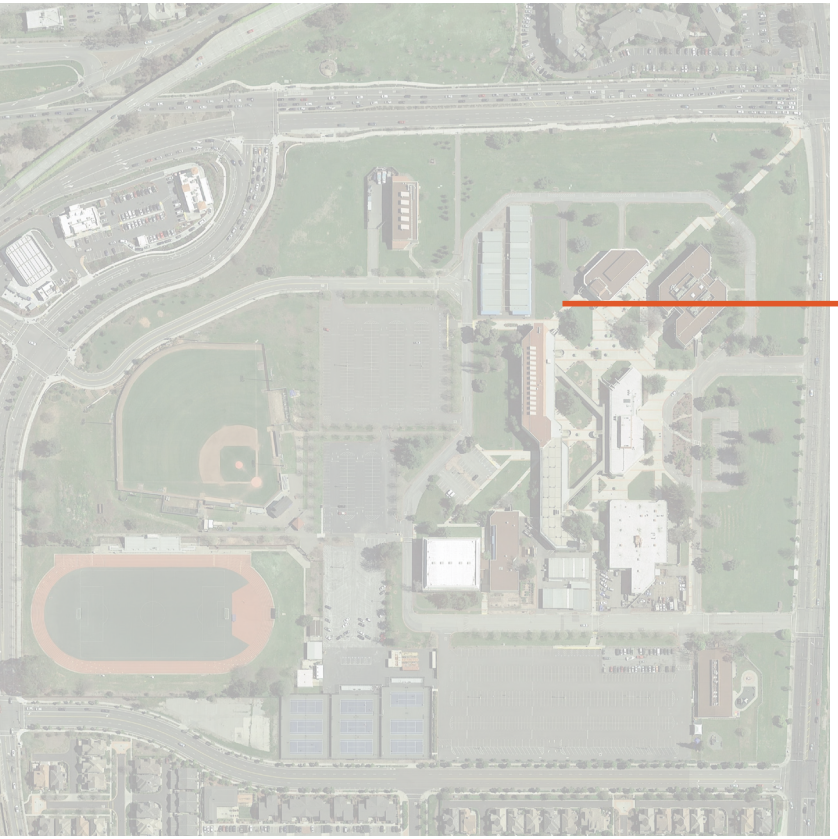
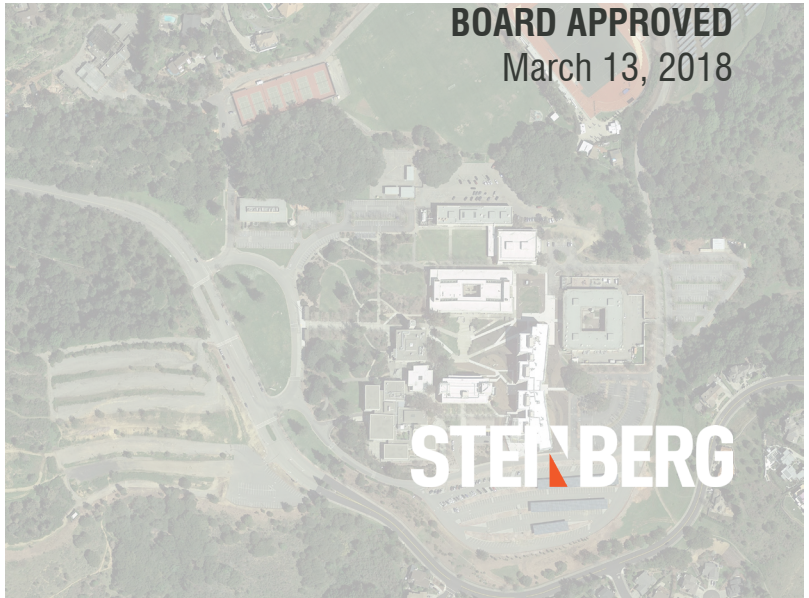


PERALTA COMMUNITY COLLEGE DISTRICT

District-Wide

Berkeley City College, College of Alameda, Laney College, Merritt College & District

2017 Facilities & Technology Master Plan Update



BOARD APPROVED
March 13, 2018

STEINBERG

ACKNOWLEDGMENTS

The District and the Board of Trustees would like to thank all the participants, across all campuses and the District. These include all the participants from the surveys, campus workshops, interviews, and campus shared governance committees. A special thank you to the Facilities Planning Committees and College Presidents who provided the necessary leadership and outreach in gaining consensus and approvals of the plan.

MASTER PLAN TEAM

STEINBERG — Facilities Master Plan Architect

TEECOM — Technology Master Planner

CSW | ST2 — Infrastructure Master Planner

INTERFACE ENGINEERING — Mechanical, Electrical, Plumbing

CUMMING Building Value Through Expertise — Preliminary Costing

Table of Contents

MISSION

We are a collaborative community of colleges.

Together, we provide educational leadership for the East Bay, delivering programs and services that sustainably enhance the region's human, economic, environmental, and social development. We empower our students to achieve their highest aspirations. We develop leaders who create opportunities and transform lives. Together with our partners, we provide our diverse students and communities with equitable access to the educational resources, experiences, and life-long opportunities to meet and exceed their goals. In part, the Peralta Community College District provides accessible, high quality, educational programs and services to meet the following needs of our multi-cultural communities:

- Articulation agreements with a broad array of highly respected Universities;
- Achievement of Associate Degrees of Arts and Science, and certificates of achievement;
- Acquisition of career-technical skills that are compatible with industry demand;
- Promotion of economic development and job growth;
- Foundational basic skills and continuing education;
- Lifelong learning, life skills, civic engagement, and cultural enrichment;
- Early college programs for community high school students;
- Supportive, satisfying, safe and functional work environment for faculty and staff; and
- Preparation for an environmentally sustainable future.

DISTRICT STRATEGIC GOALS

- Goal A: Advance Student Access, Equity, and Success
- Goal B: Engage and Leverage Partners
- Goal C: Build Programs of Distinction
- Goal D: Strengthen Accountability, Innovation and Collaboration
- Goal E: Develop and Manage Resources to Advance Our Mission

A NOTE FROM THE CHANCELLOR

The Peralta Community College Facilities Master Plan is integral to the Colleges' Education Master Plan. As approved by the Peralta Community College District (PCCD) Board of Trustees in _____ 2018, the PCCD Facilities Technology Master Plan incorporates the critical needs of our Colleges and the District Office as we continue to serve our six cities and beyond, and is a document that reflects the collaborative efforts of the Peralta Colleges' faculty, classified staff, students, and administrators.

The Facilities Master Plan will serve as a leading-edge framework necessary for all Peralta institutions to be ready for projected growth and space needs, as well as to be ready for those innovative technologies and learning environments that are a necessity for preparing the workforce of tomorrow.

This Plan is a blueprint for building a set of Peralta institutions that will be welcoming to the public and one that will be in sync with the Colleges' core mission, strategic initiatives, and overarching vision and values.

The Plan assumes that the cities within our District deserve exceptional educational resources, replete with advanced learning technologies, welcoming landscapes, and intelligent buildings. The Plan is aligned with those salient priorities of the region that address workforce needs and the new State of California energy standards.

All in all, the Facilities Master Plan is a comprehensive document that aims to establish the Peralta Colleges so as to best serve our students, faculty, staff, and our industry and community partners alike.

I wish to thank, along with offering my deepest appreciation, those who came together to develop this Plan, including the Steinberg Team--especially Suniya Malhotra -- for exceptional and responsible work. I also wish to thank the Peralta Colleges' faculty, classified staff, students, administrators, and Governing Board for working together to determine what Peralta Colleges need currently, as well as to determine what our institutions will need to move forward.

Sincerely,

Jowel C. Laguerre, Ph.D.
Chancellor

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1.0 Executive Summary

OVERVIEW

The Peralta Community College District comprises four College Campuses, two Satellite Campuses, and one District Administrative complex (DAC) located in the county of Alameda. Berkeley City College (BCC) is located in Downtown Berkeley. College of Alameda (CoA) is located on the island of Alameda, and has an off-site shared (with Merritt College) facility at 860 Atlantic Avenue in Alameda, as well as a satellite campus located near Oakland Airport: the CoA Aviation Maintenance Training Facility. Laney College and the DAC are located in the Lake Merritt District of Oakland, and Merritt College is located in the Oakland Hills.

DOCUMENT ORGANIZATION

The *summary* results of the extensive, investigative, and collaborative master planning process are documented here. For more detail on Berkeley City College, College of Alameda, Laney College, and Merritt College, please refer to the individual campus' 2017 Facilities and Technology Master Plan. This document is organized as follows:

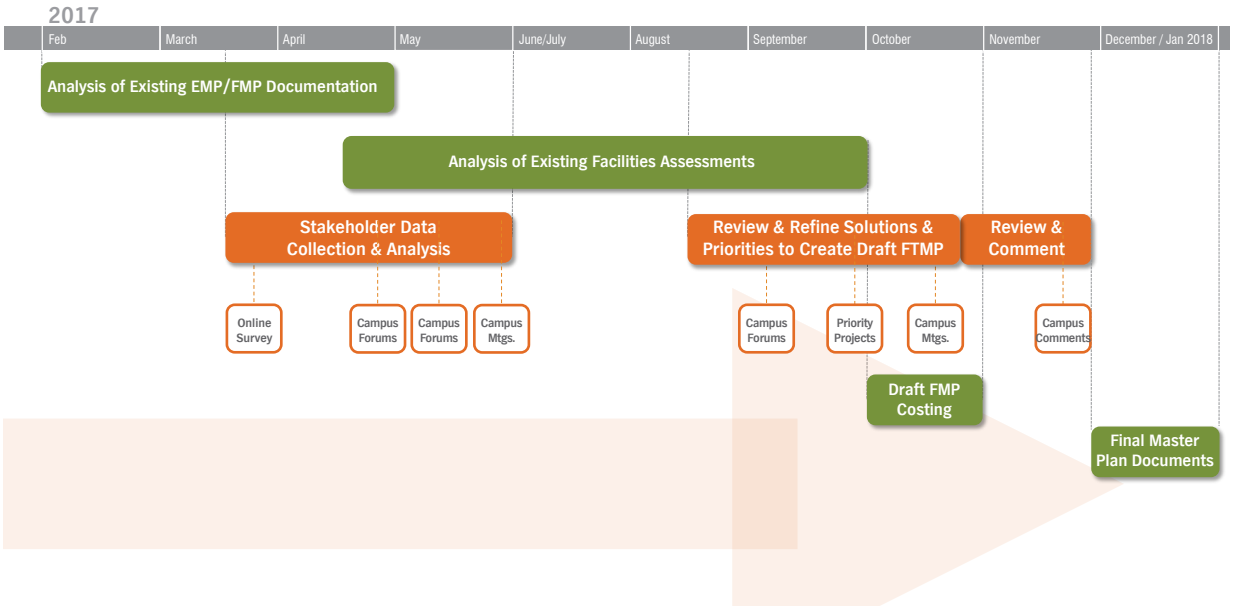
Chapter One summarizes the FTMP purpose, process, and key drivers for the entire District's Facilities, Technology and Infrastructure needs. It also provides a summary list of Priority Projects across the District.
Chapter Two documents the technology needs for the District, and provides guidelines for AudioVisual Systems, standards for Telecommunication Infrastructure, and Network, and Wi-Fi standards.
Chapter Three documents the Berkeley City College Master Plan, and the projects that comprise it.
Chapter Four documents the College of Alameda Master Plan, and the projects that comprise it, including Priority projects.
Chapter Five documents the District Administrative Complex, Workforce Development/Continuing Education, and the Genomics Institute Master Plans.
Chapter Six documents the Laney College Master Plan, and the projects that comprise it, including Priority projects.
Chapter Seven documents the Merritt College Master Plan, and the projects that comprise it, including Priority projects.
Chapter Eight documents the Rough Order of Magnitude (ROM) Costs for the Priority projects, and Project Implementation.

PURPOSE

The purpose of the Peralta Community College District Wide 2017 Facilities and Technology Master Plan Update (FTMP) is to update the previous Campus Facilities Master Plans (FMP) for:

- Alignment with the 2016 College Educational Master Plans
- Alignment with the District Strategic Goals
- Changes experienced by the District, and its Colleges, since the last facilities master plan was developed
- Identify and integrate Infrastructure needs
- Identify and integrate Technology needs
- Prioritize projects for a first phase of implementation
- Rough Order of Magnitude Costs for the projects

Facilities & Technology Master Plan Update Process



PROCESS

The 2017 FTMP process was a shared governance process led by Steinberg from March 2017 through December 2017.

The process included Online Surveys to reach a diversity of stakeholders, meetings with Facilities Planning (FPC) and Technology Committees, and multiple Campus Forums open to students, staff, faculty and administration.

The College Presidents and FPC Chairs spearheaded the presentations, discussions, and consensus building with the Shared Governance groups on campus. Each campus has approved the Draft Facilities and Technology Master Plan.

Berkeley City College
156 Responses

College of Alameda
101 Responses

District (DAC)
34 Responses

Laney College
213 + 162 Responses

Merritt College
167 Responses

883
survey totals

DRIVERS BEHIND DISTRICT NEEDS

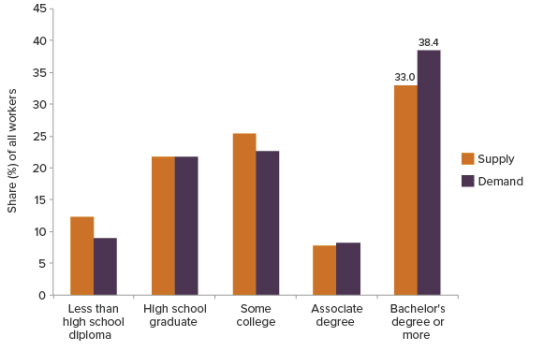
KEY DRIVERS FOR THE FTMP

The key drivers for the FTMP Update are:

- The needs arising out of each of the College's 2016 Educational Master Plans (EMPs);
- In particular the need to increase student success, retention, transfer and completion;
- And as indicated in the EMPs, the needs arising out of 21st Century changing teaching and learning pedagogies;
- And the need to increase recruitment, and retention, of faculty since 50% of PCCD faculty and staff are within retirement age;
- The needs arising out of the existing condition of facilities, and infrastructure at College of Alameda (including Aviation Maintenance Training Facility), District site, Laney College, and Merritt College;
- The needs arising out of the existing condition of technology at all District sites;
- Lack of Library space capacity at all four colleges: Berkeley City College, College of Alameda, Laney College, and Merritt College; and
- Lack of Lecture, Laboratories, and Office space capacity at Berkeley City College.

KEY FINDINGS FROM 2016 EMPS

The 2016 Educational Master Plans' main focus/goal is to increase student success, retention, transfer, and completion in alignment with State Student Success Act (SB 1456). This is also the top strategic goal for the District, as identified in the 2015 PCCD Strategic Plan, and reflects the concern that by 2030, California will be short by 1.1 million college graduates if current trends persist (according to the Public Policy Institute of California (PPIC) Higher Education Center).



Source: Johnson, Cueller Mejia, and Bohn, *Will California Run Out of College Graduates?* (PPIC 2015)

The 2016 EMPs identify a 1.0% - 1.1% per year college area population growth rate, and a decline in students less than 25 years old, which means that for the next five years the College is growth neutral.

However, growth in the 24 - 34 age group offer opportunities for the PCCD colleges to enhance and re-design existing career technical education (CTE) programs and complementary CTE programming to cater to this population segment's needs for professional growth and career changes.

Other program enhancements/re-designs are needed to address the PCCD 2016 EMP Labor Market Gap Analysis Report, which identifies gaps between district's educational programs and high-wage/high-skill jobs available in the region.

There is also a need to develop non-credit to credit pathways for 16% of the adult population that is in need of career development and college preparation.

AGED FACILITIES SNAPSHOT

KEY FINDINGS FROM EXISTING CONDITIONS

At College of Alameda, Laney College, and Merritt College, the existing conditions analysis process identified that the existing facilities, technology and infrastructure are unable to support the 2016 Educational Master Plan goals due to:

- There is no need to increase capacity in the classrooms, and class labs space categories, BUT classrooms and class labs are outdated and cannot support the 21st century instruction and learning necessary for student success, retention, transfer and completion;
- There is a need to increase library, and some office space capacity;
- Aging facilities with failing systems requiring repair or replacement, like electrical and air-conditioning (see next page for a snapshot for each college's conditions);
- Significant number of instructional and student spaces are located in buildings past their useful life (especially when failing systems and viewed in conjunction with structural upgrades required);
- Student services are impaired by dispersed locations and inadequate space to accommodate functions; and
- Underground infrastructure in poor condition.

At Berkeley City College, the existing conditions analysis process identified that:

- There is a lack of space capacity, especially in class labs, but also in classrooms, office, and library;
- Student services are impaired by dispersed locations and inadequate space to accommodate functions;
- Technology upgrades, and corrections, are required within existing facilities;
- Lack of student gathering space is having a noise impact on adjacent instructional and student support spaces.

At the District Site, the existing conditions analysis process identified that:

- Aging facilities with failing systems requiring repair or replacement, like electrical and air-conditioning;
- Departments dispersed between several buildings create operational inefficiencies; and
- Underground infrastructure in poor condition.

WHY CONDITION OF FACILITIES MATTER

Thousands of studies over the last three decades indicate that the condition of facilities impacts student learning, teaching, and teacher retention. A 2002 UCLA Study states that "researchers have repeatedly found a difference of between 5-17 percentile points difference between achievement of students in poor buildings and those students in standard buildings."

Building aspects that most affect student and teacher performance are:

- Acoustics and Noise
- Air Quality
- Lighting
- Proper Temperature
- Control of Temperature
- Classroom Size
- Classroom Configuration
- Twenty-First Century Learning

The following overview of the existing conditions at College of Alameda, Laney College, Merritt College, and the District Site, illustrates how all the aspects above are deficient across these campuses. Since poor facilities negatively impact teacher effectiveness and performance, which in turn negatively impacts student performance, one of the keys to improving student success as required by the college EMPs, and the California State Student Success Act (SB 1456), is to improve facilities for the aspects listed above.

STATE FACILITY CONDITION INDEX

The State Facilities Condition Index (FCI) is a measure of the condition of a building relative to the replacement cost of the building. FCI does not measure the suitability or functionality of spaces:

$$\text{FCI \%} = \frac{\text{current repair cost}}{\text{replacement cost}}$$

Figures 1.0, 1.2, 1.5 and 1.8 show the State FCI for each respective campus. The FCI colors represent:
Blue = Good (Repair Costs less than 10% of Replacement)
Green = Fair (Repair Costs between 10 - 50% of Replacement)
Yellow = Poor (Repair Costs between 50 - 90% of Replacement)
Red = Very Poor (Repair Costs over 90% of Replacement)

OVERALL BUILDINGS ANALYSIS OVERVIEW

Our team analyzed previous assessments provided by the District: facilities assessments from 2009, and State (FUSION) facilities assessment from 2016. Taking into consideration any District provided information on items addressed since 2009, the team factored in the additional age and wear in updating the assessments. The results are depicted in Figures 1.1, 1.4, 1.7 and 1.10. The scale: 1 (red) to 10 (blue), with "1" being bad condition, end of useful life, needing to be replaced; to "10" being in good condition, like new.

STRUCTURAL ANALYSIS OVERVIEW

Our approach to this structural assessment began with the review of the existing as-built structural plans, the review of the structural assessment report from 2008 by WLC architects and KPW structural engineers, and site visits to the Alameda campus. Once the existing conditions were assessed, collaboration with the District's team enabled us to provide structural recommendations for future planning. Structural analysis will be required for each future project to identify specific deficiencies and retrofit requirements.

The diagrams in Figure 1.3, 1.6, and 1.9 indicate which buildings were investigated and the estimated effort required to upgrade the structure with voluntary retrofits (see discussion within individual Campus FTMPs for mandatory versus voluntary upgrades explanation).

AGED FACILITIES SNAPSHOT

College of Alameda

Per the Chancellor's FUSION Facilities Condition Index (FCI) ratings,

91%

of buildings at COA require renovation or replacement.

Figure 1.2: COA State Facility Condition Index

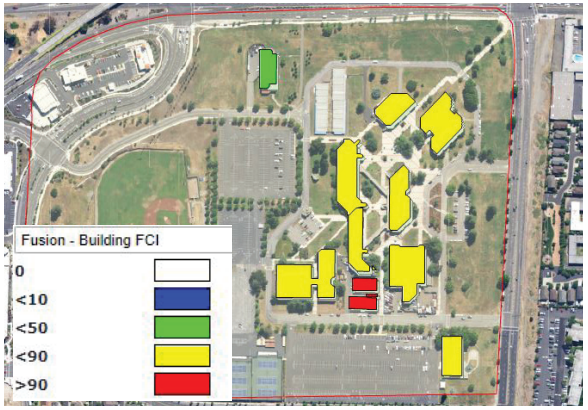


Figure 1.3: COA Structural Voluntary Upgrade Analysis (Inset: Aviation Campus)

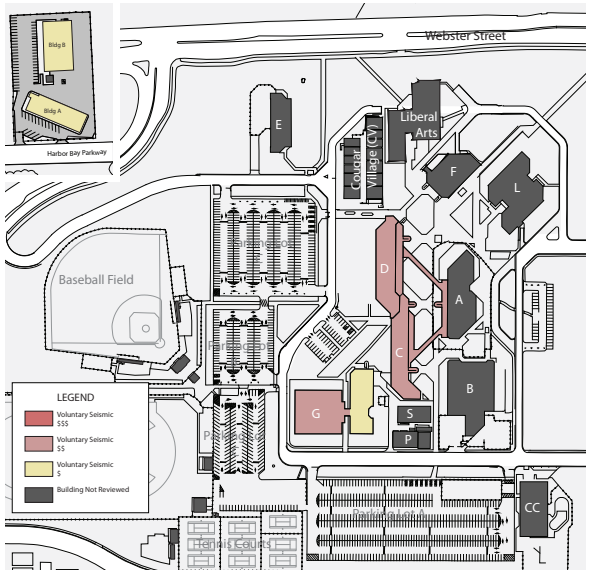


Figure 1.4: COA Building Assessments Analysis

	Electrical Distribution System	Emergency Distribution System	Lighting Systems	Fire Alarm System	HVAC Equipment	HVAC Ducts & Air Distribution	HVAC Piping	Plumbing Fixtures	Plumbing Piping	Architectural[1]	Roofing[2]
860 Atlantic Avenue[3]	8	8	8		3	3	3				
Aviation Facility	3		3	5	1	1	1	1	1	4	1
A Building	8	8	8		3	3	3			8	4
B Building	3	4	4	5	1	1	3	3	6	4	3
C Building	3	3	4	5	2	2	1	4	7	4	1
Child Care Center					4	4	4	3	5	6	1
Cougar Village	7		7	6							
D Building	3	3	4	5	1	1	2	4	4	4	1
E Building					1	1	2	4	6	4	3
F Building	3	3	4	5	2	1	3	7	6	6	1
G Building	3	3	4	5	1	1	1	5	5	5	4
L Building	3	3	3	5	3	3	1	6	7	5	2

[1] Architectural ranking does not include teaching/learning set up of rooms: See separate discussion regarding teaching/learning observations

[2] Roofing information per District Vendor Information

[3] No 2009 Assessments, only 2016 FUSION Assessments to go on

Legend

1	2	3	4	5	6	7	8	9	10	
Bad Condition Antiquated System - End of Useful Life Needs to be Replaced									Good Condition Like New	Not Applicable or No prior Assessments

AGED FACILITIES SNAPSHOT

Laney College

Per the Chancellor's FUSION Facilities Condition Index (FCI) ratings,

87%

of buildings at Laney require renovation or replacement.

Figure 1.5: LANEY State Facility Condition Index

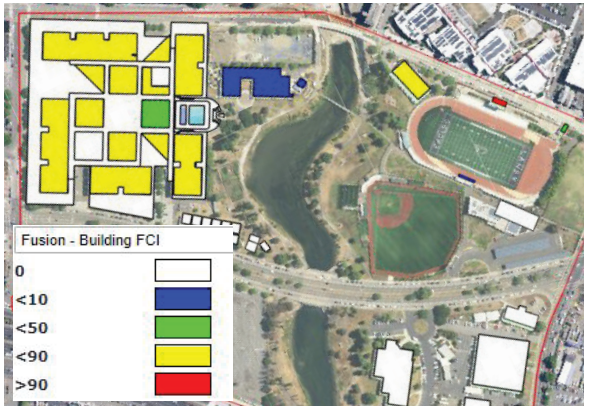


Figure 1.6: LANEY Structural Voluntary Upgrade Analysis

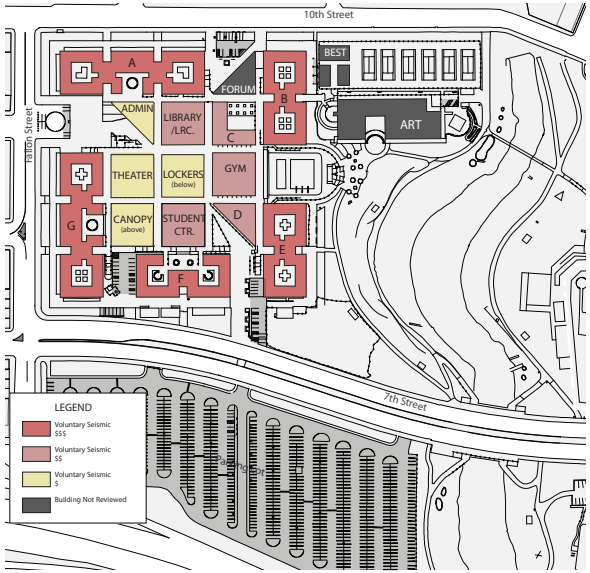


Figure 1.7: LANEY Building Assessments Analysis

	Electrical Distribution System	Emergency Distribution System	Lighting Systems	Fire Alarm System	HVAC Equipment	HVAC Ducts & Air Distribution	HVAC Piping	Plumbing Fixtures	Plumbing Piping	Architectural[1]	Roofing[2]
A Building	3	3	3	5	1	1	1	4	4	6	1
Administration	3	5	3	5	1	1	2	4	4	9	8
Art Center	7	7	5	8	8	8	8	9	9	9	
Athletic Field House											
B Building	3	3	3	5	1	2	1	4	4	5	1
C Building	3		3	5	1	1	1	4	4	5	9
Child Care Center	3		3	5	5	5	5	3	6	5	1
D Building	2	3	4	5	1	1	3	5	4	5	4
E Building	3	3	4	5	2	1	3	3	5	6	1
F Building	2	2	4	5	2	1	3	6	5	6	1
Forum	3	3	3	5	1	1	1	4	4	6	1
G Building	3	3	3	5	1	1	2	4	4	7	9
Gymnasium	3	3	4	5	1	1	1	4	4	6	2
Library	3	3	3	5	1	2	2	4	4	5	3
Locker Room	3		3	5	1	1	1	4	1	5	
Student Center[3]	3	3	3		2		2	4	4	6	1
Theater	3	3	2	5	3	3	3	4	4	5	1

[1] Architectural ranking does not include teaching/learning set up of rooms: See separate discussion regarding teaching/learning observations

[2] Roofing information per District Vendor Information

[3] No 2009 Assessments, only 2016 FUSION Assessments to go on

Legend

1	2	3	4	5	6	7	8	9	10	
Bad Condition Antiquated System - End of Useful Life Needs to be Replaced									Good Condition Like New	Not Applicable or No prior Assessments

AGED FACILITIES SNAPSHOT

Merritt College

Per the Chancellor's FUSION Facilities Condition Index (FCI) ratings,

82%

of buildings at Merritt require renovation or replacement.

Figure 1.8: MERRITT State Facility Condition

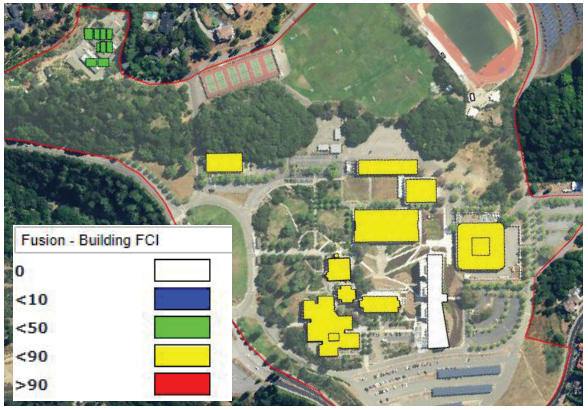


Figure 1.9: MERRITT Structural Voluntary Upgrade Analysis

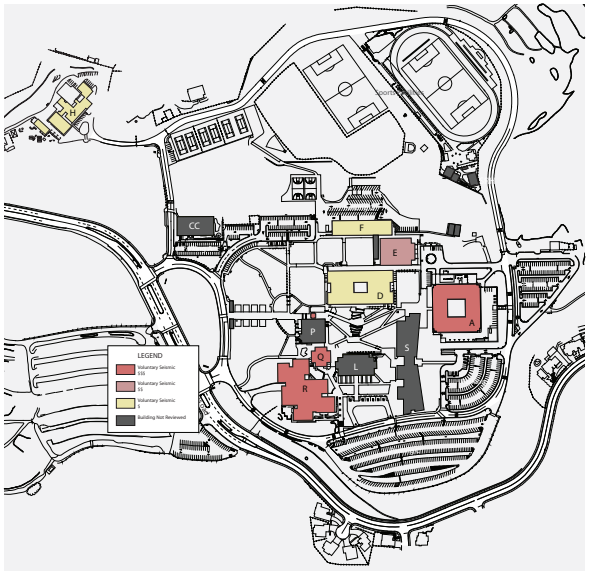


Figure 1.4: MERRITT Building Assessments Analysis

	Electrical Distribution System	Emergency Distribution System	Lighting Systems	Fire Alarm System	HVAC Equipment	HVAC Ducts & Air Distribution	HVAC Piping	Plumbing Fixtures	Plumbing Piping	Architectural[1]	Roofing[2]
860 Atlantic Avenue[3]	8	8	8		3	3	3				
Building A	3	3	4	4	3	1	2	3	6	4	1
Child Care Center	3		3	5	5	5	5	4	7	6	1
Building D[3]	3	3	4	5	3	3	3	1	1		
Building E	2	3	2	5	1	2	1	4	6	4	5
Building F	1	3	4	5	2	1	3	7	6	4	1
Horticulture	3		4	5	1	3	2	5	5	4	1
Building L	3	3	4	4	1	3	2	5	7	7	8
Building P	3	3	4	4	5	5	5	5	5	8	2
Building Q	3	3	4	4	2	1	1	5	5	6	7
Building R	3	3	4	4	3	3	3	7	7	7	2
Building S											

[1] Architectural ranking does not include teaching/learning set up of rooms: See separate discussion regarding teaching/learning observations

[2] Roofing information per District Vendor Information

[3] No 2009 Assessments, only 2016 FUSION Assessments to go on

Legend

1	2	3	4	5	6	7	8	9	10	
Bad Condition									Good Condition	Not Applicable or
Antiquated System - End of Useful Life									Like New	No prior Assessments
Needs to be Replaced										

AGED FACILITIES SNAPSHOT

District Site

Per the Chancellor's FUSION Facilities Condition Index (FCI) ratings,

35%

of buildings at District require renovation or replacement.

Figure 1.0: DISTRICT State Facility Condition Index

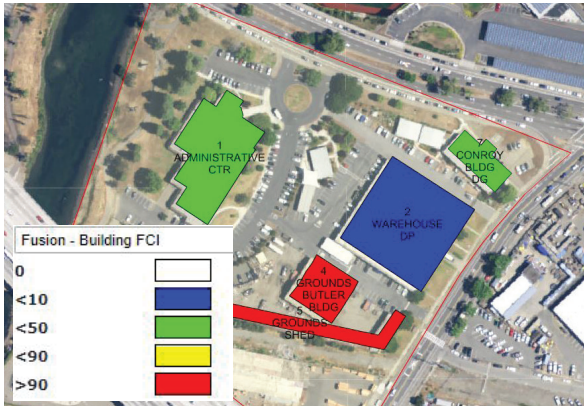


Figure 1.1: DISTRICT Building Assessments Analysis

	Electrical Distribution System	Emergency Distribution System	Lighting Systems	Fire Alarm System	HVAC Equipment	HVAC Ducts & Air Distribution	HVAC Piping	Plumbing Fixtures	Plumbing Piping	Architectural[1]	Roofing[2]
District Admin. Center	4	4	6	5	2	2	1	5	5	5	3
Physical Plant Warehouse	6		6	5	2	2	1	5	5	4	2
Admissions and Records	4		6	5	2	2	1	5	5	5	2
Grounds Butler Bldg	4		4		1					4	
Grounds Shed	2		2		1	1					

[1] Architectural ranking does not include teaching/learning set up of rooms: See separate discussion regarding teaching/learning observations

[2] Roofing information per District Vendor Information

[3] No 2009 Assessments, only 2016 FUSION Assessments to go on

Legend

1	2	3	4	5	6	7	8	9	10	
Bad Condition Antiquated System - End of Useful Life Needs to be Replaced									Good Condition Like New	Not Applicable or No prior Assessments

21ST CENTURY LEARNING

Teaching Pedagogies affecting Classrooms

There have been many changes in teaching pedagogies over the last several decades. Some of it is driven by technology (which continues to evolve at an ever-changing rapid pace) but, it is also driven by research into the ways students learn best. That research shows that students learn when they not only read, hear and see, but when they also experience and teach. The combination of these is often called "active learning" which is defined as "those instructional activities involving students in doing and thinking about what they are doing."[1] The FTMP update Online Survey respondents echo this research, with 68% - 71% of respondents saying they learn and teach best with a combination of lecture, small group and hands on activities.

The 2016 Educational Master Plans indicate the need for each College's facilities to accommodate both current and future teaching pedagogies. Although future teaching pedagogies and future technology can be hard to predict, one method of preparing for the future is to build flexible spaces. Luckily, active learning spaces that are needed now are all about flexibility: the ability to reconfigure the room for multiple different activities. To do this they require more space per student (20 - 26 ASF per student), more writable surfaces (that can double up as projectable surfaces), and furniture that can be versatile. Very few existing classrooms at COA, Laney, and Merritt meet these requirements. BCC is better equipped being a newer facility, but even at BCC some rooms require *some* reconfiguration. Across the District, the majority of existing classrooms, and class labs, are in need of reconfiguration and modernization for:

- Technology
- Sizing – area / per student, disabled access and appropriate code clearances at lab equipment
- Sizing – # of student chairs
- New lab equipment & more writing Surfaces
- Furniture - comfortable and flexible
- Flexibility / Adaptability to accommodate Hands On, Lecture and Group work.

Some examples of how modern teaching pedagogies have impacted campus spaces follow.

1 Active Learning definition by Bowell, C., & Eison, J. (1991) Active learning: Creating excitement in the classroom AEHE-ERIC higher education report No. 1.

TIERED LECTURE CLASSROOMS

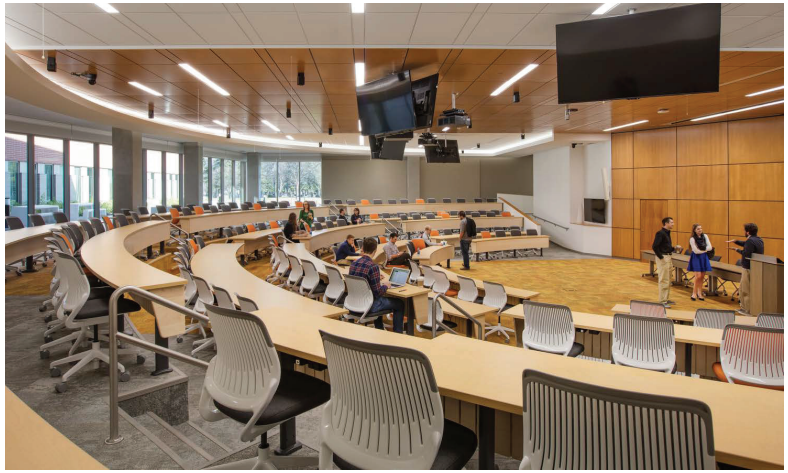
Semi-circle layout facilitates class discussion, but to accommodate group work, the lecture classroom needs tables (versus tablet chairs and there needs to be two tables per tier (students in front row of tier turn around and collaborate with students in row behind them).

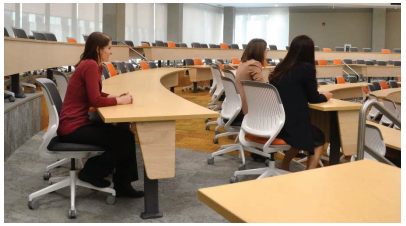
Layout requires 20 to 25 square feet per student.

Modern audiovisual systems means that these rooms can have daylighting, which research indicates improves student learning.

Existing Example (to right)

Typical for Today's Teaching Pedagogies (below)





TABLET CHAIR CLASSROOMS

Again reflecting the need for interactive classrooms, tablet chair classrooms have changed in that the tablet arm chairs are now mobile, permitting collaboration as well as lectures. Modern tablet arm chairs are also sized bigger in both the chair (reflecting the change in people's sizes) and tablet (to accommodate digital devices in addition to notebook).

Rooms typically have writable walls all around for both projection and collaboration in different classroom formations.

Layout requires 20 to 24 square feet per student.
Typically used for small class sizes (20 - 25 students)

Existing Example (to right)

Typical for Today's Teaching Pedagogies (below)

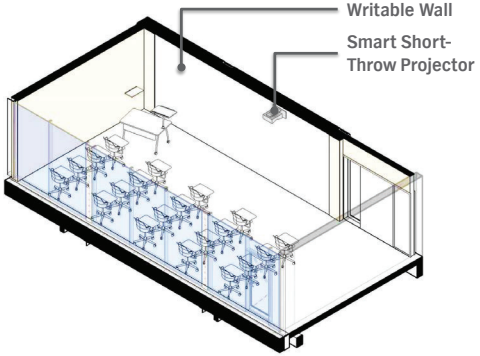
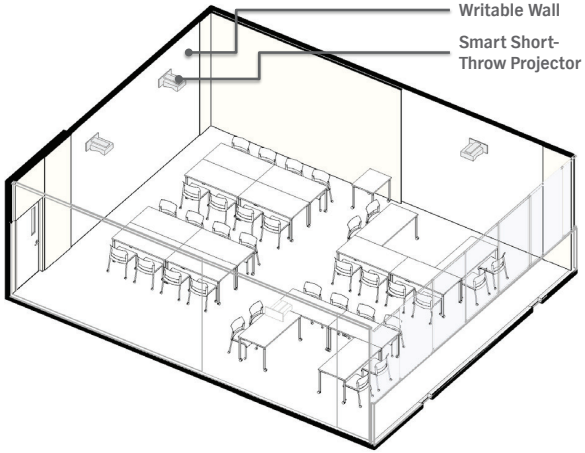
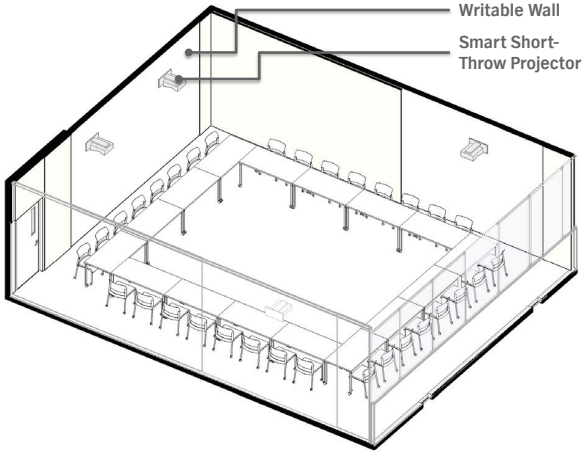


TABLE CHAIR CLASSROOMS

Quickly move between class discussion & group work. Mobile tables and chairs accommodate different teaching style set ups with relative ease. Interactive projectors & writable walls for group work.

Layout requires 26 square feet per student.
Typically used for small to medium class sizes.





Typical for Today's Teaching Pedagogies (below)

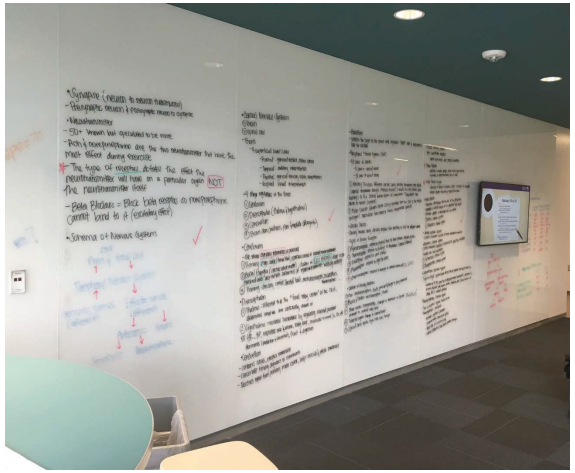
COLLABORATION SPACES NEAR CLASSROOMS & OFFICES

Longstanding research has shown that the majority of student learning happens outside of the classroom setting, with a fair amount arising from peer to peer learning. Fairly recent research has shown that locating collaboration spaces in close proximity to classrooms and faculty offices enhances this type of learning by providing immediate opportunities to continue classroom discussions and faculty assistance.

These spaces feature expansive writable walls and comfortable seating.

Existing Example (to right)

Typical for Today's Teaching Pedagogies (below)



THE MASTER PLAN

The drivers discussed here resulted in myriad Facilities, Technology, and Infrastructure needs across all District sites. These needs were addressed and captured in the Master Plan for each site. Please see each campus' chapter for their respective Master Plan, and please see each campus' 2017 FTMP for full details. To the right, and on the next page, you will find a summary of the Priority Projects across the entire District.

SUSTAINABILITY AND RESILIENCY

Peralta CCD is deeply committed to sustainability and total cost of ownership. To that effect, Peralta CCD has created a 2017 Sustainability and Resiliency Master Plan (SRMP) that will guide the execution of all future facilities and infrastructure projects, to achieve District Sustainability and Resiliency Goals. All FTMP projects, from infrastructure replacement, site improvements, demolitions, renovations and new construction will need to be developed utilizing the guidelines and recommendations within the SRMP.

PRIORITY PROJECTS

District-Wide Technology Needs

ITEM
Network and Wi-Fi Refreshes
Berkeley City College
College of Alameda
Laney College
Merritt College
District Office
Firewalls
Network Monitoring
Maintenance Contracts
Cisco Maintenance Contract - per year
NetworkConnect - per year
Cloud Data Storage - per year
Cloud Application Deployment - per year
Power and UPS Upgrades
Security Access Control Replacement
Video Surveillance Cameras
Video Surveillance Maint. Contract - per 3 year
Emergency Call Stations
Blackboard Connect
Subscription Fees
System/Infrastructure Upgrades
Premises Radio System
Duress Buttons and Intrusion Detection
Professional Development/Training
IR Sensors

PRIORITY PROJECTS

Berkeley City College

	FACILITIES
B1A	Milvia Street 3rd Floor Build Out
B1B	Existing Main Building Reconfigurations
B4	Additional Facility and/or Land**

	TECHNOLOGY
B2	Complete Wi-Fi Deployment
B3	Complete Network Upgrade Project

** Additional Facility and/or Land will depend on timing of available opportunities

PRIORITY PROJECTS

District Sites

	INFRASTRUCTURE
D3	Replace HVAC until New Complex
	Civil Infrastructure Replacements until New Complex

	FACILITIES
D1	New Consolidated Administrative Complex (DAC)
	Child Care Center Renovation/Replacement
D2	New Workforce Development and Continuing Education Center (WDCE)
D18	Renovate 860 Atlantic Avenue, Alameda for Peralta Genomics Institute (PGI)

	TECHNOLOGY
	See Technology List

PRIORITY PROJECTS
College of Alameda

	INFRASTRUCTURE
A1	Replace All Campus Major Electrical Equipment
A2	Upgrade / Replace Central Heating Hot Water Plant
A3	Civil Infrastructure Replacements

	FACILITIES
A4	C/D Replacement: Science & Administration
A5	Aviation Complex (Replacement)**
A6	Automotive/Diesel Complex (Replacement)
A7	Performing Arts
A9	Modernize Student Center Building F

	TECHNOLOGY
A14	Main Campus Complete Wi-Fi Deployment
A15	Main Campus Complete Network Upgrade Project
A16	Aviation Site Complete Wi-Fi Deployment
A17	Aviation Site Complete Network Upgrade Project

PRIORITY PROJECTS
Laney College

	INFRASTRUCTURE
L1	Replace All Campus Major Electrical Equipment
L2	Replace / New Central Plant & Infrastructure
L3	Replace Domestic Hot Water System
L4	Replace Compressed Air System
L5	Replace Domestic Water & Compressed Air Piping

	FACILITIES
L6	New Student and Welcome Center
L7	New STEAM Center
L8	New Library Learning Resource Center
L9	New Design & Manufacturing Center & Outdoor Work Area Canopy
L10	New / Replace Central Plant**
L11	Modernize Performing Arts (Theater & Partial G)
L13	New Community Building & Campus Green

	TECHNOLOGY
L19	Complete Wi-Fi Deployment
L20	Complete Network Upgrade Project

** Exact location and details to be determined by a Central Plant Study, in alignment with the SRMP.

PRIORITY PROJECTS
Merritt College

	INFRASTRUCTURE
M1	Replace All Campus Major Electrical Equipment
M2	Civil Infrastructure Replacements

	FACILITIES
M3	Replacement Building A
M4	Renovate Building D
M5	Renovate Building E and F
M9A	Combined Child Care Center & Child Development Center
M10	Horticulture Complex Replacement
M11	Kinesiology Physical Fitness Addition
M12	Site Improvement Projects
M15	Renovate Partial Building R

	TECHNOLOGY
M13	Main Campus Complete Wi-Fi Deployment
M14	Main Campus Complete Network Upgrade Project

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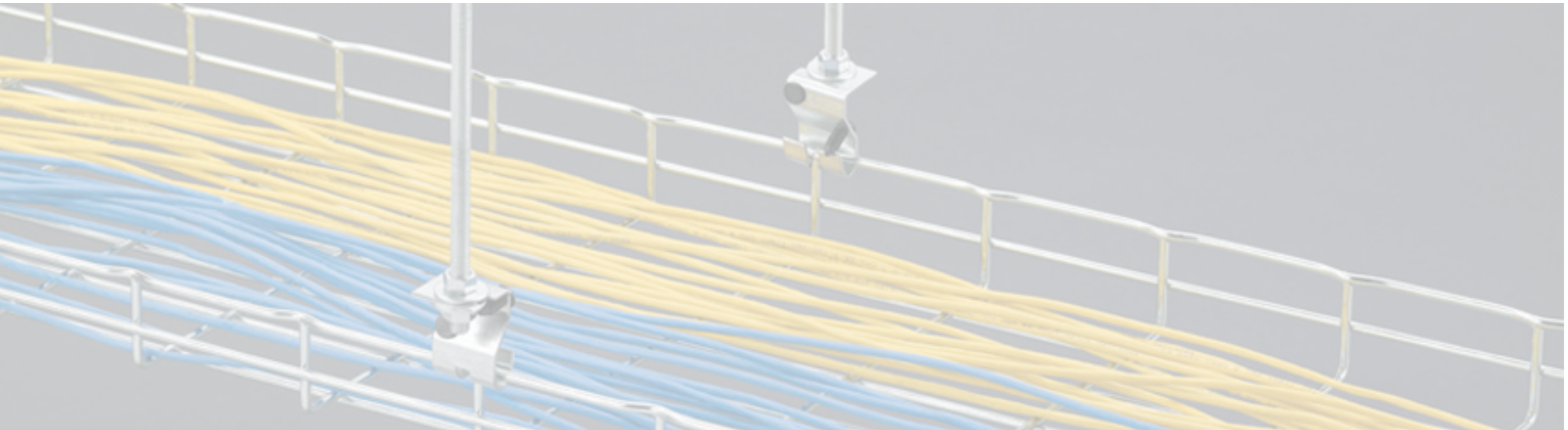
CHAPTER 2.0
Technology



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2.0 Technology Master Plan

OVERVIEW

Master Plan

The Technology portion of the Facilities Master Plan covers the following:

- Network – wired and wireless (Wi-Fi)
- WAN and CENIC
- Telephony / VoIP
- Telecommunications Infrastructure (telecom rooms/IDFs, pathways, cabling)
- Classroom Technologies
- Security Systems

Within each of the categories above, there are subsystems that collectively comprise an overall system. The following pages delve into greater detail per subcategory.

The detail includes information regarding the current condition, an identification of what improvements are needed, and a general statement as to what the Master Plan includes and what (in general) the rough budget numbers at the end of this section cover.

Note, unlike the Facilities Master Plan, the Technology Master Plan only covers a period of five years. As such, the plan takes into account annual renewals and product life spans based on this time frame.

The total costs associated for IT/Network, Telecom, and Security Systems projects identified herein is $34,100,000 for the next five years. The scheduling of these projects will be at District's discretion based on available funding.

Guidelines & Standards

The following Technology Guidelines and Standards are located after the Technology Master Plan:

- Audiovisual Systems Design Guidelines
- Telecommunications Infrastructure Standards
- Network and Wi-Fi Standards

These Guidelines and Standards are applicable to all campuses, supersede any previous Standards, and will remain in effect until they are revised or updated by the District.

NETWORK AND WI-FI

The District has planned, and has made progress with, an upgrade and expansion of the wired and wireless network on each campus throughout the District. Further, the District has also planned an upgrade to each campus' connection to the Internet via CENIC. This Technology Master Plan includes the remaining work needed to complete this initiative.

BENEFITS

These upgrades will result in increased network capacity increased capacity to the internet and increased coverage and reliability for wireless connections.

The student use of mobile devices on campus has and will continue to increase. The wireless network's upgrades will provide greater coverage, capacity and throughput resulting in better user experience with the Wi-Fi's for both faculty and students.

Wired network connectivity has steadily increases as well For example, the instructors are using more digital and video-based content in their classrooms. Network based video requires significant bandwidth. Hence Network based video places growing demands on the previous network limits. The wired network refresh features greater bandwidth and connectivity speeds resulting in faster file transfer faster application communications and allowing more instructors to use the content of their choice without network restraints.

Issues

The campuses have reported numerous issues related to network performance and Wi-Fi service.

Specific examples of reported issues include:

- **Berkeley City College:** reports the Wi-Fi is not sized for capacity or bandwidth, and often fails, the wired network has insufficient connectivity within computer laboratories.
- **College of Alameda:** recently upgraded wired network. But has not planned for next refresh.
- **Laney College:** Wire network has had a limited upgrade. But needs the remaining aged equipment refreshed. No plans have been made for next 5 year refresh cycle.
- **Merritt College:** Wire network is undergoing a complete refresh providing a significant stability improvement. Anticipated completion of the wired refresh is February 2018. The Wi-Fi upgrades are complete on this campus with reports of much improved performance.

Additional reported issues include:

- Insufficient wired network connectivity within computer laboratories
- Inadequate power and cooling within telecom spaces
- More UPS and/or emergency power is needed for network switches due to VoIP dependency
- Students and instructors often need to re-login to the network multiple time per day
- Cable pathways are full, making MAC (moves adds changes) work difficult or impossible; often new pathways must be built

Wired Network and Wireless/Wi-Fi

The District has completed the design and planning for upgrading the network equipment platform and the Wi-Fi (wireless network system) on each campus. Execution of these upgrades has made significant but not complete progress.

Note: The Wi-Fi upgrade is not necessarily dependent upon the network refresh.

For the most part, the network refresh includes the following network hardware:

- Cisco 6809 as the core switch/router
- Cisco 4500 chassis switch at the access layer

The network refresh also requires the following work:

- Install new singlemode fiber optic backbone cabling
- Upgrade or install new UPSs to support the new network hardware

For the most part, Wi-Fi deployment includes the following equipment:

- WLAN controllers
- WAPs / APs (wireless access points)
- Configurations and adjustments

The Wi-Fi deployment also requires the following work:

- Install new CAT6A cabling to each AP

Here's a snapshot of the progress:

- **Berkeley City College:** the network refresh is not started; Wi-Fi upgrade has complete coverage, though improved capacity is needed (Capacity issue is being addressed internally and does not require additional funding).
- **Aviation Facility (College of Alameda):** network refresh is not yet started; the Wi-Fi upgrade is complete.
- **College of Alameda:** the network refresh at College of Alameda complete (the District has deployed redundant core routers and access switches); the Wi-Fi upgrade is complete.
- **Laney College:** the District has completed a network refresh. Wi-Fi upgrade is complete. More work is required to increase coverage and capacity in hallways and common spaces; Wi-Fi enhancement is also required to support the Secure-All Wi-Fi based locks (see "Security Systems" below). Additional planning is required for next refresh.
- **Merritt College:** the District has deployed a 10Gb backbone and network refresh; the Wi-Fi upgrade has been completed in Building S, with the complete refresh to complete in 4 months. Note, this work is already funded.
- **District Office:** the District offices are in dire need of both a network and Wi-Fi refresh.

MASTER PLAN PROJECTS

The Master Plan seeks funding to complete the current network refresh initiative and Wi-Fi upgrades, and the next refresh cycle expected in less than 5 years. These include the following items:

Aviation Facility (College of Alameda):

- A full network upgrade; as-built documentation; integrate network monitoring; spare equipment; remove obsolete equipment.

Berkeley City College:

- Full deployment of a network refresh, including backbone fiber upgrades (to singlemode fiber), network core switches, and network access layer/edge switches.
- Wi-Fi: BCC will need a refresh, and redesign within 5 years.

College of Alameda:

- Anticipate a network and Wi-Fi refresh within four to six years.

Laney College:

- Work to upgrade the Wi-Fi throughout the buildings.
- As-built documentation; integrate network monitoring; spare equipment; remove obsolete equipment.
- Network and Wi-Fi refresh within the span of this Master Plan (within 5 years).

Merritt College:

- Final work to complete the upgrade; as-built documentation; integrate network monitoring; spare equipment; remove obsolete equipment.

District Office:

- A complete wired network refresh and full-coverage Wi-Fi upgrade that includes hardware replacement and optimization, as-built documentation, network monitor integration and removal of obsolete equipment.

CENIC

The District has collaborated with the Corporation of Education Network Initiatives in California ("CENIC", http://cenic.org/) to design and plan a district-wide service upgrade.

CENIC will connect each campus and the District offices that will result in a 10 gigabit wide area network (WAN). The campuses access the Internet via this connection.

Overall, CENIC has been fully embraced throughout the campuses and district office.

Here's a snapshot of the progress:

- Berkeley City College: to be completed within 3 months
- College of Alameda: complete
- Laney College: complete
- Merritt College: will be completed within 3 months
- District Office: to be completed within 3 months
- Outstanding work: finalize as-built documentation and network monitoring integration

MASTER PLAN PROJECTS

The CENIC project is already funded under a California grant – no funding is required.

Network Monitoring

District-wide network monitoring is incomplete and not maintained. There is no automated alerting, no configuration backups, and minimal view to syslog information.

MASTER PLAN PROJECTS

The Master Plan seeks funding to engage Solarwinds to update network monitoring, including the following:

- Integrate all network equipment and critical interfaces into Solarwinds
- Develop maintenance plan
- Develop alerts to notify IT staff
- Align resources where needed

Network Maintenance Contracts

The Cisco network equipment requires a maintenance contract (called "SmartNet"). The cost of this contract is 11% of the equipment's capital cost.
Neither the District's nor the campuses' OpEx (operational expenditure) budgets contain funding to cover ongoing maintenance for wired and wireless network equipment.

MASTER PLAN PROJECTS

As a Master Plan priority, the District seeks funding for network and Wi-Fi equipment maintenance contracts to maintain the network.

NetworkConnect (Blackboard Connect) Maintenance Contract

The District's OpEx budget does not contain funding to cover annual contracts with Network Connect to maintain systems related to Blackboard Connect.

MASTER PLAN PROJECTS

As a Master Plan priority, the District seeks funding to extend a contract with Network Connect for maintenance.

District-Wide Data Storage

The on-campus or District-based data storage is limited.

MASTER PLAN PROJECTS

District master plan calls for migration to Azores (Amazon cloud) within 12 months.

District-Wide Application Deployment

Minimal district standards exist for applications deployment. Essentially all applications are locally deployed.

The District intends to transition to cloud-based applications such as Office365.

MASTER PLAN PROJECTS

The Master Plan includes migration to cloud-based application deployment and maintenance such as Office365. The District will leverage public services for application deployment when applicable.

VOIP (TELEPHONE) SYSTEM

Deployment of the VoIP (voice-over-IP) system is complete. Decommissioning of the legacy PBX is complete.

No additional work or funding is needed for the VoIP system at this time. But additional work will be required for deployment of Informacast and paging. The District anticipates a VoIP hardware refresh within 2 years.

TELECOMMUNICATIONS / NETWORK INFRASTRUCTURE

Telecommunications/network infrastructure is comprised of telecommunications equipment rooms ("IDF" or "TR"), building pathways (such as cable tray, conduits), and cabling (backbone, horizontal/station).

Further, the telecom room infrastructure includes power and cooling services, along with equipment support (such as equipment racks).

Issues

Through interviews with campus representatives, the campuses reported issues related to telecom/network infrastructure.

Specific examples of reported issues include:

- Telecom rooms have inadequate power and cooling
- UPS / emergency power is needed for network to support VoIP
- Cable pathways are full (making MACs difficult or impossible – often requiring new pathways)

Telecommunications Equipment Rooms

No specific upgrades to telecommunications equipment rooms has been identified for this Master Plan. Though other items related to telecom rooms has been identified, under this heading no items are included.

Renovations may require telecommunications room renovations/improvements – this will vary from renovation to renovation. New construction will, or course, include full build outs of telecom rooms.

Power Upgrades

Telephone service / the VoIP system depends on network survivability. For phones to continue operation through power outage, the network switches must have backup power.

Currently, not all network switches are supported by emergency/stand-by power sources or UPS sources. Further, no UPS upgrades are currently planned.

The Master Plan recommends District investigate existing emergency/stand-by power systems and determine if these could be leveraged to support network equipment.

The Master Plan also recommends District investigate the existing conditions of local UPSs for existence (whether or not rooms have UPS), UPS conditions, UPS capacity, and current loading on UPSs.

The goal is to have network switches supported by local UPSs that are on an emergency/stand-by power source to attain at least 1/2 hour survivability. This power service would be required in each telecom room.

Telecommunications Cabling

No specific upgrades to telecommunications cabling has been identified for this Master Plan.

However, a few remarks:

- Backbone fiber optic cabling will be upgraded as needed with the network upgrades.
- Renovations and new construction will, or course, include respective backbone cabling and the telecom cabling within the building / renovated spaces.

SECURITY SYSTEM

Each campus has multiple security systems, such as access control system, video surveillance system, emergency communications system, and mass notification system. Each of these systems perform a particular function and, collectively, facilitate for the campuses and District to enforce security and safety policies and measures. These security systems tie/report back to the Dispatch Center at the District office.

The Dispatch Center monitors the campuses and security systems, and coordinates responses to security and safety instances. The Dispatch Center has direct connections to the Oakland Police Department and Alameda Sheriff's office.

Security System \ Access Control Replacement

The District has approximately 3,000 doors throughout the district that requires access control. Some time ago, the District deployed Lenel access control systems throughout the campuses and district offices (which replaced Johnson Controls systems). Recently, the District decided to replace the existing Lenel access control system with a SecureAll keyless entry system throughout the campuses and district offices.

The District has completed the design and planning to deploy a SecureAll keyless entry system to approximately 800 doors at Laney College. This project will solidify the deployment strategy for the access control replacement at the remaining +/- 2,200 doors throughout the district.

MASTER PLAN PROJECTS

As a Master Plan priority, the District seeks funding for the access control replacement throughout the district, less the doors of the currently funded Laney project.

Video Surveillance Cameras

The District has deployed over 500 cameras. Of these, the coverage is not adequate and cameras are failing.

MASTER PLAN PROJECTS

The District seeks funding for maintenance, repairing, and adding new cameras to improve coverage.

New and renovated buildings must include adequate cameras, and each of these buildings will need to fund the cameras associated with their respective projects.

Cost: approximately $3M to $4M to cover maintenance, repairing, and new cameras over a 2-year period

Video Surveillance Maintenance Contract

The District has contracted Ojo Technology Co. to a 3-year agreement (which expires next year). Under this contract, Ojo maintains the District's video surveillance and recording systems.

Neither the District's nor the campuses' OpEx budgets contain funding to cover ongoing renewal of this maintenance contract. An additional review and assessment is required.

MASTER PLAN PROJECTS

The District seeks funding for the maintenance contract covering video surveillance systems. The FMP, being a 5-year plan, shall include 2 contract renewals.

Video System Maintenance Contract

The District has contracted Ojo Technology Co (renewable annually) to maintain the video recording system.

Neither the District's nor the campuses' OpEx budgets contain funding to cover ongoing maintenance contract for the video recording system.

MASTER PLAN PROJECTS

The District seeks funding for contracts to maintain the video recording systems.

Emergency Call Stations

The campuses report that most of the emergency call stations ("blue phones") are in a non-operational state. This poses a risk to the campus and district overall, and it is unsafe for the students and instructors. The District needs to repair, replace or remove the existing stations.

The District has bid repairing/replacing emergency call stations (ref. Bid No. 16-17/23, covering the 'modified' scope of work). However, the bids came in higher than funding was available. The District revised the scope of work to the replace the existing units at Laney College and Merritt College without the additional features, leaving the other campuses untouched for now.

Also, the District is considering emergency call stations that feature surveillance cameras and 'big voice' type mass notification loudspeakers.

MASTER PLAN PROJECTS

The District seeks funding for the full scope on existing units and additional units, that will cover all campuses.

Blackboard Connect

The District subscribes to Blackboard Connect for mass notification services, which includes the following means: land line, mobile line, text, email.

Currently, the District pays $37,500 in annual subscription fees.

MASTER PLAN PROJECTS

The District seeks funding to upgrade the infrastructure of this system and for annual service fees.

WEBS via Phone App

Wide-Area Emergency Broadcast System (WEBS)
The District is considering a technology that is essentially a phone app where someone can 'press a button' that calls to PCCD Dispatch Center. The app, being on the phone, gives location information via the phone's GPS feature – this goes towards abduction events.

Note: The District has studied cellular services on the campuses; most of the coverages are good but found that Merritt had problems. These coverage problems will be addressed in collaboration with the wireless carriers. Also, the District is considering integrating the emergency call system with Blackboard Connect mass notification system.

MASTER PLAN PROJECTS
The District is seeking funding to cover development of this system and, if going forward, the deployment of this system.

Premises Radio System
The District operates a two-way radio system with coverage at BCC, CoA, Aviation, Laney, and Merritt. District-wide, the system is comprised of ~150 radios with repeaters (generally) on roofs. The radios have direct communications with the Sheriff's Office.

Campus Safety Aids, many of which are students, carry radios. These aids perform various safety functions (for example, escort female students at night to cars). The radio systems are becoming unreliable and are failing.

MASTER PLAN PROJECTS
The District seeks funding to replace these radios, mobile units and campus repeaters.

Duress Button System
The District requires a functional duress buttons system (the current duress buttons are unreliable and many are non-functional).

Also, the District desires to add intrusion detection in the District offices and campuses.

MASTER PLAN PROJECTS
The District seeks funding to develop plans for these systems and for the deployment (replacement and expansion) of these systems.

Professional Development
The District puts various staff through Professional Development training (physical defense, use of equipment, crowd control, traffic control, Sheriff's office, etc.). The District's OpEx budget does not include professional development/training costs.

Current costs are ~$15,000 per staff or aid. The District anticipates training for ~50 staff during the duration of this FMP.

ROUGH ORDER OF MAGNITUTE COSTS

The table below lists the rough-order-of-magnitude (ROM) costs for the projects and initiatives described previously.

The titles are the same to improve relating a cost with a description.

ITEM	BUDGET
Network and Wi-Fi Refreshes	**$10,100,000**
Berkeley City College	$1.4 - $2M
College of Alameda	$1.2 - $1.8M
Laney College	$1.3 - $2.4M
Merritt College	$2.5M
District Office	$1.4M
Firewalls	**$300,000**
Network Monitoring	**$300,000**
Maintenance Contracts	**$2,350,000**
Cisco Maintenance Contract	$435k / yr
NetworkConnect	$35k / yr
Cloud Data Storage $500K/year	**$1,000,000**
Cloud Application Deployment - $500K/year	**$1,000,000**
Power Upgrades	**$1,100,000**
Power Study	$100k
Power and UPS Upgrades	$1M
Security Access Control Replacement	**$5,060,000**
Cost Per Door	$2,300

ITEM	BUDGET
Video Surveillance Cameras	**$500,000**
Video Surveillance Maint. Contract	**$1,200,000**
Cost Per 3-Year Renewal	$600k
Emergency Call Stations	**$4.000,000**
Blackboard Connect	**$890,000**
Subscription Fees	$190k
System/Infrastructure Upgrades	$700k
Premises Radio System	**$1,000,000**
Duress Buttons and Intrusion Detection	**$2,500,000**
Professional Development/Training	**$2,000,000**
IR Sensors	**$800,000**
Per Classroom	$2k

The total ROM Costs for IT/Network, Telecom, and Security systems during the 5-year duration of this Master Plan is $34,100,000.

Audiovisual Systems Design Guidelines

Technology in the Classrooms

Peralta Community College District

Oakland, CA 94612

TABLE OF CONTENTS

1. Introduction

The Audiovisual Systems Design Guidelines document is intended to assist the PCCD technology teams and faculty in understanding the scope and nature of the technology systems and supporting environments for the Peralta Community College District. These standards range from the high-level functional aspects of the various types of rooms found in the PCCD Colleges to the technical aspects of each type of room.

The layout and format has been designed with four separate but related teams in mind. These teams include the following:

- Management personnel that will own and operate the facility or deployment
- Non-technical readers interested in the overall functionality of the systems along with the OAC team
- PCCD IT technical personnel that will oversee and coordinate the deployments
- Technology Contractors that will execute the actual installation of the systems

NOTE: Examples of typical rooms and equipment layouts are presented for illustration purposes and are based on the existing PCCD standards, coordination meetings with the design teams of the Peralta Community College District IT, and industry best practices for projects of similar scope and size. Each individual College will have variances and unique room layouts specific to their needs. Functionality, however, is expected to remain consistent throughout.

1.1 How to Read this Document

A suggested approach to read this document is for managers and non-technical readers to review sections 1 through 7 of the standards. These sections contain general information and a summary of the systems and technologies included in the document.

Peralta Community College District technical personnel and technology contractors will benefit from reviewing sections 8 through 10. These are the room data sheets and technology appendices for an in-depth description of the technical aspects of the standards.

The room data sheets section is designed to be easily separated from the standards document in order to be used as a field

reference in abridged format. This section is anticipated to receive periodic updates as technology evolves and newer, better systems become available.

The sections have been color-coded with the key as shown above to assist the readers in quickly identifying the sections of interest.

1.2 Design Objectives

The overarching design objectives for the Peralta Community College District builds should include the following:

Reliability – Operation with minimum start-up times, maintenance free, and consistent availability upon command.

Quality – Reproducing high-quality graphics, accurate in detail, resolution, and color. The program and speech audio must be clear, intelligible, and of appropriate volume in all spaces. Rooms with amplified audio support must receive adequate acoustic consideration.

Operation – Simple to operate, consistent in control and user interface, and intuitive in nature. Remote management capabilities must be included in the design to simplify any periodic maintenance, adjustment, and to provide helpdesk support when required.

Global Management – Accessibility and control in a centralized but flexible approach. Global control, management, and reporting should be available, leveraging the converged IP network from anywhere in the PCCD enterprise. The goal is to centralize the management of systems from dedicated workstations with access to all systems. The location of the workstation, however, should be ubiquitous for flexibility.

Expandability – Designed with future capabilities and expandability in mind while taking into consideration present and foreseeable needs, infrastructure requirements, and technology trends in the audiovisual industry.

Consolidation – Designed with a consolidated architecture approach wherever practical; equipment that is shared or does not need to be accessed by the users must be co-located in centralized rooms (telecommunications rooms, IDFs or storage closets) in order to minimize equipment space utilization. This in effect leverages the converged IP network.

1.3 Functional Standards

At a minimum, all spaces will support the following:

Connectivity (Audio and Video) - Content to be presentable within the rooms from laptops, tablets, and other user-provided devices.

Internal (LAN) Network Sharing – Content to be presentable between other technology-enabled spaces via the IP network.

External (Distance) Network Sharing - Via software-based synchronous communication tools.

Whiteboard Collaboration - With one or more walls finished using a dry-erase coating to maximize space utilization. Coating should be properly and professionally applied to maximize results. A protective strip or chair rail wall-guard should be installed on the treated surfaces to prevent chair marks or scuffing.

In-Room AV Systems Control - Control and management of the audiovisual technology via a lectern or wall-mounted control keypad, also accessible via a tablet or similar portable technology device.

IT AV Systems Control - Global management of audiovisual systems with a centralized control approach.

Future Expansion and Upgrade - Infrastructure and cable conveyance systems must support upgrades and technology refresh cycles without considerable reconstruction.

2. Core Systems - Conceptual Descriptions

2.1 Presentation, Collaboration, and Teaching Systems

A. The Concept

Presentation, collaboration, and teaching systems enable users to communicate with audiences of various sizes, to share and generate ideas, knowledge, information, and collaboration materials in a variety of formats. A successful presentation and collaboration space must support the use of multiple types of media, including legacy audiovisual materials, and the latest digital resources. Support for hand written expression must also be provided in the form of whiteboards of various sizes and styles.

In addition, the presentation and collaboration spaces must support multiple types of hardware, being flexible in configuration, form, and function. They must support presentation and collaboration activities ranging from small, simultaneous sessions, to larger collaboration functions for work groups that require extended capacity and connectivity for multiple displays, sound systems, and multi-space dissemination of information.

Audible and visual information may be presented through the use of displays, projection systems, sound systems, localized media players, and user-provided personal technology devices. To support this, a robust infrastructure is required. It must be capable of transporting signals in a flexible and reliable manner, leveraging the converged network as a form of transport.

B. Dedicated Equipment

Teaching functions are supported with equipment dedicated to the room, including video, audio, and control systems. The intent is to require minimal equipment of the presenters' own provisioning to successfully use the facility. Dedicated spaces may be combined physically or electronically by deploying a partition wall or by distributing the audio and video signal to multiple spaces for overflow.

Although these systems are relatively independent for each dedicated space, a centralized management approach must be deployed in order to efficiently and effectively manage and support the operations of the facility while addressing the different needs of the users.

C. Representative Form

Illustrated below are presentation, collaboration, and teaching spaces that emphasize the utilization of video displays for visual information sharing between local and remote collaborators.

Example of Classrooms with Dedicated Technology and Flexible Environments supporting collaboration

3. Core Technologies – Functional Descriptions

3.1 Audiovisual Systems and Capabilities

This section identifies the specific scope of audiovisual features and systems to be installed within the classrooms, and conveys how audiovisual systems and infrastructure will be integrated within the areas identified. Audiovisual systems should optimize the display potential for local sources including but not limited to computers and media players. Audio capabilities of the room should also be optimized, leveraging the digital audio processing systems and the acoustic properties of the room.

The terminologies and systems used in this report to describe the range of audiovisual capabilities in scope are listed below. The intent is to define a common denominator for the users of this document to have a common understanding of the systems referred to when discussing and planning a deployment.

A. Speech Reinforcement

Speech reinforcement systems should utilize microphones, amplifiers, signal processors, and loudspeakers to enhance the voice of the presenter to ensure that all participants can adequately hear the material.

Considerations should be made when using wired microphones on tables or lecterns to utilize shock and vibration isolation mounts.

In divisible room applications, audio processing systems should provide for automated configuration and speaker zoning capabilities.

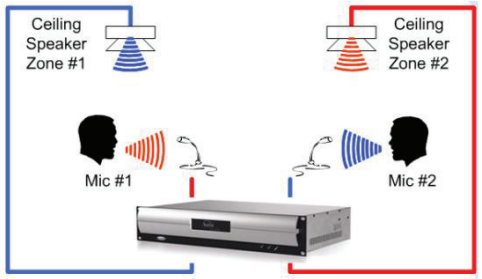
Speech reinforcement loudspeakers should be ceiling-mounted and zoned appropriately for the application. Loudspeakers should be distributed to provide even coverage throughout the space.

Example of Typical Speech Reinforcement Components

B. Voice Lift

Voice lift systems should utilize microphones, amplifiers, signal processors, and loudspeakers to enhance the voice of the presenter and participants to ensure that all in the room can adequately hear the material. This includes the assisted listening system if it exists in the space where voice lift is deployed.

A voice lift system should leverage the capabilities of the audio digital sound processor (DSP), providing amplification only when and where needed as well as with the appropriate level of amplification.



Voice Lift Principle Diagram

C. Program Audio Reinforcement

Program audio reinforcement systems should utilize playback devices, amplifiers, signal processors, and loudspeakers to enhance the audio from the playback source to ensure that all participants can adequately hear and understand the material.

In divisible room applications, audio processing systems should provide for automated configuration and speaker zoning capabilities.

D. Assistive Listening

An assisted listening system consists of audio processing devices and transducers, providing transmission of both speech and program audio to participants using a headset receiver. The systems should be provided in accordance with The Americans with Disabilities Act (ADA) guidelines.

Refer to the publication by Listen Technologies “A Guide to Assistive Listening: Understanding Legislative Compliance”, found in the Appendix.

Dedicated Assistive Listening System

E. Video Display

Video display systems, consisting of source devices, matrix switchers, signal processors, distribution devices, and display equipment, should ensure that all participants can adequately view presented material on display devices appropriately sized for the space they support.

Systems should be designed utilizing a digital infrastructure with support for analog devices and support various aspect ratios and resolutions.

Display equipment should be calculated so that the height of the screen is equal to a minimum of one-fifth to one-sixth the distance of the furthest viewer. Displays should be placed at a minimum of 48 inches above finished floor. Motorized projection screens should be utilized where projectors are used.

F. Digital Annotation System

The digital annotation system should allow real time annotation over any still or motion content being viewed on the video display system. The system should allow for electronic mark-ups from annotation tablets, typically integrated with the presenting computer or as a stand-alone system on the lectern or teaching station. The digital annotation system should have recording capabilities for archival and post-distriburion.

G. Control System

A control system consisting of user interface devices, processors, and software should be provided for the management, monitoring, and operation of local and remote equipment and systems. Control systems should be dedicated to the room, but centrally managed via a remote access procedure.

H. Campus-wide Distribution

Campus-wide distribution systems enable the transport of content between audiovisual-enabled spaces. The transport of signals should be digital and utilize the telecommunications backbone of the building. The system should utilize a digital broadband or baseband transport system as required by the type of desired distribution.

I. Digital Signage

The digital signage systems consists of video displays and signal transport systems capable of accepting and displaying information from local or remotely generated sources, such as overflow content, video players, streaming servers, databases, and scheduling systems. Digital signs may be used for way-finding, schedule information, visual messaging, and conveyance of other visual information as required by PCCD.

J. MDF/IDF Equipment Cabinets

Equipment cabinets should be provided in the MDF and IDF rooms to accommodate for the audiovisual systems in the various spaces of the facility. Equipment cabinets should match both the manufacturer and series of the Telecommunications racks and cabinets in order to ensure proper integration between the two systems. The quantity and size of equipment cabinets should accommodate for all initial and future elements of the audiovisual and technology systems. Equipment located in these cabinets will provide background support for the audiovisual systems; they will only be accessed by service personnel. This will allow for a more efficient power distribution, cooling, monitoring, and maintenance for audiovisual system.

K. Distance from MDF/IDF to AV Equipped Rooms

Audiovisual systems should follow the same distance limitation standards prescribed for telecommunication systems given the adoption of converged IP networks for audiovisual use. Each cable run must be kept to a maximum of 295 feet (90 meters),

so that with patch cords, the entire channel is no more than 328 feet (100 meters).

L. Cable Pathways

Whenever possible, the audiovisual cabling should utilize the telecommunications pathway infrastructure. When routing signal-specific cables, best practices should be observed to avoid signal cross-contamination.

M. Power for audiovisual system equipment

Energy-efficient equipment should be utilized. Power to the audiovisual systems' components should be provided by dedicated circuits. These circuits can be shared amongst different equipment in the audiovisual system, but should not supply power to any other systems' equipment, such as lighting or service outlets.

Where system components require a proper shutdown procedure, or where power fluctuation could damage equipment, an uninterruptable power supply (UPS) should be utilized.

N. Architectural Integration

Basic architectural integration issues and design criteria are described schematically. Resolution of specific issues will occur during the design stage of work on the project. It should be noted that, while the information provided in this report identifies areas where audiovisual capabilities may be developed, it is not intended to imply that any specific systems or particular level of capabilities will be installed in those areas on day 1. The information provided here is intended to identify only the extent to which the architectural designs and building infrastructure are being developed to support audiovisual capabilities at whatever time PCCD chooses to implement them.

4. Workspace Types and Variants

4.1 New Spaces

The following types of workspaces have been identified as the core areas that will receive audiovisual technology considerations. These spaces are considered new rooms and are deployed in new construction projects.

Support of various functions and technologies must be provided through a universal infrastructure approach that must enable modular deployment of functionality as needed.

The functionality anticipated in these spaces is didactic in nature, focusing on the ability to present, inform, and collaborate with local and remote users.

The spaces have been categorized by type and sub-categorized by functionality. The table below presents a summary of capabilities per room.

The rooms include the following:

- Small Classrooms
- Medium Classrooms
- Large Classrooms
- Breakout / Huddle / Overflow
- Auditoriums / Lecture Halls
- All-Hands Spaces
- Conference and Meeting Spaces
- Athletic Facility

4.2 Existing Spaces

Consideration must be given to existing spaces that may have legacy technology and will undergo a technology refresh cycle to bring them up to current standards.

In cases where systems are operational, either partially or to a full extent, the upgrade path consists of a remediation effort designed to bring them to satisfactory operation in the short term.

There are three possible operational solutions based on the room's anticipated life cycle and the needs of the user groups. These consist of short and long term execution cycles as described below.

A. Short Term Solution

Engage an audiovisual integrator to repair the current systems utilizing the current equipment and infrastructure as much as possible.

Replace only the necessary devices to enable the systems to work in a satisfactory manner consistent with the requirements of the PCCD user groups.

Anticipated implementation should be two to six weeks.

Recommended tasks include, but are not limited to, the following:

1) Troubleshoot and repair computer video and audio connections at the teaching station.
2) Adjust video screens and projector to properly align.
3) Revise program in the control system so that the control panel functions are consistent with those in the room. Simplify the design wherever possible.
4) Provide PCCD with a training strategy for the proper use of the systems. Implement a remote access procedure for helpdesk via a dedicated channel or integrating into the centralized management system model.
5) Integrator to provide PCCD with a service strategy to maintain the AV systems and repair when necessary. The strategy should include a loaner program to ensure that the rooms continues to operate when a device fails.

B. Long Term Solution A – Technology Refresh

Implement a design of AV systems that will include new equipment consistent with current technology and best industry practices, with the overarching goal to utilize the infrastructure in place and as much as possible with existing equipment without compromising the functionality in the space.

Anticipated deployment cycle – six to eight months

Recommended tasks include (but are not limited to) the following:

1) Upgrade switching solution to an HDBaseT solution. Provide automatic switching at the teaching station inputs.
2) Program control systems with a simplified graphical user interface with added macros for systems automation and enhanced features.
3) Install ceiling-mounted microphone arrays.
4) Repair all audio functions and calibrate audio systems to optimize for audio and video sessions.
5) Integrator to provide PCCD with a training strategy for the proper use of the systems. Implement a remote access procedure for helpdesk.
6) Integrator to provide PCCD with a service strategy to maintain the AV systems and repair when necessary. The strategy should include a loaner program to ensure that the rooms continues to operate when a device fails.

C. Long Term Solution B – Systems Full Redesign, PCCD Design Guidelines and Standards Implementation

This solution is similar to Solution A; however, it proposes a full redesign of AV systems that will include new equipment consistent with the PCCD AV Design Standards.

Anticipated deployment cycle – eight to ten months

5. Space Descriptions and Features

The AV systems are intended to provide support for the various functions to be carried out in the daily operations of the Colleges within PCCD. The following table, descriptions, and diagrams illustrate the fundamental requirements for each type of space:

Room Type	Single Display	Multiple Display	Projector and Screen	Laptop / BYOD Presentation	Local Dedicated Computer Presentation	Video Capture / Recording	Distance Education	Overflow to Adjacency or Huddle Space	Voice Amplification / Audience Participation	Assisted Listening	Control Touch Panel / Keypad	Room Scheduler / Roster	Local AV Furniture / Lectern / Teaching Station	Annotation Board	Wireless Microphones	Beamforming Microphone	Broadcasting Connectivity
Small Classrooms	x			x		x	x			x	x	x	x	x			
Medium Classrooms		x	x	x		x	x			x	x	x	x	x			
Large Classrooms		x	x	x		x	x	x	x	x	x	x	x	x	x		
Breakout/Huddle/Overflow	x			x		x				x	x						
Auditoriums/Lecture Halls			x	x		x	x		x	x	x	x	x	x	x		
All-Hands Spaces		x		x		x	x		x	x	x		x	x	x		
Conference / Meeting	x			x	x	x				x	x	x	x			x	
Athletic Facility		x	x	x	x	x	x	x	x	x	x			x	x	x	x

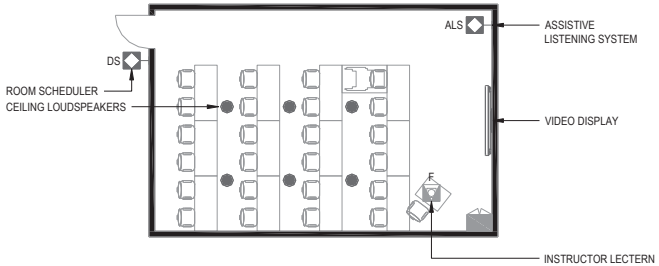
Summary of Capabilities per Room Type

X Denotes item under consideration

5.1 Small Classrooms

The small classrooms are simple teaching spaces with front teaching configuration.

- Learning functions for up to 24 people, supporting laptops and BYOD wireless connectivity.
- Video support with single display.
- Audio supported via ceiling-mounted speakers.
- Technology connectivity at the instructor's table - Document camera, end-user device, control dashboard.

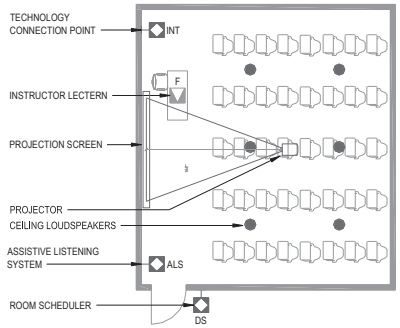


5.2 Medium Classrooms

The medium classrooms are intended to be flexible spaces with variations in configuration as follows:

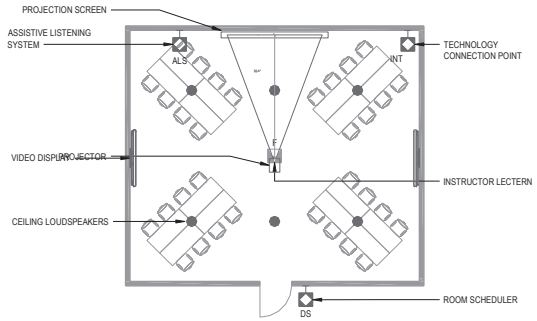
A. Tablet Configuration

- Learning functions for up to 40 people, supporting laptops and BYOD wireless connectivity.
- Video support with projection system.
- Audio supported via ceiling-mounted speakers.
- Technology connectivity at the instructor's table - Document camera, laptop, annotation board, control dashboard.



B. TEAL Configuration

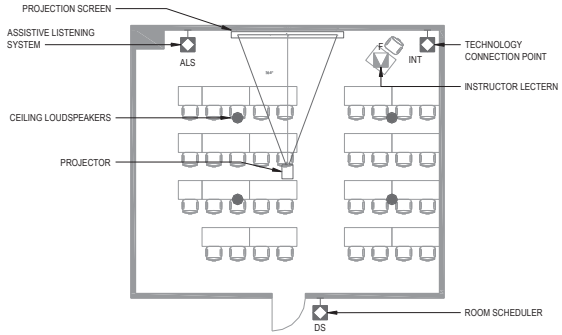
- Collaboration and teaching functions for up to 40 people, supporting laptops and BYOD wireless connectivity.
- Video support with both displays and projection system.
- Audio supported via ceiling-mounted speakers.
- Technology connectivity at a local equipment station - Document camera, laptop, annotation board, control dashboard.



Example of Teal Style Classroom

C. Lecture Configuration

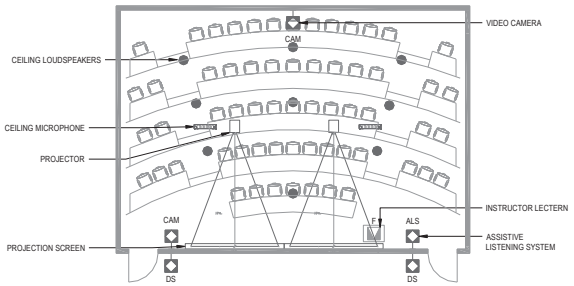
- Teaching functions for up to 40 people, supporting laptops and BYOD wireless connectivity.
- Video support with system.
- Audio supported via ceiling-mounted speakers.
- Technology connectivity at the instructor's table - Document camera, laptop, annotation board, control dashboard.



D. Tiered Configuration

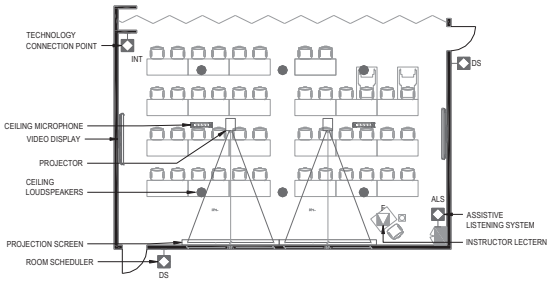
- Teaching and lecture-style functions for up to 60 people, supporting laptops and BYOD wireless connectivity.
- Video support with large projection system.

- Audio supported via ceiling-mounted speakers.
- Audience participation with ceiling microphones.
- Technology connectivity at the instructor's table - Document camera, laptop, annotation board, control dashboard.



E. Divisible Configuration

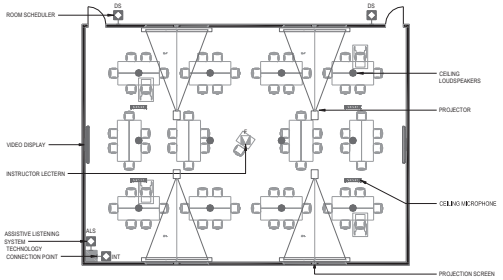
- Collaboration and teaching functions for up to 48 people, supporting laptops and BYOD wireless connectivity.
- Video support with both displays and projection system.
- Audio supported via ceiling-mounted speakers.
- Audience participation with ceiling microphones.
- Technology connectivity at the instructor's table - Document camera, laptop, annotation board, control dashboard.



5.3 Large Classrooms

The large classrooms are flexible, configurable spaces intended to support various teaching modalities, including TEAL and all-hands activities

- Collaboration and teaching functions for up to 70 people, supporting laptops and BYOD wireless connectivity.
- Video support with both displays and projection system.
- Audio supported via ceiling-mounted speakers.
- Audience participation with ceiling microphones.
- Technology connectivity at the instructor's table - Document camera, laptop, annotation board, control dashboard.



5.4 Breakout/Huddle/Overflow

The breakout/huddle/overflow spaces are intended to provide support for audiovisual presentation and collaboration activities requiring up to five users to interact. These are typically connected to and adjacent larger room.

Display of laptops and Bring Your Own Devices (BYODs) should be accomplished via direct connection to the display.

- Video support with wall-mounted display with built-in speakers.
- Display of multiple images from the users, including laptops and portable devices, using wired and wireless technology.

Example of Huddle Room

5.5 Auditoriums/Lecture Halls

The auditoriums/lecture Halls will support audiovisual presentations, lectures, all-hands meetings, special events and collaboration activities requiring up to 160 users to interact.

Technology capabilities in these rooms accommodate for flexible configurations, wired and wireless microphones, session capture, and dedicated assisted listening systems as required by the ADA.

Display of computer materials, video program, laptops and BYODs should be accomplished via scaled switched connection to the display. The connection may be accomplished via floor boxes (poke-thru) to the equipment location.

The systems should be designed for running simple operations and presentations not requiring assistance for the IT department.

Connectivity to the media via a press plate is available for special events, supporting industry standard signals and transport mechanisms.

- Audio support via ceiling-mounted loudspeakers, ceiling-mounted microphones for voice pick-up, dedicated DSP and amplification, wired and wireless microphones for lectern, presenters, and audience.
- Video is supported with projectors and projection systems
- Display of multiple images from the presenter, and connectivity for audience or users including laptops and portable devices, using wired and wireless technology.

- Self-contained capture system to record sessions utilizing the video cameras and audio mix-down channels available for the VC system.
- Remote collaboration supported via dedicated computer with built-in software clients and utilizes a connection to dedicated USB cameras mounted at the front and back of the room, ceiling-mounted. USB camera signals also available at the lectern for connectivity for presenter laptop.
- Audio conferencing will be supported utilizing the room dedicated audio system.

Control system:

- Wall-mounted keypads, self-contained and integrated with the global control management system.
- Lectern control panel, wired.
- Capable of control via a wireless device.

Rendering of Lecture Room

5.6 All-Hands Spaces

All-hands spaces are similar in form and function to the large classroom style, flexible and configurable with support for presentation and collaboration activities.

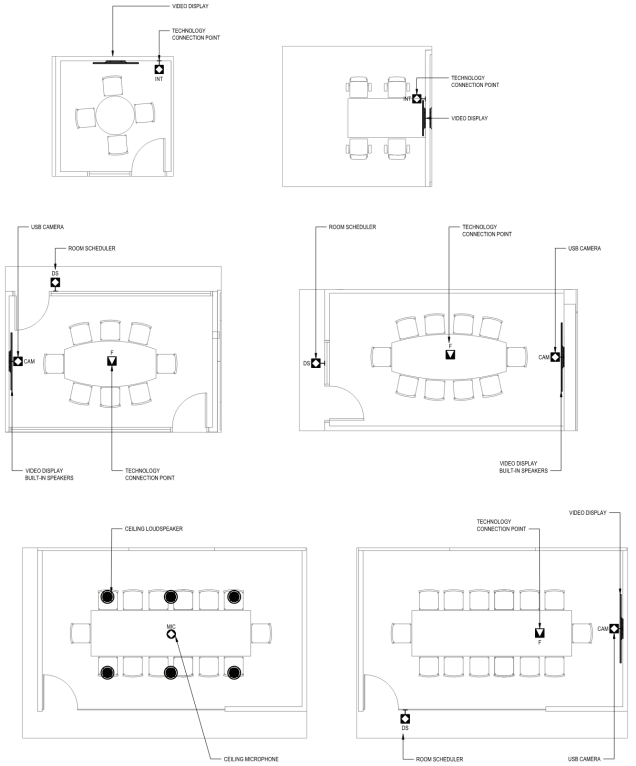
MIT's Teal Configuration / All-Hands Space

5.7 Conference and Meeting Spaces

The Conference and Meeting Spaces in the Admin area will support audiovisual presentations and audiovisual collaboration activities requiring up to eight users to interact. These are typically dedicated rooms for departments or business units that require a higher quality conferencing system.

Display of laptops and BYODs should be accomplished via scaled switched connection to the display and/or wireless technology. The connection may be accomplished via floor box (poke-thru) to the equipment location.

The equipment may be located within the room in a credenza or in the nearest IDF if the deployment is centralized.



Conference and Meeting Rooms, Typical Layout

- Audio support is supported with ceiling-mounted loudspeakers and microphones.
- Wall-mounted display for presentations of multiple images from the users, including laptops, collaboration, and portable devices, using wired and wireless technology.
- Direct local collaboration with laptops and BYODs. Remote collaboration should be supported via dedicated computer with pre-installed software and utilize a

connection to a dedicated camera mounted at the front of the room, above the display.

- Audio conferencing is supported utilizing the room's dedicated audio system.
- Wall-mounted keypad, self-contained and integrated with the global control management system.
- Capable of control via a wireless end-user device.

5.8 Athletic Facility

The athletic facility serves as a flexible venue that utilizes various elements of display technologies along with teaching tools to assist the coaches and instructors address the needs of the students engaged in athletic activities.

In general, the athletic facilities should provide support for:

- Large scale video presentations for groups, annotation boards, audio amplification, video recording capabilities, wired and wireless presentation capabilities.
- Digital signage and scoreboards. These can be used for local and sponsor advertising with the intent to generate a revenue stream for the college district.

Design specific to the athletic facilities will be addressed as needed in the design phase of the campus or college.

6. Additional Considerations

Additional elements to support the audiovisual technologies that should be taken into consideration in the planning and execution include:

6.1 Infrastructure Design (Consolidation)

The technical rooms are intended to be technology-consolidation spaces where the audiovisual equipment is co-located with other equipment that services the facility, such as the telecommunications, network, and VoIP systems. The design team should explore the possibilities and opportunities to consolidate spaces for equipment as much as possible. This will result in efficient space utilization and provide a centralized point of service and management.

6.2 Network Design (Global Management)

In order to support the various deployments anticipated for Peralta Community College District, an enterprise solution is required in order to remotely manage the audiovisual systems.

Although centralized in nature, the enterprise solution must be flexible to provide ubiquitous support from a single platform to monitor and manage AV equipment and the environment of the rooms in which the equipment operates. In addition, the enterprise solution must be capable of providing support to the users (helpdesk) and assist the Peralta Community College District IT personnel in managing the devices that utilize the converged IP network to communicate.

The support solution must, at a minimum:

- Enable IT managers to centrally monitor, manage, and schedule AV presentations, distance learning, and session capture resources.
- Track device and room usage to schedule routine maintenance, provide real-time remote technical support, and receive instant alert notifications via email or other standard tracking means for the Peralta Community College District.
- Monitor room occupancy to automatically turn AV devices on/off throughout the day, saving energy, and preserving the life of the equipment.

- Take control of AV devices to provide technical support in all rooms throughout the Peralta Community College District enterprise with the goal to eliminate downtime.
- Provide analytics reports to track room, facility, and equipment utilization to assist in the deployment decision-making process.
- Utilize a web-based user interface, customizable to portrait the rooms and spaces specific to the Peralta Community College District deployments.

In order to achieve this requirement, Peralta Community College District will standardize in the utilization of specific control products in combination with other enabled products that make use of the PCCD network infrastructure. The rollout plan will be implemented through the new deployments and retrofitted in the legacy systems as the technology refresh cycle progresses into the spaces.

6.3 Architectural / Structural Coordination

Coordinate location of ceiling mounted projectors, screens, loudspeakers, etc. with other building systems (e.g., fire sprinklers, light fixtures, HVAC), structure, and architectural features of ceilings.

Blocking should be provided at all locations where AV equipment is mounted at wall brackets (e.g., cameras, monitors, loudspeakers).

Floor standing audiovisual equipment racks should be equipped with casters to allow the racks to be pulled away from the wall for rear equipment service access. Any seismic bracing required should be removable to facilitate movement of the racks for service.

Recessed projection screens installed in the ceiling will require structural support. Depending on the specific screen used and applicable building codes, it may be necessary to build a fire-rated enclosure around the screen assembly.

A. Accessibility

Facilities with electronically reinforced sound systems will require assistive listening systems for the hearing impaired, per the ADA.

Coordinate placement of assistive listening transmitters where they occur to ensure uninterrupted coverage of audience areas.

B. Architectural Finishes

In spaces using video cameras (e.g., classrooms or conference rooms), color, pattern, and other characteristics of architectural finishes within camera view will critically impact camera performance and image quality.

On walls within the field of view of installed video cameras, avoid use of finishes with intensely saturated colors, detailed patterns and heavy textures, which can cause unwanted anomalies in video camera images.

Dark table surfaces should be avoided in videoconferencing and distance collaboration facilities. Light colored table surfaces will help reflect light up onto faces and improve lighting quality for camera imaging.

C. Acoustics

Acoustic conditions in AV areas will critically impact the performance and effectiveness of the audiovisual systems. Therefore, careful consideration must be given to such issues as wall construction, finish treatments, background noise levels (e.g., HVAC), and other factors that will affect the acoustic character and noise levels of the AV facilities.

Detailed acoustic requirements for audiovisual areas of the project should be as specified by the project's Acoustic Consultant. Audiovisual Consultant will review acoustic designs and recommendations related to audiovisual areas to confirm compatibility with the audiovisual systems designs.

6.4 Electrical Coordination

A. Power Service and Grounding

Line voltage (i.e., 110/208/277 VAC) power service specified by the AV Consultant to support audiovisual equipment and related activities should be identified as Technical Power.

All construction documentation, including plans and specifications describing electrical power service associated with the project's audiovisual program, should be engineered and documented by the project's Electrical Engineer. Documentation provided by the Audiovisual Consultant should be for reference only.

B. Low Voltage Signal Distribution

All low voltage cabling for AV systems will be routed through conduit, wireways, or other dedicated containment.

The project electrical contractor will be expected to install the conduit required for all AV cabling.

Pull strings are to be installed in the AV conduit by the electrical contractor to facilitate later installation of the low voltage cable by the AV contractor.

All conduits specified to support the audiovisual systems should be EMT type. Flexible metal conduit may be used in runs of less than ten feet (10'), or where approved by the AV Consultant.

The depth of AV connection boxes and conduit diameters may require non-standard wall depths in some locations. Such conditions are identified in construction documents specific to each project.

Flush floor power distribution outlets and signal connection boxes will be required at locations where connections cannot reasonably be made at wall outlets.

Flush floor electrical boxes will be required at designated locations for audiovisual signal and power connections. The size and density of cabling and connections will preclude the use of standard "poke-thru" type fittings. Recommended specifications for flush floor electrical boxes will be provided in the audiovisual drawings.

Where oversized flush floor electrical connections are specified for AV applications, consideration must also be given to the structural and other building design implications.

C. Low Voltage Remote Control Interfacing

Line voltage powered devices, such as projection screens, motorized window coverings, and lighting control systems that are to be operated by low voltage AV control systems, will require interface electronics between line voltage power and low voltage switching. Such interface electronics are referred to in this document as Low Voltage Interfaces (LVI).

Where low voltage remote control interfaces are required per the Architect's and Audiovisual Consultant's recommendations, such electronics should be specified and documented for construction by the project's Electrical Engineer.

Wherever available, Low Voltage Interfaces should be provided by the manufacturer of the line voltage device being controlled (e.g., projection screen interface by projection screen manufacturer).

Where the manufacturer of a line voltage powered device does not offer a low voltage control interface, a third party interface or standard relay product may be used.

Wherever available, serial digital control interfaces operating on industry standard communications protocols should be utilized.

6.5 Lighting Considerations

A. Lighting for Video Cameras

Supplemental lighting is desired where video camera systems are installed for use in applications, such as distance learning and collaboration, and video capturing.

Where video camera systems are used in association with projected image displays, special precautions to control lighting must be taken. This is observed in video conferencing and distance learning and collaboration spaces.

Lamp color temperature for video camera lighting should be in the range of 3000 - 3400 degrees Kelvin. All lamps used for video camera lighting within a given room should be of the same color temperature specification.

Illumination levels for video camera lighting should provide a minimum of 70 foot-candles of illumination at the vertical facial plane of the subject(s).

In specialized capture or video-enabled rooms, provide illumination of background surfaces located behind camera subject(s) to enhance the separation of the subject(s) from the background in the camera's view.

Example of Built-in Lighting in a Training Environment

Special caution must be taken in distance education and collaboration facilities to avoid conflicts between image displays and camera subject illumination. This issue is particularly difficult in distance collaboration where instructors like to move around the classroom while they lecture, often taking them in proximity to a projected image display.

B. Lighting for Projection

Where visual image display systems (e.g., monitors, projection screens) are utilized, it is imperative that careful consideration be given to the design of room lighting and its impact on the image displays.

Lights in AV rooms should be circuited to allow fixtures adjacent to projection screens to be turned off during projection.

Indirect architectural lighting should be avoided in rooms with large screen image projection since increased ambient light levels on projection screens will decrease the intensity of projected images.

Light fixtures should provide maximum directivity of illumination and minimal surface brightness to reduce the opportunity for glare and distribution of stray light onto image display screens.

Examples of ACT Grid Lighting for VC

C. Lighting of Presenters

Where it is appropriate to provide spotlighting of presenters in AV areas, provide narrow beam lamps in adjustable fixtures.

Lighting fixtures providing spotlighting of presenters in AV facilities should be dimmable.

Spotlighting of presenters should provide illumination from three lighting positions, or minimum of two positions, to minimize shadows on the presenter. This is particularly critical where video cameras are being used.

D. Task Lighting

In instructional areas and meeting rooms, direct task lighting should be designed to provide appropriate levels of illumination at the work surface with minimal diffusion onto adjacent surfaces. This prevents deterioration of image display quality and is particularly critical in facilities utilizing front projection display systems.

It is recommended that source fixtures providing task lighting at lecterns and instructor stations be positioned on the furniture to minimize reflection onto presentation images.

E. Daylight Control

Where window glazing allows exterior daylight or lighting from adjacent interior spaces into an AV space, blackout or shaded window coverings should be provided.

Standard window blinds and sun shading devices are typically insufficient for controlling daylight intrusion in visual display environments. In facilities with direct sun exposure or where the highest degree of presentation quality is required, edge and bottom channels are recommended on blackout window coverings to prevent light leakage at shade perimeters.

Where a large number of individual blackout window coverings are provided and presentation environments (e.g., lecture halls, auditoria), it is recommended that the window coverings be motorized with remote control capability tied to the AV system controls.

F. Lighting Controls

Where lighting is controllable through the AV control system, redundant wall-mounted controls should also be provided per Architect's specification, typically near the instructor's station and at the entrance of the room for practical purposes.

Where designated, provide a Low Voltage Interface for remote switching of lights from the AV system in designated AV facilities.

Lighting control equipment and all associated installation, setup, and programming should be provided by the electrical contractor, not the AV contractor, per electrical engineer's specifications.

6.6 Furniture and Millwork

A. Lecterns and Teaching Stations

Formal presentation facilities frequently provide lecterns or presenter stations at the front of the room. Electrical connections may be required to support integrated or portable audiovisual devices and other presentation support equipment.

Lecterns and teaching stations may be fixed or movable. However, where more than one or two electrical (power or low voltage) connections are required, lecterns and presenter stations should be considered fixed due to the risk of damage or improper connections when setting up and removing equipment. Where trained technical support is available to install and remove equipment, greater flexibility may be provided.

Lecterns and teaching stations must anticipate the need to distribute power and low voltage electrical between equipment used on the tabletop and remote equipment and systems (e.g., computer network, sound systems, controls, etc.). Connections may be provided in the floor below the furniture or may be extended up into the tabletop. Cable retractors may be included in a deployment to minimize the amount of cable slack under the furniture.

Provide accessible cable pathways through tables when integrating audiovisual and power connections into tables.

Technology Connection at Tabletop

Lectern selection must be coordinated with the architectural team assigned for the deployment to ensure that finishes and styles are consistent with the theme or style of the project.

Example of Technology Lectern

B. Mobile AV Furniture

Electrical power and AV signal distribution to mobile AV equipment should be provided in a manner that avoids service cables running across the floor to wall receptacles. Provide flush floor electrical distribution wherever possible.

Unless otherwise noted, mobile AV furniture will be specified by the PCCD and provided by the AV Contractor. Furniture styles and finishes must be coordinated with the Architect to ensure that the material provided is compatible with other furniture and finishes.

6.7 Integration with 3rd Party Systems

Connectivity and integration with soft-clients, enterprise software, and cloud-based solutions is desirable in order to provide seamless support and collaboration features. We understand the following to be part of the enterprise solutions currently in use by PCCD:

- Microsoft Skype for Business – Enterprise collaboration
- GoTo Meeting
- Moodle – Open-source learning platform (being phased out)
- Canvas – Learning management system (expected to be implemented in 2018)

The design team should take into consideration possible levels of integration with these and other technologies of similar type based

on the structure and design strategy of the selected systems for the project.

6.8 Non-Standard AV Components

A. Scheduling panels

Various solutions for scheduling panels are available in the market with features ranging from basic room name and scheduling display to full integration with the PCCD calendaring system, resource allocation, and utilization reporting capabilities.

The design team should review the type and capabilities of these devices so that the functionality can be determined and deployed during the technology refresh cycle.

Example of Room Scheduling Panel

7. General AV Systems Infrastructure

7.1 Power Requirements

A. Power serving the AV systems within a room should be from the same phase leg.

B. An electrical power outlet should be located at each wall and floor box, and be served from the same circuit.

C. Collaboration rooms must have electrical power and data connections under the tables.

D. Equipment cabinets or terminal panel locations will require at least one 20 amp circuit stubbed out either inside or adjacent to the rack/box. Larger rooms with more complex AV systems will require more circuits.

E. Each wall-mounted display will require a consolidation back box with provisions for power, data, and AV signal.

F. Each projector will require a dedicated 15-amp circuit, 120-volt convenience outlet adjacent to the AV signal box.

G. Projection screen may be manual or electric. In instances where electric screens are specified, each projection screen will require electrical power be stubbed out on the left side of the screen enclosure. Projection screens can be served from the projector circuit. A low-voltage cabling pathway will be required from the projection screen and the projector to the AV equipment rack.

7.2 Data Requirements

Below are general infrastructure requirements for data provisions. Refer to the Peralta Community College District Telecommunication Standards for specific requirements.

A. Each floor box with AV connectivity will require a minimum of two network ports.

B. Each equipment rack terminal panel will require four network ports and one voice port.

C. Each display will require a minimum of two network drops.

D. Each ceiling-mounted projector location will require a minimum of two network drops.

8. Room Data Sheets

The Room Data Sheets are intended to convey information representative of the functionality in each type of standard room in both form and function.

Although the detailed furniture layout for these spaces will vary from deployment to deployment, the general layout and functionality should remain consistent throughout the Colleges.

The Room Data Sheets section can be separated from the Standards document in order to provide Peralta Community College District IT technical personnel, as well as the technology contractor, a portable document or manual that can be used for reference during the planning process.

In addition, the Room Data Sheets will undergo a revision process - or technology refresh - on a 2 to 3 year cycle to account for improvements in technology evolution.

Information contained within the data sheets include:

8.1 Baseline AV

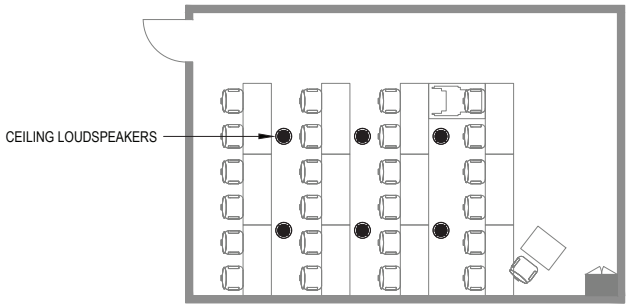
A brief description of the room purpose, overall capacity and salient technical characteristics.

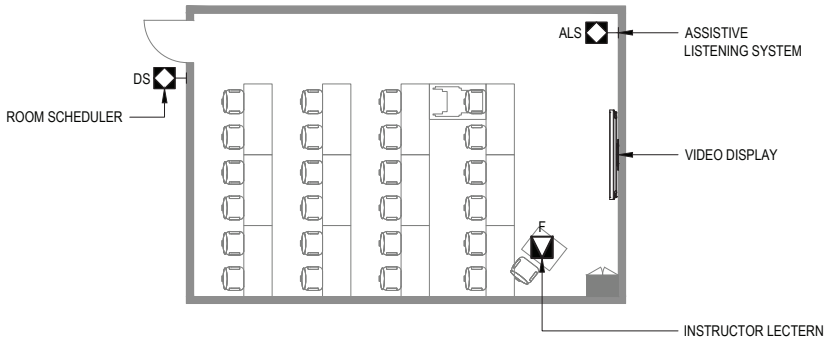
8.2 Baseline Technology

An outline of the technology elements that are supported in the room or space.

8.3 Optional Technology

An outline of the technology elements that are deemed desirable options to enhance the functionality of the room or space.





BASELINE TECHNOLOGY

- ■ Single Display
- □ Dual Display
- □ Video Projector and Electric Screen
- ■ Laptop / BYOD Presentation
- □ Local Dedicated Computer Presentation
- □ Voice Amplification / Audience Participation
- ■ Assisted Listening
- ■ Control Touch Panel / Keypad
- ■ Room Scheduler / Roster
- ■ Local AV Furniture / Lectern

BASELINE AV

Learning functions for up to 24 people, supporting laptops and BYOD wireless connectivity.
Video support with single display.
Audio supported via ceiling-mounted speakers.
Technology connectivity at the instructor's table - Document camera, laptop, annotation board, control dashboard.

OPTIONAL TECHNOLOGY

- ■ Video Capture / Recording
- □ Distance Learning
- □ Overflow to Adjacency or Huddle Space
- ■ Annotation Board

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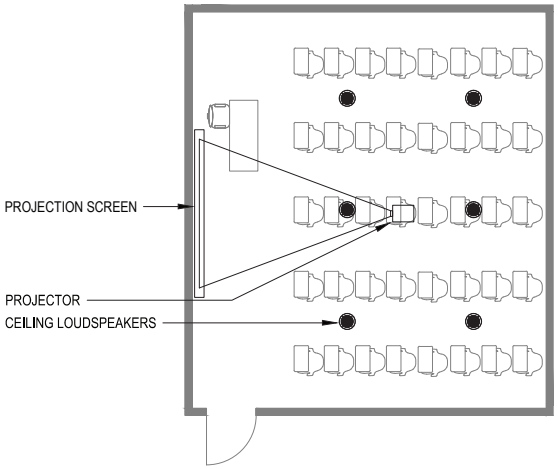
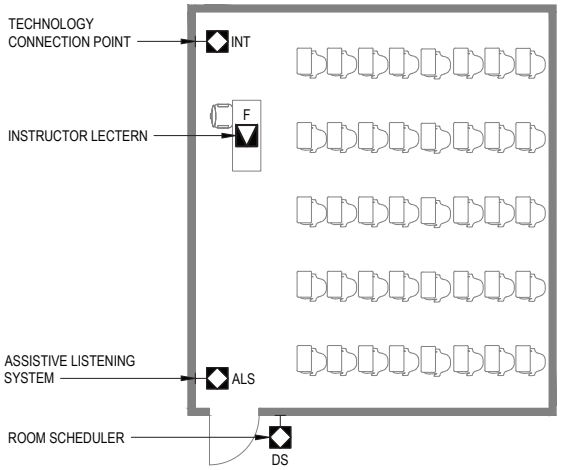
PROJECT NAME: PERALTA COMMUNITY COLLEGE DISTRICT
PROJECT No: 17026

DESCRIPTION:
TECHNOLOGY IN THE CLASSROOM
SMALL FLEXIBLE CONFIGURATION

SKETCH No:	TA 001
DATE:	09/08/2017
REVISION:	V 1.0
SCALE:	NTS





BASELINE TECHNOLOGY

- ☐ Single Display
- ☐ Dual Display
- ■ Video Projector and Electric Screen
- ■ Laptop / BYOD Presentation
- ☐ Local Dedicated Computer Presentation
- ☐ Voice Amplification / Audience Participation
- ■ Assisted Listening
- ■ Control Touch Panel / Keypad
- ■ Room Scheduler / Roster
- ■ Local AV Furniture / Lectern

BASELINE AV

Learning functions for up to 40 people, supporting laptops and BYOD wireless connectivity.
Video support with projection system.
Audio supported via ceiling-mounted speakers.
Technology connectivity at the instructor's table - Document camera, laptop, annotation board, control dashboard.

OPTIONAL TECHNOLOGY

- ■ Video Capture / Recording
- ☐ Distance Learning
- ☐ Overflow to Adjacency or Huddle Space
- ■ Annotation Board

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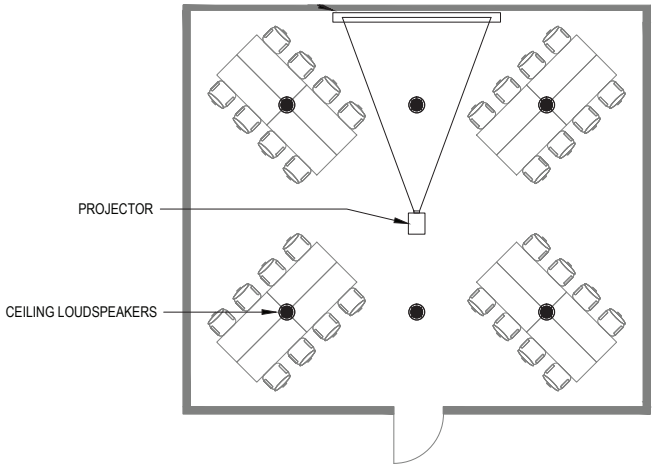
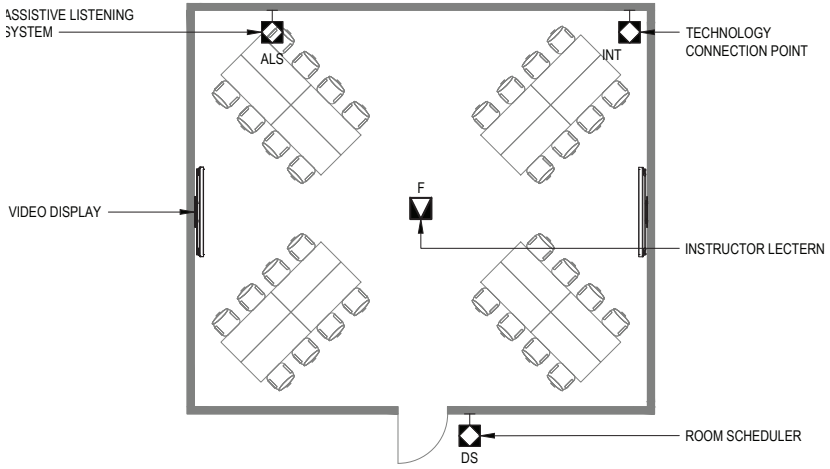
PROJECT NAME: PERALTA COMMUNITY COLLEGE DISTRICT
PROJECT No: 17026

DESCRIPTION:
TECHNOLOGY IN THE CLASSROOM
MEDIUM TABLET CONFIGURATION

SKETCH No:	TA 002
DATE:	09/08/2017
REVISION:	V 1.0
SCALE:	NTS





BASELINE TECHNOLOGY

- ☐ Single Display
- ■ Dual Display
- ■ Video Projector and Electric Screen
- ■ Laptop / BYOD Presentation
- ■ Local Dedicated Computer Presentation
- ☐ Voice Amplification / Audience Participation
- ■ Assisted Listening
- ■ Control Touch Panel / Keypad
- ■ Room Scheduler / Roster
- ■ Local AV Furniture / Lectern

BASELINE AV

Collaboration and teaching functions for up to 40 people, supporting laptops and BYOD wireless connectivity.
Video support with both displays and projection system.
Audio supported via ceiling-mounted speakers.
Technology connectivity at a local equipment station - Document camera, laptop, annotation board, control dashboard.

OPTIONAL TECHNOLOGY

- ■ Video Capture / Recording
- ☐ Distance Learning
- ☐ Overflow to Adjacency or Huddle Space
- ■ Annotation Board

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PROJECT No: 17026

DESCRIPTION:
TECHNOLOGY IN THE CLASSROOM
MEDIUM FLEXIBLE CONFIGURATION

SKETCH No:	TA 003
DATE:	09/08/2017
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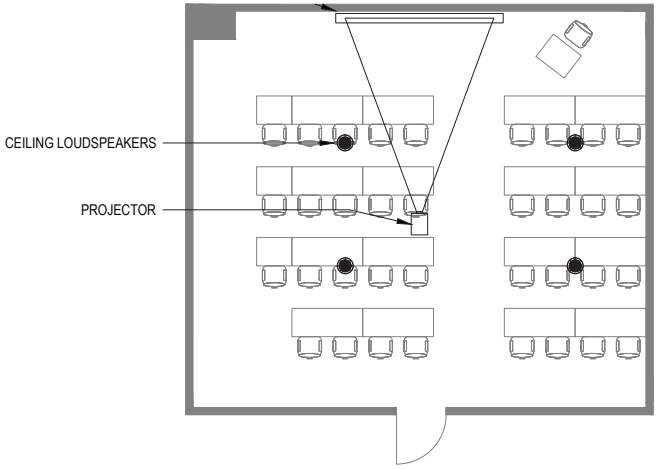
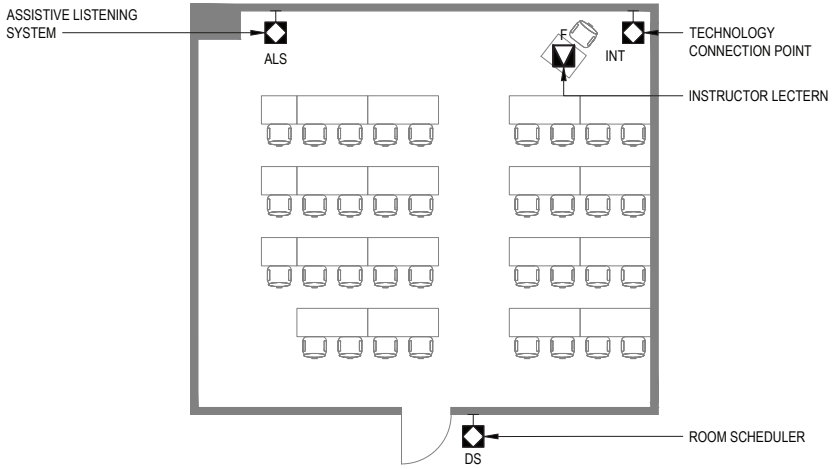
SCALE:	NTS





BASELINE TECHNOLOGY

- ☐ Single Display
- ☐ Dual Display
- ■ Video Projector and Electric Screen
- ■ Laptop / BYOD Presentation
- ☐ Local Dedicated Computer Presentation
- ☐ Voice Amplification / Audience Participation
- ■ Assisted Listening
- ■ Control Touch Panel / Keypad
- ■ Room Scheduler / Roster
- ■ Local AV Furniture / Lectern

BASELINE AV

Teaching functions for up to 40 people, supporting laptops and BYOD wireless connectivity.
Video support with system.
Audio supported via ceiling-mounted speakers.
Technology connectivity at the instructor's table - Document camera, laptop, annotation board, control dashboard.

OPTIONAL TECHNOLOGY

- ■ Video Capture / Recording
- ☐ Distance Learning
- ☐ Overflow to Adjacency or Huddle Space
- ■ Annotation Board

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DESCRIPTION:
TECHNOLOGY IN THE CLASSROOM
MEDIUM FLEXIBLE CONFIGURATION

SKETCH No:	TA 004
DATE:	09/08/2017
REVISION:	V 1.0
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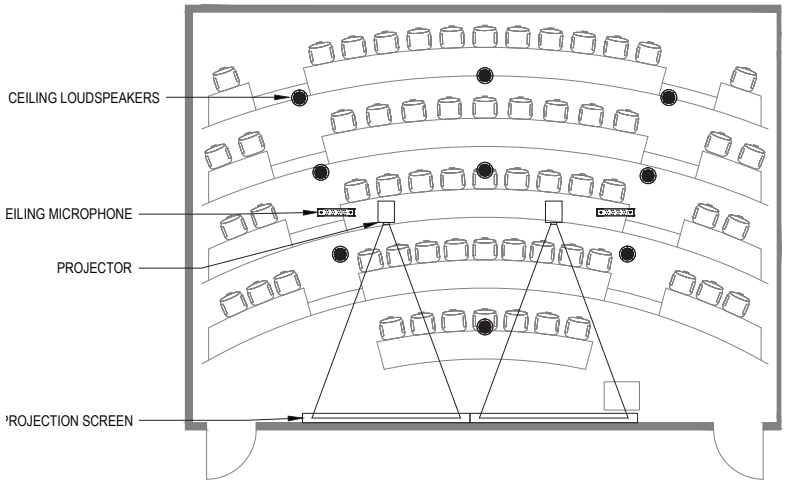

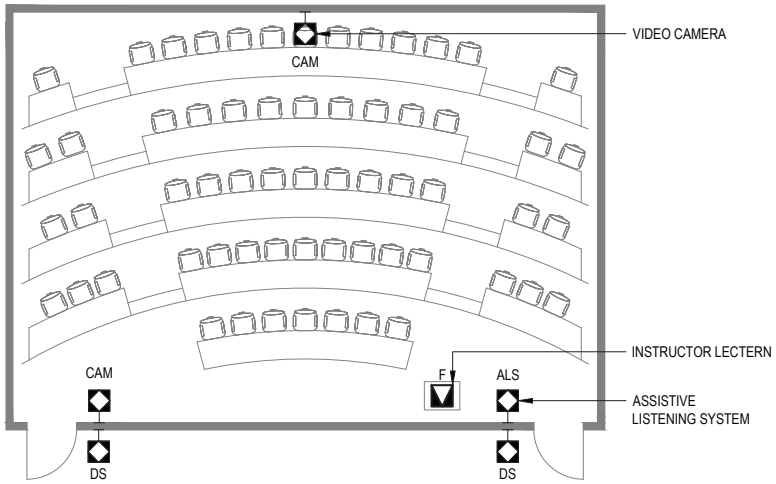

BASELINE TECHNOLOGY

- ☐ Single Display
- ☐ Dual Display
- ■ Video Projector and Electric Screen
- ■ Laptop / BYOD Presentation
- ☐ Local Dedicated Computer Presentation
- ■ Voice Amplification / Audience Participation
- ■ Assisted Listening
- ■ Control Touch Panel / Keypad
- ■ Room Scheduler / Roster
- ■ Local AV Furniture / Lectern

BASELINE AV

Teaching and lecture-style functions for up to 60 people, supporting laptops and BYOD wireless connectivity.
Video support with large projection system.
Audio supported via ceiling-mounted speakers.
Audience participation with ceiling microphones.
Technology connectivity at the instructor's table - Document camera, laptop, annotation board, control dashboard.

OPTIONAL TECHNOLOGY

- ■ Video Capture / Recording
- ☐ Distance Learning
- ☐ Overflow to Adjacency or Huddle Space
- ■ Annotation Board

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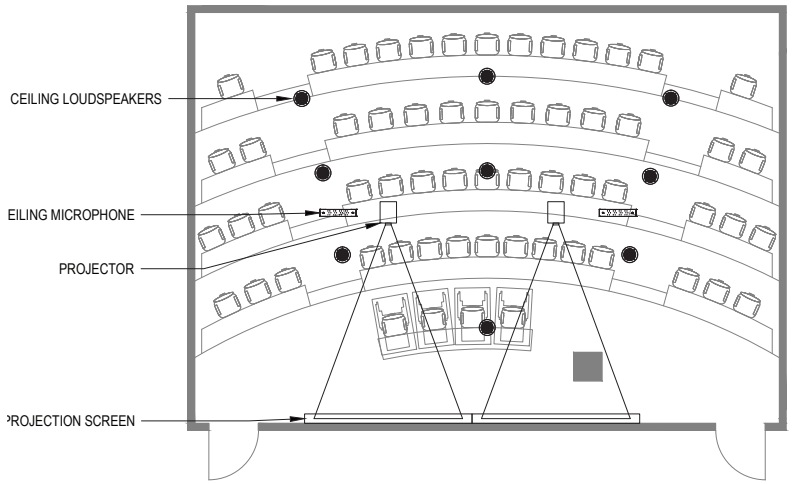
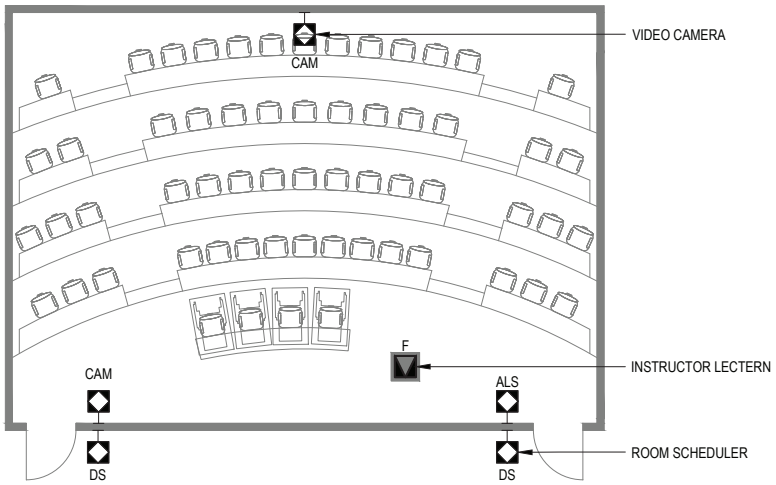
PROJECT No: 17026

DESCRIPTION:
TECHNOLOGY IN THE CLASSROOM
MEDIUM TIERED CONFIGURATION

SKETCH No:	TA 005
DATE:	09/08/2017
REVISION:	V 1.0
SCALE:	NTS





BASELINE TECHNOLOGY

- ☐ Single Display
- ☐ Dual Display
- ■ Video Projector and Electric Screen
- ■ Laptop / BYOD Presentation
- ☐ Local Dedicated Computer Presentation
- ■ Voice Amplification / Audience Participation
- ■ Assisted Listening
- ■ Control Touch Panel / Keypad
- ■ Room Scheduler / Roster
- ■ Local AV Furniture / Lectern

BASELINE AV

Teaching and lecture-style functions for up to 60 people, supporting laptops and BYOD wireless connectivity.
Video support with double large projection system.
Audio supported via ceiling-mounted speakers.
Audience participation with ceiling microphones.
Technology connectivity at the instructor's table - Document camera, laptop, annotation board, control dashboard.

OPTIONAL TECHNOLOGY

- ■ Video Capture / Recording
- ☐ Distance Learning
- ☐ Overflow to Adjacency or Huddle Space
- ■ Annotation Board

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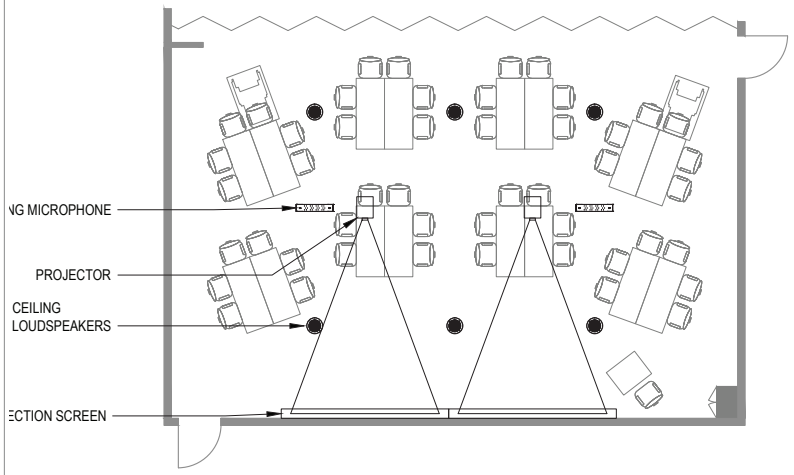
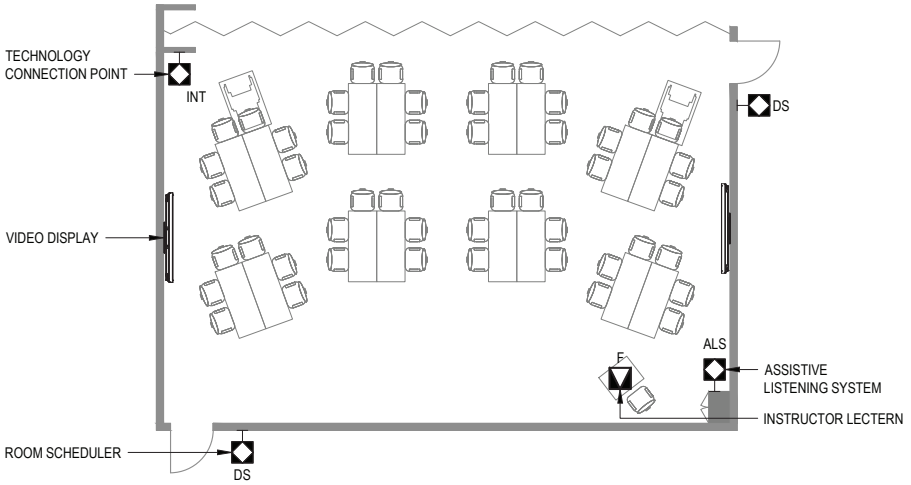
PROJECT No: 17026

DESCRIPTION:
TECHNOLOGY IN THE CLASSROOM
MEDIUM TIERED CONFIGURATION

SKETCH No:	TA 006
DATE:	09/08/2017
REVISION:	V 1.0
SCALE:	NTS





BASELINE TECHNOLOGY

- ☐ Single Display
- ■ Dual Display
- ■ Video Projector and Electric Screen
- ■ Laptop / BYOD Presentation
- ■ Local Dedicated Computer Presentation
- ■ Voice Amplification / Audience Participation
- ■ Assisted Listening
- ■ Control Touch Panel / Keypad
- ■ Room Scheduler / Roster
- ■ Local AV Furniture / Lectern

BASELINE AV

Collaboration and teaching functions for up to 48 people, supporting laptops and BYOD wireless connectivity.
Video support with both displays and projection system.
Audio supported via ceiling-mounted speakers.
Audience participation with ceiling microphones.
Technology connectivity at the instructor's table - Document camera, laptop, annotation board, control dashboard.

OPTIONAL TECHNOLOGY

- ■ Video Capture / Recording
- ☐ Distance Learning
- ■ Overflow to Adjacency or Huddle Space
- ■ Annotation Board

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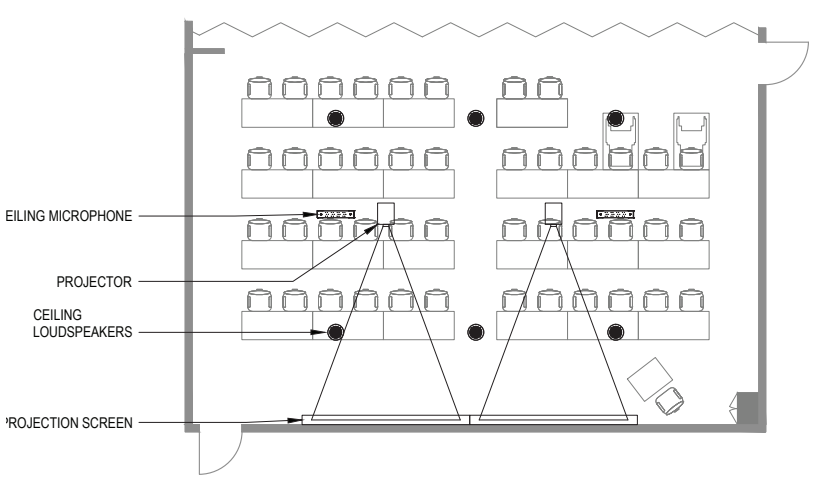
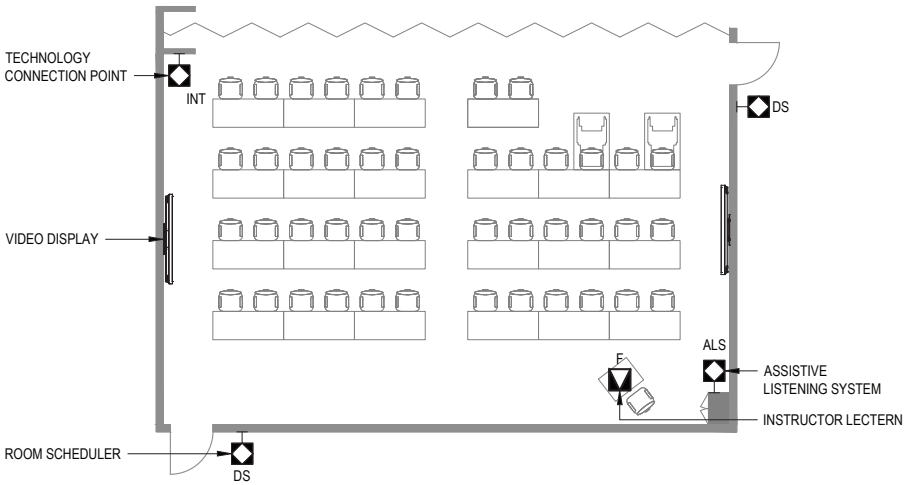
PROJECT NAME: PERALTA COMMUNITY COLLEGE DISTRICT
PROJECT No: 17026

DESCRIPTION:
TECHNOLOGY IN THE CLASSROOM
MEDIUM FLEXIBLE CONFIGURATION

SKETCH No:	TA 007
DATE:	09/08/2017
REVISION:	V 1.0
SCALE:	NTS





BASELINE TECHNOLOGY

- ☐ Single Display
- ■ Dual Display
- ■ Video Projector and Electric Screen
- ■ Laptop / BYOD Presentation
- ■ Local Dedicated Computer Presentation
- ■ Voice Amplification / Audience Participation
- ■ Assisted Listening
- ■ Control Touch Panel / Keypad
- ■ Room Scheduler / Roster
- ■ Local AV Furniture / Lectern

BASELINE AV

Collaboration and teaching functions for up to 48 people, supporting laptops and BYOD wireless connectivity.
Video support with both displays and projection system.
Audio supported via ceiling-mounted speakers.
Audience participation with ceiling microphones.
Technology connectivity at the instructor's table - Document camera, laptop, annotation board, control dashboard.

OPTIONAL TECHNOLOGY

- ■ Video Capture / Recording
- ☐ Distance Learning
- ■ Overflow to Adjacency or Huddle Space
- ■ Annotation Board

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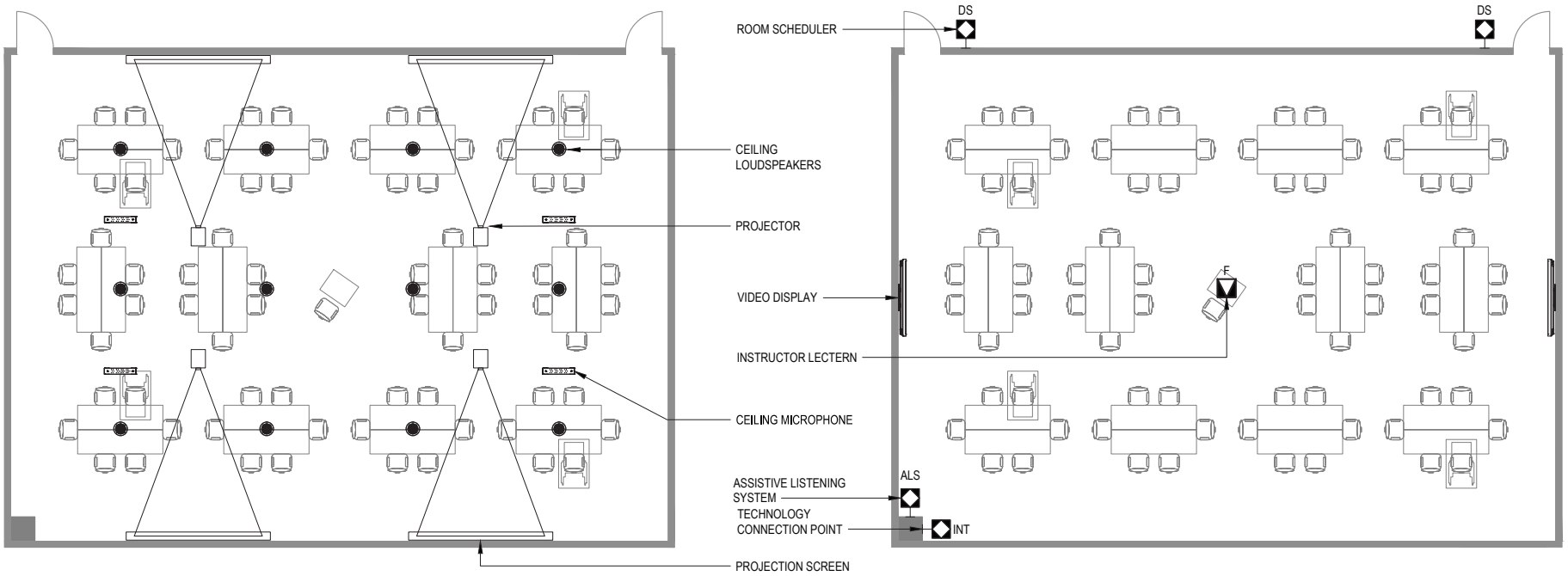
PROJECT NAME: PERALTA COMMUNITY COLLEGE DISTRICT
PROJECT No: 17026

DESCRIPTION:
TECHNOLOGY IN THE CLASSROOM
MEDIUM FLEXIBLE CONFIGURATION

SKETCH No:	TA 008
DATE:	09/08/2017
REVISION:	V 1.0
SCALE:	NTS



BASELINE TECHNOLOGY

- ☐ Single Display
- ■ Dual Display
- ■ Video Projector and Electric Screen
- ■ Laptop / BYOD Presentation
- ■ Local Dedicated Computer Presentation
- ■ Voice Amplification / Audience Participation
- ■ Assisted Listening
- ■ Control Touch Panel / Keypad
- ■ Room Scheduler / Roster
- ■ Local AV Furniture / Lectern

BASELINE AV

Collaboration and teaching functions for up to 70 people, supporting laptops and BYOD wireless connectivity.
Video support with both displays and projection system.
Audio supported via ceiling-mounted speakers.
Audience participation with ceiling microphones.
Technology connectivity at the instructor's table - Document camera, laptop, annotation board, control dashboard.

OPTIONAL TECHNOLOGY

- ■ Video Capture / Recording
- ☐ Distance Learning
- ☐ Overflow to Adjacency or Huddle Space
- ■ Annotation Board

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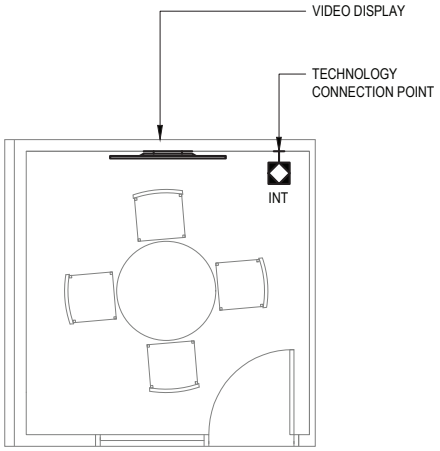
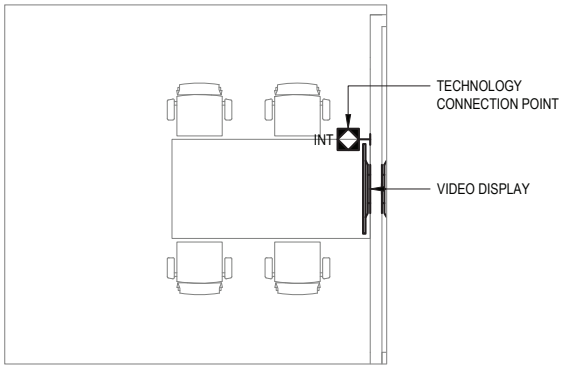
PROJECT NAME: PERALTA COMMUNITY COLLEGE DISTRICT
PROJECT No: 17026

DESCRIPTION:
TECHNOLOGY IN THE CLASSROOM
LARGE FLEXIBLE CONFIGURATION

SKETCH No:	TA 009
DATE:	09/08/2017
REVISION:	V 1.0
SCALE:	NTS





BASELINE TECHNOLOGY

- [x] Single Display
- [ ] Dual Display
- [ ] Video Projector and Electric Screen
- [x] Laptop / BYOD Presentation
- [ ] Local Dedicated Computer Presentation
- [ ] Voice Amplification / Audience Participation
- [ ] Assisted Listening
- [ ] Control Touch Panel / Keypad
- [ ] Room Scheduler / Roster
- [ ] Local AV Furniture / Lectern

BASELINE AV

Meeting functions for up to 4 people, supporting laptops and BYOD wireless connectivity.
Video support with single display.
Audio supported via display speakers.
Technology connectivity at the wall.

OPTIONAL TECHNOLOGY

- [ ] Video Capture / Recording
- [ ] Distance Learning
- [ ] Overflow to Adjacency or Huddle Space
- [ ] Annotation Board

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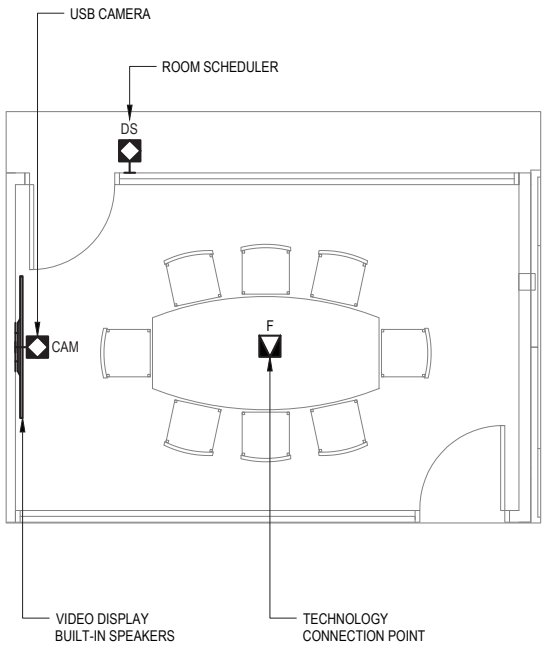
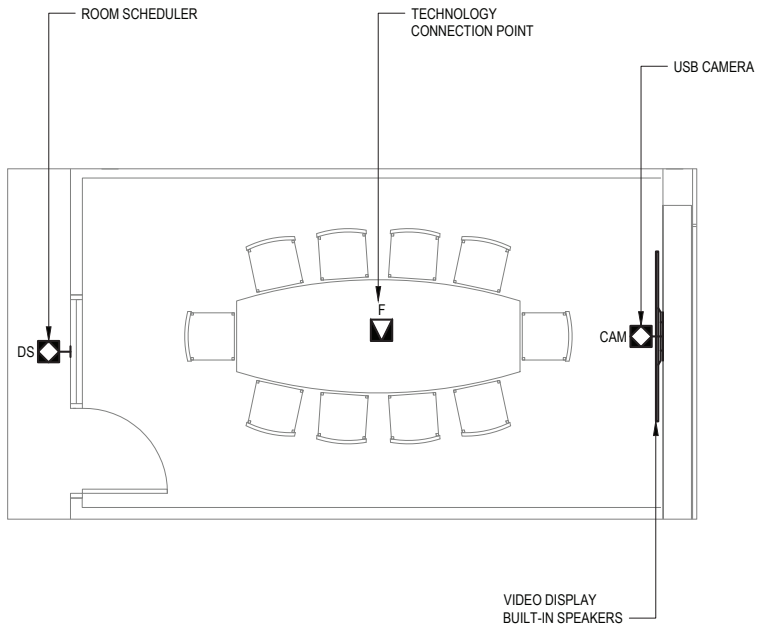
PROJECT NAME: PERALTA COMMUNITY COLLEGE DISTRICT
PROJECT No: 17026

DESCRIPTION:
TECHNOLOGY IN THE ADMIN AREAS
HUDDLE AND SMALL CONFERENCE ROOMS

SKETCH No:	TA 010
DATE:	09/08/2017
REVISION:	V 1.0
SCALE:	NTS





BASELINE TECHNOLOGY

- [x] Single Display
- [ ] Dual Display
- [ ] Video Projector and Electric Screen
- [x] Laptop / BYOD Presentation
- [x] Local Dedicated Computer Presentation
- [ ] Voice Amplification / Audience Participation
- [ ] Assisted Listening
- [x] Control Touch Panel / Keypad
- [x] Room Scheduler / Roster
- [ ] Local AV Furniture / Lectern

BASELINE AV

Meeting functions for up to 8 people, supporting laptops and BYOD wireless connectivity.
Video support with single display.
Audio supported via display speakers.
Technology connectivity at the table.

OPTIONAL TECHNOLOGY

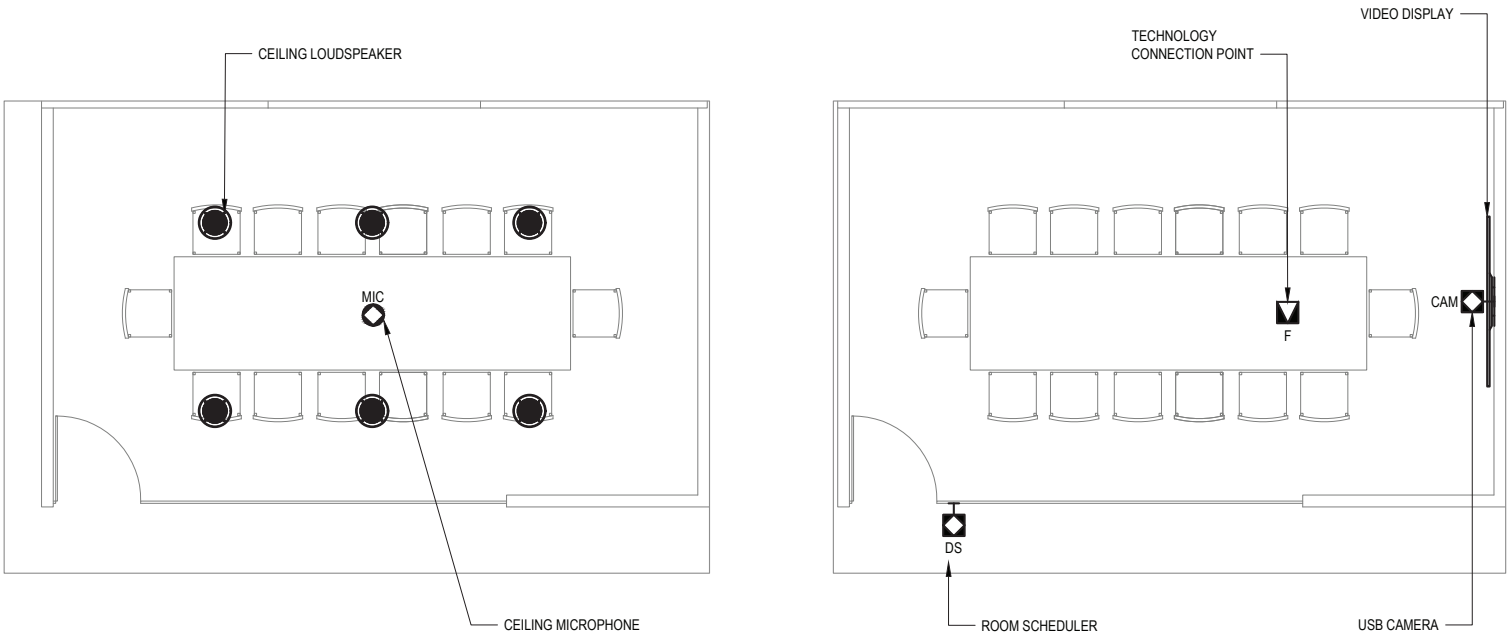
- [ ] Video Capture / Recording
- [ ] Distance Learning
- [ ] Overflow to Adjacency or Huddle Space
- [ ] Annotation Board

TEECOM
1333 Broadway
Suite 601
Oakland, CA 94612
510 337 2800
www.teecom.com

PROJECT NAME: PERALTA COMMUNITY COLLEGE DISTRICT
PROJECT No: 17026

DESCRIPTION:
TECHNOLOGY IN THE ADMIN AREAS
MEDIUM CONFERENCE ROOMS

SKETCH No:	TA 011
DATE:	09/08/2017
REVISION:	V 1.0
SCALE:	NTS



BASELINE TECHNOLOGY

- [x] Single Display
- [ ] Dual Display
- [ ] Video Projector and Electric Screen
- [x] Laptop / BYOD Presentation
- [x] Local Dedicated Computer Presentation
- [ ] Voice Amplification / Audience Participation
- [ ] Assisted Listening
- [x] Control Touch Panel / Keypad
- [x] Room Scheduler / Roster
- [x] Local AV Furniture / Lectern

BASELINE AV

Meeting functions for up to 14 people, supporting laptops and BYOD wireless connectivity.
Video support with single display.
Audio supported via ceiling-mounted speakers.
Technology connectivity at the table.

OPTIONAL TECHNOLOGY

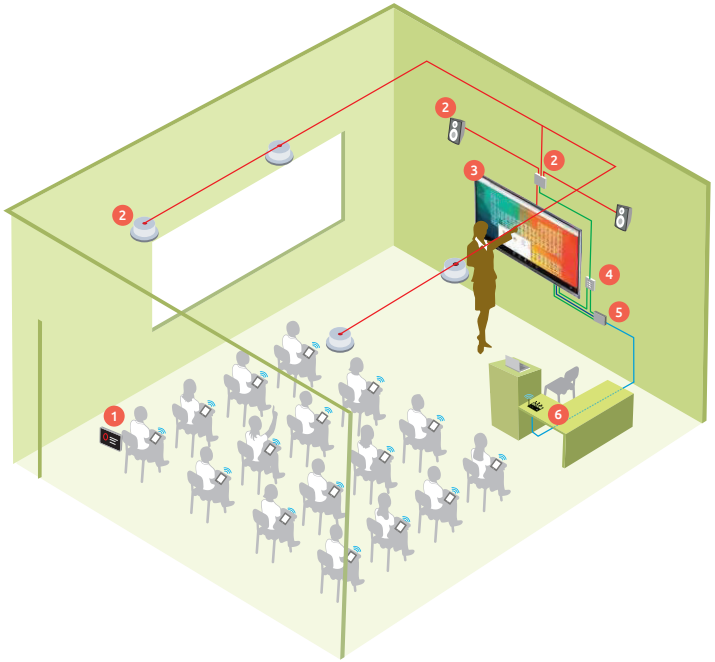
- [ ] Video Capture / Recording
- [ ] Distance Learning
- [ ] Overflow to Adjacency or Huddle Space
- [ ] Annotation Board

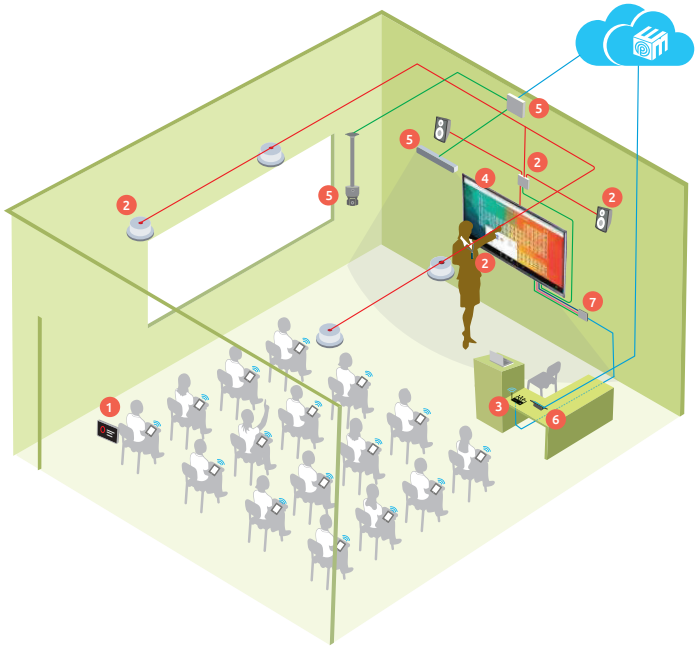
TEECOM
1333 Broadway
Suite 601
Oakland, CA 94612
510 337 2800
www.teecom.com

PROJECT NAME: PERALTA COMMUNITY COLLEGE DISTRICT
PROJECT No: 17026

DESCRIPTION:
TECHNOLOGY IN THE ADMIN AREAS
LARGE CONFRENCE ROOM

SKETCH No:	TA 012
DATE:	09/08/2017
REVISION:	V 1.0
SCALE:	NTS





STANDARDIZED COMPONENTS - SIMPLE ROOM

1 - Room Scheduler
2 - Loudspeakers and Audio Modules
3 - Interactive Video Display
4 - Control Interface - Button Panel
5 - Consolidation / Control Hardware
6 - Sources / Media Gateway, wired and wireless

STANDARDIZED COMPONENTS - ADVANCED ROOM, CLOUD-ENABLED

1 - Room Scheduler
2 - Loudspeakers and Audio Modules
3 - Sources / Media Gateway, wired and wireless
4 - Interactive Video Display
5 - Capture System / Video Modules
6 - Control Interface - Touch Panel
7 - Consolidation / Control Hardware

TEECOM
1333 Broadway
Suite 601
Oakland, CA 94612
510 337 2800
www.teecom.com

PROJECT NAME: PERALTA COMMUNITY COLLEGE DISTRICT
PROJECT No: 17026

DESCRIPTION:
TECHNOLOGY IN THE CLASSROOM
STANDARIZED SOLUTIONS - DRAFT 1

SKETCH No:	
DATE:	09/08/2017
REVISION:	V 1.0
SCALE:	NTS

9. References

9.1 Codes, Standards and Best Practices

Observe the following codes and standards. In locations outside of the United States, observe the governing standards and practices of the Authority having jurisdiction (AHJ):

- ANSI/INFOCOMM 1M-2009: Audio Coverage Uniformity in Enclosed Listener Areas
- ANSI/INFOCOMM 2M-2010, Standard Guide for Audiovisual Systems Design and Coordination Processes
- ANSI/INFOCOMM 3M-2011: Projected Image System Contrast Ratio
- ANSI/INFOCOMM 4:2012, Audiovisual Systems Energy Management
- NFPA 262: Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces
- UL 813: Commercial Audio Equipment
- UL 1419: Professional use Video and Audio Equipment
- UL 1480: Speakers for Fire Alarm, Emergency, and Commercial and Professional Use
- UL 1492: Audio-Video Products and Accessories
- UL 60065-1: Audio, Video and Similar Electronic Apparatus
- ISO 9000: Quality Management
- ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
- ASTM E336 - Standard Test Method for Measurement of Airborne Sound Attenuation between Rooms in Buildings
- ASTM E557 - Standard Guide for Architectural Design and Installation Practices for Sound Isolation between Spaces Separated by Operable Partitions
- ASTM E989 - Standard Classification for Determination of Impact Insulation Class (IIC)

- ASTM E1130 – Standard Test Method for Objective Measurement of Speech Privacy in Open Plan Spaces Using Articulation Index
- ANSI S1.13 - Measurement of Sound Pressure Levels in Air
- ISO 3382, Acoustics – Measurement of Room Acoustics Parameters

Peralta Community College District

Telecommunications Infrastructure Standards

Information Technologies
333 East 8th Street
Oakland, CA 94606

Table Of Contents

1.0 INTRODUCTION

1.1 Purpose

This purpose of this document is to describe the minimum requirements and establish the design guidelines for telecom infrastructure that will support information systems.

This document is not intended to replace a Designer. Rather, the requirements and criteria of this document shall guide the Designer and the other Design Team members (electrical, mechanical, and other disciplines) to provide the minimum infrastructure and support for information systems.

1.2 Scope

The scope of this document includes the following:

- Telecom Room build-out/fit-up, including power and cooling requirements
- Outside Plant Underground Pathways and Building Pathway Service
- Building Pathways
- Backbone Cabling
- Horizontal Cabling
- Administration / Labeling

1.3 Application

The requirements and criteria herein apply to the District Office complex and each campus within the District – Berkeley City College, College of Alameda (including Avaiation Facility), Laney College and Merritt College.

All construction projects – both renovation and new construction – shall follow the guidelines of this standard.

1.4 Systems Supported

The telecom infrastructure is intended to support data network communications from the equipment in the telecom room (e.g., switch) to the work area equipment (e.g., desktop computer) and between equipment in telecom rooms (e.g., edge switch to core switch).

The data network will support, at a minimum, IP-based host-client protocols and voice-over-IP (VoIP) protocols.

The telecom infrastructure, particularly the fiber optic backbone, can support additional building systems such as security systems, building control systems, fire alarm systems, etc.

1.5 Terminology

Passive network equipment generally refers to physical layer (OSI Layer 1) network hardware and standards such as cables, jacks, signal testing, etc. and related hardware, such as racks, patch panels, junction boxes, labeling, etc. Passive network equipment also does not, in and of itself, require electrical power. Passive network equipment shall be furnished, installed and tested by the Contractor. Refer to Appendix 1 for a list of parts. Submit cutsheets and a parts list for review to District IT.

Active network equipment generally refers to network devices such as switches, routers, wireless access points, UPS, etc. Active network equipment usually requires electrical power to operate. Active equipment is supplied, installed and configured by Peralta IT or its designated 3rd Party, unless

specifically stated otherwise, in which case, the Peralta IT liaison shall approve the device and its application.

2.0 PROCEDURES

2.1 Designer Qualifications

The telecom infrastructure shall be designed by an IT Design Professional.

The IT Design Professional:

- Shall be thoroughly familiar with PCCD's Telecommunications Infrastructure Standards.
- Shall be thoroughly familiar with referenced codes and standards.
- Shall be an accredited Registered Communications Distribution Designer (RCDD).
- Should be a professional electrical engineer licensed in the state of California.
- Should be authorized by Panduit in the Certified Design Program.

2.2 Design Approvals

The Designer shall be responsible for ensuring that all District standards are met. If variances to District standards are necessary, the Designer shall obtain written approval from the District IT Project Liaison in writing for such variances.

The Designer or Design Team Lead shall issue contract documents to District IT Project Liaison for review, comment, and approval prior to completion of 50% CD, if not before.

2.3 Contractor/Installer Qualifications

The structured cabling system installer shall have a current and active contractor's license, either C7 or C10 level, in the state of California.

The structured cabling system installer shall be a current and active Panduit ONE Partner.

The structured cabling system installer shall be certified by Panduit and can offer the Panduit Certification Plus system warranty.

2.4 Construction Approvals

The design and installation shall comply with local and state building codes and with national standards, including but not limited to the following.

A. Codes

The design and installation shall comply with local and state building codes, including but not limited to:

1. California Code of Regulations (CCR), Title 24, Part 3 "California Electric Code" (CEC)
2. California Code of Regulations (CCR), Title 24, Part 2 "California Building Code" (CBC)

B. Standards

The design and installation shall comply with national standards, including but not limited to:

1. Telecommunications Industry Association (TIA) – all the most current version and including related addenda:
   a) ANSI/TIA-568 "Generic Telecommunications Cabling for Customer Premises"
   b) ANSI/TIA-569 "Telecommunications Pathways and Spaces"
   c) ANSI/TIA-606 "Administration Standard for Telecommunications Infrastructure"
   d) ANSI/TIA-607 "Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises"
   e) ANSI/TIA-4966 "Telecommunications Infrastructure Standard for Educational Facilities"
2. Underwriter's Laboratories (UL) – all the most current version:
   a) UL 444, "Communications Cables"
   b) UL 497, "Protectors for Paired-Conductor Communication Circuits"
   c) UL 1651, "Optical Fiber Cable"
   d) UL 1690, "Data-Processing Cable"
   e) UL 1963, "Communications-Circuit Accessories"
   f) UL 2024A, "Optical Fiber Cable Routing Assemblies"
3. Insulated Cable Engineers Association (ICEA) – all the most current version:
   a) ANSI/ICEA S-83-596-, "Fiber Optic Premises Distribution Cable"
   b) ANSI/ICEA S-87-640-1999, "Fiber Optic Outside Plant Communications Cable"
   c) ANSI/ICEA S-90-661-2002, "Category 3, 5, & 5e Individually Unshielded Twisted Pair Indoor Cable for Use In General Purpose and LAN Communication Wiring Systems"
   d) ICEA S-104-696-2001, "Standard For Indoor-Outdoor Optical Cable"

C. Guidelines

The design shall comply with guidelines, including but not limited to:

1. Building Industry Construction Services International (BICSI) – all the most current version:
   a) "Telecommunications Distribution Methods Manual" (TDMM)
   b) "Outside Plant Design Reference Manual"
   c) NECA/BICSI 607, "Standard for Telecommunications Bonding and Grounding Planning and Installation Methods for Commercial Buildings"
   d) ANSI/NECA/BICSI 568, "Standard for Installing Commercial Building Telecommunications Cabling"
   e) ANSI/BICSI 001, "Information and Communication Technology Systems Design and Implementation Best Practices for Educational Institutions and Facilities"
   f) ANSI/BICSI 005, "Electronic Safety and Security (ESS) System Design and Implementation Best Practices"
   g) ANSI/BICSI 006, "Distributed Antenna System (DAS) Design and Implementation Best Practices"
   h) ANSI/BICSI 007, "Information Communication Technology Design and Implementation Practices for Intelligent Buildings and Premises"

Versions of the aforementioned codes, standards, and guidelines shall be those versions enforced by aurhorities having jurisdiction or the the most current version available at the time of design.

2.5 Products and Materials

Passive network equipment shall be furnished, installed and tested by the Contractor. Refer to Appendix 1 for a list of parts.

The Contractor shall submit, prior to installation, a parts list and cutsheets to District IT (or the Enginer) for review and approval.

Cable runs and terminations shall be clean, organized/bundled and physically secured, using appropriate cable management hardware. All terminations shall be compliant with T568B wiring.

2.6 Schedule Considerations

Information Technology staff are responsible for installation and testing of active network components (routers, switches, etc), which cannot be performed until passive equipment (cables, patch panels, jacks, etc) is fully installed, labeled and tested by the Contractor. The Contractor shall complete the passive network equipment work reasonably in advance of the scheduled occupancy date, and no less than one week. The magnitude of the project scope dictates the minimum amount of advance notice needed for active component installation and testing.

The Construction Team's Project Manager shall notify both the District and College Information Technology Staff, with reasonable advance, of the anticipated completion of the Contractor's work and planned occupancy dates.

2.7 Owner-Provided Equipment

A. Network Equipment

PCCD District IT Department will design, procure, and install the network equipment (e.g., edge switches, core switches/routers, firewalls).

The racks within telecom rooms shall be designed to allow space for the network equipment and patch cords to be installed. Obtain from PCCD IT rack space requirements.

B. Telecom and VoIP Equipment

PCCD District IT Department will design, procure, and install the telecom equipment (e.g., IP telephones).

3.0 TELECOM ROOMS

3.1 Room Classifications

The telecom rooms shall fall into one of the following room classifications:

CLASSIFICATION NAME	CLASSIFICATION DESCRIPTION
Entrance Facility / EF (also, MPOE Room)	The EF shall be a room dedicated to telecom, and shall not be shared with other building services, unless authorized in writing by the District. Campus/interbuilding conduits should enter the building into the EF. Telecom or network equipment may or may not be deployed in the EF. If applicable, the telecom utility(ies) should demarcate/establish MPOE for their services in the EF.
Main Distribution Facility / MDF	The MDF shall be a room dedicated to telecom, and shall not be shared with other building services, unless authorized in writing by the District. The core network equipment serving data communications to the entire campus/complex should be deployed in the MDF. If applicable, the WAN interface to the District office should be deployed in the MDF, in direct connection to the network core. The MDF may also act as a BDF and/or an IDF.
Building Distribution Facility / BDF	The BDF shall be a room dedicated to telecom, and shall not be shared with other building services, unless authorized in writing by District. The distribution network equipment serving data communications within a single building should be deployed in the BDF. If there are/will be additional telecom rooms (IDFs) within the building, the backbone cabling shall originate in the BDF to each IDF. The BDF may also act as an IDF.
Intermediate Distribution Facility / IDF	The IDF shall be a room dedicated to telecom, and shall not be shared with other building services, unless authorized in writing by the District. The access network equipment serving data communications within a service area shall be deployed in the IDF. If applicable, the backbone cabling from the BDF will terminate in the IDF. UPSs will be deployed into the IDFs to support PoE applications such as VoIP (i.e., keep telephones powered).
Satellite Distribution Facility / SDF	The SDF shall be an equipment enclosure or cabinet dedicated to telecom, and shall not be shared with other building services, unless authorized in writing by the District. Where no room/space can be programmed and allocated as a dedicated telecom room **and** the quantity of links is 96 or less **and** the service area is 10,000 square feet or less, access network equipment and cable terminations may be located into a service cabinet.
Equipment Room / Server Room	The Equipment Room/Server Room shall be a room dedicated to telecom, and shall not be shared with other building services, unless authorized in writing by the District. The equipment/server room shall be fit up with equipment racks to house network equipment (switches, routers, etc.) and server cabinets to house processing systems (servers, storage systems, etc.). Each server room requires an approved program/set of criteria prior to design.

3.2 Room Sizes

A. New Construction:

Size the telecom rooms based on the following criteria:

Room	Sizing Criteria – Minimum Dimensions
EF	10'-0" W x 8'-6" D x 9'-0" H
MDF	10'-0" W x 16'-0" D x 9'-0" H
EF & MDF Combined	10'-0" W x 18'-6" D x 9'-0" H, or 16'-0" W x 11'-0" D x 9'-0" H
BDF	10'-0" W x 14'-6" D x 9'-0" H
IDF	10'-0" W x 11'-0" D x 9'-0" H
SDF	Not applicable
Equipment/Server Room	As required per project

B. Renovation:

This Document acknowledges that telecom rooms are often located within existing spaces and may not meet the aforementioned minimum sizing criteria. Under these circumstances, determine the feasibility of the space based on the following criteria:

Minimum size for telecom rooms shall be as follows.

1. Width: 8'-10", including equipment and working clearances.
2. Depth: 6'-0" (3'-0" for the rack with 3'-0" for end clearance) for the first rack plus 28 inches for each additional rack.

3.3 Room Adjacencies

A. New Construction:

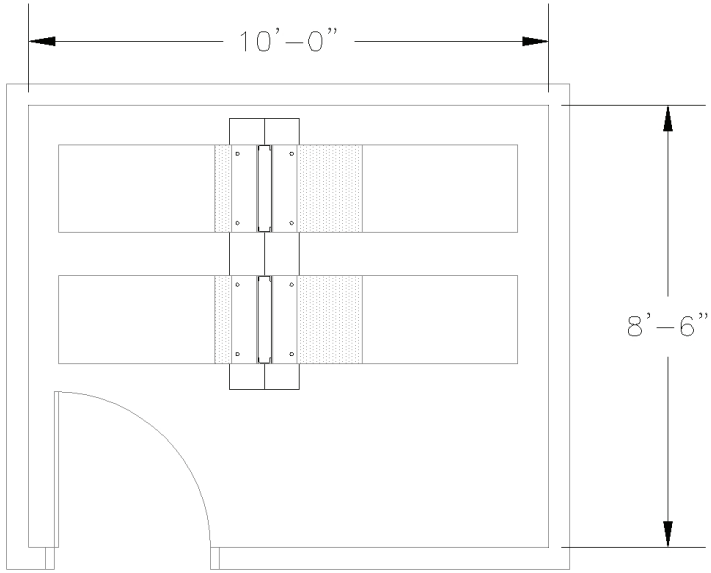
For new construction, the telecom rooms shall be vertically stacked, shall either encompass or be immediately adjacent to the vertical riser, and should be in close proximity to the electrical room.

B. Renovation:

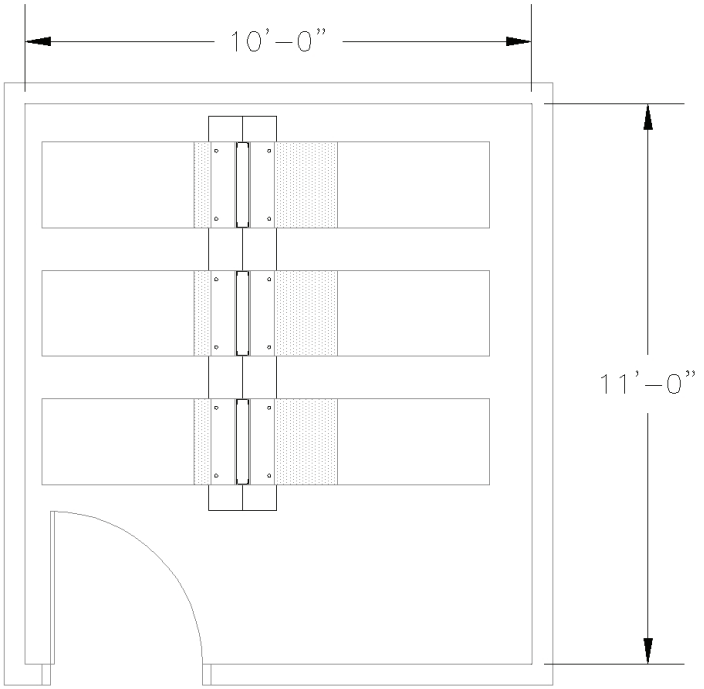
For renovation construction, the telecom rooms should be vertically stacked, shall either encompass or be immediately adjacent to the vertical riser, and should be in close proximity to the electrical room.

3.4 Room Configurations

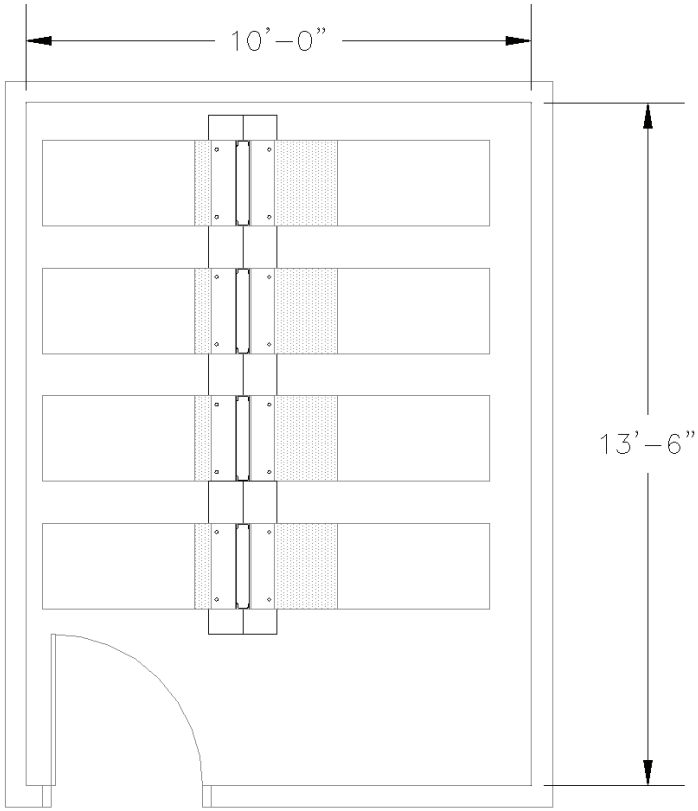
The following room configurations are examples of configurations based on rack quantity per room.



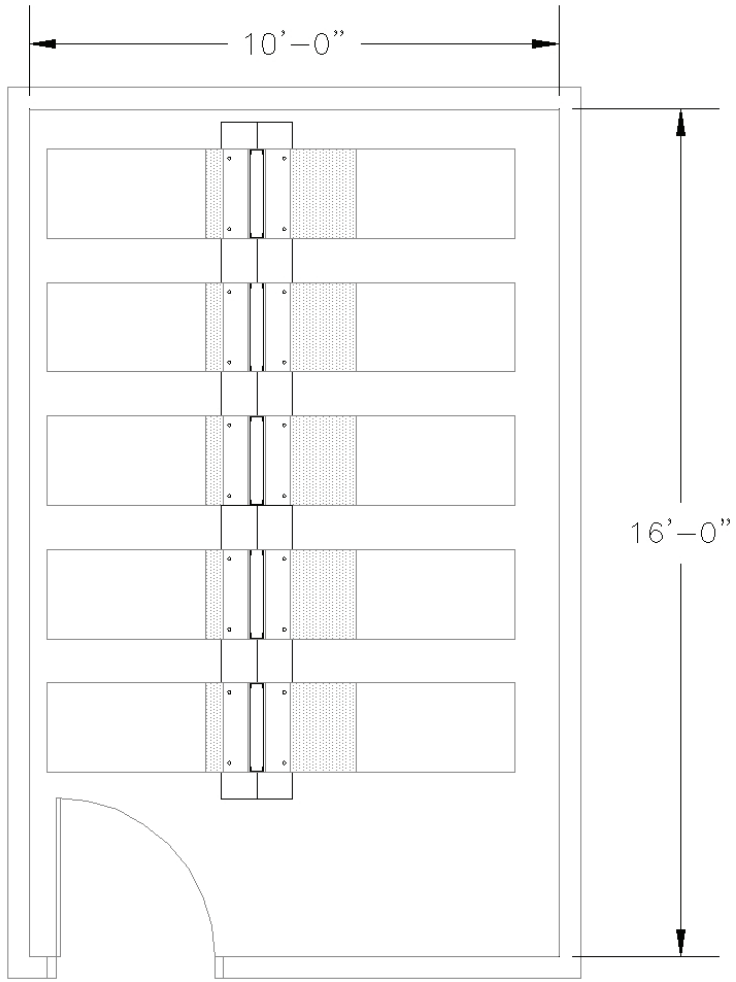
2-Rack Configuration



3-Rack Configuration



4-Rack Configuration



5-Rack Configuration

3.5 Architectural Finishes

The room finishes shall be as described in the following table:

Room	Floor	Wall	Ceiling
EF	Sealed concrete (or SD-VCT[1])	Plywood backboard[2], all walls	Open (i.e., no ceiling)
MDF	Sealed concrete (or SD-VCT[1])	Plywood backboard, all walls	Open (i.e., no ceiling)
BDF	Sealed concrete (or SD-VCT[1])	Plywood backboard, all walls	Open (i.e., no ceiling)
IDF	Sealed concrete (or SD-VCT[1])	Plywood backboard, all walls	Open (i.e., no ceiling)]
SDF	No applicable – as existing	No applicable	No applicable – as exist
Equipment/ Server Room	Sealed concrete (or SD-VCT[1]) – The flooring shall be determined per project. There may be instances where a raised floor would be required.	Wallboard – The wall finish should match typical building wall finishes (to control costs).	Lay-in acoustical tile – The ceiling shall be determined per project.

1 - SD-VCT = static-dissipating vinyl composition tile

2 - Plywood shall be ¾" thick and shall be fire treated. Plywood backboard shall be painted with white paint and shall have the fire rating stamp masked prior to painting.

3.6 Doors

The doors to telecom rooms shall be as described in the following table (minimum dimensions):

Room	Size	Quantity	Swing
EF	36"W x 7'H	1	Outward
MDF	36"W x 7'H	1	Outward
BDF	36"W x 7'H	1	Outward
IDF	36"W x 7'H	1	Outward
SDF	Not applicable	Not applicable	Not applicable
Equipment/ Server Room	72"W / double 36"W doors x 7'H	Door quantity will be defined per project.	Outward

3.7 Structural

A. Floor Loading

The floor loading shall be 150 pounds per square-foot, minimum, in all telecom rooms.

B. Floor Anchoring for Racks and Cabinets

Floor-standing racks and cabinets shall be anchored to the structural floor via devices pre-approved by DSA. Examples of such devices include Hilti Kwik-Bolt 3.

The structural engineer shall determine the applicability of the anchoring device set in the floor system, including minimum embedment depth.

C. Wall Anchoring for Racks and Cabinets

Wall-mounted racks and cabinets shall be anchored to the wall via fasteners pre-approved by DSA. Examples of such fasteners include woods screws into plywood backboard and expansion anchors into concrete wall.

The structural engineer shall determine the applicability of the fasteners depending upon the mounting substrate, including minimum embedment depth.

3.8 Electrical

A. Convenience Outlets

Convenience outlets shall be 120V. Convenience outlets shall be circuited from a normal power panel.

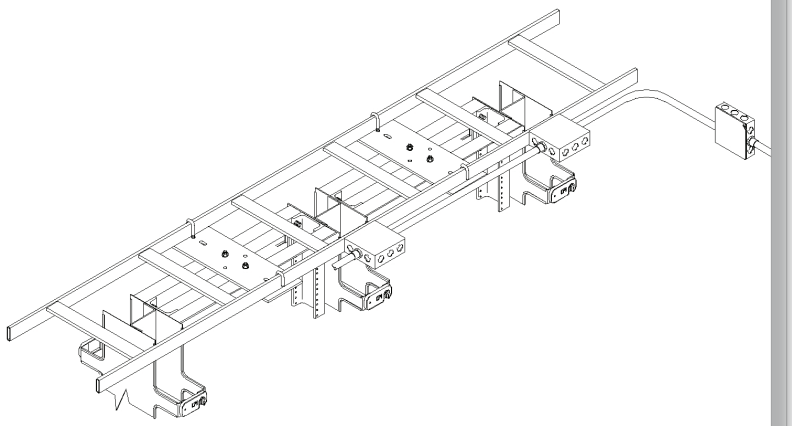
On walls adjacent to the rack bay (where the rack bay butts up against the wall), provide one duplex outlet in front of the rack bay and one duplex outlet behind the rack bay.

On the other walls, provide one duplex outlet per wall up to 15 feet. On walls longer than 15 feet, provide two duplex outlets.

B. Rack Bay Power Service

Each rack shall receive one duplex outlet. Each duplex outlet shall be circuited as 120V 20A separately breakered, or as required per project.

Each duplex outlet shall be installed between racks at the vertical management section facing down. Refer to the following figure for an example of the overhead power service at a rack bay.



Example Overhead Power Distribution at Rack Bay

C. Lighting

Lighting shall be overhead in front of and behind rack bay, and should be dual-lamp fluorescent type.

Luminance shall be 50 foot-candles measured at 3 feet above finished floor, minimum.

3.9 Mechanical

A. Cooling Criteria

For MDFs, BDFs, and IDFs, presume a load of 40 watts per square foot as a starting point.

For Equipment/Server Rooms, presume a load of 75 watts per square foot as a starting point.

The aforementioned criteria include the following sources: equipment, lighting, occupants, ambient.

B. Operation

The cooling shall operate 24 hours per day, 7 days per week.

C. Temperature Range

The rooms shall be controlled at 72 degrees Fahrenheit, +/- 5 degrees.

D. Dedicated Controls

Cooling controls (thermostat) shall be dedicated to the telecom room and shall not shared with any other space.

E. Humidity Control

For MDFs, BDFs, and IDFs, no humidity control is required.

For Equipment/Server Rooms, humidity control is required. Humidity shall be controlled between 10% and 55%, non-condensing within the specified temperature range.

F. Installation

For MDFs, BDFs, and IDFs, the cooling unit (fan coil unit or other) shall be installed either hung from the structure above or high on the wall.

For Equipment/Server Rooms, the cooling unit (CRAC, other) shall be coordinated throughout the Design Team. To minimize floor area, the cooling unit is suggested to be hung from the structure above.

The location of the cooling unit shall be coordinated with the equipment plan as not to have wet components above the equipment racks or other equipment that could be damaged by leaks. The piping to the cooling units shall be routed as not to pass over the rack bay and the equipment clearance of the rack bay. Piping connections shall not be installed over where equipment may be installed.

G. Ducting Through Telecom Rooms

Ducting unrelated to telecom shall not be routed through telecom rooms.

3.10 Plumbing

A. Piping Through Telecom Rooms

Piping and plumbing unrelated to telecom shall not be routed through telecom rooms.

3.11 Security

A. Access Control

Telecom rooms shall have access controlled, even if the room is shared with other services.

The access control should be a card reader, but shall be confirmed per instance.

B. Video Surveillance

Telecom rooms do not require video surveillance.

3.12 Racks and Rack Bays

Rack bays consist of multiple equipment racks, vertical management sections, and horizontal management.

A. Equipment Racks

Equipment racks shall be 7' high x 19" mounting (most often 20.25" wide.

B. Vertical Management Sections

Vertical management sections shall be double sided and 7' high x 6", 10", or 12" wide. Vertical management sections that will be to the right (as viewed from the front) of chassis-based network switches shall be 12" wide (this to accommodate the bulk of cords attached to the switch and routing rightward to avoid the fan tray on the left side of the switch).

4.0 OSP UNDERGROUND PATHWAYS

4.1 Underground Pathways Infrastructure

A. The following conduit types will be accepted for the different circumstances:

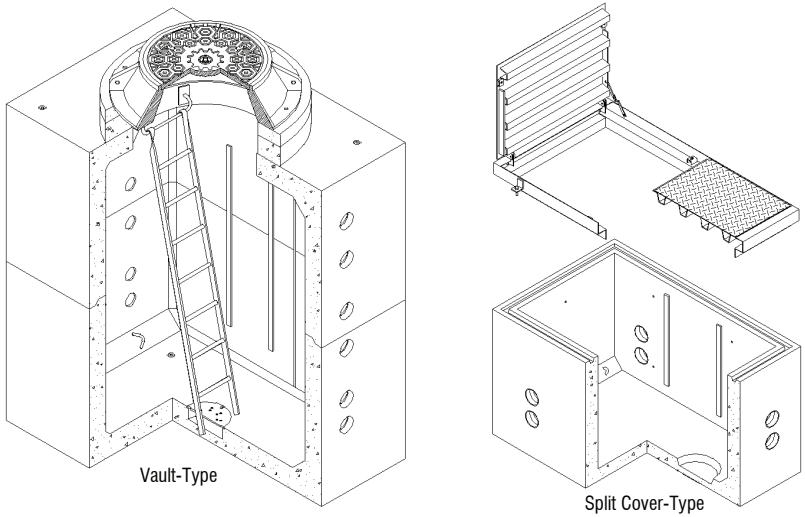
Circumstance	Acceptable Conduit Types
Straight Sections, no vehicular traffic	• Non-Metallic Schedule 40 PVC, concrete encasement not required • Non-Metallic Schedule 80 PVC, concrete encasement not required • Galvanized Rigid Steel / GRS
Straight Sections, under vehicular traffic	• Non-Metallic Schedule 40 PVC, with concrete encasement • Non-Metallic Schedule 80 PVC, with concrete encasement • Galvanized Rigid Steel / GRS
Sweeping Bends	• Non-Metallic Schedule 40 PVC, with concrete encasement • Non-Metallic Schedule 80 PVC, concrete encasement suggested • Galvanized Rigid Steel / GRS
Factory Bends/Elbows	• Non-Metallic Schedule 40 PVC, with concrete encasement • Non-Metallic Schedule 80 PVC, with concrete encasement • Galvanized Rigid Steel / GRS, with concrete encasement
Building Entrance (with	• Galvanized Rigid Steel / GRS, with concrete encasement

B. Split Cover-Type Maintenance Holes/Pull Boxes:

1. Size (minimum interior clearances): 36-inches wide by 48-inches deep by 60-inches long.
2. Split cover-type maintenance hole shall be equipped with corrosion-resistance pulling irons, corrosion-resistance cable racks, and grounding.

C. Vault-Type Maintenance Holes/Pull Boxes:

1. Size (minimum interior clearances): 48-inches wide by 84-inches deep by 60-inches long.
2. Vault-type maintenance holes shall be equipped with a sump, corrosion-resistance pulling irons, corrosion-resistance cable racks, and grounding.



Maintenance Holes Examples

D. The minimum burial depth for conduits / duct banks shall be 36 inches.

E. At buildings, install the conduit sloping toward away from the building with no less than 0.125 inches per linear foot of slope

F. Between maintenance holes, install the conduit sloping towards maintenance holes with no less than 0.125 inches per linear foot of slope.

4.2 Service Per Building

Each building shall receive two 4-inch trade size conduits, minimum, from the campus' telecommunications underground pathways infrastructure.

4.3 Building Connection

Within 15 feet of the point where the conduit enters the building, the conduit type shall be GRS. Non-metallic / PVC conduit will not be accepted.

4.4 Innerduct

At least one of the service conduits shall contain four 1-inch trade size innerducts. Each innerduct shall be uniquely colored. The innerducts should be corrugated type and should be extruded of high-density polyethylene.

4.5 Separation

Telecom conduits shall be separated from other underground structures as follows:

Structure	Separation
Power, concrete-encased	3 inches
Power, buried	12 inches
Power, on poles	Separate poles if possible; if not possible, 90 degrees, minimum

5.0 BUILDING PATHWAYS

5.1 Building Pathways

The building pathways design and installation shall be compliant to ANSI/TIA-569 standard and BICSI's TDMM.

5.2 Backbone Pathways

The building pathways for backbone cabling shall be either conduit or cable tray. The pathway component will depend on the project requirements, constraints, and coordination with the other building systems.

A. Conduit: If the backbone pathways will be conduit, then the conduit shall be 4 inch trade size. Presumable, the conduit type will be EMT, though building codes shall dictate the allowable conduit types.

B. Cable Tray: If the backbone pathways will be cable tray, then match the "Primary Pathway" guidelines below.

5.3 Horizontal Pathways

The horizontal pathways shall be defined as those pathway components that support horizontal cabling. These pathways are generally limited to a single floor from a telecom room or riser system.

A. Primary Pathways: The primary horizontal pathways shall be defined as those directly from the telecom room serving a section (a wing or side) of the building. The primary pathway components should cable tray – the tray can be wire mesh type or ladder type. If the total quantity of cables is less than approximately 50, or cable hangers can be used from the telecom rooms.

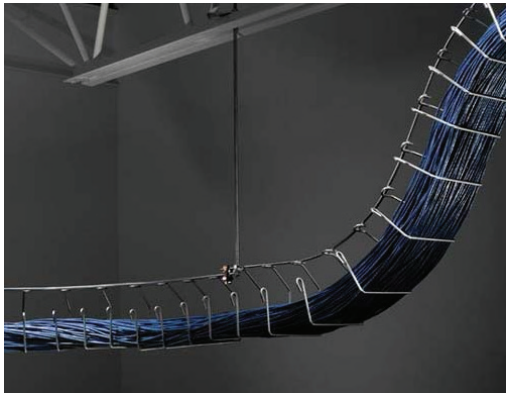
Primary Pathway Example – Cable Tray Wire Mesh Type

B. Secondary Pathways:

1. The secondary horizontal pathways shall be defined as those from the primary pathways serving an area of a section or to specific devices.
2. Secondary pathways support up to approximately 40 to 50 cables. The intent is for the primary pathway to support the bulk of the cables and the secondary pathways support those cables 'spurring off' toward their destination at work areas/outlets.
3. The secondary pathway components can be cable hangers (preferred). 'Make-shift' supports such as field-fabricated from leftover rough-in parts will not be acceptable

Preferred Secondary Pathway Example – Cable Hanger ("J-Hook")

4. As an alternative, "Snake Tray Series 201" may be used to support up to approximately 70 to 80 CAT5E cables and approximately 50 to 55 CAT6A cables.



Alternate Secondary Pathway Example – Snake Tray 201

5.4 Outlet Pathways

The outlet pathways shall be defined as the pathway supporting a single cabling complement at a work area.

A. Minimum conduit stub, or equivalent area, shall be 1-inch trade size.

B. Outlet box shall be 4 11/16" square, and "Deep" (no less than 2 1/8").

C. Framed Wall: For both new construction and renovation, the outlet pathway at framed walls shall be conduit stub from an accessible space (such as acoustical tile ceiling) to an outlet box within the wall interstitial. The outlet box should be installed at +18 inches for typical outlets or as approved per specific project requirements.

D. Concrete Wall:

1. New Construction: The outlet pathway at concrete walls shall be buried (cast within the forms) into the wall.

2. Renovation: The outlet pathway at concrete walls shall be either surface-mounted conduit and a surface-mounted back box, or shall be surface raceway and a compatible outlet box.

E. CMU Wall: For new construction and renovation, the device pathway at CMU walls shall be either surface-mounted conduit to a surface-mounted back box, or shall be surface raceway to a compatible outlet box.

6.0 BACKBONE CABLING

6.1 Backbone Fiber Optic Cabling

A. Cable Type

1. Outdoor Cables

Backbone fiber optic cables installed outdoors shall be loose buffered – either multitube or core tube type.

Backbone fiber optic cables installed outdoors should have a sheath consisting of a polyethylene jacket over the inner cable components (buffer(s), strength element, etc.).

2. Indoor Cables

Backbone fiber optic cables installed indoors shall meet the rating required by the authority having jurisdiction.

Backbone fiber optic cables installed indoors shall be tight buffered.

Backbone fiber optic cables installed indoors should have a sheath consisting of a thermoplastic jacket over the inner cable components (buffered fibers, strength element, . . etc.), an interlocking armor, and overall thermoplastic jacket. This cable does not require to be installed in innerduct.

B. Fiber Type

1. Singlemode

Singlemode fibers shall be 8.3/125µm, with a maximum dispersion of 3.5 ps/nm•km at 1285-1330 nm, and a cutoff wavelength of 1260 nm.

2. Multimode

Multimode fibers shall be 50/125µm laser-grade, with a minimum bandwidth of 500/1000 MHz-km at 850/1300 nm.

C. Cable Capacity / Conductor Count

1. Interbuilding Cabling

Interbuilding cabling links should contain 12 singlemode strands and 12 multimode strands.

2. Intrabuilding Cabling

Intrabuilding cabling links should contain 12 singlemode strands.

D. Termination

1. Connectors

Singlemode fibers shall be terminated via singlemode SC connectors. SC connectors shall be 568SC type, and shall meet all requirements of TIA/EIA-568-B.3, section 5.0 including references. The connector housing and the boot shall be blue in color.

Multimode fibers shall be terminated via multimode SC connectors. SC connectors shall be 568SC type, and shall meet all requirements of TIA/EIA-568-B.3, section 5.0 including references. The connector housing and the boot shall be beige in color.

2. Patch Panel

The patch panels shall be rack-mount type and shall be installed into an equipment rack.

3. Adapters

Adapters within the patch panels shall meet the requirements of TIA's 568 series of standards.

Singlemode adapter housing shall be blue in color.

Multimode adapter housing shall be beige in color and shall be duplex.

E. Testing

Inspection: Each fiber shall be inspected per IEC 61300-3-35.

Loss: Each fiber shall be tested as follows:

	Tier 1	Tier 2
Singlemode	Uni-directional, 1310nm and 1550nm	Bi-directional, 1310nm and 1550nm
Multimode	Uni-directional, 850nm and 1300nm	Bi-directional, 850nm and 1300nm

Passive Link Insertion Loss testing for singlemode fibers shall comply with TIA-526-7 ("OFSTP-7") "Test Method A.1: One Jumper Measurement".

Passive Link Insertion Loss testing for multimode fibers shall comply with TIA-526-14A ("OFSTP-14") "Test Method B: One Jumper Reference".

6.2 Backbone Twisted Pair Cabling

A. Cable Type

1. Outdoor Cables

Backbone twisted pair cables installed outdoors shall be gel-filled and should be AMNW type.

2. Indoor Cables

   Backbone twisted pair cables installed indoors should be ARMM type though must meet the rating required by the authority having jurisdiction.

B. Cable Capacity / Conductor Count

1. Interbuilding Cabling

   Interbuilding twisted pair cabling links should contain 100 pairs. The project scope and the building size and function will affect the final number of pairs.

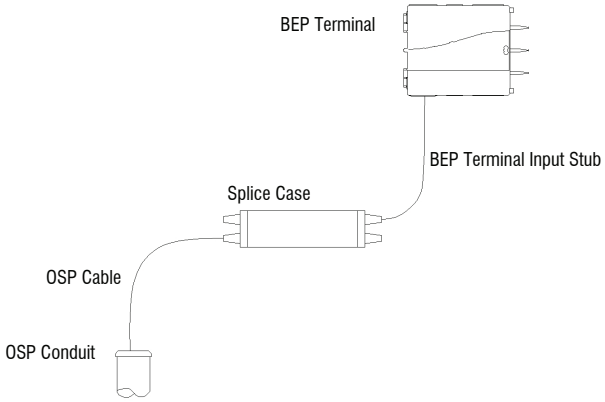
2. Intrabuilding Cabling

   Intrabuilding twisted pair cabling links should contain 25 or 50 pairs. Here again, the project scope and the building size and function will affect the final number of pairs.

C. Termination

1. Interbuilding Cabling

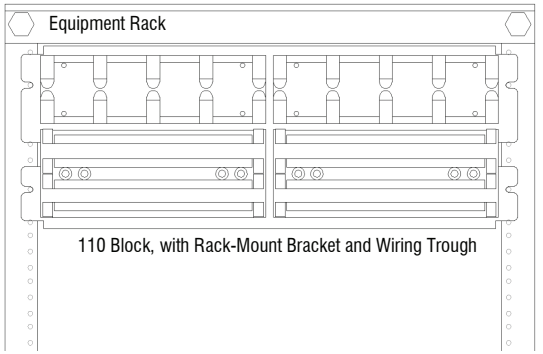
   Interbuilding twisted pair cabling links shall be terminated to building entrance protection terminals, generally wall-mounted. The OSP cable should be spliced to the BEP's input stub. See following common example.



Backbone OSP Twisted Pair Cable Termination Example

2. Intrabuilding Cabling

   Intrabuilding twisted pair cabling links should be terminated onto 110 blocks on rack-mount bracket.



Backbone OSP Twisted Pair Cable Termination Example

D. Testing

   Backbone twisted pair cabling links shall have 100% of the pairs tested for wire map and one pair from each 25-pair binder group tested for length.

7.0 HORIZONTAL CABLING

7.1 Code Compliance

Cabling and the installation shall be compliance with applicable building codes.

For example, cables installed within spaces deemed an air plenum (such as return air above an suspected ceiling system) shall be plenum rated.

7.2 Link (Definition)

A link (or permanent link) consists of a single cable, terminated in the network room to rack-mounted patch panels and terminated in the work area to an outlet (such as a faceplate, surface mounted outlet, surface back box, etc.).

7.3 Link Performance

Link performance shall be Category 6A, as defined by ANSi/TIA-568 standards.

Deviations for specific applications may be considered. However, for general purpose network connectivity, the standard performance shall be Category 6A.

A. Testing

   Horizontal twisted pair cabling links shall have 100% of the links tested per ANSI/TIA-568 standards under a permanent link configuration.

7.4 Cable

General: Cables shall be compliant with ANSI-TIA-568 standards.

Construction: Cables shall be 4-pair unshielded twisted pair (U/UTP). The jacket shall be green, unless otherwise approved to meet specific project requirements.

A. UL "LP" Rating

The cables shall be "LP" rated, regardless of the flamability/smoke rating.

7.5 Telecom Room Termination

In the telecom rooms, links shall be terminated via rack-mounted modular patch panels. The patch panels shall be either discrete port type (snap-in modular connectors) or pre-assembled 110 termination type. If discrete port type, also refer to "Modular Jacks" following.

Modular patch panels shall feature labeling per individual ports.

Avoid high-density patch panels.

7.6 Workstation Termination

Links shall be terminated via modular jacks – refer to "Modular Jacks" following.

Faceplates shall feature labeling to properly identify the outlet and the individual ports.

7.7 Modular Jacks

Construction: Modular jacks shall be 8-position 8-conductor type connectors, with an insulation displacement contact type wire termination.

Wiring: Modular jacks shall be wired to T568B configuration.

A. TIA Compliance

The modular jacks shall be compliant to the ANSI/TIA-568 suite of standards for compatibility and performance to CAT6A.

B. IEC "Connectors for Electronic Equipment" Compliance

The modular jacks shall be compliant to the IEC 60512-5-2 standard and the IEC 60512-99-001 standard as it applies to operating Power-over-Ethernet (PoE) Type 1, Type 2, Type 3 and Type 4 over the cabling plant.

7.8 Service, Per Work Area

A standard cabling complement, or "drop", shall consist of 2 links per outlet.

A. Offices: Generally, open offices shall receive 1 standard cabling complement per workstation and fixed offices shall receive at least 2 standard cabling complements. Offices which can accommodate more than one employee shall receive service consistent with the maximum number of workers the space might accommodate. Outlets should be installed on a separate wall (preferably adjacent before opposite).

1. Example: Cubicle for 1 employee shall receive 1 standard cabling complement.
2. Example: Corral for 3 employees shall receive 3 standard cabling complements.
3. Example: Large Office, which could hold 2 staff but is currently occupied by 1 person shall receive 2 standard cabling complements.

B. Executive Offices: Unless otherwise specified, "Executive" offices, which can additionally accommodate conference or work tables, shall receive 1 standard cabling complement on each wall.

C. Classrooms: Generally, classrooms shall receive 2 standard cabling complements – 1 at the front of the room and 1 at the back of the room.

D. WLAN Access Points: Access points shall receive 2 links. The deployment shall be determined per project as the coverage area is building-specific. Also, the installation shall very per instance (wall mount, ceiling mount, etc.).

8.0 ADMINISTRATION / LABELING

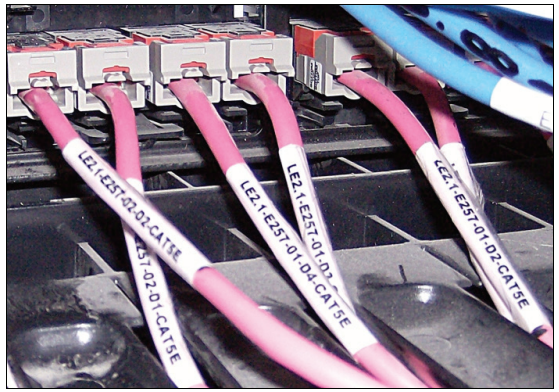
Telecom infrastructure requires clear, legible labeling using printed (not hand-written) labels according to District Standards. The Contractor shall review the labeling standard and select labeling products that are compatible, in the opinion of District IT, with the equipment receiving the labels.

Identifiers for patch panel ports and faceplate ports shall be no longer than 10 characters in length using 7-point Arial font.

8.1 Labeling Requirements

A. Horizontal Cabling: Provide labels on the following:

1. Cable: 1 label on each end, installed within 4 inches of the termination point and positioned to be visible – see example below:



2. Patch panel port (in the telecom room): 1 label per outlet and 1 label per port.
3. Outlet/faceplate (at the work area): 1 label per faceplate and 1 label per port.

B. Backbone Fiber Optic Cabling: Provide labels on the following:

1. Cable – 1 label on each end
2. Label on the card on the inside of the patch panel cover/door
3. Patch panel port (in the destination telecom room)

C. Backbone Twisted Pair Cabling: Provide labels on the following:

1. Cable – 1 label on each end
2. Patch panel port (in the origination telecom room)

3. Patch panel port (in the destination telecom room)

D. Equipment Racks: Provide 1 label plate on the top angle at both the front and the back – see the example below:

8.2 Identifier Assignment

A. General: Separate fields of the identifier with a hyphen.

B. Telecom Rooms:

1. Telecom room identifiers shall be based on the campus (C), building (B), floor (F), and unique sequential number (N).
2. Format: CBF.N
3. Example telecom room ID: "LE2.1" (Laney campus, bldg E, floor 2, 1st telecom room on this floor)
   a) Campus codes: Berkeley City College = "B", College of Alameda = "A", Laney College = "L", Merritt College = "M"

C. Equipment Racks:

1. First field: the telecom room ID; for example: "LE2.1".
2. Second field: the sequential rack number within the room; for example: "R01" (1st rack in the room), "R02" (2nd rack in the room), etc.
3. Example equipment rack ID:

LE2.1-R05

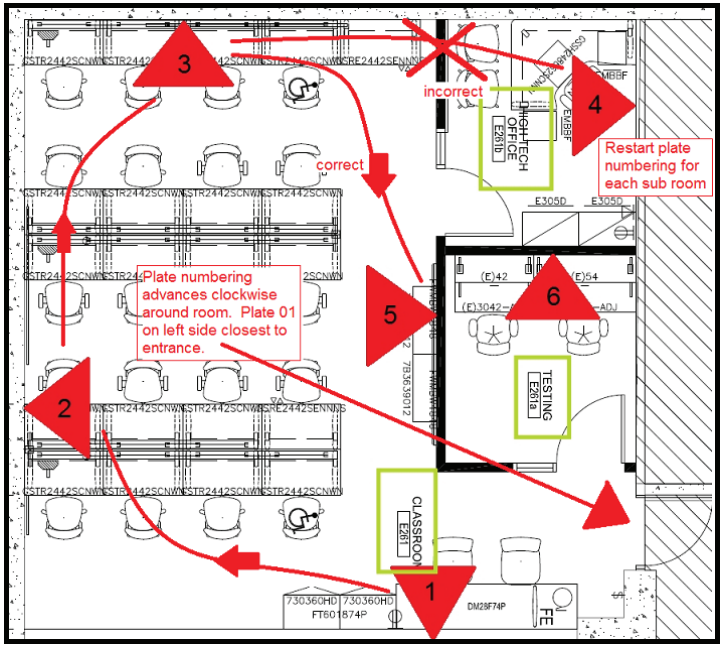
D. Outlets / Faceplates:

1. First field: the telecom room ID; for example: "LE2.1".
2. Second field: the work area room number; for example: "E261".
3. Third field: outlet/faceplate number (a unique sequential outlet number – also see "Multiple Outlets within a Room" below); for example: "01" (1st outlet in the room).
4. Example outlet/faceplate ID:

LE2.1-E261-01

E. Multiple Outlets within a Room:

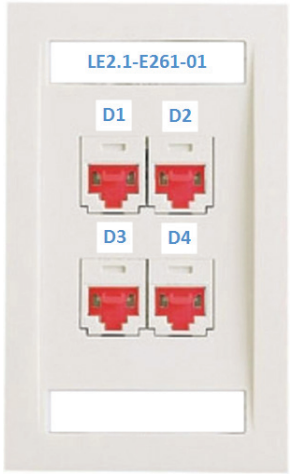
1. When multiple outlets occur in a given room, assign a unique attribute to each outlet starting on the left side of the room when entering the room and proceed clockwise (in plan view) – see the example below:



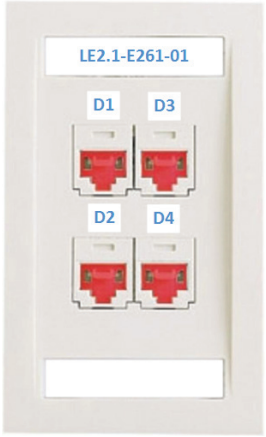
F. Individual Ports at Outlets/Faceplates:

1. First field: the cable's intended service type followed by a unique sequential number per outlet.
   a) Port numbers progress across rows.
   b) Port numbers restart per outlet/faceplate.
2. Example: "D1" (data service, 1st port of the outlet)

3. Example of a faceplate with the outlet label and port labels:

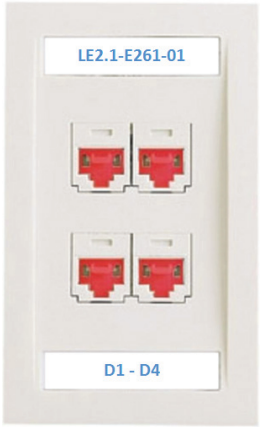


Correct Faceplate Labeling



Incorrect Faceplate Labeling

Incorrect Faceplate Labeling



Acceptable Alternate Faceplate Labeling

G. Horizontal Cables:

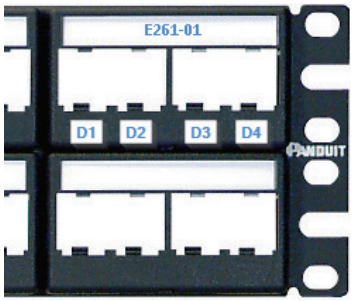
1. First field: the telecom room ID; for example: "LE2.1".
2. Second field: the work area room number; for example: "E261".
3. Third field: outlet/faceplate ID; for example: "01".
4. Fourth field: port ID (a unique letter); for example: "D1" ("D" for data service, 1st port of the outlet).
5. Fifth field: the cable type; for example: "CAT6A".
6. Example horizontal cable ID:

LE2.1-E261A-01-D1-CAT6A

H. Individual Ports at the Modular Patch Panels:

1. Top row, First field: the work area room number; for example: "E261".
2. Top row, Second field: outlet/faceplate ID; for example: "01".
3. Bottom row: outlet port number; for example: "D1".
4. Example patch panel port ID:

E261-01 D1



I. Backbone Cables:

1. First field: the originating room ID; for example: “AD1.1”.
2. Second field: the destination room ID; for example: “AD3.1”.
3. Third field: the cable type; for example: “FS” (fiber optic, 62.5/125 multimode).
   a) Type codes: “F” = fiber optic, “T” = twisted pair
   b) Type codes: “S” = singlemode, “5” = 50/125 multimode, “6” = 62.5/125 multimode
4. Fourth field: beginning strand count served from originating room; for example: “01”.
5. Fifth field: ending strand count served from originating room; for example: “12”.
6. Example backbone cable ID:

AD1.1-AD3.1-F6-01-12

APPENDIX 1: PRODUCTS LIST

LINE #	DESCRIPTION	MANUFACTURER	MNFR PRODUCT NO.	STATUS
01	**DATACOM ROOM FIT-UP**			
02	Equipment Rack, 7' H, "Standard" ("Universal" also acceptable)	CPI	55053-503	Normative
03	Vertical Management Section, 7' H by 6" W, double sided	CPI	11729-503	Normative
04	Horizontal Management Panel, 2U, double sided	Panduit	NCMH2	Normative
05	Cable Runway, 12" W, "Universal"	CPI	10250-112	Normative
06	Cable Runway, 18" W, "Universal"	CPI	10250-118	Normative
07	Cable Runway, 24" W, "Universal"	CPI	10250-124	Normative
08	Power Strip, horizontal / rack-mount, 10-outlet, 20A	Geist	SP104-1020	Normative
09				
10	**BUILDING PATHWAYS**			
11	Primary Pathway | Cable Tray, wire mesh type	B-Line (by Eaton)	Flextray Series	Normative
12	Secondary Pathway | Cable Hanger, up to ~12 CAT5E cables or ~8 CAT6A cables (note: the actual part number may vary to meet the installation configuration / condition)	B-Line	BCH12	Normative
13	Secondary Pathway | Cable Hanger, up to ~40 CAT5E cables or ~28 CAT6A cables (note: the actual part number may vary to meet the installation configuration / condition)	B-Line	BCH21	Normative
14	Secondary Pathway | Linear Ring system, 4" x 2" rings ("Snake Tray Series 201")	CMS	CM-201-24-8	Normative
15				
16	**BACKBONE FIBER OPTIC CABLING**			
17	OSP Fiber Optic Cable, dielectric, 12-strand singlemode	Corning	012EU4-T4100D20	Normative
18	ISP Fiber Cable, interlock armor, 12-strand singlemode	Corning	012E81-33131-A1	Normative
19	ISP Fiber Cable, interlock armor, 12-strand multimode	Corning	012T81-33180-A1	Normative
20	Rack-mount Fiber Enclosure, 2RU	Panduit	FRME2	Normative
21	Adapter plate, with 3 SC\duplex multimode adapters	Panduit	FAP3WEIDSC	Normative
22	Adapter plate, with 6 SC simplex singlemode adapters	Panduit	FAP6WBUSCZ	Normative
23	SC connector, multimode, beige	Panduit	FSCM5BL	Normative
24	SC connector, singlemode, blue	Panduit	FSCSBU or FSCSCBU	Normative
25				
26	**BACKBONE TWISTED PAIR CABLING**			
27	ISP Twisted Pair Cable, ARMM type, 25-pair	Superior Essex	02-097-03	Normative
28	ISP Twisted Pair Cable, ARMM type, 50-pair	Superior Essex	02-100-03	Normative
29	ISP Twisted Pair Cable, ARMM type, 100-pair	Superior Essex	02-104-03	Normative
30	110 Block, rack-mount kit (consists of: 2 100-pair blocks, 2 wire troughs, 1 bracket)	Panduit	P110B1005R4WJ	Normative
31	OSP Twisted Pair Cable, filled ASP (ANMW Bell type), 50-pair	Superior Essex	22-100-83	Normative

APPENDIX 1: PRODUCTS LIST

LINE #	DESCRIPTION	MANUFACTURER	MNFR PRODUCT NO.	STATUS
32	OSP Twisted Pair Cable, filled ASP (ANMW Bell type), 100-pair	Superior Essex	22-104-83	Normative
33	OSP Twisted Pair Cable, filled ASP (ANMW Bell type), 200-pair	Superior Essex	22-108-83	Normative
34	OSP Twisted Pair Cable, filled ASP (ANMW Bell type), 400-pair	Superior Essex	22-112-83	Normative
35	Splice Case, indoor (K&B type)	3M	R-3	Normative
36	Splice module, 710-type, 25-pair, non-filled/dry	3M	3M710-SD1-25	Normative
37	Splice module, 710-type, 25-pair, filled	3M	3M710-SC1-25 S	Normative
38	BEP Terminal, 100-pair, input = stub, output = 110	Circa Telecom	1880ECA1-100	Normative
39	BEP Module, 5-pin type, solid state, black (240V)	Circa Telecom	3B1FS-240	Normative
40	BEP Module, 5-pin type, solid state, red (75V)	Circa Telecom	4B3S-75	Normative
41				
42	**HORIZONTAL CABLING**			
43	Category 6A Cable, 4-pair, plenum, green	Panduit	PUP6XC04GR-UG	Normative
44	Modular Patch Panel, discrete port type, 24 ports, 2U	Panduit	CPPL24WBLY	Mandatory
45	Modular Patch Panel, discrete port type, 48 ports, 2U	Panduit	CPPL48WBLY	Mandatory
46	Faceplate, 2-port, electrical ivory	Panduit	CFPE2EIY	Mandatory
47	Faceplate, 4-port, electrical ivory	Panduit	CFPE4EIY	Mandatory
48	Faceplate, 6-port, electrical ivory	Panduit	CFPE6EIY	Mandatory
49	Faceplate - wall phone type, 1-port, stainless steel	Panduit	KWP6PY	Normative
50	Modular Jack, CAT6A rated, 8-position T568B wired	Panduit	CJ6X88TGWH	Mandatory
51				
52	**NETWORK MONITORING And ALERTING**			
53	Chassis based Layer 3 switches at Core	Cisco	Catalyst 6800 series	
54	Chassis based Layer 3 switches at Core (alternative)	Cisco	Catalyst 4500 series	
55	Stackable Layer 3 swtiches at Access layer\	Cisco	WS-C3850-48P	
56	Controller based WAPs supporting 802.11 abgn, AC wave 2	Cisco		
57	Campus housed Wireless Lan Controller (WLC)	Cisco		
58	Centralized Internet firewall	Cisco		
59				
60	WAN/MAN	CENIC	10 Gbps GigaMAN	
61	Network monitoring and alerting	Solarwinds	Solarwinds	
62	Maintenance on unique and core equipment	Cisco	Smartnet	
63				

Peralta Community College District

Network and Wi-Fi Standards

Information Technologies
333 East 8th Street
Oakland, CA 94606

Table of Contents

I. INTRODUCTION

A. Purpose

This purpose of this document is to describe the minimum requirements and establish the design guidelines for Information Technology systems that will support network and Wi-Fi connectivity.

This document is not intended to replace a Designer. Rather, the requirements and criteria of this document shall guide the Designer and the other Design Team members (electrical, mechanical, and other disciplines) to provide the minimum infrastructure and support for information systems.

B. Scope

The scope of this document includes the following:

- Wired Ethernet network connectivity
- Wireless / Wi-Fi connectivity
- Administration / Labeling

C. Application

The requirements and criteria herein apply to the District Office complex and each campus within the District – Berkeley City College, College of Alameda (including Aviation Facility), Laney College and Merritt College.

All construction projects – both renovation and new construction – shall follow the guidelines of this standard.

D. Systems Supported

The telecom infrastructure is intended to support data network communications from the equipment in the telecom room (e.g., switch) to the work area equipment (e.g., desktop computer) and between equipment in telecom rooms (e.g., edge switch to core switch).

The data network will support, at a minimum, IP-based host-client protocols and voice-over-IP (VoIP) protocols.

The telecom infrastructure, particularly the fiber optic backbone, can support additional building systems such as security systems, building control systems, fire alarm systems, etc.

E. Terminology

Active network equipment generally refers to network devices such as switches, routers, wireless access points, UPS, etc. Active network equipment usually requires electrical power to operate. Active equipment is supplied, installed and configured by Peralta IT or its designated 3rd Party, unless specifically stated otherwise, in which case, the Peralta IT liaison shall approve the device and its application.

Passive network equipment generally refers to physical layer (OSI Layer 1) network hardware and standards such as cables, jacks, signal testing, etc. and related hardware, such as racks, patch panels, junction boxes, labeling, etc. Passive network equipment also does not, in and of itself, require electrical power. Passive network equipment is described within the Telecommunications Infrastructure Standards document issued to District IT.

II. PROCEDURES

A. Designer Qualifications

The Wi-Fi and network shall be designed by an IT Design Professional.

The IT Design Professional:

- Shall be thoroughly familiar with PCCD's Telecommunications Infrastructure, Wi-Fi and network standards.
- Shall be thoroughly familiar with referenced codes and standards.
- Shall be an accredited Wi-Fi and network designer.
- Should be authorized by Cisco as a design and engineer

B. Design Approvals

The Designer shall be responsible for ensuring that all District standards are met. If variances to District standards are necessary, the Designer shall obtain written approval from the District IT Project Liaison in writing for such variances.

The Designer or Design Team Lead shall issue contract documents to District IT Project Liaison for review, comment, and approval prior to completion of 50% CD, if not before.

C. Contractor/Installer Qualifications

The network installer shall have a Cisco certification aligned with the equipment being installed. At a minimum, the installer shall possess Cisco's CCNA.

The Wi-Fi installer shall have a Cisco certification aligned with the equipment being installed. In addition, the installer shall possess at Wi-Fi survey too certification such as AirMagnet, Ekahau or equivalent.

D. Construction Coordination and Approvals

The design and installation shall comply owner and general contractor as follows:

1. Owner
    a) Comply with owner standards and direction
    b) Comply with manufacture standards and best practice guidelines
    c) Coordinate activation and integration with district and college IT teams
2. Construction
    a) Comply with general contractor standards and direction
    b) Coordinate access to required project spaces
    c) Coordinate equipment shipping, receiving, storage and mounting
    d) Review and approve equipment room readiness
        (1) Clean
        (2) Cool
        (3) Power energized
        (4) Physically secure

(5) Room construction complete

3. Standards

The design and installation shall comply manufacture, owner and construction standards

4. Guidelines

The design and installation shall comply with manufacturer, owner and construction guidelines.

E. Products and Materials

Active network equipment shall be furnished, installed and tested by the Contractor. Refer to Appendix 1 for a list of parts.

The Contractor shall submit, prior to installation, a parts list and cutsheets to District IT (or the Engineer) for review and approval.

Patch cord installation shall be clean, organized/bundled and physically secured, using appropriate cable management hardware. All equipment labeling shall be compliant with project labeling standards.

F. Schedule Considerations

1. Network

Information Technology staff are responsible for oversite of installation and testing of active network components (routers, switches, etc.), which cannot be performed until passive equipment (cables, patch panels, jacks, etc.) is fully installed, labeled and tested. The Contractor shall complete the network equipment work reasonably in advance of the first required network connection within the building and no less than one week prior to occupancy. The first required wired network connection will probably be physical security cameras, access control, BMS or other base building system prior to their commissioning. The magnitude of the project scope dictates the minimum amount of notice needed for active component installation and testing.

2. Wi-Fi

Information Technology staff are responsible for oversite of installation and testing of Wi-Fi components (WAPs, controllers, etc.), which cannot be performed until passive equipment (cables, patch panels, jacks, etc.) is fully installed, labeled and tested. The Contractor shall complete the Wi-Fi equipment work reasonably in advance of the first required Wi-Fi connection within the building and no less than one week prior to occupancy. The first required Wi-Fi connection will probably be the building occupants. But there may be other systems being installed requiring Wi-Fi connectivity prior to commissioning. The magnitude of the project scope dictates the minimum amount of advance notice needed for active component installation and testing.

The Construction Team's Project Manager shall notify both the District and College Information Technology Staff, with reasonable advance, of the anticipated completion of the Contractor's work and planned occupancy dates.

G. Owner-Provided Equipment and Functions

1. Network Equipment

PCCD District IT Department will have oversight in the design, procurement, and installation of the network equipment (e.g., edge switches, core switches/routers, firewalls).

The racks within telecom rooms will be provided for the network equipment to be installed. Obtain from PCCD IT rack space location for intended equipment

Power service with appropriate receptacles will be provided by PCCD District IT Department or construction project. Contractor should verify power receptacles are of correct type and energized.

Patch cords will be provided by PCCD District or project low voltage contractor. Obtain patch cords from appropriate source

2. Wi-Fi Equipment

PCCD District IT Department will have oversight in the design, procurement, and installation of the Wi-Fi equipment (e.g., WAPs, controllers).

The racks within telecom rooms will be provided for the Wi-Fi equipment to be installed. Obtain from PCCD IT rack space location for intended equipment

Patch cords will be provided by PCCD District or project low voltage contractor. Obtain patch cords from appropriate source

3. Telecom and VoIP Equipment

PCCD District IT Department will design, procure, and install the telecom equipment and services (e.g., IP telephones, CENIC, Gigaman, PRI's…etc.).

4. Telecommunication services

PCCD District IT Department will provide 1 or 10 gigabit per second services between PCCD campuses and district office via the Corporation of Education Network Initiatives in California (CENIC). Each campus and the District offices will leverage CENIC for network connectivity.

III. NETWORK EQUIPMENT DEPLOYMENT LOCATIONS

A. Equipment Deployment Locations

The network equipment shall be installed in one of the following telecom spaces:

Telecom Space Name	Network Equipment
Entrance Facility / EF	Location of telco demarcation services and equipment
(also, MPOE Room)	Network edge equipment may or may not be deployed in the EF.
Main Distribution Facility / MDF	The core network equipment serving data communications to the entire campus/complex should be deployed in the MDF.
	If applicable, the WAN interface to the District office should be deployed in the MDF, in direct connection to the network core.
	The MDF may also act as a BDF and/or an IDF.
Building Distribution Facility / BDF	No inbuilding network distribution equipment should be deployed. All access layer network equipment will home-run to campus core.
	The distribution spaces will function as passive connectivity for patching access-layer network equipment to core network equipment via backbone fiber.
	The BDF space may also support access layer network equipment.
Intermediate Distribution Facility / IDF	The access layer network equipment serving data communications within a service area shall be deployed in the IDF.

	UPSs will be deployed into the IDFs to support PoE applications such as VoIP (i.e., keep telephones powered).
Satellite Distribution Facility / SDF	A small enclosure supporting access layer network equipment and less than 96 connections remote to an IDF.
Equipment Room / Server Room	Network access layer equipment connecting servers, storage systems. Often the Equipment Room / Server room functions as an MDF supporting core network equipment (switches, routers, etc.)

IV. NETWORK EQUIPMENT

A. Core

The network core interconnects building networks within a PCCD campus. PCCD's network core routes TCP/IP Ethernet packets between buildings, WAN and local server resources.

The follow are functional requirements of the network core equipment

1. Redundant Cores
    a) Cisco 3800 series stackable switches where less than 200 ports are required
    b) Cisco 6800 or Cisco 4500 chassis based hardware where more than 200 ports are required. Note that the manufacturer will be replacing these models with Nexus 9000 series.
2. TCP/IP (layer 3) routing is enabled
3. VLAN support within a single VTP domain
4. LACP or EtherChannel support
5. Quality of Service (QoS) support
6. Uplinks are sized that is appropriate for redundant interbuilding 1Gbps / 10 Gbps interbuilding connectivity using either single mode fiber. Some older structures may be restricted to multimode fiber
7. Support Single mode and Multimode fiber
8. 2N redundant power supplies
9. Rack mounted
10. Backup power needs to be provide via a centralized or localized UPS with a minimum of 30 minutes run-time
11. Cisco 8x5xNBD Smartnet maintenance

B. Distribution

No inbuilding network distribution equipment should be deployed. All access layer network equipment will home-run to campus core.

The distribution spaces will function as passive connectivity for patching access-layer network equipment to core network equipment via backbone fiber

C. Access

The network access layer interconnects end devices (workstations, WAPs, VoIP phones…) to the Ethernet network within a building. Access switches are stackable to aggregate uplinks to PCCD's network cores.

The follow are functional requirements of the network access equipment

1. Cisco 4000 series stackable hardware
2. TCP/IP (layer 3) routing is available but not enabled
3. VLAN support within a single VTP domain
4. LACP or EtherChannel support
5. Uplinks are sized that is appropriate for redundant interbuilding 1Gbps / 10 Gbps interbuilding connectivity using either single mode fiber. Some older structures may be restricted to multimode fiber
6. Copper Ethernet ports are sized appropriately to support all active connections plus 20% growth
7. Power over Ethernet (PoE+) support
8. Support single mode and Multimode fiber
9. N+1 redundant power supplies
10. Rack mounted
11. Backup power needs to be provide via a centralized or localized UPS with a minimum of 30 minutes run-time
12. Available spares for self-maintenance support. Leverage manufacturer warranties for repairs.

D. Edge

The network edge interconnects CCD's distributed egresses to the internet. Each campus and the district office house edge firewalls. The CENIC network is leveraged for individual college access the centralized egress located at the district office.

The follow are functional requirements of the edge equipment

1. Cisco or Fortinet hardware
2. Redundant High Availability (HA)
3. LACP support
4. Sized appropriately for available bandwidth utilization
5. 2N redundant power supplies
6. Rack mounted within PCCD District office data center

7. Minimum of four 10 Gbps ethernet interfaces housed at the campus facility MPOE or MDF
8. Cisco 8x5xNBD Smartnet (or equivalent) maintenance

E. Wi-Fi

The Wi-Fi system interconnects 802.11 end devices (workstations, tablets, laptops, VoIP phones, SmartLocks…) to the Ethernet access network switches. A redundant Wireless Lan Controller (WLC) is deployed at each campus and district office. The controller manages the Wireless Access Points (WAPs) configuration and provides SSID separation.

The follow are functional requirements of the Wi-Fi equipment

1. Cisco hardware
2. Multiple SSID supported
3. 802.11 a,d, n and ac Wave 2
4. LACP or EtherChannel support
5. WAP density will align with device density such that a maximum of 25 active Wi-Fi devices will associate with a single WAP
6. 802.11 throughput shall be at a minimum of 24 mbps for each end device
7. 802.11 overlap shall be at a minimum of 20% for roaming support
8. WAP power setting shall not exceed 50% within a non-failed environment
9. WAP placement shall require a predictive survey to optimize mounting location to support end device density, overlap and anticipated throughput
10. Radio Resource Management (RRM) support
11. WAP Uplinks single 1Gbps with expansion to two
12. WLC interfaces are support multiple 10 Gbps
13. Power over Ethernet (PoE+) support
14. WAPs are ceiling mounted
15. WLC's are rack mounted
16. WLC's have 2N redundant power supplies
17. Backup power needs to be provide via a centralized or localized UPS with a minimum of 30 minutes run-time
18. WAPs have available spares for self-maintenance support. Leverage manufacturer warranties for repairs
19. WLC's have Cisco 8x5xNBD Smartnet maintenance

V. ADMINISTRATION AND LABELING

A. Administration Requirements

1. Shipping and receiving

The network contractor is responsible for shipping and coordination of receiving of network equipment. The equipment shall be stored in a clean secure location until commissioned.

2. Segmentation and Address Space Coordination

Active network equipment shall be configured to support VLAN segmentation. Coordination of the VLANs and address spaces must be coordinated by contractor with PCCD IT. Documentation of equipment VLANs and address spaces shall be recorded by contractor and shall include a patching matrix.

3. Wi-Fi segmentation

The contractor shall coordinate SSID and associated VLANs with PCCD IT. Documentation of Wi-Fi SSID VLANs and address spaces shall be recorded by contractor.

4. Management Addresses

Network Equipment management addresses must be coordinated by contractor with PCCD IT. Each manageable equipment shall be assigned a unique address for remote management. Equipment management address must be recorded within patching matrix.

5. Management Accounts

Active network equipment deployed throughout the district has local and centralized access used to administer the equipment. These accounts have various privilege levels. Upon deployment of active network equipment, the management accounts must be secured by contractor to restrict unauthorized access. At a minimum, the management account passwords must be changed during commissioning. Password length and complexity must meet the districts password policies.

6. Equipment Inventory

The network equipment inventory must be gathered by contractor at time of installation. The inventory information must include model number, serial number and deployed location. The inventory must be presented to the district within a spreadsheet and cross-checked with packing lists and purchase order.

7. Topology Sketch

An as-built topology sketch showing network equipment interconnectivity, model numbers and location shall be developed by contractor and delivered to PCCD IT upon completion of installation

8. Testing and Acceptance

The contractor shall develop and provide system testing details. Testing details and their results shall be provided to PCCD IT during equipment deployment.

9. Packing Material Disposal

The contractor shall remove equipment packing material from project site. Coordinate disposal of material with PCCD IT and/or General Contractor.

10. Maintenance and Support

The contractor shall coordinate maintenance contract requirements with PCCD IT. The contractor shall include required maintenance within Bill of Materials.

B. Monitoring Requirements

Active network equipment administration for and monitors active network equipment. Network equipment must be integrated within the district monitor systems. Active network equipment includes but not limited to routers, switches, firewalls, and controllers used to transport network packets throughout the campuses and district.

Network monitoring will leverage SNMP architectures provided by enterprise grade equipment. The SNMP information will be collected by one or more existing monitoring engines such as SolarWinds or equivalent systems. Monitoring of equipment shall include the following at a minimum:

a) Status up/down

b) Environmental parameters such as temperature and power sources (if available)

c) Component functionality such as blades, fans, supervisors

d) Uplink interface status

e) Uplink bandwidth utilization

f) CPU utilization

g) SNMP traps

h) Syslog messages

C. Labeling Requirements

Network equipment requires clear, legible labeling using printed (not hand-written) labels according to District Standards. The Contractor shall review the labeling standard and select labeling products that are compatible, in the opinion of District IT, with the equipment receiving the labels.

Identifiers for active network equipment and WAPs shall be no longer than 10 characters in length using 7-point Arial font.

CHAPTER 3.0
Berkeley City College

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3.0 Berkeley City College Facilities Master Plan

GOALS

The facilities master plan goals are the same five goals as the 2016 Educational Master Plan goals (repeated here for convenience):

- Goal One: Strengthen Resilience. Strengthen BCC students' abilities to become self-directed,focused and engaged in the pursuit of transformative, life-long learning experiences that result in personal and academic success.
- Goal Two: Raise College Competence. Raise student skills and competencies, and expand their learning experiences, so that they can successfully complete their college program.
- Goal Three: Enhance Career-Technical Education Certificates and Degrees. Enhance BCC's 1- and 2-year career and technical education programs so that they provide current and transferable skills and competencies to earn a living wage in our area, and to maintain competency for advancement in one's career.
- Goal Four: Increase Transfer and Transfer Degrees. Ensure that all of BCC's programs of study and transfer pathways for degrees prepare students, in a timely manner, for multiple transfer options.
- Goal Five: Ensure Institutional Sustainability. Increase BCC's impact in education through innovation, internal and external collaboration and partnerships, and sufficient resources, both short-term and long term.

VISION

The vision is to have an additional facility that is as great as the existing facility, but with exterior grounds and/or access to nature. Although some constituents would like the facility to be next door to the existing facility, others believe that locations in other Berkeley City College service areas might be convenient to those students.

PROCESS / THE MASTER PLAN

Based on the data collection and analysis, it was determined that besides providing some thoughts on how the existing facilities needs could be addressed, there were not any "options" that needed to be developed. This is due to the following:

- The Milvia Street Project already has a conceptual floor plan for the third floor, the current project did not have enough funding to do all three floors.
- Additional Facility and/or Land is about real estate opportunities in locations selected by the College.

With respect to the reconfiguration of (portions) of the existing Main Building the specifics of that reconfiguration will vary depending on the following two scenarios:

Scenario One is the reconfiguration needed after the Milvia Street third floor is built out, but there is no funding and/or additional facility identified.

Scenario Two is the reconfiguration needed after the Milvia Street third floor is built out, and the additional facility is identified / coming online etc.

These results, and ideas on how to address the existing facilities needs, were discussed and vetted through a shared governance process which included campus town halls, College Roundtable, Facilities Planning Committee, and Executive Cabinet meetings. This Master Plan captures those vetted needs and ideas.

MASTER PLAN PROJECTS

	FACILITIES*
B1A	**Milvia Street 3rd Floor Build Out**
B1B	**Existing Main Building Reconfigurations**
B4	Additional Facility and/or Land

	TECHNOLOGY
B2	Complete Wi-Fi Deployment
B3	Complete Network Upgrade Project

* Bolded Projects are depicted on the Master Plan in Fig. 3.1

Figure 3.1: The Master Plan

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PRIORITY PROJECTS

B1A: MILVIA STREET 3RD FLOOR BUILD OUT

is the completion of the Milvia Street Facility, consisting of the build out of the third floor. Figure 3.2 (courtesy of Noll and Tam Architects) shows the conceptual floor plan layout proposed at this time. Depending on the timeline for the B1 project, this floor plan and the elements it shows might change due to changes in needs between now and then.

B1B: EXISTING MAIN BUILDING RECONFIGURATIONS

As mentioned on the previous page the scope of partial reconfigurations to existing spaces within the main building will depend on whether Scenario One or Two is occurring. On the opposite page we illustrate some possible areas that will be reconfigured: the library tutoring areas and office spaces. We also illustrate an idea of adding about 400 ASF on the Level B (Basement), Level 1, Level 2 and Level 3, that could be used to address a few immediate needs.

B2: TECHNOLOGY WI-FI DEPLOYMENT PROJECT

Please refer to Chapter 2.0 for detail on technology projects.

B3: TECHNOLOGY NETWORK UPGRADE PROJECT

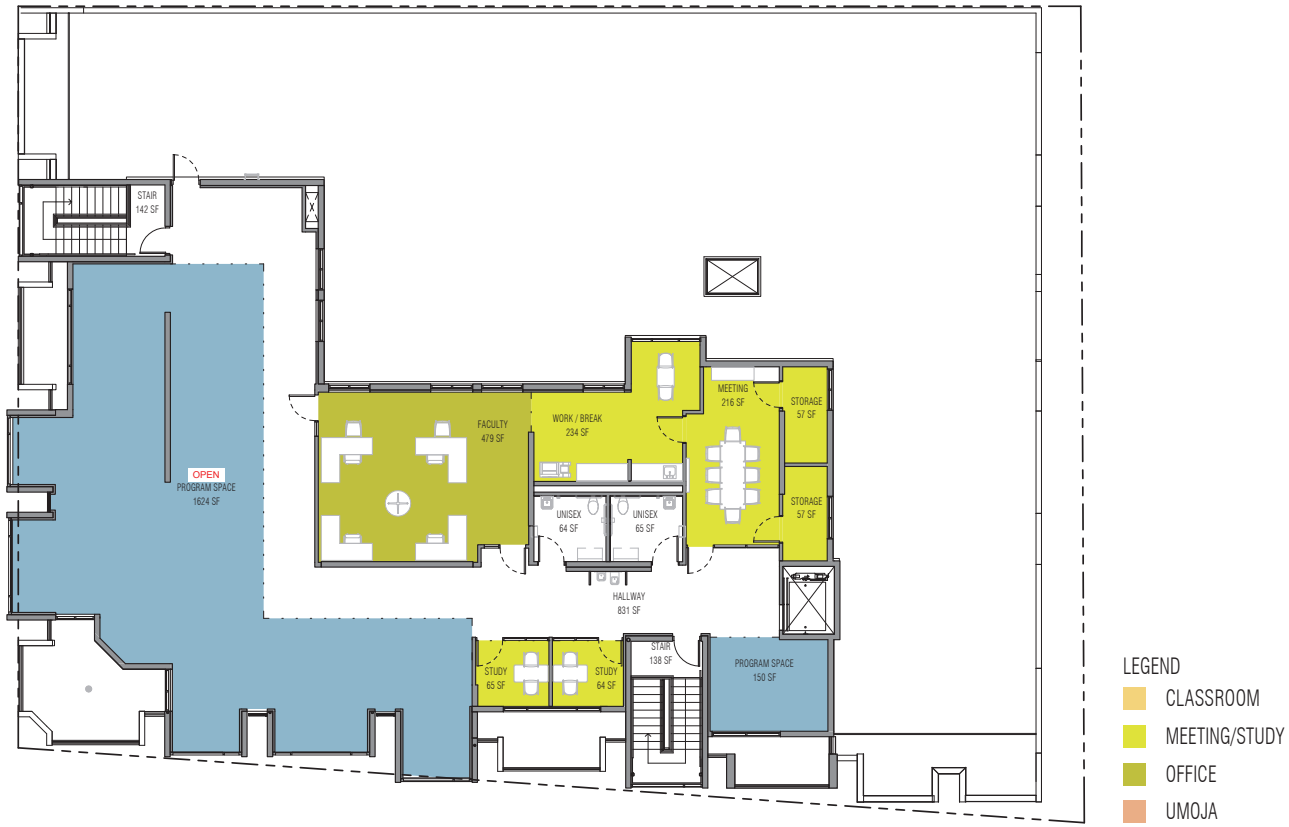
Please refer to Chapter 2.0 for detail on technology projects.

B4: ADDITIONAL FACILITY AND/OR LAND

In less than 8 years, the college has outgrown its current facilities. Even with the purchase of a second building on Milvia Street, the College does not have adequate space to accommodate its deficit space needs, particularly in class lab space. As such this project aims to identify an additional facility and/or land to build a new facility or renovate an existing one. It is highly desired that this additional facility include outdoor spaces for social, quiet and contemplative activities, inclusive of nature elements.

The location of this facility is deemed flexible, it can be in close proximity to the existing facilities, or it can be located in other parts of Berkeley City College's service area.

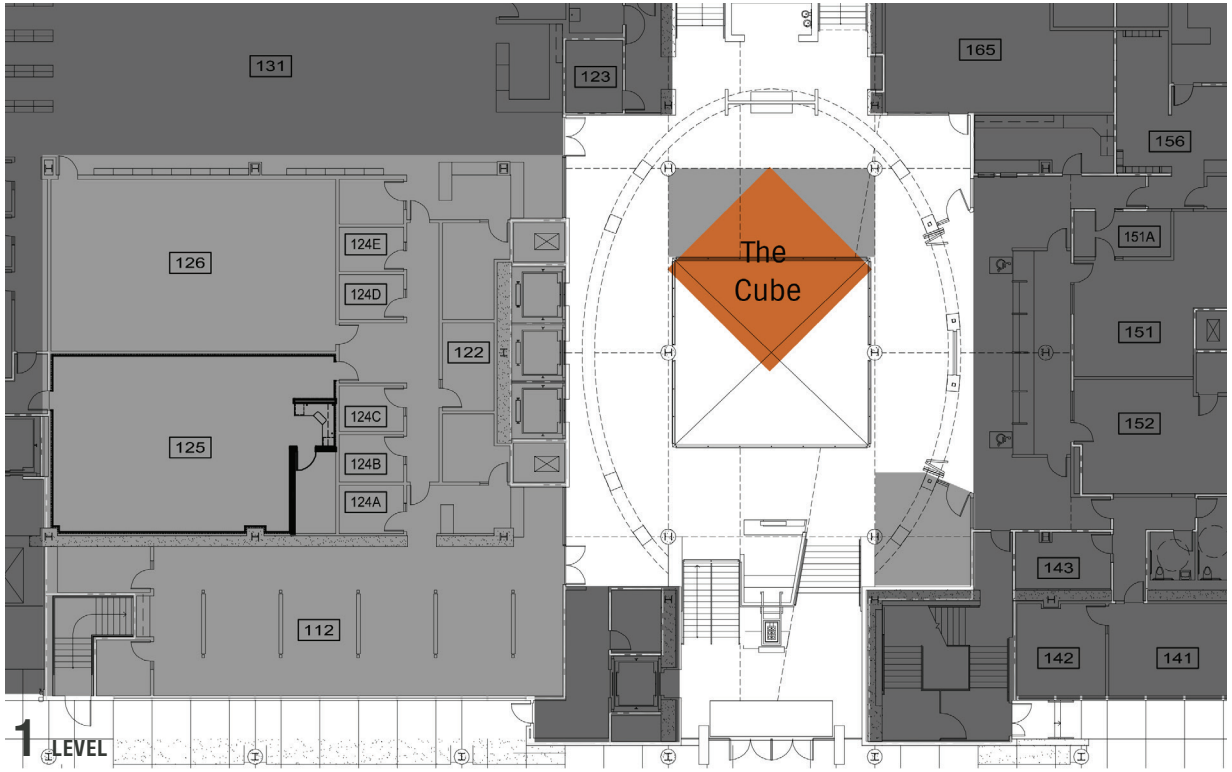
Figure 3.2: Project B1a: Milvia Street 3rd Floor Build Out

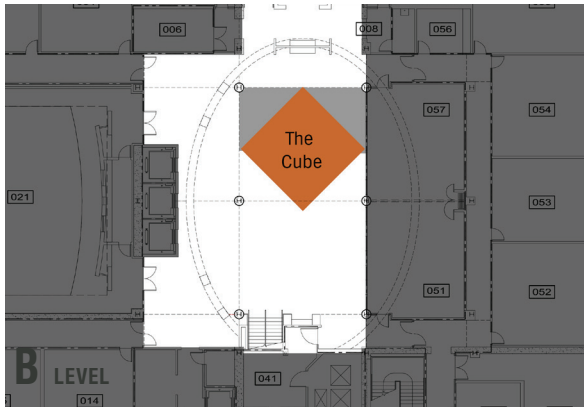


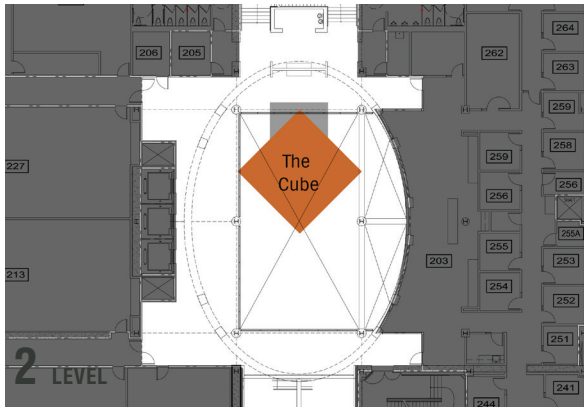
B1B: THE "CUBE" IDEA

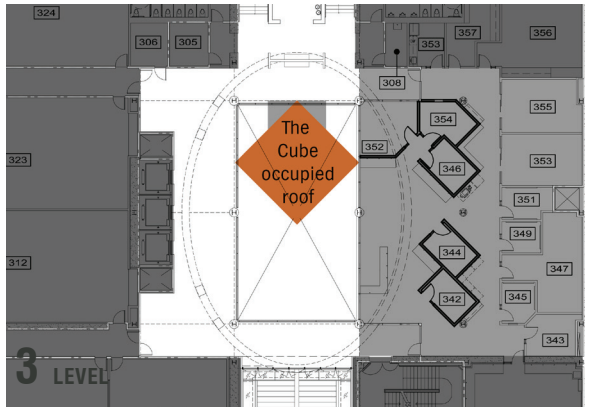
The College lacks appropriate student congregation spaces. Students currently gather/hang out in the Atrium Basement. The noise from this area travels up through the Atrium and impacts the instructional spaces immediately adjacent to the Atrium. The "Cube" (see Orange Boxes on floors B through 3 in Figure 3.3) aims to alleviate this issue by building a 3-story element within the 6-story Atrium. The approximate 400 ASF per floor element would be enclosed on Levels B, 1 and 2 with predominantly glassy walls that will help maintain daylighting and a connection to the Atrium. The roof of the Cube would also be usable space, but it would only be enclosed with railings, unlike the lower floors. See Figure 3.4 (next page) for a conceptual view of the Cube. The amount of additional space is relatively insignificant in comparison to the space needs of the College, but this element could help resolve issues that remain in the existing building regardless of whether additional facilities are built or not.

Figure 3.3: Project B1b: Existing Main Building Partial Reconfigurations - The Cube Idea Plans







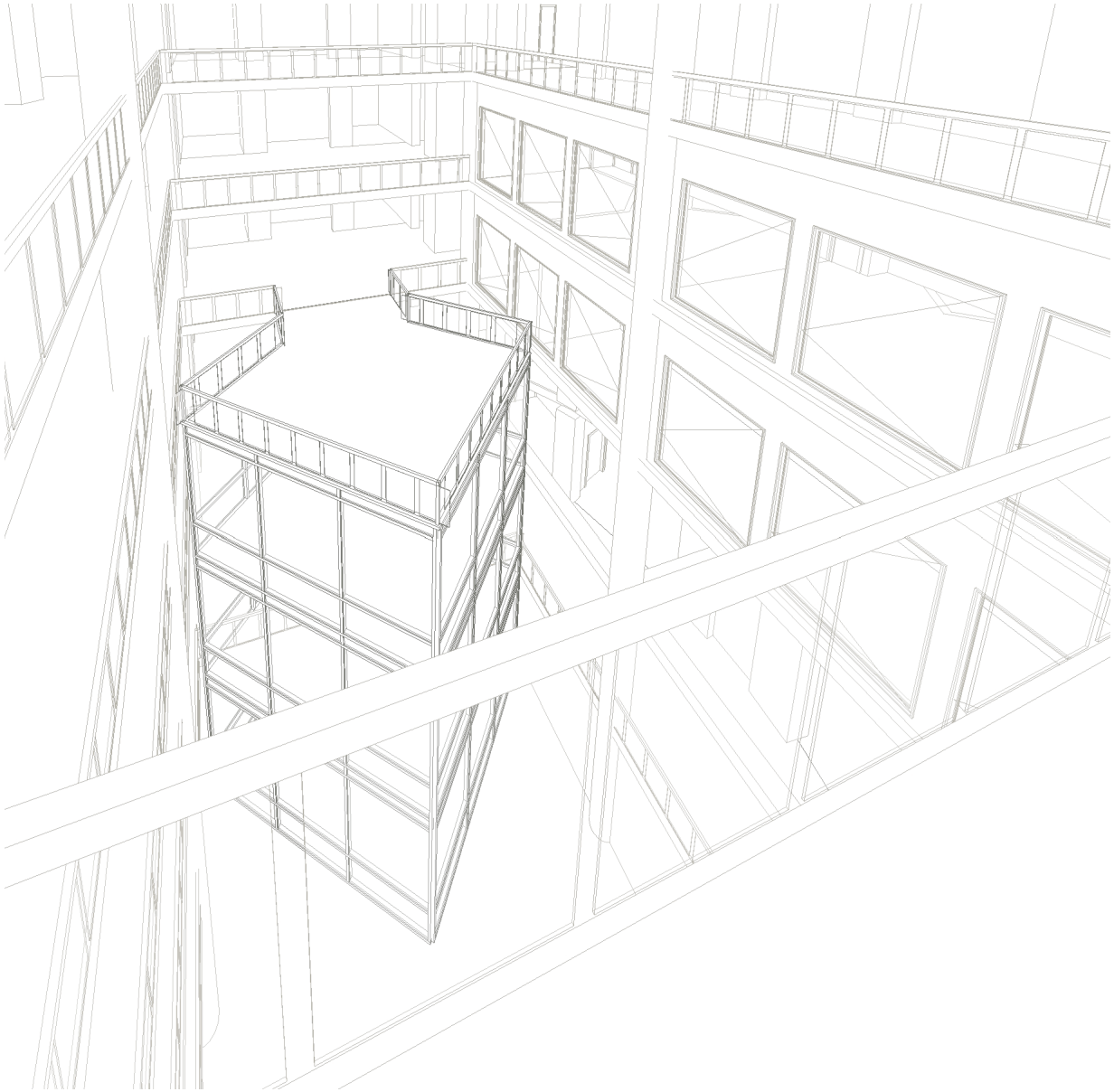


PROPOSED IDEAS

The “Cube” spaces on the four levels could be used for:

- B-Level: enclosed social student gathering space, where the adjacent Light Grey area could also be enclosed, or partially enclosed (perhaps for student club tables etc). The creation of this “noisier” room may allow the rest of the Basement Atrium floor to be zoned for quieter study.
- 1-Level: group study rooms, that might free up space in the Library Tutoring Center that is in dire need of additional space. The Light Grey areas immediately outside of the cube could be zoned for additional study carrels.
- 2-Level: the Cube could be subdivided into (2) Meeting Rooms that could replace or augment the meeting rooms on the 4th floor. Replacement could possibly permit reconfiguration of the office area to address lack of offices and lack of confidential spaces to meet.
- 3-Level: the roof of the Cube could extend the amount of quiet/study spaces for students. In lieu of the study carrels it could be set up with more lounge type furniture, inclusive of “airport hotel pods” if desired.

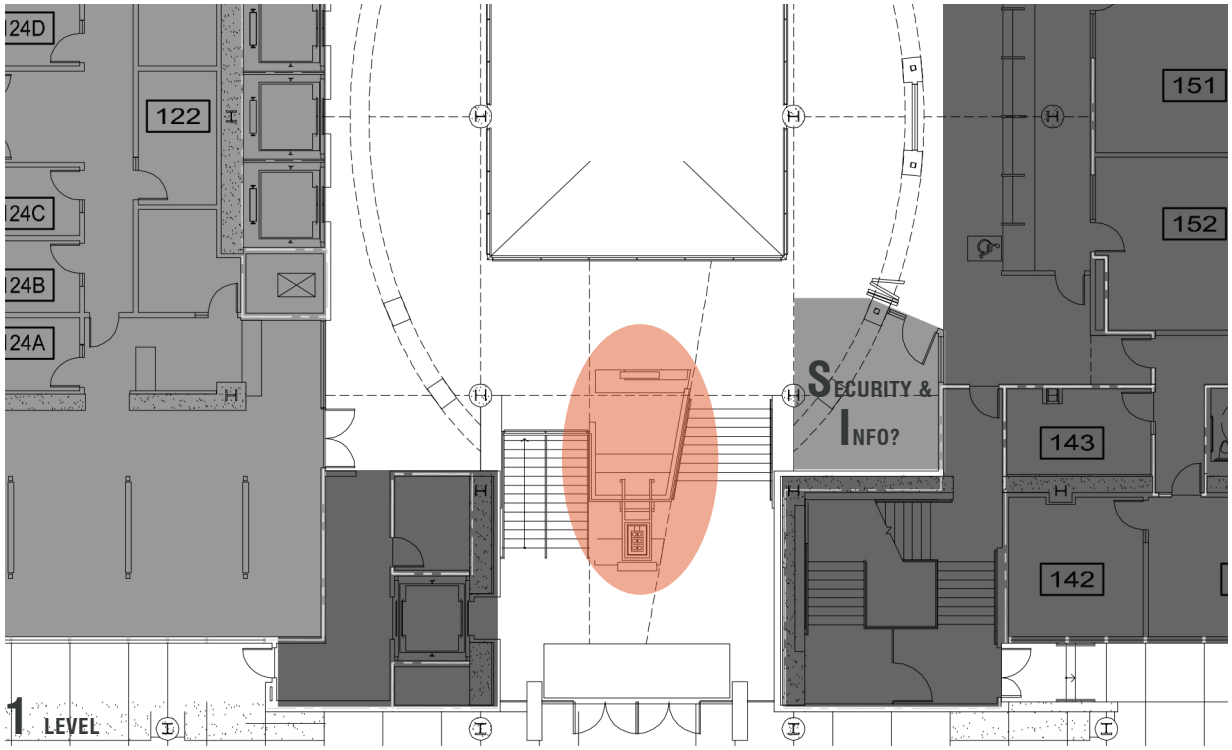
Figure 3.4: Project B1b: The Cube Idea Conceptual View from Existing 5th Floor Balcony

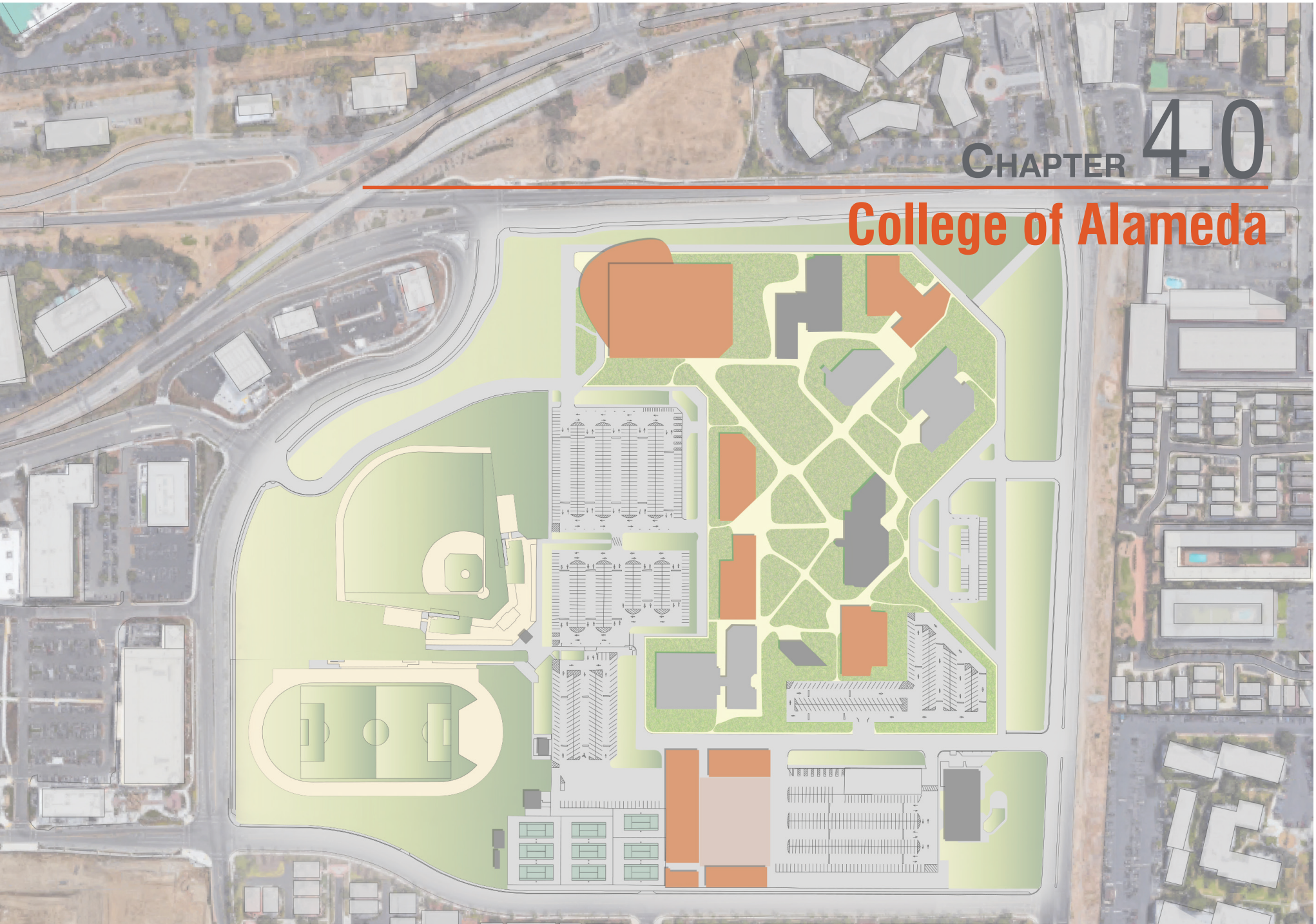


B1B: OTHER IDEAS

The front entry of the main building needs to feel more welcoming. One thought is to place the Security Desk and the Information Desk at the Light Grey location marked “Security & Info?” in Figure 3.5 to the right. The existing Security Desk area could be redesigned to have LED displays (highlighting the Berkeley City College student accomplishments, the distinctive programs, special events information etc. - in other words, information that keeps changing) and the Information Desk area could be a mini-gallery, or mini-lounge for those waiting to be picked up, etc. Both of these areas are marked by the Light Orange oval on figure 3.5.

Figure 3.5: Project B1b: Existing Main Building Partial Reconfigurations - The Front Entry





Chapter 4.0

College of Alameda

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4.0 College of Alameda Facilities Master Plan

PROCESS

Based on the data collection and analysis, the master planning team developed a few options for the future development of the campus in response to the needs identified. The option chosen was revised per shared governance feedback received through a campus forum, a follow up Online survey and the collection of feedback from campus committees by the President of the College. This was an iterative process of refinement, and the results of that process are shared within this chapter.

GOALS

The facilities master plan goals are rooted in the ten 2016 Educational Master Plan Goals (repeated here for convenience), and Goal 6 identified five strategic planning priorities related to facilities:

- Goal One: increase access to college programs / coursework through collaboration with other PCCD colleges in redesigning college schedules and offerings.
- Goal Two: reduce loss of students prior to start of classes.
- Goal Three: increase retention and persistence rates.
- Goal Four: increase community and educational partnerships.
- Goal Five: strengthen business and industry partnerships.
- Goal Six: advance CoA teaching and learning.

- 6.1: Strengthen teaching pedagogy – holistic, contemporary, and relevant curriculum and teaching methods
- 6.1: Strengthen Distance Education (DE) Program
- 6.3: Increase college and classroom technology
- 6.4: Provide faculty and staff professional development
- 6.5: Improve quality of facilities

- Goal Seven: strengthen Data-driven/ informed decision making.
- Goal Eight: establish integrated planning and evaluation system.
- Goal Nine: design organizational, committee, and governance structures to support student success.
- Goal Ten: engage in redesign of PCCD policies and procedures, including the Budget Allocation Model (BAM).

OPPORTUNITIES & CHALLENGES

OPPORTUNITIES

College of Alameda is fortunate to have enough land and parking to build replacement facilities without having to create major swing space needs. It is also located at the busiest corner of Alameda, an area that has experienced great growth and transformation over the last eight years. With its location and proximity to the Alameda Beltline Park (now named Jean Sweeney Open Space Park), College of Alameda has a big opportunity to become a vibrant hub for the community, not only with educational programs, but also with facilities for community use.

CONSTRAINTS

The major constraint for College of Alameda is transportation connections. Although it is only two miles from downtown Oakland, public transportation connections are limited. The other constraint is ironically both an opportunity and a constraint: lots of land, relatively flat, but seemingly under utilized and relatively unattractive / boring. In addition the campus is inwardly focused with main entries off the interior, and back doors (with their accompanying trash/ service yards) facing the city streets. These issues are resolvable, but they require substantial funding set aside for landscaping projects, which with competing priorities can be challenging to obtain.

THE MASTER PLAN

The Master Plan aims to address all the needs identified in the previous chapter, and make the campus more visible and inviting. Placement of new buildings along Webster Street will provide the college more visibility and their architecture will be oriented to both Webster Street and the campus side, thereby taking the first step in making College of Alameda outwardly focused and actively connected with its community.

The plan also calls for an enlarged and enhanced usable Campus Green that marries the two prevalent geometries on campus, and a landscaping treatment of the campus perimeter, complete with a bike/trail loop (A12), that turns the campus into an aesthetically pleasing community asset.

Specifically, the new buildings along Webster Street are the Science & Administration Building (A4) and the Performing Arts Center (A7), placed in line with the College of Liberal Arts that is currently under construction.

Programs from C/D, and the science programs from 860 Atlantic Avenue, will be relocated into the Science and Administration (S&A) Building, allowing for the demolition of Buildings C and D, and the re-purposing of 860 Atlantic Avenue for other District uses.

Administration from Building A first floor will also move to the S&A, allowing the collocation of DSPS (programs and services for students with disabilities) and the Veterans Center into Building A, where the majority of the Student Services are located.

Currently the plan is that the central plant portion of Building C will remain, but it will have its equipment replaced per the assessments. This part of the building has a tall element housing the boiler flue, and the master plan proposes that the exterior of the central plant get a facade treatment, be it artwork, paneling etc., which could turn this element into an icon for College of Alameda. Alternatively the College could study the viability of building a new central plant in another building and demolishing this one when the rest of Building C is demolished.

The former C/D building site areas will be occupied by the permanent ASTI/Career Center Building (A8), and a future growth building (A13). The future growth buildings have been identified to help guide the current development of the campus with respect to outdoor areas, future building pad and parking.

The Automotive/Diesel Complex (A6) is proposed to be located in Parking Lot A, with its back to the tennis courts and its yard open towards the parking lot. This location was deemed best in light of the noise and smells associated with this program. The former Building B area is proposed for another future growth building and replacement parking that is closer to the campus.

The main campus master plan is completed by modernizations of Student Center Building F (A9), Library Building L (A10) and Gymnasium Building G (A11), to address both outdated infrastructure and some reconfigurations of programs within.

At the Aviation campus, the master plan proposes a replacement of the Aviation Complex (A5) in phases to permit the program to keep operating while its facilities are being re-built.

PROPOSED PROJECTS

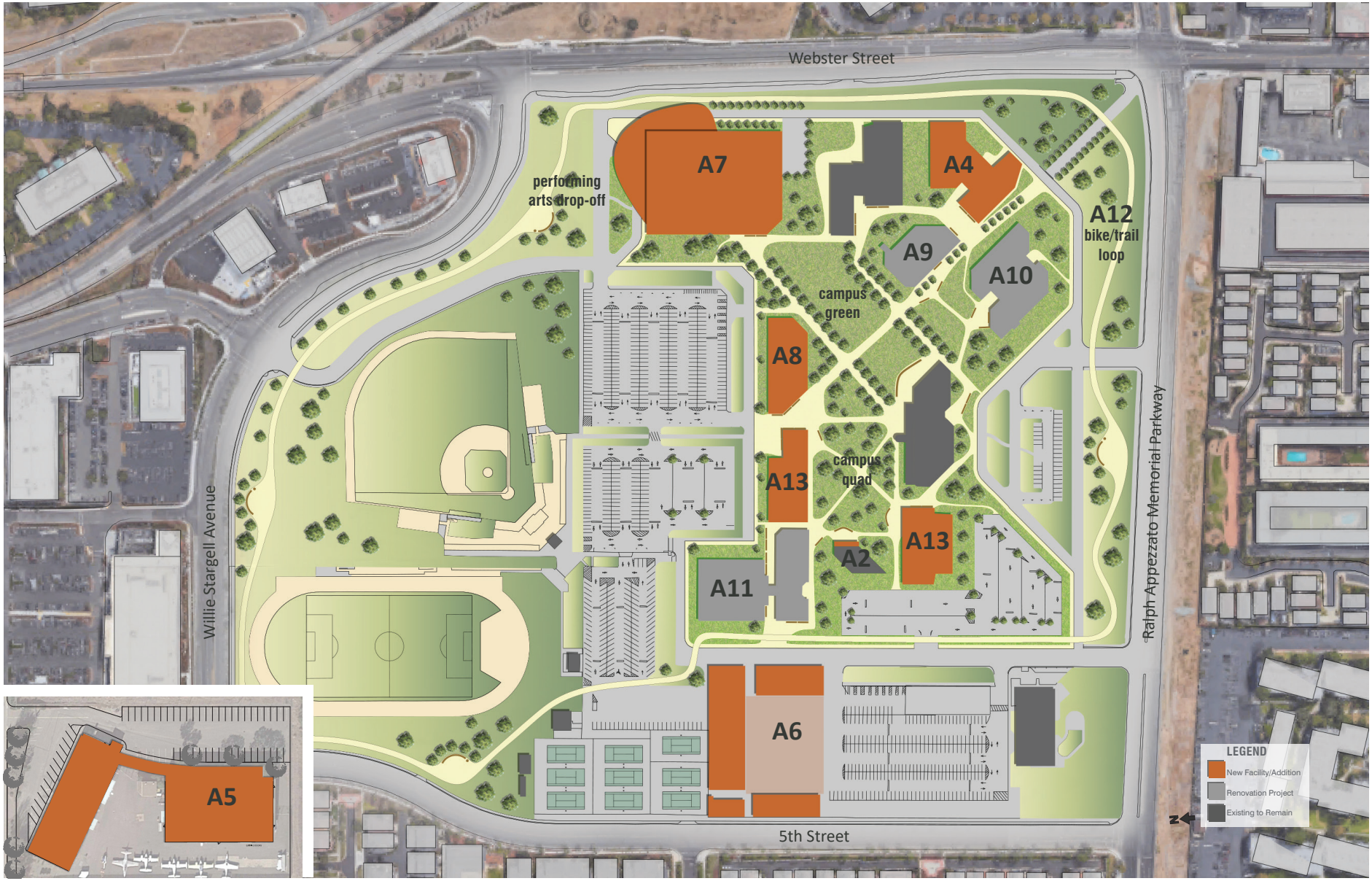
	INFRASTRUCTURE
A1	Replace All Campus Major Electrical Equipment
A2	Upgrade / Replace Central Heating Hot Water Plant
A3	Civil Infrastructure Replacements

	FACILITIES*
A4	**C/D Replacement: Science & Administration**
A5	**Aviation Complex (Replacement)****
A6	**Automotive/Diesel Complex (Replacement)**
A7	**Performing Arts**
A8	**ASTI / Career Center Replacement**
A9	**Modernize Student Center Building F**
A10	**Modernize Library Building L**
A11	**Modernize Gymnasium Building G**
A12	**Perimeter Site Landscaping (Bike/Trail etc.)**
A13	**Future Growth Building**

	TECHNOLOGY
A14	Main Campus Complete Wi-Fi Deployment
A15	Main Campus Complete Network Upgrade Project
A16	Aviation Site Complete Wi-Fi Deployment
A17	Aviation Site Complete Network Upgrade Project

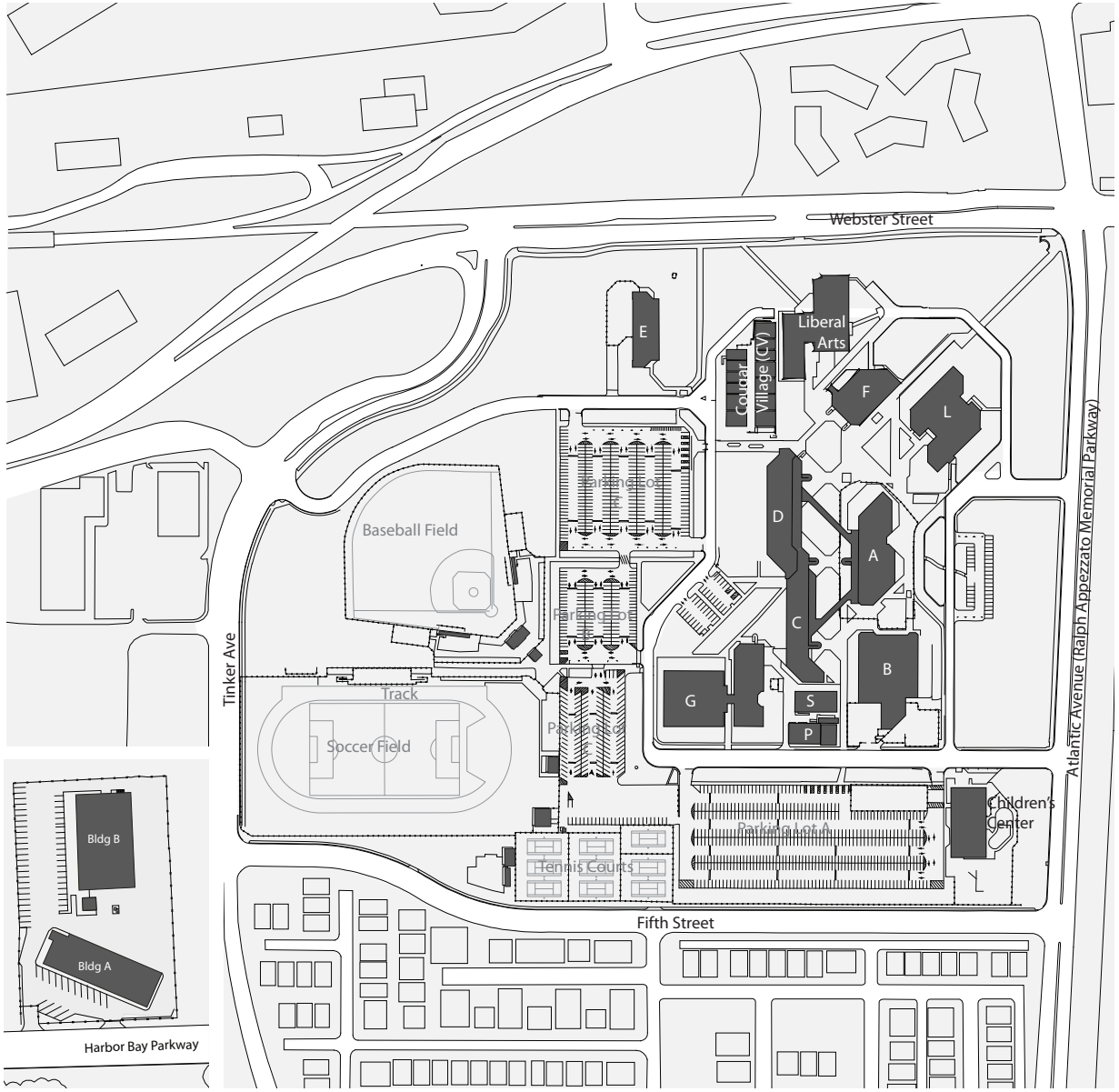
* Bolded Projects are depicted on the Master Plan (Fig. 4.1)
** Courtesy of JRDV Urban International

Figure 4.1: 2017 Facilities Master Plan (Inset: Aviation Campus)



EXISTING CAMPUS PLAN

Figure 4.2: Existing Main Campus Site Plan (Inset: Aviation Campus)

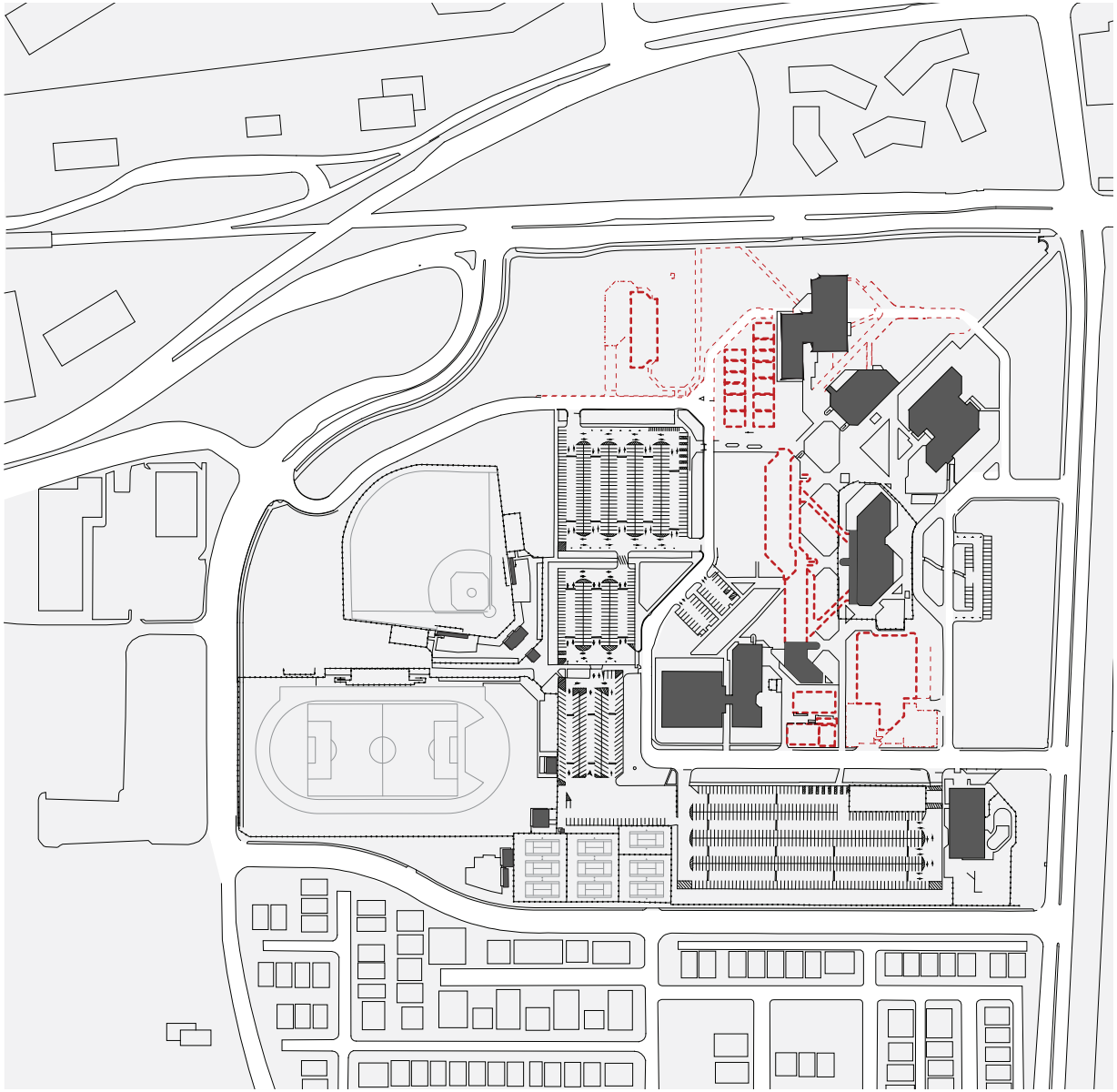


PROPOSED DEMOLITION

The Master Plan proposes to demolish the following buildings (shown as dashed red outlines in Figure 4.3, compare to Existing shown in Figure 4.2) for their associated reasons:

	RATIONALE FOR DEMOLITION
B	Existing Automotive Building is outdated both program and infrastructure wise. Building can not be renovated for modern teaching pedagogy and premier Toyota T-Ten program; also remote from E Building
C & D	More expensive building to retrofit; inefficient
CV	Temporary portables buildings used for Swing no longer needed
E	Existing Diesel Building is outdated both program and infrastructure wise. Building can not be renovated for modern teaching pedagogy; remote from B Building
S	Portable buildings beyond their useful life; programs need permanent space
AVIATION (not shown)	Major infrastructure issues and concerned that regulatory agency (DSA) will not accept retrofit of these structures (they have not in the past, no reason to believe they will now)

Figure 4.3: 2017 Facilities Master Plan Buildings to be Demolished



PRIORITIZATION

After the Draft FMP Site Plan was shared at a college wide campus forum in September 2017, the College confirmed their priorities by conducting an Online survey pursuant to the forum and meetings with the College Executive Cabinet and College Council. The priorities in order are:

- C/D replacement: Science and Administration (A4)
- Aviation Complex Replacement (A5)
- Automotive/Diesel Complex (A6)
- Performing Arts Center (A7)
- Modernize Student Center F Building (A9)
- ASTI/Career Center Replacement (A8)
- Modernize Library Building L (A10)
- Modernize Gymnasium Building G (A11)
- Growth Building (A13)

Note: the Bike/Trail Site Perimeter Landscaping project (A12) was not on original list of projects for prioritization.

The College also identified the following items that need to be integrated into the projects:

- Technology (wired/wireless network infrastructure)
- Computing (Servers)
- Computing (Lab Refreshments)
- SMART Classrooms
- Library Materials
- Basic infrastructure (sewer, power, water)
- Sustainability[1]
- Drought tolerant landscaping
- Water well for irrigation
- Electric vehicle charging stations
- Solar Panels
- Signage and Wayfinding
- Roadway and Parking Pavement

1 The District was engaged in a concurrent effort to develop a Sustainability and Resiliency Master Plan (SRMP) that captured Sustainability Goals, Recommendations etc.

The priority projects selected are shown in Figure 4.5 and listed below:

- C/D replacement: Science and Administration (A4)
- Aviation Complex Replacement (A5)
- Automotive/Diesel Complex (A6)
- Performing Arts Center (A7)
- Modernize Student Center F Building (A9)

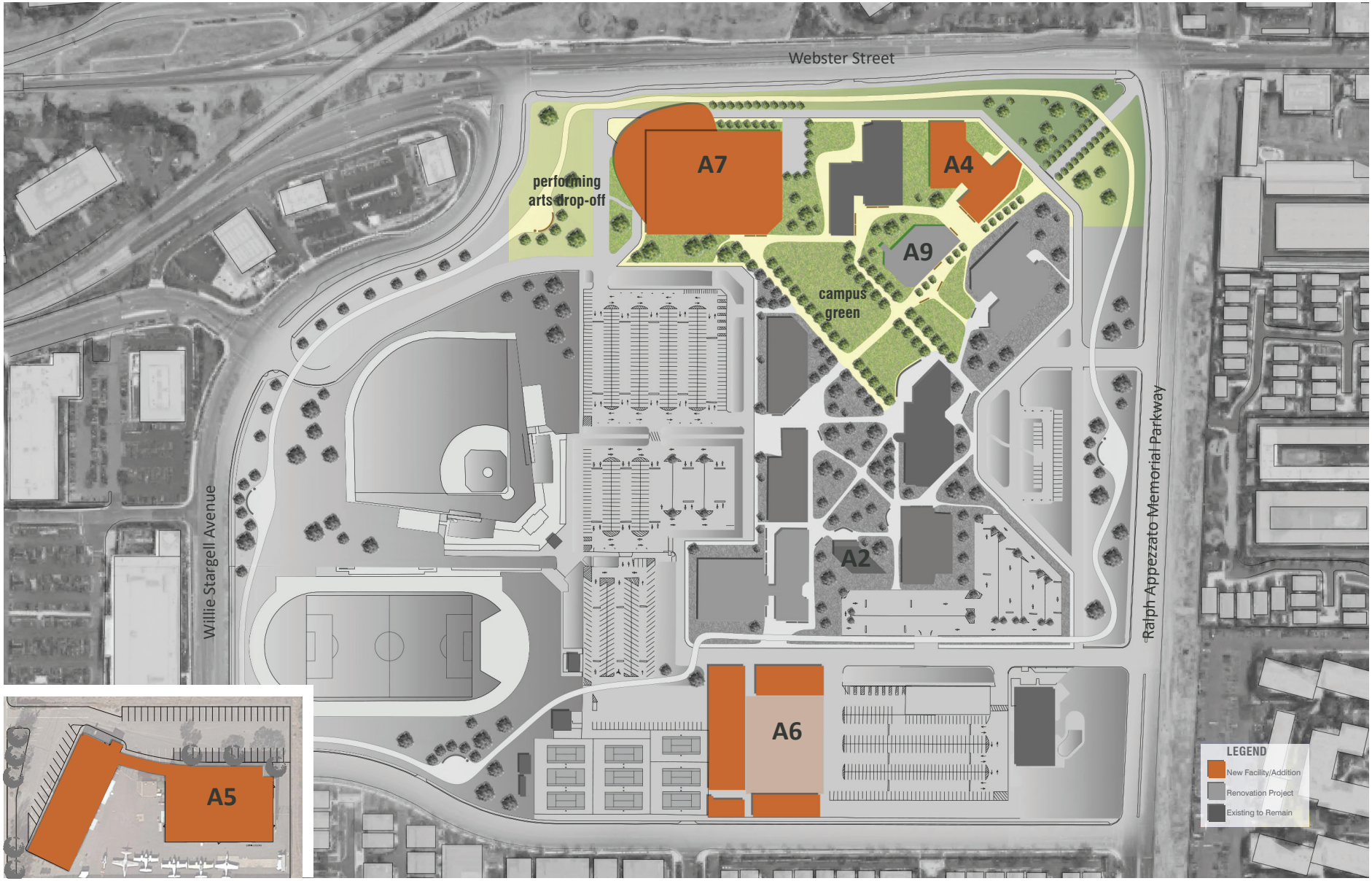
To assist the District in evaluating the myriad needs across its five campuses, the master planning team created an evaluation matrix. Below in Figure 4.4 is the excerpt as it applies to College of Alameda projects (see District-wide FTMP for footnotes and detail).

Figure 4.4: Prioritization Evaluation Matrix based on 2017 Draft Facilities Master Plan Proposed Projects

		Overall Score	Meets PCCD Strategic Goals[1]	Meets Some Goals from College 2016 EMP	Rectifies Life Safety Concerns	Rectifies Accessibility Barriers	Has State Match Funding Potential or Approval	State Facilities Condition Index[2]	FMP Team Assessments Index[3]	Rectifies Multiple Aged Infrastructure Issues	Improves the Teaching & Learning Conditions in More than 1 Building	Improves the Teaching & Learning Conditions in One Building	Essential Student Service/Support	Improves Student Retention & Success	Improves Sustainability Energy & Water	Consolidates Space and Improves Efficiency	Was Identified as a Need in Previous EMP/FMP	Other
A1	College of Alameda Upgrade and Replacement of Main 3000A Electrical Switchboard	TOP	ESSENTIAL SERVICE FOR ENTIRE CAMPUS															
A2	College of Alameda Major Upgrade for New Central Heating Hot Water Plant	TOP	ESSENTIAL SERVICE FOR ENTIRE CAMPUS															
A3	College of Alameda Civil Infrastructure High Priority Projects	TOP	ESSENTIAL SERVICE FOR ENTIRE CAMPUS															
A4	College of Alameda C/D Replacement (Science On Campus)	17	1	1	1	1		2	3	1	1	1		1	1	1	1	1	Science is currently Remot
A5	College of Alameda Renovate Aviation Complex	18	1	1	1	1	1	3	5	1		1		1			1	1	Waiting List for This Progra
A6	College of Alameda Automotive Center (Replacement)	16	1	1	1	1	1	2	2	1	1	1		1	1	1	1		
A7	College of Alameda Performing Arts	6	1	1				n/a	n/a	n/a				1				3	Engages Community, Loca
A8	College of Alameda ASTI/Career Center Replacement	11	1	1				3	excluded	1		1	1		1	1		1	High Community Use
A9	College of Alameda Moderize Building F (Student Center)	14	1	1		1		2	3	1		1	2	1	1				
A10	College of Alameda Moderize Building L (Library)	15	1	1		1	1	2	2	1		1	2	1	1		1		
A11	College of Alameda Moderize Building G (Gym)	13	1	1		1		2	3	1		1		1	1		1		
A12	College of Alameda Site Improvement Projects	9	1	1		1		n/a	n/a	n/a			2	1	1		1	1	Engages Community
A13	College of Alameda Growth Building	9	1	1		1		n/a	n/a	n/a			2	1	1	1		1	Veteran's growing in numb
A14	College of Alameda Technology Complete Wi-Fi Deployment (Main Campus)	8	1	1		1				1	1	1	1	1					
A15	College of Alameda Technology Complete Network Upgrade (Main Campus)	8	1	1		1				1	1	1	1	1					
A16	College of Alameda Technology Wi-Fi Deployment (Aviation Complex)	8	1	1		1				1	1	1	1	1					
A17	College of Alameda Technology Complete Network Upgrade (Aviation Complex)	8	1	1		1				1	1	1	1	1					

PRIORITY PROJECTS

Figure 4.5: 2017 Facilities Master Plan for Priority Projects Only (Inset: Aviation Campus)



PRIORITY PROJECTS

Facilities Project Descriptions

A4: THE SCIENCE AND ADMINISTRATION BUILDING

is a new facility that will replace the existing Buildings C and D, as well as 860 Atlantic Avenue (an off campus facility housing the Sciences). In addition to housing the Sciences, the building will house the Administration offices currently located in Building A. Relocating Administration to this building will allow the vacated spaces in Building A to be re-purposed for DSPS (currently located in Building D), and the Veterans Center (currently located in Building G) to be collocated with other Student Services.
Preliminary Assumptions:

- Size: 42,000 GSF / 28,000 ASF
- Height: 2 stories
- Programs: Biology, Chemistry, Physics, Engineering, STEM Center, Computer Lab, Administration and Faculty Offices and Support Spaces
- Site Improvements: campus road realignment; corner gateway entry landscaping/path including portion of bike/trail; landscaping/plaza around building
- Other: iconic signage on/near roof

Other Considerations:

- Demolition/Relocation: Demolition of Building D and Building C (except Central Plant (portion) and associated site improvements
- Secondary Effects: project to include tenant improvements of vacated administration area in Building A for DSPS and Veterans Center
- Structural Comments (for both demolition and new construction): the demolition of freestanding buildings need not impact the structural integrity of adjacent buildings. The proposed partial demolition of Building C leaves behind only a portion of the structure supporting the central plant equipment. A structural analysis will determine the demand, capacity, and adequacy of the remaining structure.

A5: THE AVIATION COMPLEX

will collocate the core science disciplines, mathematics, engineering and art programs in a state-of-the art laboratory building. Preliminary Assumptions:

- Size: 32,000 GSF / 25,500 ASF
- Height: 1 and 1/2 stories
- Programs: Aeronautics Technology Labs, Classrooms, Support Spaces, Offices, Study Area and Lounge
- Site Improvements: complete renovation of parking lot to address grading and ADA compliance issues
- Project requires: phased construction to allow program to remain open during construction

Other Considerations:

- Demolition/Relocation: Existing Buildings A, B and C
- Swing Needs: phased construction might require on site portables as buildings are replaced one at a time
- Structural Comments (for both demolition and new construction): project proposes to renovate the two buildings, Building A and B. The proposed renovations to each Building may increase the risk category or decrease the existing structural capacity, either of which would trigger a mandatory upgrade. There is also a proposed addition of an elevator, a stair, or a glass connector which could potentially be designed to be freestanding in order to avoid a mandatory upgrade, if the rest of the interior renovations did not trigger one on their own.

PRIORITY PROJECTS

Facilities Project Descriptions

A6: AUTOMOTIVE/DIESEL COMPLEX

College of Alameda is one of six campuses in California to host a Toyota T-TEN program and the only one within the Bay Area. This program is of great value to the College and to the community. This and other technology changes in the automotive and diesel world (alternative fuels, emission standards revisions) require a new state-of-the art Auto Technology and Diesel Mechanics Complex.
Detail per State approved FPP:

- Size: 35,000 GSF / 32,178 ASF
- Height: 1 story
- Programs: Automotive Technology & Diesel Mechanics Labs, Support Spaces, Classrooms and Offices
- Site improvements: 29,000 GSF yard enclosed with a fence; adjustments to parking lot A and new driveway

Other Considerations:

- Demolition: Building B and E

A7: THE PERFORMING ARTS CENTER

will be a dual use facility for the campus and the community. The Dance and Music programs within Building G will relocate to the Performing Arts Center, allowing configurations within the Gymnasium (A11) to occur.
Preliminary Assumptions:

- Size: 50,000 GSF / 40,000 ASF
- Height: 2 stories
- Programs: 250 seat Theater and Support Spaces (22,000 ASF); Black Box (3,000 ASF), Dance Lab and Support Spaces (5,000 ASF), Music Recital Hall and Labs, Practice Rooms etc. (10,000 ASF)
- Other: gateway building
- Site improvements: drop off; realignment of campus road; screened loading dock; portion of perimeter site landscaping (bike/trail) along Webster Street and Willie Stargell Avenue; portion of Campus Green landscaping improvements
- Project requires: demolition of Building E, therefore construction of Automotive/Diesel Complex (A6)

Other Considerations:

- Secondary Effects: vacated spaces from Dance and Music in Building G to be renovated for Gymnasium purposes (see A11)

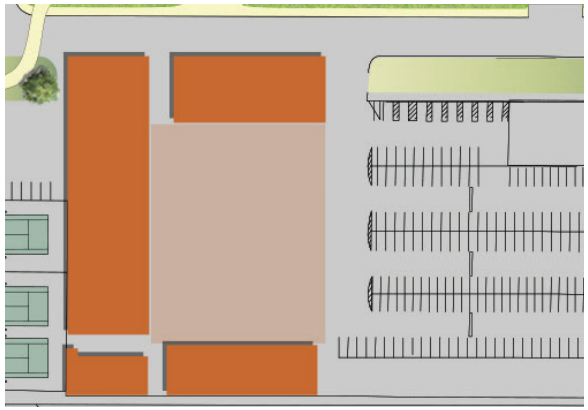
A9: MODERNIZE STUDENT CENTER BUILDING F

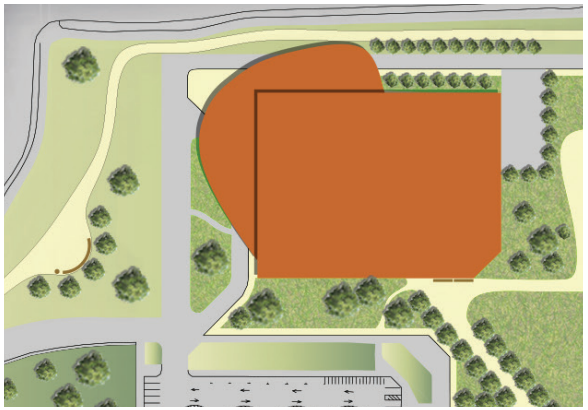
for infrastructure and programmatic deficiencies. The Health Center in particular is in need of additional space and reconfigurations are going to be required to accommodate their needs.
Preliminary Assumptions:

- Size: 22,762 GSF / 17,547 ASF
- Height: 2 stories
- Programs: ASCOA, Bookstore, Health Services, Police Services, Student Activities, Student Lounge, Cafeteria, CalWorks and Cybercafe
- Renovation: roof, HVAC, electrical, lighting and windows/doors replacement; technology upgrades; new restrooms; interior finishes replacement and reconfigurations; furniture replacement; structural voluntary upgrades
- Site improvements: landscaping around building and completion of Campus Green

Other Considerations:

- Swing: Building F occupants





OTHER MASTER PLAN PROJECTS

Facilities Project Descriptions

A8: ASTI/CAREER CENTER REPLACEMENT

will replace the S temporary portables that are past their useful life with a permanent facility that is closer to the other college buildings and the center of campus.
Preliminary Assumptions:

- Size: 22,000 GSF / 18,000 ASF
- Height: 2 stories
- Programs: Alameda Science and Technology Institute (Early College High School); and One Stop Career Center
- Site improvements: entry plaza from west, and landscaping improvements around the building including portion of Campus Green (Campus Green to be completed with this project, if not earlier)
- Project requires: demolition of Building D, therefore construction of the Science and Administration Building (A4)

Other Considerations:

- Demolition/Relocation: removal of S Portables and clearing of the site; temporary landscaping

A10: MODERNIZE LIBRARY BUILDING L

for infrastructure and programmatic deficiencies. Over the last several decades libraries have changed drastically due to changes in technology and a more heavy reliance on tutoring needs.
Preliminary Assumptions:

- Size: 41,536 GSF / 33,029 ASF
- Height: 2 stories
- Programs: Library, Assessment, Audio-Visual, Learning Resource Center, Open Computer Lab and Tutoring
- Renovation: roof, HVAC, electrical, lighting and windows/doors replacement; technology upgrades; new restrooms; interior finishes replacement and reconfigurations; furniture replacement; structural voluntary upgrades
- Site improvements: landscaping around building

Other Considerations:

- Swing: Building L occupants unless it can be phased
- Library Materials: Update aged collection of non-electronic materials such as periodicals and books and add/expand access to online resources, database subscriptions, videos and materials to address different learning styles and 21st Century learning modalities

A11: MODERNIZE GYMNASIUM BUILDING G

for infrastructure and programmatic deficiencies. The vacated spaces from Dance and Music will provide opportunities for some required reconfigurations.
Preliminary Assumptions:

- Size: 40,088 GSF / 28,179 ASF;
- Height: 2 stories
- Programs: Gym, Mens and Womens Locker Rooms and associated Support Spaces; Offices
- Renovation: roof, HVAC, electrical, lighting and windows/doors replacement; technology upgrades; new restrooms; interior finishes replacement and reconfigurations; structural voluntary upgrades
- Site improvements: landscaping around building

Other Considerations:

- Swing: phased and/or during Summer
- Structural Comments: this project includes a renovation of the existing gymnasium. It may be possible to avoid triggering a mandatory upgrade, however there are existing potential structural deficiencies found in the building, as outlined in the Building G structural narrative.

OTHER MASTER PLAN PROJECTS

Facilities Project Descriptions

A12: PERIMETER SITE LANDSCAPING (BIKE/TRAIL)
proposes to landscape the perimeter of the campus with a bike running trail loop and consistent drought tolerant landscape within which “secret” themed gardens can be discovered. The themes could be color, smell, succulents, grasses etc. These gardens would be arranged around stretch out areas for the biking/running trail that will envelop the entire campus perimeter, with the exception of the tennis courts area where it will migrate to the campus edge before joining the perimeter edge. This trail could link into the other park systems of Alameda, namely the Jean Sweeney Open Space Park.

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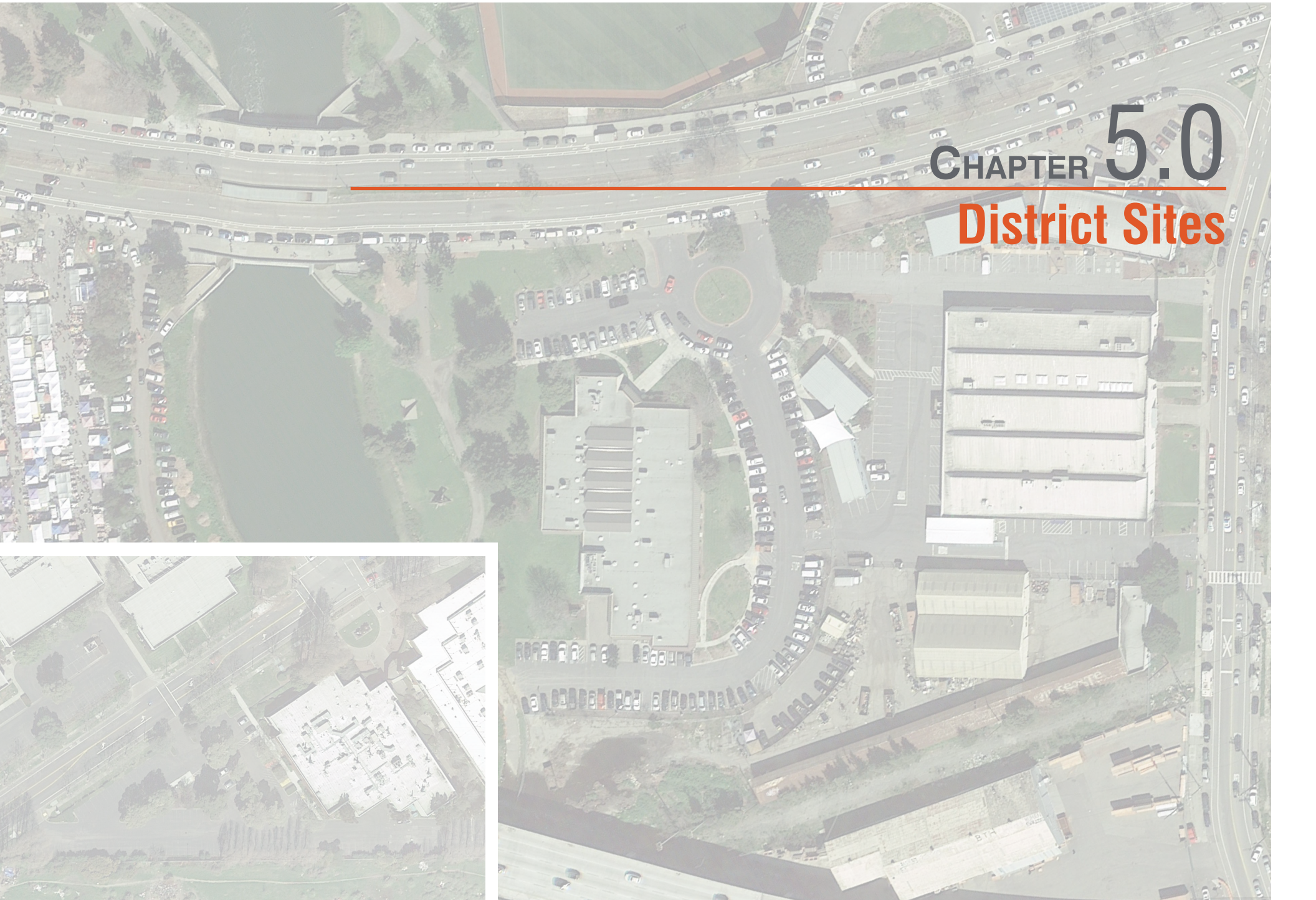

CHAPTER 5.0
District Sites

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5.0 District Sites

DISTRICT ADMINISTRATIVE COMPLEX

Process

The starting point for gathering stakeholder feedback on facilities, infrastructure and technology needs was to conduct an Online Survey based on facilities needs identified in the previous 2009 facilities master plan. The objective was to validate whether those needs and priorities were still valid, and to explore what other needs may have arisen since then.

In addition to the Online Survey, additional stakeholder feedback regarding campus needs was provided through a campus forum, and follow up discussions with various department leaders.

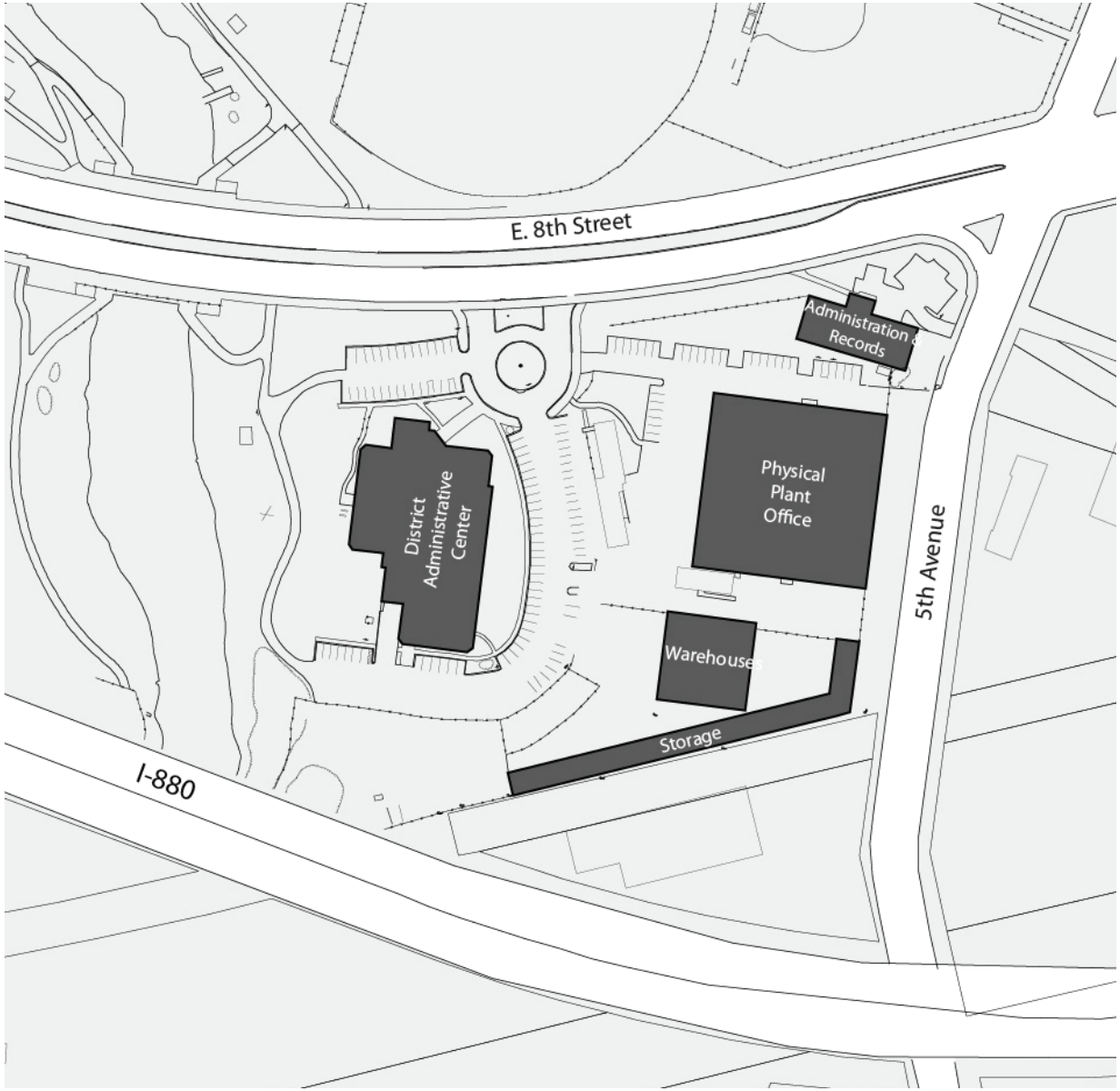
District Administrative Complex Online Survey

101 Responses

101

total responses

Figure 5.1: Existing Complex Site Plan



STAKEHOLDER FEEDBACK

District Administrative Complex

The major findings of the stakeholder feedback is that (a) the same problems/issues exist today, and (b) the 2009 Facilities "Long Term Development (Phase III)" Master Plan solution is still the preferred solution, with only a few amendments needed.

The 2009 Master Plan main priorities still stand:

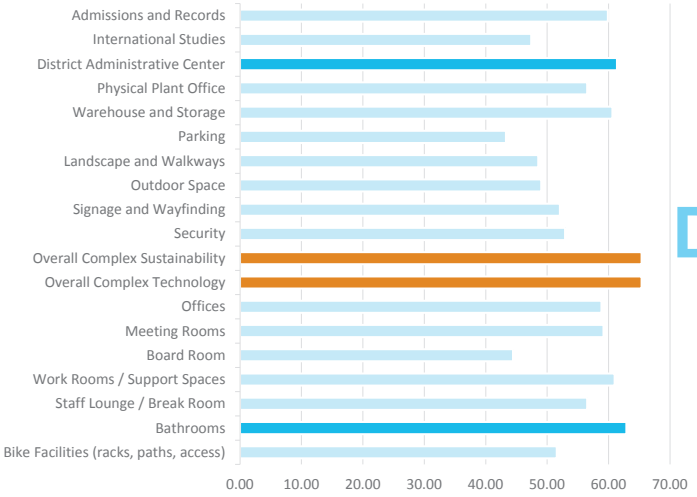
- Create a Welcoming and Inviting Campus Environment
- One Stop Service for Students and General Public
- Efficient Distribution of Departments and Resources

The 2009 "Long Term Development (Phase III)" Master Plan solution of consolidating all services scattered across the existing (5) permanent and (2) portable buildings into one new facility is the preferred solution with these amendments:

- 2009 FMP proposed this new facility would be located on the Laney Parking lot site, but the 2017 revision is that this new Consolidated District Administrative Center could be located anywhere in the District's service area (Alameda County). Access to good transportation is a key factor.
- 2009 FMP identified growth for International Studies, Admissions and Records, Educational Services, Conference Rooms and Warehouse Storage. All needs hold true, except for International Studies, which has been decentralized to the campuses where the students are located. The department does however need access to a large multi-space at the District for special events, along with two office spaces at the DAC.
- The District is also exploring decentralizing maintenance and operations to the individual campuses, and this will reduce space needs at the District site, but require space to be identified at the individual campuses.
- To respond to the trends identified in the College Educational Master Plans, there is a need to create a Workforce Development and Continuing Education Center that is not associated with any one campus and is located close to transportation. Makes sense to collocate it with District Administrative Complex.
- The Existing Child Care Center on Laney site is operated by District and in need of replacement.

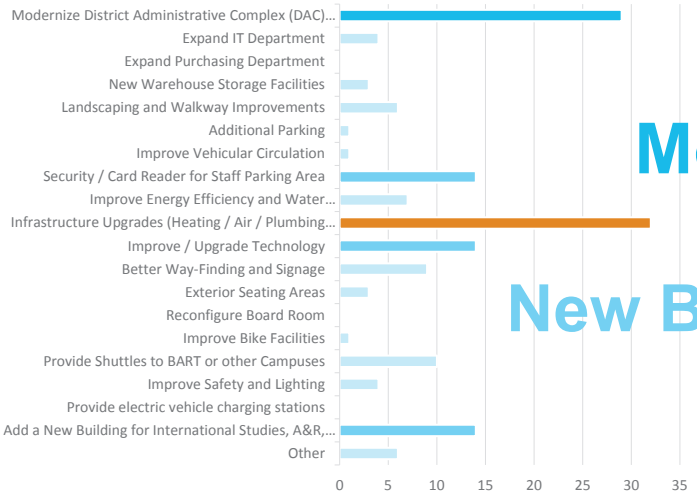
Figure 5.2: Sample Online Survey Answers

Which facilities need the most improvement:



Sustainability
Technology
Dist. Adm. Ctr.
Bathrooms
Warehouse

Top priorities for facilities improvements from previous FMP:



Infrastructure
Modernize DAC
Technology
New Bldg for Intl etc.
Security/Card

MASTER PLAN PROJECTS

District Sites

	INFRASTRUCTURE
D3	Replace HVAC until New Complex
	Civil Infrastructure Replacements until New Complex

	FACILITIES
D1	New Consolidated Administrative Complex (DAC)
	Child Care Center Renovation/Replacement
D2	New Workforce Development and Continuing Education Center (WDCE)
D18	Renovate 860 Atlantic Avenue, Alameda for Peralta Genomics Institute (PGI)

	TECHNOLOGY
	See Technology List

PRIORITY PROJECTS

District Site

D1: THE DISTRICT ADMINISTRATIVE COMPLEX (DAC)
is a new consolidated facility that will replace the existing District Administrative Complex, Admissions and Records Building, Physical Plant Building, and Warehouse/Storage Buildings. Location is to be determined: within PCCD service area, and close to public transportation. Preliminary Assumptions:

- Size: 60,000 GSF / 40,000 ASF
- Height: 3 stories
- Programs: District Administration, Finance, Information Technology, Facilities & Planning, Purchasing, and Warehousing
- Site Improvements: exterior welcoming plaza, and garden spaces
- Other: built flexibly to allow departments to change sizes as needed

Other Considerations:

- Child Center Renovation or Replacement: the existing District operated Child Care Center at Laney College is need of renovation or replacement. Depending on location of the new District Administrative Complex, there may be a desire to collocate the Child Care Center with the DAC.

PRIORITY PROJECTS

District Site

D2: WORKFORCE DEVELOPMENT AND CONTINUING EDUCATION CENTER (WDCE)
is a new facility that will expand the much needed services of the Workforce Development and Continuing Education Center. As identified in the Educational Master Plans for all colleges, there is a rising demand for Corporate Training, Professional Development and non-credit Continuing Education in the 24 - 34 age group in particular. In order to avoid duplication and inefficient use of resources, the District proposes that this should be located in one new facility, near public transportation. If feasible, it should be located adjacent to the new DAC, for this will offer operational efficiencies, and opportunities to share spaces.

- Size: 25,000 GSF / 17,,000 ASF
- Height: 2 stories
- Programs: Workforce Development and Continuing Education
- Site Improvements: exterior welcoming plaza, and garden spaces

PRIORITY PROJECTS

860 Atlantic Avenue, Alameda

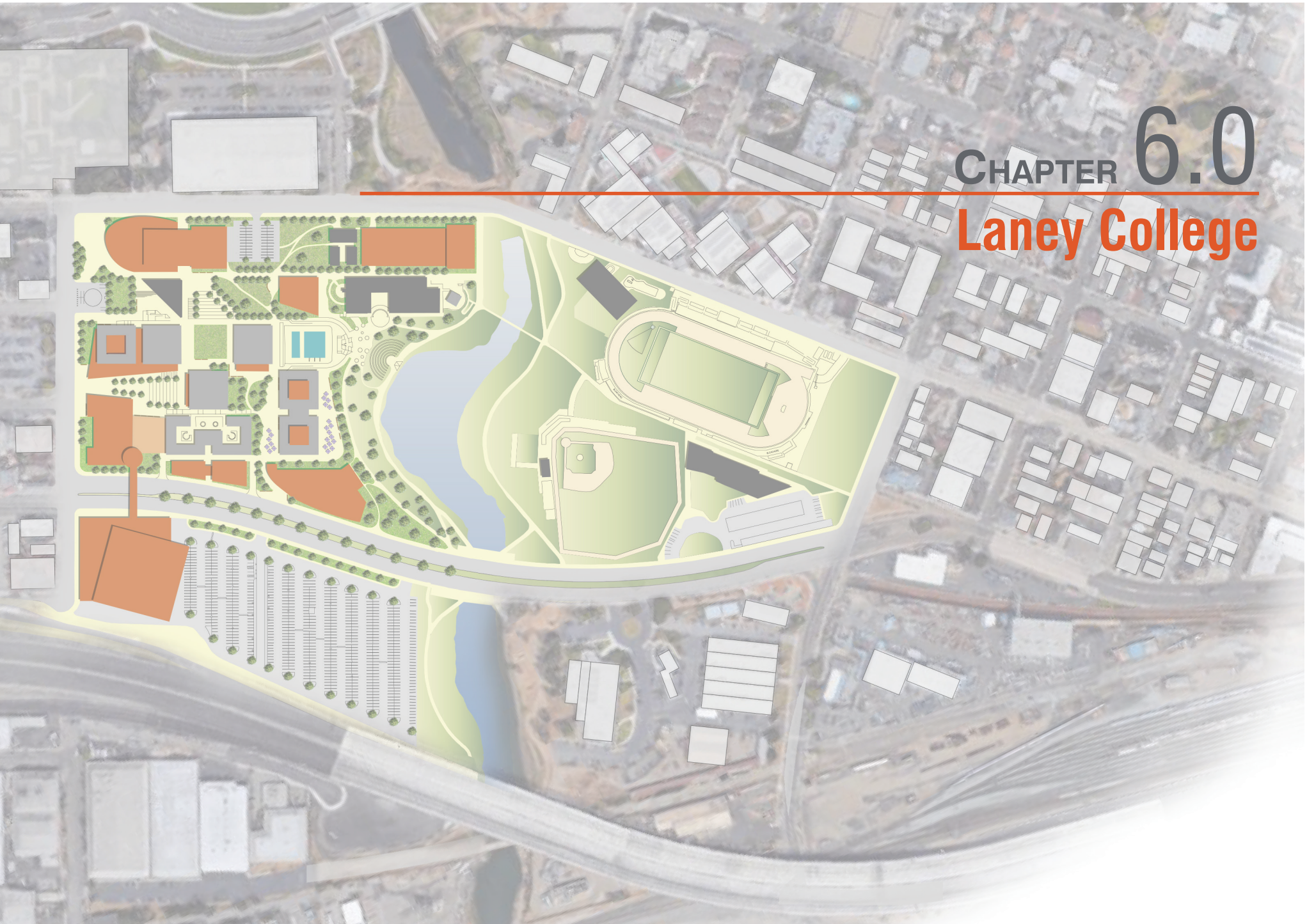
D18: PERALTA GENOMICS INSTITUTE

860 Atlantic Avenue, Alameda, will be renovated to expand the existing research-based Genomics program into the Peralta Genomics Institute (PGI). Genomics is one of the fastest growing industries requiring high technical training, and the PGI will attract local students for profitable careers in this rapidly growing field. In addition, the institute is poised to be largely self-sustaining, by conducting DNA prep and sequencing for others, as well as creating novel course work delivered for profit through a series of webinars. Preliminary Assumptions:

- Size: 26,000 GSF / 19,600 ASF
- Height: 1 story
- Programs: Genomics
- Renovations: roofing; air conditioning, electrical (increase capacity) and backup generator required because negative freezers house valuable samples; increase technology bandwidth drastically (huge amounts of data transmitted); existing Genomics area very minor adjustments, rest of the building will require reconfiguration and replacement of outdated equipment; add some lab systems (deionized water, nitrogen etc); and signage.

Other Considerations:

- Secondary Effects: project requires CoA Science programs and the Merritt Medical Genomics program to move out.



CHAPTER 6.0
Laney College

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6.0 Laney College Facilities Master Plan

PROCESS

Based on the data collection and analysis, the master planning team developed a few options for the future development of the campus in response to the needs identified. The option chosen was revised per shared governance feedback received from the Facilities Planning Committee, stakeholders participating in Flex Day (August 2017), and the College President. This was an iterative process of refinement, and based on the refined draft facilities master plan the Facilities Planning Committee led another prioritization process to establish first phase projects. The results of that process are shared within this chapter.

GOALS

The facilities master plan goals are the same eight 2016 Educational Master Plan Goals (repeated below):

- Goal One: raise awareness in the community of and access to programs, resources and opportunities at Laney College and manage enrollment effectively.
- Goal Two: develop an equitable and sustainable college resource allocation model that is aligned with Laney College's priorities.
- Goal Three: make all facilities clean, safe, functioning, well-equipped and attractive.
- Goal Four: build a culture of success, belonging and pride.
- Goal Five: increase student success, retention, transfer and completion.
- Goal Six: provide pathways from adult school, high school, community based organizations, and other student populations, to careers, degrees, certificates and/or transfer.
- Goal Seven: create a culture of innovation including technology where data-based decisions are made, implemented, communicated and evaluated, prioritizing sustainability.
- Goal Eight: create liaisons with community based organizations and agencies, and become a hub for social and human, health, wellness and housing services to benefit the wider college community.

And additional criteria for achieving some of these goals:

- Provide the learning and teaching facilities that support student success: most of the existing facilities have reached their maximum life expectancy, not only in terms of building systems and infrastructure, but also with respect to accommodating current teaching pedagogies.
- Be welcoming: address the campus aesthetic of being inwardly focused and uninviting. Create more welcoming and clear approaches onto campus, on all sides of campus, especially from BART.
- Be community focused: leverage the rejuvenation of 10th Street (OMCA, Kaiser Convention Center) to rejuvenate Laney's presence and become a well known community asset.

OPPORTUNITIES & CONSTRAINTS

CONSTRAINTS

Laney College is limited in its ability to build replacement structures due to lack of available sites. The parking lot site is not viable because there is already a shortage of parking for the campus, and many constituents think the noise and pollution from the freeway I-880 is not conducive to teaching and learning.

The Eagle Village portable buildings location (along 7th Street) is the State approved site of the future Library Learning Resource Center (LLRC). The project has State funds that have already been approved (not allocated yet), and as such this site has to be reserved for that project.

Demolishing and re-building in place, while feasible to do in many circumstances, can also add significant swing costs to projects, and result in loss of student enrollment due to inconveniences of swing location or setups.

It is due to these constraints that the facilities master plan proposed to look at the tennis courts as a potential site, with the hope that the courts could be relocated both in the interim and in the long-term.

OPPORTUNITIES

Laney College is located in an exciting multicultural part of Oakland that is witnessing revitalization. The Oakland Museum of California (OMCA) is revamping itself, the Kaiser Convention Center is being developed into a co working space for non-profits, and the BART Lake Merritt Station Plan is starting to take effect. These developments offer opportunities for Laney to enact the eighth goal from the 2016 EMP: create liaisons with community based organizations, and goal one: raise awareness in the community of and access to programs, resources and opportunities at Laney College. Critical for their ability to do so is the creation of a more welcoming atmosphere on campus, and state of the art facilities that attract community members for a variety of their needs.

THE MASTER PLAN

The objective of the Facilities Technology Master Plan is to address the severely outdated classrooms, class labs and infrastructure concurrently. Each proposed project addresses these items and while suggested building names reflect the class laboratories within, each of those buildings will house modern multi-use multi-purpose classrooms on the upper floors available for all programs across campus.

To begin achieving these objectives, the Master Plan proposes to utilize the two "non-building" sites to build a new Library Learning Resource Center (LLRC) and a new STEAM (Science, Technology, Engineering, Arts and Mathematics) Center. The Library Learning Resource Center (L8) will be located at the Eagle Village Portables site per State approved location, while the STEAM Center (L7) is proposed to be built on the current site of the Tennis courts, along 10th Street.

From a campus perspective the building of the STEAM Center at this location will accomplish multiple goals:

- Collocate dispersed science disciplines into one building
- Collocate related fields within same building, fostering collaboration and new fields of study/careers
- Being able to address many departmental needs all in one building
- Capitalizing on views to Lake Merritt and the Estuary for multiple campus users
- Creating a Laney College icon visible from the surrounding neighborhoods
- Address infrastructure needs immediately by building a Central Plant (L10) within this building to tie new and existing buildings to remain
- Enabling the ability to demolish Buildings A and B, and parts of G, which appear to cost more to renovate than replace
- Enables potentially easier replacement of campus infrastructure
- Provides a new welcoming face along 10th Street

This last goal is augmented by the replacement of Building A with a combined Student and Welcome Center (L6). This building opens up to the corner of 10th and Fallon Streets to create a connection with the Oakland Museum of California

The Theater and Music component of G Building will be renovated with infill and new lobby components into a combined Performing Arts facility (L11), while the rest of Building G will be demolished and replaced with a 3-story Design and Manufacturing Center (L9) housing Machine Technology, Carpentry, Graphic Arts and Photography, Cosmetology, and modern multi-use classrooms. This building will ultimately connect to a the Laney Marketplace & Incubator / Parking Garage with a pedestrian bridge (L14) that will help address the vehicular safety concerns of the existing pedestrian crossings across 7th Street.

These two projects will provide the opportunity for Laney to create an inviting and more secure edge along Fallon Street, and a more pronounced entry from BART onto campus. With the relocation of the Carpentry outdoor covered work area along 7th Street, this entry can now open up to a welcoming courtyard with seating steps (and accessible means) up to the existing Upper Quad level.

The former Student Center will be renovated as a Wellness Center (L12) which will facilitate the removal of Building C. With the Forum, B Building and Old Library vacated by the LLRC and STEAM Center projects, these buildings will be demolished to build a new Community Building and Campus Green (L13) that integrates the campus, and provides social spaces for the campus and the community.

Building F (L15A) will be renovated for Welding and a potential Maker Lab on the first floor, to complete the Design and Manufacturing Center, and modern multi-use classrooms on the second floor. The project will also include building a small building in front of Building F to house the Sustainability Center (L15B) which will have an energy efficient recycling center and garbage collection area.

Building E (L16) will be renovated to collocate and expand the existing Culinary programs into a Culinary Institute (L16) on the first floor. It will house a cafe/retail bakery component and continue to house the Bistro restaurant, both of which will have expanded and enhanced exterior seating areas. The second floor will house modern multi-use classrooms.

Last, but not least, the Gymnasium (L17) will be renovated to address assessment and program deficiencies.

PROPOSED PROJECTS

	INFRASTRUCTURE
L1	Replace All Campus Major Electrical Equipment
L2	Replace / New Central Plant & Infrastructure
L3	Replace Domestic Hot Water System
L4	Replace Compressed Air System
L5	Replace Domestic Water & Compressed Air Piping

	FACILITIES*
L6	**New Student and Welcome Center**
L7	**New STEAM Center**
L8	**New Library Learning Resource Center**
L9	**New Design & Manufacturing Center & Outdoor Work Area Canopy**
L10	New / Replace Central Plant**
L11	**Modernize Performing Arts (Theater & Partial G)**
L12	**Wellness Center (Modernize Student Center)**
L13	**New Community Building & Campus Green**
L14	**Laney Marketplace & Incubator / Parking Garage with Campus Pedestrian Bridge**
L15A	**Modernize F / Design & Manufacturing II**
L15B	**Sustainability Center**
L16	**Modernize E / Culinary Institute**
L17	**Modernize Gym**

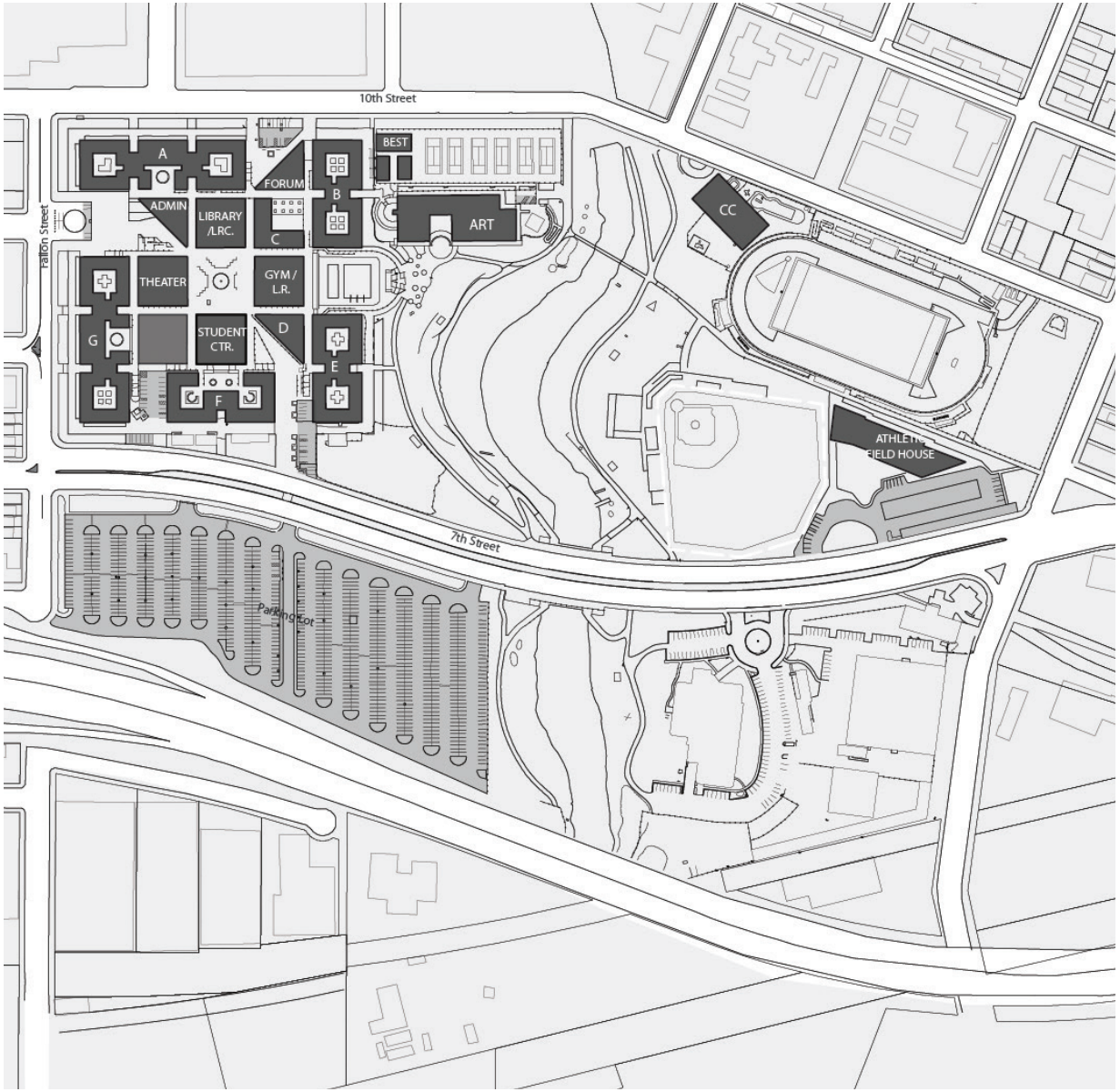
	TECHNOLOGY
L19	Complete Wi-Fi Deployment
L20	Complete Network Upgrade Project

* Bolded Projects are depicted on the Master Plan (Fig. 6.1)
** Exact location and details to be determined by a Central Plant Study

Figure 6.1: 2017 Facilities Master Plan

EXISTING CAMPUS PLAN

Figure 6.2: Existing Campus Site Plan

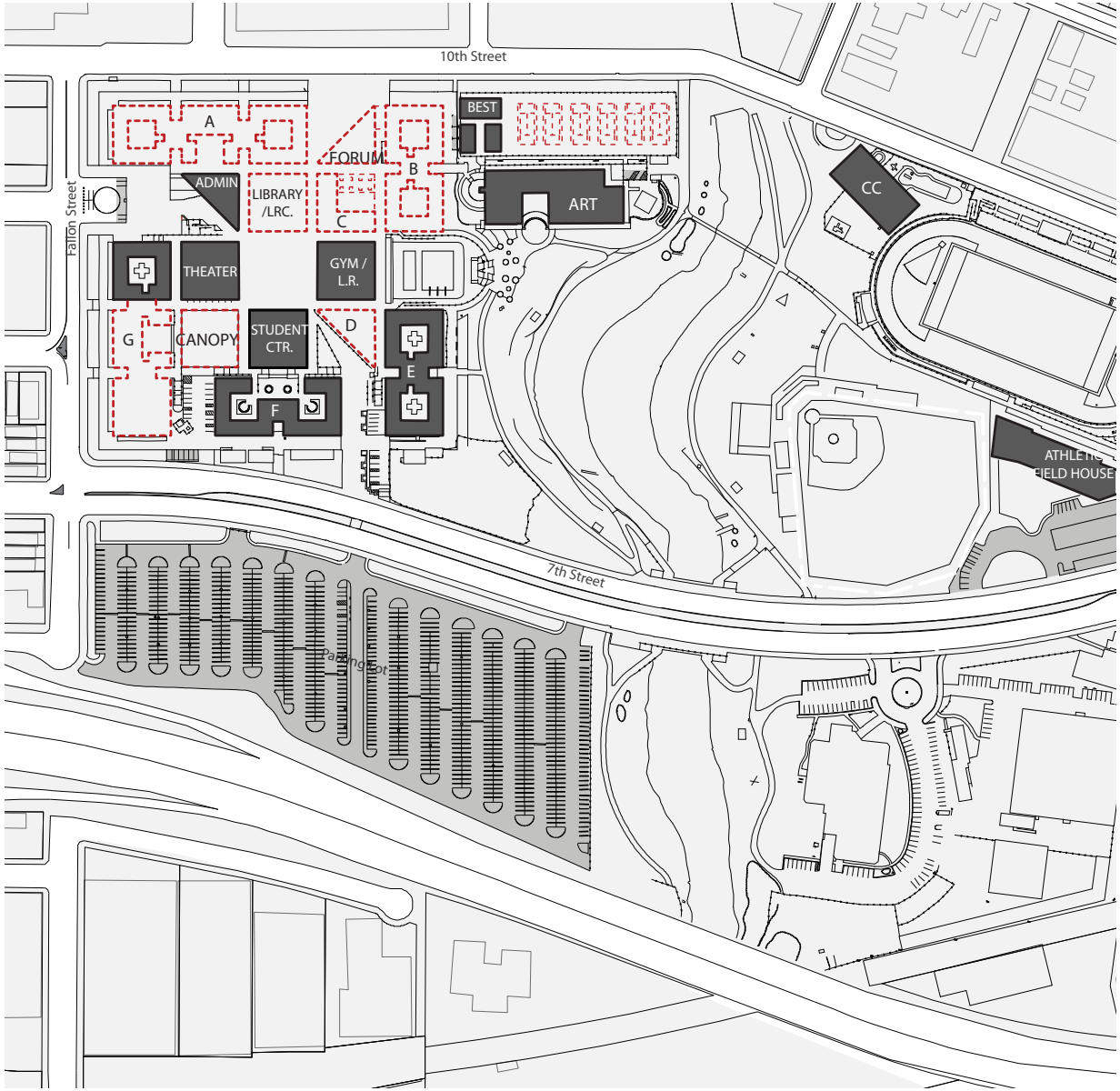


PROPOSED DEMOLITION

The Master Plan proposes to demolish the following buildings (shown as dashed red outlines in Figure 6.3, compare to Existing shown in Figure 6.2) for their associated reasons:

	RATIONALE FOR DEMOLITION
A	More expensive building to retrofit; programs move to replacement Student/Welcome Center, STEAM Center and Design and Manufacturing Center
B	More expensive building to retrofit; programs move to replacement STEAM Center and Design and Manufacturing Center
C	Campus needs to reduce building areas to afford replacement buildings: poor use of site area compared to other buildings remaining; program moves to Wellness Center (Old Student Center)
D	Campus needs to reduce building areas to afford replacement buildings: poor use of site area compared to other buildings remaining; program moves to Wellness Center (Old Student Center)
FORUM	Campus needs to reduce building areas to afford replacement buildings: poor use of site area compared to other buildings remaining; program moves to STEAM Center
PARTIAL G and CANOPY	More expensive building to retrofit; programs move to replacement STEAM Center and Design and Manufacturing Center; canopy needs structural work and better placed along 7th Street, to provide welcoming plaza from BART approach onto campus and Performing Arts

Figure 6.3: 2017 Facilities Master Plan Buildings to be Demolished



PRIORITIZATION

After the development of a Draft FMP Site Plan (with project solutions that revised clustering of programs and, building names), the Laney Stakeholders engaged in another prioritization process in early October, and selected the first phase projects. The Laney FPC's rationale behind this selection can be found in the Appendix.

The priority projects selected are shown in Figure 6.5 and listed below:

- Replacement of all failing Infrastructure
- Library Learning Resource Center (L8)
- STEAM Center (L7) and Central Plant One (L10)
- Student and Welcome Center (L6)
- Modernize Theater and Partial G (L11) and Design and Manufacturing Center (L9) with Central Plant Two (L10)
- Community Building and Campus Quad (L13)

To assist the District in evaluating the myriad needs across its five campuses, the master planning team created an evaluation matrix. Below Figure 6.4 is the excerpt as it applies to Laney College projects (see District-wide FTMP for footnotes and detail).

Figure 6.4: Prioritization Evaluation Matrix based on 2017 Draft Facilities Master Plan Proposed Projects

		Overall Score	Meets PCCD Strategic Goals[1]	Meets Some Goals from College 2016 EMP	Rectifies Life Safety Concerns	Rectifies Accessibility Barriers	Has State Match Funding Potential or Approval	State Facilities Condition Index[2]	FMP Team Assessments Index[3]	Rectifies Multiple Aged Infrastructure Issues	Improves the Teaching & Learning Conditions in More than 1 Building	Improves the Teaching & Learning Conditions in One Building	Essential Student Service/Support	Improves Student Retention & Success	Improves Sustainability Energy & Water	Consolidates Space and Improves Efficiency	Was Identified as a Need in Previous EMP/FMP	Other
L1	Laney College Upgrade and Replace all Major Electrical Unit Substations	TOP	ESSENTIAL SERVICE FOR ENTIRE CAMPUS															
L2	Laney College Infrastructure / New Central Utility Plant	TOP	ESSENTIAL SERVICE FOR ENTIRE CAMPUS															
L3	Laney College Replace Domestic Hot Water System	TOP	ESSENTIAL SERVICE FOR ENTIRE CAMPUS															
L4	Laney College Replace Compressed Air System	TOP	ESSENTIAL SERVICE FOR ENTIRE CAMPUS															
L5	Laney College Replace Domestic Cold and Hot Water & Compressed Air Piping	TOP	ESSENTIAL SERVICE FOR ENTIRE CAMPUS															
L6	Laney College Student and Welcome Center	19	1	1	1	1		2	5	1			2	1	1	1	1	1	Engages Community
L7	Laney College STEM Center	19	1	1	1	1		2	5	1	1	1		1	1	1	1	1	Engages Community
L8	Laney College Library Learning Resource Center	18	1	1	1	1	1	2	4	1		1	2	1	1		1		
L9	Laney College New Design & Manufacturing Center (DMC I)	18	1	1	1	1		2	5	1	1	1		1	1	1	1		
L10	Laney College Infrastructure / Replace Existing Central Plant	TOP	ESSENTIAL SERVICE FOR ENTIRE CAMPUS															
L11	Laney College Performing Arts - Modernize Partial G (Music) & Theater	18	1	1	1	1	1	2	5	1	1	1		1	1		1		
L12	Laney College Wellness Center (Modernize Student Center)	18	1	1	1	1		2	4	1	1	1	1	1	1	1	1		
L13	Laney College New Campus Green & Community Building (Demo B, C & Library)	17	1	1	1	1		2	5	1			2	1	1		1		
L14	Laney College Laney Marketplace / Parking Garage with Pedestrian Bridge	8	1	1		1		n/a	n/a	n/a			1				1	3	Engages Community, Loca
L15	Laney College Modernize F (DMC II) and New Sustainability Center	17	1	1	1	1		2	5	1		1		1	1		1	1	Engages Community
L16	Laney College Modernize E (Culinary Institute)	17	1	1	1	1		2	5	1	1	1		1	1	1			
L17	Laney College Modernize Gym	15	1	1	1	1	1	2	3	1		1		1	1		1		
L19	Laney College Technology Complete Wi-Fi Deployment	9	1	1		1				1	1	1	1	1			1		
L20	Laney College Technology Complete Network Upgrade Project	9	1	1		1				1	1	1	1	1			1		

PRIORITY PROJECTS

Figure 6.5: 2017 Facilities Master Plan for Priority Projects Only

PRIORITY PROJECTS

Facilities Project Descriptions

L8: THE LIBRARY LEARNING RESOURCE CENTER

is a new facility that will replace the existing library. The new LRC will provide significantly improved services, the technology center, and integrate tutoring functions that are currently scattered across the campus in various buildings. Detail per State approved project:

- Size: 71,752 GSF / 48,830 ASF
- Height: 3 stories
- Programs: Library, Technology Center and Tutoring Services
- Site Improvements: Writer's Garden on the Estuary side; street landscaping, drop off area and improvements along 7th Street
- Project requires: relocation or removal of Eagle Village Portables

Other Considerations:

- Demolition/Relocation: Eagle Village Portables
- Secondary Effects: Old Library will be demolished as part of Project L13; Technology Center will be vacated out of Building F (see L15)
- Library Materials: Update aged collection of non-electronic materials such as periodicals and books and add/expand access to online resources, database subscriptions, videos and materials to address different learning styles and 21st Century learning modalities

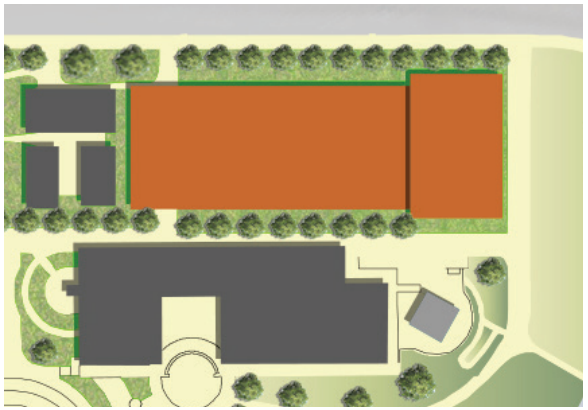
L7: THE STEAM CENTER

will collocate the core science disciplines, mathematics, and engineering in a state-of-the art laboratory building; and provide modern multi-use multi-purpose classrooms for all programs. Preliminary Assumptions:

- Size: 120,000 GSF / 75,000 ASF
- Height: 6 or 7-Story Building
- Programs: Biology, Biotech, Chemistry, Physics, Geology, Electrical & Electronics Technology (HVAC controls, Solar etc), Computer Labs (CIS), Mathematics, Large Tiered Classroom (300 seats), Multi-Use Classrooms (some divisible), Meeting/ Collaboration Spaces, Offices, etc.
- Other: might include replacement Central Plant and associated campus-wide piping replacement (L10)
- Other: Signature building; iconic signage on or near roof top announcing Laney College
- Site Improvements: new street landscaping/paving along 10th Street and around the building; new landscaping at the Building B demolition area (unless project L13 Community Building & Campus Green is funded and follows this project)
- Project requires: demolition of Tennis Courts

Other Considerations:

- Demolition/Relocation: Tennis Courts
- Secondary Effects: Most of Building B vacated (Demolished with L13)



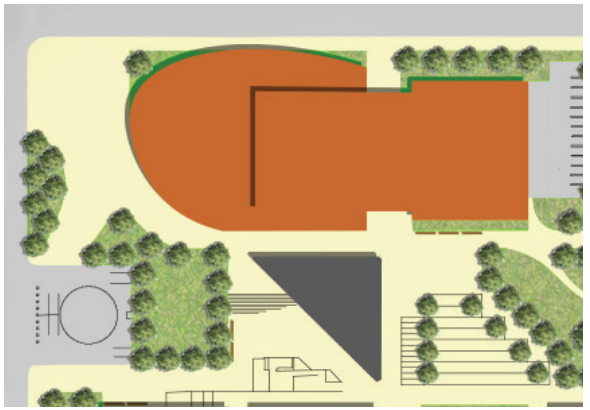
L6: THE STUDENT AND WELCOME CENTER

will collocate Student Service and Student Center Programs currently dispersed in multiple buildings into one facility that becomes a One Stop for Student Support and Services. Preliminary Assumptions:

- Size: 70,000 GSF / 45,000 ASF
- Height: 3 stories
- Programs: Student Services include (but are not limited to) current Welcome Center, Admissions & Records, Financial Aid, Assessment Center, Transfer Center, Counseling, Job Placement Center, DSPS, EOPS, Veterans Center, Faculty Commons, secure Art Gallery, Associated Student Government, Student Clubs, Dining/Cafeteria and support spaces
- Other: might include replacement Central Plant and associated campus-wide piping replacement (L10)
- Site improvements: new Welcoming Art Plaza ; new street landscaping/paving along both Fallon Street and 10th Street; service yard and parking on Forum building site to be heavily landscaped/screened
- Project requires: demolition of Building A

Other Considerations:

- Demolition: Building A and Forum
- Swing Needs: Building A non-science occupants (assumes L6 done after L7) and Campus Police
- Secondary Effects: spaces will be vacated in existing Student Center, Building E, and Building G which will



PRIORITY PROJECTS

Facilities Project Descriptions

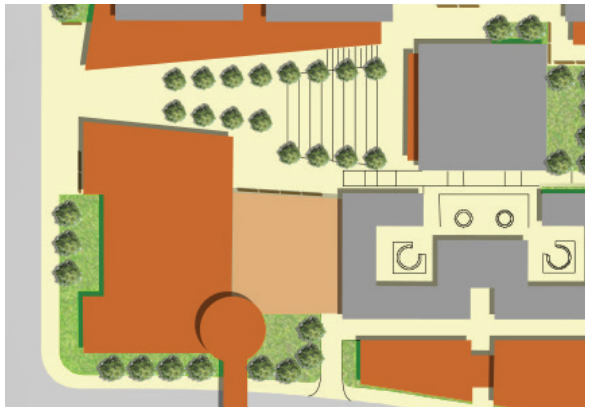
L11: THE PERFORMING ARTS CENTER

collocates the Theater Arts, Music, Dance and Media Communication within one facility. The facility is comprised of a modernized Theater, a partial Building G modernization, a two-story infill addition between the two, and the addition of the Performing Arts double-height lobby element to the south. Preliminary Assumptions:

- Size: Existing approximately 56,200 GSF / 33,800 ASF; Addition approximately 15,000 GSF / 12,000 ASF
- Height: 2 stories at Fallon Street, 4 stories at Theater
- Programs: Dramatic Arts, Music, Dance, Media Communication
- Renovation: roof, HVAC, electrical, lighting and windows/doors replacement; all theater systems upgrades/replacement; elevator replacement/addition; soundproofing; technology upgrades; new restrooms; reconfigurations within both Theater (upper floors) and entire Building G (Music); structural upgrades (see other considerations section)
- New Construction: new glassy/digital display/LED facade element along Fallon Street; new roof and skylights (taller than rest of Building G to accommodate Media Communications) at Building G second floor courtyard; new floor/roof infill between Theater and Building G Music to facilitate movement of instruments; new glassy two-story lobby element on south side of building with steps/ramp up to Quad Lobby Entry level
- Site improvements: Fallon Plaza (in conjunction with project L9); new street landscaping/paving along Fallon Street; new drop off area for Performing Arts if feasible

Other Considerations:

- Demolition: Building G two thirds
- Swing Needs: Theater and Building G occupants
- Secondary Effects: L9 project has to be done at the same time or immediately after
- Structural Comments: project proposes partial demolition of Building G (two thirds of the building will be removed). Since this structure has a rigid concrete diaphragm, the forces to any given wall could either increase or decrease, depending on the amount of structure removed. The remainder of Building G is proposed to be combined with the existing Theater building. Given the additional mass from enclosing the courtyard at Building G, a mandatory seismic evaluation is likely to be required of both buildings. If a seismic gap can be maintained between the Theater and Building G, then avoiding a mandatory evaluation on the Theater building may be possible.
- Potential Impacts of Structural Mandatory upgrade: the mitigation efforts that are identified during the mandatory evaluation could suggest that this portion of Building G ought to be demolished as well, in which case a Music/Dance/Media Communications replacement facility that is attached to the Theater would be the suggested alternative.



L9: THE DESIGN AND MANUFACTURING

collocates Architecture, Graphic Arts, Photography, Carpentry and Machine Technology programs in a new replacement facility that will also house modern multi-use multi-purpose classrooms, Cosmetology, and the second Central Plant. The facility will also connect to a future pedestrian bridge from the New Marketplace Parking Garage (L14), and includes the construction of an outdoor canopy over an enclosed Outdoor Carpentry Work Area (located along 7th Street). Preliminary Assumptions:

- Size: 60,000 GSF / 45,000 ASF plus Outdoor Area
- Height: 3-Story Building plus possible partial basement for Central Plant
- Programs: Carpentry, Machine Technology, Architecture and Photography, Cosmetology, Multi-Use Classrooms, Meeting/Collaboration Spaces, Offices, Support Spaces, etc.
- Other: might include replacement Central Plant and associated campus-wide piping replacement (L10)
- Site improvements: a new Fallon Plaza with sitting steps (plus regular steps/ramp up to Quad level); landscaping and paving; new street landscaping/paving along both Fallon Street and 7th Street; new Trellis Structure and artful fence around Outdoor Carpentry Work Area, with glazed “windows” in fence for public to view in
- Project requires: demolition of two-thirds of Building G and existing Canopy structure over Outdoor Carpentry Area

Other Considerations:

- Demolition: Building G two thirds; Outdoor Work Area
- Swing Needs: Building G occupants
- Secondary Effects: L11 project has to be done concurrently or immediately before
- Structural Comments: project includes the demolition of existing buildings, rebuilding of existing structures, and the construction of new buildings. The demolition of a freestanding building need not impact the structural integrity of adjacent buildings. Additional analysis of the proposed demolition and the existing structure will be required.

PRIORITY PROJECTS

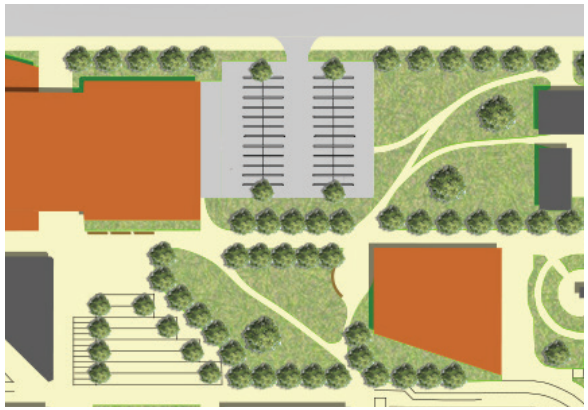
Facilities Project Descriptions

L13: COMMUNITY BUILDING & CAMPUS GREEN
is a new facility that will provide meeting rooms for multiple community and campus uses. The project includes the creation of a Campus Green that will unify the campus through active outdoor spaces. Preliminary Assumptions:

- Size: 20,000 GSF/ 15,000 ASF
- Height: 2 stories
- Programs: Large Meeting Rooms, Kitchen/Support spaces, Large Meeting space with divisible partitions
- Other: Large LED screen display on west side
- Site Improvements: Campus Green to include, seating steps from ground level up to Quad Level at former Library site; outdoor seating areas within landscaping; an exterior plaza at Community Building with AV equipment capabilities that acts as platform for graduations and a seating wall
- Project requires: L7 and L11 projects to be complete for Building B to be completely vacated and demolished
- Project requires: L8 and L7 projects to be complete and Old Library and Building C demolition for Campus Green component

Other Considerations:

- Demolition: Building C, Old Library (after new LLRC is built); Building B and Forum is demolished under L6
- Swing Needs: Building C programs if L12 is not done before L13



OTHER MASTER PLAN PROJECTS

Facilities Project Descriptions

L12: THE WELLNESS CENTER
is the renovation of the Student Center Building (after project L6 has been completed) for Athletic Programs (Fitness, Kinesiology), Health Center, and the Meditation/Mindfulness Center. Preliminary Assumptions:

- Size: 49,935 GSF / 25,596 ASF
- Height: existing 4 stories
- Programs: Athletic Programs (Fitness, Kinesiology), Dance, Health Center, and the Meditation/Mindfulness Center
- Renovation: roof, HVAC, electrical, lighting and windows/doors replacement; elevator replacement/ addition; technology upgrades; new restrooms; gut renovation due to change in function; structural voluntary upgrades
- Connections: to existing Locker Rooms below Quad
- New Construction: a projected element (glazed pop-out or LED Display or graphic art wall) on north side facing Fallon Plaza

Other Considerations:

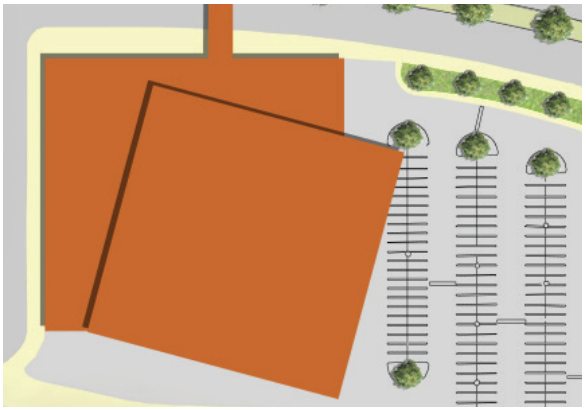
- Demolition: none
- Swing Needs: none
- Secondary Effects: demolition of Building D (Building C demolition under project L13)

L14: LOCAL BUSINESS MARKETPLACE AND INCUBATOR / PARKING GARAGE / PEDESTRIAN BRIDGE
is a new facility comprised of many components: a one ground story, 21,000 square foot facility to house retail space (for small local businesses) located to maximize frontage on both Fallon Street and 7th Street; a one-story 21,000 square foot business incubator space (for local emerging businesses) on top; an eleven-story parking garage; and a pedestrian bridge linking into the L9 Design and Manufacturing Center. The parking garage will have approximately 1,800 parking spaces, inclusive of disabled parking, motorcycle parking and bicycle lockers. Preliminary Assumptions:

- Size: see description above
- Height: see description above
- Programs: Retail Spaces for Local Businesses, Incubator Spaces for Emerging Local Businesses, Parking Garage and Pedestrian Bridge
- Site improvements: street landscaping/paving along both Fallon Street and 7th Street; reconfiguration of surface parking adjacent to facility
- Project requires: removal of a portion of surface parking

Other Considerations:

- Demolition: removal of a portion of surface parking
- Swing Needs: parking



OTHER MASTER PLAN PROJECTS

Facilities Project Descriptions

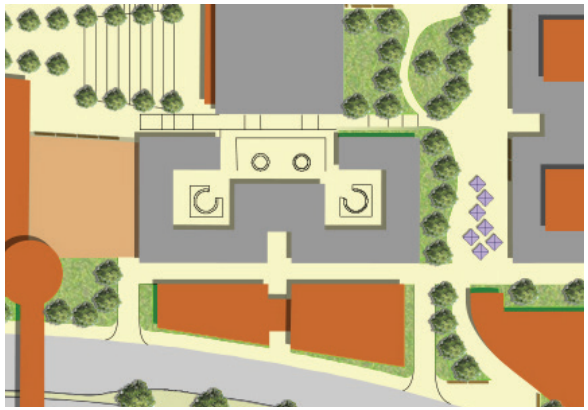
L15: MODERNIZE F DESIGN AND MANUFACTURING II AND NEW SUSTAINABILITY CENTER

renovates the existing Building F (L15A) for the Welding Program and potential Maker Lab on first floor and modern multi-use Classrooms on the second floor. The project includes the building of a new freestanding building to house the Sustainability Center (L15B). Preliminary Assumptions:

- 15A Size: 38,090 GSF / 32, 842 ASF
- Height: 2 stories
- Programs: Welding, Multi-Use Classrooms, Meeting/Collaboration Spaces, Offices, Support Spaces, etc.
- Renovation: roof, HVAC, electrical, lighting and windows/doors replacement; technology upgrades; new restrooms; gut renovation due to change in function; structural voluntary upgrades
- 15B New Construction: 25,000 GSF / 20,000 ASF to house an Energy Efficient Recycling Center, Garbage Collection, Loading Dock, Compactor, Campus Police and Campus Maintenance and Operations
- Site improvements: new street landscaping/paving along Fallon Street; enhanced drop off area at 7th St.
- Project requires: removal of temporary buildings along 7th Street

Other Considerations:

- Demolition: removal of temporary buildings at 7th St.
- Swing Needs: Welding phased in place?; Other occupants should be able to use other campus spaces



L16: MODERNIZE E: CULINARY INSTITUTE

modernizes Building E for Culinary Arts, inclusive of former Central Plant area (once L10 done) on first floor, and multi-use Classrooms on second floor. Collocates two Culinary Programs that were previously split between E and Student Center and provides opportunity to create a cafe/bakery retail shop, while improving/expanding the Bistro Restaurant. Preliminary Assumptions:

- Size: 56,200 GSF / 33,800 ASF
- Height: 2 stories
- Programs: Culinary Arts, Multi-Use Classrooms, Meeting/Collaboration Spaces, Offices, Support Spaces, etc.
- Renovation: roof, HVAC, electrical, lighting and windows/doors replacement; technology upgrades; new restrooms; gut renovation except existing culinary spaces; structural voluntary upgrades
- New Construction: lightweight roof enclosure over two existing courtyards as long as it avoids mandatory structural upgrade
- Site improvements: expand existing patio on Estuary side with nice paving, seating and umbrellas/canopy structure; new Social Courtyard on campus side

Other Considerations:

- Demolition: central plant and associated piping within Building E
- Swing Needs: Culinary, Building E occupants

- Structural Comments: project seeks to enclose the two courtyards in the existing Building E. Given the additional mass from enclosing the courtyard at Building E, a mandatory seismic evaluation is likely. However, if the roof enclosure is lightweight, and there is no other additional mass on the structure, and no other retrofit triggers are met (e.g. removal of shearwalls or other lateral force resisting systems), then it may be possible to avoid the mandatory evaluation.

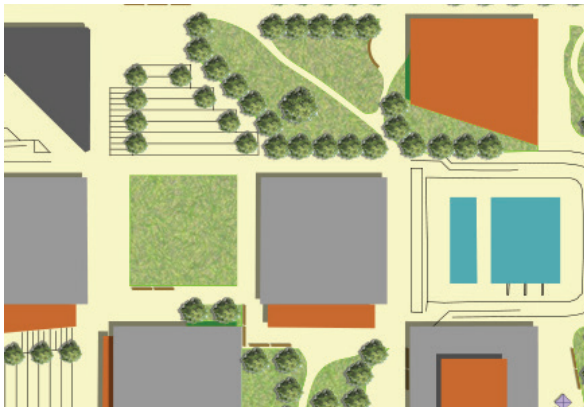
L17: MODERNIZE GYMNASIUM

modernizes gymnasium. Preliminary Assumptions:

- Size: 16,570 GSF / 14,683 ASF
- Height: 2 story
- Programs: Athletics
- Renovation: roof, HVAC, electrical, lighting and windows/doors replacement; technology upgrades; new restrooms; structural voluntary upgrades
- Site improvements: improve landscaping at Quad (above Locker Rooms)

Other Considerations:

- Demolition: none
- Swing Needs: gymnasium (unless feasible to phase)



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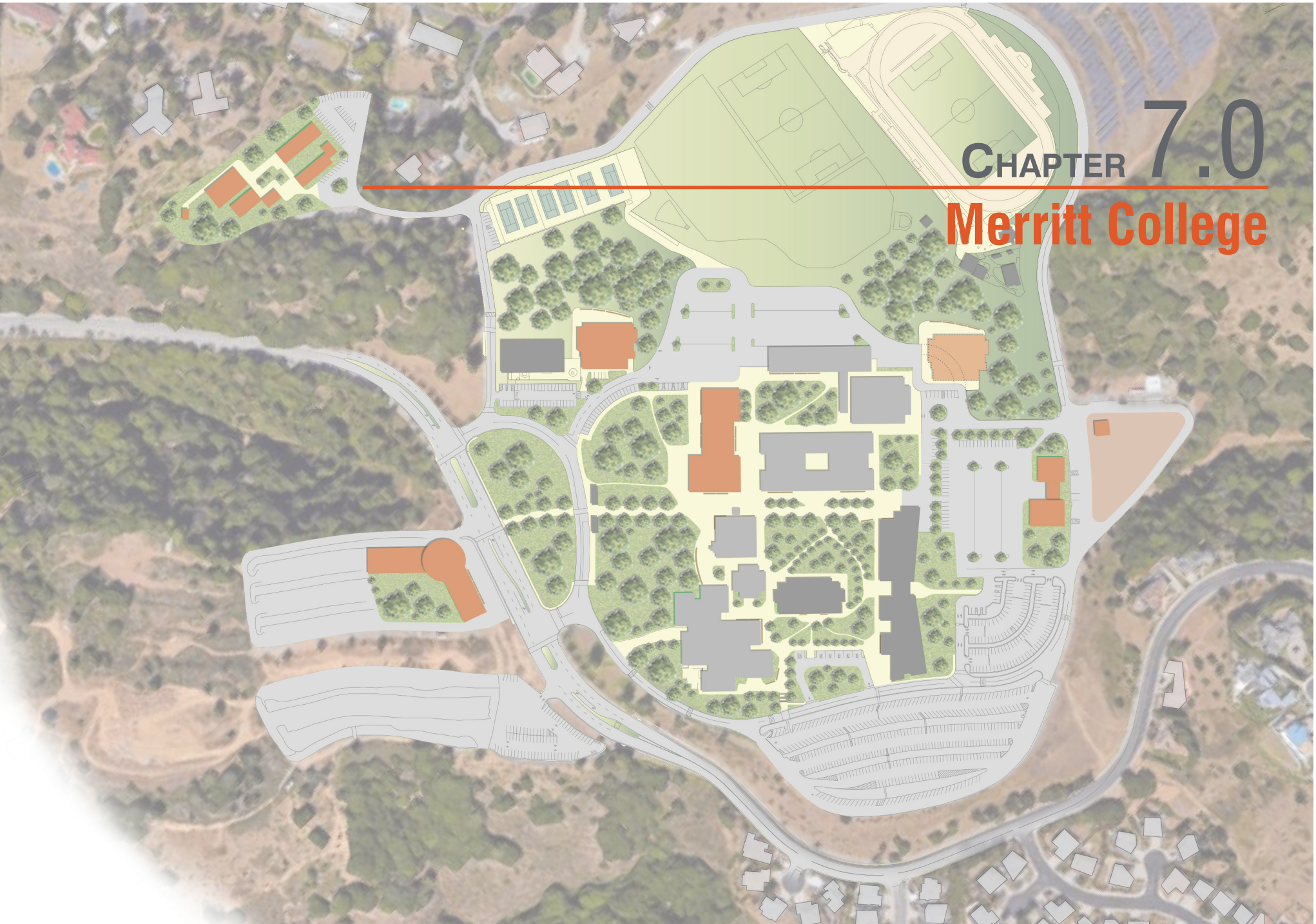

Chapter 7.0
Merritt College

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7.0 Merritt College Facilities Master Plan

PROCESS

Based on the data collection and analysis, the master planning team developed a few options for the future development of the campus in response to the needs identified. The option chosen was revised per shared governance feedback received through multiple campus forums. This was an iterative process of refinement, and the results of that process are shared within this chapter.

GOALS

The facilities master plan goals are rooted in the five 2016 Educational Master Plan Goals (repeated here for convenience):

- Goal One: create an environment of exceptional student access, equity and success.
- Goal Two: engage our community through respectful dialogue to create partnerships and opportunities for our students.
- Goal Three: create and implement effective innovative programs that meet the diverse needs of our community.
- Goal Four: through collegiate governance, support institutional communication, innovation and interdisciplinary collaboration.
- Goal Five: develop human, fiscal and technological resources to advance and sustain our mission.

OPPORTUNITIES & CHALLENGES

OPPORTUNITIES

Merritt College is fortunate to have enough land and parking to build replacement facilities without having to create major swing space needs. Certain parts of the campus also have great views of the Bay, and with the abundance of parking this presents opportunities to offer community resources that can bring in additional revenues to support educational programs.

CONSTRAINTS

The major constraint for Merritt College is the topography that positions buildings at different elevations making accessible navigation challenging. Some buildings like the Horticulture Complex and the Self Reliant House are also remote from the campus center, and Lot B is across Campus Road. The other constraints are due to lack of sufficient public transportation, especially connections to other Peralta Colleges (a majority of Peralta College students are enrolled at more than one campus at a time).

THE MASTER PLAN

The Master Plan aims to address all the needs identified in the previous chapter. The first step entails demolishing and replacing Building A. This building is located at the "back" of the campus, cut off from the main campus area, in poor condition and more expensive to upgrade structurally. As such Building A will be replaced with a smaller facility (M3) located at the front of the campus. This new facility helps cluster the academic functions of the college together, provides a new look along Campus Drive, and encloses the exterior space (North Quad) between it, Buildings D, E and F to create a new accessible outdoor space.

Building D will be renovated (M4) to maintain the Middle College on the upper level and accommodate a Student Health Center, Veteran's Resource Center, Immigration Resource Center, and Career Job Placement Center on the first level.

Buildings E and F will also be renovated (M5) for outdated building infrastructure, and the relocation of the Fitness Center from Building A into Building F. To accommodate the expansion of the Athletic/Kinesiology programs an addition (M11) is needed. The placement of this addition is dependent on the location of the Child Development Center (CDC). The CDC project has the potential of State Matching Funds, and the location submitted to the State is per M9B, however the College wishes to co-locate the CDC with the existing Child Care Center (per M9A) for laboratory instructional needs for Child Development students. If the CDC can be relocated per M9A, then the Kinesiology Physical Fitness Addition can be placed adjacent to Buildings E and F, and the campus loop road connector would be routed around this addition.

The Master Plan proposes to address numerous Site Improvements (M12). The first concerns the ability to drive all around the campus, something that is currently not possible between Buildings E and F. To facilitate this "Campus Loop" (note, Margie Lane which currently completes the Loop Road is closed off except for Fire Emergencies), and to address parking inefficiencies, the Parking Lots G and A will be reconfigured to allow smooth vehicular traffic flow around the campus, and for soccer drop-off.

Additionally, a road connection near the Tennis courts connecting to Bacon Road is proposed to provide an additional evacuation option for the campus in case of emergencies. Other improvements include improving the South Quad, Central Quad, and North Quad to address accessibility issues, and to create a diversity of social gathering spaces.

The Horticulture Complex is another project with potential State Matching Funds, and it is proposed to be re-built (M10) on its current site in a configuration that accommodates modern teaching pedagogies for Horticulture/Landscape Design programs.

Building A will be demolished to house a new Regional Public Safety Training Center (M6) for Fire Science, Paramedics, Emergency Medical Technicians, Administration of Justice and Law Enforcement. This facility has the potential of partnerships with the Oakland Fire Department, Oakland Police Department and possibly other local fire and law enforcement agencies. Lot E parking will be relocated to the former Building A site as well, for Lot E will be used by the Regional Public Safety Training Center for training exercises. The placement of parking in this location provides more parking (including accessible parking) closer to the center of campus.

Buildings P, Q and R (M7, M8, M15) had some renovations in the past, but portions within each still require reconfigurations and renovations, and some building infrastructure replacements.

Medical Genomics is proposed to be moved back on campus, from its off campus site at 860 Atlantic Avenue in Alameda, by fitting out the shell space in Building S (M16).

Completing the Master Plan is a proposed Conference Center (M17) on the upper side of Lot B. The views and adjacent parking make this an ideal location to provide conference facilities.

PROPOSED PROJECTS

	INFRASTRUCTURE
M1	Replace All Campus Major Electrical Equipment
M2	Civil Infrastructure Replacements

	FACILITIES*
M3	**Replacement Building A**
M4	**Renovate Building D**
M5	**Renovate Building E and F**
M6	**Regional Public Safety Training Center**
M7	**Renovate Partial Building P**
M8	**Renovate Partial Building Q**
M9A	**Combined Child Care Center & Child Development Center**
M9B	**Child Development Center - State FPP location (not preferred, see M9A)**
M10	**Horticulture Complex Replacement**
M11	Kinesiology Physical Fitness Addition
M12	**Site Improvement Projects**
M15	**Renovate Partial Building R**
M16	**Finish Out Shell in Building S**
M17	**Conference Center**

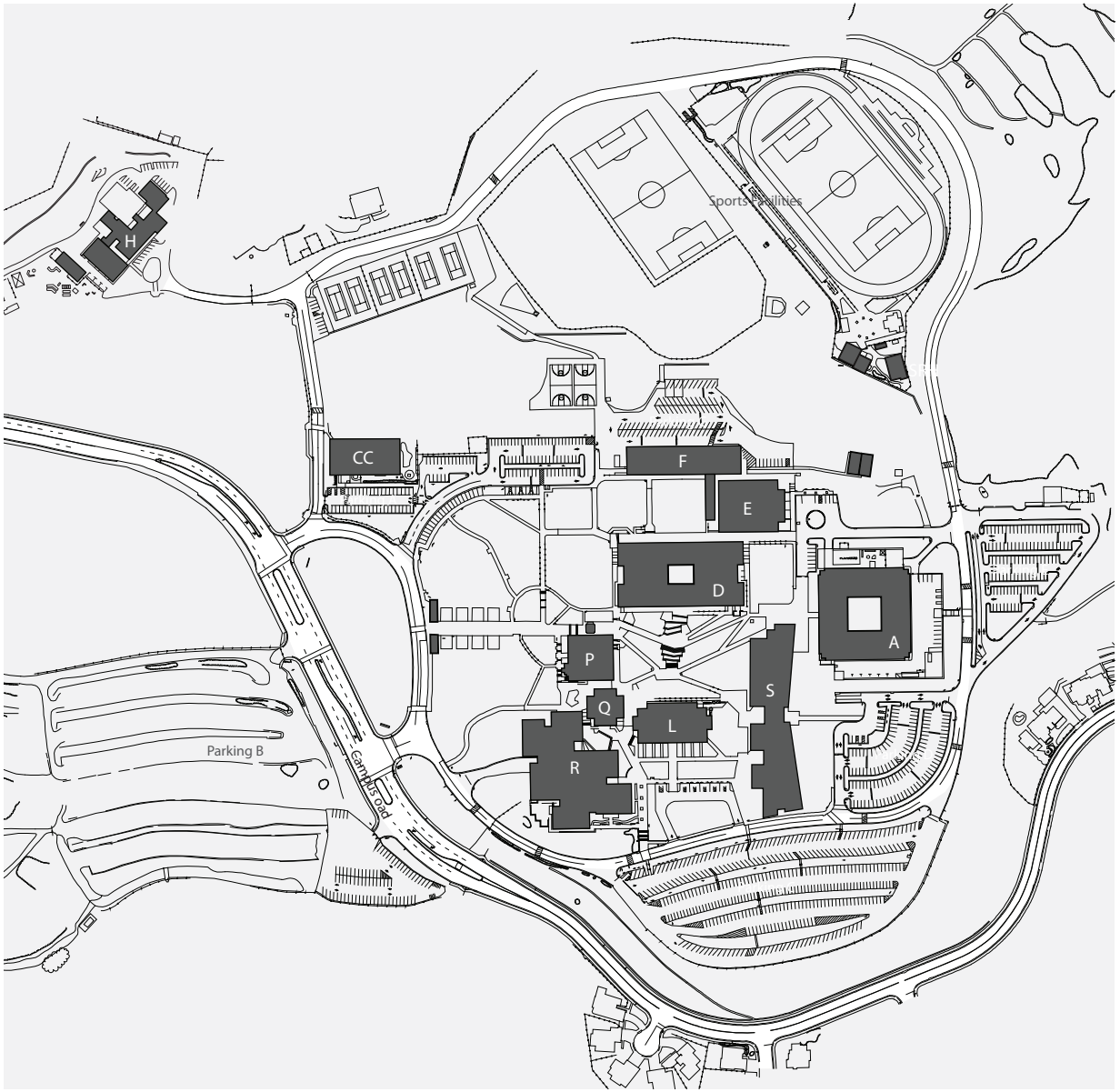
	TECHNOLOGY
M13	Main Campus Complete Wi-Fi Deployment
M14	Main Campus Complete Network Upgrade Project

* Bolded Projects are depicted on the Master Plan (Fig. 7.1)

Figure 7.1: 2017 Facilities Master Plan

EXISTING CAMPUS PLAN

Figure 7.1: Existing Campus Site Plan

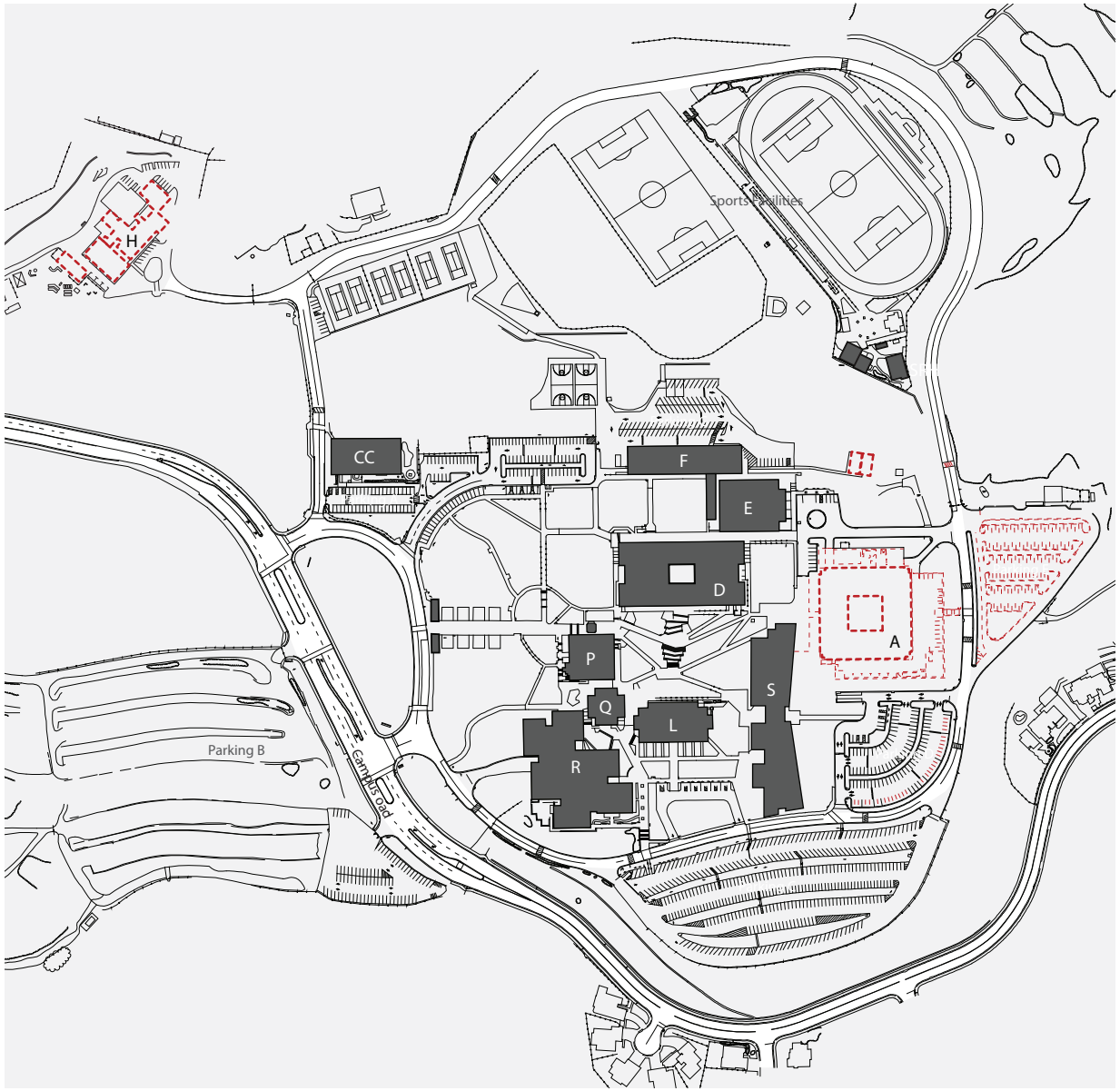


PROPOSED DEMOLITION

The Master Plan proposes to demolish the following buildings (shown as dashed red outlines in Figure 7.3, compare to Existing shown in Figure 7.2) for their associated reasons:

	RATIONALE FOR DEMOLITION
A	More expensive building to retrofit; remote from rest of campus
Hort	Buildings are end of life; configuration does not serve current teaching pedagogies for Horticulture

Figure 7.3: 2017 Facilities Master Plan Buildings to be Demolished



PRIORITIZATION

After the Draft FMP Site Plan was refined through a series of campus forums, the stakeholders confirmed priorities to be as follows:

- Building A Demolition and Replacement
- Site Improvements
- Renovate Building D[1]
- Renovate Buildings E and F
- Kinesiology Physical Fitness Addition
- Horticulture Replacement
- Renovate partial Building R
- Combined Child Care Center/Child Development Center
- Renovate partial Building P
- Renovate partial Building Q
- New Regional Public Safety Training Center
- Conference Center
- Complete Shell Space in Building S

1 Not Prioritized but if some occupants from Building A need to move into Building D, then this project must be done sooner than later

The College also identified the following items that need to be integrated into the projects:

- Accessibility
- Sustainability[1]
- Lighting & Security
- Provide a *complete* Campus Loop Road
- Provide more than one way to get off Campus
- Enhance Quad between Buildings R & S
- Signage & Wayfinding, including Electronic Marquee
- Address Tunnels
- Main Campus Cabling (Building D)
- Spare Conduits from Campus to Outside
- Large Displays & Video Capture for Athletics
- Revamp Relay of Radio Systems
- Access Control: Robust Electronic Card Readers
- Cameras in Public Spaces
- Blue Phones Fixed
- Mass Notification PA System
- Connected to Digital Signage

1 The District was engaged in a concurrent effort to develop a Sustainability and Resiliency Master Plan (SRMP) that captured Sustainability Goals, Recommendations etc.

The priority projects selected are shown in Figure 7.5 and listed below:

- Building A Demolition and Replacement (M3)
- Site Improvements (M12)
- Renovate Building D (M4)
- Renovate Buildings E and F (M5)
- Kinesiology Physical Fitness Addition (M11)
- Horticulture Replacement (M10)
- Renovate partial Building R (M15)
- Combined Child Care Center/Child Development Center (M9A)

To assist the District in evaluating the myriad needs across its five campuses, the master planning team created an evaluation matrix. Below in Figure 7.4 is the excerpt as it applies to most of Merritt College projects (see District-wide FTMP for footnotes and detail).

Figure 7.4: Prioritization Evaluation Matrix based on 2017 Draft Facilities Master Plan Proposed Projects

		Overall Score	Meets PCCD Strategic Goals[1]	Meets Some Goals from College 2016 EMP	Rectifies Life Safety Concerns	Rectifies Accessibility Barriers	Has State Match Funding Potential or Approval	State Facilities Condition Index[2]	FMP Team Assessments Index[3]	Rectifies Multiple Aged Infrastructure Issues	Improves the Teaching & Learning Conditions in More than 1 Building	Improves the Teaching & Learning Conditions in One Building	Essential Student Service/Support	Improves Student Retention & Success	Improves Sustainability Energy & Water	Consolidates Space and Improves Efficiency	Was Identified as a Need in Previous EMP/FMP	Other	
M1	Merritt College Upgrade and Replace all Major Electrical Unit Substations	TOP	ESSENTIAL SERVICE FOR ENTIRE CAMPUS																
M2	Merritt College Civil Infrastructure High Priority Projects	TOP	ESSENTIAL SERVICE FOR ENTIRE CAMPUS																
M3	Merritt College Demolish Building A / New Replacement Building	16	1	1	1	1		2	*4*	1		1		1	1	1	1		
M4	Merritt College Renovate Building D	15	1	1	1	1		2	*2*	1	1	1		1	1	1	1		
M5	Merritt College Renovate Building E and F	16	1	1	1	1		2	*3*	1	1	1		1	1	1	1		
M6	Merritt College Regional Public Safety Training Center	6	1	1				n/a	n/a	n/a		1		1				2	Regional Partnership
M7	Merritt College Renovate Building P	12	1	1	1	1		2	*1*	1		1		1	1		1		
M8	Merritt College Renovate Building Q	8	1					2	*2*	1			1		1				
M9	Merritt College Combined Child Care Center / Child Development Center	13	1	1	1	1	1	2	1		1	1		1	1	1			
M10	Merritt College Horticulture Replacement	12					1	1	3	1	1	1		1	1	1	1		
M11	Merritt College Kinesiology Physical Fitness Addition	5	1	1			1	n/a	n/a	n/a				1			1		
M12	Merritt College Site Improvement Projects	9	1	1		1		n/a	n/a	n/a			2	1	1		1	1	Engages Community

PRIORITY PROJECTS

Figure 7.5: 2017 Facilities Master Plan for Priority Projects Only

PRIORITY PROJECTS

Facilities Project Descriptions

M3: REPLACEMENT BUILDING A

is a new smaller facility that will replace the existing Building A, housing modern music and art class laboratories, modern multi-use classrooms, and divisible meeting rooms. Preliminary Assumptions:

- Size: 30,000 GSF / 21,000 ASF
- Height: 2 stories
- Programs: Art, Ceramics, Music labs, Multi-Use Classrooms, Tiered Lecture Hall, Collaboration Spaces, Divisible Meeting Rooms, Regular Meeting Rooms, Offices and Support Spaces
- Site Improvements: Merritt Walk, Plaza and landscaping around new building and North Quad

Other Considerations:

- Demolition/Relocation: Demolition of Building A after projects M3, M4 & M5

M12: SITE IMPROVEMENTS

includes numerous Site Improvements (M12) such as the completion of a campus road loop, drop off and parking lot improvements and Quad improvements.

Site Improvement: continuity of road access all around the campus by providing a road connection from Building E to Building F, something that is currently not possible. The road transition to make this connection will be greatly improved if the proposed new CDC can be located at the M9A location in lieu of the M9B Improvements (M12). The location of the campus road loop completion should be coordinated with the optimum placement for an addition to Buildings E and F (see Kinesiology Physical Fitness Addition project M11).

Site Improvement: parking lots G and A will be reconfigured to allow smooth vehicular traffic flow around the campus, and to improve both parking efficiencies and the soccer drop-off.

Site Improvement: a road connection near the Tennis courts connecting to Bacon Road is proposed to provide an additional evacuation option for the campus in case of emergencies.

Site Improvement: improving the South Quad, Central Quad and North Quad to address accessibility issues, and to create a diversity of social gathering spaces (shade, seating, clusters, quiet spaces, congregating spaces etc.)

M4: RENOVATION OF BUILDING D

for aged infrastructure, and to collocate essential student services on the first floor, and to accommodate programs from Building A (which will be demolished), while maintaining the COVAH Middle College on the second floor.

- Size: 75,493 GSF / 56,000 ASF
- Height: 2 stories
- Programs: Student Health Center, Veteran's Resource Center, Immigration Resource Center, Career Job Placement Center, Bookstore, Institutional Research, and Information Technology on the first level, COVAH Middle School on upper level
- Renovation: roof, HVAC, electrical, lighting and windows/doors replacement; technology upgrades; new restrooms; interior finishes replacement and reconfigurations; furniture replacement; structural voluntary upgrades
- Project requires: possibly phased or summer construction to allow COVAH to remain open during construction

Other Considerations:

- Demolition/Relocation: Existing Buildings A, B and C
- Swing Needs: COVAH (Middle College) and Student Services on first floor
- Structural Comments: this project appears to be feasible without triggering a mandatory structural upgrade

PRIORITY PROJECTS

Facilities Project Descriptions

M5: RENOVATION OF BUILDING E AND F

to address aged infrastructure, modernization of teaching spaces and to reconfigure Building F to accommodate the Fitness Center currently located in Building A.

- Size: 24,617 GSF / 12,809 ASF and 29,585 GSF / 15,603 ASF
- Height: 1 1/2 story and 2 stories
- Programs: Gymnasium, Fitness Center, Locker Rooms
- Renovation: roof, HVAC, electrical, lighting and windows/doors replacement; technology upgrades; new restrooms; gymnasium flooring replacement, interior finishes replacement and reconfigurations; furniture and equipment replacement; structural voluntary upgrades
- Site Improvements: ideal to address Site Improvements (M12) for Campus Loop, Parking Lot G & A and Soccer Drop-off reconfiguration at same time

Other Considerations:

- Demolition: Building A
- Structural Comments: this project appears to be feasible without triggering a mandatory structural upgrade. However, we recommend analyzing the existing structure to determine the extent of the existing deficiencies found in Building E.

M11: KINESIOLOGY PHYSICAL FITNESS ADDITION

will be an addition to Building E and F for Kinesiology programs. Exact placement to be determined once location of proposed Child Development Center (M9) is moved to desired location in State submission. Location also needs to be coordinated with the campus loop road completion design (see M12). Preliminary Assumptions:

- Size: 20,000 GSF / 17,000 ASF
- Height: 2 stories
- Programs: Kinesiology Teaching Spaces and Offices

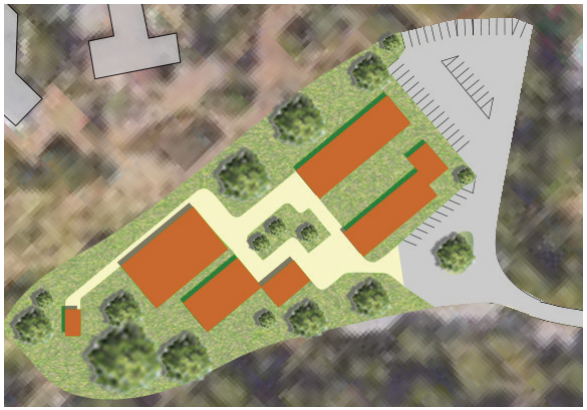
M10: HORTICULTURE REPLACEMENT

will replace the 11 separate Horticulture structures with 6 structures, totally the same size as the original aged complex, but configured for modern teaching pedagogies in Horticulture and Landscape Design.
Detail per State approved FPP:

- Size: 19,032GSF / 18,213 ASF
- Height: 1 story
- Programs: Horticulture and Landscape Design
- Site improvements: landscaped outdoor instructional areas
- Project requires: demolition of Existing Horticulture Complex, may need to be phased to keep program operational

Other Considerations:

- Demolition/Relocation: demolition of Existing Horticulture Complex
- Swing: Horticulture unless it can be phased



PRIORITY PROJECTS

Facilities Project Descriptions

M15: PARTIAL RENOVATION OF BUILDING R
to address aged infrastructure, intermittent water intrusion, and reconfigurations of specific departments within each of these three buildings. For example more counseling offices, and relocating Assessment Center. Preliminary Assumptions:

- Size: 53,889 GSF / 28,492 ASF
- Height: 1 1/2 stories
- Programs: Student Services in R
- Renovation: roof, HVAC, electrical, lighting and windows/doors replacement; technology upgrades; new restrooms; selective interior finishes replacement and reconfigurations; furniture replacement; structural voluntary upgrades

Other Considerations:

- Swing: affected departments will need to swing
- Structural Comments: project appears to be feasible without triggering a mandatory structural upgrade. However, we recommend to address the existing deficiencies found in Building R.

M9: CHILD DEVELOPMENT CENTER
is a new small facility for the Child Care Development program, currently housed inadequately in Building A. The Master Plan proposes to locate this building closer to the existing Child Care Center so that students can observe these rooms for class lab purposes. This location will also facilitate a smoother completion of the requested Campus Loop Road under Site Improvements Project M12.
Detail per State approved FPP:

- Size: 12,532 GSF / 8,661 ASF
- Height: 1 stories + 2,000 ASF Covered Play Yard
- Programs: Child Development Center Childcare Class Labs, Classrooms, and Offices, and New Play Yard
- Site improvements: landscaping around building; covered outdoor area, and pathway connections to Child Care Center

OTHER MASTER PLAN PROJECTS

Facilities Project Descriptions

M7 AND M8: PARTIAL RENOVATION OF BUILDINGS P & Q
to address aged infrastructure and reconfigurations of specific departments within each of these three buildings. For example, designated areas for EOPS offices, an Assessment lab with computers and office, enlargement of Transfer Center, and Welcome Center, and more counseling offices in Building R.
Preliminary Assumptions:

- Size: 44,537 GSF / 19,641 ASF, 14,326 GSF / 7,714 ASF
- Height: 3 stories each
- Programs: classrooms, Puente, DSPS, and Computer Labs in P; Administration, and Production in Q
- Renovation: roof, HVAC, electrical, lighting and windows/doors replacement; technology upgrades; new restrooms; selective interior finishes replacement and reconfigurations; furniture replacement; structural voluntary upgrades

Other Considerations:

- Swing: affected departments will need to swing
- Structural Comments (M8): project appears to be feasible without triggering a mandatory structural upgrade. However, we recommend to address the existing deficiencies found in building Q.

M6: REGIONAL PUBLIC SAFETY TRAINING CENTER

will be a dual use facility for the campus and local fire and law enforcement agencies to train students in Fire Science, Paramedics, Emergency Medical Technicians (EMT), Administration of Justice and Law Enforcement. Preliminary Assumptions:

- Size: 30,000 GSF / 22,500 ASF
- Height: 2 stories plus basement and small structures
- Programs: Underground Gun Firing Range, Class Labs for Fire, Police, Paramedics, EMT, and Administration of Justice, Multi-Use Classrooms, Meeting Rooms, Offices, Lockers, Equipment Storage, and Support Spaces
- Other: dormitory with bedrooms, restrooms, offices; Free Standing 60' Ladder and Rescue Tower; Free Standing Drill Tower; Strength and Conditioning Pavilion (not all ancillary buildings shown on plan)
- Site improvements: landscaping around new building; Lot E for Yard (truck exercises) and smaller structures; underground water retention and recycling system for fire
- Project requires: demolition of Building A and relocation of Lot E

Other Considerations:

- Secondary Effects: vacated spaces from Fire Science and EMT in Building F

M17: NEW CONFERENCE CENTER

for both campus and community use. Preliminary Assumptions:

- Size: to be determined
- Height: 2 stories
- Programs: Meeting Rooms, Lounges, Kitchen and Support Spaces

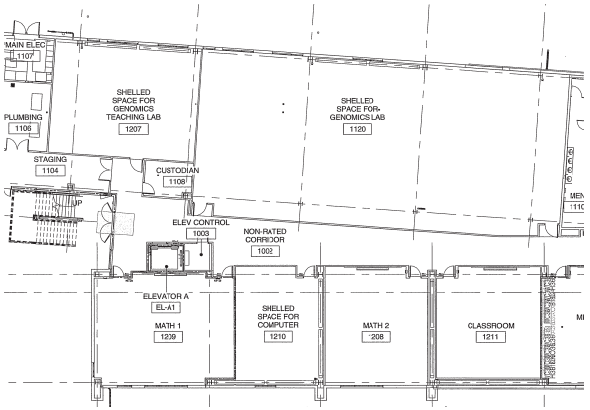
M16: FIT OUT OF BUILDING S SHELL SPACE

for Medical Genomics currently residing at 860 Atlantic Avenue in Alameda. Preliminary Assumptions:

- Size: per image below

Other Considerations:

- Secondary Effects: Building 860 Atlantic Avenue will be vacated after this project and College of Alameda Science and Administration project. See District-Wide FTMP for future plans for 860 Atlantic Avenue.



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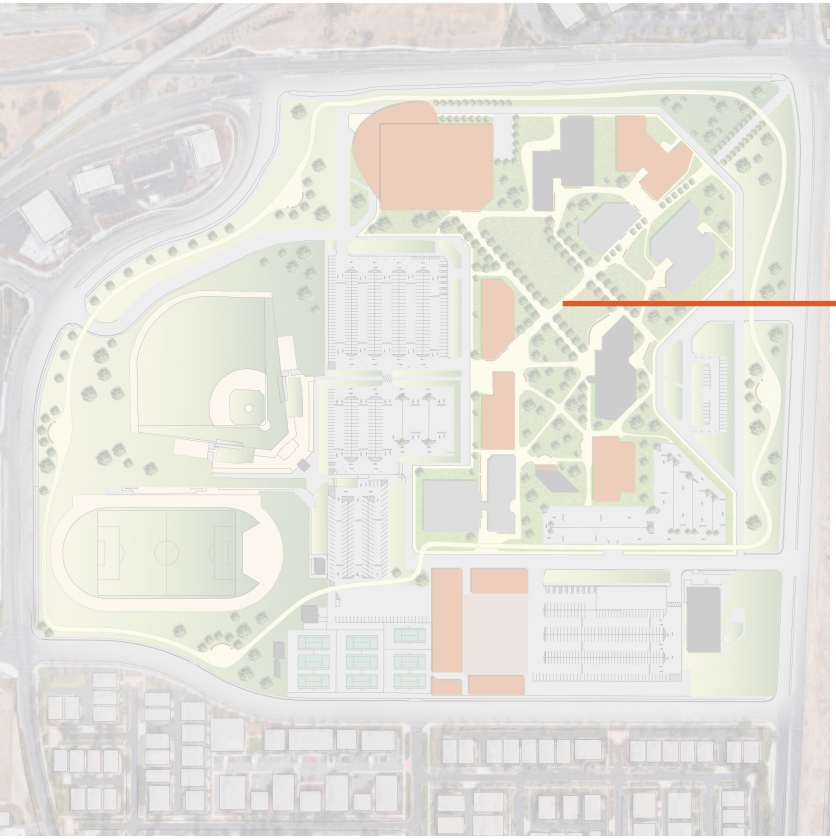
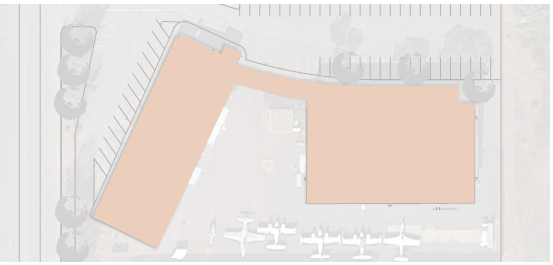


CHAPTER 8.0
Cost and Implementation



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8.0 Cost and Implementation

OVERVIEW

The Master Planning team developed preliminary cost estimates for Facilities' projects, as identified in the October 2017 Draft Facilities Master Plans[1]. Projects were estimated based on the following:

- New Construction: estimate is based on programs within, and overall size and siting, using current construction cost per square-foot basis
- Renovation: estimate is based on particulars of building (as provided in the project descriptions), programs, size, and siting

The team also developed life cycle costs for 20 projects from the total list of Master Plan Projects. These can be found in the Appendix. The District is committed to looking at a variety of methods to help pay for life cycle costs, inclusive of more efficient building systems (that may have a longer payback period with respect to additional upfront capital costs, but lower operational costs over the life span of a the building), and building public - private partnerships that could provide additional revenues to help pay for operational costs.

With respect to Infrastructure and Technology projects, the District indicated that these would be *initiated* with Deferred/ Scheduled Maintenance Funds. However, it is already clear that these State provided funds will not be sufficient to cover all the costs associated with Infrastructure and Technology projects, and thus, the shortfall should be addressed through an allocation in soft costs (per facility project) for completion of Infrastructure & Technology projects. The cost estimates provided include this allocation in the soft costs.

DEFINITIONS

Total Cost of Ownership

Total Cost of ownership is the total cost to build, and *operate and maintain* a facility across its life span. It includes

- Costs associated with the Design of the Facility (Design / Soft Costs)
- Costs associated with the Building of the Facility (Construction / Hard Costs)
- Costs associated with operating and maintaining the facility

Typically the cost to operate and maintain a facility is the bulk of the total cost.

Life Cycle Costs

A tool used to establish the total cost of ownership. Overarching costs may include, but are not limited to:

- Initial Costs – Purchases, Acquisition, Construction Costs
- Replacement Costs
- Residual Values – Resale or Salvage Values or Disposal Costs
- Fuel Costs
- Operation, Maintenance, and Repair (OM&R) Costs
- Finance Charges – Loan Interest Payments
- Non-Monetary Benefits or Costs
- Other (O) Cost

Construction / Hard Costs

Is the cost to build the facility (if we bought it off a shelf, today). It includes materials and labor, and related markups. Demolition costs, and site improvement costs, if any, are also included. Construction costs reflect current bid pricing for labor and materials.

Escalation / Inflation

Reflects expected percentage of price increases, during the time a project may be under construction (or waiting to start construction). The rate is determined using recent inflation information, the expected start date for construction, and the expected duration for the construction, and it is usually calculated to the midpoint of construction.

Design / Soft Costs

Are the costs associated with designing, engineering and obtaining regulatory approvals for a construction project. It also includes the costs associated with furnishing and equipping the building (the "loose" items within a building) and other items such as:

- All Consultant (Architect/Engineer) Fees
- Regulatory Agency Fees
- Furniture & Equipment
- IT and AV/TV Installation
- Temporary/Swing Space, if needed
- Infrastructure/Technology/Security/Signage Allocation
- Hazardous Materials Abatement
- Construction Contingency

Project Cost

Is the combination of Design/Soft Costs, Escalation/Inflation and Construction/Hard Costs. The costs presented in this Chapter are preliminary Project Costs for each of the Master Plan Projects.

1 Exceptions include the 860 Atlantic Avenue Genomics Institute which was not yet defined at this time, and the B4 Project: Berkeley new facility and/or land, which requires real estate expertise not covered by this FTMP Update scope.

MARKET CONDITIONS - ESCALATION

The estimate is based on a number of assumptions (see next page). The main assumption is that the projects would be undertaken over a 10-year period, with the first project starting construction in January 2019. Escalation is assumed to run through the fourth quarter of 2023 ("mid-point of construction"). The cumulative escalation from January 2019 through December 2023 is currently projected at 29.4%. Clearly projects undertaken immediately, and completed within a few years, would not bear the entire 29.4% escalation. However, in the absence of a confirmed implementation plan, the application of this factor across all projects means that initial projects will bear less than 29.4%, while projects initiated much later will bear more than 29.4%, so as an average it is a reasonable placeholder.

So what is driving this 29.4% escalation projection? Current market conditions show:

- Local construction market has experienced record growth.
- The contracting community is taking a selective approach to bidding products, resulting on upward price pressure.
- Many trades continue to experience labor shortages in conjunction with excess demand, resulting in upward price pressure: concrete, glazing, elevators, mechanical, and electrical trades.
- Short term volume forecasts appear to indicate a plateau in the coming two year period, but the supply side continues to lag.

Given the Market Conditions the recommended escalation rates are:

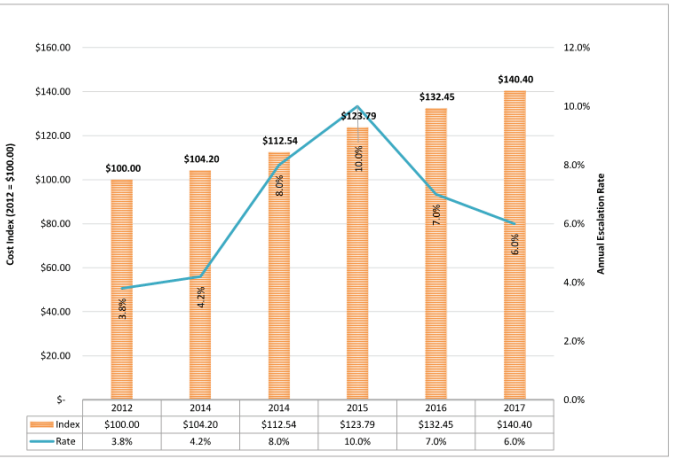
2017 – 6.0%
2018 – 5.0%
2019 – 4.5%
2020 – 4.5%

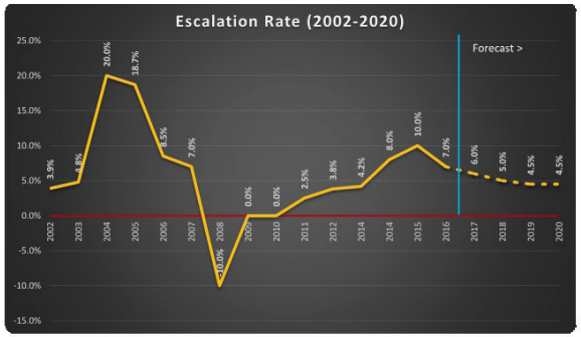
Note: after a peak in volume in 2017, labor may ultimately meet capacity needs.

Market Conditions - Escalation

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Volume (x$1m)	$18,225	$16,602	$17,151	$19,745	$22,933	$25,372	$29,347	$30,992	$33,978	$32,639	$31,798	$31,878
Annual Inc/Dec	Y-O-Y %	-8.9%	3.3%	15.1%	16.1%	10.6%	15.7%	5.6%	9.6%	-3.9%	-2.6%	0.3%

- Continuing increase in construction volume in the Bay Area
- Considerable cost escalation through this construction cycle
- Surge in volume puts continued pressure on labor resources





PRIORITY PROJECTS COST SUMMARY

Each campus prioritized its projects through a shared governance process. The project cost summary for those selected projects, is located on the next page. On the right is an explanation on how to read the estimate, and percentages assigned to markups and soft costs.

Detailed Cost Estimates for all projects and Life Cycle Costs for 20 select projects can be found in the Appendix (under separate cover).

After the preliminary cost estimate was prepared, the estimate was adjusted for:

- Potential State Funding through State submitted FPPs
- A target reduction to all other projects that will be achieved through a closer look at program sizing, characteristics of project, and soft costs breakdown.

HOW TO READ THE ESTIMATE

The exhibit below identifies the columns, and what the columns represent. Furthermore:

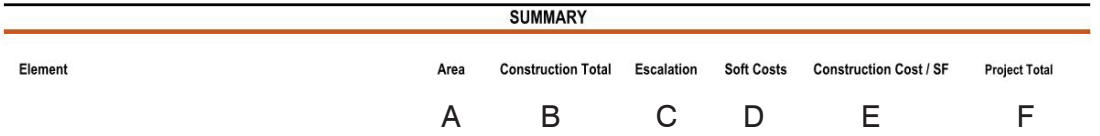
B - CONSTRUCTION TOTAL: includes materials and labor for building and Construction related Markups. Those markups are broken down as follows:

	New Buildings	Renovations
Contractor's General Conditions:	10%	12%
Contractor's Bonds & Insurance:	2%	2%
Contractor's Fee:	5%	6%
Design Contingency:	10%	20%

C - ESCALATION: Midpoint of 10 year Construction (12/31/23) = 29.4% of Construction Costs

D - SOFT COSTS: Design and Engineering, Regulatory Agencies, IT, Equipment and Furniture etc. = 35%

Definitions: Preliminary Project Cost Estimate Summary



SUMMARY						
Element	Area	Construction Total	Escalation	Soft Costs	Construction Cost / SF	Project Total
	A	B	C	D	E	F

A - AREA: Gross Square Footage (Size)
B - CONSTRUCTION TOTAL: Cost to build it (if we bought it off a shelf, today)

C - ESCALATION: Cost of constructing it in follow on years (Not today)
D - SOFT COSTS: Design and Engineering, Regulatory Agencies

E - COST/SF: Project Total (F) divided by Area of Project

F - PROJECT TOTAL: Add up Construction Total, Escalation, Soft Costs

PRIORITY PROJECTS COST SUMMARY

Element	Area	Construction Total	Escalation	Soft Costs	Construction Cost / SF	Project Total	Adjustments	Revised Project Total	Notes
Berkeley									
Project B1 - BCC Milvia 3rd Floor Build-Out / Reconfig. Of E. Bldg.	27,053	$11,405,362	$3,563,325	$5,239,040	$746.97	$20,207,727	-$4,041,545	**$16,166,182**	
Project B4 - BCC Additoinal Facility and/or Land Allowance							$50,000,000	**$50,000,000**	
Total Estimated Construction Cost	**27,053**	**$11,405,362**	**$3,563,325**	**$5,239,040**	**$746.97**	**$20,207,727**	**$45,958,455**	$66,166,182	
Alameda									
Project A4 - COA Science & Administration Center	42,000	$33,181,264	$10,366,671	$15,241,777	$1,399.76	$58,789,712	-$11,757,942	**$47,031,770**	
Project A5 - COA Replace Aviation Complex	28,479	$14,872,931	$4,646,682	$6,831,864	$925.30	$26,351,477	-$7,840,000	**$18,511,477**	educt for Potential State Funds
Project A6 - COA Automotive Center (Replacement)	35,000	$30,789,655	$9,619,471	$14,143,194	$1,558.64	$54,552,320	-$14,230,000	**$40,322,320**	educt for Potential State Funds
Project A7 - COA Performing Arts	50,000	$42,506,370	$13,280,071	$19,525,254	$1,506.23	$75,311,694	-$15,062,339	**$60,249,355**	
Project A9 - COA Modernize Building F (Student Center)	22,762	$8,561,053	$2,674,691	$3,932,510	$666.38	$15,168,255	-$3,033,651	**$12,134,604**	
Total Estimated Construction Cost	**178,241**	**$129,911,272**	**$40,587,585**	**$59,674,600**	**$1,291.36**	**$230,173,457**	**-$51,923,932**	$178,249,525	
District Offices									
Project D1 - District New Consolidated Admin. Complex	60,000	$37,688,343	$11,774,797	$17,312,099	$1,112.92	$66,775,239	-$20,032,572	**$46,742,667**	
Project D2 - District Workforce & Development / CE Center	25,000	$16,315,976	$5,097,526	$7,494,726	$1,156.33	$28,908,228	-$8,672,468	**$20,235,760**	
Project D18 - District Genomics Institute at 860 Atlantic Avenue Allowance	20,000				$600.00		$12,000,000	**$12,000,000**	
Total Estimated Construction Cost	**85,000**	**$54,004,319**	**$16,872,323**	**$24,806,825**	**$1,125.69**	**$95,683,467**	**-$16,705,040**	$78,978,427	
Laney									
Project L6 - Laney Student and Welcome Center	70,000	$52,216,217	$16,313,674	$23,985,462	$1,321.65	$92,515,354	-$18,503,071	**$74,012,283**	
Project L7 - Laney STEAM Center	120,000	$86,357,693	$26,980,339	$39,668,311	$1,275.05	$153,006,343	-$30,601,269	**$122,405,074**	
Project L-CP - Laney (2) New Central Plants	10,000	$24,463,546	$7,643,034	$11,237,303	$4,334.39	$43,343,882	-$8,668,776	**$34,675,106**	
Project L8 - Laney Library LRC	71,752	$43,794,940	$13,682,653	$20,117,157	$1,081.43	$77,594,750	-$20,245,005	**$57,349,745**	educt for Potential State Funds
Project L9 - Laney New Design & Manufacturing Center (DMC I)	60,000	$39,693,383	$12,401,222	$18,233,112	$1,172.13	$70,327,717	-$14,065,543	**$56,262,174**	
Project L11 - Laney Modernize Theater & Partial G	53,886	$48,440,839	$15,134,150	$22,251,246	$1,592.74	$85,826,235	-$6,953,000	**$78,873,235**	educt for Potential State Funds
Project L13 - Laney New Campus Green & Community Building	20,000	$15,956,554	$4,985,233	$7,329,626	$1,413.57	$28,271,413	-$5,654,283	**$22,617,131**	
Total Estimated Construction Cost	**405,638**	**$310,923,172**	**$97,140,305**	**$142,822,217**	**$1,358.07**	**$550,885,695**	**-$104,690,947**	$446,194,748	
Merritt									
Project M3 - Merritt Demolish Building A / New Building	30,000	$23,513,192	$7,346,119	$10,800,759	$1,388.67	$41,660,069	-$8,332,014	**$33,328,055**	
Project M4 - Merritt Renovate Bldg. D	75,493	$32,092,031	$10,026,367	$14,741,439	$753.18	$56,859,837	-$11,371,967	**$45,487,869**	
Project M5 - Merritt Renovate F and E	54,202	$18,924,268	$5,912,423	$8,692,842	$618.60	$33,529,532	-$6,705,906	**$26,823,626**	
Project M9 - Merritt Child Development Center	12,532	$8,043,966	$2,513,140	$3,694,987	$1,137.26	$14,252,092	-$5,119,000	**$9,133,092**	educt for Potential State Funds
Project M10 - Merritt Horticulture Replacement	19,032	$15,649,300	$4,889,239	$7,188,489	$1,456.86	$27,727,029	-$8,003,000	**$19,724,029**	educt for Potential State Funds
Project M11 - Merritt Kinesiology Physical Fitness Addition	20,000	$12,700,127	$3,967,842	$5,833,789	$1,125.09	$22,501,758	-$5,501,000	**$17,000,758**	educt for Potential State Funds
Project M12 - Merritt Site Improvement Project	-	$5,304,920	$1,657,392	$2,436,809	N/A	$9,399,121	-$1,879,824	**$7,519,297**	
Project M13 - Merritt Renovate Building R	53,889	$21,679,714	$6,773,294	$9,958,553	$712.79	$38,411,561	-$7,682,312	**$30,729,249**	
Total Estimated Construction Cost	**265,148**	**$137,907,517**	**$43,085,815**	**$63,347,666**	**$921.53**	**$244,340,999**	**-$54,595,024**	$189,745,975	
Grand Total									
Berkeley	27,053	11,405,362	3,563,325	5,239,040		20,207,727	45,958,455	**66,166,182**	
Alameda	178,241	129,911,272	40,587,585	59,674,600		230,173,457	(51,923,932)	**178,249,525**	
District Offices	85,000	54,004,319	16,872,323	24,806,825		95,683,467	(16,705,040)	**78,978,427**	
Laney	405,638	310,923,172	97,140,305	142,822,217		550,885,695	(104,690,947)	**446,194,748**	
Merritt	265,148	137,907,517	43,085,815	63,347,666		244,340,999	(54,595,024)	**189,745,975**	
Total Estimated Construction Cost	**961,080**	**$644,151,643**	**$201,249,353**	**$295,890,349**		**$1,141,291,345**	**-$181,956,488**	$959,334,856	

IMPLEMENTATION

The implementation of the priority projects will depend on available funding, but the District has the following general guidelines:

- Infrastructure and Technology Projects are being initiated with State Scheduled and Deferred Maintenance Funds immediately. Additional funding to complete these projects will most certainly be required, and therefore the first allocation of funding that becomes available will be allocated towards the completion of in-progress infrastructure and technology projects.
- The funding will then start to be allocated to each College's top priority Facility Project.
- The District will work with College Leadership and Shared Governance to update College priorities as needed.
- The District aims to have enough staff resources to manage at least (1) Facility Project per campus at the same time.
- If feasible and pending funding, the District might explore managing more than (1) concurrent project per campus, but this will be balanced with safety evacuation routes being maintained, and a manageable campus life while projects are under construction.

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