

PROGRAMS AND SERVICES

INTERVIEWEES

- o Programs and Services Interviewees

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- o Laboratory Space Analysis

FARM PLANNING

- o Farm Planning

STUDENT FOCUS GROUP REPORT

- o Student Focus Group Report

COMMUNITY WORKSHOPS REPORT

- o Community Workshops Report

REFERENCE DOCUMENTS

- o Reference Documents

PREVIOUS FACILITIES MASTER PLANS

- o Previous Facilities Master Plans
- o Mount San Antonio College Master Plan, September 1981 excerpts
- o Master Plan Update 2005 excerpts
- o Facilities Master Plan Update 2009 excerpts
- o Facilities Master Plan 2012 excerpts
- o 2015 Facilities Master Plan Update excerpts

UTILITIES INFRASTRUCTURE

- o Utilities Infrastructure
 - o Chilled and Heating Hot Water Systems
 - o Electrical System
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- o Communication Systems

- o Potable Water System

- o Non-Potable Water Systems

- o Stormwater Systems

- o Sanitary Sewer System

THERMAL COMFORT DIAGRAMS

- o Thermal Comfort Diagrams

- o Thermal Comfort Diagram: Summer

- o Thermal Comfort Diagram: Winter

LANDSCAPE GUIDELINES

- o Landscape Guidelines Overview

- o Sustainability Goals

- o Hardscape

- o Bicycle Circulation

- o Pedestrian Circulation

- o Wayfinding and Signage

- o Campus Gateways

- o Site Lighting

- o Site Furnishings and Amenities

- o Planting and the Campus Forest

- o Planting Palettes

EDR AERIAL PHOTO DECADE PACKAGE

- o EDR Aerial Photo Decade Package

2017 PARKING AND CIRCULATION MASTER PLAN (PCMP)

- o 2017 Parking and Circulation Master Plan

PROGRAMS AND SERVICES INTERVIEWEES

APPENDIX

PROGRAMS AND SERVICES INTERVIEWEES

PRESIDENT'S CABINET

Dr. William Scroggins, President and CEO
Dr. Irene Malmgren, Vice President Instruction
Dr. Audrey Yamagata-Noji, Vice President
Student Services
Michael Gregoryk, Vice President Administrative
Services
Ibrahim Ali, Vice President Human Resources
Myeshia Armstrong, Associate Vice President
Joumana McGowan, Associate Vice President

ADMINISTRATIVE SERVICES AND HUMAN RESOURCES

Myeshia Armstrong, Associate Vice President
Ronald Bean
William Eastham
Mika Klein
Duetta Langevin
Gary Nellesen
Kevin Owen
Rosa Royce
Sokha Song
Dale Vickers
Dave Wilson

INSTRUCTIONAL PROGRAMS

Arts Division
Sue Long, Dean
Mark Lowentrout, Associate Dean
Carolyn Alexander
Brian Bouskill
Robert Bowen
Steve Burgoon
Laurie Hartman
Tiffany Kuo
Jay Perez
Hector Rivas

Dan Smith
Richard Strand
Sunil Thankamushy
Tammy Trujillo

Business Division

Jennifer Galbraith, Dean
Fawaz Al-Malood, Associate Dean
Barry Andrews
Brenda Domico
Shelley Doonan
Amrik Dua
Sheila Espy
Ed Estes
Tony Henry
Carol Impara
Lisa Ledeboer
Tom McFarland
Marty Ramey
Niki Tran

Humanities and Social Sciences Division

Jim Jenkins, Dean
Jeanne-Marie Velickovic, Associate Dean
Toni Albertson
Robert Augustus
Stacy Bacigalupi
Kate Cannon
Manuel Castillejos
Mariene Gallarde
Cristina Hernandez
Sandon Larson
Elizabeth Lobb
Charis Louie
Nona Stokes
John Vitullo
Margie Whalen

APPENDIX
PROGRAMS AND SERVICES INTERVIEWEES
(cont.)

Kinesiology, Athletics, Dance Division

Joe Jennum, Dean
Debbie Cavion, Associate Dean
Amy Nakamura
Marc Ruh
Liz Ward

Library and Learning Resources

Meghan Chen, Dean
Romelia Salinas, Associate Dean
James Abbott
Shazia Aziz
Nicole Blean
Huu Bui
John Cardenas
David Charbonneau
Eva Figueroa
LeAnn Garrett
Sandon Larson
Julie Laverty
Erica Ledesma
Peggy Marcy
Frida Valderrama Perez
Rene Pyle
John Reed
Dianne Rowley
Michelle Sampat
Jennifer Turner
Chisa Uyeki
Tom Vitzelio

Natural Sciences Division

Matthew Judd, Dean
Karelyn Hoover, Associate Dean
David Beydler
Julie Bray-Ali
Eileen DiMauro

Scott Guth
Jennifer Hinostriza
Mike Hood
Kambiz Khoddam
Audra Lopez
Martin Mason
Dave Mrofka
Maya Padilla
Matthew Pawlak
Chaz Perea
Jamie Phillips
Horia Pop
Malcolm Rickard
Debbie Rivers
Brian Scott
Jimmy Tomayo
Gary Uyeno
Becca Walker
Dawn Waters

Adult and School of Continuing Education Division

Madelyn Arballo, Dean
Liza Becker, Associate Dean
Tami Pearson, Associate Dean
Jody Fernando
Lesley Johnson
Mary Lange
Paulo Madrigal
Peggy Marcy
Marilyn McNall
Dana Miho
Donna Necke
Angelena Pride
Shelby White
Krystal Yeo

Technology and Health Division

Jemma Blake-Judd, Dean
Sarah Plesetz, Associate Dean
Denise Condra
Kelly Coreas
Joe Denny
Famm Douangchampa
Paulette Engisch
Dan Garcia
Cheryl Gilbert
David Hering
Jonathan Hymer
Steve James
Paul Jefferson
Fred Kobzoff
Billie Lynes
David Mah
Monique Neel
Bruce Nixon
Paul Ramoneda
Lanny Richardson
Linda Rogus
Robert Rogus
Iggy Sardinias
Steve Shull
Garett Staley
Byron Strobe
Mary-Rose Wiesner
David Yost

Jolene Chong
Aida Cuenza-Uvas
Chau Dao
Matthew Dawood
Tim Engle
Zolita Fisher
Darren Grosch
Irene Herrera
Mark Howard
Isaac Rodriguez Lupercio
Maria Macedo
Desiree Marquez
Jose Martinez-Saldana
Patricia Montoya
Laura Muniz
James Ocampo
Ivan Pena
Anabel Perez
Don Potter
Tannia Robles
Elmer Rodriguez
Andrea Sims
Marti Whitford

STUDENT SERVICES PROGRAMS

George Bradshaw, Dean
Grace Hanson, Dean
Thomas Mauch, Dean
Francisco Dorame, Associate Dean
Eric Lara, Associate Dean
Clarence Banks

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MT. SAN ANTONIO COLLEGE 2018 EDUCATIONAL AND FACILITIES MASTER PLAN
CBT AND HMC ARCHITECTS / DRAFT DATED 12.12.18

LABORATORY SPACE ANALYSIS

APPENDIX

LABORATORY SPACE ANALYSIS

In addition to lecture (classroom) teaching space that is shared by instructional programs, Mt. SAC's facilities house teaching laboratory (class laboratory) space that is designed and equipped for the instruction of specific programs. Class laboratories are typically not shared, or are shared with related programs. This analysis looks campus-wide at the amount of class laboratory space assigned to programs in each broad category of instruction: the amount that existed at the end of 2016 and the amount that will be needed in 2027, based on the EFMP Growth Forecast. The analysis also considers the net gains in the amount of class laboratory space that are planned for three projects that are currently being built or will soon be built: The Business and Computer Technology project, the Athletics Complex East project, and the Physical Education Complex project.

APPENDIX

LABORATORY SPACE ANALYSIS (cont.)

NOTES AND ABBREVIATIONS USED

TOP:	Taxonomy of Programs, a system of numerical codes used to collect and report information on programs and courses. The codes shown in the analysis represent the broad categories which include the programs that Mt. SAC offers
Total Lab Hours:	Fall 2027 projected total class laboratory student contact hours (source: Mt. SAC Office of Research and Institutional Effectiveness)
Lab WSCH:	Fall 2027 projected class laboratory weekly student contact hours
Lab Factor:	California Code of Regulation Title 5 class laboratory space standard for assignable square feet per 100 WSCH (refer to Projection of Space Needs, Table 4, on page 9.1)
ASF Need:	Fall 2027 projected space need (assignable square feet)
2016 Space Inventory:	Existing onsite (not including facility at Brackett Field) class laboratory assignable space (source: FUSION 2016 space inventory)
BCT:	Business and Computer Technology facility - Net assignable space (primary + secondary assignable space) (source: Space Inventory Update - Building No./ Business + Computer Technology (BCT), prepared by Mt. SAC Facilities Planning and Management, dated September 15, 2016)
ACE:	Physical Education Project, Phase 1: Athletics Complex East facility - Planned net assignable space (primary + secondary assignable space) (source: 2018-2022 Five-year Capital Outlay Plan, dated September 26, 2016)
PEC:	Physical Education Project, Phase 2: Physical Education Complex facility - Planned net assignable space (primary + secondary assignable space) (source: 2018-2022 Five-year Capital Outlay Plan, dated September 26, 2016)
Adjusted Inventory:	(2016 Space Inventory) + (BCT + ACE + PEC)
Difference:	(ASF Need) less (Adjusted Inventory)

LABORATORY SPACE ANALYSIS

TOP	Programs	2027 Projected Enrollment and ASF				2016 Space Inventory	BCT	ACE	PEC	Adjusted Inventory	Difference
		Total Lab Hours	Lab WSCH	Lab Factor	ASF Need						
100	Agriculture & Natural Resources	74,782	4,273	4.92	21,025	23,112				23,112	(2,087)
200	Architecture & Environmental Design	30,801	1,760	2.57	4,523	8,200				8,200	(3,677)
400	Biological Science	293,061	16,746	2.33	39,019	17,976				17,976	21,043
500	Business & Management	1,448	83	1.28	106	6342	3,979			10,321	(10,215)
600	Media & Communications	62,009	3,543	2.14	7,583	1,260				1,260	6,323
700	Information Technology	71,471	4,084	1.71	6,984	12,626				12,626	(5,642)
800	Education	361,544	20,660	3.21	*			2,995	2,400	5,395	

TOP 09: Engineering & Industrial Technologie

900	Engineering & Engineering Technology	51,463	2,941	3.21	9,440	23,266				23,266	
934	Electronics & Electric Technology	33,879	1,936	8.56	16,572					0	
945	Industrial Systems Technology & Maintenance					9,748				9,748	
946	Environmental Control Technology	26,399	1,508	8.56	12,913					0	
948	Automotive Technology					2,642				2,642	
950	Aeronautical & Aviation Technology	32,831	2,236	7.49	16,751	26,260				26,260	
953	Drafting Technology	13,916	795	7.49	5,956					0	
956	Manufacturing & Industrial Technology					19,136				19,136	
Subtotal TOP 09		158,488	9,416		61,632	61,916				61,916	(284)

1000	Fine & Applied Arts	352,528	20,144	2.57	51,771	59,120				59,120	(7,349)
1100	Foreign Language					1,041				1,041	(1,041)
1200	Health	214,891	12,280	2.14	26,278	7,444				7,444	18,834
1300	Family & Consumer Sciences	53,984	3,085	2.57	7,928	15,718	475			16,193	(8,265)
1500	Humanities (Letters)	10,265	587	1.5	880	3021				3,021	(2,141)
1700	Mathematics	8,835	505	1.5	757	4026				4,026	(3,269)
1900	Physical Sciences	309,153	17,666	2.57	45,401	38,511				38,511	6,890
2000	Psychology	27,099	1,549	1.5	2,323	2,036				2,036	287
2100	Public & Protective Services	27,828	1,590	2.14	3,403					0	3,403
2200	Social Sciences	6,708	383	1.5	575	3931				3,931	(3,356)
3000	Commercial Services	936	54	2.14	115	2562				2,562	(2,447)
4900	Interdisciplinary Studies	222,331	12,705	2.57	32,651	12,281				12,281	20,370
Grand Total		2,288,162	131,113		312,954	300,259	4,454	2,995	2,400	310,108	

* Top Code 0800 is comprised primarily of athletics. Athletic facilities are not categorized as lab space. They appear on the space inventory as 500 space. Therefore, there is no laboratory ASF allotment for the 0800 TOP Code.

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MT. SAN ANTONIO COLLEGE 2018 EDUCATIONAL AND FACILITIES MASTER PLAN
CBT AND HMC ARCHITECTS / DRAFT DATED 12.12.18

FARM PLANNING

FARM PLANNING

The EFMP Farm precinct planning process included tours of facilities, meetings, and working sessions with faculty, staff, and administrators to understand and rethink the Farm precinct's organization and utilization. With the assistance of animal sciences and horticulture expert advisors, the participants established planning objectives and area programs that describe the facilities needed for instruction, as envisioned in the description of the Agricultural Sciences Programs in Chapter 3: *Instructional Programs*. These documents provided the framework for developing the recommendations that are presented in the section titled The Farm Precinct, in Chapter 11: *Site and Infrastructure Improvements Recommendations*, as well as in the section titled Future Asset Development in Chapter 12: *Implementation*. These documents are recorded on the following pages with the intention of preserving the work done by faculty and staff, and of informing the detailed planning, programming, and design of construction projects.

The following are included in this section.

- o Mt. SAC Farm: Animal Sciences Area Program—June 13, 2017 DRAFT
- o Mt. SAC Farm: Horticulture Science Area Program—June 13, 2017 DRAFT
- o Mt. SAC 2018 EFMP: Draft Farm Planning Recommendations—June 15, 2017 Farm Council Meeting
- o Agriculture and Animal Sciences Facilities Recommendations, prepared by Five-G Consulting
 - Equine Unit Planning
 - » Arena Conceptual Plan
 - Swine Unit Planning
 - » Swine Barn Conceptual Plan
 - Beef/Sheep Unit Planning
 - Dog Kennel Planning
 - Agricultural Planning
 - Livestock Pavilion (F9) Recommendations

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MT. SAN ANTONIO COLLEGE 2018 EDUCATIONAL AND FACILITIES MASTER PLAN
CBT AND HMC ARCHITECTS / DRAFT DATED 12.12.18

MT. SAN ANTONIO COLLEGE

2018 Educational and Facilities Master Plan

JUNE 15, 2017 FARM COUNCIL MEETING

EFMP Planning

Purpose &

Process

PURPOSE OF AN EDUCATIONAL AND FACILITIES MASTER PLAN

To ensure that the College will continue to meet its mission by answering two questions:

1. How will our communities change in the next decade?
2. Are our programs, services and facilities prepared to meet these changes?



THE MT. SAC 2018 EDUCATIONAL AND FACILITIES MASTER PLAN

Will be a 10-Year Plan that forecasts changing and emerging educational needs and guides development of facilities to meet those needs

/ Educational Plan

/ Facilities Plan



WHAT IS A FACILITIES PLAN?

- / Provides a road map for campus development and organization
- / Identifies projects that can be developed in the next ten years, as well as potential long-term build out of the campus
- / Is conceptual in nature; details of projects are not developed

EMP 2015 ADDENDUM: THE FARM

// SUMMARY OF RECOMMENDATIONS //

/ Develop new career education certificates of achievement to match today's marketplace

/ Use Agricultural Sciences Department to increase connection between the College and local communities: Agricultural Literacy Trail, Demonstration Gardens

EMP 2015 ADDENDUM: THE FARM

// SUMMARY OF IMPLICATIONS FOR FACILITIES //

- / Initiate new projects and repurpose land in support of linking the Agricultural Sciences Department to the community (Agricultural Literacy Trail, composting, demonstration)
- / Complete unfinished projects that support viable instructional programs
- / Renovate existing facilities where possible
- / Remove aging or temporary facilities that have outlived their usefulness
- / Modernize existing buildings to address safety, accessibility, and maintenance needs
- / Renovate spaces to meet the needs of the programs currently being developed
(new certificate in organic production, retail nursery center, livestock show team)

2018 Draft EMP

Overview

2018 DRAFT EMP: ENROLLMENT DATA

// AGRICULTURE AND ANIMAL SCIENCE //

/ 2012-2015 Enrollment: 20.8% increase

// ORNAMENTAL HORTICULTURE //

/ 2012-2015 Enrollment: 12.6% decrease

// REGISTERED VETERINARY TECHNOLOGY //

/ 2012-2015 Enrollment: 17.3% increase

2018 DRAFT EMP: LABOR MARKET PROJECTIONS

// AGRICULTURE AND ANIMAL SCIENCE //

/ 2015-2020 Projection: 18% decrease in job openings

// ORNAMENTAL HORTICULTURE //

/ 2015-2020 Projection: 5% increase in job openings

// REGISTERED VETERINARY TECHNOLOGY //

/ 2015-2020 Projection: 26% increase in job openings

2018 DRAFT EMP: GROWTH

// AGRICULTURE AND ANIMAL SCIENCE //

/ Projected to keep pace with College's 0.75% yearly growth rate

// ORNAMENTAL HORTICULTURE //

/ Projected to exceed College's 0.75% yearly growth rate

// REGISTERED VETERINARY TECHNOLOGY //

/ Projected to exceed College's 0.75% yearly growth rate

2018 DRAFT EMP: CHALLENGES AND OPPORTUNITIES

- / Expand curriculum to incorporate contemporary topics: animal care perceptions, urban agriculture, sustainable agriculture/horticulture, land use management, organic production, drought/water issues, pesticides/fertilizer regulations
- / Develop strategies to provide students with sufficient hands-on experience
- / Complete the Agricultural Literacy Trail to increase community awareness and experiences
- / Add ornamental horticulture retail space

2018 DRAFT EMP: IMPLICATIONS FOR FACILITIES

/ Land, facilities, and infrastructure for the Farm will be reorganized and replaced, repurposed, or modernized to support its use as a state-of-the-art teaching laboratory

2018 Facilities Master Plan Progress

WHAT ARE FACILITIES PLANNING OBJECTIVES?

- / Facilities Planning Objectives are big picture items that provide the filter for making decisions about facilities master plan recommendations
- / They are gathered in response to the facilities analysis challenges and opportunities
- / They are what the College would like to accomplish in facilities and on the campus site

// FACILITIES PLANNING OBJECTIVES CATEGORIES //

- / Campus Site
- / Indoor Space
- / Outdoor Space
- / Sustainability

PROPOSED FACILITIES PLANNING OBJECTIVES

// CAMPUS SITE//

/ Create a welcoming, safe, and student-centered campus

/ Create a recognized, prominent entry into the campus (front door)

/ Zone functions with appropriate adjacencies

/ Address wayfinding and circulation issues on campus

/ Create attractive views into the campus and maximize mountain views from the campus

/ Address the campus' need for additional parking, including improving parking distribution and facilities

PROPOSED FACILITIES PLANNING OBJECTIVES

// CAMPUS SITE (CONT.) //

/ Plan open spaces that balance greenery/landscaping with concrete

/ Provide more shaded outdoor spaces for both instruction and leisure

/ Create a more cohesive aesthetic and feel to the campus with structures, signage, and landscaping

/ Improve site lighting and address campus safety

/ Connect both sides of campus, across Temple

PROPOSED FACILITIES PLANNING OBJECTIVES

// INDOOR SPACE //

/ Additional food service facilities (could be separate facility or in other buildings)

/ Create shared innovative learning environments, such as makerspaces and virtual reality labs

/ Provide sufficient student access to open computer labs

/ Consider expansion of art gallery and art gallery store

PROPOSED FACILITIES PLANNING OBJECTIVES

// INDOOR SPACE (CONT.) //

/ Build storage and support space for classrooms and labs

/ Provide sufficient space for all programs and plan for growth

/ Design future and update existing lecture and lab space to be flexible and well-equipped, with infrastructure to accommodate growing technology needs

/ Provide office space for adjunct faculty

/ Build faculty offices that support collaboration and interaction

PROPOSED FACILITIES PLANNING OBJECTIVES

// OUTDOOR SPACE //

/ Create campus outdoor destinations, both large and small

/ Create outdoor learning labs

/ Consider outdoor dining options

/ Include outdoor assembly/event spaces

PROPOSED FACILITIES PLANNING OBJECTIVES

// SUSTAINABILITY //

/ Minimize negative impacts to the environment, including, but not limited to, water pollution, air pollution, waste, energy use, water use, and the heat island effect

/ Reduce hardscape areas that contribute to the heat island effect and stormwater pollution

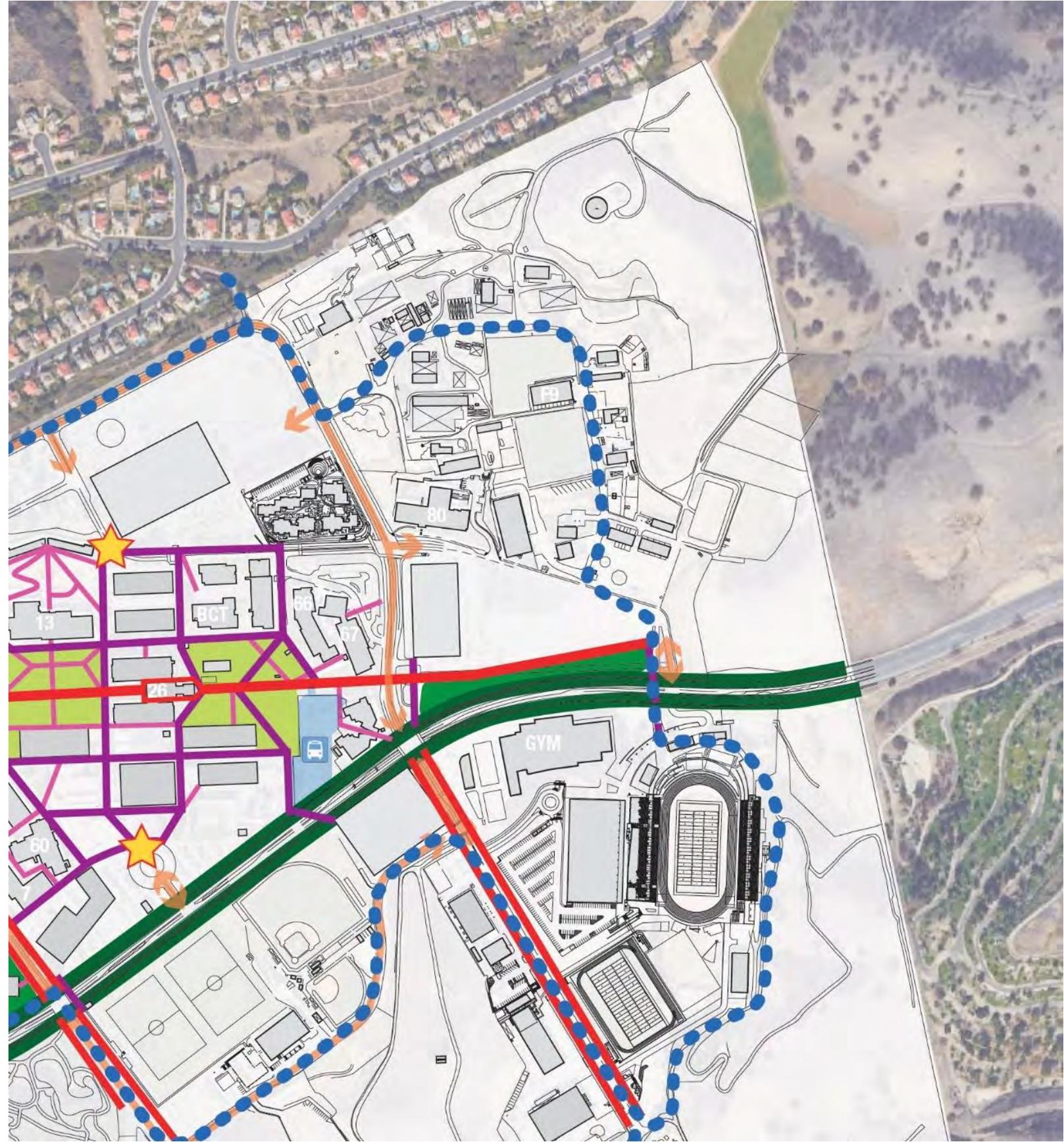
/ Promote sustainability awareness and education through interpretive design, programming, and research

/ Support opportunities for on-campus waste management strategies

/ Provide alternatives to single-occupant vehicle travel

CAMPUS ORGANIZATIONAL FRAMEWORK - DRAFT

- / Miracle Mile as a primary organizational element
- / Miracle Mile Green Spine of open spaces
- / Hierarchical circulation, universal access
- / Healthy Living Loop
- / Temple Avenue Green Corridor and Farm Frontage



Farm Facilities Planning

FMP FARM PLANNING CONSULTANT TEAM

/ HMC Architects: Lead Facilities Master Plan Consultant

/ SWA Group: FMP Landscape Planning Consultant

/ Five-G: FMP Farm Planning Animal Sciences Consultant

/ Nicholas Staddon: FMP Farm Planning Ornamental Horticulture Consultant

FMP FARM PLANNING MEETINGS

/ November 2016: EFMP Program Interview 1

/ November 2016: Farm Tour

/ December 2016: Follow-up Farm Tour

/ January 2017: Horticulture Facilities Planning Workshops 1 and 2

/ March 2017: Animal Facilities Planning Workshop

/ March 2017: EFMP Program Interview 2

/ April 2017: Farm Brainstorming Charrette

FMP FARM PLANNING ANALYSIS

// FARM AREA //

/ 74-77 acres north of Temple Ave



FMP FARM PLANNING ANALYSIS

// FACILITIES CONDITION INDEX //

/ Recent (2016) assessment

/ Facilities rated 80% or higher (red)
recommended for renovation or
replacement

/ Some facilities rated 10% or less
(green) are not well suited to the current
function, or are otherwise not suitable
long term solutions



FCI - FACILITIES CONDITION INDEX

The estimated total cost of repairs as a percentage of the cost to replace a facility. Source: 2016 Facilities Condition Assessment Report, prepared by R.G. McClung, FUSION Assessor

FMP FARM PLANNING ANALYSIS

// SLOPE //

/ >10% generally too steep for many land uses, some areas may have erosion problems

/ 5-10% generally suitable for most land uses, care must be taken in siting elements

/ 2-5% provides maximum flexibility for development

/ 0-2% may have poor drainage in areas



FMP FARM PLANNING ANALYSIS

// EXISTING PROGRAMMING //

/ Redundant uses and inefficient arrangement

/ Inadequate distribution of indoor classroom space

/ Additional areas south of Temple used for grazing

- Retail
- Employee Area
- Parking
- Pesticide Prep Rinse Area
- RV Spots for Students
- Tool Storage
- Bulk Material + Nursery Material Storage
- Power Equipment Storage
- Hay Barn
- Infrastructure/Utilities
- Indoor Classroom/Lab
- Circulation
- Vegetated Buffer
- Horticulture Sciences**
- Shadehouse
- Greenhouse
- Full Sun/Outdoor Growing Area
- Demonstration
- Propagation House
- Animal Sciences**
- Demonstration
- Pasture
- 🐑 Sheep
- 🐮 Cattle
- 🐎 Equine
- 🐷 Swine
- 🐕 Dog



FMP FARM PLANNING ANALYSIS

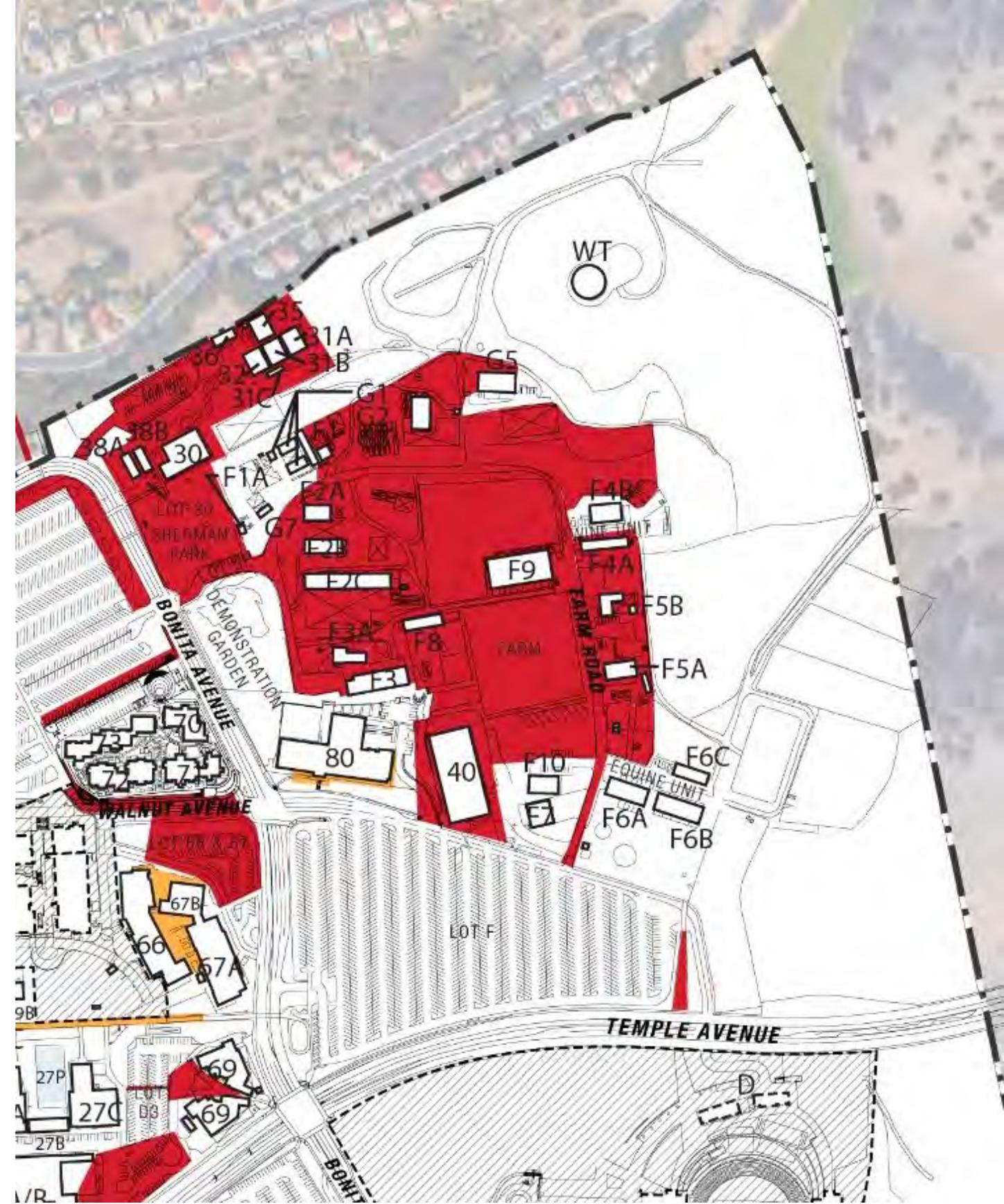
// EXISTING LIGHTING //

/ Campus-wide qualitative assessment of site lighting

/ Inadequate lighting impacts evening instruction and safety

LEGEND

- PROPERTY LINE ---
- EXISTING FACILITIES
- FACILITIES UNDER CONSTRUCTION
- LANDSCAPE UNDER CONSTRUCTION
- AREAS WITH INSUFFICIENT LIGHTING
- HIGH-MAINTENANCE AREAS
- AREAS WITH LED LIGHTING
- FLAGS WITHOUT LIGHTING FIXTURES
- CROSS COUNTRY COURSE



FMP FARM PLANNING ANALYSIS

// EXISTING INFRASTRUCTURE //

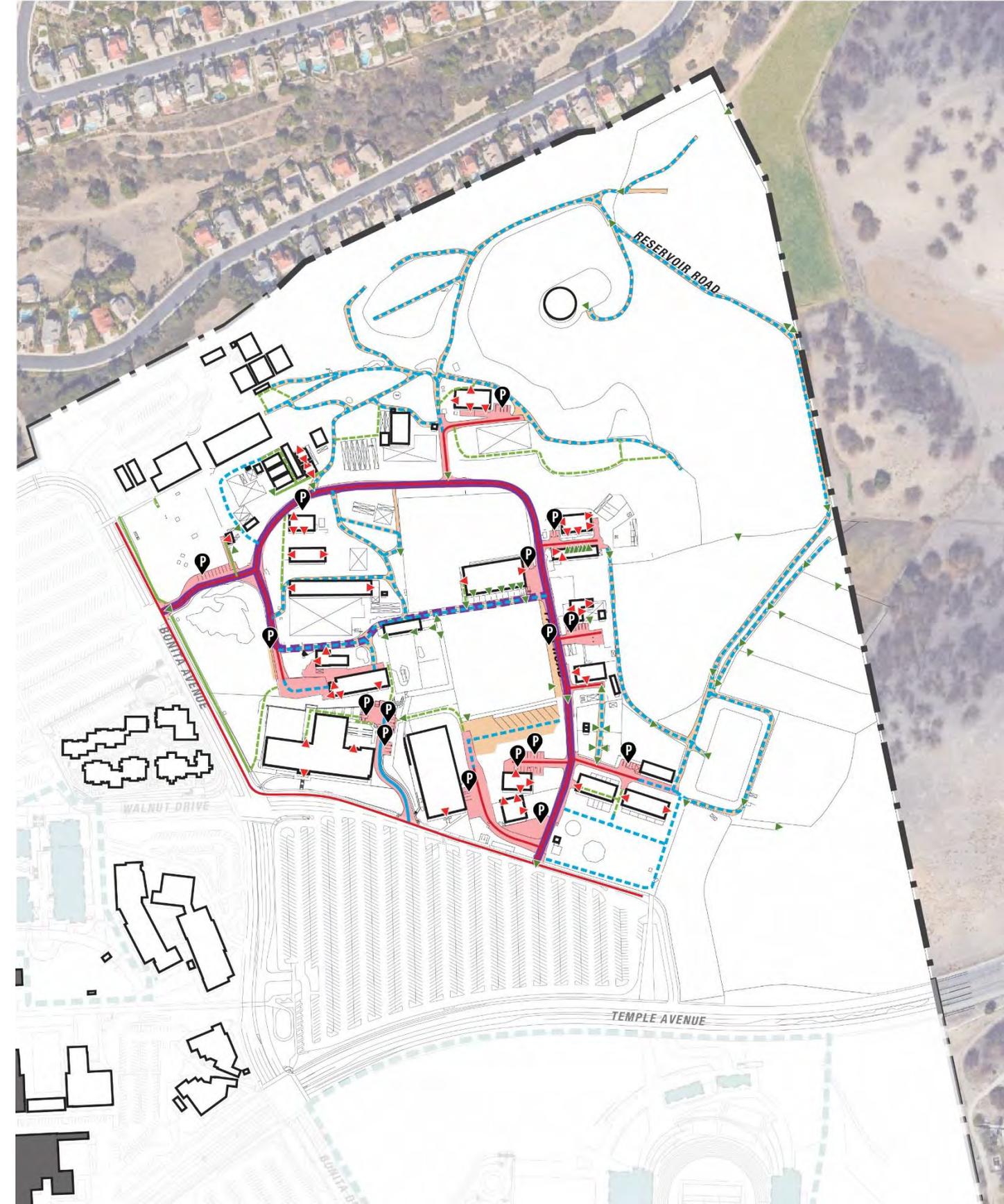
/ Circulation accommodates vehicles (public, service, and delivery), pedestrians, bicyclists, and animals

/ Storm drain network is underdeveloped

/ Irrigation systems are outdated and inefficient

LEGEND

- PROPERTY LINE-----
- PAVED VEHICULAR
- UNPAVED VEHICULAR
- DELIVERY TRUCK ROUTE, PAVED
- DELIVERY TRUCK ROUTE, UNPAVED
- PUBLIC VEHICULAR ROUTE, PAVED
- SERVICE VEHICLE ROUTE, PAVED
- SERVICE VEHICLE ROUTE, UNPAVED
- PEDESTRIAN (NON-VEHICULAR), PAVED
- PEDESTRIAN (NON-VEHICULAR), UNPAVED
- ▼ BUILDING ENTRANCE
- ▼ GATE
- P PARKING



FMP FARM PLANNING: WHAT WE'VE HEARD

// INPUT FROM FARM PLANNING WORKSHOPS //

/ General opportunities and constraints

/ Purpose of existing facilities

/ Shifts in the educational program focus

/ Need for reorganization

/ Need for improvements to facilities

/ Need for new facilities

FMP FARM PLANNING: WHAT WE'VE HEARD

// HORTICULTURE PLANNING WORKSHOPS //

/ **Current unit is inefficient**

/ **Technology is out-of-date**

/ **Erosion and drainage** is a big issue

/ **Parking** is needed for faculty, staff, and retail customers

/ **Multiple identification planting areas** and the ability to maintain collections are needed

/ **Shade structures** demonstrate different uses, with different shade percentages. They can easily be taken down and rebuilt.

FMP FARM PLANNING: WHAT WE'VE HEARD

// HORTICULTURE PLANNING WORKSHOPS (CONT.) //

/ There is increased interest in **Urban Sustainable Agriculture**, including hydroponics, aquaponics, rooftop gardens, vertical gardens, and Community Supported Agriculture

/ Plant production should **shift to drought-tolerant material**, and support wholesale market needs

/ **Production** areas can **decrease**

/ **Demonstration and retail areas** need **more space**

FMP FARM PLANNING: WHAT WE'VE HEARD

// HORTICULTURE PLANNING WORKSHOPS (CONT.) //

/ **Better location and organization of tool storage**, and increased quantity of tools, are needed to support labs

/ **Separation between retail and propagation** areas is needed

/ **Dedicated bulk materials storage area** is needed

FMP FARM PLANNING: WHAT WE'VE HEARD

// HORTICULTURE PLANNING WORKSHOPS (CONT.) //

- / **Better lighting**, both permanent and portable, is needed for night-time use of facilities
- / **Propagation houses** are in poor condition, sweat tent and grafting area is needed
- / **Greenhouses** need to be repaired, with better controls and **flexibility for easy technology updates**
- / **Rebuild or repurpose old poultry houses and dairy building**; they do not function well for their current uses as storage and classrooms

FMP FARM PLANNING: WHAT WE'VE HEARD

// HORTICULTURE PLANNING WORKSHOPS (CONT.) //

/ **Composting facility** could help with College mandate to keep all green waste on-property

/ **Permanent CLCA Test Site** could serve industry professionals and College landscape programs

/ **Pesticide storage and wash/rinse area** is needed

/ Student workers need a **break room with lockers**; this could be used for meetings/trainings as well

/ **Irrigation controller demonstration** area is needed

FMP FARM PLANNING: WHAT WE'VE HEARD

// ANIMAL FACILITIES PLANNING WORKSHOP //

/ **Synergies** between RVT and Ag and Animal Science programs – RVT students practice on large animals first

/ **Loss of land** is big impact to programs – cattle need large areas of land

/ Students transfer to Mt. SAC for the **high quantity of hands-on labs** offered by the Ag program

/ **RVT** program is a “poster child” for Mt. SAC’s **strong workforce program**

FMP FARM PLANNING: WHAT WE'VE HEARD

// ANIMAL FACILITIES PLANNING WORKSHOP (CONT.) //

/ Facilities are bound by **USDA guidelines and standards** for animal space needs

/ Current **number of animals** cannot sustain greater numbers of students;
physical constraints are limiting the numbers of animals

/ **Improving efficiency** is a priority

/ All buildings should **meet DSA approval**

FMP FARM PLANNING: WHAT WE'VE HEARD

// ANIMAL FACILITIES PLANNING WORKSHOP (CONT.) //

/ **Equine boarding** is a good revenue generator and student work experience opportunity

/ **Animal Science** program is needed for those who will transfer to **veterinary school**;

RVT program is for those who want **to become RVTs**

/ **Staff Caretaker RV spot** should be separate from student RV spots; current location works

/ **Quarantine areas** are needed for transient, newly purchased, and show animals

/ **Feed is best stored** at each animal area, not in one centralized location

FMP FARM PLANNING: WHAT WE'VE HEARD

// ANIMAL FACILITIES PLANNING WORKSHOP (CONT.) //

- / **Increasing small animals** could alleviate pressure on large animals; new kennels will allow almost double the number of dogs
- / **Beef, sheep, and swine** numbers are not anticipated to increase
- / Consider **shared uses** between Architecture labs and Farm workshop
- / **Co-locate** shop function (F7) with equipment storage
- / **Cactus Pasture** is an opportunity for other uses

FMP FARM PLANNING: WHAT WE'VE HEARD

// ANIMAL FACILITIES PLANNING WORKSHOP (CONT.) //

/ **Swine facilities** are right-sized but need repair and reconfiguration

/ Consider **single structure replacement options** to improve efficiency and reduce costs

(Equine F6A-F6B and Swine F4A-F4B facilities)

/ Utilize **flexible fencing** between pastures shared by cattle and horses

/ **Livestock Pavilion** (F9) needs renovation to improve safety, efficiency, and animal comfort

FMP FARM PLANNING: WHAT WE'VE HEARD

// ANIMAL FACILITIES PLANNING WORKSHOP (CONT.) //

/ Large **specimen trees in pastures** could provide shade and plant ID education

/ **Traffic plan** for delivery trucks is needed; Lot F entrance is problematic

/ **Dry Lot** needs separate working area for sorting animals

/ Consider **equestrian trail connectivity** across Temple Avenue; connectivity could facilitate community support for the College

FMP FARM PLANNING: WHAT WE'VE HEARD

// ANIMAL FACILITIES PLANNING WORKSHOP (CONT.) //

- / **Covered arena** in round pens area is an opportunity for improved visibility and public access – entrance feature for the Farm (relocate round pens and warm-up area to existing arena area)
- / Building 40 area is an opportunity for a **Farm Store**, improved visibility and public access
- / **Dedicated equine areas** for class use and for boarding/show are needed due to scheduling conflicts
- / **Equine obstacle course** is desired for behavior and training courses
- / **Covered parking for horse trailers** would improve maintenance and reduce weathering

FMP FARM PLANNING ANALYSIS

// ISSUES AND OPPORTUNITIES //

/ Infrastructure improvements are mandatory for the future

/ Instructional facilities need improvements to be relevant to today's job market

/ Facilities and space needs to be organized more efficiently and intentionally to improve function, educational quality, safety, and animal comfort

FMP FARM PLANNING: DRAFT RECOMMENDATIONS

// FARM OPTIONS

CHARRETTE //

/ Confirm the master plan
program for the Farm

/ Brainstorm ideas and arrive at
conceptual planning direction
for the Farm



FMP FARM PLANNING: DRAFT RECOMMENDATIONS

/ Space Planning Program Area Chart: Animal Sciences

AREA TYPE	EXISTING AREA	PROPOSED AREA	PROPOSED CHANGE
Pasture* (Equine , Cattle, Sheep)	~39 acres	~39 acres	None
Equine Facilities	~4 acres	~4 acres	None
Sheep & Cattle Facilities	~1.5 acres	~2 acres	Increase
Canine / Small Animal Facilities	~9,000 sf	~9,000 sf	None
Swine Facilities	~0.8 acre	~0.8 acre	None
Quarantine & Show Animal Facilities	~0.5 acre	~0.5 acre	None

*Does not include pasture areas south of Temple Ave

FMP FARM PLANNING: DRAFT RECOMMENDATIONS

/ Space Planning Program Area Chart: Ornamental Horticulture

AREA TYPE	EXISTING AREA	PROPOSED AREA	PROPOSED CHANGE
Full Sun Growing	~4 acres	TBD	Decrease
Shadehouse	~1.5 acres	~0.8 acre	Decrease
Greenhouse	~11,000 sf	~12,500 sf	Increase
Propagation House, Pesticide Area, Employee Area	~3,800 sf	~17,000 sf	Increase
Tool Storage	~2,500 sf	~7,000 sf	Increase
Demonstration Areas	~ 6 acres	~7 acres	Increase
Retail	~1,000 sf	~7,500 sf	Increase

FMP FARM PLANNING: DRAFT RECOMMENDATIONS

/ Space Planning Program Area Chart: Shared Areas

AREA TYPE	EXISTING AREA	PROPOSED AREA	PROPOSED CHANGE
Composting, Bulk Materials, Canning	TBD	~2 acres	Increase
Equipment Technology	~10,000 sf	~10,000 sf	None
Student/Staff RV	TBD	TBD	None
Parking	TBD	TBD	TBD
Infrastructure	TBD	TBD	Increase

FMP FARM PLANNING ANALYSIS

// EXISTING
PROGRAMMING //

/ Separation of animal areas by
Farm Road

- Retail
- Employee Area
- Parking
- Pesticide Prep Rinse Area
- RV Spots for Students
- Tool Storage
- Bulk Material + Nursery Material Storage
- Power Equipment Storage
- Hay Barn
- Infrastructure/Utilities
- Indoor Classroom/Lab
- Circulation
- Vegetated Buffer

- Horticulture Sciences**
- Shadehouse
- Greenhouse
- Full Sun/Outdoor Growing Area
- Demonstration
- Propagation House

- Animal Sciences**
- Demonstration
- Pasture
- 🐑 Sheep
- 🐮 Cattle
- 🐎 Equine
- 🐷 Swine
- 🐕 Dog



FMP FARM PLANNING: DRAFT RECOMMENDATIONS

/ Realignment of Farm Road

/ “Complete Streets” design to accommodate multiple user groups and manage stormwater run-off

/ Reorganization to improve efficiency and focus on educational objectives

/ Opportunities for cross-disciplinary use

- Retail
 - Employee Area
 - Parking
 - Pesticide Prep Rinse Area
 - RV Spots for Students
 - Tool Storage
 - Bulk Material + Nursery Material Storage
 - Power Equipment Storage
 - Hay Barn
 - Infrastructure/Utilities
 - Indoor Classroom/Lab
 - Circulation
 - Vegetated Buffer
-
- Horticulture Sciences**
 - Shadehouse
 - Greenhouse
 - Full Sun/Outdoor Growing Area
 - Demonstration
 - Propagation House
-
- Animal Sciences**
 - Demonstration
 - Pasture



Next Steps

- / Working with Instructional Team and CMPCT on Recommendations
- / Further Developing Details of the Preferred Direction for Facilities Master Plan Concept
- / Produce EFMP Document Over the Summer
- / MPSTF Review of Developed Facilities Master Plan Concept – September 8th
- / Campus Presentation of Facilities Master Plan – Fall (TBD)

Q & A

APPENDIX: FARM PLANNING
 MT. SAC FARM: ANIMAL SCIENCES AREA PROGRAM - JUNE 13, 2017 DRAFT

AREA TYPE (ex. Equine pasture; hay barn; etc.)	ATTRIBUTES (needs irrigation, slope restrictions, etc.)	CURRENT FACILITIES/SPACES	FACILITY UPDATE NEEDS	ASSOCIATED PROGRAM Ornamental Horticulture Ag. & Animal Science, Registered Vet. Tech. (RVT)	ANIMALS	AVG # STUDENTS / SECTION	EXISTING AREA (sf)	PROPOSED AREA (sf)
Equine Pasture	Irrigation	Pastures 1-6 Hill Pasture, Triangle Pasture, Reservoir Pasture, Cactus Pasture	Irrigation, gates/fencing, pasture obstacle course (min. 2.5 acres) Shade structures	Ag. & Animal Science		35.4	1,398,276 (32 acres)	1,398,276 (32 acres)
Equine Arena	Lighting, Sprinklers Flat area	Arena	Covered arena, outdoor arena, and small arena (for boarding) Hot walker (could be shared), 40' diameter Lighting and sprinklers Seating/bleachers	Ag. & Animal Science		35.4	28,750	TBD
Equine Barns	Lighting Flat area	F6A Equine Breeding Barn F6B Equine Mare Motel	2-4 quarantine stalls separate from other barns Improved drainage Fans Additional tack room for storage Finish existing stalls Replace F6A & F6B w/1 bldg More space for congregation Lab space Restrooms Separate boarding pens (separate boarding barn?)	Ag. & Animal Science RVT	23 mares 2 stallions 6 boarded horses 2-3 foals/year (kept for 2 years)	35.4 30.5	10,276	10,276
Hay Barn - Equine	Separate from Cattle/Sheep Hay Barn Proximity to Equine Barns Orientation for truck loading	F6C Equine Hay Barn	Relocate and rebuild (not functional) Weather protection Drainage	Ag. & Animal Science		35.4	2,764	Size & dimension to accommodate 1.2 truck loads of hay
Round Pen	60' diameter	Round Pen	Separate round pen for boarding area	Ag. & Animal Science		35.4	TBD	TBD
Bull Pen		Bull Pen		Ag. & Animal Science		35.4	TBD	TBD
Swine Market Pens		F4A	Redo plumbing, pens Fans, heaters, lighting Loading chute & alley, Quarantine area	Ag. & Animal Science		35.4	2,349	2,349
Swine Farrowing House		F4B	Repair or replace Reconfigure Smaller classroom space Larger nursery space	Ag. & Animal Science	18 sows 10-15 replacement gilts 3 boars	35.4	3,735	3,735
Sow Pens	Open pens Connection with market pens & farrowing house (facilitate movement of animals)	Sow Pens	New pens (sow & boar) - eventually need complete new unit Pole Barn structure Concrete apron Drainage	Ag. & Animal Science	litters every 5-6 wks	35.4	3,129	3,129

AREA TYPE (ex. Equine pasture; hay barn; etc.)	ATTRIBUTES (needs irrigation, slope restrictions, etc.)	CURRENT FACILITIES/SPACES	FACILITY UPDATE NEEDS	ASSOCIATED PROGRAM Ornamental Horticulture Ag. & Animal Science, Registered Vet. Tech. (RVT)	ANIMALS	AVG # STUDENTS / SECTION	EXISTING AREA (sf)	PROPOSED AREA (sf)
Sheep Pastures	Irrigation	Sheep Pastures 1 and 2	Fence/gates, irrigation, planting Shade structures	Ag. & Animal Science	40 breeding ewes 2 rams 15-20 yearling ewes lambs in fall (65) and spring (30)	35.4	158,558 (3.6 acres)	158,558
Dry Lot	Working chutes Loading Movement of cattle between pens Shade, Lighting Level slope	Dry Lot	Needs to be expanded & reconfigured Separate sheep dry lot (13,000 SF), loading chutes Shade structures Drainage Separate pens	Ag. & Animal Science		35.4	23,087	22,800
Sheep Barn/Pens		F9 Livestock Pavilion	Fencing Correct spacing/size of feed bunkers, improved drainage Secured storage area Feed storage shed Dedicated outlets & circuits	Ag. & Animal Science RVT	(see sheep pastures)	35.4 30.5	12,596	12,596
Cattle Barn/Pens		F9 Livestock Pavilion	Fencing Correct spacing/size of feed bunkers, improved drainage Secured storage area Feed storage shed	Ag. & Animal Science RVT	19 cows 1 bull 8 replacement heifers 10 calves <2 yrs age	35.4 30.5	(see above)	(see above)
Cattle Pastures		Hill Pasture Equine 6 Areas south of Temple	Shade structures	Ag. & Animal Science	(see above)	35.4		TBD/no change
Hay Barn - Cattle/Sheep	Separate from Equine Hay Barn Proximity to Cattle/Sheep Barn Orientation for truck loading	F8 Hay Barn	Weather protection Size & dimension to accommodate 6-7 truck loads of hay	Ag. & Animal Science		35.4		2,900
Dog Kennels		Dog Kennels	Relocate Office space and rat room	RVT		30.5		8,500
Quarantine Pens		Quarantine Pens 1-4	Redo for 4 species Barn w/stalls, feed storage area (960 SF)	Ag. & Animal Science RVT		35.4 30.5	16,372	16,372
Tractor / Equipment Shed	Central location w/in Farm (Used by Hort & Animal)	F3, F7	Move out of F7, all at F3	Ornamental Horticulture Ag. & Animal Science		27.4 35.4		
Vivarium		F5A	Currently used for dogs & rats	RVT		30.5		
Small Animal Care		F5B		RVT		30.5		
Materials / Manure Storage	Proximity to equine area (hand distribution of materials) Transfer rig access	Equine Hay Barn?	Separate concrete bunkers	Ag. & Animal Science		35.4		840
Show Livestock (Beef, Sheep, Swine)			Barn, pens, show arena, indoor working area	Ag. & Animal Science		35.4		51,500
General Infrastructure			Roads/circulation, surfaces Drainage Perimeter protection Irrigation/livestock waterers Lighting	Ornamental Horticulture Ag. & Animal Science RVT		27.4 35.4 30.5		

APPENDIX: FARM PLANNING
 MT. SAC FARM: HORTICULTURE SCIENCE AREA PROGRAM - JUNE 13, 2017 DRAFT

AREA TYPE (ex. Equine pasture; hay barn; etc.)	ATTRIBUTES (needs irrigation, slope restrictions, etc.)	CURRENT FACILITIES/SPACES	FACILITY UPDATE NEEDS	ASSOCIATED PROGRAM Ornamental Horticulture Ag. & Animal Science, Registered Vet. Tech. (RVT)	AVG # STUDENTS / SECTION	OTHER USERS/USES	EXISTING AREA (sf)	PROPOSED AREA (sf)
Shadehouse	Needs to be flat, needs irrigation and electricity	S1-S11 (smallest is S9 - 720 sq. ft, largest is S10 - 15,200)	Reduce area devoted to plant production for off-site use Remove outdated quonset huts	Ornamental Horticulture	27.4	Plant Production, highest value crops	66,000	34,334
Greenhouse	Flat Area, irrigation, electricity, open area - no canopy, Gas	G1, G2, G3, G4, G5, G7	Rebuild and increase the size of the current G4 structure to 5,000 sq. ft. The additional space will come from a small plant growing area to the west of the current structure and S9. Include space for hydroponic and aquaponic production systems Rebuild/replace all but G5 with up-to-date facilities	Ornamental Horticulture	27.4	Plant Production	11,000	12,452
Full Sun / Outdoor Growing Area	Flat area, irrigation, electrical Access by trucks for delivery of soil to canning area	L1-L37 Canning area near S3	Consolidate and provide efficient organization	Ornamental Horticulture	27.4		3-4 Acres	TBD
Demonstration (Plant ID, Arboriculture Work Areas, Hydroponics, Aquaponics)	Varying terrain (flat/sloped as appropriate), Irrigation, Electrical, Some accessibility.	Demonstration Garden, Koi garden, Fern Grotto, Conservatory, Container Garden, Peripheral landscapes as appropriate, Sherman Park	New area devoted to Urban Farming, with support structures for home and small space crop production Update outdated facilities and increase space for better accessibility and use by groups Sloped planting areas for groundcover demonstration / plant ID	Ornamental Horticulture	27.4	Rainbird	6 Acres	7 acres
Retail	Parking (15-20 stalls), irrigation, Utilities, Flat Area, Pavement, small greenhouse, restrooms (depending on location)	Front area of F1/L10 (shared space), Temporary location in front of G5	Separation from production facilities Indoor and outdoor sales area Parking Potential location - Building 40	Ornamental Horticulture	27.4	Student Work Experience	1,000	7500 sq ft, plus 15-20 parking stalls
Permanent Designated Outdoor Lab Area (CLCA , Equipment)	Outdoor flat area, lighting, water, No utilities in work area	None	Potential location - Mesa Norte	Ornamental Horticulture	27.4	California Landscape Contractors Association (CLCA)	None	2 acres
Tool Storage	Multiple Areas central to lab facilities	Vegetable plot shed, F2-C, Tool Shed, Turf cargo container, SS shed	More efficient organization	Ornamental Horticulture	27.4		2,500	7,000
Employee Area - Offices, Showers / Lockers, lunch and	Permanent Structure	Small area in F-1, Shower in F-3. Offices in F2-A	Consolidate and provide adequate facilities	Ornamental Horticulture	27.4		2,500	(included in prop house
Composting	Open space to dump, windrow, and process compost, chip area	None	Potential location - Montana I & II	Ornamental Horticulture	27.4		None	2 acres
Parking	Accessible, paved stalls	Sherman Park - 8 spaces, F2-A - 12 spots, G5	Parking in Farm should focus on supporting universal access Most students would use main campus parking areas (Lot F, Lot H)	Ornamental Horticulture	27.4		23 stalls	23 stalls

AREA TYPE (ex. Equine pasture; hay barn; etc.)	ATTRIBUTES (needs irrigation, slope restrictions, etc.)	CURRENT FACILITIES/SPACES	FACILITY UPDATE NEEDS	ASSOCIATED PROGRAM Ornamental Horticulture Ag. & Animal Science, Registered Vet. Tech. (RVT)	AVG # STUDENTS / SECTION	OTHER USERS/USES	EXISTING AREA (sf)	PROPOSED AREA (sf)
Propagation House	Flat Area, irrigation, electricity, open area - no canopy, Gas	P1 and P2, F1	Replace outdated facilities	Ornamental Horticulture	27.4	Student Work Experience	400	17,000
Pesticide Prep Rinse Area	Multiple entry points	Tool shed, Pesticide Shed, F3 Bay	Replace outdated facilities Provide adequate space and organization to meet codes	Ornamental Horticulture	27.4	Student Work Experience	900	(included in prop house area)
RV spots for students	Designated RV spots with electrical, sewer, and water.	2 spots at hort unit, 6 spots at Veg/Pasture Area, 1 @ dog kennel		Ornamental Horticulture	27.4		9 spots	9 spots
Bulk Material and Nursery material storage	Accessible by transfer truck and tractors, level, drainage control, permanent bins	non-designated open area when accessible.	More efficient organization	Ornamental Horticulture	27.4			1,500
Power equipment Storage	Some indoor, some outdoor.	F3, F3A, F7, F2-C,	More efficient organization	Ornamental Horticulture	27.4		10,000	10,000
Indoor Laboratory Classroom near lab facilities	Standard lab classroom specifications for 36 students. Proximity to outdoor demonstration areas	None	Indoor lab classroom for 36 students	Ornamental Horticulture	27.4		None	1,200

Draft Recommendations

1. Replace temporary, aged, and outdated facilities
2. Repurpose or replace existing facilities that are not well-zoned or located
3. Provide intentional and efficient organization of space to improve function, educational quality, and animal comfort
4. Address the need for short-term repairs and upgrades
5. Organize utilities infrastructure and improve circulation to and within the Farm
6. Develop infrastructural systems – including, but not limited to, drainage, irrigation, circulation, and lighting – that sustainably support the facilities and user needs
7. Provide classrooms and outdoor learning lab stations within the Farm
8. Provide flexible facilities that can adapt to evolving industry and job market trends
9. Upgrade parking needs throughout the Farm
10. Prioritize universal accessibility, and comfort and safety for animals and people

These *draft* planning recommendations have been developed through a collaborative process involving the EFMP planning consultant team and Mt. SAC staff and faculty.

Draft Program Area Space Planning

Animal Facilities

AREA TYPE	EXISTING AREA	PROPOSED AREA	PROPOSED AREA CHANGE
Pasture* (Equine, Cattle, Sheep)	~39 acres	~39 acres	None
Equine Facilities	~4 acres	~4 acres	None
Sheep & Cattle Facilities	~1.5 acres	~2 acres	Increase
Canine / Small Animal Facilities	~9,000 sf	~9,000 sf	None
Swine Facilities	~0.8 acre	~0.8 acre	None
Quarantine & Show Animal Facilities	~0.5 acre	~0.5 acre	None

*Does not include pasture areas south of Temple Avenue (no proposed area changes)

Horticulture Facilities

AREA TYPE	EXISTING AREA	PROPOSED AREA	PROPOSED AREA CHANGE
Full Sun Growing	~4 acres	TBD	Decrease
Shadehouse	~1.5 acres	~0.8 acre	Decrease
Greenhouse	~11,000 sf	~12,500 sf	Increase
Propagation House, Pesticide Area, Employee Area	~3,800 sf	~17,000 sf	Increase
Tool Storage	~2,500 sf	~7,000 sf	Increase
Demonstration Areas	~6 acres	~7 acres	Increase
Rooftop Urban Agriculture	None	TBD	Increase
Retail	~1,000 sf	~7,500 sf	Increase

Shared Facilities

AREA TYPE	EXISTING AREA	PROPOSED AREA	PROPOSED AREA CHANGE
Composting, Bulk Materials, Canning	TBD	~2 acres	Increase
Equipment Technology	~10,000 sf	~10,000 sf	None
Student/Staff RV	TBD	TBD	None
Parking	TBD	TBD	TBD
Infrastructure	TBD	TBD	Increase

Draft Program Area Diagram



MT SAC

EQUINE UNIT PLANNING



- | | |
|----|---|
| E1 | A covered arena w/lighting |
| E2 | Solid-sided round pen |
| E3 | Small arena, hot walker and round pen for boarder area |
| E4 | 2-3 additional round pens for daily use/classes) |
| E5 | Lighting for 1 outdoor arena |
| E6 | Sprinklers for lower arena / improved Sprinklers for upper arena |
| E7 | 2-4 quarantine stalls removed from other barns |
| E8 | Patience poles x2-4 |
| E9 | Downspouts and drainage pipe to remove rain runoff on mare barn and breeding barn |

MT SAC

EQUINE UNIT PLANNING



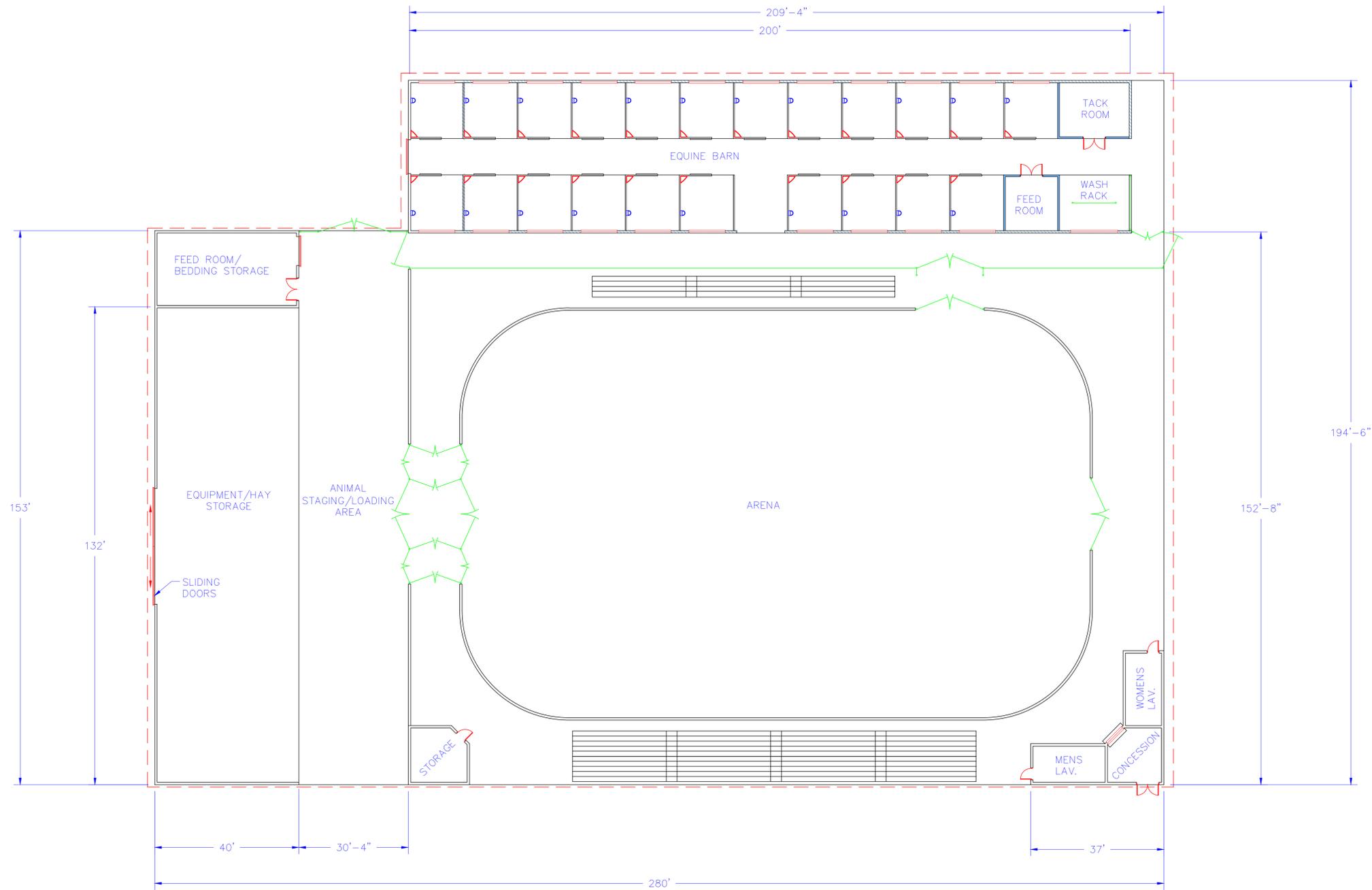
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|-----|---|
| E10 | Fans in main barn & mare motel (ceiling & in each stall) |
| E11 | Water misting system in main barn & mare motel |
| E12 | Additional tack room with saddle/bridle/blanket storage racks |
| E13 | Old quarantine pens (re-do or repurpose area... does not have to be for equine) |
| E14 | Small tractor and equipment shed |
| E15 | Concrete bunkers x3-4 at existing manure pit (1 each for manure waste; 1 each for clean shavings/bedding; 1 for Decomposed Granite (DG) or sand at unit) |
| E16 | Grading, Footing and Install of lower arena |
| E17 | Tie rails / cross ties for upper arena and boarding area |
| E18 | Stall mats for mare motel (finish existing stalls) / stall mats for main barn (plus concrete flooring for box stalls... double mat & glue on top of concrete pad) |

MT SAC

EQUINE UNIT PLANNING



- | | |
|----|--|
| P1 | Updated and Improved Pasture fencing (recommend solar electric tape with solid corners & good gates) |
| P2 | Pasture irrigation--fix/improve as necessary for permanent grass pastures |
| P3 | Pasture feeders/troughs |
| P4 | Add perimeter fence with 2 access gates along Farm Road |
| P5 | Pasture obstacle course (solid, built to last... mostly telephone poles or the like) |
| P6 | Old fencing in pastures... replace... reconfigure pastures to accommodate operation for horses and pasture care. |



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MT. SAC
CALIFORNIA

SCALE 1/16" = 1' DATE 22-MAR-2017 DRAWN BY NMH

ARENA

DRAWING NO. _____
SHT. _____

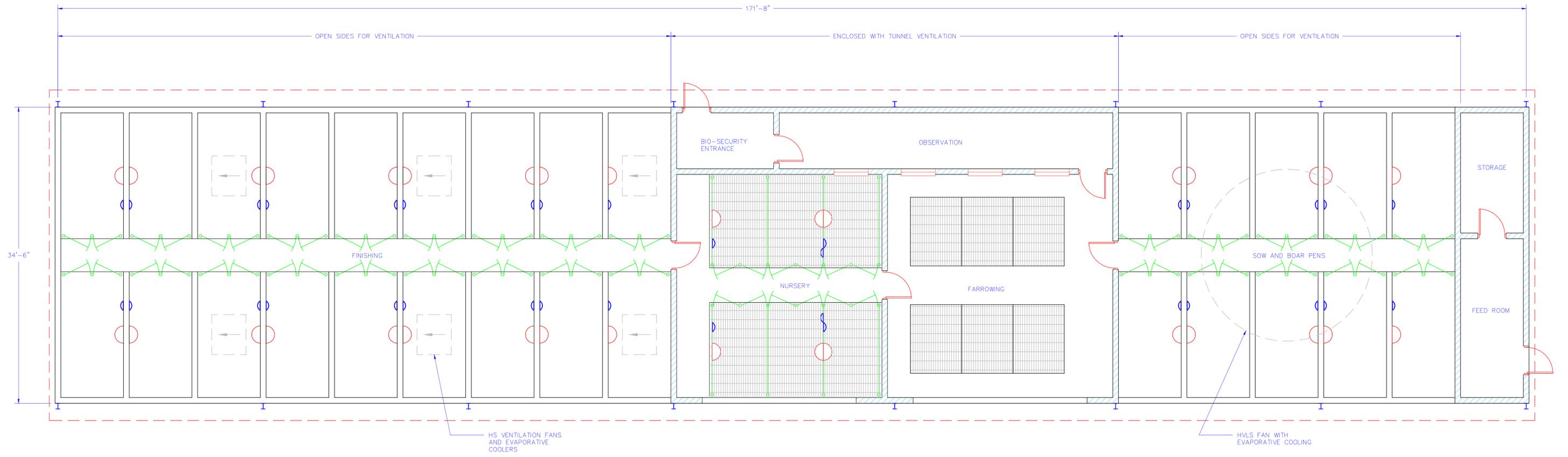


MT SAC

SWINE UNIT PLANNING



- | | |
|----|---|
| S1 | New sow pens and boar pens- Eventually need new complete unit |
| S2 | Redo plumbing in market pens |
| S3 | Install fans, infrared heaters in market pens |
| S4 | Eventually rebuild market pens, new pens, lighting, manure flush, etc. |
| S5 | Loading chute and Alley |
| S6 | Repair or Replace Farrowing House. Layout is wrong for facility purpose use. Building has severe floor and wall failure due to moisture |
| S7 | Proper swine quarantine area located in enclosed building at market pen (sick pens) |



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MT. SAC CALIFORNIA		
SCALE 3/16" = 1'	DATE 24-MAR-2017	DRAWN BY ELG
SWINE BARN		
DRAWING NO.		SHT.



Five-G Consulting

MT SAC

BEEF/SHEEP UNIT PLANNING



- B1 Redo fencing in barn to safely house beef and sheep. Need the correct spacing and sized feed bunkers (F9)
- B2 Drainage in F9 for lambing jais
- B3 Secured storage area in F9 for livestock equipment (located between wash rack and sheep lambing jais)
- B4 Redo North and South Sheep pasture (proper fence, irrigation and planting)
- B5 Loading chute for cattle at dry lot
- B6 Proper gates to move cattle and sheep along pasture and pens in livestock barn area.
- B7 Feed storage shed at F9 east end on existing pad

MT SAC

DOG KENNEL PLANNING



- D1 Redo quarantine pens to properly house each of the four species plus small feed storage area.
- D2 Set up previous dog kennel area as a show barn and area for students to work with the livestock show animals. Set up barn and pens for show livestock (beef, sheep and swine) with turn out pens, show arena, indoor working area, etc.
- D3 Build new dog kennels at F5B (new unfinished building) including office space for Registered Veterinarian Technician (RVT) and a room for rats.

MT SAC

AGRICULTURAL PLANNING



- | | |
|-----|--|
| G1 | Redo roads and surfaces for proper travel |
| G2 | Drainage |
| G3 | Pasture Purposing and Fencing (open pastures) |
| G4 | Irrigation for Triangle Pasture |
| G5 | Better security / gates and fencing for entrances to farm area (perimeter protection) |
| G6 | Bunkers for construction materials (sand, gravel, DG, etc) located at west end of north pasture. Larger, not same as equine unit |
| G7 | Shade structures in pastures and dry lots |
| G8 | Shade structures near lab areas for students |
| G9 | Improved lighting and possible fans for lab areas (ie dry lots, swine areas, equine, etc) |
| G10 | Remove old dairy building – Build small shop and equipment maintenance area where equipment tech labs can be held and general equipment maintenance can be preformed |
| G11 | Working and accessible water shut off at each building to allow repair of irrigation or livestock waterers. |

Ruminant Barn (F9)

This basic structure is of recent construction, is sound, and has significant remaining life. For optimum future operations a few issues need to be addressed. The two biggest problems are the pen fences and associated feed bunks. The rail spacing of the fences needs to be appropriately sized for the animals being housed; sheep and steer calves. Attached is a recommended all pipe fence with proper rail spacing and appropriately sized pipes. All fences and gates should be upgraded to a similar design. New concrete feed bunks sized for each species are recommended as per the attached sketches. The lambing area has no drainage provisions. This area needs to be frequently washed down and needs a trench drain added to properly deal with this water. The electric service in this barn is under-sized and needs to be upgraded. There should be additional outlets to lessen the need for extension cords. Finally, a small feed storage building is needed at the East end of this structure, this is recommended to be 12'x16'.

STUDENT FOCUS GROUP REPORT

Mt. SAC
Educational and Facilities Master Plan (EFMP)
Student Focus Group Report
May 17, 2017

1 CONTENTS

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2 SUMMARY OF COMMON THEMES

2.1 THREE TYPES OF SPACE: VERY QUIET, MODERATE NOISE/GROUP WORK, LOUD/SOCIAL SPACE

Students expressed concern about overcrowding and misuse of spaces on campus. In general, the students want to have ample access to three types of spaces: (a) silent or very quiet space, which would be used for individual/silent studying; (b) a place with moderate noise (like a coffee shop environment, but not like the dining areas which feel too formal) where students can work either in a group or individually; and (c) a recreation space where students are able to hang out between classes without worrying about interrupting students trying to study.

2.2 PARKING

Students were concerned with the lack of parking available on campus and the long distances they have to walk once they are able to find parking.

2.3 SECURITY/SAFETY

Students also expressed concern about their safety when walking back to their cars late at night. They would like to see more emergency blue light phones around campus, along with more readily available security guards to assist in escorting students to their cars.

2.4 WI-FI

Inconsistent Wi-Fi access and strength was a common concern of the focus group participants. They explained that poor Wi-Fi connections made both social and scholastic attempts difficult.

2.5 ACCESS TO POWER OUTLETS

Participants explained that they often have trouble finding power outlets that are both available and in working condition.

2.6 FOOD OPTIONS

Food concerns on campus revolved around a few key concepts: cost, time, and Electronic Benefit Transfer (EBT). Students explained that the food from Mountie Café was too expensive, while the WOW Café had better options, but the food took longer to receive. Students also explained that they often have to walk off-campus to buy food at a retailer that accepts EBT debit cards/food stamps.

2.7 BOTTLE FILLING STATIONS

Students would like to see more water bottle filling stations across campus. They are interested in sustainable options and believe bottle filling stations will promote this initiative.

2.8 COMPUTER ACCESS

Students explained that although there are specialized computer labs on campus, they have trouble accessing general computers (unless they arrive on campus very early in the morning).

3 FOCUS GROUP PLANNING LOGISTICS & DEMOGRAPHICS

3.1 QUESTIONS

Opening remarks:

Please think about the campus spaces and facilities you use at Mt. SAC such as parking, buildings, and places to learn, study, eat, hang out, relax, and interact with others.

- 1) What works well about this these spaces?
- 2) What is missing?
- 3) What needs work?
- 4) What are the challenges with these spaces?

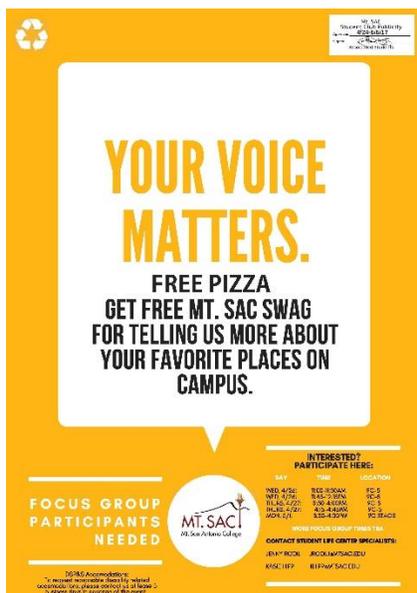
3.2 FOCUS GROUP SESSIONS

Wednesday, 4/26, Location: 9C-5
 11:00 a.m. - 11:30 a.m.
 11:45 a.m. - 12:15 p.m.

Thursday, 4/27, Location: 9C-5
 3:30 p.m. – 4:00 p.m.
 4:15 p.m. - 4:45 p.m.

Monday, 5/1, Location: 9C-B
 3:30 p.m. – 4:00 p.m.

3.3 FLYER



3.4 SUMMARY OF PARTICIPANT DEMOGRAPHICS**TOTAL PARTICIPANTS: 57**

MALE: 37

FEMALE: 20

FOCUS GROUP #	1	2	3	4	5
MALE	4	7	7	6	13
FEMALE	8	3	3	2	4
AAPI	3	4	6	2	3
CAUCASIAN	1	0	1	1	6
LATINX	7	4	2	4	7
AFAM/BLACK	0	1	1	1	1
UNIDENTIFIED	1	1	0	0	0

4 RAW DATA

4.1 FOCUS GROUP 1

Date: 4/26/17
Time: 11:00 am – 11:30 am
Students: 12
Facilitator: Kasie Hipp
Note Taker: Kasie Hipp

Question 1: What works well about these spaces?

- Library (Building 6):
 - They are very helpful.
 - Proactive if a student needs help.
- Veterans Resource Center (VRC; Building 9E):
 - Feels like home.
 - Like that Veterans Resource Center is next door to the Accessible Technology Center.
 - Like that there are tables with computers.
 - Lounge area.
 - T.V.
 - Hangout friendly.
 - Kitchen and microwaves.
- DREAM, ARISE, ASPIRE, and other specific Student Services:
 - Resources to students.
- LARC (Learning Assistance Resource Center; Building 6):
 - Provides a good introduction to college life.
 - Computer center is very spacious.
- Cafeteria (Building 8):
 - Sad no dollar drink anymore.
 - Nice that it's fresh, hot and right in front of you.
 - Con: can take long.
 - Con: expensive.
- WOW Café (Building 19C):
 - Takes a long time to get order.
 - Food is good, but have to wait for it.
 - High prices.
 - Don't like having to pay such high prices.
 - Students go to 7-11 or other places across the street instead.

Question 2: What is missing?

- Parking structure--everyone agrees that parking is a major issue on campus:
 - Can take two hours to find parking.
- Quiet room that can be used for prayer, meditation, or just a quiet space:
 - Non-denominational.
 - Lots of head nods; students in the group agreed that this would be a nice addition to the campus.
- Tutoring Center does not have enough space (Building 6):
 - Need more computer spaces.
 - The space is small for tutoring.
- TPI (Teacher Preparation Institute; Building 26A):
 - Is very small; it is nice that there is a couch, but there are only three computers.
- Accessing computers is very difficult:
 - Need all access (or general open access) computers—not ones that are limited to specific programs or populations.
 - If a student does not get to campus early in the morning, they are out of luck for getting to use a computer.
 - Very slow computers on campus (outdated).
 - Need more Mac computers:
 - Only Mac is in the Bridge area (Building 9E).
 - Design Technology Center (Building 13) has Macs, but have to be graphic design and architecture student to use them.
- More kitchen access:
 - Outside of a staff kitchen.
 - Utensils.
 - Microwaves.

Question 3: What needs work?

- Get better access to counselors throughout the year, big advertisements.
- Wi-Fi:
 - Everyone agrees that Wi-Fi is a huge and inconsistent issue on campus.
 - Students get varying levels of Wi-Fi throughout campus.
- Vending machines:
 - Taking money; they don't work; want more products.

Question 4: What are the challenges with these spaces?

- Not enough space in the classroom.
- Some places have a lot of space, while lots of spaces are cramped:
 - Accessible Technology Center (Building 9E) has more space than the Veterans Resource Center, (Building 9E) but there are more vets utilizing the space on a regular basis compared to DSPS students.
- DREAM program is very crowded in the existing portable.

- Portable buildings are very cramped, sometimes students have to hang out outside because inside is too full.
- Study space is limited, people hang out outside:
 - Studying at the Writing Center (Building 26B) is not really a quiet study space.
- Library (Building 6):
 - Group study space is available in the Library, but have to reserve ahead of time.
 - Library is too full.
 - People sitting on floors.
 - Outlets are loose or not working.
- Missing both quiet and group study space:
 - More casual group setting necessary.
 - Café feel is desired, like a coffee shop and informal.
 - Cafeteria is too formal.
 - Tables get cluttered.

Other Comments:

- Limited power outlets available on campus, no tables with outlets:
 - Outlets falling out of the wall, and sometimes they don't even work.
- Wi-Fi sucks.
- Weird that the Student Life Center is not able to use stage side of the building (9C), especially when it is not in use.
- Space not being utilized to full potential.
- Chairs and tables around campus with umbrellas so that people can sit and have lunch, need more space to sit and eat.
- Lockers or storage space or more secure places to store items are needed.
- Need charging stations outside where students can hang out.
- Need Computer Center where all students are welcome to use.
- Bottle filling stations are needed more around campus.
- Parking is a struggle, to know how many parking spaces are available would be helpful, currently we have to walk a mile after parked to get to class.
- An app to know where parking is available on campus is needed.
- Free coffee around finals week, create community around finals schedule, free coffee.
- Drinking fountain pressure is too low.
- Need more "filtered" water stations, only two are currently on campus and available to students.

Attendees:

4 male, 8 female:

3 AAPI

1 Caucasian

7 Latinx

1 unidentified

4.2 FOCUS GROUP 2

Date: 4/26/17
Time: 11:45 am – 12:15 pm
Students: 10
Facilitator: Kasie Hipp
Note Taker: Kasie Hipp

Question 1: What works well about these spaces?

- Student Success Center (9E) is a good addition to the campus.
- Student Services building (9B) is not as helpful:
 - Feels like it's more financial and counseling stuff.
 - Not inviting.
 - Students have to actually know about the building and what's inside to be able to find the resources.
- Study a lot in the Library, but there is only one “quiet” space on campus...but it is not quiet:
 - Have to tell people to be quiet because it is often very loud and hard to concentrate in the Library.
 - Students will try to find other places to study because it is hard to concentrate in the Library.
- Technical Education Resource Center (TERC; Building 18C) is a cool place to study:
 - Has good resources.
 - A good place to hide out and is quiet.
- There are multiple spaces available to study.
- In the Library it is hard to find space for all types of work:
 - Group study space is limited.
 - Individual and group study space is available, but has to be reserved or is not being used properly (one person in a big room, or people hanging out in the rooms).
- Not a lot of places to hang out, so it's hard to have a hangout space (like the Student Life Center 9C).
- Hangout space is different than study space.
- Need an in-between study space:
 - Where discussion is ok, but it could be a study space.
 - Like a café or more informal setting than the Library.
- The Library here is not quiet.
- Design Technology Center (DTC; Building 13) is nice, likes all the electronic resources.
- Study space is limited.
- Need a silent study space.
- Need to have three types of space: very quiet, moderate noise, and a place to chill or hangout with friends.
- There is not a divide between gaming and just studying.
- There's not enough info about places to study.

- Administration (Building 4) has a quiet space in the second floor lobby, but it's kind of hidden:
 - Needs to be promoted and made more accessible.
 - Need a handout to get information out to students.
 - Unless a student works on campus, they don't know what else is on campus.
- Printing is very hard to find, not a lot of spaces have printing available:
 - And can get really packed.
 - If a student has class on one side of the campus and forgets they needed to turn in a printed document, it can be difficult to get to a printer in a timely manner and then be able to access the printer.
 - Students need to take advantage of the specialized student success programs because they will allow you to print for free; student resources and programs are a huge benefit.
 - Students don't know what we have.
 - Printing available throughout campus, but students are not aware.
- Printing at the Design Technology Center (DTC; Building 13).
- LARC is very quiet, but limited space.

Question 2: What is missing?

- Working power outlets:
 - Charging stations have been helpful, but they are still limited.
 - Some students were not aware of the charging stations.
- EBT debit card use on campus:
 - Need to have a system for EBT cards to be used on campus, currently no use.
 - Walking across the street to use EBT is difficult.
 - Students may have money on their card, but they are not able to eat because they don't have time to walk elsewhere.

Question 3: What needs work?

- 2 hour rental for books is not enough time:
 - The space in the Library is maybe not set up for use of space and using reference materials.
- Access to the gym/fitness rooms:
 - You have access because of a class or have to pay to get use.
 - Wellness Center (Building 27A) has limited space.
- Music Building (Building 2M):
 - Need a place to play music, or a practice space for music, and practice space for dance open to students.

Question 4: What are the challenges with these spaces?

- Library:
 - The walls are really thin and there is a lot of outside noise.
 - The carpet in the Library (Building 6) is distracting and makes studying difficult.
- Additional space:
 - Little rooms:
 - Small group work rooms where it can be quieter.
 - Little pods for working with other students.
 - More consistent place use, if it's a quiet place, it should always be quiet. If people are able to hang out, there should not be restrictions like there are in the Student Life Center (SLC; Building 9C).
- Printing is available in the Design Technology Center (DTC; Building 13), and very convenient to get to:
 - People don't know about it.
 - A computer just for printing would be really nice.
- General students lack knowledge about resources, the in-reach folks are hidden away:
 - Student Ambassadors are hard to access.
 - Have to actively seek out the assistance.
 - Have to put effort into getting help.
 - Promote information better to make it easier to find.

Other Comments:

- Bridge program space is small, access to resources is limited.
- More enforcement of study time and spaces:
 - Library or different spaces should be enforced; quiet spaces are not really quiet and no one does anything.
- Hard to know what's going on around campus.
- Smoking spaces are gross and it sucks to have to walk through the smoking areas to get around campus:
 - Could be better spaced so that students don't have to walk through on a regular basis.
 - Makes students cough and is bad for asthma.
- Library needs rework to be a better learning environment.
- Student services made more available and accessible.
- Like that Student Life Center (SLC; Building 9C) is a relaxing space, don't like to have the restrictions of time for gaming versus “study:”
 - Don't like being told that they need to quiet down.
- A building with nice desks with wide tables so that people can study:
 - Easy to access.
 - Need big tables that can easily fit a book and a computer.
- Tables in the Student Life Center (SLC) are too small to fit items on.
- Spaces to take a nap would be good.
- The Koi Pond at the farm is really nice and relaxing—like to see nature.
- More flyers, scrolling marquee is helpful too.
- They like to receive and see flyers.

- Social media is used more for personal purposes, not for getting information from the school.

Attendees:

7 male, 3 female:

4 AAPI

4 Latinx

1 AFAM/Black

1 unidentified

4.3 FOCUS GROUP 3

Date: 4/27/17
Time: 3:30 pm – 4:00 pm
Students: 10
Facilitator: Jennifer Rodil
Note Taker: Amrik Johal

Question 1: What works well about these spaces?

- Air conditioning.
- Quiet zone in Library.
- Starbucks at Mountie Café.
- Math Activities Resource Center (MARC; Building 61) and other resource centers are useful.

Question 2: What is missing?

- Gender neutral restrooms.
- Bottle filling stations.
- Underground parking and more parking in general.
 - Parking structure that says how many spaces are available.
 - Need a covered parking lot.
 - Solar panels over parking lots.
 - Student employee parking (integrated with staff parking).
- Better Wi-Fi.
- Humanities areas need places like the Math and Computer Science Lab (Building 61) for more study and collaboration spaces.
- Study spaces:
 - Round tables for studying and collaboration and more individual study spaces.
 - More private study rooms around campus, not just in the Library (required to reserve at least two weeks in advance and often students book them and do not show up).
- Quiet spaces:
 - Private, quiet areas to relax before and after class (couches and lounge chairs).
 - Students currently rest/sleep throughout campus (especially in the aisles of the Library), there needs to be places for relaxing given gap between classes and students who don't have the luxury of resting in a car or going home.
- Need more charging stations around campus.
- Chill zones for during finals week.
- More restrooms.
- Spaces for programs are too small (ARISE); so many students, space not conducive.
- PRIDE Center is very small.
- Openness and accessibility for students who are here during later hours when offices and programs are closed.
- Need larger spaces for resource centers and affinity spaces for students to feel safe.

Question 3: What needs work?

- High prices for food for students on campus.
- Mountie Café seating is in direct sunlight, and it is not utilized because there is no shade over those spaces.
- Wi-Fi needs to be better.
- Need more parking.
- Textbook pricing is very high.
- Advertising for social activities and athletic events:
 - Marketing of events needs to be better.
 - Extracurricular offerings and marketing of these offerings.
 - More widespread marketing for all students, not just to certain parts of the campus.
 - A page or two with the week's events.
 - Need a centralized calendar.
- Counseling (long waits for students), students being turned away:
 - Cannot book three weeks out, only can book two weeks out.
 - Students are turned away.
 - Walk-in appointments are too fast, and questions are not all addressed; then told to make an appointment but they are not available.
 - Students are told that they are not visiting counselors and need to, but when they try they cannot get appointments.
- Need free recreational space (like a large campus):
 - Indoor rock-climbing.
 - Recreational activities.
 - Gym available to students.
 - Free weights.
 - Accessible basketball courts.
 - Volleyball courts.
 - More pool tables and ping pong in another recreational space.

Question 4: What are the challenges with these spaces?

[no content]

Other Comments:

Campus is being built out and under construction which students like. They feel like it is a Cal State given the size and feel/look of the campus. They recommend this school to others as a campus with a lot of support and resources.

Attendees:

7 male, 3 female:

6 AAPI

1 Caucasian

2 Latinx

1 AFAM/Black

4.4 FOCUS GROUP 4

Date: 4/27/17
Time: 4:15 pm – 4:45 pm
Students: 8
Facilitator: Jennifer Rodil
Note Taker: Amrik Johal

Question 1: What works well about these spaces?

- Comfortable chairs and couches in the Administration (Building 4).
- High tables at the TERC (Building 18C).
- Plug-ins for charging mobile devices.
- Modern facilities (new cafeteria, inside and outside design).
- Outdoor seating.
- Mt SAC is developing more and more of a University campus feel; indoor and outdoor facilities are very nice and it makes it nice to come here.

Question 2: What is missing?

- More natural lighting and electrical outlets in the classrooms.
- More food and drink options at the places students use for studying.
- More vending machines at study spaces.
- Faster Wi-Fi.
- More air conditioning in spaces.
- Technological innovation: outlets, Wi-Fi.
- More restrooms needed for students (some buildings are faculty only designated restrooms).
- More recycling trash cans near where students are eating and ordering food.
- More elevators (especially 26D where there is only one elevator), makes students who need to use them late (more accessibility; elevators).
- Elevators (26D) are not functioning properly.

Question 3: What needs work?

- Environmentally friendly: energy, furniture, etc.
 - Design to save energy and keep cooling costs low (especially with the new buildings).
 - Drip irrigation, promoting the changes among students' minds.
 - Be more sustainable.
 - More environmentally friendly waste bins (organics, plastic, paper).
 - Provide examples of what can be disposed of in each bins (like they have at SMC).
 - Need more trash cans around campus so that people do not put their trash in the recycling bins.
- Outdoor seating needs to be improved:
 - Wooden benches are weathered and not in the best condition anymore.
 - Need more outdoor spaces (tables and chairs) in the shade.

- Closer parking:
 - Parking closer for rechargeable cars (plug-in hybrids and electric cars).
 - Having to walk to far parking at night, with limited security around at those hours.
 - Security escorts for late classes (not enough escorts, and not enough in various areas).
 - Gets very dark at night, needs to be more lit.
 - Need a shuttle or trolley system to help students get around safely late at night.
 - Need emergency blue light phones, many places on campus with none nearby.
- Charging stations around campus.
- Get furniture that can be easily moved around and broken down so that the spaces can be rearranged and made into open spaces.

Question 4: What are the challenges with these spaces?

- Space challenges: people coming to hang out, and others coming to study.
- Separate recreation spaces and study spaces and relaxation spaces.
- Cramped spaces in the Student Life Center (SLC; Building 9C).
- Need appropriate lighting for studying.
- Coffee shop inside of buildings where students are studying.
- Multi-use areas (current and future) need designated areas for studying, relaxation, and recreational activities.

Attendees:

6 female, 2 male:

2 AAPI

1 Caucasian

4 Latinx

1 AFAM/Black

4.5 FOCUS GROUP 5

Date: 5/1/17
Time: 3:30 pm – 4:00 pm
Students: 17
Facilitator: Jennifer Rodil
Note Taker: Amrik Johal

Question 1: What works well about these spaces?

- A lot of places to study. If one place is too crowded, there are other spaces to go to.
- Multiple options to choose from.
- In seeing other campuses, Mt SAC has a lot of facilities and options for spaces.
- For motorcycle parking, there are allotted spaces.
- Escort service is a nice service.
- Parking permits are not that expensive.
- Not a lot of colleges have more than one parking lot, so it is a nice thing to have.
- Shuttle service is also good.

Question 2: What is missing?

- Parking security guards.
- More restrooms; there are very few and need to know where they are in each building.
- Business row buildings (17, 18, 19B) do not have restrooms, have to travel a distance to get to one.
- More private study rooms, since they fill up during finals.
- More computer access.
- Not enough power outlets to accommodate the number of tables (Library), like the tables in ACES with the outlets.
- Food trucks on campus and trucks that provide food options (“gut trucks”).
- More vending food options, including healthier snacks in the vending machines.
- In the restrooms, remind people to wash their hands with signage.
- A “chill lounge” with seating, movies, and places to unwind – especially for time between classes.
- Ventilation in Student Life Center is ineffective, with a rank smell.
- Need more emergency blue light phones in the parking lots.
- Need more student stops and stores.
- Vending machines with school supplies.
- More posting board space on the outside of buildings and around campus.
- More affordable food options.
- Pay lots are not being utilized – use those for student parking.
- Staff lots: allocate some spaces from those spots to students.
- Healthier food choices (non-GMO).
- Healthy vending machines.

- Parking structure (underground also); parking signage and sections to allow students to remember where they parked.
- Security cameras, shuttles, and escorts at night.
- More printing areas.

Question 3: What needs work?

- Student Wi-Fi is not good; the staff one is what a lot of students are using.
- Temperature regulation across all buildings.
- Methods for transportation intra-campus.
- Utilize empty classrooms for studying zones when they are not in use.
- Sky-bridges so students can cross street without waiting on traffic lights, and also to make driving and foot travel safer.
- Elevators need improvement; Science Laboratories (Building 60) is not working properly.
- Escalators.
- Have bike racks on campus to encourage students to use other forms of transportation.
- Have the bike racks in central and secure locations.
- Have bike lanes on campus to ensure safety of students.

Question 4: What are the challenges with these spaces?

[no data collected]

Attendees:

13 male, 4 female:

3 AAPI

6 Caucasian

7 Latinx

1 AFAM/Black

REFERENCE DOCUMENTS

APPENDIX

REFERENCE DOCUMENTS

These documents were referenced for the planning process.

COLLEGE HISTORY

- o Mt. San Antonio College—The First Fifty Years—circa 1996

COLLEGE POLICIES

- o AP 6610 Facilities Project Prioritization—September 12, 2012

COLLEGE STUDIES AND PLANS

- o Feasibility Study MSAC Brackett Field Facility—December 1, 1988, CHCG Architects Inc. for the Mount San Antonio College Foundation
- o ADA Transition Plan, Mt. San Antonio College—March 2010, Sally Swanson Architects, Inc.
- o Food Services Program Plan, Mt. San Antonio College—July 2011, Webb Design
- o Mt. San Antonio College Educational Master Plan 2008–2009 2015 Addendum: The Farm—May 8, 2015 Draft, Collaborative Brain Trust
- o Mt. San Antonio College Facilities Condition Index Assessment Report and COMET Facility Report Executive Summary—August 5, 2016, Barney McClung
- o Campuswide Stormwater Analysis—September 1, 2016, Psomas
- o Farm Hydrology Master Plan: Existing Conditions—September 1, 2016, Psomas
- o Mt. San Antonio College Utility Infrastructure Master Plan—September 25, 2012, P2S Engineering

ENVIRONMENTAL IMPACT REPORTS

- o Mt. San Antonio College Campus Master Plan Draft Program Environmental Impact Report—September 2002, Sid Lindmark, AICP
- o Mt. San Antonio College Master Plan Update 2005 Draft Supplement to a Program Final Environmental Impact Report—December 2005, Sid Lindmark, AICP
- o Mt. San Antonio College 2008 Master Plan Update Draft Subsequent Environmental Impact Report—May 2008, Sid Lindmark, AICP
- o Mt. San Antonio College 2012 Facility Master Plan Draft Subsequent Environmental Impact Report to a Final Program Environmental Impact Report—September 2013, Sid Lindmark, AICP
- o Mt. San Antonio College 2015 Facilities Master Plan Update (FMPU) Subsequent Program Final Environmental Impact Report and Physical Education Projects (PEP) Project Final EIR—October 2016, Sid Lindmark, AICP

GOVERNMENT DOCUMENTS

- o City of Walnut 1978 General Plan
- o City of Walnut 2012 Zoning Ordinance
- o City of Industry 2014 General Plan
- o State of California 2017 General Plan Guidelines, Governor’s Office of Planning and Research

GEOTECHNICAL REPORTS

- o Geoseismic/Geotechnical Study Report—Proposed Student Support Services Building Project, Mt. San Antonio College—December 9, 2011, by Converse Consultants

APPENDIX

REFERENCE DOCUMENTS (cont.)

- o Geotechnical Study Report—Proposed Athletic Complex East, Mt. San Antonio College—January 23, 2015, by Converse Consultants

LEASE AGREEMENTS

- o Lease for Construction of College Aviation Instructional Facilities at Brackett Field—April 3, 1990
- o Hangar Storage License Agreement Brackett Airport—August 20, 2015

PREVIOUS COLLEGE FACILITIES MASTER PLANS

- o See Appendix, Previous Facilities Master Plans

STUDENT SURVEY REPORTS

- o First-time Students: Cooperative Institutional Research Program, Insights on the College, Volume 13, No. 8—December 2003, Mt. SAC Research & Institutional Effectiveness
- o Mt. San Antonio College CIRP Survey Results: A Five-Year Comparison (2001–2005)—July 24, 2006, Mt. SAC Research & Institutional Effectiveness
- o Mt. San Antonio College CIRP Supplemental Questions: A Three-Year Comparison (2003, 2005)—July 24, 2006, Mt. SAC Research & Institutional Effectiveness
- o Mt. San Antonio College CIRP Survey Results: A Six-Year Comparison (200–2005 & 2007)—April 8, 2008, Mt. SAC Research & Institutional Effectiveness
- o Mt. San Antonio College Graduate Survey Report, Classes 2005, 2006, 2007—May 12, 2008
- o Mt. San Antonio College CIRP Survey Results: A Six-Year Comparison (2002–2005, 2007,

2009)—December 6, 2010, Mt. SAC Research & Institutional Effectiveness

- o Mt. San Antonio College CIRP Supplemental Questions: A Four-Year Comparison (2004, 2005, 2007, 2009)—February 8, 2011, Mt. SAC Research & Institutional Effectiveness
- o Cooperative Institutional Research Program (CIRP): Freshman Survey Analysis—May 14, 2012, Mt. SAC Research & Institutional Effectiveness
- o Mt. San Antonio College CIRP Survey Results: A Seven-Year Comparison (2002-2005, 2007, 2009, & 2011)—June 7, 2012, Mt. SAC Research & Institutional Effectiveness
- o Mt. San Antonio College Graduate Survey Report, Classes 2008, 2009, 2010, 2011, & 2012—June 28, 2012, Mt. SAC Research & Institutional Effectiveness
- o Graduate Survey Report—October 1, 2014, Mt. SAC Research & Institutional Effectiveness
- o Cooperative Institutional Research Program (CIRP): Freshman Survey Analysis—May 15, 2015, Mt. SAC Research & Institutional Effectiveness

TRANSPORTATION STUDIES

- o Mt. San Antonio College 2015 Facilities Master Plan Update & Physical Education Projects Traffic Impact Study—September 1, 2016, Iteris (refer to Mt. San Antonio College 2015 Facilities Master Plan Update (FMPU) Subsequent Program Final Environmental Impact Report and Physical Education Projects (PEP) Project Final EIR)
- o Mt. San Antonio College Parking and Circulation Master Plan—November 15, 2017, by Psomas

PREVIOUS FACILITIES MASTER PLANS

APPENDIX

PREVIOUS FACILITIES MASTER PLANS

The following are presented below.

- o Mount San Antonio College Master Plan, September 1981
 - The Master Plan: Functional Relationships & Provisions for Expansion (page 32)
 - The Master Plan: Physical Campus (page 33)

- o Master Plan Update 2005
 - Campus Master Plan Summary (page 6)
 - Project List & Description (page 7)
 - Land Use Plan (page 8)

- o Facilities Master Plan Update 2009
 - Measure R Bond Projects (page 11)
 - Measure RR Bond Projects (page 12)
 - Master Plan (page 13)
 - Campus Zoning Plan (page 14)

- o Facilities Master Plan 2012
 - Master Plan (page 11)
 - Campus Zoning (page 13)

- o 2015 Facilities Master Plan Update
 - Existing Campus Plan
 - Campus Zoning Plan
 - Land Use Plan

A.14

MT. SAN ANTONIO COLLEGE 2018 EDUCATIONAL AND FACILITIES MASTER PLAN
CBT AND HMC ARCHITECTS / DRAFT DATED 12.12.18

UTILITIES
INFRASTRUCTURE

APPENDIX

UTILITIES INFRASTRUCTURE

This section summarizes the findings of recent assessments and the recommendations for each of these systems. The utilities infrastructure within the campus boundaries comprise the following systems.

- o Chilled and Heating Hot Water Systems
- o Electrical System
- o Natural Gas System
- o Communication Systems
- o Potable Water System
- o Non-Potable Water Systems
- o Stormwater System
- o Sanitary Sewer System

Following the completion of the EFMP, the update of Mt. SAC's *Utilities Infrastructure Master Plan* is recommended to achieve the following objectives.

- o Increase service capacity and extend service areas to support the EFMP's recommended facilities and site improvements
- o Address spatial conflicts from the location of utility lines and equipment
- o Support sustainable campus operations and the objectives of Mt. SAC's *Climate Action Plan*
- o Repair or replace outmoded, aged, and inefficient/poorly functioning systems and components
- o Increase service reliability, flexibility, and capabilities

APPENDIX

UTILITIES INFRASTRUCTURE: CHILLED AND HEATING HOT WATER SYSTEMS

FINDINGS

A central cooling and heating plant with a cogeneration system and a thermal energy storage system provides chilled water to most of the buildings on campus for space cooling and hot water to some of the buildings for space heating.

Chilled Water

The campus chilled water needs are currently met by a central plant located in the academic core of the campus. The central plant houses two 640 ton centrifugal chillers, an 820 ton centrifugal chiller, and a 500 ton absorption chiller driven by waste heat from a 1.5 megawatt cogeneration system. A below-grade 20,000 ton-hour chilled water thermal energy storage (TES) tank provides chilled water storage and allows chillers to run at night when the electricity rates are lower and outside temperatures are favorable, resulting in reduced operational costs. The chilled water is distributed through a system of pre-insulated chilled water lines to each major building on campus. A few campus buildings have stand-alone systems and utilize package systems/dedicated chiller systems to provide cooling. Two 250 ton chillers at the existing Performing Arts Center 2 are connected to the chilled water distribution system and, therefore, supplement the existing chilled water system capacity.

The central plant equipment is in good condition. The equipment needs to be continually maintained to minimize interruptions.

Hot Water

Majority of the campus hot water needs are currently met by stand-alone boiler systems

housed in individual buildings. The heating hot water needs of a few buildings are met by centralized boilers housed in the central plant facility. The individual boilers in buildings are in good condition.

RECOMMENDATIONS

Chilled Water

An evaluation and analysis of the existing central plant and its capacities revealed that the main central plant and TES is adequately sized to support the previously planned campus building development. However, additional capacity will be required to meet the cooling needs of new facilities that are recommended for the first time in this EFMP.

- o A second cooling plant or additional chillers are recommended to supplement the capacity of the existing central plant and offer redundancy to the system. The existing cogeneration system should be abandoned at the end of its useful life to minimize greenhouse gas emissions
- o A pipe flow model of the system is recommended to verify the capacities of the underground distribution system and the improvements needed to meet future demands

Hot Water

Stand-alone boilers are recommended for new facilities. As indicated by a study, it is not economical to expand the existing centralized heating hot water system to meet the needs of new facilities.

LEGEND

- PROPERTY LINE
- CHILLED WATER



EXISTING CHILLED WATER SYSTEM

A.17

APPENDIX

UTILITIES INFRASTRUCTURE: ELECTRICAL SYSTEM

FINDINGS

The Southern California Edison (SCE) Company is Mt. SAC's electrical utility provider. The College's 12kV (medium-voltage) electrical distribution system distributes power from the utility to each building on campus. Medium-voltage distribution systems are desirable for being more efficient and stable than low-voltage distribution systems.

The electrical distribution system was upgraded in 1993. An evaluation revealed that the main 12kV switchgear and distribution feeders are in good condition. The system is configured in a loop, which is desirable because it provides redundancy in case one of the feeders fails or is taken down for maintenance. However, the loops employ modular connectors that are located underground in manholes and cannot be conveniently accessed.

RECOMMENDATIONS

Currently planned and recently completed electrical system upgrades have been designed and phased to meet the immediate needs of the campus and to support previously planned facilities. To meet the needs of new facilities and renovations that are being recommended for the first time in this EFMP, it would be necessary to further increase the capacity and extent of the medium voltage electrical distribution system and reconsider the phasing of system-wide improvements.

Mt. SAC is planning to build four megawatts of solar electrical generating capacity on the campus. Smart-grid technology could help to optimize the benefits from this investment. A campus-wide micro-grid would use smart-grid technology to

efficiently integrate, manage, and distribute on-site solar power, as well as power from the grid and all other sources.

- o Extensions of existing feeders are recommended to serve the proposed renovations and additions. New loops are recommended within new areas of development or areas that would be extensively redeveloped
- o As new facilities are planned for the campus, SCE should be informed in advance of new loads that would be added to their system
- o Sub-metering is recommended at each building and outdoor area to allow the College to monitor the consumption of electrical power and measure the impact of energy-conservation measures
- o Study the feasibility of developing a campus-wide micro-grid
- o Transfer all campus energy-using systems that operate in buildings and outdoor spaces, to a single integrated energy management platform

LEGEND

- PROPERTY LINE
- ELECTRICAL
- ELECTRICAL HIGH VOLTAGE



EXISTING ELECTRICAL SYSTEM

A.19

APPENDIX

UTILITIES INFRASTRUCTURE: NATURAL GAS SYSTEM

FINDINGS

The Southern California Gas (SCG) Company is Mt. SAC's natural gas utility provider. The campus is currently supplied from SCG's high-pressure system. The north- and south-of-Temple Avenue campus areas are each supplied through a single high-pressure line with a single meter assembly. These high-pressure lines feed individual medium-pressure lines that step down to 10 pounds per square inch, gage distribution systems. The medium-pressure distribution mains provide for the needs of the entire campus and were the focus of a recent evaluation and analysis.

The evaluation concluded that the system is in good condition with the capacity for increased pressure on the campus-wide medium-pressure distribution loop.

A review of load demands indicated that the existing medium-pressure distribution main lines are adequately sized to accommodate the demands of existing and previously planned new facilities due to the significant diversity that characterizes system-wide usage.

RECOMMENDATIONS

Currently planned natural gas system upgrades have been designed and phased to meet the immediate needs of the campus and to support previously planned facilities. To meet the needs of new facilities and renovations that are being recommended for the first time in this EFMP, it would be necessary to further increase the extent of the medium-pressure distribution system and reconsider the phasing of system-wide improvements.

- o Upgrading the main meter and installing sub-meters meter to each sub-area of the campus is recommended. In a few locations, the re-routing of existing underground lines will be required to coordinate the system with the location of recommended facilities
- o Replace existing steel lines that are part of the campus distribution system with polyethylene pipe
- o Provide earthquake valves at meter assembly locations on the downstream side of the regulator, to shut off the flow during a seismic event
- o Install sub-meters at each building to track the energy consumption of buildings and measure the impact of energy-conservation measures

APPENDIX

UTILITIES INFRASTRUCTURE: COMMUNICATION SYSTEMS

FINDINGS

Verizon is the local exchange carrier (LEC) for communication services. Mt. SAC uses an underground system of conduits to distribute all fiber and copper cables to its buildings. It plans to provide redundant data and voice services to all new buildings. The fiber optic cables being installed consist of single-mode fibers and multi-mode 62.5 fiber optic cable. The fiber count in each building varies from 6SM/6MM for smaller buildings to 18SM/36MM for larger buildings. The campus is converting to Hewlett Packard data switches for their data network.

Currently, digital voice service is provided by MITEL PBX. The College plans to convert its phone systems to voice over internet protocol (VoIP), and maintain non-switched analog lines from the service provider as the only voice services not on the data network. With the College's plan to convert to VoIP, the number of copper pairs needed to serve each building will be reduced greatly—to 25 pairs of copper to most of their buildings and 50 pairs to a few buildings.

In some existing buildings, the communications equipment rooms are inadequate and have limited or no communication grounding, bonding HVAC, and electrical systems. Some communications rooms lack proper security and are shared with other functions that require access by campus employees in addition to the Information Technology unit.

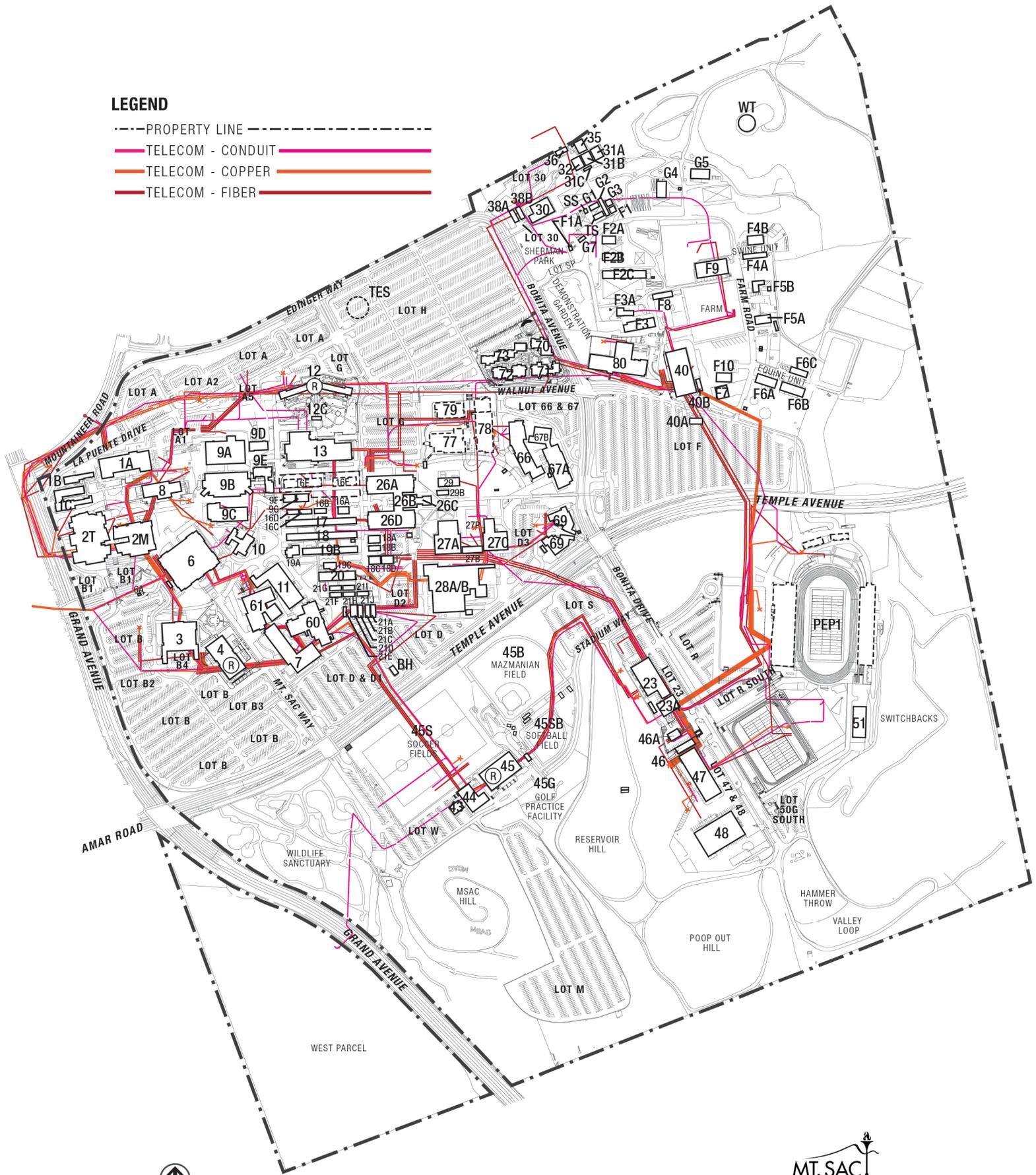
RECOMMENDATIONS

The campus has been converting its communications system backbone to single-mode fiber optic cable to meet future needs for higher speeds. The continuation of this work is recommended. To meet the needs of new facilities and renovations, it would be necessary to build new conduit pathways, fiber optic cables, and copper cables to each of the new and renovated facilities. VoIP services will be provided over fiber. Each facility will require limited copper cable connections for elevator phones, alarms, modems, and fax lines.

- o Communications equipment rooms in all buildings would provide grounding and bonding of all cable to meet ANSI/EIA/TIA 607 Commercial Building Grounding and Bonding requirements
- o The renovation of existing communications equipment rooms to meet ANSI/EIA/TIA requirements is recommended, potentially requiring the upgrade of the electrical and HVAC systems that serve these rooms

LEGEND

- PROPERTY LINE
- TELECOM - CONDUIT
- TELECOM - COPPER
- TELECOM - FIBER



EXISTING COMMUNICATION SYSTEMS

A.23



APPENDIX

UTILITIES INFRASTRUCTURE: POTABLE WATER SYSTEM

FINDINGS

The Mt SAC campus is currently served by the Three Valleys Municipal Water District (TVMWD) through an existing 46-inch water transmission main line. Mt. SAC's existing master meter and point of connection to the 46-inch main line is located east of the Mt. SAC campus on the property of Cal Poly Pomona. From this connection point, water is supplied to an existing 12-inch water main in Temple Avenue that serves the entire Mt. SAC campus. The southern portion of campus is served directly from this 12-inch main. The northern portion of campus is served by a one-million-gallon storage tank and four 25,000-gallon supplemental storage tanks located in the northeastern portion of campus. Water from the 12-inch main is supplied to these tanks using a series of pumps, and then distributed to the campus through a College-owned water distribution system that is pressurized by the elevation of the main tank.

Throughout the campus, the same potable water distribution system serves the College's domestic water, fire protection, and landscape irrigation needs. Some of the distribution main lines and many of the water service connections to older building, especially in the southern portion of campus, consist of transite piping, an outdated material that contains asbestos. The College is in the process of replacing the existing transite piping and has recently replaced the water main along Bonita Avenue with a new PVC main. As new building projects have been completed, the College has been replacing transite pipe within the project limits.

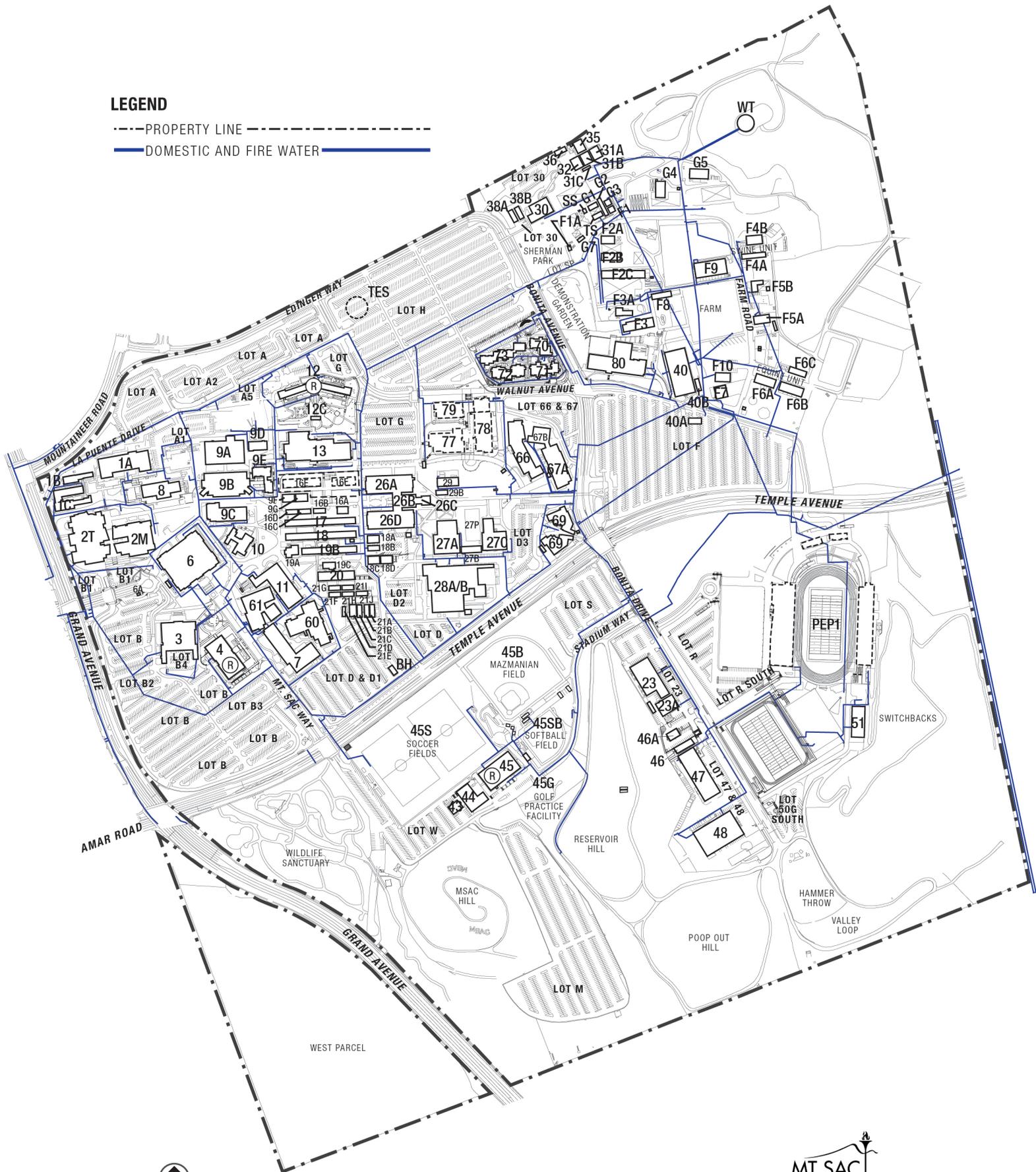
RECOMMENDATIONS

To meet the needs of new facilities and renovations that are being recommended in this EFMP, it would be necessary to increase Mt. SAC's potable water storage capacity and upgrade and extend the campus water distribution system. A study is recommended to understand increasing service demands and how these would impact the system and the existing facilities that it serves.

- o Build two more potable water storage tanks
- o The significant difference in topographic elevation between the northern and southern limits of the campus would lead to large pressure differences that must be addressed in the system's design. To provide adequate flow and pressure to new facilities, it may be necessary to increase the size of certain existing water distribution mains within the academic core of the campus
- o The College would continue its program to replace existing transite water mains and laterals with PVC piping
- o Partner with TVMWD, the cities of Walnut and Pomona, and Cal Poly Pomona to replace the 12-inch transite water main line within Temple Avenue that supplies Mt. SAC's campus
- o Landscape irrigation systems should be converted to the use of non-potable water (see Non-Potable Water System, below)

LEGEND

- PROPERTY LINE ---
- DOMESTIC AND FIRE WATER —



EXISTING POTABLE WATER SYSTEM

A.25

APPENDIX

UTILITIES INFRASTRUCTURE: NON-POTABLE WATER SYSTEMS

FINDINGS

Mt. SAC currently uses potable water to satisfy its landscape irrigation needs. It uses far more water for irrigation than for its domestic water needs (refer to the section titled Campus Water Use, in Chapter 8: *Environmental Analysis*). The College recently announced its intention to build a non-potable water system that would serve the entire campus. TVMWD, which supplies potable water to Mt. SAC's campus water distribution system, also offers reclaimed water for non-potable uses, such as landscape irrigation. The use of reclaimed water offers benefits to the College over the use of potable water. The cost of reclaimed water is significantly lower, as is its carbon footprint. Recently, TVMWD approved Mt. SAC's application to build the campus' first connection to its reclaimed water system. The West Parcel and Lot M will be the first areas to be supplied with reclaimed water.

Reasonable precautions must be exercised when using non-potable water. Due to the presence of minerals—especially salts—non-potable water may affect the growth potential and life span of certain plants. The composition and concentration of minerals can vary over time, especially for recycled water, and its use on potentially susceptible landscape materials must be monitored. Non-potable water systems, such as irrigation systems and sewage conveyance systems, must meet current health code requirements that provide for separation from potable water systems, and minimize occupant contact with non-potable water.

Another non-potable water source is available onsite. In the past, the College maintained a system of wells that supplied ground water for non-potable uses on the campus. It retains its status as a local water agency with the right to produce groundwater for its own use and could do so again if it should prove to be economically feasible compared to alternatives, such as reclaimed water.

RECOMMENDATIONS

A study is recommended to understand non-potable water service demands and plan for a campus-wide distribution system that will meet the needs of existing and new site improvements, facilities, and renovations.

- o Evaluate the existing campus irrigation system to determine upgrades necessary to utilize reclaimed water
- o Evaluate the plant materials to determine the suitability of irrigation with reclaimed water
- o Based on the campus topography, determine whether the TVMWD reclaimed water system will be able to adequately pressurize the campus distribution system, or whether some means must be used to increase the pressure
- o Irrigation water mains and irrigation systems installed for new projects should be designed to accept future reclaimed water service

LEGEND

- PROPERTY LINE
- IRRIGATION WATER



APPENDIX

UTILITIES INFRASTRUCTURE: SANITARY SEWER SYSTEM

FINDINGS

Campus sanitary sewer lines are sloped down toward the south and west where they meet the public system in Temple Avenue: a 15-inch vitrified clay pipe (VCP) trunk line, which is owned and operated by Los Angeles County Sanitation District 21. The 15-inch diameter public VCP main line continues through the campus area south of the Wildlife Sanctuary within a public easement in Campus Way, and continues south in Grand Avenue. The campus recently installed a new sanitary sewer main that runs from Bonita Avenue along Stadium Way to the northern edge of the Wildlife Sanctuary where it connects to the County's public sewer main. This new service line was designed and constructed to serve the site and facilities of the Athletics Complex East and Physical Education Complex.

The existing main campus sewer system discharges through an existing campus-owned 18-inch sanitary sewer main to the public 15-inch sanitary sewer main line. This configuration is non-standard and should be reevaluated as part of future development studies.

RECOMMENDATIONS

Previous studies have shown that most of the campus' existing sanitary sewer system would accommodate previously planned campus development. The system should be further evaluated to ensure that it would meet the needs of new facilities and renovations that are being recommended in this EFMP.

To help offset the increase of domestic effluent from future development, the campus is encouraged to explore the potential to implement a wastewater recycling system that is based on wetland ecology, such as a Living Machine. A Living Machine would be a unique educational resource for Mt. SAC's students and community. Such a system would work well with an individual building by treating and diverting its sewage before it enters the campus sanitary sewage system. Potential uses for recycled gray and black water include non-sprayed irrigation and toilet flushing.

Ecologically-based systems use straightforward technology, and require little space and energy. Certification training and staff time would be required to maintain and operate the system. Building users would be educated about acceptable materials to flush or drain into the system. A thoughtful evaluation of potential educational uses, costs, and benefits is recommended.

LEGEND

- PROPERTY LINE
- SEWER



EXISTING SANITARY SEWER SYSTEM

A.29

APPENDIX

UTILITIES INFRASTRUCTURE: STORMWATER SYSTEM

FINDINGS

To better understand existing conditions and plan responsibly and sustainably for future campus development, Mt. SAC has commissioned recent studies that analyze existing conditions and recommend a campus-wide approach to managing storm water (refer to the section titled Stormwater Management, in Chapter 8: *Environmental Analysis*). These studies have identified the need to improve the design of existing open spaces and infrastructure.

The existing campus storm drain infrastructure is designed to collect and convey stormwater to the public drainage system. Following the topography, campus infrastructure generally drains southward and conveys stormwater to several public main lines: an 84-inch reinforced concrete pipe (RCP) public main located in Grand Avenue, an 84-inch RCP public main located in Bonita Drive, and a 60-inch RCP storm drain located in Temple Avenue and Mt SAC Way. The western portions of campus generally drain to Snow Creek in the Wildlife Sanctuary, while the eastern portions of campus generally drain to an unnamed tributary of Snow Creek.

Mt. SAC is in the process of improving its stormwater management system. Recent Measure RR project areas have been developed to employ strategies that treat and reduce the volume of stormwater. But planned improvements have yet to be implemented in other areas of the campus. Based on studies, storm drain lines that

serve the academic core are adequately sized to accommodate a 25-year storm as required by Los Angeles County Department of Public Works. However, the studies predict that where the campus main lines cross to the south of Temple Avenue, they would begin to flow under pressure. This condition indicates that projected flows would exceed the capacity of these lines—an acceptable condition only if the adjacent street can contain the 25-year storm event within the public right-of-way.

Real-world experiences of high-volume storm events, indicate that the campus infrastructure and public right-of-ways are not adequately addressing drainage and stormwater management issues in the southern portion of campus, as well as in portions of the Academic Core, the Farm Precinct, and the School of Continuing Education facilities.

RECOMMENDATIONS

To guide the design of new facilities and renovations that are being recommended in this EFMP, Mt. SAC's stormwater management plans should be updated and implemented. These plans employ a campus-wide approach to stormwater management. New development should not increase runoff from the project site and thus potentially increase run-on to a downstream site. The impacts of new development on the capacities of existing storm drain mains should be evaluated.

APPENDIX

UTILITIES INFRASTRUCTURE: STORMWATER SYSTEM *(cont.)*

Recommended objectives for stormwater design include the following.

- o The design of new site improvements and building projects shall minimize impacts on the existing campus storm drain pipe infrastructure and eliminate potential hydromodification
- o Construction projects that disturb one or more acres of land, or projects that disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the State Water Resources Control Board (SWRCB) Construction General Permit (CGP) and shall develop and implement a Stormwater Pollution Prevention Plan (SWPPP) that will be implemented during the construction process
- o Each new building and site project should include a hydrology analysis to determine the pre-development runoff and to identify design strategies that would minimize the post-development runoff. The design of new site improvement and building projects will comply with the Los Angeles County stormwater quality management program and Low Impact Design (LID) Ordinance. Infiltration systems that treat and percolate stormwater to recharge the local aquifer, should be most highly prioritized, followed by stormwater capture and reuse and high-removal-efficiency biofiltration

APPENDIX

UTILITIES INFRASTRUCTURE: COORDINATION

The recommendation to update Mt. SAC's Utilities Infrastructure Master Plan arises in part from the need to coordinate utilities infrastructure systems with future facilities and site improvement projects. The following is a partial list of existing underground utility lines that could be affected by recommended site improvement and facilities projects. The need to replace or reroute these and other utility lines should be studied and included in construction projects as needed.

STORM DRAIN

- o 4" SD F6A - Farm area along La Puente Drive
- o 8" and 15" SD Bookstore (Student Services North)
- o 30" and 12" SD Parking Lot B (Auditorium)
- o 15" Abandoned SD Parking Lot B
- o 36" SD Parking Lot F (Parking Structure F and Campus Safety)
- o 8" and 12" SD Lot A 1 (Student Services North and North Site Enhancement Concept)

SANITARY SEWER

- o 8" SS Horticulture Unit area by Building S7
- o 6" SS Parking Lot F (Parking Structure F and Campus Safety)
- o 8" SS Parking Lot B
- o 6" SS Lot A 1 (Student Services North and North Site Enhancement Concept)
- o 8" SS Parking Lot W (Volleyball Courts)

DOMESTIC WATER

- o 4" W Parking Lot B (Auditorium)
- o 4" W Bookstore (Student Services North)
- o 6" W Building 40
- o 6" W Building F6A, F6B
- o 12" W Building F8

- o 10" W Lot F (Parking Structure F and Campus Safety)
- o 4", 6", and 8" W Lot A 1 (Student Services North and North Site Enhancement Concept)

ELECTRICAL

- o 12kV feeder lines to the campus in Lot D, Library/Learning Resources, Bookstore, and Student Center

NATURAL GAS

- o 6" Main gas line Library/Learning Resources and Bookstore

CHILLED WATER

- o 12" and 10" CHW Library/Learning Resources, Bookstore, and Student Center

TELECOMMUNICATIONS

- o Four 1" Innerduct in two conduits and two 4" conduit in Lot D and Library/Learning Resources

THERMAL COMFORT DIAGRAMS

APPENDIX

THERMAL COMFORT DIAGRAMS

A Thermal Comfort (Psychrometric) Diagram is a tool that helps identify passive building design strategies that are well suited for use under a specific set of climate conditions. The diagrams in this section were created with Climate Consultant Version 6.2 software, using climatic data that reflect typical climate conditions for Mt. SAC's campus. The small dots, which represent each hour over the course of a year, are charted according to prevailing outdoor temperature and humidity levels. The colored boxes capture the hours (dots) during which comfort can be achieved by implementing the design strategies that corresponds to those colored boxes.

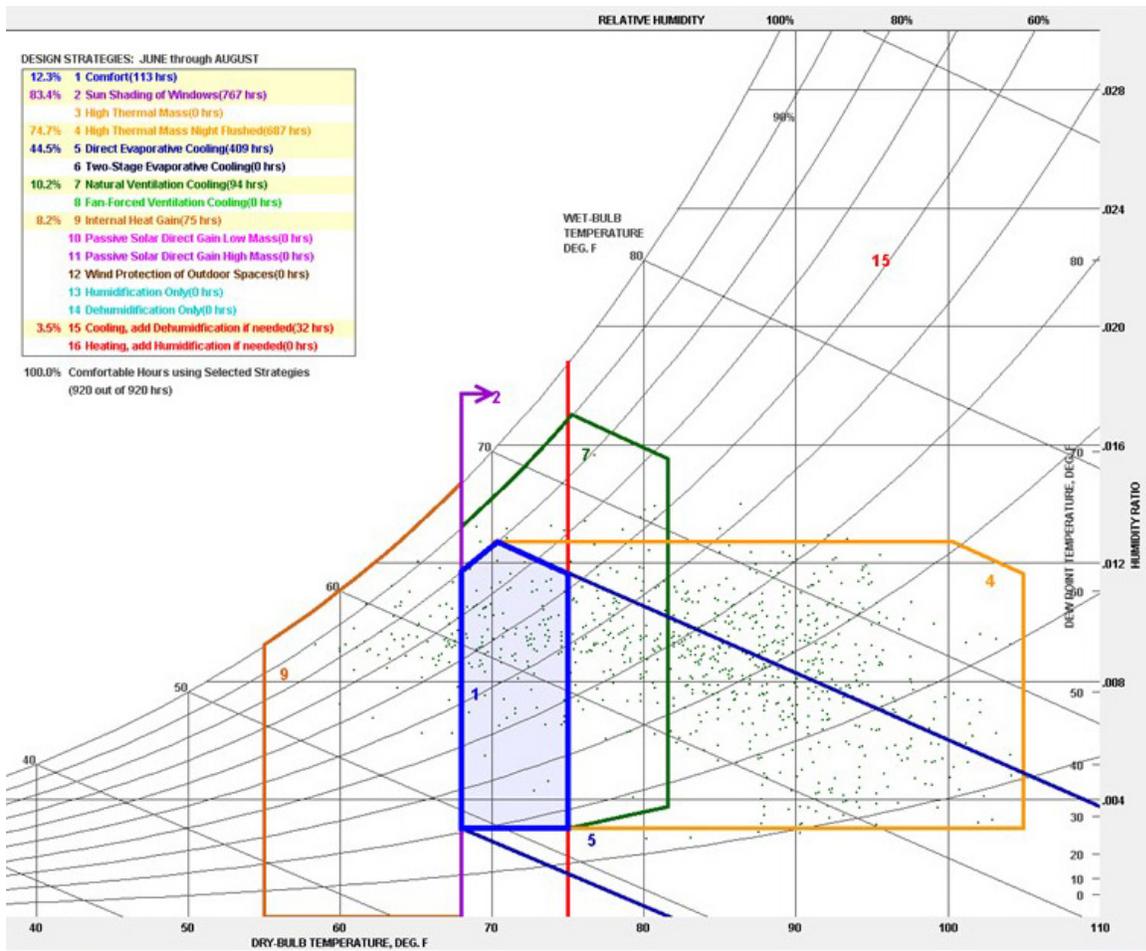
APPENDIX

THERMAL COMFORT DIAGRAMS (*cont.*)

THERMAL COMFORT DIAGRAM: SUMMER

The Thermal Comfort (Psychrometric) Diagram: Summer, on the opposing page, graphically indicates passive building design strategies that would be effective during the months of June through August. The diagram indicates an approach using strategies such as thermal mass, natural ventilation for cooling, and sun shading.

THERMAL COMFORT DIAGRAM: SUMMER



COMFORT INDOORS

100% COMFORTABLE
 0% NOT COMFORTABLE

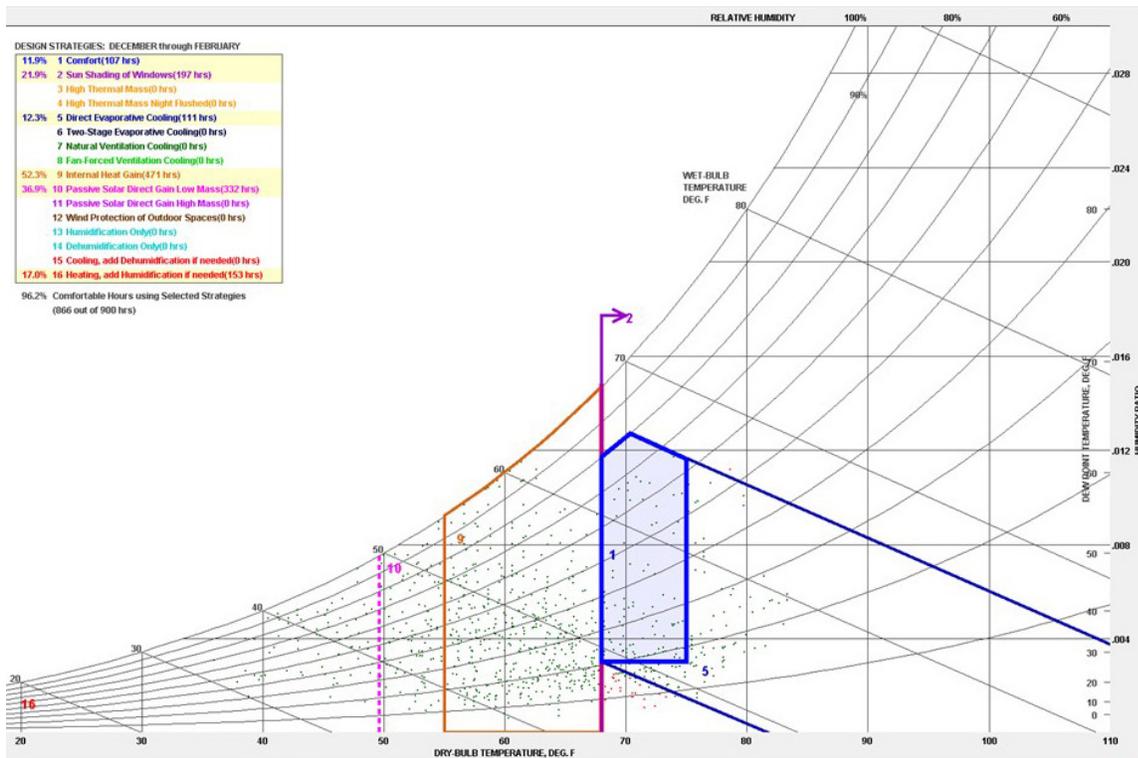
APPENDIX

THERMAL COMFORT DIAGRAMS (*cont.*)

THERMAL COMFORT DIAGRAM: WINTER

The Thermal Comfort (Psychrometric) Diagram: Winter, on the opposing page, graphically indicates passive building design strategies that would be effective during the months of December through February. The diagram indicates an approach using a combination of thermal mass and building insulation optimization.

THERMAL COMFORT DIAGRAM: WINTER



COMFORT INDOORS

96% **COMFORTABLE**
 4% **NOT COMFORTABLE**

LANDSCAPE GUIDELINES

SITE AND INFRASTRUCTURE IMPROVEMENTS
RECOMMENDATIONS: LANDSCAPE GUIDELINES

LANDSCAPE GUIDELINES

INDEX

- o Landscape Guidelines Overview
- o Sustainability Goals
- o Hardscape
- o Bicycle Circulation
- o Pedestrian Circulation
- o Wayfinding and Signage
- o Campus Gateways
- o Site Lighting
- o Site Furnishings and Amenities
- o Planting and the Campus Forest
- o Planting Palette: Trees
- o Planting Palette: Palms
- o Planting Palette: Shrubs
- o Planting Palette: Perennials
- o Planting Palette: Groundcovers and Vines
- o Planting Palette: Grasses



LANDSCAPE GUIDELINES: OVERVIEW

These landscape guidelines are intended to provide strategies for landscape project design, implementation, and maintenance that contribute to a unified, accessible, and sustainable campus landscape. They are informed by the analysis of existing conditions (Chapter 7: *Existing Facilities and Site Analysis*) and best practices at other institutions. The guidelines are intended to provide high-level strategies, not specific standards or designs. They provide guidance for the following topics.

- o Sustainability Goals
- o Bicycle Circulation
- o Pedestrian Circulation
- o Wayfinding and Signage
- o Campus Gateways
- o Hardscape
- o Site Lighting
- o Site Furnishings and Amenities
- o Planting and the Campus Forest

Most of the above topics are organized into three categories: Recommendations for Mt. SAC, Design Guidelines, and Maintenance Guidelines.

The Recommendations for Mt. SAC are directed to College leadership and management to consider for implementation or further action.

It is important for readers of the EFMP that are involved in the programming, budgeting, design, and construction of facilities and site improvement projects—such as administrators, construction program and project managers, faculty and staff serving in user groups, and design professionals—to consult these Landscape Design Guidelines, and to implement its strategies to the greatest extent

feasible. In cases where particular conditions or circumstances are in conflict with the guidelines, consultation with the Campus Landscape Advisory Committee (see guideline A.3.2) or Facilities Planning and Management project management team is advised.

The Maintenance Guidelines would also guide ongoing campus landscape maintenance by Mt. SAC's Grounds Department, who provided input for and validated these guidelines.

The campus Planting Palette is provided at the end of this section. It includes a range of choices for tree and plant species that are recommended for Mt. SAC's campus. In most cases, they are low-water, low-maintenance species that are adapted to the local environment (USDA Hardiness Zone 10a, Sunset Climate Zone 19) and the campus setting. The palette is intended as a tool to facilitate planting design when used together with the planting guidelines. While the species included are recommended for the campus in general, care should be taken to select the species that are most appropriate for each particular planting site. Species that are not listed in the palette may be considered for planting designs, if they meet the intent of the planting guidelines and are approved by the Campus Landscape Advisory Committee or the Facilities Planning and Management project management team.

Note: Several of the following guidelines are based on prerequisites and credits in the SITES v2 rating system for sustainable land development. The Sustainable Sites Initiative may be a useful resource for identifying implementation strategies associated with these guidelines.

SITE AND INFRASTRUCTURE IMPROVEMENTS
 RECOMMENDATIONS: LANDSCAPE GUIDELINES
SUSTAINABILITY GOALS

Guidelines for Sustainability Goals are intended to help the College achieve its benchmarks for using resources more efficiently and reducing its environmental impact. They are focused on landscape water use, stormwater management, and landscape maintenance.

A.1. LANDSCAPE WATER USE REDUCTION

	RECOMMENDATION FOR MT. SAC	DESIGN GUIDELINE	MAINTENANCE GUIDELINE
1. Design landscapes and irrigation systems to minimize the use of water. Determine the baseline case scenario and reduce long-term water use (after the establishment period) by at least 50 percent from the baseline. The U.S. EPA WaterSense Water Budget Tool can be used for calculations.			
2. Use non-potable water for irrigation, where feasible: captured rainwater, reclaimed water, on-site recycled wastewater, on-site recycled greywater, air-conditioner condensate, or water treated and conveyed by a public agency for non-potable uses (municipal recycled water).			
3. Update irrigation schedules after plant establishment, to eliminate excessive watering.			
4. Convert all irrigated shrub planting areas to drip tubing or low-emitting bubblers, to reduce water loss through evaporation and overspray.			



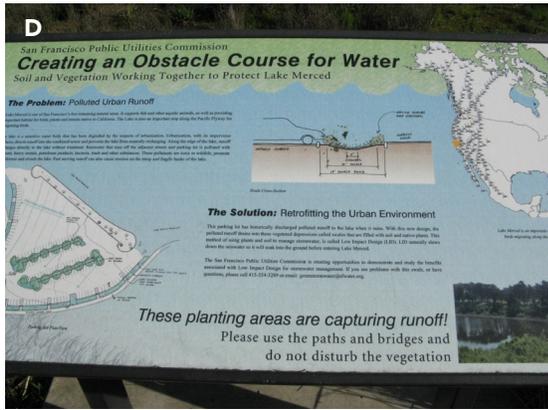
IMAGES

- A. Cistern to collect rainwater
- B. Reclaimed water irrigation
- C. "Living Machine" wastewater treatment system
- D. Low-emitting bubbler irrigation

SITE AND INFRASTRUCTURE IMPROVEMENTS
RECOMMENDATIONS: LANDSCAPE GUIDELINES
SUSTAINABILITY GOALS (cont.)

A.2. STORMWATER MANAGEMENT

	RECOMMENDATION FOR MT. SAC	DESIGN GUIDELINE	MAINTENANCE GUIDELINE
1. Site and building projects shall minimize impact on the existing campus storm drain pipe network and eliminate potential hydromodification.			
2. Projects that disturb one or more acres of soil, or projects that disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the State Water Resources Control Board (SWRCB) Construction General Permit (CGP) and shall develop and implement a Stormwater Pollution Prevention Plan (SWPPP).			
3. Design projects in compliance with the Los Angeles County stormwater quality management program and Low Impact Design (LID) Ordinance. Infiltration systems are the first priority type of BMP improvements, followed by high removal efficiency biofiltration and capture and reuse.			
4. Design and implement BMP improvements to mitigate areas that produce high concentrations of stormwater pollutants, such as equipment wash-down areas.			
5. Retain the maximum precipitation volume possible on the site through infiltration, evapotranspiration, and reuse. Target retaining the 60th percentile precipitation event as a benchmark.			
6. Design stormwater features as amenities, providing aesthetic, ecological, and/or educational benefits.			
7. Practice maintenance activities as specified in the site maintenance plan (see guideline A.3.3) to ensure the long-term effectiveness of the stormwater features.			



IMAGES

- A. Stormwater bioretention basin
- B. Bioswale in parkway
- C. Parking lot with stormwater BMPs
- D. Interpretive sign
- E. Bioswale landscape feature



SITE AND INFRASTRUCTURE IMPROVEMENTS RECOMMENDATIONS: LANDSCAPE GUIDELINES SUSTAINABILITY GOALS (cont.)

A.3. LANDSCAPE MAINTENANCE

	RECOMMENDATION FOR MT. SAC	DESIGN GUIDELINE	MAINTENANCE GUIDELINE
1. The development of Landscape Construction Standards for approved methods of hardscape, planting, and site furnishing construction/installation are recommended.			
2. The establishment of a Campus Landscape Advisory Committee, responsible for ensuring landscape plans/projects are consistent with the guidelines and palette provided within this document, and are coordinated with College objectives is recommended. Members should include representatives from Facilities Planning and Management, Grounds, Natural Sciences and Ornamental Horticulture faculty, and the student body.			
3. Consult with the Campus Landscape Advisory Committee during the early phases of the project design to determine maintenance objectives and resources for the project. In accordance with the terms of the project design services contract, the project design team will prepare a site maintenance plan for each landscape project, including short- and long-term maintenance and operations strategies.			
4. Ensure the project design is aligned with the College’s maintenance resources and objectives.			
5. Ensure grounds maintenance personnel are trained to implement the site maintenance plans.			
6. To the greatest extent feasible, allow for natural growth of plants and trees with minimal pruning, trimming, or hedging.			
7. Collect and compost green waste (vegetation trimmings).			
8. Use Integrated Pest Management to the greatest extent feasible.			
9. Provide buffer zones around sensitive areas, such as water bodies and stormwater conveyance features, where fertilizers and pesticides may not be applied.			
10. Minimize the use of powered landscape maintenance equipment that generates air pollutants and greenhouse gases. Where the use of such equipment is necessary, plan for their use during times when the number of site users is typically low.			



IMAGES

- A. Natural growth of planting
- B. Greenwaste mulch
- C. Stormwater conveyance within planting area
- D. Electric leafblower

SITE AND INFRASTRUCTURE IMPROVEMENTS
RECOMMENDATIONS: LANDSCAPE GUIDELINES

HARDSCAPE

Hardscape guidelines are intended to guide the design and installation of paving materials to enhance campus character, improve accessibility, contribute to sustainability, and reduce maintenance issues.

B. HARDSCAPE

	RECOMMENDATION FOR MT. SAC	DESIGN GUIDELINE	MAINTENANCE GUIDELINE
1. The College should develop a palette of standard paving materials, colors, and finishes. Different landscape typologies or different campus districts may have different standards.			
2. Prioritize campus objectives for stormwater management and urban heat island effect in the site’s design and material selection. Design hardscape areas to support their intended function while also contributing to a comfortable microclimate and minimizing negative impacts to stormwater quantity and quality. Paving materials with a minimum solar reflectivity value of 0.33 at installation are preferred.			
3. Paving design and materials should be consistent with the overall campus landscape character and reinforce the pedestrian circulation hierarchy.			
4. Feature decorative paving designs and materials in areas with high levels of use, such as primary pedestrian paths, or that serve as focal points, such as courtyards and plazas.			
5. Paving material should not present a barrier to universal access.			
6. Decomposed granite should not be used for primary or secondary pedestrian routes, nor open spaces with high volumes of traffic. Consult with the Campus Landscape Advisory Committee to confirm the appropriate use of decomposed granite.			
7. Avoid asphalt paving for surfaces that are primarily used by pedestrians.			
8. Pedestrian paving should be designed and installed to withstand light vehicular traffic by service vehicles. Where pedestrian paving is within a fire access area, paving must be designed and constructed to withstand heavy vehicular traffic. Consult with the Campus Landscape Advisory Committee to determine vehicular load expectations per site.			

B. HARDSCAPE (cont.)

RECOMMENDATION
FOR MT. SAC

DESIGN
GUIDELINE

MAINTENANCE
GUIDELINE

9. Paving should be designed and installed in accordance with recommendations in the site's geotechnical report.			
10. All precast unit pavers must be designed and installed to withstand heavy vehicular traffic. Consult with the Campus Landscape Advisory Committee to confirm the use of pavers for each site.			
11. Site projects with hardscape elements should provide the appropriate construction specifications necessary for the contractor to perform the proper installation of the hardscape materials.			

IMAGES

A. Decorative paving pattern at Mt. SAC

B. High SRI colored concrete precedent



SITE AND INFRASTRUCTURE IMPROVEMENTS
 RECOMMENDATIONS: LANDSCAPE GUIDELINES
BICYCLE CIRCULATION

Guidelines for Bicycle Circulation are intended to promote the safe use of bicycles as an alternative mode of transportation to and from the campus.

C. BICYCLE CIRCULATION

	RECOMMENDATION FOR MT. SAC	DESIGN GUIDELINE	MAINTENANCE GUIDELINE
1. The College should develop a campus-wide bicycle plan. Assess the need for relocation and/or addition of bike parking facilities to determine strategic locations with new campus projects or existing sites. Review campus policy regarding on-campus bicycle use and revise as needed. Update bicycle circulation routes as needed to reflect the most current policy and College objectives.			
2. Contribute to a safe and accessible network of bicycle infrastructure that connects Mt. SAC to the San Gabriel Valley cities and greater Los Angeles County, for the general benefit of all County residents.			
3. Locate bike parking facilities where they can be easily accessed from bicycle circulation routes. Focus on locating bike parking at points of transition between modes of transportation (for example, where bike routes connect with pedestrian routes, or at bus stops).			
4. Avoid slopes greater than five percent for bicycle routes when possible.			
5. Provide bicycle circulation routes separate from vehicular circulation, where feasible.			
6. Indicate lanes on campus roadways that are shared by vehicular and bicycle traffic with shared lane markings, also known as "sharrows."			
7. Increase the visibility of bike lanes on campus roadways with green colored pavement in addition to striping and symbol markings. Coloring may be applied for the length of the lane, or only within conflict areas.			
8. Provide intersection treatments to reduce conflict between bicyclists, pedestrians, and vehicles.			
9. Reference professional organizations and industry standards for bicycle infrastructure design and maintenance of facilities.			



IMAGES

- A. Separate bike path
- B. Sharrow indicates shared use of road
- C. On-street bike lane painted green
- D. Bike signals and green pavement at intersection

SITE AND INFRASTRUCTURE IMPROVEMENTS
RECOMMENDATIONS: LANDSCAPE GUIDELINES

PEDESTRIAN CIRCULATION

Guidelines for Pedestrian Circulation are intended to guide the design of safe and universally accessible walkways throughout the campus that contribute to a cohesive campus character and intuitive wayfinding.

D. PEDESTRIAN CIRCULATION

	RECOMMENDATION FOR MT. SAC	DESIGN GUIDELINE	MAINTENANCE GUIDELINE
1. Establish a cohesive hierarchy within the campus pedestrian network. The hierarchy will facilitate wayfinding, appropriately accommodate pedestrian and service vehicle traffic, and contribute to the campus landscape character. Design new and renovate existing walkways to reinforce the hierarchy. See "Pedestrian Circulation" in the Site Planning Approach section for additional description.			
2. The width of the path of travel should reinforce the hierarchy and adequately accommodate the anticipated volumes of pedestrian and service vehicle traffic. Primary Routes: 20 feet minimum Secondary Routes: 15 feet minimum Tertiary Routes: 6 feet minimum			
3. Employ universal design strategies to provide walkways that can be understood and accessed by all people, regardless of their age and abilities, to the greatest extent feasible.			
4. Provide amenities to enhance comfort and landscape character along walkways, such as shade trees, site furnishings, and site lighting. The amenities should be adjacent to the walking routes, outside of the path of travel.			
5. Provide clear pedestrian circulation routes through parking lots, and from parking lots to primary and secondary pedestrian routes.			
6. Provide intersection design treatments to reduce conflict between pedestrians, bicyclists, and vehicles.			
7. Provide continuous pedestrian circulation, separate from vehicular lanes, along the vehicular streets that surround and traverse the campus.			

D. PEDESTRIAN CIRCULATION (cont.)

RECOMMENDATION
FOR MT. SAC
DESIGN
GUIDELINE
MAINTENANCE
GUIDELINE

<p>8. To the greatest extent practical, connect campus destinations by providing accessible routes for all primary and secondary pedestrian routes. Where accessible walkways are not feasible, utilize building elevators to make accessible connections.</p>			
<p>9. Design walkways to accommodate and support maintenance vehicles, where appropriate. Consult with the Campus Landscape Advisory Committee.</p>			
<p>10. Provide vehicular rated bollards where vehicles may have access to pedestrian areas. Bollards should be retractable where emergency or service vehicle access is needed. Bollards should follow the campus standard (per guideline H.1).</p>			

IMAGES

A. Primary pedestrian path at Mt. SAC

B. Tertiary pedestrian path at Mt. SAC



SITE AND INFRASTRUCTURE IMPROVEMENTS
RECOMMENDATIONS: LANDSCAPE GUIDELINES

WAYFINDING AND SIGNAGE

Guidelines for Wayfinding & Signage are intended to result in a campus that is easy to navigate, with signage that enhances the College's landscape character and brand identity.

E. WAYFINDING & SIGNAGE

	RECOMMENDATION FOR MT. SAC	DESIGN GUIDELINE	MAINTENANCE GUIDELINE
1. The College should develop a campus-wide wayfinding signage plan, to identify strategic locations for directional signage and campus maps.			
2. The College should develop standards for campus wayfinding and site signage, to ensure that the aesthetic character of all campus signage is consistent with and contributes to the overall campus character. See "Wayfinding Improvements" in the Campus-Wide Projects section for additional description.			
3. Directional wayfinding signage should be located at key decision points for motorists, bicyclists, and pedestrians. Provide campus maps at each primary pedestrian circulation route entry point to campus, and within campus neighborhoods. Refer to campus signage plans and standards, as available (per guidelines D.1 and D.2).			
4. Size and placement of signage should be adapted to the user's mode and speed of movement. Refer to campus signage plans and standards, as available (per guidelines D.1 and D.2 and the Building Renumbering section in Chapter 12: <i>Implementation</i>).			
5. Provide adequate clearance in front of campus maps for close viewing. Consider inclusion of a QR code or link to facilitate viewing the campus map on mobile devices.			
6. Avoid visual clutter that can result from excessive signage.			



IMAGES

- A. Campus map located for easy viewing
- B. Site identity signage at Mt. SAC
- C. Vehicular directional signage precedent
- D. Pedestrian directional signage precedent

SITE AND INFRASTRUCTURE IMPROVEMENTS
RECOMMENDATIONS: LANDSCAPE GUIDELINES

CAMPUS GATEWAYS

Guidelines for Campus Gateways are intended to enhance and unify the public image of the College at its main entries and perimeter, and to facilitate access to the campus.

F. CAMPUS GATEWAYS

	RECOMMENDATION FOR MT. SAC	DESIGN GUIDELINE	MAINTENANCE GUIDELINE
1. Architectural, landscape, and graphic/signage elements at each gateway location should contribute to a unified character and brand identity for the College.			
2. Perimeter site elements (walls, fencing, lighting, signage, etc.) and landscaping should be consistent and contribute to the unified campus character.			
3. Provide monument signage identifying Mt. San Antonio College at each gateway location. Monument signs at each gateway should be consistent in character and materials.			
4. Provide accent planting at each campus gateway. Gateway plantings should reflect the natural environment of Mt. SAC's location, and reinforce the College's colors. Include specimen trees from one of the following genera: Pinus, Platanus, or Quercus. Feature understory planting with maroon foliage and/or bloom colors. Refer to the planting palette for recommended species.			
5. Where appropriate, consider the incorporation of a physical gateway feature, to reinforce the sense of entering the campus. Where they are provided, gateway features should be consistent at all campus locations.			
6. Provide access for bicyclists, pedestrians, and vehicles at each campus gateway. Ensure circulation infrastructure supports universal access.			



IMAGES

- A. Existing gateway monument signage
- B. Gateway feature precedent
- C. Gateway accent tree example
- D. Gateway accent planting example

SITE AND INFRASTRUCTURE IMPROVEMENTS
RECOMMENDATIONS: LANDSCAPE GUIDELINES

SITE LIGHTING

Guidelines for Site Lighting are intended to promote safety, security, sustainability, and a unified campus character through the design, installation, and maintenance of outdoor lighting.

G. SITE LIGHTING

	RECOMMENDATION FOR MT. SAC	DESIGN GUIDELINE	MAINTENANCE GUIDELINE
1. The College should develop standards for site lighting. Standards should address the light source (bulb) type, technology, light color and quality, design, materials, and finishes for lighting fixtures located along or within: vehicular drives, parking lots, service areas, pedestrian routes, open spaces, and campus entry gateways.			
2. Site lighting standards should be developed with consideration of current technological advances, energy consumption, maintenance/ replacement requirements, operation costs, and a cohesive campus landscape character.			
3. Lighting control systems should be consolidated and automated to improve efficiency and control.			
4. Consult with Campus Safety, campus electricians, and campus grounds staff during site lighting design.			
5. Unless specified otherwise by future lighting standards, site lighting fixtures should have an LED light source, and where appropriate, solar power.			
6. Flag poles should have adequate night-time lighting to alleviate maintenance needs associated with nightly lowering and daily raising of the flags.			
7. Site lighting design should consider safety of site users, evening wayfinding, and where applicable, also the evening educational use of the space.			

G. SITE LIGHTING (cont.)

RECOMMENDATION
FOR MT. SAC

DESIGN
GUIDELINE

MAINTENANCE
GUIDELINE

<p>8. Site lighting design should minimize the effects of light pollution. The International Dark-Sky Association provides design guidance, including:</p> <ul style="list-style-type: none"> Lighting should only be on when needed Only light the area that needs it* Be no brighter than necessary Minimize blue light emissions Be fully shielded (pointing downward) <p>*Note: Landscape areas are used for night-time educational instruction</p>			
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IMAGES

A. Shielded pedestrian pole light precedent at Mt. SAC

B. Lighting for evening use at Mt. SAC



SITE AND INFRASTRUCTURE IMPROVEMENTS
RECOMMENDATIONS: LANDSCAPE GUIDELINES

SITE FURNISHINGS AND AMENITIES

Guidelines for Site Furnishings and Amenities are intended to guide the selection and installation of appropriate outdoor furnishings and other amenities to contribute to a unified campus character and safe, functional, maintainable, and comfortable outdoor environments.

H. SITE FURNISHINGS & AMENITIES

	RECOMMENDATION FOR MT. SAC	DESIGN GUIDELINE	MAINTENANCE GUIDELINE
1. The College should develop campus-wide standards for site furnishings. Standards should address acceptable materials, finishes, colors, and style; and may include specifications for manufacturer and model. Different landscape typologies or different campus districts may have different standards. At a minimum, standards should be provided for: benches, seatwalls, and other seating fixtures; tables; shade umbrellas and shade structures; light fixtures (to be included in campus lighting standards); waste receptacles; bollards; fencing; bike racks.			
2. Provide and locate site furnishings that are appropriate to the scale and use of the outdoor space.			
3. Distribute site furnishings and amenities along campus primary and secondary walkways. At a minimum, include campus standard light fixtures, campus standard seating, and campus standard waste receptacles.			
4. Non-campus standard site furnishings may be considered for installation in courtyards, plazas, and gardens. Non-standard site furnishings must be approved by the Campus Landscape Advisory Committee.			
5. Site furnishings must be securely anchored, through tamper-proof means. The use of movable furnishings must be approved by the Campus Landscape Advisory Committee and Facilities Advisory Committee.			
6. For every new building and site project, identify opportunities to incorporate public art within the campus landscape or building interior. Coordinate with the Public Arts Advisory Council.			
7. Consider the use of site lighting poles for hanging announcement banners.			

8. Fencing materials and design should inhibit the ability to be climbed, cut, crawled under, or vandalized.			
9. Fencing material should be economical and readily available, to facilitate replacement when needed. Chainlink should not be used as long-term fencing along Temple Avenue and the public faces of the College.			
10. Fencing should have a design aesthetic that is consistent with other site furnishings and the overall campus character.			
11. Fencing should blend with the surrounding setting, unless specifically intended to be a decorative element. Dark colors, such as black or dark grey, have reduced visual impact and are preferred compared to light colors, such as silver or white.			
12. Use appropriate fencing for athletic fields. Design and materials may differ from perimeter fencing at non-athletic field sites, but should contribute to a cohesive campus character.			

IMAGES

- A. Bench precedent at Mt. SAC
- B. Shaded table and chair precedent at Mt. SAC



SITE AND INFRASTRUCTURE IMPROVEMENTS
RECOMMENDATIONS: LANDSCAPE GUIDELINES

PLANTING AND THE CAMPUS FOREST

Guidelines for Planting and the Campus Forest apply to the design, installation, and maintenance of plants and trees on the campus; with the intention of promoting a sustainable, maintainable, comfortable, and safe environment that supports educational objectives and a cohesive campus character. Guidelines are provided within four topics: Campus Forest Management, Site Design, Species Selection, and Project Construction.

Campus Forest Management guidelines are high-level recommendations for developing and maintaining a healthy campus forest.

I.1. CAMPUS FOREST MANAGEMENT

	RECOMMENDATION FOR MT. SAC	DESIGN GUIDELINE	MAINTENANCE GUIDELINE
1. The College should consider participating in the Tree Campus USA program to promote healthy trees and student activity and learning opportunities.			
2. The Campus Landscape Advisory Committee should include a sub-committee for campus tree related issues. This Campus Tree Advisory Committee should include a representative from faculty, Planning and Facility Management, students, and the Walnut community (for example a city forester or municipal arborist).			
3. The College should develop a Campus Tree Care Plan that sets policy and clear guidance for planting, maintaining, and removing trees. It should also be developed as an educational resource for the campus community.			
4. The College should develop an annual work plan with an allocated budget for the campus tree program.			
5. The College should complete and update on a regular basis a campus-wide tree inventory. All campus-maintained trees should be inventoried and assessed for species, condition, and size.			
6. Where landscape maintenance manuals have been provided by project designers, they should be followed to the greatest extent practical in order to maintain the original design intent of the project.			
7. See also Sections I. 2, I.3, and I.4 for additional guidelines on tree planting design, species selection, and tree protection during construction.			



IMAGES

- A. Tree Campus USA event
- B. Adequate growing space for trees
- C-E. Planting character precedents at Mt. SAC



SITE AND INFRASTRUCTURE IMPROVEMENTS
 RECOMMENDATIONS: LANDSCAPE GUIDELINES
PLANTING AND THE CAMPUS FOREST (cont.)

Site Design Guidelines are intended to guide the development of tree and shrub planting designs during the planning and design of site projects.

I.2. SITE DESIGN GUIDELINES

	RECOMMENDATION FOR MT. SAC	DESIGN GUIDELINE	MAINTENANCE GUIDELINE
1. The College’s planting and campus forest character should represent vegetation that is appropriate to the inland valley and foothill climate of Walnut. Appropriate planting concepts may include: woodland garden, chaparral scrubland garden, southwestern garden, or Mediterranean garden.			
2. Design the site’s overall landscape to be cohesive within the project, and to relate to the character of the College campus.			
3. Place trees to frame desirable views, and screen objectionable views, such as parking lots, building equipment, or plain facades.			
4. Planting design should conform to current local and state regulations. Do not obstruct sightlines at driveways and intersections, and comply with regulations for water allowance and irrigation.			
5. Consider the mature size of trees in regards to their tree-to-tree spacing and placement near buildings, paving, or infrastructure. Ensure there is adequate access to the tree by maintenance equipment. Trees should be given adequate space to reach their mature size without excessive trimming or pruning. See also guideline I.4.10.			
6. Provide planting spaces that allow healthy tree growth. To maximize growth and health of trees, provide a minimum of 1,000 cubic feet of loam soil per tree, or ideally 1.5 to 2 cubic feet of loam soil per square foot of mature tree canopy area. Where adequate growing space is confined by paving, provide structural cells or soils beneath the paving to expand the available growing area. See also guideline I.4.10.			
7. Consult with the Campus Landscape Advisory Committee for minimum tree planter size per project site and design.			

I.2. SITE DESIGN GUIDELINES (cont.)

	COLLEGE RECOMMENDATION	DESIGN GUIDELINE	MAINTENANCE GUIDELINE
8. Utilize trees and vegetation to provide a comfortable micro-climate and minimize heat island effects. Provide shade over large expanses of paved areas, and prioritize vegetated areas over paved areas where appropriate.			
9. Plant trees and plants or use vegetated structures in strategic locations around buildings to reduce energy consumption and costs associated with indoor climate control.			
10. Design turf grass/lawn areas only in areas intended for active use (sports fields and lawns for events, activity, and lounging.) Provide access for mowers to lawn areas. See also guideline I.4.12.			
11. During project design, consult with the Campus Landscape Advisory Committee regarding existing trees on the site. Determine which, if any, trees are to be preserved and protected-in-place or preserved for relocation.			
12. Where existing trees are to be preserved in place, avoid planting within the one foot radius per inch DBH of the tree. Additional planting in this zone presents high risk of damage to roots and soil chemistry and negative impacts from additional irrigation.			
13. Per the project contract, either the project designers or College staff should include a maintenance manual describing the critical procedures for sustaining the intended planting design. The maintenance manual should be approved by the Campus Landscape Advisory Committee.			

SITE AND INFRASTRUCTURE IMPROVEMENTS
 RECOMMENDATIONS: LANDSCAPE GUIDELINES
PLANTING AND THE CAMPUS FOREST (cont.)

Species selection guidelines are intended to guide the selection of the specific tree and plant species during the planning and design of site projects, in support of design, educational, and maintenance goals.

I.3. SPECIES SELECTION GUIDELINES

	RECOMMENDATION FOR MT. SAC	DESIGN GUIDELINE	MAINTENANCE GUIDELINE
1. Refer to the planting palette for tree and plant species recommended for use on Mt. SAC's campus. Use only species that are suitable for the project's design objectives and site conditions.			
2. The palette of species selected for a project should collectively contribute to a cohesive character for the site, and for the campus as a whole.			
3. Plant to provide the intended performance and aesthetic with the lowest water usage. Species with low to very low water use ratings are preferred. Utilize native planting where possible.			
4. Select species to attract and support local insects and wildlife, as appropriate. Plantings that bloom in succession will provide pollinators with food sources throughout the year.			
5. Consult with the Campus Landscape Advisory Committee during design to identify opportunities to meet educational objectives through tree and plant species selection.			
6. Avoid selecting tree species with significant fruit or flower drop for locations where litter will fall over walkways, bikeways, site furnishings (tables and seating), or parking.			
7. Avoid selecting tree species known to have high root damage potential for locations near pavement, foundations, or utilities. See also guideline I.4.10.			
8. For any areas that may be accessible by animals (primarily within the Farm), do not select tree or plant species that are known to be toxic to animals. Special considerations should also be made for the Child Development Center.			

I.3. SPECIES SELECTION GUIDELINES (cont.)

	COLLEGE RECOMMENDATION	DESIGN GUIDELINE	MAINTENANCE GUIDELINE
9. When selecting tree species, identify current pest and disease issues for each species; avoid species with the potential for decimation from pest and/or disease. Consult with the Campus Landscape Advisory Committee to determine the presence of pests/diseases on campus.			
10. Provide campus-wide species diversity to resist insects and disease. For larger sites, plant no more than 10 percent of any tree species, no more than 20 percent of any tree genus, and no more than 30 percent of any tree family. For smaller sites, select species that contribute to campus-wide diversity. Exceptions may apply for consistently spaced row plantings of trees of the same species or other planting concepts that require less diversity; confirm such locations with the Campus Landscape Advisory Committee.			
11. For lawn areas, select turf grass species that minimize post-establishment requirements for irrigation, pesticide, fertilizer, and maintenance.			
12. Site soils should be tested by a reputable soil lab. Select species that are suitable for the site's soil, and specify amendments as necessary per soil lab recommendations.			

SITE AND INFRASTRUCTURE IMPROVEMENTS
 RECOMMENDATIONS: LANDSCAPE GUIDELINES
PLANTING AND THE CAMPUS FOREST (cont.)

Project Construction guidelines are applicable to all construction projects on the campus, and are intended to contribute to safe and healthy tree and plant communities while minimizing maintenance issues.

I.4. PROJECT CONSTRUCTION GUIDELINES

	RECOMMENDATION FOR MT. SAC	DESIGN GUIDELINE	MAINTENANCE GUIDELINE
1. Trees that are to be preserved in place must be protected and maintained during construction activities. The area 20% to 40% beyond the dripline of the tree must not be used for any purpose during construction including lunch and breaks for workers, storage, or parking. Protective safety fencing must be installed around the area 20% to 40% beyond the tree's dripline, and maintained throughout the duration of construction activities until substantial completion, or as directed by the landscape architect. Contractor is responsible for providing trees with deep irrigation and managing any resultant runoff during construction.			
2. Use only trees that are nursery-grown, legally harvested, or salvaged for re-use from on- or off-site. Identify opportunities to use species grown by Mt. SAC's Ornamental Horticultural Program, as feasible.			
3. Tree specimens should be selected and tagged by the project landscape architect, in consultation with the campus Grounds staff.			
4. For consistently spaced row plantings of trees of the same species (for example, along walkways, roads, or parking lot aisles), select tree specimens with matched height, spread, and caliper.			
5. If a cultivar or variety of a plant or tree species is not specified in the design, use a single variety of the species listed throughout the project to maintain consistency. (Do not mix and match with various cultivars/varieties.)			
6. All trees and planting materials are to be inspected and approved by campus Grounds staff prior to planting. Purchase of the materials are to be verified by receipt at time of delivery.			

I.4. PROJECT CONSTRUCTION GUIDELINES (cont.)

	COLLEGE RECOMMENDATION	DESIGN GUIDELINE	MAINTENANCE GUIDELINE
7. Trees, shrubs, and other vegetation should be planted using industry-accepted methods.			
8. Test all tree wells and planting pits for adequate drainage using standard methods.			
9. For turf replacement projects, use industry-accepted methods to ensure all turf grass and dormant seeds are eliminated from the site before planting new materials.			
10. To prevent pavement uplift and other infrastructural damage, tree species selection, structural soil/cell installation, and tree placement require approval by campus Grounds staff. See also guidelines I.2.5, I.2.6, and I.3.7.			
11. Install two- to four-inches of mulch for all tree wells and planting beds. Consult with the Campus Landscape Advisory Committee for the preferred mulch material.			
12. Replace clay soils in high-use lawn areas, with sandy loam to minimize compaction for improved drainage and turf growth.			
13. Reference the International Society of Arboriculture and industry standards for tree planting, care, and maintenance.			

SITE AND INFRASTRUCTURE IMPROVEMENTS
RECOMMENDATIONS: LANDSCAPE GUIDELINES

PLANTING PALETTE: TREES

LATIN NAME	IMAGES	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name	LEGEND						
Cultivars / Comments							
= Evergreen							
= California Native							

ACACIA BAILEYANA

Bailey Acacia

Accent planting



Low	Sun - Part Shade	20-30 feet	20-40 feet	Spring - Winter

AESCULUS CALIFORNICA

California Buckeye

Seeds are toxic to horses and livestock
Accent planting
Habitat planting



Low	Full Sun	10-25 feet	15-30 feet	Spring

AFROCARPUS FALCATUS

African Fern Pine

Podocarpus gracilior, syn.
Background or
Screen planting
Row planting
Shade tree



Moderate	Sun - Part Shade	50-65 feet	10-20 feet

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ARBUTUS UNEDO
Strawberry Tree

Accent planting



Low
Full Sun
20-35 feet
15-40 feet
Fall - Winter

ARBUTUS X ANDRACHNOIDES
Marina Strawberry Tree

'Marina'
Row planting
Shade tree



Moderate
Full Sun
40-50 feet
25-40 feet
Year-round
Seasonal Leaf Color

BRACHYCHITON DISCOLOR
Queensland Lace Bark

Semi-deciduous
Profuse flower litter
May grow erect or spreading, requires ample growing space
Accent planting
Shade tree



Moderate
Sun - Part Shade
40-65 feet
30 feet
Summer - Fall

BRACHYCHITON POPULNEUS
Bottle Tree

Background or
Screen planting
Row planting
Shade tree



Low
Full Sun
30-50 feet
30 feet
Spring - Summer

SITE AND INFRASTRUCTURE IMPROVEMENTS
RECOMMENDATIONS: LANDSCAPE GUIDELINES
PLANTING PALETTE: TREES (cont.)

LATIN NAME	IMAGES	LEGEND	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name								
Cultivars / Comments								
= Evergreen								
= California Native								

CALLISTEMON CITRINUS
Lemon Bottlebrush

Attracts bees
Accent planting



Low	Full Sun	20-25 feet	10-12 feet	Spring - Summer
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CALLISTEMON RIGIDUS
Stiff Bottlebrush

Attracts bees
Accent planting



Low	Full Sun	20 feet	10 feet	Spring - Summer
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CALOCEDRUS DECURRENS
Incense Cedar

Accent planting
Background or
Screen planting



Moderate	Sun - Part Shade	30-50 feet	8-10 feet	
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CEDRUS DEODARA
Deodar Cedar

Requires ample growing space
Can be trained as espalier
Accent planting
Background or Screen planting



Moderate
Full Sun
40-60 feet
20-30 feet

CERCIS CANADENSIS
Eastern Redbud

Blooms best in full sun
Cultivars provide variety in leaf and bloom color
Accent planting



Moderate
Sun - Part Shade
25-35 feet
25-35 feet
Spring
Fall

CERCIS OCCIDENTALIS
Western Redbud

Blooms best in full sun
Accent planting
Habitat planting



Low
Sun - Part Shade
10-20 feet
10-20 feet
Spring
Fall

CHIONANTHUS RETUSUS
Chinese Fringe Tree

Low branching habit
Accent planting



Moderate
Sun - Part Shade
10-20 feet
6-12 feet
Spring
Fall

SITE AND INFRASTRUCTURE IMPROVEMENTS RECOMMENDATIONS: LANDSCAPE GUIDELINES PLANTING PALETTE: TREES (cont.)

LATIN NAME	IMAGES	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name	LEGEND						
Cultivars / Comments							
= Evergreen							
= California Native							

CHIONANTHUS VIRGINICUS

White Fringe Tree

Low branching habit
Accent planting



Moderate	Sun - Part Shade	25-30 feet	25 feet	Spring	Fall
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CHORISIA (CEIBA) SPECIOSA

Floss Silk Tree

Semi-deciduous
Select thornless variety
or plant away from
active-use areas
Accent planting
Row planting
Shade tree



Low	Sun - Part Shade	40-60 feet	40-50 feet	Fall - Winter	
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CINNAMOMUM CAMPHORA

Common Name

Dry fruit litter
High root damage
potential
Requires ample
growing space
Row planting
Shade tree



Moderate	Sun - Part Shade	50-65 feet	50-60 feet		
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LG.76

CUPANIOPSIS ANACARDIOIDES
Carrot Wood

Dry fruit litter, however
 some trees never
 produce fruit
 Row planting
 Shade tree



Moderate
 Sun - Part Shade
 40 feet
 30 feet
 Winter

CUPRESSUS SEMPERVIRENS
Italian Cypress

Background or
 Screen planting
 Select smaller-growing
 / compact varieties



Low
 Sun - Part Shade
 40 feet
 10 feet

DRACAENA DRACO
Dragon Tree

Wet fruit litter
 Slow-growing
 Accent planting



Low
 Partial Shade
 10-30 feet
 6-25 feet

ERYTHRINA X SYKESII
Australian Coral Tree

Toxic to humans,
 horses, and livestock
 Semi-deciduous
 Requires ample
 growing space
 Accent planting



Low
 Full Sun
 20-30 feet
 25-40 feet
 Spring

SITE AND INFRASTRUCTURE IMPROVEMENTS RECOMMENDATIONS: LANDSCAPE GUIDELINES PLANTING PALETTE: TREES (cont.)

LATIN NAME	IMAGES	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name	LEGEND						
Cultivars / Comments							
= Evergreen							
= California Native							

EUCALYPTUS SIDEROXYLON
Red Iron Bark

Background or
Screen planting
Row planting



Low	Sun - Part Shade	30-90 feet	30-60 feet	Spring / Fall	Winter

FEIJOA SELLOWIANA
Pineapple Guava

Wet fruit litter
Accent planting



Moderate	Sun - Part Shade	18-25 feet	18-25 feet	Spring

FRAXINUS ANGUSTIFOLIA
Raywood Ash

'Raywood'
Fruitless
Row planting
Shade tree



Moderate	Sun - Part Shade	40-50 feet	20-30 feet	Fall

LG.78

FRAXINUS UHDEI
Evergreen Ash

Requires ample growing space
 Row planting
 Shade tree



Moderate

Sun - Part Shade

80 feet

60 feet

FRAXINUS VELUTINA
Arizona Ash

Row planting
 Shade tree



Moderate

Sun - Part Shade

30-50 feet

30-40 feet

Fall

GEIJERA PARVIFLORA
Australian Willow

Row planting
 Shade tree



Moderate

Sun - Part Shade

30 feet

20 feet

Spring / Fall

GINKGO BILOBA
Maidenhair Tree

Requires ample growing space
 Plant male trees to avoid fruit
 Accent planting
 Row planting



Moderate

Sun - Part Shade

35-65 feet

25 feet

Fall

SITE AND INFRASTRUCTURE IMPROVEMENTS RECOMMENDATIONS: LANDSCAPE GUIDELINES PLANTING PALETTE: TREES (cont.)

LATIN NAME	IMAGES	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name	LEGEND						
Cultivars / Comments							
= Evergreen							
= California Native							

GREVILLEA ROBUSTA
Silk Oak Tree

Requires ample growing space
Accent planting
Background or Screen planting
Row planting



Low	Full Sun	50-65 feet	25-35 feet	Spring

HANDROANTHUS CHRYSOTRICHIA
Golden Trumpet Tree

Tabebuia, syn.
Produces large seed pods
Irregular branching habit, trees will vary in size and shape
Accent planting



Moderate	Sun - Part Shade	25-50 feet	25-50 feet	Spring	Fall

HANDROANTHUS HEPTAPHYLLUS
Pink Trumpet Tree

Tabebuia impetiginosa, syn.
Produces large seed pods
Growth is more uniform than Golden Trumpet Tree
Accent planting
Row planting
Shade tree



Moderate	Full Sun	35-40 feet	30-40 feet	Winter - Spring

HESPEROCYPARIS ARIZONICA
Arizona Cypress

Cupressus arizonica, syn.
 Accent planting
 Background or
 Screen planting



Very Low
 Full Sun
 40-50 feet
 20 feet

HYMENOSPORUM FLAVUM
Sweetshade

Weak-branched,
 prune to strengthen
 Needs well-drained soil
 Well-suited to lawns
 Accent planting



Moderate
 Sun - Part Shade
 20-35 feet
 15-20 feet
 Spring - Summer

JACARANDA MIMOSIFOLIA
Jacaranda

Profuse flower litter
 Accent planting
 Row planting
 Shade tree



Moderate
 Full Sun
 40-50 feet
 20-30 feet
 Summer

JUGLANS CALIFORNICA
So. California Black Walnut

Toxic to horses
 and livestock
 Good on slopes
 Background or
 Screen planting
 Habitat planting



Low
 Full Sun
 20-30 feet
 5-15 feet

SITE AND INFRASTRUCTURE IMPROVEMENTS
RECOMMENDATIONS: LANDSCAPE GUIDELINES
PLANTING PALETTE: TREES (cont.)

LATIN NAME	IMAGES	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name	LEGEND						
Cultivars / Comments							
 = Evergreen							
 = California Native							

JUNIPERUS CHINENSIS

Chinese Juniper

Accent planting
Background or
Screen planting



Moderate	Sun - Part Shade	25-35 feet	20-25 feet
			

JUNIPERUS SCOPULORUM

Tolleson's Weeping Juniper

'Tolleson's Blue Weeping'
Accent planting
Background or
Screen planting



Moderate	Full Sun	20-25 feet	10-12 feet
			

JUNIPERUS VIRGINIANA

Eastern Red Cedar

Accent planting
Background or
Screen planting



Moderate	Sun - Part Shade	40-50 feet	8-25 feet
			

LAGERSTROEMIA INDICA
Crape Myrtle

Flower and dry fruit litter
 Cultivars provide variety
 in size and bloom color
 Select cultivars with
 white blooms
 Accent planting
 Row planting



Moderate
 Full Sun
 25 feet
 25 feet
 Summer - Fall

LAURUS NOBILIS
Sweet Bay

Background or
 Screen planting
 Row planting
 Shade tree



Low
 Sun - Part Shade
 15-40 feet
 15-30 feet
 Spring

LEPTOSPERMUM LAEVIGATUM
Australian Tea Tree

Develops twisting trunk
 and branches, which may
 arch along the ground
 Accent planting
 Background or
 Screen planting



Low
 Full Sun
 20-30 feet
 20-30 feet
 Spring

LOPHOSTEMON CONFERTUS
Brisbane Box

Tristania conferta, syn.
 Row planting
 Shade tree



Moderate
 Sun - Part Shade
 30-50 feet
 10-30 feet
 Spring

SITE AND INFRASTRUCTURE IMPROVEMENTS
 RECOMMENDATIONS: LANDSCAPE GUIDELINES
PLANTING PALETTE: TREES (cont.)

LATIN NAME	IMAGES	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name	LEGEND						
Cultivars / Comments							
= Evergreen							
= California Native							

LYONOTHAMNUS FLORIBUNDUS
Catalina Ironwood
 subsp. asplenifolius
 Needs good drainage
 Background or Screen
 planting



Low	Sun - Part Shade	50-60 feet	40 feet	Summer

MELALEUCA LINARIIFOLIA
Flax Leaf Paper Bark
 Accent planting
 Row planting
 Shade tree



Low	Sun - Part Shade	20-30 feet	20-25 feet	Summer

MELALEUCA NESOPHILA
Pink Melaleuca
 Prune to small tree
 Accent planting



Low	Full Sun	15-20 feet	8-12 feet	Spring - Summer

MELALEUCA QUINQUENERVIA
Cajeput Tree

Accent planting
Background or
Screen planting
Row planting



Moderate

Sun - Part Shade

20-40 feet

15-25 feet

Summer - Fall

OLEA EUROPAEA 'SWAN HILL'
Swan Hill Olive

Fruitless variety
Accent planting
Row planting



Low

Sun - Part Shade

25-30 feet

25-30 feet

PARKINSONIA (CERCIDIUM)
Desert Museum Palo Verde

'Desert Museum'
Variety is thornless and
does not reseed
Accent planting



Low

Full Sun

15-25 feet

15-25 feet

Spring - Summer

PINUS ELДАРICA
Eldarica Pine

Requires ample
growing space
Accent planting
Background or
Screen planting



Low

Sun - Part Shade

30-80 feet

15-25 feet

SITE AND INFRASTRUCTURE IMPROVEMENTS RECOMMENDATIONS: LANDSCAPE GUIDELINES PLANTING PALETTE: TREES (cont.)

LATIN NAME	IMAGES	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name	LEGEND						
Cultivars / Comments							
 = Evergreen							
 = California Native							

PINUS HALEPENSIS
Aleppo Pine

Requires ample growing space
Accent planting
Background or Screen planting
Shade tree



Low	Sun - Part Shade	30-60 feet	20-40 feet

PINUS PINEA
Italian Stone Pine

Requires ample growing space
Accent planting
Background or Screen planting
Shade tree



Low	Sun - Part Shade	40-80 feet	40-60 feet

PINUS THUNBERGII
Japanese Black Pine

Requires ample growing space, may grow up to 100 ft high in right conditions
Accent planting
Background or Screen planting



Moderate	Sun - Part Shade	25-30 feet	20-35 feet

PISTACIA CHINENSIS
Chinese Pistache

Row planting
 Shade tree



Moderate
 Sun - Part Shade
 25-35 feet
 25-35 feet
 Fall

PITTOSPORUM ANGUSTIFOLIUM
Willow Pittosporum

Background or
 Screen planting



Low
 Sun - Part Shade
 20-25 feet
 10-15 feet
 Winter - Spring

PITTOSPORUM RHOMBIFOLIUM
Queensland Pittosporum

Background or
 Screen planting
 Row planting
 Shade tree



Moderate
 Sun - Part Shade
 15-35 feet
 10-20 feet
 Spring

PITTOSPORUM UNDULATUM
Victorian Box

Row planting
 Shade tree



Moderate
 Sun - Part Shade
 30-40 feet
 30-40 feet
 Spring

SITE AND INFRASTRUCTURE IMPROVEMENTS RECOMMENDATIONS: LANDSCAPE GUIDELINES PLANTING PALETTE: TREES (cont.)

LATIN NAME	IMAGES	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name	LEGEND						
Cultivars / Comments							
 = Evergreen							
 = California Native							

PLATANUS MEXICANA
Mexican Sycamore
Requires ample growing space
Flood and wet soil tolerant
Accent planting
Row planting
Shade tree



Moderate	Sun - Part Shade	50 feet	30 feet	Fall
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PLATANUS RACEMOSA
California Sycamore
Requires ample growing space
Accent planting
Habitat planting
Shade tree



Moderate	Sun - Part Shade	30-80 feet	20-50 feet	Fall
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PLATANUS X HISPANICA
London Plane
P. acerifolia, syn.
Requires ample growing space
Accent planting
Row planting
Shade tree



Moderate	Sun - Part Shade	70-85 feet	50-70 feet	Fall
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PODOCARPUS MACROPHYLLUS
Yew Pine

Needs good drainage
 Can be espaliered
 or hedged
 Background or
 Screen planting
 Row planting
 Shade tree



Moderate
 Partial Shade
 40-50 feet
 20 feet

QUERCUS AGRIFOLIA
Coast Live Oak

Toxic to horses
 and livestock
 Requires ample
 growing space
 Accent planting
 Habitat planting
 Row planting
 Shade tree



Low
 Sun - Part Shade
 20-70 feet
 20-70 feet

QUERCUS CHRYSOLEPIS
Canyon Live Oak

Toxic to horses
 and livestock
 Requires ample
 growing space
 Accent planting
 Habitat planting
 Row planting
 Shade tree



Low
 Sun - Part Shade
 70 feet
 30 feet

QUERCUS ENGELMANNII
Mesa Oak

Toxic to horses
 and livestock
 Requires ample
 growing space
 Accent planting
 Habitat planting
 Shade tree



Low
 Sun - Part Shade
 50-65 feet
 80-120 feet

Fall

SITE AND INFRASTRUCTURE IMPROVEMENTS RECOMMENDATIONS: LANDSCAPE GUIDELINES PLANTING PALETTE: TREES (cont.)

LATIN NAME	IMAGES	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name	LEGEND						
Cultivars / Comments							
= Evergreen							
= California Native							

QUERCUS ILEX
Holly Oak

Toxic to horses and livestock
Requires ample growing space
Background or Screen planting
Row planting
Shade tree



Low
Sun - Part Shade
30-60 feet
30-60 feet

QUERCUS KELLOGGII
California Black Oak

Toxic to horses and livestock
Requires ample growing space
Accent planting
Habitat planting
Row planting
Shade tree



Moderate
Sun - Part Shade
30-70 feet
30-50 feet
Fall

QUERCUS LOBATA
Valley Oak

Toxic to horses and livestock
Requires ample growing space
Accent planting
Habitat planting
Shade tree



Moderate
Sun - Part Shade
50-70 feet
50 feet
Fall

QUERCUS PALUSTRIS
Pin Oak

Toxic to horses and livestock
Requires ample growing space
Accent planting
Row planting
Shade tree



Moderate
Sun - Part Shade
50-70 feet
30-40 feet
Fall

QUERCUS SUBER
Cork Oak

Toxic to horses and livestock
Requires ample growing space
Accent planting
Background or Screen planting
Row planting
Shade tree



Low
Sun - Part Shade
70 feet
70 feet

STENOCARPUS SINUATUS
Firewheel Tree

Accent planting
Background or Screen planting
Row planting
Shade tree



Moderate
Sun - Part Shade
30 feet
15 feet
Fall

TIPUANA TIPU
Tipu Tree

Accent planting
Row planting
Shade tree



Moderate
Sun - Part Shade
25-50 feet
25-50 feet
Summer
Fall

SITE AND INFRASTRUCTURE IMPROVEMENTS
 RECOMMENDATIONS: LANDSCAPE GUIDELINES
PLANTING PALETTE: TREES (cont.)

LATIN NAME	IMAGES	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name	LEGEND						
Cultivars / Comments							
= Evergreen							
= California Native							

ULMUS PARVIFLORA
Chinese Evergreen Elm
 'Drake'
 Row planting
 Shade tree



Low
 Sun - Part Shade
 35-45 feet
 35-50 feet

VITEX AGNUS-CASTUS
Chaste Tree
 Accent planting



Low
 Full Sun
 15-25 feet
 15-20 feet
 Summer

ZELKOVA SERRATA
Sawleaf Zelkova
 Accent planting
 Row planting
 Shade tree



Moderate
 Sun - Part Shade
 50-65 feet
 50-65 feet
 Fall

SITE AND INFRASTRUCTURE IMPROVEMENTS
RECOMMENDATIONS: LANDSCAPE GUIDELINES

PLANTING PALETTE: PALMS

LATIN NAME	IMAGES	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name	LEGEND						
Cultivars / Comments							
= Evergreen							
= California Native							

BRAHEA ARMATA
Mexican Blue Palm

Grows slowly
Flower stalks may reach 15 ft long
Wet fruit litter



Low	Sun - Part Shade	25-40 feet	6-8 feet	Spring

BRAHEA EDULIS
Guadalupe Palm

Wet fruit litter



Low	Full Sun	20-30 feet	15 feet	Summer

BUTIA CAPITATA
Pindo Palm

Fruit and leaf litter



Low	Sun - Shade	15-20 feet	10-15 feet	

CHAMAEROPS HUMILIS
Mediterranean Fan Palm



Low
Full Sun
8-12 feet
10-15 feet

TRACHYCARPUS FORTUNEI
Windmill Palm



Low
Sun - Part Shade
8-10 feet
4-6 feet
Summer

WASHINGTONIA FILIFERA
California Fan Palm

Requires ample growing space
Dry fruit and leaf litter



Low
Full Sun
50 feet
10-20 feet

SITE AND INFRASTRUCTURE IMPROVEMENTS
RECOMMENDATIONS: LANDSCAPE GUIDELINES

PLANTING PALETTE: SHRUBS

LATIN NAME	IMAGES	LEGEND	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name								
Cultivars / Comments								
= Evergreen								
= California Native								

ABELIA X GRANDIFLORA
Kaleidoscope Abelia
'Kaleidoscope'



Moderate	Sun - Shade	2-3 feet	3-4 feet	Summer - Fall	Year-round
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ABELIA X GRANDIFLORA
Glossy Abelia
'Sherwoodii'



Moderate	Full Sun	3-4 feet	3-5 feet	Summer - Fall
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ABUTILON PALMERI
Indian Mallow



Low	Sun - Shade	4-5 feet	4-5 feet	Spring - Summer
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ABUTILON X HYBRIDUM
Flowering Maple Cultivars

Cultivars provide various sizes and color blooms
 Grows best in mild microclimate locations



Moderate
 Sun - Part Shade
 2-8 feet
 2-5 feet
 Year-round

ACACIA COGNATA
Little River Wattle

'Cousin Itt'



Moderate
 Sun - Shade
 2-3 feet
 4-6 feet

ACACIA ITEAPHYLLA
Flanders Range Wattle

Use only where tall screen planting is needed



Low
 Full Sun
 8-10 feet
 10-15 feet
 Winter - Spring

AGAVE AMERICANA VAR. MEDIO-PICTA
Dwarf White-Striped Century Plant

'Dwarf Alba'



Very Low
 Full Sun
 2-4 feet
 2-4 feet

SITE AND INFRASTRUCTURE IMPROVEMENTS
RECOMMENDATIONS: LANDSCAPE GUIDELINES
PLANTING PALETTE: SHRUBS (cont.)

LATIN NAME	IMAGES	LEGEND	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name								
Cultivars / Comments								
= Evergreen								
= California Native								

AGAVE ATTENUATA
Fox Tail Agave



Low	Sun - Shade	4-5 feet	6-8 feet
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AGAVE 'BLUE FLAME'
Blue Flame Agave

Forms clumps of rosettes which may reach 8-10 ft wide and 4-5 ft tall



Low	Full Sun	2-3 feet	3 feet
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AGAVE 'BLUE GLOW'
Blue Glow Agave



Low	Full Sun	1-2 feet	2-3 feet
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AGAVE GEMINIFLORA
Twin-flowered Agave



Low
Partial Shade
2-3 feet
2-4 feet

AGAVE OCAHUI
Ocahui
Tolerates reflected heat



Very Low
Full Sun
2-3 feet
2-3 feet

AGAVE PARRYI
Artichoke Agave



Low
Full Sun
1-2 feet
1-2 feet

AGAVE SHAWII
Shaw's Agave
Forms clumps of rosettes



Low
Full Sun
2-3 feet
3-4 feet

SITE AND INFRASTRUCTURE IMPROVEMENTS
 RECOMMENDATIONS: LANDSCAPE GUIDELINES
PLANTING PALETTE: SHRUBS (cont.)

LATIN NAME	IMAGES	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name	LEGEND						
Cultivars / Comments							
= Evergreen							
= California Native							

ALYOGYNE HUEGELII
Blue Hibiscus
 Use only where tall screen planting is needed



Low	Full Sun	6-10 feet	6-8 feet	Year-round

ARBUTUS UNEDO
Dwarf Strawberry Tree
 'Compacta'



Low	Sun - Part Shade	6-10 feet	6-10 feet	Fall

ARCTOSTAPHYLOS
Byrd Hill Manzanita
 'Byrd Hill'



Low	Sun - Part Shade	8-10 feet	8 feet	Winter - Spring

ARCTOSTAPHYLOS DENSIFLORA
Harmony Manzanita

'Harmony'



Low
Sun - Part Shade
4 feet
6 feet
Winter

ARTEMISIA CALIFORNICA
Montara Calif. Sagebrush

'Montara'
Reseeds



Very Low
Full Sun
2 feet
6 feet

BERBERIS AQUIFOLIUM
Compact Oregon Grape

'Compacta'
Prickly leaves, plant away
from active use areas



Moderate
Partial Shade
2 feet
3-5 feet
Spring
Fall

BERBERIS PINNATA
California Holly Grape

Use only where tall screen
planting is needed



Moderate
Partial Shade
5 feet
6 feet
Spring
Fall

SITE AND INFRASTRUCTURE IMPROVEMENTS
 RECOMMENDATIONS: LANDSCAPE GUIDELINES
PLANTING PALETTE: SHRUBS (cont.)

LATIN NAME
 Common Name
 Cultivars / Comments
 = Evergreen
 = California Native

IMAGES

LEGEND

Irrigation Demands
 Sun Exposure
 Avg. Mature Height
 Avg. Mature Spread
 Flower Color/Season
 Seasonal Leaf Color

BUXUS MICROPHYLLA
Littleleaf Boxwood
 'Compacta' or 'Koreana'
 Toxic to horses
 and livestock



Moderate
 Sun - Shade
 1-3 feet
 1-3 feet

CALLIANDRA CALIFORNICA
Baja Fairy Duster



Low
 Full Sun
 3-4 feet
 4-5 feet
 Year-round

CALLIANDRA TWEEDII
Trinidad Flame Bush

Does not tolerate
 alkaline soil
 Should be espaliered or
 pruned into small tree, or
 use only where tall screen
 planting is needed



Low
 Sun -Shade
 6-15 feet
 8-10 feet
 Spring, Fall

CALLISTEMON
Dwarf Callistemon

'Little John'
Attracts bees



Low
Full Sun
3-5 feet
4-6 feet
Year-round

CARISSA MACROCARPA
Compact Natal Plum

'Boxwood Beauty'
or 'Tomlinson'



Moderate
Sun - Part Shade
2-3 feet
2-3 feet
Year-round

CHRYSACTINIA MEXICANA
Damianita Daisy

Can become woody
over time
Encourage new growth
with light shearing
in late spring



Low
Full Sun
2 feet
2 feet
Spring, Fall

CISTUS X PURPUREUS
Orchid Rockrose



Low
Full Sun
3-4 feet
5-8 feet
Spring

SITE AND INFRASTRUCTURE IMPROVEMENTS
 RECOMMENDATIONS: LANDSCAPE GUIDELINES
PLANTING PALETTE: SHRUBS (cont.)

LATIN NAME	IMAGES	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name	LEGEND						
Cultivars / Comments							
= Evergreen							
= California Native							

CISTUS X SKANBERGII
Pink Rockrose



Low	Full Sun	2-3 feet	3-5 feet	Spring

COTINUS COGGYRIA
Purple Smoke Bush



Low	Sun - Part Shade	12-16 feet	10-15 feet	Spring	Spring - Summer

COTONEASTER MICROPHYLLUS
Rockspray Cotoneaster



Moderate	Full Sun	2-3 feet	6 feet	Spring

DODONAEA VISCOSA
Purple Hopbush

'Purpurea'
 Use only where tall screen
 planting is needed



Low
 Full Sun
 12-16 feet
 8-12 feet
 Year-round

ENCELIA CALIFORNICA
California Sunflower

Summer dormant
 without irrigation



Low
 Full Sun
 3 feet
 5 feet
 Spring - Fall

ENCELIA FARINOSA
Inciense



Very Low
 Full Sun
 3-5 feet
 4 feet
 Spring

ERIOGONUM FASCICULATUM
California Buckwheat



Very Low
 Full Sun
 3-4 feet
 4 feet
 Summer

SITE AND INFRASTRUCTURE IMPROVEMENTS
 RECOMMENDATIONS: LANDSCAPE GUIDELINES
PLANTING PALETTE: SHRUBS (cont.)

LATIN NAME	IMAGES	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name	LEGEND						
Cultivars / Comments							
= Evergreen							
= California Native							

EUONYMUS JAPONICUS
Boxleaf Euonymus
 'Microphyllus'
 'Microphyllus Variegata'



Moderate
 Full Sun
 1-2 feet
 1 foot

FRANGULA CALIFORNICA
California Coffeeberry
 Rhamnus californica, syn.
 Use only where tall screen
 planting is needed



Low
 Sun -Shade
 6-8 feet
 6-8 feet

GALVEZIA SPECIOSA
Island Snapdragon



Low
 Part Shade - Shade
 3 feet
 5 feet
 Spring

LG.106

HESPERALOE PARVIFLORA
Red Yucca, Yellow Yucca

Clean plant
 "Unarmed" leaves



Low
 Full Sun
 3-4 feet
 3-5 feet
 Summer - Fall

HETEROMELES ARBUTIFOLIA
Toyon

Toxic to horses
 and livestock
 Use only where tall screen
 planting is needed, or
 prune into small tree
 'Davis Gold' produces
 golden berries



Low
 Sun - Shade
 6-10 feet
 6-8 feet
 Summer

ILEX VOMITORIA
Dwarf Yaupon Holly

'Nana' or 'Stokes'
 Toxic to horses
 and livestock
 Compact growth with
 low maintenance



Low
 Full Sun
 3-4 feet
 3-4 feet

JUNIPERUS CALIFORNICA
California Juniper

Dry fruit litter
 Use only where tall screen
 planting is needed



Low
 Sun - Part Shade
 10-40 feet
 10-40 feet

SITE AND INFRASTRUCTURE IMPROVEMENTS
 RECOMMENDATIONS: LANDSCAPE GUIDELINES
PLANTING PALETTE: SHRUBS (cont.)

LATIN NAME	IMAGES	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name	LEGEND						
Cultivars / Comments							
= Evergreen							
= California Native							

JUNIPERUS X PFITZERIANA
Pfitzer Juniper

Various cultivars with unique traits
 Size varies per cultivar



Moderate	Full Sun	2-6 feet	3-8 feet

LANTANA CAMARA
Lantana

Highly toxic to humans, horses and livestock
 Size and bloom colors vary per cultivar



Low	Full Sun	3-6 feet	1-6 feet	Spring - Fall

LAVANDULA ANGUSTIFOLIA
English Lavender

'Hidcote'



Low	Full Sun	1-2 feet	1-2 feet	Spring - Summer

LAVANDULA STOECHAS
Spanish Lavender

'Otto Quast'



Low
Full Sun
2-3 feet
3-4 feet
Year-round

LEPTOSPERMUM LAEVIGATUM
Dwarf Tea Tree

'Reevesii'
Slow-growing



Low
Full Sun
4-5 feet
4-5 feet
Spring

LEPTOSPERMUM SCOPARIUM
New Zealand Tea Tree

Prune into small tree
Select appropriate cultivars
for smaller growth



Moderate
Full Sun
6-10 feet
6-10 feet
Summer

LEUCOPHYLLUM CANDIDUM
Violet Silverleaf

Size and colors
vary per cultivar
Must have good drainage



Low
Full Sun
3-5 feet
3-5 feet
Summer - Fall

SITE AND INFRASTRUCTURE IMPROVEMENTS
 RECOMMENDATIONS: LANDSCAPE GUIDELINES
PLANTING PALETTE: SHRUBS (cont.)

LATIN NAME	IMAGES	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name	LEGEND						
Cultivars / Comments							
= Evergreen							
= California Native							

LEUCOPHYLLUM FRUTESCENS
Compact Texas Ranger

'Compacta'
 Requires little or
 no pruning



Low	Full Sun	5 feet	5 feet	Summer - Fall

LEUCOPHYLLUM LANGMANIAE
Rio Bravo Sage

'Lynn's legacy'



Low	Full Sun	4-5 feet	4-5 feet	Summer - Fall

MIMULUS AURANTIACUS
Bush Monkeyflower



Very Low	Sun - Part Shade	2-3 feet	3 feet	Spring

MYRICA CALIFORNICA
Pacific Wax Myrtle

Use only where tall screen planting is needed
 Can be kept smaller with pruning



Moderate
 Sun - Shade
 20-30 feet
 10-20 feet

OLEA EUROPEA
Little Ollie Dwarf Olive

'Montra'
 Non-fruiting variety
 Use only where tall screen planting is needed or
 prune into small tree



Low
 Full Sun
 6-8 feet
 4-5 feet

PITTOSPORUM TOBIRA
Dwarf Mock Orange

'Wheeler's Dwarf'



Moderate
 Sun - Shade
 3-4 feet
 4-5 feet
 Spring

PRUNUS CAROLINIANA
Compact Carolina Cherry Laurel

'Compacta'
 Toxic to horses
 and livestock
 Can be kept smaller
 through pruning
 Use only where tall screen
 planting is needed



Moderate
 Sun - Shade
 6-10 feet
 4-6 feet
 Winter - Spring

SITE AND INFRASTRUCTURE IMPROVEMENTS
RECOMMENDATIONS: LANDSCAPE GUIDELINES
PLANTING PALETTE: SHRUBS (cont.)

LATIN NAME	IMAGES	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name	LEGEND						
Cultivars / Comments							
= Evergreen							
= California Native							

RHUS INTEGRIFOLIA
Lemonade Berry

Good for slope stabilization, will grow shorter on slopes
Can be hedged
Use only where tall screen planting is needed



Low	Sun - Shade	6-10 feet	10-15 feet	Spring

RHUS OVATA
Sugar Bush

Good for slope stabilization
Can be hedged or trained as small tree
Use only where tall screen planting is needed



Low	Sun - Shade	6-10 feet	8-10 feet	Spring

RIBES VIBURNIFOLIUM
Evergreen Currant

Recommended under oaks
Can survive without irrigation after establishment



Moderate	Sun - Shade	3-4 feet	4-6 feet	Spring

SALVIA APIANA
White Sage



Low

Full Sun

4-5 feet

4-5 feet

Spring - Summer

SALVIA BRANDEGEI
Santa Rosa Island Sage



Low

Sun - Part Shade

4-5 feet

5-7 feet

Spring

SALVIA CLEVELANDII
Cleveland Sage

Various cultivars with unique traits



Low

Sun - Part Shade

4-6 feet

3-5 feet

Spring - Summer

SALVIA COAHUILENSIS
Coahuila Sage



Low

Full Sun

2-3 feet

2-3 feet

Summer - Fall

SITE AND INFRASTRUCTURE IMPROVEMENTS
RECOMMENDATIONS: LANDSCAPE GUIDELINES
PLANTING PALETTE: SHRUBS (cont.)

LATIN NAME
Common Name
Cultivars / Comments
= Evergreen
= California Native

IMAGES

LEGEND

Irrigation Demands
Sun Exposure
Avg. Mature Height
Avg. Mature Spread
Flower Color/Season
Seasonal Leaf Color

SALVIA LEUCOPHYLLA
Purple Sage
Select appropriate cultivars for smaller growth
= California Native



Low
Full Sun
6 feet
8 feet
Spring - Summer

SIMMONDSIA CHINENSIS
Jojoba
Use only where tall screen planting is needed
= California Native



Very Low
Full Sun
6-10 feet
8 feet
Spring

TEUCRIUM FRUTICANS
Bush Germander
'Azureum'



Low
Full Sun
3-4 feet
4-5 feet
Summer - Fall

LG.115

SITE AND INFRASTRUCTURE IMPROVEMENTS
RECOMMENDATIONS: LANDSCAPE GUIDELINES

PLANTING PALETTE: PERENNIALS

LATIN NAME	IMAGES	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name	LEGEND						
Cultivars / Comments							
= Evergreen							
= California Native							

ACHILLEA MILLEFOLIUM
Yarrow

Groundcover
Cultivars provide various flower colors



Low

Sun - Shade

6-24 inches

2-3 feet

Summer

AEONIUM ARBOREUM
Purple Aeonium

'Atropurpureum'



Low

Partial Shade

2-3 feet

1-2 feet

Summer

Year-round

ALOE STRIATA
Coral Aloe



Low

Full Sun

2-3 feet

1-2 feet

Winter - Spring

ANIGOZANTHOS
Kangaroo Paw

Size and bloom color vary by cultivar



Low
Full Sun
3-4 feet
2-3 feet
Spring, Fall

ARCTOTIS ACAULIS
African Daisy

Groundcover
Cultivars provide various flower colors



Low
Full Sun
1 foot
3-4 feet
Spring - Summer

ARMERIA MARITIMA
Common Thrift

Protect from intense sun



Moderate
Partial Shade
1 foot
1 foot
Spring - Summer

ARTEMISIA PYCNOCEPHALLA
Sandhill Sage

'David's Choice'
Short-lived (3-4 years)



Low
Partial Shade
1 foot
2 feet
Spring - Summer

SITE AND INFRASTRUCTURE IMPROVEMENTS
 RECOMMENDATIONS: LANDSCAPE GUIDELINES
PLANTING PALETTE: PERENNIALS (cont.)

LATIN NAME	IMAGES	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name	LEGEND						
Cultivars / Comments							
= Evergreen							
= California Native							

ASCLEPIAS FASCICULARIS
Narrow-leaf Milkweed

Toxic to horses
 and livestock



Low	Sun - Part Shade	2-3 feet	2-3 feet	Spring - Summer
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BAILEYA MULTIRADIATA
Desert Marigold

Will flower throughout the
 year with occasional water



Low	Full Sun	2 feet	2 feet	Summer
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DIANELLA REVOLUTA
Flax Lily

Various cultivars



Low	Sun - Shade	2-4 feet	1-2 feet	Spring - Summer
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LG.118

DIANELLA TASMANICA
Flax Lily

Various cultivars
 Spreads through runners



Moderate
 Partial Shade
 1-2 feet
 1-2 feet
 Spring

DIETES IRIDIOIDES
African Iris



Moderate
 Sun - Part Shade
 2-3 feet
 3-4 feet
 White

DUDLEYA BRITTONII
Giant Chalk Dudleya



Low
 Full Sun
 6-9 inches
 1-2 feet
 Spring - Summer

DUDLEYA PULVERULENTA
Chalk Liveforever



Low
 Sun - Shade
 1-2 feet
 1-2 feet
 Spring - Summer

SITE AND INFRASTRUCTURE IMPROVEMENTS
 RECOMMENDATIONS: LANDSCAPE GUIDELINES
PLANTING PALETTE: PERENNIALS (cont.)

LATIN NAME	IMAGES	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name	LEGEND						
Cultivars / Comments							
= Evergreen							
= California Native							

ECHEVERIA
Hens and Chicks



Low
 Sun - Shade
 6-24 inches
 6-24 inches
 Spring - Summer

ERIGERON GLAUCUS
Wayne Roderick's Daisy
 'WR' / 'Wayne Roderick'



Low
 Sun - Part Shade
 1 foot
 1-2 feet
 Winter - Summer

ERIOGONUM CROCATUM
Sulphur Buckwheat
 Summer dormant



Low
 Sun - Part Shade
 1-2 feet
 2-3 feet
 Summer - Fall

ERIOGONUM UMBELLATUM
Sulphur-flower Buckwheat



Low
Sun - Part Shade
1 foot
3 feet
Summer

HEUCHERA MAXIMA
Island Alum Root



Moderate
Part Shade - Shade
2 feet
2 feet
Spring

IRIS DOUGLASIANA
Douglas Iris

Pacific Coast hybrids provide various bloom colors



Moderate
Sun - Shade
1-2 feet
2-3 feet
Spring

LIRIOPE MUSCARI
Big Blue Lily Turf



Moderate
Partial Shade
1-2 feet
1-2 feet
Summer

SITE AND INFRASTRUCTURE IMPROVEMENTS
 RECOMMENDATIONS: LANDSCAPE GUIDELINES
PLANTING PALETTE: PERENNIALS (cont.)

LATIN NAME
Common Name
 Cultivars / Comments
 [Green Box] = Evergreen
 [California Map] = California Native

IMAGES

LEGEND

Irrigation Demands
 Sun Exposure
 Avg. Mature Height
 Avg. Mature Spread
 Flower Color/Season
 Seasonal Leaf Color

MONARDELLA VILLOSA
Coyote Mint
 Spreads by rhizomes



Low
 Part Shade - Shade
 2 feet
 2 feet
 Summer

PENSTEMON HYBRIDS
Garden Penstemon
 Cultivars provide various bloom colors



Moderate
 Sun - Part Shade
 2-3 feet
 2-3 feet
 Spring - Fall

PENSTEMON
Native Penstemon
 Native species and cultivars



Low
 Sun - Part Shade
 1-2 feet
 2-3 feet
 Spring - Summer

PEROVSKIA ATRIPLICIFOLIA
Russian Sage



Moderate
Full Sun
3-4 feet
3-4 feet
Summer - Fall

RANUNCULUS CALIFORNICUS
California Buttercup
Summer dormant
Reseeds



Very Low
Partial Shade
1 foot
1 foot
Winter - Spring

ROMNEYA COULTERI
Matilija Poppy

Spreading, can be invasive
Use only where tall screen
planting is needed



Very Low
Full Sun
3-6 feet
6-8 feet
Summer

SALVIA CHIAPENSIS
Chiapas Sage



Moderate
Partial Shade
2-4 feet
3-4 feet
Year-round

SITE AND INFRASTRUCTURE IMPROVEMENTS
 RECOMMENDATIONS: LANDSCAPE GUIDELINES
PLANTING PALETTE: PERENNIALS (cont.)

LATIN NAME
 Common Name
 Cultivars / Comments
 [Green Box] = Evergreen
 [California Map] = California Native

IMAGES

LEGEND

Irrigation Demands
 Sun Exposure
 Avg. Mature Height
 Avg. Mature Spread
 Flower Color/Season
 Seasonal Leaf Color

SALVIA GREGGII
 Autumn Sage



Low
 Full Sun
 2-4 feet
 2-3 feet
 Spring - Fall

SALVIA SPATHACEA
 Hummingbird Sage

Groundcover
 Slowly spreads to
 form a colony



Moderate
 Sun - Part Shade
 2 feet
 1-2 feet
 Spring - Summer

SISYRINCHIUM BELLUM
 Blue-eyed Grass
 Summer dormant



Very Low
 Sun - Part Shade
 12-18 inches
 6 inches
 Spring - Summer

LG.124

SPHAERALCEA AMBIGUA
Apricot Mallow



- Low
- Full Sun
- 3 feet
- 3 feet
- Winter - Summer

STACHYS BYZANTINA
Lamb's Ears
 Densely spreads to 4-5 feet



- Moderate
- Sun - Shade
- 1 foot
- 4-5 feet
- Summer

TEUCRIUM COSSONII MAJORICUM
Majorcan Germander
 Groundcover



- Low
- Full Sun
- 4-6 inches
- 2-3 feet
- Spring, Fall

VERBENA LILACINA
Lilac Verbena
 Drought-deciduous
 Water deeply once
 per month for year-
 round blooms



- Low
- Sun - Part Shade
- 3 feet
- 4 feet
- Spring - Fall

SITE AND INFRASTRUCTURE IMPROVEMENTS
 RECOMMENDATIONS: LANDSCAPE GUIDELINES
PLANTING PALETTE: PERENNIALS (cont.)

LATIN NAME	IMAGES	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name							
Cultivars / Comments							
= Evergreen							
= California Native	LEGEND						

VERBENA RIGIDA
Vervain
 Groundcover
 Spreads by rhizomes
 and reseeds



Low	Full Sun	1-2 feet	3-4 feet	Spring - Fall
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WOODWARDIA FIMBRIATA
Giant Chain Fern



Moderate	Part Shade - Shade	6 feet	4 feet
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LG.126

LG.127

SITE AND INFRASTRUCTURE IMPROVEMENTS
RECOMMENDATIONS: LANDSCAPE GUIDELINES

PLANTING PALETTE: GROUNDCOVERS AND VINES

LATIN NAME	IMAGES	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name	LEGEND						
Cultivars / Comments							
= Evergreen							
= California Native							

ACACIA REDOLENS
Prostrate Acacia

'Low Boy'
Provide adequate spacing
between plants or
shearing will be required
Performs well on slopes



Low	Full Sun	1-2 feet	10-15 feet	Spring

ADENOSTOMA FASCICULATUM
Prostrate Chamise

'Nicolas'



Very Low	Sun - Part Shade	1-3 feet	3-5 feet	Spring - Summer

ANTIGONON LEPTOPUS
Coral Vine

Climbing vine, fast growing
Does well on hot walls



Low	Sun - Part Shade	30-40 feet	12-15 feet	Summer - Fall

ARTEMISIA CALIFORNICA
Prostrate Calif. Sagebrush

'Canyon Gray'
 Good for erosion control on slopes



Very Low
 Full Sun
 2 feet
 6 feet

BACCHARIS PILULARIS
Dwarf Coyote Brush

Low-growing cultivars
 Good for erosion control on slopes



Low
 Full Sun
 1-2 feet
 3-8 feet
 Fall

BERBERIS AQUIFOLIUM
Creeping Barberry

var. repens
 Excellent under oaks or pines



Low
 Sun - Part Shade
 12-18 inches
 18-24 inches
 Spring - Summer
 Fall

BOUGAINVILLEA
Bougainvillea

'California Gold'
 Vine, fast growing
 Requires support to climb



Low
 Full Sun
 15-30 feet
 15-30 feet
 Summer

SITE AND INFRASTRUCTURE IMPROVEMENTS
 RECOMMENDATIONS: LANDSCAPE GUIDELINES
**PLANTING PALETTE: GROUNDCOVERS
 AND VINES (cont.)**

LATIN NAME	IMAGES	LEGEND Irrigation Demands Sun Exposure Avg. Mature Height Avg. Mature Spread Flower Color/Season Seasonal Leaf Color
Common Name		
Cultivars / Comments		
= Evergreen = California Native		

CARISSA MACROCARPA
Green Carpet Natal Plum

'Green Carpet'
 Drought tolerant but
 performs better with
 regular watering



Moderate	Sun - Part Shade	12-15 inches	4-5 feet	Year-round
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CEANOTHUS GRISEUS HORIZONTALIS
Diamond Heights Ceanothus

'Diamond Heights'
 Protect from hot sun



Moderate	Part Shade - Shade	1 foot	4-6 feet	Spring	Year-round
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CEANOTHUS GRISEUS HORIZONTALIS
Yankee Point Ceanothus

'Yankee Point'
 Does not need irrigation
 after establishment
 if planted in
 partial shade



Moderate	Sun - Shade	2-3 feet	8-10 feet	Winter - Spring
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CISTUS X PULVERULENTUS
Magenta Rockrose

'Sunset'
 Fall pruning helps
 retain form



Low
 Full Sun
 12-24 inches
 3-6 feet
 Spring - Summer

CUPHEA HYSSOPIFOLIA
Mexican Heather



Moderate
 Sun - Part Shade
 2 feet
 2 feet
 Summer

CYRTOMIUM FALCATUM
Holly Fern



Moderate
 Part Shade - Shade
 2-3 feet
 2-3 feet

DUDLEYA HASSEI
Catalina Isl. Live-Forever



Low
 Sun - Shade
 6 inches
 1 foot
 Spring - Summer

SITE AND INFRASTRUCTURE IMPROVEMENTS
 RECOMMENDATIONS: LANDSCAPE GUIDELINES
**PLANTING PALETTE: GROUNDCOVERS
 AND VINES (cont.)**

LATIN NAME	IMAGES	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name	LEGEND						
Cultivars / Comments							
= Evergreen							
= California Native							

FICUS PUMILA
Creeping Fig

Climbing vine
 Adheres to walls or other structures
 Requires only occasional irrigation after establishment



Moderate	Sun - Shade	25-30 feet	3 feet

GELSEMIUM SEMPERVIRENS
Yellow Carolina Jessamine
 Climbing vine



Moderate	Sun - Part Shade	20 feet	3-6 feet	Winter - Spring

GREVILLEA LANGIGERA
Coastal Gem Grevillea
 'Coastal Gem'



Low	Full Sun	1 foot	4-5 feet	Year-round

IVA HAYESIANA
Poverty Weed

Good for erosion control on slopes
Spreading



Moderate water requirements (Low)

Sun - Part Shade

2 feet height

6-9 feet spread

JASMINUM POLYANTHUM
Pink Jasmine

Climbing vine



Moderate water requirements

Sun - Shade

25 feet height

25 feet spread

Winter - Summer flowering

JUNIPERUS CONFERTA
Shore Juniper

'Blue Pacific'



Moderate water requirements

Sun - Shade

1 foot height

6-8 feet spread

JUNIPERUS PROCUMBENS
Japanese Garden Juniper

'Nana'



Moderate water requirements

Sun - Shade

1 foot height

4-5 feet spread

SITE AND INFRASTRUCTURE IMPROVEMENTS
 RECOMMENDATIONS: LANDSCAPE GUIDELINES
**PLANTING PALETTE: GROUNDCOVERS
 AND VINES (cont.)**

LATIN NAME	IMAGES	LEGEND	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name								
Cultivars / Comments								
= Evergreen								
= California Native								

JUNIPERUS SABINA
Tamarix Juniper
 'Tamariscifolia'



Moderate
 Full Sun
 18-30 inches
 10+ feet

JUNIPERUS X PFITZERIANA
Daub's Frosted Juniper
 'Daub's Frosted'
 Intolerant of wet,
 poor draining soils
 Good for hot, dry banks



Moderate
 Full Sun
 1-2 feet
 3-6 feet

LANTANA MONTEVIDENSIS
Trailing Lantana
 Highly toxic to humans,
 horses, and livestock



Low
 Full Sun
 1-2 feet
 8-10 feet
 Year-round

LESSINGIA FILAGINIFOLIA
California Aster



Moderate

Sun - Part Shade

6 inches

3 feet

Summer - Fall

NEPHROLEPIS CORDIFOLIA
Sword Fern

Spreads by runners



Moderate

Sun - Shade

2-3 feet

2-3 feet

ROSMARINUS
Trailing/Prostrate Rosemary
Low-growing cultivars



Low

Full Sun

2-3 feet

6-8 feet

Winter - Spring

RUMOHRA ADIANTIFORMIS
Leatherleaf Fern



Moderate

Partial Shade

3 feet

3 feet

SITE AND INFRASTRUCTURE IMPROVEMENTS
 RECOMMENDATIONS: LANDSCAPE GUIDELINES
**PLANTING PALETTE: GROUNDCOVERS
 AND VINES (cont.)**

LATIN NAME
 Common Name
 Cultivars / Comments
 [Green Box] = Evergreen
 [California Map] = California Native

IMAGES

LEGEND

Irrigation Demands
 Sun Exposure
 Avg. Mature Height
 Avg. Mature Spread
 Flower Color/Season
 Seasonal Leaf Color

SALVIA
Bee's Bliss Sage
 'Bee's Bliss'

[California Map]



Low
 Sun - Part Shade
 1-2 feet
 2-5 feet
 Spring - Summer

SALVIA
Dara's Choice Sage
 'Dara's Choice'

[California Map]



Low
 Sun - Part Shade
 1-2 feet
 3 feet
 Spring - Summer

SALVIA MELLIFERA
Prostrate Black Sage
 'Terra Seca'
 Good for erosion control on slopes
 Spreading

[California Map]



Low
 Sun - Part Shade
 1-2 feet
 6 feet
 Spring - Summer

SENECIO MANDRALISCAE
Kleinia



Low
Sun - Part Shade
1-3 feet
2-3 feet
Summer

SENECIO SERPENS
Blue Chalksticks



Low
Full Sun
1 foot
2-3 feet
Summer

THELYPTERIS NORMALIS
Southern Wood Fern
Spreads by rhizomes



Moderate
Part Shade - Shade
3 feet
3 feet

TRACHELOSPERMUM JASMINOIDES
Star Jasmine

Toxic to horses and livestock
Train to cover walls or trellis, or spreads as 1-2 foot high groundcover



Moderate
Sun - Shade
18-20 feet
6-20 feet
Spring - Summer

SITE AND INFRASTRUCTURE IMPROVEMENTS
 RECOMMENDATIONS: LANDSCAPE GUIDELINES
**PLANTING PALETTE: GROUNDCOVERS
 AND VINES (cont.)**

<p>LATIN NAME</p> <p>Common Name</p> <p>Cultivars / Comments</p> <p> = Evergreen</p> <p> = California Native</p>	<p>IMAGES</p> <p>LEGEND</p>	<p>Irrigation Demands</p> 	<p>Sun Exposure</p> 	<p>Avg. Mature Height</p> 	<p>Avg. Mature Spread</p> 	<p>Flower Color/Season</p> 	<p>Seasonal Leaf Color</p> 
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VITIS CALIFORNICA
Roger's Red Calif. Grape
 'Roger's Red'
 Climbing vine
 Fruit is toxic to dogs





<p>Low</p> 	<p>Sun - Part Shade</p> 	<p>15-30 feet</p> 	<p>15-30 feet</p> 	<p>Fall</p> 
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SITE AND INFRASTRUCTURE IMPROVEMENTS
RECOMMENDATIONS: LANDSCAPE GUIDELINES

PLANTING PALETTE: GRASSES

LATIN NAME	IMAGES	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name	LEGEND						
Cultivars / Comments							
= Evergreen							
= California Native							

ARISTIDA PURPUREA
Purple Three-awn

Warm season
Good for erosion control on slopes
Native meadow planting



Low	Full Sun	2-3 feet	2 feet	Spring - Summer	Fall - Winter

BOUTELOUA CURTIPENDULA
Side Oats Grama

Warm season
Accent planting



Low	Full Sun	2 feet	2 feet	Summer	Fall - Winter

BOUTELOUA GRACILIS
Blue Grama

Warm season
Native meadow planting



Low	Full Sun	6-12 inches	6-12 inches	Summer	Fall - Winter

LG.140

CALAMAGROSTIS X ACUTIFOLIA
Feather Reed Grass

'Karl Foerster'
 Cut back in late winter to
 maintain fresh foliage
 Accent planting
 Bioswales



Moderate
 Sun - Shade
 2-3 feet
 2-3 feet
 Summer

CAREX PANSA
Dune Sedge

Creeping habit
 Groundcover
 Bioswales



Moderate
 Sun - Part Shade
 6-8 inches
 3 feet
 Spring

CAREX PRAEGRACILIS
California Field Sedge

Prefers moist locations
 Groundcover
 Bioswales



Moderate
 Sun - Part Shade
 1 foot
 Spreading
 Spring - Summer

FESTUCA OVINA GLAUCA
Blue Fescue

Accent planting



Moderate
 Sun - Part Shade
 6-10 inches
 6-10 inches
 Summer

SITE AND INFRASTRUCTURE IMPROVEMENTS
RECOMMENDATIONS: LANDSCAPE GUIDELINES
PLANTING PALETTE: GRASSES (cont.)

LATIN NAME
Common Name
Cultivars / Comments

IMAGES

LEGEND

 = Evergreen
 = California Native

Irrigation Demands
Sun Exposure
Avg. Mature Height
Avg. Mature Spread
Flower Color/Season
Seasonal Leaf Color

HELICTOTRICHON SEMPERVIRENS
Blue Oat Grass

Does best in sun
to light shade
Accent planting
Bioswales



Moderate
Sun - Shade
1-2 feet
1-2 feet
Summer

JUNCUS EFFUSUS
Soft Rush

Spreading, can
become invasive
Accent planting
Bioswales



Moderate
Sun - Part Shade
1-3 feet
Spreading
Summer

JUNCUS MEXICANUS
Mexican Rush

Accent planting
Bioswales



Moderate
Sun - Part Shade
2 feet
Spreading
Spring

JUNCUS PATENS
California Grey Rush

Spreading, can become invasive
Accent planting
Bioswales



Low
Sun - Part Shade
2 feet
Spreading
Summer

LEYMUS CONDENSATUS
Canyon Prince Wild Rye

'Canyon Prince'
Flower spikes grow to 6 ft tall
Accent planting
Bioswales



Low
Sun - Part Shade
4 feet
4 feet
Summer

MELICA CALIFORNICA
California Melic

Summer/fall dormant
Native meadow planting



Low
Part Shade
1-2 feet
1-2 feet
Spring - Summer
Summer - Fall

MUHLENBERGIA CAPILLARIS
Pink Muhly

Accent planting



Low
Full Sun
2-3 feet
2-3 feet
Fall

SITE AND INFRASTRUCTURE IMPROVEMENTS
 RECOMMENDATIONS: LANDSCAPE GUIDELINES
PLANTING PALETTE: GRASSES (cont.)

LATIN NAME
Common Name
 Cultivars / Comments
 = Evergreen
 = California Native

IMAGES

LEGEND

Irrigation Demands
 Sun Exposure
 Avg. Mature Height
 Avg. Mature Spread
 Flower Color/Season
 Seasonal Leaf Color

MUHLENBERGIA DUBIA
Mexican Muhly

Accent planting
 Bioswales



Low
 Full Sun
 1-3 feet
 1-3 feet
 Summer - Fall

MUHLENBERGIA DUMOSA
Bamboo Muhly

Accent planting



Low
 Full Sun
 4-6 feet
 3-5 feet
 Fall - Winter

MUHLENBERGIA RIGENS
Deer Grass

Accent planting
 Bioswales



Moderate
 Sun - Shade
 4-5 feet
 4-6 feet
 Summer

MUHLENBERGIA 'WHITE CLOUD'
White Awn Muhly

Accent planting



Low
 Full Sun
 3-4 feet
 3-4 feet
 Fall - Winter

NASSELLA CERNUA
Nodding Needlegrass

Summer dormant
 Native meadow planting



Very Low
 Sun - Part Shade
 2-3 feet
 1-2 feet
 Spring - Summer
 Summer

NASSELLA LEPIDA
Foothill Needlegrass

Summer dormant
 Good for erosion control
 Good under native oaks
 Native meadow planting



Very Low
 Sun - Part Shade
 1-2 feet
 1-2 feet
 Spring
 Summer

NASSELLA PULCHRA
Purple Needlegrass

Summer dormant
 Recommended for
 dry, hot areas
 Native meadow planting



Very Low
 Sun - Part Shade
 1-3 feet
 2 feet
 Spring
 Summer

SITE AND INFRASTRUCTURE IMPROVEMENTS
RECOMMENDATIONS: LANDSCAPE GUIDELINES
PLANTING PALETTE: GRASSES (cont.)

LATIN NAME	IMAGES	Irrigation Demands	Sun Exposure	Avg. Mature Height	Avg. Mature Spread	Flower Color/Season	Seasonal Leaf Color
Common Name	LEGEND						
Cultivars / Comments							
= Evergreen							
= California Native							

SESLERIA AUTUMNALIS
Autumn Moor Grass

Accent planting
Bioswales



Moderate	Sun - Shade	1 foot	1-2 feet	Spring

HYBRID BERMUDA
Turf Grass

Use for sports fields
and high-traffic lawns
Consult with the
Campus Landscape
Advisory Committee for
the species that best
supports the intended
use/program of the site



Moderate	Full Sun	Mow to Height	Spreading

TALL FESCUE
Turf Grass

Use for low-traffic lawns
Consult with the
Campus Landscape
Advisory Committee for
the species that best
supports the intended
use/program of the site



Moderate	Sun - Part Shade	Mow to Height	3 inches

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DECADE PACKAGE**



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929-1087 North Grand Avenue

Walnut, CA 91789

Inquiry Number: 4959903.1

June 08, 2017

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Site Name:

Mt. San Antonio College, West
929-1087 North Grand Avenue
Walnut, CA 91789
EDR Inquiry # 4959903.1

Client Name:

Converse Consultants
3176 Pullman St, Suite 108
Costa Mesa, CA 92626
Contact: Mark Schluter



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Year	Scale	Details	Source
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2010	1"=500'	Flight Year: 2010	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2005	1"=500'	Flight Year: 2005	USDA/NAIP
2002	1"=500'	Flight Date: May 22, 2002	USDA
1995	1"=500'	Acquisition Date: October 03, 1995	USGS/DOQQ
1989	1"=500'	Flight Date: August 03, 1989	USDA
1983	1"=500'	Flight Date: November 23, 1983	EDR Proprietary Brewster Pacific
1979	1"=500'	Flight Date: May 11, 1979	EDR Proprietary Brewster Pacific
1966	1"=500'	Flight Date: April 16, 1966	USGS
1964	1"=500'	Flight Date: July 28, 1964	USGS
1953	1"=500'	Flight Date: February 01, 1953	USDA
1948	1"=500'	Flight Date: July 10, 1948	USGS
1946	1"=500'	Flight Date: December 29, 1946	USGS
1938	1"=500'	Flight Date: May 24, 1938	USDA
1928	1"=500'	Flight Date: January 01, 1928	FAIR

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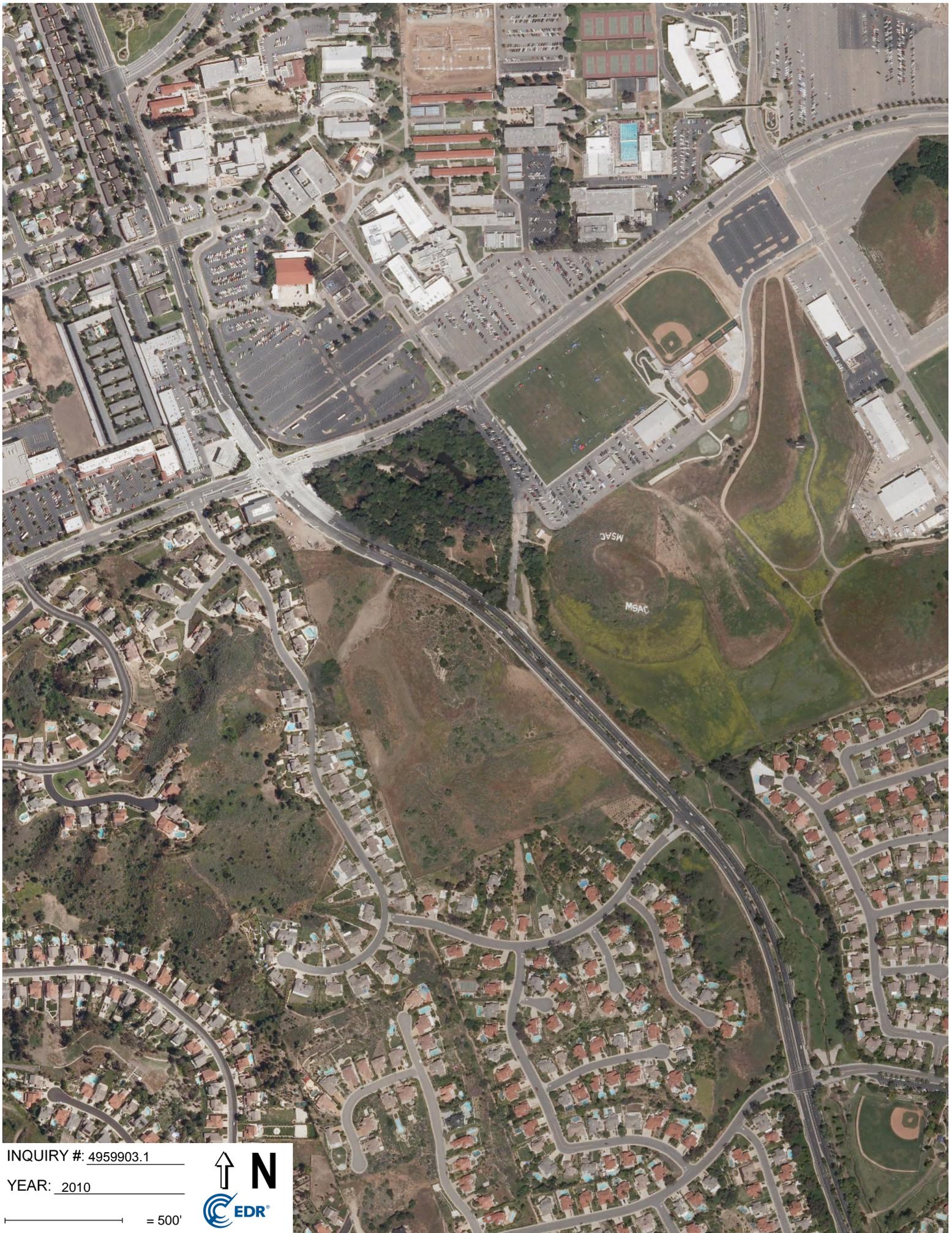


INQUIRY #: 4959903.1

YEAR: 2012

— = 500'





INQUIRY #: 4959903.1

YEAR: 2010

— = 500'





INQUIRY #: 4959903.1

YEAR: 2009

— = 500'





INQUIRY #: 4959903.1

YEAR: 2005

— = 500'





INQUIRY #: 4959903.1

YEAR: 2002

— = 500'





INQUIRY #: 4959903.1

YEAR: 1995

— = 500'





INQUIRY #: 4959903.1

YEAR: 1989

— = 500'





INQUIRY #: 4959903.1

YEAR: 1983

— = 500'



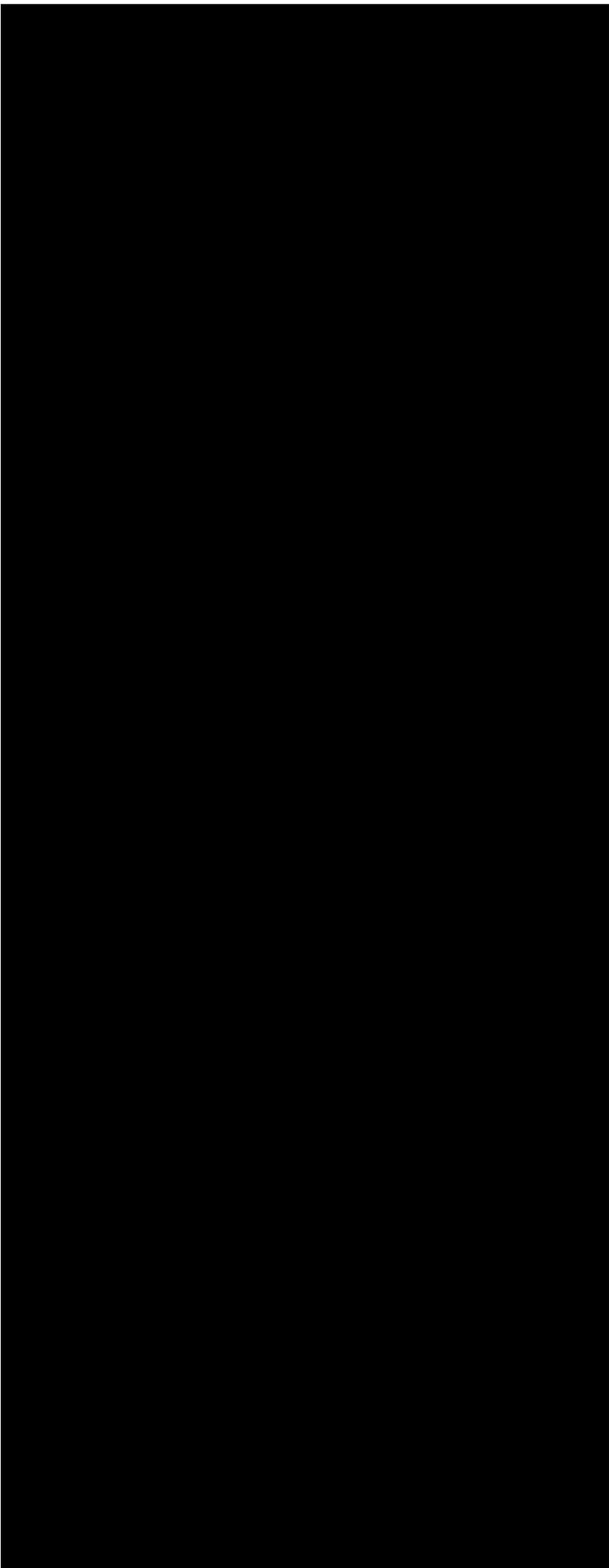


INQUIRY #: 4959903.1

YEAR: 1979

— = 500'





INQUIRY #: 4959903.1

YEAR: 1966

— = 500'





INQUIRY #: 4959903.1

YEAR: 1964

— = 500'





INQUIRY #: 4959903.1

YEAR: 1953

— = 500'





INQUIRY #: 4959903.1

YEAR: 1948

— = 500'





INQUIRY #: 4959903.1

YEAR: 1946

— = 500'





INQUIRY #: 4959903.1

YEAR: 1938

— = 500'





INQUIRY #: 4959903.1

YEAR: 1928

— = 500'



**2017 PARKING AND
CIRCULATION
MASTER PLAN**



FINAL

2017 Mt. San Antonio College Parking and Circulation Master Plan

FINAL 2017
**MT. SAN ANTONIO COLLEGE
PARKING AND CIRCULATION
MASTER PLAN**

Prepared for



Prepared by

P S O M A S

Psomas Project No. 1MTS014000
November 15, 2017

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2. Context



3. Future Conditions



4. Parking



5. Traffic Operations



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1. Executive Summary



2. Context



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6. Recommendations



This Parking and Circulation Master Plan (PCMP) was developed to evaluate the existing parking and transportation network within Mt. San Antonio College (Mt. SAC), identify deficiencies and areas for improvement, determine needs to serve future growth, develop recommendations for improvements, and prioritize those recommendations. While parking is a main area of interest for the College, the PCMP also evaluates the needs of pedestrians and cyclists, and provides recommendations to improve the safety and experience for all.

The PCMP is generally based on the 2015 Facilities Master Plan Update (FMPU)¹, and therefore provides planning and recommendations through 2025. Discussions with the College about the feasibility of growth (i.e. how quickly funds can be obtained and facilities can actually be constructed) were factored into the recommendations provided in the PCMP. The PCMP is limited to areas within the College's main campus, as traffic issues outside the campus were evaluated in the Traffic Study² prepared for the 2015 FMPU.

Existing parking data was collected on March 15, 2017, and at the time the data was collected, there were 8,907 parking spaces on campus. The peak parking demand rate was calculated based on the number of occupied spaces counted during the data collection and the Fall 2016 enrollment. Based on that calculated parking rate (0.222 spaces per student) and growth projections in the 2015 FMPU (approximately 1.9% per year), the College would need 9,420 parking spaces for the 2025-2026 school year to serve its population. However, based on the feasible timeline for construction, the student growth for which sufficient parking could be provided is closer to 0.75% per year. At the request of the College, a 5% buffer in the number of required parking spaces has been considered. Given the revised growth rate and buffer, the College would need 9,030 parking spaces for the 2025-2026 school year.

During this planning process, Mt. SAC was selected to host the 2020 Olympic Trials. Before the event in June 2020, the College plans to have two new parking structures constructed. The PCMP identifies six potential parking structures around campus. Only four are expected to be required (and constructed) during the study period included in the PCMP; those include structures in Lots B, F, R, and S. The structures in Lots R and S are expected to be constructed before the Trials.

Based on observations of existing parking conditions on campus, it is recommended that approximately 73% of all spaces be designated as student parking, and approximately 15% of all spaces should be designated as staff parking.

Staff parking spaces should be located along an edge of any shared lot, and at least 35% of designated staff parking spaces should be located in the proposed parking structures in Lots F, R, and S. While it is understood that staff members want to park close to their respective buildings, it should also be considered that students would also like convenient parking, and the needs of the two groups should be balanced as the parking improvements take shape around campus.

In addition to the proposed construction of new parking structures, the PCMP provides improved parking layouts for Lots A and B. The layouts improve the circulation through the parking lots, and also increase the total number of spaces in each. A new layout is also included in the PCMP for Lot W, which is expected to be reconstructed to include sand volleyball courts.

Recommended options for potential circulation improvements at the San Jose Hills Road and Mt. SAC Way access drives are also provided herein. In all cases, the proposed and recommended changes aim to reduce confusion and improve operations. Closely related to the circulation improvement recommendations on San Jose Hills Road, the PCMP also includes recommended improvements for the signalized intersection of San Jose Hills Road and Grand Avenue. The recommendations include reassigning lanes and changing the signal phasing on San Jose Hills Road to provide more efficient intersection operations.

Additional recommended vehicular circulation improvements include restricting La Puente Drive between San Jose Hills Road and Lot A to service and emergency vehicle use only, adding new designated pick-up/drop off areas around campus, and proving wayfinding signs to help direct drivers (particularly visitors) to parking areas closest to their destinations.

Mt. SAC is also currently working with Foothill Transit to construct a new transit center on campus. The transit center will include 10 bus bays and will be located near the intersection of Temple Avenue and Bonita Drive. The PCMP assumes the transit center will start construction in January 2018. Additional access improvements to existing transit stops are also provided in this plan.

Three new pedestrian bridges are also recommended in this plan. All three are expected to be incorporated into new parking structures. Two new pedestrian bridges will cross Temple Avenue (between Lot S and the transit center, and between Lot F and the athletic facilities), and one new pedestrian bridge will cross Bonita Drive (between Lot S and Lot R).

Lastly, although cycling is not prevalent among the College population, recommendations for improving cycling facilities are included in this plan. Off-site, it is recommended that the bike lanes along Grand Avenue and Temple Avenue be made continuous, including the removal of on-street parking along Temple Avenue. Potential on-site improvements include the provision of bike share and/or additional bike parking and bike storage. Bike parking/storage facilities should be incorporated into the proposed parking structures.

Overall, the recommendations in the PCMP aim to provide a safer, more efficient, and generally improved experience for all who attend, work at, or visit Mt. SAC.

1. Executive Summary



2. Context



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5. Traffic Operations



6. Recommendations



2.1. PREVIOUS STUDIES AND EXISTING FACILITIES

Several documents from previously developed studies and plans were reviewed to obtain relevant information. Reference Table 1 below for a list of reviewed documents. Information from these documents was supplemented with information obtained in discussions with the College and additional review of available information online. Given the available information, Psomas developed maps to show the existing vehicular circulation, transit facilities, pedestrian circulation and access, bicycle circulation and parking, and parking. The first four maps are shown in Figures 1 through 4; the parking is discussed in more detail in Section 4.

Table 1. Existing Relevant Documents

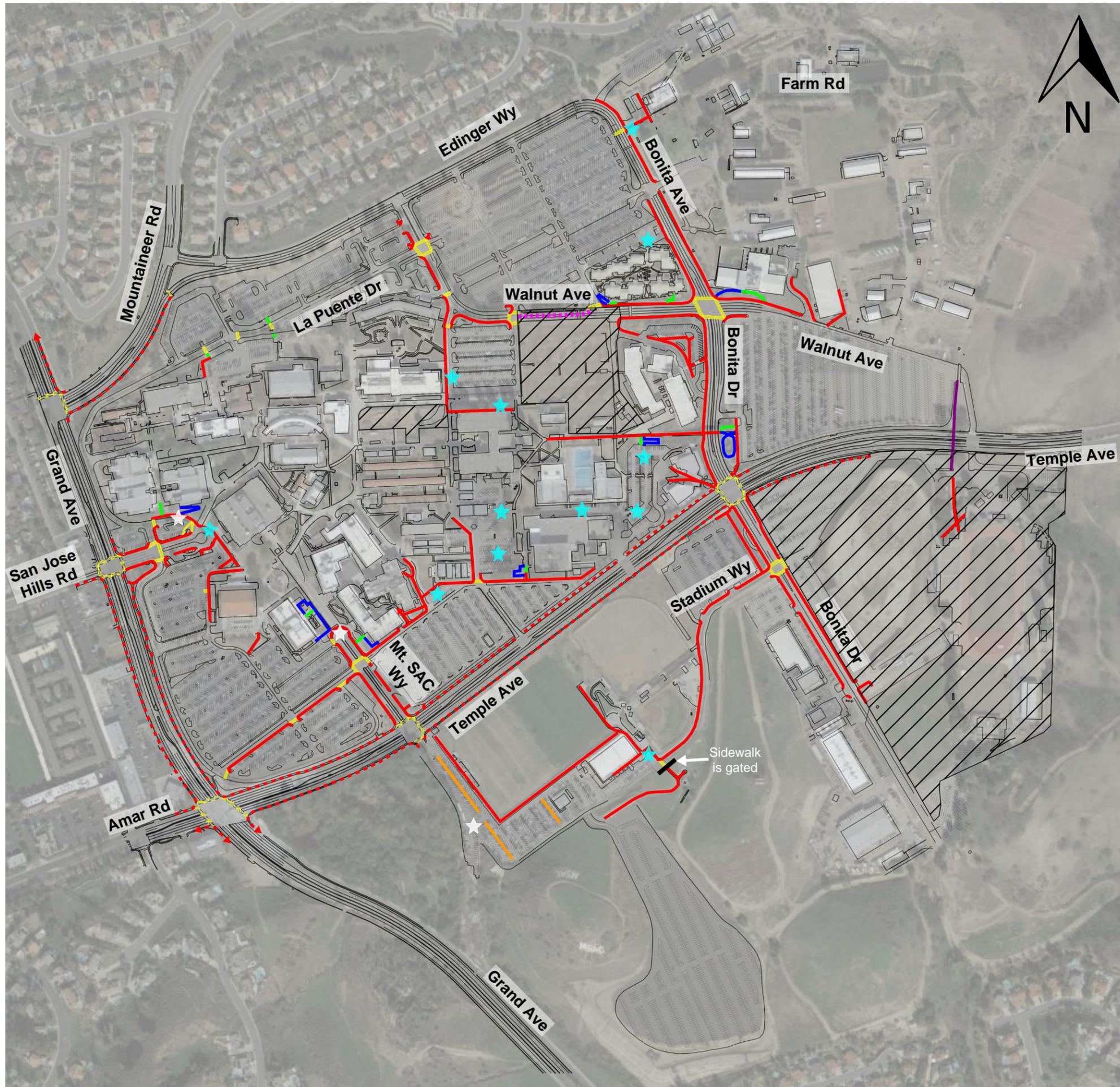
Group	Title	Year	Author
Mt SAC 2008 Master Plan Update	Master Plan Project List	July 2008	Mt SAC
	Biological Technical Report	July 2008	HELIX Environmental Planning
	EIR Traffic Impact Analysis	May 2008	Iteris
	EIR Traffic Impact Analysis Technical Appendix	May 2008	Iteris
Mt SAC 2012 Facilities Master Plan	Facility Master Plan	February 2013	Marlene Imirzian & Associates Architects, Cambridge West Partnership
	Draft Subsequent EIR to Final Program EIR	September 2012	SID LINDMARK
2015 Facilities Master Plan Update and Physical Education Projects (FMPU)	Draft Addendum to 2012 Facility Master Plan Final EIR	December 2015	SID LINDMARK
	Draft Subsequent Program/Project EIR to Final Program EIR, Volume 1	June 2016	SID LINDMARK
	Draft Subsequent Program/Project EIR to Final Program EIR, Volume 2 (Appendices - includes Draft Traffic Impact Study from April 2016 and parking data from Mt SAC)	June 2016	SID LINDMARK
	2016 Mitigation Monitoring Program	September 2016	SID LINDMARK
	Statement of Facts and Findings	October 2016	Mt SAC
	Campus Maps (existing campus plan, campus zoning, land use plan)	April 2016	HMC Architects
	Campus Parking Inventory	August 2016	Mt SAC
Foothill Transit Authority Draft Memorandum of	May 2016	Foothill Transit	



LEGEND

- Two-Way, Two Lanes
- Two-Way, Four Lanes
- One Way, One Lane
- One Way, Two Lanes
- Access - Signalized
- Access - All Way Stop
- Access - Two-Way Stop
- Access - Two-Way Stop, Right-in, Right-out only
- Access - One Way (Entrance or Exit Only)
- Areas under construction or starting construction soon
- Parking lots (see Existing Parking figure for additional information)

FIGURE 1.
EXISTING VEHICULAR
CIRCULATION AND ACCESS
CONDITIONS AS OF JANUARY 19, 2017



LEGEND

- Sidewalk
- Sidewalk continues beyond location shown
- - - Sidewalk in public ROW (controlled by City of Walnut)
- - - Future pedestrian walkway
- Paved pedestrian path through parking lot
- Stairs
- Ramp
- Pedestrian tunnel
- Marked crosswalk
- Marked crosswalk in public ROW
- ★ Pick up/drop off area - Designated
- ★ Pick up/drop off area - Not Designated
- Areas under construction or starting construction soon

FIGURE 2.
EXISTING PEDESTRIAN
CIRCULATION AND ACCESS*
 CONDITIONS AS OF FEBRUARY 2, 2017

*ALONG MAJOR ROUTES AND PARKING AREAS

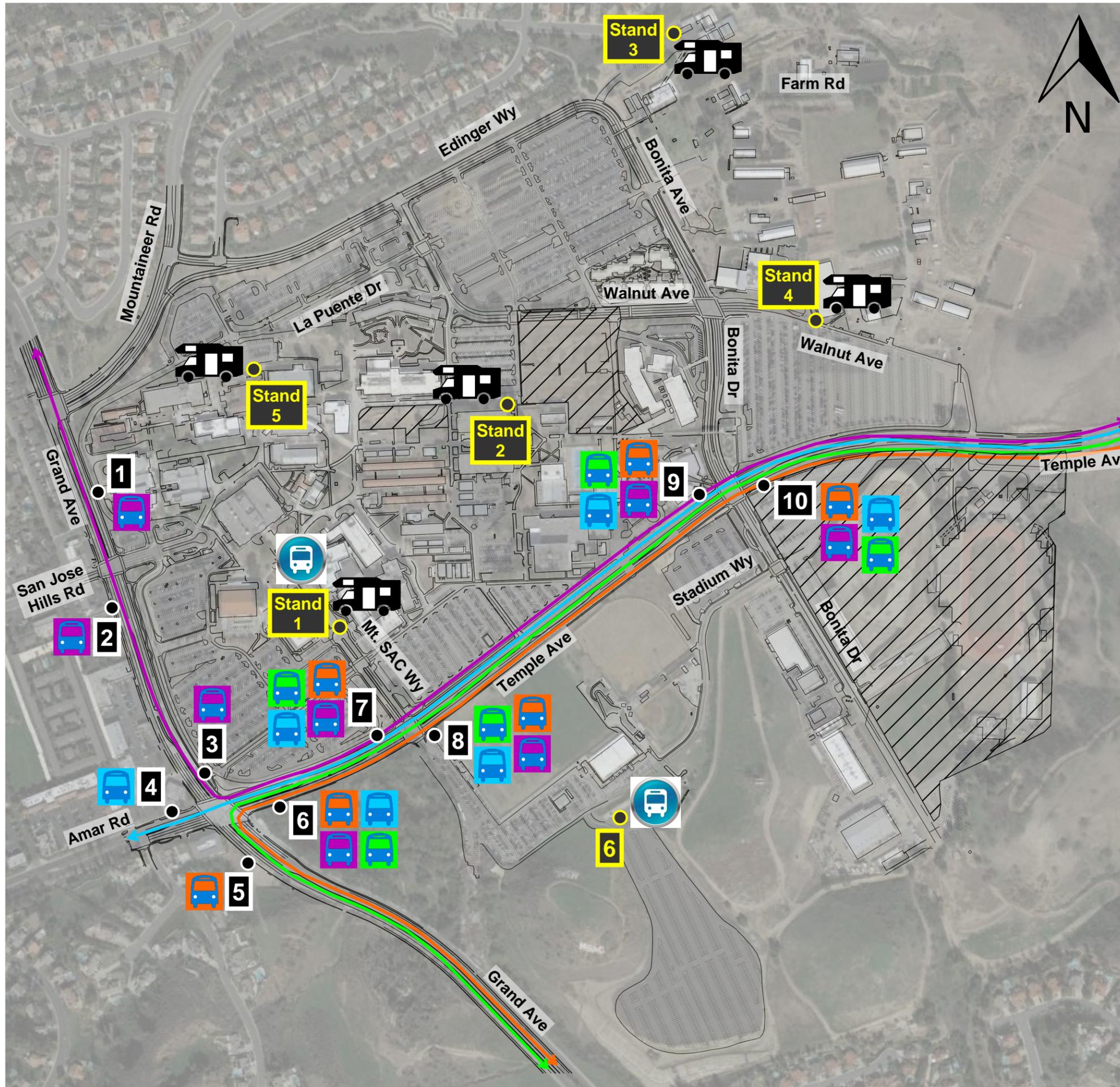




LEGEND

-  Bike Lane
-  Bike lane continues beyond location shown
-  Bike Rack
-  Areas under construction or starting construction soon

FIGURE 3.
EXISTING BICYCLE CIRCULATION
AND PARKING
 CONDITIONS AS OF NOVEMBER 6, 2017



- LEGEND**
- Foothill Transit Route 190
 - Foothill Transit Route 194
 - Foothill Transit Route 289
 - Foothill Transit Route 486
 - Foothill Transit Bus Stop Location*
 - Foothill Transit Bus Stop Identification Number**
 - Stop Served by Route 190
 - Stop Served by Route 194
 - Stop Served by Route 289
 - Stop Served by Route 486
 - On-Campus Transit Stop Location
 - On-Campus Transit Stop Stand or Identification Number**
 - Lot M Shuttle Stop
 - Access Services (Paratransit Van)/Mt. SAC Disabled Student Programs & Services (DSPS) Stop
 - Areas under construction or starting construction soon

Stop Number	Sidewalk	Benches	Shelter	Trash Cans
1	Yes	4	Yes	3
2	Yes	1	No	2
3	Yes	0	No	0
4	Yes	0	No	2
5	Yes	2	Yes	1
6	Yes	2	Yes	2
7	Yes	4	Yes	2
8	Yes	5	Yes	2
9	Yes	2	No	2
10	No	2	No	2

*Note that all of the existing Foothill Transit bus stops are curbside (no bus pullouts) along Grand Avenue, Temple Avenue, or Amar Road, and are not located on campus.
 **The Stand Numbers provided match those from Access Services. Other bus/transit stop numbers are only for identification purposes on this map.

FIGURE 4.
EXISTING TRANSIT FACILITIES
 CONDITIONS AS OF JANUARY 19, 2017

2.2. STUDENT POPULATION

Table 2 shows the student population for the fall and spring semesters beginning in 2012³. As seen in the table, the fall semesters generally have higher enrollment than the spring semesters. Analyses conducted for the 2015 Facilities Master Plan Update (FMPU) were based on the Fall 2014 enrollment of 35,280 students, and analyses for the PCMP were based on the Fall 2016 enrollment of 36,220 students.

Table 2. Student Population, Fall 2012 – Spring 2017

Semester	Full-Time Students	Part-Time Students	Total Enrollment
Fall 2012	10,840	23,177	34,017
Spring 2013	10,178	23,591	33,769
Fall 2013	10,671	23,694	34,365
Spring 2014	10,204	24,099	34,303
Fall 2014	10,597	24,683	35,280
Spring 2015	9,597	24,759	34,356
Fall 2015	10,493	25,113	35,606
Spring 2016	9,287	25,054	34,341
Fall 2016	14,400	21,820	36,220
Spring 2017	9,110	25,481	34,591

As shown in Figure 5, the fall semester student population has increased approximately 1.6% per year, while the spring semester population has increased approximately 0.6% per year.

Figure 5. Student Population by Semester, Fall 2012 – Spring 2017

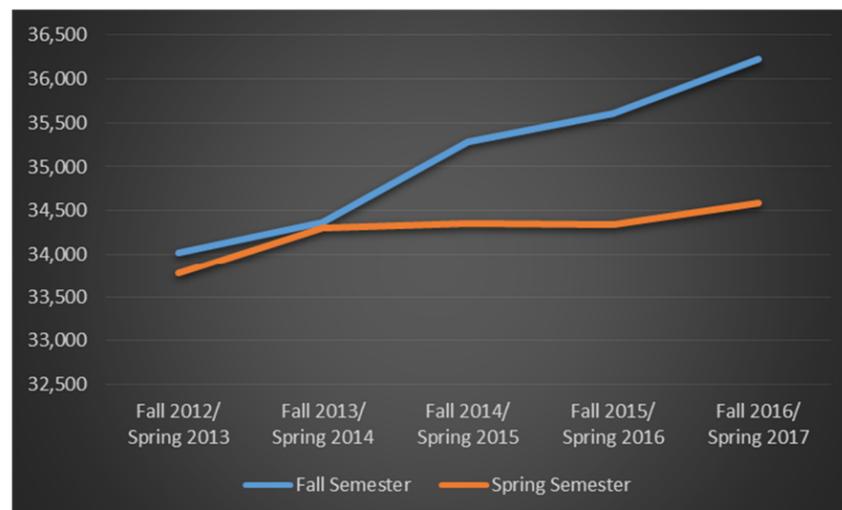
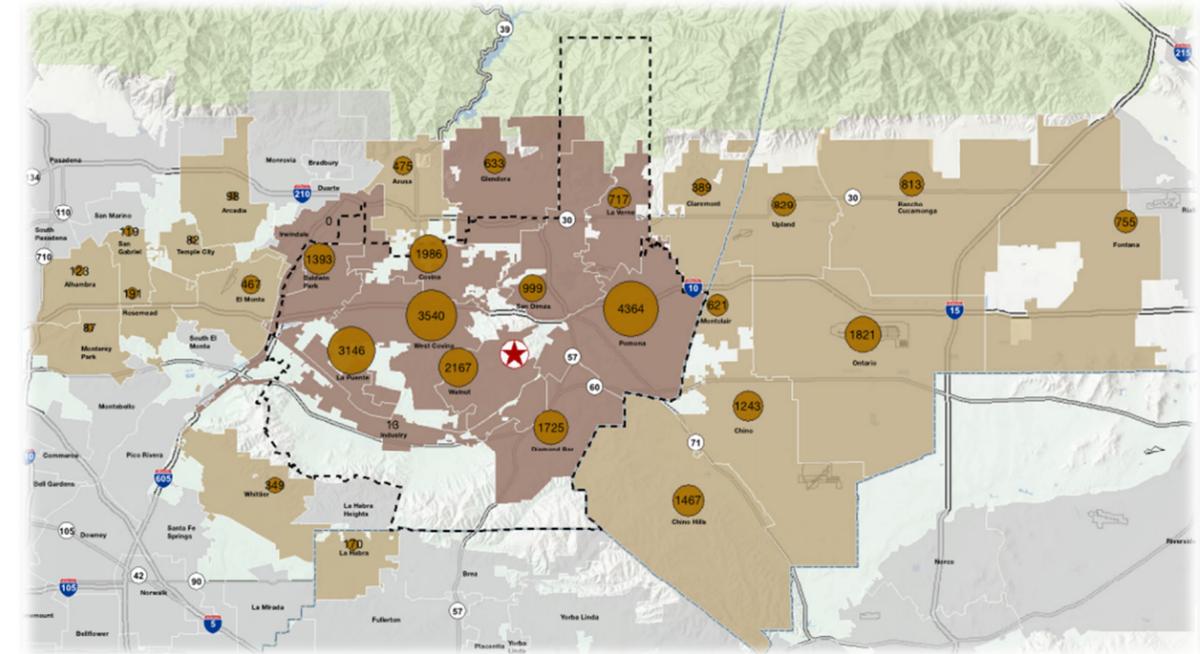


Figure 6 shows where current students live. As shown, students travel to campus from the east and west in relatively equal levels.

Figure 6. Student Enrollment Map



2.3. EXISTING TRANSPORTATION FACILITIES

Primary regional access to Mt. SAC is provided primarily by Grand Avenue and Temple Avenue. Three signalized intersections along those two roadways provide direct access onto campus, and four transit routes have stops at 12 adjacent stops (see Figure 4). Paratransit services are also provided on campus, along with one campus shuttle between Parking Lot M and the Administration Building. Pedestrian facilities exist along most of the major roadways adjacent to and within campus. However, bike lanes only exist along intermittent segments of Grand Avenue and Temple Avenue. Portions of the bike lanes on Temple Avenue were recently replaced with on-street metered parking.

Foothill Transit offers the Class Pass for free to Mt. SAC students who are enrolled in at least one unit. The pass allows for unlimited rides on all Foothill Transit routes. In the 2015 fall semester, there were 11,024 active pass users, and 17,682 passes had been issued to registered students. During that same semester, over 379,000 rides were given to pass holders.

Student parking permits are \$50 per semester for the fall and spring semesters, or \$25 per session for the winter or summer intersessions. Parking permits are required 24 hours a day, 7 days a week in the student lots during each of the semesters/intersessions. Staff parking permits are required in the staff parking lots/areas, and staff permits are also valid in the pay lots. The two pay lots each have a daily parking fee of \$4. Metered parking is available for 25¢ for 15 minutes with a 4-hour maximum time limit.

2.4. COLLISION HISTORY

Table 3 shows information provided by the college concerning traffic collisions on campus in 2016. As seen in the table, there were a total of 33 reported collisions, including 5 with injury. Although additional information concerning whether the collisions included motor vehicles, pedestrians, and/or cyclists was not available, it was indicated by a campus official that pedestrians and/or cyclists are not often involved in collisions with motor vehicles. Campus police also indicated that most collisions occur in parking lots, particularly lots B, D, and F, and often involve parking space disputes.

Table 3. Collision Data by Injury Severity

Month	Injury	Non-Injury	Total
January	1	2	3
February	0	1	1
March	1	0	1
April	0	1	1
May	1	5	6
June	0	1	1
July	0	2	2
August	1	4	5
September	0	3	3
October	0	2	2
November	0	3	3
December	1	4	5
Total (2016)	5	28	33

2.5. STUDENT SURVEY

Mt. SAC conducted a survey of 249 students in 2016 to obtain input for their Climate Action Plan. The survey included questions about how students travel to/from the campus and what obstacles keep them from cycling or using transit services for school travel. The survey results showed that approximately 70% of students had driven alone to school during the previous week. Other methods of travel include:

- Carpool (19%)
- Public transit (18%)
 - Overall 64% of students never ride the bus; approximately 18% ride the bus several times each week
- Walk (5%)
- Dropped off (2%)
- Bike (1%)

Over 90% of students stated that they would be (or currently use) a carpool or car-sharing program, with the following motivating factors (among others):

- Cost savings (60%)
- Convenience (58%)
- Preferential car parking (45%)
- Time savings (44%)
- Program or smartphone app to arrange rides (41%)
- Incentive program (38%)

When identifying obstacles that keep students from using public transportation for school trips, the following were the most common:

- Long commute (61%)
- Too many transfers (38%)
- Too complicated (36%)
- Safety of waiting at bus stop (29%)

Students also mentioned that the bus schedules are not convenient with their class schedule and/or are sometimes sporadic/unreliable, and many are not willing to spend time waiting for the bus.

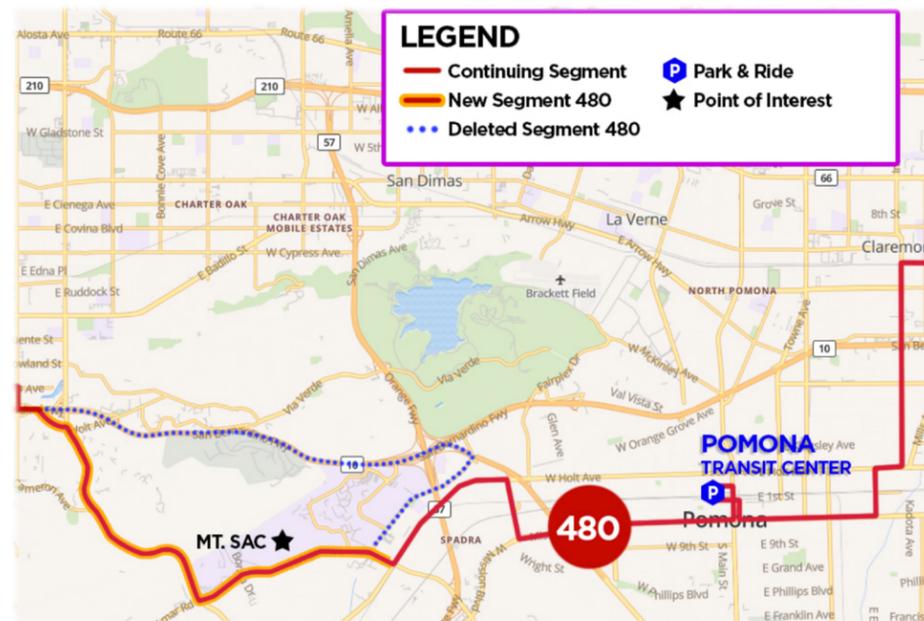
Students provided similar input concerning why they do not ride a bicycle to campus, and the most common responses included:

- Distance (78%)
- Nighttime travel (37%)
- Safety of routes (32%)
- Fitness (15%)
- Knowledge of bicycling (13%)

Students also mentioned the lack of bicycle facilities near and into/out of the campus as well as a lack of knowledge of bike parking on campus. The terrain was also mentioned by a few students, and presumably is also related to the “fitness” response listed above.

The survey responses indicate that many of the barriers keeping students from using public transportation or cycling to campus are not within the College’s control (i.e. safety at bus stops or of public bicycle routes). However, some changes are already underway, including the planned update to Foothill Transit line 480, which will provide service to Mt. SAC beginning in October 2017. Figure 7 shows the relevant portion of the route, taken from the map on the Foothill Transit⁴ website. Further, Los Angeles County is actively working towards improving Temple Avenue for bicycles.

Figure 7. Planned Foothill Transit Route 480



1. Executive Summary



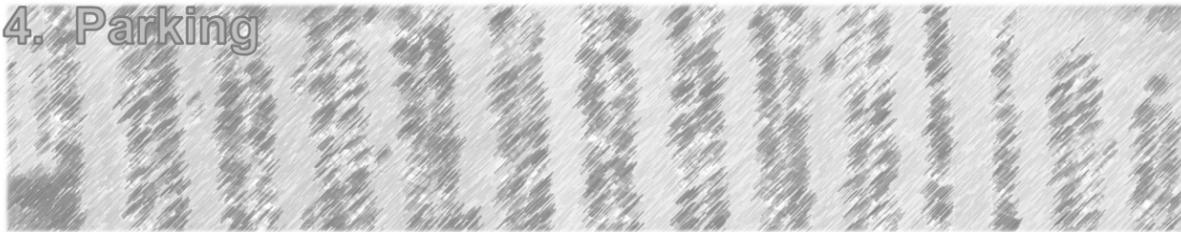
2. Context



3. Future Conditions



4. Parking



5. Traffic Operations



6. Recommendations



3.1. STUDENT POPULATION

The 2015 FMPU states that the school is expected to grow from 35,280 students to 39,025 students in 2020 (an increase of 3,745 students) and to 42,433 students in 2025 (an increase of 7,153 students). In order to develop the projected number of students per year between 2017 and 2025 and maintain consistency with the 2015 FMPU projections, linear growth rates were assumed between 2017 and 2020, then again between 2020 and 2025. Table 4 shows the projected number of students each school year.

Table 4. Projected Student Population

School Year	Students
2016-2017	36,220
2017-2018	36,921
2018-2019	37,623
2019-2020	38,324
2020-2021	39,025*
2021-2022	39,707
2022-2023	40,388
2023-2024	41,070
2024-2025	41,751
2025-2026	42,433*

*FMPU Student Population

3.2. PROPOSED TRANSIT CENTER

Concept planning is underway for a new transit center on campus. The transit center was evaluated by Psomas in a memorandum dated April 24, 2017, which is included in Appendix A. A summary of the memorandum is provided here.

The proposed Foothill Transit Authority (FTA) Transit Center will be located on the north side of Temple Avenue, just west of Bonita Drive, as shown in Figure 8. Based on the analyses in the memorandum, it has been recommended that a traffic signal be installed on Temple Avenue at the Transit Center access drive, which will be located at the existing median opening just west of Bonita Drive.

Figure 8. Transit Center Study Area



Some notable highlights of the conceptual plan include:

- Ten (10) bus bays will be provided;
- Buses will share the on-site driveway (access to Temple Avenue) with vehicular traffic from buildings west of the transit center to maintain access to those buildings. This is an interim condition which will be eliminated with the construction of the new pool facilities south of Temple Avenue;
- A separated vehicular access road to the Welding/AC buildings turn-around, northerly maintenance area, and covered storage will be preserved. In addition, seven (7) service parking spaces for the Welding/AC buildings will be maintained at Mt. SAC's request;
- An accessible parking space will be provided adjacent to Welding/AC buildings;
- Elevator access to northerly pedestrian walkway will be added; and
- Pedestrian access from Temple Avenue will be added.

The conceptual plan shown in the memorandum (prepared to address the Memorandum of Understanding between Mt. SAC and FTA⁵) is shown in Figure 9. Traffic analyses detailed in the memorandum indicate that the new signal will operate efficiently through 2025, and there is not expected to be any queue interaction between the new signal and the existing signalized intersection at Temple Avenue and Bonita Drive.

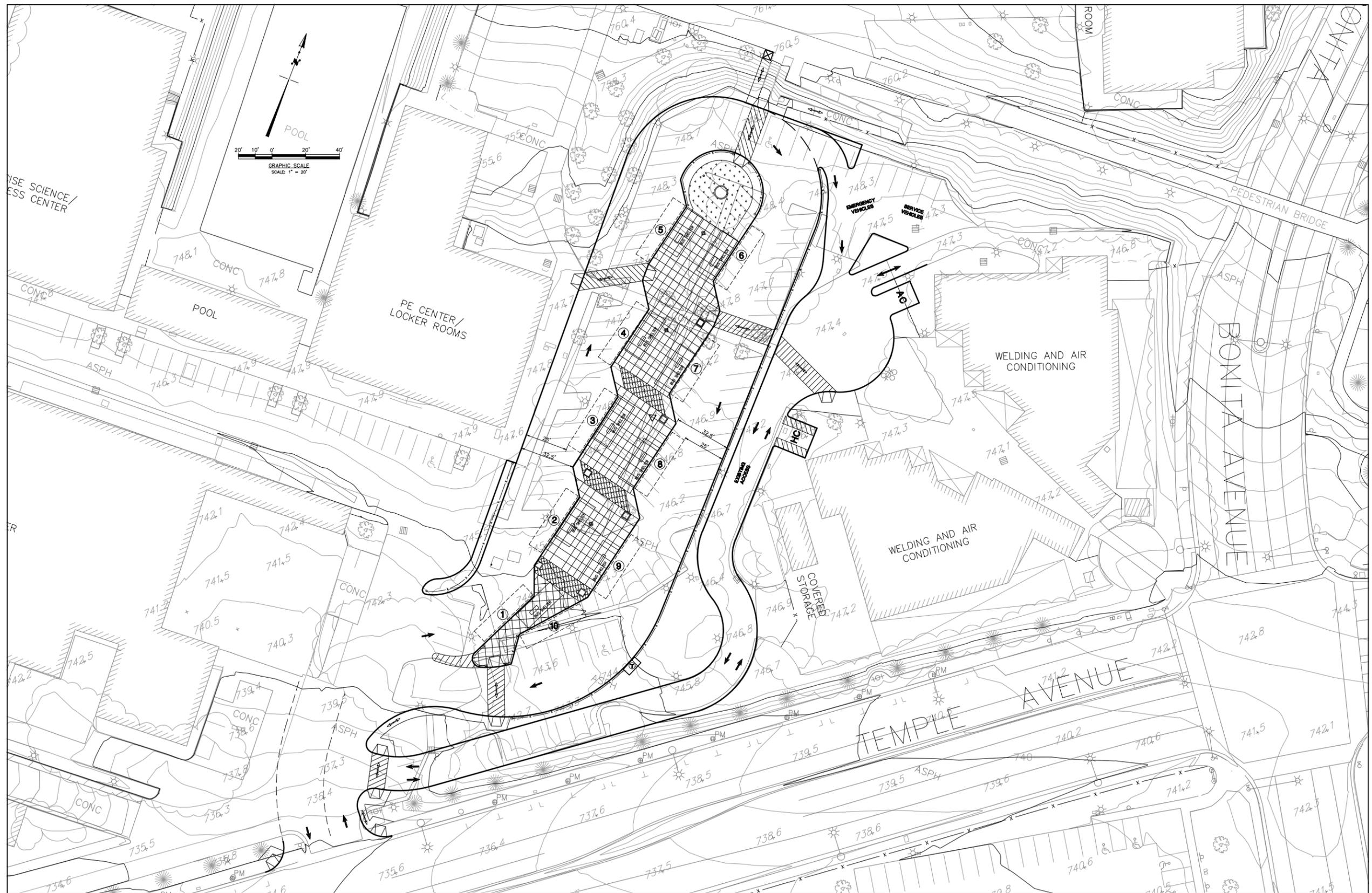


FIGURE 9.
TRANSIT CENTER CONCEPTUAL PLAN

3.3. OTHER CAMPUS FACILITIES

To help ease congestion with the addition of new students and improve overall circulation and access, the following improvements were recommended as part of the development of the 2015 FMPU:

- Construct a pedestrian bridge across Temple Avenue, east of Bonita Avenue, to provide access to/from the athletic facilities
- Provide preferential carpool parking permits and spaces for special events and/or special recognition of student and faculty achievements
- Provide additional bicycle racks
- Provide bicycle lockers and/or showers and lockers for cyclists
- Discuss a joint campus shuttle service with Cal Poly Pomona

The pedestrian bridge location has been further investigated in the PCMP, and will be discussed in the following sections. Recommendations for bicycle facilities and the potential for providing preferred parking will also be discussed later in the PCMP, but the joint campus shuttle service has been dropped from consideration after further investigation into the logistics of the potential operation.

The FMPU also included a number of changes to the academic and support buildings on campus, including renovation, demolition and reconstruction, and new construction. Where applicable, those recommendations are incorporated into this plan, specifically to account for the potential loss of parking due to new construction.

One major departure from the FMPU is parking-related. The large parking structure (“J”) which was included in the 2015 FMPU is not considered in the PCMP. However, a smaller parking structure may be considered in the same area. The parking options and recommendations will be discussed in the following section.

1. Executive Summary



2. Context



3. Future Conditions



4. Parking



5. Traffic Operations



6. Recommendations



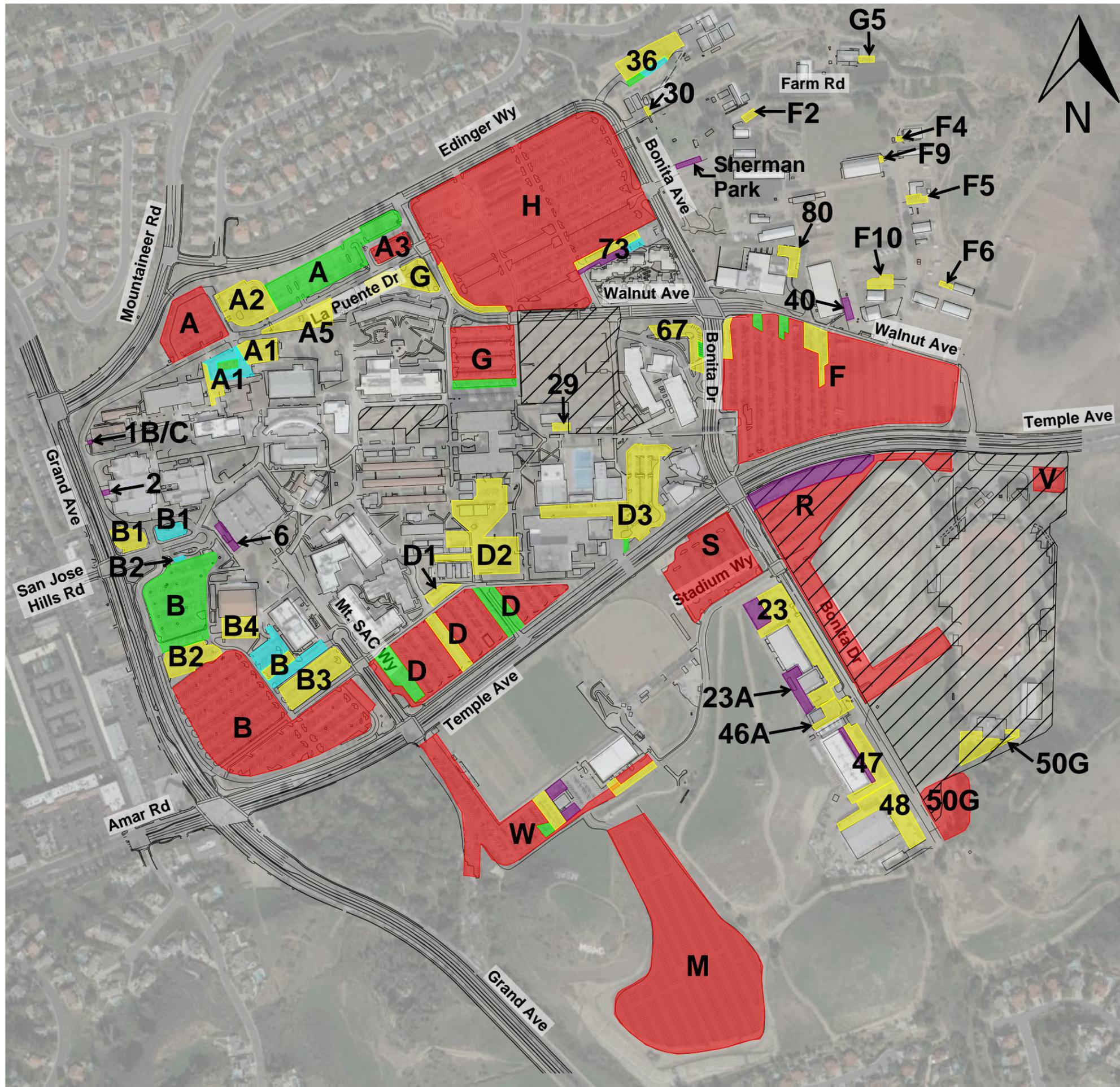
4.1. EXISTING PARKING

As a part of this planning effort, a parking study was conducted on March 15, 2017, which was the census week for the spring semester. Data surveyors on the ground collected data in each of the 54 parking lots for 12 hours (7:00 AM to 7:00 PM), and aerial photographs were taken throughout the day to provide visual support of the findings.

The parking survey found that (as of March 15, 2017), there were 8,907 existing parking spaces on campus, including 1,446 staff spaces and 6,291 student spaces. The “other” spaces include visitor spaces, pay spaces, construction spaces, and various dedicated spaces (i.e. ADA accessible, service vehicles, etc.). Note that the number of spaces changed between the date of the survey and the preparation of the PCMP due to construction activities (see Appendix B for information on changes to parking). Figure 10 shows the parking lots by type, along with the inventory collected on the day of the survey.

The peak parking hour was found to be between 11:00 AM and 12:00 PM, and the busiest four hours for parking are between 10:00 AM and 2:00 PM. In order to best determine the parking demand for the College, vehicles that were illegally parked were included in the hourly parking totals, but no spaces were added to the inventory to account for those vehicles. As shown in Figure 11, overall parking demand peaked at 90% of available parking spaces (the percentages shown are for overall campus parking). During the peak hour, approximately 93% of all student parking, 85% of all staff parking, and 89% of visitor parking was occupied. It should be noted that staff members are able to park free of charge in the paid parking areas, and it has also been observed that students sometimes park in paid lots/spaces as well.

Based on the collected data and the Fall 2016 enrollment, the peak parking demand was found to be 0.222 parking spaces per student, approximately 10% higher than the typical rate of 0.20 spaces per student used for suburban community college campuses. In addition to overall totals, it is important to understand the location(s) on campus where parking demand is the highest to aid in the planning of future parking facilities. To that end, heat maps were created to show the percent occupancy for each of the parking lots. Figure 12 shows the occupancy during the peak parking hour for each of the lots on campus. Figures 13 and 14 show the occupancy during the busiest four hours of parking and for the entire 12-hour data collection period, respectively.



LEGEND

- Student
- Staff
- Visitor
- Pay
- Other
- Areas under construction or starting construction soon*

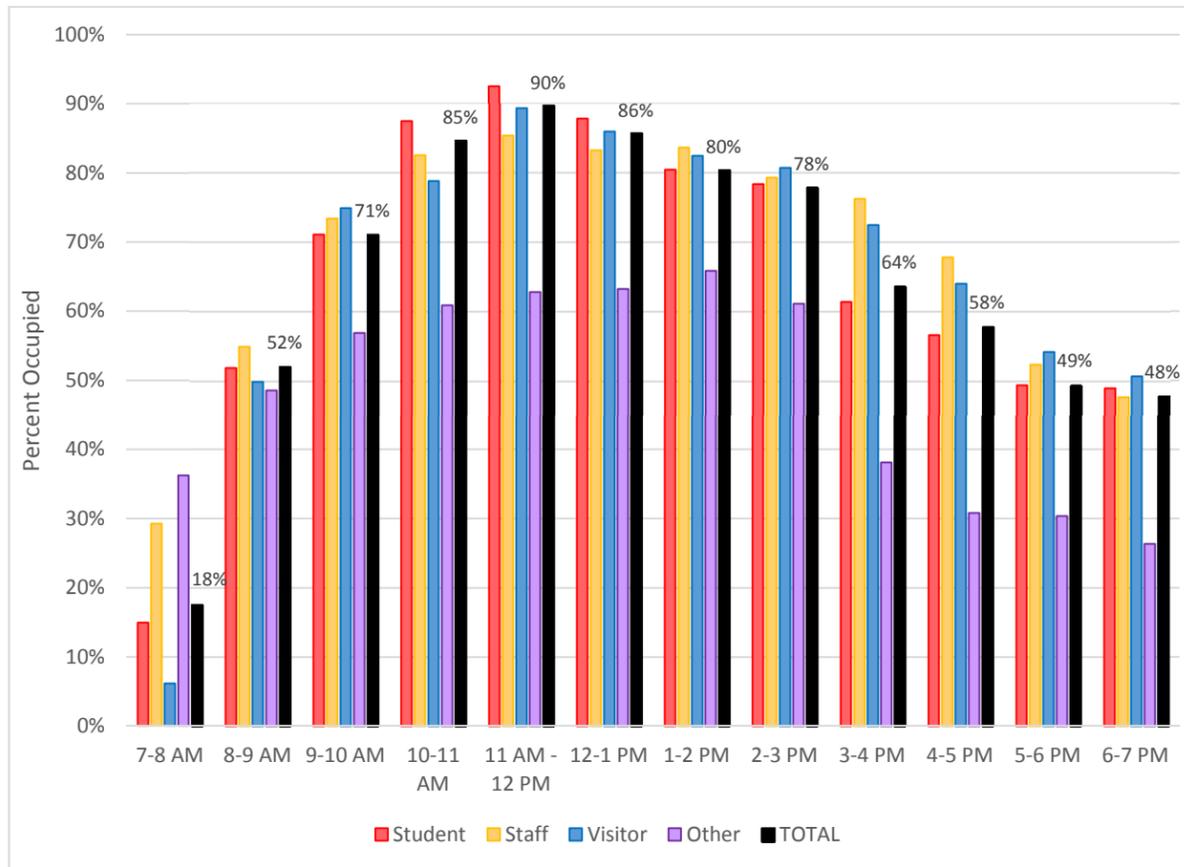
Lot #	Staff	Student	Disabled	Pay	Free Short-Term	Other	Total
A Pay Lot				213		0	213
A Student		165				0	165
A1 Staff	48		2		5	0	55
A1 Visitor			6	16	12	1	35
A2	92					0	92
A3		34				0	34
A5	34					0	34
B Pay Lot			3	209		0	212
B Student		754				1	755
B Visitor	20		1	19	20	14	74
B1 Staff	28					0	28
B1 Visitor			2		19	0	21
B2 Staff	64					0	64
B2 Visitor					5	0	5
B3	119					0	119
B4	17					5	22
D	100	357	16	106		42	621
D1	18					0	18
D2	104		11			11	126
D3	164		4	2		1	171
F	63	1,159	12	22	6	0	1,262
G Staff	50		4			2	56
G Student		166	22	25		1	214
H	35	1,529				0	1,564
M		971				0	971
R		579	4			97	680
S		261	7			0	268
V			12			22	34
W	51	261	12	9		15	348
Bldg. F2	10				2	0	12
Bldg. F4			2			0	2
Bldg. F5	4		2			0	6
Bldg. F6						0	0
Bldg. F9	2		2			0	4
Bldg. F10	12		2			0	14
Bldg. G5	4					0	4
Bldg. 1B/C					4	0	4
Bldg. 2						8	8
Bldg. 6			1			7	8
Bldg. 23	132		5		2	10	149
Bldg. 23A	7					0	7
Bldg. 29	2					2	4
Bldg. 30			2			0	2
Bldg. 36	67		2	8	3	2	82
Bldg. 40						4	4
Bldg. 46A	20		2			0	22
Bldg. 47	42		2			15	59
Bldg. 48	49					6	55
Bldg. 50G Staff	17					0	17
Bldg. 50G Student		55	1	4		0	60
Bldg. 67	40		3	6	3	3	55
Bldg. 73	23		3		16	3	45
Bldg. 80	8		6			0	14
Sherman Park					9	0	9
TOTAL	1,446	6,291	153	639	106	272	8,907

*Construction is expected to:
 --Eliminate Lot V (34 spaces)
 --Eliminate Lot 50G Staff (33 spaces)
 --Eliminate 10 spaces from Lot W
 --Eliminate 17 spaces from Lot 50G Student and replace with 3 spaces
 --Remove Lot R (700 spaces) and replace with new lot (248 spaces)

FIGURE 10.
EXISTING PARKING
 CONDITIONS AS OF MARCH 15, 2017



Figure 11. Parking Occupancy by Hour



For both Lots A and B, the internal lot barriers were removed to allow for better circulation within and through each lot. These physical barriers currently provide separation between types of parking spaces (i.e. staff, student, visitor/pay). College officials have indicated that separate pay parking areas within both lots will still be required. Potential designs which clearly define pay parking spaces within shared lots are discussed in detail in Section 4.4.

As seen in Figure 15, the redesign is expected to result in an increase of 361 spaces in Lot B. Figure 16 shows that the redesign for Lot A is expected to result in an increase of 108 spaces. Additional work in Lot A includes lowering the grade to match the adjacent buildings and providing access via a slip ramp from Mountaineer Road.

As shown in Figure 17, the design for Lot W includes only two parking aisles alongside the existing soccer fields as opposed to the existing three parking aisles. This change provides an access lane for vehicles and bicycles which is unimpeded by parking. The design also provides an area for at least two buses to park, pick-up, and/or drop-off students at the Wildlife Sanctuary. The existing parking in the area south of the soccer fields will be replaced by the sand volleyball courts.

As seen in the preceding figures, the lots on the western portion of campus seem to be more popular than those on the eastern portion of campus, which is consistent with the location of a majority of the academic and student services buildings. However, as the campus continues to grow, it is expected that the “center” of campus will shift more to the east.

4.2. PARKING LOT RECONFIGURATION

As a part of the evaluation of parking conditions on campus, it was observed that the circulation in Lots A and B had the significant potential for improvement. Per direction from the College, updated surface parking layouts for both lots were developed, and are included (with a comparison to the existing layouts) in Figures 15 (Lot B) and 16 (Lot A). A redesign for Lot W (Figure 17) was also developed for the PCMP due to the planned construction of sand volleyball courts and to address existing circulation concerns.

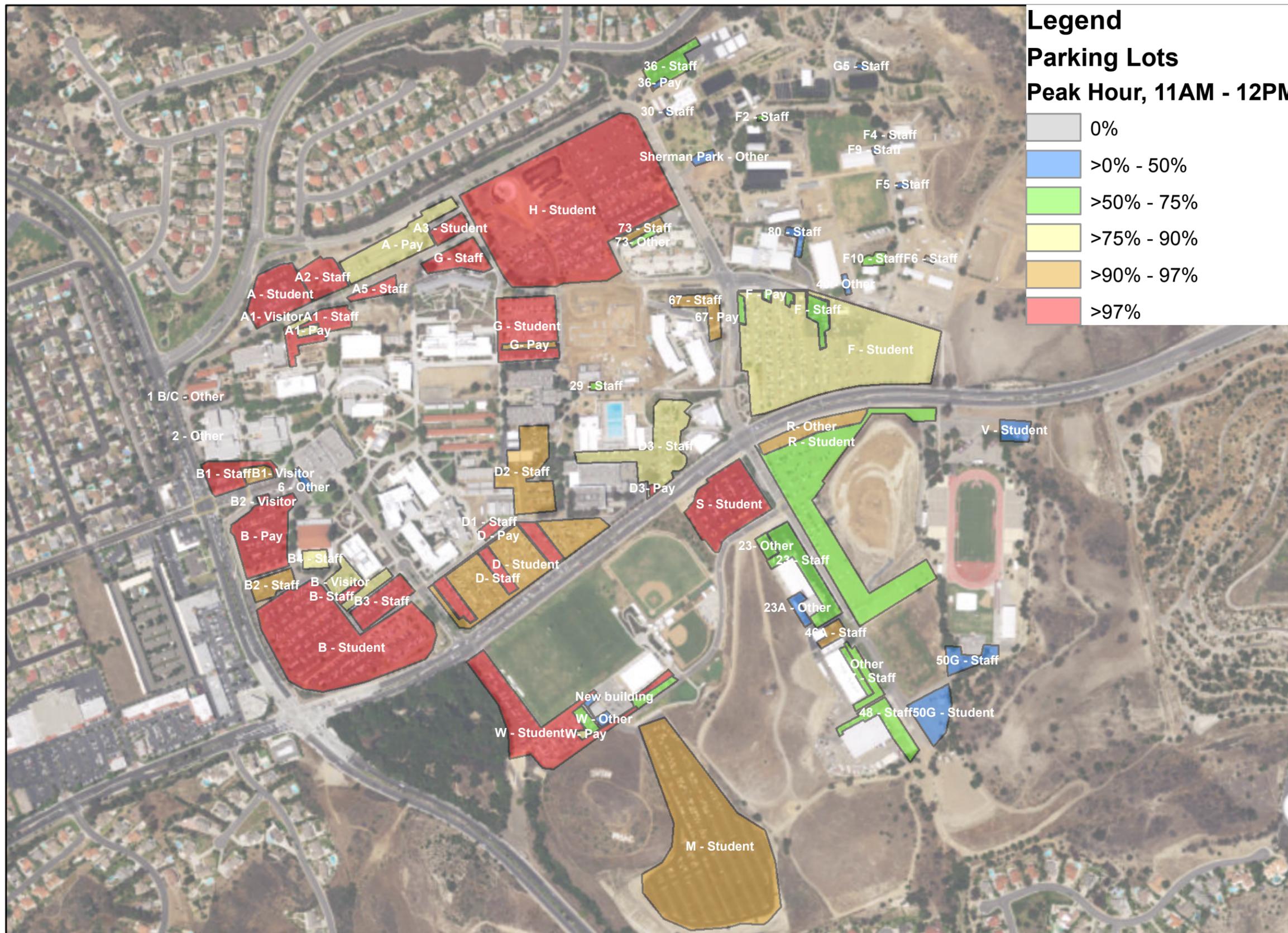


FIGURE 12.
PARKING LOT OCCUPANCY -
PEAK PARKING HOUR (11 AM - 12 PM)

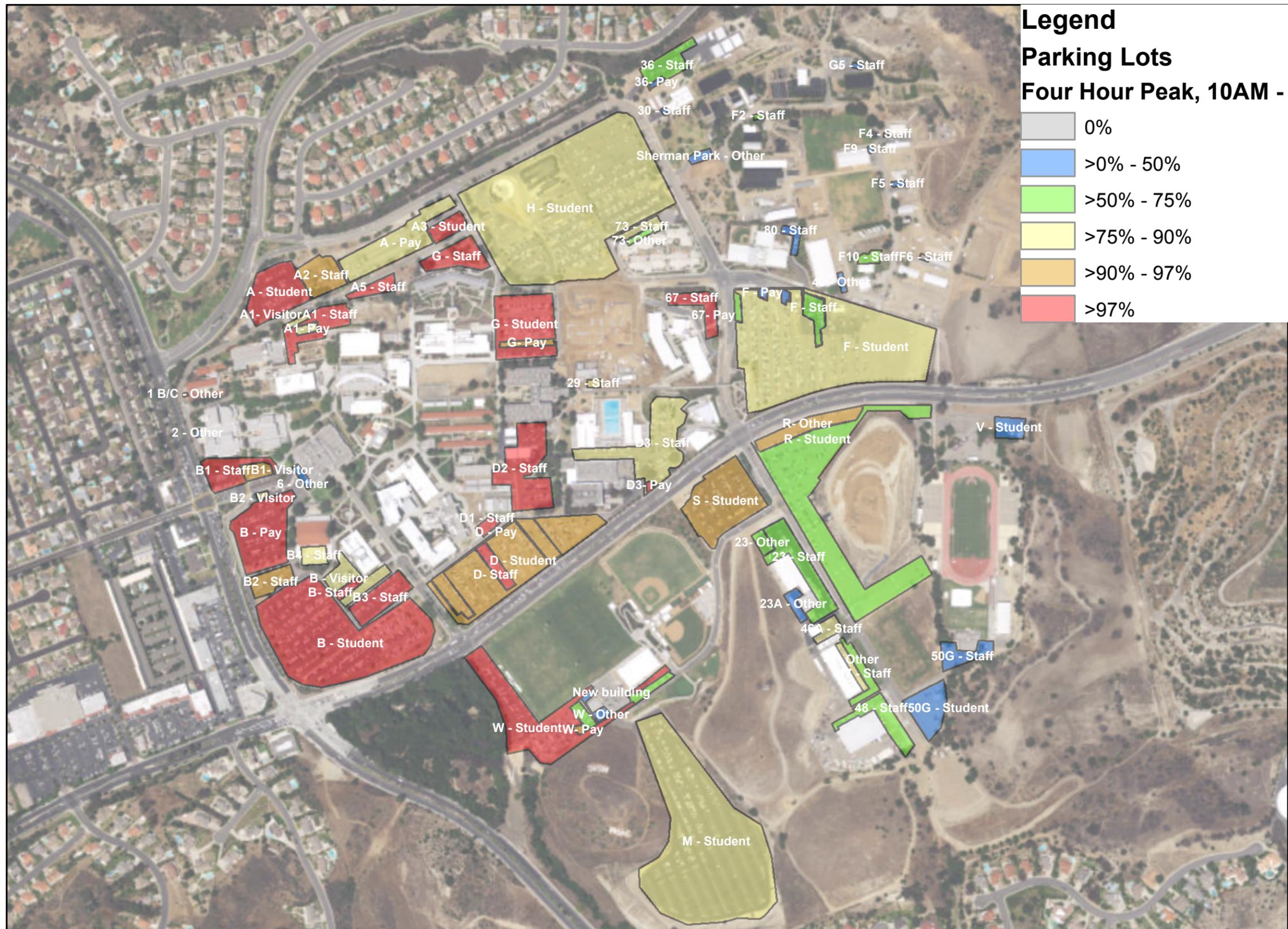


FIGURE 13.
PARKING LOT OCCUPANCY - PEAK PARKING
FOUR HOUR PERIOD (10 AM - 2 PM)

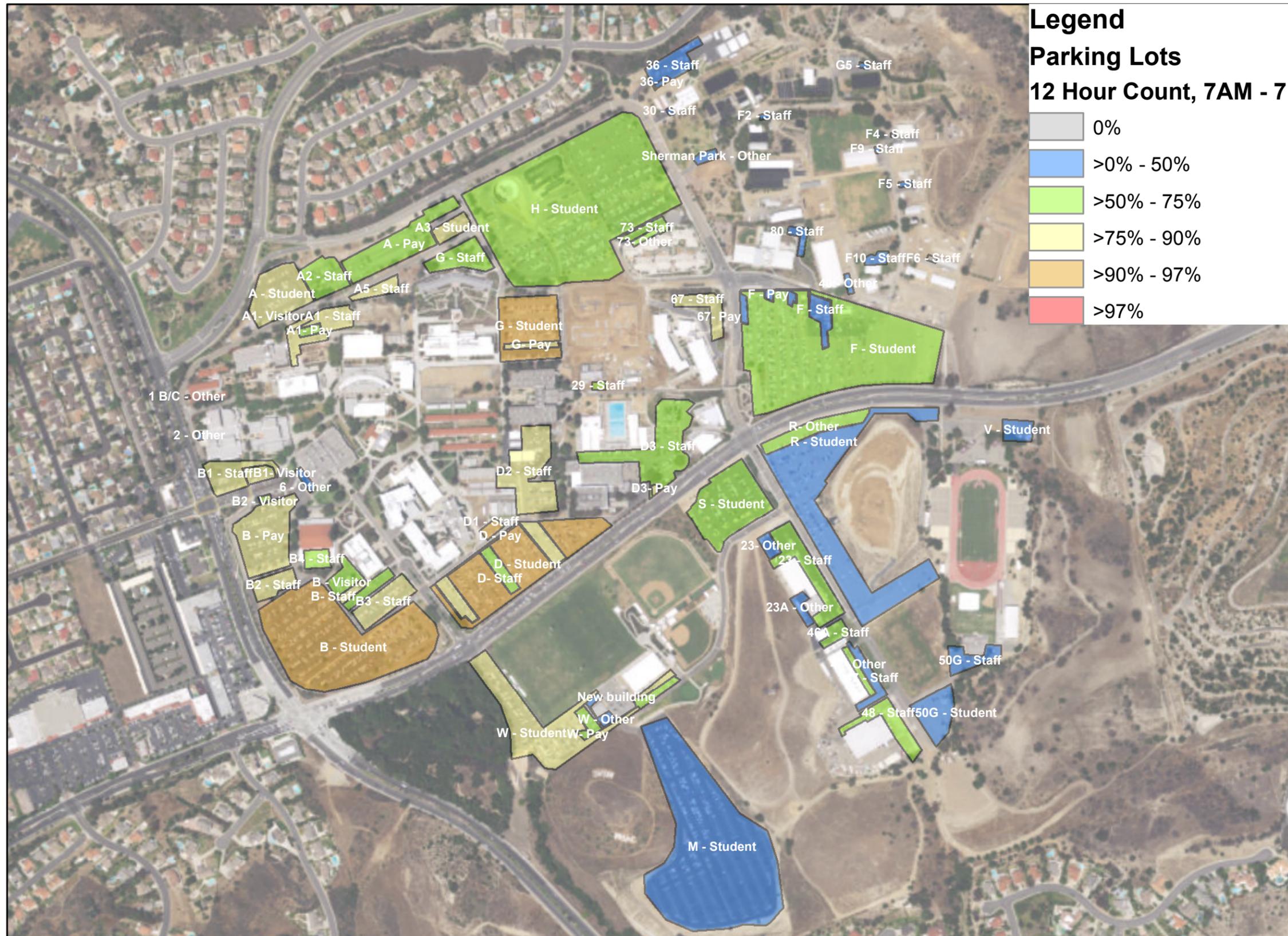
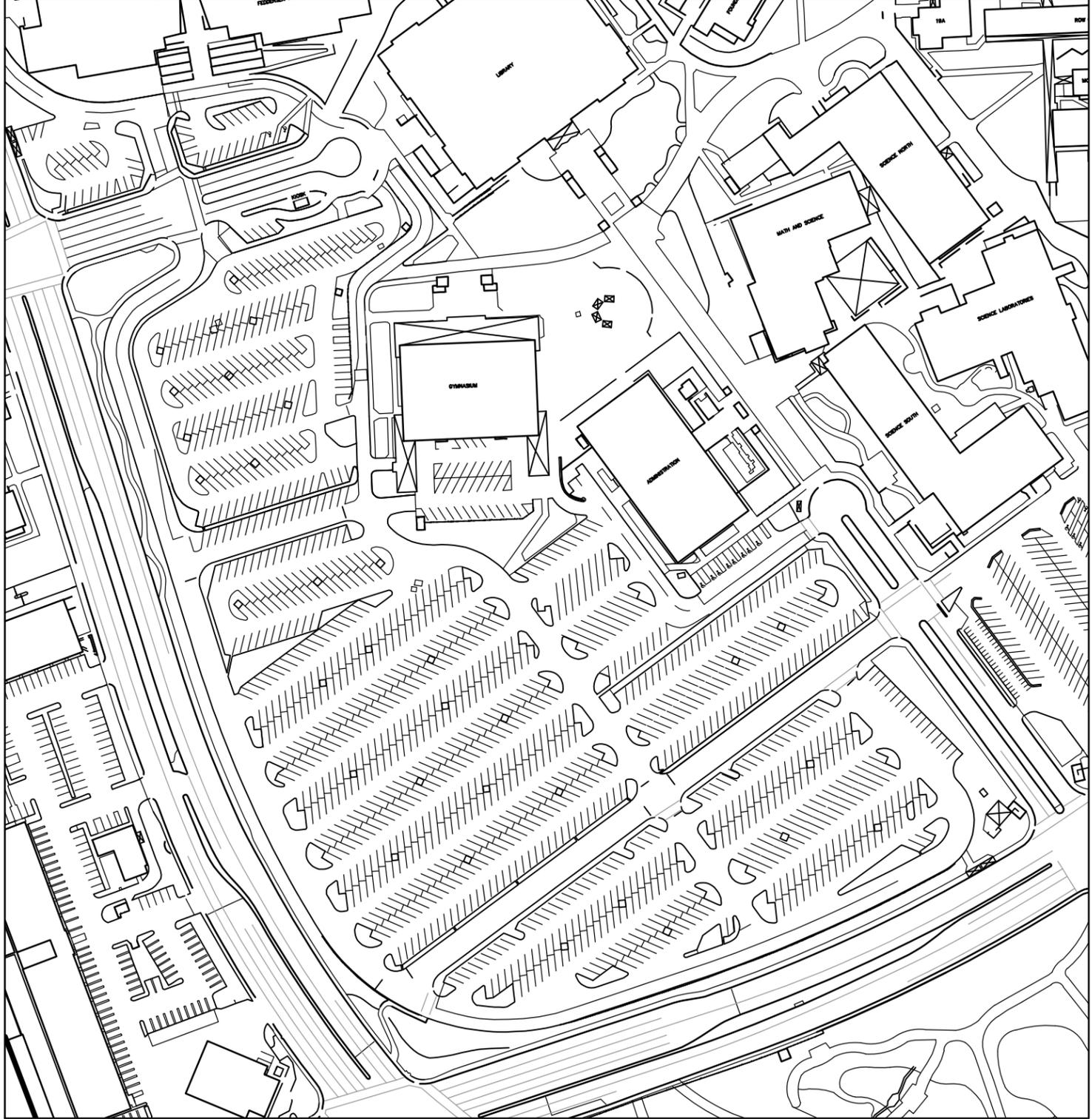
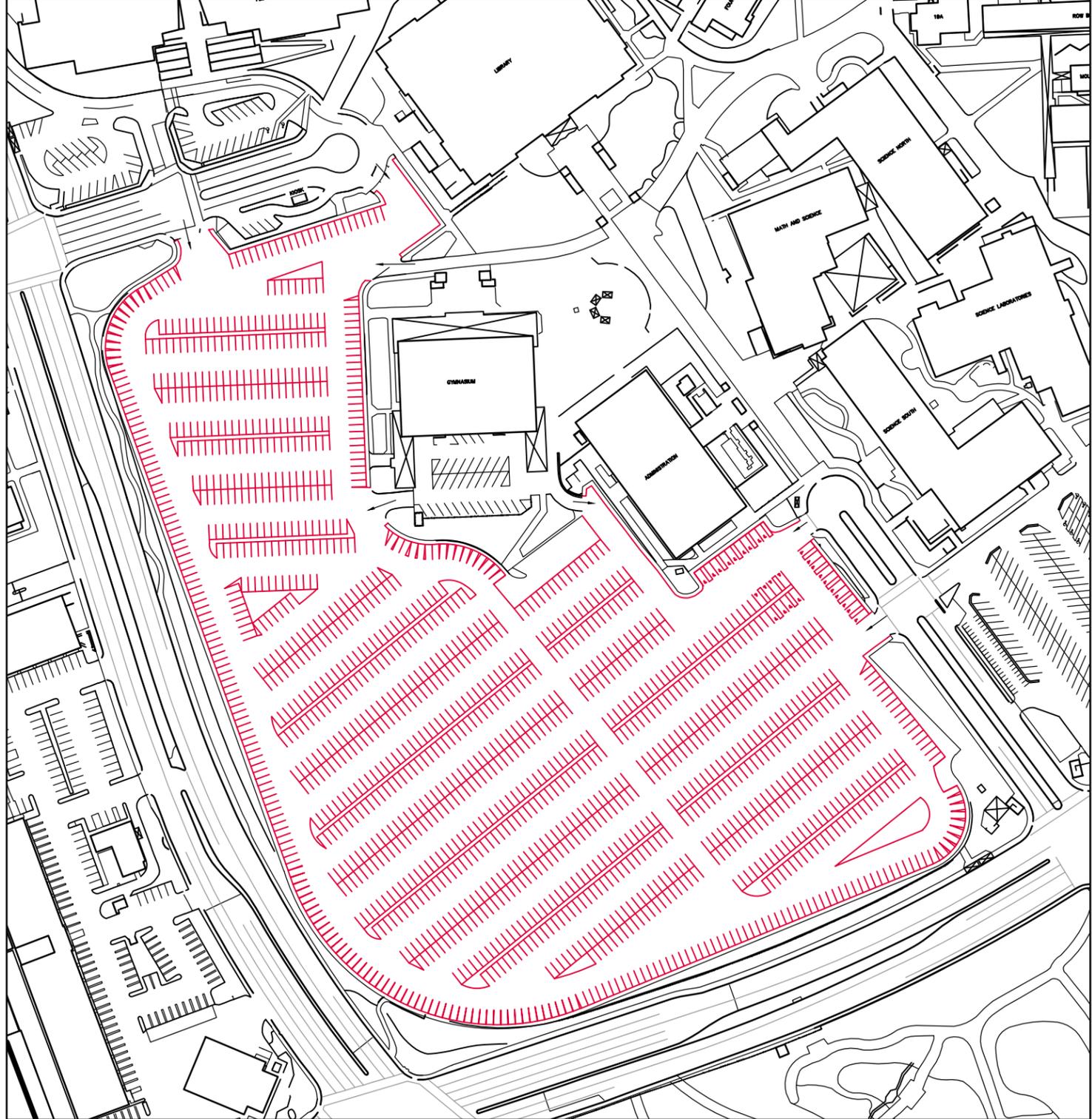


FIGURE 14.
PARKING LOT OCCUPANCY -
12-HOUR DATA COLLECTION PERIOD



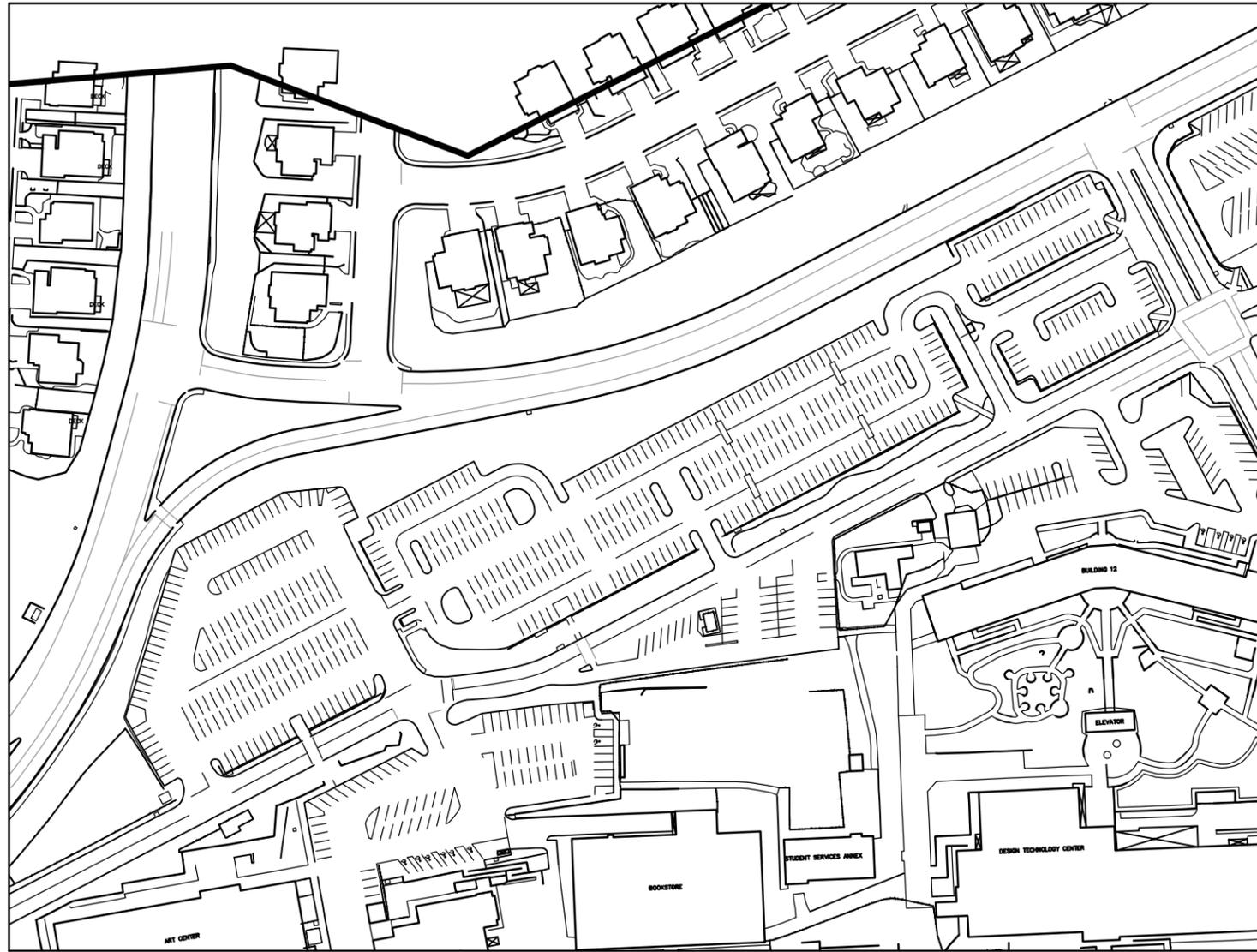
EXISTING LOT B LAYOUT
STALL COUNT = 1,224



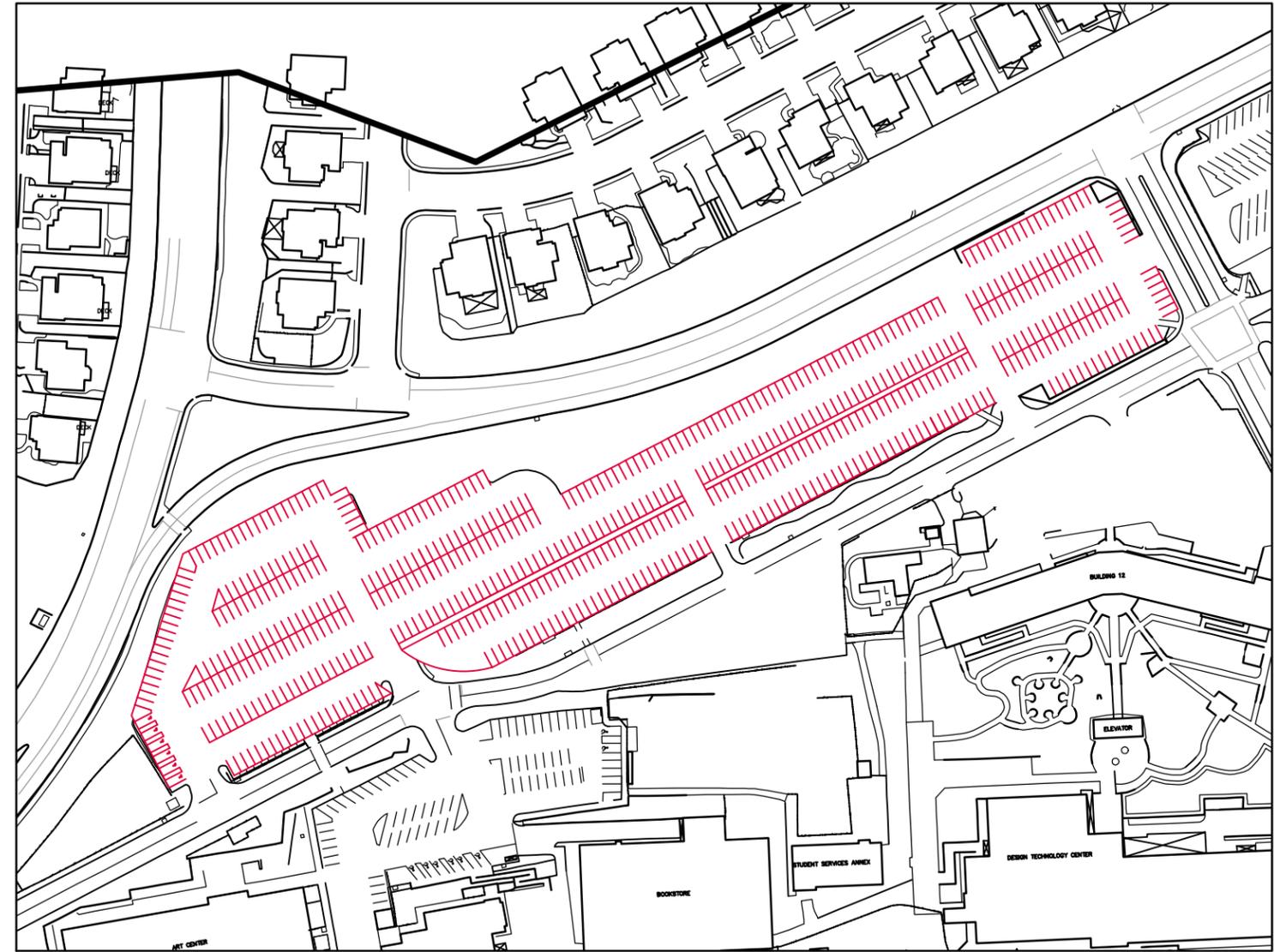
OPTIMIZED LOT B LAYOUT WITH BIOSWALES
STALL COUNT = 1,585



FIGURE 15.
RECOMMENDED LAYOUT FOR LOT B

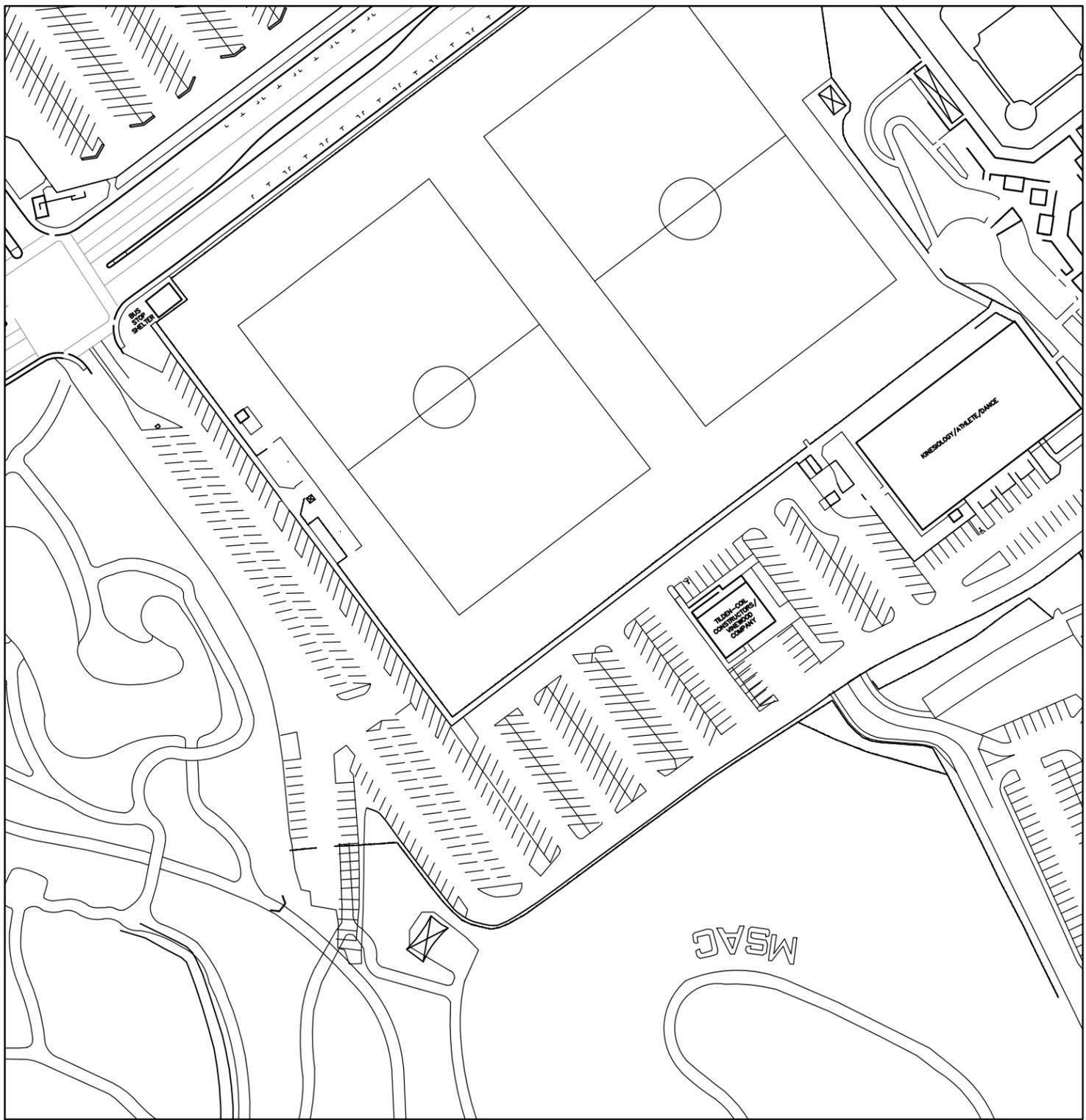


EXISTING LOT A LAYOUT
STALL COUNT = 504

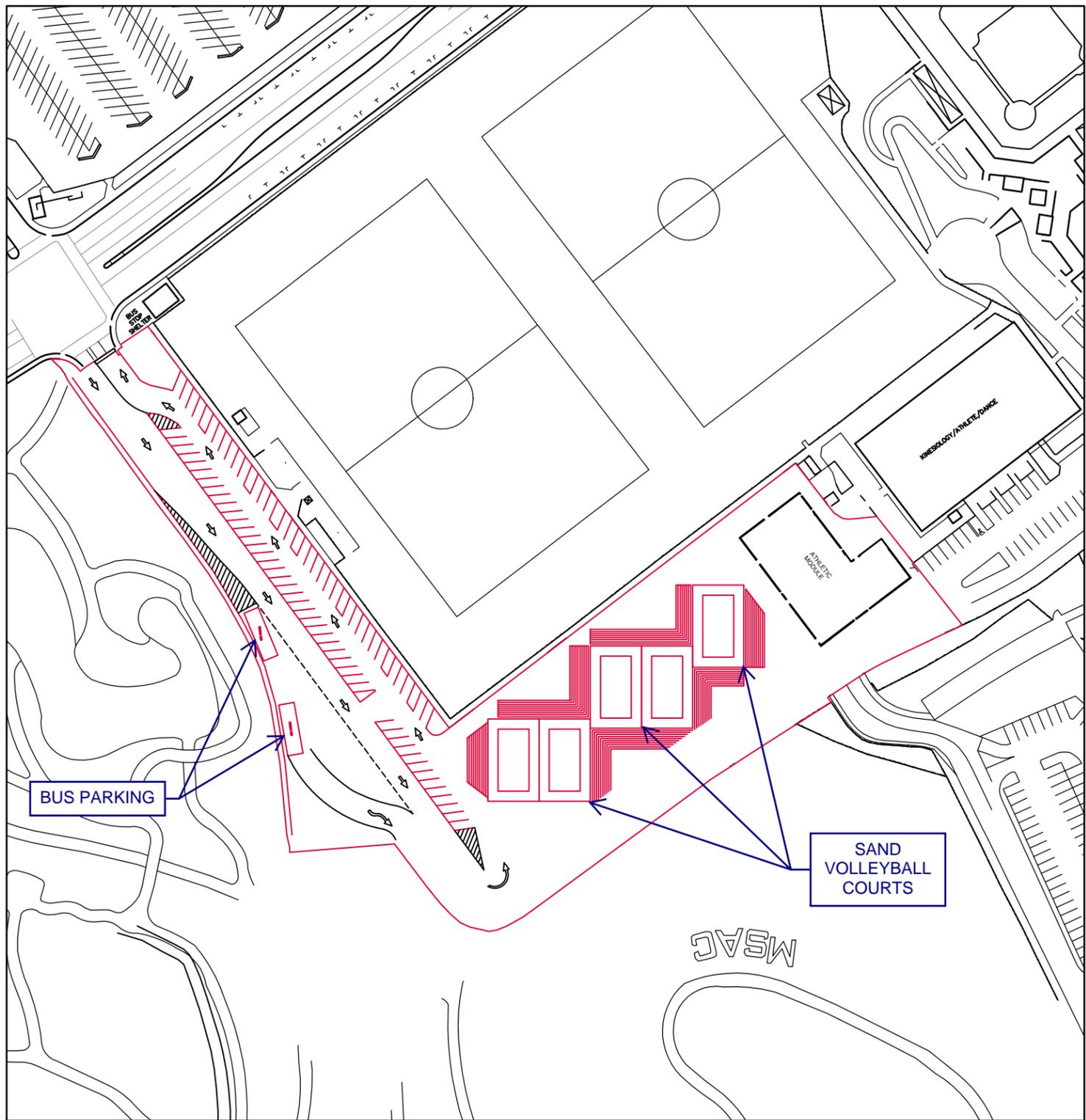


OPTIMIZED LOT A LAYOUT
STALL COUNT = 612

FIGURE 16.
RECOMMENDED LAYOUT FOR LOT A



EXISTING LOT W LAYOUT
STALL COUNT = 361



OPTIMIZED LOT W LAYOUT WITH VOLLEYBALL COURTS + BUS PARKING
STALL COUNT = 79 + 2 BUS



FIGURE 17.
RECOMMENDED LAYOUT FOR LOT W

4.3. FUTURE PARKING NEEDS

In concert with the College, four parking facility scenarios were developed. The schedule for constructing new parking structures reflects needs generated by the recent announcement that the College will be hosting the 2020 Olympic Trials in June 2020; two structures are expected to be completed before the Trials. The construction years of other structures and facilities was provided by the College, and is based on projected funding availability and anticipated duration for construction.

To be consistent, the projected need for parking spaces was calculated based on the growth in the 2015 FMPU. However, when considering the anticipated construction of facilities, the capacity for growth on campus is somewhat less than what was previously projected. Therefore, in order to provide a more realistic estimate, a 0.75% per year growth rate was assumed. To be conservative (and to help account for campus conditions in the generally busier first three weeks of each semester), the projected number of required parking spaces for both growth profiles was increased by 5%. The projected needs for both growth profiles will be evaluated for each of the scenarios in the following sections.

All four scenarios include proposed structures in Lots A, B, F, H, R, and S. Many of the potential structures are the same size in each of the scenarios; the two which vary are the proposed structures in Lots F and R. Table 5 shows the sizes of the potential structures in Lots A, B, H, and S, along with the number of lost spaces in each lot, the estimated number of spaces in each structure, and the net gain in parking spaces. Each of the potential structures will be in compliance with City of Walnut code, which indicates a maximum height of 35 feet⁶.

Table 5. Parking Structure Statistics (Lots A, B, H, and S)

Parking Structure Calculations							
Location	Lost Spaces	Space Type	Footprint (sq. ft.)	Spaces per Level*	Levels	Structure Spaces	Net Gain
Lot A	165	Student	102,130	310	3	930	570
	92	Staff					
	103	Other					
Lot B	80	Staff	64,750	200	3	600	361
	159	Other					
Lot H	726	Student	239,600	740	3	2,220	1,494
Lot S	268	Student	89,820	280	3	840	572

*Assumes 325 sq. ft. per space

The following sections provide a discussion of each of the four scenarios. The scenarios will focus on a total number of parking spaces, with recommendations about space types (i.e. staff, student, pay, etc.) included in Section 4.4. For all four scenarios, projected growth and construction of facilities on campus indicate that potential structures in Lots A and H would not be constructed before 2025. However, both have been identified as feasible locations for parking structures in the future (after 2025), so they are included in this PCMP.

4.3.1. Scenario A

Scenario A is considered the base scenario. The potential parking structures associated with this scenario are shown in Figure 18. The figure also includes likely structure access locations, pick-up/drop-off zones, vehicular circulation on and around campus, and a general pedestrian bridge location. The vehicle circulation is the same for each of the four scenarios, and the pick-up/drop-off areas are generally the same (with the exception of the area located in Lot F). The projected traffic operations at the major campus entries (five total, shown on each figure) will be discussed in Section 5.

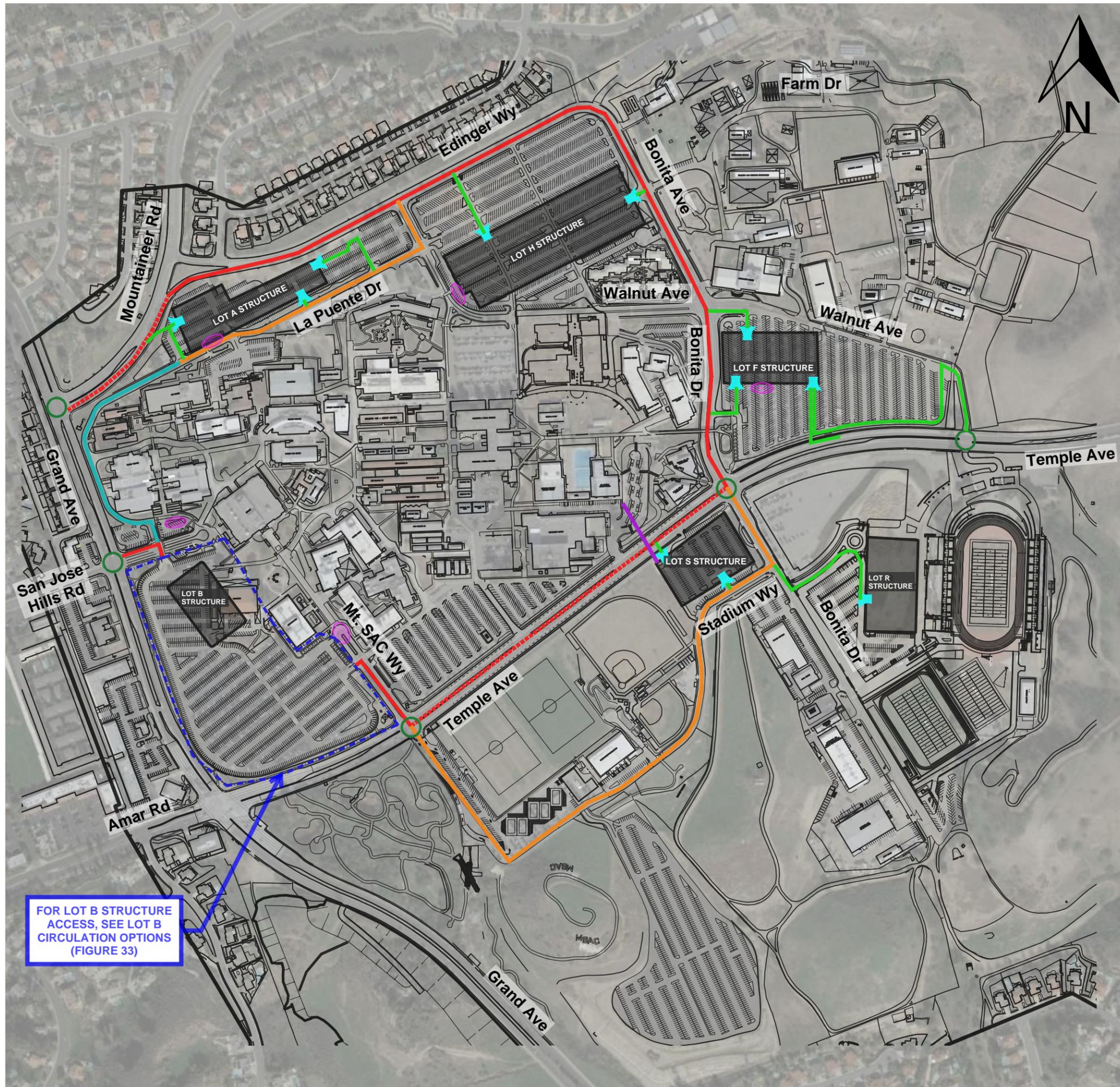
This base scenario includes a smaller structure in Lot F (when compared to the enhanced Lot F structure included in Scenarios B and D) and a single level of parking underneath the tennis courts in Lot R. Scenario A also includes the construction of a new pedestrian bridge across Temple Avenue between the Lot S structure and the future transit center. Table 6 shows information about the potential structures in Lots F and R for this scenario.

Table 6. Parking Structure Statistics (Lots F and R, Scenario A)

Parking Structure Calculations							
Location	Lost Spaces	Space Type	Footprint (sq. ft.)	Spaces per Level*	Levels	Structure Spaces	Net Gain
Lot F	379	Student	94,750	**	3**	890	419
	63	Staff					
	29	Other					
Lot R	0	N/A	93,250	290	1	290	290

*Assumes 325 sq. ft. per space

**Lot F will include a drop-off area on the ground floor and an agricultural rooftop. Therefore, only 3 of the 4 levels will include parking, and there will be less parking available on the ground floor than on the 2nd and 3rd levels.

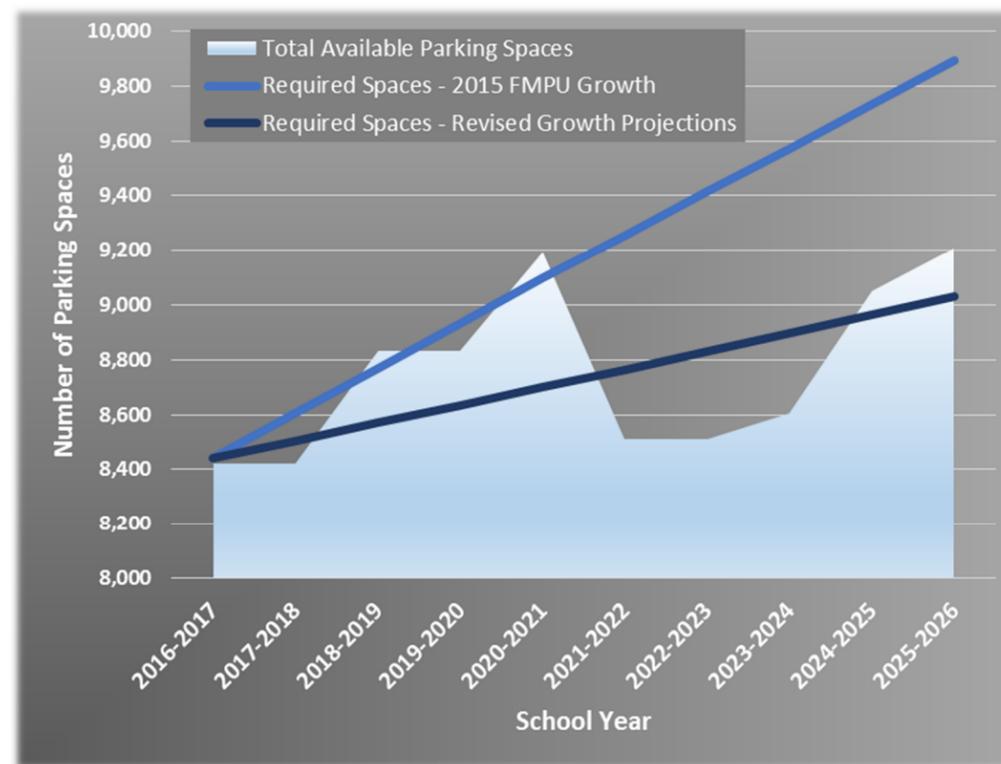


FOR LOT B STRUCTURE ACCESS, SEE LOT B CIRCULATION OPTIONS (FIGURE 33)

**FIGURE 18.
PARKING SCENARIO A**

To evaluate the feasibility of each scenario, the available parking spaces at the start, end, and throughout each school year were calculated based on expected dates of construction and completion. The estimates account for new construction which may result in the temporary or permanent loss of parking spaces, the addition of other temporary parking spaces, the redesign of surface parking lots to increase the total number of spaces, and the construction of parking structures. Figure 19 shows the minimum number of parking spaces available during each school year along with the projected parking needs based on the 2015 FMPU growth and the revised growth previously discussed in this PCMP. A detailed calculation of the available number of parking spaces is included in Appendix B.

Figure 19. Parking Need vs. Supply – Scenario A



As seen in the figure, the available number of parking spaces is expected to fall considerably below the projected needs for both growth profiles between 2021 and 2025 for Scenario A. Based on the significant deficit in the number of available parking spaces and the duration of the deficit, Scenario A is not feasible.

4.3.2. Scenario B

Scenario B is similar to Scenario A except it includes an enhanced version of the structure in Lot F, as shown in Figure 20. In addition to the pedestrian bridge shown in Scenario A between the Lot S structure and the transit center, Scenario B also includes a second pedestrian bridge over Temple Avenue between the Lot F structure and the athletic facilities.

Table 7 shows the parking space information for the potential structures in Lots F and R for this scenario. Note that the information for Lot R matches what was shown for Scenario A, but Lot F is considerably larger.

Table 7. Parking Structure Statistics (Lots F and R, Scenario B)

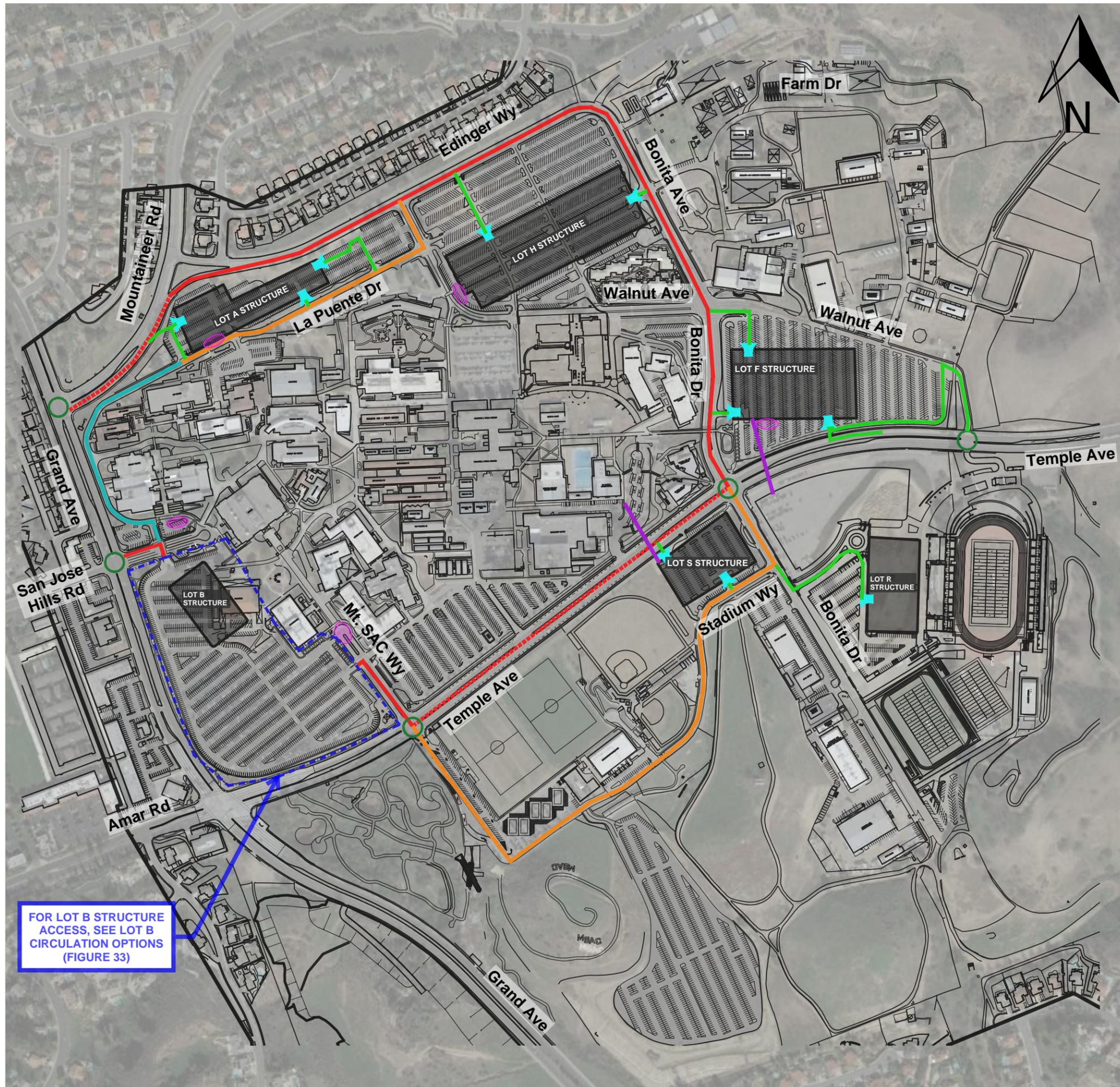
Parking Structure Calculations							
Location	Lost Spaces	Space Type	Footprint (sq. ft.)	Spaces per Level*	Levels	Structure Spaces	Net Gain
Lot F	675	Student	168,956	**	3**	1,498	720
	63	Staff					
	40	Other					
Lot R	0	N/A	93,250	290	1	290	290

*Assumes 325 sq. ft. per space

**Lot F will include a drop-off area on the ground floor and an agricultural rooftop. Therefore, only 3 of the 4 levels will include parking, and there will be less parking available on the ground floor than on the 2nd and 3rd levels.

As with Scenario A, the projected number of parking spaces available each year was calculated, and is shown in Figure 21. The two growth profiles are the same as those discussed in the previous section. A detailed calculation of the available number of parking spaces is included in Appendix B.

As seen in the figure, the deficit of parking spaces is considerably less than what was projected for Scenario A, but nonetheless, a deficit is still expected. Further, if student growth outpaces the projected 0.75% per year in any given year, it is very likely that there could be a deficit in the number of parking spaces. Therefore, Scenario B is not feasible.



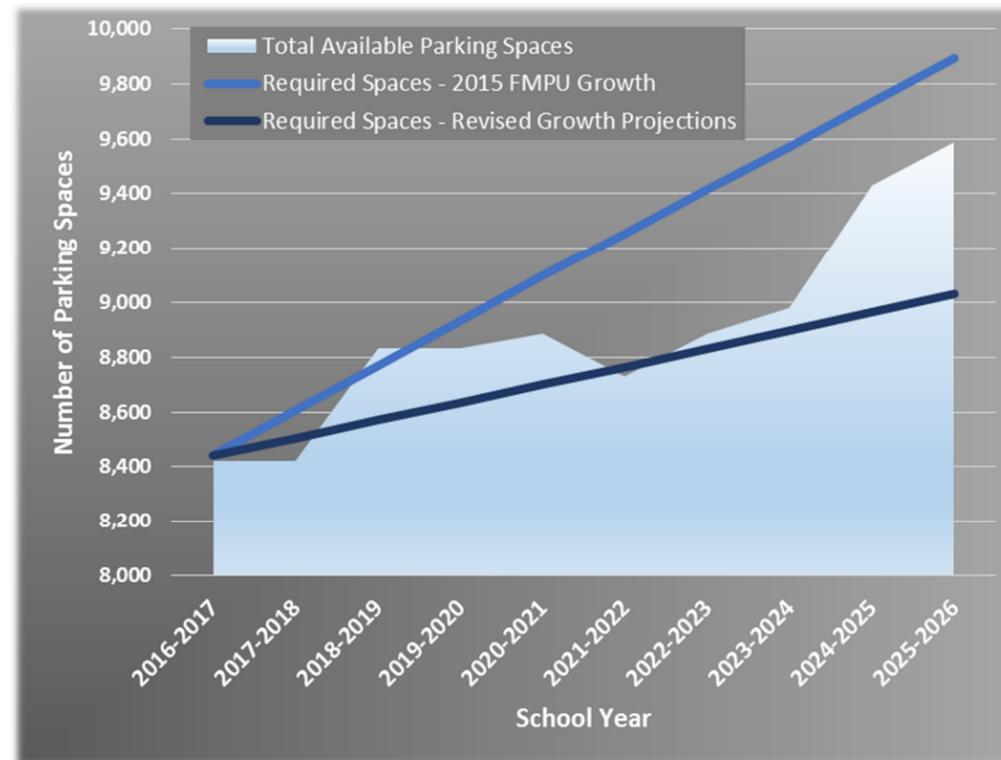
- LEGEND**
- Campus Road
 - - - Public Right-of-Way
 - Optional Alignment
 - Service/Emergency Only
 - Structure Access Lane
 - ▲ Structure Access Point
 - Pick-up/Drop-off Area
 - Main Campus Entry
 - Pedestrian Bridge

FOR LOT B STRUCTURE ACCESS, SEE LOT B CIRCULATION OPTIONS (FIGURE 33)

**FIGURE 20.
PARKING SCENARIO B**



Figure 21. Parking Need vs. Supply – Scenario B

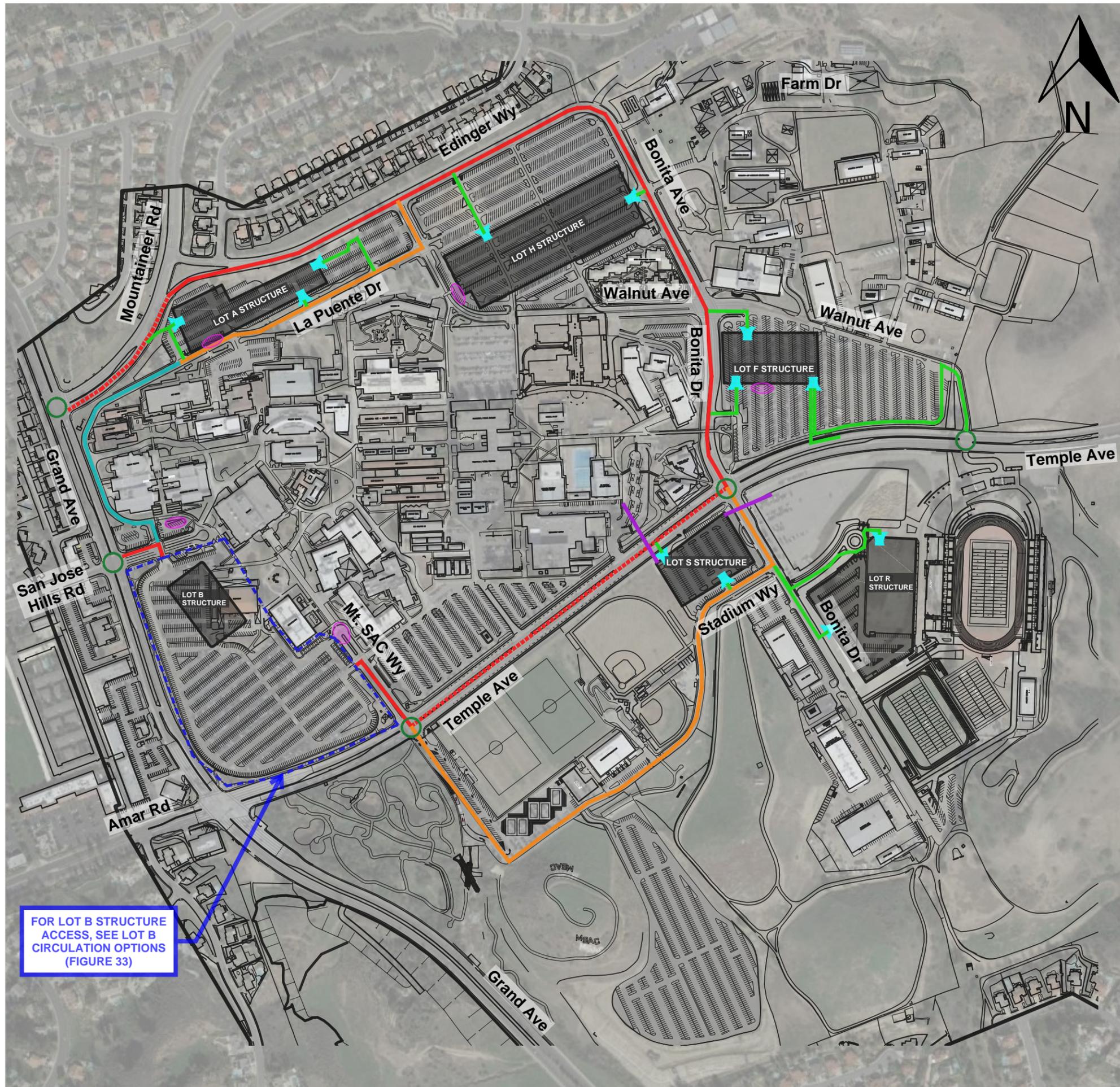


4.3.3. Scenario C

Scenario C is similar to Scenario A except that it includes an enhanced version of the structure in Lot R, as shown in Figure 22. The structure will include one level below grade, with additional parking on the same level of the tennis courts. The structure will not result in the loss of any existing surface parking spaces in Lot R. In addition to the pedestrian bridge shown in Scenario A between the Lot S structure and the transit center, Scenario C also includes a pedestrian bridge over Bonita Drive between the Lot S structure and Lot R structure.

Table 8 shows the parking space information for the potential structures in Lots F and R for this scenario. Note that the information for Lot F matches what was shown for Scenario A, but Lot R is considerably larger.

As with Scenario A, the projected number of parking spaces available each year was calculated, and is shown in Figure 23. The two growth profiles are the same as those discussed in the previous sections. A detailed calculation of the available number of parking spaces is included in Appendix B.



- LEGEND**
- Campus Road
 - - - Public Right-of-Way
 - Optional Alignment
 - Service/Emergency Only
 - Structure Access Lane
 - ▲ Structure Access Point
 - Pick-up/Drop-off Area
 - Main Campus Entry
 - Pedestrian Bridge

FOR LOT B STRUCTURE ACCESS, SEE LOT B CIRCULATION OPTIONS (FIGURE 33)

**FIGURE 22.
PARKING SCENARIO C**



Table 8. Parking Structure Statistics (Lots F and R, Scenario C)

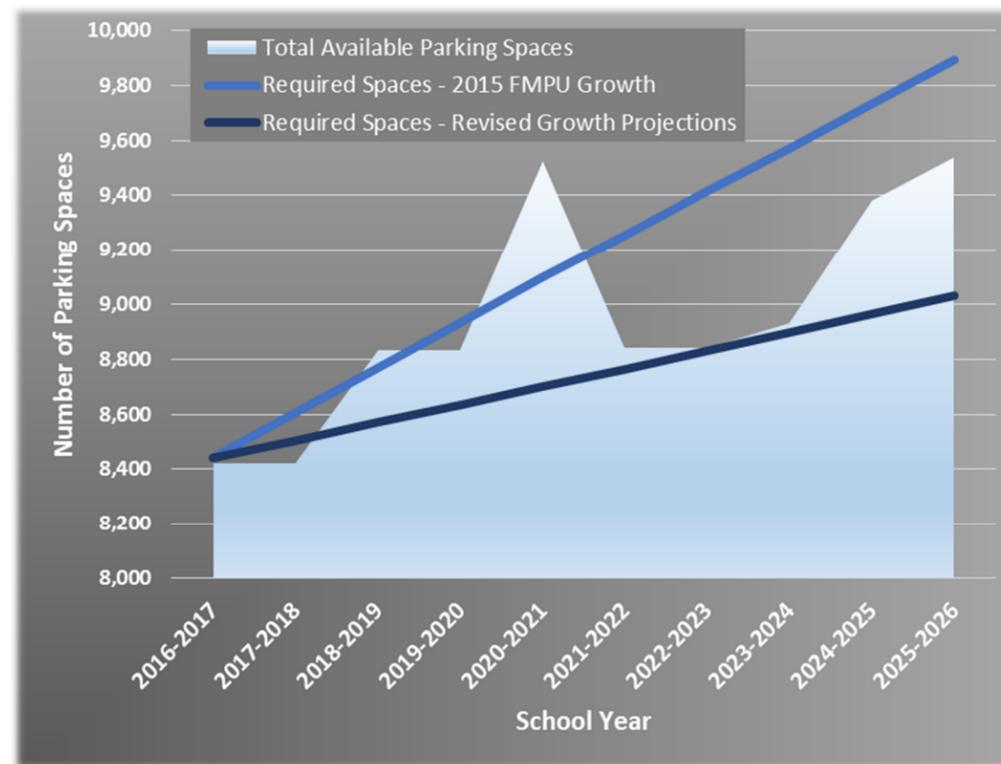
Parking Structure Calculations							
Location	Lost Spaces	Space Type	Footprint (sq. ft.)	Spaces per Level*	Levels	Structure Spaces	Net Gain
Lot F	379	Student	94,750	**	3**	813	342
	63	Staff					
	29	Other					
Lot R	0	N/A	199,920	***	2***	620	620

*Assumes 325 sq. ft. per space

**Lot F will include a drop-off area on the ground floor and an agricultural rooftop. Therefore, only 3 of the 4 levels will include parking, and there will be less parking available on the ground floor than on the 2nd and 3rd levels.

***Lot R will include one level below grade and additional parking on the same grade as the tennis courts.

Figure 23. Parking Need vs. Supply – Scenario C



As seen in Figure 23, Scenario C will have a parking deficit between 2022 and 2026 for the 2015 FMPU growth profile. Parking will also be very near capacity between 2021 and 2024 for the revised growth profile. As with Scenario B, if student growth outpaces the projected 0.75% per year in any given year, it is very likely that there could be a deficit in the number of parking spaces. Therefore, Scenario C is not ideal.

4.3.4. Scenario D

Scenario D includes the enhanced structures in Lots F and R discussed for Scenarios B and C, respectively. Figure 24 shows the potential parking structures for Scenario D. As seen in the figure, Scenario D includes three pedestrian bridges; two over Temple Avenue (between the Lot S structure and the transit center and between the Lot F structure and the athletic facilities) and one over Bonita Drive between the Lot S structure and Lot R structure. Table 9 shows the parking space information for the potential structures in Lots F and R for this scenario.

Table 9. Parking Structure Statistics (Lots F and R, Scenario D)

Parking Structure Calculations							
Location	Lost Spaces	Space Type	Footprint (sq. ft.)	Spaces per Level*	Levels	Structure Spaces	Net Gain
Lot F	675	Student	168,956	**	3**	1,498	720
	63	Staff					
	40	Other					
Lot R	0	N/A	199,920	***	2***	620	620

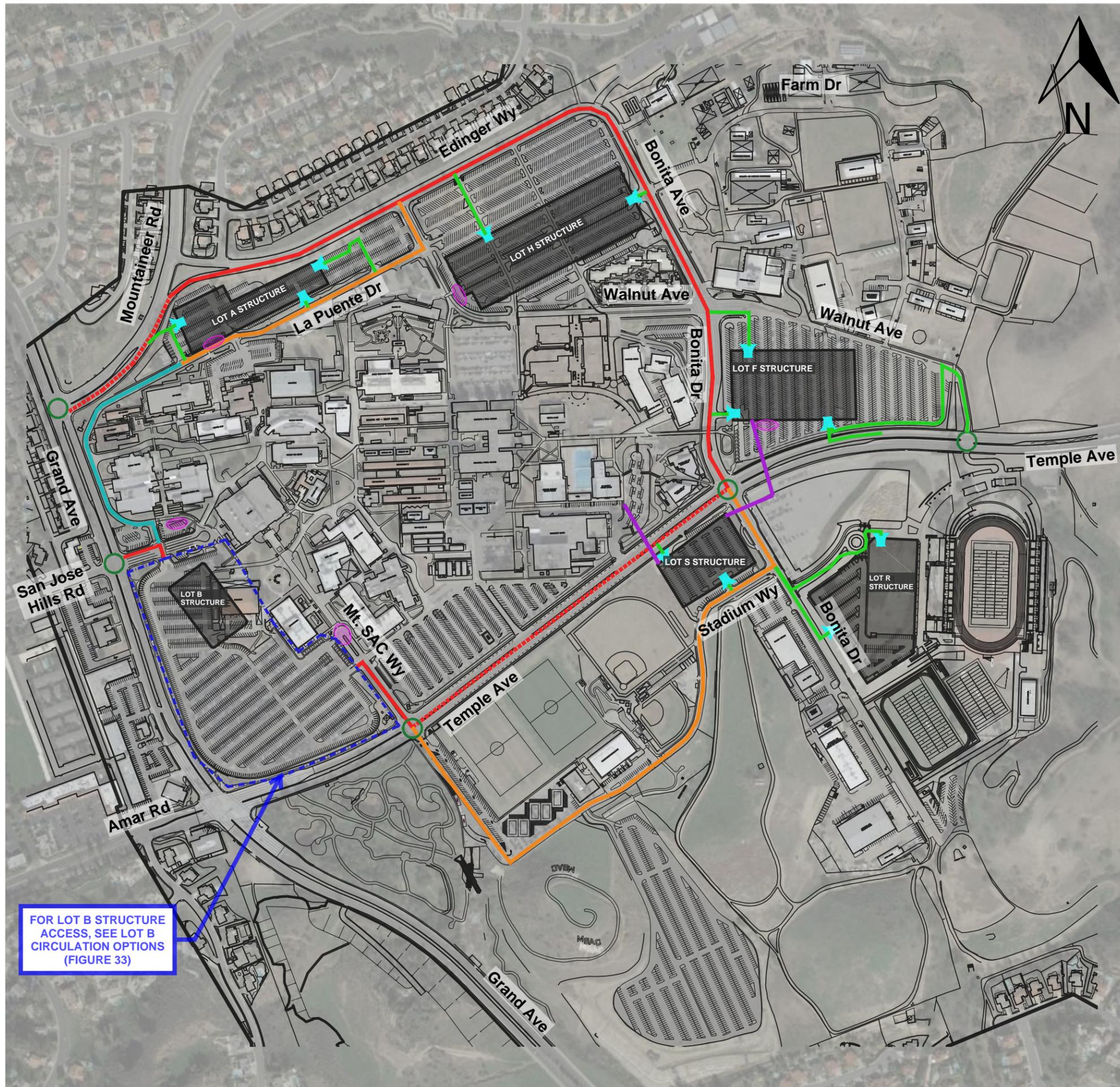
*Assumes 325 sq. ft. per space

**Lot F will include a drop-off area on the ground floor and an agricultural rooftop. Therefore, only 3 of the 4 levels will include parking, and there will be less parking available on the ground floor than on the 2nd and 3rd levels.

***Lot R will include one level below grade and additional parking on the same grade as the tennis courts.

As with the previous scenarios, the projected number of parking spaces available each year was calculated, and is shown in Figure 25. The two growth profiles are the same as those discussed in the previous sections. A detailed calculation of the available number of parking spaces is included in Appendix B.

As seen in Figure 25, Scenario D provides a surplus of parking for the revised growth projections through most of the study period, not including the 2016-2018 period, which shows parking at a deficit for all four scenarios. It is also important to recall that the revised growth projections were increased by 5% to provide conservative calculations; if the revised growth were used without the 5% buffer, Scenario D would provide ample parking throughout the study period. The figure also reinforces the notion that the 2015 FMPU growth rate is likely not attainable due to parking restrictions, and that the 0.75% annual growth rate is likely approaching the highest sustainable average growth for the College over the next 10 years. Different from the first three scenarios, Scenario D also provides an additional buffer for a surge in student population in any given year. It is recommended that the College proceed with constructing the parking structures as laid out in Scenario D.



- LEGEND**
- Campus Road
 - - - Public Right-of-Way
 - Optional Alignment
 - Service/Emergency Only
 - Structure Access Lane
 - ▲ Structure Access Point
 - Pick-up/Drop-off Area
 - Main Campus Entry
 - Pedestrian Bridge

**FIGURE 24.
PARKING SCENARIO D**



Figure 25. Parking Need vs. Supply – Scenario D

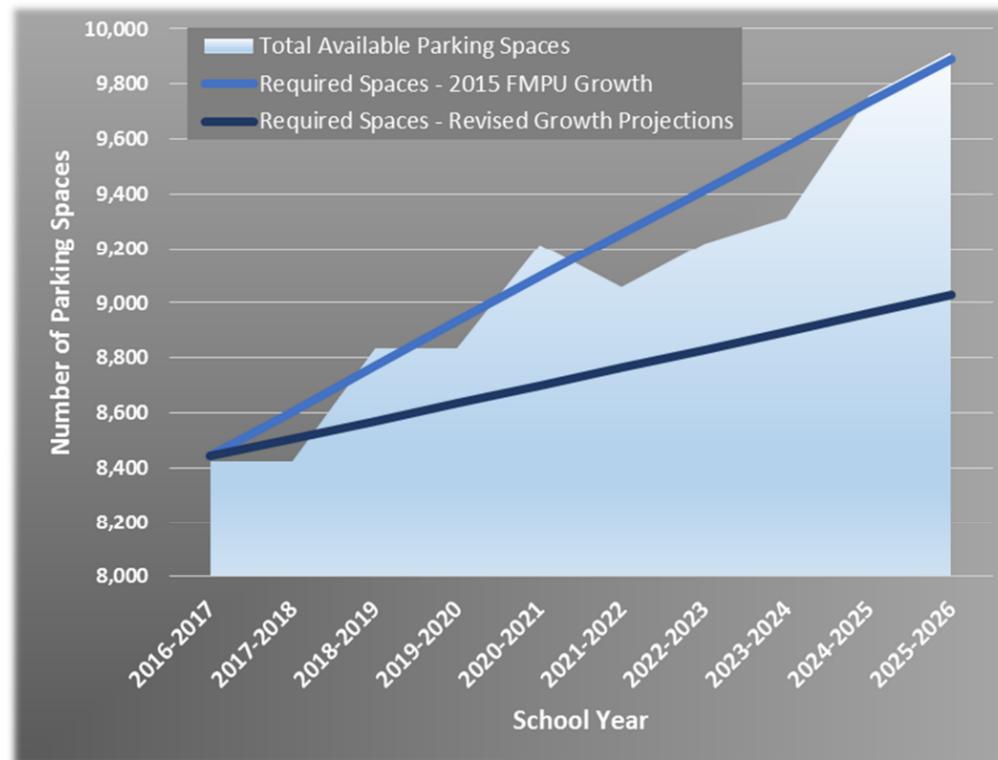


Figure 26. Numbered Spaces in Pay Parking Lot



4.4. PARKING DISTRIBUTION

As previously discussed, the College has expressed the desire to maintain pay parking areas for visitors in both Lots A and B. In order to allow for the lots to be more open with better circulation, it is recommended that the pay parking areas be designated using signage and/or pavement markings. Visitor/pay spaces could be individually served with parking meters, or spaces could be numbered and served by a single pay station (Figure 26). In either case, it is recommended that the pay parking spaces only serve paying vehicles; free parking in pay spaces with a staff parking permit should no longer be allowed.

The existing number of visitor parking spaces (745) can remain generally unchanged at this time. Further, the location of visitor spaces is generally appropriate considering the location of services and attractions on campus, though the College may want to consider allowing for paid parking (along with permit parking) within one or more of the parking structures proposed in Lots F, R, and S. It is expected that those structures will serve a significant number of visitors due to their proximity to the athletic facilities.

Based on observations of existing parking conditions on campus, it is recommended that approximately 73% of all spaces be designated as student parking, and approximately 15% of all spaces should be designated as staff parking. These percentages are similar to existing conditions, with slight adjustments based on the results of the parking survey conducted in March 2017.

To minimize confusion within parking lots, it is recommended that staff parking spaces be located along an edge of any shared lot, unlike the current conditions in Lots D and F, where both visitor and staff parking are intermingled in the student parking lots. Further, some (at least 35%) of the designated staff parking spaces should be located in the proposed parking structures in Lots S, R, and F. The exact distribution of spaces may be determined as facilities are constructed. While it is understood that staff members want to park close to their buildings, it should also be considered that students would also like convenient parking, and the needs of the two groups should be balanced as the parking improvements take shape around campus.

1. Executive Summary



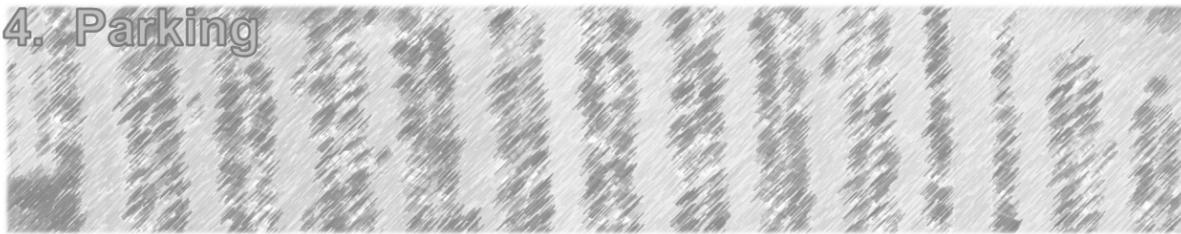
2. Context



3. Future Conditions



4. Parking



5. Traffic Operations



6. Recommendations



5.1. STUDY INTERSECTIONS

The traffic study associated with the 2015 FMPU was finalized in September 2016, and included an analysis of 19 intersections, including 6 immediately adjacent to the campus. However, the PCMP assumes a different distribution of parking on the Mt. SAC campus than that which was assumed in the 2015 FMPU. Therefore, this section includes an updated analysis of the major entries onto campus, including:

- Grand Avenue/Mountaineer Road
- Grand Avenue/San Jose Hills Road
- Grand Avenue/Temple Avenue
- Temple Avenue/Mt. SAC Way
- Temple Avenue/Bonita Avenue
- Temple Avenue/Lot F Access (existing)

Although the Grand Avenue/Temple Avenue intersection does not provide direct access into campus, it is adjacent to the campus and serves a significant amount of College traffic, so it was included in the analysis. The analysis will be conducted based on Parking Scenario D.

5.2. METHODOLOGY

The performance of the intersections in the study was evaluated using the Intersection Capacity Utilization (ICU) method. The study area was modeled in *Synchro*, a traffic modeling software program that follows the methodology of the *Highway Capacity Manual*⁷. Model inputs include the existing intersection geometry, traffic control, and traffic volumes. *Synchro* outputs include ICU percentages, which are then translated into a corresponding Level of Service for each intersection.

The Level of Service (LOS) is a qualitative measure that describes operational conditions in terms of travel speed (for arterials), density (for freeways and ramps), and delays (for intersections). LOS ranges from A to F, with A representing the best operating conditions and F representing the worst. LOS D or better is considered to represent acceptable operations within the City of Walnut⁸.

5.3. PROJECT TRAFFIC

The following sections discuss the traffic expected to be generated by the growth of the College, based on the 2015 FMPU. The traffic volumes collected for the 2016 traffic report associated with the FMPU will be used as “existing” volumes in order to provide a comparable analysis.

5.3.1. Trip Generation

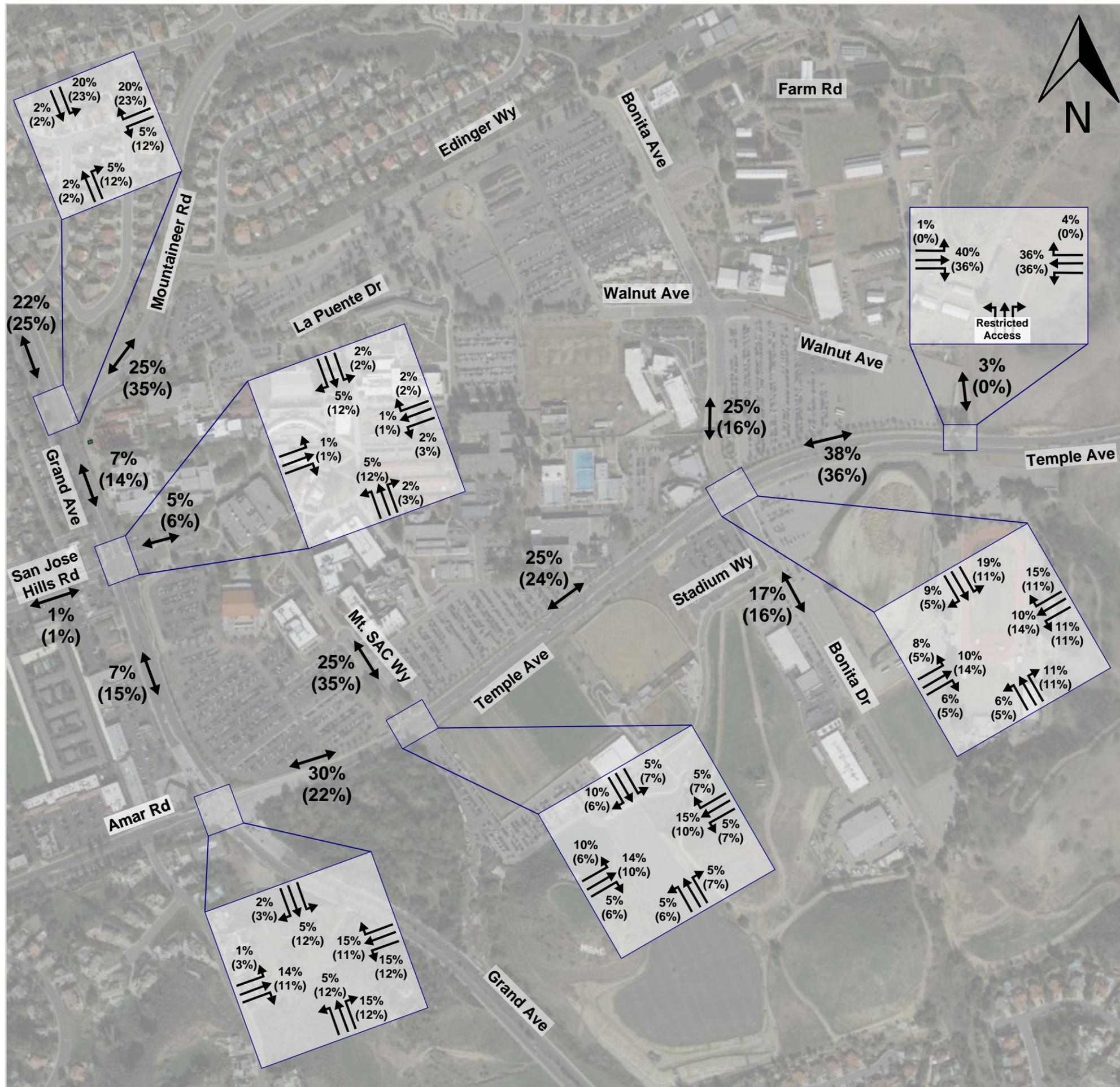
The projected number of trips generated by the expected growth at the College through 2025 was calculated in the 2016 traffic study, and is shown in the Table 10. The trip generation was calculated using the *Institute of Transportation Engineers Trip Generation Manual, 9th Edition*⁹. As seen in the table, the projected growth is expected to generate 858 new trips in the peak hour and 8,798 daily trips.

Table 10. Trip Generation

Junior/Community College (LU Code 540)			
Students	7,153		
	In	Out	Total
AM Peak Hour	715	143	858
PM Peak Hour	572	286	858
Daily	4,399	4,399	8,798

5.3.2. Original Trip Distribution (2015 FMPU)

The trip distribution which was used in the 2016 traffic study is shown in Figure 27. As seen in the figure, the Grand Avenue/Mountaineer Road intersection was expected to serve the greatest amount of new traffic into and out of the College (35%), which is consistent with the original plan to construct a large parking structure on the north part of campus. The intersection of Temple Avenue and Bonita Avenue was shown to serve approximately 33% of new traffic accessing the College (the 5% shown for eastbound turns at that intersection is actually closer to 5.5%).



LEGEND

- xx%** New Trip Distribution
- (xx%)** Previous (2015 FMPU) Trip Distribution



**FIGURE 27.
TRIP DISTRIBUTION**



5.3.3. Adjusted Trip Distribution

Also shown in Figure 27 is the adjusted trip distribution based on the parking recommendations discussed in this PCMP. Because of the planned parking structures near the intersection of Temple Avenue and Bonita Drive, it is expected that a higher percentage will access the school at that intersection than what was originally anticipated in the 2016 TIS. Further, the percentage of traffic accessing the school via the Grand Avenue/Mountaineer Road intersection was assumed to be 25%; considerably lower than the 2016 TIS, but similar to existing conditions.

In the 2016 TIS, it was not assumed that any new traffic would access the College via the existing Lot F entrance located on Temple Avenue just east of Bonita Drive. However, the College has expressed interest in placing more emphasis on this entrance. It was therefore assumed that 5% of the traffic entering the College would do so through the Lot F entrance. To be conservative (by placing more traffic at the Temple Avenue/Bonita Drive intersection), it was assumed that the existing access would continue to only serve entering traffic, so exiting vehicles would still use the Temple Avenue/Bonita Drive intersection.

The College has also discussed the potential for constructing a second right-turn only access into Lot F between Bonita Drive and the existing Lot F access to the east. While this access is shown on several figures throughout this PCMP, the traffic operation analysis was conducted with the assumption that no new access points would be constructed. This provides a conservative analysis for the existing access points at the Temple Avenue/Bonita Drive and Temple Avenue/Lot F Access intersections.

5.4. TRAFFIC OPERATIONS (2025)

Table 11 shows the LOS for 2025 conditions with the project taken from the 2016 TIS and the LOS calculated for the PCMP. As seen in the table, the LOS based on the redistributed traffic is generally similar to what was originally calculated in the 2016 TIS. The three highlighted cells in orange show instances where the LOS is worse in the PCMP than it was in the 2016 TIS; however, in all three instances, the LOS is still considered acceptable. The cells highlighted in green show instances where the LOS is better in the PCMP than it was in the 2016 TIS. Figure 28 is an excerpt from the 2016 TIS, showing the location and number of each of the study intersections.

Table 11. 2025 Intersection Peak Hour LOS (2016 TIS vs. PCMP)

Intersection		Results from 2016 Traffic Study		Results from PCMP	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
No.*	Roadways	LOS	LOS	LOS	LOS
6	Grand Ave/ Mountaineer Rd	C	D	D	C
7	Grand Ave/ San Jose Hills Rd	E	D	E	D
8	Grand Ave/ Temple Ave	E	D	E	D
14	Mt. SAC Wy/ Temple Ave	C	C	C	C
15	Bonita Dr/ Temple Ave	B	B	D	C
16	Lot F/ Temple Ave	C	A	A	A

*Intersection numbers match those in the 2016 Traffic Impact Study for easy reference

Figure 28. Excerpt of 2016 TIS Study Intersection Map



1. Executive Summary



2. Context



3. Future Conditions



4. Parking



5. Traffic Operations



6. Recommendations



This section provides a summary of the recommended improvements developed throughout this PCMP, and prioritizes the improvements based on need and input from the College.

6.1. PARKING

As discussed in Section 4, parking Scenario D is recommended. This scenario is expected to provide sufficient parking through 2025 for the revised growth profile, and will include parking structures in Lots S, R, F, and B. Potential structures in Lots A and H are not expected to be constructed before 2025. Parking needs should be reevaluated in the future because driving/parking trends and needs may change over time.

Parking recommendations also include the reconstruction of Lots A, B, and W to improve circulation. Further, the redesign of Lot A (before the construction of a structure or other improvements) is expected to result in an increase of 108 parking spaces, and the redesign of Lot B (before the construction of a structure) is expected to result in an increase of approximately 361 parking spaces. In both Lots A and B, pay parking should be provided either using individual parking meters or using numbered spaces with a single pay station (per lot). Free parking in pay parking spaces with a staff permit should no longer be allowed anywhere on campus.

The improvements in Lot W are tied to the planned construction of sand volleyball courts in the lot. The courts will replace some of the parking, and the area of the lot to the west of the soccer fields will be redesigned to provide better circulation.

Overall, the number of visitor parking spaces (745) is appropriate and can remain generally unchanged at this time. However, the College may want to consider allowing paid parking (along with permit parking) within one or more of the parking structures proposed in Lots F, R, and S. It is expected that those structures will serve a significant number of visitors due to their proximity to the athletic facilities.

At any given time during the development of this plan, approximately 73% of all spaces should be designated as student parking, and approximately 15% of all spaces should be designated as staff parking. Any staff parking located within larger lots should be concentrated in a single area within that lot to minimize confusion, and some (at least 35%) of the designated staff spaces should be located in the proposed parking structures in Lots S, R, and F. The exact distribution of all spaces may be determined as facilities are constructed.

As discussed in the 2015 FMPU, some consideration may be given to providing preferential carpool and/or recognition parking spaces. A staff recognition space may be designated using temporary signage (since different staff members will have different parking location preferences). If carpool parking spaces are provided, they should be provided in multiple parking lots and/or structures, and should be located in the area closest to the center of campus. To help regulate parking in those spaces, carpool permits could be provided. Periodic monitoring by campus police may also be necessary to ensure that those with carpool permits are actually traveling in a carpool, and are not simply single drivers who purchased a carpool parking permit.

Lastly, as the parking facilities change, the College could restructure the parking permit process to specify a location (or locations) for each permit, particularly for student parking. For example, surface parking could be split up into a few areas, and a structure permit could either allow parking in any structure, or permits could be issued specifically for each structure. Limiting where each permit is valid would help cut down on congestion in parking areas and should reduce the time spent searching for a parking space.

6.2. VEHICULAR CIRCULATION

6.2.1. Wayfinding

While access to the campus is straightforward, circulation through the campus can be somewhat confusing, particularly for visitors. It is recommended that the College install wayfinding signs for drivers to help guide them to the appropriate parking lots and/or structures based on what area(s) of campus they wish to visit. Examples of signs are shown in Figure 29. Signs could be designed to direct drivers to specific parking lots and/or structures based on where their final destination may be, as shown in the left photo. When further away from the designated parking area, signs can be used to direct drivers in the general direction of parking for various destinations (right photo). The signs can be designed to match the aesthetics of the College, and can be updated as campus conditions change.

Table 12 shows a preliminary list of locations which might be included on similar destination signing along with the external intersections at each destination would be included. Generally, no more than four destinations should be included on each sign (including a parking location) to minimize driver confusion. Therefore, only the most relevant destinations should be included on each sign, based on the intersection location and direction of travel.

Note that this list can be changed at any time by the College. Further, it is expected that additional signage will be included on campus to further help direct people to locations of interest, particularly after they have parked and become pedestrians.

Figure 29. Examples of Destination Signage



Table 12. Recommended Sign Locations and Destinations

		Intersection											
		Grand Ave/ Mountaineer Rd		Grand Ave/ San Jose Hills Rd			Grand Ave/ Temple Ave			Mt. SAC Wy/ Temple Ave		Bonita Dr/ Temple Ave	
		NB	SB	EB	NB	SB	EB	NB	SB	EB	WB	EB	WB
Location of Interest	Library	x	x	x	x						x		
	Administration	x	x	x	x		x	x		x	x		
	Bookstore		x	x	x	x	x	x					
	Student Services		x	x	x	x	x	x					
	Child Development Complex											x	x
	Farm Entrance											x	x
	Athletics						x	x	x	x		x	x
	Parking for Transit Center								x	x		x	x
	Parking Lot M									x	x		

6.2.2. Pick-up/Drop-off Areas

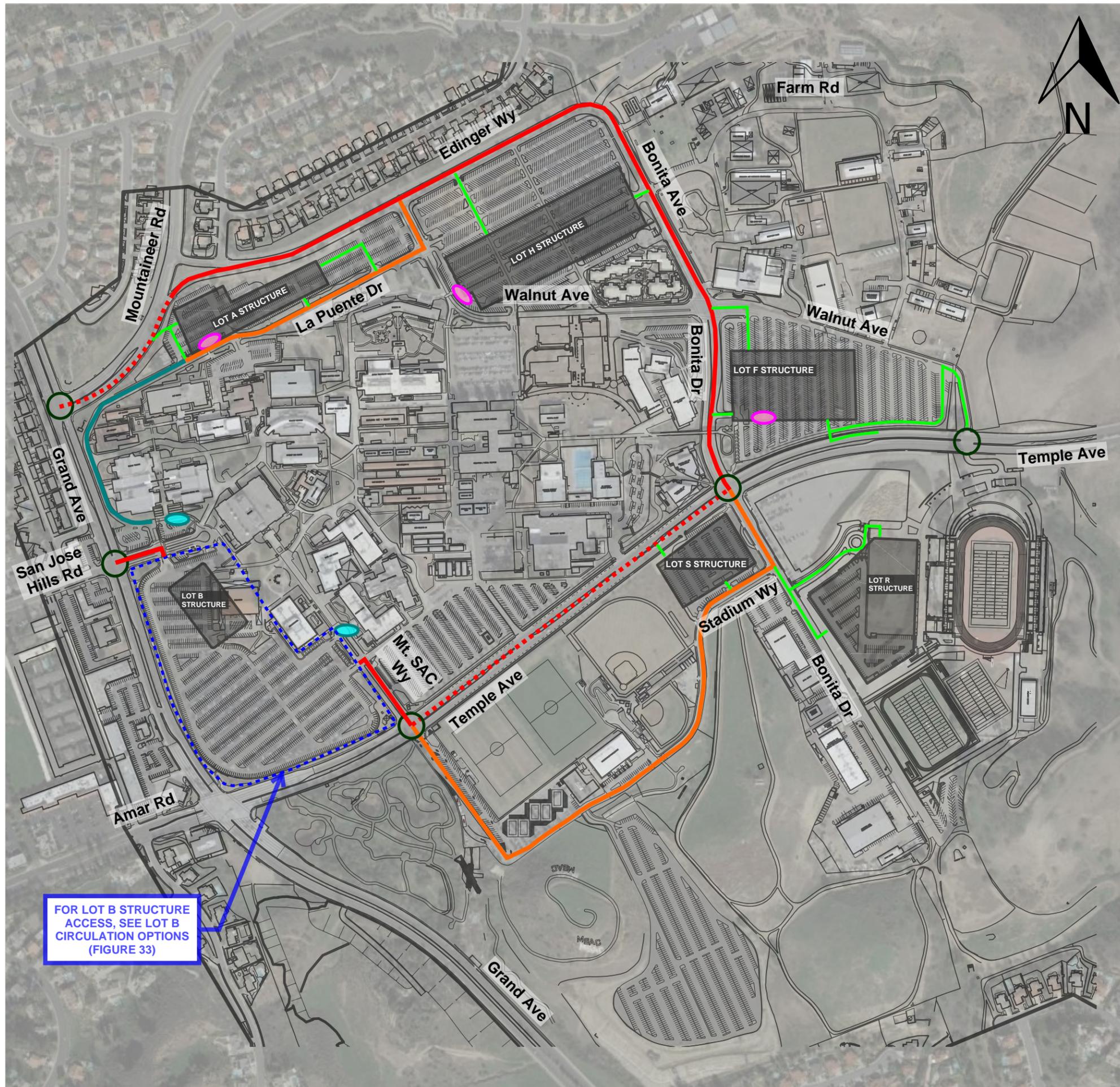
Although a majority of students drive themselves and park on campus, a moderate number are dropped off by other drivers. As discussed in Section 2.1, there are several officially designated pick-up/drop-off areas as well as unofficial pick-up/drop-off areas located around campus. The two existing official pick-up/drop-off areas are expected to remain, and three new areas are proposed in this plan. As shown in Figure 30, it is recommended that pick-up/drop off areas be added in Lot A, Lot F, and Lot H. In addition, the loading zone near the Wildlife Sanctuary will be redesigned to provide parking for at least two buses. The pick-up/drop-off areas can also be used by ride sharing services such as Lyft and Uber.

Due to the nature of traffic in these areas, they often become congested, include potential conflicts between vehicles and pedestrians, and sometimes create issues for those wishing to circulate through an area. The new pick-up/drop-off areas should be carefully designed to ensure sufficient storage and circulation, while also minimizing pedestrian/vehicle conflicts.

6.2.3. Internal Vehicular Circulation

Figure 30 also shows the recommended internal circulation. Much of the existing circulatory network will remain unchanged, with two major exceptions. Based on discussions with the College, the segment of La Puente Drive from San Jose Hills Road to Lot A will be designated as service and emergency vehicle access only. Also, a slip ramp from Mountaineer Road between Grand Avenue and Edinger Way will be constructed to provide direct access into Lot A. Overall, circulation should be designed/improved to keep vehicles on the outer portions of campus, helping to minimize pedestrian/vehicle conflicts while also preserving the interior area of campus as a pedestrian haven.

The designation of La Puente Drive as a service/emergency roadway will also help to improve the existing four leg intersection on San Jose Hills Road just east of Grand Avenue. San Jose Hills Road, along with Mt. SAC Way, serve as major campus access points at signalized intersections on Grand Avenue and Temple Avenue, respectively. Both roadways include pick-up/drop-off areas and provide access to Lot B, which is one of the busiest parking lots on campus. Since both access drives serve high vehicular traffic and pedestrian volumes, have relatively limited storage, and include multiple crossing movements, concerns have been raised about their operation and safety. Options for improving both access points are discussed in the following section.



LEGEND

- Campus Road
- - - Public Right-of-Way
- Optional Alignment
- Service/Emergency Only
- Structure Access Lane
- ▲ Structure Access Point
- Main Campus Entry
- Existing Pick-up/Drop-off Area
- Proposed Pick-up/Drop-off Area

FOR LOT B STRUCTURE ACCESS, SEE LOT B CIRCULATION OPTIONS (FIGURE 33)

**FIGURE 30.
PROPOSED VEHICULAR
CIRCULATION**

6.2.4. Lot B Access and Circulation

As previously discussed, numerous concerns have been expressed regarding operations and safety along the existing access drives at San Jose Hills Road and Mt. SAC Way. Figure 31 shows two options for recommended improvements to San Jose Hills Road, and Figure 32 shows two options for recommended improvements to Mt. SAC Way. In discussions with the College, it was determined that both options for each of the two access drives should be included within the PCMP to allow for further study and refinement as more detailed planning efforts are conducted. The circulation between San Jose Hills Road and Mt. SAC Way (through Lot B) was also evaluated to determine a more efficient vehicle circulation route which considers the interim reconstruction of Lot B and the construction of the future Lot B structure.

The recommended improvements shown in the PCMP figures are conceptual. If the College decides to move forward with any of the improvements shown in the figures, further detailed designs will need to be developed in coordination with the College and any future development projects.

The following is a summary of the recommended improvements for San Jose Hills Road, Mt. SAC Way, and vehicular circulation through Lot B.

San Jose Hills Road

As seen in Figure 31, there are several recommendations which are included in both options for San Jose Hills Road, as listed below:

- Designate the inside inbound lane for through traffic only, while maintaining the outside/curb inbound lane for right turn traffic only
- Extend the sidewalk along the north side of San Jose Hills Road across the north leg of the intersection to close the access to San Jose Hills from Lot B1
- Redesign a portion of the existing Lot B1 to allow for egress through the parking lot
- Remove the existing crosswalk across San Jose Hills Road to reduce conflicts and increase the storage at the Grand Avenue/San Jose Hills Road intersection
- If desired, provide a directional median to allow left turns from San Jose Hills Road into Lot B

San Jose Hills Road Option 1 would consolidate Lot B access at the existing Lot B main entrance. Curb extensions could be used to clearly show that inbound traffic is restricted to a single lane east of the Lot B access. Once into the circulatory roadway, two lanes could be striped, with the inside lane directing drivers east towards Grand Avenue, and the outside lane allowing drivers to access the existing drop off area and Lot B1.

San Jose Hills Road Option 2 would separate the Lot B access, similar to existing conditions. The existing Lot B main entrance would remain as an entrance only, and the existing Lot B access near the east end of San Jose Hills Road would be an exit only from Lot B. As with Option 1, curbing (including changes to the existing median) could be used to better delineate travel lanes. Two lanes would be provided near the exit of the circulatory area, again with the inside lane providing access to Grand Avenue and the outside lane providing access to Lot B1.

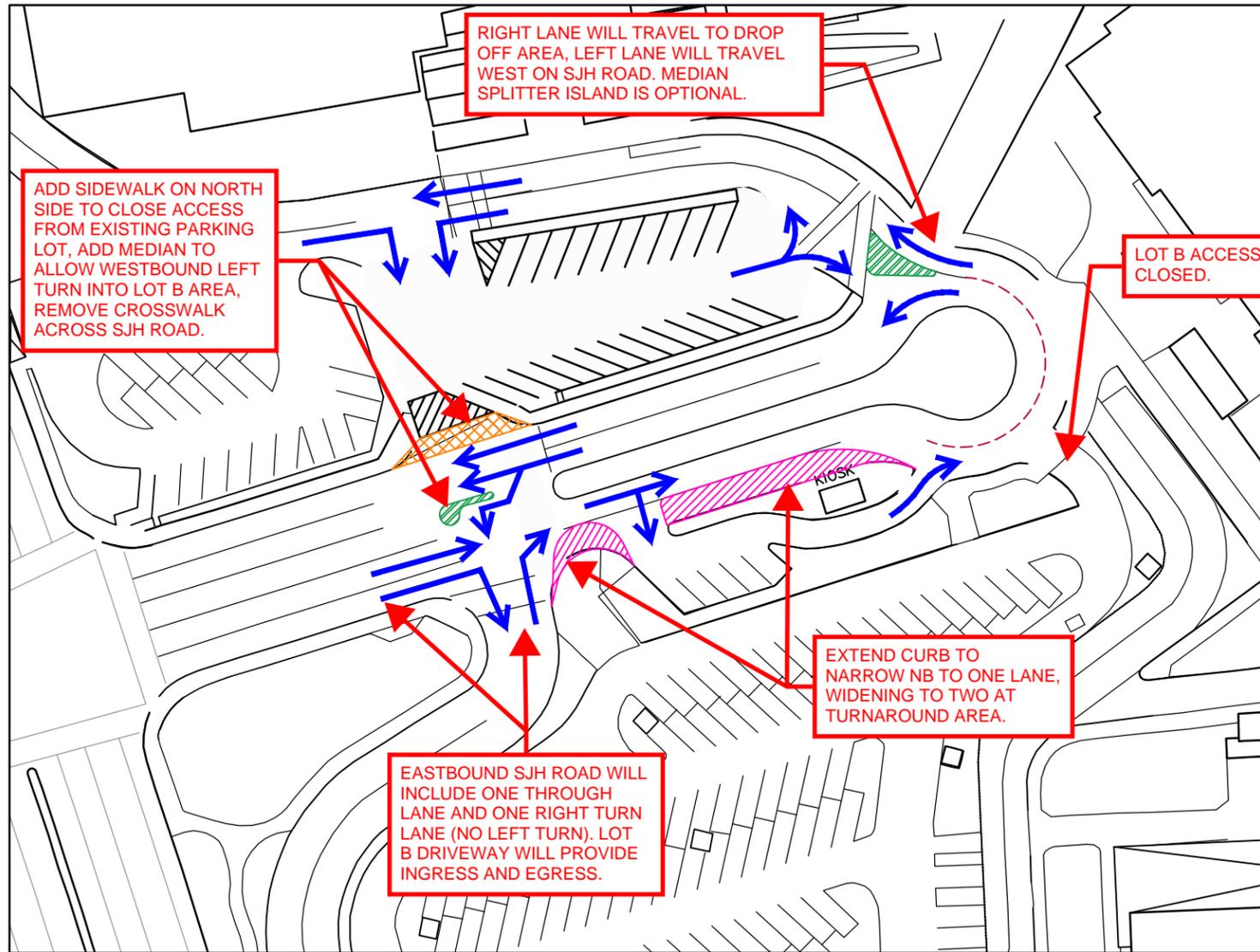
Mt. SAC Way

Figure 32 shows two options for improvements on Mt. SAC Way. There are some similarities between the two options, including:

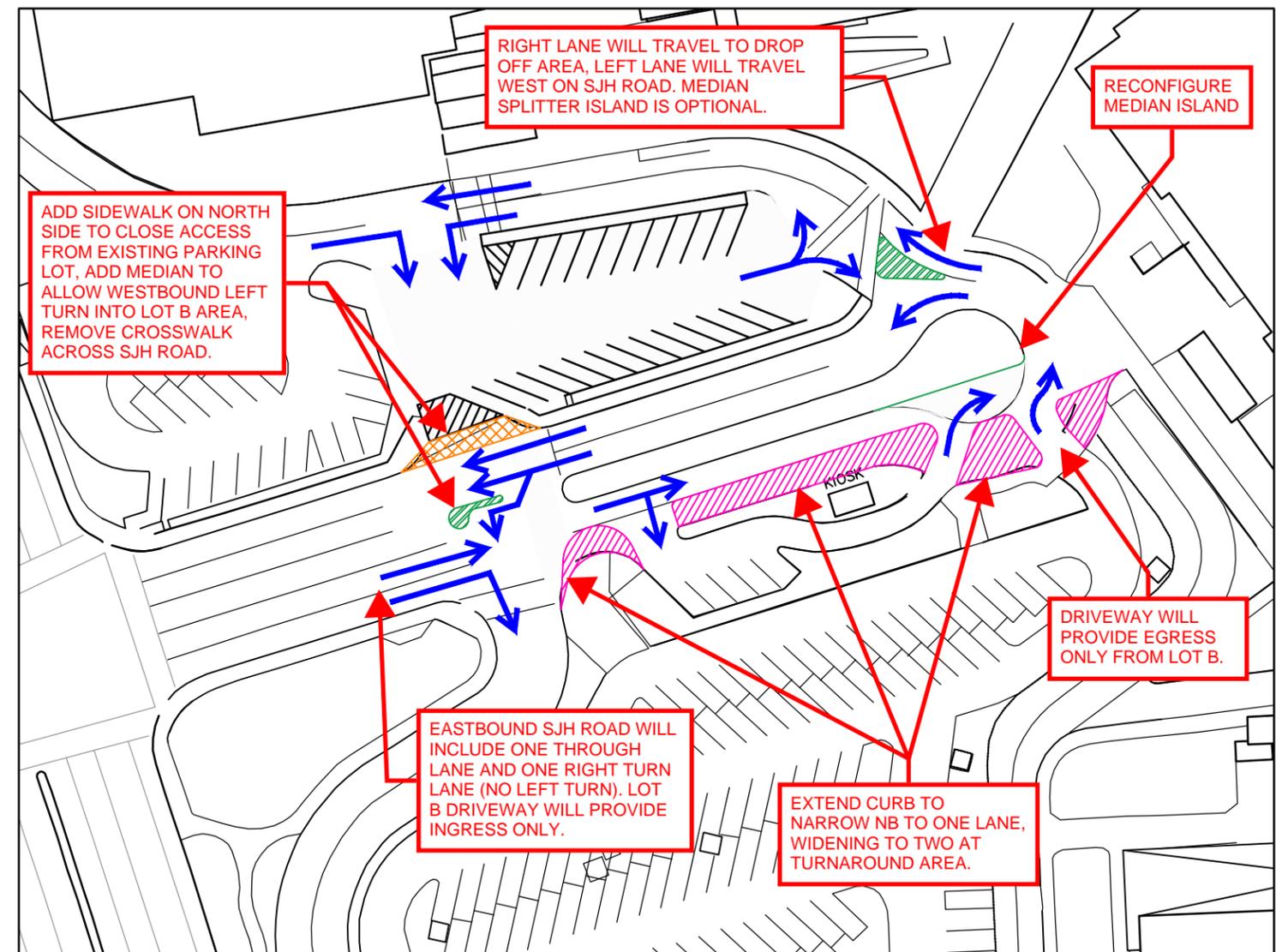
- Traffic exiting Lot B should be restricted to right turn only
- Mt. SAC Way north of Lot B access should be one-way (northbound) only
- Northbound right turns into Lot D can be maintained
- The Lot B and Lot D access points would operate with stop control, and traffic on Mt. SAC Way would be uncontrolled
 - Additional signing may be used to ensure safe pedestrian crossing of Mt. SAC Way, or a raised crosswalk/speed table could be constructed at that location

Mt. SAC Way Option 1 would maintain the existing median opening at the Lot B access, including the separate northbound left turn and thru lanes. With this option, left turns out of Lot B and/or Lot D should be restricted with signage or physical barriers. If right turns were allowed out of Lot D, care should be taken to ensure that left turn and thru movements are not allowed. North of the lot access drives, the existing median would be removed, providing a center drive aisle as well as pick-up/drop-off areas. New curb could be added to narrow the roadway width, allowing for pick-up/drop-off along one or both sides of Mt. SAC Way.

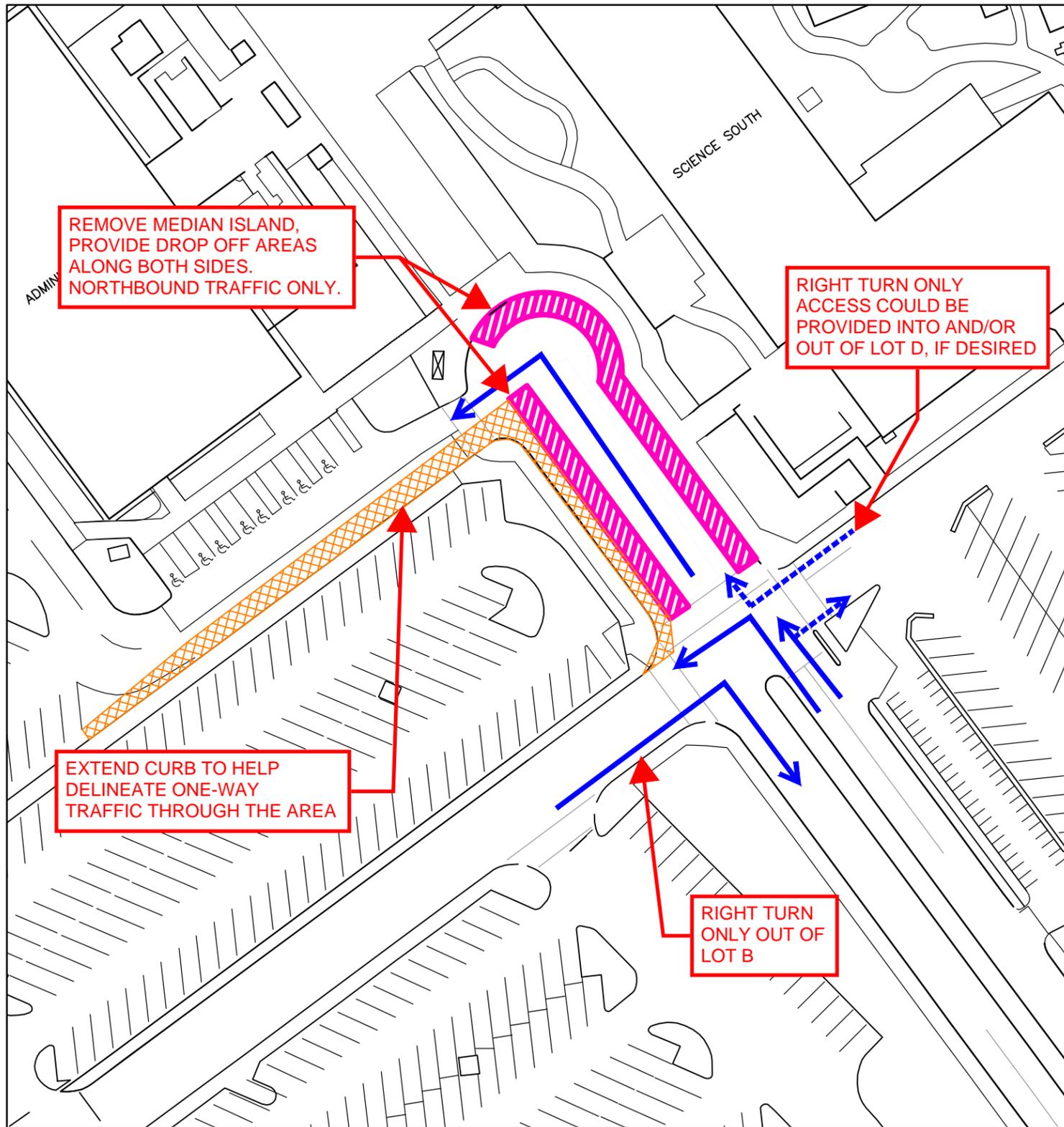
Mt. SAC Way Option 2 includes adding a raised median to connect the two existing portions of median along Mt. SAC Way, providing a physical barrier at the Lot B and Lot D access drives. The existing northbound lanes on Mt. SAC Way would be converted to separate through and right turn lanes, and only right turns would be allowed out of Lot B and Lot D. A pick-up/drop-off area could be provided along the right side of the roadway. On the existing southbound leg of Mt. SAC Way north of the lot access drives, curb could be extended to either provide green space or additional parking within Lot B.



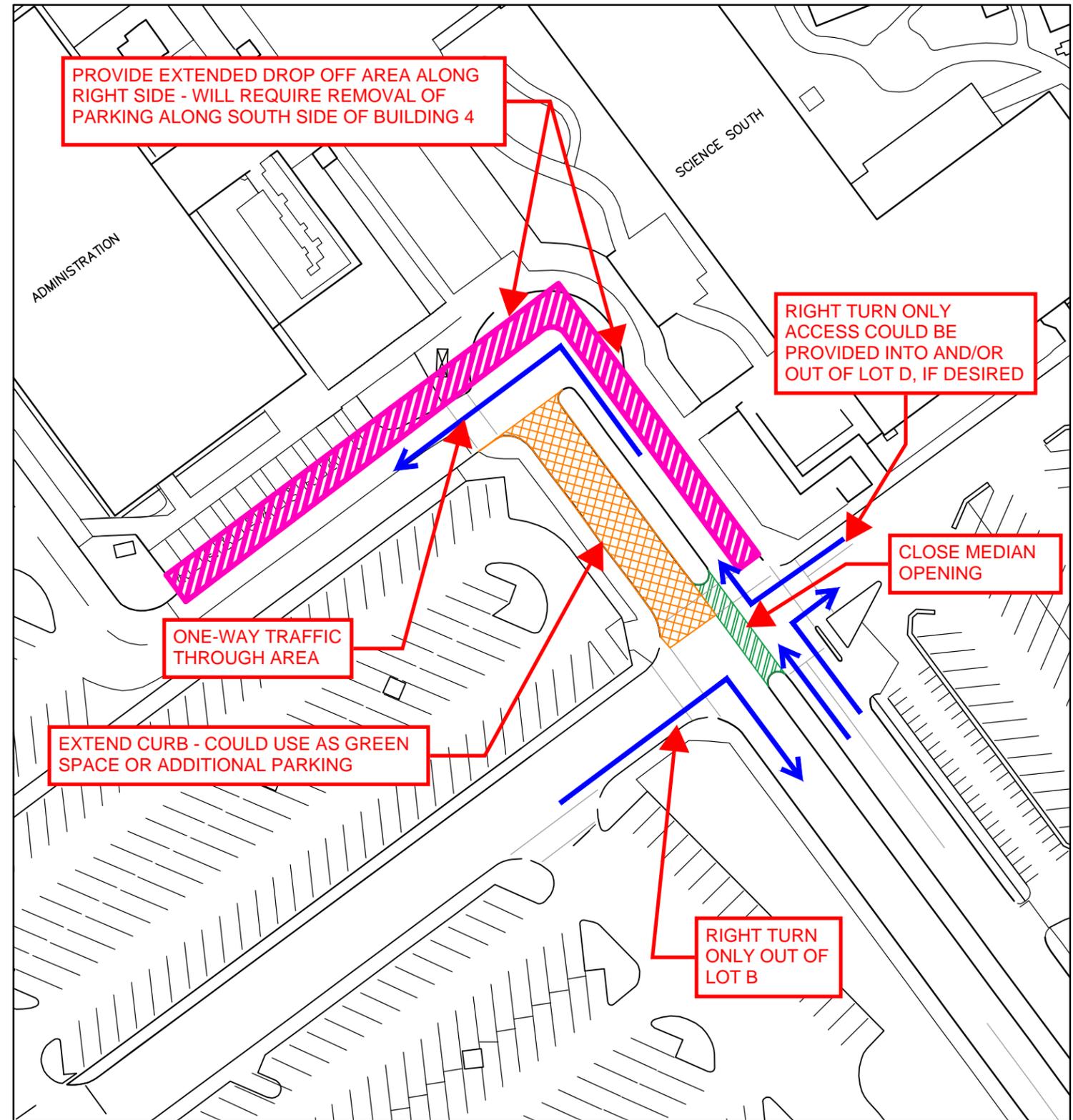
OPTION 1



OPTION 2



OPTION 1



OPTION 2

Lot B Circulation

Figure 33 shows two potential circulation options within Lot B between San Jose Hills Road and Mt. SAC Way. The two options include consideration of circulation around and access to the future Lot B structure. The options also include the interim reconstruction and revised layout of Lot B (before the construction of a structure) for reference. The most significant difference in the two options is whether or not vehicular circulation will be allowed along the east side of the Lot B structure. Both circulation options are coordinated with and will work with both of the San Jose Hills Road (Figure 31) and Mt. SAC Way (Figure 32) options.

6.2.5. Improvements in Public Right-of-Way

In conjunction with the proposed improvements to the San Jose Hills Road access drive, the signalized intersection of Grand Avenue and San Jose Hills Road was evaluated. The intersection serves high vehicle and pedestrian volumes, and long queues are often observed along both roadways. Although the traffic signal is not within Mt. SAC jurisdiction, recommendations for improvements are discussed below. The College should meet with the City of Walnut to discuss potential improvements to the intersection and its operations.

As shown in Figure 34, it is recommended that the lane assignments on San Jose Hills Road be changed to better serve traffic volumes. For example, the westbound left turn volume is 2-4 times greater than the westbound through volume, so the recommendation would be to convert the through-only lane into a shared through-left turn lane. Further, the eastbound right turn volume is nearly the same as the eastbound through and left turn volumes combined, so the recommendation is to provide an exclusive right turn lane along with a shared through-left turn lane. With the lane assignment changes, the signal phasing would need to be changed to operate with split phasing on San Jose Hills Road (due to the shared left turn/through lanes).

It is also recommended that the crosswalk on the south side of the intersection be removed, which will require pedestrians to cross Grand Avenue via the existing crosswalk on the north leg of the intersection. If the Lot B1 access from San Jose Hills Road is closed and the sidewalk is extended through the existing driveway (Figure 31), pedestrians using the northern crosswalk would only have to contend with vehicular traffic at the east end of San Jose Hills Road. Under existing conditions, pedestrians on San Jose Hills Road have to cross at least two driveways. Removing the crosswalk would also eliminate potential conflicts between pedestrians and the relatively heavy eastbound right turn volume.

With the recommended changes at the Grand Avenue and San Jose Hills Road intersection, the level of service (LOS) is expected to improve in both peak hours. Table 13 shows the expected LOS with the improvements discussed in this section, and includes the LOS for the intersection from the 2016 Traffic Study and from the PCMP (originally shown in Table 11) for reference.

Figure 34. Recommended Improvements at Grand Avenue/San Jose Hills Road

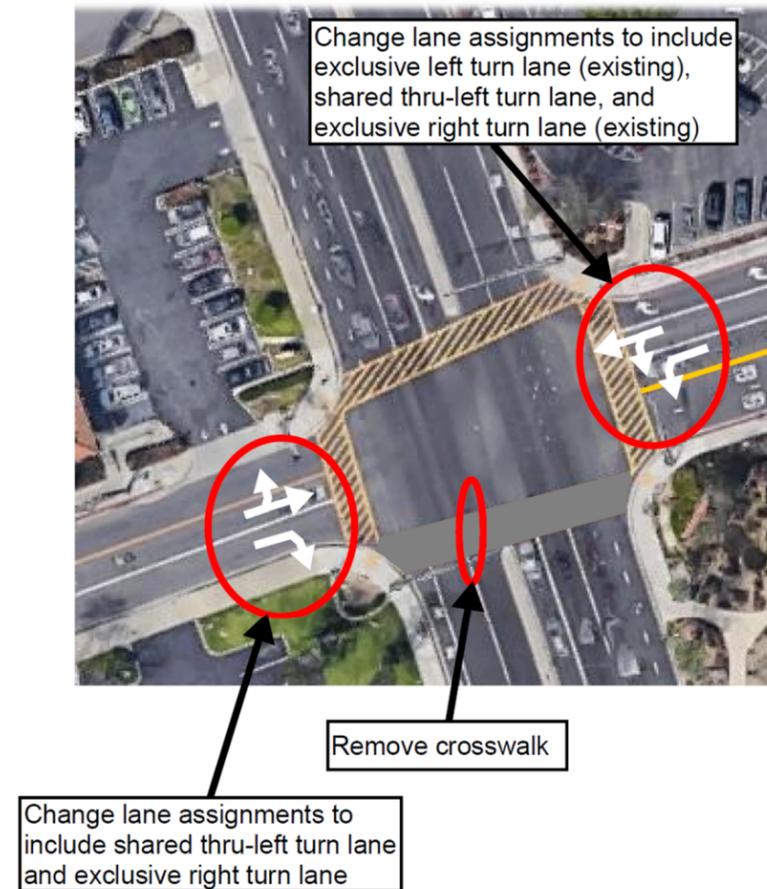
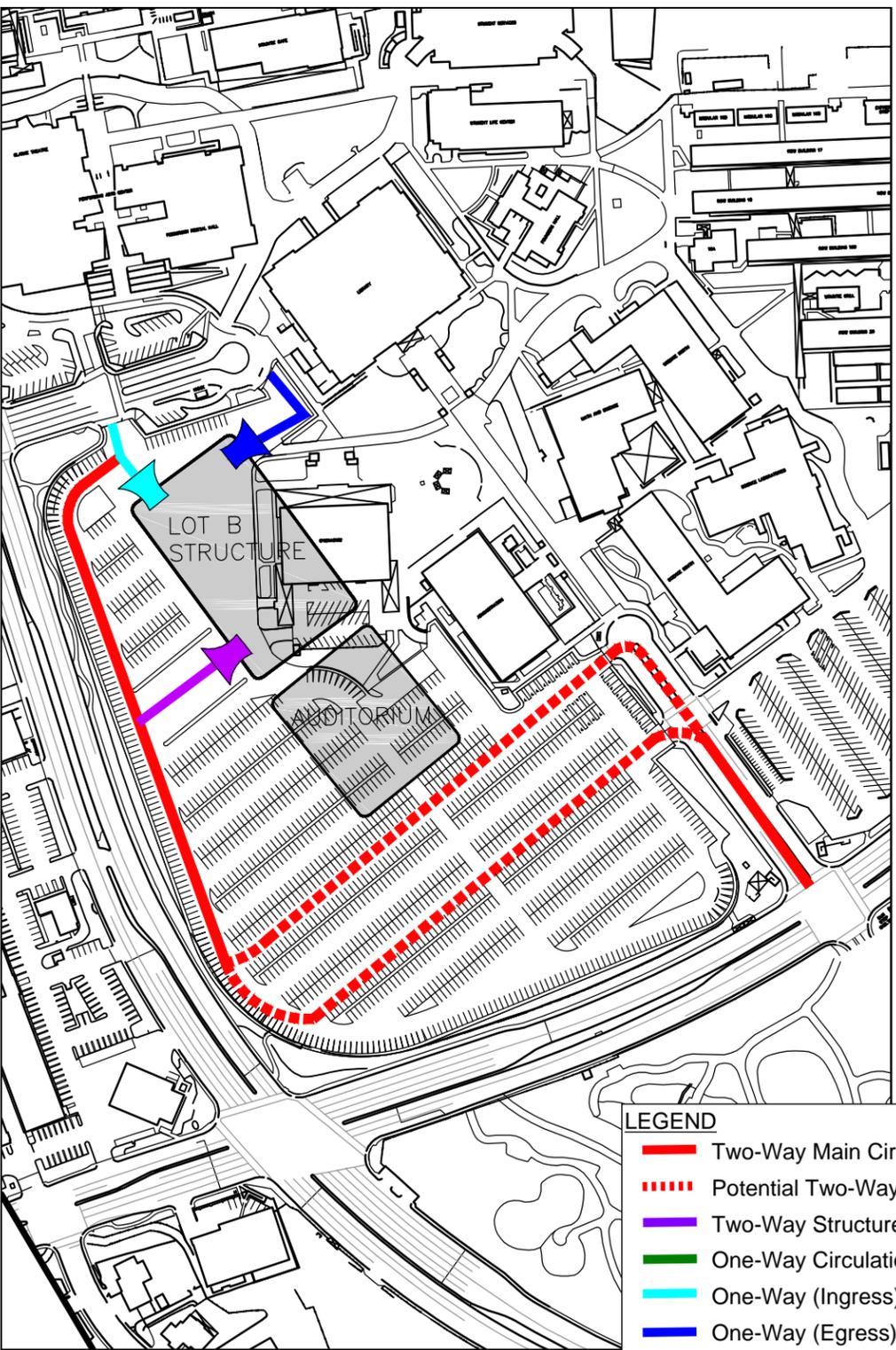
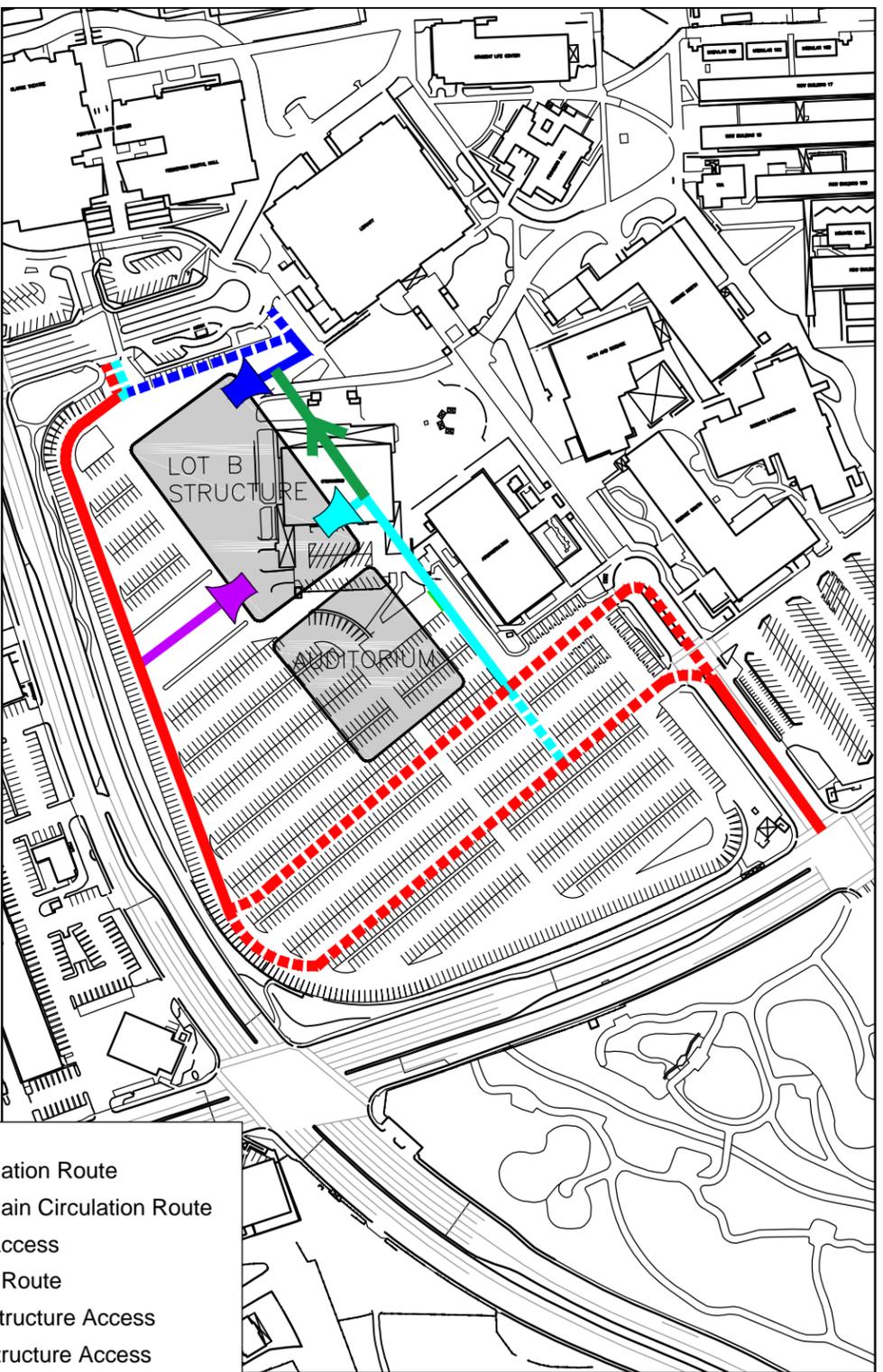


Table 13. 2025 Intersection Peak Hour LOS (Grand Avenue/San Jose Hills Road)

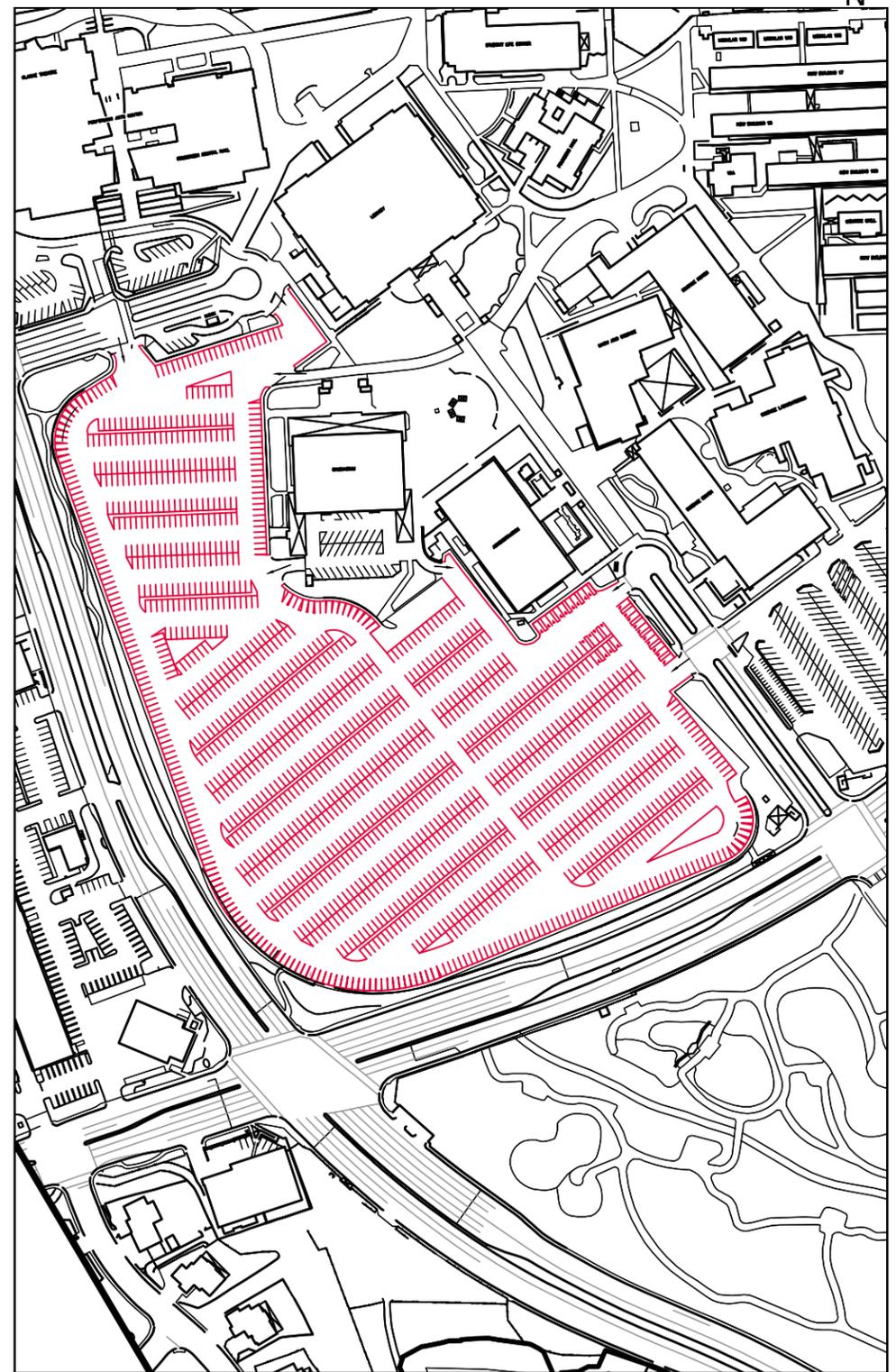
Grand Ave/San Jose Hills Rd		
Results from 2016 Traffic Study	AM Peak Hour	E
	PM Peak Hour	D
Results from PCMP	AM Peak Hour	E
	PM Peak Hour	D
Results from PCMP with Improvements	AM Peak Hour	D
	PM Peak Hour	C



Option 1
Parking Structure to North
Circulation to West



Option 2
Parking Structure to North
Circulation to West and East



Interim Condition

LEGEND

- Two-Way Main Circulation Route
- - - Potential Two-Way Main Circulation Route
- Two-Way Structure Access
- One-Way Circulation Route
- One-Way (Ingress) Structure Access
- One-Way (Egress) Structure Access
- ▲ Structure Ingress/Egress
- ▲ Structure Ingress Only
- ▲ Structure Egress Only

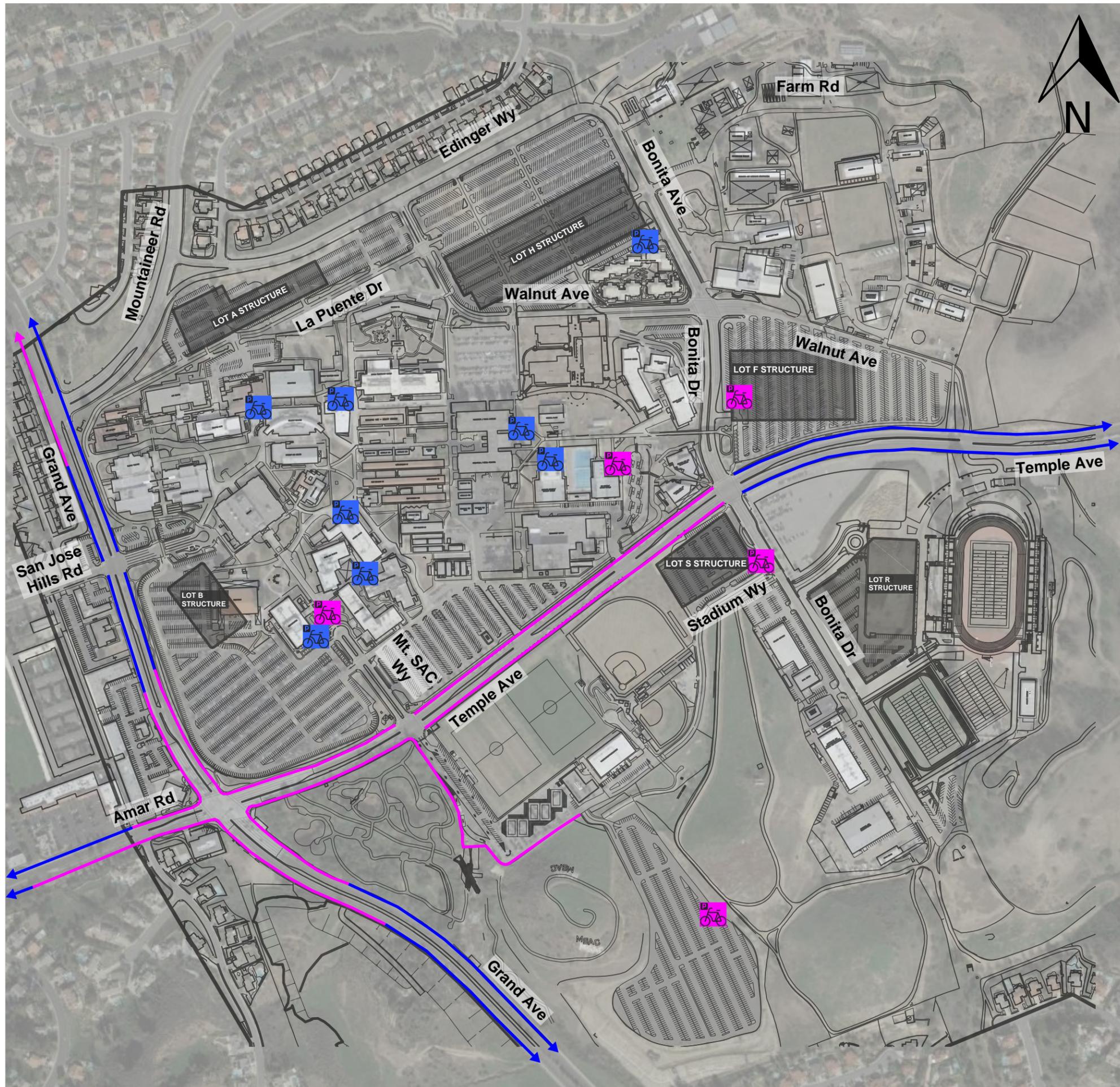
FIGURE 33.
LOT B CIRCULATION OPTIONS

In addition to the intersection improvements, other improvements for various uses are recommended in the public right-of-way, as discussed in the following section.

6.3. MULTIMODAL FACILITIES

Although a majority of the College population travels to and from campus in a personal vehicle, it is also important to serve non-vehicular users of the network. Figure 35 shows the existing and proposed bicycle facilities on and around campus. As shown in the figure, it is recommended that the bike lanes be made continuous along Grand Avenue and Temple Avenue in the vicinity of Mt. SAC. Along Temple Avenue, this will include the removal of on-street parking, which would be a reversal of a recent move to add on-street parking in place of the bike lanes. The overall width of Temple Avenue may allow for protected/buffered bike lanes, as shown in Figure 36.

It is also recommended that bike storage be incorporated into the parking structures; bike share stations could also potentially be included in or near parking structures. Bike share services allow users to check out a bike from one location and return it at another. In the case of Mt. SAC, the bike share service could help encourage drivers to park further away from the center of campus instead of circling through parking areas closer to their eventual destination.



LEGEND

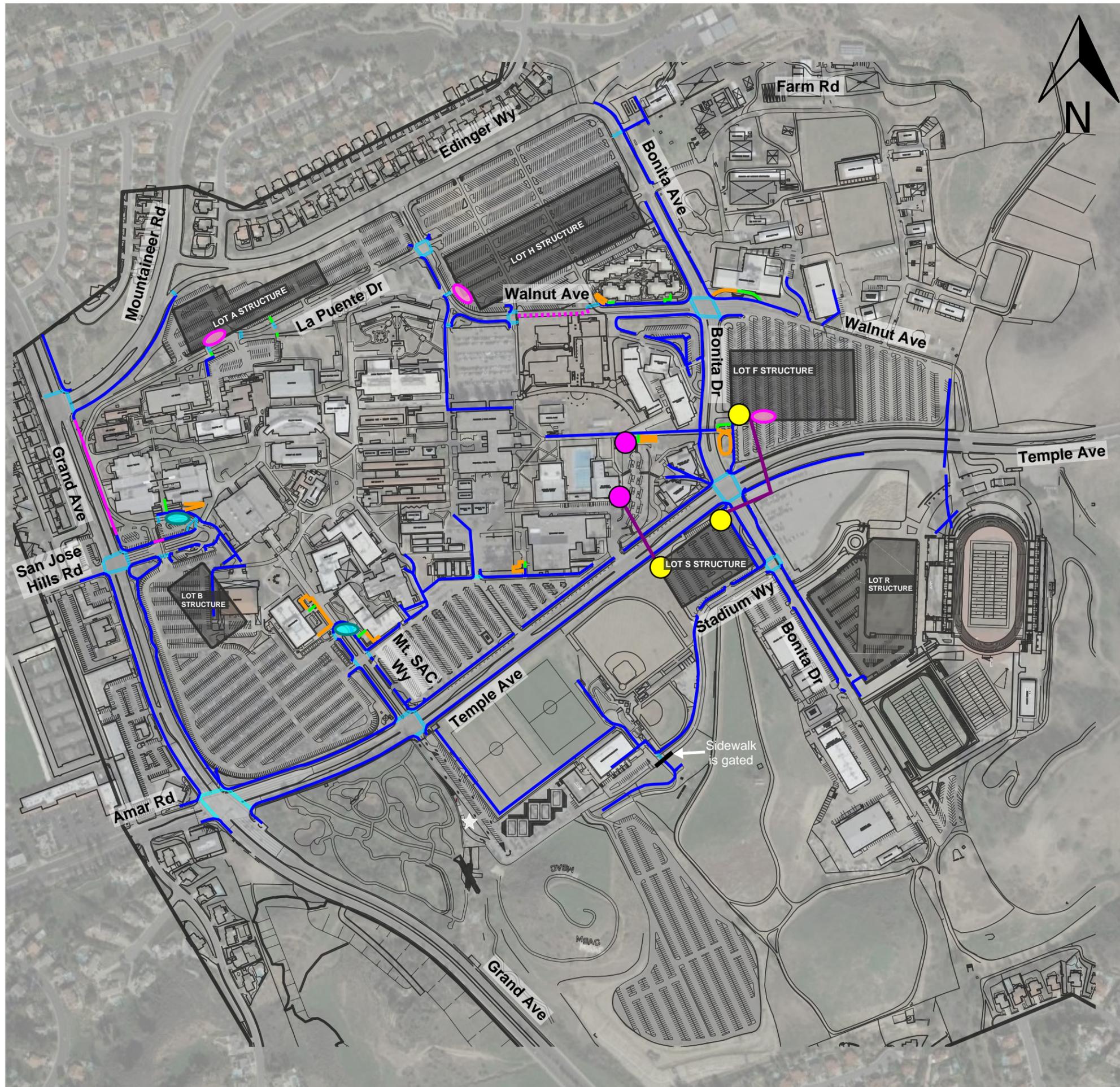
- Existing Bike Lane
- Proposed Bike Lane
- Existing Bike Parking
- Proposed Bike Share Station/Bike Parking

**FIGURE 35.
EXISTING AND PROPOSED
BICYCLE FACILITIES**

Figure 36. Buffered Bike Lanes



Pedestrian facilities should also be expanded and improved throughout campus. As discussed in Section 4, three new pedestrian bridges are proposed near the intersection of Temple Avenue and Bonita Drive. All three bridges are expected to tie into the new parking structures, and will not only provide safer travel for pedestrians across Temple Avenue, but may also improve intersection operations. Figure 37 shows the pedestrian bridges, along with other existing and proposed pedestrian infrastructure, such as improved access to transit stops and external elevators. For reference, the figure also shows the previously shown pick-up/drop-off locations since those areas generally serve a high pedestrian volume.



LEGEND

- Existing pedestrian facility
- ⋯ Pedestrian walkway under construction
- Proposed sidewalk
- Proposed pedestrian bridge
- Existing stairs
- Existing ramp
- Existing marked crosswalk
- Existing pick-up/drop-off area
- Proposed pick-up/drop-off area
- Proposed external elevator
- Proposed elevator in parking structure

**FIGURE 37.
EXISTING AND PROPOSED
PEDESTRIAN FACILITIES**

6.4. PRIORITIZATION OF IMPROVEMENTS

Table 14 provides an indication of the importance of each of the recommended measures for parking and circulation improvements at Mt. SAC. Although this table provides a guideline of which recommendations should be implemented before others, the College will ultimately make the final decisions based on changing needs, available funding, and other relevant factors. Implementing these improvements will ultimately provide a safer and overall better experience for the entire Mt. SAC community.

Table 14. Priority of Recommendations

Improvement Type	Proposed Improvement	Priority		
		High	Medium	Low
Parking	Construct Parking Structures			
	Lot A			X
	Lot B		X	
	Lot F		X	
	Lot H			X
	Lot R	X		
	Lot S	X		
	Redesign Parking Lots			
	Lot A		X	
	Lot B	X		
	Lot B1		X	
	Lot W			X
	Redistribute Parking Spaces (by type)		X	
	Provide Carpool Spaces			X
	Provide Staff Recognition Space(s)			X
Restructure Parking Permit Process			X	
Vehicular Circulation	Install Wayfinding Signs		X	
	Construct New Pick-Up/Drop-Off Areas		X	
	Redesignate La Puente Drive North of San Jose Hills Road		X	
	Construct Slip Ramp into Lot A			X
Multimodal Facilities	Construct Continuous Bike Lanes along Temple Avenue		X	
	Construct Continuous Bike Lanes along Grand Avenue			X
	Provide Additional Bike Parking/Storage on Campus		X	
	Provide Bike Share on Campus			X
	Construct New Pedestrian Bridges	X		
	Provide Improved Access to Transit Facilities	X		
Construct New External Elevators	X			

7. References

- ¹ HMC Architects. *2015 Facilities Master Plan Update & Physical Education Projects*, April 2016.
- ² Iteris. *Mt. SAC 2015 Facilities Master Plan Update & Physical Education Projects, Traffic Impact Study, Final Report*, September 1, 2016.
- ³ California Community Colleges Chancellor's Office Management Information Systems Data Mart. <http://datamart.cccco.edu/Students/Default.aspx>, accessed July 2017.
- ⁴ Foothill Transit. <http://foothilltransit.org/changes/>, accessed July 2017.
- ⁵ Foothill Transit. *Memorandum of Understanding between Foothill Transit and Mt. San Antonio Community College District Transit Center*, March 2017.
- ⁶ Walnut City Code, Title VI (Planning and Zoning), Chapter 25 (Zoning), Article VIII (RPD Residential Planned Development Zone). http://gcode.us/codes/walnut/view.php?topic=vi-25-viii-25_89_1&frames=on, accessed July 2017.
- ⁷ Transportation Research Board. *Highway Capacity Manual*, Washington D.C., 2002.
- ⁸ MIG. *City of Walnut General Plan, Existing Conditions Report, Walnut General Plan and West Valley Specific Plan*, February 2017.
- ⁹ Institute of Transportation Engineers. *Trip Generation Manual, 9th Edition*, 2012.

APPENDIX A
TRANSIT CENTER MEMORANDUM

Memorandum

To: Mt. San Antonio College
From: Darlene Danehy, PE, TE, PTOE
cc: Alysén Weiland, PE
Date: May 3, 2017
Re: Mt. San Antonio College Parking and Circulation Master Plan
 FINAL Transit Center Evaluation Summary

Introduction

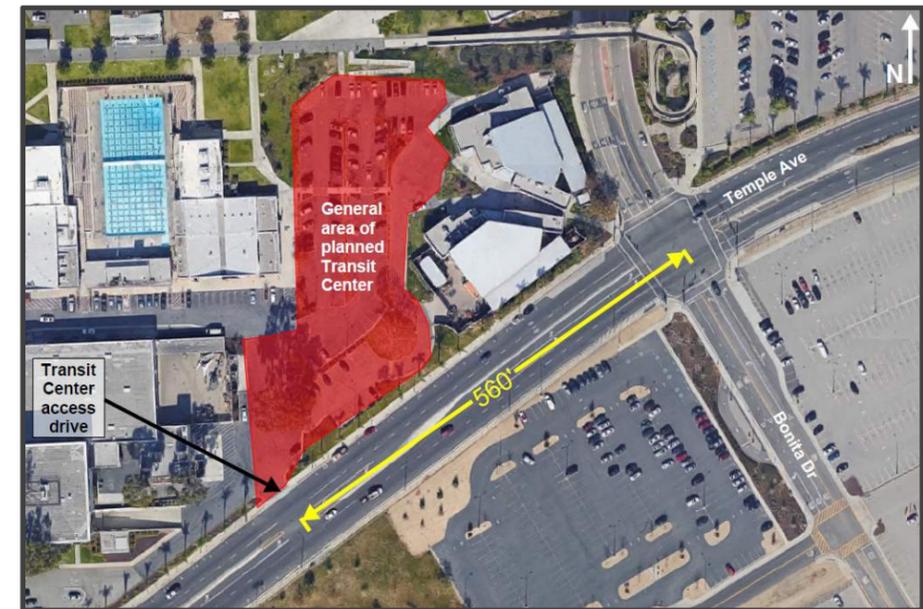
This memorandum provides a summary of the analysis for the proposed Foothill Transit Authority (FTA) Transit Center, to be located on the north side of Temple Avenue just west of Bonita Drive, as shown in Figure 1. A conceptual plan for the Transit Center was developed, including access from Temple Avenue at the existing median opening located approximately 560' west of Bonita Drive.

Operational analyses were completed to determine potential improvements which may be required with the construction of the Transit Center. This memorandum provides a discussion of assumptions made in developing the Transit Center conceptual plan, a summary of the existing and projected future conditions, and recommendations for improvements to the intersection at Temple Avenue which will provide access to the future Transit Center.

Transit Center Conceptual Plan

Based on information in the March 2017 Memorandum of Understanding agreement between FTA and Mt. San Antonio College (Mt. SAC), several conceptual plans for the transit center were developed. Following additional input and a meeting with Mt. SAC and FTA representatives, the group identified a preferred plan that includes 10 bus bays and access exclusively from the existing driveway on Temple Avenue. The preferred conceptual plan (*Conceptual Transit Station Option A*, dated March 15, 2017) is included as an attachment to this memorandum.

Figure 1. Study Area



In addition to the scope noted in the agreement on the previous page, below are some notable highlights of the conceptual plan, including:

1. Buses will share the on-site driveway (access to Temple Avenue) with vehicular traffic from buildings west of the transit center to maintain access to those buildings. This is an interim condition which will be eliminated with the construction of the new kinesiology, wellness, and aquatics facilities south of Temple Avenue;
2. A separated vehicular access road to the Welding/HVAC buildings (Building 69) turn-around, northerly maintenance area, and covered storage will be preserved. In addition, seven (7) service parking spaces for the Welding/HVAC buildings will be maintained at Mt. SAC's request;
3. An accessible parking space will be provided adjacent to the Welding/HVAC buildings;
4. Elevator access to the northerly pedestrian walkway (Miracle Mile East) will be added; and
5. Pedestrian access from Temple Avenue will be added.

Existing Traffic Volumes

Existing peak period traffic volume data was collected on Wednesday, March 15, 2017. Data was collected at both the access intersection and the nearby intersection of Temple Avenue and Bonita Drive. The AM peak hour was found to be from 7:15 to 8:15 AM, and the afternoon peak hour was found to be from 4:15 to 5:15 PM. The existing traffic volumes are shown in Figure 2.

As seen in the figure, the turning movement volumes at the access drive are heaviest for westbound right turns from Temple Avenue. Outbound traffic from the access drive is heavier in the PM peak than in the AM peak, but in both peak hours, the outbound traffic is split relatively evenly between right turns and left turns. Through traffic volumes on Temple Avenue are higher in the AM peak hour than in the PM by approximately 15%.

At the intersection of Temple Avenue and Bonita Drive, westbound through volumes are very heavy in the AM peak hour, with most of that traffic continuing straight through the intersection at the future Transit Center access drive. The westbound right turn and eastbound left turn movements are also heavy in the AM peak hour. The total intersection volume is similar to that collected in 2015 for the *2015 Facilities Master Plan Update & Physical Education Projects Traffic Impact Study*, prepared and submitted by Iteris on September 1, 2016 (2015 TIS).

Figure 2. Existing Traffic Volumes



Existing Transit Conditions

Currently, there are four transit routes operated by Foothill Transit Authority (FTA) which provide service along Temple Avenue; Routes 190, 194, 289, and 486. All four routes stop at the eastbound and westbound FTA stops located near the Temple Avenue and Bonita Drive intersection. Table 1 shows the peak bus frequencies on Temple Avenue along the frontage of Mt. SAC based on the posted schedules for each line (as of April 2017). As seen in the table, Line 486 has the highest frequency at five buses per hour.

Table 1. Existing Hourly Buses on Temple Avenue at Mt. SAC

Line	AM peak		PM peak	
	EB	WB	EB	WB
190	3	3	4	2
194	3	1	4	2
289	1	1	1	1
486	5	5	5	4
Total	12	10	14	9

Projected 2025 Traffic Volumes

In the 2015 TIA, traffic projections for 2025 were made based on expected development in the area as well as projected growth at Mt. SAC. In that report, traffic volumes at the Temple Avenue/Bonita Drive intersection increased approximately 8% between 2015 and 2025. Because the volumes collected in 2017 were similar to those collected in 2015, and to remain consistent with the 2015 TIS, traffic volumes in this study were increased by 8% to provide an estimate of 2025 volumes (Figure 3).

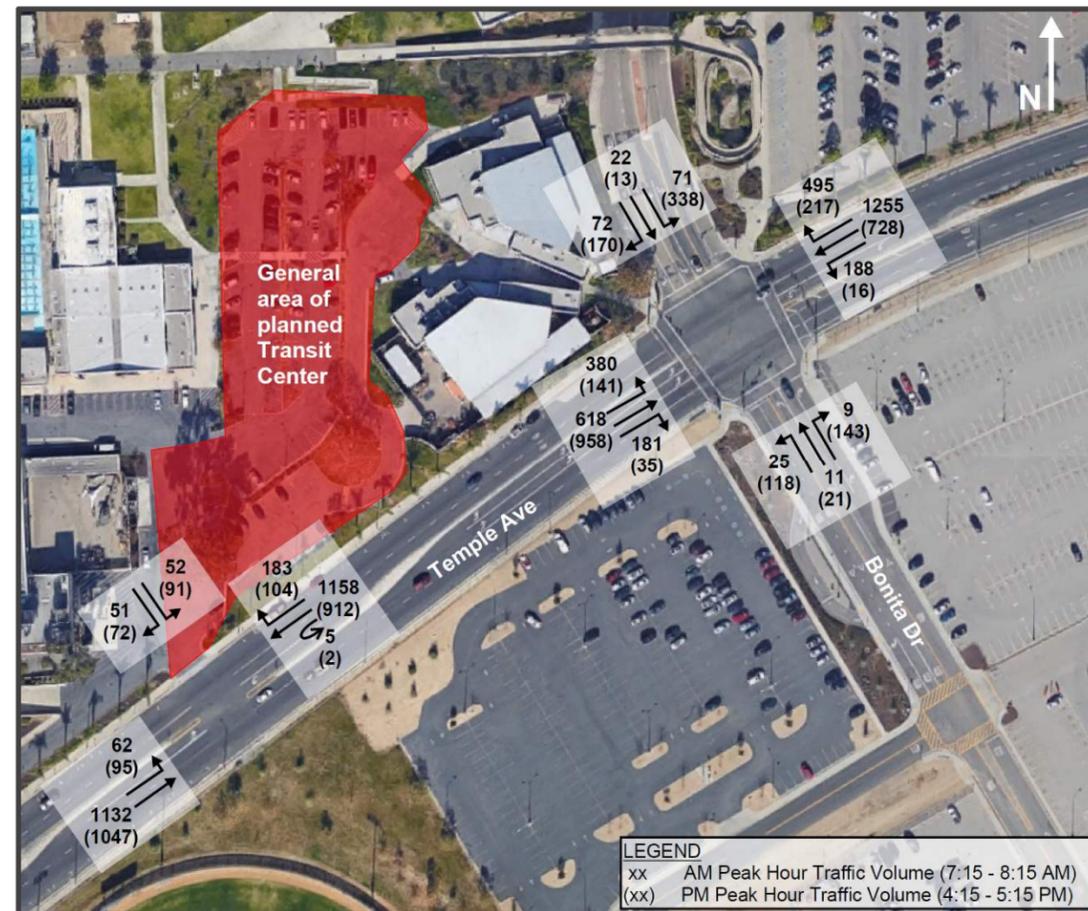
Figure 3. Projected 2025 Traffic Volumes – Without Transit Center



Although future transit projections are not yet available from FTA, it is expected that bus volumes will increase in the next few years, particularly with the construction of the Transit Center at Mt. SAC. To be conservative, it was assumed that bus traffic would double by 2025. Figure 4 shows the projected 2025 traffic volumes with the construction of the Transit Center.

As seen in the figure, traffic volumes at the Temple Avenue/Bonita Drive intersection are not anticipated to change with the construction of the Transit Center. Projections for bus traffic were completed assuming that eastbound buses on Temple Avenue would turn left into the Transit Center, then would turn left again when exiting the Transit Center. Similarly, westbound buses would turn right to enter the Transit Center, then exit by turning right again, continuing west on Temple Avenue.

Figure 4. Projected 2025 Traffic Volumes – With Transit Center



Operational Analyses

It is anticipated that when the Transit Center opens, the access drive will serve both the buses and private vehicles. Currently, the access drive provides access to parking areas as well as the pool area, which is heavily used. Plans call for the pool and its associated buildings (Buildings 27 A, B, and C) to be reconstructed in a different area of campus, at which point, the access drive will be used exclusively for bus access and occasional Mt. SAC service vehicle access to the welding/HVAC building. Therefore, to ensure that buses accessing the Transit Center will be able to do so without excessive delays which might affect schedules, the traffic analyses were completed for the most conservative situation assuming that the access drive will still serve mixed traffic in 2025. Of particular interest was to evaluate whether a traffic signal could be installed at the proposed Transit Center access without affecting operations at the Bonita Drive/Temple Avenue intersection.

Traffic simulations were run using *SimTraffic*, which is a microsimulation traffic modeling software. Both Level of Service (LOS) and 95th percentile queue lengths were evaluated at the intersection of Temple Avenue and the Transit Center access drive. LOS is a qualitative measure that describes operational conditions on roadway facilities, and specifically in terms of delays for intersections. LOS ranges from A to F, with A representing the best operating conditions and F representing the worst. LOS D or better is considered to be an acceptable operating condition. Note that uncontrolled movements at two-way stop controlled intersections (such as the through movements on Temple Avenue in the unsignalized condition) do not have a defined LOS, and are also not expected to have any queuing because the movement is free-flowing. Table 2 shows the projected 2025 LOS for the unsignalized and signalized options at the intersection of Temple Avenue and the Transit Center access drive.

Table 2. Projected 2025 Level of Service (LOS)

		Temple Avenue						Transit Center Access			Total
		Eastbound			Westbound			Southbound			
		LT	TH	RT	U-Turn	TH	RT	LT	TH	RT	
Unsignalized	AM	D	--		B	--	--	F		F	--
	PM	C	--		C	--	--	F		F	--
Signalized	AM	D	A		B	A	A	D		B	A
	PM	C	A		C	A	A	C		B	A

As seen in Table 2, vehicles (including buses) trying to exit from the Transit Center access drive onto Temple Avenue are expected to operate with considerable delays (in excess of three minutes per vehicle) under the unsignalized alternative. However, with traffic signal operation, all movements at the intersection are expected to operate efficiently.

Because of the proximity of the Transit Center access drive to the existing traffic signal at Bonita Drive, concern has been raised that the installation of a new traffic signal on Temple Avenue would cause traffic to back up into the Temple Avenue/Bonita Drive intersection. However, as seen in Table 3, the projected 95th percentile queues (those which are only exceeded in length 5% of the time) on Temple Avenue are considerably shorter than the distance between the two intersections, and are therefore not expected to interfere with operations.

Table 3. Projected 2025 95th Percentile Queues (feet)

		Temple Avenue						Transit Center Access
		Eastbound			Westbound			Southbound
		LT	TH	RT	U-Turn	TH	TH-RT	LT-RT
Unsignalized	AM	99	--		<50	--	--	238
	PM	111	--		<50	--	--	211
Signalized	AM	139	134		18	127	155	124
	PM	144	136		13	117	139	156

Recommendations

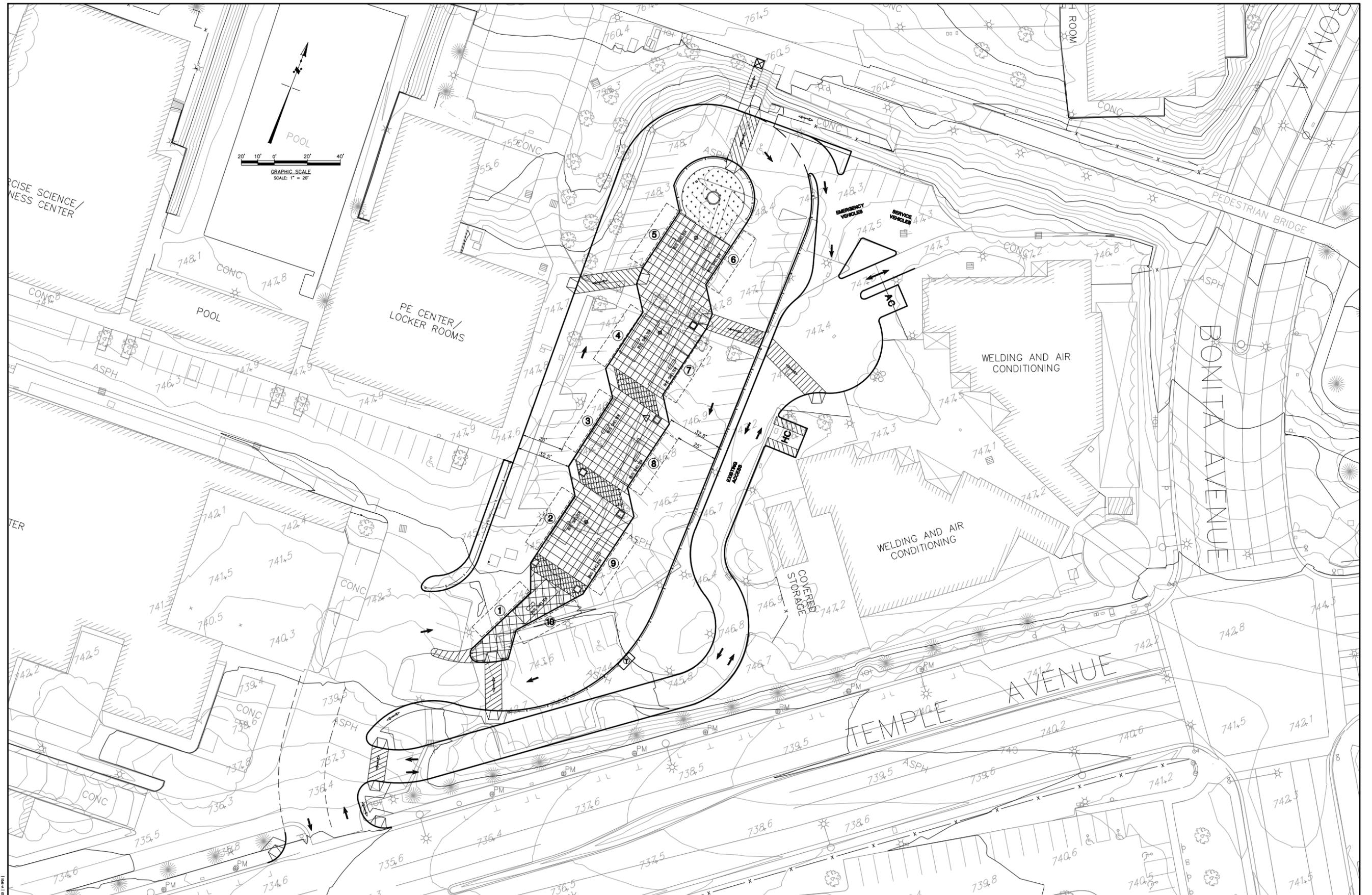
It is recommended that in order to avoid transit delays and keep buses on schedule, a traffic signal be installed at the intersection of Temple Avenue and the Transit Center access drive with the construction of a new FTA Transit Center on the Mt. SAC campus. The traffic signal should be carefully coordinated with the existing signal at the intersection of Temple Avenue and Bonita Drive. Further, the new signal will likely operate with a shorter cycle length than the existing adjacent signals on Temple Avenue in order to minimize delays for Temple Avenue traffic. Lastly, the traffic signal should rest in the green phase for Temple Avenue, only showing a relatively short green indication for the Transit Center access drive when vehicles are waiting. The findings of this analysis should be shared and discussed with the City of Walnut prior to pursuing design of the signal and Transit Center in order to obtain approval from the City.

After the pool facilities are relocated and the driveway is restricted to bus use only (with limited exceptions for service vehicles), the intersection operations should improve beyond what is shown in this memorandum. No crosswalks across Temple Avenue are recommended as crosswalks already exist at Bonita Drive, and Mt. SAC is considering grade-separated alternatives for a crossing near this location. However, it is expected that pedestrians may use the sidewalk to cross the access drive while walking along Temple Avenue.

Additional improvements at the intersection, such as the addition of an exclusive westbound right turn lane on Temple Avenue, are recommended in order to further improve operations.

Attachments:

- Conceptual plan for Transit Center



DATE	BY	DESCRIPTION

NO.	DATE	DESCRIPTION

NO.	DATE	DESCRIPTION

PSOMAS
 555 South Flower Street, Suite 4300
 Los Angeles, CA 90071
 (213) 223-1400 (213) 223-1444 fax
 www.psomas.com

MT. SAN ANTONIO COLLEGE
CONCEPTUAL TRANSIT STATION OPTION A
 IN THE CITY OF WALNUT COUNTY OF LA ANGELES STATE OF CALIFORNIA

DATE	MARCH 16, 2017
SCALE	1" = 20'
PROJECT NUMBER	

APPENDIX B
PARKING SCENARIO DETAILED CALCULATIONS

Estimated Project Phasing
PCMP Parking Scenario A

<u>Fall 2016 - Spring 2017</u>							
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit	Major Construction Projects
Measured Baseline	Mar-17		8,907	8,041	8,443	464	
Lot R & 50G Demolition	May-17	-483	8,424	8,041	8,443	-19	

<u>Fall 2017 - Spring 2018</u>							
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit	Major Construction Projects
Prior Year Baseline			8,424	8,101	8,506	-82	
Lot R Temp. Spaces	Oct-17	300	8,724	8,101	8,506	218	<div style="border: 1px solid black; padding: 5px;"> <u>MEASURE "RR" ONGOING PROJECTS</u> Business and Computer Technology Athletics Complex Phase 1 Bldg. 16 E and 40 Bldg. 16 F </div>
Farm Area Temp.	Dec-17	200	8,924	8,101	8,506	418	
Start Transit Center Construction	Jan-18	-140	8,784	8,101	8,506	278	
Start Old CDC Temp.	Jun-18	50	8,834	8,101	8,506	328	
Start Event Services Storage	Jun-18	-110	8,724	8,101	8,506	218	
Sand Volleyball Courts	Jun-18	-191	8,533	8,101	8,506	27	
Restripe Lot B	Jun-18	361	8,894	8,101	8,506	388	
Restripe Lot A	Jun-18	108	9,002	8,101	8,506	496	

<u>Fall 2018 - Spring 2019</u>							
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit	Major Construction Projects
Prior Year Baseline			9,002	8,162	8,570	432	<div style="border: 1px solid black; padding: 5px;"> <u>MEASURE "GO" PROJECT STARTS</u> Student Center Lot S Structure Lot R Structure Bookstore Athletics Complex Phase 3 (March 2019 Early Start) </div>
Lot M Added Spaces	Aug-18	100	9,102	8,162	8,570	532	
Start Lot S Structure	Mar-19	-268	8,834	8,162	8,570	264	
Start Lot R Structure	Mar-19	0	8,834	8,162	8,570	264	

<u>Fall 2019 - Spring 2020</u>							
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit	Major Construction Projects
Prior Year Baseline			8,834	8,223	8,634	200	
Open Lot R Structure	May-20	290	9,124	8,223	8,634	490	
Open Lot S Structure	May-20	840	9,964	8,223	8,634	1,330	
Restore Lot R Temp. Spaces	Jun-20	-300	9,664	8,223	8,634	1,030	

<u>Fall 2020 - Spring 2021</u>							
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit	Major Construction Projects
Prior Year Baseline			9,664	8,285	8,699	965	<div style="border: 1px solid black; padding: 5px;"> <u>MEASURE "GO" PROJECT STARTS</u> Lot F Structure Lot W Reconstruction </div>
Start Lot F Construction	Sep-20	-471	9,193	8,285	8,699	494	

Estimated Project Phasing
PCMP Parking Scenario A

<u>Fall 2021 - Spring 2022</u>						
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit
Prior Year Baseline			9,193	8,347	8,764	429
Reconstruct Lot W	Jun-22	-157	9,036	8,347	8,764	272
Open Lot F Structure	Jun-22	813	9,849	8,347	8,764	1,085
Start lot A Reconstruction	Jun-22	-600	9,249	8,347	8,764	485
Start Lot B Structure	Jun-22	-439	8,810	8,347	8,764	46
Start Lot D Buildings	Jun-22	-300	8,510	8,347	8,764	-254

MEASURE "GO" PROJECT STARTS
 Lot A Reconstruction
 Lot B Structure
 Student Services
 Library
 Science laboratories
 Technology Building
 Auditorium

<u>Fall 2022 - Spring 2023</u>						
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit
Prior Year Baseline			8,510	8,410	8,830	-320
Open Lot W	Jun-23	93	8,603	8,410	8,830	-227

MEASURE "GO" PROJECT STARTS
 Student Services
 Library
 Science laboratories
 Technology Building
 Auditorium

<u>Fall 2023 - Spring 2024</u>						
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit
Prior Year Baseline			8,603	8,473	8,896	-293
Open Lot A	Feb-24	450	9,053	8,473	8,896	157

<u>Fall 2024 - Spring 2025</u>						
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit
Prior Year Baseline			9,053	8,536	8,963	90
Restore Lot B Lay Down Area	Aug-24	200	9,253	8,536	8,963	290
Open Lot B Structure	Aug-24	598	9,851	8,536	8,963	888
Farm Construction	Jun-25	-93	9,758	8,536	8,963	795

<u>Fall 2025 - Spring 2026</u>						
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit
Prior Year Baseline			9,758	8,600	9,030	728
Restore Lot M	Jun-26	-550	9,208	8,600	9,030	178

MEASURE "GO" PROJECT STARTS
 Continuing Education
 Old Library Renovation
 Old Technology Renovation
 Fire Technology Physical Training

Estimated Project Phasing
PCMP Parking Scenario B

<u>Fall 2016 - Spring 2017</u>							
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit	Major Construction Projects
Measured Baseline	Mar-17		8,907	8,041	8,443	464	
Lot R & 50G Demolition	May-17	-483	8,424	8,041	8,443	-19	

<u>Fall 2017 - Spring 2018</u>							
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit	Major Construction Projects
Prior Year Baseline			8,424	8,101	8,506	-82	
Lot R Temp. Spaces	Oct-17	300	8,724	8,101	8,506	218	<div style="border: 1px solid black; padding: 5px;"> <u>MEASURE "RR" ONGOING PROJECTS</u> Business and Computer Technology Athletics Complex Phase 1 Bldg. 16 E and 40 Bldg. 16 F </div>
Farm Area Temp.	Dec-17	200	8,924	8,101	8,506	418	
Start Transit Center Construction	Jan-18	-140	8,784	8,101	8,506	278	
Start Old CDC Temp.	Jun-18	50	8,834	8,101	8,506	328	
Start Event Services Storage	Jun-18	-110	8,724	8,101	8,506	218	
Sand Volleyball Courts	Jun-18	-191	8,533	8,101	8,506	27	
Restripe Lot B	Jun-18	361	8,894	8,101	8,506	388	
Restripe Lot A	Jun-18	108	9,002	8,101	8,506	496	

<u>Fall 2018 - Spring 2019</u>							
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit	Major Construction Projects
Prior Year Baseline			9,002	8,162	8,570	432	<div style="border: 1px solid black; padding: 5px;"> <u>MEASURE "GO" PROJECT STARTS</u> Student Center Lot S Structure Lot R Structure Bookstore Athletics Complex Phase 3 (March 2019 Early Start) </div>
Lot M Added Spaces	Aug-18	100	9,102	8,162	8,570	532	
Start Lot S Structure	Mar-19	-268	8,834	8,162	8,570	264	
Start Lot R Structure	Mar-19	0	8,834	8,162	8,570	264	

<u>Fall 2019 - Spring 2020</u>							
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit	Major Construction Projects
Prior Year Baseline			8,834	8,223	8,634	200	
Open Lot R Structure	May-20	290	9,124	8,223	8,634	490	
Open Lot S Structure	May-20	840	9,964	8,223	8,634	1,330	
Restore Lot R Temp. Spaces	Jun-20	-300	9,664	8,223	8,634	1,030	

<u>Fall 2020 - Spring 2021</u>							
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit	Major Construction Projects
Prior Year Baseline			9,664	8,285	8,699	965	<div style="border: 1px solid black; padding: 5px;"> <u>MEASURE "GO" PROJECT STARTS</u> Lot F Structure Lot W Reconstruction </div>
Start Enhanced Lot F Construction	Sep-20	-778	8,886	8,285	8,699	187	

Estimated Project Phasing
PCMP Parking Scenario B

<u>Fall 2021 - Spring 2022</u>						
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit
Prior Year Baseline			8,886	8,347	8,764	122
Reconstruct Lot W	Jun-22	-157	8,729	8,347	8,764	-35
Open Enhanced Lot F Structure	Jun-22	1,498	10,227	8,347	8,764	1,463
Start lot A Reconstruction	Jun-22	-600	9,627	8,347	8,764	863
Start Lot B Structure	Jun-22	-439	9,188	8,347	8,764	424
Start Lot D Buildings	Jun-22	-300	8,888	8,347	8,764	124

MEASURE "GO" PROJECT STARTS
 Lot A Reconstruction
 Lot B Structure
 Student Services
 Library
 Science laboratories
 Technology Building
 Auditorium

<u>Fall 2022 - Spring 2023</u>						
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit
Prior Year Baseline			8,888	8,410	8,830	58
Open Lot W	Jun-23	93	8,981	8,410	8,830	151

MEASURE "GO" PROJECT STARTS
 Student Services
 Library
 Science laboratories
 Technology Building
 Auditorium

<u>Fall 2023 - Spring 2024</u>						
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit
Prior Year Baseline			8,981	8,473	8,896	85
Open Lot A	Feb-24	450	9,431	8,473	8,896	535

<u>Fall 2024 - Spring 2025</u>						
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit
Prior Year Baseline			9,431	8,536	8,963	468
Restore Lot B Lay Down Area	Aug-24	200	9,631	8,536	8,963	668
Open Lot B Structure	Aug-24	598	10,229	8,536	8,963	1,266
Farm Construction	Jun-25	-93	10,136	8,536	8,963	1,173

<u>Fall 2025 - Spring 2026</u>						
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit
Prior Year Baseline			10,136	8,600	9,030	1,106
Restore Lot M	Jun-26	-550	9,586	8,600	9,030	556

MEASURE "GO" PROJECT STARTS
 Continuing Education
 Old Library Renovation
 Old Technology Renovation
 Fire Technology Physical Training

Estimated Project Phasing
PCMP Parking Scenario C

<u>Fall 2016 - Spring 2017</u>							
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit	Major Construction Projects
Measured Baseline	Mar-17		8,907	8,041	8,443	464	
Lot R & 50G Demolition	May-17	-483	8,424	8,041	8,443	-19	

<u>Fall 2017 - Spring 2018</u>							
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit	Major Construction Projects
Prior Year Baseline			8,424	8,101	8,506	-82	
Lot R Temp. Spaces	Oct-17	300	8,724	8,101	8,506	218	<div style="border: 1px solid black; padding: 5px;"> <u>MEASURE "RR" ONGOING PROJECTS</u> Business and Computer Technology Athletics Complex Phase 1 Bldg. 16 E and 40 Bldg. 16 F </div>
Farm Area Temp.	Dec-17	200	8,924	8,101	8,506	418	
Start Transit Center Construction	Jan-18	-140	8,784	8,101	8,506	278	
Start Old CDC Temp.	Jun-18	50	8,834	8,101	8,506	328	
Start Event Services Storage	Jun-18	-110	8,724	8,101	8,506	218	
Sand Volleyball Courts	Jun-18	-191	8,533	8,101	8,506	27	
Restripe Lot B	Jun-18	361	8,894	8,101	8,506	388	
Restripe Lot A	Jun-18	108	9,002	8,101	8,506	496	

<u>Fall 2018 - Spring 2019</u>							
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit	Major Construction Projects
Prior Year Baseline			9,002	8,162	8,570	432	<div style="border: 1px solid black; padding: 5px;"> <u>MEASURE "GO" PROJECT STARTS</u> Student Center Lot S Structure Lot R Structure Bookstore Athletics Complex Phase 3 (March 2019 Early Start) </div>
Lot M Added Spaces	Aug-18	100	9,102	8,162	8,570	532	
Start Lot S Structure	Mar-19	-268	8,834	8,162	8,570	264	
Start Enhanced Lot R Structure	Mar-19	0	8,834	8,162	8,570	264	

<u>Fall 2019 - Spring 2020</u>							
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit	Major Construction Projects
Prior Year Baseline			8,834	8,223	8,634	200	
Open Enhanced Lot R Structure	May-20	620	9,454	8,223	8,634	820	
Open Lot S Structure	May-20	840	10,294	8,223	8,634	1,660	
Restore Lot R Temp. Spaces	Jun-20	-300	9,994	8,223	8,634	1,360	

<u>Fall 2020 - Spring 2021</u>							
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit	Major Construction Projects
Prior Year Baseline			9,994	8,285	8,699	1,295	<div style="border: 1px solid black; padding: 5px;"> <u>MEASURE "GO" PROJECT STARTS</u> Lot F Structure Lot W Reconstruction </div>
Start Lot F Construction	Sep-20	-471	9,523	8,285	8,699	824	

Estimated Project Phasing
PCMP Parking Scenario C

<u>Fall 2021 - Spring 2022</u>						
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit
Prior Year Baseline			9,523	8,347	8,764	759
Reconstruct Lot W	Jun-22	-157	9,366	8,347	8,764	602
Open Lot F Structure	Jun-22	813	10,179	8,347	8,764	1,415
Start lot A Reconstruction	Jun-22	-600	9,579	8,347	8,764	815
Start Lot B Structure	Jun-22	-439	9,140	8,347	8,764	376
Start Lot D Buildings	Jun-22	-300	8,840	8,347	8,764	76

MEASURE "GO" PROJECT STARTS
 Lot A Reconstruction
 Lot B Structure
 Student Services
 Library
 Science laboratories
 Technology Building
 Auditorium

<u>Fall 2022 - Spring 2023</u>						
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit
Prior Year Baseline			8,840	8,410	8,830	10
Open Lot W	Jun-23	93	8,933	8,410	8,830	103

MEASURE "GO" PROJECT STARTS
 Student Services
 Library
 Science laboratories
 Technology Building
 Auditorium

<u>Fall 2023 - Spring 2024</u>						
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit
Prior Year Baseline			8,933	8,473	8,896	37
Open Lot A	Feb-24	450	9,383	8,473	8,896	487

<u>Fall 2024 - Spring 2025</u>						
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit
Prior Year Baseline			9,383	8,536	8,963	420
Restore Lot B Lay Down Area	Aug-24	200	9,583	8,536	8,963	620
Open Lot B Structure	Aug-24	598	10,181	8,536	8,963	1,218
Farm Construction	Jun-25	-93	10,088	8,536	8,963	1,125

<u>Fall 2025 - Spring 2026</u>						
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit
Prior Year Baseline			10,088	8,600	9,030	1,058
Restore Lot M	Jun-26	-550	9,538	8,600	9,030	508

MEASURE "GO" PROJECT STARTS
 Continuing Education
 Old Library Renovation
 Old Technology Renovation
 Fire Technology Physical Training

Estimated Project Phasing
PCMP Parking Scenario D

<u>Fall 2016 - Spring 2017</u>							
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit	Major Construction Projects
Measured Baseline	Mar-17		8,907	8,041	8,443	464	
Lot R & 50G Demolition	May-17	-483	8,424	8,041	8,443	-19	

<u>Fall 2017 - Spring 2018</u>							
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit	Major Construction Projects
Prior Year Baseline			8,424	8,101	8,506	-82	
Lot R Temp. Spaces	Oct-17	300	8,724	8,101	8,506	218	<div style="border: 1px solid black; padding: 5px;"> <u>MEASURE "RR" ONGOING PROJECTS</u> Business and Computer Technology Athletics Complex Phase 1 Bldg. 16 E and 40 Bldg. 16 F </div>
Farm Area Temp.	Dec-17	200	8,924	8,101	8,506	418	
Start Transit Center Construction	Jan-18	-140	8,784	8,101	8,506	278	
Start Old CDC Temp.	Jun-18	50	8,834	8,101	8,506	328	
Start Event Services Storage	Jun-18	-110	8,724	8,101	8,506	218	
Sand Volleyball Courts	Jun-18	-191	8,533	8,101	8,506	27	
Restripe Lot B	Jun-18	361	8,894	8,101	8,506	388	
Restripe Lot A	Jun-18	108	9,002	8,101	8,506	496	

<u>Fall 2018 - Spring 2019</u>							
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit	Major Construction Projects
Prior Year Baseline			9,002	8,162	8,570	432	<div style="border: 1px solid black; padding: 5px;"> <u>MEASURE "GO" PROJECT STARTS</u> Student Center Lot S Structure Lot R Structure Bookstore Athletics Complex Phase 3 (March 2019 Early Start) </div>
Lot M Added Spaces	Aug-18	100	9,102	8,162	8,570	532	
Start Lot S Structure	Mar-19	-268	8,834	8,162	8,570	264	
Start Enhanced Lot R Structure	Mar-19	0	8,834	8,162	8,570	264	

<u>Fall 2019 - Spring 2020</u>							
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit	Major Construction Projects
Prior Year Baseline			8,834	8,223	8,634	200	
Open Enhanced Lot R Structure	May-20	620	9,454	8,223	8,634	820	
Open Lot S Structure	May-20	840	10,294	8,223	8,634	1,660	
Restore Lot R Temp. Spaces	Jun-20	-300	9,994	8,223	8,634	1,360	

<u>Fall 2020 - Spring 2021</u>							
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit	Major Construction Projects
Prior Year Baseline			9,994	8,285	8,699	1,295	<div style="border: 1px solid black; padding: 5px;"> <u>MEASURE "GO" PROJECT STARTS</u> Lot F Structure Lot W Reconstruction </div>
Start Enhanced Lot F Construction	Sep-20	-778	9,216	8,285	8,699	517	

Estimated Project Phasing
PCMP Parking Scenario D

<u>Fall 2021 - Spring 2022</u>						
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit
Prior Year Baseline			9,216	8,347	8,764	452
Reconstruct Lot W	Jun-22	-157	9,059	8,347	8,764	295
Open Enhanced Lot F Structure	Jun-22	1,498	10,557	8,347	8,764	1,793
Start lot A Reconstruction	Jun-22	-600	9,957	8,347	8,764	1,193
Start Lot B Structure	Jun-22	-439	9,518	8,347	8,764	754
Start Lot D Buildings	Jun-22	-300	9,218	8,347	8,764	454

MEASURE "GO" PROJECT STARTS
 Lot A Reconstruction
 Lot B Structure
 Student Services
 Library
 Science laboratories
 Technology Building
 Auditorium

<u>Fall 2022 - Spring 2023</u>						
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit
Prior Year Baseline			9,218	8,410	8,830	388
Open Lot W	Jun-23	93	9,311	8,410	8,830	481

MEASURE "GO" PROJECT STARTS
 Student Services
 Library
 Science laboratories
 Technology Building
 Auditorium

<u>Fall 2023 - Spring 2024</u>						
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit
Prior Year Baseline			9,311	8,473	8,896	415
Open Lot A	Feb-24	450	9,761	8,473	8,896	865

<u>Fall 2024 - Spring 2025</u>						
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit
Prior Year Baseline			9,761	8,536	8,963	798
Restore Lot B Lay Down Area	Aug-24	200	9,961	8,536	8,963	998
Open Lot B Structure	Aug-24	598	10,559	8,536	8,963	1,596
Farm Construction	Jun-25	-93	10,466	8,536	8,963	1,503

<u>Fall 2025 - Spring 2026</u>						
		Change	Actual Parking Spaces	Calculated Need - Revised Growth	Calculated Need + 5%	Surplus/Deficit
Prior Year Baseline			10,466	8,600	9,030	1,436
Restore Lot M	Jun-26	-550	9,916	8,600	9,030	886

MEASURE "GO" PROJECT STARTS
 Continuing Education
 Old Library Renovation
 Old Technology Renovation
 Fire Technology Physical Training



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