2045 Facilities Plan

COAST COMMUNITY COLLEGE DISTRICT

Coast Colleges Gensler

Introduction

This Coast Community College District 2045 Facilities Plan has been developed as a long-range vision that will guide the District over the future decades. It serves as a guide to explore a range of innovative planning concepts, and to evaluate preferred options to be developed into recommendations through a series of interactive meetings.

This approach ensures that the values of the District's community are an integral part of the planning process.

CONTENT

Letter from the Chancellor

Dear Coast Community College District Community,

One characteristic of a strong organization is its ability to execute on visionary plans. Coast District's ability to execute can be seen, touched, experienced simply by walking its college campuses. Since the first student stepped onto our first campus in 1948, the Coast District has been consistently executing on ambitious and innovative plans for the benefit of future students. Plans related to infrastructure, facilities, and technology are some of the most complex.

Our journey began with Orange Coast College, originally an Army Air Base complete with barracks. Today, we proudly encompass three colleges – Orange Coast, Golden West, and Coastline – across seven sites in six cities. While our first facilities were able to accommodate the first class of 515 daytime and 728 evening students, the founding board of trustees immediately began building and upgrading facilities in order to serve the growth they knew was coming. In our last full academic year, our student population was just over 50,000, with 13,499 of those attaining their associate's degree or Career Education certificate. We are proud to serve as an economic engine for Orange County, not only by transforming the lives of students but by supplying local businesses with an educated workforce and bolstering the economy as employers.

The facilities necessary to serve this population would not have been possible without the support of our local community through the passage of two bond measures. In 2002, the voters approved Bond Measure C at $370M. Ten years later, that support was reinforced through the approval of Bond Measure M for $698M.

We owe it to the visionary planners who gave us the Coast District we see today, as well as to our future students and the broader community we serve, to plan for the coming decades. This includes anticipating changes in technology, developing career programs we cannot currently imagine, designing flexible classrooms, and creating more welcoming and energy efficient facilities. A forward-thinking, innovative approach remains our culture. In that spirit, I introduce the Coast Community College District 2045 Facilities Plan, a product of our governance processes and a work that builds on our legacy.

Sincerely,
Whitney Yamamura, Ed.D.
Chancellor, Coast Community College District

2025 Chancellor's Goals

1 Provide a safe and secure learning environment for students, faculty, and staff

- *Upgrade safety and security technologies, lighting, signage, communications and utility infrastructure including a coordinated effort to implement building access control, security cameras, and emergency notification systems, in preparation for future emergencies.*

2 Focus on student success and equity

- *Adopt best practices to close equity gaps in outcomes*
- *Strengthen responses to student health, food and housing insecurity, Veterans, and DEIAA needs*

3 Maintain fiscal integrity

- *Increase alternative sources of revenue*
- *Reduce overall space to align utilization with standards established by Ed Code*
- *Maximize flexibility in order to adapt and serve future student needs*
- *Replace inefficient spaces with cost effective interior and exterior spaces*
- *Evaluate capital decisions based on long-term operational impacts and resources*
- *Reduce overall energy demand and expand renewable energy supply*

4 Stabilize enrollments

- *Establish new programs that meet educational needs and draw students*
- *Improve accessibility and increase retention*

5 Leverage educational technology to support post-pandemic learning

- *Support technological innovation at each College*
- *Enhance the operational integrity and security of Information Services*
- *Provide infrastructure to support workplace and instructional flexibility and wireless connectivity*

COASTLINE COLLEGE

Coast Colleges Gensler

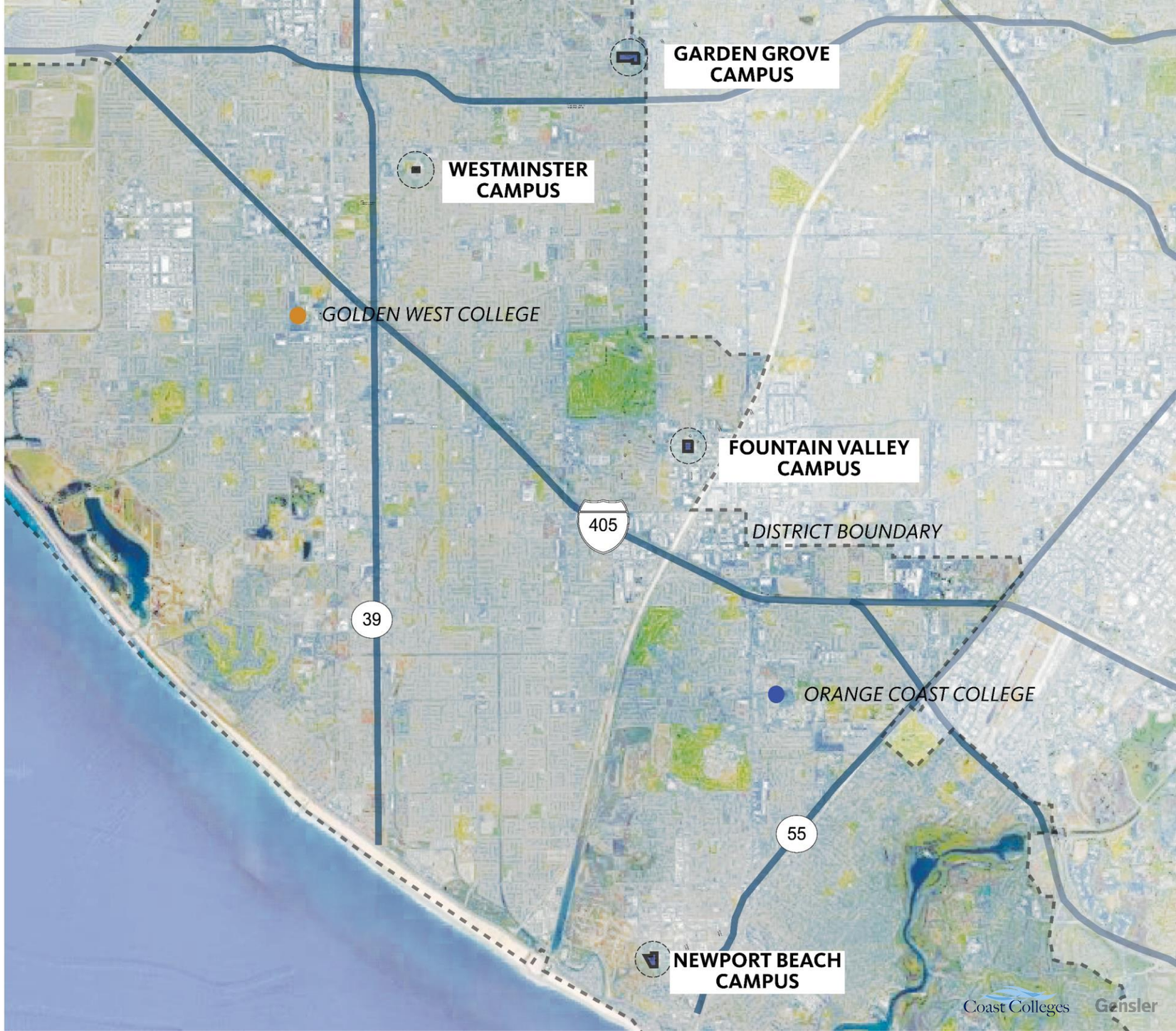
COASTLINE COLLEGE
College Today

Coastline College is part of the Coast Community College District, a multi-college district that also includes Golden West College and Orange Coast College.

Coastline College is designed as a distributed college model, with four campuses:

- Fountain Valley Campus
- Garden Grove Campus
- Westminster Campus
- Newport Beach Campus

Each of these campuses is described on the following pages.



COASTLINE COLLEGE
Facilities Planning Principles

Following the extensive analysis of qualitative and quantitative information, the Planning Team worked closely with the Task Force to develop a set of Facilities Planning Principles. These principles were developed to guide discussions related to site and facilities improvements and led to the development of the recommendations presented in this Facilities Plan.

The five principles are the key drivers that led to the Facilities Plan recommendations and serve as a touchstone for the future development of the campus. They provide the framework for identifying the required improvements to the campus environment, facilities and infrastructure that are articulated in the following section.

COASTLINE COLLEGE
Facilities Planning Principles

STUDENT SUCCESS

- Develop spaces to support innovative teaching, learning and success
- Design equitable and accessible spaces that support all learners and educators
- Increase access to student support services

CAMPUS LIFE

- Develop areas to support collaboration, clubs, affinity groups, and activities
- Provide food options and areas for dining
- Create opportunities for employee and student wellness
- Ensure campus safety for all

COMMUNITY ENGAGEMENT

- Increase visibility within the communities
- Enhance opportunities for partnerships
- Welcome the community into each campus

EFFECTIVE & EFFICIENT

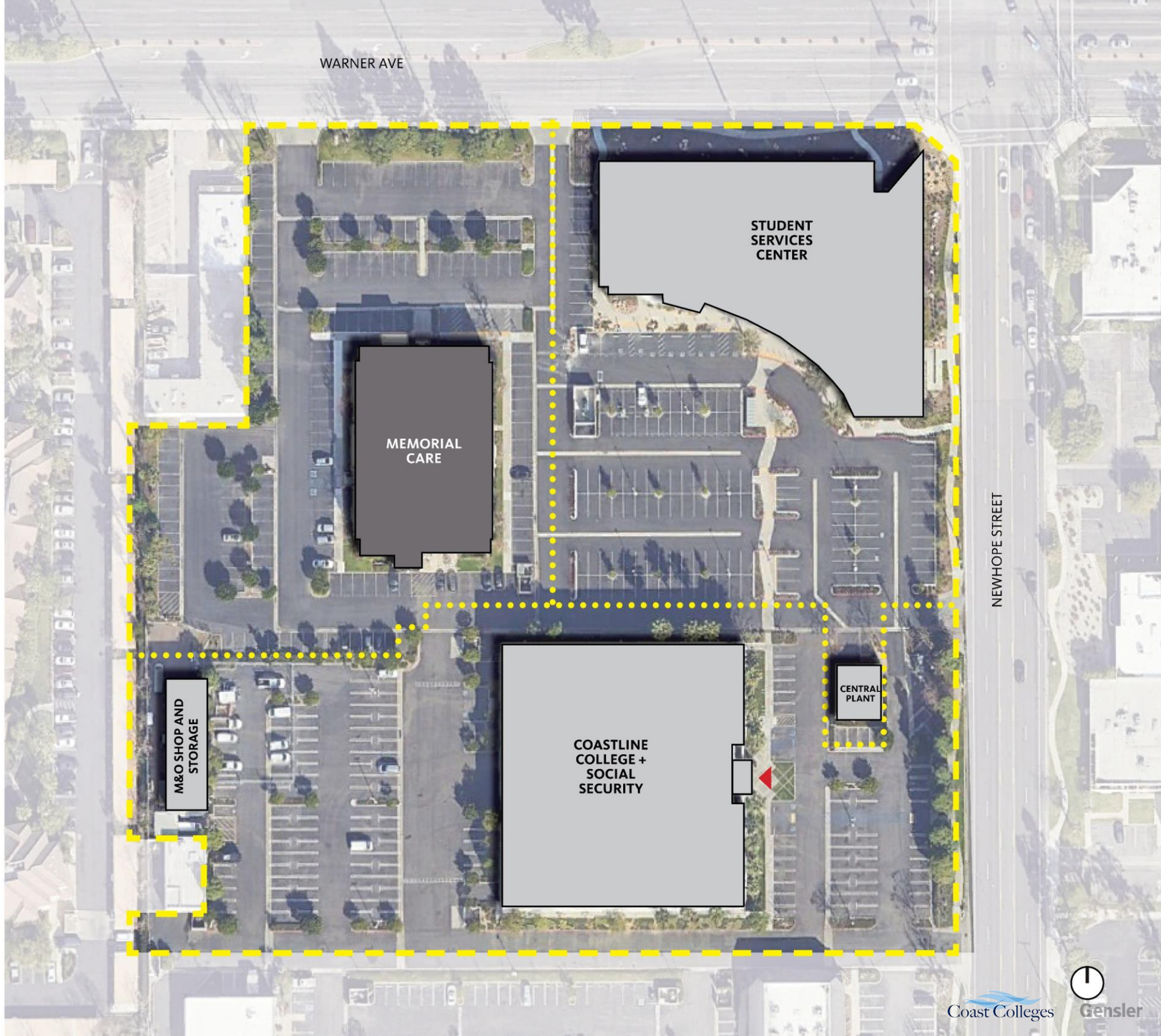
- Align existing space to support college priorities and goals
- Improve scheduling and room utilization of existing space
- Design multi-use spaces to support a variety of activities
- Ensure campuses are technologically current and future proof

STEWARDSHIP OF RESOURCES

- Optimize all available resources for specific facilities
- Leverage physical and virtual space
- Increase awareness and create a culture of sustainability
- Ensure facilities planning account for total cost of ownership

COASTLINE COLLEGE
Fountain Valley Campus

The Fountain Valley Campus is located at the southwest corner of Warner Avenue and Newhope Street and occupies 2 of the 3 land parcels owned by the District. The remaining parcel is developed under a long-term ground lease providing on-going revenue to the District and is currently occupied by Memorial Care Medical Group and Urgent Care.

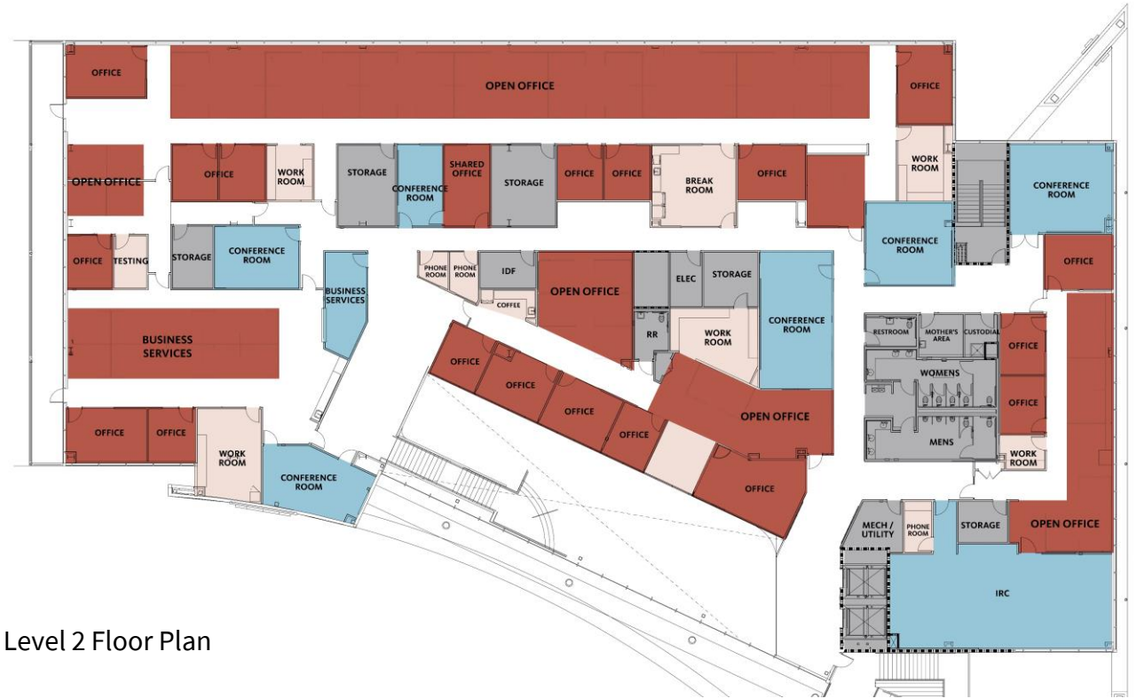


Coast Colleges Gensler

COASTLINE COLLEGE
Fountain Valley Campus

Recommendations for improving the Fountain Valley Campus support the Facilities Planning Principles and focus on these strategies:

- Enhance collaboration and improve utilization of spaces,
- Increase visibility of campus within the neighborhood and community,



Level 2 Floor Plan

Level 1 Floor Plan

- INSTRUCTIONAL
- OFFICE
- RESOURCE / SUPPORT
- LOUNGE / WORKROOM
- DATA / STORAGE / UTILITY

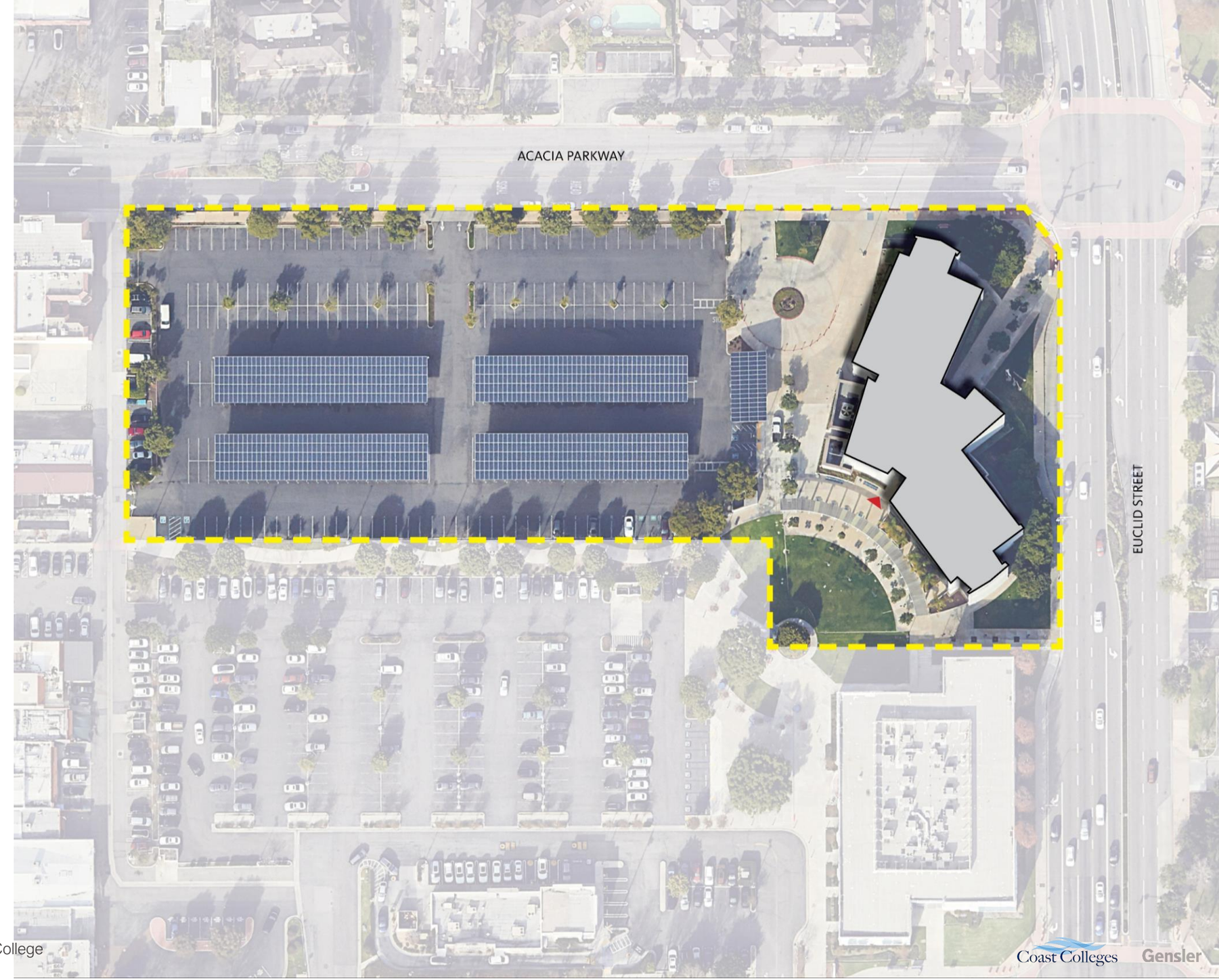
Coast Colleges Gensler

COASTLINE COLLEGE
Garden Grove Campus

The Garden Grove Campus is located at the southwest corner of Acacia and Euclid Streets in the City of Garden Grove. The College occupies the 3-story building located on the northeast corner of the site. The remainder of the site is allocated to surface parking.

Recommendations for improving the Garden Grove Campus support the Facilities Planning Principles and focus on these strategies:

- Develop spaces to support innovative learning and success
- Develop areas to support collaboration and activities
- Provide food options and areas for dining
- Support health and wellness
- Improve utilization of indoor and outdoor space
- Activate the Garden Grove Center to enhance community engagement



COASTLINE COLLEGE
Garden Grove Campus

Level 1 Floor Plan

- INSTRUCTIONAL
- OFFICE
- RESOURCE / SUPPORT
- LOUNGE / WORKROOM
- DATA / STORAGE / UTILITY

Level 3 Floor Plan

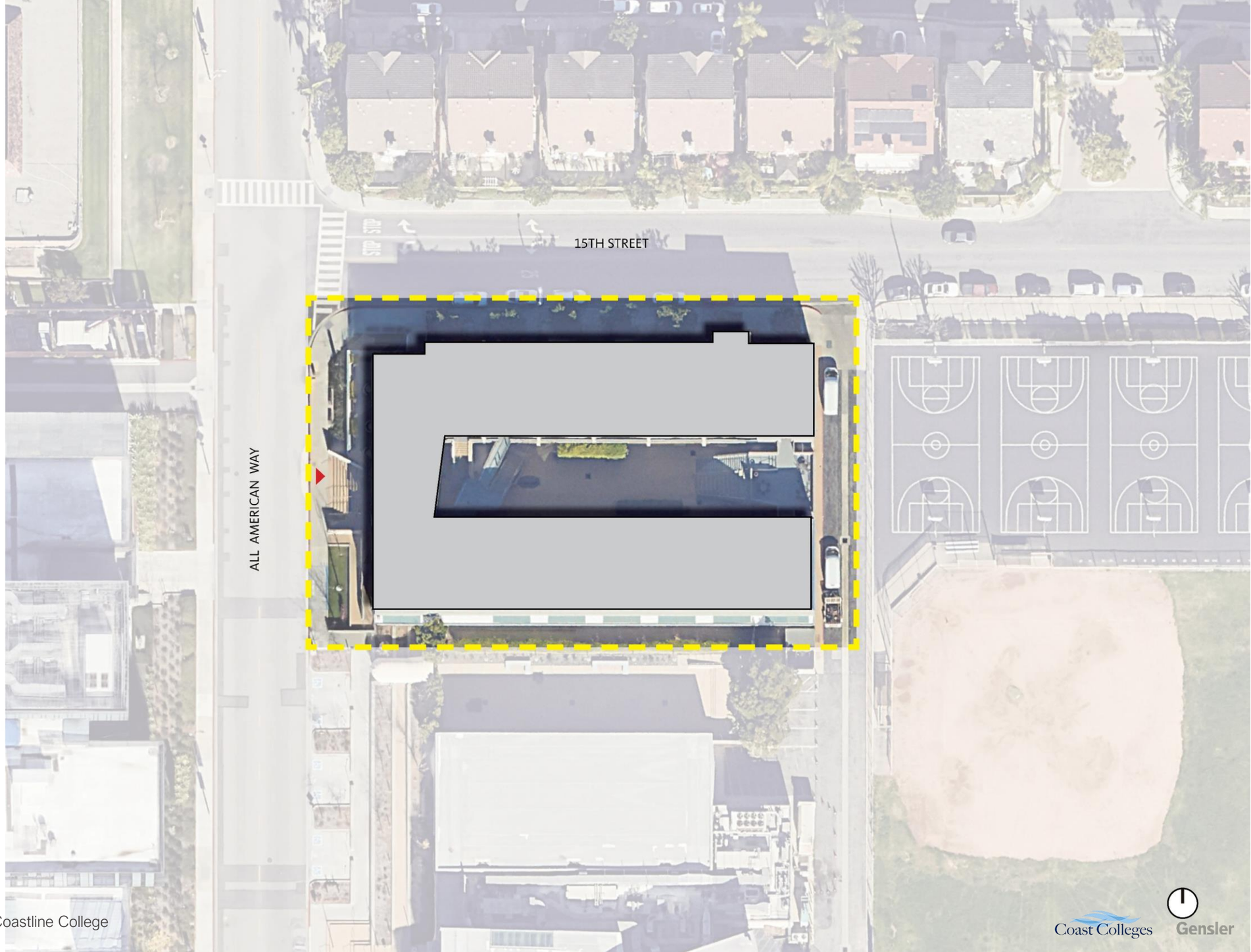
Level 2 Floor Plan

Coast Colleges Gensler

COASTLINE COLLEGE
Westminster Campus

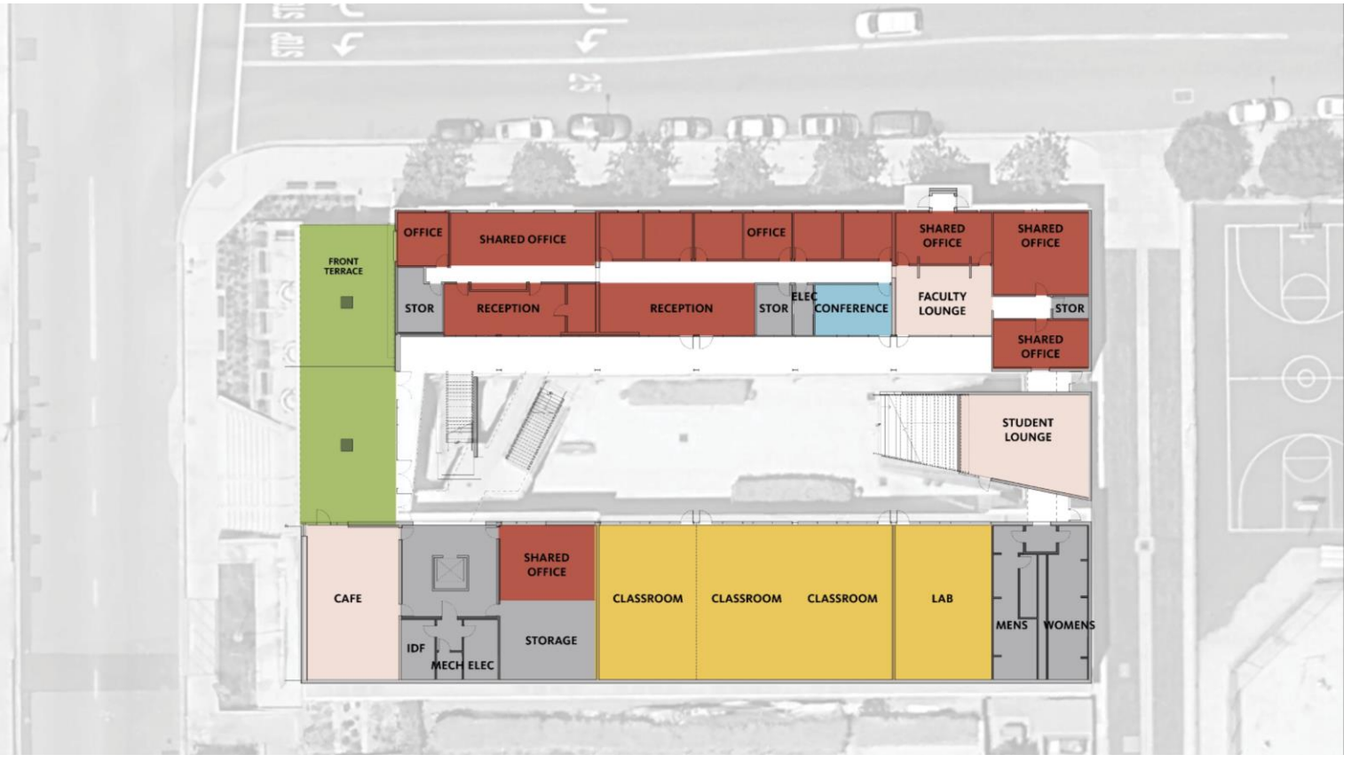
Recommendations for improving the Westminster Campus support the Facilities Planning Principles and focus on these strategies:

- Develop areas to support collaboration and activities
- Provide food options and areas for dining
- Support health and wellness
- Improve utilization of indoor and outdoor space
- Explore opportunities for off-site parking

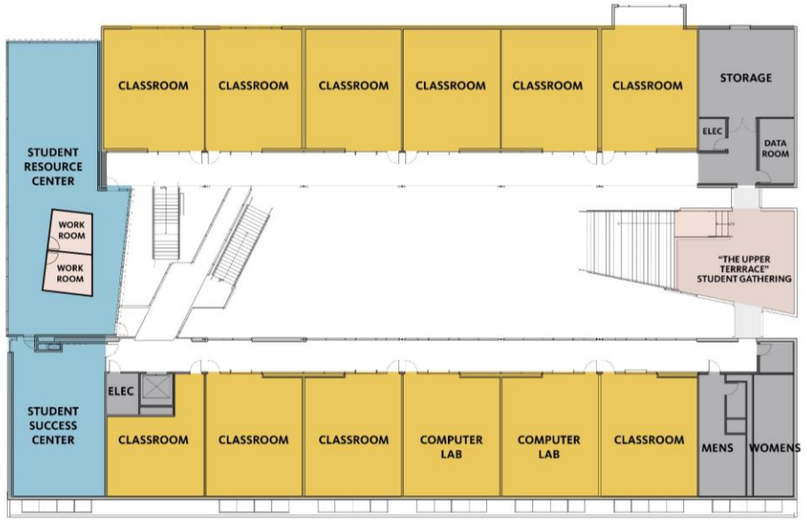


Coast Colleges Gensler

COASTLINE COLLEGE
Westminster Campus



Level 1 Floor Plan



Level 2 Floor Plan

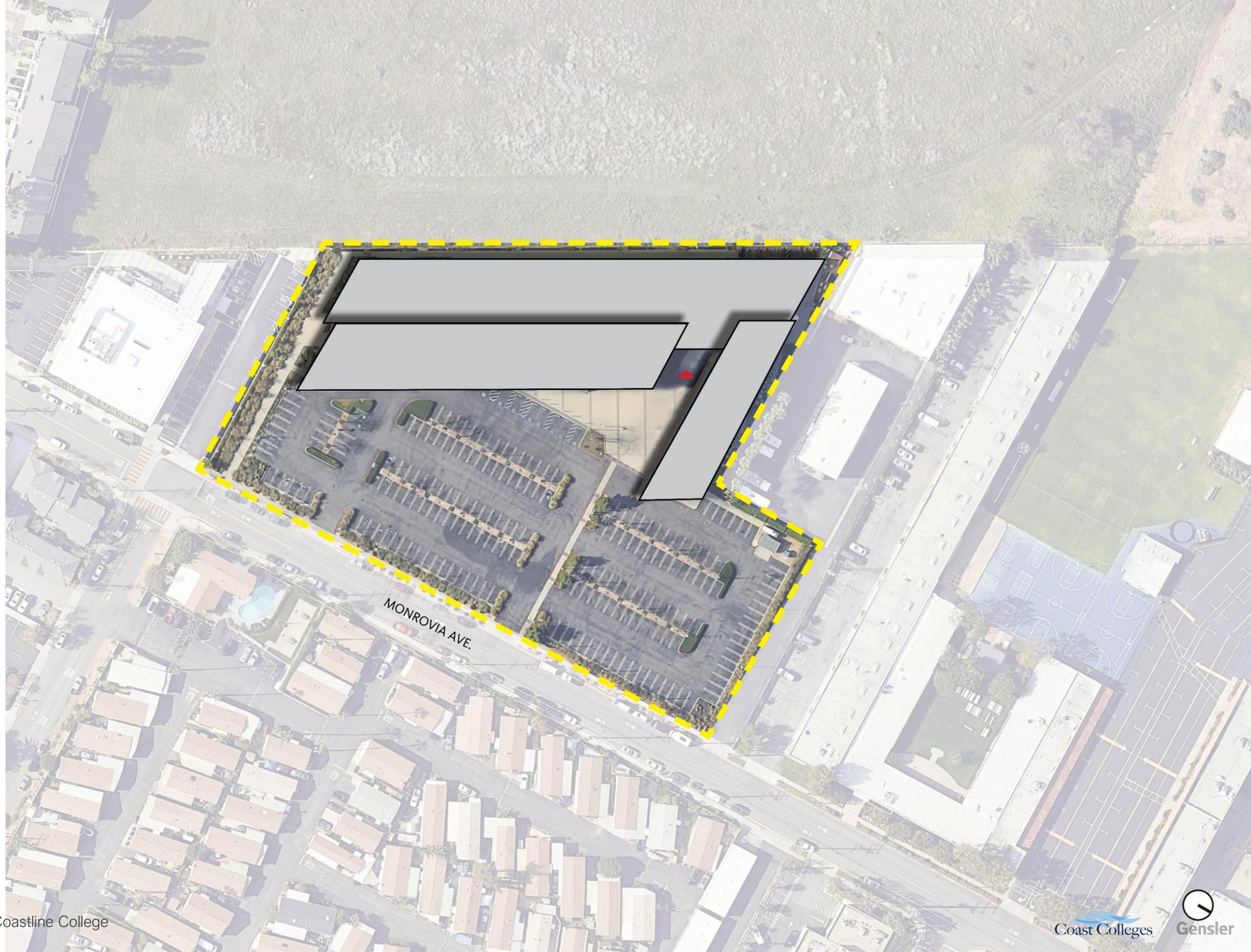
- INSTRUCTIONAL
- OFFICE
- RESOURCE / SUPPORT
- LOUNGE / WORKROOM
- DATA / STORAGE / UTILITY
- TERRACE / OUTDOOR SPACE

Coast Colleges Gensler

COASTLINE COLLEGE
Newport Beach Campus

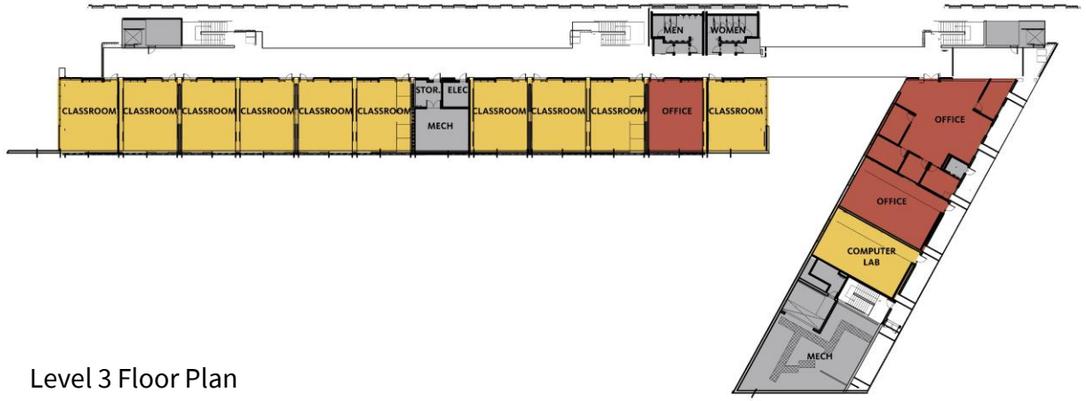
Recommendations for improving the Newport Beach Campus support the Facilities Planning Principles and focus on these strategies.

- Increase access to student support services
- Provide food options and areas for dining
- Improve scheduling and utilization of space
- Leverage campus to support College events and activities
- Improve building systems and controls for increased efficiency and user comfort
- Explore partnership and expansion opportunities with adjacent open space

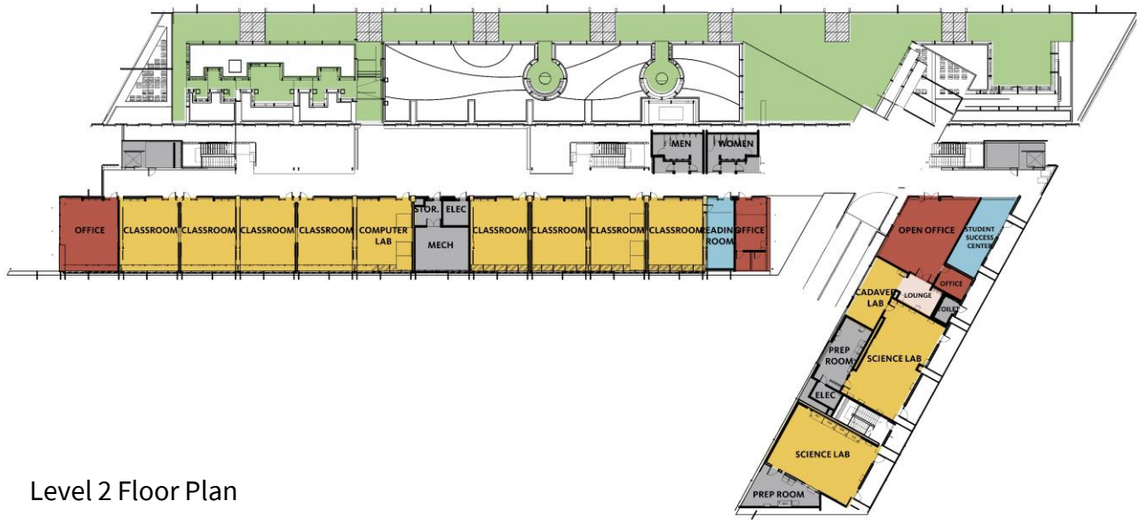


COASTLINE COLLEGE
Newport Beach Campus

Level 1 Floor Plan



Level 3 Floor Plan



Level 2 Floor Plan

- INSTRUCTIONAL
- OFFICE
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Coast Colleges Gensler

GOLDEN WEST COLLEGE

GOLDEN WEST COLLEGE
Campus Today

Golden West College (GWC) is located in Huntington Beach in northwestern Orange County. The county is bordered by the ocean to the west and four larger counties: Los Angeles to the north, San Bernardino to the northeast, Riverside to the east, and San Diego to the south.

The planning process included the analysis of existing conditions to identify the key planning issues to address. The information was based on engagements with college students, faculty, classified professionals, and discussions with workgroups.

The existing campus conditions shown in the graphic illustrates the facilities in construction or construction zones, and existing buildings in use.

GOLDEN WEST COLLEGE
Facilities Planning Principles

Extensive analyses of qualitative and quantitative data inform the Facilities Planning Principles.

Facilities Planning Principles summarize the issues and dreams of GWC faculty, classified professionals, students, and administrators and describe how site and facilities improvements will support the Chancellor's Goals. These principles were used to guide discussions related to site and facilities improvements over the coming decades.

These six principles were developed collaboratively with the 2045 Facilities Plan Task Force and align with GWC's commitment to student success and equity. The principles serve as the key drivers for the site and facilities recommendations presented later in this chapter.

GOLDEN WEST COLLEGE
Facilities Planning Principles

STUDENT FIRST

- Develop campus to support the needs of each student
- Increase the presence and availability of tutorial and counseling services
- Develop spaces to encourage student/faculty interaction
- Develop site and facilities to keep students on campus
- Create healthy, safe and comfortable campus environment
- Create equitable student experiences
- Improve classroom experiences

PRIDE OF OWNERSHIP

- Establish a GWC brand identity
- Create logical groupings and adjacencies of programs and services
- Integrate instruction and student support services
- Enhance a sense of belonging + pride

ACCESS & PATHWAYS

- Develop welcoming + inviting campus entries
- Improve campus organization to enhance wayfinding
- Improve connections to all areas of the campus
- Create spaces to engage the internal and external communities

EFFECTIVE & EFFICIENT

- Align facilities to support College Goals
- Address outdated facilities to enhance ownership and pride
- Replace inefficient and underperforming facilities
- Right-size facilities to support program needs and improve utilization
- Develop flexible, multi-purpose, and timeless space to adapt over time
- Develop spaces to support both virtual and in-person instruction and support services

STEWARDSHIP OF RESOURCES

- Optimize utilization of all facilities, including rentals
- Maximize land use to support College Goals
- Implement campus-wide sustainability design strategies
- Increase resources through partnerships and collaborations
- Maximize state and private funding opportunities
- Plan and implement Total Cost of Ownership strategies
- Focus on fiscal stewardship

COMMUNITY ENGAGEMENT

- Increase visibility of GWC to the communities
- Welcome the communities into the campus
- Bring the College to the communities
- Expand opportunities for students by partnering with community agencies and businesses

GOLDEN WEST COLLEGE
2045 Facilities Plan

The 2045 Facilities Plan presents an overall picture of the future developed campus and includes recommendations for new construction, building renovations, and site development projects. The drawings represent a conceptual layout of the buildings and their site surroundings that highlight the location and purpose of the proposed improvements.

Modernization work is recommended for facilities where a significant change is not highlighted, and is needed, so that Golden West College will accomplish the following objectives:

- Repairs and upgrades for safety and accessibility
- Upgrades of technology systems
- Renewing of finishes, furniture and equipment
- Upgrades for sustainability

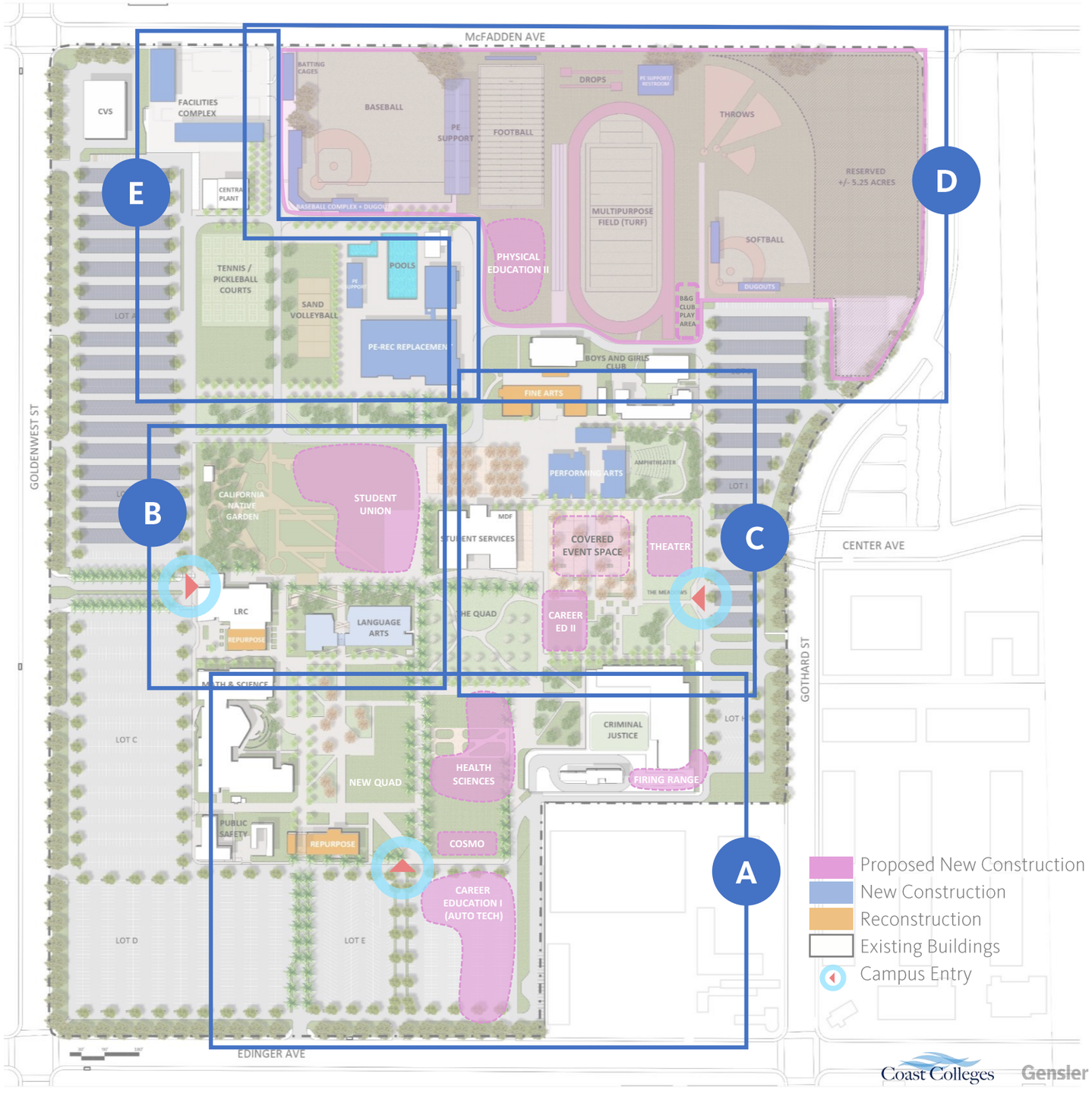
GOLDEN WEST COLLEGE
2045 Facilities Plan

The project list summarizes the major facilities projects highlighted in the Facilities Plan.

NEW CONSTRUCTION
- PE Rec Replacement + PE Support
- Performing Arts Complex
- Facilities Complex
- Student Union
- Community Theater
- Career Education I
- Career Education II
- Health Sciences
- Criminal Justice Expansion (Firing Range)
- Cosmetology
- Physical Education II

RECONSTRUCTION
- Fine Arts Renovation
- Learning Resource Center (partial)
- Nursing + Health (repurpose)

SITE DEVELOPMENT
- PE Field Improvements + Athletic Support



Coast Colleges Gensler

GOLDEN WEST COLLEGE
2045 Facilities Plan

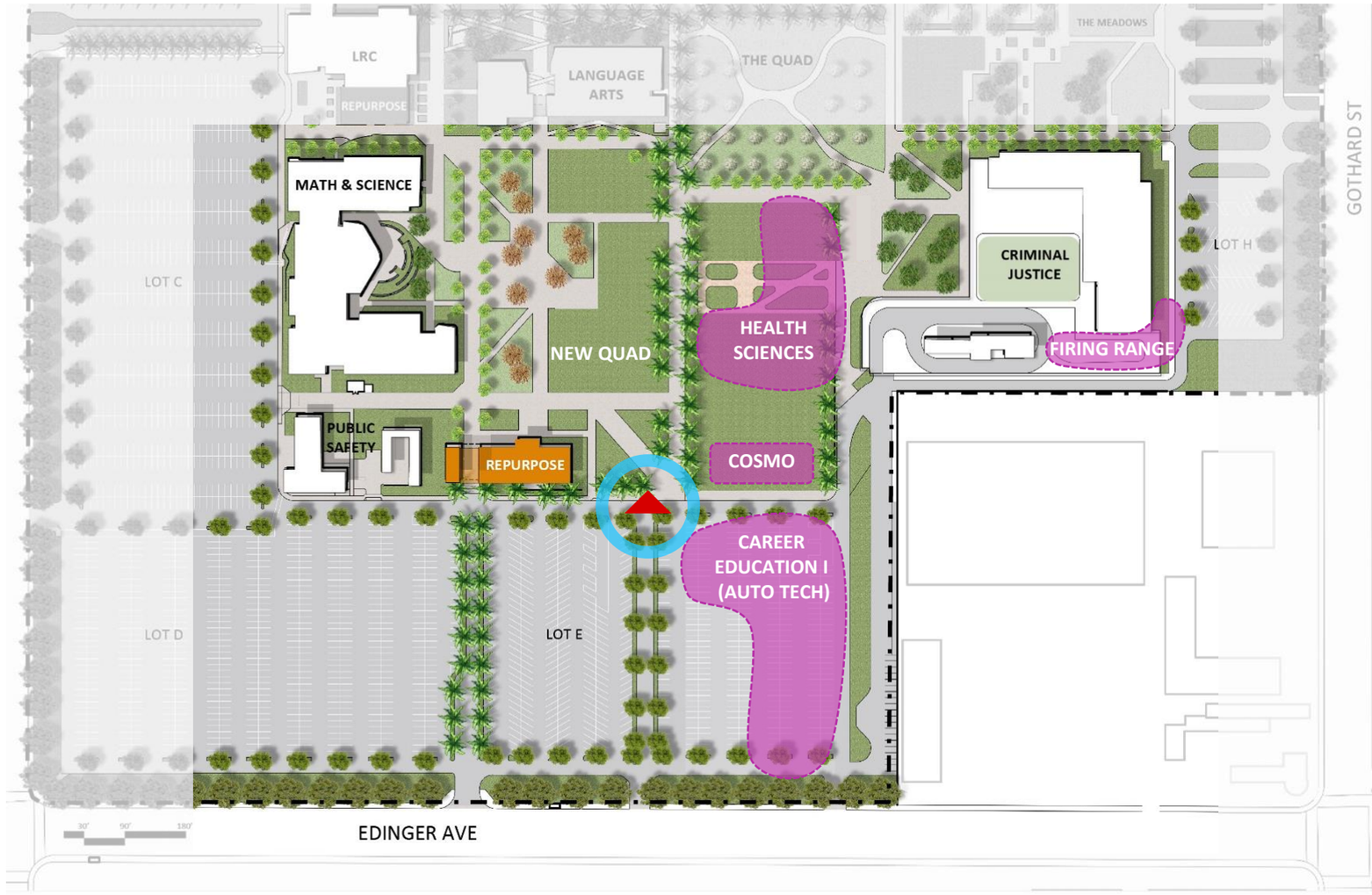
A

Health Sciences
A new Health Sciences building is proposed to be adjacent to the Criminal Justice Building, once the existing Forum, Business and Administration buildings are removed. The new building will create an expanded new quad connecting with the Math & Science building, and is planned to replace the existing Nursing Building with an expanded program to include Health Sciences.

Cosmetology
A new Cosmetology building is planned to be located adjacent to the Health Sciences and Career Education I buildings, providing important programmatic adjacencies at a primary entry point to campus and allowing public-facing community access.

Career Education I
A new Career Education Building is planned to replace aged and underperforming facilities and be sized to support program needs. The new building will include classrooms and interdisciplinary labs and offices to support career education programs, including functions currently located in the Automotive Technology, Technology and Cosmetology Buildings.

Nursing + Health (Repurpose)
The existing Nursing Building is proposed to be renovated and repurposed after the program moves into the new Health Sciences Building. This building will support adjacent instructional program needs and serve as an entry point into the campus.



Coast Colleges Gensler

GOLDEN WEST COLLEGE
2045 Facilities Plan

B

Student Union
A new Student Union Complex is planned to replace the aging Student Union/Cafeteria and Bookstore Buildings. The complex will be reconstructed in the same general location, along the primary east-west pedestrian corridor, adjacent to the core student support services located in the LRC and Student Services Center.

The new complex will be designed to support a variety of functions in a welcoming environment that supports collaboration, enhances student engagement and strengthens the sense of belonging to the GWC community. In addition to replacing the functions planned for removal, the complex will house flexible, multi-purpose spaces to support a variety of activities, including large meetings and events.

Learning Resource Center Renovation
The existing Learning Resource Center is planned to be partially renovated to repurpose existing programs that will move into the new construction on campus. The renovated space could potentially house IT, HR, and/or Marketing.

GOLDEN WEST COLLEGE
2045 Facilities Plan

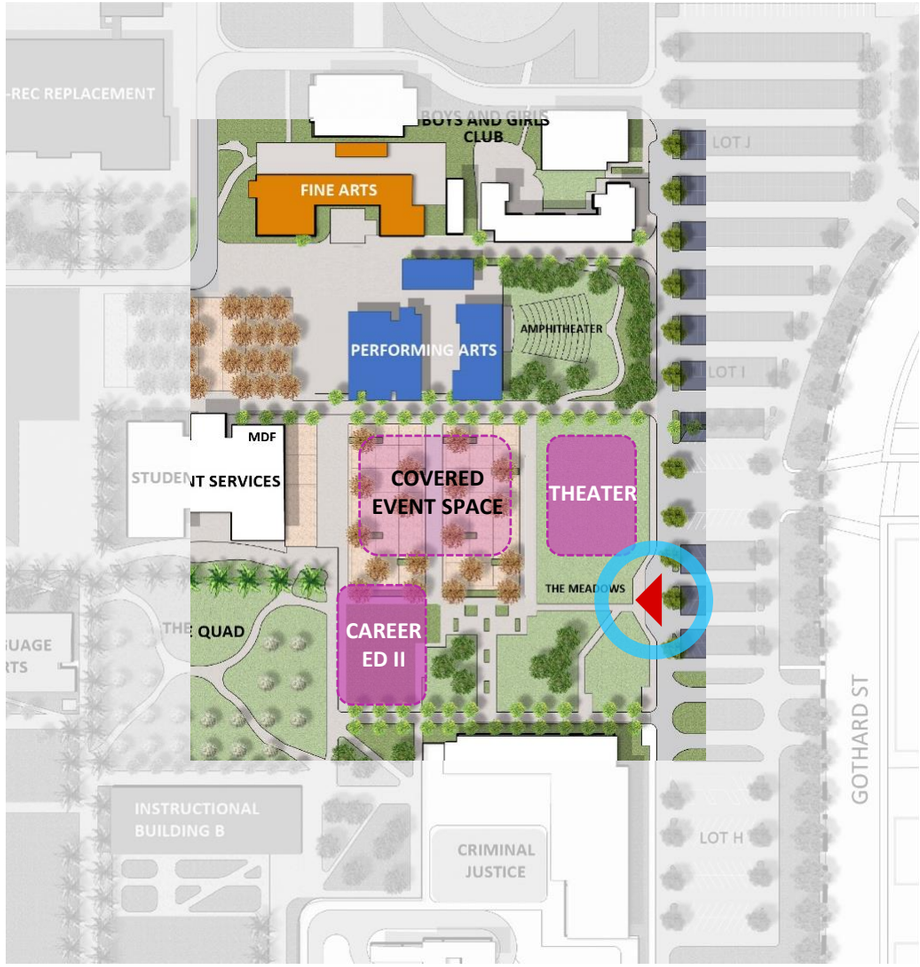
C

Performing Arts Complex
A new home for Performing Arts is proposed to replace functions currently located in the Music, Communications and Forum II Buildings along with a new Art Gallery. Strategically located between the Fine Arts and Theater Buildings, it will become the centerpiece of the new Arts Zone of the GWC campus. The new facility will be accessed from the network of pedestrian paths it connects to, and will frame a new Arts Plaza. The east side will open to the Amphitheater which is proposed to be improved to support a variety of formal and informal uses.

Community Theater
A new Theater proposed to replace the existing theater with adjacent open space and covered event space. When completed, the building will be up to date with technology, systems and other required upgrades.

Career Education II
A new Career Education Building is planned to replace aged and underperforming facilities and be sized to support program needs. The new building will include classrooms and interdisciplinary labs and offices to support career education programs, including functions currently located in the Automotive Technology, Technology and Cosmetology Buildings.

Fine Arts Renovation
A major renovation is proposed for the existing Fine Arts Building to address a number of building deficiencies and support current and projected program needs. When completed, the building will be transformed into an open, light-filled, environment that will celebrate the arts, attract students and encourage them to spend time there. Flexible and innovative design will leverage all areas of the building, maximize indoor and outdoor connections and improve the efficiency and utilization of space.



Coast Colleges Gensler

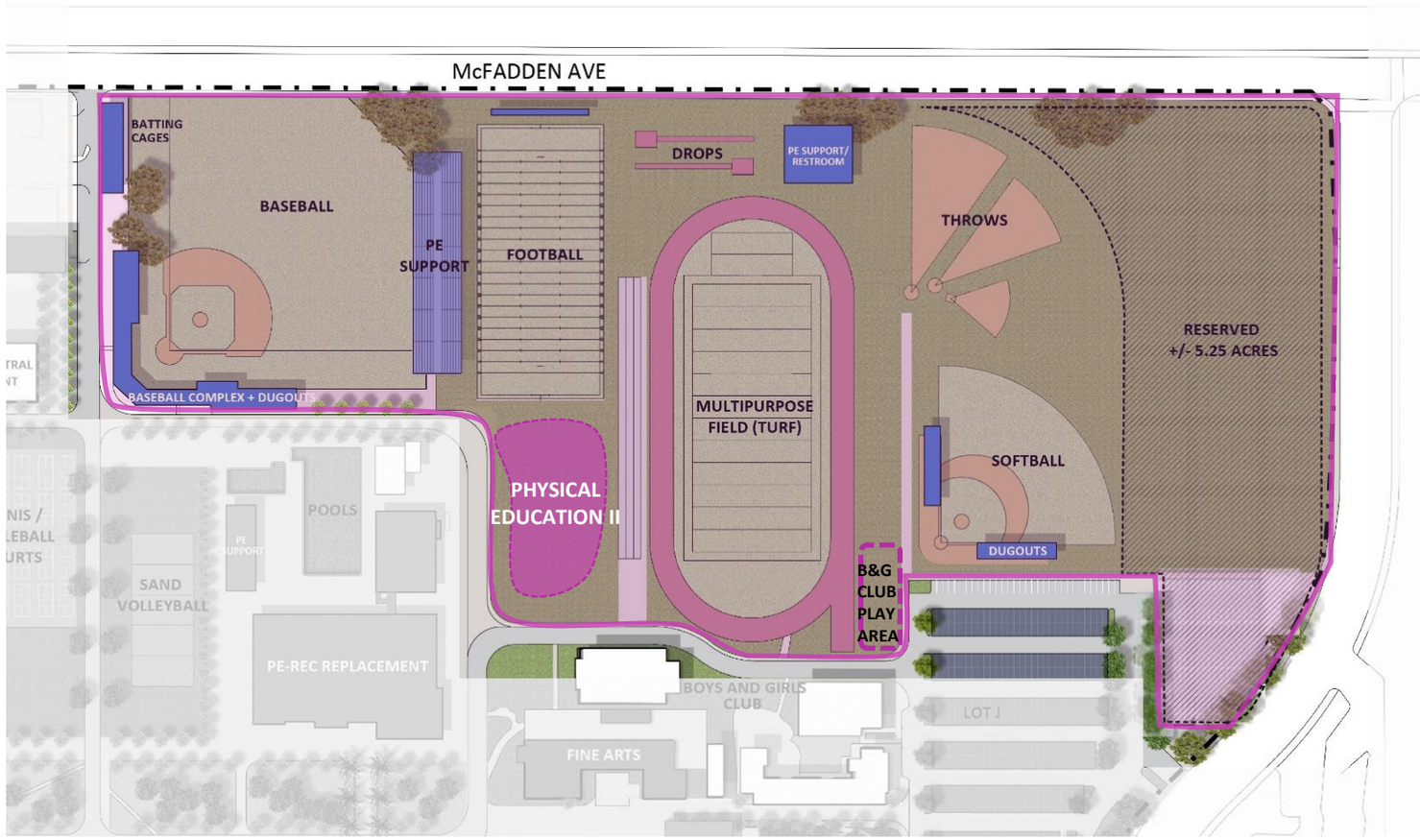
GOLDEN WEST COLLEGE
2045 Facilities Plan

D

PE Field Improvements + Athletic Support
The second PE facility is proposed as a Recreation/Fitness Center to support a variety of programs and activity spaces and complement the surrounding building uses. A public entry is planned on the northwest corner, connected to the gateway plaza and along the east-west pedestrian pathway.

The PE Fields are reconfigured to improve land utilization and support program needs. Proposed improvements include the addition of a Football Field on the east side of the Track & Field and an area for field throwing sports on the north side along McFadden. Consideration for the use of artificial turf will be determined as projects are funded and designed.

A new building is proposed to support the multiple activities planned for the northeast zone of the campus. The proposed location is between the Track & Field and new Football Field and will include bleacher seating facing both east and west directions above enclosed PE support spaces such as restrooms, locker rooms, team rooms and equipment storage.



Coast Colleges Gensler

GOLDEN WEST COLLEGE
2045 Facilities Plan

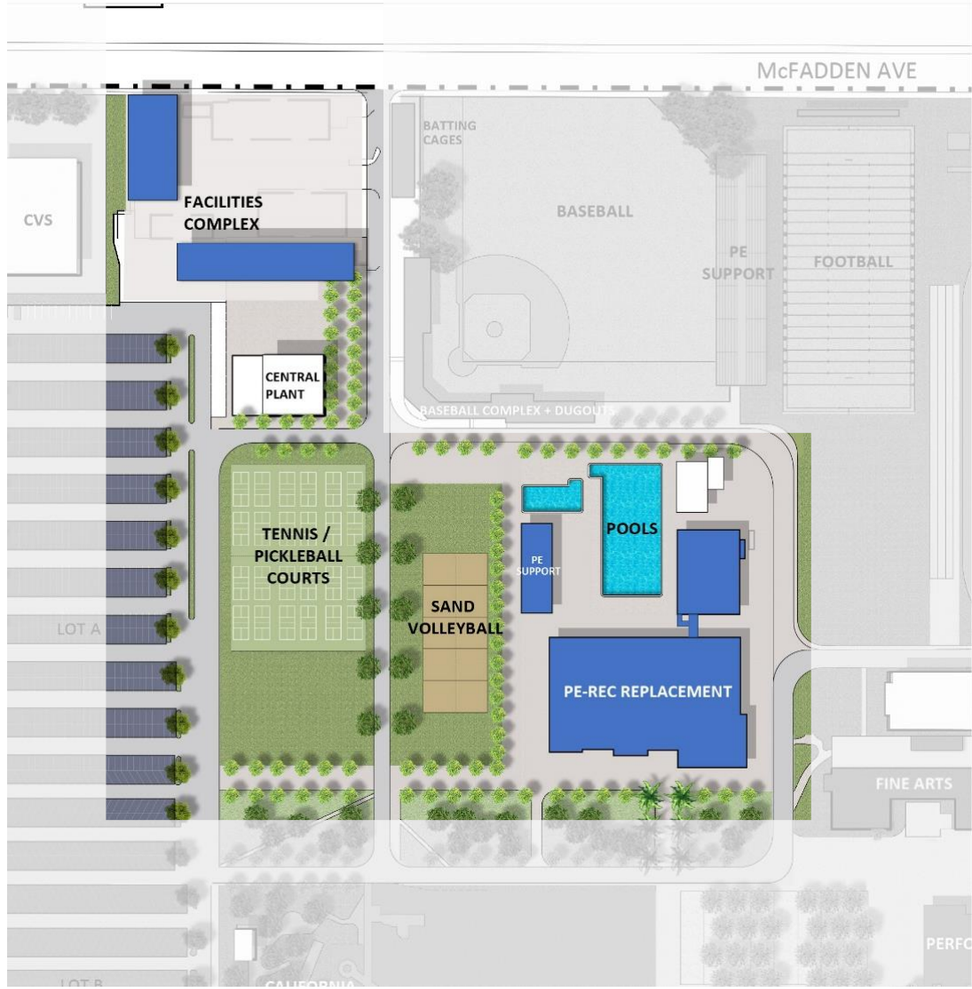
E

PE Rec Replacement + PE Support
A new facility is proposed to replace the aged and underperforming Recreation Education/Gymnasium and Locker Room Buildings. This building will be part of a larger Physical Education Complex that will be designed to support the current and projected program needs.

The proposed location places the new building adjacent to the existing pools and creates a welcoming access point from the campus core along Main Street. Community members visiting the pool will be welcomed from the parking area, through the new gateway plaza and along the newly developed east-west pathway.

Facilities Complex
A new Facilities Complex is proposed to house functions currently located in the Maintenance and Operations Buildings that are planned for removal. The new complex is planned to be reconstructed in the same location to leverage the existing vehicular entrance at McFadden Avenue and the important adjacency to the Central Plant.

A complex of efficient indoor and outdoor spaces will be developed to support the program needs while minimizing disruption and limiting the need for swing space. Secured outdoor areas for receiving/loading and yards for multiple operations will be developed.



Coast Colleges Gensler

GWC Appendix

CONTENTS

GWC MEP UTILITIES ANALYSIS REPORT
Electrical System Analysis

Introduction and Background

Golden West College is undergoing a period of significant expansion, with multiple new facilities and buildings planned. In support of this growth, Gensler has been engaged to develop a comprehensive Facilities Plan that will guide future development. As part of this planning process, a thorough evaluation of the existing mechanical, plumbing, and electrical utilities is being undertaken. The purpose of this analysis is to determine whether the current utility infrastructure has sufficient capacity and reliability to support the anticipated demands of the proposed developments, and to identify any necessary upgrades or enhancements to ensure long-term operational efficiency.

Existing System

The existing main distribution system on the campus is serviced by Southern California Edison. It receives an underground service that operates at 12 (KV). The existing main distribution is located outdoor on the north side of the campus.

The existing main distribution consists of a main breaker rated at 1200A, three (3) branch circuit breakers, and three (3) 15 KV feeders. Feeder 1 and 2 serves several load centers with a selector switch. Feeder 3 serves a transformer rated at 2000 KVA at 12 KV-4160/2400 V. The 2000KVA transformer feeds a load center with a 5 KV switch and distributed to several load centers.

The existing electrical power distribution is shown on Figure 1 and is based on the as-built drawings.

Figure 1: Existing 12KV and 4.16KV Power Distribution System

GWC MEP UTILITIES ANALYSIS REPORT

Electrical System Analysis

Analysis

The campus had a peak demand of 2,630 KW (3,288 KVA) in 2024. Table 1 [Appendix 1] provides an electrical load analysis of buildings on campus. It includes existing buildings to remain, existing buildings to be demolished, new facilities currently in design, and new facilities planned.

Table 1: Electrical System Analysis

CAMPUS UTILITY LOAD SUMMARY					
Bldg #	BUILDING NAME	EXISTING GSF	EXISTING ASF	YEAR BUILT	KVA
EXISTING BUILDINGS					
4	Administration	32,604	29,544	1966	65
14	Auto Technology	31,720	29,432	1967	63
91	Bookstore	8,251	7,175	1966	17
39	Boys/Girls Club Child Dev	8,750	7,657	2011	18
3	Business	15,687	12,511	1966	31
13	Facilities Office	14,403	13,838	1969	29
35	Central Plant	8,850	5,194	2007	62
5	Communication	8,103	6,510	1966	16
20	Community Theater	27,419	22,301	1971	55
13	Facilities Office	14,403	13,838	1969	29
16	Cosmotology	12,243	10,816	1969	24
33	Criminal Justice Annex	2,150	1,826	2001	4
8	Fine+App Arts	40,472	33,426	1966	81
17	Forum 2	7,300	4,998	1971	15
2	Forum One	11,398	8,364	1966	23
38	Library/LRC	55,251	40,505	2011	221
37	Math & Science	122,747	76,577	2019	491
10	Mens Phys Ed	16,180	12,897	1966	32
6	Music	11,911	10,896	1966	24
95	New Criminal Justice Center	43,636	30,132	2018	87
36	Nursing & Health Serv	25,815	17,223	2008	52
26	Old Criminal Justice Center-TRN	11,583	8,941	1981	23
18	PE-Rec	44,796	41,895	1971	90
93	Pub Safety/Community Ed	5,950	3,717	2016	12
96	Student Services Center	48,894	29,680	2018	147
92	Student Union	15,225	14,791	1966	30
19	Technology	31,570	27,176	1971	174
25	Wellness Center	4,418	4,331	1979	9
11	Womens Phys Ed	8,720	6,469	1966	17
	Sub-Total	**690,449**	**532,660**		**1,941**
EXISTING BUILDINGS TO BE DEMOLISHED					
4	Administration	32,604	29,544	1966	65
91	Bookstore	8,251	7,175	1966	17
3	Business	15,687	12,511	1966	31
13	Facilities Office	14,403	13,838	1969	29
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19	Technology	31,570	27,176	1971	174
11	Womens Phys Ed	8,720	6,469	1966	17
	Sub-Total	**242,957**	**203,075**		**530**
PROPOSED PROJECTS					
x	Facilities Complex	23,353		X	47
X	Instruction Building A	32,604		X	65
X	Instruction Building B	13,540		X	27
X	Performing Arts	40,472		X	81
X	Career Education	31,570		X	63
X	Phyiscal Education-1	44,144		X	88
X	Physicall Education-2	44,796		X	90
X	Studen Housing	11,825		X	83
X	Student Union & Coffee Shop	1,200		X	2
	Sub-Total	**220,151**			**499**
TOTAL FUTURE ELECTRICAL LOAD SUMMARY					
	Existing Building Area	**690,449**		**1,941**	**KVA**
	Demolished Building Area	**242,957**		**-530**	**KVA**
	Proposed Projects	**220,151**		**499**	**KVA**
	Total Future Campus Area/Load	**1,153,557**		**1,910**	**KVA**
	Total Future Campus Area (Amps)			**92**	**A**
	Existing Main Breaker			**1,200**	**A**

GWC MEP UTILITIES ANALYSIS REPORT
Electrical System Analysis

Analysis

Based on the analysis in Table 1, it appears that the existing electrical system has adequate capacity to accommodate new facilities proposed in this facilities plan. New transformers and feeders will be provided to proposed new buildings. New feeders will be connected to the nearest existing manhole. New manholes will also be provided. See Figure 2 for proposed new electrical utility distribution.

As the College continues to grow, new projects will change the landscape of the campus. The electrical system must be set up to accommodate planned changes and growth. In anticipation of this, this study recommends electrical system improvement and additions that will set a clear path for connecting future projects to the electrical infrastructure.

Figure 2: Proposed 12KV and 4.16KV Power Distribution System

GWC MEP UTILITIES ANALYSIS REPORT
Electrical System Analysis

Additional Recommendations:

1. The existing main outdoor electrical power distribution system is beyond its expected life. Age and condition of existing cables and duct banks cannot be determined. It is recommended to replace and upgrade the main outdoor electrical power distribution to accommodate future growth and new facilities.
2. It is recommended that the electrical load analysis (Table 1 [Appendix 1]) be updated as new facilities are completed. This helps ensure the existing electrical power distribution system will not be overloaded.
3. The District is incorporating sustainability as a strategy in the 2045 Facilities Plan. To achieve this goal, renewable energy sources such as photovoltaic systems are recommended. The goal would be to achieve grid neutrality for the campus. Another measure to assist in grid neutrality is to install accurate energy monitoring throughout the campus. Accurate energy monitoring for existing and new buildings will be a major component in ongoing utility systems operation and maintenance.

GWC MEP UTILITIES ANALYSIS REPORT
Mechanical System Analysis

Analysis

The scope of analysis on the mechanical system is to determine if the overall existing central plant capacity for chilled and hot water is adequate to accommodate the future planning and expansion on this campus. A mechanical Load Summary spreadsheet (Table 2 [Appendix 1]) is provided listing the estimated HVAC cooling and heating loads for each individual building, existing buildings to be demolished and proposed future buildings. The HVAC load for each building breaks down into the chilled water load in tons of cooling, and heating loads in KBTUH. The overall and subtotals of different categories are also provided for comparison.

For most of the buildings, there are no design documents or as-built drawings available, therefore the estimate for total campus cooling and heating capacity for the central plant was based on square footage analysis.

According to campus maintenance personnel, the central plant capacity was recently upgraded to 1600 tons of cooling. This capacity is adequate to accommodate all existing and planned future expansion, an estimated total of 1,450 tons of cooling.

Chilled water is produced and pumped from the Central Plant and distributed below grade with chilled water and hot water piping to each building. Chilled and hot water lines will be extended to the future buildings from the main campus piping distribution network.

The new 2045 Facilities Plan will impact the existing underground chilled/hot water site distribution piping loop in some areas where future buildings are shown. In these areas part of the loop will need to be demolished and rebuilt around the buildings. Refer to Figure 3 that shows the proposed existing chilled & hot water site piping demolition plan, and Figure 4 that shows the new proposed chilled & hot water site piping distribution plan to accommodate the future expansion.

The existing central heating plant on campus produces enough space heating hot water for all existing and planned future buildings, which is an estimated total of approximately 27 million BTUH of boiler input load.

The current facilities plan indicates ten (10) new buildings are planned to be added to the campus while nineteen (19) existing buildings will be demolished to accommodate the proposed new construction. It appears that both the quantity of the buildings and the gross square footage will be reduced. As a result, we believe the capacity of the existing infrastructure is adequate to handle the demand for the proposed new buildings. With more accurate design and as-built information becoming available, more precise analysis and evaluation can be performed.

GWC MEP UTILITIES ANALYSIS REPORT
Mechanical System Analysis

Figure 3: Existing Chilled/Hot Water Distribution Piping (Proposed Demolition Plan)

GWC MEP UTILITIES ANALYSIS REPORT

Mechanical System Analysis

FIGURE 4 : PROPOSED CHILLED/HOT WATER DISTRIBUTION PIPING

Figure 4: Proposed Chilled/Hot Water Distribution Piping

Coast Colleges ALFATECH

GWC MEP UTILITIES ANALYSIS REPORT

Mechanical System Analysis

Table 2: HVAC System Analysis

HVAC LOAD SUMMARY												
Bldg #	BUILDING NAME	BUILDING AREA		COOLING LOAD			HEATING LOAD				LOAD ASSUMPTIONS	
		GSF	ASF	CHW TONS	Delta T (°F)	FLOW (GPM)	BOILER OUTPUT LOAD (MBH)	INPUT (KBTUH)	Delta T (°F)	FLOW (GPM)	ASF / TON	BTUH / ASF
EXISTING BUILDINGS												
4	Administration	32,604	29,544	80	(42-54)	160	1,182	1,477	(180-140)	59	370	40
14	Auto Technology	31,720	29,432	80	(42-54)	159	1,177	1,472	(180-140)	59	370	40
91	Bookstore	8,251	7,175	19	(42-54)	39	287	359	(180-140)	14	370	40
39	Boys/Girls Club Child Dev	8,750	7,657	21	(42-54)	41	306	383	(180-140)	15	370	40
3	Business	15,687	12,511	34	(42-54)	68	500	626	(180-140)	25	370	40
35	Central Plant	8,850	5,194	14	(42-54)	28	208	260	(180-140)	10	370	40
5	Communication	8,103	6,510	18	(42-54)	35	260	326	(180-140)	13	370	40
20	Community Theater	27,419	22,301	60	(42-54)	121	892	1,115	(180-140)	45	370	40
13	Corp Yard - Maintenance	14,403	13,838	37	(42-54)	75	554	692	(180-140)	28	370	40
16	Cosmetology	12,243	10,816	29	(42-54)	58	433	541	(180-140)	22	370	40
33	Criminal Justice Annex	2,150	1,826	5	(42-54)	10	73	91	(180-140)	4	370	40
8	Fine+App Arts	40,472	33,426	90	(42-54)	181	1,337	1,671	(180-140)	67	370	40
17	Forum 2	7,300	4,998	14	(42-54)	27	200	250	(180-140)	10	370	40
2	Forum One	11,398	8,364	23	(42-54)	45	335	418	(180-140)	17	370	40
15	Health Science	18,590	15,472	42	(42-54)	84	619	774	(180-140)	31	370	40
21	Humanities	39,944	27,534	74	(42-54)	149	1,101	1,377	(180-140)	55	370	40
94	Kaplan International	6,240	5,066	14	(42-54)	27	203	253	(180-140)	10	370	40
38	Library/LRC	55,251	40,505	109	(42-54)	219	1,620	2,025	(180-140)	81	370	40
37	Math & Science	122,747	76,577	207	(42-54)	414	3,063	3,829	(180-140)	153	370	40
1	Math Science	44,144	36,927	100	(42-54)	200	1,477	1,846	(180-140)	74	370	40
10	Mens Phys Ed	16,180	12,897	35	(42-54)	70	516	645	(180-140)	26	370	40
6	Music	11,911	10,896	29	(42-54)	59	436	545	(180-140)	22	370	40
95	New Criminal Justice Center	43,636	30,132	81	(42-54)	163	1,205	1,507	(180-140)	60	370	40
36	Nursing & Health Serv	25,815	17,223	47	(42-54)	93	689	861	(180-140)	34	370	40
26	Old Criminal Justice Center-TRN	11,583	8,941	24	(42-54)	48	358	447	(180-140)	18	370	40
18	PE-Rec	44,796	41,895	113	(42-54)	226	1,676	2,095	(180-140)	84	370	40
93	Pub Safety/Community Ed	5,950	3,717	10	(42-54)	20	149	186	(180-140)	7	370	40
97	Scenario Drill Build A	2,645	1,895	5	(42-54)	10	76	95	(180-140)	4	370	40
98	Scenario Drill Build B	1,650	1,108	3	(42-54)	6	44	55	(180-140)	2	370	40
99	Scenario Drill Build C	1,546	1,209	3	(42-54)	7	48	60	(180-140)	2	370	40
96	Student Services Center	48,894	29,680	80	(42-54)	160	1,187	1,484	(180-140)	59	370	40
92	Student Union	15,225	14,791	40	(42-54)	80	592	740	(180-140)	30	370	40
22	Swing Space (KOCE)	11,755	8,051	22	(42-54)	44	322	403	(180-140)	16	370	40
19	Technology	31,570	27,176	73	(42-54)	147	1,087	1,359	(180-140)	54	370	40
25	Wellness Center	4,418	4,331	12	(42-54)	23	173	217	(180-140)	9	370	40
11	Womens Phys Ed	8,720	6,469	17	(42-54)	35	259	323	(180-140)	13	370	40
	Sub-Total	**802,560**	**616,084**	**1,665**		**3,330**		**30,804**		**1,232**		
EXISTING BUILDINGS TO BE DEMOLISHED												
4	Administration	32,604	29,544	80	(42-54)	160	1,182	1,477	(180-140)	59	370	40
14	Auto Technology	31,720	29,432	80	(42-54)	159	1,177	1,472	(180-140)	59	370	40
91	Bookstore	8,251	7,175	19	(42-54)	39	287	359	(180-140)	14	370	40
3	Business	15,687	12,511	34	(42-54)	68	500	626	(180-140)	25	370	40
13	Corp Yard - Maintenance	14,403	13,838	37	(42-54)	75	554	692	(180-140)	28	370	40

GWC MEP UTILITIES ANALYSIS REPORT

Mechanical System Analysis

Table 2: HVAC System Analysis

HVAC LOAD SUMMARY												
Bldg #	BUILDING NAME	BUILDING AREA		COOLING LOAD			HEATING LOAD				LOAD ASSUMPTIONS	
		GSF	ASF	CHW TONS	Delta T (°F)	FLOW (GPM)	BOILER OUTPUT LOAD (MBH)	INPUT (KBTUH)	Delta T (°F)	FLOW (GPM)	ASF / TON	BTUH / ASF
16	Cosmetology	12,243	10,816	29	(42-54)	58	433	541	(180-140)	22	370	40
17	Forum 2	7,300	4,998	14	(42-54)	27	200	250	(180-140)	10	370	40
15	Health Science	18,590	15,472	42	(42-54)	84	619	774	(180-140)	31	370	40
21	Humanities	39,944	27,534	74	(42-54)	149	1,101	1,377	(180-140)	55	370	40
94	Kaplan International	6,240	5,066	14	(42-54)	27	203	253	(180-140)	10	370	40
1	Math Science	44,144	36,927	100	(42-54)	200	1,477	1,846	(180-140)	74	370	40
10	Mens Phys Ed	16,180	12,897	35	(42-54)	70	516	645	(180-140)	26	370	40
6	Music	11,911	10,896	29	(42-54)	59	436	545	(180-140)	22	370	40
26	Old Criminal Justice Center-TRN	11,583	8,941	24	(42-54)	48	358	447	(180-140)	18	370	40
18	PE-Rec	44,796	41,895	113	(42-54)	226	1,676	2,095	(180-140)	84	370	40
92	Student Union	15,225	14,791	40	(42-54)	80	592	740	(180-140)	30	370	40
22	Swing Space (KOCE)	11,755	8,051	22	(42-54)	44	322	403	(180-140)	16	370	40
19	Technology	31,570	27,176	73	(42-54)	147	1,087	1,359	(180-140)	54	370	40
11	Womens Phys Ed	8,720	6,469	17	(42-54)	35	259	323	(180-140)	13	370	40
	Sub-Total	**382,866**	**324,429**	**877**		**1,754**	**12,977**	**16,221**		**649**		
FUTURE BUILDINGS												
X	Administration	X	32,604	88	(42-54)	176	1,304	1,630	(180-140)	65	370	40
X	Career Education	X	13,540	37	(42-54)	73	542	677	(180-140)	27	370	40
X	Performing Arts	X	11,911	32	(42-54)	64	476	596	(180-140)	24	370	40
X	Instructional	X	6,240	17	(42-54)	34	250	312	(180-140)	12	370	40
X	M & O	X	44,144	119	(42-54)	239	1,766	2,207	(180-140)	88	370	40
X	Physical Education	X	44,796	121	(42-54)	242	1,792	2,240	(180-140)	90	370	40
X	Student Housing	X	11,825	32	(42-54)	64	473	591	(180-140)	24	370	40
X	Student Union	X	23,476	63	(42-54)	127	939	1,174	(180-140)	47	370	40
X	Volleyball Area	X	0	0	(42-54)	0	0	0	(180-140)	0	370	40
	Sub-Total		**188,536**	**510**		**1,019**	**7,541**	**9,427**		**377**		
HVAC LOAD CALCULATION												
	Existing Building Loads			**1,665**		**3,330**	**287**	**30,804**		**1,232**		
	Demolished Building Loads			**877**	**0**	**1,754**	**12,977**	**16,221**		**649**		
	Future Building Loads			**510**	**0**	**1,019**	**7,541**	**9,427**		**377**		
	Total Future Campus Loads			**1,298**	**0**	**2,596**	**-5,149**	**24,010**		**960**		

GWC MEP UTILITIES ANALYSIS REPORT
Plumbing System Analysis

Existing System

The scope of analysis on plumbing system is to determine if the overall existing plumbing site utility infrastructure can accommodate the future planning and expansion campus wide. A spreadsheet is provided to evaluate the plumbing load for each individual building, existing buildings to be demolished and proposed future buildings (Table 3 [Appendix 1]). The plumbing load for each building breaks down into water, sanitary, storm, gas, and fire. The overall and subtotals of different categories are also provided for comparison.

For most of the buildings, there are no design documents or as-built drawings available, therefore the estimate is largely based on the square footage except a few of them with drawings from which the plumbing load is taken. The square footage method is as follow:

Use 2016 CPC chapter 4 table A-occupant load factor to determine the maximum occupancy load for each type of building; Use 2016 CPC chapter 4 table 422.1 – minimum plumbing facilities to determine the minimum number of plumbing fixtures required and add 30% more to this number. With the quantity of plumbing fixtures, the water and sanitary load can be calculated in terms of fixture units or gallons per minute (GPM). Storm water (roof drainage) is evaluated based on square footage and converted to gallons per minute with corresponding rainfall rate. The gas load is evaluated based on 40 btu/square foot for space heating (except buildings served by heat pumps) plus the domestic water heating. The fire water demand is assumed 500 GPM for small building, 750 GPM for medium building and 1000 GPM for large building.

Analysis

The current facilities plan indicates that 10 new buildings are planned to be added to the campus while 19 existing buildings will be demolished to accommodate the proposed new constructions. It appears that both the quantity of the buildings and the gross square footage will be reduced. The total water, gas, sewer, and storm loads campus wide are expected to decrease about 10-20%. We believe the capacity of the existing infrastructure is adequate to handle the existing demand and the proposed new buildings.

GWC MEP UTILITIES ANALYSIS REPORT

Plumbing System Analysis

Table 3: Plumbing System Analysis

PLUMBING LOAD SUMMARY																		
		AREA				DOMESTIC WATER			FIRE WATER		NATURAL GAS			STORM		SANITARY	
Bldg #	BUILDING NAME	GSF	ASF	NO. OF FLOORS	YEAR BUILT	FIXTURE UNITS	WATER DEMAND (GPM)	WATER PRESSURE REQUIRED (PSI)	DEMAND (GPM)	WATER PRESSURE REQUIRED (PSI)	HVAC DEMAND (MBH)	PLUMBING DEMAND (MBH)	TOTAL NATURAL GAS DEMAND (MBH)	ROOF AREA (SF)	FLOW RATE (GPM)	FIXTURE UNITS	MAIN PIPE SIZE (INCH)
EXISTING BUILDINGS																		
4	Administration	32,604	29,544	2	1966	150	80	55	1,000	110	1,477	100	1,577	32,604	1,043	121	4
14	Auto Technology	31,720	29,432	2	1967	169	84	55	1,000	110	1,472	100	1,572	35,313	1,130	99	4
91	Bookstore	8,251	7,175	1	1966	26	39	50	750	70	359	100	459	8,251	264	21	4
39	Boys/Girls Club Child Dev	8,750	7,657	1	2011	178	86	50	750	70	383	100	483	9,535	305	146	4
3	Business	15,687	12,511	2	1966	80	61	55	750	110	626	100	726	9,160	293	64	4
35	Central Plant	8,850	5,194	1	2007	26	39	50	750	70	260	100	360	9,374	300	21	4
5	Communication	8,103	6,510	1	1966	49	50	50	750	70	326	100	426	8,103	259	39	4
20	Community Theater	27,419	22,301	2	1971	147	80	55	1,000	110	1,115	100	1,215	17,306	554	115	4
13	Corp Yard - Maintenance	14,403	13,838	1	1969	26	39	50	750	70	692	100	792	14,403	461	21	4
16	Cosmetology	12,243	10,816	2	1969	71	58	55	750	110	541	100	641	14,838	475	56	4
33	Criminal Justice Annex	2,150	1,826	1	2001	26	39	50	500	70	91	40	131	2,504	80	21	4
8	Fine+App Arts	40,472	33,426	2	1966	360	119	55	1,000	110	1,671	100	1,771	19,731	631	347	6
17	Forum 2	7,300	4,998	1	1971	52	52	50	750	70	250	100	350	7,300	234	43	4
2	Forum One	11,398	8,364	2	1966	80	61	55	750	110	418	100	518	11,398	365	64	4
38	Library/LRC	55,251	40,505	2	2011	147	80	55	1,000	110	2,025	100	2,125	23,557	754	115	4
37	Math & Science	122,747	76,577	3	2019	385	123	60	1,000	120	3,829	100	3,929	49,761	1,592	310	6
10	Mens Phys Ed	16,180	12,897	2	1966	89	64	55	750	110	645	100	745	16,180	518	69	4
6	Music	11,911	10,896	2	1966	55	53	55	750	110	545	100	645	11,911	381	45	4
95	New Criminal Justice Center	43,636	30,132	2	2018	162	83	55	1,000	110	1,507	100	1,607	30,335	971	129	4
36	Nursing & Health Serv	25,815	17,223	2	2008	110	70	55	1,000	110	861	100	961	10,568	338	94	4
26	Old Criminal Justice Center-TRN	11,583	8,941	1	1981	52	52	50	750	70	447	100	547	11,583	371	43	4
18	PE-Rec	44,796	41,895	2	1971	304	111	55	1,000	110	2,095	200	2,295	38,566	1,234	263	4
93	Pub Safety/Community Ed	5,950	3,717	1	2016	26	39	50	750	70	186	40	226	5,950	190	21	4
97	Scenario Drill Build A	2,645	1,895	1	2018	26	39	50	500	70	95	40	135	2,645	85	21	4
98	Scenario Drill Build B	1,650	1,108	1	2018	26	39	50	500	70	55	40	95	1,650	53	21	4
99	Scenario Drill Build C	1,546	1,209	1	2018	26	39	50	500	70	60	40	100	1,546	49	21	4
96	Student Services Center	48,894	29,680	2	2018	253	102	55	1,000	110	1,484	100	1,584	27,911	893	283	6
92	Student Union	15,225	14,791	2	1966	89	64	55	750	110	740	100	840	15,225	487	69	4
22	Swing Space (KOCE)	11,755	8,051	1	1976	52	52	50	750	70	403	100	503	11,755	376	43	4
19	Technology	31,570	27,176	2	1971	147	80	55	1,000	110	1,359	100	1,459	12,842	411	119	4
25	Wellness Center	4,418	4,331	1	1979	40	46	50	500	70	217	40	257	4,418	141	41	4
11	Womens Phys Ed	8,720	6,469	1	1966	64	56	50	750	70	323	100	423	8,720	279	51	4
	Sub-Total	**693,642**	**531,085**			**3,493**	**2,079**		**25,500**		**26,554**	**2,940**	**29,494**	**484,943**	**15,518**	**2,936**	
EXISTING BUILDINGS TO BE DEMOLISHED																		
4	Administration	32,604	29,544	2	1966	150	80	55	1,000	110	1,477	100	1,577	32,604	1,043	121	4
14	Auto Technology	31,720	29,432	2	1967	169	84	55	1,000	110	1,472	100	1,572	35,313	1,130	99	4
91	Bookstore	8,251	7,175	1	1966	26	39	50	750	70	359	100	459	8,251	264	21	4
3	Business	15,687	12,511	2	1966	80	61	55	750	110	626	100	726	9,160	293	64	4
13	Corp Yard - Maintenance	14,403	13,838	1	1969	26	39	50	750	70	692	100	792	14,403	461	21	4
16	Cosmetology	12,243	10,816	2	1969	71	58	55	750	110	541	100	641	14,838	475	56	4
17	Forum 2	7,300	4,998	1	1971	52	52	50	750	70	250	100	350	7,300	234	43	4
37	Math & Science	122,747	76,577	3	2019	385	123	60	1,000	120	3,829	100	3,929	49,761	1,592	310	6
10	Mens Phys Ed	16,180	12,897	2	1966	89	64	55	750	110	645	100	745	16,180	518	69	4
6	Music	11,911	10,896	2	1966	55	53	55	750	110	545	100	645	11,911	381	45	4

Coast Colleges ALFATECH

GWC MEP UTILITIES ANALYSIS REPORT

Plumbing System Analysis

Table 3: Plumbing System Analysis

PLUMBING LOAD SUMMARY																	
		AREA				DOMESTIC WATER			FIRE WATER		NATURAL GAS			STORM		SANITARY	
Bldg #	BUILDING NAME	GSF	ASF	NO. OF FLOORS	YEAR BUILT	FIXTURE UNITS	WATER DEMAND (GPM)	WATER PRESSURE REQUIRED (PSI)	DEMAND (GPM)	WATER PRESSURE REQUIRED (PSI)	HVAC DEMAND (MBH)	PLUMBING DEMAND (MBH)	TOTAL NATURAL GAS DEMAND (MBH)	ROOF AREA (SF)	FLOW RATE (GPM)	FIXTURE UNITS	MAIN PIPE SIZE (INCH)
26	Old Criminal Justice Center-TRN	11,583	8,941	1	1981	52	52	50	750	70	447	100	547	11,583	371	43	4
18	PE-Rec	44,796	41,895	2	1971	304	111	55	1,000	110	2,095	100	2,195	44746	1,432	263	6
33	Criminal Justice Annex	2,150	1,826	1	2001	26	39	50	500	70	91	40	131	2,504	80	21	4
92	Student Union	15,225	14,791	2	1966	89	64	55	750	110	740	100	840	15225	487	69	4
19	Technology	31,570	27,176	2	1971	147	80	55	1,000	110	1,359	100	1,459	16927	542	119	4
11	Womens Phys Ed	8,720	6,469	1	1966	64	56	50	750	70	323	100	423	8720	279	51	4
	Sub-Total	**387,090**	**309,782**			**1,785**	**1,055**		**13,000**		**15,489**	**1,540**	**17,029**	**299,426**	**9,582**	**1,415**	
FUTURE BUILDINGS																	
X	Administration	X	32,604	2	X	172	85.0	55	1,000	110	1,630	100	1,730	16,302	522	138	4
X	Career Education	X	13,540	2	X	80	61.0	55	750	110	677	100	777	6,752	216	64	4
X	Fine Arts	X	40,472	2	X	147	80.0	55	1,000	110	2,024	100	2,124	20,236	648	115	4
X	Gallery Music Forum	X	11,911	2	X	62	56.0	55	750	110	596	100	696	5,956	191	49	4
X	Instruction	X	6,240	1	X	49	50.0	50	750	70	312	100	412	6,240	200	39	4
X	MS	X	44,144	2	X	225	96.0	55	1,000	110	2,207	100	2,307	22,072	706	181	4
X	Recreation Ed	X	44,796	2	X	143	79.0	55	1,000	110	2,240	200	2,440	22,398	717	111	4
X	Student Housing	X	11,825	2	X	256	76.0	55	750	110	591	200	791	5,913	189	220	6
X	Student Union & Bookstore	X	23,476	2	X	125	74.0	55	1,000	110	1,174	100	1,274	11,738	376	101	4
X	Volleyball	X	16,180	2	X	90	65.0	55	1,000	110	809	100	909	8,090	259	71	4
	Sub-Total		**245,188**			**1,349**	**722**		**9,000**		**12,259**	**1,200**	**13,459**	**125,697**	**4,022**	**1,089**	
PLUMBING LOADS CALCULATION																	
	Existing Building Loads					**3,493**	**2,079**		**25,500**		**26,554**	**2,940**	**29,494**	**484,943**	**15,518**	**2,936**	
	Demolished Building Loads					**1,785**	**522**		**13,000**		**15,489**	**1,540**	**17,029**	**299,426**	**9,582**	**1,415**	
	Future Building Loads					**1,349**	**722**		**9,000**		**12,259**	**1,200**	**13,459**	**125,697**	**4,022**	**1,089**	
	Total Future Campus Loads					**3,057**	**2,279**		**21,500**		**23,325**	**2,600**	**25,925**	**311,214**	**9,959**	**2,610**	

GWC CIVIL DESIGN CONSIDERATIONS

OVERVIEW

Golden West College, located at the northeast corner of Goldenwest St and Edinger Ave in Huntington Beach, CA, is undergoing significant redevelopment as part of its updated 2045 Facilities Plan. Originally, the approved 2030 Vision proposed 15 new buildings and the redevelopment of 5 existing structures. However, the updated plan now includes the construction of 8 previously proposed buildings while introducing 8 additional new buildings on campus.

In addition to these structural improvements, the project will feature enhanced landscaping and the development of new walkways to improve campus accessibility. New utility lines will be reconfigured to accommodate these upgrades, ensuring the improvements supports the college's long-term growth and modernization.

EXISTING CONDITIONS / SITE DEMOLITION

Golden West College campus primarily consist of buildings, landscaped areas, concrete walkways, and asphalt roads. Several of the existing buildings are located within the areas designated for new improvements and will need to be demolished, with their utility lines capped and abandoned. Additionally, any existing utilities on-site that conflict with the proposed design will either be removed if no longer necessary or relocated to accommodate the new construction.

To ensure compliance and site stability during construction, erosion control measures such as fiber rolls and dust control fencing will be implemented around the project perimeter. Temporary construction entrances and exits will also be stabilized to minimize disruption and maintain safety throughout the redevelopment process.

SITE EXCAVATION AND GRADING

The current surface drainage patterns cannot be verified as the Topographic Survey has not been obtained.
However, based on available resources such as Google Earth, it can be inferred that the existing drainage pattern flows from northeast to southwest across the site. While no specific details have been provided regarding offsite improvements to the storm drain system, it is known that a significant drainage infrastructure traverses the campus, running from the western edge of Goldenwest St to the southern boundary along Edinger Ave. This system consists of a 63-inch reinforced concrete pipe (RCP) that transitions into a larger 75-inch RCP line, serving as a critical component of the site's stormwater management. Any excavation and grading activities will need to account for this drainage system to ensure proper water flow and prevent disruptions to existing hydrology.
To minimize grading, the finish floor elevations of the proposed buildings will be determined to meet ADA minimum requirements while reducing the need for extensive grading and minimizing impacts to utilities.
Accessible open-grated catch basins will be strategically installed throughout the project site to collect surface runoff. All new flat work within the project scope will comply with accessibility regulations, as well as provide smooth transitions to the existing surrounding facilities.
Grading for the project will adhere to the recommendations outlined in a provided geotechnical report. Excavation will follow the Standard Specifications for Public Works Construction ("Greenbook").

SITE CIVIL UTILITIES

The civil utilities for the project include storm drains, domestic water, and sanitary sewer systems. The Underground Mapping by P2S details the current utility infrastructure within the project limits.

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GWC CIVIL DESIGN CONSIDERATIONS

STORM DRAINAGE

In the proposed condition, preserving the existing drainage pattern remains a primary objective to ensure effective stormwater management. A network of catch basins will be strategically placed to collect runoff from their respective tributary areas, ideally positioned within landscaped zones to capture surface flows from adjacent hardscapes while also managing potential runoff from softscape areas. These catch basins will be integrated into the existing storm drain system, maintaining efficient drainage across the site. All roof drains from the proposed buildings will be directed into this system, further supporting proper water flow and minimizing the risk of localized flooding.

To further accommodate the proposed buildings, storm drain lines have been strategically rerouted to ensure they do not run beneath new structures while maintaining the existing drainage pattern. These adjustments allow for uninterrupted stormwater flow while preventing potential conflicts with building foundations.

WATER DISTRIBUTION

The existing water line system on campus currently serves both buildings and fire hydrants, ensuring a reliable water supply throughout the site. To accommodate proposed improvements, water lines passing through new construction areas have been strategically rerouted to prevent any portions of the system from running beneath new structures. Several new laterals have been integrated into the existing network to provide necessary connections for the proposed buildings, ensuring seamless water distribution. A backflow preventer, such as a double check detector assembly (DCDA), is likely unnecessary if a campus-wide backflow preventer is provided before the connection point. The routing of these water lines within the building footprint will be determined by the plumbing engineer.
All newly proposed water lines, as well as existing lines designated for removal, are detailed in the Civil Proposed Utility Plan.

SANITARY SEWER

As part of the campus redevelopment, existing sanitary sewer lines that currently service buildings slated for demolition will be cut, capped, and abandoned, as they will no longer be necessary once these structures are removed. To accommodate the new construction, a network of new sanitary sewer lines will be installed to provide proper service to the proposed buildings. This will include the placement of new laterals, cleanouts, and manholes to ensure efficient wastewater flow and prevent potential blockages within the system. New sewer routes have been strategically planned, as some proposed buildings will be constructed directly over existing lines, necessitating their relocation to avoid structural conflicts and potential damage. The design will aim to match the existing pipe sizes at their points of connection; however, if the projected demand from new buildings requires additional capacity, an upsize of certain sewer lines may be considered to maintain optimal system performance.
Laterals that require removal and sanitary sewer lines being proposed can be found in the Civil Proposed Utility Plan.

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GWC CIVIL DESIGN CONSIDERATIONS

EXISTING UTILITY LEGEND:

- SS — SANITARY SEWER
- W — WATER
- SD — STORM DRAIN
- MANHOLE
- FH — FIRE HYDRANT
- WATER METER

PROPOSED UTILITY LEGEND:

- SS — SANITARY SEWER
- W — WATER
- SD — STORM DRAIN
- EXISTING SANITARY SEWER TO BE REMOVED
- EXISTING WATER TO BE REMOVED
- EXISTING STORM DRAIN TO BE REMOVED
- FH — PROPOSED FIRE HYDRANT
- PROPOSED MANHOLE
- PROPOSED CATCH BASIN
- PROPOSED BUILDING

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ORANGE COAST COLLEGE

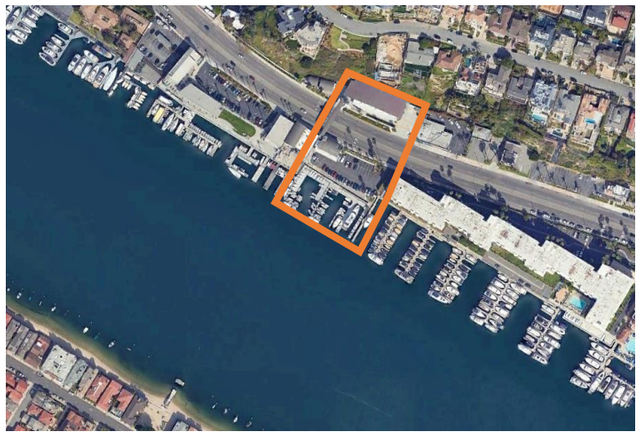
ORANGE COAST COLLEGE
Campus Today

Today, OCC is a 164-acre campus enrolling more than 25,000 students each semester. As a fully accredited college by the Western Association of Schools and Colleges, OCC features more than 135 academic and career programs and offers classes year-round.

The planning process included the analysis of existing conditions to identify the key planning issues to address. The information was based on engagements with college students, faculty, classified professionals, and discussions with workgroups.

The exiting campus conditions shown in the graphic illustrates the facilities in construction or construction zones, and existing buildings in use.

Waterfront Campus



ORANGE COAST COLLEGE
Facilities Planning Principles

Extensive analyses of qualitative and quantitative data inform the Facilities Planning Principles.

Facilities Planning Principles summarize the aspirations of OCC faculty, classified professionals, students, and administrators and describe how site and facilities improvements will support the Chancellor's Goals. These principles were used to guide discussions related to site and long-term facilities planning improvements over the coming decades.

These five principles were developed collaboratively with the 2045 Facilities Plan Task Force and align with OCC's commitment to student success and equity. The principles serve as the key drivers for the site and facilities recommendations presented later in this section.

ORANGE COAST COLLEGE
Facilities Planning Principles

- Increase the visibility of OCC within the community
- Create welcoming gateways to the campus with a diversity, equity & inclusion lens
- Improve access to programs and services designed to meet the community and local workforce needs
- Build the OCC 'sense of community'
- Strengthen connections and partnerships
- Support experiences that promote diversity, inclusion and multiculturalism

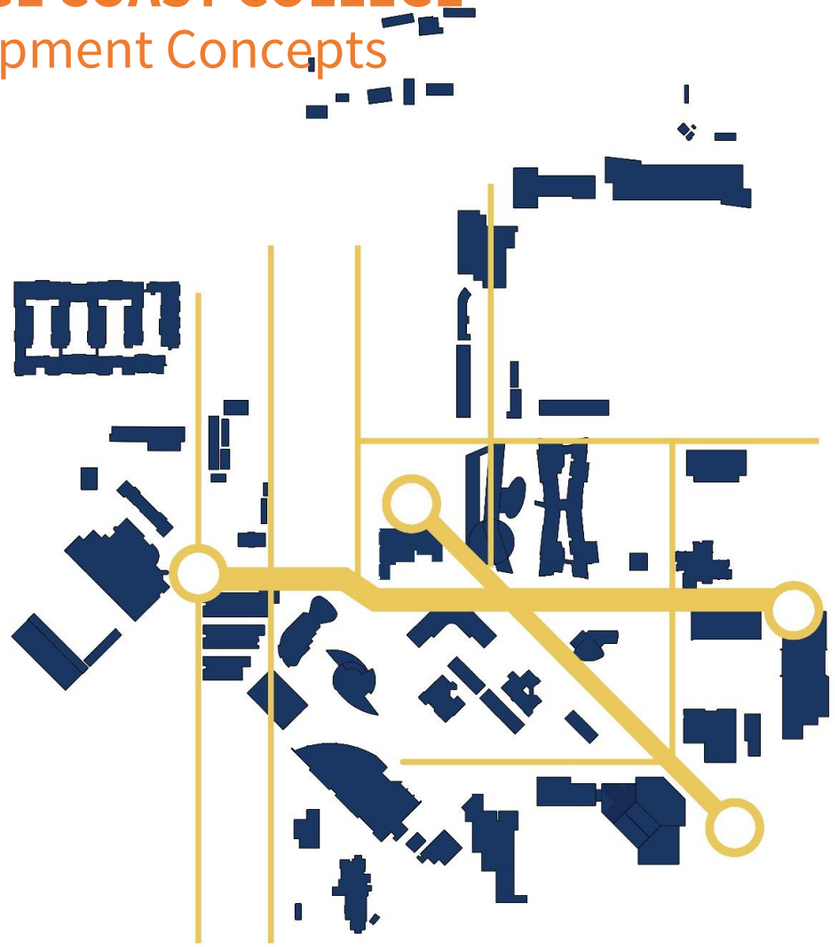
- Improve learning environments to achieve equitable outcomes
- Modernize facilities and integrate technology to support multiple modes of learning
- Group academic programs to support interdisciplinary collaboration
- Improve access to instructional support services using an equity lens
- Align with the Strategic Student Enrollment Management Plan

- Improve campus experience using a diversity, equity & inclusion lens for all
- Improve access and increase awareness of programs and services
- Develop and clarify circulation patterns
- Improve parking distribution/efficiency
- Improve connections to all areas of the campus
- Enhance wayfinding and campus flow
- Strengthen areas designed to address student accessibility and basic needs
- Modernize facilities and integrate technology to support inclusive excellence

- Optimize available resources
- Maximize land use to align with institutional priorities
- Remove inefficient and underperforming facilities
- Develop flexible space to adapt over time
- Incorporate TCO into all projects
- Position OCC to maximize state funding
- Honor the legacy of OCC, support project needs and look towards the future
- Improve transportation strategies/options
- Integrate environmental sustainability to create efficient, climate-resilient spaces and infrastructure

- Develop indoor and outdoor spaces to encourage collaboration and engagement
- Create a variety of small and large areas to support formal and informal activities
- Develop campus to enhance a sense of community and a culture of care for students & employees
- Enhance off-campus/virtual connections
- Enhance a 'sense of belonging' and pride

ORANGE COAST COLLEGE
Development Concepts



CAMPUS NETWORK

A framework of pedestrian corridors established around two main axis connecting all areas of the campus creates a network of circulation that improves access to programs and services.

REESTABLISH THE CAMPUS CORE

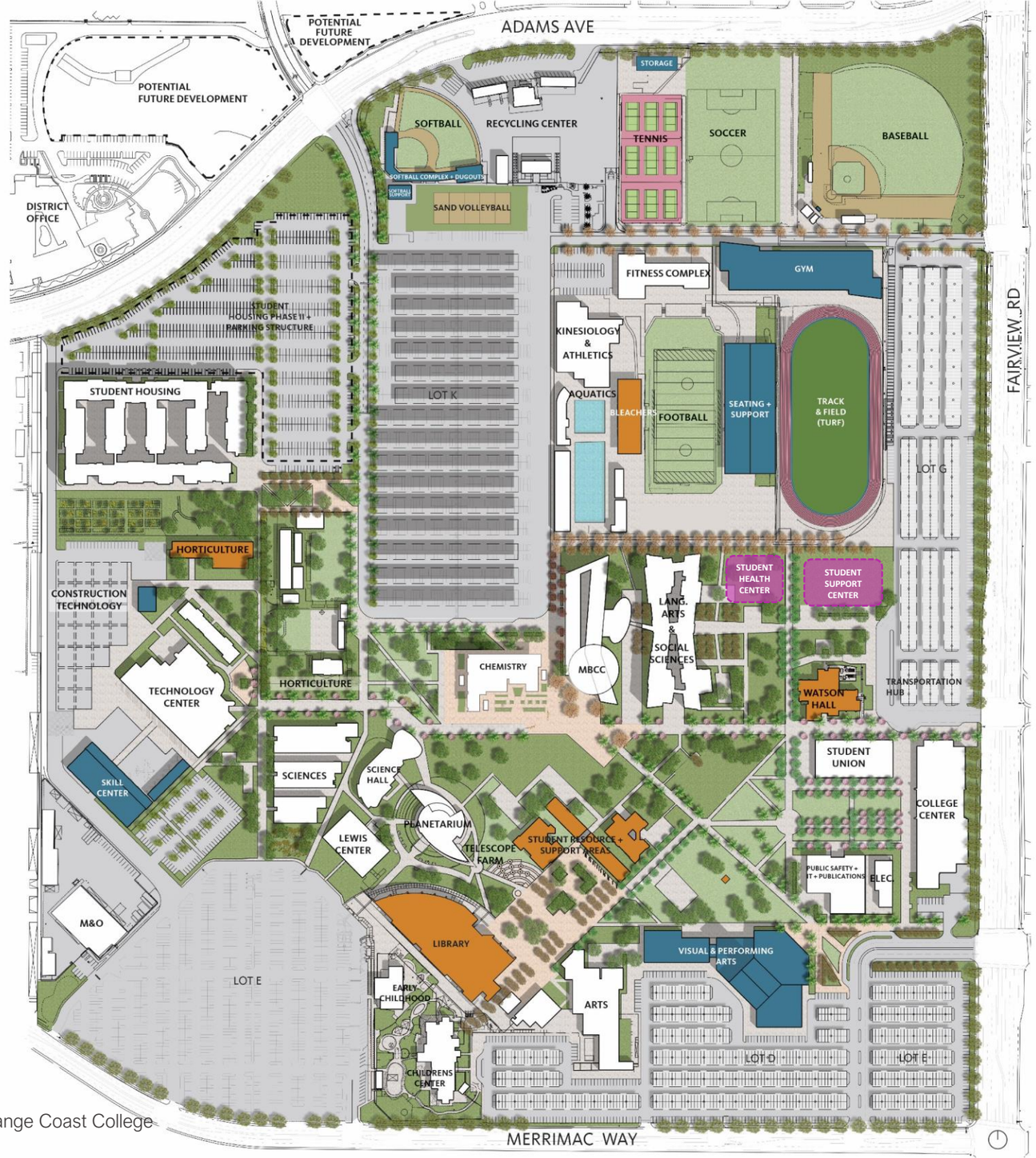
The primary campus entry is developed to welcome students and the community to the new campus heart surrounded by core student support services that will increase access to services and enhance a sense of belonging.

ORANGE COAST COLLEGE
2045 Facilities Plan

The 2045 Facilities Plan presents an overall picture of the future developed campus and includes recommendations for new construction, building renovations, and site development projects. The drawings represent a conceptual layout of the buildings and their site surroundings that highlight the location and purpose of the proposed improvements.

Modernization work is recommended for facilities where a significant change is not highlighted, and is needed, so that Orange Coast College will accomplish the following objectives:

- Repairs and upgrades for safety and accessibility
- Upgrades of technology systems
- Renewing of finishes, furniture and equipment
- Upgrades for sustainability



New Construction
Reconstruction
Existing Buildings

Coast Colleges Gensler

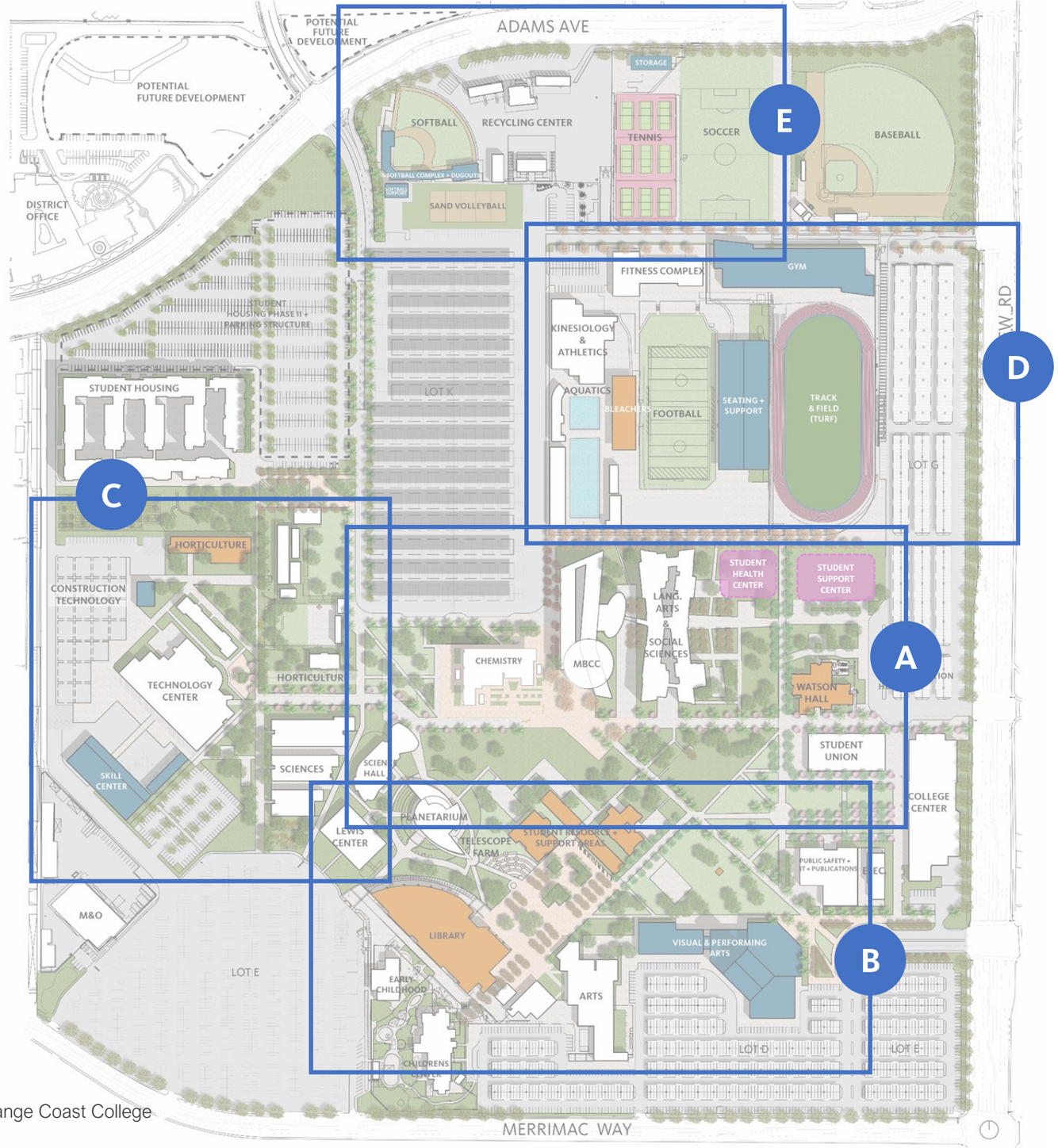
ORANGE COAST COLLEGE
2045 Facilities Plan

The project list summarizes the major facilities projects highlighted in the Facilities Plan.

NEW CONSTRUCTION
- Skills Center
- Visual + Performing Arts (Replacement)
- Gym (PE Complex Replacement)
- Stadium Renovation + Athletic Support
- Student Health Center
- Student Support Center

RECONSTRUCTION
- Horticulture
- Watson Hall
- Student Resource + Support Areas
- Library
- Construction Technology (Relocation)

SITE DEVELOPMENT
- Central Quad
- Softball, Volleyball and Support Complex
- Vehicular Circulation, Parking + EV Charging
- Pedestrian Circulation + site development



New Construction
Reconstruction
Existing Buildings

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ORANGE COAST COLLEGE
2045 Facilities Plan

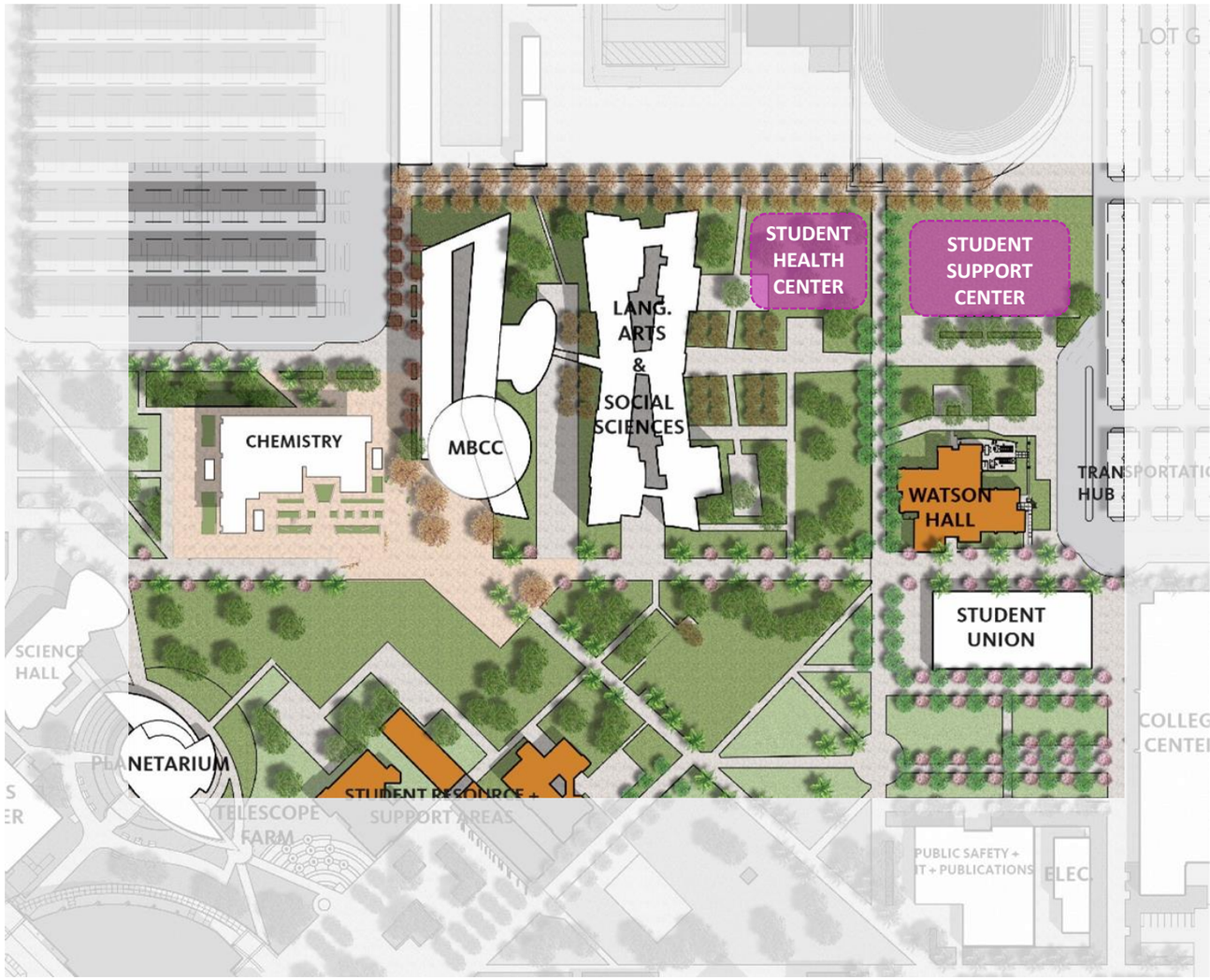
A

Student Health Center
A new Student Health Center is proposed to house Health Services at a front door location. The proposed location will improve access to these services and increase visibility in support of a healthy and safe campus environment.

Student Support Center
A new Student Support Center is proposed at the campus core, at the intersection of two primary pedestrian corridors and adjacent to campus parking for added accessibility. This will become the entry point for the student journey and act as a gateway onto campus. This building will be used for various student programming, including the Pantry and the bookstore.

Watson Hall Renovation
Following the development of the new Student Support Center, some functions will move out of Watson Hall and space will be repurposed to support the centralization of administrative functions currently distributed throughout the campus. Watson Hall 1st floor to be used as secondary space for support. Renovation may include offices for the Academic Senate, Classified Senate, and the Union. Additional space in Watson Hall will also host Adult Education.

Central Quad Development
The Central Quad will be expanded to provide improved access across the campus and unify circulation patterns between programs.



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ORANGE COAST COLLEGE
2045 Facilities Plan

B

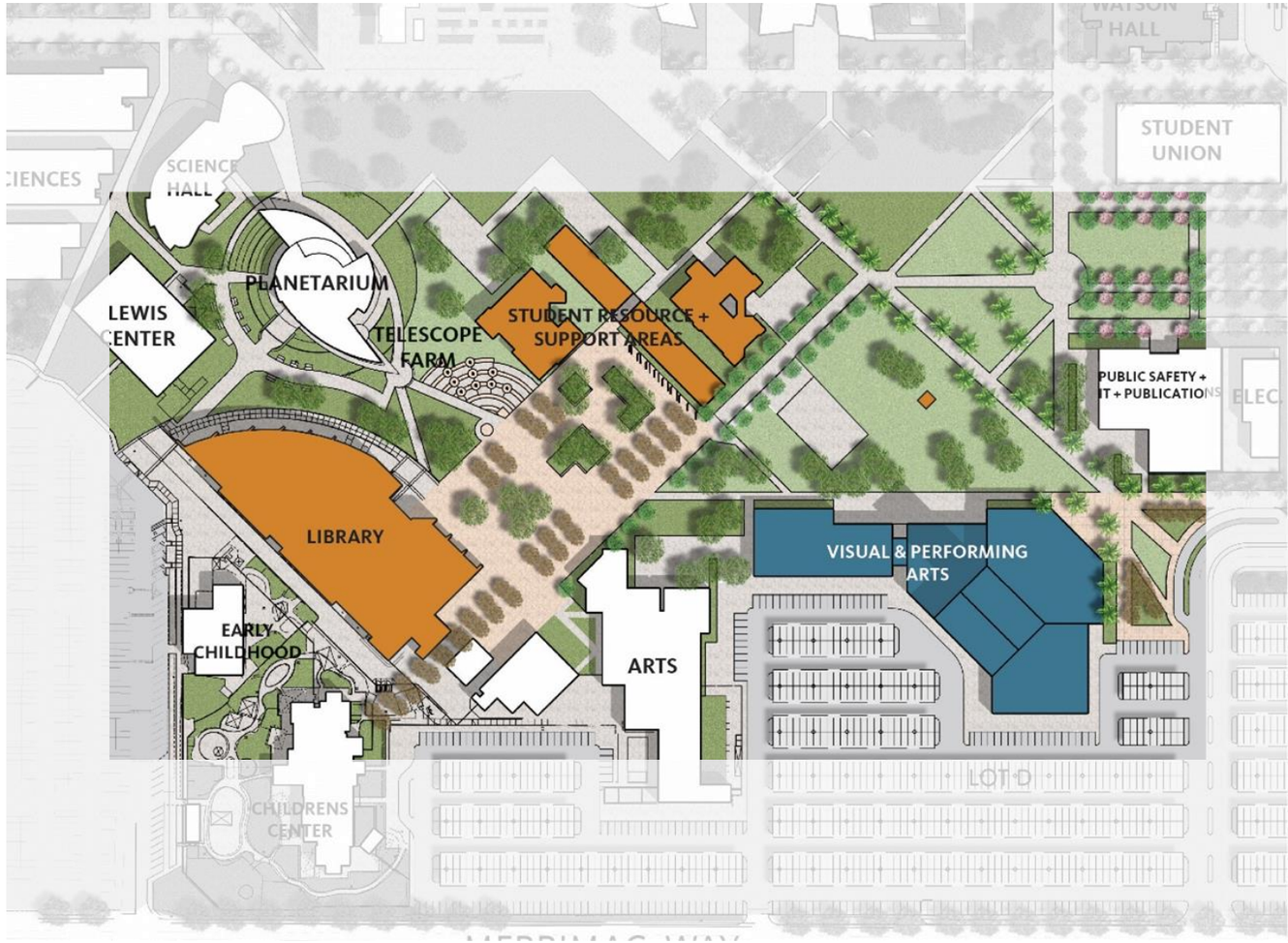
Student Resource + Support Area Renovation
Honoring the history of Orange Coast College and preserving select original buildings in the campus core is recommended for expanded student support services. The smaller scale of the original buildings, in contrast to the newer and larger facilities, provide opportunities to create student resource centers.

Library Renovation
The Library is proposed to be renovated to accommodate general campus services.

Visual and Performing Arts Replacement
A new Visual & Performing Arts Complex is proposed to replace multiple functions that are housed in aged and underperforming facilities and to create a state-of-the-art facility that supports program needs, promotes collaboration and celebrates the arts at OCC.

Together with the existing Arts Building and Arts Pavilion, this zone of the campus will increase visibility of the arts programs, presenting a new face to the main quad and framing the improved welcoming gateway entry at Fairview.

The project includes the reconfiguration of the parking lots along Merrimac Way to improve circulation and efficiency and will result in a net gain of approximately 431 spaces.



Coast Colleges Gensler

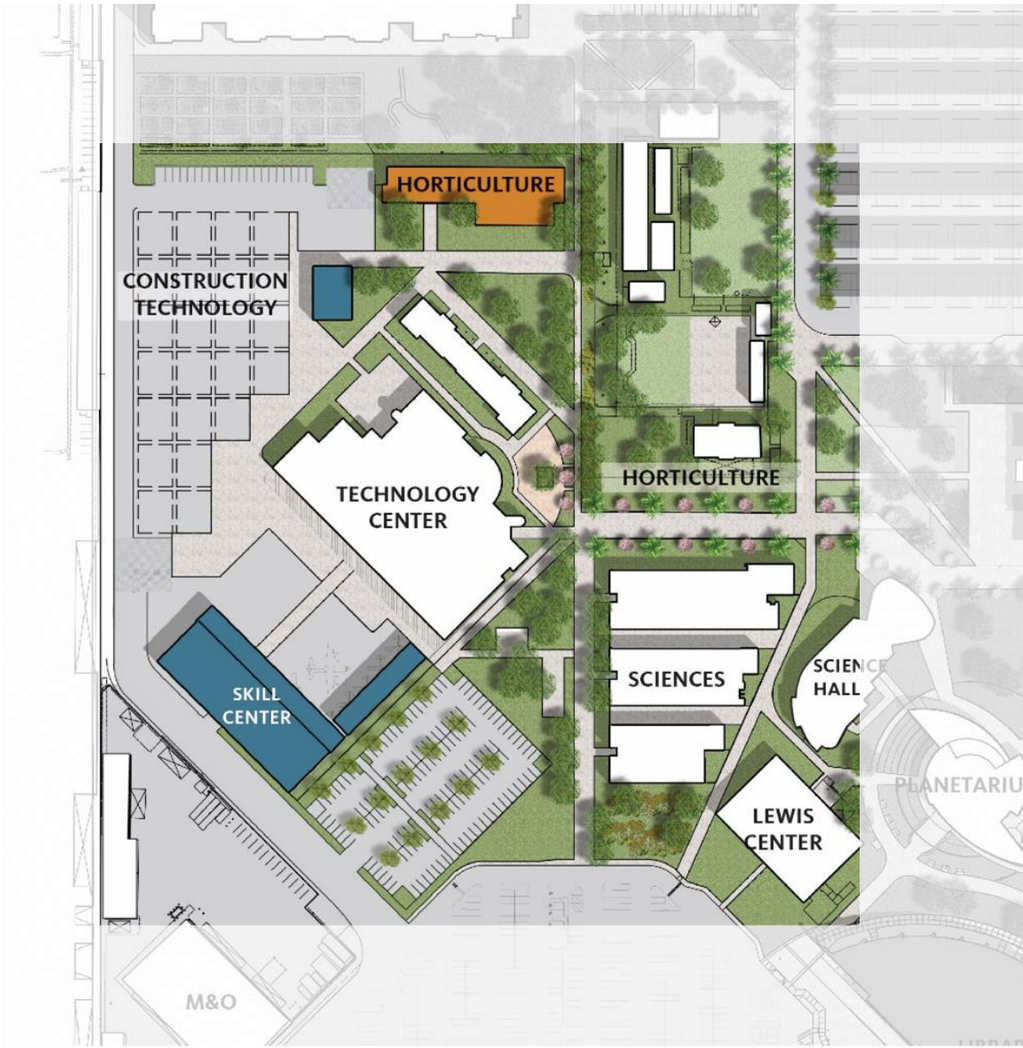
ORANGE COAST COLLEGE
2045 Facilities Plan

C

Skill Center
A new Skill Center is proposed to replace the aging and underperforming facility that currently supports the Aviation programs. The new building will include specialized indoor and outdoor instruction areas to support the program needs in state-of-the-art learning environments. The new location enhances opportunities for interdisciplinary collaboration with related programs in the Technology Center and frees up land for expanded parking.

Construction Technology Relocation
Construction Technology is proposed to be relocated and reorganized in this location. This restructuring will improve program and special efficiencies and improve access to the Technology and Skill Center.

Horticulture Renovation
Renovation of the existing Information Technology Building is proposed to create an interdisciplinary Maker Space to support multiple programs on campus. Strategically located between Technology and Horticulture, along a primary pedestrian path, this facility will increase awareness and encourage students to collaborate in a flexible and innovative learning environment.



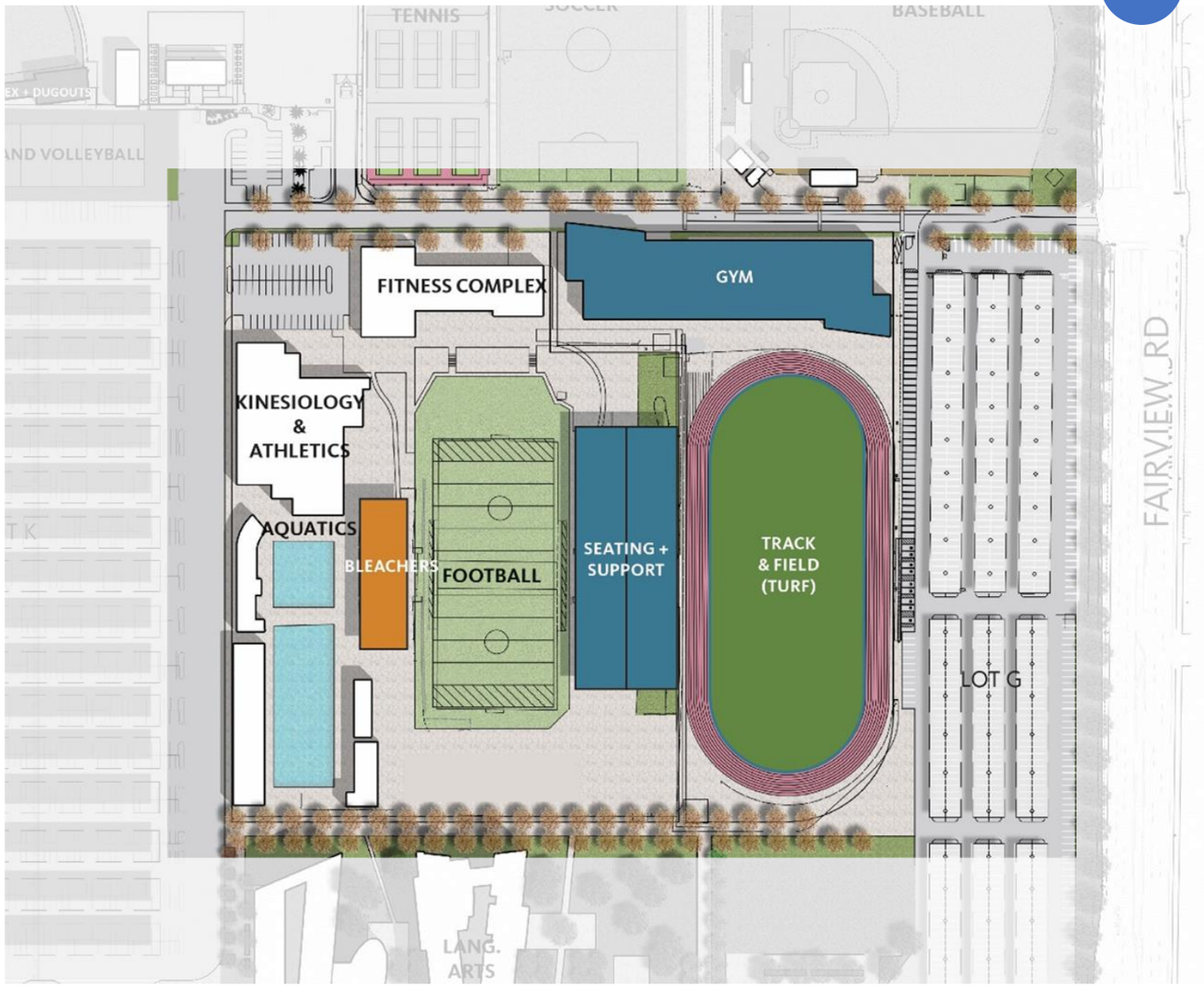
Coast Colleges Gensler

ORANGE COAST COLLEGE
2045 Facilities Plan

D

Gym (PE Complex Replacement)
A new Gym facility is proposed to replace the existing gym and locker rooms currently located along Fairview Avenue, which are aged and underperforming buildings that no longer support the Physical Education program needs. The new facility will provide instructional and support space for current and projected program needs. The planned location on the north side of the existing Track & Field, will replace Parking Lot G, and integrate all of Kinesiology & Athletics into a cohesive zone, maximizing opportunities to share resources, improve access, and enhance pedestrian connections. This project includes the development of expanded parking along Fairview to improve access and welcome students and visitors.

Stadium Renovation + Athletic Support
The current stadium is proposed to be renovated to provide safe and accessible seating at the home and visitor sides. The existing bleachers are proposed to be reconstructed, and new seating and athletic support space will be constructed to serve both adjacent fields. The functions located in the existing Field House, such as team rooms, locker rooms, restrooms and equipment storage, will be relocated and incorporated into the new Stadium Seating + Support complex.



New Construction
Reconstruction
Existing Buildings

Coast Colleges Gensler

ORANGE COAST COLLEGE
2045 Facilities Plan

E

Softball Complex + Dugouts
A new Softball Complex and Dugouts is proposed to replace current softball support facilities and provide necessary spaces for lockers, storage, and restrooms.

Sand Volleyball
A new Sand Volleyball Court is proposed on the north end of Lot K to support 5 volleyball courts, which is the minimum needed to qualify for tournaments. This program will address current athletic program needs, reinforce existing adjacencies to athletic fields, and help brings students back on campus.

Tennis + Soccer Support
A new storage building is proposed to be adjacent to the existing Tennis Courts and Soccer Field, and act as additional support for academic programs throughout campus.

New Construction
Reconstruction
Existing Buildings

Coast Colleges Gensler

OCC Appendix

CONTENTS

MEP Analysis Report

Civil Design Considerations

Coast Colleges Gensler

OCC MEP UTILITIES ANALYSIS REPORT
Electrical System Analysis

Introduction and Background

Orange Coast College is in the process of expanding its facilities and buildings across the campus. To support this growth, Gensler will be developing an updated Facilities Plan that will guide the future development of the College. As a critical component of this plan, a detailed assessment of the existing mechanical, plumbing, and electrical utility systems will be conducted. This analysis aims to determine whether the current infrastructure has the capacity to accommodate the proposed expansions and to identify any necessary upgrades or modifications to support the College's long-term growth.

Existing System

The existing main distribution system on the campus is serviced by Southern California Edison. It receives an underground service that operates at 4.16/2.40 (KV). The existing main distribution is located outdoors near the southeast corner of Arlington Drive. It is also located next to the Administration building.

The existing main distribution feeds different sectionalizing load break switches (SF-6) on campus. The SF-6 switches create a utility loop and feed several area substations with step-down transformers. The utility loop arrangement is to enhance system reliability, operation, and maintenance flexibility. The existing electrical system configuration is shown in Figure 1.

Figure 1: Existing 4.16KV Power Distribution System

Coast Colleges ALFATECH

OCC MEP UTILITIES ANALYSIS REPORT
Electrical System Analysis

Analysis

The campus had a peak demand of 3,738 KW (4,672 KVA) in 2024. Table 1 [Appendix 1] provides an overview load analysis of buildings on campus. It includes existing buildings to remain, existing buildings to be demolished, new facilities currently in design, and new facilities planned.

ELECTRICAL UTILITY LOAD SUMMARY

BLDG #	BUILDING NAME	EXISTING BLDG AREA GSF	EXISTING BLDG AREA ASF	YEAR BUILT	LOAD (KVA)
	EXISTING BUILDINGS				
1	ADMINISTRATION	13,487	10,234	1975	37
2	AUDITORIUM	36,566	28,496	1954	101
4	MUSIC	12,541	11,448	1954	34
5	FINE ARTS	16,122	11,442	1975	44
7	STUDENT SUCCESS CENTER	13,350	11,243	1950	37
8	CLASSROOM & LABS	5,243	3,692	1950	14
9	CLASSROOM & LABS	5,430	4,234	1950	15
10	SPECIAL SERVICES	7,288	4,307	1975	20
11	FACULTY HOUSE	2,023	1,759	1957	6
12	LEGACY HALL	6,671	4,672	1953	18
13	GARRISON BUILDING	4,617	2,874	1953	13
14	GLOBAL ENGAGEMENT CENTER	8,169	6,037	1953	22
40	SCIENCE HALL	10,285	7,033	1964	28
41	MATH LECTURE HALL 1	4,975	4,339	1971	14
42	LEWIS CENTER APPLIED SCI	33,921	20,790	1971	93
43	CONSUMER SCI & DESIGN	24,315	13,057	2011	67
44	ALLIED HEALTH SCIENCES	25,835	15,241	2011	71
45	BIOLOGICAL SCIENCES	33,304	23,115	2011	92
47	SKILL CENTER	15,996	12,276	1975	44
48	SKILL CENTER	8,596	5,744	1975	24
58	GREEN HOUSE # 6	1,872	1,628	1999	5
59	GREEN HOUSE # 7	1,680	1,655	1999	5
64	HORTICULTURE	3,229	2,719	1975	9
65	HORT. SHED #1	3,219	2,769	1975	9
66	HORT. SHED #2	848	738	1975	2
69	CHEMISTRY	33,580	21,273	1980	92
73	CLARK CENTER REPROGRAPHICS	14,272	11,951	1963	39
74	MATHEMATICS, BUS & COMP	75,080	55,272	2015	206
80	SOCIAL SCIENCES	12,354	8,428	1965	34
81	FORUM	9,237	6,719	1960	25
83	BOOKSTORE	16,330	13,361	1965	45
87	WATSON HALL	58,603	38,008	1965	161
89	STUDENT HEALTH CENTER	12,023	8,211	1978	33
90	PHYSICAL ED BUS OFF	442	382	1988	1
91	GYMNASIUM	29,080	27,969	1962	80
92	WOMENS SHOWER/LOCKER	7,560	6,994	1962	21
96	MENS SHOWER/LOCKER	12,280	8,523	1962	34
97	INDOOR HANDBALL CRTS	7,025	6,316	1962	19
98	PRESSBOX #1	415	361	1955	1
99	PRESSBOX #2	415	361	1955	1
110	FIELD HOUSE	9,010	3,148	1955	25
111	MO WAREHOUSE P	3,990	3,075	1971	11
112	GROUNDS MAINT SH	1,025	960	1994	3
113	GROUNDS MAINT SH	2,765	2,374	1994	8

ELECTRICAL UTILITY LOAD SUMMARY

BLDG #	BUILDING NAME	EXISTING BLDG AREA GSF	EXISTING BLDG AREA ASF	YEAR BUILT	LOAD (KVA)
114	TECHNOLOGY CTR	67,606	48,677	1994	186
115	TECHNOLOGY CTR A	7,652	5,852	1994	21
116	TECHNOLOGY CTR B	1,600	504	1994	4
121	RECYCLE CENTER	5,769	5,017	1977	16
138	SAILING CENTER	12,006	10,440	1970	33
144	BOOKSTORE WAREHOUSE	3,600	3,302	1981	10
146	EARLY CHILD LAB SCH	7,256	4,904	1988	20
147	PUBLIC SAFETY #1	1,429	1,154	1987	4
148	PUBLIC SAFETY #2	1,529	1,329	1999	4
152	CHILDREN CENTER	12,865	9,960	1997	35
153	CHILDREN CTR ART	546	530	1997	2
154	M&O SHOP	2,730	2,374	2006	8
155	MAINT & OPER	19,692	17,991	1998	54
156	INFORMATION TECHNOLOGY	10,420	9,479	2000	29
157	WEIGHT LAB	2,249	2,100	2000	6
158	ART CENTER	57,505	42,046	2002	158
171	TECHNICAL ANNEX	4,464	3,880	2001	12
172	CONSTRUCTION MANAGEMENT	2,160	1,753	2001	6
180	DOYLE ARTS PAVILION	8,948	5,508	2007	25
181	STARBUCKS CAFE	1,752	1,460	2007	5
182	LIBRARY	86,781	62,294	2008	239
183	FITNESS COMPLEX	32,272	25,159	2007	89
184	FIELD ENTRY FACILITY	1,006	875	2011	3
185	PLANETARIUM	13,067	8,455	2018	36
187	KINESIOLOGY/ ADAPTIVE PE	104,000		2020	286
188	STUDENT UNION/LIFE	40,600		2020	112
189	COLLEGE CENTER	119,000		2020	327
190	L.A. & SOCIAL SCIENCES	107,760		2021	296
191	THE HARBOUR AT OCC	327,377		2020	900
	Sub-Total	**1,668,709**	**710,271**		**4,589**
	EXISTING BUILDINGS TO BE DEMOLISHED				
1	-	-	-	-	0
2	AUDITORIUM	36,566	28,496	1954	73
4	MUSIC	12,541	11,448	1954	25
5	FINE ARTS	16,122	11,442	1975	32
47	SKILL CENTER	15,996	12,276	1975	32
48	SKILL CENTER	8,596	5,744	1975	17
89	STUDENT HEALTH CENTER	12,023	8,211	1978	24
91	GYMNASIUM	29,080	27,969	1962	58
96	MENS SHOWER/LOCKER	12,280	8,523	1962	25
97	INDOOR HANDBALL CRTS	7,025	6,316	1962	14
157	WEIGHT LAB	2,249	2,100	2000	4
171	TECHNICAL ANNEX	4,464	3,880	2001	9
172	CONSTRUCTION MANAGEMENT	2,160	1,753	2001	4

ELECTRICAL UTILITY LOAD SUMMARY

BLDG #	BUILDING NAME	EXISTING BLDG AREA GSF	EXISTING BLDG AREA ASF	YEAR BUILT	LOAD (KVA)
	Sub-Total	**159,102**	**128,158**		**318**
	PROJECT UNDER CONSTRUCTION				
69	CHEMISTRY	33,580	21,273	1980	92
	-	0			0
	-	0			0
	-	0			0
	Sub-Total	**33,580**			**92**
	PROJECT UNDER DESIGN				
	-	0			0
	Sub-Total	**0**			**0**
	PPROPOSED PROJECTS				
	SKILL CENTER	24,592			68
	GYMNASIUM	48,385			133
	FOOTBALL SEATING & SUPPORT	15,000			41
	SOFTBALL COMPLEX & DUGOUTS	12,000			33
	VISUAL & PERFORMING ARTS	49,107			135
	STUDENT SUPPORT CENTER	14,272			39
	HEALTH CENTER	12,023			33
	Sub-Total	**175,379**			**482**

ELECTRICAL UTILITY LOAD SUMMARY

BLDG #	BUILDING NAME	EXISTING BLDG AREA GSF	EXISTING BLDG AREA ASF	YEAR BUILT	LOAD (KVA)
	TOTAL FUTURE ELECTRICAL LOAD SUMMARY				
	Existing Building Area	1,668,709		4,589	KVA
	Demolished Building Area	159,102		318	KVA
	Project Under Construction	33,580		92	KVA
	Project Under Design	0		0	KVA
	Proposed Projects	175,379		482	KVA
	Total Future Campus Area/Load	**1,543,187**		**4,845**	**KVA**
	Total Future Campus Load (Amps)			**672**	**A**
	Existing Main Breaker			**3,000**	**A**

Table 1: Electrical System Analysis

OCC MEP UTILITIES ANALYSIS REPORT
Electrical System Analysis

Analysis

Based on this analysis, it appears that the existing electrical system has adequate capacity to accommodate the new facilities proposed in this facilities plan. The existing utility loop also has an adequate number of SF-6 switches near all proposed facilities. No additional SF-6 switches are required to accommodate the current facilities plan. Additional manholes may be required at strategic locations. See Figure 2.

The Administration building will be demolished as part of this facilities plan. The campus electrical distribution will be affected as part of the demolition of the Administration building. The existing 4.16KV distribution system must be relocated prior to any demolition work of the Administration building. Relocation of the existing 4.16KV distribution system will require coordination and support from Southern California Edison.

As the College continues to grow, new projects will change the landscape of the campus. The electrical system must be set up to accommodate planned changes and growth. In anticipation of this, this study recommends electrical system improvements and additions that will set a clear path for connecting future projects to the electrical infrastructure.

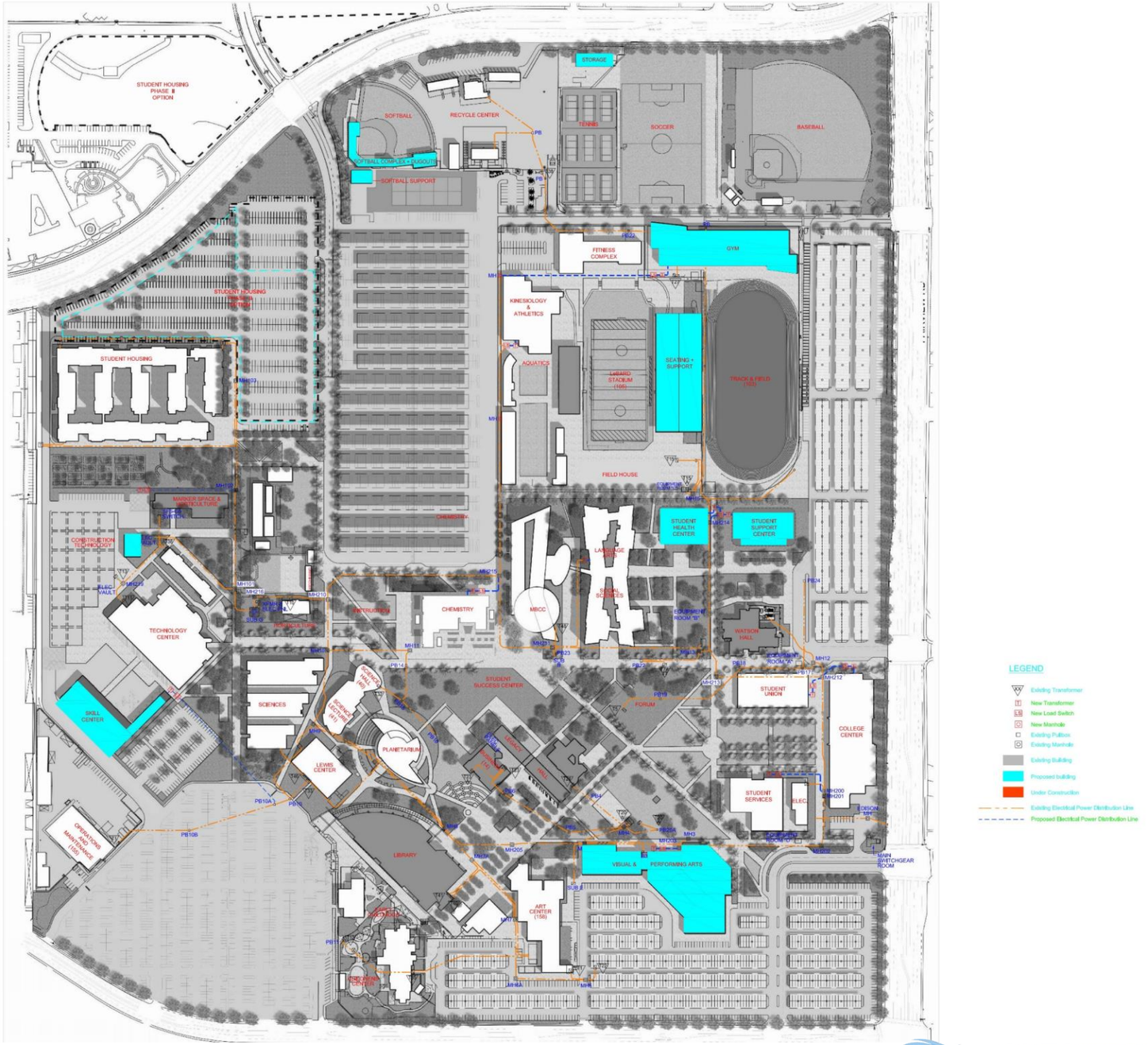


Figure 2: Proposed 4.16KV Power Distribution System

OCC MEP UTILITIES ANALYSIS REPORT
Electrical System Analysis

Additional Recommendations:

1. The existing main outdoor electrical power distribution system is beyond its expected life. Age and condition of existing cables and duct banks cannot be determined. It is recommended to replace and upgrade the main outdoor electrical power distribution to accommodate future growth and new facilities.
2. It is recommended that the overview load analysis (Table 1 [Appendix 1]) be updated as new facilities complete design and construction. This helps ensure the existing electrical power distribution system will not be overloaded.
3. The district is incorporating sustainability as a strategy in the 2045 Facilities Plan. To achieve this goal, renewable energy such as photovoltaic systems are recommended. The goal would be to achieve grid neutrality for the campus. Another measure to assist in gird neutrality is to maintain the existing energy monitoring system and install same device types in new buildings as they come online throughout the campus. Accurate energy monitoring will be a major component in ongoing utility systems operations and maintenance.

OCC MEP UTILITIES ANALYSIS REPORT
Mechanical System Analysis

Existing System

The campus's air conditioning system consists of packaged rooftop gas-electric units, heat pumps, and small central plants serving individual buildings or clusters. These central plants generate chilled hot water, which is distributed through piping to air handling units equipped with chilled and hot water coils for air conditioning. Heating is provided by local hot water boilers, which supply VAV reheat coils and air handler heating coils. This integrated system ensures efficient temperature control and occupant comfort across the campus.

Analysis

Future buildings will incorporate air conditioning systems similar to those in existing buildings, as the campus lacks a central plant with a site-wide distribution piping system. Depending on the type and size of the new building, some may utilize packaged rooftop gas-electric units with VAV reheat or heat pumps. These systems will be designed to meet the specific cooling and heating demands of each building while maintaining operational efficiency.

To ensure optimal performance and reduce the campus's environmental impact, all new air conditioning units will be high-efficiency models, featuring ECM motor drives for the fans and variable frequency drive compressors. These advanced components will provide precise control of airflow and refrigerant flow, improving energy efficiency and contributing to a significant reduction in the campus's carbon footprint. Additionally, Variable Refrigerant Flow (VRF) technology will be incorporated into the air conditioning units, known for its high energy efficiency and ability to provide individualized comfort control within different building zones.

Moving forward, the primary objective is to achieve overall campus sustainability. This will involve adopting energy-efficient technologies and strategies to reduce energy consumption, minimize environmental impact, and support the campus's long-term commitment to sustainability.

Mini Central Plants should be considered for buildings with high sensible loads, particularly those with substantial outside air requirements that necessitate chilled water for effective dehumidification. Buildings such Performing Arts Center is a prime example where this system would be beneficial. By integrating a Mini Central Plant, these buildings can efficiently manage their cooling, and dehumidification needs while optimizing energy consumption. Furthermore, nearby buildings could be connected to these Mini Central Plants, creating a network that enhances the overall energy efficiency of the campus and reduces the operational costs associated with heating and cooling. This approach aligns with the goal of creating a more sustainable and cost-effective campus infrastructure.

For example: We recommend the addition of a central plant to serve the new Performing Arts building. The proposed location for the central plants and associated piping distribution are illustrated in the site plan (Figure 3). Estimated plant capacities are detailed in Table 2 (Appendix 1).

Central Plants will generate chilled and hot water distributed via piping to air handling units equipped with corresponding coils in the buildings. The system will feature air-cooled chillers with variable speed drives on compressors and ECM motors on condenser fans. Heating will be provided by high-efficiency, low-NOx, gas-fired condensing boilers. All pumps will utilize variable flow to enhance part-load efficiency, and the chiller plant will operate with a variable primary flow design. Collectively, these components will deliver a high-performance HVAC system that supports the campus's long-term sustainability objectives.

OCC MEP UTILITIES ANALYSIS REPORT

Mechanical System Analysis

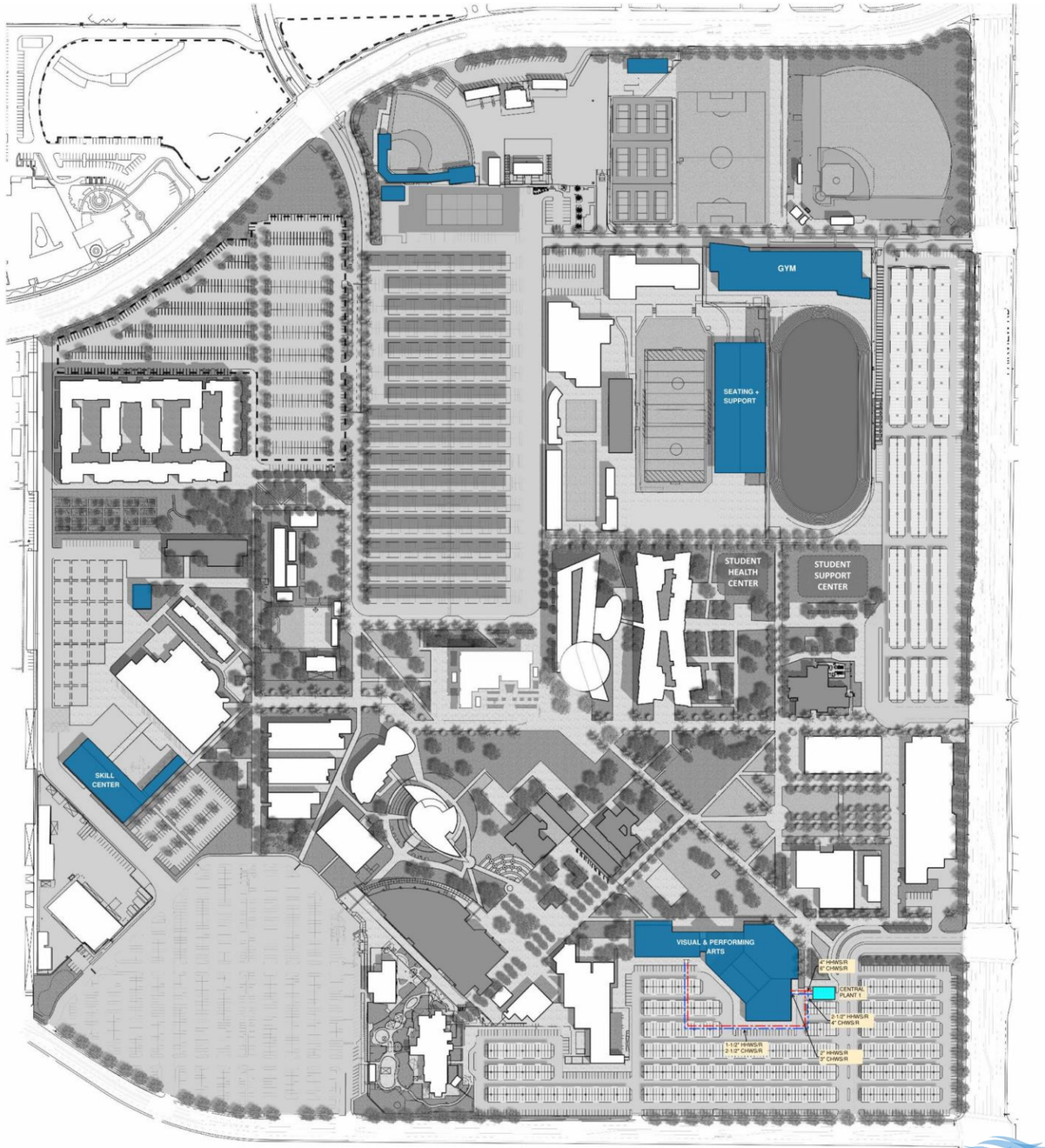


FIGURE 3:
PROPOSED PLANT AND CHILLED/ HOT WATER DISTRIBUTION PIPING

LEGEND

- HHWS/R PIPE (UNDERGROUND)
- CHWS/R PIPE (UNDERGROUND)
- SHUT-OFF VALVE

- New Construction
- Reconstruction
- Existing Buildings

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OCC MEP UTILITIES ANALYSIS REPORT
Mechanical System Analysis

Table 2: HVAC System Analysis

HVAC LOAD SUMMARY											
BUILDING NAME	EXISTING BLDG AREA		COOLING LOAD			HEATING LOAD				LOAD ASSUMPTIONS	
	GSF	ASF	CHW TONS	Delta T (°F)	FLOW (GPM)	BOILER OUTPUT LOAD (MBH)	INPUT (KBTUH)	Delta T (°F)	FLOW (GPM)	ASF / TON	BTUH / ASF
CENTRAL PLANT 1											
PERFORMING ARTS	22,942	19,501	65	(42-54)	130	780	975	(180-140)	39	300	40
Sub-Total	**22,942**		**65**		**130**	**780**	**975**		**39**		

OCC MEP UTILITIES ANALYSIS REPORT
Plumbing System Analysis

Existing System

The scope of analysis on plumbing system is to determine if the overall existing plumbing site utility infrastructure can accommodate the future planning and expansion campus wide. A spreadsheet has been provided to evaluate the plumbing load for each individual building (Table 3 [Appendix 1]). The plumbing load for each building breaks down into water, sanitary, storm, gas, and fire. The overall and subtotals of different categories are also provided for comparison.

For most of the buildings, there are no design documents or as-built drawings available, therefore the estimate is largely based on the square footage except a few of them with drawings from which the plumbing load is taken. The square footage method is as follows:

Use 2022 CPC chapter 4 table A-occupant load factor to determine the maximum occupancy load for each type of building; Use 2022 CPC chapter 4 table 422.1 – minimum plumbing facilities to determine the minimum number of plumbing fixtures required and add 30% more to this number. With the quantity of plumbing fixtures, the water and sanitary load can be calculated in terms of fixture units or gallons per minute (GPM). Storm water (roof drainage) is evaluated based on square footage and converted to gallons per minute with corresponding rainfall rate. The gas load is evaluated based on 40 btu/square foot for space heating (except buildings served by heat pumps) plus the domestic water heating. The fire water demand is assumed 500 GPM for small buildings, 750 GPM for medium building and 1000 GPM for large building.

Analysis

The current Facilities Plan indicates that 8 new buildings are planned to be added to the campus in the future, 8 new buildings, 3 reconstructions, 24 existing. It appears that both the quantity of the buildings and the gross square footage will be reduced. The total water, gas, sewer, and storm loads campus wide are expected to decrease about 10-20% in general. We believe the capacity of the existing infrastructure is adequate to handle the existing demand and the proposed new buildings.

OCC MEP UTILITIES ANALYSIS REPORT

Plumbing System Analysis

Table 3: Plumbing System Analysis

PLUMBING LOAD SUMMARY																	
		AREA				DOMESTIC WATER			FIRE WATER		NATURAL GAS			STORM		SANITARY	
Bldg #	BUILDING NAME	GSF	ASF	NO. OF FLOORS	YEAR BUILT	FIXTURE UNITS	WATER DEMAND (GPM)	WATER PRESSURE REQUIRED (PSI)	DEMAND (GPM)	WATER PRESSURE REQUIRED (PSI)	HVAC DEMAND (MBH)	PLUMBING DEMAND (MBH)	TOTAL NATURAL GAS DEMAND (MBH)	ROOF AREA (SF)	FLOW RATE (GPM)	FIXTURE UNITS	MAIN PIPE SIZE (INCH)
EXISTING BUILDINGS																	
1	ADMINISTRATION	13,487	10,234	2	1975	66	57	55	750	110	512	100	612	13,929	446	55	4
2	AUDITORIUM	36,566	28,496	2	1954	146	80	55	1,000	110	1,425	100	1,525	41,745	1,336	115	4
4	MUSIC	12,541	11,448	2	1954	44	48	55	750	110	572	100	672	10,656	341	36	4
5	FINE ARTS	16,122	11,442	2	1975	52	52	55	750	110	572	100	1,217	14,146	453	46	4
7	STUDENT SUCCESS CENTER	13,350	11,243	2	1950	96	67	55	750	110	562	100	5,348	16,057	514	107	4
8	CLASSROOM & LABS	5,243	3,692	1	1950	33	43	50	750	70	185	40	225	5,930	190	26	4
9	CLASSROOM & LABS	5,430	4,234	1	1950	35	44	50	750	70	212	40	252	5,708	183	29	4
10	SPECIAL SERVICES	7,288	4,307	1	1975	35	44	50	750	70	215	40	255	9,292	297	29	4
11	FACULTY HOUSE	2,023	1,759	1	1957	17	34	50	500	70	88	40	128	3,447	110	15	4
12	LEGACY HALL	6,671	4,672	1	1953	36	45	50	750	70	234	40	274	6,516	209	29	4
13	GARRISON BUILDING	4,617	2,874	1	1953	49	51	50	500	70	144	40	184	5,192	166	38	4
14	GLOBAL ENGAGEMENT CENTER	8,169	6,037	1	1953	48	50	50	750	70	302	100	402	10,229	327	39	4
40	SCIENCE HALL	10,285	7,033	2	1964	59	55	55	750	110	352	100	452	10,582	339	46	4
41	MATH LECTURE HALL 1	4,975	4,339	1	1971	39	46	50	500	70	217	40	257	8,100	259	31	4
42	LEWIS CENTER APPLIED SCI	33,921	20,790	2	1971	104	69	55	1,000	110	1,040	100	1,140	17,573	562	82	4
43	CONSUMER SCI & DESIGN	24,315	13,057	2	2011	76	60	55	1,000	110	653	100	753	9,797	314	64	4
44	ALLIED HEALTH SCIENCES	25,835	15,241	2	2011	514	144	55	1,000	110	762	100	862	13,113	420	390	6
45	BIOLOGICAL SCIENCES	33,304	23,115	2	2011	243	100	55	1,000	110	1,156	100	1,256	17,272	553	212	4
47	SKILL CENTER	15,996	12,276	2	1975	10	27	55	750	110	614	100	714	19,018	396	10	4
48	SKILL CENTER	8,596	5,744	1	1975	60	55	50	750	70	287	100	387	8,900	185	44	4
58	GREEN HOUSE # 6	1,872	1,628	1	1999	10	27	50	XXX	XXX	81	40	121	XXX	XXX	XXX	XXX
59	GREEN HOUSE # 7	1,680	1,655	1	1999	10	27	50	XXX	XXX	83	40	123	XXX	XXX	XXX	XXX
64	HORTICULTURE	3,229	2,719	1	1975	40	47	50	XXX	XXX	136	40	176	3,229	67	35	4
65	HORT. SHED #1	3,219	2,769	1	1975	10	27	50	XXX	XXX	138	40	178	3,219	67	XXX	XXX
66	HORT. SHED #2	848	738	1	1975	10	27	50	XXX	XXX	37	40	77	848	18	XXX	XXX
69	CHEMISTRY	33,580	21,273	2	1980	346	117	55	1,000	110	1,064	200	1,264	19,485	624	325	6
70	LITERATURE-LANGUAGE	23,912	16,831	2	1976	92	66	55	1,000	110	842	100	942	14,545	465	69	4
71	WRITERS ROW	6,394	4,577	1	1958	48	50	50	750	70	229	40	269	6,624	212	39	4
72	JOURNALISM	10,593	7,365	1	1958	48	50	50	750	70	368	100	468	10,299	330	39	4
73	CLARK CENTER REPROGRAPHICS	14,272	11,951	2	1963	34	44	55	750	110	598	100	698	17,598	563	28	4
74	MATHEMATICS, BUS & COMP	75,080	55,272	3	2015	278	107	60	1,000	120	2,764	100	2,864	46,851	1,499	222	6
80	SOCIAL SCIENCES	12,354	8,428	2	1965	90	65	55	750	110	421	100	521	11,883	380	67	4
81	FORUM	9,237	6,719	1	1960	59	55	50	750	70	336	100	436	9,558	306	46	4
83	BOOKSTORE	16,330	13,361	2	1965	26	39	55	750	110	668	100	768	18,822	602	21	4
86	STUDENT CENTER	26,993	24,870	2	1952	212	94	55	1,000	110	1,244	100	11,862	26,993	864	237	6
87	WATSON HALL	58,603	38,008	3	1965	189	89	60	1,000	120	1,900	100	2,000	16,088	515	157	4
89	STUDENT HEALTH CENTER	12,023	8,211	2	1978	58	55	55	750	110	411	100	511	13,675	438	50	4
90	PHYSICAL ED BUS OFF	442	382	1	1988	26	39	50	500	70	19	40	59	442	14	21	4
91	GYMNASIUM	29,080	27,969	2	1962	203	92	55	1,000	110	1,398	200	1,538	32,834	1,051	175	4
92	WOMENS SHOWER/LOCKER	7,560	6,994	1	1962	69	58	50	750	70	350	200	550	10,595	339	62	4
96	MENS SHOWER/LOCKER	12,280	8,523	2	1962	70	59	55	750	110	426	200	626	12,820	410	51	4
97	INDOOR HANDBALL CRTS	7,025	6,316	1	1962	59	55	50	750	70	316	100	416	8,163	261	46	4

OCC MEP UTILITIES ANALYSIS REPORT

Plumbing System Analysis

Table 3: Plumbing System Analysis

PLUMBING LOAD SUMMARY																	
		AREA				DOMESTIC WATER			FIRE WATER		NATURAL GAS			STORM		SANITARY	
Bldg #	BUILDING NAME	GSF	ASF	NO. OF FLOORS	YEAR BUILT	FIXTURE UNITS	WATER DEMAND (GPM)	WATER PRESSURE REQUIRED (PSI)	DEMAND (GPM)	WATER PRESSURE REQUIRED (PSI)	HVAC DEMAND (MBH)	PLUMBING DEMAND (MBH)	TOTAL NATURAL GAS DEMAND (MBH)	ROOF AREA (SF)	FLOW RATE (GPM)	FIXTURE UNITS	MAIN PIPE SIZE (INCH)
98	PRESSBOX #1	415	361	1	1955	0	XXX	50	500	70	18	0	18	415	13	0	XXX
99	PRESSBOX #2	415	361	1	1955	0	XXX	50	500	70	18	0	18	414	13	0	XXX
110	FIELD HOUSE	9,010	3,148	1	1955	101	68	50	500	70	157	40	1,294	8,895	285	87	4
111	MO WAREHOUSE P	3,990	3,075	1	1971	21	36	50	500	70	154	40	194	3,990	128	18	4
112	GROUNDS MAINT SH	1,025	960	1	1994	21	36	50	500	70	48	40	88	1,025	33	18	4
113	GROUNDS MAINT SH	2,765	2,374	1	1994	21	36	50	500	70	119	40	159	2,765	88	18	4
114	TECHNOLOGY CTR	67,606	48,677	3	1994	248	101	60	1,000	120	2,434	100	2,534	54,071	1,730	200	4
115	TECHNOLOGY CTR A	7,652	5,852	1	1994	42	47	50	750	70	293	100	393	8,227	263	34	4
116	TECHNOLOGY CTR B	1,600	504	1	1994	26	39	50	500	70	25	40	65	1,600	51	21	4
121	RECYCLE CENTER	5,769	5,017	1	1977	21	36	50	750	70	251	100	351	5,769	185	18	4
138	SAILING CENTER	12,006	10,440	1	1970	70	59	50	750	70	522	100	622	3,600	115	56	4
144	BOOKSTORE WAREHOUSE	3,600	3,302	1	1981	21	36	50	500	70	165	40	205	4,360	140	18	4
146	EARLY CHILD LAB SCH	7,256	4,904	1	1988	35	44	50	750	70	245	40	285	7,855	251	29	4
147	PUBLIC SAFETY #1	1,429	1,154	1	1987	26	39	50	500	70	58	40	98	1,393	45	21	4
148	PUBLIC SAFETY #2	1,529	1,329	1	1999	26	39	50	500	70	66	40	106	1,874	60	21	4
152	CHILDREN CENTER	12,865	9,960	2	1997	206	93	55	750	110	498	100	548	17,325	554	184	4
153	CHILDREN CTR ART	546	530	1	1997	12	29	50	500	70	27	40	29	546	17	10	4
154	M&O SHOP	2,730	2,374	1	2006	26	39	50	500	70	119	40	159	2,730	87	21	4
155	MAINT & OPER	19,692	17,991	1	1998	96	67	50	750	70	900	100	1,000	21,280	681	78	4
156	INFORMATION TECHNOLOGY	10,420	9,479	2	2000	59	54	55	750	110	474	100	574	13,490	432	48	4
157	WEIGHT LAB	2,249	2,100	1	2000	26	39	50	500	70	105	40	145	2,677	86	21	4
158	ART CENTER	57,505	42,046	2	2002	242	100	55	1,000	110	2,102	100	2,202	33,206	1,063	195	4
171	TECHNICAL ANNEX	4,464	3,880	1	2001	33	43	50	500	70	194	40	234	5,071	162	26	4
172	CONSTRUCTION MANAGEMENT	2,160	1,753	1	2001	26	39	50	500	70	88	40	128	2,540	81	21	4
180	DOYLE ARTS PAVILION	8,948	5,508	1	2007	39	46	50	750	70	275	100	375	7,819	250	31	4
181	STARBUCS CAFÉ	1,752	1,460	1	2007	33	43	50	500	70	73	40	113	1,945	62	26	4
182	LIBRARY	86,781	62,294	3	2008	237	99	60	1,000	120	3,115	100	3,215	57,935	1,854	186	4
183	FITNESS COMPLEX	32,272	25,159	2	2007	125	74	55	1,000	110	1,258	200	1,458	21,433	686	98	4
184	FIELD ENTRY FACILITY	1,006	875	1	2011	26	39	50	500	70	44	40	84	1,006	32	21	4
185	PLANETARIUM	13,067	8,455	2	2018	72	59	55	750	110	985	55	1,040	14,100	451	58	4
187	KINESIOLOGY/ ADAPTIVE PE	104,000	104,000	3	2020	1,242	239	60	1,000	120	3,930	7600	11,530	37,360	1,196	2,886	10
188	STUDENT UNION/LIFE	40,600	40,600	2	2020	130	76	55	1,000	110	1,000	125	1,125	23,222	743	150	4
189	COLLEGE CENTER	119,000	119,000	3	2020	635	161	60	1,000	120	19,800	1200	21,000	56,250	1,800	557	6
190	L.A. & SOCIAL SCIENCES	107,760	69,701	3	2021	270	105	60	1,000	120	5,250	120	5,370	38,425	1,230	344	6
191	THE HARBOUR AT OCC	327,377	327,377	3	2020	4,520	604	60	1,000	120	0	3700	3,700	93,178	2,982	1,778	8
	Sub-Total	**1,736,601**	**1,424,592**			**12,483**	**5,124**		**53,750**		**68,738**	**18,400**	**103,836**	**1,089,564**	**34,472**	**10,431**	

OCC MEP UTILITIES ANALYSIS REPORT

Plumbing System Analysis

Table 3: Plumbing System Analysis

PLUMBING LOAD SUMMARY																		
		AREA				DOMESTIC WATER			FIRE WATER		NATURAL GAS			STORM		SANITARY	
Bldg #	BUILDING NAME	GSF	ASF	NO. OF FLOORS	YEAR BUILT	FIXTURE UNITS	WATER DEMAND (GPM)	WATER PRESSURE REQUIRED (PSI)	DEMAND (GPM)	WATER PRESSURE REQUIRED (PSI)	HVAC DEMAND (MBH)	PLUMBING DEMAND (MBH)	TOTAL NATURAL GAS DEMAND (MBH)	ROOF AREA (SF)	FLOW RATE (GPM)	FIXTURE UNITS	MAIN PIPE SIZE (INCH)
EXISTING BUILDINGS TO BE DEMOLISHED																		
1	ADMINISTRATION	13,487	10,234	2	1975	66	57	55	750	110	512	100	612	13,929	446	55	4
2	AUDITORIUM	36,566	28,496	2	1954	146	80	55	1,000	110	1,425	100	1,525	41,745	1,336	115	4
4	MUSIC	12,541	11,448	2	1954	44	48	55	750	110	572	100	672	10,656	341	36	4
5	FINE ARTS	16,122	11,442	2	1975	52	52	55	750	110	572	100	672	14,146	453	46	4
7	STUDENT SUCCESS CENTER	13,350	11,243	2	1950	96	67	55	750	110	562	100	662	16,057	514	107	4
8	CLASSROOM & LABS	5,243	3,692	1	1950	33	43	50	750	70	185	40	225	5,930	190	26	4
9	CLASSROOM & LABS	5,430	4,234	1	1950	35	44	50	750	70	212	40	252	5,708	183	29	4
11	FACULTY HOUSE	2,023	1,759	1	1957	17	34	50	500	70	88	40	128	3,447	110	15	4
47	SKILL CENTER	15,996	12,276	2	1975	10	27	55	750	110	614	100	714	19,018	609	10	4
48	SKILL CENTER	8,596	5,744	1	1975	60	55	50	750	70	287	100	387	8,900	285	44	4
69	CHEMISTRY	33,580	21,273	2	1980	346	117	55	1,000	110	1,064	200	1,264	19,485	624	325	6
70	LITERATURE-LANGUAGE	23,912	16,831	2	1976	92	66	55	1,000	110	842	100	942	14,545	465	69	4
71	WRITERS ROW	6,394	4,577	1	1958	48	50	50	750	70	229	40	269	6,624	212	39	4
72	JOURNALISM	10,593	7,365	1	1958	48	50	50	750	70	368	100	468	10,299	330	39	4
73	CLARK CENTER REPROGRAPHICS	14,272	11,951	2	1963	34	44	55	750	110	598	100	698	17,598	563	28	4
80	SOCIAL SCIENCES	12,354	8,428	2	1965	90	65	55	750	110	421	100	521	11,883	380	67	4
83	BOOKSTORE	16,330	13,361	2	1965	26	39	55	750	110	668	100	768	18,822	602	21	4
86	STUDENT CENTER	26,993	24,870	2	1952	212	94	55	1,000	110	1,244	100	1,344	26,993	864	237	6
89	STUDENT HEALTH CENTER	12,023	8,211	2	1978	58	55	55	750	110	411	100	511	13,675	438	50	4
91	GYMNASIUM	29,080	27,969	2	1962	203	92	55	1,000	110	1,398	200	1,598	32,834	1,051	175	4
92	WOMENS SHOWER/LOCKER	7,560	6,994	1	1962	69	58	50	750	70	350	200	550	10,595	339	62	4
96	MENS SHOWER/LOCKER	12,280	8,523	1	1962	70	59	50	750	70	426	200	626	12,820	410	51	4
97	INDOOR HANDBALL CRTS	7,025	6,316	1	1962	59	55	50	750	70	316	100	416	8,163	261	46	4
116	TECHNOLOGY CTR B	1,600	504	1	1994	26	39	50	500	70	25	40	65	1600	51	21	4
144	BOOKSTORE WAREHOUSE	3,600	3,302	1	1981	21	36	50	500	70	165	40	205	4,360	140	18	4
147	PUBLIC SAFETY #1	1,429	1,154	1	1987	26	39	50	500	70	58	40	98	1,393	45	21	4
148	PUBLIC SAFETY #2	1,529	1,329	1	1999	26	39	50	500	70	66	40	106	1,874	60	21	4
157	WEIGHT LAB	2,249	2,100	1	2000	26	39	50	500	70	105	40	145	2,677	86	21	4
171	TECHNICAL ANNEX	4,464	3,880	1	2001	33	43	50	500	70	194	40	234	5,071	162	26	4
172	CONSTRUCTION MANAGEMENT	2,160	1,753	1	2001	26	39	50	500	70	88	40	128	2,540	81	21	4
	Sub-Total	**358,781**	**281,259**			**2,098**	**1,625**		**21,750**		**14,063**	**2,740**	**16,803**	**363,387**	**11,628**	**1,841**	
PROJECT UNDER CONSTRUCTION																		
	STUDENT HOUSING	327,681	327681	3	X	4,520	604	60	1,000	120	0	3,700	3,700	93,178	2,982	1,778	8
	AQUATIC CENTER	37,633	37633	2	X	1,242	239	55	1,000	110	11,230	300	11,530	37,360	1,196	2,886	10
	STUDENT LIFE	34,620	34,620	2	X	130	75	55	1,000	110	1,025	100	1,125	23,222	743	150	4
	COLLEGE CENTER	119,185	119,185	3	X	635	161	60	1,000	120	20,700	300	21,000	56,250	1,800	557	6
	Sub-Total	**519,119**	**519,119**			**6,527**	**1,079**		**4,000**		**32,955**	**4,400**	**37,355**	**210,010**	**6,720**	**5,371**	
PROJECT UNDER DESIGN																		
	LANGUAGE ARTS	23,912	23,912	2	X	270	105		1,000		1,196	100	5,370	23,222	743	150	4
	Sub-Total	**23,912**	**23,912**			**270**	**105**		**1,000**		**1,196**	**100**	**5,370**	**23,222**	**743**	**150**	
FUTURE BUILDINGS																		

OCC MEP UTILITIES ANALYSIS REPORT

Plumbing System Analysis

Table 3: Plumbing System Analysis

PLUMBING LOAD SUMMARY																	
		AREA				DOMESTIC WATER			FIRE WATER		NATURAL GAS			STORM		SANITARY	
Bldg #	BUILDING NAME	GSF	ASF	NO. OF FLOORS	YEAR BUILT	FIXTURE UNITS	WATER DEMAND (GPM)	WATER PRESSURE REQUIRED (PSI)	DEMAND (GPM)	WATER PRESSURE REQUIRED (PSI)	HVAC DEMAND (MBH)	PLUMBING DEMAND (MBH)	TOTAL NATURAL GAS DEMAND (MBH)	ROOF AREA (SF)	FLOW RATE (GPM)	FIXTURE UNITS	MAIN PIPE SIZE (INCH)
	SKILL CENTER	24,592	24,592	2	X	134	76	55	1,000	110	1,230	100	1,330	12,296	393	108	XXX
	CHEMISTRY	33,580	33,580	2	X	179	87	55	1,000	110	1,679	200	1,879	16,790	537	143	XXX
	INSTRUCTION	24,592	24,592	2	X	134	76	55	1,000	110	1,230	100	1,330	12,296	393	108	XXX
	STUDENT EXCELLENCE	13,350	13,350	2	X	80	61	55	750	110	668	100	768	6,675	214	64	XXX
	PERFORMING ARTS	12,354	12,354	2	X	125	74	55	750	110	618	100	718	6,177	198	98	XXX
	STUDENT SERVICES	14,272	14,272	2	X	80	61	55	750	110	714	100	814	7,136	228	64	XXX
	HEALTH CENTER	12,023	12,023	2	X	78	61	55	750	110	601	100	701	6,012	192	63	XXX
	POLICE	2,958	2,958	1	X	39	46	50	500	70	148	40	188	2,958	95	32	XXX
	Sub-Total	**137,721**	**137,721**			**849**	**542**		**6,500**		**6,886**	**840**	**7,726**	**70,340**	**2,251**	**680**	
PLUMBING LOADS CALCULATION																	
	Existing Building Loads					**12,483**	**5,124**		**53,750**		**68,738**	**18,400**	**103,836**	**1,089,564**	**34,472**	**10,431**	
	Demolished Building Loads					**2,098**	**703**		**21,750**		**14,063**	**2,740**	**16,803**	**363,387**	**11,628**	**1,841**	
	Future Building Loads					**849**	**542**		**6,500**		**6,886**	**840**	**7,726**	**70,340**	**2,251**	**680**	
	Total Future Campus Loads					**11,234**	**4,963**		**38,500**		**61,561**	**16,500**	**94,759**	**796,517**	**25,094**	**9,270**	

OCC CIVIL DESIGN CONSIDERATIONS

OVERVIEW

Orange Coast College is located at the northwest corner of Fairview Road and Merrimac Way in Costa Mesa, CA. The original 2030 Vision proposed the construction of 11 new buildings along with the redevelopment of 3 existing structures. The updated 2030 Vision now includes 7 new buildings and the reconstruction of 4 existing buildings. As part of the revised plan, several existing buildings will be demolished to create additional open spaces and walkways, enhancing the campus layout and overall accessibility.

EXISTING CONDITIONS / SITE DEMOLITION

Orange Coast College consists of a mix of buildings, landscaped areas, and walkways. The project involves demolishing the existing buildings within the work area. Currently, there are several utilities run between and around these buildings, serving the structures slated for demolition. Most of these utilities can be removed and capped at the work limits
To ensure regulatory compliance and preserve site stability during construction, perimeter erosion control measures will be employed. Stabilizing temporary access points will also be created to limit disturbances and uphold safety throughout the redevelopment.

SITE EXCAVATION AND GRADING

The current surface drainage patterns cannot be verified at this time, as the Topographic Survey has not yet been obtained. However, to minimize grading efforts, the finished floor elevations of the new buildings will be set to ensure ADA compliance while also directing all surface water flows away from the structures. Accessible, open-grated catch basins will be strategically placed throughout the site to collect surface runoff. During grading operations, all existing utilities will be clearly identified on the plan to prevent disturbance to lines that must remain in place, while any utilities designated for removal will be properly cut and capped.
Grading will be carried out in accordance with the recommendations provided in the geotechnical report, and excavation will follow the Standard Specifications for Public Works Construction (commonly referred to as the "Greenbook").

SITE CIVIL UTILITIES

The civil utilities for the project include storm drains, domestic water, and sanitary sewer systems.

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OCC CIVIL DESIGN CONSIDERATIONS

STORM DRAINAGE

The proposed site design prioritizes maintaining the existing drainage pattern to ensure effective and efficient stormwater management. A series of strategically placed catch basins will be installed to collect runoff from their designated tributary areas. Whenever possible, these catch basins will be positioned within landscaped areas to capture surface flows from hardscapes while also managing runoff from adjacent softscapes. The collected stormwater will be directed into the existing storm drain system, preserving overall site drainage functionality. Additionally, roof drains from the proposed buildings will be integrated into this system, enhancing water conveyance and minimizing the risk of localized flooding.

To accommodate the new development, storm drain lines have been carefully rerouted to prevent conflicts with proposed structures while preserving the natural drainage flow. These modifications ensure uninterrupted stormwater conveyance, safeguarding both the site's infrastructure and the long-term functionality of the drainage system.

WATER DISTRIBUTION

The campus currently has an existing water distribution system that supplies both the buildings and fire hydrants, ensuring reliable access to water across the site. To accommodate the proposed buildings, new laterals have been added to the system to provide the necessary connections. Plumbing will determine the building water supply, considering proper pipe sizing based on the required flow. Several water lines that were previously located beneath proposed building surfaces have been rerouted to avoid conflicts with the new structures. A double check detector assembly (DCDA) will likely not be required if a campus-wide backflow preventer is installed upstream of the connection point, ensuring effective backflow prevention throughout the system.

SANITARY SEWER

Sanitary sewer lines serving buildings set for demolition will be disconnected, capped, and abandoned. New sewer lines, including laterals, cleanouts, and manholes, will be installed to properly service the proposed buildings and maintain efficient wastewater flow. Invert elevation will be considered when rerouting lines, as to continue gravity flow lines. The proposed lines will aim to match the existing pipe sizes, with potential upgrades considered to meet increased capacity requirements.

The Civil Proposed Utility Plan provides detailed information on the removal and installation of sewer lines.

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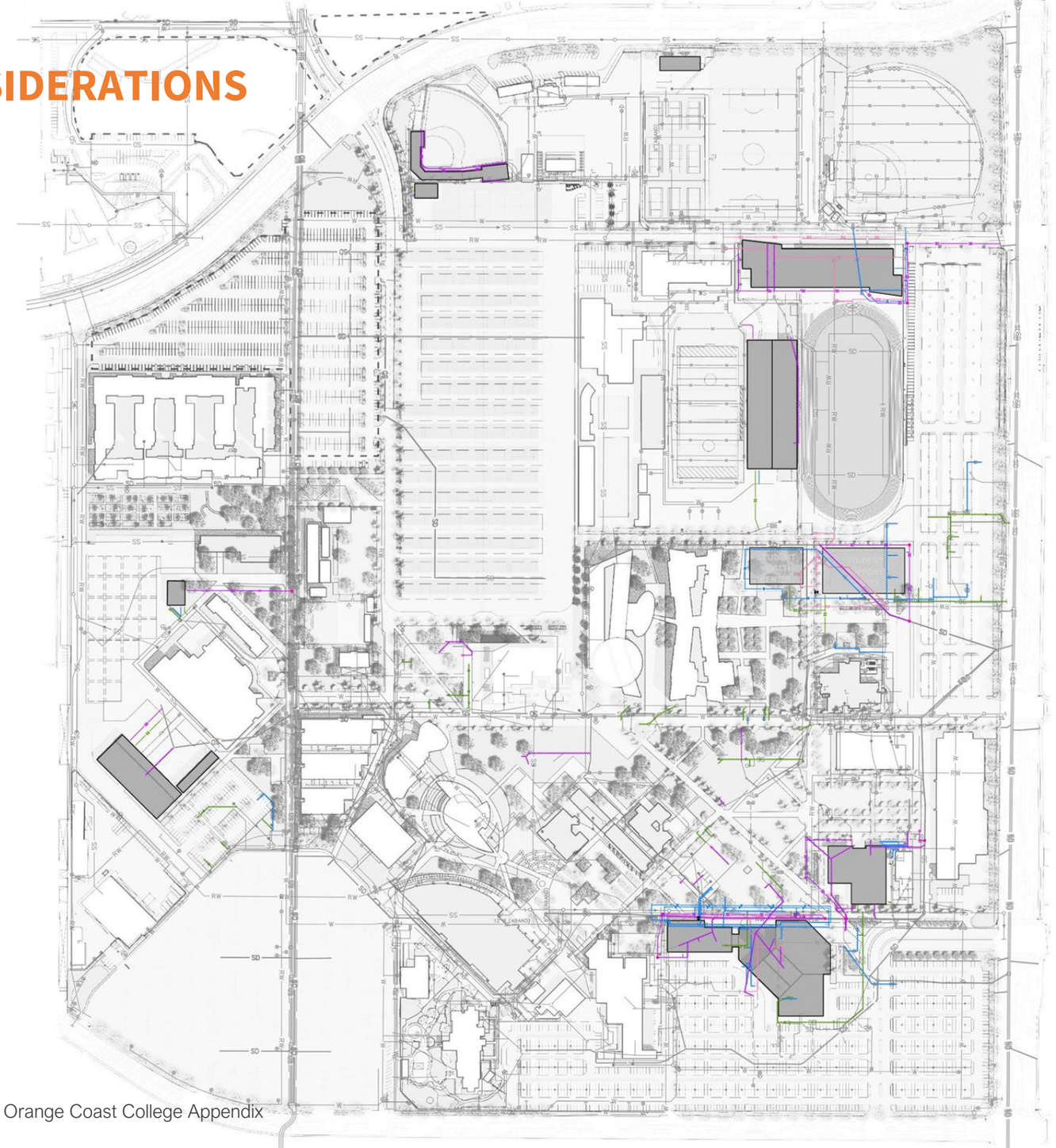
OCC CIVIL DESIGN CONSIDERATIONS



EXISTING UTILITY LEGEND:

- SANITARY SEWER
- WATER
- STORM DRAIN
- RECLAIMED WATER
- MANHOLE
- FIRE HYDRANT
- WATER METER

PROPOSED UTILITY LEGEND:

- SANITARY SEWER
- WATER
- STORM DRAIN
- RECLAIMED WATER
- EXISTING SANITARY SEWER TO BE REMOVED
- EXISTING WATER TO BE REMOVED
- EXISTING STORM DRAIN TO BE REMOVED
- EXISTING RECLAIMED WATER TO BE REMOVED
- PROPOSED FIRE HYDRANT
- PROPOSED MANHOLE
- PROPOSED CATCH BASIN
- PROPOSED BUILDING

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2045 Facilities Plan

COAST COMMUNITY COLLEGE DISTRICT

Coast Colleges Gensler