user focus with freedom of design, while workstations will create flexible work environments perfectly suited to individual tasks.

The following pages include diagrams and notes for the design of each of the office types. Diagrams include suggested arrangements and will be designed for each project.

SHARED OFFICE

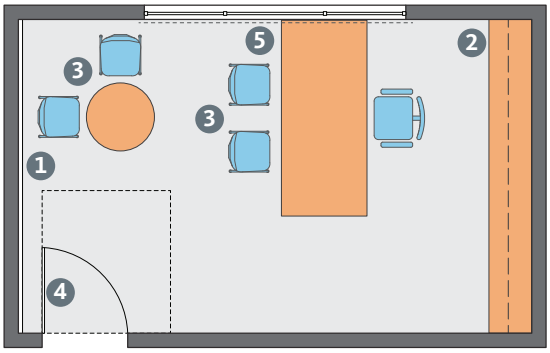
SUPERVISORS OFFICE

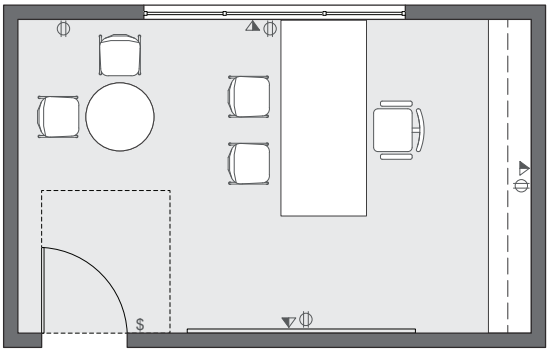
DEANS / EXECUTIVE DIRECTORS OFFICE

DEAN / EXECUTIVE DIRECTOR OFFICE

SINGLE OCCUPANCY | 200 ASF

PLAN





LEGEND

1. Whiteboard
2. Built-in storage w/ bookshelves above
3. Guest seating
4. Solid wood door
5. Single roller shade

SYMBOLS

- Duplex
- Tel/Data
- $ Light switch w/ occupancy senor

HVAC

- Manually operated thermostats are acceptable

SURFACES

Floor: Carpet tile

Wall: Painted drywall

Ceiling Height: 9'-0" min.

Ceiling Type: Acoustic ceiling tile

- Work surface
- Seating

LIGHTING

- Refer 'Interior Lighting' Section 07

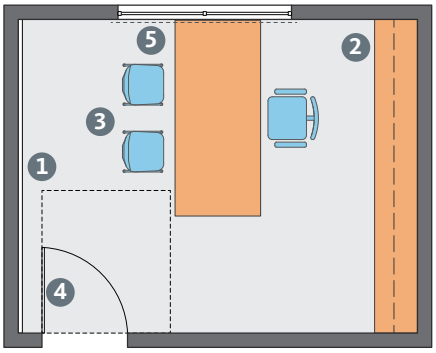
NOTES:

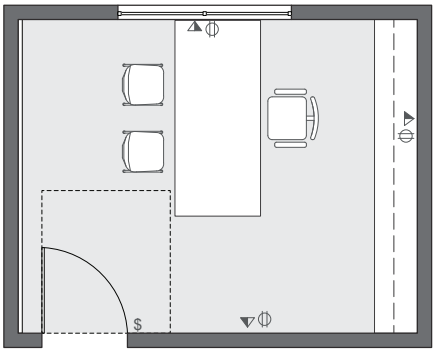
- All clean-outs & access panel types & locations to be coordinated with architect.

MANAGER / DIRECTOR OFFICE

SINGLE OCCUPANCY | 150 ASF

PLAN





LEGEND

1. Whiteboard
2. Built-in storage w/ bookshelves above
3. Guest seating
4. Solid wood door
5. Single roller shade

SYMBOLS

- Duplex
- Tel/Data
- $ Light switch w/ occupancy senor

HVAC

- Manually operated thermostats are acceptable

SURFACES

Floor: Carpet tile

Wall: Painted drywall

Ceiling Height: 9'-0" min.

Ceiling Type: Acoustic ceiling tile

- Work surface
- Seating

LIGHTING

- Refer 'Interior Lighting' Section 07

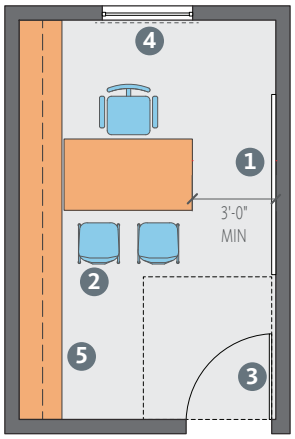
NOTES:

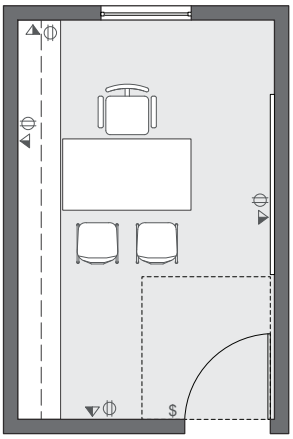
- All clean-outs & access panel types & locations to be coordinated with architect.

SUPERVISOR OFFICE

SINGLE OCCUPANCY | 110-120 ASF

PLAN





LEGEND

1. Whiteboard
2. Guest seating
3. Solid wood door
4. Single roller shade
5. Built-in storage w/bookshelves

SYMBOLS

- Duplex
- Tel/Data
- $ Light switch w/ occupancy senor

HVAC

- Manually operated thermostats are acceptable

SURFACES

Floor: Carpet tile

Wall: Painted drywall

Ceiling Height: 9'-0" min.

Ceiling Type: Acoustic ceiling tile

- Work surface
- Seating

LIGHTING

- Refer 'Interior Lighting' Section 07

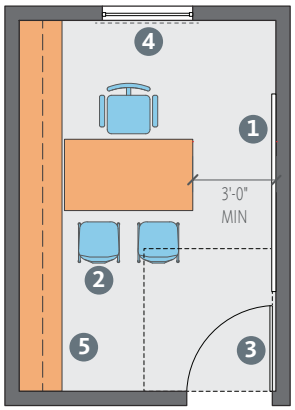
NOTES:

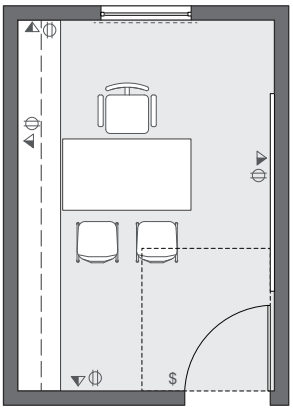
- All clean-outs & access panel types & locations to be coordinated with architect.

FACULTY OFFICE

SINGLE OCCUPANCY | 90 ASF

PLAN





LEGEND

1. Whiteboard
2. Guest seating
3. Solid wood door
4. Single roller shade
5. Built-in storage w/bookshelves

SYMBOLS

- Duplex
- Tel/Data
- $ Light switch w/ occupancy senor

HVAC

- Manually operated thermostats are acceptable

SURFACES

Floor: Carpet tile

Wall: Painted drywall

Ceiling Height: 9'-0" min.

Ceiling Type: Acoustic ceiling tile

- Work surface
- Seating

LIGHTING

- Refer 'Interior Lighting' Section 07

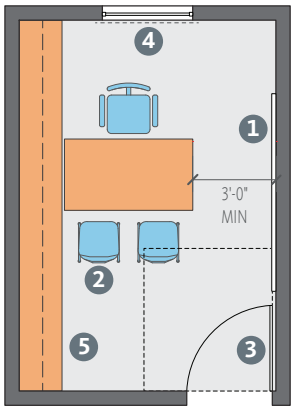
NOTES:

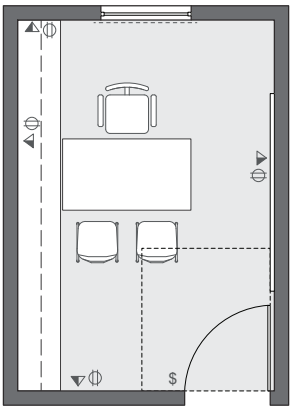
- All clean-outs & access panel types & locations to be coordinated with architect.

STAFF OFFICE

SINGLE OCCUPANCY | 90 ASF

PLAN





LEGEND

1. Whiteboard
2. Guest seating
3. Solid wood door
4. Single roller shade
5. Built-in storage w/bookshelves

SYMBOLS

- Duplex
- Tel/Data
- $ Light switch w/ occupancy senor

HVAC

- Manually operated thermostats are acceptable

SURFACES

Floor: Carpet tile

Wall: Painted drywall

Ceiling Height: 9'-0" min.

Ceiling Type: Acoustic ceiling tile

- Work surface
- Seating

LIGHTING

- Refer 'Interior Lighting' Section 07

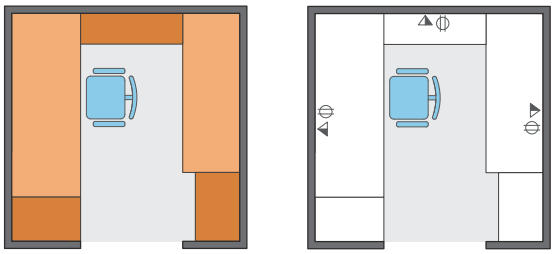
NOTES:

- All clean-outs & access panel types & locations to be coordinated with architect.

STAFF WORKSTATIONS

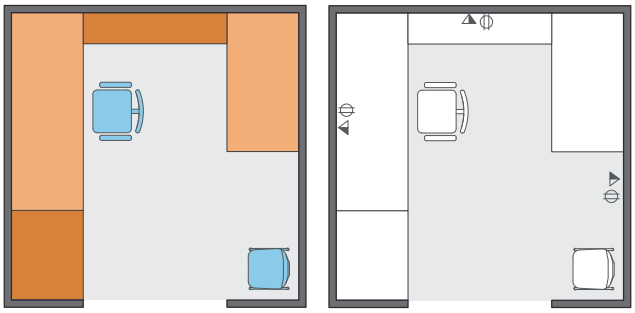
STANDARD WORKSTATION | 64 ASF

PLAN



LARGE WORKSTATION | 100 ASF

PLAN



LEGEND

- Duplex
- Tel/Data
- $ Light switch w/ occupancy senor

HVAC

- Manually operated thermostats are permitted in Division Suites.

SURFACES

Floor: Carpet tile

Wall: N/A

Ceiling Height: 9'-0" min.

Ceiling Type: Acoustic ceiling tile

Work surface

Seating

- Work surface
- Seating
- Storage

LIGHTING

- Refer 'Interior Lighting' Section 07

NOTES:

- All clean-outs & access panel types & locations to be coordinated with architect.

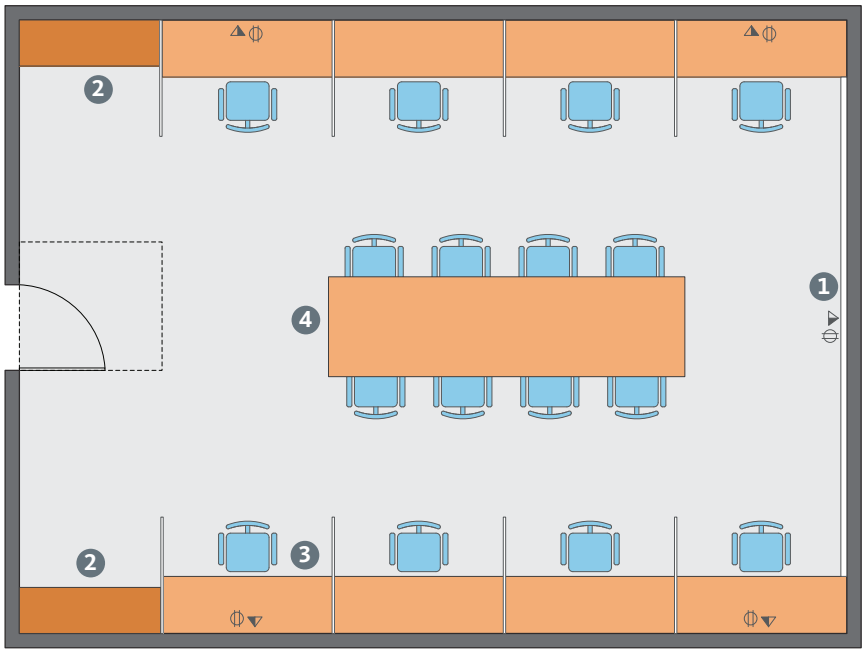
DIVISION OFFICE SUITE

DIVISION OFFICE PROGRAM

SPACE	SIZE + TYPE
Dean's Office	*200 ASF Private Office*
Staff	*90 ASF Office*
Staff	*90 ASF Workstation*
Waiting	*100 ASF Open Area*
Conference Room	*300 ASF Room*
Work/File	*200 ASF Room*
Total	**1,000 ASF**

ADJUNCT FACULTY OFFICE

ASF VARIES



LEGEND

1. Whiteboard
2. Lockers
3. Workstations
4. Communal work table

SYMBOLS

- Duplex
- Tel/Data
- $ Light switch w/ occupancy senor

HVAC

- Manually operated thermostats are permitted in Division Suites.

SURFACES

Floor: Carpet tile

Wall: Painted drywall

Ceiling Height: 9'-0" min.

Ceiling Type: Acoustic ceiling tile

- Work surface
- Seating

LIGHTING

- Refer 'Interior Lighting' Section 07

NOTES:

- All clean-outs & access panel types & locations to be coordinated with architect.

CONFERENCE ROOMS

A well designed conference room helps in an effective, clear and dramatic communication of ideas and dialogue. Conference room design demands not only the appropriate furniture and equipment, but also the right space, atmosphere, and lighting arrangement of the room.

SMALL CONFERENCE ROOM

LIGHTING

For rooms with exterior windows, the window treatments should contain solar blocking or blackout to prevent glare for audio visual use. Lighting controls shall be configured to ensure that the lights directly in front of AV displays/projection screens can be turned on/off independently of the other lights in the room.

AUDIO

Conference room interiors should be designed seeking the comfort level of the users and should not allow for external sound to interfere with internal interaction.

FURNISHINGS

Conference room interiors should be designed seeking the comfort level of the users and should not allow for external sound to interfere with internal interaction.

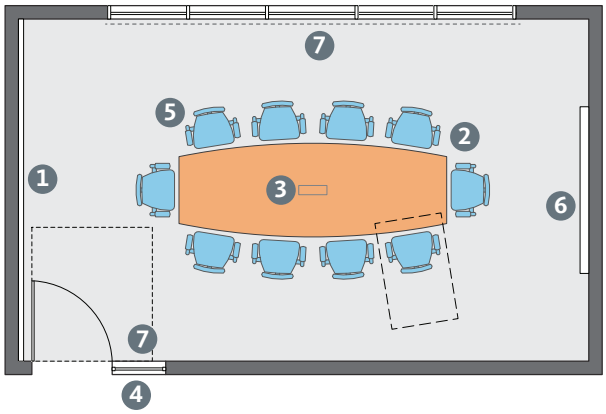
MEDIUM CONFERENCE ROOM

LARGE CONFERENCE ROOM

SMALL CONFERENCE ROOM

8-10 SEATS | 250 ASF

PLAN



LEGEND

1. Whiteboard
2. Conference table, fixed
3. Power / data / phone access panel @ table top
4. Sidelight
5. Mobile chairs
6. Flat panel display, wall mounted
7. Double roller shade (window treatment & room darkening)

SURFACES

Floor: Carpet tile

Wall: Painted drywall

Ceiling Height: 9'-0" min.

Ceiling Type: Acoustic ceiling tile

- Work surface
- Seating

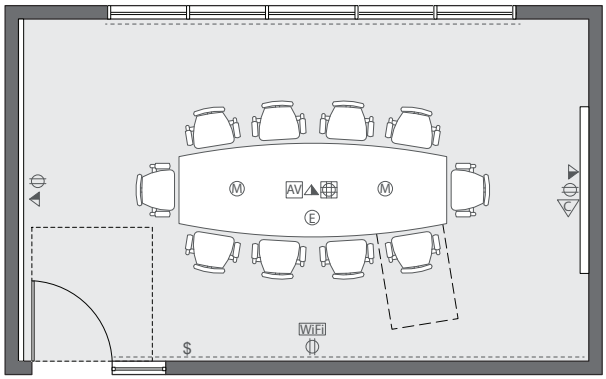
HVAC

- Manually operated thermostats are acceptable

LIGHTING

- Refer 'Interior Lighting' Section 07

PLAN



SYMBOLS

- Duplex
- Tel/Data
- $ Light switch w/ occupancy senor
- Flush floor-mounted quadruplex
- Flush floor-mounted data
- AV A/V connections
- Ceiling data (3 cables)
- S Ceiling speaker
- Ceiling duplex

- WiFi Wireless access point
- E Extron LCD touchscreen controller
- M Tabletop microphones for video conference enabled rooms
- C Wall-mounted camera in flush-mounted Vaddio box for video conferencing enabled rooms

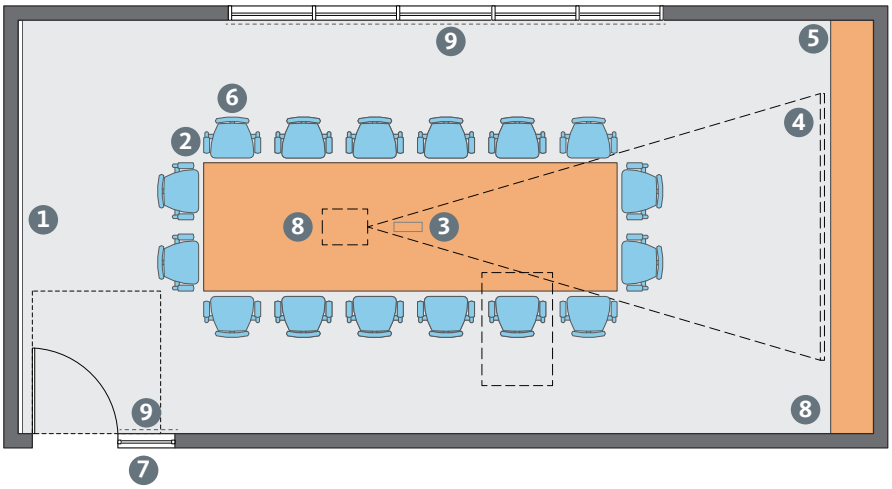
NOTES:

- All clean-outs & access panel types & locations to be coordinated with architect.
- Confirm locations of wireless access point w/ AVCCD ITS.

MEDIUM CONFERENCE ROOM

14-16 SEATS | 400 ASF

PLAN



LEGEND

1. Whiteboard
2. Conference table, fixed
3. Power / data / phone access panel @ table top
4. Motorized projection screen
5. Built-in storage
6. Mobile chairs
7. Sidelight
8. AV equipment cabinet
9. Double roller shade (window treatment & room darkening)

SURFACES

Floor: Carpet tile

Wall: Painted drywall

Ceiling Height: 9'-0" min.

Ceiling Type: Acoustic ceiling tile

- Work surface
- Seating
- Storage

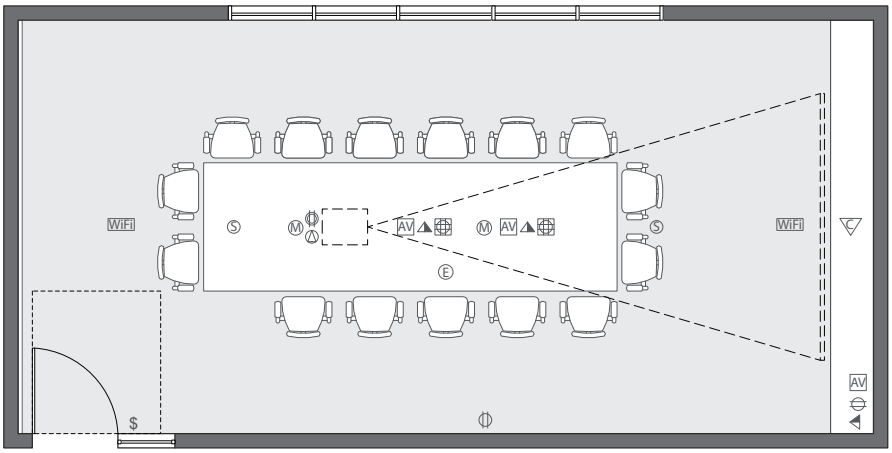
HVAC

- Manually operated thermostats are permitted in Division Suites. Provide separate zone for each Conference Room.

LIGHTING

- Refer 'Interior Lighting' Section 07

PLAN



SYMBOLS

- Duplex
- Tel/Data
- $ Light switch w/ occupancy senor
- Flush floor-mounted quadruplex
- Flush floor-mounted data
- AV A/V ions
- Ceiling data (3 cables)
- Ⓢ Ceiling speaker
- Ceiling duplex
- WiFi Wireless access point
- Ⓔ Extron LCD touchscreen controller
- Ⓜ Tabletop microphones for video conference enabled rooms
- Wall-mounted camera in flush-mounted Vaddio box for video conferencing enabled rooms

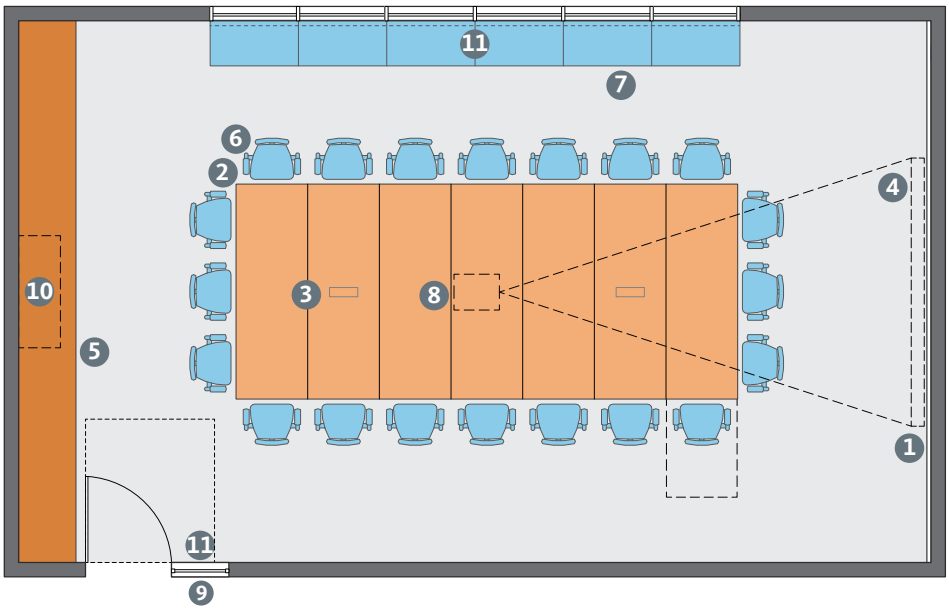
NOTES:

- All clean-outs & access panel types & locations to be coordinated with architect.
- Confirm locations of wireless access point w/ AVCCD ITS

LARGE CONFERENCE ROOM

18-20 SEATS | 600 ASF

PLAN



LEGEND

1. Whiteboard
2. Conference tables
3. Power / data / phone access panel @ table top
4. Motorized projection screen
5. Built-in storage
6. Mobile chairs
7. Built-in bench seating
8. Projector, ceiling mounted
9. Sidelight
10. AV equipment
11. Double roller shade (window treatment & room darkening)

SURFACES

Floor: Carpet tile

Wall: Painted drywall

Ceiling Height: 9'-0" min.

Ceiling Type: Acoustic ceiling tile

- Work surface
- Storage
- Seating

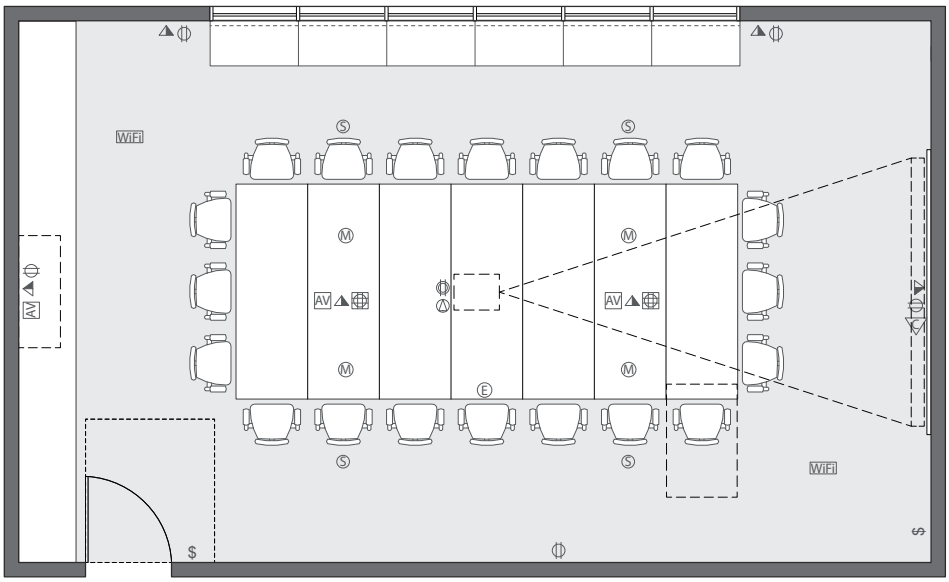
HVAC

- Manually operated thermostats are permitted in Division Suites. Provide separate zone for each Conference Room.

LIGHTING

- Refer 'Interior Lighting' Section 07

PLAN



SYMBOLS

- Duplex
- Tel/Data
- $ Light switch w/ occupancy senor
- Flush floor-mounted quadruplex
- Flush floor-mounted data
- AV A/V connections
- Ceiling data (3 cables)
- (S) Ceiling speaker
- Ceiling duplex
- WiFi Wireless access point
- (E) Extron LCD touchscreen controller
- (M) Tabletop microphones for video conference enabled rooms
- Wall-mounted camera in flush-mounted Vaddio box for video conferencing enabled rooms

NOTES:

- All clean-outs & access panel types & locations to be coordinated with architect.
- Confirm locations of wireless access point w/ AVCCD ITS.

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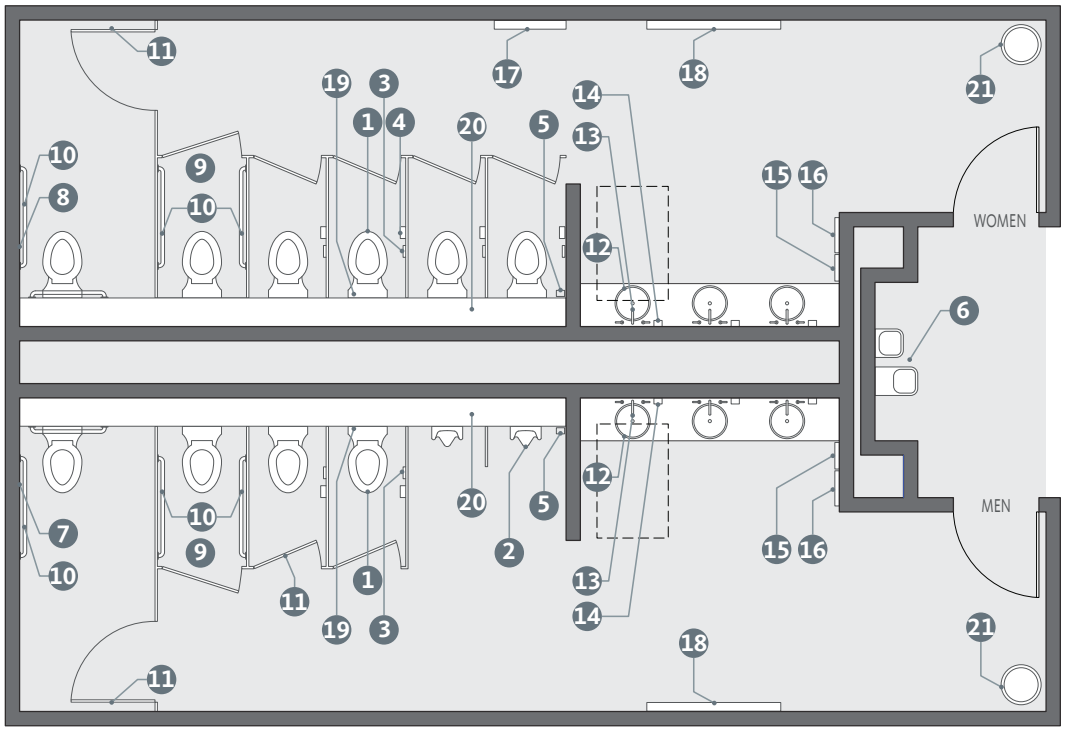
RESTROOMS

RESTROOM DISTRIBUTION

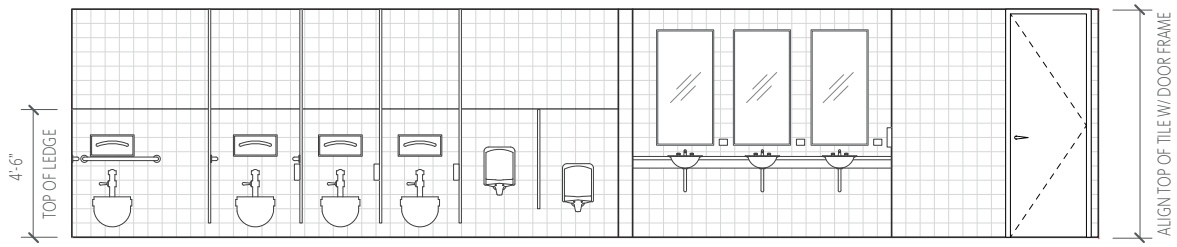
- Multiple accommodation restrooms - Per plumbing code
- Staff restrooms (men + women) - 1 set per building (located within an office area suite)
- Single occupancy restrooms - 1 per building

MULTIPLE ACCOMMODATION RESTROOM

PLAN



ELEVATION



SURFACES

Floor: 12”x12” tile, min.

Wall: 12”x6” tile, min.

Ceiling Height: 8’-0” min.

Ceiling Type: Painted drywall

LIGHTING

Refer ‘Interior Lighting’ Section 07

NOTES:

- All floor drains to be provided with an automatic trap primer behind an access panel.
- All wall-mounted water closets, urinals, and lavatories to be supported by floor mounted chair carriers or concealed arm uprights.
- Backing plates for drinking fountains to be provided by the manufacturer.
- Provide exhaust at a minimum of 10 AC/HR and sufficient supply or transfer air to prevent excess negative pressure.
- Hot and cold water supply should be provided with accessible shut off valves.
- All clean-outs and access panels locations to be coordinated with the architect.
- Provide a continuous ledge 12" in depth, spanning the area behind the toilets & urinals. This element provides a convenient dry surface for occupants to set their personal belongings. Provide a notch or fold down ledge where countertop exists.

LEGEND

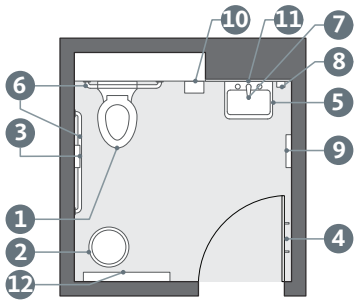
1. Water closet
2. Urinal
3. Twin jumbo roll toilet tissue dispenser - surface mount
4. Sanitary napkin disposal
5. Floor drain w/ trap primer connection
6. Hi-lo drinking fountain
7. Combination toilet seat cover & toilet tissue dispenser
8. Combination toilet seat cover, sanitary napkin disposal and toilet tissue dispenser
9. Semi-ambulatory accessible as required
10. Grab bars
11. Coat hook w/ bumper (2 per stall)
12. Lavatory
13. Faucet
14. Soap dispenser - surface mount
15. Paper towel dispenser
16. Hand dryer
17. Napkin/tampon vendor - recessed (Women's)
18. Diaper changing station
19. Toilet seat cover dispenser - recessed
20. Ledge
21. Trash bin

HVAC

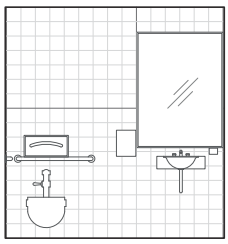
- Manually operated thermostats are acceptable

SINGLE OCCUPANCY RESTROOM

PLAN



ELEVATION



LEGEND

1. Water closet
2. Trash bin
3. Combination toilet seat cover, sanitary napkin disposal (in women's) and toilet tissue dispenser.
4. Coat hook w/ bumper
5. Lavatory - wall hung
6. Grab bar
7. Faucet
8. Soap dispenser - surface mount
9. Paper towel dispenser and napkin/ tampon vendor. - recessed
10. Hand dryer
11. Mirror
12. Diaper changing station

SURFACES

Floor: 12" x 12" tile, min.

Wall: 12" x 6" tile, min.

Ceiling Height: 8'-0" min.

Ceiling Type: Painted drywall

LIGHTING

Refer 'Interior Lighting' Section 07

NOTES:

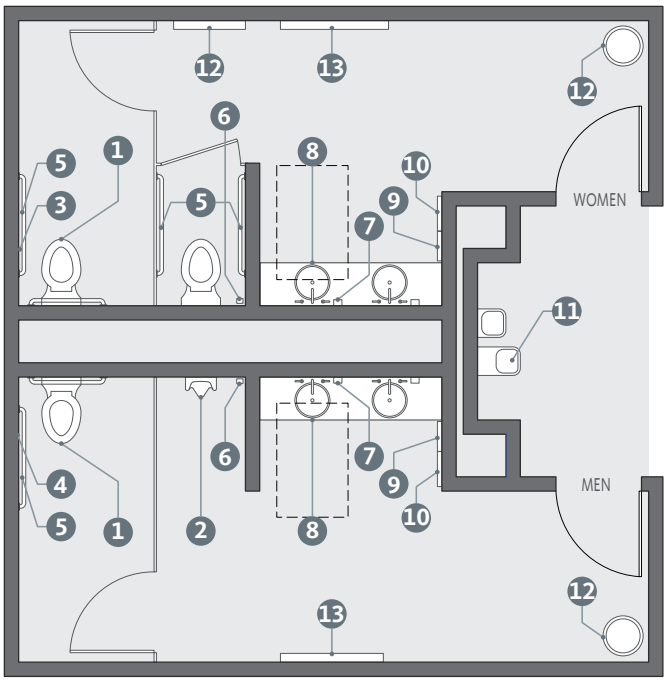
- The number of single occupancy Restroom included in a building project will be determined by the needs of the specific programs that will occupy the building.
- Hot and cold water supply should be provided with accessible shut off valves.
- All floor drains to be provided with an automatic trap primer behind an access panel.

NOTES CONTINUED:

- All wall-mounted water closets, lavatories to be supported by floor mounted chair carriers or concealed arm uprights.
- Provide exhaust at a minimum of 10 AC/HR and sufficient supply or transfer air to prevent excess negative pressure. All clean-outs and access panels locations to be coordinated with the architect.
- All clean-outs and access panels locations to be coordinated with the architect.
- Provide a continuous ledge 12" in depth, spanning the area behind the toilets & lavatories. This element provides a convenient dry surface for occupants to set their personal belongings.

STAFF RESTROOM

PLAN



LEGEND

1. Water closet
2. Urinal
3. Combination toilet seat cover, sanitary napkin disposal and toilet tissue dispenser
4. Combination toilet seat cover & toilet tissue dispenser
5. Grab bars
6. Floor drain w/ trap primer
7. Soap dispenser - surface mount
8. Lavatory
9. Hand dryer
10. Paper towel dispenser
11. Hi-lo drinking fountain
12. Trash bin
12. Napkin/tampon vendor - recessed (Women's)
13. Diaper changing station

SURFACES

Floor: 12"x12" tile, min.

Wall: 12"x6" tile, min.

Ceiling Height: 8'-0" min.

Ceiling Type: Painted drywall

LIGHTING

- Refer 'Interior Lighting' Section 07

NOTES:

- All floor drains to be provided with an automatic trap primer behind an access panel.

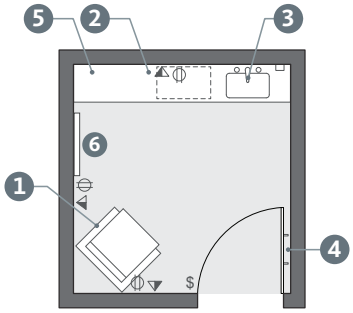
NOTES CONTINUED:

- All wall-mounted water closets, urinals, and lavatories to be supported by floor mounted chair carriers or concealed arm uprights.
- Provide exhaust at a minimum of 10 AC/HR and sufficient supply or transfer air to prevent excess negative pressure.
- Hot and cold water supply should be provided with accessible shut off valves.
- All clean-outs and access panels locations to be coordinated with the architect.

QUIET ROOM

60 ASF

PLAN



LEGEND

1. Seating
2. Tabletop w/ shelving
3. Sink
4. Coat hook w/ bumper
5. Under-counter refrigerator
6. Diaper changing station

SYMBOLS

- Duplex
- Tel/Data

SURFACES

Floor: Carpet
Wall: Painted drywall

Ceiling Height: 9'-0" min.

Ceiling Type: Painted drywall / acoustic ceiling tile

LIGHTING

- Refer 'Interior Lighting' Section 07

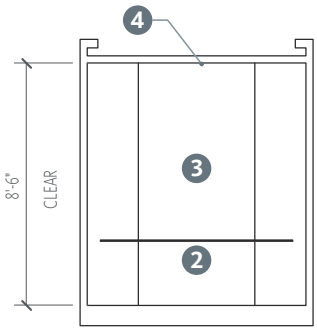
NOTES:

- The mother's rooms should provide, at a min., a lockable door, counter-tops w/ storage below, a sink, an under-counter refrigerator and a comfortable lounge chair.
- Adequate HVAC service, including a thermostat; and well-placed electrical outlets.
- Telephone service and network connections for the room are also recommended to increase worker safety and productivity for occupants to set their personal belongings.
- Accessibility guidelines should be met for all the features of the room.

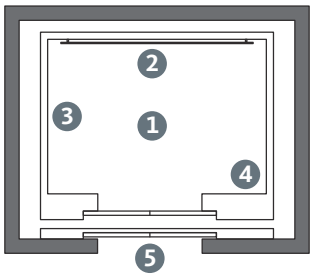
UTILITY ROOMS

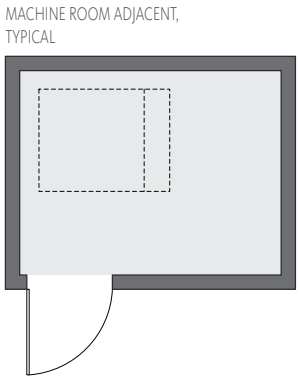
ELEVATOR

ELEVATION



PLAN





LEGEND

1. Floor: Match flooring in adjacent public space, typically terrazzo.
2. Handrail along back wall
3. Durable, easily cleaned wall finish
4. Provide access panel in ceiling to access controls on top of cab
5. Doors & front returns: Satin stainless steel (vertical)

LIGHTING

- Refer 'Interior Lighting' Section 07

NOTES:

- Hydraulic elevator w/ machine room.
- Machine room surfaces similar to Electrical Room.
- Keep HS standard where elevator goes to roof.
- Provide elevator pad studs w/ protection pads.

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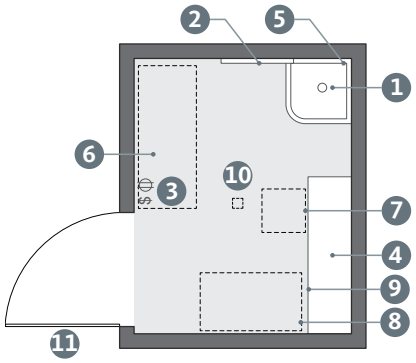
CUSTODIAL CLOSETS

CUSTODIAL WET/ EQUIPMENT CLOSET

MINIMUM 100 ASF

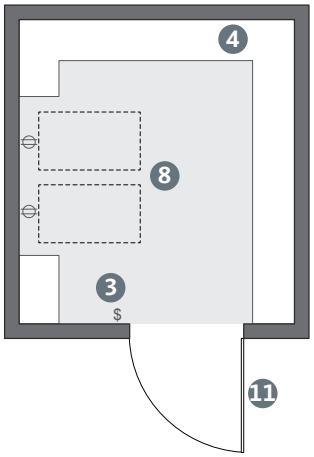
PLAN



CUSTODIAL STORAGE ROOM

MINIMUM 100 ASF

PLAN



LEGEND

1. Floor basin (mop sink) w/ 4" curb
2. Mop rack/shelf w/ hooks
3. Ground fault interrupter (GFI) receptacle located approx. 2'-0" above finish floor (AFF) near door
4. Adjustable shelving -18" deep. Provide at least 15 lineal feet
5. Hot & cold water faucet w/ hook for filing buckets & attached hose
6. Mop cart
7. Vacuum
8. Floor machine (buffer)
9. Step ladder
10. Floor drain w/ trap primer connection
11. 4'-0" Wide door

SYMBOLS

- Duplex
- Tel/Data
- $ Light switch w/ occupancy senor

LIGHTING

- Refer 'Interior Lighting' Section 07

SURFACES

Floor: Sealed concrete

Wall: • Washable, hard, smooth finish
• Glazed tile wainscot at floor basin

Ceiling Height: Varies

Ceiling Type: Painted drywall

Door: 4'-0" wide min. opening

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 (4'-0" min).
- Provide adequate ventilation.

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.
- Provide adequate ventilation.

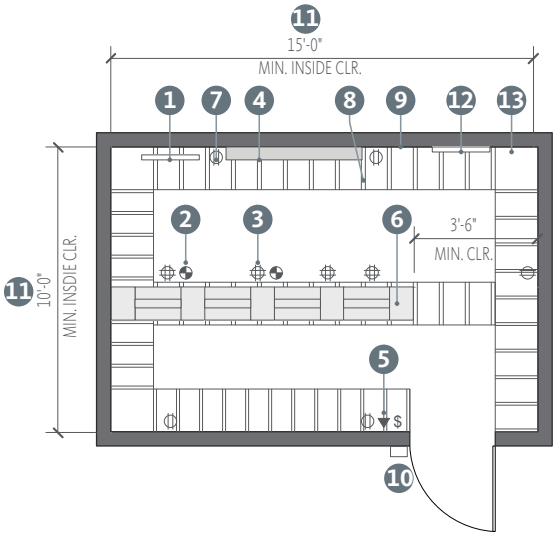
NOTES:

- Provide proper access and room to maneuver floor machine.
- Backflow preventer's, pressure regulators etc. are not allowed in custodial rooms.
- Provide exhaust at a minimum of 10AC/HR.
- All equipment rooms shall be designed and located to facilitate the removal, transport, and replacement of the largest equipment component housed within the room.

BUILDING DISTRIBUTION FRAME (BDF)

MINIMUM 150 ASF

PLAN



LEGEND

1. Telecom main grounding busbar (TMGB) at 7' AFF
2. 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 (handset)
6. 19" equipment rack w/ 6" (min.) vertical cable management (each side)
7. Convenience duplex outlet (typ.)
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. Mount vertical on all walls, 6" (min.) AFF
10. Security card access - ID card reader/ keypad combo with electrified mortise lockset, keyed off master
11. Any deviation from minimum clear dimensions requires written pre-authorization from AVCCD ITS. Typical for all technology rooms
12. Building entrance terminal (B.E.T.)
13. Conduits to communications vault for incoming copper & fiber optic cables

SYMBOLS

- 120V.20A Duplex power outlets
- Tel/Data
- $ Light switch w/ occupancy senor
- 120V/20A Quadruplex power outlet
- Wall phone
- 208V/30A Locking power outlet

SURFACES

Floor: Sealed concrete

Wall: Painted drywall

Ceiling Height: 9'-0" min.

Ceiling Type: Exposed

LIGHTING

- Refer 'Interior Lighting' Section 07

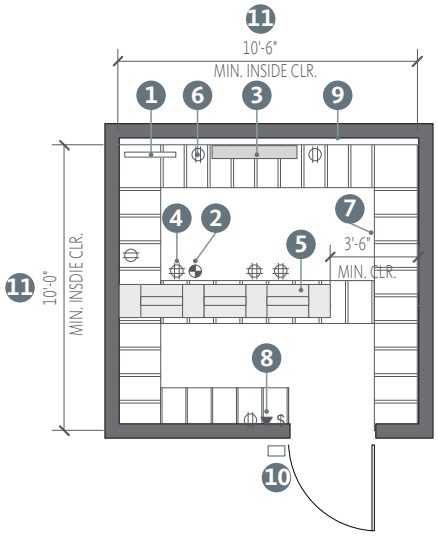
NOTES:

- Connect to emergency power
- Minimum clear height of 8'-0" clear of obstructions
- No windows, full height walls
- Provide stand-alone HVAC unit with independent controls
- Coordinate light layout with rack and cable tray placement to ensure adequate service lighting on both sides of the racks
- Technology rooms should not be directly accessible from outside of the building
- All equipment rooms shall be designed and located to facilitate the removal, transport, and replacement of the largest equipment component housed within the room.

INTERMEDIATE DISTRIBUTION FRAME (IDF)

MINIMUM 150 ASF

PLAN



LEGEND

1. Telecom grounding busbar (TGB) mount @ 7' AFF
2. 208/30A outlet on dedicated circuit mounted on side of ladder rack (NEMA L5-30R)
3. Wall mounted equipment
4. Quadruplex outlet on dedicated circuit mounted @ side of ladder rack
5. 19" equipment rack w/ 6" vertical cable management each side (typ.)
6. Convenience duplex outlet
7. 18" ladder rack @ 7'-6" above finish floor (AFF)
8. Wall mounted telephone handset
9. 8'x4'x 3/4" sheets of A-C grade fire retardant treated plywood by General Contractor mounted vertical on all walls @ 6" (min.) AFF
10. Security card access. HID card reader/ keypad combo with electrified mortise lockset, keyed off master
11. Any deviation from minimum clear dimensions requires written pre-authorization from AVCCD ITS. Typical for all technology rooms

SYMBOLS

- 120V/20A Duplex power outlet
- Tel/Data
- $ Light switch w/ occupancy senor
- 120V/20A Quadruplex power outlet
- Wall phone
- 208V/30A Locking power outlet

SURFACES

Floor: Sealed concrete

Wall: Painted drywall

Ceiling Height: 9'-0" min.

Ceiling Type: Exposed

LIGHTING

- Refer 'Interior Lighting' Section 07

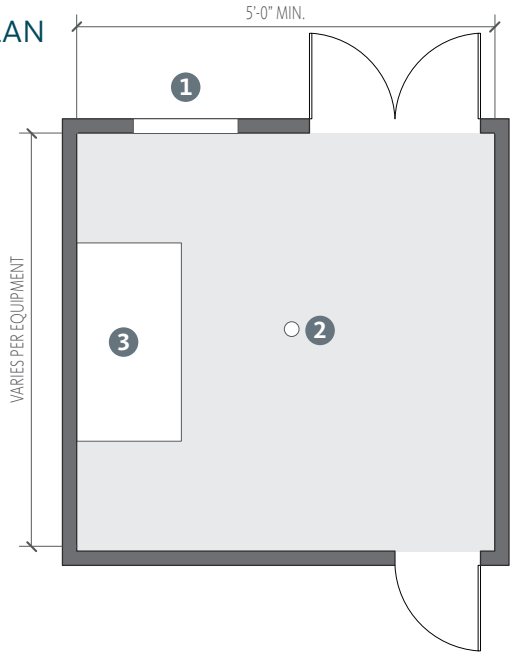
NOTES:

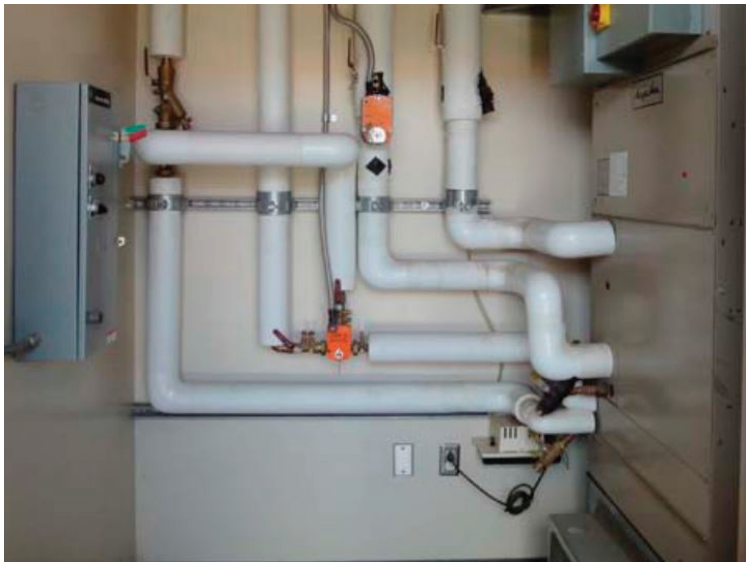
- Connect to emergency power
- Minimum clear height of 8'-0" clear of obstructions
- No windows, full height walls
- Provide stand-alone HVAC unit with independent controls
- Coordinate light layout with rack and cable tray placement to ensure adequate service lighting on both sides of the racks
- Technology rooms should not be directly accessible from outside of the building
- All equipment rooms shall be designed and located to facilitate the removal, transport, and replacement of the largest equipment component housed within the room.

MECHANICAL ROOM

SF VARIES

PLAN





LEGEND

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

SURFACES

Floor: Sealed concrete

Wall: Painted drywall

Ceiling Height: Varies

Ceiling Type: Exposed

Door:
- 3'-0" wide, louvered door (if required for ventilation and not fire rated)
- Hollow metal frames
- Hollow metal, double, exterior doors where applicable

Drains: Minimum of one floor drain is required. Provide floor sink to support equipment as needed.

LIGHTING

Refer 'Interior Lighting' Section 07

NOTES:

- Air handlers & equipment shall be inside the building and not on the roof. Use depressed slab or perimeter curb to stop water spills flooding other parts of the building.
- Provide acoustic treatment to walls and ceilings where required.
- Provide adequate safe access and manufacturer's recommended working clearances for all equipment.
- Provide for replacement of the largest piece of equipment without removing permanent walls, large items of equipment, or equipment essential to the principal on-going, day-today building use.
- Provide direct access from the exterior for major mechanical rooms exceeding 100 net square feet.
- In phased projects, mechanical rooms shall be sized to include equipment for all the phases.
- Air equipment, piping, ductwork, etc., shall be located to provide

NOTES CONTINUED:

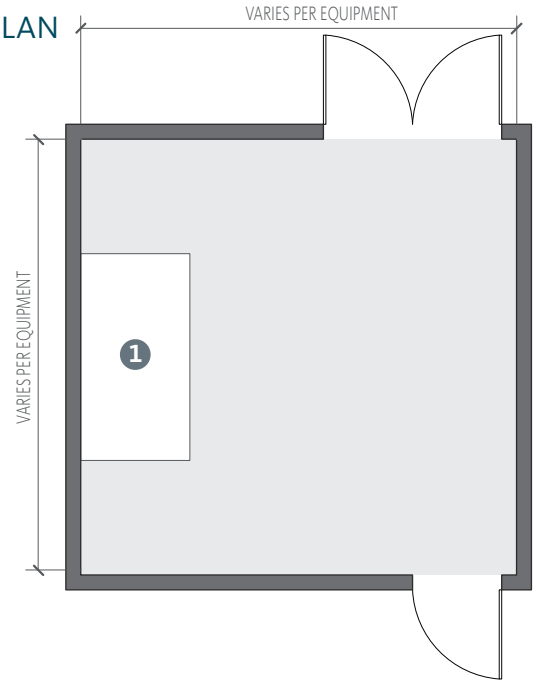
unobstructed access to filters, bearings, valves, control devices, and anything requiring access for maintenance.

- Maintain 10' clearance from vents for outside air or any intake louvers.
- Mechanical rooms shall be ventilated by a thermostatically controlled fan unless room is used as plenum.
- With the exception of fire sprinklers servicing the room, no other piping is allowed in the space.
- Condensation drain for air handler required.
- Depressed slab or curbed wall to contain leaks and spills.
- Rooms ventilated by thermostatically controlled fan/ filter positive pressure, avoid using rooms as plenum with ducts direct to outside air louver and a clean slab outside.

ELECTRICAL ROOM

80 ASF MINIMUM

PLAN



LEGEND

1. Provide 4" high concrete curbs (housekeeping pads) for equipment

LIGHTING

- Refer 'Interior Lighting' Section 07

SURFACES

Floor: Sealed concrete

Wall: Painted drywall
Ceiling Height: Varies

Ceiling Type: Exposed

Door:
- 3'-0" wide, louvered door (if required for ventilation and not fire rated)
- Hollow metal frames
- Hollow metal, double, exterior doors where applicable
- Double doors and second exit where required

NOTES:

- All equipment rooms shall be designed and located to facilitate the removal, transport, and replacement of the largest equipment component housed within the room.
- With the exception of fire sprinklers servicing the room, no other piping is allowed in the space (no floor drains).
- The use of house air or split systems should be considered if room contains transformers, IT or heat producing equipment. Maintain 80 degrees Fahrenheit.

BOILER ROOM

SURFACES

Floor: Sealed concrete

Ceiling Height: 9'-0" min.

Ceiling Type: Exposed

LIGHTING

- Refer 'Interior Lighting' Section 07

NOTES:

- Boiler rooms to be separate rooms from air handler equipment.
- Hot water domestic boilers can be in same room as heating hot water.
- Provide outside double doors for equipment replacement. Inside access is also desirable, but not mandatory.
- 4" high concrete curbs for (housekeeping pads) for equipment. Use depressed slab.
- Maintain 10' clearance from vents for outside air or any intake louvers.
- Boiler rooms to be located on ground level for ease of maintenance.

ROOM NUMBERING

PURPOSE

UNIFORMITY

A standard pattern of room numbers shall be included in the design development drawings.

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 judgment as to which starting point will permit the simpler and more logical progression.)

DESIGNATION FLOOR

Lower Level.....00 - 99

First Floor.....100 - 199

Second Floor.....200 - 299

Third Floor.....300 - 399

DESIGNATION FLOOR

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.

INTERIOR LIGHTING

LOCATION	FIXTURE TYPE	LAMP SOURCE	RECOMMENDED LIGHT LEVELS	SWITCHING
Lobbies	• Downlights • Decorative Pendants	• LED Sources: 3000K-3500K	• General Lighting: 10-20 FC avg. • Task Lighting: 40-50 FC avg. @ work plane	General lighting to be timers & switched separately from accent & task lighting.
Corridors	• Downlights • Wall Mount	• LED Sources: 3000K-3500K	• General Lighting: 10-20 FC avg. • Task Lighting: 40-50 FC avg. @ work plane	General lighting to be timers & switched separately from accent & task lighting
Support Spaces	• Indirect Pendant • Wall Mount	• LED Sources: 3000K-3500K	• General Lighting: 10-20 FC avg. • Task Lighting: 30-40 FC avg.	General lighting to be timers & switched separately from accent/ display lighting as well as task lighting
Classrooms	• Indirect Pendant • Wall Mount	• LED Sources: 3000K-3500K	• General Lighting: 40-50 FC avg. • Vertical Task Lighting: 30-30 FC avg. @ display locations	General lighting to be timers & switched separately from accent/ display lighting as well as fixtures located adj. to projection screen
Offices	• Indirect Pendant • Wall Mount	• LED Sources: 3000K-3500K	• General Lighting: 40-50 FC avg. • Vertical Task Lighting: 30-30 FC avg. @ display locations	General lighting to be timers & switched separately from accent/ display lighting as well as fixtures located adj. to projection screen
Workroom	• Indirect Pendant • Wall Mount	• LED Sources: 3000K-3500K	• General Lighting: 40-50 FC avg. • Vertical Task Lighting: 20-30 FC avg. @ display locations	General lighting to be timers & switched separately from accent/ display lighting as well as fixtures located adj. to projection screen
Faculty Lounge	• Indirect Pendant • Wall Mount	• LED Sources: 3000K-3500K	• General Lighting: 10-20 FC avg. • Vertical Task Lighting: 20-30 FC avg. @ work plane	General lighting to be timers & switched separately from accent/ display lighting & task lighting @ counters

LOCATION	FIXTURE TYPE	LAMP SOURCE	RECOMMENDED LIGHT LEVELS	SWITCHING
Mail Room	• Downlights • Decorative Pendants	• LED Sources: 3000K-3500K	• General Lighting: 20-30 FC avg. • Task Lighting: 40-50 FC avg. @ work plane	General lighting to be switched separately from task lighting
Conference/ Meeting Rooms	• Indirect Pendant • Wall Mount	• LED Sources: 3000K-3500K	• General Lighting: 20-30 FC avg. • Task Lighting: 40-50 FC avg. @ work plane • Vertical Task Lighting: 20-30 FC avg. @ display locations	General lighting to be motion & switched separately from accent/ display lighting as well as task lighting
Restrooms	• Downlights • Cove Lighting @ Back of Stalls & Sink	• LED Sources: 3000K-3500K	• General Lighting: 10-20 FC avg. • Vertical Lighting @ Mirrors: 20-30 FC avg.	Lighting to be motion & switched
Custodial Rooms	• Surface or Pendant Mounted	• LED Sources: 3000K-3500K	• General Lighting: 5-10 FC avg.	Lighting to be motion & switched
Elevator Cabs	• Downlights or Cove Light on four sides	• LED Sources: 3000K-3500K	• General Lighting: 5-10 FC avg.	Lighting to be motion & switched
Technology Rooms	• Surface or Pendant Mounted	• LED Sources: 3000K-3500K	• General Lighting: 10-20 FC avg. • Equipment Task Lighting: 20-30 FC avg.	Lighting to be motion & switched on one zone. Locate lighting @ a min. of 8'6" AFF
Mechanical/ Electrical / Boiler Rooms	• Surface or Pendant Mounted	• LED Sources: 3000K-3500K	• General Lighting: 30-40 FC avg.	Lighting to be motion & switched

08

SPECS, STANDARDS + SYSTEMS

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INTRODUCTION

Section 8 of this handbook includes a set of performance standards to be implemented into each capital impr ovement project on campus. The design of engineered systems will respond to standards set forth in this section to ensure compatible infrastructure components working together in easily maintainable configurations.

Specifications are organized based on the 2016 Master Format® list of numbers and titles classified by work results or construction practices. Information includes product, system and/or manufacturer criteria specific to Antelope Valley College (AVC).

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DIVISION 2: EXISTING CONDITIONS

02 41 16 STRUCTURE DEMOLITION

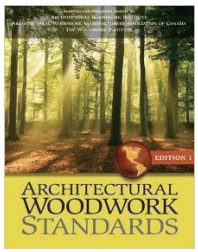
- Do a full demolition of everything within limit line, including foundations. Everything is demolished if not serving something else.

02 41 19 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.

DIVISION 6: WOOD, PLASTICS & COMPOSITES

06 41 00 ARCHITECTURAL WOOD WORK



- 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
- All casework hardware is to be accessibility compliance

DIVISION 7: THERMAL + MOISTURE PROTECTION

It is recommended that the design team retain the services of a qualified waterproofing consultant. Obtain waterproofing systems (or materials) from single source from single manufacturer whenever possible.

07 13 00 BELOW GRADE SHEET WATERPROOFING

- Self-adhesive 60 mil modified bituminous sheet that complies with State and Federal VOC limit.
- Provide manufacturer's molded sheet drainage panels.

    - Manufacturer: Carlisle Coatings & Waterproofing, Inc., Grace Construction Products, Cetco (a mineral technologies company)

07 14 10 BELOW GRADE FLUID-APPLIED WATERPROOFING

- Fluid-applied waterproofing applied in one or more coats to obtain a seamless membrane of 60 dry mils thickness, minimum.
- Provide manufacturer's molded sheet drainage panels.

    - Manufacturer: Carlisle Coatings & Waterproofing, Inc, Situra Inc., Tremco Incorporated, BASF Corporation.

07 16 16 BELOW GRADE CRYSTALLINE WATERPROOFING

- Cementitious slurry formulated to penetrate concrete or masonry by capillary action to develop crystoline growth within the capillaries.

    - Manufacturer: Koester American Corporation – Koester NB-1, Xypex Chemical Corporation, BASF Corporation.

07 19 00 WATER REPELLENTS

- Clear penetrating water repellent sealer applied to exterior vertical surfaces of brick masonry, exposed unpainted concrete and sandblasted concrete.

    - Manufacturer: Evonik Industries, ProSoCo, Inc., BASF Corporation.

07 21 00 THERMAL INSULATION

- Thermal insulation complying with CCR, Title 24, Part 2, Chapter 7, Section 707 and Part 12, Chapter 12-13 standards for insulating materials.
- Use products with post-consumer and pre-consumer recycled content to achieve LEED credit where applicable.

07 22 16 ROOF BOARD INSULATION

- Rigid board roof insulation, designated thickness and variable tapered types insulated with roofing membrane as an integrated system.
- Provide insulation and insulation fasteners listed in the FM Reference Guide that are tested and approved by Factory Mutual.
- Provide class 1-90 wind rating approval.
- Install tapered insulation over non-drainable deck areas to direct water to edges or drains.

07 54 00 THERMOPLASTIC MEMBRANE ROOFING - PVC, TPO & PVC ALLOYS

- Single ply thermoplastic membrane, 60 mil thickness, Energy Star with Solar Reflectance Index (SRI) of 78 minimum.
- Emissivity values used to calculate SRI are based upon product ratings from the CRRC's Directory of Rated Products or field measurements using the ASTM E-408-71 procedure.
- Provide UL Class A fire rating for entire roof system. System shall be listed in the current UL Building Materials directory.
- Single ply thermoplastic system shall be fully adhered or mechanically fastened with Factory Mutual 1-90 classification.
- The single ply system shall be covered by the material manufacturer's 20-year no dollar limit warranty covering all roofing components installed above the roof deck.

  - Manufacturer: Sika Sarnafil, Johns Manville, GAF

07 62 00 SHEET METAL FLASHING & TRIM

- Factory or field fabricated sheet metal flashings and roof-related metal components.
- Sheet metal shall be galvanized steel sheet metal of designated gauge except where indicated otherwise on contract drawings.
- Refer to SMACNA's Architectural Sheet Metal Manual for galvanic scale. No dissimilar metals in contact to avoid corrosion or galvanic action.
- Roof drain flashings shall be sheet lead.

07 92 00 JOINT SEALANTS

- Interior and exterior sealants and caulking, including glazing sealants.

  - Manufacturer (based on usage of products): Dow Corning, GE Silicones, Sika Sarnafil and Pecora Corporation

DIVISION 8: OPENINGS

08 10 00 DOORS & FRAMES

- Hollow Metal Exerior: Steelcraft “L” series 16ga honeycomb core or “S” or “A” series 16ga tubular for full glass, galvanized, with galvanized 14ga frames. Include top cap.
- Hollow Metal Interior: Steelcraft “L” series honeycomb core, or “S” or “A” series for full glass, 18ga w/ 16ga frames.
- Typical Interior: Solid core wood doors with 16ga steel frames. Use knockdown frames at interiors.

08 50 00 WINDOWS

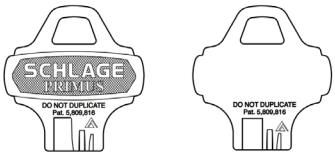
- Locate and specify windows, when possible, to enable convenient window cleaning by occupants and maintenance personnel.
- Pivoting windows or easily accessible windows for cleaning are desirable.

08 71 00 DOOR HARDWARE

- Antelope Valley College uses the following hardware products in new construction, in renovation and tenant improvement work. This hardware standard is to be adhered to for all district projects when specifying finish hardware in Specifications Section 087100.
- Antelope Valley College uses Allegion as its consultant for doors and door hardware. Contacts with the firm is Kevin Latimer, 626-201-0829. Antelope Valley College requests that they write all hardware specifications for their projects. There is no fee for their specification writing services.

KEY SYSTEM

- Manufacturer: Schlage
- Model: Everest Primus IC Core, Level 9G
- Keys to be stamped “Do Not Duplicate”. Consult with Locksmith for additional and other specific keying information and instructions.



LOCKETSETS

- Manufacturer: Mortise: Schlage
- Model: L9000T Series-L283 Visual Indicators 06a 626 for all construction
- Verify function & indicator type with Locksmith.
- Manufacturer: Cylindrical: Schlage
- Model: “NDTD RHO 626” Series. (Not generally used)

ELECTRIFIED LOCKSETS

- Manufacturer: Mortise: Schlage
- Model: L9000T EL/EU RX LX Series, 06a 626 for all construction

- Manufacturer: Cylindrical: Schlage
- Model: "NDTD RHO 626" EL/EU Series. (Not generally used)
- Verify reader with Locksmith

MORTISE CYLINDERS

- Manufacturer: Schlage
- Model: Everest Primus Level 9G 20-776-XP-626
- Consult Locksmith for keying instructions.

RIM CYLINDERS

- Manufacturer: Schlage
- Model: Everest Primus Level 9G 20-757-XP-626
- Consult Locksmith for keying instructions.

DEADBOLTS

- Do not specify

ACCESS CONTROL

- Manufacturer: Schlage
- Model: AD300-40/50/70-MT-TD Series-06-626 for new constructions.
- AD400-40/50/70-MT-TD Series-06-626 for modernization upgrade
- Consult with Locksmith to verify application.

PADLOCKS

- Manufacturer: Schlage
- Model: Kryptonite KS43 TD Series

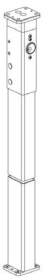
EXIT DEVICES

- Manufacturer: Von Duprin
- Model: AX-PA-98L-2SI-US26D-XB11-979: Non Rated Doors
-
- Manufacturer: Von Duprin
- Model: AX-PA-98L-2SI-F-US26D-XB11-979: Rated Doors
- Do not specify narrow stile storefront entry application.
- Verify trims with Locksmith.
- Do not specifiy vertical rods.

ELECTRIFIED EXIT DEVICES

- Manufacturer: Von Duprin
- Model: QEL/EL-AX-PA 98L series
- Verify trims with Locksmith
- Do not specify vertical rods

MULLIONS



- Manufacturer: Von Duprin
- Model: KR4954/9954 Fire Rated as required
- Von Duprin MT54 Storage Bracket

SURFACE CLOSERS

- Manufacturer: LCN
- Model: 4011/4111-EDA/HEDA/SCUSH/HCUSH-689 series
- Verify with Locksmith.

CONCEAL CLOSERS (OH) OR FLOOR

- Do Not Specify floor closers or overhead conceal closers.

LOW ENERGY POWER OPERATORS

- Manufacturer: LCN
- Model: 9560 Senior Swing Series Surface Mounted

- Manufacturer: LCN
- Model: Full Length Actuators 8310-T/TW

- Manufacturer: LCN
- Model: LCN Transmitter 8310-865 for wireless applications

PUSH/PULLS

- Manufacturer: Ives
- Model: 8200 Series & 8305 Series

COORDINATORS

- Manufacturer: Ives
- Model: COR Series as detailed

FLUSH BOLTS

- Manufacturer: Ives
- Model: FB50, FB60 Series

ASTRAGALS

- Manufacturer: Ives
- Model: LG Series as detailed

POWER SUPPLY

- Manufacturer: Von Duprin
- Model: PS900-BB Series

POWER TRANSFER

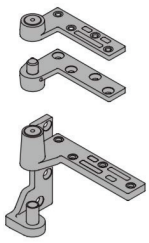
- Manufacturer: Von Duprin
- Model: EPT10

DOOR POSITION SWITCHES

- Manufacturer: Ives
- Model: 7764

PIVOTS

- Manufacturer: Ives
- Model: 7200 Series. For 3/4" offset use 7215 series minimum.



HINGES

- Manufacturer: Conventional : Ives
- Model: 3CB1 Series

- Manufacturer: Continuous: Ives 700
- Model: Zero 919STST

- Manufacturer: Electrified: Ives
- Model: 3CB1TW4 or 8 as required

OVERHEAD STOPS

- Manufacturer: Glynn-Johnson
- Model: 90 series and 100 series
- Use only where floor or wall stops are inadvisable. When used, use heavy weight hinges or continuous hinges on doors w/ locksets, anchor type or continuous hinges on doors w/ panic hardware.

FLOOR STOPS

- Manufacturer: Interior: Ives
- Model: FS436/438

- Manufacturer: Exterior: Ives
- Model: FS18S/L as required

WALL STOPS

- Manufacturer: Ives
- Model: WS401 Series as required

KICKPLATES

- Manufacturer: Ives
- Model: 8400 Series, 12"Hx2" less than door width, (1" LDW at non-mullion pairs)

DOOR SEALS

- Zero Use “intumescent” at “S” labeled wood door openings.

KEY CABINETS

- HPC, Lund, TRAKA or Telkey. Size of cabinet to be appropriate to door count.

08 80 00 GLAZING

- Each piece of glass furnished shall bear the manufacturer’s label identifying name of manufacturer, proprietary brand name and product number, and quality, grade and thickness.

DIVISION 9: FINISHES

09 29 00 GYPSUM BOARD

- Finish levels described have been adapted from ASTM GA-214 and GA-216.
- Location of use:

  Level 1: Not permitted
  Level 2: Use at concealed areas and construction not indicated to be Levels 3, 4, or 5.
  Level 3: Use at locations such as storage, service rooms, riser closets, electrical rooms, and equipment rooms.
  Level 4: Use at locations with light textures and flat paint finishes, or under medium weight fabric-backed patterned low sheen wall coverings
  - Use are locations under fabric-backed wall coverings through which substrate variations would not be noticeable
  - Use typically at walls with flat paint finishes.

  Level 5: Use at public areas such as lobbies, restrooms, stairways, or other areas to receive painted finish.
  - Use at walls used as projection screens, provide continuous, smooth, uniform, and virtually flawless finish for application of marker/ projection screen wall covering.
  - Use typically at ceilings.
- Finish description:

  Level 1: Not permitted
  Level 2: Surface Appearance - Surface shall be free of excess joint compound. Tool marks and ridges will be acceptable.
  Level 3: Surface Appearance - Joints compound shall be smooth and free of tool marks and ridges.
  Level 4: Surface Appearance - Smooth and free of tool marks and ridges.
  Level 5: Surface Appearance - Smooth and free of tool marks and ridges.

09 30 00 TILING

- Wall Tile: 12”x6” tile, min.
- Floor Tile: 12”x12” tile, min.
- Base: Porcelain to match floor tile, coved, 12” x 6”H
- Threshold: Solid surface or stone
- Installation: Floor - mortar bed
- Walls - thin set
- Colors and shades of selected tiles shall be of medium intensity (not so light as to easily show soiling, or so dark as to show dust and lint).
- Provide dark color grout - submit sample for review and approval by College.

09 51 00 ACOUSTICAL CEILINGS

- Acoustical Tile

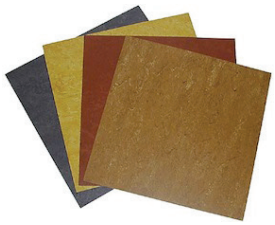
  Manufacturer: Armstrong Ceilings, USG
  Style: 9/16" Optima Square Tegular (or equal)
  Color: White
  Size: 24" x 24" (24" x 48" as approved by College)
- Suspension System

  Manufacturer: Armstrong, USG
  Grid: 9/16" Suprafine, heavy-duty suspended grid (or equal)
  Color: White or factory painted Satin Silver

09 54 00 SPECIALTY CEILINGS

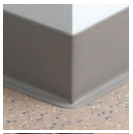
- As approved by College on a per project basis

09 65 00 RESILIENT FLOORING



- Vinyl Tile/ Sheet Vinyl
- Linoleum/ Sheet Linoleum
- Rubber Tile/ Sheet Rubber
- Resilient flooring is required under fixed floor cases and cabinets

09 65 13 RESILIENT BASE & ACCESSORIES



- Rubber base:
  - 4" High, 120' coiled material
  - 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 68 00 CARPET

- Manufacturer : Tandus
- Style : As Approved
- Color : As Approved
- Sizes : 24"x24" Tile
  6'-0" Powerbond roll good
- Backing : Vinyl cushion backing system with pre-applied adhesive (similar to Tandus Powerbond)
- Installation : Per Manufacturer's suggestions

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 : Sherwin-Williams / Dunn Edwards
- Color : Refer to Section 5 for recommended colors
- Finish : Walls - eggshell (not flat), semi-gloss at wet areas
  Ceilings - flat, semi-gloss at wet areas

09 96 23 GRAFFITI-RESISTANT COATING

- 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.
- Material: Clear, penetrating, breathable, UV-resistant, water, oil and graffiti resistant treatment. Coatings shall not darken or discolor the treated surfaces and shall be non-toxic, compatible with all standard polymer type sealing materials and certified by manufacturer as suitable over indicated finishes.
- Graffiti Removal: With water or proprietary cleaner.
- Sheen: Gloss level 1.
- Graffiti Resistance: Exceeds performance requirement for Level 3 per ASTM D 6578.
- Abrasion Resistance: 45mg maximum weight loss per ASTM D 4060.
- Cyclic Weathering: No blistering, cracking, checking, softening or delamination per AASHTOR-31. Maximum change of 10 gloss level.
- Outdoor Weathering: 8,000 hours per ASTM G 155-05a.

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DIVISION 10: SPECIALTIES

10 11 00 VISUAL DISPLAY SURFACES

- Porcelain Enamel Marker Boards
- Face Sheet Thickness: 0.024-inch (0.61-mm)
- Face Sheet Material: Enameling grade steel or stretcher-leveled aluminized-steel face sheet. Coat exposed face and edges with porcelain-enamel coating. Coat concealed face with two-coat process consisting of primer and ground coat. Fuse cover and ground coats to steel at manufacturer's standard firing temperatures, but not less than 1000 deg F (540 deg C) per PEI 1002.
- Glass Markerboards: 6-mm tempered glass markerboard, with smooth polished edge and rounded eased corners; color coated on back surface. ASTM C 1048, Kind FT, Condition A, Type I, Class 1, Quality Q3, with exposed edges seamed before tempering.
- Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace markerboard panels that do not retain their original writing and erasing qualities, become slick and shiny, or exhibit crazing, cracking, or flaking within specified warranty period.

10 21 13 TOILET COMPARTMENTS

- Manufacturer : Accurate Partition Corp., Bobrick, Global Partitions
- Model: Floor to ceiling anchored, overhead braced.
- Color : As approved
- Material : Phenolic toilet compartments
- Floor to ceiling pilaster and urinal screens
- Provide with no-sightline system. Eliminate vertical sightlines into compartments with continuous stops and fillers.

10 26 13 CORNER GUARDS

- Material : Brushed satin stainless steel
- Size : 2" wing
- Installation : Double back tape
- Location : At corridors

10 28 13 TOILET ACCESSORIES

WASTE RECEPTACLE (RESTROOMS)

Floor placed receptacles are preferred

- Manufacturer: Rubbermaid: FG907900HSILV / Tough Guy: 4PGH1
- Finish: Metallic silver/satin finish aluminum 35 gal. round open top, fire resistant.

WASTE RECEPTACLE (HALLWAYS/CORRIDORS)

Three bin litter & recycling receptacles

- Manufacturer: Forms + Surfaces
- Model: SLTRA-180 Transit Litter & Recycling Receptacles
- Finish: Silver/satin finish

HAND DRYER

Recess-mounted, rapid dry electric

- Manufacturer: Excel Dryer
- Model: Xlerator with recess kit
- Finish: Stainless steel
- Every restroom to have hand towels, even if it is equipped with a hand dryer.

HAND TOWEL DISPENSER

- Manufacturer: Tork
- Model: 84TR Hand Operated

- Manufacturer: Kimberly-Clark
- Model: KCC0992 Hands Free Automatic

TOILET SEAT COVER DISPENSER

- Manufacturer: Bobrick
- Model: B-3013
- Mount: Recessed
- Finish: Stainless Steel

TOILET TISSUE DISPENSER

- Manufacturer: San Jamar
- Model: Double Jumbo R4000TBK
- Primary dispenser

COMBINATION TOILET SEAT COVER & TOILET TISSUE DISPENSER (MEN'S RESTROOM)

- Manufacturer: Bobrick
- Model: B-3474
- Mount: Recessed
- Finish: Stainless Steel
- At accessible stalls only (Men)

COMBINATION TOILET SEAT COVER, SANITARY NAPKIN & TOILET TISSUE DISPENSER (WOMEN'S RESTROOM)

- Manufacturer: Bobrick
- Model: B-3574
- Mount: Recessed
- Finish: Stainless Steel
- At accessible stalls only (Women)

MIRROR

- Mount: Surface
- Finish: Stainless Steel

NAPKIN/TAMPON VENDOR

- Manufacturer: Bobrick
- Model: B-37063
- Mount: Recessed
- Finish: Stainless Steel

SOAP DISPENSER

- Manufacturer: Renown
- Model: REN02473
- Finish: Chrome
- Manufacturer: Georgia - Pacific
- Model: Pacific Blue Ultra S3057
- Finish: Black

SANITARY NAPKIN DISPOSAL

- Manufacturer: Rubber Maid
- Model: 6140
- Finish: Plastic For Heavy Duty Use
- Manufacturer: Bobrick
- Model: B-270
- Finish: Stainless Steel For Regular Use

HORIZONTAL GRAB BAR

- Manufacturer: Bobrick
- Model: B-6806 Series
- Mount: Surface
- Finish: Stainless steel

UNDER LAVATORY GUARDS

- Manufacturer: IPS Corporation
- Model: Soft Guard Plus
- Finish: White

DIAPER CHANGING STATION

- Manufacturer: Bobrick
- Model: KB110-SSRE
- Mount: Recessed
- Finish: Stainless steel

UTILITY SHELF/HOLDER

- Manufacturer: Bobrick
- Model: B-239
- Mount: Surface
- Finish: Stainless steel

COAT HOOK

- Manufacturer: Bobrick
- Model: B-212
- Mount: Surface
- Finish: Stainless steel

CAM LOCKS

- Manufacturer: Bobrick
- Model: CompX CC8052-C346A-14A 5/8”

10 43 13 AED CABINET

AED CABINET

- Manufacturer : Allied Medical Products
- Model : Outside Dimensions - 17.5”(H) x 17.375”(W) x 7”(D)
- Mount : Surface or Semi-Recessed

AED

- Manufacturer : Zoll
- Model : AED Plus

10 44 13 FIRE EXTINGUISHER CABINETS

FIRE EXTINGUISHER CABINETS

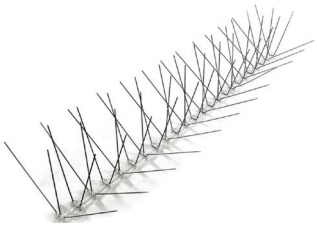
- Manufacturer : Potter Roemer Porcelain-on-steel writing surface
- Model : “Dana” 7250-7265 series, stainless steel, with duo-vertical panel with rolled radius return, provide fire-rated as required.
- Mount : Recessed
- Finish : #304 stainless steel with #4 finish
- Lettering : Vertical ascending in red (-VAR)

VALVE CABINETS

- 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 81 13 BIRD CONTROL DEVICES

- Manufacturer : Bird X
- Model : STS-100, 5" Width / 4.5" Height
- Mount : Screw, nails, wire or adhesive
- Finish : Stainless Steel
- Location : Ledges, parapet caps, roof peaks, chimneys



- Manufacturer : Bird X
- Model : Sonic + Ultrasonic Electronic Repellers
- Location : Ledges, parapet caps, roof peaks, chimneys

- Manufacturer : Nixalite
- Model : Bird-Zap Shock Tracks
- Location : Ledges, parapet caps, roof peaks, chimneys

11 12 00 PARKING CONTROL EQUIPMENT

- Manufacturer : Ventek International
- Model : Ventek 400
- Mount : Pedestal
- Not to be solar powered
- Coin, cash, credit combinations to be determined by location. Coordinate with AVC.

DIVISION 12: FURNISHINGS

12 24 13 ROLLER SHADES

- Manual independent operation. Provide motorized shades in hard to reach areas. Provide double solar and room darkening shades as necessary.
- Manufacturer: Mechoshades
- Location and application as approved by College

12 30 00 CASEWORK

- See Division 6

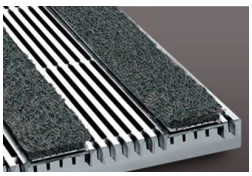
12 36 00 COUNTERTOPS

- Solid surface
- Stainless steel
- Or other material approved by College
- No plastic laminate
- Edge : Squared seld edge

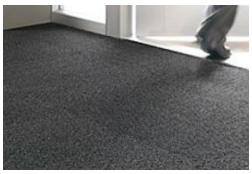
12 48 13 ENTRANCE FLOOR MATS & FRAMES

Employ permanent entryway systems to capture dirt, particles, etc. from high volume building entries.

- Manufacturer : C/S Group, Balco Inc.
- Model : Aluminum hinged mat with vinyl inserts in a recessed aluminum frame
- Size : As approved by college
- Location : Exterior



- Manfacturer: As approved by college
- Size : Single door - 48”x72” / Double door 70”x72” or 70”x88”
  (78 mil thick w/ smooth bottom)
- Installation : Monolithic or vertical / brick ashlar
- Finish : Charcoal color
- Location : Interior



DIVISION 21: FIRE SUPPRESSION

21 00 00 FIRE SUPPRESSION

- Provide all documentation, including hydraulic calculations and head locations, in conjunction with submittal of plumbing fire suppression drawings. All equipment, sprinkler heads, detectors, required panel alarms, post indicator valves, fire department connections, etc. shall be coordinated with Architectural drawings, including reflected ceiling plans.
- Types of systems to be utilized shall include but are not limited to: wet, dry, combined standpipe, pre action and clean agent.
- All underground piping shall be high strength ductile cast iron with adequate thrust blocks.
- Sprinkler main riser to be located in a dedicated space with adequate access.
- All ceiling sprinkler heads to be quick response recessed or concealed with escutcheon, and located in the center of tiles. Sprinkler guards to be provided where required.
- All sprinkler head locations and types to be coordinated with the project architect.
- Circulate and clean interior of all piping of cutting oils and debris with TSP and cleaning solution for 24 hours, remove and store solution and flushing fluids in separate container to be removed and disposed of off-site.

DIVISION 22: PLUMBING

22 00 00 PLUMBING

GENERAL:

- Designs shall utilize systems and products that are:

  A. Long-life, industrial quality.
  B. Readily-available products and components with service support available.
  C. Maintainable arrangements with multiple units.
  D. Readily available spare parts and materials incorporate multiple equipment elements in key systems to provide reduced capacity operation when portions are down for maintenance or failure.

- For alteration and renovations, the designer shall obtain appropriate as-built documents from the AVC archives for design and implementation.
- The plumbing system designer should consider using such techniques as:

  A. Controlling hot water temperatures, water pressures, providing faucets with flow rusticators.
  B. The economic use of thermal insulation, automatic shutdown of water heating and circulating systems, use of occupancy sensor for automatic flushing, use of automatic closing faucets, and using minimum energy consuming equipment to provide maximum. Energy conservation design practices should become integrated into the building allowing it to operate more efficiently and use less energy, while meeting the needs of the user.

- Access doors and/or panels should be coordinated with the Architect, including reflected ceiling plans, prior to installation.
- All piping installed outdoors or in corrosive environments should be prime coated and painted, or otherwise protected and insulated to prevent freezing.
- Seismic bracing for piping and equipment should conform to Title 24. Calculations and details should be reviewed and signed by a Licensed Structural Engineer with California registration where applicable.

22 05 48 VIBRATION & SEISMIC CONTROLS FOR PLUMBING PIPING & EQUIPMENT

INTERTIA BASES

- All package-based mounted rotary or reciprocating equipment shall be mounted on a concrete filled inertia base with open spring mounts with brackets and seismic snubbers to control noise, vibration and limit seismic movement.

  - Manufacturer: Mason Ind., M.W. Sausse & Co.

NAMEPLATE

- All equipment shall be provided with a laminated three-layer plastic plate, 1/8" thick, with engraved black letters on light contrasting background color. Nameplates shall be engraved with the name of the equipment. The symbol designation on the drawings & specific service. Example: Domestic Water Heater WH-1, 120 degree F water, BSMT thru 3rd Floor. Provide equipment chart with number, location & purpose.

  - Manufacturer: Brady, Seton, Kolbi

VALVE TAGS

- Each tag shall be a minimum 18 gauge polished brass, 1 ½" diameter. Tags shall contain the service (1/4" stamped or engraved black-filled letters) and appropriate valve number (1/2" stamped or engraved black-filled number). Tag shall be securely fastened to valve. Provide valve chart with number, location and purpose.

  - Manufacturer: Brady, Seton, Kolbi

PIPE MAKERS

- All piping shall be clearly identified per the color and lettering: Scheme conform to ASME A13.1. Directional flow arrows shall be included in each marker.
- - Manufacturer: Seton, Brady, Kolbi
- Plastic Underground Pipe Markers
- Bright colored continuously printed plastic ribbon minimum of 6" wide by 4 mil thick. Installed 6" to 8" below finished grade

  - Manufacturer: Seton, Brady, Kolbi

CHARTS

- Charts of all valves and equipment shall be furnished in duplicate with one chart mounted and framed.

  - Manufacturer: Brady, Seton, Kolbi

DOMESTIC & INDUSTRIAL HOT WATER SUPPLY & RETURN

- All hot water supply and return pipe shall be insulated with performed heavy density fiberglass insulation with standard factory applied all purpose jacket with double pressure sensitive adhesive self-sealing closure system.
- Fitting, valves and flanges, except in piping installed outdoors, shall be insulated with thermally equivalent thickness of fiberglass insulation with a PVC fitting cover.
- All insulated piping installed outdoors or exposed to the weather shall be covered with a polished 0.016" aluminum or 0.010" stainless steel metal jacket. Fittings other than elbows and tees shall be covered with weather resistant insulating cement to a thickness equal to the adjacent insulation.
- For insulated pipe, support shields shall be provided at each hanger and support.

  - Manufacturer: John Manville, Owens-Corning, Certain Teed, Knauf

DISABLED USE LAVATORIES

- Hot water supply riser, fixture tailpiece, trap and trap arm to be insulated.

  - Manufacturer: Wilkins, Chicago, Kohler, Zurn, McGuire

DOMESTIC HOT WATER STORAGE TANK

- Hydrous calcium silicate block or molded sections with 6 ounce canvas or fiberglass reinforcing cloth.

  - Manufacturer: John Manville, Owens-Corning, Certain Teed, Knauf

22 11 00 FACILITY WATER DISTRIBUTION

DOMESTIC INDUSTRIAL WATER PIPING, ABOVE GRADE

- Within five feet of the building
- Copper type L, hard drawn tube with wrought copper joint fittings.
- Joints shall be made with tin based, lead free solder and a paste flux.
  - Manufacturer: Cerro, Elkhart, Nibco

DOMESTIC & INDUSTRIAL WATER PIPING, BELOW GRADE

- Within five feet of the building
- Copper type K, hard drawn tube with wrought copper joint fittings.
- Joints shall be brazed using a silver bearing copper-phosphorus alloy with a silver content not less than 14.5%.The use of flux is prohibited.
  - Manufacturer: Cerro, Elkhart, Nibco

DOMESTIC & INDUSTRIAL WATER PRESSURE GAUGES

- Bourdon tube type, 4-1/2" diameter, recalibrating adjustment, corrosion resistant movement.
- Gauges on pulsating or reciprocating equipment to be liquid filled. All gauges to be provided with shut-off cock.
  - Manufacturer: Trerice, Weiss, Ashcroft, U.S.Gauges

THERMOMETERS

- Vapor tension type, 4-1/2" dial, adjustable pointer, adjustable angle type, separate brass socket.
  - Manufacturer: Ashcroft, Trerice, Weiss

FLOW CONTROL VALVES

- Brass or Bronze body with union on inlet and outlet, temperature and pressure test plug on inlet and outlet, combination blow-down or back-flush drain.
  - Manufacturer: Bell & Gossett, Armstrong, Griswold

PRESSURE REDUCING VALVES

- Main supply line to be pilot-operated, globe type with stainless steel trim, pilot inlet strainer, shut-off valves and flow stabilizer.
  - Manufacturer: Cla-Val, Watts

BACKFLOW PREVENTERS

- Cross contamination shall be prevented with the use of a reduced pressure backflow device complete with inlet and outlet shutoff valves. Provide complete with funnel and drain piping.
- Pressure principle backflow device complete with inlet/outlet shut-off valves. Provide air gap funnel and drain.
  - Manufacturer: Cla-Val, Febco, Watts, Wilkins

WATER HAMMER ARRESSTORS

- Copper construction, bellows or piston type. Pre-charged suitable for 35 to 100 degrees temperature range, working pressure.
- Provide distribution box as required.
  - Manufacturer: PPP Inc, Sioux Chief, J.R. Smith

22 13 00 FACILITY SANITARY SEWERAGE

SANITARY SOIL, WASTE, GREASE WASTE & VENT PIPING

- Service weight, no hub cast iron soil pipe and fittings. Standard neoprene compression gasket with stainless steel shield and clamp couplings to be provided for above grade piping and heavy-duty type for below grade. All materials shall comply with CISPI 301 & 310 and ASTM A888.
- All underground piping shall be a 6" minimum diameter .
  - Manufacturer: AB & I, Charlotte, Anaco, Husky, Clamp-All

CHEMICAL RESISTANT WASTE & VENT PIPING (ABOVE & BELOW GRADE)

- Schedule 40, flame retardant polypropylene pipe and fittings with fused joints in concealed locations and mechanical joints in accessible locations. The use of type 304 or 316 stainless steel pipe with compression joint fittings is optional.
  - Manufacturer: +GF+ Fuseal, Enfield, Orion, Blucher-Josam

FLOOR DRAINS / FLOOR SINKS / INDIRECT WASTE RECEPTORS

- Duco cast iron body and flashing collar with adjustable nickel bronze strainer for floor drains.
- Floor sink shall be provided with seepage holes and acid resistant coated interior with aluminum dome bottom strainer and nickel bronze rim and grate.
- Indirect waste receptors shall have sump receiver, solid water dam, underdeck clamp and dome bottom drainer.
- See 22 40 00 for additional info.
  - Manufacturer: J.R. Smith, Zurn, MiFAB

BACK WATER VALVES

- Cast iron body and cover, removable bronze swing valve, extension sleeve as required, bolted access cover, horizontal or vertical type, threaded or hubless ends.
  - Manufacturer: J.R. Smith, Zurn, MiFAB

GREASE INTERCEPTORS

- Reinforced precast concrete tank with manways, riser extension, frame and covers extended to grade. System shall be completed with sampling box.
  - Manufacturer: Pro-Cast Inc, Jensen Precast, Pro-Ceptor

SAND / OIL INTERCEPTORS

- Reinforced precast concrete tank with manways, riser extension, frame and covers extended to grade.
  - Manufacturer: Pro-Cast Inc, Jensen Precast

SEWAGE EJECTORS

- Ejector station to incorporate duplex column or submersible type pump with alternating controls. Sump to be fabricated fiberglass, HDPE, precast or poured in place concrete. Submersible system shall have the quick railing disconnect feature.
  - Manufacturer: Weil Aquatronics, Paco, J.D.L. Systems

CLEANOUTS

- All cleanouts except process waste to have bronze countersink rectangular slotted plugs, tapered threads, lubricated with emulsified lead paste. Flush with floor cleanout tops shall have non-skid covers secured independent of plug. Where cleanout occurs in waterproof membrane, provide flashing flange and ring. All wall cleanouts shall be located so that the bottom of the access panel or plate is above the top of the baseboard, or in the case of location inside of a cabinet, above the inside bottom of the cabinet.
- Floor cleanouts in finished room floors to be cast iron adjustable floor level cleanout assembly with round nickel bronze top.
- Floor cleanouts in unfinished floors to be cast iron adjustable floor level assembly with round double extra heavy cast iron top.
- Wall cleanouts in drywall or block wall to be bronze plug with test tee.
- Provide prime coated steel concealed hinge type access covers with removable door.
- Wall cleanouts in tile surfaces to be bronze plug with cover plate, screw and test tee.
- Cleanout in yard box to be cast iron surface level cleanout assembly with lifting device, for concrete or blacktop surface. In non-surfaced areas, set in 18" x 18" x 4" concrete support.
- Floor cleanout in equipment room floor to be cast iron adjustable floor cleanout assembly with round double extra heavy nickel bronze top.
- Floor cleanouts in terrazzo floors to be cast iron adjustable floor level cleanout assembly with square nickel bronze top, with center lifting device. Top depression to be filled with terrazzo and smoothed flush.
- Floor cleanouts in ceramic tile floors to be cast iron adjustable floor level cleanout assembly with square nickel bronze top.
- Floor cleanouts in vinyl, asphalt tile or linoleum floors to be cast iron adjustable floor level cleanout assembly with round nickel bronze top.
- Floor cleanouts in carpeted floors to be cast iron adjustable floor level cleanout with round nickel bronze top and carpet cleanout marker.
- Floor cleanout for chemical resistant waste to be durian cleanout plug and ferrule.
  - Manufacturer: J.R. Smith, Zurn, MiFAB, Durian

STORM & OVERFLOW PIPING

Service weight, no hub cast iron soil pipe and fittings. Standard neoprene compression gasket with stainless steel shield and clamp couplings to be provided for above grade piping and heavy-duty type for below grade. All materials shall comply with CISPI 301 & 310 and ASTM A888.

- Manufacturer: AB & I, Charlotte, Anaco, Husky, Clamp-All

ROOF OVERFLOW & AREA DRAINS

- Roof, overflow and area drains shall have Duco cast iron body with flashing collar and underdeck clamps, gravel stops and cast iron domes.
- Overflow drains to be provided with an exterior water dam.
- Area drains shall have duco cast iron body, standard or wide flange, flashing clamps, seepage openings, adjustable extension sleeve underdeck clamp & grate suitable for all applications.

  - Manufacturer: J.R. Smith, Zurn, MIFAB

SUMP PUMPS

- Sump pump station to incorporate duplex column or submersible type pump with alternating controls. Sump to be fabricated fiberglass, HDPE, precast or poured in place concrete. Submersible system shall have the quick railing disconnect feature.

  - Manufacturer: Weil Aquatronics, Paco, J.D.L. Systems

CENTRALIZED WATER SOFTENING EQUIPMENT

- Provide an automatic duplex water softening system. Exchange material shall be high quality resin having an exchange capacity expressed as CaCO3 of 30,000 grains per cubic grains per cubic foot when regenerated with 15 lbs. of salt per cubic foot, and 20,000 grains per cubic foot when regenerated with 6lbs. of salt per cu.ft.
- Softener tanks shall have 60% or more freeboard. ASME labeled for not less than 120 psi working pressure, structural steel legs welded to tank.
- Operating valves on each softener shall be automatic, slow opening and closing and free of water hammer.

  A. Valving may be a single multi-port type unit or multiple hydraulically actuated diaphragm valves, controlled by a multi- port rotary pilot valve.
- Face Piping: Schedule 40 galv. steel pipe with 150 lb. galv. malleable iron I.P.S. fittings or Victaulic or equal grooved end galv. malleable iron fittings with couplings.

  A. Provide dielectric isolators at inlet and outlet of each softener.
  B. Option: Schedule 40 PVC or CPVC Pipe & Fittings.
- Controls: Regeneration shall be controlled by an electronic sensor with manual override.

  A. The sensor shall initiate regeneration automatically and be interwired to permit only one softener to regenerate at a time during off peak hours.
  B. The manual override shall permit regeneration at any time of the day or night, any or every day of the week, and shall allow for push button start (override).
  C. All control mechanisms shall be enclosed in a gasketed moisture resistant case, rated as a NEMA 4 enclosure, listed by Underwriters' Laboratories.
  D. The unit shall have provisions for individual adjustment of the backwash and rinse cycles, and provisions for manually regenerating the water softener in the event of power failure.
  E. The control valve mechanism shall prevent hard water bypass to service during regeneration.
  F. A duplex alternator shall be provided to allow only one unit to be in regeneration at a time while the other unit is in service.
  G. This system shall provide a continuous supply of soft water. Indicating lights shall be provided to show which unit is in the service position.
  H. Self-adjusting flow regulators shall control the rate off low during the backwash (to prevent resin loss), brine-rinse and fast rinse positions regardless of pressure fluctuations.
  I. Automatic controls for brine metering shall be included.

- Brine System: Combination salt storage and brine measuring tank with cover, sized to hold salt for at least 10 regenerations between refills. The tank shall be molded of corrosion free, rigid polyethylene or commercial grade fiberglass reinforced plastic.
- Accessories: Inlet and outlet pressure gauges, 4-1/2" diameter, totalizing meter, sampling cock on soft water outlet and hard water inlet, and water quality test kit.

  - Manufacturer: Culligan, Siemens, U.S. Filter - Evoqua

POINT-OF-USE

- Cellulose cellulose/glass fiber – melamine resin, 5 micron, with cartridge housing and mounting bracket. Provide inlet and outlet shut-off valves and gauges.

  - Manufacturer: Cuno, 3M Purification Inc., Filtrene

22 33 00 ELECTRIC DOMESTIC WATER HEATERS

ELECTRIC WATER HEATERS - TANK TYPE

- Corrosion resistant glass lining, vertical storage, thermally insulated with Non-CFC foam, lining, magnesium anode rod, heavy gauge steel tank with baked enamel finish, dielectric fittings, brass drain valve, T&P relief valve.
- Automatic water thermostat with adjustable temperature range from 120 to 160 degrees F, screw-in immersed elements, enclosed controls and electrical junction box. Wire double element units so elements do not operate simultaneously.
- Provide seismic anchoring straps, listed and approved.

  - Manufacturer: Lochinvar, Bradford White, A.O. Smith

ELECTRIC WATER HEATERS - INSTANTANEOUS / POINT-OF-USE

- Factory-assembled and wired with microprocessor temperature control, celcon waterways and nichrome heating coils and factory set a 104 degrees F.

  - Manufacturer: Chromite, Eemax, Rinnau

COMMERCIAL GAS FIRED WATER HEATERS - STORAGE TYPE

- Low NOx, glass lined welded steel with single flue passage, flue baffle and draft hood; brass dip tube, drain valve, magnesium anode, thermally insulated with Non-CFC foam and encased in corrosion- resistant steel jacket; baked-on enamel finish; floor shield and legs, dielectric fittings, brass drain valve, T&P relief valve.
- Automatic water thermostat and built-in gas pressure regulator; temperature range adjustable from 120 to 180 degrees F, cast iron or stainless steel burner, safety pilot and thermocouple, and electronic ignition.
- Provide anchoring straps, listed and approved.

  - Manufacturer: Bradford White, Lochinvar, A.O. Smith

COMMERCIAL GAS FIRED WATER HEATERS - BOILER / STORAGE TANK

- Low NOx natural gas-fired water tube boiler, with copper finned tube heat exchanger, one inch minimum diameter, 13 gage steel boiler tubes and copper tube heat exchanger with bronze heads, steel jacket with glass fiber insulation, and tank circulating pump.
- Components to include, thermometer and pressure gauge. Immersion thermostats for operating and high limit protection, 100 percent safety shut-off. Electric gas valve with transformer, electronic safety pilot and pilot burner, gas pressure regulator. Manual gas shut- off, low water cut off, ASME rated temperature and pressure relief valve, coil relief valve,expansion tank, draft inverter.
- Storage tank to be cement lined, 120 psi ASME rated, vertical or horizontal with preformed, fiberglass board insulation

    - Manufacturer: Raypak, Teledyne Laars or other to be determined by AVC.

22 42 00 COMMERCIAL PLUMBING FIXTURES

This section describes the Plumbing fixtures, trim and accessories for campus buildings. The intent of this document is to provide standards and design approaches subject to review by AVC. Fixtures shall conform to the current commercial and code standards for cast iron and vitreous china fixtures, trim and accessories. Provide hose bib in each restroom. All exposed metal work at fixtures should be brass with chromium plate. All faucets, fittings, supply stops for fixtures, and similar devices should be one (1) manufacturer unless otherwise required. Each fixture should contain standardized interchangeable operating units made up of separate renewable stem, seat, washer retainer, and nut. All faucets and fittings must close with the water pressure. All fixtures should be installed with supply stops/ valves accessible at the fixtures. All fixtures should be provided with water hammer arrester.

WATER CLOSET

- Toilet: Vitreous china, elongated bowl, low flow (1.6 gallons per flush)
  - Manufacturer:
    - American Standard Afwall Hung
    - Madera Floor Mount
- Flush Valve: Conventional type or infrared sensor type hard wired to a 120-volt circuit
  - Manufacturer:
    - American Standard 604711
- Toilet Seats: Open end with self sustaining check hinges
  - Manufacturer:
    - Olsonite
- Wall-mounted support carriers: To be equipped with cast iron anchor foot assemblies, 300 pound minimum hinges
  - Manufacturer:
    - JR Smith

URINALS

- Urinal: Vitreous china, wall hung, low flow (1 gallon per flush)
  - Manufacturer:
    - American Standard Washbrook Style
- Flush Valve: Conventional type or infrared sensor type hard wired to a 120-volt circuit
  - Manufacturer:
    - American Standard 6045014 (0.125 gpf)
- Support Carriers: Adjustable floor-mountted uprights
  - Manufacturer:
    - JR Smith
    - Zurn

LAVATORIES

- Lavatory: Vitreous china, wall hung
  - Manufacturer:
    - American Standard Lucerne Wall Hung
- Faucet: Solid brass, polish chrome plated of the conventional type or infrared sensor type hard wired to a 120-volt circuit
  - Manufacturer: Chicago
- Traps: 17 gauge tubing
  - Manufacturer:
    - E&S
    - JR Smith
    - LA Pattern

- Stops: 1/4 turn - Iron pipe with stainless steel braided S5
- Supply: 1/2 x 1P5 x 3/8 comp bronze nipples. Loose key angle type & supplies
  - Manufacturer:
    - Chicago
    - McGuire
- Support Carriers: Floor-mounted upright; wall hangers are prohibited
  - Manufacturer: JR Smith

SERVICE SINKS

Sink: S5 with sound proofing

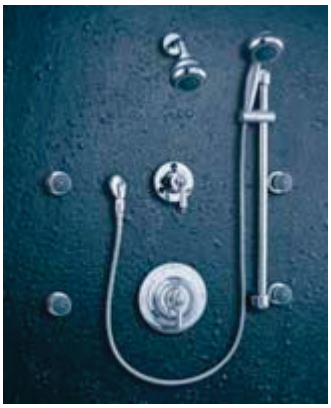
- Fixtures to be cast iron, wall or floor type with rim guards. Wall hung fixture shall have a 3" trap standard.
  - Manufacturer: Commercial Enameling Company, Kohler, Elkay or Just

Faucets

- Solid brass, polished chrome plated equipped with integral vacuum breaker, 5 foot vinyl hose and pail hook.
  - Manufacturer: Chicago,

SHOWERS

- Mixing valve to be pressure balancing type, inlet check stops, lever handle, deluxe arm and flange with low flow brass shower heads. ADA stalls to be provided with hand held shower, long reinforced vinyl hose, long, in-line vacuum
- breaker, vertical adjusting bar.
  - Manufacturer: Acorn or Symmons



HOSE BIBBS

- Wall, standpipe or recessed, polished chrome plated, loose key with vacuum breaker.
  - Manufacturer: Woodford - Acorn

FLOOR DRAINS/SINKS

- 3"x4" finished area adjustable floor drain with square top
  - Manufacturer: JR Smith, MIFAB, Zurn

22 45 00 EMERGENCY FIXTURES

EMERGENCY FIXTURES

Floor-mounted: Emergency shower, emergency shower & eyewash, and eyewash. Provide electric heat tracing for units installed outside.

- Stainless steel shower head and eyewash bowl with polished chrome plated brass piping and trim and stay open.
- Secure to floor or wall. Counter-mounted:
- All stainless steel, swing- or hand-held type with hose.
  - Manufacturer: Bradley, Guardian, Haws.

22 47 00 DRINKING FOUNTAINS

BOTTLE FILLING STATION

Provide electrical heat tracing for units installed outside.

- - Manufacturer: Elkay
- - Model: LZS8WS or LZSDWS (Single Filtered)
- LZSTL8WS or LZSTLDDWS (Bi-Level Filtered)
- - Finish: Satin finish stainless steel

- - Manufacturer: Halsey Taylor
- - Model: HTHB-HAC8 or HTHB-HACD (Single HAC)
- HTHB-HAC8BLWF OR HTBH-HACDBLWF (Filtered Bi-Level HAC)
- - Finish: Satin finish stainless steel

- - Manufacturer: Oasis
- - Model: PG8SBF or PGSBF (Barrier Free Versacooler II)
- - Finish: Satin finish stainless steel

DIVISION 23: HEATING, VENTILATION + AC

23 00 00 HEATING, VENTILATING & AIR-CONDITIONING (HVAC)

GENERAL

- Designs shall utilize systems and products that are:

  A. Long-life, industrial quality.
  B. Readily-available products and components with service support available.
  C. Maintainable arrangements with multiple units.
  D. Readily available spare parts and materials incorporate multiple equipment elements in key systems to provide reduced capacity operation when portions are down for maintenance or failure.
  E. Locate mechanical equipment indoors in equipment room with depressed slab with floor drain or curbed wall to contain leaks and spills.

- Large Equipment Installation Sequencing:

  A. In conjunction with other design disciplines, provide the necessary scheduling, sequencing, movement and positioning of large equipment into the building during construction, including provisions for temporary removal/ replacement of existing building components.

- Special and AVC-Furnished Equipment:

  A. Special types of equipment, including AVC-furnished and contractor installed materials, shall be coordinated for correct rough-in and attachment requirements.

- Interferences:

  A. AC units, valves, fans, piping, ducts, valves, pumps, and other equipment shall be reviewed for interferences that would prevent proper installation of each system.

- Clearances:

  A. AC units, valves, fans, piping, ducts, valves, pumps, and other equipment shall have adequate clearance on all sides as well as above and other interferences where space is limited. Maintain all 3-ft around equipment and fan coils for service.

- Accessibility:

  A. AC units, valves, fans, piping, ducts, valves, pumps, and other equipments shall be coordinated with building instruction, beams, etc., to provide adequate clearances and accessibility for maintenance.
  B. Piping and ducts shall be coordinated with other engineering disciplines.
  C. Provide service platforms for equipment mounted 10-ft above finished floor.
  D. VAV controls & HW piping shall be oriented towards middle of room for access so as not to be blocked by walls or wall mounted cabinets, counters, etc.

- Penetrations:

  A. Piping/utility and duct penetrations through floors, walls, and roofs shall be coordinated and identified on the architectural and structural construction drawings.
  B. Mfg: HILTI

- Equipment Protection and System Protection:

  A. Project specifications shall clearly indicate that all equipment and systems intended for a project shall be properly protected from damage, corrosion, and weather during shipment, in-transit storage, job-site storage, field/shop prep, installation, and checkout until the work is accepted by AVC.

B. Ends of piping, valves, and fittings shall be protected from abuse and the entry of moisture.
C. Electrical equipment controls, and insulation shall be protected against moisture and water damage.
D. Follow SMACNA IAQ Guidelines for Occupied Buildings Under Construction 2nd Edition.

- Special Support and Anchors:

A. All equipment including piping supports, anchors, supports-guides, and pre-insulated versions thereof, which exert force on the structure other than those forces produce by gravity, and equipment shall be designed to a factor of 1.5G and detailed on the drawings and coordinated with structural engineer and appropriate fire protection drawings.

- All equipment shall be arranged for maximum service access, while reserving space for future equipment and future uses. Ensure that all components and equipment are easily accessible for maintenance and replacement.
- Provide manufacturer's recommended space for a service access envelope around each AC unit, AHU, Pump, Boiler, Fan, Cooling Tower, Heat Exchanger and accessories for service in all dimensions.
- Install valves and flange/unions as needed to isolate each piece of equipment for maintenance and replacement requirements.
- Other Design Issues:

A. Mounting of air moving equipment
- For roof-top installations, the units should be mounted on curbs, or on housekeeping pads to be coordinated with the structural engineer.
- Curbs should be supplied or coordinated by the manufacturer/ supplier.
- Air handlers mounted on housekeeping pads indoor shall be minimum 4 inches high and extend 6 inches on all sides of the equipment mounting base.

B. Equipment anchoring
- For moving equipment, vibration isolators may be required, depending on the equipment location. Isolators should allow for 1-1/2 to 2 inch deflection.
- Seismic restraints are required in all locations.
- All suspended piping related to the mechanical system shall be isolated from the building structure per ISAT.
- Pipes on roof per PHP.
- Custom air moving equipment is generally internally isolated; in this instance external vibration isolation may not be necessary.

C. Duct Air Velocities
- Duct air velocities should be limited to values that ensure that the noise from equipment and air movement is not excessive and is compliant with applicable noise criteria.
- Duct systems shall be designed with maximum velocities as follows:

* Supply Ductwork: 1900 feet per minute for main ductwork. Pressure drop of 0.10 inch water gage per hundred feet for main ducts and 0.05 inch water gage per hundred feet for ducts downstream of VAV boxes.

* Exhaust / Return Ductwork: 1800 feet per minute for main ductwork. Pressure drop of 0.10 inch water gage per hundred feet.

* Velocities over 1200 fpm generally require noise attenuation. Duct liner is used where required by the acoustical engineer for noise attenuation, otherwise ducts are externally insulated and covered with sheet metal when outdoor.

- Verify noise criteria for the spaces.
*All occupied spaces shall meet room noise criteria (NC) of NC- 35, except for conference and meeting rooms that shall be less than NC-30 or NC-20 for multi-media conference room.
- Provide sound attenuators as necessary.

D. Chiller systems

- Generally the buildings at AVC are served from the Central Utility Plant (CUP). This needs to be verified in all instances. If so, a chiller system may not be required.
- Temporary chiller systems may be required during construction, along with temporary cooling towers.

E. Fans in air moving equipment
- Fan-wall systems shall be campus standard.
- Fan-wall systems save on space, reduce noise and allow the system to continue operating if a fan becomes inoperative for some reason (motor or drive failure). Provide VFD and backup VFD as standard for the fan walls.

- Life-cycle and Maintenance Issues:

A. Coatings extend the life of the system.
- Consider factory coatings at time of equipment specification.

DESIGN & CALCULATIONS

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

- Outdoor Design Criteria:

A. Location: W. Ave K, Lancaster, CA 93536.
B. Climate Zone: 14.
C. Latitude: 34.7 North.
D. Longitude: 118.2 West.
E. Elevation: 2340 feet above mean sea level.
F. Outdoor design dry bulb temperature (cooling): 106 degrees F (0.10%).
G. Outdoor design wet bulb temperature: 68 degrees F.
H. Summer rooftop design temperature (condensers): 120 degrees F.
I. Outdoor design dry bulb temperature (heating): 12 degrees.

- Indoor Space Design:

ROOM	SUMMER	WINTER	RH (RANGE)	PRESSURIZATION
Office Space	72F	70F	(30-60)	Positive
Conference Room	72F	70F	(30-60)	Positive
Restroom	75F	68F		Negative
Locker Room	75F	68F		Negative
Janitorial	78F	68F		Negative
Electrical Room	78F	70F	**	Positive
UPS Room	75F	68F	**	Negative
Corridor	68F	70F	(30-60)	Positive
Tele/Data Room	68F	68F	(30-60)	Positive
Control Room	72F	68F		Positive

- Hours of Operation:

  A. The building operation schedule shall be verified with AVC to allow for appropriate occupancy, lighting, and office equipment loads. AHU can operate 24/7 to cycle with un-occupied setback temps and/or utility room requirements.

- Building Envelope:

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

- Ventilation:

  A. Occupant density will be defined within the program documents for the facility, and an additional 15% shall be added to the occupant count to incorporate the high density of people associated with special situations.
  B. If data is unavailable from program documents, refer to ASHRAE Standard 62 and add 15% for occupant density.
  C. Reasonable assumptions (diversity, etc) should be used in keeping with industry standards to determine the population for purposes of calculating the ventilation air quantity. Assumptions must be documented and understood by AVC. Demand ventilation controls shall be incorporated.
  D. Keep all filter banks on air handler units. An equal valve in size, e.g. 20x20x2/10x20x2 or 224x24x2/12x24x2 etc.
  E. Battery Rooms shall be ventilated according to the type of batteries. Rooms with wet cell batteries shall be provided with a minimum six air changes per hour, and dry cell battery rooms shall be provided with a minimum of four air changes per hour and per the requirement of the Fire Marshall.

- Building Pressurization:

  The outside air requirement shall be based on the greater of the ventilation requirement, or the positive air balance requirement as compared to the total rate of building exhaust.

- Air Filtration:

  Airtight blank-off panels shall be required for irregular modular perimeter panels. Face velocity shall not exceed 350 feet per minute.

23 05 48 VIBRATION & SEISMIC CONTROLS FOR HVAC PIPING & EQUIPMENT

- Carefully refer to other documents to assure a complete acoustic system is achieved.
- All equipment shall be supported or suspended using vibration isolators.
- Provide calculations by Vibrex/Sausse, Mason Industries, or equal for seismic restraints per ISAT including details. Pipes on roof provide PHP systems design.
- Sound attenuators shall be provided where acoustic considerations are deemed important by the architect or owner. This will typically be for multi-media rooms, large lecture rooms, theaters, certain labs, or other areas as determined.
- Test and Balance Report shall include sound and vibration data assuring strict compliance with design intent.

23 05 53 IDENTIFICATION FOR HVAC PIPING & EQUIPMENT

- Comply with ASME A13.1 Scheme for the Identification of Piping Systems
- Confirm with other sections and the owner for other schemes particular to this campus.
- All exterior piping ID shall be blue (cooling, red (heating). Directional arrows at least 1-1/2" insulation diameter with exterior enamel of appropriate mil thickness to withstand outside elements. Plastic wrap around signage is not acceptable. All exterior ties shall be metal (straps). Plastic is not acceptable.

    - Manufacturer: SETON

23 05 93 TESTING, ADJUSTING & BALANCING FOR HVAC

- Provide complete Test and Balance services for air and water systems by an independent AABC Certified company.

- Testing Agency:

    A. Total System Balance shall be performed by an independent, non-affiliated agency certified by the Associated Air Balance Council (AABC) which specializes in the balancing and testing, ventilating, and air conditioning systems, to balance, adjust, and test air moving and distribution systems, water systems and steam systems.
    B. Minimum of 5 years as air balance and testing agency and proof of having successfully completed at least 5 projects of similar size and scope.
    C. All work shall comply with applicable procedures and standard of a National Standards for Field Measurements and Instrumentation, Total System Balance® by the Associated Air Balance Council (AABC).

- Test and Balance Reports:

    The Test and Balance agency shall prepare and submit minimum of three (3) copies of the Test and Balance Analysis to El Camino College within five (5) working days of completion. This report shall contain, at a minimum:
    A. AABC Certification credential(s) for the responsible Air Balance Company Engineer of record and all certified technicians involved in the project.
    B. Project Summary and comments.
    C. Table of contents and test forms for all systems.
    D. Calibration certificates for all test equipments.
    E. Drawings:
        - Full scale single line schematic drawings showing actual duct runs and outlet/inlet locations.
        - Drawings shall be in Autocad and Revit latest version.
        - Copy of AABC National performance guaranty
        - Copy of data for all fans
        - Copy of data for the coils
        - Copy of data for the pumps

- Guarantee:

    Air Balance Testing agency shall provide an extended warranty of 90 days after completion of test and balance work for recheck or resetting of any outlet, supply air fan, VAV box, return/exhaust fan or pump as listed in test report.

23 07 00 HVAC INSULATION

- Insulation materials shall not exceed a Flame Spread of 25 or Smoke Developed 50 ratings as tested by procedure ASTM E 84, NFPA 255, and UL 723
- All supply air and return air shall be insulated. Where there are acoustical considerations, internal duct liner may be used as duct insulation.

  - Manufacturer: Certain Teed, Johns Manville, Knauf, or Owens Corning.

23 08 00 COMMISSIONING OF HVAC

- During the acceptance phase the commissioning authority will carry out the following scope of work:

  A. Verify by sample, the testing, adjusting and balancing work that has been carried out by the AABC agency.
  B. Conduct functional performance testing of sub systems, systems and interactions between systems, leading to ac ceptance of the completed work. Document results of tests witnessed.
  C. Organize and direct the training of O & M personnel.

- During the post acceptance phase the commissioning authority will carry out the following scope of work:

  A. Conduct functional performance testing of sub systems, systems, and interactions between systems that could not be carried out prior to acceptance due to unsuitable weather conditions.
  B. Prepare and submit a final commissioning report.
  C. Provide follow up for quality performance during the guarantee period.

23 09 23 DIRECT-DIGITAL CONTROL SYSTEM FOR HVAC

- Automatic temperature controls field monitoring and control system using field programmable microprocessor based units with communications to Campus Building Automation and Control System.
- DDC System shall be native BACNET based and web hosted allowing password protected access from the internet. New systems to be Delta. Maintain and integrate legacy systems (Siemens) as needed Utilize Niagra/Jace front end to integrate with all new and legacy systems.
- Base system on distributed system of fully intelligent, stand alone controllers, operating in a multi tasking, multi user environment on token passing network, with central and remote hardware, software, and interconnecting wire and conduit.
- Provide computer software and hardware, operator input/output devices, control units, local area networks (LAN), sensors, control devices, actuators. Utilize standard programming and templates whenever possible for controls of AHUs, VAV and fan coils.
- Provide controls for variable air volume terminals, reheat coils, unit heaters, fan coils, and package units when directly connected to control units.
- Provide control systems consisting of thermostats, control valves, dampers and operators, indicating devices, interface equipment and other apparatus and accessories to operate mechanical systems, and to perform functions specified.
- Provide installation and calibration, supervision, adjustments, and fine tuning necessary for complete and fully operational system.

23 11 23 FACILITY NATURAL GAS PIPING

- Low pressure gas (9" WC and lower) piping 2" and smaller shall be standard weight, schedule 40, threaded black steel pipe with malleable iron fittings. All low pressure gas piping 2 ½" and larger and all medium pressure piping, shall be schedule 40, welded black steel with plain ends. Fittings shall be standard butt weld fittings. Valves 2" and smaller to be non-lubricated bronze with square heads or lubricated semi-steel body with tapered plug, valves 2 ½" and larger to be lubricated semi-steel flanged. Site piping to be polyethelyne.

  - Manufacturer: Continental Steel & Tube, Pinnacle Industrial Supply, A-1 Alloys, Nordstrom, A.Y. McDonald

- Natural gas pressure regulator:

  Spring loaded, general purpose, self-operating service regulator including internal relief type diaphragm assembly and vent valve. Diaphragm case can be rotated 360 degrees in relation to body.

  - Manufacturer: Fisher, Rockwell, Equimeter

- Seismic valve:

  Flanged or screwed semi-steel body, manual reset, high flow efficiency to eliminate gas pressure drop, soft seat construction, non-creeping tripping mechanism, visual open- close indicator. The valve shall close within five (5) seconds when subject to a horizontal sinusoidal oscillation with a peak acceleration of 0.3g for a period of 0.4 seconds. The valve shall be UL Listed and State of California Certified.

  - Manufacturer: Pacific Seismic Producers (KOSO), Seismic Safety Products, Earthquake Safety Systems

23 21 13 HYDRONIC PIPING

- Chilled and hot water piping shall be standard weight schedule 40 black steel pipe, ASTM A 53.
- Site piping to be sand bedded Rovanco pre-insulated with closed cell insulation and polyethelyne jacket.
- Use welded fittings on 2-1/2 inches and larger. Grooved piping may be considered.
- Copper piping will be considered for pipes under 4 inches. Submit request to college for each particular project.
- Provide closed system water treatment for all systems, provide flushing and cleaning for all substantial piping modifications.
- Piping from water make-up pressure regulator (HW building loop) to main HW building loop shall be copper with dielectric unions.

23 21 16 HYDRONIC PIPING SPECIALTIES

- Provide manual and automatic air vents at all high points of chilled and hot water piping systems.
- Provide strainers on all pumps, coils, and control valves and terminal units.
- Provide unions at all pieces of equipment.
- Provide Pete's Plugs and isolation valves at all pieces of equipment.
- Provide dielectric unions when connecting dissimilar metals.

23 23 00 REFRIGERANT PIPING

- Field Fabricated Pipe. Furnish refrigeration grade nitrogen charged and capped copper tube Type L & K, drawn temper with wrought copper or cast bronze fittings
- Pre charged Piping. Furnish copper tube Type L, annealed, with "Quick Connect" fittings matched to equipment.
- Follow manufacturer's recommendations.

23 31 00 HVAC DUCTS & CASINGS

- All ductwork shall conform to SMACNA and CMC standards & uniform mechanical code.
- Ductwork shall be galvanized steel and internally lined with acoustical insulation where shown or required for a quiet system.
- Provide turning vanes in all elbows.
- Provide manual balancing dampers at all branch run outs to individual diffusers.
- Provide leak testing of all duct systems for less than 1%.

23 34 00 HVAC FANS

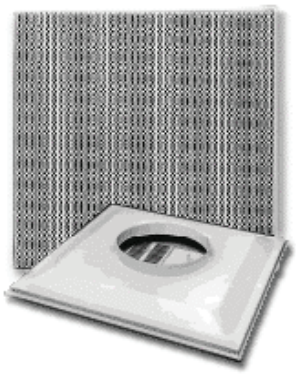
- Provide fans as required.
- In general, exhaust fans shall be roof-mounted centrifugal type with curb by fan manufacturer.
- Where centrifugal fans are not practical, single inlet centrifugal utility sets may be used.
- All fans shall be AMCA certified and by the same manufacturer. Manufacturer: Cook, Penn, Greenheck, or approved equal.

23 36 00 AIR TERMINAL UNITS

- For most systems, provide hot water reheat VAV terminals.
- Terminal units shall be pressure independent with an overall maximum pressure airside drop of 0.35" WC.
- Hot water coils shall provide a minimum of 95 degree F. discharge air and be either one or two row as required.
- Units shall be complete with factory-mounted DDC controls and sound attenuation extensions.
    - Manufacturer: Titus, Krueger, Accutrol, or Anemostat

23 37 00 AIR OUTLETS & INLETS

RETURN



- In general, perforated face supply air diffusers with modular cores will be used. These are readily used in 24" x 24" acoustical tile ceilings. Smaller sizes may be used in hard type ceilings provided the correct frame is provided.
  - Manufacturer/Model: Titus Model PAS or Krueger Model 1100.
- Return air grilles in acoustical ceilings will also be perforated face. The modular core is not required but a duct connection (for a ducted return air system) will be required.
  - Manufacturer/Model: Titus Model PAR or Krueger Model 1190.

RETURN / EXHAUST

- In general, perforated face supply air diffusers with modular cores will be used. These are readily used in 24" x 24" acoustical tile ceilings. Smaller sizes may be used in hard type ceilings provided the correct frame is provided.
  - Manufacturer/Model: Titus Model PAS or Krueger Model 1100.
- Return air grilles in acoustical ceilings will also be perforated face. The modular core is not required but a duct connection (for a ducted return air system) will be required.
  - Manufacturer/Model: Titus Model PAR or Krueger Model 1190.

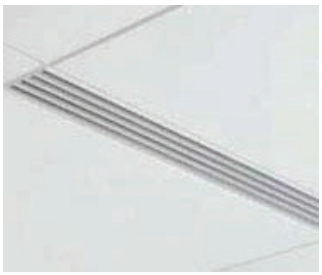
SUPPLY

- Supply air devices for walls will be double deflection type with the front blades parallel to the long dimension.
- These may also be used in hard ceilings if so desired for architectural reasons.
  - Manufacturer/Model: Titus Model 350 or Krueger Model 880.

LINEAR

- Where linear diffusers are desired for architectural reasons, they should come with supply air boot provided by the diffuser manufacturer where possible. Matching linear diffusers can also be used for return air.

    - Manufacturer/Model: Titus ML Series or Krueger 1900 series.



EGGCRATE

- Eggcrate type grilles are acceptable in Janitor Closets and equipment rooms for exhaust.

23 40 00 HVAC AIR CLEANING DEVICES

- All air handling units shall have two sets of filters; pre-filters and final filters.
- Pre filters shall be MERV 8.
- Final filters shall be MERV 13.
- Air handling units shall also have UV lights as additional air cleaning device (see Section 23 42 00).
- Provide temporary filters to protect equipment during construction if fans are running.
- Upon completion of the work provide college with one spare set of new filters for each application.
- In some smaller units it may not be possible to install all the filtration required. In some instances, filtration systems may be installed in the ductwork.

23 73 00 CENTRAL-STATION AIR-HANDLING UNITS

- Provide custom Air Handling Units as needed.
- Carefully review space requirements for AHUs.
- Units are chilled water with air side economizers, dual filters, direct drive fan wall supply and return fans, with primary and backup VFDs for controlling fan speeds, or ECM motor fans.
    - Manufacturer: Temtrol, Alliance, Climate Craft, or Energy Labs, Dynamic Air.

23 81 03 PACKAGED ROOFTOP AIR CONDITIONING UNITS - SMALL CAPACITY ONLY

- Packaged rooftop units will only be used where chilled water is impractical and their use is pre-approved by the college.
- In general, where units are over five tons nominal capacity indoor, chilled water Air Handling Units shall be used.
- Units shall be VAV with variable speed compressors and ECM motor fans controlled from duct static and room temperature. Units shall use R410a.
- Units shall include dry bulb economizer, two sets of filters (pre and final), relief fan, coils shall be copper tube & aluminum fins, gas fired furnaces, and curbs including vibration isolation and seismic restraints.
    - Manufacturer: Trane, Carrier, York, or Daikin

23 81 07 VARIABLE FREQUENCY DRIVES (VFD)

- VFDs shall be UL listed.
- VFDs shall be tested to UL 508C.
- VFDs shall be compatible with BACNET campus DDC system.
- The VFD's full load output current rating shall meet or exceed NEC Table 430-150. The VFD shall be able to provide full rated output current continuously, 110% of rated current for 60 seconds and 120% of rated torque for up to 0.5 second while starting.
- A programmable automatic energy optimization selection feature shall be provided standard in the VFD. This feature shall automatically and continuously monitor the motor's speed and load to adjust the applied voltage to maximize energy savings.

- Galvanic isolation shall be provided between the VFD's power circuitry and control circuitry to ensure operator safety and to protect connected electronic control equipment from damage caused by voltage spikes, current surges, and ground loop currents. VFDs not including either galvanic or optical isolation on both analog i/o and discrete digital i/o shall include additional isolation modules
- Protect from under voltage. The VFD shall provide full rated output with an input voltage as low as 90% of the nominal. The VFD will continue to operate with reduced output, without faulting, with an input voltage as low as 70% of the nominal voltage.
- Protect from over voltage. The VFD shall continue to operate without faulting with an input voltage as high as 130% of the nominal voltage
- All backup drives shall have same programming as primary drive.

    - Manufacturer: ABB (ABB shall be campus standard)

23 81 23 COMPUTER-ROOM AIR-CONDITIONERS

- Where required, provide unit specifically designed for use in a computer room (BDF, IDF, etc.).
- Units shall use chilled water for cooling. If chilled water is impractical or a split system is desired as back up, provide air condensing unit by the same manufacturer as the indoor computer room air handling unit. Condensing coils shall be copper fins on copper tubes.
- No reheat design and adiabatic (ultra-sonic) humidifiers required.
- Provide integrated economizer system as required.

    Large System:
    - Manufacturer: Liebert, Data Aire

    Small System: Use house air VAV box plus Mitsubishi/Daikin mini split units for small data/computer rooms
    - Manufacturer: Mitsubishi, Daikin

23 81 27 DUCTLESS SPLIT-SYSTEM AIR-CONDITIONERS

- Units may be used for small rooms requiring 24 hour air conditioning, no more than five tons total. Typical applications are small server rooms, elevator equipment rooms, remote office in a warehouse, etc., provide only if impractical to cool rooms from main air handlers.
- Refrigerant shall be R410A.
- Indoor fan coils may be wall-mounted, ceiling-mounted, or above ceiling fan coils depending on the application.
- Refrigerant piping shall be installed in accordance with manufacturer's recommendations.
- Thermostat must be capable of being hard wired to connect to the campus DDC system.

    - Manufacturer: Mitsubishi/Daikin

DIVISION 25: INTEGRATED AUTOMATION

25 00 00 INTEGRATED AUTOMATION

- Building Management System (BMS):

  The BMS shall monitor and control all building mechanical systems and equipment.

  A. Each mechanical system shall be complete with factory controls, and shall be specified with accessory integration modules, hardware, computer cards, and software required for full and complete integration to the BMS (Native BacNet). The BMS shall monitor mechanical equipment for failure alarms, and all operating set point variables shall be capable of being reset and trended. Additional integration modules, hardware, software, and programming shall be provided
  by the BMS vendor as required to complete system integration (Niagra-Jace).
  B. The lighting, emergency generator, UPS, Battery Plant, main circuit boards, transfer switch, electrical gear, and other building electrical systems and subsystems shall have separately monitored and controlled systems.
  C. Security shall have separately monitored systems and fire control panels shall also be separately monitored and controlled.
  D. Coordinate requirements for each discipline with Antelope Valley College requirements.

DIVISION 26: ELECTRICAL

26 00 00 ELECTRICAL

DESIGN GUIDELINES

- Power Shut-Down Procedures:

  A. The Contractor's construction schedule shall indicate dates of proposed electrical power shutdowns required to perform the installation. The Contractor shall notify the College a minimum of 14 days prior to each shutdown. All shutdown coordination meetings shall be arranged by the Contractor for each shutdown.

  B. Power shutdowns shall occur between the hours of 12:00am and 4:00am.

  C. The Contractor shall be responsible for investigating and listing all affected loads that will be switched off during a power shutdown.

- Product Specifications:

  A. In all instances, three manufacturers should be specified. The basis of design should be the first manufacturer named in the specifications and this same name should show on the drawings.

  B. The first named manufacturer is the standard of quality, performance, space requirements.

  C. Any names beyond the first named is an acceptable manufacturer. However, being listed as an acceptable manufacturer does not imply that the manufacturer has a product that meets or exceeds the project requirements.

  D. The Contractor should verify this information and make adjustments as needed to accommodate equipment other than the first named manufacturer.

- Building Normal Power Distribution:

  A. Place equipment such that space for expansion is available and usable.

  B. Provide 4" housekeeping pads for floor-mounted equipment.

  C. Provide a separate ground bar in the main electrical room.

  D. Motors greater than ½ HP shall be 480V-3 Phase in buildings where 480 volts is available. ½HP and below shall be 120V-1 phase.

  E. Provide a minimum of 25 percent spare load and circuit breaker capacity in branch circuit panelboards.

  F. Type AC/MC cable is not permitted except for specific applications where other methods will not work.

  G. Include a separate grounding conductor, other than the raceway, in all feeders and branch circuits.

- Building Emergency Powers Systems:

  A. Shall be sized to maintain egress lighting operations for a minimum of 90 minutes.

- Emergency Power Distribution (Life Safety):

  A. Provide required egress lighting maintaining 1 foot candle minimum.
  B. Fire alarm systems shall be on the life-safety system.

- Emergency Power Distribution (Stand-by):

  A. Provide Uninterruptible Power Supplies (UPS) for data rooms.

26 05 19 LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS & CABLES

- Use only copper conductors, #12 AWG minimum for power wiring; #14 AWG for control circuitry.
- AC and MC cables are not permitted except as specifically noted in this section.
- A separate grounding conductor, other than the raceway, shall be included in all feeders and branch circuits.
- Manufactured wiring systems are not acceptable except within modular partition systems.

26 05 26 GROUNDING & BONDING FOR ELECTRICAL SYSTEMS

- Provide separate insulated grounding conductor within each feeder and branch circuit raceway.
- Use copper-clad steel ground rods.
- Ground resistance testing shall be performed by a Contractor engaged independent testing company.
- Provide exothermic weld connections.
- Utilize the following elements for grounding:

    Metal underground water pipe
    Metal building frame.
    Concrete-encased electrode. Rod electrode.
    Ground rings.

- 15 ohm maximum system ground performance.
- Well pipes shall be 8" diameter by 24" long fiberglass with cast iron cover marked "GROUND."

26 05 29 HANGERS & SUPPORTS FOR ELECTRICAL SYSTEMS

- Utilize the following mounting, anchorage and attachment components:

    A. Powder actuated fasteners.
    B. Zinc-coated steel mechanical-expansions anchors.
    C. Concrete inserts.
    D. Clamps for attachment to structural steel elements.
    E. Toggle bolts.
    F. Hanger rods.

- Concrete bases: use 3000-psi, 28 day compressive-strength concrete.

26 05 33 RACEWAYS & BOXES FOR ELECTRICAL SYSTEMS

- Conduit Materials:

  Rigid steel and PVC-coated rigid steel.
  Electrical metallic tubing (EMT).
  Galvanized flexible steel conduit.
  PVC schedule 40 and schedule 80.

- Conduit applications:

  A. Underground, more than 5 feet outside foundation wall: provide PVC schedule 40 or PVC-coated rigid steel conduit.
  B. Underground, within 5 feet from foundation wall: provide rigid steel conduit wrapped with corrosion protective electrical tape, or PVC coated rigid steel conduit.
  C. In or under slab on grade: provide PVC schedule 80 conduit.
  D. Outdoor locations above grade: provide galvanized rigid steel conduit. EMT may be used in areas 10' above finished grade.
  E. In slab above grade: provide PVC schedule 80 conduit.
  F. Wet and damp locations: provide galvanized rigid steel conduit.
  G. Exposed dry locations: provide galvanized rigid steel conduit. EMT may be used in areas 10' above finished grade or floor.
  H. Concealed dry locations: provide EMT.

- Provide sheet metal boxes; provide flush mounting outlet box in finished areas.
- Minimum conduit size shall be 3/4".
- Multi-outlet metal raceways in Laboratories shall be aluminum.
- Provide pull ropes in all empty conduit.

26 05 53 IDENTIFICATION FOR ELECTRICAL SYSTEMS

- Electrical Identification Materials and Devices:

  A. Identification for raceways.
  B. Identification for conductors and communication and control cable.

- Raceway Identification:

  A. Warning tape for underground lines.
  B. Paint bands every 10':
    1. 480V: Blue
    2. 208V: Yellow
    3. Fire alarm: Red
    4. Telephone or data: Green
    5. Emergency: Orange

- Conductor and Cable Identification:

  A. Colored adhesive tape and brass or aluminum tags.

- Equipment Labels: engraved plastic attached with rivets or screwed on.

  A. Warning Signs: Baked enamel and metal backed butyrate.
  B. Instruction Signs: Engraved, laminated acrylic or melamine plastic.

26 05 73 OVERCURRENT PROTECTIVE DEVICE COORDINATION STUDY & ARC FLASH STUDY

- Provide computer-based, fault current and overcurrent protective devices coordination study including ground fault protection and arc fault hazard analysis studies to be performed by the contractor.
- Protective devices shall be set based on the result of the protective device coordination study. Arc fault hazard analysis warning nameplates shall be printed and affixed to the electrical system equipment after the final protective relay settings have been applied and confirmed operational.
- Settings and adjustments of the relays shall be performed by an independent qualified agency familiar with this work and the agency is to be retained by the contractor.
- The person performing this work shall have a minimum of five years experience.
- Contractor shall retain a 3rd party independent consultant to perform the study indicated in this section.
- Perform study under direct supervision of Professional Engineer experienced in design of this Work and licensed at in State of California with minimum of five years experience in power system analysis.

26 22 00 LOW-VOLTAGE TRANSFORMERS

- Provide continuous copper windings.
- Ventilated enclosures.
- Insulation class: 220 degrees.
- Taps: 25KVA transformers and larger shall have two 2.5 percent full capacity taps above and two 2.5 percent full capacity taps below normal.
- Transformers shall be NEMA TP-1 compliant and meet NEMA sound criteria.
- Provide K-rated transformers or harmonic mitigation transformers for non-linear load applications.

26 24 13 SWITCHBOARDS

- The manufacturer of the switchboard assembly shall be the same as the manufacturer of circuit breakers and installed within the assembly.
- Mains shall be individually or panel-mounted; branch feeder breakers shall be group- mounted.
- Provide ground bussing the full length of the switchboard assembly.
- Bussing: copper with silver or tin plating of standard size.
- Connections shall be bolted, accessible from the front for ease of maintenance.
- Provide bus extensions on ends for future sections.
- Install individual circuit breaker nameplates.
- Testing shall be done by a separate contractor-engaged testing firm.
- Provide electronic metering for building main switchboard with capacity of reading kw.

26 24 16 PANELBOARDS

- The manufacturer of the panelboard assembly shall be the same as the manufacturer of circuit breakers and installed within the assembly. Preferred manufacturer is Square D.
- Copper bussing.
- Copper ground bussing shall be installed in all panelboards.
- Circuit breakers shall be bolt-on type.
- For non-linear load applications subject to harmonics, furnish 200 percent rated, plated copper, solid neutral.
- Install spare conduits out of each recessed panelboard to accessible location above ceiling or below floor. Minimum spare conduits: 5 empty 1 inch. Identify each as "SPARE."
- Provide minimum 25 percent spare load capacity and 25 percent spare circuit breakers in panelboards.
- Circuit directories shall be typed under clear plastic contained within a metal frame inside the panelboard door.
- Provide HACR type circuit breakers for air conditioning equipment.

26 24 19 MOTOR-CONTROLLED CENTERS

- The manufacturer of the motor control center assembly shall be the same as the manufacturer of circuit breakers and starters installed within the assembly.
- Horizintal Bus: copper bus with continuous rating. Include copper ground bus entire length of control center.
- Vertical Bus: copper.
- All indicating and pilot lights shall be LED with metal housing and easily replaceable parts.
- Control wiring shall be installed in Panduit wiring ducts. Control wiring shall be stranded copper.
- Provide engraved nameplates describing load on each cubicle.

26 27 26 WIRING DEVICES

- Receptacles: 120V, 20A
    - A. Straight blade.
    - B. GFCI: feed-thru type.
    - C. Isolated ground in IT equipment rooms.
    - D. Commercial grade, back and side wired. Manufacturer: Hubbell or equal.

- Snap Switches: 120/277V, 20A, Heavy Duty
    - A. Pilot light switches.
    - B. Key-operated switches.
    - C. Momentary contact, center off switches.

- Occupancy Sensors:
    - A. Wall-Switch Sensors: Infrared type with adjustable time delay.
    - B. Long-Range Wall-Switch Sensors: Passive-infrared type with adjustable time delay.
    - C. Wide-Range Wall-Switch Sensors: Passive-infrared type with adjustable time delay.
    - D. Exterior Occupancy Sensors: Passive-infrared type with adjustable time delay.

- Wall Plates:
    - A. Material for Finished Spaces:
        - Type 302 stainless steel satin finish
    - B. Material for Unfinished Spaces: Galvanized steel
    - C. Material for Damp and Wet Locations: Die-cast.

- Finishes:
    - A. Switches and receptacles connected to normal power system: White.
    - B. Switches and receptacles connected to emergency power system: Red.
    - C. TVSS Devices: Blue.
    - D. Isolated-Ground Receptacles: Orange.

26 28 13 FUSES

- Cartridge fuses rated 600 V and less for use in switches.
- Spare-fuse cabinets. Wall-mounted steel unit with fuse pullers for each size of fuse. Quality Standard: NEMA FU 1.
- Cartridge Fuses: Nonrenewable
- Fuse Applications:
    - A. Motor Branch Circuits: Class RK1, time delay.
    - B. Other Branch Circuits: Class RK1, time delay.

26 28 16 ENCLOSED SWITCHES & CIRCUIT BREAKERS

- Fusible and Nonfusible Switches:

  A. Fusible Switch, 600 A and Smaller: NEMA KS 1, Type HD.
  B. Nonfusible Switch, 600 A and Smaller: NEMA KS 1, Type HD.
  C. Accessories:
  - Equipment ground kit.
  - Neutral kit, where required.
  - Auxiliary contact kit

  D. Preferred manufacturer is Square D.

26 51 00 INTERIOR LIGHTING SYSTEMS

- The lighting shall be designed to provide comfortable, aesthetically pleasing environments that enable and support visual acuity, and wayfinding. Lighting equipment selection will be mindful of energy conservation, and ease of maintenance with the goal to minimize operating costs.
- The lighting system shall utilize long life lamps and energy conservation strategies in alignment with the sustainability goals of the project. Light emitting diodes (LEDs) and extra long-life linear fluorescent lamps shall be utilized.:

  A. LED luminaires shall be manufacturer and tested in compliance with ANSI chromacticity standards and with the Illuminating Engineer Society of North America's (IESNA) LM-79 and LM-80.
  B. Interior fixtures shall utilize lamps with 3500K correleated color temperature (CCT) and a minimum color rendering
  index (CRI) of 80.
  C. Halogen and incandescent lamps shall not be used.
  D. All lamps shall be TCLP compliant and contain less than 80 pictograms of mercury/lumen-hour.
  E. Edge-lit exit signs with LED lamps shall have red letters.

- All luminaires shall be UL listed, specification grade in order to provide the college with the best possible long-term value. Three equivalent manufacturers shall be specified for each luminaire type.

28 31 00 FIRE ALARM SYSTEM

- Fire alarm system control panels shall be Edwards for compatibility with existing systems on campus.
- Systems shall be intelligent, addressable devices. Provide system with voice evacuation where required by code.

LIGHTING DESIGN CRITERIA

- The design criteria noted below reflects the relevant illumination and energy standards, and are consistent with the recommendations published by the IESNA Lighting Handbook 10th Edition 2011.
- Illuminance values are average, and maintained footcandles are measured on the horizontal plane at 3'-0", 2'-6", or floor level. A light-loss factor of between 0.70 and 0.85 shall be used in the calculations to account for degrading of light over time. The lighting power densities shall be based on Title 24 energy guidelines. Individual rooms may exceed these lighting power density values as long as the total connected lighting load for the building does not exceed the total lighting allowance for the building, calculated by the Space-by-Space or Whole Building method as outlined in Title 24. To assist with LEED energy conservation goals, the Design Team shall strive to maximize reductions to Title 24 guidelines while maintaining visual acuity.
- Lighting system features shall include:
- Interior lighting shall be primarily LED.
- Interior lighting controls shall be specified as required for Title 24 compliance.
- The lighting and controls shall be designed to contribute to or meet the following LEED v4 credits::

    A. Interior Lighting.
    B. Building Level Energy Metering.
    C. Optimize Energy Performance.
- Lighting will be designed to meet or exceed Title 24 energy requirements.
- Emergency power will be provided for all egress lights and exit signs.

LIGHTING CONTROL SYSTEMS

- Lighting controls shall be Wattstopper.
- The system shall be networked and interfaced with the BMS system.
- The lighting control system will utilize local room 0-10V dimming control devices.
- Control devices available for use with the system will include:

    A. Occupancy sensing wall switches.
    B. Vacancy sensing wall switches.
    C. Momentary contact push button switches.
    D. Dimming switches.
    E. Ceiling mounted dual-technology (ultrasonic and infrared) occupancy sensors.
    F. Ceiling mounted photocells.
    G. AV L.V Interface (as needed per specific project - not in typical classrooms).
- The system shall be designed to:

    A. Interface with Building Management System.
    B. Provide daylight harvesting dimming as well as daylight switching.
    C. Provide on site factory commissioning upon substantial completion, and 6-month follow-up site visit to verify proper operation of daylight control devices.
    D. Provide one day of on site system training at the completion.
    E. Provide multiple protocols for digital communications and system integration.
    F. Provide system status feedback for remote monitoring of lighting and control status.
    G. Provide separate relay devices for dimmed and switched loads.
    H. Interface with the AV equipment as needed (project specific - not in typical classrooms)
- The system shall be easily expanded by additional bridges and digital controllers. Expansion of system shall create no down time to first installed system.
- The digital controllers shall be capable of being assigned and prioritized to any relay.

EMERGENCY LIGHTING

- Emergency Lighting Units: Self-contained, with sealed, maintenance-free, lead-acid battery and fully automatic, solid-state charger, wire guard, integral time-delay relay, and integral self-test.
- LED Lighting.
- Manufacturer: Evenlite
- Model: Aperion Retracted Recessed emergency light, APR-25-NC-UP-SD
- Mount: Wall or ceiling-mounted
- Finish: Textured white powder coat (field paint to blend with architecture)

26 53 00 EXIT SIGNS

- Manufacturer: Lithonia
- Model: Precise LRP Series, LED Recessed
- Mount: Ceiling, wall or pendant mount as applies
- Finish: Red letters
- Notes: Directional arrows or double sided as required Internally lighted:

- LED, 100,000 hours.
- Battery Type Exit Signs: Sealed, maintenance- free, nickel cadmium battery with fully automatic, solid-state charger with sealed transfer relay, remote test switch.
- Provide emergency power.

DIVISION 27: COMMUNICATIONS

27 00 00 COMMUNICATIONS

TECHNOLOGY ROOMS

There are a number of names used to describe Technology Rooms, including:

- Telecommunications Rooms (TR), IDF Closet, Tele/Data Closet, Equipment Rooms (ER), Entrance Facility (EF), BDF, MDF etc.
- For the purpose of this document relevant to the individual building projects, Antelope Valley Community College District has identified two classifications of Technology Rooms, the BDF and IDF. Antelope Valley Community College District reserves the use of the MDF, Main Distribution Frame and Data Center names for spaces that support the entire Campus.
- Technology Rooms provide an environmentally suitable and secure space for installing cable, associated hardware, rack and wall mounted technology equipment.
- Refer to Section 7 Space Standards for specific criteria.

27 05 00 COMMON WORK RESULTS FOR COMMUNICATIONS

CABLING SYSTEM REQUIREMENTS

The cabling system shall be an end to end solution that is sourced from, and manufactured by CommScope, for an end-to-end UNIPRISE system and qualify for the CommScope 25-year extended product warranty and Application Assurance.

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

- The cabling system will be standards compliant (EIA/TIA 568D) and shall be based on Category 6 cables and components, unless otherwise noted.
- The cabling system will provide a high level of flexibility, capability and resilience.
- The cabling system shall include high performance copper and optical fiber cabling, as well as wireless systems where appropriate.
- Communications Outlets will be provided throughout the facility. Each outlet will support voice, data and digital media connectivity.

CABLING SYSTEM OVERVIEW

- The information included in this section is provided as reference for project's architects, engineers and other consultants in order to establish an initial understanding of how integrated technologies will impact architectural designs and construction for the new and renovated building projects on campus.
- This document addresses minimum guidelines for the design of Technology Rooms, pathways (inter-building and intra-building), and structured cabling system.
- The communications cabling system at Antelope Valley Community College District is based on a flexible design that will allow any communications connector to be used for voice or data. All communications station cable is terminated on RJ45 connectors at the faceplate and RJ45 patch panels in the IDF Closets. The voice riser cable will be extended from 110 blocks in the BDF to each IDF with one pair terminated on each port of a voice riser patch panel. This system will support additions, moves and changes by simply moving a patch cord.

DIVISION 27: COMMUNICATIONS

COMMUNICATIONS OUTLET CONFIGURATIONS

- All communications outlets will support a combination of voice, data and media applications. Provide Category 6 cables running from the location to the closest IDF closet. Provide blue colored RJ45s for all IP-based voice, data, media and other technology connections,unless otherwise noted.
- At ceiling-mounted projectors and wall-mounted flat panel display locations used by audiovisual systems, provide two Category 6 cables running from each projector/display to the nearest IDF Closet and two shielded Category 6 cables (jacket color yellow), running from each projector/display to the Instructor location (or local AV equipment) in the room. Provide shielded RJ45 jacks with yellow icons at each end of the shielded cables, and label them AV.

27 05 29 HANGERS & SUPPORTS FOR COMMUNICATIONS SYSTEMS

CABLE SLINGS

- Cable slings shall be used in locations where the communication cable (bundles of 50 or more cables) is not supported by continuous systems such as cable trays or conduit.
- Support Requirements

  - Provide cable slings every 48-60" at a maximum, attached to threaded rod or ceiling hangers to provide support for cable bundles or innerduct.

J-HOOKS:

- J-Hooks shall be used in locations where the communication cable (bundles of less than 50 cables) is not supported by continuous systems such as cable trays or conduit.
- Support Requirements

  - Provide cable slings every 48-60" at a maximum, attached to threaded rod or ceiling hangers to provide support for cable bundles or innerduct.

27 05 33 CONDUITS & BACKBONES FOR COMMUNICATIONS SYSTEMS

Provide Communications cable conduit in locations where access to cable tray is unavailable or where portions of the pathway span are inaccessible (i.e. embedded in walls or inaccessible ceilings). Provide conduit for small quantities of cable where cable tray is impractical.

Conduit may be used to house non-rated cables between end points to ensure NEC Code compliance.

Conduits for Communications Systems:

- Conduits serving individual work area outlets shall be a minimum of 1 in. Individual work area outlet conduits are to be dedicated to only one outlet box each, and shall not be "daisy-chained" together.
- Conduits for backbone cabling in the building riser and incoming services shall be a minimum of three 4in. More conduits may be needed depending on the number of floors and IDF rooms it serves.

The following conduit type shall be utilized as described below:

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

  - RGS shall be installed using threaded couplers and fittings.
- Electrical Metallic Tubing (EMT)

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

- Flexible Conduit ("Flex")
  - Flexible conduit shall not be used for communication cable installation when EMT conduit is available. Flex conduit may be used for connections into modular furniture or similar applications. When using Flex conduit, increase the diameter of the Flex by one trade size over what the requirement would be using smooth-wall conduit.
  - Flexible conduit runs may not exceed 5 feet.
- Plastic Conduit/Polyvinyl Chloride (PVC)
  - Plastic and PVC conduit shall be used for underground duct construction between buildings and vaults. PVC conduit shall not be used within buildings per NEC Code and UBC (Uniform Building Code).
  - The PVC conduit shall be Schedule 40 PVC. Plastic.
- Conduit Installation Guidelines:

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

  B. Bonding and Grounding: Bonding of conduits to the Telecommunications Grounding System is required. At the termination of conduit runs within technology rooms, attachment of a ground wire between the Telecommunications Ground Bus to grounding rings installed on conduit box connectors should be accomplished to ensure electrical continuity of the conduit system.

  C. Firestopping

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

  Backboxes:

  Each work area outlet shall have the conduit connected to 5" square double-gang, deep device boxes (2-1/2" - 2-7/8"deep), equipped with a single-gang mud ring at the outlet location.

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

- Materials:
  - For indoor use, use NEMA Type 1 pull boxes. For areas exposed to heavy moisture, chemicals or weather elements, NEMA Type 3 or 4 pull boxes shall be installed.
  - The pull box shall be equipped with hinged covers, or removable covers which are screwed or bolted on. The pull boxes shall have hardware for supporting and securing cabling and pulling eyes to facilitate cabling installation.

- Placement:
  - A pull box shall be installed after 100 feet of conduit has been placed, and/ or after 180 degrees of directional change in the conduit pathway has been affected. The installation of a pull box shall not be used for directional change.

- Support Requirements

- Pull boxes shall be attached directly to the ceiling slab, or suspended by 4-point threaded rod supports anchored to the ceiling. Pull boxes require seismic bracing to comply with Local Building Codes. Seismic bracing shall be installed as required by local building codes, DSA, and NUSIG (National Uniform Seismic Installation Guidelines). Accommodations for lateral and oblique bracing struts must be coordinated with the other disciplines that vie for critical ceiling space.

27 05 36 CABLE TRAYS FOR COMMUNICATIONS SYSTEMS

Distribution cable tray shall be installed above the accessible ceiling for the creation of main pathways for the management of high volumes of cable through corridors, and for access and egress to BDF and IDFs.

- Construction

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

- Dimensions

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

- Clearances

  Provide a minimum of 12" clearance at the top and one side of the cable tray on parallel runs with other overhead trades. Where possible, provide a minimum of 12" clearance on both sides of the cable tray on parallel runs with other overhead trades. When other trades are running perpendicular to the cable tray, they above clearances may be reduced provided there is no span longer than 10' in which the above clearances are reduced. Provide a minimum of 18" clearance from fluorescent lights.

- Support Requirements

  A trapeze-style support shall be used along the span of the cable tray. The trapeze shall be constructed of channel stock (i.e.Unistrut) and 5/8 in. threaded rod. The trapeze support elevation should allow a minimum of 12 in. between the top edge of the cable tray and the slab above. Appropriate threaded rod anchors shall be selected and approved by the Project Structural Engineer. Trapeze supports shall be placed a minimum of every 10 ft. and at cable tray intersections and terminations.

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

- Bonding and Grounding Requirements

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

- Firestopping Requirements

  Cable trays that penetrate fire-rated walls shall be equipped with wall penetration sleeves at each location, and have appropriate fire-stopping materials installed after the placement of cable has been completed.

27 05 53 IDENTIFICATION FOR COMMUNICATIONS SYSTEMS

Labeling shall be consistent across all projects. Please ensure that the labeling corresponds to the final room number which may be different then the Architect's number scheme on the construction documents.

- IDF Closets

  Use the room number to identify the BDF and IDF.

- Patch Panels

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

  A. Patch Panels: 1, 2, 3, etc. (numerical)
  B. Patch Panel Jack Numbers 1-48

- Workstation Outlets

  All workstation outlets will be clearly labeled as follows:

WWW	**IDF closet room number**
XX	**Patch panel number**
YY, YY, YY	**Patch panel jack number**

Example: 202-1-46,47,48

IDF Room 202, Patch Panel 1, Jack # 46, 47, 48

27 11 16 COMMUNICATIONS CABINETS, RACKS, FRAMES & ENCLOSURES

Provide a minimum of (4) equipment racks in a standard BDF and (3) equipment racks in a standard IDF.

- Size and Construction:

  Each rack shall consist of a modular EIA 19" mounting frame, with a minimum of 77" (44U) space for equipment in the vertical plane. The rack shall be manufactured from extruded aluminum / steel with a minimum load-carrying capacity of 1000 lbs. (450 kg.). Each rack will have both horizontal and vertical cable management. Provide double width (6" typical) mounted vertical cable management on both sides of each rack. Provide strain relief and cable management at the rear of each rack to ensure tidy routing of all feeder and horizontal cables.

- Power Requirements: Refer to Section 7 Space Requirements for power distribution in BDF and IDF Rooms.
- Installation Requirements:

  Provide all mounting components and accessories to securely fix racks to floor and supporting walls. Provide appropriate seismic transverse and longitudinal bracing per any local codes and the current seismic requirements and fix each rack to the overhead ladder. Provide cable bend management fixtures to maintain the proper bend radius as the cables drop into the rack. Do not allow cables to be unsupported as they run from conduit or cable tray to equipment cabinets.

- Bonding and Grounding:

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

COMMUNICATION CABLE DISTRIBUTION INFRASTRUCTURE

The horizontal communication cable distribution infrastructure includes the pathway and support hardware which concentrates, supports and protects horizontal cable between its origination point in the IDF or BDF and the workstation outlet location. It also provides a permanent pathway that facilitates the addition or replacement of cable over time. Horizontal support hardware is further defined as continuous, (e.g. Conduit, Cable Tray) and non- continuous (e.g. J-Hooks, Bridle Rings).

27 11 23 COMMUNICATION CABLE MANAGEMENT & LADDER RACK

Provide Ladder Rack within the BDF and IDF rooms to route cable to or from sleeves, risers, ducts, cable trays to termination fields within equipment racks or mounted on walls. This cable ladder system shall be contained within the confines rooms.

- Ladder Rack Materials and Applications:

  Cable ladder may be mounted horizontally or vertically on walls and over equipment cabinets and racks. Vertical ladder will be used to support riser cable from floor to ceiling as it passes between floors. The Cable Runway system shall be mounted to walls, the top of equipment rack, or hung with threaded rods for bracing and support. Refer to Local Building Codes for additional seismic bracing for code compliance.

- Ladder Rack Bonding and Grounding:

The ladder rack system shall be bonded to the Telecommunications Ground Bus with 6AWG stranded copper wire.

27 13 00 BACKBONE CABLE

INTRA-BUILDING DISTRIBUTION

The intra-building backbone cable will connect each IDF back to the BDF. Backbone connectivity will be supported by multipair copper cabling for analog voice and optical fiber cables for data.

- Provide 25 pair Category 5E telephone riser cable from 110 blocks in the BDF to rack mounted patch panels in each IDF with 1 pair terminated on one RJ45 connector on the patch panel.
- Optical fiber will be run from the BDF to each IDF consisting of (24) 62.5 micron OM1 multimode (for legacy low-voltage systems) and (24) 50 micron OM4 Multimode elements terminated on LC connectors rack mounted in optical fiber patch panels.

Innerduct

- Innerduct shall be installed to establish multiple pathways in a larger conduit or provide a pathway across a cable tray. Innerduct shall be used for the protection of fiber optic cabling, but copper cabling may be installed in the innerduct to prevent tangling with other cables already present. Innerduct shall be used to protect fiber optic cabling in cable trays, exposed areas in ceilings, IDFs, and BDFs.
- The minimum size of innerduct to be used is 1 1/4" and shall be rated appropriately for the environment it serves. Innerduct shall be provided along the entire run of the fiber optic cable.

Communication Cable System Pull Boxes

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

INTER-BUILDING DISTRIBUTION

The campus uses Air Blown Fiber technology in the campus backbone. Refer to the campus infrastructure drawings for termination locations for copper and optical fiber.

Optical Fiber

Provide 84 strands of single mode (OS2), and 12 strands of multimode (OM1), air blown optical fiber from the North MDF to each building. Terminate on a patch panel in the BDF and the North MDF.

Copper Voice Cable

Provide 25 pair outside plant Category 5E cable for each IDF, not to exceed 100 pair to each building. Cable shall be from North MDF to the BDF in each building for analog voice connections. Terminate on protector blocks in the BDF.

The table below describes the typical outlet configurations.

STANDARD WALL MOUNTED OUTLET	Standard wall mounted outlets will be the typical outlet configuration throughout the buildings. Standard wall mounted outlets will consist of four Category 6 unshielded communications cables terminated on RJ45 connectors at the faceplate.
WALL MOUNTED PHONE OUTLET	Wall mounted phone outlets will consist of two Category 6 unshielded communications cables terminated on RJ45 connectors at the faceplate. The faceplate will be mounted 42" above the finished floor, unless directed otherwise by the Architect.
WALL MOUNTED SECURITY CAMERA	Wall mounted security camera outlets will consist of two Category 6 unshielded communications cables (orange in color) terminated on orange RJ45 connectors at the faceplate. The faceplate will be mounted above the finished floor at the elevation shown on the drawings.
FLOORBOX POKE-THROUGH	In areas that need communications outlets in the floor, the typical floorbox and poke though will consist of eight Category 6 unshielded communications cables terminated on RJ45 connectors in the floor devices. All jacks utilized in floor boxes shall have dustcaps installed. Conduits to floor boxes shall be 1.25" min.
AUDIOVISUAL COMMUNICATIONS OUTLETS	At instruction or presentation locations, provide six Category 6 unshielded communications cables terminated on RJ45 connectors in the floorbox or wall outlet. At locations where a projector/ monitor will be located, provide an additional two Category 6 shielded cables home run to the podium/ local AV equipment rack. Terminate each cable with yellow RJ45 jacks or metallic shielded jacks and Yellow icons. If no audiovisual system exists, the AV communications outlet will still be provided at the instructor's location consisting of six Category 6 unshielded communications cables terminated on RJ45 connectors.
CEILING MOUNTED OUTLET	At the video projection locations, ceiling mounted outlets will consist of two Category 6 unshielded communications cables terminated on RJ45 connectors at the faceplate mounted in the accessible ceiling tile or mounted on the surface as applicable. Provide an additional two Category 6 shielded cables home run to the podium/ local AV equipment rack. Terminate each cable with yellow RJ45 jacks.
WIRELESS ACCESS POINT	Provide WAP outlets mounted 1' above the accessible ceiling or wall-mounted 1' below an inaccessible ceiling. The outlets supporting the wireless access points will consist of two Category 6A unshielded communications cables terminated on RJ45 connectors at the faceplate.

EQUIPMENT STANDARDS

The following are descriptions and model numbers for recommended Information Technology components to be used in communications infrastructure and structured cabling systems:

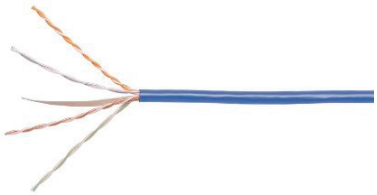
OUTLET BOXES

- Provide a deep 5-Square telecommunications box by Steel City (T&B 82181T-1) or Randl (T-55017) electrical outlet box fitted with a single or double gang plaster ring. (Part numbers vary based on conduit knockout size and mounting methods)
- Description

5 in. Square x 2.875 in. Deep Metal Bracket Box with Cable Management

STANDARD VOICE/DATA CABLE

- CommScope Uniprise UltraMedia 75N4 ETL Verified Category 6e U/UTP Cable, non-plenum, blue jacket, 4 pair count. (Use plenum rated as required by local code and AHJ)



AV MEDIA CABLES

- CommScope Uniprise Media 6 65S4+ Category 6 F/UTP Shielded Cable, plenum, yellow jacket, 4 pair count
- Provide between instructor location and projector or display

PROJECTION SCREEN CONTROL CABLE

- Manufacturer: Beldne (or equal from Liberty, Marshall, Carroll)
- 16AWG - 2 conductor with shield control cable will connect to low voltage screen interface and be extended to AV equipment rack for parallel system operation. Provide 6-foot slack cable for AV podium routing and connection.

SERIAL CONTROL CABLE

- Manufacturer: Beldne (or equal from Liberty, Marshall, Carroll)
- 18-16 AWG - 2 conductor with shield control cable will connect to low voltage screen interface and be extended to AV equipment rack for parallel system operation. As required, provide 6-foot slack cable for AV podium routing and connection.

70-VOLT SPEAKER CABLE

- Manufacturer: Beldne (or equal from Liberty, Marshall, Carroll)
- In 70-volt operation, 16-12 AWG - 2 conductor speaker cable will connect first speaker in zone/series and be extended to AV equipment rack for parallel system operation and a similar cable will be connecting to each speaker in the series/zone. Provide 6-foot slack cable for AV podium routing and connection.

AUDIO SIGNAL & MICROPHONE CABLE

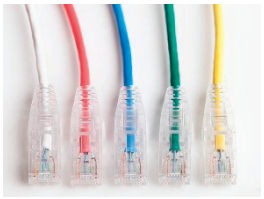
- Manufacturer: Beldne (or equal from Liberty, Marshall, Carroll)
- 18-16 AWG - 2 conductor with shield control cable will connect to audio device / microphone and be extended to AV equipment rack for parallel system operation. As required, provide 6-foot slack cable for AV podium routing and connection.

PATCH PANELS

- CommScope Uniprise 48 port Angled Category 6
- UNP610-ANG-48P (24 port where applicable)
- CommScope Uniprise 48 port Angled Category 6A
- UNA610-U-10G-2U-48 (24 port where applicable)

PATCHCORDS @ RACK

- 28 Ga Category 6 performance “skinny patch cords”
- CommScope CO166S2-02 | MINO6-LB



WALL MOUNT BRACKET FOR WAPS

- Oberon 1006-AP225

HANGING CONDUIT OR PENDANT MOUNT BOX FOR WAPS

- Oberon 0900-HC

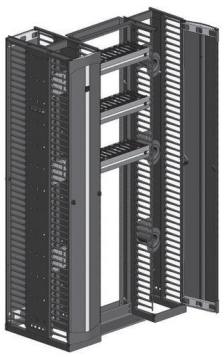
RECESSED CEILING WAP

- Oberon install kit 1043-AP 225 for new construction Hard Lid or Acoustical Tile

RACKS

- 19”W Universal Rack (Black) 46353-703 84”H x 19”W, 45U
- Cable Management:

Evolution g3 Comb. Vertical Cable Managers 35571-703 Evolution Horiz. Cable Manager 35442-702



27 41 00 AUDIOVISUAL

INTRODUCTION

Antelope Valley College is intent on moving to 21st century unified communications and data systems, consistent with industry standards and best practices as they evolve. To that end all AVC AV will be digital (unless laws or codes specify otherwise) and/or will digitally controlled through an enterprise management system, and will be tightly integrated into the data components of the AVC technology plan. All AV provisions shall be approved by AVC ITS during design phases and prior to installation.

AUDIOVISUAL SYSTEMS OVERVIEW - CONFERENCE ROOMS

- Conference Rooms shall utilize a ceiling mounted projector or single wall mounted LED flat panel display sized accordingly for video content presentation.
- Two (2) power outlets shall be installed behind LED displays.
- One 2-port data outlet shall be installed behind LED display.
- Power, data (and audiovisual) services coordinated at floor (as required) for table support in floor box or floor poke-through.
- Mount to be installed to prevent easy access to display controls wherever possible.
- Displays will use ceiling mounted speakers, mounting shall be designed to best project sound throughout the conference room.
- System inputs will include VGA, HDMI, audio and data ports.
- Wireless collaboration device to be installed allowing the ability to display content from mobile devices.
- Audiovisual equipment shall be installed within pullout and pivot style 12RU equipment rack(s) within room millwork. Room millwork to include forced convection ventilation (intake and exhaust) with thermal sensor.
- Content will be managed and controlled via the Extron control station within the room. Control station and speakers shall integrate with the Extron system to support automatic switching of inputs and outputs. Coordinate Extron integration requirements.
- Lighting shall be coordinated for appropriate levels related to room functions.
- Video conference enabled rooms shall be equipped with microphones (wired and wireless), ceiling-mounted speakers, and cameras (front and rear view.)

AUDIOVISUAL SYSTEMS OVERVIEW - CLASSROOMS

Exterior Audio/Video (A/V) Cabinet

- All room will have one (1) Instructor Table measuring 60”W x 30”D x 32”H.
- All rack mounted AV equipment will be consolidated and housed within instructor desk. Provide a 14U rack-mount cabinet for storage of all electronic teaching tools (CPU, VCR, DVD, controller, amp, etc.) with locking rear louvered door.
- Instructor desk equipment bay to include forced convection ventilation (intake and exhaust) with thermal sensor.
- Locate next to wall adjacent to teaching wall 5’ from corner.
- Provide 2-3” hole is to be cut in the side of cabinet for cables at location of junction box.
- Provide 2” Conduit from ceiling to 4” junction box in the wall behind A/V cabinet in line with 2-3” hole cut in side of cabinet.
- Remove any casters from AV Cabinet.
- Include active ventilation within cabinet for forced convection.
- Install shelf or rails if not already installed.
- In certain situations the room configuration may dictate the elimination of the A/V Cabinet. Elimination or substitution of cabinet to be confirmed with AVC ITS.

- Distance education rooms shall be equipped with microphones (wired and wireless) ceiling mounted speakers and cameras (front and rear view).

Lighting

- Shall be coordinated for appropriate levels related to room functions
- Must include controls at the A/V Cabinet so that lights directly over the teaching wall can be dimmed or turned off for maximum viewing capability.
- Industry standards and guidelines shall be followed.

Power Requirements

- Two (2) outlets above the ceiling at the projector location
- Four (4) outlets at the A/V cabinet. Two (2) outlets to be at the table top height of cabinet and two (2) below/behind cabinet near the junction box for AV cables.
- Hard-wired power to projection screen (when motorized) and wall switch.

Projection Screens

- Shall be motorized or manual roll up and shall be sized appropriately for the room size and desired coverage areas.
- Motorized screens shall be used are in areas in which the screen sizes are larger than 12 ft.
- Smaller screens shall be manual roll up or electric depending on room design.
- Screens are to be centered on teaching wall mounted no more than 6" below the ceiling (in rooms with normal ceiling heights).
- 16 AWG - 2 conductors with shield control cable will connect to low voltage screen interface and be extended to AV equipment rack for parallel system operation.
- Include low-voltage wall switch for parallel operation with A/V system control.

Projectors

- Shall be industry standard High Definition (WUXGA), with HDMI and Internet Protocol (IP) input, native 16:9 format. Brightness to be no less than 4300 lumens.
- To be mounted 12-14' from the projection screen with input sources selectable via Extron control.
- Distance should be close enough so that the image will take up as much screen space as possible.
- Projector mount should be offset 3.5" right of screen as viewed from the screen location to accommodate for the offset of the projector lens.
- Care should be taken to NOT place anything in the projection path (i.e. lights, art work hangers etc.).

Audio

- Audio sound shall be distributed through four (4) new 70Volt ceiling mounted speakers.
- One (1) one-channel audio amplifier shall be installed for audio distribution where needed. Smaller rooms shall utilize a built-in audio amplifier on the new Switcher.
- Speakers will be installed according to size of the area.
- Assisted Listening Systems shall be provided by code requirements.
- In 70-volt operation, 16-12 AWG - 2 conductor speaker cable will connect first speaker in zone/series and be extended to AV equipment rack for parallel system operation and a similar cable will be connecting to each speaker in the series zone.
- Wireless and permanent microphones shall be provided in Distance Education equipped rooms and larger rooms.

Collaboration

- Each classroom regardless of size will accommodate collaboration utilizing the Extron Sharelink 250 Wireless Collaboration Gateway or equivalent as approved by the AVC ITS.

Control

- System Controls will be an embedded Extron control processor which will be programmed to
- perform all necessary controls for all related A/V devices for each classroom.
- The system will accommodate one (1) Extron Touch Panel that will serve as the primary control interface for the AV System, which will be the main universal controller for each classroom.
- The Large and Small Classrooms will be programmed and designed to accommodate simple and easy uses of controls.
- Program features will include: e.g., Source switching/routing, System Power, Volume up/down, Projector Screen, Room lighting and Display power.
- Divisible room controls features will include: (e.g., Source Matrix switching/routing, System Power, Volume up/down, room configuration, Projector Screen, Room lighting and Display power.

Data

- Two (2) home run data connections between projector and Audio/Video (A/V) Cabinet consisting of Cat6 shielded identified with yellow keystone jacks.
- Six (6) data runs from Audio/Video (A/V) Cabinet to nearest IDF using AVC ITS data structure standards.
- All IP equipment is to be configured to use reserved DHCP addresses to be supplied by AVC ITS.
- All Audio Visual and network data cables are to be identified with labeling at all connection points.

AUDIOVISUAL SYSTEMS - STANDARD CLASSROOM

- Standard Classrooms shall utilize a ceiling mounted projector, electric projection screen, A/V Cabinet and ceiling mounted speakers, Computer workstation and Blu-ray player.
- An ADA compliant instructor's desk shall be located adjacent to the classroom A/V data ports and power outlets.
- All classroom A/V control equipment is to be installed in the keyed alike A/V Cabinet located within the instructor desk.
- Monitor, document camera and system input panel shall be installed on the table. System inputs shall be via input panel that will include VGA, HDMI, USB, Audio and data ports.
- Content will be managed and controlled via Extron Touch Panel.
- The workstation shall support USB, DVD/CD, VGA, and HDMI or Display Port.
- Displays and speakers shall integrate with Extron to support automatic switching of inputs and outputs, control projector screen and any room lighting systems if equipped.
- Wireless collaboration device to be installed allowing instructors and students the ability to display content from mobile devices to projection screen.
- Coordinate Extron integration requirements with AVC ITS.

AUDIOVISUAL SYSTEMS - LARGE CLASSROOM

- Large Classrooms shall utilize a ceiling mounted projector, electric projection screen, A/V Cabinet and ceiling mounted speakers, Computer workstation and Blu-ray player.
- An ADA compliant instructor's desk shall be located adjacent to the classroom A/V data ports and power outlets.
- All classroom A/V control equipment is to be installed in the keyed alike A/V Cabinet located within the instructor desk.

- Monitor, document camera and system input panel shall be installed on the table. System inputs shall be via input panel that will include VGA, HDMI, USB, Audio and data ports.
- Content will be managed and controlled via Extron Touch Panel.
- The workstation shall support USB, DVD/CD, VGA, and HDMI or Display Port.
- Displays and speakers shall integrate with Extron to support automatic switching of inputs and outputs, control projector screen and any room lighting systems if equipped.
- Wireless collaboration device to be installed allowing instructors and students the ability to display content from mobile devices to projection screen.
- Coordinate Extron integration requirements with AVC ITS

AUDIOVISUAL SYSTEMS - TYPICAL FLEXIBLE CLASSROOM

- Standard Classrooms shall utilize a ceiling mounted projector, electric projection screen, A/V Cabinet and ceiling mounted speakers, Computer workstation and Blu-ray player.
- An ADA compliant instructor's desk shall be located adjacent to the classroom A/V data ports and power outlets.
- All classroom A/V control equipment is to be installed in the keyed alike A/V Cabinet located within the instructor desk.
- Monitor, document camera and system input panel shall be installed on the table. System inputs shall be via input panel that will include VGA, HDMI, USB, Audio and data ports.
- Content will be managed and controlled via Extron Touch Panel.
- The workstation shall support USB, DVD/CD, VGA, and HDMI or Display Port.
- Displays and speakers shall integrate with Extron to support automatic switching of inputs and outputs, control projector screen and any room lighting systems if equipped.
- Wireless collaboration device to be installed allowing instructors and students the ability to display content from mobile devices to projection screen.
- Coordinate Extron integration requirements with AVC ITS.

AUDIOVISUAL SYSTEMS - CONFERENCE ROOM

- All conference room A/V control equipment is to be installed in a ventilated keyed A/V Cabinet or millwork.
- System input panel shall be installed on the table. System inputs shall be via input panel that will include VGA, HDMI, Audio and data ports.
- Content will be controlled via Extron Touch Panel.
- The workstation shall support USB, DVD/CD, VGA, and HDMI or Display Port.
- Displays and speakers shall integrate with Extron to support automatic switching of inputs and outputs, control LCD TV and any room lighting systems if equipped.
- Wireless collaboration device to be installed allowing the ability to display content from mobile devices.
- Coordinate Extron integration requirements with AVC ITS.

DIGITAL SIGNAGE SYSTEMS

- Digital signage content shall be displayed via LED flat panel displays sized accordingly for this application.
- Digital signage is found typically in Lounges and public spaces, but may be required in specialty areas as well.

- Power outlet shall be installed behind LED displays. (1) 2-port data outlet shall be installed behind LED display for future smart-TV web content streaming or to support a separate Digital Media Player. The District currently uses ChromeSticks (connected via the District's WiFi network) to provide content at each Digital Signage display.
- Coordinate power/data requirements with AVC ITS.
- Outlet mounting shall be coordinated with mounting brackets.
- Mount to be installed to prevent easy access to display controls wherever possible.
- Mounting type may include wall mount, pole mount, or other, depending on the application. Installation shall be coordinated with AVC ITS.
- TV to be mounted on wall mount so as to permit optimal viewing and is to be secured to the mount to prevent easy theft. Size of display shall be dictated per specific viewing requirements and location.
- If deployed in outdoor or unmonitored public areas consideration should be given to anti-vandalism measures including cabinets with toughened Macaralon type screen protection or residing within a weatherized and vandal-proof enclosure..
- Digital Media Player (DMP) is to be mounted on the back of the TV or attached to the wall.
- Content will be managed and controlled by AVC content management system.

EQUIPMENT STANDARDS

The following are descriptions and model numbers for recommended audiovisual system technology components found in the various classroom and conference space types:

INSTRUCTOR DESK

- Manufacturer: Computer Comforts
- Model/Size: Sit-To-Stand Table

http://www.computercomforts.com/sit-to-stand.html

- Elements:

Table measures 60"W x 30"D x 32"H. Also included is a 14U rack-mount cabinet for storage of all electronic teaching tools (CPU, VCR, DVD, controller, amp, etc.). Locking front and rear louvered door are required (front door not shown in image.) All rack mounted AV equipment will be consolidated and housed within instructor desk. Include surface cable well for laptop connections and cutout for external cabling/control panel.

PROJECTOR

- Epson Pro-Lite 1980W (4400 lumens) WUXGA
- Epson Pro G6770WU (6000 lumens) WUXGA
- Epson Pro L1300U (8000 lumens) WUXGA

PROJECTOR SCREEN

- Da-Lite Tensioned Contour Electrol 54”x96” 16:10
- Da-Lite Tensioned Contour Electrol 78” x 139” 16:10

PROJECTOR MOUNT

- Peerless-AV PRGS-455 Color: White
- Peerless-AV PRG3-EXB-W Color: White

AUDIO SPEAKERS

- Extron Full Range Flat Field 2x2 with 70/100V transformer

AMPLIFIER

- Extron XPA 2001-70V

SWITCHING

- Extron IN1608 IPCP Control Proc, 70 V Amp, DTP
- Extron IN1608
- Extron IPCP Pro 350

OPERATION CONTROLS/INPUTS

- Extron Cable Cubby 1400 with TLP Pro 720T 7 inch Touch Panel

POWER INJECTOR

- Extron XTP PI 100 (Power Injector) Coordinate with all applicable furniture contractors for fit.
- AV connection shall include HDMI-M,USB, VGA HD-15(M) & attached 3.5mm stereo audio phono plug.

WIRELESS LAPEL MICROPHONE

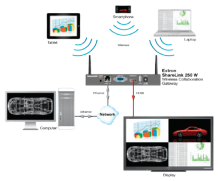
- Shure LX 14/85
- All frequency settings shall be coordinated with surrounding RF signals and other RF devices for elimination of band conflict. Channels to be coordinated between rooms and with ALS equipment settings.

WIRED INSTRUCTOR DESK/PODIUM MICROPHONE

- Shure MX-418/C with dedicated mute switch, Shock mount XLR base

WIRELESS PRESENTATION

- Extron Sharelink 250 Presentation Collaboration Gateway.



DOCUMENT CAMERA

- AVerVision F17HD Document Camera - 5 MP - 720p/1080p

CEILING MICROPHONE ARRAY

- ClearOne white ceiling 360-degree cardioid microphone array kit #910-001-014W with Interact AT XLR adapter.

DISTANCE EDUCATION CAMERA

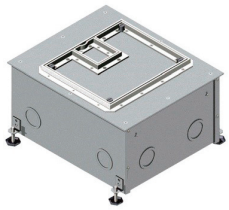
- ClearOne Unite pan/tilt/zoom/focus HD camera with DVI-I, USB 3.0 and serial control connections.

DIGITAL AUDIO SIGNAL PROCESSING (DSP)

- Extron DMP 128 Plus series (configure per specific program requirements)
- Use only when required (in large spaces surpassing presentation switch audio capabilities)

AUDIOVISUAL, TELE/DATA & POWER FLOORBOX

- FSR FL-500P (or equivalent based on floor slab conditions) with metal (brass or aluminum, per Architect) lid and appropriate flooring insert.

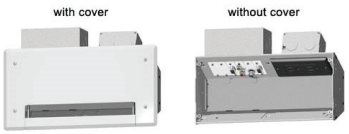


AUDIOVISUAL, TELE/DATA & POWER POKETHRU

- Legrand EVO-8 (or equivalent based on floor slab conditions) with durable lid to match flooring.

AUDIOVISUAL, TELE/DATA & POWER WALL-MOUNTED DISPLAY BOX

- FSR PWB-100 Flat Panel Display Wall Box (or equivalent based on wall conditions)



DISTANCE EDUCATION/VIDEO CONFERENCING CAMERA WALL BOX

- Vaddio In-Wall Enclosure 999-2225-015 (or equivalent based on wall conditions). Confirm selected camera and cabling fits in selected box.
- Example camera shown in image.

ARTICULATION WALL TV MOUNT

- Tripp-Lite DWM3770X swivel / tilt wall mount for 37”-70” flat panel displays. Anchor to appropriate wall backing per manufacturer and per DSA approved mounting detail.

FLAT WALL MOUNT

- Tripp-Lite DWT3270X tilt wall mount for 32”-70” flat panel displays. Anchor to appropriate wall backing per manufacturer and per DSA approved mounting detail.

DISTANCE EDUCATION/VIDEO CONFERENCE EQUIPMENT

- Extron MediaPort 200 connected to the wired data network used with Vaddio HD camera and Vaddio ceiling mic array and interface. Extend USB cabling with Extron USB Extender Plus TX 60-1471-12 and RX 60-1471-13.

DISTANCE EDUCATION/VIDEO CONFERENCE HD CAMERA

- Vaddio RoboSHOT 12 HDMI HD PTZF camera #999-9940-000. Use Vaddio signal and control extension set as required. Include Vaddio wall mounting bracket.

DISTANCE EDUCATION/VIDEO CONFERENCE CEILING MICROPHONE ARRAY

- Vaddio TRIO Acoustic Echo Canceling Ceiling Mic Array (White) #999-8860-000. Include Vaddio TRIO MIC I/O Interface #999-8535-000.

CONFERENCE ROOM CONTROL PANEL (TABLETOP)

- Extron TLP Pro 720t 7" TouchLink Pro control panel #601395-02. Connect to data network.

INSTRUCTOR DESK CABLE WELL/CONTROL PANEL

- Extron TLP Pro 720C 7" Cable Cubby with TouchLink Pro control panel #60-1396-020A. Provide blank double AAP plate #70-090-12 and cable organized AAP plate kit #70542-11and route cabling through appropriate passage holes. Instructor desk to be ordered with cutout to accommodate Extron Cable Cubby. Include AC module for a total of two AC outlets. Connect to data network.

27 32 26 RING-DOWN EMERGENCY TELEPHONES

Pedestal - ineractive voice communication unit

- Manufacturer: Code Blue 1-standard (CB 1-s)24v AC pedestal mount
- Faceplate: IP 5000 FP2 IP speakerphone with 2nd button (additional black "Info" button)
- Finish: Standard painted finish
- Color: Safety Blue
- Graphics text: "Police" Graphics color: Reflective White
- Main Bezel : "Emergency" (raised letters w/ Braille)
- Power: Night Charge
- Note: Provide KDC Fiber Module

Wall mounted - interactive voice communication unit

- Manufacturer: Code Blue 2-standard (CB 2-s) 24v AC wall mount with LED area light
- Faceplate: IA4100 FP1 Speakerphone with single red button "Push for Help" is standard
- Finish: 4B Brushed stainless steel

27 51 26 ASSISTIVE LISTENING SYSTEMS

- Listen Technologies 216MHz RF system
- Rooms with 50+ occupants – fixed RF transmitter (and antenna kit where required). Number of receivers to be 4% of occupancy or no less than 2. Receivers to include inductive loop lanyard.
- Rooms under 50 occupants – Mono RCA connection at rack to support portable RF kit with case, charger, 2 receivers and 1 portable transmitter / microphone. Receivers to include inductive loop lanyard.
- Portable RF ALS kit – one per floor
- ALS signage shall be installed (coordinate with architect) for each applicable space.

27 51 13 OVERHEAD PAGING SYSTEMS

- Overhead Paging Speakers: Valcom (or approved equivalent) InformaCast IP-enabled speakers
- Model: As approved by District
- Provide InformaCast IP-enabled speakers in locations requiring overhead paging coverage (both interior and exterior spaces.) Speaker types, layout and configuration shall be designed to meet the specific requirements and acoustic properties of the space the speakers are covering.
- Provide District-standard Category 6e U/UTP cable running from each speaker to assigned IDF / BDF Room.
- For legacy installations with existing speakers and new locations where multiple speakers in a single zone are required, as an option provide a single group/zone of standard 70v paging speakers tied to an InformaCast device and associated amplifier.
- Provide a Singlewire InformaCast Advanced server to support the paging system. Consult with the District to determine if an existing server is available.

INTERIOR SPEAKER

- Manufacturer: Valcom
- Model: VIP-120A-IC High-Efficiency 8" Speaker
- Mounting: Ceiling.
- Power: PoE (802.3af) / Output Level: 103 db/1 Meter
- Finish: Durable Electrostatic Powder Coat Finish on Metal Surfaces

- Manufacturer: Valcom
- Model: VIP-480AL-IC
- Mounting: Wall using bracket or inside enclosure.
- Power: PoE (802.3af)
- Finish: Durable Electrostatic Powder Coat Finish on Metal Surfaces
- Water-proof, weather-resistant, and recommended for exterior use.
- Provide V-9805 Vandal Resistant Enclosure in locations where speakers are accessible.

27 53 13 CLOCK SYSTEMS

- Manufacturer: Primex Wireless
- Model: Primex Wireless Electric Model 14306; 12.5" black electric clock 120vac, 18" c
- Mount: Surface
- Finish: Black

DIVISION 28: ELECTRONIC SAFETY & SECURITY

28 20 00 ELECTRONIC SURVEILLANCE SYSTEMS

ACCESS CONTROL SYSTEMS

Security Management System: Vanderbilt Industries

- Model: As approved by District
- District uses Wiegand standard 26-bit binary card data format. Provide card readers compatible with the HID 1136 Duoprox II Card.
- Provide card readers at exterior doors, BDF, IDF, mailrooms, and rooms that hold equipment. Review card reader locations with District for each building.
- Provide card readers at entry to each classroom, laboratory and other teaching space. Provide ability for District to lockdown classrooms (one classroom, all classrooms in a building or all classrooms on campus) from central servers (Security Command Post and Facilities Services Building) and for instructor to lockdown an individual classroom using a push button (protected by a cover to prevent accidental usage) at the instructor station.
- The head end for the access control server is located in the MDF Room within the Facilities Services Building.

IP VIDEO AND SECURITY PLATFORM

- Manufacturer: Exacq Technologies
- Model: Exacqvision
- All cameras and other components of the video security platform shall be compatible with the Exacqvision NVR.
- Camera coverage should cover all main building entry/exit points, main lobby areas, all emergency exits, cash handling and storage areas (e.g. cashier's office, bookstore, ATMs), high value equipment areas, and large student congregation sectors (e.g. cafeteria, library, student lounge). Camera coverage of main hallways and corridors, network rooms, and parking lots shall also be provided. Review camera locations with District.
- All cameras shall be Power over Ethernet (POE) IP-enabled devices that shall connect to and be powered by the District's local area network equipment.

FIXED CAMERA

- Manufacturer: Tyco Security Products
- Model: IPS05D2ICWIY Illustra 5MP Mini-Dome, 3-9mmn (or outdoor equivalent) with IR
- Mounting: Bracket for wall, drop ceiling, or direct wall as applicable.
- Display Resolution: Five Megapixel resolution
- Power: Power over Ethernet (PoE)
- Video: H. 264 protocol
- Finish: To be coordinated with project architect
- Compatibility: ONVIF 2.4 profile S compliant

FISH-EYE (360/180 DEGREE) CAMERA

- Manufacturer: Tyco Security Products
- Model: ADCI825-F311 Illustra 825 5MP Fisheye 360°/180° Vandal Resistant (or appropriate equivalent)
- Mounting: Wall (180 degree viewing field) or ceiling (360 degree viewing field) with onboard de-warping technology to ensure distortion corrected video streaming of 180°, 360° panoramic 16:9 or active 4:3 views.
- Display Resolution: Five Megapixel resolution
- Power: Power over Ethernet (PoE)
- Video: H. 264 protocol
- Finish: To be coordinated with project architect
- Compatibility: ONVIF 2.4 profile S compliant

FIXED MULTI-SENSOR (180 DEGREE) CAMERA

- Manufacturer: Pelco
- Model: IMM12018 Pelco 12MP 180° Vandal Resistant Dome. Pendant, ceiling or surface mount models available.
- Mounting: Bracket for wall, drop ceiling, or direct wall as applicable.
- Display Resolution: Twelve Megapixel resolution
- Power: Power over Ethernet (PoE)
- Video: H. 264 protocol
- Finish: To be coordinated with project architect
- Compatibility: ONVIF 2.4 profile S compliant

FIXED MULTI-SENSOR (270 DEGREE) CAMERA

- Manufacturer: Pelco
- Model: IMM12027 Pelco 12MP 270° Vandal Resistant Dome. Pendant, ceiling or surface mount models available.
- Mounting: Bracket for wall, drop ceiling, or direct wall as applicable.
- Display Resolution: Twelve Megapixel resolution
- Power: Power over Ethernet (PoE)
- Video: H. 264 protocol
- Finish: To be coordinated with project architect
- Compatibility: ONVIF 2.4 profile S compliant

FIXED MULTI-SENSOR (360 DEGREE) CAMERA

- Manufacturer: Pelco
- Model: IMM12036 Pelco 12MP 360° Vandal Resistant Dome. Pendant, ceiling or surface mount models available.
- Mounting: Bracket for wall, drop ceiling, or direct wall as applicable.
- Display Resolution: Twelve Megapixel resolution
- Power: Power over Ethernet (PoE)
- Video: H. 264 protocol
- Finish: To be coordinated with project architect
- Compatibility: ONVIF 2.4 profile S compliant

EXTERNAL CAMERA CORNER WALL BRACKET

- Manufacturer: Pelco
- Model: IMM-CM
- Mounting: Anchor direct to wall as applicable.
- Finish: To be coordinated with project architect
- Compatibility: Pelco pendant camera bracket. Exterior rated.

EXTERNAL CAMERA MOUNT

- Manufacturer: Pelco
- Model: WMVE Series
- Mounting: Anchor direct to wall or corner mount as applicable.
- Finish: To be coordinated with project architect
- Compatibility: Pelco pendant camera bracket. Exterior rated.

28 31 00 FIRE ALARM SYSTEM

- Fire alarm system control panels shall be Edwards for compatibility with existing systems on campus.
- Systems shall be intelligent, addressable devices. Provide system with voice evacuation where required by code.

DIVISION 33: ORDER OF INVERTS

33 00 00 ORDER OF INVERTS

OVERVIEW

- A. Antelope Valley College (AVC)

I. Purpose: AVC preferences and requirements are indicated in this document. For other related requirements, refer to Section 33 10 00, 33 17 00, 33 30 00, 33 40 00, 33 60 00 AND 33 70 00

- B. The following table summarizes the types of particular requirements identified within this section for all AVC Campus unless noted otherwise:

	Order Of Inverts ++ (Refer to Order of Inverts Sketch)			
UTILITY	**HORIZONTAL CRITERIA+**	**VERTICAL CRITERIA+**	**TRENCH BACKFILL* & COMPACTION CRITERIA**	**ADDITIONAL CRITERIA**
Electrical	• Min. 12 inch separation between electrical & IT.	• Low Voltage: 24” • High Voltage: 36”	• Native soil, 6 inch layers, 95% compacted or Type 1 (See footnote).	
Security	• Min. 12 inch separation between electrical & IT.	• 24-30 inches	• Native soil, 6 inche layers, 95% compacted or Type 1 (See footnote).	
IT	• Min. 12 inch separation between electrical & IT.	• 24-30 inches	• Native soil, 6 inche layers, 95% compacted or Type 1 (See footnote).	
Gas	• Coordinate with Utility Purveyor.	• 30-36 inches	• Native soil, 6 inch layers, 95% compacted.	
Domestic & Fire Water	• Min. 10 feet separation from sanitary sewer.	• Min. 36 inches • Lay water mains over sanitary sewers to provide vertical separation min. 3 feet.	• Refer to flexible pipe bedding and backfill detail.	Type 1 (See footnote)

Order Of Inverts ++: Refer to Order of Inverts Sketch page 290.

UTILITY	HORIZONTAL CRITERIA	VERTICAL CRITERIA	TRENCH BACKFILL & COMPACTION CRITERIA	ADDITIONAL CRITERIA
Chilled Water Supply & Return	• Min. 6-12 inches from other utilities	• Min. 36 inches with preferred bottom of trench depth not to exceed 5 feet	• Native soil, 6 inch layers, 95% compacted.	Horizontal & vertical alignment to account for utility insulation.
Steam & Condensate Return	• Min. 12 inch from other utilities	• Min. 36 inches with preferred bottom of trench depth not to exceed 5 feet.	• Native soil, 6 inch layers, 95% compacted	Horizontal & vertical alignment to account for utility insulation.
Storm Drain	• Coordinate & account for existing utilities.	• Laterals to be min. 12 inches in landscape areas & min. 18 inches in paved areas.	• Refer to flexible pipe bedding & backfill detail where applicable. In other cases, refer to section 33 40 00.	Coordinate with utility purveyor & FS.
Sanitary Sewer	• Min. 10 feet separation from combined domestic/fire water.	• Laterals to be min. 12 inches in landscape areas & min. 18 inches paved areas. • Lay sanitary mains under water main to provide vertical separation min. 3 feet.	• Refer to flexible pipe bedding and backfill detail where applicable. In other cases, refer to section 33 30 00.	Coordinate with utility purveyor & FS.

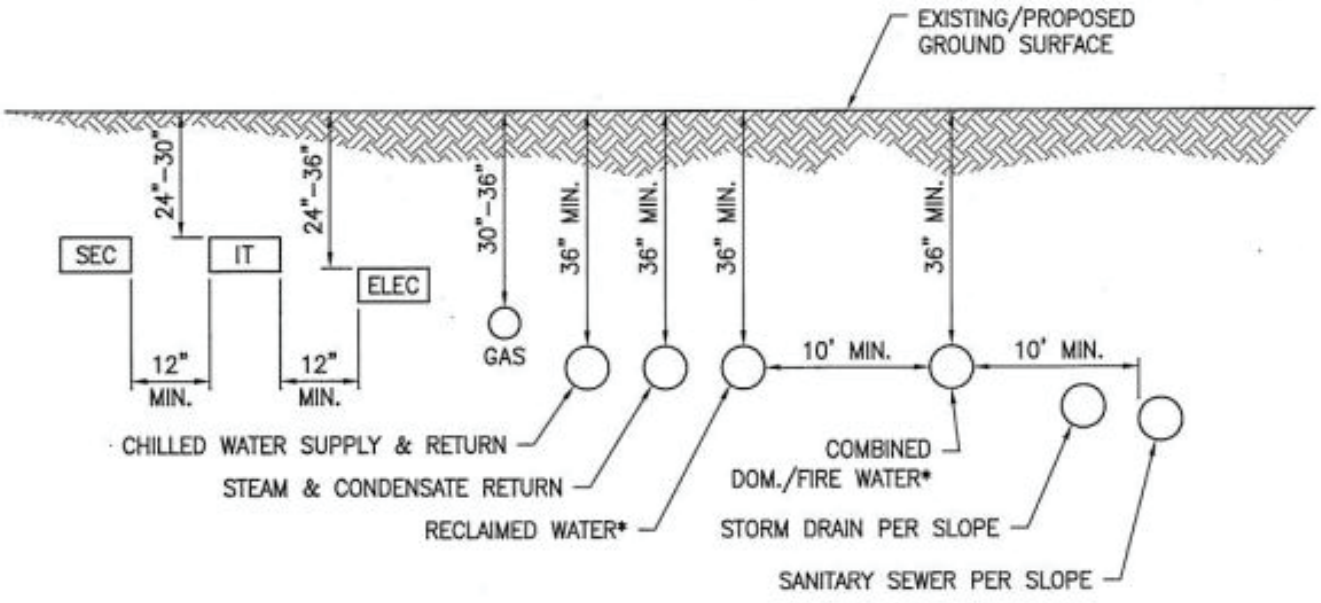
* Initial Backfill to be 6-12 inches native soils.

\+ Horizontal & vertical clearances are from/to outside diameter of adjacent utlities. Vertical Depths are from Existing/Proposed Ground Surface to the top of pipe soffit.

++ Confirm the location of public utility easements.

Type 1 (Hardscape areas only): Placer & compact initial trench backfill of satisfactory soil. 1/2 Sack Slurry mix (not to exceed) to final subgrade elevation (see flexible pipe backfill detail where applicable). Contractor to coordinate with AVC project manager to determine where and when appropriate.

ORDER OF INVERTS SKETCH



NOTE: See blanket protection detail below where field conditions do not allow fro minimum coverages to be obtained & as approved by AVC project manager.

DIVISION 33: WATER UTILITY SYSTEMS

33 10 00 WATER UTILITY SYSTEMS

OVERVIEW

- A. Antelope Valley College (AVC)

  I. Purpose: AVC preferences and requirements are indicated in this document. For other related requirements, refer to Section 33 11 00 Water Utility Distribution Piping, 21 00 00 Facility Fire Suppression AND 33 00 00 Order of Inverts.

  II. Points of connection

  a. Avenue K approximately 440 feet East of Entry "C".

- B. The following table summarizes the types of particular requirements identified within this section for all AVC Campus unless noted otherwise:

Domestic Water

REQUIREMENTS LISTED	PREFERENCES LISTED	DISALLOWED ITEMS LISTED	ITEMS REQUIRING TESTING/INSPECTION
• PVC, Schedule 40 Pipes (NPS 1/8 to NPS 3 ½). PVC, AWWA Pipe (NPS 4 to NPS 12): AWWA C900, Class 200 DR 14. • Ductile iron fittings with fully restrained joints. • Gate valve on building laterals. • Valves: AWWA, UL/NSF/FM Cast-Iron, Gate Valves, Resilient Wedge. Valve boxes shall be precast concrete with cast iron traffic covers. Traffic box lid shall be circular with the word "WATER" embossed on the top surface. • Tee connection to combined mains. • Coordinate water main shut down with the college project manager 2 weeks in advance. • Color coding of water main per AWWA standards. • All tees to be 4" on the street.	• Refer to sections below		• Chlorination, hydrostatic pressure testing & witnessed flushing of all new piping systems.

Domestic Water/Combined Main

REQUIREMENTS LISTED	PREFERENCES LISTED	DISALLOWED ITEMS LISTED	ITEMS REQUIRING TESTING/INSPECTION
• PVC, AWWA Pipe (NPS 4 to NPS 12): AWWA C900, Class 200 DR 14, UL Listed/FM Approved with bell-and-spigot or double-bell ends. • Ductile iron fittings with fully restrained joints. • Backflow prevention required with OS&Y (with chain and lock) or separate PIV on building laterals. • No gate valves on building laterals. • Coordinate sizing & equipment with fire sprinkler contractor and building systems. • Valves: AWWA, UL/NSF/FM Cast-Iron, Gate Valves. • Valve boxes shall be precast concrete with cast iron traffic covers. Traffic box lid shall be circular with the word "WATER" embossed on the top surface. • Tee connection to combined mains • Coordinate water main shut down with the college project manager 2 weeks in advance. • Color coding of water main per AWWA standards.	• Fire hydrants at all major intersections shall be installed inside of main cross fitting where possible.		• Flow testing of existing fire hydrants to be coordinated with the college with a minimum 2 week notice. • Chlorination hydrostatic pressure testing & witnessed flushing of all new piping systems.

PROCEDURAL REQUIREMENTS

A. Considerations specific to components in this section:

1. Required for Domestic Water/Fire Protection Line:

a. Coordinate water main shut down with the college project manager 2 weeks in advance.
b. Color coding of water main per AWWA standards.
c. All LA County Department of Public Health system guidelines to be followed including warning tapes. Installation of tracer wire and pipe markers.
d. All piping and fittings shall be hydrostatically pressure tested for 200 PSI working pressure.
e. Hydrostatic pressure testing shall be limited to new pipe and fittings being installed. Means for isolating new piping systems shall be provided to avoid hydrostatic pressure testing through existing water system.
f. Existing laterals being taken out of service shall not be abandoned in place and shall be cut, capped and restrained at connection to main.
g. Means for providing temporary service to buildings during utility upgrades shall be accounted for and coordinated with the college.
h. System piping shall be hydrostatically tested at 200 psi for two hours or at 50 psi above the maximum system operating pressure, whichever is greater.
i. Fire department connections shall be located on the address side of the building, face the street, be visible and accessible, approved check valve located in the main line (as close to inlets as possible).
j. All valves and fire department connections shall have permanently affixed signs, indicating their function.
k. The following notes shall be on the plans when a private hydrant is proposed:

1) All private hydrants shall flow a minimum of 1250 gpm at 20 psi for duration of two hours. If more than one on-site fire hydrant is required, the on-site flows shall be at least 2500 gpm at 20 psi, flowing from the most hydraulically remote hydrants simultaneously. On-site flows shall match the public flow requirements.
2) All private on-site fire hydrants shall be installed a minimum of 25 feet from a structure or protected by a two-hour firewall to the highest portion of the building, adjacent to the hydrant.
3) Each private fire system shall have a main post indicator valve, or other approved valve, at the city connection on the system side of the detector check valve.
4) All private on-site fire hydrants shall be equipped with a shut-off (gate) valve, which is located at least 10 feet, and not more than 25 feet from the fire hydrant. The location may be less than 10 feet when the water main is existing, and the 10-foot minimum distance cannot be satisfied. The shut-off valve shall be readily accessible at all times (locating it under a parking stall is not allowed).

2. The fire protection contractors will provide the college with the necessary instruction manuals for the upkeep of the system.

PRODUCT REQUIREMENTS

A. Fire department connection (FDC)

1. Acceptable Manufacturers:

a. Badger-Powhatan
b. Elkhart Brass
c. Croker Corp.
d. Potter-Roemer
e. Tyco Fire Products

B. System control valves

1. Acceptable manufactures:

a. Nibco
b. Milwaukee Valve Co.
c. Apollo

d. Alhambra Foundry

C. Gate Valve:
1. Acceptable manufacturers:
a. Kennedy
b. Milwaukee Valve Co.
c. Mueller
d. Nibco
e. Stockham
f. Victaulic

D. Check Valve:
1. Acceptable manufactures:
a. Tyco Fire Products
b. Reliable
c. Viking Corp.

E. Ball Valve:
1. Preferred manufacturers:
a. Nibco
b. Milwaukee Valve Co.
c. Mueller
d. Stockham
e. Victaulic

F. Butterfly Valve:
1. Preferred manufacturers:
a. Kennedy
b. Nibco
c. Milwaukee Valve Co.
d. Mueller
e. Stockham
f. Victaulic

G. Double Check Backflow Prevention Assembly (DCBP)
1. Preferred manufacturers:
a. Conbraco
b. Cla_Val
c. Febco
d. Watts

H. Reduced Pressure Zone Backflow Prevention Assembly (RPZ):
1. Acceptable manufacturers:
a. Conbraco
b. Cla-val
c. Febco
d. Watts

I. Fire Hydrant
1. Preferred manufacturers:
a. Croker
b. Elkhart
c. Potter-Roemer

INSTALLATION REQUIREMENTS

- I. Required:

1. Water Main Connection: Coordinate connection and associated service interruptions with College Representative. Install mechanical joint fittings at point of connection to main and gate valve. Hot taps to the private water mains are prohibited.
2. Tracer Wire: Install continuous length of tracer wire for full length of each run of non-metallic pipe. Fasten wire to top of pipe in such a manner that it will not be displaced during construction operations. Wire shall be fasted to pipe at intervals not exceeding 20 feet. Wire shall terminate above finished grade with a 12-inch lead, taped around each riser. Provide a tracer wire to grade under a permanent marker where straight-line transitions of metallic to non-metallic pipe are installed.
3. Underground Pipe Markers: Provide markers at grade where non-metallic pipe is installed and for each horizontal change in direction.
4. Provide means of temporary restraining pipe where service cannot be completely isolated and/or within 10 feet of known existing water fitting/valve.
5. Utility Trench Backfill
    a. Refer to section 33 00 00 for trench backfill requirements, order of inverts and clearances for IT, security, electrical, telecom, reclaimed water, sanitary sewer, storm drain and mechanical buried pipes.
    b. Install warning tape directly above utilities, minimum 6 inches above top of pipe, minimum 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.
    c. Repair disturbed pavement per College requirements. Replace affected pavement to match existing at minimum unless otherwise noted.
6. Domestic Water/Combined Main
    a. PVC, Schedule 40 Pipes (NPS 1/8 to NPS 3 ½). PVC, AWWA Pipe (NPS 4 to NPS 12): AWWA C90, Class 200 DR 14
    b. PVC to PVC Fittings: Push-on-Joint, PVC Fittings, ASTM 3139, with elastomeric gasket bell ends, conforming to ASTM D2122 for bell measurements.
    c. PVC to Metal Fittings, Valves, and Accessories: Mechanical-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
    d. Glands, Gaskets, and Bolts: AWWA C111, ductile- or gray-iron glands, rubber gaskets, and steel bolts. Use corrosion resistant, high strength, low alloy steel, bolts and nuts where in contact with corrosive soil ASTM A 325.
    e. Gate valve on building laterals
    f. Refer to Blanket Protection for Pipes detail when the clearance between the top of the existing pipe and the bottom of the crossing pipe is less than 18 inches.
    g. Tee connection to combined mains.
7. Fire Protection/Combined Main
    a. PVC, AWWA pipe (NPS 4 to NPS 12): AWWA C900, Class 200 DR 14, UL Listed/FM Approved with bell-and-spigot or double-bell ends.
    b. Backflow prevention required with OS&Y (with chains and locks) or separate PIV on building laterals.
    c. No gate valves on building laterals
    d. All private on-site fire hydrants shall be installed to the following specifications, prior to flow test and acceptance of the system:
        1) Installed so that the centerline of the lowest outlet is between 14 and 24 inches above finished grade.
        2) Installed so that the front of the riser is between 12 and 24 inches behind the curb face.
        3) Installed so that the outlets are facing the curb at a 45-degree angle to the curb line.
        4) Of a type and construction which conforms to current American Water Works Association Standard C503.
        5) Provided with a 3-foot unobstructed clearance on all sides.

6) Installed so that the fire hydrant is centered on a 3' x 3' x 1' thick concrete pad.
7) Provided with approved plastic outlet caps.
8) All private on-site water mains, laterals, gate valves, buries, and risers feeding private fire hydrants shall be a minimum of six inches in diameter.
9) When sidewalks are contiguous with a curb and have a width of five feet or less, the front of the fire hydrant riser shall be placed immediately behind the sidewalk. In no case shall a fire hydrant be more than six feet from a curb face.
10) Approved fire hydrant barricades shall be installed if curbs are not provided.
11) Piping shall be hydrostatically tested at 200 psi for two hours or at 50 psi above the system operating pressure, whichever is greater 12) Adequate (10 feet per second) flushing of the piping, in accordance with NFPA 13.
13) Flow test to satisfy fire flow requirements

B. Disallowed:

1. Hot taps to private water mains.
2. Cutting and Capping of existing building laterals.
3. Installation shall not begin until plans have been approved by the College and the fire department. A complete set of approved plans shall be kept at the building site at all times. Contractors installing system without approved plans may be cited.

TESTING & INSPECTION

A. List of items or systems requiring testing, evaluation, verification, or commissioning: Required Items:

1. Flow testing of existing fire hydrants to be coordinated with the college with a minimum 2 week notice.
2. Chlorination, hydrostatic pressure testing and witnessed flushing of all new piping systems.

33 30 00 SANITARY SEWER SYSTEMS

OVERVIEW

- A. Antelope Valley College (AVC)

  I. Purpose: AVC preferences and requirements are indicated in this document. For other related requirements, refer to Section 33 31 00 Sanitary Utility Sewerage Piping AND 33 00 00 Order of Inverts.

  II. AVC campus is a private sanitary sewer system that connects to City of Lancaster Sanitary Sewer System outside of the campus.

  III. All connections to public sanitary sewer mains and or manholes to be coordinated with the appropriate governing agency.
- B. The following table summarizes the types of particular requirements identified within this section for all AVC Campus unless noted otherwise:

Sanitary Sewer (Connection to City of Lancaster/Other Governing Agency Systems)

REQUIREMENTS LISTED	PREFERENCE LISTED	DISALLOWED ITEMS LISTED
2.0% Minimum Slope for lateral Unless Otherwise Approved. Manhole required for sewer lateral connection equal in size to main line or 8 inches and greater.	• VCP Laterals	• Cast Iron Pipes and PVC SDR 35 for building laterals
Tracer wire required on all private non-metallic sanitary sewer piping.		
Double Clean out to be installed at building point of connection 5 feet outside building face.		
All connections to be per city/governing agency's standards at a minimum unless approved.		
Sewer main lines and manholes on-campus are part of campus private sanitary sewer system.		
Engineer to confirm with the appropriate governing agency regarding pipe material for connection to city mains.		
Engineer to research available records associated with public sanitary sewer systems with appropriate governing agency.		
Where open air trash enclosure with washdown in proposed, provide dual drain to storm drain and sanitary sewer. Refer to Section 33 40 00 for further details. Where covered trash enclosure with washdown is proposed, provide drain to sanitary sewer.	• Fox Diversion Drain	

PROCEDURAL REQUIREMENTS

- A. Design considerations specific to components in this section:
    1. Required:
        a) 2.0% Minimum Pipe Slope for laterals Unless Otherwise Approved
        b) 3 ft/sec Minimum Flow Velocity
        c) Sewer mains designed per City of Lancaster Sewer Design Manual and Uniform Plumbing Code.
        d) All science buildings that discharge acid waste shall have an acid resistant sewer and be neutralized prior to connection to the sanitary system.
            · Coordinate these systems with Division 22 and appropriate governing agency.
        e) All dining facilities that discharge grease waste shall have interceptors to remove grease solids prior to connection to the sanitary system.
            · Coordinate these systems with Division 22 and appropriate governing agency.
        i) All connections to be per city/governing agency's standards at a minimum unless approved.
    2. j) Preferred:
        a) Use Vitrified Clay Pipe (VCP) unless otherwise approved.
    3. Disallowed:
        a) Cast Iron Pipes not allowed for building laterals.

PRODUCT REQUIREMENTS

- A. Sewage piping
    1. Acceptable Manufactures
        a) Can Clay
        b) Gladding McBean
        c) Mission Clay

INSTALLATION REQUIREMENTS

- A. Required:
    1. Refer to Standard Specifications for Public Works Construction "Greenbook."
    2. Manhole required for sewer lateral connection equal in size to main line or 8 inches greater.
    3. Repair disturbed pavement per Standard Specifications for Public Works Construction "Greenbook". Replace affected
    pavement to match existing at minimum unless otherwise noted.

- Preferred: None

DIVISION 33: STORMWATER MANAGEMENT SYSTEMS

33 40 00 STORMWATER MANAGEMENT SYSTEMS

OVERVIEW

- A. Antelope Valley College (AVC)

  I. Purpose: AVC preferences and requirements are indicated in this document. For other related requirements, refer to Section 33 41 00 Storm Utility Drainage Piping AND 33 00 00 Order of Inverts.
  II. AVC campus is served by City of Lancaster Stormwater System, and contains easements.
  III. All connections to public stormwater mains and or public catch basins to be coordinated with the appropriate governing agency.

B. The following table summarizes the types of particular requirements identified within this section for all AVC Campus unless noted otherwise:

Drainage

REQUIREMENTS LISTED	PREFERENCE LISTED	ITEMS REQUIRING TESTING/INSPECTION
• Storm Drain mains and catch basins are either privately owned and maintained or owned by the City of Lancaster. Engineer to research available records associated with public storm drain systems with appropriate governing agency. • Storm drain connection permits issued by the City of Lancaster are required for connections to public storm drain lines, manholes or curb inlet catch basins or modifications to existing public catch basins. • 2% max surface slope considering ADA requirements and landscape areas. • Minimum grades for different surfaces - Concrete - 0.5%, - Asphalt – 1.0% - Landscape – 2.0% • When not possible to meet the minimum slopes listed, coordinate with AVC. • Adhere to ADA standards at all times. Underground storm drainage collection system shall be designed to provide a minimum flow velocity of 3.0 fps. Cut and fill slopes shall not exceed 2:1, unless otherwise approved by AVC Project Manager and Geotechnical Engineer. • Tracer wire shall be installed on a nonmetallic storm drain piping. • Where open air trash enclosure is being installed without a hose bib for washdown provide catch basin to storm drain. Where washdown will occur, provide dual drain to storm drain and sanitary sewer. Refer to Section 33 3000 for further details.	• PVC SDR 35 piping for building storm drain laterals less than 18 inch diameter • Reinforced concrete pipe (RCP). 18 inch diameter and over. • Schedule 40 (minimum) P.V.C. pipe with solvent weld joints for sump pump outlets/serving manholes. • Galvanized catch basin grates to prevent rusting. • Design gravity pipes to flow 90% full, without surcharge where possible.	• A water test is required to check for positive drainage.

Storm Water Migitation

REQUIREMENTS LISTED	PREFERENCE LISTED	DISALLOWED ITEMS LISTED	ITEMS REQUIRING TESTING/INSPECTION
• All projects that include land-disturbing activity that results in the creation, addition, or replacement of 5000 square feet or more of impervious surface area must conform to City of Lancaster Storm Water Management Program (SWMP). • Storm Water Mitigation system to be reviewed by AVC FMS. • Operation and Maintenance Manuals and Covenants to be provided to AVC for all Best Management Practices (BMPs). • Coordinate site specific infiltration testing and requirements with geotechnical engineer, City of Lancaster Bureau of Sanitation, City of Lancaster Building & Safety. • Adhere to City of Lancaster and/or County of Los Angeles Low Impact Development Guidelines and mandatory requirements contained in CalGreen Code.	• Storm Water Mitigation systems with the lowest impact to the surrounding campus. • Storm Water Mitigation systems that can be easily maintained, as agreed with AVC FS. • Refer to CA Stormwater BMP Manual.	N/A	• All Storm Water Mitigation systems to be properly inspected by civil engineer of record and City of Lancaster. • All infiltration system to be tested for proper percolation upon completion of construction and reviewed by civil engineer of record.

Storm Water Pollution Prevention

REQUIREMENTS LISTED	PREFERENCE LISTED	DISALLOWED ITEMS LISTED	ITEMS REQUIRING TESTING/INSPECTION
• For projects less than 1 acre, an approved Erosion Control Plan from City of Lancaster/ Other Appropriate Governing Agency. • State SWPPP for all projects 1 acre or more • If SWPPP required, a state certified Civil Engineer or other Consultant to serve as QSD • If SWPPP required, representative with signatory powers to serve as LRP • If SWPPP required, AVC to hire QSP • Contractor to conform to current SWPPP requirements .	• QSD to coordinate with AVC on SMARTS system information input.	N/A	• Testing and inspection for pre, post and during rain events as required by the construction general permit.

PROCEDURAL REQUIREMENTS

A. Design considerations specific to components in this section: Drainage

1. Required:

a) Space consideration for potential infiltration on project site.

b) Design to a 25-year storm frequency and 50-year in Sump Condition. Adhere to the LA County Hydrology Manual.

c) Engineer to research available records associated with public storm drain systems with appropriate governing agency.

d) Storm drain connection permits issued by the City of Lancaster or County of Los Angeles are required for connections to main lines, manholes or curb inlet catch basins or modifications to existing catch basins.

e) Underground storm drainage collection system shall be designed to provide a minimum flow velocity of 3.0 fps. Cut and fill slopes shall not exceed 2:1, unless otherwise approved by the AVC and Geotechnical Engineer.

2. Preferred:

a) Grading to minimize drain inlets.

b) Design gravity pipes to flow 90% full, without surcharge where possible.

B. Design considerations specific to components in this section: Storm Water Mitigation

1. Required:

a) Space consideration for potential infiltration on project site.

b) All projects that include land-disturbing activity that results in the creation, addition, or replacement of 5000 square feet or more of impervious surface area must conform to City of Lancaster Storm Water Mitigation Program (SWMP).

c) Storm Water Mitigation system to be reviewed by AVC FS.

d) Operation and Maintenance Manuals and Covenants to be provided to AVC for all Best Management Practices (BMPs).
e) Coordinate site specific infiltration testing and requirements with geotechnical engineer, City of Lancaster Bureau of Sanitation, City of Lancaster Building & Safety.
f) Adhere to County of Los Angeles Low Impact Development Guidelines and mandatory requirements contained in CalGreen Code.

2. Preferred:

a) Storm Water Mitigation systems with the lowest impact to the surrounding campus.
b) Storm Water Mitigation systems that can be easily maintained, as agreed with AVC FS.
c) Refer to CA Stormwater BMP Manual.

C. Design considerations specific to components in this section: Strom Water Pollution Prevention

1. Required:

a) For projects less than 1 acre, an approved Erosion Control Plan from City of Lancaster.
b) State SWPPP for all projects 1 acre or more.
c) If SWPPP required, a state certified Civil Engineer or Other Consultant to serve as QSD.
d) If SWPPP required, AVC representative with signatory powers to serve as LRP.
e) If SWPPP required, AVC to hire QSP.
f) Contractor to conform to current SWPPP requirements.

2. Preferred:

a) QSD to coordinate with AVC on SMARTS system information input.

PRODUCT REQUIREMENTS

- A. Storm Drainage piping

1. Acceptable Manufacturers

a) Contech
b) J-M Pipe Precon Products
c) Rinker
d) Tyler Pipe

INSTALLATION REQUIREMENTS

- A. Required:

1. 3' minimum cover over pipes.

2. Refer to Standard Specifications for Public Works Construction "Greenbook" and typical installation details (see below) where appropriate.

3. 2% max surface slope considering ADA requirements and landscape areas.

4. Minimum grades for different surfaces.

a) Concrete – 0.5%,
b) Asphalt – 1 %,
c) Landscape – 2.0 %.

5. When not possible to meet the minimum slopes listed, coordinate with AVC.

6. Adhere to ADA standards at all times.

7. Repair disturbed pavement per AVC requirements. Replace affected pavement to match existing at minimum unless otherwise noted.

- B. Preferred:

1. Design gravity pipes to flow 90% full, without surcharge where possible.

2. PVC SDR 35 piping for building storm drain laterals less than 18 inch diameter

3. Reinforced concrete pipe (RCP). 18 inch diameter and over.

4. Schedule 40 (minimum) P.V.C. pipe with solvent weld joints for sump pump outlets/serving manholes.

5. Galvanized catch basin grates to prevent rusting.

DIVISION 50: STRUCTURAL SYSTEM DESIGN

DELEGATED DESIGN

The incorporation of "delegated design" duties (i.e. design duties required of the contractor and his/her structural engineering consultants) into the contract drawings or specifications is prohibited where such delegated designs include any of the basic structural design duties for the building, structure or anchorage of nonstructural components described above for the project structural engineer.

STRUCTURAL SYSTEM SELECTION

- Limited to conventional building and other structural systems that are widely used.
- Considerations for local markets considering materials, skill sets, and cost.
- Provide higher levels of seismic performance for projects that have special considerations such as contents that far exceed the cost of the building.
- Systems should be redundant and capable of continued resistance and protection of the structure and contents after the onset of seismic induced damage.
- Structural irregularities should be avoided whenever possible.
- Lateral force resisting systems should be continuous from roof to foundation and should be evenly distributed.
- Use of discontinuous shear walls or braced frames is not acceptable.
- Use of transfer girders or other design elements that limit gravity system redundancy should be avoided.
- All buildings and structures, including non-bearing partitions, shall be of noncombustible construction. Wood-framed structures may be acceptable for small structures on a case-by-case basis with special written permission from the College.
- The use of moment frames in steel buildings and structures should generally be avoided where braced frames or other stiff and more economical structural systems can be utilized. Moment frames are inherently flexible and produce relatively large seismic drifts that can cause damage to typical wall finishes.

STRUCTURAL STEEL STRUCTURES

- Galvanize all steel exposed to weather unless noted otherwise in the architectural drawings or coating specifications.

DIVISION 51: ACOUSTICAL & SOUND ISOLATION DESIGN

DESIGN GUIDELINES

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

- Speech privacy in rooms with confidential conversations.
- Freedom from distraction due to intruding sounds in rooms where such intrusions would disrupt the room's main functions.
- Control of reverberation and echoes to permit adequate speech intelligibility in assembly rooms of various sizes, as well as good sound quality in performance, rehearsal and multi-media rooms.

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

EXTERIOR SOUND ISOLATION

The facades of buildings near the campus perimeter should be designed and glazed to control the intrusion of traffic noise and other environmental noise. The design of each building's exterior envelope (e.g., walls, roof, windows, doors, etc.) should control the intruding environmental sound levels to maximum values of Leq = 35 dBA and L10 = 40 dBA during any contiguous 60-minute time period. Leq is the energy-averaged, A-weighted sound level over a contiguous 60-minute time period. L10 is the A-weighted sound level that is exceeded only 10% of time during any contiguous 60-minute time period. Rooms with extreme sensitivity to

noise should not have a perimeter exposure and should be surrounded with quiet "buffer" zones, such as corridors, etc.

INTERIOR SOUND ISOLATION

Interior partitions, doors and windows should be selected to provide appropriate levels of speech privacy and freedom from distraction. Tables 1 & 2 on the following pages give the minimum recommended Sound Transmission Class (STC) ratings for partitions that separate various room-pair adjacencies. Table 1 applies for room-pairs that are not interconnected with a door, while Table 2 applies where there is a door in the interconnecting partition. Note in Table 2 that there are many room-pair adjacencies that should not have an interconnected door. Proper detailing of the partitions is critical for maintaining their expected acoustical performance. The following guidelines will help with the specification and detailing of interior partitions selected in accordance with Tables 1 and 2.

- Pay specific attention to stud gauge and o.c. spacing when selecting partition STC ratings. Light gauge studs with 24" o.c. spacing provide higher STC ratings than heavier studs and closer stud spacings. Where heavy gauge studs are needed, use ½" thick, 25 gauge, single-leg resilient channels on one side of the partition to improve its STC rating, installed per the channel manufacturer's written instructions.
- Separate all room-pairs rated at STC-45 and higher with full height, slab-to-slab partitions.
- All interior partitions with insulation batts in their stud cavities should be considered "acoustical" partitions. All "acoustical" partitions should be designed and installed in complete conformance with the latest revision of ASTM E497 "Standard Practice for Installation Sound-Isolating Lightweight Partitions".
- Seal all perimeters, including the ends, head and bottom, of all "acoustical" partitions with a continuous bead of acoustical sealant. Install the sealant at both sides of the partition.
- Seal all intersections of "acoustical" partitions airtight to the building perimeter. Dog-leg partitions to intersect the perimeter at drywall or masonry, not at glass or window mullions.

- Seal all penetrations (e. g., conduits, pipes, ducts, etc.) through "acoustical" partitions with a continuous bead of acoustical sealant. Install the sealant at both sides of the partition.
- Avoid back-to-back, recessed electrical, telephone, data or other wired service outlet boxes in all "acoustical" partitions. Separate the boxes by at least 16 inches. Backwrap all recessed electrical, telephone, data, etc., boxes with box pads; in fire-rated partitions use a product similar to Manville Fire temp Putty Pads; in non-rated partitions use a product similar to Lowry's Outlet Box Pads.
- For an enclosed space that is completely surrounded by slab-to-slab partitions provide a sound-isolating, internally-lined return air "Zee-boot" located above the entry door to the space.
- Where an occupied space occurs above, below or next to an equipment room or duct shaft, select and detail the partitions, slabs and shaft-walls so that the background sound level criteria specified elsewhere in the Campus Standards Handbook are not exceeded.
- Operable accordion partitions provide very little sound isolation. For divisible rooms needing a moderate amount of sound isolation select operable panel partitions with a laboratory STC rating not less than STC-49. Design and install the operable panel partition assembly in complete accordance with ASTM E557, "Standard Practice for Architectural Application and Installation of Operable Partitions" such that the Noise Isolation Class (NIC) rating across the assembly is not less than NIC-42.
- The door in an "acoustical" partition should have an STC rating that is within 5 points of the partition's STC rating, i.e., the door in an STC-45 partition should be rated at STC-40 or higher.

TABLE 1

Minimum partition STC rating between room-pairs **without** a door in the common partition

	CLASSROOM (SMALL GROUP)	LECTURE ROOM	SCIENCE LAB	LAB PREP ROOM	COMPUTER LAB	PRIVATE OFFICE, CONFERENCE ROOM	OPEN OFFICE AREA	OFFICE SUPPORT ROOM	LOBBY, CORRIDOR	TOILETS	STORAGE ROOM	MECH. / ELEC. / ELEV. EQUIPMENT ROOM
CLASSROOM (SMALL GROUP)	50	55	50	50	50	55	50	50	45	50	50	AR
LECTURE ROOM		55	55	55	55	55	50	50	45	50	50	AR
SCIENCE LAB			50	45	45	55	45	45	45	50	40	AR
LAB PREP ROOM				-	40	50	40	40	40	50	40	AR
COMPUTER LAB					-	50	40	40	40	50	40	AR
PRIVATE OFFICE, CONFERENCE ROOM						50	50	50	50	50	45	NR
OPEN OFFICE AREA							-	40	-	50	40	AR
OFFICE SUPPORT ROOM								-	-	50	40	AR
LOBBY, CORRIDOR									40	50	-	AR
TOILETS										50	45	AR
STORAGE ROOM											-	AR
MECH. / ELEC. / ELEV. EQUIPMENT ROOM												-

Legend
- = Architect's Choice
NR = Not recommended
AR = As required to meet other acoustical criteria
Note: Ratings higher than STC-40 require slab-to-slab construction.

TABLE 2

Minimum partition STC rating between room-pairs **with** a door in the common partition

	CLASSROOM (SMALL GROUP)	LECTURE ROOM	SCIENCE LAB	LAB PREP ROOM	COMPUTER LAB	PRIVATE OFFICE, CONFERENCE ROOM	OPEN OFFICE AREA	OFFICE SUPPORT ROOM	LOBBY, CORRIDOR	TOILETS	STORAGE ROOM	MECH. / ELEC. / ELEV. EQUIPMENT ROOM
CLASSROOM (SMALL GROUP)	NR	NR	NR	NR	NR	NR	NR	NR	40	NR	-	NR
LECTURE ROOM		NR	NR	NR	NR	NR	NR	NR	40	NR	NR	NR
SCIENCE LAB			45	40	40	NR	NR	NR	40	NR	-	AR
LAB PREP ROOM				-	40	NR	NR	NR	35	NR	-	AR
COMPUTER LAB					-	NR	-	-	40	35	-	AR
PRIVATE OFFICE, CONFERENCE ROOM						NR	35	NR	40	NR	-	NR
OPEN OFFICE AREA							-	-	-	35	-	NR
OFFICE SUPPORT ROOM								-	-	NR	-	NR
LOBBY, CORRIDOR									-	40	-	AR
TOILETS										NR	35	AR
STORAGE ROOM											-	-
MECH. / ELEC. / ELEV. EQUIPMENT ROOM												-

Legend
- = Architect's Choice
NR = Not recommended
AR = As required to meet other acoustical criteria
Note 1: Ratings higher than STC-40 require slab-to-slab construction.
Note 2: STC rating of door to be at least "partition STC rating minus 5 points" (e.g., STC-30 or higher door in an STC-35 partition)

ROOM TYPE	RT60 (SECONDS)	CEILING	FLOOR	WALLS
CLASSROOMS ROOM VOLUME 10,000 CUBIC FEET OR LESS	0.60	1	2	N/A
CLASSROOMS ROOM VOLUME 10,000 TO 20,000 CUBIC FEET OR LESS	0.70	1	2	3
CLASSROOMS LABS	0.70	1	2	N/A
GROUP/TUTOR ROOMS	0.70	1	2	N/A
CONFERENCE/MEETING ROOMS	1.0	1	2	3
PRIVATE OFFICES	1.0	1	2	N/A
OPEN OFFICE AREAS	1.0	1a	2	N/A
PUBLIC AREAS, LOBBY AND CORRIDORS	1.5 or less	1	N/A	N/A
COLLABORATIVE SUPPORT SPACES	0.70	1	2	N/A

1	Sound absorptive ceiling, NRC 0.70 minimum.
1A	Sound absorptive ceiling, NRC 0.90 minimum.
2	Carpet for sound absorption and impact noise reduction.
3	Sound absorptive wall panels (NRC 0.80 min.) will likely be required to achieve RT60 requirement. Panels should be placed on at least two adjacent walls. Coverage required should be determined by project team on a project by project basis.
N/A	Sound absorptive finish not required.

ROOM ACOUSTIC (ACOUSTICAL SURFACE FINISHES)

Reverberation is the persistence of sound within an enclosed space and is related to the room volume, geometry and the quantity of sound absorptive surfaces within a room. Reverberation time (RT60) is expressed in seconds. It is important to have a reverberation time below 1.0-secons in spaces where speech communication is the primary function.

- Unoccupied spaces should be designed so that the maximum reverberation time (RT60) values in the 500, 1,000 and 2,000 herzt octave bands do not exceed the values listed below. The table also provides guidelines for achieving the RT60 values.