CABRILLO COMMUNITY COLLEGE DISTRICT

FACILITIES MASTER PLAN UPDATE
with Technology Support Plan

2018

Board Adopted
June 11, 2018
Facilities Master Plan TEAM

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TEECOM  Technology Master Plan

CSWST  Infrastructure Consultant

Cumming  Preliminary Costing
For two years, college constituency groups have been involved in a planning process and developing a prioritized list of facilities projects that can advance the college’s mission and meet the student-centered goals listed in our values statement. Specifically, we want our educational environment to foster high quality learning, to be student-focused, and to stress the values of collaboration, esteem, and equitable attainment for all of our students.

Since the failure to win voter approval for Measure Q in June of 2016, the college has worked to streamline its project list to address the critical needs facing the college. Through a series of meetings focused on data, facilities utilization, renovation needs, and recommended technology improvements, project lists have been developed and vetted within the college’s Facilities Planning Committee. That work was informed by our Educational Master Plan and the Space Utilization Plan.

I am proud to say that the top three projects in our Facilities Master Plan all feature major renovations or new construction efforts that are student-focused, will have significant positive impacts on large numbers of students, and are designed to promote high quality education and support services that result in completion of degrees and certificates that are meaningful for our 21st Century economy. While there are many projects envisioned for the college, some highlights of the plan include:

• The proposed renovation of the college’s library and learning center spaces, resulting in greater access to collaborative learning spaces, peer-learning centers, and enhanced information technology.
• Major renovation of the college’s 200 Building to serve as a hub of student support services, counseling, advising, and programs designed to promote completion of degrees and certificates.
• Construction of a new science center for the college that provides modern lab learning spaces and equipment specifically directed toward transfer programs and careers in the fields of science, technology, engineering, math, and preparation for health related programs.

There are other prioritized projects in the plan that will help the college be more efficient in its use of learning spaces, and promote better access to the community in arts, entertainment, and athletics. The Facilities Master Plan also features renovated or new flexible learning spaces that can help the college meet its enrollment targets and train workers in critical fields for our local economy, like public safety, fire technology, and culinary arts and hospitality services.

I want to thank the many faculty, staff, and administrators who devoted hours of service to the creation of this planning document. The Facilities Master Plan will help the college address its vision for the future and shape the college’s physical footprint for the next 10 to 15 years. In the process of bringing this plan to life, the college community is mindful of the support that the broader community has given to the college in the past, and the support it will need in the future. Through it all, we remain focused on providing the learning spaces and high quality programs that will yield well-rounded students who can thrive in our modern economy.

Sincerely,
Matt Wetstein
President/Superintendent
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Purpose
The purpose of the Cabrillo Community College District Facilities Master Plan with Technology Support Plan (FMP) 2018 Update is to:

- Align the FMP with the current California Economy;
- Align the FMP with the 2015 Educational Master Plan;
- Align the FMP with the 2014 District Strategic Goals;
- Address changes experienced by the District in the last decade as documented in the 2017 Space Plan;
- Identify and integrate Infrastructure needs;
- Identify and integrate Technology needs;
- Prioritize projects for a first phase of implementation;
- Identify Rough Costs for selected projects.

This Facilities Master Plan (FMP) replaces all previous District Facilities Master Plans, and synthesizes all the relevant data in one document.

Document Overview
The document is organized to present an overview of the Key Drivers for the FMP Needs within this first chapter. Technology Needs are described in Chapter Two, while Site and Facilities Needs are detailed in Chapter Three. Chapter Four presents the new Facilities Master Plan, and Chapter Five discusses the Next Steps, including Priorities and Costing information. The last chapter, Chapter Six, presents the AV Systems and Design and the Telecommunications Infrastructure Guidelines.
Cabrillo College empowers students to be effective communicators, critical thinkers, and responsible world citizens. With a commitment to quality and equity, we connect all learners to pathways that propel them from where they are to where they aspire to be, including: academic, personal, and career growth.

The Facilities Master Plan is based on the goals and recommendations identified in the District’s latest Strategic Plan, and latest Educational Master Plan. The following are the abbreviated goals from the “Cabrillo Connects” 2014-2019 Strategic Plan:

GOAL 1 Professional Development and Transformational Learning: this strategic focus identifies goals that reinforces Cabrillo College’s leadership in transformational approaches to teaching and learning, technology and other processes that make the college one of the leaders in identifying methods for student success.

GOAL 2 Sustainable Programs and Services: this strategic focus identifies areas that best meet student and industry demands for degrees and certificates as well as practices that encourage a seamless articulation of students through the basic skills sequence and into a career/transfer area.

GOAL 3 Community Partnerships and Economic Vitality: this strategic focus identifies ways to increase community and business partnerships to benefit the economic prosperity of Cabrillo’s students, Cabrillo College service area employers, and its community.

GOAL 4 Institutional Stewardship: this strategic focus identifies goals for providing high quality, sustainable and effective learning environments, that includes facilities, technology, and other operational systems.

GOAL 5 Institutional Responsibilities: this strategic focus plans the institutional compliance to meet ongoing and mandatory responsibilities in order to improve student success and student achievement. These new mandates include but are not limited to the Student Success Act, accreditation site visit recommendations and updated accreditation standards.

2015 Educational Master Plan Recommendations

The following are the key recommendations affecting facilities from the 2015 Educational Master Plan:

• Provide additional sections of courses in STEM;
• Continue to grow Distance Education Program;
• Reconfigure and consolidate Student Services within one location;
• Continue to pro actively address the requirements of SB1456 - Student Success Act of 2012;
• Increase counseling and educational planning services;
• Accommodate the long-term needs of its core programs, particularly those of Science, Mathematics, Humanities and Language Arts;
• Identify possible programs to relocate/add to the Watsonville Center to increase enrollment;
• Re-purpose and reconfigure spaces within existing buildings to increase operational efficiencies;
• Address ongoing maintenance to match resources.
The Facilities Master Plan with Technology Support Plan process was a shared governance process led by Steinberg Hart, with the Technology expertise of TEECOM, from October 2017 through June 2018.

The FMP process built upon the 2017 Space Plan intensive stakeholder process/feedback, and focused on the following:

• Validation of the 2017 Space Plan with the Facilities Planning Committee (FPC);
• Confirmation on the sizing expectation for the Student Services Renovation and New Science Building to verify proposed master plan solutions are feasible with representatives of those departments;
• A preliminary broad brush look at site infrastructure and site accessibility needs for Aptos campus;
• Site walks, online surveys and interviews to establish technology needs, AV Systems Design (classroom technology) and Telecommunications Infrastructure guidelines with IT Staff, Technology Committee (TC) and faculty representatives;
• Prioritization of technology projects and facilities projects through FPC, Faculty and Classified Staff Surveys, and TC, FPC, Cabinet and CPC workshops;
• Shortlist of 20 Projects for preliminary costing with Cabrillo Leadership;
• Review and feedback of Draft FMP by TC, FPC, Cabrillo Leadership and Board of Trustees.
• Approval of final Facilities Master Plan with Technology Support Plan 2018 Update by Board of Trustees.
Key Drivers for FMP Needs

There are multiple drivers for Cabrillo’s facilities and technology needs. The driving forces have their genesis in the California Economy and span from the campus site infrastructure to the individual classroom, on each of the Cabrillo’s campuses.

They can be summarized as follows (note all drivers are important and they are not in any order):

- The need to address the 1.1 million California college graduates shortfall by 2030;
- The need to meet the obligations of SB 1456: the Seymour-Campbell Student Success Act of 2012;
- As identified in both the 2014 District Strategic Plan (DSP) and the 2015 Educational Master Plan (EMP), the need to increase student success, retention, transfer and completion as a way to address the two items above;
- As identified in the 2015 EMP, the need to reconfigure and collocate Student Services to address the needs outlined above;
- To address SB 1456, the 2015 Cabrillo College Student Equity Plan and the 2015 EMP, expand counseling and tutoring services;
- As identified in the 2015 EMP (and the California Economy), the need to increase enrollment by providing additional course sections in the STEM fields (would address existing demand in addition to future demand);
- As identified in the 2015 EMP (and the California Economy, and current trends in education), the need to increase enrollment by growing the Distance Education Program;
- As identified in the 2015 EMP and the 2017 Space Plan, address the current and long-term needs of the core programs, particularly those of Science, Mathematics, Humanities and Language Arts;
- As identified in 2014 DSP and the 2017 Space Plan, the need to provide programs responsive to student learning needs and changes in the job market, which will require outdated facilities to be reconfigured or replaced for 21st Century teaching and learning pedagogies;
- As identified in the 2015 EMP and the 2017 Space Plan, the need to repurpose and reconfigure existing buildings to increase operational efficiencies;
- As identified in the 2014 DSP, provide students and employees with technology that supports successful learning outcomes, currently limited by the existing condition of technology and security;
- As identified in the 2014 DSP, the need to provide sustainable and effective learning environments (including ongoing maintenance), which is currently limited by the existing condition of facilities and the supporting infrastructure;
- As identified by the California Community Colleges Board of Governors’ Energy and Sustainability Policy, the State AB 32 Global Warming Solutions Act of 2006, and the American College & University President’s Climate Commitment (ACUPCC), the need to increase operational sustainability which is currently limited by the existing condition of facilities and the supporting infrastructure;
- Other potential facilities needs/impacts from the adoption and resulting recommendations of the CCCCO’s Guided Pathways Project. Cabrillo CCD is one of 20 Community Colleges in the State to participate in this pilot program to smooth students path to transfer and graduation (see page 10).
Existing Conditions Affect Student Success

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 majority (51%) of Cabrillo Campus buildings were built between 40 to 56 years ago, and they have aged mechanical, plumbing, and electrical systems that are well beyond their useful life. These failing systems, in conjunction with outdated wall, ceiling and flooring construction make the first five aspects deficient in most buildings across the Aptos campus. The deficiencies in the other three aspects are covered in detail within the 2017 Space Plan.

Above you will find one example of the outdated systems (highlighted in orange) for Building 700. These assessments are conducted by the California Community Colleges Chancellor’s Office (C CCCCO) on a periodic basis. The complaints about temperature, air quality, acoustics, and lighting in these buildings is corroborated by the high maintenance calls for these buildings, and the survey respondents feedback during this FMP process and the 2017 Space Plan Process.

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 2014 DSP, the 2015 EMP, and the California State Student Success Act (SB 1456), is to improve facilities for all these aspects.
Students are depending on California Community Colleges for education, career training and social mobility, and the State of California is depending on California Community Colleges for economic improvement and to close the skills gap.

The CCCCO’s California Vision for Success is a strategic plan calling for sizable increases in the number of CCC students transferring to a University of California or California State University campus, substantial improvements in preparing students for in-demand jobs and eliminating the achievement gap altogether.

The Goals in the Vision for Success (from CCCCO’s July 17, 2017 Press Release) are:

- Increasing by 35 percent the number of California community college students transferring annually to a UC or CSU campus. The Public Policy Institute of California says this benchmark must be reached if California is to meet future workforce demands for employees with bachelor’s degrees. The Vision for Success calls for reaching this goal by mid-2022.

- Boosting by 2022 the number of students completing career education programs who find a job in their field of study from the current 60 percent to 69 percent.

- Increasing by at least 20 percent the number of students annually who earn associate degrees, credentials, certificates or acquire specific skill sets that prepare them for an in-demand job. This goal, set for 2022, is needed to meet future workforce demand in California, as analyzed by the Centers of Excellence for Labor Market Research.

- Significantly reducing the average number of units accumulated by students who earn an associate degree from approximately 87 to 79. Most associate degrees require 60 units, and reducing the average number of units-to-degree will help students reach their educational goals sooner and at less cost.

- Reducing achievement gaps by 40 percent within 5 years and fully closing those achievement gaps for good within 10 years.

Achieving the goals set forth in Vision for Success will require a set of seven commitments. Focusing relentlessly on students’ end goals tops the list of commitments. Critical in meeting this commitment is the Guided Pathways initiative, a five-year project aimed at engaging administrators, faculty and staff to enact comprehensive changes so that all courses are designed as part of a coherent pathway with a clear outcome.

Cabrillo CCD is one of twenty California Community Colleges participating in a CCCCO Initiative Guided Pathways. The Guided Pathways framework assists colleges in improving student achievement outcomes by focusing efforts throughout the system on effective, evidence-based, practices and interventions, and integrating planning across all divisions. It also calls for a thoughtful redesign of support services programs that are effectively integrated with instructional programs to help students succeed.
Chapter Overview

This chapter identifies the technology needs, and the roadmap on how the District plans to address them. The needs are driven by the 2014 District Strategic Plan, the 2015 Educational Master Plan, the needs identified by this Facilities Master Plan, and the foreseeable needs for providing 21st Century teaching and learning, as identified by stakeholders during this process.

The technology components covered in this chapter include:

- Network – wired and wireless (Wi-Fi)
- WAN / CENIC
- Telecommunications / Network Infrastructure
- Classroom Technologies
- Security Systems

Within each of the categories above, there are subsystems that collectively comprise the 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 Technology Support Plan proposes.

Note, this Technology Support Plan works in conjunction with Chapter 6 that includes the Audiovisual Systems Design Guidelines, and the Telecommunications Infrastructure Master Plan Guidelines.
Overview

The process for gathering information on the condition of the various Technology components, and the specific needs of the Cabrillo stakeholders with respect to Classroom technologies, included:

- On-site inspections with Information Technology (IT) Staff
- Interviews with IT staff
- Review of Existing Documentation
- District IT’s Project List
- Survey for Classroom Technology distributed to participants representing the various disciplines across Cabrillo College.

The feedback and data collected culminated in a list of technology needs for both Cabrillo College and the Watsonville Center. The proposed solutions to address these needs was done through a collaborative effort between the Cabrillo stakeholders and the Technology Support Planning team, and is in alignment with the best practices across the higher education sector in California.

Access to the internet (both internal to the District, and the external world wide web) is an essential component of 21st Century Teaching and Learning. The major issue for Cabrillo College CCD (and many other Community College Districts) is lack of sufficient network and Wi-Fi (wireless network system) capacity. Upgrades to the network and Wi-Fi will result in increased network capacity to both internal district resources, and the internet. Internal resources include servers, storage, firewalls and education material hosted on district systems. Internet resources include public applications and data.

The student use of multiple mobile devices on campus has, and will continue to increase. More devices per person requires more Wi-Fi capacity to support those devices. The wireless network’s upgrades will provide greater coverage, capacity and throughput resulting in better user Wi-Fi experience for both faculty and students.

The need for more wired network connectivity has steadily increased as well. For example, the instructors are using more digital and video-based content in their classrooms. Network based video content requires significant bandwidth, which is currently limited on campus.

Network and Wi-Fi

The proposed wired network refresh features greater bandwidth and connectivity speeds, resulting in faster file transfer, faster application communications, and will allow more instructors to use the content of their choice without network restraints.

Detailed Issues

The campuses have reported numerous issues related to network performance and Wi-Fi service. The following reported issues are more technical and apply to the various components that make up the wired and wireless network systems.

Specific examples of reported issues include:

- Insufficient network core redundancy
- Insufficient bandwidth between cores to campus buildings
- Insufficient firewall capacity and redundancy
- End-of-Life (EoL) backup storage system
- Aged data storage SANs
- EoL blade servers, storage within data center
- VDI (virtual Desktop) poor user experience and performance
- Insufficient backup power at Watsonville Center and parts of Aptos Campus
- Disaster Recover / Business Continuity technology plan stale and need updating
- Aged / failed mobile end-user devices (laptops, desktops...)
- Insufficient and unmaintained network and cyber security monitoring tools
- Insufficient WAN (CENIC) upgrades Aptos Campus, Watsonville Center and Sunnyvale
- Inadequate power and cooling within telecom spaces
- Insufficient cable conduit capacity (noted in Library and Hub area)
Wired Network and Wireless/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 to upgrade campus connections to the Internet via CENIC. This Technology Master Plan includes the remaining work needed to complete this initiative.

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

Wired Network

Needed network refresh efforts includes the following network changes:
• Cisco Nexus 7000 chassis as the core switch/router – underway and funded
• Configure redundant cores for High Availability (HA) – underway and funded
• Cisco access switches being deployed to replace aged (End-of-Life) switches and hubs – underway and partially funded
• Redundant 10 Gigabit uplinks between buildings to core – not funded
• Backup tape library reached End-of-Life – not funded
• Legacy server blades – not funded
• Policy based network segmentation – not funded
• Replacement of edge firewalls to Internet with high-speed high-availability equipment – underway and funded
• Update and expand network monitoring tools – not funded
• Deploy network intrusion detection – not funded

WI-FI

• Expand Wi-Fi connectivity – underway and partially funded
• Deploy updated Wireless Access Points (WAPs) supporting multigigabit 802.11ac – underway with approximately 1/3 upgraded. Note that new WAP deployments require CAT6A copper cabling and single mode fiber backbones to function optimally – partially funded
• Update configurations and features – partially funded

Additional Wired Network and WI-FI

• Data storage SAN (Storage Area Network) upgrades – not funded
• Upgrade or replace blade servers – not funded
• VDI (Virtual Desktop Infrastructure) upgrades or replacement – not funded
• Update a DR / BC policy and procedures – not funded
• Repair or replace failed mobile end-user devices – not funded
• Upgrade or install new UPSs for the new network hardware with a 1-hour (or more) battery run-time – not funded
• Watsonville: a generator is needed.
District Progress in a SnapShot

**APTOS CAMPUS:**
- Network refresh is underway.
- Upgrade designs and strategy has been developed.
- New redundant wired Cisco Nexus 7000 switch cores are being deployed/commissioned.
- Wired access switches are being upgraded to address near End-of-Life (EoL) equipment with an anticipated completion of early 2018.
- New firewalls have recently been deployed.
- Edge firewalls have just been replaced.
- Wireless system upgrade is underway (to implement current 802.11ac wave 2 technologies. Approximately 80 out of 220 (~1/3) WAPs have been upgraded.

**WATSONVILLE CENTER:**
- Redundant 1 Gig CENIC network circuit is planned but, not yet ordered or deployed.

**Recommendations**

The Technology Support Plan proposes to complete the current network refresh initiative and Wi-Fi upgrades, and the next two refresh cycles expected over the next 12 years. These include the following items:

**APTOS CAMPUS:**
- A full network upgrade; as-built documentation; integrate network monitoring; spare equipment; remove obsolete equipment
- Full deployment of a network refresh, including backbone fiber upgrades (to single-mode fiber), network core switches, and network access layer/edge switches
- Wi-Fi: a refresh and redesign within 3 years
- Work to upgrade of the Wi-Fi throughout the buildings
- As-built documentation; integrate network monitoring; spare equipment; remove obsolete equipment
- Complete wired network refresh with lifespans of 5 year intervals
- Complete the upgrade; as-built documentation; integrate network monitoring; spare equipment; remove obsolete equipment
- Migration to Cloud storage

**WATSONVILLE CENTER:**
- Redundant WAN / CENIC link
- UPS and HVAC upgrades
- Wi-Fi: a refresh and redesign within 3 years
- Work to upgrade of the Wi-Fi throughout the buildings
- As-built documentation; integrate network monitoring; spare equipment; remove obsolete equipment
- Complete wired network refresh with lifespans of 5 year intervals
- Complete the upgrade; as-built documentation; integrate network monitoring; spare equipment; remove obsolete equipment

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 have redundant connects to Aptos Campus with 10 gigabit wide area network (WAN) and 1 gigabit at Watsonville Center. Note that the campuses access the Internet via this connection.

Overall, CENIC has been fully embraced throughout the campuses and is widely deployed throughout the California education system.

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

District-wide network monitoring is incomplete and in need of updates and expansion.

The Technology Support Plan proposes to engage professional services for design, implementation and deployment of network monitoring tools upgrades including the following:

- Continued use of Cisco Prime
- Continued use of Opensource for server monitoring
- Integrate Struxureware for APC (UPSes) monitoring
- Develop maintenance plan
- Develop alerts to notify IT staff
- Align resources where needed

Cyber Security

District-wide cyber security technology and monitoring is being enhanced with updated firewalls and security focused applications.

The Technology Support Plan proposes to engage professional services for design, implementation and deployment of cyber security upgrades including the following:

- Replacement edge Firewall hardware to Internet
- Integrate whitelists and blacklists
- Integrate Anti-X technologies
- Deploy Cisco’s TrustSec software-defined network segmentation
- Deploy Cisco’s Stealthwatch
- Deploy Amazon’s Cloudwatch
- Develop alerts to notify IT staff
- Align resources where needed

Network Maintenance Contracts

Cisco network equipment requires a maintenance contract (“SmartNet”). The cost of this contract is 11% of the equipment’s capital cost.

One-of-a-kind and critical equipment have support contracts. The widely deployed equipment is self-maintained with local spares, and leverage warranty as maintenance.

The District seeks but does not have funding for equipment maintenance. The District may require additional maintenance costs for software subscriptions and cloud based storage.
Telecommunications and Infrastructure

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

Specific examples of reported issues include:

- Aged cabling infrastructure
- Telecom rooms are co-located with other utility rooms.
- Telecom rooms have inadequate power and cooling
- Telecom rooms are inadequately sized for future capacity
- UPS / emergency power is needed for network to support VoIP, security and other critical services.
- No physically redundant outside plant pathway between the two sides of the campus.

Outside Telecommunications Infrastructure

The following projects would be standalone projects as they are not tied to specific building renovations:

Major Outside Plant Infrastructure Upgrades:

- New redundant conduit path and single-mode fiber that crosses Soquel to connect two campus hubs (B100 and B1300). This provides a full physically redundant path between the two hubs. This approach is typically recommended to prevent service disruption caused by single points of failure or service connectivity.
- New single-mode fiber for the upper campus, so upper campus buildings can operate at 10 gig bandwidth.

Newly Built or Renovated/Modernized Buildings:

- New OSP fiber cabling for new or renovated buildings.

Existing Buildings:

- Bring new outside plant fiber into buildings that do not currently support 10 gig bandwidth.
Telecommunications Equipment Rooms

All new or renovated/modernized buildings in Technology Support Plan shall receive all new telecommunications rooms, and:

• They will be sized appropriately to have the proper clearances and provide future capacity.
• Adequate power and cooling will be provided in the telecom rooms for the expected loads.

Existing Buildings:

• When cabling in existing buildings is upgraded, the building may require new telecom rooms to replace inadequate telecom rooms. For example, in some buildings the Telecom equipment is in the Custodial Closet. These new telecom rooms will follow campus requirements for new and dedicated telecom rooms.
• Some existing buildings had new telecom rooms built, but existing cabling has not been re-routed to it.
• It is recommended that college phase cabling and telecom room upgrades of existing buildings with the upgrade of the campus wide telecom OSP distribution.

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 Technology Support Plan proposes that the District investigate emergency/stand-by power systems, and determine if these could be leveraged to support network equipment. The District should also investigate the existing conditions of local UPSs (where they exist), 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 hour survivability. This power service would be required in each Telecom room.

Telecommunications Intrabuilding Cabling

All new or fully replaced/renovated buildings in Technology Support Plan shall receive new backbone fiber and copper cabling and CAT6A horizontal cabling, and:

• Locations of work area outlets will follow campus standards and desires of College and Users.

Existing Buildings:

• Existing buildings will have their current data cabling replaced with new backbone fiber and CAT6A horizontal cabling.
• Existing buildings with already newly built telecom rooms will have to replace current cabling and pull new CAT6A to the new telecom rooms.
• It’s recommended that college phase cabling and telecom room upgrades of existing buildings with the upgrade of the campus wide telecom OSP distribution.

Telecomm. Infrastructure Guidelines

Refer to Chapter 6 for Telecommunication Infrastructure Guidelines related to this Technology Support Plan.
Classroom Technologies

The Technology Support Plan included an investigation process consisting of a survey and interviews with faculty representatives. The information gathered through the process, along with the College’s set of standards (published on the Cabrillo College website) constitute the basis of design for the new classroom technologies. The complete survey results can be found in the Appendix.

The Technology Support Plan proposes a standardized design to accommodate various instructional modalities used in the College. The intent is to roll out systems that provide infrastructure capable of supporting current and future technology, repeatable, and consistent in form and function.

A/V Master Plan Design Guidelines

A design guidelines reference has been created to document the results of the investigation and survey process. It also contains the design elements that will be used in the roll out of new classrooms as well as any renovation of existing rooms that will receive technology refresh under the allocated funds. These guidelines can be found in Chapter 6.

Security Systems

The security system is comprised of multiple systems, such as access control system and alarm monitoring, video surveillance system, intrusion detection, and emergency communications system. Each of these systems perform a specific function and, collectively, facilitate the enforcement of security and safety policies and measures for the Cabrillo Campus and Watsonville Center.

In addition to the Cabrillo’s staff, the Sheriff department provides assistance for design review and recommendations for new projects, and monitoring of the security systems.

Access Control Security System

The existing Access Control and Alarm Monitoring System (ACAMS) is a compilation of multiple manufacturers.

The College is in the process of completing a pilot project utilizing Lenel at buildings 400 and 450. The project includes approximately 60 card readers. Upon the conclusion and assessment of the solution, the College will verify if Lenel will be used for their security standards.

As a Technology Support Plan priority, the College seeks funding for converting all existing ACAMS throughout the College to one standardized product and functional-
Video Surveillance Security Cameras

The College has deployed approximately 250 IP security cameras that are being recorded on an OnSSI video management system. The first round of IP cameras where 720p, but recent projects have standardized on a minimum resolution of 1080p, with the use of higher resolution when the Sheriff determines it is required.

Cameras have been included in new projects as part of the security standards. At existing buildings and at site locations the Sheriff’s team provides recommendations for additional video coverage, but additional cameras are only provided when funding is available. Currently the camera coverage across the campus is not adequate and additional coverage is required.

The College seeks funding for maintenance, repairs, and addition of new cameras to improve coverage. New and renovated buildings must include adequate cameras.

Intrusion Detection System

The College utilizes the Intrusion Detection System to monitor building activities after hours. The system reports to the Sheriff’s department, who is then dispatched to resolve any alarm events.

Emergency Call Stations

The College includes 31 Emergency Blue Light Phones at Aptos and one at Watsonville. The Emergency Blue Light Phone call direct to the Sheriff. Some units are captured by video surveillance cameras.

To provide a consistent level coverage, Blue Light Phone should be provided for all new projects.
Summary of Technology Needs

The technology projects identified in this chapter have been categorized into two categories: Tier One End of Life Replacement (EoL) or Lacking, and Tier Two Enhancements.

TIER 1 End of Life Replacements or Lacking

- Complete network core refresh (includes Wi-Fi)
- Complete network hardware EoL replacements
- Complete firewall replacement
- Replace UPS for Watsonville Center campus hub (requires generator)
- Update and expand Disaster Recovery (DR)
- Replace/upgrade backup system; SAN (Storage Area Network) EoL replacement; EoL blade servers (eight total: replacement on some depends on VDI Plan)
- Cyber security deployments
- Redundant pathways and fiber to redundantly connect two Aptos campus hubs (B100 and B1300)
- New OSP fiber and copper for new buildings (per facilities priorities)
- B100 and B1300 campus hub equipment and cabling replacement
- New telecom rooms, backbone cabling and horizontal cabling for new buildings (per facilities priorities)
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- New telecom rooms, backbone cabling and horizontal cabling for new buildings (per facilities priorities)

TIER 2 (Enhancements)

- VDI (Virtual Desktop Infrastructure) repair or replace
- Mobile end-user device replacement
- Network monitoring
- Cyber security enhancements
- CENIC/WAN (Wide Area Network) upgrades between Aptos Campus and Watsonville Center
- Develop alerts to notify IT staff
- Wi-Fi expansion
- Update cabling infrastructure of existing buildings (per facilities priorities)
- New telecom rooms, backbone cabling and horizontal cabling for renovated buildings (per facilities priorities)
- Infrastructure for classroom technologies (phased deployment per facilities priorities)
- Appropriate power upgrades for renovated buildings
- Upgrade fiber from campus hub (B100 to Horticulture Building on Aptos Campus)
- Fiber to parking lots and other site areas (on Aptos Campus)
- Security camera expansion
CHAPTER OVERVIEW

This chapter identifies the facilities needs, and some of the known site needs for the District. The needs are driven by the key drivers identified in Chapter One, and have their basis in the California Economy, 2014 District Strategic Plan, the 2015 Educational Master Plan, the existing condition of facilities, and the foreseeable needs for providing 21st Century teaching and learning, as identified by stakeholders during this process.
Summary of Facilities Needs

Modernization Projects:
• 200 Building for Student Services
• Partial 300 Building (Classroom Building)
• 350 Building (Classroom Building)
• 400 Building (Classroom Building)
• 500 Building (Classroom Building)
• 700 Building (Classroom Building)
• Partial 900 (Student Center)
• 1000 Library (Tutoring and Library)
• 1100 Gymnasium
• 1300 Building Trades (Classroom Building)
• 1500 Early Childhood Education (Classroom Building)
• 1550 Building (Office Building)
• 1600 Public Services (Classroom Building)
• 1700 Child Development Center
• 1800 Sesnon House (Classroom Building)
• SAC (Secondary Project to 200 Building)
• Stadium and Athletic Fields
• Watsonville Center Building A (Classroom Building)

Major Replacement (New) Projects:
• Replacement Science Building
• Replacement Culinary Arts Center
• Replacement Dance Lab & VAPA Community Center
• Replacement Public Safety & Fire Academy
• Replacement Maintenance & Operations Complex

Other Projects:
• Smaller Needs for Newer Buildings
• Mechanical, Plumbing, Electrical, Technology, M&O, Sustainability Projects in Buildings not already listed

The majority of the facilities needs are modernizations and replacements with some added new space. The FMP aims to balance (to the best extent possible) added new space with the removal of portable buildings (which are a drain on maintenance budgets), and any aged and outdated buildings that can be not be appropriately reconfigured for the use intended to be housed there.

Buildings Proposed to be Demolished:
• 100 Building
• 450 Forum
• 600 Building
• 1185 Sheriff’s Office (portable)
• 2000 - 2050 Purchasing, Facilities Development, Maintenance & Operations
• 2100 A (portable)
• 2100 B (portable)
• 2100 C (portable)
• 2500 Building (portable)
• 2550 Building (portable)
• 2600 Building (portable)

The needs identified so far are directly driven by the key drivers identified in Chapter One. In addition to these needs, Cabrillo CCD identified the need for affordable housing for both faculty and staff, as well as students. The high rising rent costs in the college service area have created challenges with faculty/staff retention, and student success impediments as students live further away with fewer and poorer public transportation options.

Highly Desired Projects:
• Affordable Housing
• Conference Center

The extensive data collection process throughout the 2017 Space Plan and this 2018 Facilities Master Plan Update indicates that Cabrillo College has significant facilities needs to meet their instructional and student support mission. Most of these needs are immediate and are critical to the State’s mandate to improve Student Success.

All Projects Will Include (Where Appropriate):
• Reconfigure and Resize Classrooms for modern teaching pedagogies & appropriate sizing
• Modernize/Add Class Labs in programs requiring expansion/replacement
• Update Technology and Wi-Fi
• Address Mechanical, Plumbing, Electrical Issues
• Renovate and Add Restrooms
• Address Faculty/Staff Meeting Rooms
• Improve Student Study/Gathering Areas
• Address Office Needs
• Improve Lighting and Security
• Improve Signage and Wayfinding
• Improve Campus Sustainability, Maintenance and Operations

1. Should Building 200 not be suitable for repurposement from its original Theater use, this project will become a replacement project.

1. Building 600 will only be demolished after all other facilities projects are complete, for the building is critical to serving swing classroom needs during those projects.
Summary of Site Needs

Although a complete analysis of the site needs was not part of this FMP process, the team was able to gather some information that provides a broad view on site needs, along with some recommendations on next steps. Site components include:

- Accessibility
- Site Signage and Wayfinding
- Site Lighting and Security
- Campus Landscape and Pathways
- Site Underground Infrastructure

Accessibility
Cabrillo CCD has an active database and barrier removal transition plan created by the District’s consultants. The database captures the accessibility issues affecting each campus facility, and each campus wide path of travel (see example chart to the right). The District works on rectifying these issues based on available funding.

RECOMMENDATION: If the District could identify a larger source of funding these items could be addressed faster.

Site Signage and Wayfinding
Cabrillo suffers from lack of enough signage in all categories: directional signs, campus maps, building names, and room numbers. In addition, signage is inconsistent, contradictory, and outdated signage has not been removed. All of these make wayfinding more challenging, which can be an impediment to student success.

RECOMMENDATION: District should develop a Signage Standard Program with the assistance of subject matter experts, and replace and add site signage throughout their campuses.

Site Lighting and Security
Cabrillo users identified a few campus locations and pathways that are in need of lighting for safe access to classes during dark hours. Security needs outside of lighting (emergency phones, access readers etc.) are discussed in Chapter Two, Technology Needs.

RECOMMENDATION: District should study lighting levels across campus pathways, and develop a plan to augment/address deficient areas, with the assistance of subject matter experts. Site lighting should be energy efficient and standardized.

Chart provided by District’s Accessibility Consultant.
Numbers shown on x-axis represent each singular item correction required, y-axis shows building on campus.
Campus Landscape and Pathways

Research has shown that outdoor areas are as key to fostering learning as indoor spaces. Cabrillo has a beautiful campus that is greatly appreciated by its community, but not all areas are maximizing their potential for enabling collaboration, studying, gathering, meditating, community uses, access and walking. The following are highly desired:

- Partial shade structure, electrical outlets, Wi-Fi and small platform for existing landscaped amphitheater which would provide ability to have exterior lectures, extension of learning activities, and community events;
- More benches and picnic tables with electrical outlets, Wi-Fi and shade throughout campus, in particular lower campus;
- Convert at least some of the green lawn areas at the VAPA complex to create shaded study and gathering areas with benches, tables etc;
- Improve the Quad: too much concrete and not welcoming enough;
- Add and improve pathway connections from upper campus to Horticulture Buildings;
- Add and improve pathway connections from remote parking areas to both lower and upper campus;
- Connect lower and upper campus with another pedestrian bridge;
- Improve landscaping at other miscellaneous areas of campus;
- Possibly add an organic farm for cafeteria;
- Sustainable landscaping.

RECOMMENDATION: District should try and address some of these desires within facilities projects that are contiguous to the landscape areas and pathways.
Site Underground Infrastructure (Utilities)

The following general analysis is based on schematic utility master plans which show utility locations and some pipe materials, but not the date of construction. In a number of cases there were no pipe sizes noted. We assume most of the utilities were installed in the 1960’s, when the campus was first built.

Pipe materials noted on the Utility Master Plans were mostly plastic and PVC but also include:

- 6”-18” Vitrified Clay Storm Drain Pipe
- 8”-15” Corrugated Metal Storm Drain Pipe
- 15”-24” Reinforced Concrete Pipe
- 3”-10” Transite Water and Storm Drain Pipe
- 6” PMP Storm Drain
- 4”-8” Vitrified Clay Sanitary Sewer Pipe

**RECOMMENDATION: District should hire a subject matter expert to conduct assessments and:**

- Locate “as-builts” or original Design Plans to help determine date of construction, materials and sizes;
- Where possible, video the sanitary sewers and storm drain utilities. This is especially necessary where Vitrified Clay Pipe (VCP) was initially installed in the vicinity of vegetation;
- Visit site to do a conditional assessment of the visible utilities;
- Visit Campus and meet with M&O Staff to locate historic problem areas. Also review maintenance logs, if available. Determine if there are flow or pressure issues;
- Develop a program for exercising Water and Gas valves and have Fire Hydrants pressure tested;
- To assist in all future construction work, including work associated with each facility project, create a comprehensive Digital Mapping System for Existing Utilities to avoid expensive re-routing of utilities or unexpected utilities related issues.

**Priority One: Gas Lines**

Age of gas infrastructure is over 50 years. We recommend that the subject matter expert:

- Map existing system;
- Conduct assessments via potholing and leak detection;
- Determine capacities – existing system and future buildings/demand;
- Assess program for exercising valves;
- Establish leak isolation procedures;
- Review maintenance and operations (M&O) logs to determine problem areas and meet with staff;
- Meet with PG&E, who should provide supply pressure and capacity information;
- Conduct a thorough hydraulic study to incorporate existing and proposed demands on the system;
- **Make recommendations on how to address the issues uncovered in the more thorough assessment.**

**Priority Two: Water Mains**

It appears that the majority of the water system on campus was constructed with Cast Iron Pipe (CIP) and Transite. Cast iron pipes are prone to corrosion. We assume that most of these pipes are near the end of their useful life. We recommend that the subject matter expert:

- Map existing system;
- Conduct assessments via potholing and inspect all cast iron pipes for corrosion, lines that are severely corroded should be replaced;
- Review and determine capacities – existing system and future buildings/demand;
- Assess program for exercising valves;
- Fire hydrant flow testing history & recommendations;
- Identify asbestos materials locations and quantity;
- Review M&O logs to determine problem areas and meet with staff;
- **Make recommendations on how to address the issues uncovered in the more thorough assessment.**
Priority Three: Sanitary Sewer System

The Sanitary Sewer piping is mainly Vitrified Clay Pipe (VCP). The majority of the sanitary sewer system has been relined in the last five years.

**RECOMMENDATION:** the remaining piping should be relined for VCP is prone to leaking (infiltration of groundwater) and tree root intrusion which could lead to periodic blockages and sewer backups on campus.

Priority Four: Storm Drain System

The storm drain system consists of Corrugated Metal Pipe, Vitrified Clay Pipe and Reinforced Concrete Pipe. The majority of the storm drain system has been relined in the last five years, however, the system was designed and installed prior to the requirements for on-site storm water quantity (hydrograph modification) and quality control devices. In addition to the previously mentioned concerns with Vitrified Clay Pipe, corrugated metal pipe is subject to corrosion unless a cathodic protection system is installed.

**RECOMMENDATION:** all corrugated metal pipe be replaced with Polyvinylchloride (PVC) or High Density Polyethylene Pipe (HDPE), and all drainage structures should be cleaned of debris. Additionally, landscape media should be changed to one that does not cause a clogging hazard, or should be replaced with structures that can accommodate/pass significant debris and landscape media.
CHAPTER OVERVIEW

This chapter identifies the roadmap as to how the District plans to address the currently known facilities, technology and site needs for both the Aptos Cabrillo College Campus and the Watsonville Center.
The Facilities Master Plan proposes to address the majority of Cabrillo’s facilities needs by modernizing existing buildings, resorting to replacement facilities only where existing facilities cannot be modernized for those needs, or the existing location is not conducive to instructional and operational efficiencies.

The large modernizations include the conversion of Building 200 (former Theater) for the consolidation of Student Services, and the modernization of Building 1000 for the expansion of Hub/Tutoring Services and reconfiguration of the library to 21st Century standards.

Building 200 is an optimal location for Student Services given its proximity to the bus stop and the A/B Parking Structure. An extension to the front of the building housing elevators and stairs within it will provide the college an accessible path of travel from bus stop to student services, and the upper campus beyond. It also provides an opportunity to create an iconic/gateway building that will greatly facilitate wayfinding for campus first-comers.

Other modernizations include numerous 50 year old outdated instructional and instructional support buildings: Buildings 350, 400, 500, 700, 1100, 1300, 1500, 1550, 1800, Stadium and Athletic Fields. Some of the aforementioned modernizations result in vacated spaces in other buildings that will also be modernized to consolidate campus space. These additional (partial) modernizations include Buildings 300, 800, 900, 1600 and SAC. Buildings 1170, 1200, 1400 and 1700, although lower in priority, will also ultimately need some modernization given their aged building infrastructure.

There are four facilities that are inadequate for their functions and cannot be appropriately modernized: Building 450 (tiered lecture halls), Building 600 (Science), Culinary Lab within Building 900 and Dance Lab within Building 1100. There are two facilities that have site constraints limiting the appropriate program adjacencies (Buildings 600 and 1600) and one facility that is more expensive to retrofit than replace (the Purchasing, Facilities, Maintenance and Operations Complex).

Building 450 houses tiered lecture halls that cannot be modernized due to its construction which limits the ability to make technology upgrades, and also makes it costly to reconfigure for today’s tiered lecture hall standards.

Building 600 houses Anatomy, Biology and Chemistry, and the existing building’s construction and materials make it ill-suited for science instruction (due to code requirements for fire, life and safety). Its current size and site constraints also limits the ability to add much needed science laboratories, for these laboratories need to be served by a central prep/stock room for each discipline.

The Facilities Master Plan proposes to demolish Building 100 (occupants are relocated to Building 200) and Building 450, to create a Replacement Science Center to house both the sciences and appropriately sized/configured tiered lecture spaces. This project will also include a re-invigorated Central Quad, equipped with shaded areas conducive for gatherings and studying, as well as landscape improvements in the project’s vicinity.

The Culinary lab within 900 is not only outdated and limited in being modernized, it is also remote from the rest of the Culinary and Hospitality program, which is housed in 1800 Sesnon House. Since there is no space in 1800 to accommodate the Culinary lab, a Replacement Culinary Arts Center is proposed on the site of the 2500, 2550 and 2600 Portables. These portables are proposed to be demolished once functions within are moved to other buildings. This new facility will overlook the gardens of Sesnon House and possibly incorporate an organic growing garden. The facility is envisioned to be a community asset that can become a source of revenue for the sustained growth of college programs.

The Dance Lab within 1100 is similar in that it too is inappropriately sized and inappropriately located. It would ideally be located within the VAPA complex, but there is no space large enough within the complex to house this lab, so a Replacement Dance Lab & VAPA Community Center is proposed adjacent to the Samper Recital Hall. The facility is also envisioned to be a community resource and will greatly augment community events already taking place in the VAPA complex.

The Public Safety program is currently housed within 1600, and there is a regional interest in adding a Fire Academy to the Campus. These programs require exterior yard spaces to conduct practice drills and exercises, thus the Replacement Public Safety & Fire Academy is proposed to be located within Parking Lot S, adjacent to the track and fields. This facility will also house the Sheriff’s Office which will allow for the removal of another portable (1185).

A Replacement Maintenance & Operations Complex will replace and consolidate all the buildings that comprise Purchasing, Facilities, Maintenance, Operations and Warehousing, on the same site as the existing buildings. The existing buildings are poorly configured, operationally inefficient and costly to upgrade.
• **100 Building:** 51 year old aged building, poor use of site area, and programs within are being consolidated into another building.

• **450 Forum:** 51 year old aged building that limits technology upgrades and resizing/reconfiguration of tiered lecture halls per today’s teaching pedagogies. Program consolidated into other buildings.

• **2100A, 2100B, 2100C and Restroom Building:** 28-year old portable buildings that are a drain on maintenance and operations budgets; programs consolidated into other buildings.

• **2500, 2550 & 2600:** 19 year old portable buildings that are a drain on maintenance and operations budgets; programs consolidated into other buildings.

• **1185 Sheriff’s Office:** 38-year old portable that is a drain on maintenance and operations budgets; program consolidated into another building.

• **2000, 2020, 2030, 2040 and 2050 Purchasing, Facilities, M&O:** five 44 year old buildings that are more expensive to retrofit than replace, and whose scattered placement creates operational inefficiencies.

• **600 Building:** 56-year old building ill-suited for the Sciences, but could be used for other instructional uses. Proposed to be demolished at the end of the FMP to balance out replacement facilities.
The Watsonville Center comprises a total of four buildings, Buildings A, B, C and D. The bulk of the Center programs are housed in Building A, and each of the programs within it needs either a small amount of additional space and/or reconfigurations to address the operational issues.

The Center also needs to add a Science Wet Lab, which will help increase enrollment and help address the student success drivers behind the 2014 District Strategic Plan, the 2015 Educational Master Plan, and the Student Success Act of 2012.

**Building A Modernization and Small Addition**

The Facilities Master Plan proposes to address Building A issues by adding a small 3-story addition to the front of Building A. The addition will provide the necessary relief space that will permit the expansion and reconfiguration of each of the programs within the Building. Specifically:

- Reconfigure and re-size Classrooms to accommodate group work, and upgrade technology and furniture (all floors);
- Provide space for students to hang out and study (1st Floor Addition);
- Enlarge Student Resource Center (1st Floor facilitated by addition);
- Enlarge Tutoring Center (2nd Floor);
- Add Group Study Rooms (2nd Floor facilitated by addition);
- Reconfigure Enrollment/Admissions and Records (1st Floor);
- Space for students to buy books and supplies (1st Floor);
- Dance needs a sprung floor to avoid injuries (1st Floor);
- Add a meeting room (3rd Floor Addition).

**Existing Gross Square Footage:** 32,200 gsf

**Existing Assignable Square Footage Modernized:** 23,500 asf

**New Addition:** 3,000 gsf / 2,500 asf

**Number of Floors:** 3

**Building D Reconfiguration to Add a Science Wet Lab**

The Facilities Master Plan proposes to convert Classroom D-101 to a Wet Science Lab, and to reconfigure the Solar Green Technology lab (D-105) to accommodate the classroom functions of D-101 within it.

**Existing Assignable Square Footage Modernized:** 7,800 asf
Existing / 2018 Facilities Master Plan
Watsonville Center
Student services are scattered across campus, in multiple buildings (Buildings 100, 900, and SAC). Lack of adjacency between these departments is an impediment to the efficient delivery of student services, and contributes to gaps in student outcomes. In addition, several programs are restrained by lack of adequate room conditions (for example lack of privacy, not enough offices, etc.), and lack of appropriate student areas to wait and access resources.

To address these issues, the Facilities Master Plan proposes to collocate these services into a “One Stop” building, as is the best practice across Community Colleges and Universities. The campus has an existing building, Building 200 the former theater, that is unused and is in an optimal location for student services. Proximity to public transportation, parking and high visibility within the campus are key factors for a successful One Stop.

Building 200 will require a full modernization and replacement of all building systems (mechanical, electrical, plumbing, technology, roofing, etc.). There is also a chance that the conversion of use from a theater to student services might trigger a major structural upgrade, required by the code governing agency, the Division of the State Architect (DSA). The District will need to evaluate the cost of modernizing Building 200 with the cost of replacing it, when the project is funded and the preliminary design is discussed and evaluated with DSA.

The departments that will be housed here include: Admissions and Records (A&R), Counseling, Financial Aid, Assessment, Articulation, Extended Opportunity Program and Services (EOPS), Honors Transfer Program, Equity, Outreach, Puente, Student Success & Support Program (SSSP & BSI), Transfer/Career Center, and Dean of Student Services. A space needs questionnaire during the FMP process confirmed that these departments would need to be “squeezed” into the building.

To provide some relief from the space constraints and flexibility to be able to accommodate changes (that are likely to occur between now and project execution), the FMP proposes an addition as part of this project. The addition would house a street level lobby with elevator and stairs to provide an expedient, accessible path of travel from Bus Stop to Student Services, and onwards to the Upper campus. Locating the much needed meeting rooms on the second floor of this addition would permit the entire community to enjoy the available views.

An additional pedestrian bridge across Soquel Drive, in the vicinity of this building is highly desired. At a bare minimum the District should work with the City to create a safe pedestrian crossing at this location.

### Building 200 Modernization

**Consolidated Student Services + Secondary Effects Project:**

**Partial SAC Modernization**

Existing Gross Square Footage: 34,900 gsf
Existing Assignable Square Footage Modernized: 21,900 asf
New Addition: 13,000 gsf / 9,000 asf (to be confirmed when Building is programmed)
Number of Floors: 2 plus Street Lobby Level

### Secondary Effects Project

**Partial SAC Modernization**

As a secondary effect to the One Stop project, the Business Services (located in 2030, 2500 and 2600) will be collocated with the rest of Administration in SAC West; and numerous student learning groups like Foster Youth (from Building 1000) and International Students will be collocated in the vacated second floor of SAC East. In addition to interior reconfigurations of spaces and finishes, the project will include some modernizations to address mechanical ventilation deficiencies.

Existing Assignable Square Footage Modernized: 19,300 asf
Number of Floors: 2
Main Project Scope Includes:

- Reconfigure, Resize and Modernize Classrooms for current teaching pedagogies and equipment
- New Classrooms to replace old ones for modern teaching pedagogies, appropriate sizing & configuration
- Reconfigure, Resize and Modernize Class Labs for current teaching pedagogies and equipment
- Replace and/or Add Class Labs in programs requiring expansion/replacement
- Modernize and Expand Tutoring and Counseling Services
- Modernize and Expand Open Computer Labs
- Modernize and Expand Study Areas including Group Study Rooms
- Modernize Other Instructional Spaces with modern equipment and configurations
- Modernize Other Student Support Spaces with modern equipment and configurations
- Modernize and/or Add Restrooms
- Modernize, Reconfigure and Add Offices
- Add Meeting Rooms
- Rectify all Accessibility issues identified to date throughout and around facility
- Replace all floor, ceiling and wall finishes that are worn and torn beyond repair
- Replace partial floor, ceiling and wall finishes where needed
- Replace furniture, fixtures and equipment (FF&E) with more comfortable, appropriate, functioning FF&E (includes Window Coverings etc.)
- New Network and Wi-Fi cabling infrastructure for New Buildings
- New Network and Wi-Fi cabling infrastructure of existing buildings
- New telecom rooms, backbone cabling and horizontal cabling for new buildings
- New telecom rooms, backbone cabling and horizontal cabling for buildings to be modernized
- Campus Main Data (IT) Hub Equipment and Cabling Replacement
- Infrastructure for classroom technologies
- AV Equipment for classroom technologies
- Add/Upgrade Security Cameras
- Substantial Replacement of Mechanical & Plumbing Equipment
- Partial Replacement of Mechanical & Plumbing Equipment
- Substantial Replacement and Upgrade to Electrical & Lighting Equipment
- Partial Replacement and Upgrade to Electrical & Lighting Equipment
- Possible Major Structural Upgrades Required
- Possible Minor Structural Upgrades Required
- Substantial Replacement Door and Windows
- Partial Replacement Door and Windows
- Replace Door Hardware
- Repair/Re-roof Roofing
- Replace Roofing
- Replace Elevators and Elevator Equipment
- Add Elevators and Elevator Equipment
- Replace and Improve/Expand Facility Signage
- New Addition to Existing Facility
- Demolish Existing Buildings (as specified) and associated Site Work
- Underground Utilities Replacement as may be required by future complete assessments
- Landscaping improvements in the vicinity of the facility to create shaded study areas, benches etc.
- Improvements to Pedestrian Pathways around facility to address accessibility and campus connections
- Major Landscaping Improvements and/or New Quad/Exterior Plaza adjacent or part of facility
- Replace and Improve/Expand Exterior Lighting and Security around the facility
- Replace and Improve/Expand Exterior Signage around the facility

Project Scope Addresses These Drivers:

- The need to address the 1.1 million California college graduates shortfall by 2030
- The need to meet the obligations of SB 1456: the Seymour-Campbell Student Success Act of 2012
- As identified in both the 2014 District Strategic Plan (DSP) and the 2015 Educational Master Plan (EMP), the need to increase student success, retention, transfer and completion
- As identified in the 2015 EMP, the need to reconfigure and collocate Student Services to address the needs outlined above
- To address SB 1456, the 2015 Cabrillo College Student Equity Plan and the 2015 EMP, expand counseling and tutoring services
- As identified in 2014 DSP and the 2017 Space Plan, the need to provide programs responsive to student learning needs and changes in the job market, which will require outdated facilities to be reconfigured or replaced for 21st Century teaching and learning
- As identified in the 2015 EMP and the 2017 Space Plan, the need to repurpose and reconfigure existing buildings to increase operational efficiencies
- As identified in the 2014 DSP, provide students and employees with technology that supports successful learning outcomes
- As identified in the 2014 DSP, the need to provide sustainable and effective learning environments (including ongoing maintenance)
- As identified by the California Community Colleges Board of Governors’ Energy and Sustainability Policy, the State AB 32 Global Warming Solutions Act of 2006, and the American College & University President’s Climate Commitment (ACUPCC), the need to increase operational sustainability which is currently limited by the existing condition of facilities.
## Building 200 Modernization

### Consolidated Student Services +

### Secondary Effects Project: Partial SAC Modernization

To confirm the viability of consolidating all the student services into Building 200, the specific departments were asked to fill out an electronic space needs questionnaire based on their existing spaces, and their best guess for future needs. The results were then collated into one single table shown to the right. Note: this does not represent a final program for the building, but rather a best guess starting point. Programming requires face to face meetings to vet out the specific needs for each department, and discussions on what resources/spaces can be shared between them. Once the project is funded, a full programming effort will be required.

From table, total ASF needed:

<table>
<thead>
<tr>
<th>Rm. Type</th>
<th># of People / Stations</th>
<th>ASF per Room / Space</th>
<th>How Many of Each</th>
<th>TOTAL</th>
<th>How Many of Each</th>
<th>TOTAL</th>
<th>How Many of Each</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Offices</td>
<td>955</td>
<td>5,300</td>
<td>1,205</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1 Large (e.g. Dean) Office</td>
<td>1</td>
<td>150</td>
<td>1</td>
<td>150</td>
<td>0</td>
<td>1</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>1.2 Regular Singular Office</td>
<td>1</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>700</td>
<td></td>
</tr>
<tr>
<td>1.3 2 People Shared Office</td>
<td>2</td>
<td>130</td>
<td>0</td>
<td>1</td>
<td>130</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.4 Counsellor Office</td>
<td>1</td>
<td>130</td>
<td>0</td>
<td>18</td>
<td>2,340</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5 Open Office Cubicle</td>
<td>1</td>
<td>65</td>
<td>10</td>
<td>650</td>
<td>0</td>
<td>2</td>
<td>130</td>
<td></td>
</tr>
<tr>
<td>1.6 Open Workstation</td>
<td>1</td>
<td>65</td>
<td>1</td>
<td>65</td>
<td>0</td>
<td>3</td>
<td>195</td>
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<td>1.7 Reception &quot;Position&quot;</td>
<td>1</td>
<td>65</td>
<td>0</td>
<td>0</td>
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<td>1.8 Service Counter</td>
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<td>30</td>
<td>3</td>
<td>90</td>
<td>2</td>
<td>60</td>
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<td>1.9 Special Office</td>
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<td>0</td>
<td>0</td>
<td></td>
<td></td>
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<tr>
<td>2 Support Spaces</td>
<td>600</td>
<td>2,275</td>
<td>1,390</td>
<td></td>
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<td>2.1 Waiting Area</td>
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<td>0</td>
<td>15</td>
<td>525</td>
<td>4</td>
<td>140</td>
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<td>2.2 Computer Resource Area</td>
<td>30</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>20</td>
<td>600</td>
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<td>2.3 Read/Study Area for Students</td>
<td>35</td>
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<td>0</td>
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<td></td>
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<tr>
<td>2.4 4 Person Conference Room</td>
<td>100</td>
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<td>0</td>
<td>0</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>2.5 6 - 8 Person Conference Room</td>
<td>200</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.6 10 - 12 Person Meeting Room</td>
<td>300</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>300</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.7 15 - 20 Person Meeting Room</td>
<td>500</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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From table, total ASF needed:

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This type of building requires a large lobby (part of GSF not ASF) with check-in /self-serve computers. Accounting for this means that the required ASF is closer to 26,000 ASF.
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<th>Assess Articul.</th>
<th>EOPS Honor TP</th>
<th>EOPS Honor TP</th>
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CABRILLO CCD FACILITIES MASTER PLAN UPDATE | 2018 | 39
Building 1000 Modernization
Library, Tutoring Services & Health Services
+
Secondary Effects Project:
Minor Partial VAPA Renovation

Both the Library and Tutoring Services (“The Hub”) are in need of additional space and reconfiguration due to:

- Tutoring needs have outgrown the existing Hub space, need more space for tutoring across most learning centers, in particular Math Learning Center;
- MLC should also be contiguous with rest of the Hub for student wayfinding and to share resources with other Tutoring Centers;
- Accessibility Support Center (ASC) also needs additional space for private offices (confidentiality issues) and a larger proctoring room;
- Need space for Tutoring workshops;
- Need more group study rooms for Hub and Library;
- Need kitchen for Hub (food at some tutoring events);
- Need a computer classroom double the current size
- Need more study spaces and diversity of seating/furniture to accommodate different types of learning, and to replace worn and torn furniture;
- Students want exterior covered study areas immediately outside of the library to provide the ability to study outdoors near the resources they require;
- See list on next page for all other replacement/upgrade to building systems, technology, elevators, entrance sliding doors, etc.

The Facilities Master Plan proposes to address these needs by modernizing the 1000 Building. The project will require a substantial reconfiguration of all floors. The Hub might need to be relocated to the first floor, or library functions from the second floor move down to the first floor to make way for the Hub expansion upstairs.

These reconfigurations will be greatly facilitated if some additional space is added or captured for the Library/Hub functions. One way to do so is by reducing book stacks where feasible, and vacating programs that are not related out of the building. These include: Digital Media Lab (which moves to VAPA), and some of the classrooms. Other opportunities for additional space include the possible enclosure of the second floor porch, and/or the enclosure of the exterior space between the back and the main floor of the library (see orange boxes in top right exhibit - lighter boxes could be optional).

Building 1000 ground floor level will also be modernized. The existing Exhibition space will be relocated to the VAPA complex, and the existing Foster Youth program will relocate to SAC (see Consolidated Student Services project), which will enable this floor to be modernized for the Health Services currently housed in inadequately sized and outdated facilities within Building 900. Exterior site work around the building should include a covered area to continue housing the ASC Electric Carts and, the addition of shaded study areas with benches, tables, electrical outlets and Wi-Fi. If feasible, given its proximity, the project should also include the addition of a partial shade structure, electrical outlets, Wi-Fi and a small platform to the existing landscaped amphitheater.

Existing Gross Square Footage: 73,296 gsf
Existing Assignable Square Footage Modernized: 52,500 asf
New Addition: 5,000 gsf / 4,000 asf
Number of Floors: 3

Secondary Effects Project
Minor Partial VAPA Renovation

The VAPA complex has minor partial renovations required to accommodate the gallery moving to the Theater Lobby, and the Digital Media Lab moving to VAPA 2000. These renovations are required to facilitate the main project, Building 1000 Modernization.

Existing Assignable Square Footage Modernized: 3,000 asf
Main Project Scope Includes:

- Reconfigure, Resize and Modernize Classrooms for current teaching pedagogies and equipment
- New Classrooms to replace old ones for modern teaching pedagogies, appropriate sizing & configuration
- Reconfigure, Resize and Modernize Class Labs for current teaching pedagogies and equipment
- Replace and/or Add Class Labs in programs requiring expansion/replacement
- Modernize and Expand Tutoring and Counseling Services
- Modernize and Expand Open Computer Labs
- Modernize and Expand Study Areas including Group Study Rooms
- Modernize Other Instructional Spaces with modern equipment and configurations
- Modernize Other Student Support Spaces with modern equipment and configurations
- Modernize and/or Add Restrooms
- Modernize, Reconfigure and Add Offices
- Add Meeting Rooms
- Rectify all Accessibility issues identified to date throughout and around facility
- Replace all floor, ceiling and wall finishes that are worn and torn beyond repair
- Replace partial floor, ceiling and wall finishes where needed
- Replace furniture, fixtures and equipment (FF&E) with more comfortable, appropriate, functioning FF&E (includes Window Coverings etc.)
- New Network and Wi-Fi cabling infrastructure for New Buildings
- New Network and Wi-Fi cabling infrastructure of existing buildings
- New telecom rooms, backbone cabling and horizontal cabling for new buildings
- New telecom rooms, backbone cabling and horizontal cabling for buildings to be modernized
- Campus Main Data (IT) Hub Equipment and Cabling Replacement
- Infrastructure for classroom technologies
- AV Equipment for classroom technologies
- Add/Upgrade Security Cameras
- Substantial Replacement of Mechanical & Plumbing Equipment
- Partial Replacement of Mechanical & Plumbing Equipment
- Substantial Replacement and Upgrade to Electrical & Lighting Equipment
- Partial Replacement and Upgrade to Electrical & Lighting Equipment
- Possible Major Structural Upgrades Required
- Possible Minor Structural Upgrades Required
- Substantial Replacement Door and Windows
- Partial Replacement Door and Windows
- Replace Door Hardware
- Repair/Re-roof Roofing
- Replace Roofing
- Replace Elevators and Elevator Equipment
- Add Elevators and Elevator Equipment
- Replace and Improve/Expand Facility Signage
- New Addition to Existing Facility
- Demolish Existing Buildings (as specified) and associated Site Work
- Underground Utilities Replacement as may be required by future complete assessments
- Landscaping improvements in the vicinity of the facility to create shaded study areas, benches etc.
- Improvements to Pedestrian Pathways around facility to address accessibility and campus connections
- Major Landscaping Improvements and/or New Quad/Exterior Plaza adjacent or part of facility
- Replace and Improve/Expand Exterior Lighting and Security around the facility
- Replace and Improve/Expand Exterior Signage around the facility

Project Scope Addresses These Drivers:

- The need to address the 1.1 million California college graduates shortfall by 2030
- The need to meet the obligations of SB 1456: the Seymour-Campbell Student Success Act of 2012
- As identified in both the 2014 District Strategic Plan (DSP) and the 2015 Educational Master Plan (EMP), the need to increase student success, retention, transfer and completion
- To address SB 1456, the 2015 Cabrillo College Student Equity Plan and the 2015 EMP, expand counseling and tutoring services
- As identified in the 2015 EMP and the 2017 Space Plan, address the current and long-term needs of the core programs, particularly those of Science, Mathematics, Humanities and Language Arts
- As identified in 2014 DSP and the 2017 Space Plan, the need to provide programs responsive to student learning needs and changes in the job market, which will require outdated facilities to be reconfigured or replaced for 21st Century teaching and learning
- As identified in the 2015 EMP and the 2017 Space Plan, the need to repurpose and reconfigure existing buildings to increase operational efficiencies
- As identified in the 2014 DSP, provide students and employees with technology that supports successful learning outcomes
- As identified in the 2014 DSP, the need to provide sustainable and effective learning environments (including ongoing maintenance)
- As identified by the California Community Colleges Board of Governors’ Energy and Sustainability Policy, the State AB 32 Global Warming Solutions Act of 2006, and the American College & University President’s Climate Commitment (ACUPCC), the need to increase operational sustainability which is currently limited by the existing condition of facilities.
Biology and Chemistry are housed in the 600 Building, and Physics in Building 800. These programs need to:

- Add one additional class lab for Biology & Physics;
- Add two additional class labs for Chemistry;
- Modernize outdated Biology and Chemistry labs for current teaching pedagogies and safety features; and
- Reconfigure and modernize Biology and Chemistry lab prep rooms for efficiencies and updates to equipment & procedures.

Neither Building 600 nor Building 800 has space to accommodate the additional class labs needed. In addition, the 600 Building is not suitable to house science laboratories. The existing building construction (wood framing, the location of shear walls, and the gable attic) add exorbitant costs to the required modernization of the mechanical, plumbing, electrical, technology and laboratory (fumehoods etc.) systems. It also results in floors that are above the vibration tolerances for the equipment used in the labs. Past partial renovation projects for Building 600 confirm the high cost of adapting this older building for new science needs. The majority of the costs are for items that are not visible to the users of the spaces.

Given the constraints the Facilities Master Plan proposes to build a replacement Science Center that will address these needs AND also start addressing the inadequacies of the existing outdated campus classrooms, in particular those located in 450 Forum.

The Forum is an underutilized building due to the outdated configuration of its tiered lecture halls (which cannot support group work), and inadequate technology (existing structure thwarts upgrades). The new facility will include two, in lieu of three, tiered lecture spaces, and two large 21st century teaching spaces for the entire campus use.

The Replacement Science Center will be located on the site of Buildings 450 and 100 (vacant after Building 200 project is complete), which will be demolished as part of this project. One underground component of Building 100 will remain in place and be upgraded: the existing Campus Data Main Point of Entry (MPOE). In all likelihood it is feasible to build the new building over the MPOE as long as exterior access to this space is provided, but should it not be desired or possible, the area above the MPOE can be incorporated into the project as an exterior courtyard/study space, as depicted above.

The project also includes the revitalization of the Main Campus Quad (to have less concrete, more gathering spaces and shade), connections and improvements to pedestrian pathways on all sides of the building, along with all associated sitework at the perimeter of the building.

New Gross Square Footage: 55,000 gsf
New Assignable Square Footage: 36,300 asf
Number of Floors: 2
Demolition Gross Square Footage (Forum): 11,400 gsf
Demolition Gross Square Footage (100): 15,900 gsf
Campus Hub (MPOE) to be modernized: 500 gsf
Approximate Site Area: 50,000 gsf

Secondary Effects Project
Partial 800 Modernization

As a secondary effect, the existing Physics Lab and Prep Room within Building 800 will be repurposed for Engineering Technology (Career Tech) 3D Printing Computer Lab.

Existing Assignable Square Footage Modernized: 2,300 asf
**Main Project Scope Includes:**

- ✓ Reconfigure, Resize and Modernize Classrooms for current teaching pedagogies and equipment
- ✓ New Classrooms to replace old ones for modern teaching pedagogies, appropriate sizing & configuration
- ✓ Reconfigure, Resize and Modernize Class Labs for current teaching pedagogies and equipment
- ✓ Replace and/or Add Class Labs in programs requiring expansion/replacement
- ✓ Modernize and Expand Tutoring and Counseling Services
- ✓ Modernize and Expand Open Computer Labs
- ✓ Modernize and Expand Study Areas including Group Study Rooms
- ✓ Modernize Other Instructional Spaces with modern equipment and configurations
- ✓ Modernize Other Student Support Spaces with modern equipment and configurations
- ✓ ✓ Modernize and/or Add Restrooms
- ✓ ✓ Modernize, Reconfigure and Add Offices
- ✓ Add Meeting Rooms
- ✓ ✔ Rectify all Accessibility issues identified to date throughout and around facility
- ✓ ✔ Replace all floor, ceiling and wall finishes that are worn and torn beyond repair
- ✓ ✔ Replace partial floor, ceiling and wall finishes where needed
- ✓ ✔ Replace furniture, fixtures and equipment (FF&E) with more comfortable, appropriate, functioning FF&E (includes Window Coverings etc.)
- ✓ ✔ New Network and Wi-Fi cabling infrastructure for New Buildings
- ✓ ✔ New Network and Wi-Fi cabling infrastructure of existing buildings
- ✓ ✔ New telecom rooms, backbone cabling and horizontal cabling for new buildings
- ✓ ✔ New telecom rooms, backbone cabling and horizontal cabling for buildings to be modernized
- ✓ ✔ Campus Main Data (IT) Hub Equipment and Cabling Replacement
- ✓ ✔ Infrastructure for classroom technologies
- ✓ ✔ AV Equipment for classroom technologies
- ✓ ✔ Add/Upgrade Security Cameras
- ✓ ✔ Substantial Replacement of Mechanical & Plumbing Equipment
- ✓ ✔ Partial Replacement of Mechanical & Plumbing Equipment
- ✓ ✔ Substantial Replacement and Upgrade to Electrical & Lighting Equipment
- ✓ ✔ Partial Replacement and Upgrade to Electrical & Lighting Equipment
- ✓ ✔ Possible Major Structural Upgrades Required
- ✓ ✔ Possible Minor Structural Upgrades Required
- ✓ ✔ Substantial Replacement Door and Windows
- ✓ ✔ Partial Replacement Door and Windows
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- ✓ ✔ Repair/Re-roof Roofing
- ✓ ✔ Replace Roofing
- ✓ ✔ Replace Elevators and Elevator Equipment
- ✓ ✔ Add Elevators and Elevator Equipment
- ✓ ✔ Replace and Improve/Expand Facility Signage
- ✓ ✔ New Addition to Existing Facility
- ✓ ✔ Demolish Existing Buildings (as specified) and associated Site Work
- ✓ ✔ Underground Utilities Replacement as may be required by future complete assessments
- ✓ ✔ Landscaping improvements in the vicinity of the facility to create shaded study areas, benches etc.
- ✓ ✔ Improvements to Pedestrian Pathways around facility to address accessibility and campus connections
- ✓ ✔ Major Landscaping Improvements and/or New Quad/Exterior Plaza adjacent or part of facility
- ✓ ✔ Replace and Improve/Expand Exterior Lighting and Security around the facility
- ✓ ✔ Replace and Improve/Expand Exterior Signage around the facility

**Project Scope Addresses These Drivers:**

- ✓ The need to address the 1.1 million California college graduates shortfall by 2030
- ✓ The need to meet the obligations of SB 1456: the Seymour-Campbell Student Success Act of 2012
- ✓ As identified in both the 2014 District Strategic Plan (DSP) and the 2015 Educational Master Plan (EMP), the need to increase student success, retention, transfer and completion
- ✓ As identified in the 2015 EMP (and the California Economy), the need to increase enrollment by providing additional course sections in the STEM fields (would address existing demand in addition to future demand)
- ✓ As identified in the 2015 EMP (and the California Economy, and current trends in education), the need to increase enrollment by growing the Distance Education Program
- ✓ As identified in the 2015 EMP and the 2017 Space Plan, address the current and long-term needs of the core programs, particularly those of Science, Mathematics, Humanities and Language Arts
- ✓ As identified in 2014 DSP and the 2017 Space Plan, the need to provide programs responsive to student learning needs and changes in the job market, which will require outdated facilities to be reconfigured or replaced for 21st Century teaching and learning
- ✓ As identified in the 2014 DSP, provide students and employees with technology that supports successful learning outcomes
- ✓ As identified in the 2014 DSP, the need to provide sustainable and effective learning environments (including ongoing maintenance)
- ✓ As identified by the California Community Colleges Board of Governors’ Energy and Sustainability Policy, the State AB 32 Global Warming Solutions Act of 2006, and the American College & University President’s Climate Commitment (ACUPCC), the need to increase operational sustainability which is currently limited by the existing condition of facilities.
Replacement Science Center
For Biology, Chemistry, Physics & Large Teaching Spaces
+
Secondary Effects Project: Partial 800 Modernization

To ascertain the approximate size of the replacement facility, the science departments were asked to review an electronic space needs questionnaire based on their existing spaces, and their best guess for future needs. The results were then collated into one single document shown to the right. Please note that this does not represent a final program for the building, but rather a best guess starting point. Programming requires face to face meetings to vet out the specific needs for each department, and discussions on what resources/spaces can be shared between them. Once the project is funded, a full programming effort will be required.

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<td>Shared Classroom / Computer Lab</td>
<td>6</td>
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<td>Office</td>
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<td>ASF Subtotal</td>
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<td>28,390</td>
<td>7,920</td>
<td>36,310</td>
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<td>Total Gross S.F.</td>
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<td></td>
<td></td>
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## BIOLOGY

<table>
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<tr>
<th>Space Name</th>
<th>No. of Work Stations</th>
<th>Suggested ASF</th>
<th>Quantity</th>
<th>New ASF Total</th>
<th>Existing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro/Molecular/Cell Biology Labor</td>
<td>32</td>
<td>1400</td>
<td>1</td>
<td>1400</td>
<td>1400</td>
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<tr>
<td>Micro/Molecular/Cell Biology Labor</td>
<td>32</td>
<td>1400</td>
<td>1</td>
<td>1400</td>
<td>1400</td>
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<tr>
<td>Organismal Biology Laboratory</td>
<td>32</td>
<td>1400</td>
<td>1</td>
<td>1400</td>
<td>1400</td>
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<tr>
<td>Anatomy Laboratory</td>
<td>32</td>
<td>1400</td>
<td>1</td>
<td>1400</td>
<td>1400</td>
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<tr>
<td><strong>Subtotal Laboratory Space</strong></td>
<td><strong>4</strong></td>
<td><strong>5600</strong></td>
<td><strong>3781</strong></td>
<td><strong>5600</strong></td>
<td><strong>5600</strong></td>
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<tr>
<td>Biology Prep</td>
<td>2</td>
<td>300</td>
<td>1</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>Biology Storage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anatomy Prep &amp; Preserved Specimens Storage</td>
<td>500</td>
<td>1</td>
<td>500</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>Anatomy Prep &amp; Non Preserved Storage</td>
<td>300</td>
<td>1</td>
<td>300</td>
<td>300</td>
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</tr>
<tr>
<td>Cadaver Room</td>
<td>300</td>
<td></td>
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<tr>
<td>Biology Waste Room/Utility</td>
<td>80</td>
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<td>1</td>
<td>80</td>
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<td>Incubator Room</td>
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<td>150</td>
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<td>Greenhouse</td>
<td>200</td>
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<td>1</td>
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<tr>
<td><strong>Subtotal Laboratory Support Space</strong></td>
<td><strong>8</strong></td>
<td><strong>2330</strong></td>
<td><strong>2689</strong></td>
<td><strong>2330</strong></td>
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## CHEMISTRY

<table>
<thead>
<tr>
<th>Space Name</th>
<th>No. of Work Stations</th>
<th>Suggested ASF</th>
<th>Quantity</th>
<th>New ASF Total</th>
<th>Existing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intro/Intermediate Chemistry Lab</td>
<td>28</td>
<td>1400</td>
<td>2</td>
<td>2800</td>
<td>2800</td>
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<tr>
<td>General Chemistry Laboratory</td>
<td>28</td>
<td>1400</td>
<td>2</td>
<td>2800</td>
<td>2800</td>
</tr>
<tr>
<td>Organic Chemistry Laboratory</td>
<td>24</td>
<td>1200</td>
<td>2</td>
<td>2400</td>
<td>2400</td>
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<tr>
<td><strong>Subtotal Laboratory Space</strong></td>
<td><strong>6</strong></td>
<td><strong>8000</strong></td>
<td><strong>5233</strong></td>
<td><strong>8000</strong></td>
<td><strong>5233</strong></td>
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<tr>
<td>General Chemistry Balance Room</td>
<td>300</td>
<td></td>
<td>1</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>Chemistry Instrument Room</td>
<td>150</td>
<td></td>
<td>1</td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td>Organic Chemistry Balance Room</td>
<td>300</td>
<td></td>
<td>1</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>Chemistry Stock Room</td>
<td>900</td>
<td></td>
<td>1</td>
<td>1200</td>
<td>1200</td>
</tr>
<tr>
<td>Chemistry Storage + Waste</td>
<td>150</td>
<td></td>
<td>1</td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td>Lab Tech</td>
<td>130</td>
<td></td>
<td>1</td>
<td>130</td>
<td>130</td>
</tr>
<tr>
<td>Chemistry Storage/Receiving Area</td>
<td>300</td>
<td></td>
<td>1</td>
<td>300</td>
<td>300</td>
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<tr>
<td>Dispensing Room</td>
<td>150</td>
<td></td>
<td>1</td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td>Gas Cylinder Storage</td>
<td>100</td>
<td></td>
<td>1</td>
<td>100</td>
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<td><strong>Subtotal Laboratory Support Space</strong></td>
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<td><strong>2780</strong></td>
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<td><strong>2780</strong></td>
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## PHYSICS

<table>
<thead>
<tr>
<th>Space Name</th>
<th>No. of Work Stations</th>
<th>Suggested ASF</th>
<th>Quantity</th>
<th>New ASF Total</th>
<th>Existing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics</td>
<td>28</td>
<td>1200</td>
<td>2</td>
<td>2400</td>
<td>2400</td>
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<tr>
<td><strong>Subtotal Laboratory Space</strong></td>
<td><strong>2</strong></td>
<td><strong>2400</strong></td>
<td><strong>1102</strong></td>
<td><strong>2400</strong></td>
<td><strong>1102</strong></td>
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<td>Physics Prep</td>
<td>1200</td>
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<td>1200</td>
<td>1200</td>
</tr>
<tr>
<td><strong>Subtotal Laboratory Support Space</strong></td>
<td><strong>1</strong></td>
<td><strong>1200</strong></td>
<td><strong>1175</strong></td>
<td><strong>1200</strong></td>
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</tr>
</tbody>
</table>

## SHARED CLASSROOMS / COMPUTER LAB

<table>
<thead>
<tr>
<th>Space Name</th>
<th>No. of Work Stations</th>
<th>Suggested ASF</th>
<th>Quantity</th>
<th>New ASF Total</th>
<th>Existing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tiered Lecture</td>
<td>100</td>
<td>2600</td>
<td>2</td>
<td>5200</td>
<td>6,995</td>
</tr>
<tr>
<td>Lecture Classroom</td>
<td>68</td>
<td>1360</td>
<td>2</td>
<td>2720</td>
<td>4,612</td>
</tr>
<tr>
<td>Computer Lab</td>
<td>40</td>
<td>1000</td>
<td>1</td>
<td>1000</td>
<td>1000</td>
</tr>
<tr>
<td>Science Commons (Student Study)</td>
<td>40</td>
<td>800</td>
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<td>800</td>
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<tr>
<td><strong>Subtotal Classroom Space</strong></td>
<td><strong>6</strong></td>
<td><strong>9720</strong></td>
<td><strong>12104</strong></td>
<td><strong>9720</strong></td>
<td><strong>12104</strong></td>
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## OFFICE

<table>
<thead>
<tr>
<th>Space Name</th>
<th>No. of Work Stations</th>
<th>Suggested ASF</th>
<th>Quantity</th>
<th>New ASF Total</th>
<th>Existing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty Offices Biology (Shared)</td>
<td>2</td>
<td>130</td>
<td>7</td>
<td>910</td>
<td>910</td>
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<tr>
<td>Faculty Offices Chemistry</td>
<td>1</td>
<td>130</td>
<td>3</td>
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<td>390</td>
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<tr>
<td>Faculty Offices Chemistry (Shared)</td>
<td>2</td>
<td>130</td>
<td>5</td>
<td>650</td>
<td>650</td>
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<tr>
<td>Faculty Offices Physics</td>
<td>1</td>
<td>130</td>
<td>4</td>
<td>520</td>
<td>520</td>
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<td>Admin Assistants (Science)</td>
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<td>100</td>
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<td><strong>Subtotal Office Space</strong></td>
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<td><strong>2668</strong></td>
<td><strong>2670</strong></td>
<td><strong>2668</strong></td>
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<tr>
<td>Work Area (storage, kitchenette, copier)</td>
<td>300</td>
<td>1</td>
<td>300</td>
<td>300</td>
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<tr>
<td>Staff Unisex Restroom</td>
<td>1</td>
<td>80</td>
<td>2</td>
<td>160</td>
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<tr>
<td>Building Meeting Room 30 people</td>
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<td>750</td>
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<td>750</td>
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<tr>
<td>Meeting Room for Office Hours</td>
<td>4</td>
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<td>4</td>
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<tr>
<td><strong>Subtotal Office Support</strong></td>
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<td><strong>1610</strong></td>
<td></td>
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</table>
Cabrillo’s most crucial need is the need to reconfigure classrooms for the variety of needs listed below, while also addressing the aged and failing building infrastructure. The need is greatest in the existing original buildings that have not previously been substantially renovated. The reconfigurations needed include:

- Ability to reconfigure student desks/chairs for multiple teaching and learning methods within classrooms. This impacts not only the furniture/equipment selection, but also the sizing of rooms to accommodate the types of furniture that can be configured in multiple ways (typically requires 25 asf per student);
- Re-size classrooms for optimal student numbers across multiple disciplines;
- Add and improve teaching walls (whiteboard, projection screen etc.);
- Add and update technology to support instruction;
- Equip some classrooms with the right technology and configuration to teach and record online courses, to expand Distance Education;
- Address poor heating and ventilation of classrooms by replacing mechanical, electrical and plumbing systems;

The existing classroom buildings (350, 400, 500, 600, 700 and 1500) also house computer/specialized labs, offices and restrooms, and these need to be modernized for similar issues (see 2017 Space Plan). Building 300’s classrooms were modernized but the aged building systems were not replaced and are in need of replacement.

As the existing buildings are modernized to address these myriad issues, the modernizations should also aim to add meeting rooms and student gathering areas where feasible. On pages 48-49 you will find sample layouts showing how larger classrooms might be added in Building 350, and how a building like Building 700 might be modernized for all needs.

**Building 350**
Existing Gross Square Footage: 10,700 gsf
Existing Assignable Square Footage Modernized: 8,500 asf
Number of Floors: 2

**Building 400**
Existing Gross Square Footage: 23,800 gsf
Existing Assignable Square Footage Modernized: 17,100 asf
Number of Floors: 2

**Building 500**
Existing Gross Square Footage: 19,300 gsf
Existing Assignable Square Footage Modernized: 13,300 asf
Number of Floors: 1

**Building 600**
Existing Gross Square Footage: 31,000 gsf
Existing Assignable Square Footage Modernized: 20,800 asf
Number of Floors: 1

**Building 700**
Existing Gross Square Footage: 20,700 gsf
Existing Assignable Square Footage Modernized: 14,500 asf
Number of Floors: 1

**Building 300**
Existing Gross Square Footage: 18,400 gsf
Existing Assignable Square Footage Modernized: 12,900 asf
Number of Floors: 1

1 Building 600 will only be modernized if New Science Center is not feasible within the next 5 years.
Main Project Scope Includes:

☑ Reconfigure, Resize and Modernize Classrooms for current teaching pedagogies and equipment
☐ New Classrooms to replace old ones for modern teaching pedagogies, appropriate sizing & configuration
☑ Reconfigure, Resize and Modernize Class Labs for current teaching pedagogies and equipment
☑ Replace and/or Add Class Labs in programs requiring expansion/replacement
☐ Modernize and Expand Tutoring and Counseling Services
☐ Modernize and Expand Open Computer Labs
☐ Modernize and Expand Study Areas including Group Study Rooms
☑ Modernize Other Instructional Spaces with modern equipment and configurations
☐ Modernize Other Student Support Spaces with modern equipment and configurations
☑ Modernize and/or Add Restrooms
☐ Modernize, Reconfigure and Add Offices
☐ Add Meeting Rooms
☐ Rectify all Accessibility issues identified to date throughout and around facility
☑ Replace all floor, ceiling and wall finishes that are worn and torn beyond repair
☐ Replace partial floor, ceiling and wall finishes where needed
☐ Replace furniture, fixtures and equipment (FF&E) with more comfortable, appropriate, functioning FF&E (includes Window Coverings etc.)
☐ New Network and Wi-Fi cabling infrastructure for New Buildings
☐ New Network and Wi-Fi cabling infrastructure of existing buildings
☑ New telecom rooms, backbone cabling and horizontal cabling for new buildings
☑ New telecom rooms, backbone cabling and horizontal cabling for buildings to be modernized
☐ Campus Main Data (IT) Hub Equipment and Cabling Replacement
☐ Infrastructure for classroom technologies
☑ AV Equipment for classroom technologies
☑ Add/Upgrade Security Cameras
☑ Substantial Replacement of Mechanical & Plumbing Equipment
☐ Partial Replacement of Mechanical & Plumbing Equipment
☐ Substantial Replacement and Upgrade to Electrical & Lighting Equipment
☐ Partial Replacement and Upgrade to Electrical & Lighting Equipment
☐ Possible Major Structural Upgrades Required
☐ Possible Minor Structural Upgrades Required
☐ Substantial Replacement Door and Windows
☐ Partial Replacement Door and Windows
☐ Replace Door Hardware
☐ Repair/Re-roof Roofing
☐ Replace Roofing
☐ Replace Elevators and Elevator Equipment
☐ Add Elevators and Elevator Equipment
☐ Replace and Improve/Expand Facility Signage
☐ New Addition to Existing Facility
☐ Demolish Existing Buildings (as specified) and associated Site Work
☐ Underground Utilities Replacement as may be required by future complete assessments
☐ Landscaping improvements in the vicinity of the facility to create shaded study areas, benches etc.
☐ Improvements to Pedestrian Pathways around facility to address accessibility and campus connections
☐ Major Landscaping Improvements and/or New Quad/Exterior Plaza adjacent or part of facility
☐ Replace and Improve/Expand Exterior Lighting and Security around the facility
☐ Replace and Improve/Expand Exterior Signage around the facility

Project Scope Addresses These Drivers:

☑ The need to address the 1.1 million California college graduates shortfall by 2030
☑ The need to meet the obligations of SB 1456: the Seymour-Campbell Student Success Act of 2012
☑ As identified in both the 2014 District Strategic Plan (DSP) and the 2015 Educational Master Plan (EMP), the need to increase student success, retention, transfer and completion
☑ As identified in the 2015 EMP (and the California Economy, and current trends in education), the need to increase enrollment by growing the Distance Education Program
☑ As identified in the 2015 EMP and the 2017 Space Plan, address the current and long-term needs of the core programs, particularly those of Science, Mathematics, Humanities and Language Arts
☑ As identified in 2014 DSP and the 2017 Space Plan, the need to provide programs responsive to student learning needs and changes in the job market, which will require outdated facilities to be reconfigured or replaced for 21st Century teaching and learning
☑ As identified in the 2015 EMP and the 2017 Space Plan, the need to repurpose and reconfigure existing buildings to increase operational efficiencies
☑ As identified in the 2014 DSP, provide students and employees with technology that supports successful learning outcomes
☑ As identified in the 2014 DSP, the need to provide sustainable and effective learning environments (including ongoing maintenance)
☑ As identified by the California Community Colleges Board of Governors’ Energy and Sustainability Policy, the State AB 32 Global Warming Solutions Act of 2006, and the American College & University President’s Climate Commitment (ACUPCC), the need to increase operational sustainability which is currently limited by the existing condition of facilities.
Classroom Building Modernizations

Sample Layout for:
Building 350 (this page)
Building 700 (next page)

The sample floor plan layouts for Building 350 and Building 700 shown here are notional layouts of one option of what might be feasible with the modernization. Once projects are funded, faculty and staff will need to work with the architect team to develop a more refined program on classroom sizes and setups required, and architects selected will have to verify location of shear walls, feasibility of enclosing the middle portion of the longer buildings (like Building 700), etc.
Building 700 existing floor plan

Building 700 one sample floor plan layout
Other Modernizations

Building 1300
Building 1800 (Sesnon House)
Stadium & Athletic Fields
Building 1500
Building 1400
Building 1550
Building 1170
Building 1200
Building 1700

These buildings are also outdated, and have similar issues to the classroom buildings requiring modernization. The main distinction is that these buildings predominantly house class labs/specialty spaces. As such the modernizations will require fewer wall reconfigurations, but substantial upgrades to equipment and layout within the specialty spaces. Classrooms, offices and restrooms, where they occur, will need complete reconfiguration and renovation, and building systems throughout will need to be replaced (see list on next page).

Below are a few more specifics on some of the buildings:

1300 Building Trades: both Engineering Technology (ET) and Construction Energy Management (CEM) need a dedicated classroom adjacent to labs due to materials and tools transport from their labs. This will require a relocation of a few programs out of the Building. CEM needs lab expansion, and ET needs a precision tool room. ET also requires a computer lab for 3D printing that will be accommodated as part of the Building 800 Secondary Effects Project.
Existing Gross Square Footage: 11,800 gsf
Existing Assignable Square Footage Modernized: 8,300 asf
Number of Floors: 1

1800 Sesnon House: needs building systems replacement, technology upgrades, and several deficiencies addressed in the Culinary Arts kitchen and (inadequate) kitchen support areas.
Existing Gross Square Footage: 9,300 gsf
Existing Assignable Square Footage Modernized: 6,100 asf
Number of Floors: 2

Athletic Fields and Stadium: the fields and stadium have miscellaneous issues related to replacement of field surfaces/materials for health and safety, and configuration of stadium and track and field for maximum optimal use, including community use.
Existing Stadium Gross Square Footage: 2,100 gsf
Existing Assignable Square Footage Modernized: 900 asf
Number of Floors: 1
Approximate Site Area: 354, 660 gsf

1500 Early Childhood Education: classroom renovations per issues identified to date, room finishes replacements in childcare rooms, building systems replacement and technology upgrades throughout.
Existing Gross Square Footage: 17,900 gsf
Existing Assignable Square Footage Modernized: 12,100 asf
Number of Floors: 2

The following buildings are in need of building systems replacement and technology upgrades only:

Building 1400 Computer Lab
Existing Gross Square Footage: 9,900 gsf
Existing Assignable Square Footage Modernized: 7,800 asf
Number of Floors: 1

Building 1550 Office Building
Existing Gross Square Footage: 2,500 gsf
Existing Assignable Square Footage Modernized: 1,500 asf
Number of Floors: 1

Building 1170 Pool Building
Existing 1,400 gsf / 1,000 asf / 1 Floor

Building 1200 Computing Resources
Existing Gross Square Footage: 7,600 gsf
Existing Assignable Square Footage Modernized: 3,100 asf
Number of Floors: 2

Building 1700 Child Development Center
Existing Gross Square Footage: 3,200 gsf
Existing Assignable Square Footage Modernized: 2,900 asf
Number of Floors: 1
Main Project Scope Includes:

- Reconfigure, Resize and Modernize Classrooms for current teaching pedagogies and equipment
- New Classrooms to replace old ones for modern teaching pedagogies, appropriate sizing & configuration
- Reconfigure, Resize and Modernize Class Labs for current teaching pedagogies and equipment
- Replace and/or Add Class Labs in programs requiring expansion/replacement
- Modernize and Expand Tutoring and Counseling Services
- Modernize and Expand Open Computer Labs
- Modernize and Expand Study Areas including Group Study Rooms
- Modernize Other Instructional Spaces with modern equipment and configurations
- Modernize Other Student Support Spaces with modern equipment and configurations
- Modernize and/or Add Restrooms
- Modernize, Reconfigure and Add Offices
- Add Meeting Rooms
- Rectify all Accessibility issues identified to date throughout and around facility
- Replace all floor, ceiling and wall finishes that are worn and torn beyond repair
- Replace partial floor, ceiling and wall finishes where needed
- Replace furniture, fixtures and equipment (FF&E) with more comfortable, appropriate, functioning FF&E (includes Window Coverings etc.)
- New Network and Wi-Fi cabling infrastructure for New Buildings
- New Network and Wi-Fi cabling infrastructure of existing buildings
- New telecom rooms, backbone cabling and horizontal cabling for new buildings
- New telecom rooms, backbone cabling and horizontal cabling for buildings to be modernized
- Campus Main Data (IT) Hub Equipment and Cabling Replacement
- Infrastructure for classroom technologies
- AV Equipment for classroom technologies
- Add/Upgrade Security Cameras
- Substantial Replacement of Mechanical & Plumbing Equipment
- Partial Replacement of Mechanical & Plumbing Equipment
- Substantial Replacement and Upgrade to Electrical & Lighting Equipment
- Partial Replacement and Upgrade to Electrical & Lighting Equipment
- Possible Major Structural Upgrades Required
- Possible Minor Structural Upgrades Required
- Substantial Replacement Door and Windows
- Partial Replacement Door and Windows
- Replace Door Hardware
- Repair/Re-roof Roofing
- Replace Roofing
- Replace Elevators and Elevator Equipment
- Add Elevators and Elevator Equipment
- Replace and Improve/Expand Facility Signage
- New Addition to Existing Facility
- Demolish Existing Buildings (as specified) and associated Site Work
- Underground Utilities Replacement as may be required by future complete assessments
- Landscaping improvements in the vicinity of the facility to create shaded study areas, benches etc.
- Improvements to Pedestrian Pathways around facility to address accessibility and campus connections
- Major Landscaping Improvements and/or New Quad/Exterior Plaza adjacent or part of facility
- Replace and Improve/Expand Exterior Lighting and Security around the facility
- Replace and Improve/Expand Exterior Signage around the facility

Project Scope Addresses These Drivers:

- The need to address the 1.1 million California college graduates shortfall by 2030
- The need to meet the obligations of SB 1456: the Seymour-Campbell Student Success Act of 2012
- As identified in both the 2014 District Strategic Plan (DSP) and the 2015 Educational Master Plan (EMP), the need to increase student success, retention, transfer and completion
- As identified in the 2015 EMP and the 2017 Space Plan, address the current and long-term needs of the core programs, particularly those of Science, Mathematics, Humanities and Language Arts
- As identified in 2014 DSP and the 2017 Space Plan, the need to provide programs responsive to student learning needs and changes in the job market, which will require outdated facilities to be reconfigured or replaced for 21st Century teaching and learning
- As identified in the 2015 EMP and the 2017 Space Plan, the need to repurpose and reconfigure existing buildings to increase operational efficiencies
- As identified in the 2014 DSP, provide students and employees with technology that supports successful learning outcomes
- As identified in the 2014 DSP, the need to provide sustainable and effective learning environments (including ongoing maintenance)
- As identified by the California Community Colleges Board of Governors’ Energy and Sustainability Policy, the State AB 32 Global Warming Solutions Act of 2006, and the American College & University President’s Climate Commitment (ACUPCC), the need to increase operational sustainability which is currently limited by the existing condition of facilities.
Replacement Culinary Arts Center

For Biology, Chemistry, Physics & Large Teaching Spaces

Secondary Effects Project: Partial 900 Modernization

The existing Culinary Arts Lab in the 900 Building is too small, outdated (no technology and students cannot see demonstration), and too remote from the rest of the Culinary and Hospitality Management program located in 1800 Sesnon House.

The Facilities Master Plan proposes to build a replacement Culinary Arts Center on the site occupied by portable buildings 2500, 2550 and 2600. The portables will be demolished and removed as part of this project (the existing programs within having been vacated to the SAC modernization project).

The Replacement Culinary Arts Center will include a new demonstration Culinary Lab that will serve instructional needs, and could also help generate revenue by being leased to the community and local TV stations. The facility will include support spaces for the culinary lab (prep rooms, storage rooms, locker rooms), storage spaces for catering equipment, an outdoor seating area (partially shaded) and an organic community garden.

The project also includes the creation of pedestrian pathways and an outdoor plaza that will be a node connecting the buildings on this side of campus to VAPA.

New Gross Square Footage: 8,000 gsf
New Assignable Square Footage: 7,500 asf
Number of Floors: 1
Demolition Gross Square Footage (2500/2550): 5,800 gsf
Demolition Gross Square Footage (2600): 3,000 gsf
Approximate Site Area: 16,000 gsf

Secondary Effects Project
Partial 900 Modernization

Portions of the 900 College Center building are vacated by three different projects: EOPS is vacated with the Building 200 Student Services Modernization, the Health Services are vacated with the Building 1000 Modernization, and the Culinary Arts Lab is vacated by its Replacement Project.

This secondary effects project would modernize all the vacated areas for three major uses. The former Health Services area on the lower level would be repurposed for the Veterans Center additional space needs. The former Health Services area on the upper level would be repurposed for a Multicultural Center, while the former EOPS and Culinary lab would be repurposed for Student Clubs meeting and workshop space for their existing location is too small to accommodate these functions.

The modernization will also include the replacement of building systems and other components (glazing, doors, etc.) as necessary.

Existing Assignable Square Footage Modernized: 4,100 asf
Number of Floors: 2
Main Project Scope Includes:

- Reconfigure, Resize and Modernize Classrooms for current teaching pedagogies and equipment
- New Classrooms to replace old ones for modern teaching pedagogies, appropriate sizing & configuration
- Reconfigure, Resize and Modernize Class Labs for current teaching pedagogies and equipment
- Replace and/or Add Class Labs in programs requiring expansion/replacement
- Modernize and Expand Tutoring and Counseling Services
- Modernize and Expand Open Computer Labs
- Modernize and Expand Study Areas including Group Study Rooms
- Modernize Other Instructional Spaces with modern equipment and configurations
- Modernize Other Student Support Spaces with modern equipment and configurations

☑ Modernize and/or Add Restrooms
☑ Modernize, Reconfigure and Add Offices
☑ Add Meeting Rooms

☐ Rectify all Accessibility issues identified to date throughout and around facility
☐ Replace all floor, ceiling and wall finishes that are worn and torn beyond repair
☐ Replace partial floor, ceiling and wall finishes where needed
☐ Replace furniture, fixtures and equipment (FF&E) with more comfortable, appropriate, functioning FF&E (includes Window Coverings etc.)

☑ New Network and Wi-Fi cabling infrastructure for New Buildings
☑ New Network and Wi-Fi cabling infrastructure of existing buildings
☑ New telecom rooms, backbone cabling and horizontal cabling for new buildings
☑ New telecom rooms, backbone cabling and horizontal cabling for buildings to be modernized

☐ Campus Main Data (IT) Hub Equipment and Cabling Replacement
☐ Infrastructure for classroom technologies
☐ AV Equipment for classroom technologies
☐ Add/Upgrade Security Cameras
☐ Substantial Replacement Security Cameras
☐ Partial Replacement of Mechanical & Plumbing Equipment
☐ Partial Replacement of Mechanical & Plumbing Equipment
☐ Substantial Replacement and Upgrade to Electrical & Lighting Equipment
☐ Partial Replacement and Upgrade to Electrical & Lighting Equipment
☐ Possible Major Structural Upgrades Required
☐ Possible Minor Structural Upgrades Required
☐ Substantial Replacement Door and Windows
☐ Partial Replacement Door and Windows
☐ Replace Door Hardware
☐ Repair/Re-roof Roofing
☐ Replace Roofing
☐ Replace Elevators and Elevator Equipment
☐ Add Elevators and Elevator Equipment
☐ Replace and Improve/Expand Facility Signage

☐ New Addition to Existing Facility
☑ Demolish Existing Buildings (as specified) and associated Site Work
☑ Underground Utilities Replacement as may be required by future complete assessments
☑ Landscaping improvements in the vicinity of the facility to create shaded study areas, benches etc.
☐ Improvements to Pedestrian Pathways around facility to address accessibility and campus connections
☐ Major Landscaping Improvements and/or New Quad/Exterior Plaza adjacent or part of facility
☐ Replace and Improve/Expand Exterior Lighting and Security around the facility
☐ Replace and Improve/Expand Exterior Signage around the facility

Project Scope Addresses These Drivers:

☑ The need to address the 1.1 million California college graduates shortfall by 2030
☑ The need to meet the obligations of SB 1456: the Seymour-Campbell Student Success Act of 2012
☑ As identified in both the 2014 District Strategic Plan (DSP) and the 2015 Educational Master Plan (EMP), the need to increase student success, retention, transfer and completion
☑ As identified in 2014 DSP and the 2017 Space Plan, the need to provide programs responsive to student learning needs and changes in the job market, which will require outdated facilities to be reconfigured or replaced for 21st Century teaching and learning
☑ As identified in the 2014 DSP, provide students and employees with technology that supports successful learning outcomes
☑ As identified in the 2014 DSP, the need to provide sustainable and effective learning environments (including ongoing maintenance)
☑ As identified by the California Community Colleges Board of Governors’ Energy and Sustainability Policy, the State AB 32 Global Warming Solutions Act of 2006, and the American College & University Presidents’ Climate Commitment (ACUPCC), the need to increase operational sustainability which is currently limited by the existing condition of facilities.
Replacement Public Safety and Fire Academy

Secondary Effects Project: 1600 Modernization
Community Education

Secondary Effects Project: Parking Extension

The existing 1600 Public Services building is not large enough to add a Fire Academy, a program that is in high demand and highly desired by local Fire and Law Enforcement Agencies. In addition these programs require a fair amount of yard space to conduct practice drills. These programs also have some synergies with the Sheriff’s Office (located in the 1185 Building, another temporary modular building), and could greatly benefit from being close to the athletic fields, where students could run strength training drills.

As such, the Facilities Master Plan proposes to build the Replacement Public Safety and Fire Academy in Parking Lot S, with associated Yard Training facilities located within a portion of Parking Lot S. The demolition of Portable Building 1185 would be part of this project, as would the pedestrian connections and landscaping around the facility.

Secondary Effects Project 1600 Modernization

Building 1600 will have its classrooms modernized for the various needs identified under the Classroom Building Modernization Projects. It will also be modernized to accommodate the offices of Community Education, Public Relations and Small Business Development. These office functions are currently housed in temporary portable buildings (2100A, 2100B and 2100C) and relocating them into 1600 will permit these portable buildings to be demolished.

The modernization will also include modernizations to the restrooms, and the replacement of building systems and other components (glazing, doors, etc.).

Existing Gross Square Footage: 8,100 gsf
Existing Assignable Square Footage Modernized: 4,700 asf
Number of Floors: 1

Secondary Effects Project Parking Extension

With the relocation of Community Education, Public Relations and Small Business Development into Modernized 1600, the existing portables will be demolished and replaced with parking.

Demolition Gross Square Footage (2100A): 1,000 gsf
Demolition Gross Square Footage (2100B): 1,000 gsf
Demolition Gross Square Footage (2100C): 1,000 gsf
Demolition Gross Square Footage (Restrooms): 400 gsf
Approximate Site Area: 5,000 gsf
### Main Project Scope Includes:

- [ ] Reconfigure, Resize and Modernize Classrooms for current teaching pedagogies and equipment
- [ ] Reconfigure, Resize and Modernize Class Labs for current teaching pedagogies and equipment
- [ ] Replace and/or Add Class Labs in programs requiring expansion/replacement
- [ ] Modernize and Expand Tutoring and Counseling Services
- [ ] Modernize and Expand Open Computer Labs
- [ ] Modernize and Expand Study Areas including Group Study Rooms
- [ ] Modernize Other Instructional Spaces with modern equipment and configurations
- [ ] Modernize Other Student Support Spaces with modern equipment and configurations
- [ ] Modernize and/or Add Restrooms
- [ ] Modernize, Reconfigure and Add Offices
- [ ] Add Meeting Rooms
- [ ] Rectify all Accessibility issues identified to date throughout and around facility
- [ ] Replace all floor, ceiling and wall finishes that are worn and torn beyond repair
- [ ] Replace partial floor, ceiling and wall finishes where needed
- [ ] Replace furniture, fixtures and equipment (FF&E) with more comfortable, appropriate, functioning FF&E (includes Window Coverings etc.)
- [ ] New Network and Wi-Fi cabling infrastructure for New Buildings
- [ ] New Network and Wi-Fi cabling infrastructure of existing buildings
- [ ] New telecom rooms, backbone cabling and horizontal cabling for new buildings
- [ ] New telecom rooms, backbone cabling and horizontal cabling for buildings to be modernized
- [ ] Campus Main Data (IT) Hub Equipment and Cabling Replacement
- [ ] Infrastructure for classroom technologies
- [ ] AV Equipment for classroom technologies
- [ ] Add/Upgrade Security Cameras
- [ ] Substantial Replacement Security Cameras
- [ ] Partial Replacement of Mechanical & Plumbing Equipment
- [ ] Substantial Replacement and Upgrade to Electrical & Lighting Equipment
- [ ] Partial Replacement and Upgrade to Electrical & Lighting Equipment
- [ ] Possible Major Structural Upgrades Required
- [ ] Possible Minor Structural Upgrades Required
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- [ ] Partial Replacement Door and Windows
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- [ ] Replace Roofing
- [ ] Replace Elevators and Elevator Equipment
- [ ] Add Elevators and Elevator Equipment
- [ ] Replace and Improve/Expand Facility Signage
- [ ] New Addition to Existing Facility
- [ ] Demolish Existing Buildings (as specified) and associated Site Work
- [ ] Underground Utilities Replacement as may be required by future complete assessments
- [ ] Landscaping improvements in the vicinity of the facility to create shaded study areas, benches etc.
- [ ] Improvements to Pedestrian Pathways around facility to address accessibility and campus connections
- [ ] Major Landscaping Improvements and/or New Quad/Exterior Plaza adjacent or part of facility
- [ ] Replace and Improve/Expand Exterior Lighting and Security around the facility
- [ ] Replace and Improve/Expand Exterior Signage around the facility

### Project Scope Addresses These Drivers:

- ✔ The need to address the 1.1 million California college graduates shortfall by 2030
- ✔ The need to meet the obligations of SB 1456: the Seymour-Campbell Student Success Act of 2012
- ✔ As identified in both the 2014 District Strategic Plan (DSP) and the 2015 Educational Master Plan (EMP), the need to increase student success, retention, transfer and completion
- ✔ As identified in 2014 DSP and the 2017 Space Plan, the need to provide programs responsive to student learning needs and changes in the job market, which will require outdated facilities to be reconfigured or replaced for 21st Century teaching and learning
- ✔ As identified in the 2014 DSP, provide students and employees with technology that supports successful learning outcomes
- ✔ As identified in the 2014 DSP, the need to provide sustainable and effective learning environments (including ongoing maintenance)
- ✔ As identified by the California Community Colleges Board of Governors’ Energy and Sustainability Policy, the State AB 32 Global Warming Solutions Act of 2006, and the American College & University President’s Climate Commitment (ACUPCC), the need to increase operational sustainability which is currently limited by the existing condition of facilities.
Replacement Dance Lab and VAPA Community Center

The existing Dance Lab in 1100 Gymnasium Building has several issues related to sizing, flooring, location, and support needs (lockers/changing rooms etc.). These issues are not resolvable within Building 1100, and there is no space within the Visual and Performing Arts (VAPA) complex to accommodate them. In addition several needs/issues related to the VAPA complex and “Lower Campus” were identified:

- Need Gallery space closer to VAPA complex;
- Locate food/coffee at Lower Campus more centrally;
- Provide shaded gathering space on the lower campus;
- Provide conference space on campus;
- Provide better Community Education facilities;
- Address security concerns at VAPA complex;
- Leverage VAPA facilities for multiple community uses by providing flexible space that can host a myriad of events including catered events etc.

The Facilities Master Plan proposes to address the majority of these needs by providing a Replacement Dance Lab and VAPA Community Center, located near Samper Recital Hall, at the heart of the VAPA complex. The facility will house a Dance Class Lab, along with lab support spaces (locker rooms, restrooms etc.), a multi-use gallery space with a cafe component, and community education/function rooms on the second floor. The vision is to have some of the glazed walls at the lower level capable of being opened up to the shaded exterior outdoor area, in order to expand the ways these spaces can be used collectively.

New Gross Square Footage: 8,000 gsf
New Assignable Square Footage: 7,000 asf
Number of Floors: 2
Approximate Outdoor Area: 1,500 gsf

Secondary Effects Project
1100 Modernization

With the relocation of the Dance Lab out of 1100 Gymnasium, the athletic functions within this building can be reconfigured and modernized per 21st Century equipment and standards.

The modernization will cover all spaces within the facility, and the replacement of building systems and other components (glazing, doors, etc.).

Existing Gross Square Footage: 43,900 gsf
Existing Assignable Square Footage Modernized: 32,700 asf
Number of Floors: 1
### Main Project Scope Includes:

- ☐ Reconfigure, Resize and Modernize Classrooms for current teaching pedagogies and equipment
- ☐ New Classrooms to replace old ones for modern teaching pedagogies, appropriate sizing & configuration
- ☐ Reconfigure, Resize and Modernize Class Labs for current teaching pedagogies and equipment
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- ☑ Add Meeting Rooms
- ☑ Rectify all Accessibility issues identified to date throughout and around facility
- ☑ Replace all floor, ceiling and wall finishes that are worn and torn beyond repair
- ☑ Replace partial floor, ceiling and wall finishes where needed
- ☑ Replace furniture, fixtures and equipment (FF&E) with more comfortable, appropriate, functioning FF&E (includes Window Coverings etc.)
- ☑ New Network and Wi-Fi cabling infrastructure for New Buildings
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- ☐ New telecom rooms, backbone cabling and horizontal cabling for new buildings
- ☐ New telecom rooms, backbone cabling and horizontal cabling for buildings to be modernized
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### Project Scope Addresses These Drivers:

- ✔ The need to address the 1.1 million California college graduates shortfall by 2030
- ✔ The need to meet the obligations of SB 1456: the Seymour-Campbell Student Success Act of 2012
- ✔ As identified in both the 2014 District Strategic Plan (DSP) and the 2015 Educational Master Plan (EMP), the need to increase student success, retention, transfer and completion
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- ✔ As identified by the California Community Colleges Board of Governors’ Energy and Sustainability Policy, the State AB 32 Global Warming Solutions Act of 2006, and the American College & University President’s Climate Commitment (ACUPCC), the need to increase operational sustainability which is currently limited by the existing condition of facilities.
Replacement Facilities
Purchasing Maintenance and Operations Complex

The existing 2000 Maintenance & Operations Building, the 2030 Administration and Purchasing Building and the associated 2020 Grounds Shop, 2040 Paint Shop and 2050 Vehicle/Custodial Buildings were built in 1974 and are past their useful life. The State has identified that the repair of these buildings exceeds the cost to replace these buildings, and therefore a replacement facility is warranted.

The Facilities Master Plan proposes to build the Replacement Facilities Purchasing Maintenance and Operations Complex on the existing location.

New Gross Square Footage: **18,900 gsf**
New Assignable Square Footage: **16,200 asf**
Number of Floors: **1**
Demolition Gross Square Footage (2000): **11,700 gsf**
Demolition Gross Square Footage (2020): **1,400 gsf**
Demolition Gross Square Footage (2030): **2,000 gsf**
Demolition Gross Square Footage (2040): **1,100 gsf**
Demolition Gross Square Footage (2050): **2,000 gsf**
Approximate Site Area: **54,000 gsf**
Main Project Scope Includes:

☐ Reconfigure, Resize and Modernize Classrooms for current teaching pedagogies and equipment
☐ New Classrooms to replace old ones for modern teaching pedagogies, appropriate sizing & configuration
☐ Reconfigure, Resize and Modernize Class Labs for current teaching pedagogies and equipment
☑ Replace and/or Add Class Labs in programs requiring expansion/replacement
☐ Modernize and Expand Tutoring and Counseling Services
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☐ Modernize Other Instructional Spaces with modern equipment and configurations
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✓ Modernize and/or Add Restrooms
✓ Modernize, Reconfigure and Add Offices
✓ Add Meeting Rooms
☐ Rectify all Accessibility issues identified to date throughout and around facility
☐ Replace all floor, ceiling and wall finishes that are worn and torn beyond repair
☐ Replace partial floor, ceiling and wall finishes where needed
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✓ New Network and Wi-Fi cabling infrastructure for New Buildings
☐ New Network and Wi-Fi cabling infrastructure of existing buildings
✓ New telecom rooms, backbone cabling and horizontal cabling for new buildings
☐ New telecom rooms, backbone cabling and horizontal cabling for buildings to be modernized

Project Scope Addresses These Drivers:

✓ As identified by the California Community Colleges Board of Governors’ Energy and Sustainability Policy, the State AB 32 Global Warming Solutions Act of 2006, and the American College & University President’s Climate Commitment (ACUPCC), the need to increase operational sustainability which is currently limited by the existing condition of facilities.
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CHAPTER OVERVIEW

This chapter identifies the District priorities (at the time of FMP development), the project implementation opportunities/constraints, preliminary cost estimates for select projects and approximated preliminary costs for the balance of projects. The conclusion of the chapter includes suggested recommendations for next steps which are to the discretion of the District.
Prioritizing projects is challenging when the needs (and resulting projects) are numerous. The College faculty and staff recognized the necessity to nurture and grow the diversity of all its programs to create a rich and vital campus for all its students. As such, the prioritization process undertaken by the Facilities Planning Committee (FPC) during the FMP process occurred over a number of meetings, held across several months to ensure a thoughtful deliberation and outcome.

The prioritization process included:

- A matrix (see next page) that analyzed the projects with respect to a range of criteria reviewed and discussed with the FPC in November 2017;
- Several discussions with FPC and leadership on the appropriate prioritization process in early 2018;
- A FPC workshop tagging the top 12 projects to initiate discussions in March (see previous page);
- A survey sent to three groups (FPC, Faculty and Classified Staff) in April (see left for aggregate responses);
- A discussion and deliberation of the survey results with FPC in late April, resulting in the priorities as shared on pages 64-65.
<table>
<thead>
<tr>
<th>Building Number / Name</th>
<th>Space Plan Recommendation</th>
<th>Overall Renovation Assessment Level</th>
<th>Mechanical Replacement / Upgrade</th>
<th>Electrical &amp; Lighting Replacement / Upgrade</th>
<th>Plumbing Replacement / Upgrade (exp. Restrooms)</th>
<th>Technology Replacement / Upgrade</th>
<th>Accessibility (ADA) Corrections</th>
<th>Dear Hardware (Security) Upgrades</th>
<th>Elevators</th>
<th>Roofing</th>
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<th>Wall / Partition Reconstructions?</th>
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<th>Modernize / Add Class Rooms Lab for Modern Teaching</th>
<th>Address Student Services &amp; Tutoring Inadequacies</th>
<th>Address Support Space Inadequacies</th>
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<td>x</td>
<td>x</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Modernize 890</td>
<td>X</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Modernize 990</td>
<td>X</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<td>X</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Modernize 1090</td>
<td>X</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>New VAPA Pavilion/Dance</td>
<td>Modernize 1200</td>
<td>X</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>X</td>
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<td>X</td>
<td>X</td>
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<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Modernize 1200</td>
<td>New Dance</td>
<td>X</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>X</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>New Public Safety and Fire Academy</td>
<td>Modernize 1600</td>
<td>X</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>X</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Replacement Maintenance &amp; Operations</td>
<td>Modernize 1000</td>
<td>X</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>X</td>
<td>X</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

1 Building 600 is proposed to be demolished at the end of all Facilities Technology Master Plan Projects, which would most likely be in about 20 years. Considering that it will be used by multiple departments for swing needs during these years, the HVAC, Electrical, Technology etc. upgrades/ replacements are warranted.

2 Major Technology Projects include: Complete Equipment and Cabling Replacement in Telecom Rooms; Upgrades to HVAC/Electric/UPS Power etc. to Telecom Rooms; Replacement of all Horizontal Cabling within Buildings; Teaching Technology Upgrades to Classrooms and Support Spaces; Wi-Fi Extension

3 Less Major Technology Projects include: Replacement of all Horizontal Cabling within Buildings (except 700 and 1409 where complete); Teaching Technology Upgrades to Classrooms and Support Spaces; Wi-Fi Extension
As a first step to facilitate the prioritization process, the projects were grouped into categories: (a) Large Projects; (b) Career Technical Program Projects; (c) Community Benefits/Revenue Generation Projects; (d) Major Modernizations; and (e) Smaller Projects. Some projects appear in more than one category. The groupings are shown on this and the next page.

To clarify a little further, the categorization with the letters A, B, C, D and E does not mean to imply that A is more important than B etc. We needed to assign each project a number so that it could be easily referenced in the future. Once the categories were established it made sense to assign projects with a letter and a number.

Note: the order of the projects under each of the groupings correlates roughly to the order they ranked in the surveys, with a few exceptions reflecting adjustments based on discussions with the FPC. Please see page 66 for Facilities Projects Priorities.

### Facilities Projects Categorization

<table>
<thead>
<tr>
<th>A</th>
<th>LARGE PROJECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Modernize 1000 for Library/Hub Needs</td>
</tr>
<tr>
<td></td>
<td>A1.1 Secondary Effects Project (to A1): Minor Partial VAPA Renovation</td>
</tr>
<tr>
<td>A2</td>
<td>Modernize 200 for Consolidated Student Services Building</td>
</tr>
<tr>
<td></td>
<td>A2.1 Secondary Effects Project (to A2): Modernize Partial SAC</td>
</tr>
<tr>
<td>A3</td>
<td>Replacement Science Center (Demolish 100 and 450) - dependent on Project A2</td>
</tr>
<tr>
<td></td>
<td>A3.1 Secondary Effects Project (to A3): Modernize Partial 800</td>
</tr>
<tr>
<td>A4</td>
<td>Replacement Culinary Arts (Demolish 2500 and 2600) - dependent on A2.1</td>
</tr>
<tr>
<td></td>
<td>A4.1 Secondary Effects Project (to A4, A1 and A2): Modernize Partial 900</td>
</tr>
<tr>
<td>A5</td>
<td>Replacement Public Safety and Fire Academy</td>
</tr>
<tr>
<td></td>
<td>A5.1 Secondary Effects Project (to A5): Modernize 1600</td>
</tr>
<tr>
<td>A6</td>
<td>Modernize/Small Addition Watsonville Building A</td>
</tr>
<tr>
<td>A7</td>
<td>Replacement Facilities, Purchasing Maintenance and Operations Complex</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B</th>
<th>CAREER TECHNICAL PROGRAM PROJECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1</td>
<td>(Also A4) Replacement Culinary Arts (Demolish 2500 and 2600) - dependent on A2.1</td>
</tr>
<tr>
<td></td>
<td>A4.1 Secondary Effects Project (to A4, A1 and A2): Modernize Partial 900</td>
</tr>
<tr>
<td>B2</td>
<td>(Also A5) Replacement Public Safety and Fire Academy</td>
</tr>
<tr>
<td></td>
<td>A5.1 Secondary Effects Project (to A5): Modernize 1600</td>
</tr>
<tr>
<td>B3</td>
<td>Replacement Dance Lab &amp; VAPA Community Center</td>
</tr>
<tr>
<td></td>
<td>B3.1 Secondary Effects Project (to B3): Modernize 1100 Gymnasium</td>
</tr>
<tr>
<td>B4</td>
<td>Modernize 1800 Sesnon House</td>
</tr>
<tr>
<td>B5</td>
<td>Modernize 1300 Building Trades</td>
</tr>
</tbody>
</table>
### COMMUNITY BENEFITS / REVENUE GENERATION PROJECTS

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>(Also A4) Replacement Culinary Arts (Demolish 2500 and 2600) - dependent on A2.1</td>
</tr>
<tr>
<td></td>
<td>A4.1 Secondary Effects Project (to A4, A1 and A2): Modernize Partial 900</td>
</tr>
<tr>
<td>C2</td>
<td>(Also B3) Replacement Dance Lab &amp; VAPA Community Center</td>
</tr>
<tr>
<td></td>
<td>B3.1 Secondary Effects Project (to B3): Modernize 1100 Gymnasium</td>
</tr>
<tr>
<td>C3</td>
<td>Modernize Athletic Fields</td>
</tr>
<tr>
<td>C4</td>
<td>(Also B4) Modernize 1800 Sesnon House</td>
</tr>
<tr>
<td>C5</td>
<td>Affordable Housing</td>
</tr>
<tr>
<td>C6</td>
<td>Conference Center</td>
</tr>
</tbody>
</table>

### MAJOR MODERNIZATION (NOT ALREADY ADDRESSED IN A, B AND C) PROJECTS

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td>Modernize 350 (Add Larger Classrooms)</td>
</tr>
<tr>
<td>D2</td>
<td>Modernize 700</td>
</tr>
<tr>
<td>D3</td>
<td>Modernize 400</td>
</tr>
<tr>
<td>D4</td>
<td>Modernize 600</td>
</tr>
<tr>
<td>D5</td>
<td>Modernize 500</td>
</tr>
<tr>
<td>D6</td>
<td>Modernize 300</td>
</tr>
<tr>
<td>D7</td>
<td>Modernize 1500</td>
</tr>
<tr>
<td>D8</td>
<td>Modernize 1400</td>
</tr>
<tr>
<td>D9</td>
<td>Modernize 1550</td>
</tr>
<tr>
<td>D10</td>
<td>Modernize 1170</td>
</tr>
<tr>
<td>D11</td>
<td>Modernize 1200</td>
</tr>
<tr>
<td>D12</td>
<td>Modernize 1700</td>
</tr>
</tbody>
</table>

### SMALLER PROJECTS

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1</td>
<td>Watsonville Building D (Add Science Lab)</td>
</tr>
<tr>
<td>E2</td>
<td>Horticulture 5000 (Add Landscape Design Lab)</td>
</tr>
<tr>
<td>E3</td>
<td>Health &amp; Wellness HW1000 (minor reconfigurations)</td>
</tr>
<tr>
<td>E4</td>
<td>Health &amp; Wellness HW2000 (minor reconfigurations)</td>
</tr>
</tbody>
</table>
**Facilities Projects Prioritization**

The FPC and District Leadership developed evaluation criteria to assist in the prioritization:

- Biggest impact for increasing student success;
- Biggest impact in number of students/staff who benefit;
- Biggest impact to creating a strong workforce;
- Biggest impact in operational efficiencies;
- Biggest impact for Cabrillo community;
- Has not had any significant modernizations within the last 10 years; and
- Reflects feedback from prioritization surveys filled out by Facilities Committee, Faculty and Staff.

The prioritization surveys indicated three projects that are the “top” priorities: Modernize Building 1000 for the Library/Hub needs (A1), Modernize Building 200 for Consolidation of Student Services (A2), and the Replacement Science Center (A3). The FPC and District Leadership agreed with these three projects as the top projects for they not only aligned with the evaluation criteria, but they affected the biggest number of students, faculty and staff.

Other projects that would affect a significant number of students were the Building 350 and Building 700 modernizations. The Building 350 modernization will provide larger classrooms that will be used by all divisions. The addition of larger classrooms will facilitate the consolidation and removal of some smaller classrooms within the other modernization projects.

Building 700 is the largest classroom building on campus that also serves a significant number of students, as such modernizing it to modern teaching pedagogies will have a big impact.

Beyond these projects, the Facilities Planning Committee (FPC) did not officially prioritize the rest of the projects. The projects are arranged under each grouping based roughly on the survey responses, but the FPC felt a more detailed prioritization process would be required once funding was secured to validate and prioritize the projects further.

### Facilities Projects Prioritization

<table>
<thead>
<tr>
<th></th>
<th>LARGE PROJECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Modernize 1000 for Library/Hub Needs</td>
</tr>
<tr>
<td></td>
<td>A1.1 Secondary Effects Project (to A1): Minor Partial VAPA Renovation</td>
</tr>
<tr>
<td>A2</td>
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<td></td>
<td>A2.1 Secondary Effects Project (to A2): Modernize Partial SAC</td>
</tr>
<tr>
<td>A3</td>
<td>Replacement Science Center (Demolish 100 and 450) - dependent on Project A2</td>
</tr>
<tr>
<td></td>
<td>A3.1 Secondary Effects Project (to A3): Modernize Partial 800</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>MAJOR MODERNIZATION (NOT ALREADY ADDRESSED IN A, B AND C) PROJECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td>Modernize 350 (Add Larger Classrooms)</td>
</tr>
<tr>
<td>D2</td>
<td>Modernize 700</td>
</tr>
</tbody>
</table>
The technology projects are collated in the table to the right and categorized into: Tier One End of Life Replacement (EoL) or Lacking, and Tier Two Enhancements based on the details of the particular project. The arrangement of the projects within the table reflects the Technology Committee’s March 2017 prioritization.

This list should be updated and prioritized periodically by the Cabrillo Technology Committee in partnership with Cabrillo Leadership.

<table>
<thead>
<tr>
<th>TIER ONE</th>
<th>END OF LIFE REPLACEMENTS or LACKING</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A</td>
<td>Complete Network Core Refresh (includes Wi-Fi)</td>
</tr>
<tr>
<td>1B</td>
<td>Complete Network Hardware EoL Replacements</td>
</tr>
<tr>
<td>1C</td>
<td>Complete Firewall Replacement</td>
</tr>
<tr>
<td>1D</td>
<td>Replace UPS for Watsonville Center Campus Hub (Requires Generator)</td>
</tr>
<tr>
<td>1E</td>
<td>Update and Expand Disaster Recovery</td>
</tr>
<tr>
<td>1F</td>
<td>Replace/Upgrade Backup System, SAN (Storage Area Network) EoL Replacement, EoL Blade Servers (eight total: replacement of some depend on VDI Plan in Tier Two)</td>
</tr>
<tr>
<td>1G</td>
<td>Cyber Security Deployments</td>
</tr>
<tr>
<td>1H</td>
<td>Redundant Pathways and Fiber to Redundantly Connect Two Campus Hubs (B100 and B1300)</td>
</tr>
<tr>
<td>1I</td>
<td>New OSP Fiber and Copper for New Buildings (per Facilities Priorities)</td>
</tr>
<tr>
<td>1J</td>
<td>B100 and B1300 Campus Hub Equipment and Cabling Replacement</td>
</tr>
<tr>
<td>1K</td>
<td>New Telecom Rooms, Backbone Cabling and Horizontal Cabling for New Buildings (per Facilities Priorities)</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>TIER TWO</th>
<th>ENHANCEMENTS</th>
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</thead>
<tbody>
<tr>
<td>2A</td>
<td>VDI (Virtual Desktop Infrastructure) Repair or Replace Plan</td>
</tr>
<tr>
<td>2B</td>
<td>Mobile End-user Device Replacement</td>
</tr>
<tr>
<td>2C</td>
<td>Network Monitoring</td>
</tr>
<tr>
<td>2D</td>
<td>Cyber Security Enhancements</td>
</tr>
<tr>
<td>2E</td>
<td>CENIC/WAN (Wide Area Network) Upgrades between Aptos Campus and Watsonville Center</td>
</tr>
<tr>
<td>2F</td>
<td>Develop Alerts to Notify IT Staff</td>
</tr>
<tr>
<td>2G</td>
<td>Wi-Fi Expansion</td>
</tr>
<tr>
<td>2H</td>
<td>Update Cabling Infrastructure of Existing Buildings (per Facilities Priorities)</td>
</tr>
<tr>
<td>2I</td>
<td>New Telecom Rooms, Backbone Cabling and Horizontal Cabling for Renovated Buildings (per Facilities Priorities)</td>
</tr>
<tr>
<td>2J</td>
<td>Infrastructure for Classroom Technologies (Phased Deployment per Facilities Priorities)</td>
</tr>
<tr>
<td>2K</td>
<td>Appropriate Power Upgrades for Renovated Buildings</td>
</tr>
<tr>
<td>2L</td>
<td>Upgrade Fiber from Campus Hub (B100) to Horticulture (Aptos Campus)</td>
</tr>
<tr>
<td>2M</td>
<td>Fiber to Parking Lots and Other Site Areas (Aptos Campus)</td>
</tr>
<tr>
<td>2N</td>
<td>Security Camera Expansion</td>
</tr>
</tbody>
</table>
The chart above shows which projects are dependent on one another. Tier One projects have to be undertaken first, then Tier Two projects, and finally Tier Three.

With the exception of the 1000 Library/Hub and Health Services Modernization project, none of the Tier One projects require swing space.

If the 1000 Modernization project were to remain Tier One then the project would need to swing the Foster Youth Program to another location, and it would have to be phased in place (in multiple phases), to allow some Library/Hub functions to be remain in operation as the building was modernized. If however, the project was moved to Tier Two, then one of the vacated buildings (for example Building 600 from Science Center) could be used to house a temporary Library/Hub as Building 1000 was modernized.

All the other projects are NOT dependent on one another, but most of them do require swing space, or they have to be phased to maintain classroom operations in at least some of the classrooms. Those projects include (in rough building order, not priority order):

- Watsonville Building A Modernization
- Watsonville Building D Modernization
- Stadium and Athletic Fields Modernization
- Replacement Facilities, Purchasing, and M&O
- Building 300 (partial) Modernization
- Building 350 Modernization
- Building 400 Modernization
- Building 500 Modernization
- Building 600 Modernization
- Building 700 Modernization
- Building 1170 Modernization
- Building 1200 Modernization
- Building 1300 Modernization
- Building 1400 Modernization
- Building 1500 Modernization
- Building 1550 Modernization
- Building 1700 Modernization
- Building 1800 Modernization
The table on the right lists the projects that were selected for preliminary cost estimation. They were chosen for their uniqueness, with the four modernization projects being representative of the other modernizations, and E1 being representative of the other smaller projects.

To determine the other modernization projects one can apply the average cost per square foot for the D1, D2, D3 and D5 modernizations. Similarly, the cost per square foot for E1 can be applied to the other smaller projects.
Preliminary Cost Estimate
Basis for Estimate/Clarifications

Basis of Master Plan Estimate
This estimate was prepared by the Cumming Corporation, the master plan cost consultant, and is based on their historic database for construction costs, their extensive experience estimating construction cost within the California Community College Districts, and the project particulars described within this master plan. Given that a construction implementation plan/schedule is not determined at this time, Cumming made the following assumptions:

- Local General Contractor laydown/compound area will be within the proximity of the project site;
- Local trade parking will be available both onsite (partial) and offsite;
- All sub trades will be competitively bid;
- Labor pool will be from the Greater Bay Area;
- General Contractor Markups are assumed per page 72 (renovations being more complex);
- Project soft cost markups have been included as an allowance per page 72;
- The master plan projects would take 20 years to build commencing in January 2021, putting the mid-point of construction for the master plan (not the individual projects) at December 30, 2031.

New Construction Estimates
Are based on particulars of the building (as provided in the Master Plan project descriptions), programs, size, and siting, and Cumming’s historic database for construction costs. Two key assumptions were:

- New construction superstructures are assumed to be structural steel with metal deck diaphragms (including concrete topping). Shallow foundations, including spread footings and grade beams, are included as the basis of design. Allowances for other types of foundations is excluded.

Renovation Estimates
Are based on particulars of the building (as provided in the Master Plan project descriptions), programs, size, and siting. Furthermore:

- Structural seismic upgrades have been included where identified within the detailed backup of this estimate. These allowances are based on a review of the master plan documentation, in conjunction with Cumming’s historic database for construction cost. Detailed takeoff and quantification is not included.
- Replacement of existing mechanical, electrical, plumbing, and fire protection systems have been included where identified within the detailed backup of this estimate. Replacement costs include trade demolition as required. These allowances are based on a review of the master plan documentation, in conjunction with Cumming’s historic database for construction cost. Detailed takeoff and quantification is not included.
- Restroom upgrades, where noted, are included as a “full gut remodel” of existing areas. Where restroom areas are not identified within the documentation, an assumption of affected area is included for this scope. Partial or “replace in kind” upgrades may result in a decrease in the costs included herein.
- Roofing replacement is assumed to include Single-Ply Roofing, Built-Up-Roofing or similar flat roof systems, and insulation. Upgraded roofing such as clay tile or standing seam roofing is not included.
- Fire sprinkler systems are assumed to be existing (with modifications as required in renovated areas) in all existing buildings. New fire sprinkler systems have been included for expansions / encapsulation of new space.

Exclusions: What is Not Included
The estimate also does not include department swing space needs, nor phasing of projects. Swing space is when a department or an entire building has to relocate while their area/building is under renovation. Depending on project order implementation and the swing solutions chosen the swing needs can vary enormously, and are hard to quantify without additional information. Similarly, phasing is when a renovation (or new construction) is built in increments versus the entire building at the same time. Phasing adds costs to a project.

The estimate does not include a pedestrian bridge across Soquel Drive, it includes a new street level pedestrian crossing at that location instead.

This estimate does not include the operational costs associated with these projects, such as maintenance, operations and salaries etc.

This Estimate and the 5-Year Plan
The District is required to submit an annual Five Year Construction Plan (5-Year Plan) to the State. The District has included its top three projects within this year’s Plan, assigning them tentative (placeholder) years for completion (Project A1 in 2022/23, Project A2 in 2023/24, and Project A3 in 2024/25). The plan includes a cost estimate generated by the State system. The 5-Year Plan’s cost for Project A1 is within 2% of this estimate’s 2022 Project Total. The other two projects are higher because they include additional escalation: Project A2 includes an additional 3.5% of escalation for one additional year; and Project A3 include an additional 3.5% plus another 3.5% of escalation for two years beyond 2022.
Preliminary Cost Estimate Definitions & Market Conditions

Construction/Hard Costs
Are the costs directly associated with the physical construction of the facility. 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.

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

Escalation/Inflation
Reflects the expected percentage of price increases, during the time a project may be under construction (or waiting to start construction). This 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.

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.

Market Conditions - Escalation
The cost estimations are based on a number of assumptions. The primary assumption being that the projects would be undertaken over a 20-year period, with the first project starting construction in January 2022. Escalation is assumed to run through the fourth quarter of 2031 (“mid-point of construction”). The cumulative escalation from January 2022 through December 2031 is currently projected at 64.2%. Clearly projects undertaken in 2022, and completed within a few years, would not bear the entire 64.2% 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 64.2%, while projects initiated much later will bear more than 64.2%, so as an average it is a reasonable escalation factor.

So what is driving this 64.2% 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.
Preliminary Cost Estimate:
How to Read it

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A - AREA:</td>
<td>Gross Square Footage (Size)</td>
</tr>
<tr>
<td>B - CONSTRUCTION TOTAL:</td>
<td>Cost to build the Building/Renovation today (2018)¹</td>
</tr>
<tr>
<td>C - LEED PLATINUM:</td>
<td>Additional cost to build it at LEED Platinum Level today (2018)</td>
</tr>
<tr>
<td>D - NET ZERO ENERGY (NZE):</td>
<td>Additional cost to build it to Net Zero Energy Construction today (2018)²</td>
</tr>
<tr>
<td>F - PROJECT TOTAL 2018:</td>
<td>Add Construction Total +LEED Platinum +NZE +Escalation +Soft Costs till 2018</td>
</tr>
<tr>
<td>G - COST/SF 2018:</td>
<td>Project Total 2018 (F) divided by Area of Project (A)</td>
</tr>
<tr>
<td>H - ESCALATION to 2022:</td>
<td>Escalation from 2018 through 2022</td>
</tr>
<tr>
<td>I - PROJECT TOTAL 2022:</td>
<td>Add Project Total 2018 (F) + Escalation to 2022 (H)</td>
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<tr>
<td>J - ESCALATION to 2031:</td>
<td>Escalation from 2022 through mid-point of construction 2031</td>
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<tr>
<td>K - PROJECT TOTAL 2031:</td>
<td>Add Project Total 2022 (I) + Escalation to 2031 (J)</td>
</tr>
<tr>
<td>L - COST/SF 2031:</td>
<td>Project Total 2031 (K) divided by Area of Project (A)</td>
</tr>
</tbody>
</table>

¹ Base Construction complying with California Code is equivalent to LEED Construction
² Only applicable to Replacement Buildings

Important Estimate Considerations

B - CONSTRUCTION TOTAL: includes materials and labor for building and Construction related Markups. Those markups are broken down as follows:

<table>
<thead>
<tr>
<th>New Buildings</th>
<th>Renovations</th>
</tr>
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<tr>
<td>Contractor’s General Conditions:</td>
<td>10%</td>
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<tr>
<td>Contractor’s Bonds &amp; Insurance:</td>
<td>2%</td>
</tr>
<tr>
<td>Contractor’s Fee:</td>
<td>5%</td>
</tr>
<tr>
<td>Design Contingency:</td>
<td>10%</td>
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</table>

E - SOFT COSTS: Design and Engineering, Regulatory Agencies, IT, Equipment and Furniture etc. = 35%

K - ESCALATION: Midpoint of 20 year Construction (12/31/31) = 64.2% of Construction Costs
<table>
<thead>
<tr>
<th>Element A</th>
<th>Area</th>
<th>Construction Total</th>
<th>Platinum (All Bldgs.)</th>
<th>NZE (New Bldgs.)</th>
<th>Soft Costs 2018</th>
<th>Project Total 2018</th>
<th>Cost / SF 2018</th>
<th>Escalation to 2022</th>
<th>Project Total 2022</th>
<th>Escalation to 2031</th>
<th>Project Total 2031</th>
<th>Cost / SF 2031</th>
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</thead>
<tbody>
<tr>
<td>Project A1 - Modernize B1000 Library/Hub / Sec. Effects VAPA Partial</td>
<td>81,296</td>
<td>$43,701,399</td>
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<th>Cost / SF 2018</th>
<th>Escalation to 2022</th>
<th>Project Total 2022</th>
<th>Escalation to 2031</th>
<th>Project Total 2031</th>
<th>Cost / SF 2031</th>
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<tr>
<td>Project B3 - Replacement Dance Lab &amp; VAPA Community Center</td>
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<td>Project B5 - Modernize B1300 Building Trades</td>
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<th>Platinum (All Bldgs.)</th>
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<th>Soft Costs 2018</th>
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<th>Cost / SF 2018</th>
<th>Escalation to 2022</th>
<th>Project Total 2022</th>
<th>Escalation to 2031</th>
<th>Project Total 2031</th>
<th>Cost / SF 2031</th>
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<tbody>
<tr>
<td>Element</td>
<td>Area</td>
<td>Construction Total</td>
<td>Platinum (All Bldgs.)</td>
<td>NZE (New Bldgs.)</td>
<td>Soft Costs 2018</td>
<td>Project Total 2018</td>
<td>Cost / SF 2018</td>
<td>Escalation to 2022</td>
<td>Project Total 2022</td>
<td>Escalation to 2031</td>
<td>Project Total 2031</td>
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<td>D Project D1 - Modernize B350</td>
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<td><strong>E Projects Total Estimated Construction Cost</strong></td>
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<td>$172,712</td>
<td>$0</td>
<td>$1,269,430</td>
<td>$4,896,374</td>
<td>$628</td>
<td>$803,756</td>
<td>$5,700,129</td>
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<td><strong>Balance of Modernization Projects (Applied Average Cost/SF)</strong></td>
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<tr>
<td><strong>D Projects Total Estimated Construction Cost</strong></td>
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<td></td>
<td></td>
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</tr>
</tbody>
</table>

1 Projects not estimated by Cumming. The average cost/sf of the D modernization projects estimated by Cumming was applied to the balance of D Modernization Projects.
The majority of projects identified in the 2018 Facilities Master Plan are modernizations of aged buildings. A few buildings are proposed to be replaced for modernizing them is either too expensive and/or the existing building cannot accommodate the appropriate re-configuration of teaching and learning spaces that is required.

Not addressing these facilities needs is not an option for the existing building systems within these buildings will fail, and State funding for maintenance is not sufficient to replace these systems at the scale required. Cabrillo CCD is not alone in this predicament: most of the California Community Colleges were built in the 1960s and are facing similar issues. Building systems need to be replaced every 30 - 40 years, and State funding has never taken this into account by allocating reserves for these replacements. The State is now looking into this (as part of Total Cost of Ownership) but there is no “catch-up” monies available at this time, or in the foreseeable future, to address the current condition.

As such our recommendation is that the District pursue funding, and as soon as possible. As the cost estimates indicate, the cost to modernize or replace these projects end up costing almost twice as much due to escalation, which is only getting worse in Cabrillo CCD’s region. Ideally projects would be executed concurrently to save on escalation costs, but this needs to be balanced by swing needs (existing programs have to move out to permit modernization of buildings), and manageable disruption on campus for students.
Chapter Overview

This chapter provides Technology Design Guidelines for Audiovisual Systems and Telecommunications Infrastructure. These guidelines should be used for all related Technology projects.
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Audiovisual Systems Design Guidelines

Technology in the Classrooms
Version 2: March 2018

6.0 Audiovisual Systems Design Guidelines

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1. Introduction

The Audiovisual Systems Design Guidelines document is intended to assist the CCCD technology teams and faculty in understanding the scope and nature of the technology systems and supporting environments for the Cabrillo Community College District. These standards range from the high-level functional aspects of the various types of rooms found in the CCCD Campus 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 who will own and operate the facility or deployment
- Non-technical readers interested in the overall functionality of the systems along with the OAC team
- CCCD IT technical personnel who 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 CCCD standards, coordination meetings with the design teams of the Cabrillo Community College District IT, and industry best practices for projects of similar scope and size. It is anticipated that the 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.

Cabrillo 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 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 Cabrillo Community College District buildings 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 CCCD 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, IDPs or storage closets) 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.
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 using 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 to efficiently and effectively
C. Representative Form

Teaching spaces that emphasize the utilization of video displays for visual information sharing between local and remote collaborators.

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.
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.

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 assistive 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.

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-distribution.

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 rooms 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 consist 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 CCD.

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 back-up 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 system 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 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 CCD 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:
- Medium Classroom Type 1 – Lecture Configuration
- Medium Classroom Type 2 – Flexible Configuration
- Medium Classroom Type 3 – Tiered Configuration
- Huddle/Breakout/Overflow Spaces
- Auditoriums/Lecture Halls

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.

B. Long Term Solution A – Technology Refresh

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

www.teecom.com
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 CCCD. The following table, descriptions and diagrams illustrate the fundamental requirements for each type of space:

<table>
<thead>
<tr>
<th>Room Type</th>
<th>Single Display</th>
<th>Multiple Display</th>
<th>Projector and Screen</th>
<th>Laptop / BYOD Presentation</th>
<th>Local Dedicated Computer</th>
<th>Presentation</th>
<th>Video Capture / Recording</th>
<th>Overflow to Adjacency or Huddle Space</th>
<th>Voice Amplification / Audience Participation</th>
<th>Assisted Listening</th>
<th>Control Touch Panel / Keypad</th>
<th>Room Scheduler / Roster</th>
<th>Local AV Furniture / Teaching Station</th>
<th>Annotation Board</th>
<th>Wireless Microphone</th>
<th>Ceiling Microphone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium Classroom Type 1</td>
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<td>x</td>
<td>x</td>
<td>x</td>
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</tr>
<tr>
<td>Medium Classroom Type 2</td>
<td>x</td>
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</tr>
<tr>
<td>Medium Classroom Type 3</td>
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</tr>
</tbody>
</table>

Summary of Capabilities per Room Type

Denotes item under consideration
5.1 Medium Classrooms

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

A. Type 1 - Lecture Configuration
   - Teaching functions for up to 48 people, supporting laptops and BYOD wireless connectivity.
   - Video support with dual projection and display systems.
   - Audio supported via ceiling-mounted speakers.
   - Technology connectivity at the instructor’s table - Document camera, laptop, annotation board, control dashboard.

B. Type 2 – Flexible 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.
   - Technology connectivity at a local equipment station - Document camera, laptop, annotation board, control dashboard.
C. Type 3—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.
5.2 Teaching Support Spaces

A. 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.

B. 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.
### 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)

To support the various deployments anticipated for Cabrillo 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 Cabrillo 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 Cabrillo 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 Cabrillo 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 Cabrillo Community College District deployments.

To achieve this requirement, Cabrillo Community College District will standardize in the utilization of specific control products in combination with other enabled products that make use of the CCCD 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 (e.g., 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 maybe used.

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

6.5 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.
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 CCCD 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.

6.6 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 CCCD:

- Microsoft Skype for Business – Enterprise collaboration
- GoTo Meeting
- Canvas – Learning management system

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.
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 Cabrillo 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 Cabrillo Community College District IT technical personnel, as well as the technology contractors 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.
TECHNOLOGY IN THE CLASSROOM
MEDIUM FLEXIBLE CONFIGURATION
TYPE 1

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
**TECHNOLOGY IN THE CLASSROOM**

**MEDIUM FLEXIBLE CONFIGURATION TYPE 2**

**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
TECHNOLOGY IN THE CLASSROOM
MEDIUM FLEXIBLE CONFIGURATION
TYPE 3

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 NAME: CABRILLO COMMUNITY COLLEGE DISTRICT
PROJECT NO: 17277

DESCRIPTION:
TECHNOLOGY IN THE CLASSROOM
MEDIUM FLEXIBLE CONFIGURATION
TYPE 3

SKETCH No: TA 003
DATE: MARCH 2018
REVISION: V 2.0
SCALE: NTS
9. Codes, Standards and Best Practices

Observe the following codes and standards. Include the governing standards and practices of the Authority having jurisdiction (AHJ):

- ANSI/INFOCOMM 1M-2009: Audio Coverage Uniformity in Enclosed Listener Areas
- 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 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
6.1 Telecommunications Infrastructure Design Guidelines

Telecommunications Infrastructure Master Plan Guidelines

Cabrillo Community College District
6500 Soquel Drive
Aptos CA 95003
1. Introduction

This document, at a high level, will describe the telecommunications infrastructure work needed for the campus master plan at Cabrillo College.

1.1 How to Read this Document

This document first outlines the systems covered within telecom system infrastructure, then describes the guidelines for two categories. Those categories are major and minor campus projects.

2. Telecommunications Infrastructure

2.1 Scope

The scope of work for the telecommunications system consists of the following components:

A. Outside Plant Pathways
B. Outside Plant Backbone Cabling
C. Telecommunications Spaces
D. Pathways
E. Backbone Cabling
F. Horizontal Cabling

2.2 Outside Plant Pathways

Major Projects

A. Redundant outside plant pathway to connect campus hubs B100 and B1300.

The pathway guidelines for this redundant connection is as follows:

1) Minimum (4) 4" schedule 40/80 conduits from B100 (crossing Soquel Dr.) to B1300.
2) Place in ground pull boxes as necessary for ductbank routing and length. Also place pull boxes to give flexibility to add additional conduits to branch out to new or remodeled campus buildings.

B. The following image below shows a suggested route for the ductbank:

C. New outside plant pathway for newly built or renovated/modernized buildings

This pathway will provide connection for campus telecom cabling from nearest campus hub. The pathway guidelines for these connections are as follows:

1) Provide new pull box just outside of newly built buildings
2) For renovated/modernized buildings, reuse existing entry pull box if possible
3) Minimum (2) 4" schedule 40/80 conduits from building BOF to building entry pull box, then continue to nearest campus duct bank.
2.3 Outside Plant Backbone Cabling

Major Projects

A. Redundant outside plant fiber cabling to connect campus hubs B100 and B1300.

The cable guidelines for this redundant connection are as follows:

1) Minimum 144-strand OSP singlemode fiber, to be confirmed during project start-up

B. New outside plant backbone cabling for newly built or renovated/modernized buildings

This cable will provide connection for campus telecom services from nearest campus hub. The cable guidelines for these connections are as follows:

1) Minimum 48-strand OSP singlemode fiber, to be confirmed during project start-ups

2) Minimum 25-pair OSP copper cabling, to be confirmed during project start-ups

2.4 Telecommunications Spaces

Major Projects

Telecom Rooms for newly built or renovated/modernized buildings will be sized adequately to house the necessary network equipment and future capacity. It shall also have the proper room cooling and electrical distribution.

A. BDF Room

The new BDF Room will be located in the lowest level of the building and will be where incoming site cabling will be terminated. The BDF will also be where backbone cabling to the IDF’s originates. The BDF will also serve as an IDF and will house the following equipment:

- Network Equipment
- OSP Backbone Cabling
- Backbone Cabling Terminations
- Horizontal Cabling Terminations
- Security System Equipment
- Air Conditioning Units
- Electrical UPS

1) Architectural Requirements:

(a) Floor: Static dissipating VCT

(b) Ceiling: Open to structure above, seal fireproofing if existing

(c) Walls: Full height, all walls with fire-retardant plywood

(d) Recommended Door Size: 7'-0" high by 3'-0" wide, no sill, and card key door lock

(e) Finishes: Walls and plywood painted with a low-gloss white paint masked around the fire-retardant labels on the plywood

2) Electrical Requirements

(a) Support a connected load of 30 watts per sq. ft.

(b) Provide dedicated electrical receptacles above the racks for power to PDU’s, UPS’s or active equipment.

(c) The BDF shall have a rack mounted UPS unit. Size the UPS systems to support the minimum campus required runtime.

(d) Provide two vertical rack mount smart PDUs for each Network equipment rack

3) Mechanical Requirements

(a) Support a connected load of 30 watts per sq. ft.

(b) Provide continuous 24x7x365 cooling with local control

(c) Maintain a temperature range between 70 to 76°F
(d) Provide positive pressure and one air change per-hour at a minimum (recommended)

4) Fire Protection
(a) Provide sprinkler heads with protective cages

5) Lighting Requirements
(a) Provide a minimum light level of 50 foot-candles, measured 3'-0" above finished floor
(b) Provide one row of lights at the front of the racks, and one row of lights at the rear of the racks
(c) Provide coves on light fixtures (recommended)
(d) Provide a light switch near the door

6) Bonding Requirements
(a) The BDF’s telecommunications grounding busbar shall be connected to either of the following:
   i. The building’s telecom bonding backbone
   ii. If no telecom bonding backbone exist, then provide telecom bonding conductor and from
      busbar to building steel and nearest electrical panel ground.
(b) Provide bonding conductors from the busbar to the following components within the BDF:
(c) Equipment racks
(d) Vertical and overhead Cable runway
(e) Building steel (if available)
(f) Electrical panel
(g) Conduits and sleeves entering room

7) Telecommunications Requirements
(a) Provide one level of 18" wide cable runway above the equipment racks and around the room. This
    will provide cable routing within the BDF.
(b) Provide minimum (2) 4" riser conduits for backbone cabling to IDF’s.
(c) Provide a minimum of three 19" Wx 7'-0" H two-post equipment racks for core network and access
    network equipment, plus future capacity.
B. IDF Room

The new IDF Rooms will be located so that horizontal cabling will not exceed 295 ft. The IDF will have the same room characteristics as the BDF, but will not need to be as large in size and will not contain OSP backbone cabling termination equipment.

1) See below for sample BDF test fit and layout.

C. IDF rooms in existing buildings

In existing buildings that won’t be renovated, but the cabling infrastructure upgraded, the inadequate IDF rooms will be replaced or updated.

Space will be at a minimum because of retrofitting existing rooms or building in corridors, therefore working
clearances can be met by using doors that swing out for clearance.

1) See below for sample IDF test fit and layout.

2.5 Pathways

Major Projects

Pathways for newly built or renovated/modernized buildings includes ISP backbone cabling pathways, primary horizontal cabling pathways, and secondary horizontal cabling pathways.

A. Intra-building Backbone Cabling Pathways:

1) Refer to the telecom room requirements listed above for backbone cabling pathways information.

B. Primary Horizontal Cabling Pathways:

1) Provide basket-style cable tray as the primary pathway along main corridors above accessible ceiling. Size cable tray based on quantity of cabling and future capacity.

2) Provide conduits as primary pathways above all non-accessible or exposed ceiling areas. Size conduits based on quantity of cabling and future capacity.

3) For secondary pathways above accessible ceilings, provide j-hooks to the primary pathway in areas with
accessible ceilings. In areas with non-accessible or exposed ceilings, homerun device conduits back directly to the primary pathways.

4) For wall outlets, walls require 1-1/4" conduit from the accessible ceiling space to a 5" x 5" x 2-7/8" deep wall box and single-gang ring.

5) Provide floor boxes or poke-thrus for floor outlets, with 1-1/4" conduit from the device stubbed up to the accessible ceiling space.

6) Provide conduit sleeves in locations where cabling passes through full-height walls. Size sleeves based on quantity of cabling and future capacity. Provide firestopping for cable transitions through fire-rated walls and smoke barriers.

Re-use existing building’s ISP pathway wherever possible. Where inadequate, provide new pathways as described above in major project pathways.

2.6 Backbone Cabling

Major Projects

The backbone cabling system for newly built or renovated/modernized buildings includes the copper and fiber backbone cables, termination apparatus, and copper and fiber optic patch cords.

Refer to the college’s telecommunication specific standards for more information on cabling requirements

A. Optical Fiber Backbone Cabling

1) The fiber optic cabling shall be singlemode, and allow the highest bandwidth available at the time of installation, currently projected at 10 Gb/s and 40 Gb/s. Singlemode fiber optic cables shall be terminated with duplex LC connectors and adapter panels. Provide the following:

   (a) One 24-strand singlemode fiber optic backbone cable from the building’s BDF to the IDF’s.

   (b) Rack-mounted fiber optic patch panels for termination of fiber optic backbone cabling. Fiber optic patch panels shall have duplex LC type connectors mounted to standard adapter plates for singlemode terminations. Provide separate fiber shelves for termination of singlemode fiber optic cables.

   (c) Fiber Optic Patch Cords—Furnish one duplex fiber optic patch cord for each active port.

B. Copper Backbone Cabling

1) Provide 25 pair CAT3 cabling from BDF to the IDF’s.

2) Terminate cable on rack-mounted patch panel in the IDF’s.

3) Furnish one Category 6A patch cord for each port on both ends.

In existing buildings where cabling will be updated, the backbone cabling shall follow the requirements as described above in major projects.

2.7 Horizontal Cabling

Major Projects

The horizontal cabling system for newly built or renovated/modernized buildings consists of the following:

A. Cabling will consist of a complete Category 6A solution

B. At the IDF’s, terminate data cabling on rack-mounted 48-port modular patch panels.

C. Rack mount horizontal cable managers.

D. At the outlet, voice and data cabling terminate on Cat 6A 8-pin modular jacks in 2-port faceplates.

E. Patch cords

1) Provide two patch cords per port

F. Preferred manufacturer: CommScope Syntelmax

Refer to the college’s telecommunication specific standards for more information on cabling requirements.

In existing buildings where cabling will be updated, the horizontal cabling shall follow the requirements as described above in major projects.
3. Codes, Standards and Best Practices

Observe the following codes and standards. Include the governing standards and practices of the Authority having jurisdiction (AHJ):

- National Fire Protection Agency (NFPA) – 70 “National Electric Code” (NEC) and 75

- California Code of Regulations (CCR) Title 24, California Building Standards Code Part 2, Basic Building Regulations and Part 3, California Electrical Code (CEC)

- Cabrillo Community College District Information and Communications Technology (ICT) – Telecommunications Standards

- ANSI/TIA/EIA-568-B “Commercial Building Telecommunications Cabling Standard”, and applicable addenda

- ANSI/TIA/EIA-569-A “Commercial Building Standard for Telecommunications Pathways and Spaces”, and applicable addenda

- ANSI/TIA/EIA-606-A “Telecommunications Infrastructure of Commercial Buildings

- ANSI/J-STD-607-A “Commercial Building Grounding and Bonding Requirements for Telecommunications”

- ANSI/TIA/EIA-758 “Customer-Owner Outside Plant Telecommunications Cabling Standard”, and applicable addenda


- FCC Regulations – Part 68 “Connection of Terminal Equipment to the Telephone Network” (as required)