Miramar Community College Facilities Master Plan

ARCHITECTURAL MASTER PLAN

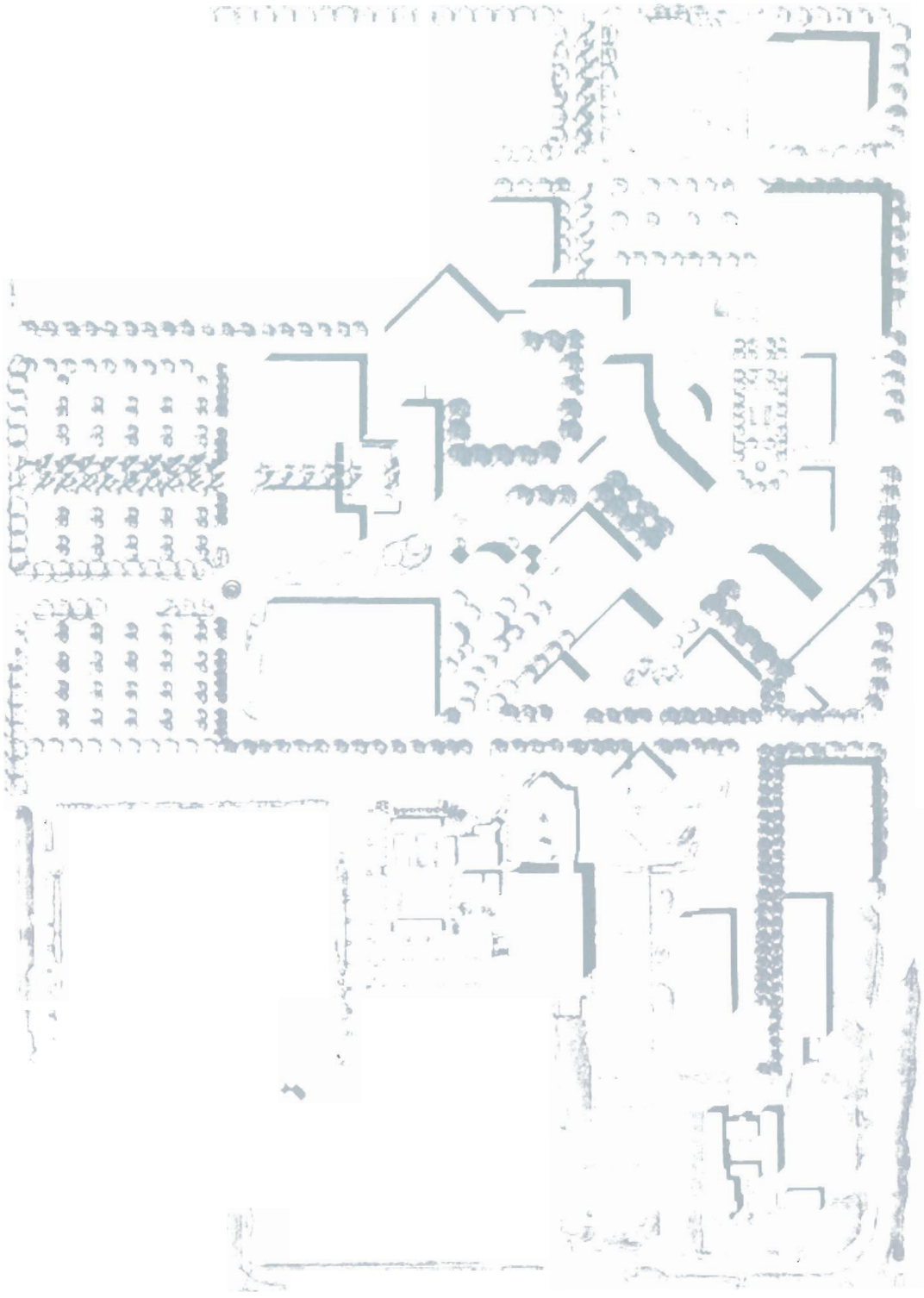
LANDSCAPE MASTER PLAN

UTILITIES MASTER PLAN

San Diego Community College District

June 2005
Updated October 2005

PERKINS + WILL



Miramar Community College Facilities Master Plan

ARCHITECTURAL MASTER PLAN

San Diego Community College District

June 2005

PERKINS
+WILL

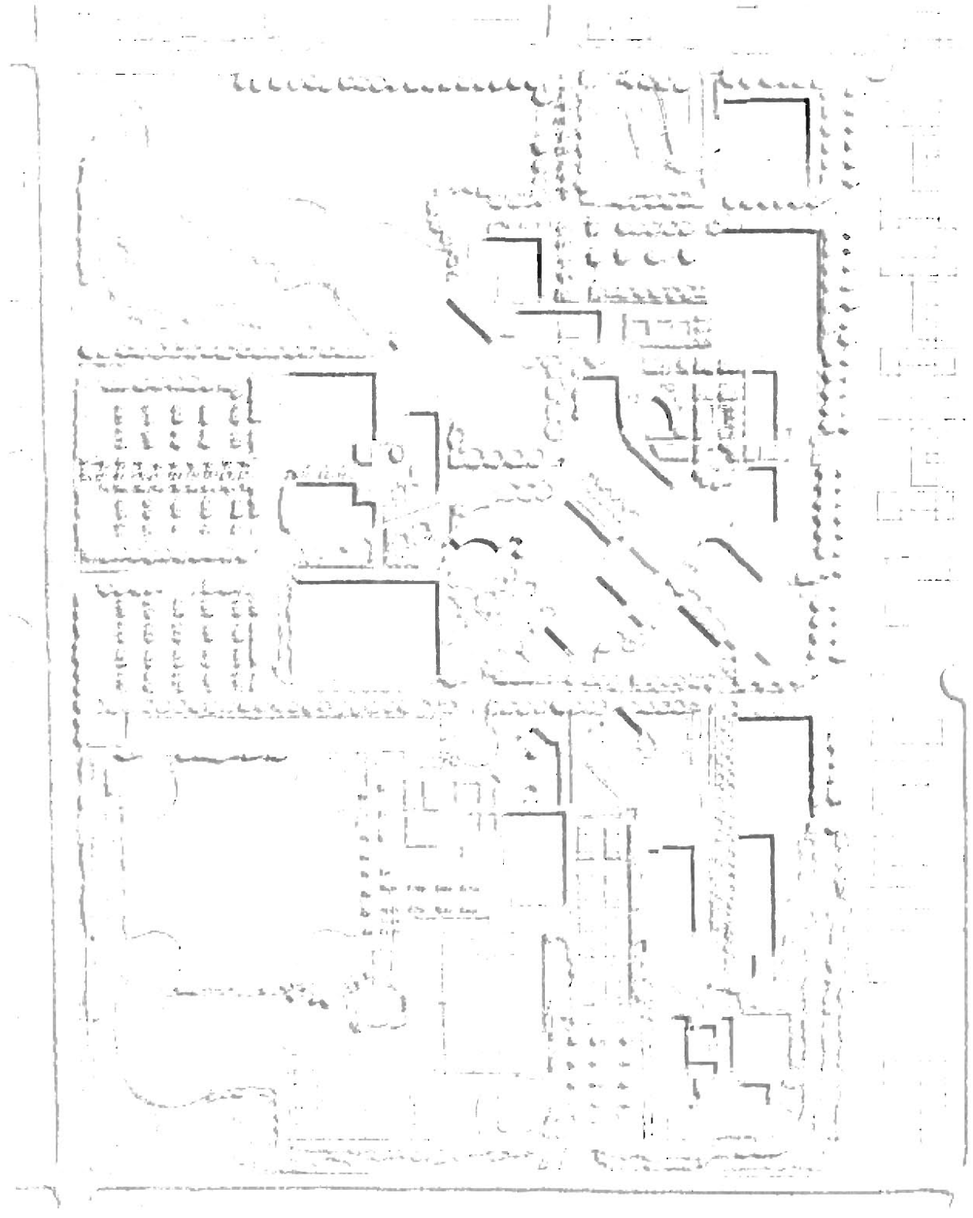


Table of Contents:

PERKINS
+WILL

617 W. Seventh Street, 12th Floor
Los Angeles, California 90017
t 213.270.6450 f 213.270.6451
www.perkinswill.com

Acknowledgments

The Miramar College Master Plan is the result of over eight months of collaborative planning and research on behalf of the Miramar Master Plan Committee, the San Diego Community College District, the surrounding community, and the Perkins+Will Planning Team. From the onset, all members of the campus including students, staff and faculty, were encouraged to participate in campus planning meetings which structured this plan. The participation, time and consideration of all Committee and District members were invaluable to the planning process, and all must be congratulated for the selfless commitment each member has made to ensure the future development and success of the campus at Miramar.

Miramar Master Plan Committee:

Hanz Biltz, Associated Student President

Rick Covert, Facilities Supervisor - Landscape

Pam Deegan, Vice President, Instruction

Bob Fritsch, Fine Arts, Academic Senate President-Elect

Robert Garber, Vice President Student Services

Dan Gutowski, Hourglass Park Coordinator

Pat Keir, former Miramar College President

Peggy Manges, Director of Administrative Services

Ron Manzoni, Interim President

Mary Meiners, Psychology, former Academic Senate President

George Mendevil, Associate Dean, North City Center Continuing Education

Greg Newhouse, Associate Dean, Advanced Transportation Technology

Wheeler North, Aviation, Academic Senate President

Kevin Petti, Biological Sciences

Edith Pollack, Assistant Vice President Student Services

Tim Riley, Regional Facilities officer

Sandi Rosalia, Classified Senate Representative

Jeff Stevens, Mira Mesa Community Representative

Sandi Trevisan, Public Information Officer

Jim Vincent, Dean, Continuing Education

San Diego Community College District Office:

Damon Schamu, Assistant Chancellor, Facilities Management, San Diego Community College District

Richard Burkhart, Facilities Management, San Diego Community College District

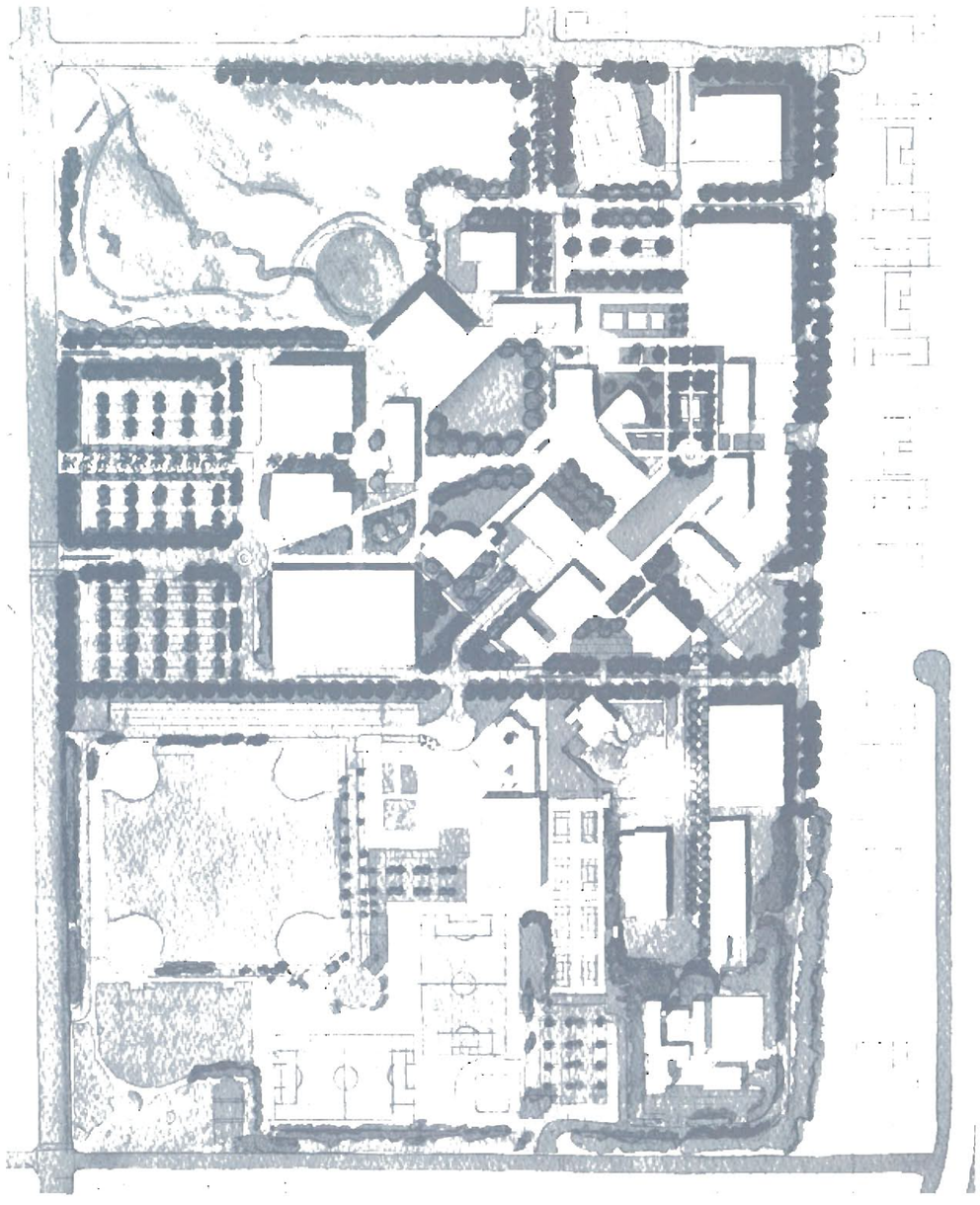
Bryan Adams, District Architect

Planning Team:

Mike Fejes, AIA, Managing Director
Perkins+Will

Nick Selerup, AIA, Design Director
Perkins+Will

Kyoko Adachi, Project Manager
Perkins+Will



Mission Statement

"Our mission is to prepare students to succeed in a world of dynamic change by providing an environment which values excellence in teaching, learning, innovation and partnerships in a setting that celebrates diversity."

Executive Summary

The Miramar College Master Plan represents a collaboration between the Miramar College Master Planning Committee, the District and the architects to establish a simple, yet thoughtful approach to campus planning and architecture. We have endeavored to consider design opportunities that may be derived from the existing context, historic influences, architectural case studies, planning strategies, programmatic need and site context, in order to provide future architects and campus administrators with a meaningful foundation for their own research. The plan attempts to address paradoxical contradictions between traditional construction and modernity. It offers both flexibility and structure by providing a "big idea" within which to work, creating opportunities for future changes in technology, programming and design standards.

The Master Planning Committee met seven times in eight months, beginning in April of 2004 with its first visioning session. At this session, planning guidelines were discussed and a review process was established to expedite the planning process. The Committee then set out to examine the overall site including its orientation, access and existing facilities, and began to formulate a forward thinking approach to campus growth. Finally, the visioning session began to define a planning process generated from investigations of axial and contextual relationships and adjacencies, in an effort to define a "big picture" or "main idea."

During these visioning sessions, the committee enumerated Proposition "S" funded projects, as well as future building requirements, and outlined construction phasing sequencing. It also proposed way finding and sustainability guidelines to support its future campus vision. Finally, outdoor spaces were hierarchically developed from the campus organizational structure that would protect existing endangered species, as well as provide central gathering spaces, reflective study zones, and processional spaces. These outdoor spaces will help to define the character of the campus' physical environment and provide opportunities for individual and industy recognition.

The Campus Plan lays out three dynamic axial relationships; one to the north on axis with Westview Parkway and in relation to Black Mountain in the distance, the second to the southeast, adjoining the upper and lower campuses, and finally to the west, uniting Black Mountain Road with the campus interior. A series of landscaped outdoor spaces and pedestrian pathways emanate from these axes, and all prominent buildings, both existing and proposed, relate to them.

With an abundance of available land, the campus planner and architect are afforded a tremendous opportunity for land development. Vernal and road pools located at the northwest corner of campus, currently in disrepair, would greatly benefit from restoration and protection. These pools periodically collect storm water, providing temporary habitat for endangered fairy shrimp and plant life. Preserving these pools would provide the campus with an opportunity to teach good environmental stewardship to the community.

3-D view of Final Miramar College Master Plan

On November 8, 2004, the Miramar College Master Plan was presented to a Citizen's Overview Committee for review and comment and on November 11th, the Board of Supervisors granted preliminary plan approval. It is the hope of the Master Planning Committee, the District and the Planning Team to provide future designers with a framework that will guide an environment supportive of the academic community it serves.

Architectural Vision Statement

The new masterplan for Miramar College establishes an organizational framework for a future environment which is warm, open and humanly scaled, a vibrant world of higher education which strengthens the mission of elevated thought, preparation for workplace, and lifelong success. The planning, architecture, and landscape design all reflect and respond to the unique qualities of the campus' ecology, regional history, Mediterranean climate and community as modern translations of these contributing elements. Sustainable design strategies employed throughout demonstrate an educated commitment to the responsible use of the earth's resources.

Through its perimeter landscaping and carefully sited buildings the campus presents a strong, coherent and clearly identifiable image to the surrounding world, a beacon of knowledge that welcomes and embraces the surrounding community as good neighbors and creates opportunities for shared use and accessible public interaction.

A special Miramar sense of place is created through an interconnected series of well-defined outdoor spaces which include large, formal quads, flexible programmatic areas, quiet, contemplative courtyards and gardens. Trellises, canopies, arcades and pergolas are employed as sun filters and space defining elements, and the careful use of water features acts to cool and humidify the air. The thematic use of bold color in plantings and landscape materials is contrasted against the architecture, which integrates with the landscape, and mutually reinforces the spaces defined between buildings and the learning process ongoing within.

Buildings are highly functional and flexible, integrating modern technologies with the ability to adapt to a wide range of teaching/curricular options, and designed to allow for future expansion. A consistent, coherent vocabulary is achieved campus-wide, as pre-existing buildings are unified with new structures through the use of color, landscape, and hardscape, referencing the history of the local missions and a sustainable strategy to minimize heat gain. As a result, formerly unrelated older buildings and new structures alike are united visually into a coherent campus. New buildings are built of traditional, natural materials within this color palette, and employ transparency to encourage inquisitiveness and communicate internal logic.

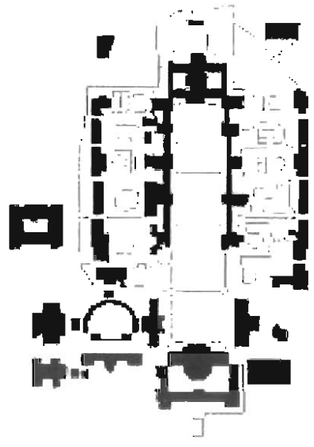
The Master Plan diagrams provide building footprints only, based upon customary square footages required by most programs. Each program will generate its own needs and requirements, which will in turn, generate individual building footprints. At the onset of each new project, it is the intention that the master plan will help inform the design process, saving time for the designer, and ensuring respectful acknowledgement of the basic organizational principles outlined in the Master Plan.

Timelessness, comfort, integrity and honesty of expression all act to create a functional, beautiful, and an esthetically pleasing campus environment which instills students, faculty and community members with memories of their Miramar College experience to last a lifetime.

University of Washington, Seattle, Washington

Parc de la Villette, Paris, France

Foothill College, Los Altos, California



University of Virginia, Charlottesville, Virginia

Conceptual Plans and Case Study Analysis

In planning the Miramar campus, several case studies were selected as compositional guides to convey basic organizational principles of campus planning. These case studies employed radial, axial, composite, clustered, and grid systems, and included the University of Washington at Seattle, Parc de le Vilette, Paris, France, Foothill College (a campus in northern California), and the University of Virginia.

The use of vistas and visual reference points at the University of Washington campus were of special interest to the Miramar Master Planning Committee, where sight lines lead to Mt. Rainier through allees of cherry trees. Way finding is simplified as the mountain serves as a prevailing reference point throughout the campus.

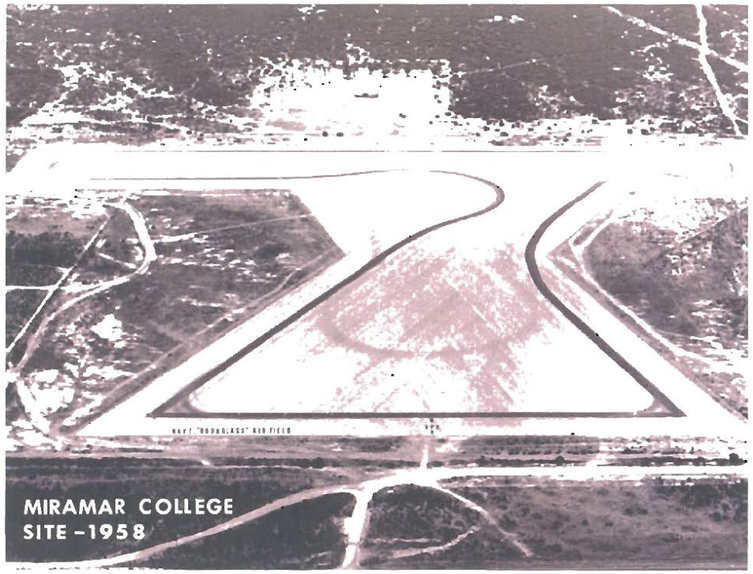
Foothill College campus is similar in size to that of Miramar's at its proposed build-out of 25,000 enrollment. It uses a clustered organizational system, linking building groups to each other through a hierarchical system of outdoor spaces. The overall campus plan is "organic" in nature, organized around highly defined interior spaces that expand across a terraced terrain, and dispersing more loosely at its edges.

Parc de la Villette by Bernard Tschumi is located in Paris, France and demonstrates a composite plan organization. Originally developed as an urban renewal project, it incorporates themed gardens that unify man-made artifacts or "folies" with "natural" landscaping elements.

The University of Virginia is an historic campus designed by Thomas Jefferson in 1819 using a grid system. Jefferson originally designed the campus on a predictable building grid as a series of 10 pavilions connected by a colonnade. These pavilions were oriented around a central lawn terminated on one end by the Rotunda and open to mountain views at the other end. Each Pavilion was associated with the program taught within. Later, Old Cabell Hall was added to the end of the lawn, creating a campus quadrangle. This quad is now linked by an expansive tree-lined mall, framing views of buildings and adding a protective overhead shade canopy.

Using organizational information gained from these case studies, the Master Planning Committee set about to determine the best organizational strategy for the Miramar campus. The committee began by analyzing existing building structures and their relationships to parking, pedestrian access and way finding, as well as hierarchical programmatic relationships and programmatic interaction. In addition to previous site analysis, it also considered the campus' street visibility from several key intersections. Several schemes resulted from this analysis and included a clustered organizational scheme, a sight line organizational scheme centered on the Black Mountain vista, and an Hourglass scheme that employed the existing hourglass airfield as an historic artifact. The Hourglass was also used to determine landscape use and organization, and a roadway loop around the campus followed its pattern.

Finally, an axial scheme developed that linked the existing 45 degree angles generated from the Science and Technology Building classrooms with a grid generated from the Westview Drive/Black Mountain view court axis. This axial system revealed a strong pedestrian corridor leading from the southwest portion of campus to Westview Parkway through various outdoor spaces and building cavities.



Miramar College, 1958

Miramar College, 1973

Campus History

1969-2003 Background:

The Miramar campus site is situated on Kearny Mesa, a mesa consisting of Tertiary and Quartemary-age rock supporting primarily costal Diegan scrub and vernal pools. These pools are created during the rainy season by slow percolating soil conditions and support unique flora and fauna, as well as an endangered species of San Diego fairy shrimp (branchinecta andiegonensis).

From 1937 to 1958, the site was used as a private hourglass-shaped airfield disturbing much of the original plant and animal species. By 1969, the landing field had been plowed over to prevent its further use and the Miramar College campus opened with three buildings housing Administration of Justice and Fire Science programs. In 1971, Aviation Maintenance was added to the academic program.

Interstate 15 opened (formerly Highway 395), attracting development and by the late seventies and early eighties, residential housing had nearly surrounded the campus. The aerial image of 1996 shows the rapid growth of the Miramar area, as well as the absence of most of the historic airfield.

As the academic program evolved, the college added several more buildings to the site including: the Police Academy, the Interim Library, the Instructional Center, the Child Development Center, the Mira Mesa Recreational Complex (Hourglass Park), the District Computing Distribution Center, the Automotive Technology Career Instructional Building, the Science and Technology Building, the Diesel Technology Laboratory, and a host of portable/modular buildings serving as classrooms and administrative services.

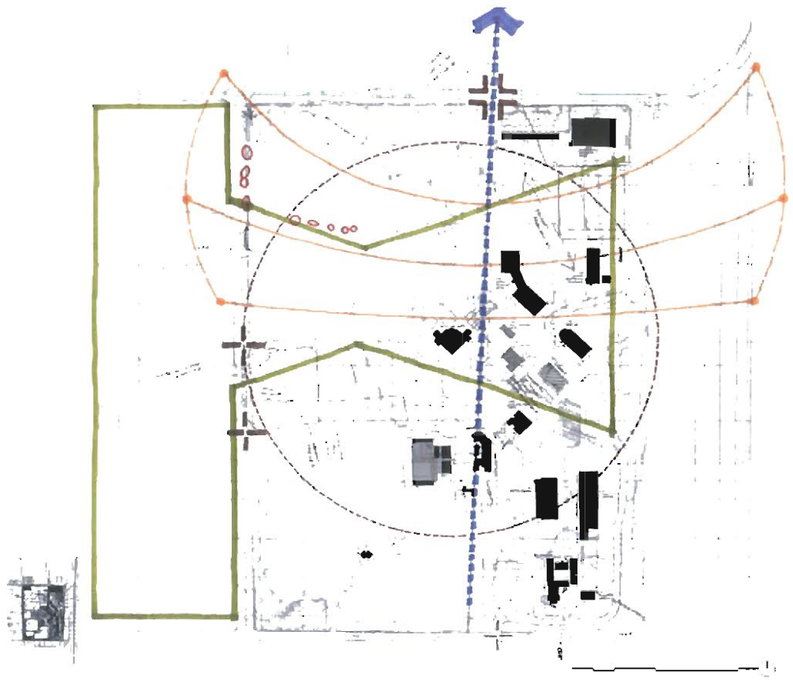
On November 5, 2002, San Diego voters approved the Proposition "S" Construction Bond Program to renovate and modernize the existing campus structures, improve campus safety, and facilitate a master plan as a guideline for future construction and campus enhancements. The plan, in it's final phase, will serve a future campus enrollment of 25,000 students.

Future curriculum development will include a diverse Liberal Arts program, and will enhance existing programs to meet the academic needs of a growing population. As the campus develops, strides should be taken to integrate new structures with thoughtful, well-developed landscaping and hardscaping to ensure a welcoming sense of place. The development of a layered hierarchy of outdoor gardens, plazas, private spaces and gathering spaces linked to building structures and parking by a system of pathways and visual corridors would greatly enhance campus socialization and desirability. An effort should also be made to acknowledge historic influences that have helped defined the campus to this point. These influences include references to aviation, geology, paleontology, and general San Diego history. The campus master planning committee must continue to assess and respond to campus needs as the campus enrollment grows and the academic program progresses.

Miramar College, 1979

Miramar College, 1996

Proposed Final Master Plan - aerial view



Site analysis showing Hourglass airstrip (green), the sun's path as it travels across campus (orange), a ten-minute walk across campus (dashed purple circle shows the diameter of the 10 minute walk), and a visual axis with Black Mountain (blue dashed line). Vernal and road pools are indicated in red outline at the north-west edge of campus.

Looking north between existing Administration and Aviation Buildings

Vernal Pools

Site Analysis and Surrounding Context

Site analysis with respect to the Master Plan included context and climate analysis, transportation, zoning and community surveys. The Master Plan based its research on information provided by San Diego Regional Planning Agency (SANDAG), US Geological Survey (USGS), the US Library of Congress Historic American Buildings-Historic American Engineering Record, the San Diego Natural History Museum, a geologic survey conducted by Ninyo Moore, a Cultural Resource Survey provided by Potter & Associates, and an Environmental Impact Report provided by Helix Environmental Planning, Incorporated.

The Miramar campus is bordered by Black Mountain Road to the west, Hillery Drive to the north, East Campus Road to the east (at present not a continuous road), and Gold Coast Drive to the south. Westview Parkway runs perpendicular to the campus at Hillery Drive. The campus is also near the Interstate 15 to the east. Black Mountain Road has been identified by SANDAG as a prime #2 collector with high traffic volume. The junction between Hillery and Westview has been designated as a #3 collector, with significant traffic flow.

Zoning surrounding the campus varies and the campus is bordered by Wangenheim Middle School and Walker Elementary School to the west, as well as Walker Park. A newly completed shopping center and older trailer park lie to the north. Residential apartments lie to the east between the campus and the interstate, and to the south at Gold Coast Drive, as well as north east near East Campus Drive and Hillery Drive.

The campus is approximately 98.6 acres, with various tree species including mature eucalyptus to the southeast and mature evergreens bordering Hourglass Park and Black Mountain Road. In an Environmental Impact Report provided by Helix Environmental Planning, Inc., vegetation communities included wetland/riparian habitats (vernal and road pools), upland habitats, including Diegan coastal sage scrub and non-native grassland, and areas of disturbed habitat. Vernal Pool habitats included woolly marbles (Psilocarphus brevissimus), plantago (Plantago elongate), crassula (Crassula aquatica), chaffweed (Centunculus minimus), and adobe popcorn flower (Plagiobothrys acanthocarpus). Much of the indigenous plant and animal communities have been disturbed, however, the campus does support communities of rodents, coyote, and migratory birds. The southwestern portion is maintained as a joint-use recreation area with the City of San Diego and includes soccer and softball fields and an aquatic center.

In a Cultural Resource Survey provided by Potter and Associates, 2004, nearby prehistoric inhabitants included the San Dieguito Complex; people who enter the San Diego are from the desert approximately 9,000 years ago. More recent indigenous peoples include Northern Diegueno/Ipai, Southern/Diegueno/Ipai, and Luiseno peoples. The project falls within the Southern Diegueno/Ipai area. The study states that, "The record search from the SCIC and the San Diego Museum of Man did not identify any previous studies within the study area and both showed that no cultural resources had been previously identified."

A geologic evaluation of the area provided by Ninyo Moore concluded that the nearest known active fault line is the Rose Canyon Fault approximately 8 miles west of the campus site. In its conclusion, the survey found, "no active faults or landslides have been mapped, or were observed in the area." It also stated, however that, "the site has moderate potential for strong ground motions due to earthquakes on nearby active faults." Other geologic considerations include the presence of fill soils at the southern end of the site.

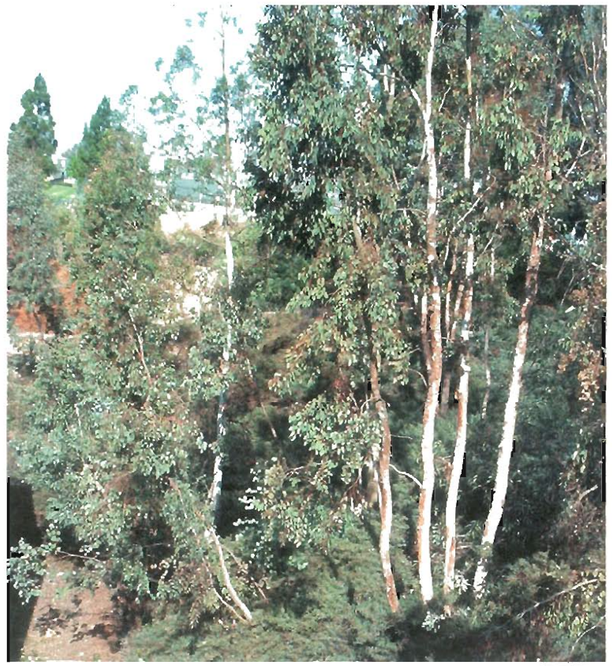
Lower campus parking (left), Police Building (right), and stair well at grade change (in foreground).

Park and ride at north west corner property bordered by Black Mountain Road and Hillery Drive

Most areas of the campus are well within a 10 minute walk, allowing for easy access from bus stops, parking lots and structures to classrooms. Most of the campus is relatively flat with the exception of an approximate 25 foot drop at the southeast corner where the Police Academy is presently located. At that location, the campus is served by an elevator tower in the Police Academy, as well as a steep flight of stairs.

Walker Park is located across Black Mountain Road to the west of campus

Wangenheim Middle School to the west of Miramar campus



Eucalyptus trees and olive undergrowth at lower campus

Signage at corner of Black Mountain Road and Gold Coast Drive

Entry signage at Black Mountain Road

Black Mountain axis

Planning Strategies

The Miramar campus is currently challenged by inefficient organizational planning resulting from rapid and unplanned expansion. Pedestrian and vehicular way finding is hindered by the absence of clear, directed pathways and gathering spaces that would help define the campus experience and contribute to an enjoyable learning experience. The campus master planning process explored existing site opportunities such as view corridors, visual landmarks, pedestrian use patterns, programmatic relationships, parking requirements, and environmental concerns, to establish planning relationships that might lead to a unifying organizational system. Case studies provided successful planning models and four distinct plans emerged from this investigation. These plans were identified as the Black Mountain Axis Plan, the Hourglass Campus, the Clustered Plan and the Diagonal Axis Plan.

Black Mountain Axis Plan

A contextual investigation of the site revealed a visual axial connection with Black Mountain in the distance to the north of campus. As a response to this visual axis, an organizational strategy creating sight lines to Black Mountain along Westview Parkway was proposed, in much the same way as the University of Washington employed sight line references to Mt. Rainier. Using this strategy, most outdoor hierarchies and pathways would relate to this north/south axis.

New building construction centered on this axis will create a central mall, similar to that employed at the University of Virginia. Subordinate outdoor spaces will emerge from the central space defined by pedestrian corridors and parking at the perimeter of campus.

View of Black Mountain to the north at intersection of Hillery and Westview Parkway

University of Washington, Seattle, Washington

Hourglass Campus

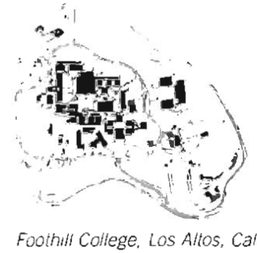
As mentioned in the campus history portion of this text, until 1958, the site was used as a private hourglass-shaped airfield. A circulation loop road was proposed using the remaining imprint of the airfield as a found artifact on the landscape. Site planning and campus development occurred as a response to this loop road, creating a central gathering space at the pinched portion of the hourglass and outlying parking surrounding it. This plan is similar to the composite plan at Parc de la Villette.

Historic Hourglass airstrip

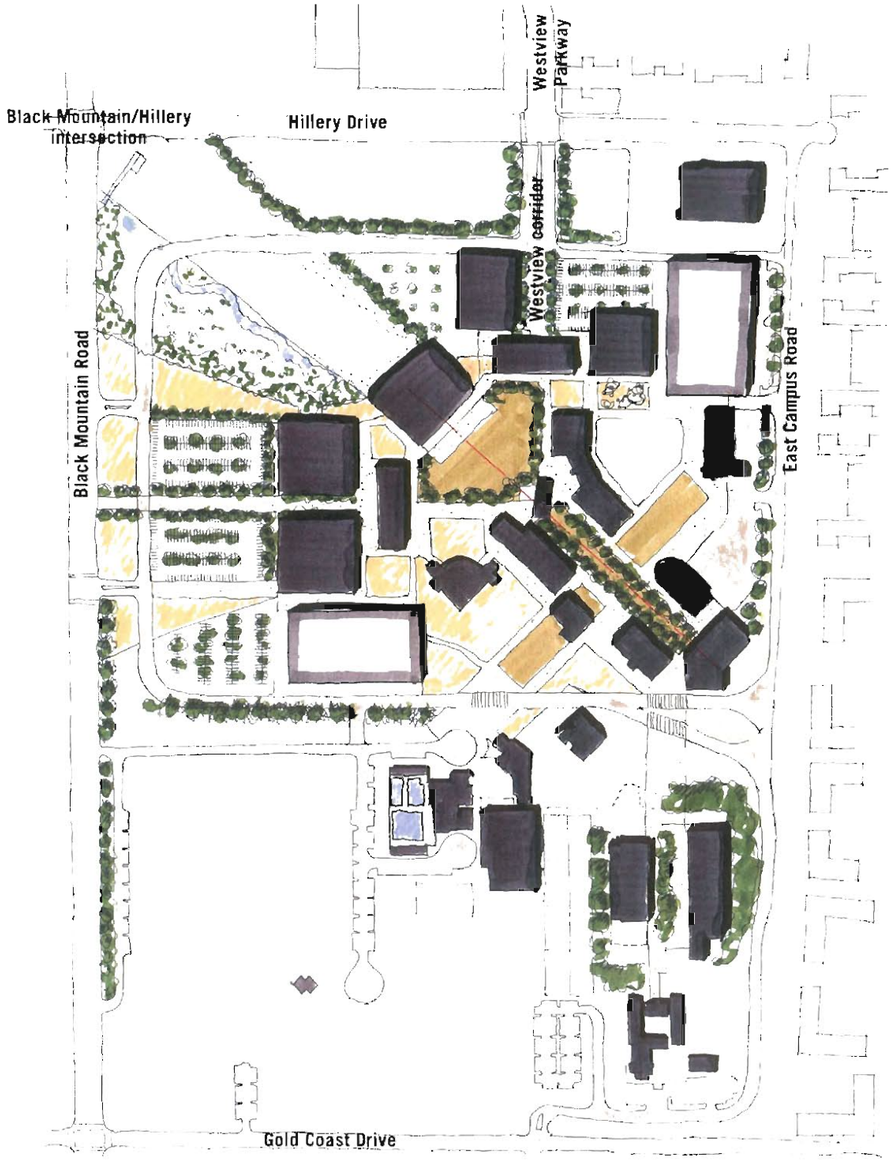
Parc de la Villette, Paris, France

Clustered Plan

The clustered plan organized spaces hierarchically around nodes of activity and program, similar to the organization structure of Foothill College. Axial relationships with Black Mountain and existing 45 degree axes aligning with the Science and Technology Building provided the circulation structure for clusters. A large central outdoor space evolved, surrounded by smaller gathering spaces that were eventually flanked by parking.



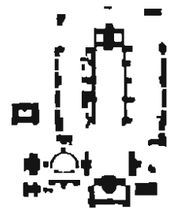
Foothill College, Los Altos, California



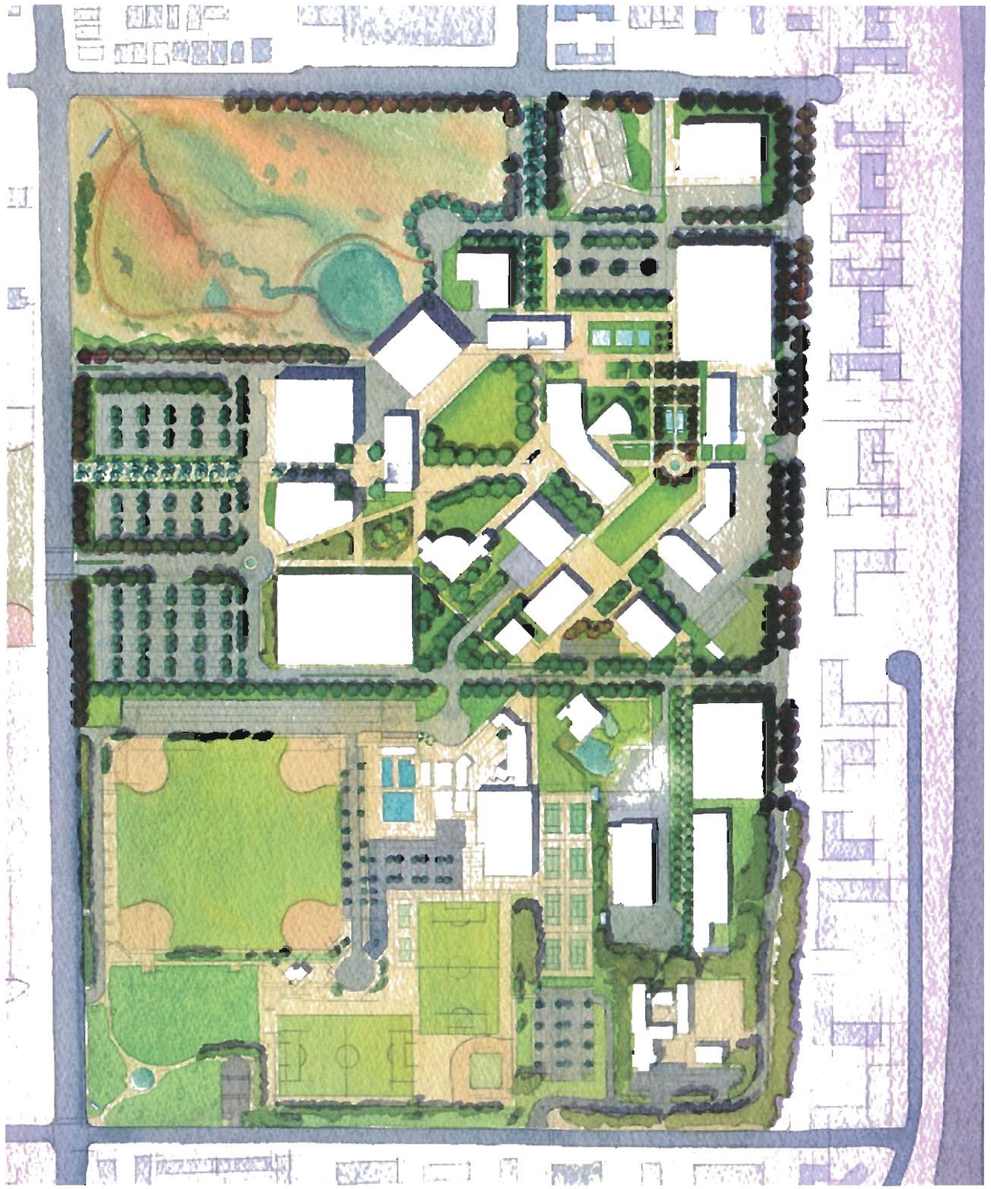
Diagonal Axis

A diagonal organizational scheme began to develop as a response to visual cues from external sight lines at two primary intersections of campus: Black Mountain/Hillery and Westview/Hillery. The Black Mountain/Hillery axis connected the busy intersection at Black Mountain and Hillery visually and structurally, providing opportunities for the development of an Environmental Preserve, transitional spaces and programs, and a primary central campus gathering space. The intersection of Westview/Hillery created the Westview corridor axis.

The 45 degree diagonal axis also afforded an opportunity to connect the new upper campus development with the older portion of campus by use of a connector pedestrian pathway. The existing campus population uses this pathway today, in a makeshift way, as pedestrians move from the lower southeastern portion of campus north to the newer portion of campus along the existing driveway connector road. This pedestrian movement is dangerous, as it mixes foot traffic with vehicular traffic. The diagonal axis scheme connects outdoor gathering spaces with a clear pedestrian pathway that minimizes vehicular/pedestrian interchange.



University of Virginia, Charlottesville, Virginia



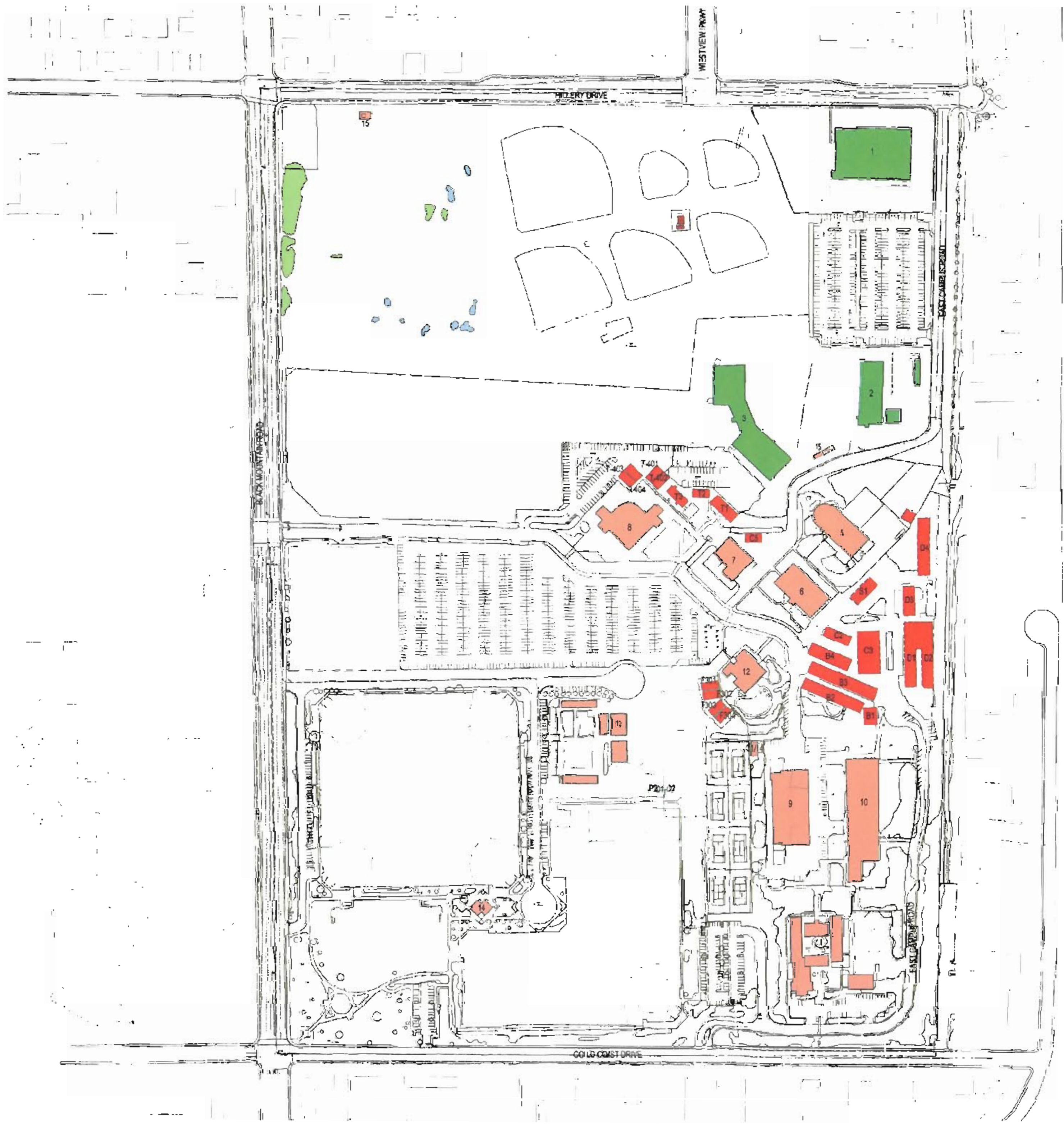
Final Master Plan

Final Master Plan

The final plan expanded the axial relationships that lay between pedestrian pathways and outdoor spatial hierarchies of the diagonal plan. The Environmental Preserve has evolved to become a principle identity opportunity, providing a "front door" that relates the campus to environmental protection and responsible land use.

Pedestrian and visual links to Westview Parkway to the north and Black Mountain Road to the west support the diagonal axial frame. View and pedestrian corridors are maintained through classroom building structures. The Tower is located at the center of campus, at the visual axis of Westview Parkway and Black Mountain Road, and acts as a visual compass point connecting pedestrian and view corridors. It is proposed that the Tower act as a central, high visibility signage point that will provide way finding and informational opportunities and link the campus visually to the surrounding community.

Parking is interspersed throughout campus along a vehicular loop road connecting Black Mountain Road with East Campus Road. Proposed campus development occurs around outdoor spaces creating shared outdoor "living rooms" that respond to the programmatic needs of adjacent buildings and other outdoor spaces.



BUILDING KEY

PERMANENT STRUCTURES

1. DISTRICT COMPUTING/ DISTRIBUTION CENTER
ASF: 40,000 SF
GSF: 54,000 SF

2. AUTOMOTIVE TECHNOLOGY CAREER INSTRUCTIONAL BUILDING
ASF: 8,000 SF
GSF: 10,800 SF

3. SCIENCE & TECHNOLOGY BUILDING
ASF: 33,500 SF
GSF: 45,225 SF

5. C-100 DIESEL TECHNOLOGY LAB

6. LIBRARY

7. U-100 HVAC PLANT

8. I-100 INSTRUCTIONAL CENTER

9. F-100 AVIATION MAINTENANCE & TECHNOLOGY CENTER

10. ADMINISTRATION

11. POLICE ACADEMY

12. CHILD DEVELOPMENT

13. AQUATIC CENTER

14. COMFORT STATION

15. UTILITIES

TEMPORARY STRUCTURES

B1 OFFICES

B2, B3 OFFICES/CLASSROOMS

B4 CLASSROOMS/LAB

C2 8 OFFICES, 1 CLASSROOM

C3 ADMISSIONS & RECORDS, COUNSELING, REPRODUCTION, EOPS, MAIL ROOM

C5 SDCS MODULAR

D1 DINING ROOMS, INDEPENDENT STUDY, LEARNING RESOURCES, STAFF RESTROOMS

D2 CAFETERIA, 3 CLASSROOMS, MEN'S ROOM

D3 BOOKSTORE

D4 CONTINUING EDUCATION CENTER

F310 - F304 CLASSROOMS

G1 RESTROOMS

P201 POOL GARDEN SHED

P202 CAMPUS STORAGE

S1 ASB BUILDING

T1 FACULTY RESOURCE CENTER

T2 OFFICES

T3 OFFICES

T4 CLASSROOMS

PHASING LEGEND

- EXISTING BUILDINGS TO REMAIN
- EXISTING PORTABLES
- EXISTING PORTABLES TO BE REMOVED
- NEW BUILDING/AREAS PROPOSED AS PART OF PROP S
- VERNAL POOL
- ROAD POOL

MIRAMAR COLLEGE

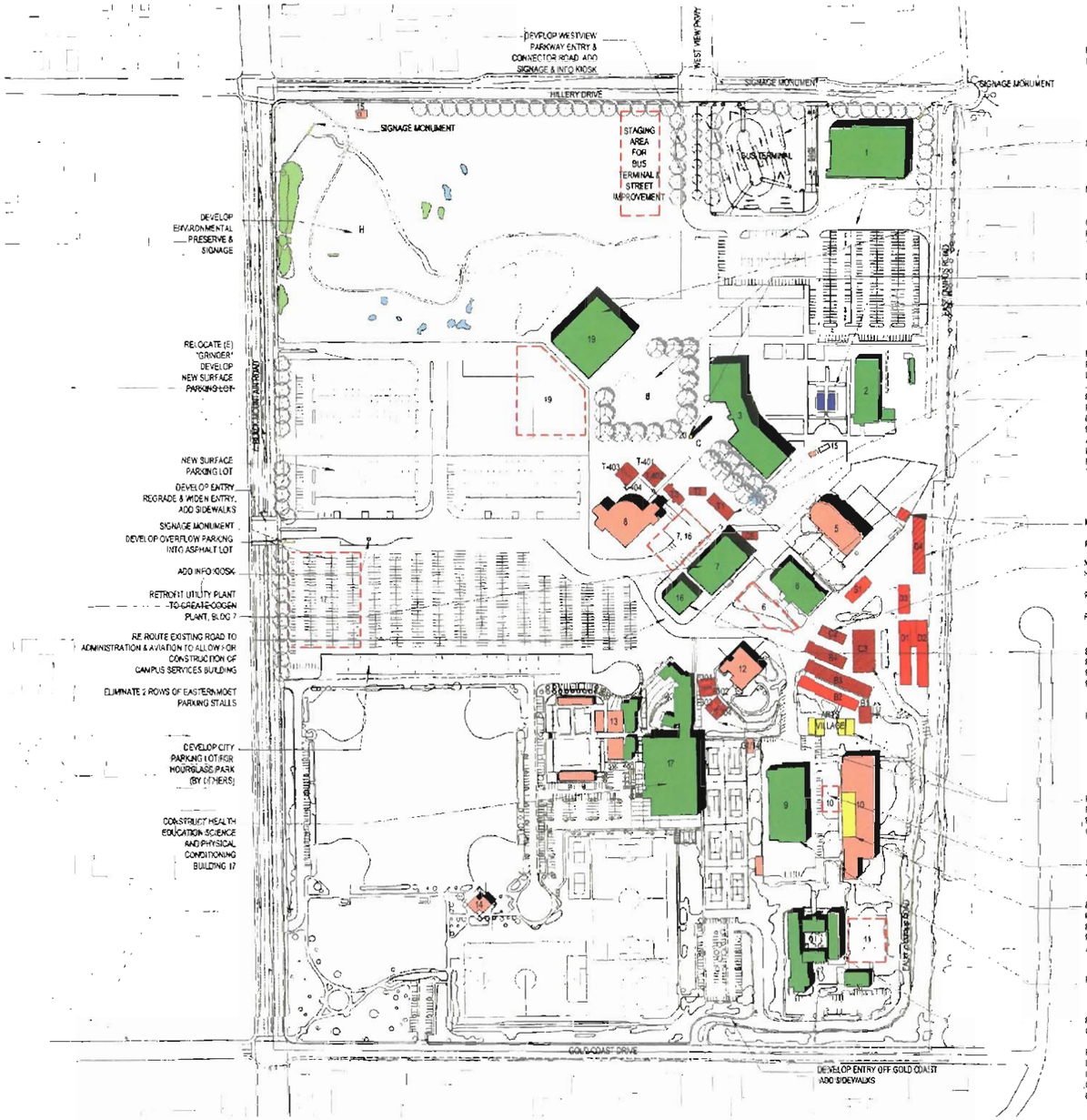
FACILITIES MASTER PLAN - AXIS SCHEME
EXISTING CAMPUS 2004

Phasing Sequence

Phase One		Bldg #	Funding Source	Prop-S Project #
	Existing Campus Phasing plan up to and including LLRC & CET construction completion			
1.1	Relocate Science & Technology classrooms housed in portables into completed Science & Technology Building	3	PS	I-2
1.2	Relocate Science Labs from Administration Building to Science & Technology Building	10,3	PS	I-2
1.3	Construct "Leave a Legacy" Plaza			
1.4	Relocate Classrooms housed in F301-304 portables into Science & Technology Building	3	PS	I-2
1.5	Renovate space in Administration Building & relocate Faculty Offices in B-3, B-4 and C-2 into space vacated by science labs in Administration Building	10		
1.6	Create Public Information Office in Administration Building	10		
1.7a	Remove Bungalows B300, B400, C-200.		PS	IV-2
1.7b	Relocate Portables F301 - 304 to create Arts Village.			
1.8	Retrofit Utility Plant to create Cogeneration Plant	7	PS	II-5
1.9	Construct Health Education Science and Physical Conditioning Facility	17	PS	II-1
1.10	Develop City shared-use parking lot for Hourglass Park			
1.11	Relocate "Grinder." Prepare site for parking development			
1.12	Develop entry and parking at Black Mountain Road Re-grade entry Add Information Kiosk		PS	II-4
1.13	Develop Infrastructure and Landscape plans, plant perimeter and primary pathway shade trees. Add sidewalks and pedestrian egress where needed including entry at Black Mountain and at south-east campus road near Police Academy			
1.14	Construct LLRC	19	PS	I-1
1.15	Develop Eco-Garden & Campus Signage at northwest corner of Hillery Drive & Black Mountain Road			

Phase One Continued		Bldg #	Funding Source	Prop-S Project #
	Existing Campus Phasing plan up to and including LLRC & CET construction completion			
1.16	Relocate Library associated programs throughout campus including "The Place" (currently located in D1 portable) into new LLRC including relocation of ILC into new LLRC	19	PS	I-1
1.17	Build Bus Terminal (by others). Construction scheduled for 2007		*By Others*	
1.18	Develop north entry & signage at intersection of Westview Parkway and Hillery Drive and provide linking road from Hillery Drive to parking lot south of District Computing/ Distribution Center		PS	II-4
1.19	Develop Tower & Quad	20		
1.20.	Build College Services Center & Police/ Emergency Services substation. Re-route road to Aviation/Administration to create room for College Services Center/Police/Emergency Services	16	PS	II-2
1.21	Relocate Police Services from Portable B1 into new facility	16	PS	II-2
1.22	Renovate former Library Building and relocate Admissions, Counseling, Disabled Student Programs & Services, Extended Opportunity Programs & Services, Assessment Services & Evaluations into Student Services Center (former Library Building)	6	PS	IV-3
1.23	Remove Portables B1 & C3		PS	II-4
1.24	Relocate classrooms and offices housed in T100 – 404 into new LLRC. Remove portables T100 - 404	19	PS	I-1
1.25	Relocate Police Academy off-site and remodel existing building	11	PS	III
1.26	CET & ESL programs to move into remodeled former Police Academy building	11	PS	IV-5
1.27	Portable D4 to be removed			
1.28	Remodel Aviation Building	9	PS	IV-4

PS =*Proposition "S" Funded Project*



BUILDING KEY

PERMANENT STRUCTURES

1. DISTRICT COMPUTING/ DISTRIBUTION CENTER
ASF: 40,000 SF
GSF: 54,000 SF

2. AUTOMOTIVE TECHNOLOGY CAREER INSTRUCTIONAL BUILDING
ASF: 8,000 SF
GSF: 10,800 SF

3. SCIENCE & TECHNOLOGY BUILDING
ASF: 33,500 SF
GSF: 45,225 SF

5. C-100 DIESEL TECHNOLOGY LAB

6. ADMISSIONS, COUNSELING, EVALUATIONS, DSPS, EOPS

7. U-100 COGEN PLANT

8. I-100 INSTRUCTIONAL CENTER

9. F-100 AVIATION MAINTENANCE & TECHNOLOGY CENTER

10. ADMINISTRATION & CLASSROOMS
ASF: 60,000 SF
GSF: 81,000 SF

11. CET
ASF: 10,526 SF
GSF: 14,002 SF

12. CHILD DEVELOPMENT

13. AQUATIC CENTER

14. COMFORT STATION

15. UTILITIES

16. COLLEGE SERVICES CENTER & POLICE/EMERGENCY SERVICES SUBSTATION
ASF: 15,000 SF
GSF: 20,250 SF

17. HEALTH EDUCATION SCIENCE & PHYSICAL CONDITIONING FACILITY FOR COLLEGE USE: 38,391 SF
GSF: 63,373 SF

19. LIBRARY/LLRC
ASF: 77,000 SF
GSF: 103,950 SF

20. TOWER

TEMPORARY STRUCTURES

B1. OFFICES

B2, B3. OFFICES/CLASSROOMS

B4. CLASSROOMS/LAB

C2. 8 OFFICES, 1 CLASSROOM

C3. ADMISSIONS & RECORDS, COUNSELING, REPRODUCTION, EOPS, MAIL ROOM

C5. SDCS MODULAR

D1. DINING ROOMS, INDEPENDENT STUDY, LEARNING RESOURCES, STAFF RESTROOMS

TEMPORARY STRUCTURES CONT.

D2. CAFETERIA, 3 CLASSROOMS, MEN'S ROOM

D3. BOOKSTORE

D4. CONTINUING EDUCATION CENTER

F310 - F304. CLASSROOMS

G1. RESTROOMS

P201. POOL GARDEN SHED. P202. CAMPUS STORAGE REMOVED FOR BLDG 17 CONSTRUCTION

S1. ASB BUILDING

T1. FACULTY RESOURCE CENTER

T2. OFFICES

T3. OFFICES

T4. CLASSROOMS

PHASING LEGEND

- EXISTING BUILDINGS TO REMAIN
- EXISTING PORTABLES
- EXISTING PORTABLES TO BE REMOVED
- NEW BUILDING/AREAS PROPOSED AS PART OF PROP S
- FUTURE PROJECTS
- CONSTRUCTION STAGING
- VERNAL POOL
- ROAD POOL

OUTDOOR SPACE KEY

A. "LEAVE-A-LEGACY" PLAZA

B. CAMPUS QUADRANGLE

C. TOWER PLAZA

H. ENVIRONMENTAL PRESERVE

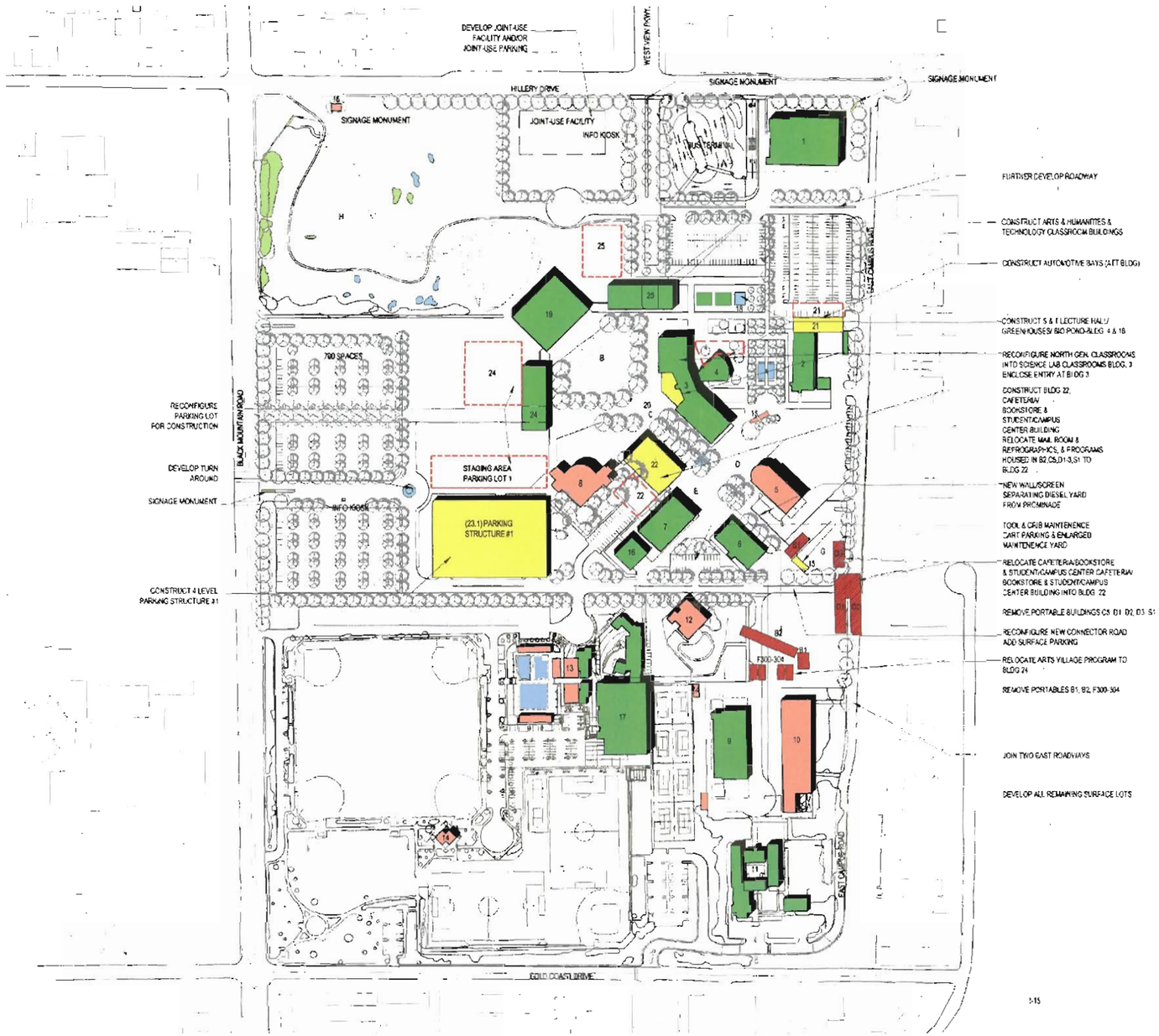
MIRAMAR COLLEGE

FACILITIES MASTER PLAN – AXIS SCHEME
MILESTONE – LLRC COMPLETION
PHASE ONE

Phasing Sequence

Phase Two		Bldg #	Funding Source	Prop-S Project #
	Proposition "S" Build-out			
2.1	Construct Arts & Humanities Classroom Building	24	PS	I-5
2.2	Relocate programs from Arts Village (portables B2, F301 - 304) into new Arts & Humanities Classroom Building	24	PS	I-5
2.3	Construct new Cafeteria/Bookstore & Student/Campus Center Building	22		
2.4	Relocate Mail Room from lower campus and Reprographics (upper campus) to Student/Campus Center Building	22		
2.5	Relocate programs housed in B2, C5, D1, D2, D3, S1 into Student/Campus Center Building	22		
2.6	Remove portables C5, D1, D2, D3, S1		PS	II-4
2.7	Construct new Technology Classroom Building	25	PS	I-4
2.8	Develop connector road to East Campus Road		PS	II-4
2.9	Construct Parking Structure 1 and reconfigure city surface parking	23.1		
2.10	Develop connector road from Black Mountain Road to East Campus Road		PS	II-4
2.11	Develop all remaining surface parking areas			
2.12	Construct Science & Technology Lecture Hall/Greenhouses/ Bio Pond. Reconfigure north general classrooms into lab classrooms and Bldg. 3 courtyard enclosure	3, 4, 18	PS	IV-1
2.13	Develop Joint Use Facility parking with Joint-use leased property (north campus)			
2.14	Enlarge Maintenance Services Yard and provide additional space at north east corner entrance of East Campus Road loop connector for tool crib & maintenance cart parking (electric vehicles). Screen from view	15		
2.15	Construct Potential expansion of ATT Building	21		

PS =*Proposition "S" Funded Project*



BUILDING KEY

PERMANENT STRUCTURES

1. DISTRICT COMPUTING/ DISTRIBUTION CENTER
   ASF: 40,000 SF
   GSF: 54,000 SF

2. AUTOMOTIVE TECHNOLOGY CAREER INSTRUCTIONAL BUILDING
   ASF: 8,000 SF
   GSF: 10,600 SF

3. SCIENCE & TECHNOLOGY BUILDING
   ASF: 33,500 SF
   GSF: 45,225 SF

4. SCIENCE & TECHNOLOGY LECTURE HALL

5. C-100 DIESEL TECHNOLOGY LAB

6. ADMISSIONS, COUNSELING, EVALUATIONS, DSPS, EOPS

7. U-100 COGEN PLANT

8. I-100 INSTRUCTIONAL CENTER

9. F-100 AVIATION MAINTENANCE & TECHNOLOGY CENTER

10. ADMINISTRATION & CLASSROOMS

11. CET
    ASF: 10,528 SF
    GSF: 14,002 SF

12. CHILD DEVELOPMENT

13. AQUATIC CENTER

14. COMFORT STATION

15. UTILITIES

16. COLLEGE SERVICES CENTER & POLICE/EMERGENCY SERVICES SUBSTATION
    ASF: 15,000 SF
    GSF: 20,250 SF

17. HEALTH EDUCATION SCIENCE & PHYSICAL CONDITIONING FACILITY
    FOR COLLEGE USE: 38,391 SF
    GSF: 63,373 SF

18. GREENHOUSES & BIOLOGICAL POND

19. LIBRARY/LLRC
    ASF: 77,000 SF
    GSF: 103,950 SF

20. TOWER

21. AUTOMOTIVE BAYS
    ASF: 4,492 SF
    GSF: 6,910 SF

22. CAFETERIA/ BOOKSTORE & STUDENT/CAMPUS CENTER BUILDING
    ASF: 45,000 SF
    GSF: 60,750 SF

23.1 PARKING STRUCTURE

24. ARTS & HUMANITIES CLASSROOM BUILDING
    ASF: 30,000 SF
    GSF: 40,500 SF

25. TECHNOLOGY CLASSROOM BUILDING
    ASF: 30,000 SF
    GSF: 40,500 SF

TEMPORARY STRUCTURES

B1, B2: ARTS/MUSIC CLASSROOMS

D1, D2, D3, S1 RELOCATE

F300-304: ARTS/MUSIC CLASSROOMS

PHASING LEGEND

- EXISTING BUILDINGS TO REMAIN
- EXISTING PORTABLES
- EXISTING PORTABLES TO BE REMOVED
- NEW BUILDING/AREAS PROPOSED AS PART OF PROP S
- FUTURE PROJECTS
- CONSTRUCTION STAGING
- VERNAL POOL
- ROAD POOL

OUTDOOR SPACE KEY

A "LEAVE-A-LEGACY" PLAZA
B CAMPUS QUADRANGLE
C TOWER PLAZA
D THE GREEN
E STUDENT CENTER PLAZA
G LANDSCAPE MAINTENANCE YARD
H ENVIRONMENTAL PRESERVE

MIRAMAR COLLEGE

FACILITIES MASTER PLAN – AXIS SCHEME
MILESTONE – PROP S BUILDOUT
PHASE TWO

Phasing Sequence

Phase Three		Bldg #	Funding Source	Prop-S	Project #
	Final Build-out @ 25,000 Enrollment				
3.1	Construct Administration/Admissions Building	26			
3.2	Relocate administrative & admissions, counseling, evaluations, DSPS and EOPS functions from former Administration Building & Building 6 (former Library Building) into new Administration Building	6,10,26			
3.3	Construct Parking Structure 2	23.2			
3.4	Renovate old Administration Building and use for overflow classroom/office space	10			
3.5	Construct Parking Structure 3	23.3			
3.6	Construct Performing Arts Complex	27			
3.7	Construct Transportation Technology Building for motorcycles & buses or Diesel Program and re-use existing Diesel Building for Motorcycle/Bus Technology program	28			
3.7	Finalize all landscape development				

BUILDING KEY

PERMANENT STRUCTURES

1. DISTRICT COMPUTING/ DISTRIBUTION CENTER
ASF 40,000 SF
GSF 54,000 SF

2. AUTOMOTIVE TECHNOLOGY CAREER INSTRUCTIONAL BUILDING
ASF 8,000 SF
GSF 16,800 SF

3. SCIENCE & TECHNOLOGY BUILDING
ASF 33,500 SF
GSF 45,225 SF

4. SCIENCE & TECHNOLOGY LECTURE HALL

5. C-100 DIESEL TECHNOLOGY LAB

6. OVERFLOW CLASSROOMS/OFFICES

7. U-100 COGEN PLANT

8. I-100 INSTRUCTIONAL CENTER

9. F-100 AVIATION MAINTENANCE & TECHNOLOGY CENTER

10. FACULTY OFFICES, CLASSROOMS

11. CET
ASF 10,528 SF
GSF 14,002 SF

12. CHILD DEVELOPMENT

13. AQUATIC CENTER

14. COMFORT STATION

15. UTILITIES

16. COLLEGE SERVICES CENTER & POLICE/EMERGENCY SERVICES SUBSTATION INCLUDES CAMPUS POLICE, FACILITIES, INFORMATION, COLLEGE SERVICES (2 OFFICES, 1 CLERICAL, STORAGE, CONF. ROOM, LOUNGE)
ASF 15,000 SF
GSF 20,250 SF

17. HEALTH EDUCATION SCIENCE & PHYSICAL CONDITIONING FACILITY FOR COLLEGE USE 39,391 SF
GSF 63,373 SF

18. GREENHOUSES & BIOLOGICAL POND

19. LIBRARY/LLRC
ASF 77,000 SF
GSF 103,950 SF

20. TOWER

21. AUTOMOTIVE BAYS
ASF 4,492 SF
GSF 8,910 SF

22. CAFETERIA/BOOKSTORE & STUDENT/CAMPUS CENTER BUILDING INCLUDING HEALTH, FINANCE, STUDENT AFFAIRS, MAIL ROOM, FACULTY CENTER, REPROGRAPHICS SUPPLY ROOM
ASF 45,000 SF
GSF 60,750 SF

23.1- 23.3 PARKING STRUCTURE

24. ARTS & HUMANITIES CLASSROOM BUILDING
ASF 30,000 SF
GSF 49,500 SF

25. TECHNOLOGY CLASSROOM BUILDING
ASF 30,000 SF
GSF 40,500 SF

26. ADMISSIONS, ADMINISTRATION & STUDENT SERVICES BUILDING
ASF 60,000 SF
GSF 81,000 SF

27. PERFORMING ARTS COMPLEX
ASF 60,000 SF
GSF 81,000 SF

28. TRANSPORTATION TECHNOLOGY BUILDING (MOTORCYCLES & BUSES)

PHASING LEGEND

- EXISTING BUILDINGS TO REMAIN
- EXISTING PORTABLES
- EXISTING PORTABLES TO BE REMOVED
- NEW BUILDING/AREAS PROPOSED AS PART OF PROP S
- FUTURE PROJECTS
- CONSTRUCTION STAGING
- VERNAL POOL
- ROAD POOL

OUTDOOR SPACE KEY

A "LEAVE-A-LEGACY" PLAZA
B CAMPUS QUADRANGLE
C TOWER PLAZA
D THE GREEN
E STUDENT CENTER PLAZA
F ARTS COURT
G LANDSCAPE MAINTENANCE YARD
H ENVIRONMENTAL PRESERVE

MIRAMAR COLLEGE

FACILITIES MASTER PLAN - AXIS SCHEME
MILESTONE - CAMPUS BUILD-OUT 25,000 ENROLLMENT
PHASE THREE

BUILDING KEY
PERMANENT STRUCTURES

1. DISTRICT COMPUTING/ DISTRIBUTION CENTER
ASF: 40,000 SF
GSF: 54,000 SF

2. AUTOMOTIVE TECHNOLOGY CAREER INSTRUCTIONAL BUILDING
ASF: 8,000 SF
GSF: 10,800 SF

3. SCIENCE & TECHNOLOGY BUILDING
ASF: 33,500 SF
GSF: 45,225 SF

4. SCIENCE & TECHNOLOGY LECTURE HALL

5. C-100 DIESEL TECHNOLOGY LAB

6. OVERFLOW CLASSROOMS/OFFICES

7. U-100 COGEN PLANT

8. I-100 INSTRUCTIONAL CENTER

9. F-100 AVIATION MAINTENANCE & TECHNOLOGY CENTER

10. OFFICES & CLASSROOMS

11. CET
ASF: 10,528 SF
GSF: 14,002 SF

12. CHILD DEVELOPMENT

13. AQUATIC CENTER

14. COMFORT STATION

15. UTILITIES

16. COLLEGE SERVICES CENTER & POLICE/EMERGENCY SERVICES SUBSTATION INCLUDES CAMPUS POLICE, FACILITIES, INFORMATION, COLLEGE SERVICES (2 OFFICES, 1 CLERICAL, STORAGE, CONF. ROOM, LOUNGE)
ASF: 15,000 SF
GSF: 20,250 SF

17. HEALTH EDUCATION SCIENCE & PHYSICAL CONDITIONING FACILITY FOR COLLEGE USE: 39,381 SF
GSF: 83,373 SF

18. GREENHOUSES & BIOLOGICAL POND

19. LIBRARY/LLRC
ASF: 77,000 SF
GSF: 103,950 SF

20. TOWER

21. AUTOMOTIVE BAYS
ASF: 4,492 SF
GSF: 6,910 SF

22. CAFETERIA/BOOKSTORE & STUDENT/CAMPUS CENTER BUILDING INCLUDING HEALTH, FINANCE, STUDENT AFFAIRS, MAIL ROOM, FACULTY CENTER, REPROGRAPHICS, SUPPLY ROOM
ASF: 45,000 SF
GSF: 60,750 SF

23. PARKING STRUCTURE

24. ARTS & HUMANITIES CLASSROOM BUILDING
ASF: 30,000 SF
GSF: 40,500 SF

25. TECHNOLOGY CLASSROOM BUILDING
ASF: 30,000 SF
GSF: 40,500 SF

26. ADMISSIONS, ADMINISTRATION & STUDENT SERVICES BUILDING
ASF: 60,000 SF
GSF: 81,000 SF

27. PERFORMING ARTS COMPLEX
ASF: 60,000 SF
GSF: 81,000 SF

28. TRANSPORTATION TECHNOLOGY BUILDING (MOTORCYCLES & BUSES)

OUTDOOR SPACE KEY

A "LEAVE-A-LEGACY" PLAZA

B CAMPUS QUADRANGLE

C TOWER PLAZA

O THE GREEN

E STUDENT CENTER PLAZA

F ARTS COURT

G LANDSCAPE MAINTENANCE YARD

H ENVIRONMENTAL PRESERVE

PRIMARY PEDESTRIAN PATH OF TRAVEL

SECONDARY PEDESTRIAN PATH OF TRAVEL

MINOR PEDESTRIAN PATH OF TRAVEL

NATURE TRAIL

MIRAMAR COLLEGE
FACILITIES MASTER PLAN - AXIS SCHEME
PEDESTRIAN PATHWAYS

BUILDING KEY
PERMANENT STRUCTURES

1. DISTRICT COMPUTING/ DISTRIBUTION CENTER
ASF: 40,000 SF
GSF: 54,000 SF

2. AUTOMOTIVE TECHNOLOGY CAREER INSTRUCTIONAL BUILDING
ASF: 8,000 SF
GSF: 10,800 SF

3. SCIENCE & TECHNOLOGY BUILDING
ASF: 33,500 SF
GSF: 45,225 SF

4. SCIENCE & TECHNOLOGY LECTURE HALL

5. C-100 DIESEL TECHNOLOGY LAB

6. OVERFLOW CLASSROOMS/OFFICES

7. U-100 COGEN PLANT

8. I-100 INSTRUCTIONAL CENTER

9. F-100 AVIATION MAINTENANCE & TECHNOLOGY CENTER

10. OFFICES & CLASSROOMS

11. CET
ASF: 10,528 SF
GSF: 14,002 SF

12. CHILD DEVELOPMENT

13. AQUATIC CENTER

14. COMFORT STATION

15. UTILITIES

16. COLLEGE SERVICES CENTER & POLICE/EMERGENCY SERVICES SUBSTATION INCLUDES CAMPUS POLICE FACILITIES, INFORMATION, COLLEGE SERVICES (2 OFFICES, 1 CLERICAL, STORAGE, CONF. ROOM, LOUNGE)
ASF: 15,000 SF
GSF: 20,250 SF

17. HEALTH EDUCATION SCIENCE & PHYSICAL CONDITIONING FACILITY
FOR COLLEGE USE: 39,391 SF
GSF: 63,373 SF

18. GREENHOUSES & BIOLOGICAL POND

19. LIBRARY/LRC
ASF: 77,000 SF
GSF: 103,950 SF

20. TOWER

21. AUTOMOTIVE BAYS
ASF: 4,492 SF
GSF: 6,910 SF

22. CAFETERIA/BOOKSTORE & STUDENT/CAMPUS CENTER BUILDING INCLUDING HEALTH, FINANCE, STUDENT AFFAIRS, MAIL ROOM, FACULTY CENTER, REPROGRAPHICS, SUPPLY ROOM
ASF: 45,000 SF
GSF: 60,750 SF

23. PARKING STRUCTURE

24. ARTS & HUMANITIES CLASSROOM BUILDING
ASF: 30,000 SF
GSF: 40,500 SF

25. TECHNOLOGY CLASSROOM BUILDING
ASF: 30,000 SF
GSF: 40,500 SF

26. ADMISSIONS, ADMINISTRATION & STUDENT SERVICES BUILDING
ASF: 60,000 SF
GSF: 81,000 SF

27. PERFORMING ARTS COMPLEX
ASF: 60,000 SF
GSF: 81,000 SF

28. TRANSPORTATION TECHNOLOGY BUILDING (MOTORCYCLES & BUSES)

OUTDOOR SPACE KEY

A "LEAVE-A-LEGACY" PLAZA

B CAMPUS QUADRANGLE

C TOWER PLAZA

D THE GREEN

E STUDENT CENTER PLAZA

F ARTS COURT

G LANDSCAPE MAINTENANCE YARD

H ENVIRONMENTAL PRESERVE

SERVICE ROAD

SERVICE ENTRY

CITY TRASH PICK UP POINT

FUTURE RECYCLING CENTER & COMPOSTING AREA

MIRAMAR COLLEGE
FACILITIES MASTER PLAN - AXIS SCHEME
SERVICE AREAS & ROAD

BUILDING KEY

PERMANENT STRUCTURES

1. DISTRICT COMPUTING/ DISTRIBUTION CENTER
ASF: 40,000 SF
GSF: 54,000 SF

2. AUTOMOTIVE TECHNOLOGY CAREER INSTRUCTIONAL BUILDING
ASF: 8,000 SF
GSF: 10,800 SF

3. SCIENCE & TECHNOLOGY BUILDING
ASF: 33,500 SF
GSF: 45,225 SF

4. SCIENCE & TECHNOLOGY LECTURE HALL

5. C-100 DIESEL TECHNOLOGY LAB

6. OVERFLOW CLASSROOMS/OFFICES

7. U-100 COGEN PLANT

8. I-100 INSTRUCTIONAL CENTER

9. F-100 AVIATION MAINTENANCE & TECHNOLOGY CENTER

10. OFFICES & CLASSROOMS

11. CET
ASF: 10,528 SF
GSF: 14,002 SF

12. CHILD DEVELOPMENT

13. AQUATIC CENTER

14. COMFORT STATION

15. UTILITIES

16. COLLEGE SERVICES CENTER & POLICE/EMERGENCY SERVICES SUBSTATION INCLUDES CAMPUS POLICE, FACILITIES, INFORMATION, COLLEGE SERVICES (2 OFFICES, 1 CLERICAL, STORAGE, CONF. ROOM, LOUNGE)
ASF: 15,000 SF
GSF: 20,250 SF

17. HEALTH EDUCATION SCIENCE & PHYSICAL CONDITIONING FACILITY FOR COLLEGE USE: 39,391 SF
GSF: 63,373 SF

18. GREENHOUSES & BIOLOGICAL POND

19. LIBRARY/LLRC
ASF: 77,000 SF
GSF: 103,950 SF

20. TOWER

21. AUTOMOTIVE BAYS
ASF: 4,492 SF
GSF: 6,910 SF

22. CAFETERIA/BOOKSTORE & STUDENT/CAMPUS CENTER BUILDING INCLUDING HEALTH, FINANCE, STUDENT AFFAIRS, MAIL ROOM, FACULTY CENTER, REPROGRAPHICS, SUPPLY ROOM
ASF: 45,000 SF
GSF: 60,750 SF

23. PARKING STRUCTURE

24. ARTS & HUMANITIES CLASSROOM BUILDING
ASF: 30,000 SF
GSF: 40,500 SF

25. TECHNOLOGY CLASSROOM BUILDING
ASF: 30,000 SF
GSF: 40,500 SF

26. ADMISSIONS ADMINISTRATION & STUDENT SERVICES BUILDING
ASF: 60,000 SF
GSF: 81,000 SF

27. PERFORMING ARTS COMPLEX
ASF: 60,000 SF
GSF: 81,000 SF

28. TRANSPORTATION TECHNOLOGY BUILDING (MOTORCYCLES & BUSES)

OUTDOOR SPACE KEY

A "LEAVE-A-LEGACY" PLAZA

B CAMPUS QUADRANGLE

C TOWER PLAZA

D THE GREEN

E STUDENT CENTER PLAZA

F ARTS COURT

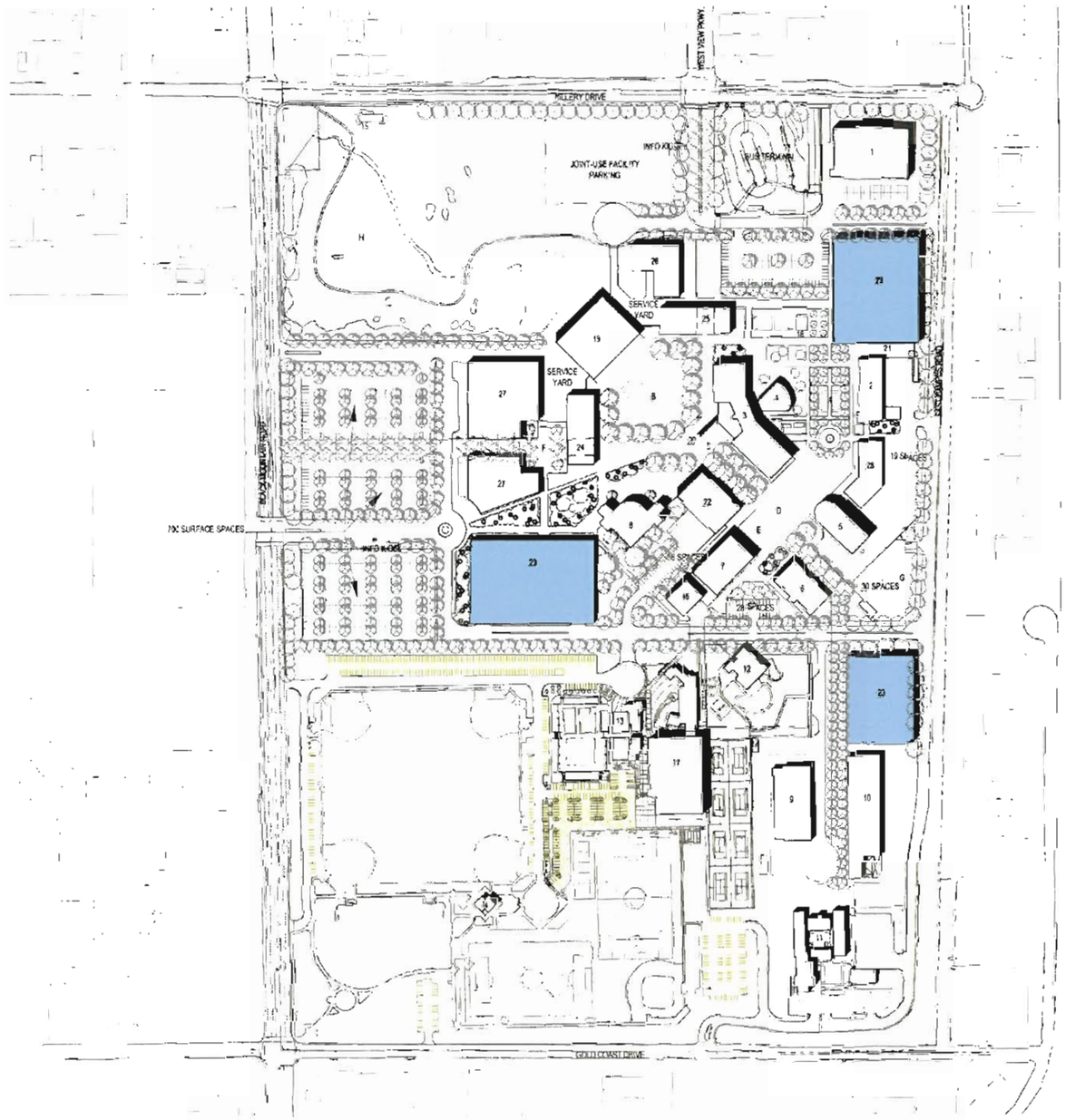
G LANDSCAPE MAINTENANCE YARD

H ENVIRONMENTAL PRESERVE

PRIMARY VEHICULAR EGRESS

MIRAMAR COLLEGE

FACILITIES MASTER PLAN - AXIS SCHEME
PRIMARY VEHICULAR EGRESS



BUILDING KEY
PERMANENT STRUCTURES

1. DISTRICT COMPUTING/ DISTRIBUTION CENTER
ASF: 40,000 SF
GSF: 54,000 SF

2. AUTOMOTIVE TECHNOLOGY CAREER INSTRUCTIONAL BUILDING
ASF: 8,000 SF
GSF: 10,800 SF

3. SCIENCE & TECHNOLOGY BUILDING
ASF: 33,500 SF
GSF: 45,225 SF

4. SCIENCE & TECHNOLOGY LECTURE HALL

5. C-100 DIESEL TECHNOLOGY LAB

6. OVERFLOW CLASSROOMS/OFFICES

7. U-100 COGEN PLANT

8. I-100 INSTRUCTIONAL CENTER

9. F-100 AVIATION MAINTENANCE & TECHNOLOGY CENTER

10. OFFICES & CLASSROOMS

11. CET
ASF: 10,528 SF
GSF: 14,002 SF

12. CHILD DEVELOPMENT

13. AQUATIC CENTER

14. COMFORT STATION

15. UTILITIES

16. COLLEGE SERVICES CENTER & POLICE/EMERGENCY SERVICES SUBSTATION INCLUDES CAMPUS POLICE, FACILITIES, INFORMATION, COLLEGE SERVICES (2 OFFICES, 1 CLERICAL STORAGE, CONF. ROOM, LOUNGE)
ASF: 15,000 SF
GSF: 20,250 SF

17. HEALTH EDUCATION SCIENCE & PHYSICAL CONDITIONING FACILITY FOR COLLEGE USE: 39,391 SF
GSF: 60,373 SF

18. GREENHOUSES & BIOLOGICAL POND

19. LIBRARY/LRC
ASF: 77,000 SF
GSF: 103,950 SF

20. TOWER

21. AUTOMOTIVE BAYS
ASF: 4,492 SF
GSF: 6,910 SF

22. CAFETERIA/BOOKSTORE & STUDENT/CAMPUS CENTER BUILDING INCLUDING HEALTH, FINANCE, STUDENT AFFAIRS, MAIL ROOM, FACULTY CENTER, REPROGRAPHICS, SUPPLY ROOM
ASF: 45,000 SF
GSF: 60,750 SF

23. PARKING STRUCTURE

24. ARTS & HUMANITIES CLASSROOM BUILDING
ASF: 30,000 SF
GSF: 40,500 SF

25. TECHNOLOGY CLASSROOM BUILDING
ASF: 30,000 SF
GSF: 40,500 SF

26. ADMISSIONS, ADMINISTRATION & STUDENT SERVICES BUILDING
ASF: 60,000 SF
GSF: 81,000 SF

27. PERFORMING ARTS COMPLEX
ASF: 60,000 SF
GSF: 81,000 SF

28. TRANSPORTATION TECHNOLOGY BUILDING (MOTORCYCLES & BUSES)

PARKING LEGEND

- CAMPUS SURFACE PARKING
- HOURGLASS PARKING
- PARKING STRUCTURES

OUTDOOR SPACE KEY

A. "LEAVE-A-LEGACY" PLAZA
B. CAMPUS QUADRANGLE
C. TOWER PLAZA
D. THE GREEN
E. STUDENT CENTER PLAZA
F. ARTS COURT
G. LANDSCAPE MAINTENANCE YARD
H. ENVIRONMENTAL PRESERVE

MIRAMAR COLLEGE
FACILITIES MASTER PLAN - AXIS SCHEME
PARKING

Existing Parking Count: (per Miramar College Parking Survey: 9/02)

Campus Total:	1,546
Hourglass Park:	292
Total:	1,838

Current parking ratios at the college are .54 spaces per student.

Projected Need at 25,000 Enrollment:

Based on 25,000/.54 parking ratio factor (4,482) + additional staff parking (450) = 4,932 spaces are required. City of San Diego municipal code allows a 15% reduction in minimum parking reducing the required number of spaces to 4,193

Phase 1 Parking:

Black Mountain Lots	736
Administration Lot	105
Distribution Center	80
Lot below Dist. Center	260
Existing Lot bordered by Black Mountain	755
Aviation/Admin Lot	77
C500	5
Academy Lots (43 + 28)	71
Total	*2,089*

Phase 2 Parking:

Northeast Parking Structure (4 Levels)	820
Black Mountain Lots	700
Administration Lot	105
Distribution Center	80
Lot below Dist. Center	260
Campus Center Lots (Library + Student Serv.+ Diesel Lot) (36+28+19)	83
Academy Lots (43 + 28)	71
Total	*2,119*

Phase 3 Parking:

Southwest Parking Structure #1 (4 Levels)	1,000
Northeast Parking Structure #2 (4 Levels)	820
Southeast Parking Structure #3 (6 Levels)	750
Black Mountain Lots	700
Administration Lot	105
Distribution Center	80
Campus Center Lots (Library + Student Serv.+ Diesel Lot) (36+28+19)	83
Academy Lots (43 + 28)	71
Total	*3,609*
Required number of spaces	4,193
Less total number of spaces at end of Phase 3	3,609
Shortfall:	*(584)*

Parking Options:
to meet 584 shortfall spaces

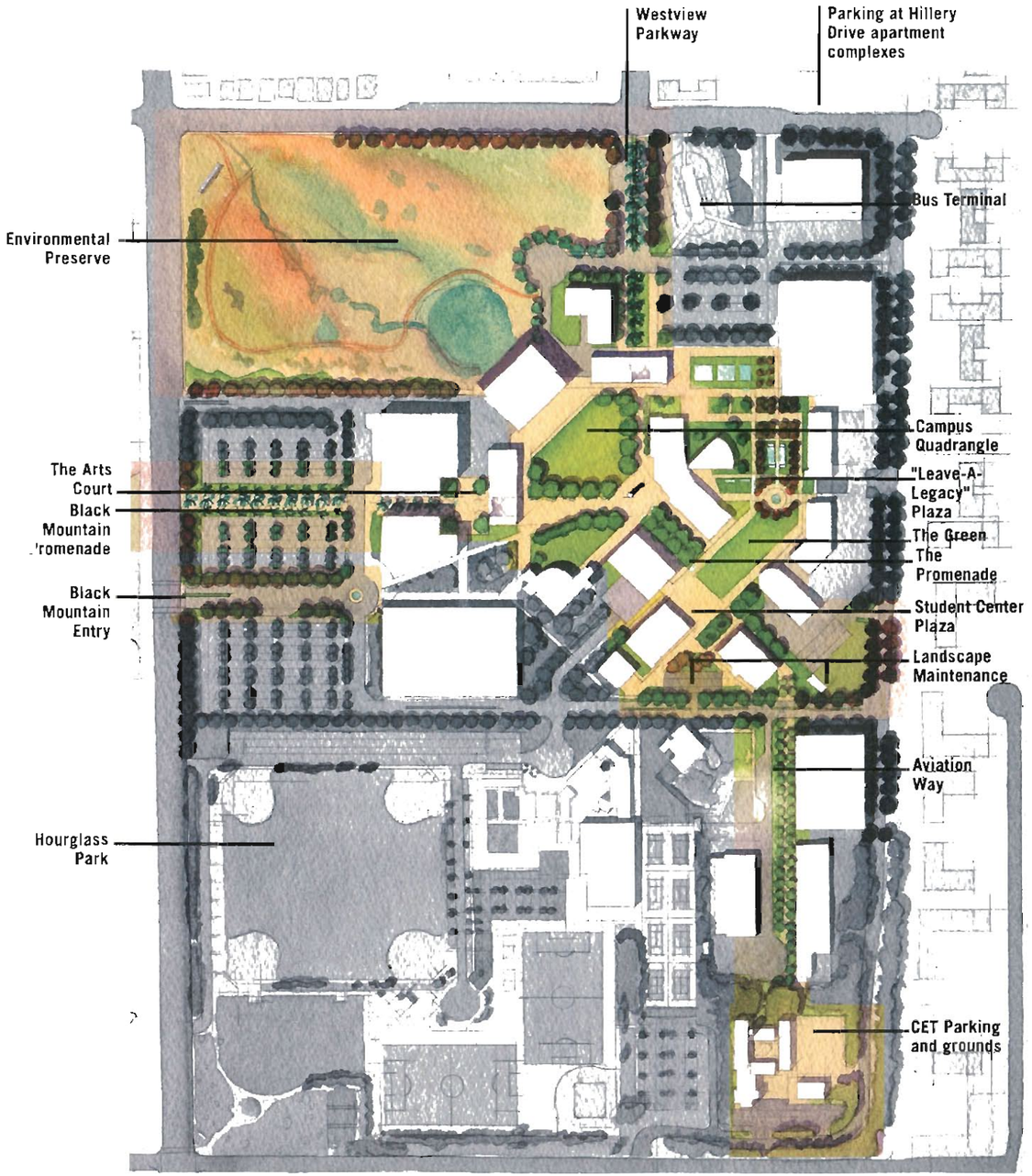
1. Add West View Parking Structure (4 Level) — 1,000 spaces

   or

2. Make Northeast & Southwest Structures 6 Levels (Add 2 levels to each Structure) — 900 spaces

   or

3. Revise calculation to provide fewer stalls, encouraging more efficient and sustainable transportation alternatives such as use of public transportation, carpooling, and bicycle usage.



Outdoor Spaces

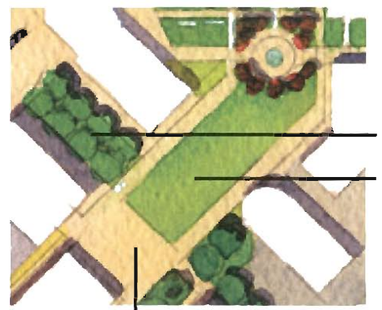
Outdoor spaces are organized along three axial relationships, the Westview/Black Mountain view corridor, the diagonal axis connecting the center of campus with the intersection of Black Mountain Road and Hillery Drive. Adjacent to the Transit Authority Bus Terminal is the Westview Parkway/Hillery Drive entry to the north that provides the portal to the campus and accommodates both vehicular and pedestrian traffic. At the time of this writing, an HOV lane from the Interstate 15 along Hillery Drive is proposed from the east dedicated to bus lanes, to serve the bus terminal. A traffic study will be required for this intersection, to predict the actual traffic flow impact and signalling requirements for this area. Overflow parking for the Bus Terminal is proposed across Hillery Drive, adjacent to the shopping center to the north, behind the existing apartment buildings. Limited parking is also provided in front of the northern apartment complexes along Hillery Drive.

Principle outdoor areas include: the "Leave-A-Legacy" Plaza, near the Science and Technology Building, the Campus Quadrangle, the Tower Plaza, The Green, the Student Center Plaza, the Arts Court, and the Environmental Preserve. The Tower Plaza and the Campus Quadrangle work in concert to serve as the center of campus. Most view corridors and pedestrian pathways lead to or emanate from the Tower, as the central campus directory is located at the Tower. There are also several support areas proposed for maintenance including a landscape Maintenance Yard at the connector road and East Campus Road.


"Leave-A-Legacy" Plaza

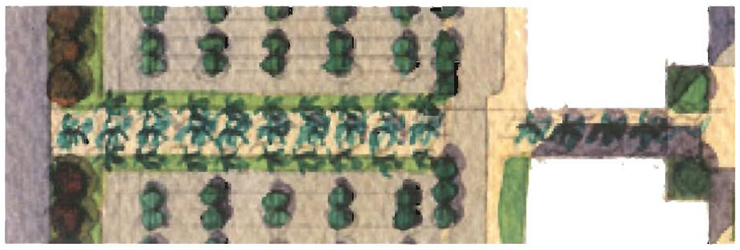

The Campus Quadrangle


Tower Plaza



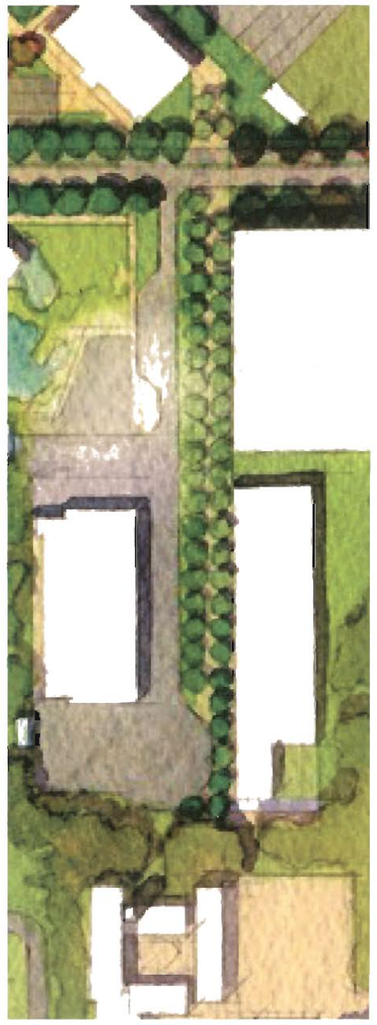

The Arts Court

Environmental Preserve and Vernal Pools



Black Mountain Promenade

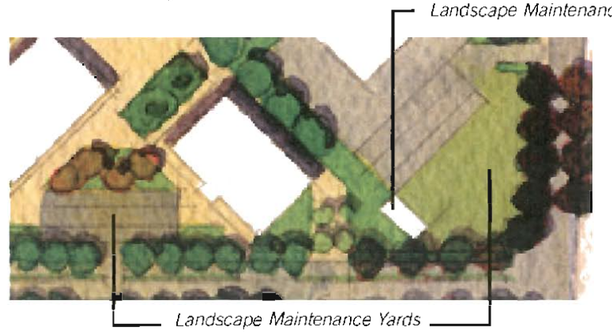
Black Mountain Road Entry

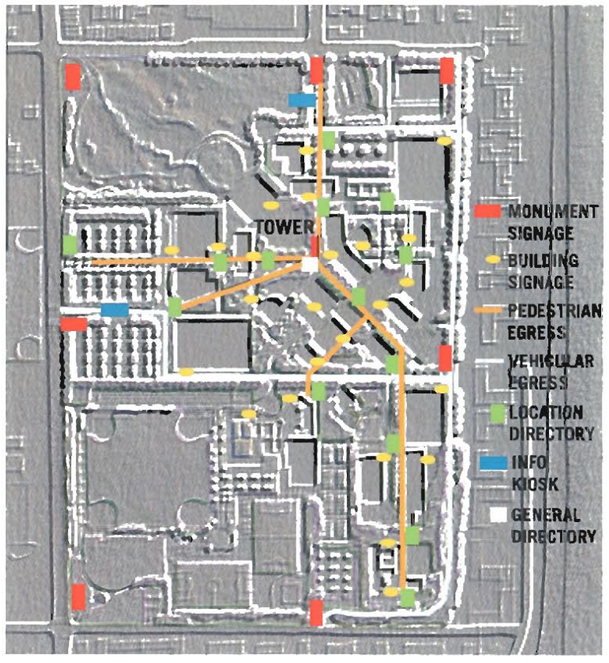


Aviation Way

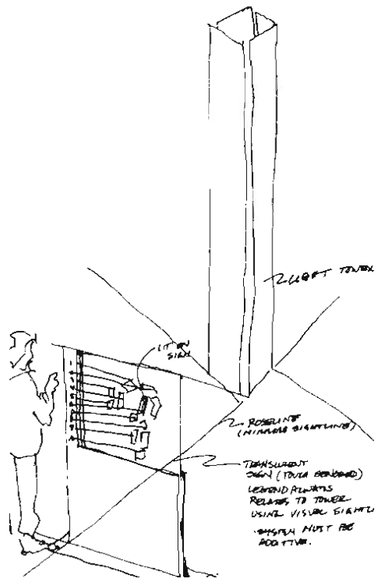
Westview Drive Entry

CET Parking and grounds

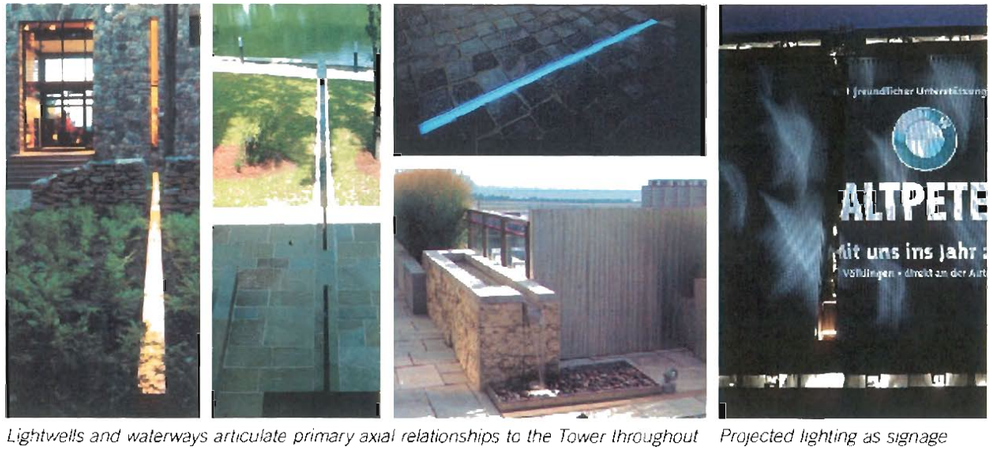




Principle signage types and locations



The Tower serves as a directional compass point and visual reference. Way finding signage is linked visually to the Tower along pedestrian pathways



Lightwells and waterways articulate primary axial relationships to the Tower throughout campus

Projected lighting as signage

Signage and Way Finding

Signage and campus identity function as an introduction to the campus and help define and support the campus image. Signage design is most successful when considered as part of a whole employing building materials and techniques used throughout the campus infrastructure. Two prominent points of entry are located to the north of the campus at Hillery Drive and Westview Parkway, and at the western edge of campus along Black Mountain Road. These entry points require careful consideration and redesign to service both pedestrians and vehicles and acknowledge axial view corridors and pathways prescribed by the Master Plan. Signage should also be located at all points of entyr, identifying either the campus or adjacent facility (ie. Hourglass Park, Distribution Center, etc.) Parking lots should be identified in a manner that links them to their location and adjacent entry point.

Monument signage at these two principle entry points and also at other prominent corners and entries should employ a similar building language to other campus construction and materials. Consistency in lighting and landscaping design reinforce way finding and signage recognition.

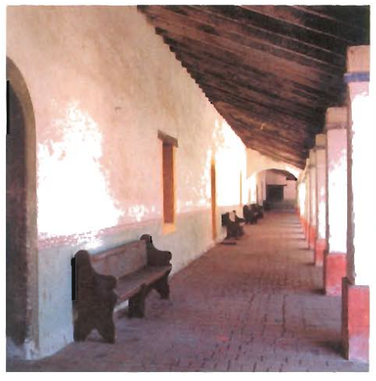
The Tower is located at the intersection of the diagonal axis and the Westview Parkway corridor axis and serves as focal and destination points for pedestrian circulation. It marks the heart of campus and is bordered by the Central Quadrangle, the Promenade, and is adjacent to the Science and Technology Building, and the Student Center. All primary pedestrian egress is directed to the Tower and it serves as the campus general directory. At various intervals along these pedestrian pathways, signage markers visually referencing the Tower and the viewer's current location will be positioned to aid in way finding. These markers may be small signage monuments employing maps as guides, or may be ceramic or metal tiles cast into the hardscape akin to surveyor markers guiding the campus visitor. Signage may be designed in conjunction with pathway lighting and landscape water elements, to support landscaping and circulation systems. Way finding signage may also be employed in conjunction with building signage.

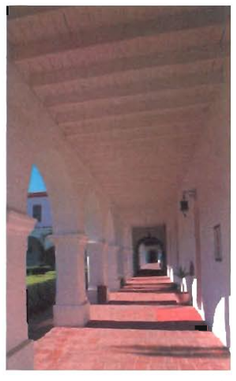
Suggested building numbering systems may be programmatic in nature, referencing building to the programs they serve, or site specific, relating buildings to adjacent outdoor spaces. Building numbering systems should be additive, allowing for new building construction in non-sequential order. Examples of programmatic numbering might be AR-100 representing the Art Classroom Building or ST-100 representing the Science and Technology Building. Examples of site specific numbering might be CQ-100 for the Science and Technology Building, identifying its relationship to the Central Quadrangle.

Mission San Diego de Alcala

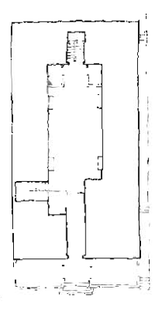
Mission San Juan Capistrano

Mission San Luis Rey

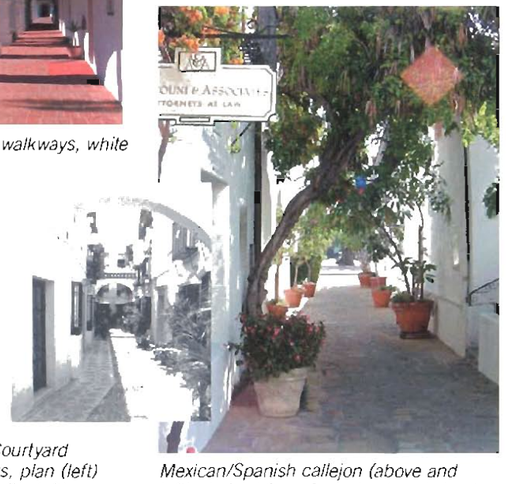




Transitional spaces are marked by materials changes, brick walkways, white plaster walls, wood rafters providing weather protection



El Greco Courtyard Apartments, plan (left) and photo (far left)



Mexican/Spanish callejon (above and left), derived from Arab dead-end streets

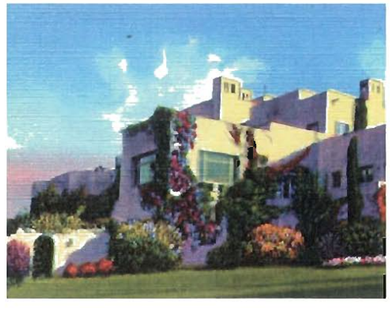
Historic Context

Miramar campus is close to four historic missions, and is influenced by a multiplicity of architectural influences. Nearby missions include San Diego de Alcala, San Luis Rey de Francia, Mission San Antonio de Pala and San Juan Capistrano. Predominant use of unadorned white paint and plaster is characteristic of mission architecture. White serves both functionally to reflect heat, and spiritually, as a symbolically sacred color. Mission walls were usually constructed of adobe or stone and structures were composed around patios and courtyards. Simple massing of form and color reflected historic building functions such as spiritual contemplation or protection against indigent uprisings.

Exterior courtyards were usually flanked by a system of corridors with deep overhangs that provided weather protection. Buttresses protected thick walls from seismic activity and resisted lateral forces from arches and domes. Red tile or flat roofs with deep overhangs protected many of the buildings and were often supported by curved gables. Lighting was usually supplied by oil or candle lamps. Bell towers called the faithful and symbolically tied the earth to the heavens.

Architect Irving Gill, a San Diego native, played an important role in exploring regional modernism in the early part of the twentieth century. He, along with other regional modernists of the period, attempted to integrate the local historic language of Spanish arches and simplified massing into a new, regional Southern California design language. Gill employed the use of "long arcades and open grassy areas that allowed indoor and outdoor spaces to interact with each other."[1]

Other architectural influences associated with the general San Diego area include Balboa Park, an example of Spanish Baroque architecture, as well as many examples of Craftsman and Victorian architecture. Many employ the use of garden spaces, indoor/outdoor living areas, and transitional areas such as loggias or verandas for heat protection and environmental control.



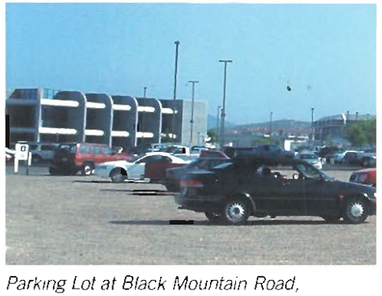
Historic Images of Irving Gill's work

[1] San Diego Historical Society, Irving Gill http://www.sandiegohistory.org/bio/gill/gill.htm

Aviation Building

Police Academy

Automotive Technology Center



Parking Lot at Black Mountain Road, Instructional Center in background

The Diesel Technology Laboratory

The Student Services Center

Arcade at the Police Academy Building

Existing Campus Architecture

Miramar campus is composed of a number of different architectural languages. The earliest buildings are fairly minimalist, employing brick, concrete and glass in rhythmic patterning. The interiors are simple, functional and adaptive. They are one-story, and are scaled comfortably with the landscape. The older campus is well landscaped and maintained with covered eating areas, lawns and vistas, bordered by eucalyptus trees and low-growing olive. Many on campus have expressed their feeling that it is one of the "most comfortable" areas on campus.

Newer structures on campus include:

- The Police Academy, a stuccoed building with large tower housing an elevator enabling access to the steep grade change
- The Interim Library, a modular building which is very adaptive to interior reconfiguration
- The Instructional Center, housing large computer labs, classrooms, offices and lecture rooms
- The Child Development Center, a wood framed, residential-looking building, landscaped with species trees and lawn
- The Automotive Technology Career Instructional Building, a new, plastered building
- The Science and Technology Building, a white plastered, two-story structure housing classrooms and offices with an open central stair court.
- The Diesel Technology Laboratory, a plastered building, open on two-sides for truck access.
- The Health, Education, Science and Physical Conditioning Building, beginning construction at the time of this writing.

See Phasing Sequencing for Proposition "S" projects.

Child Development Center

Flagpole in front of Administration Building

Gathering spaces

Varied paving patterns

Campus Photo Essay

During the initial master planning process, the campus was given an assignment to visually document their needs, likes and dislikes for the future campus. Each participant was given a disposable camera and was asked to find images that could represent and help record their personal voices for the future.

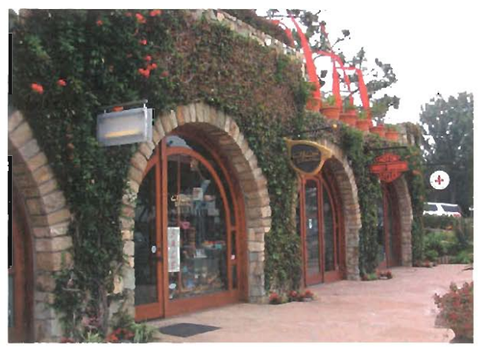
The participant's comments include representations of both desirable and undesirable characteristics. Many referenced landscape images in an attempt to underscore the tremendous need and desire for landscaping on the campus. Some of the comments included requests for gazebos, trellises or overhead shading devices that could support creeping vines, shade trees, in addition to long, sweeping vistas and view corridors. Other planning considerations included the use of human-scaled architectural details, visual acknowledgement of the surrounding context in scale, color, rhythm and materials, and wider, visually recognizable entry points. The need for an inviting landscaping was a pervasive comment during this investigative process and should be acknowledged in all future building projects.

Overhead canopies and trellis

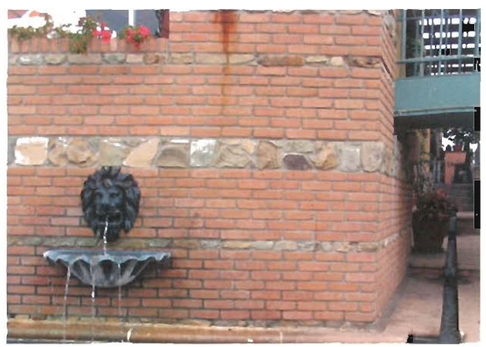
Vine covered walkways

Water elements, textured paving, and trees

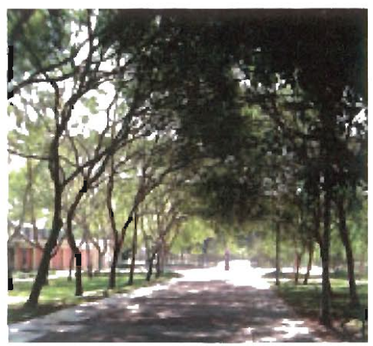
Lush landscaping and water features



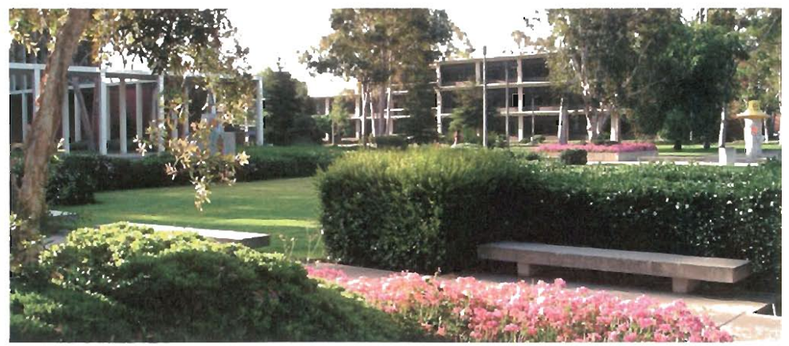
Articulated thresholds, use of planting materials to soften building surfaces, mixed materials of stone and wood



Textured walls and water elements



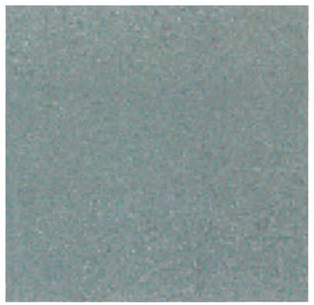
Tree lined promenade



Outdoor seating, lawn areas, walkways with overhangs

Jade White Stone

Decomposed Granite



Blue stone

Blues from the agave plant

Color from local succulents

Structural Plastic for use as decking, trellises

Materials and Finishes

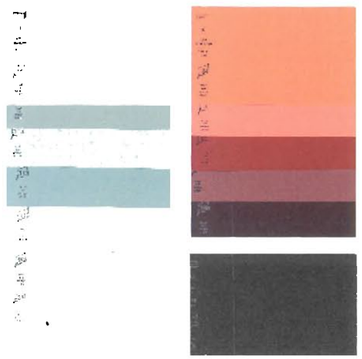
The Master Plan recommends the prevailing use of a warm white and buff color palette throughout the campus to act as a unifying theme tying together new and old architecture. Materials using "natural" finishes may also be used to compliment white surfaces. Exterior building materials may include but are not limited to: warm white stone, plaster (rough or smooth trowelled finish), sandblasted glass, tile, concrete, concrete masonry units in warm white, and pre-patinated copper.

Suggested materials are derived from local building context, historic references and site surroundings, and conveyed programmatic meaning. For example, stone may be used to convey mass and volume, glass may convey light or transparency. Materials may reflect building structure, or may exist independent of it.

Planting materials and hardscape may be used to underscore hierarchies between outdoor spaces and can integrate building colors and materials. The use of planting materials and water features may be utilized to add interest to building facades and outdoor spaces.

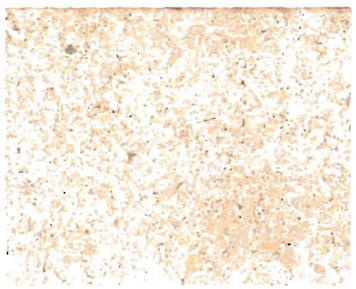
Building materials and finishes should meet or exceed all code requirements including fire and off-gasing requirements, and also be durable and preferably renewable or recyclable.

Pre-patinated copper



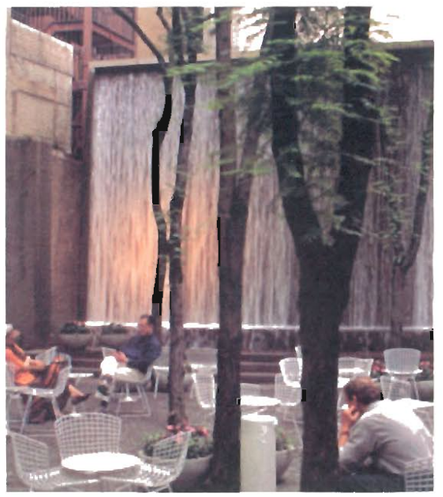
A range of colors from landscape and historic context

White Plaster



Buff/white color concrete masonry unit

Planting materials are easily distinguished against a white backdrop adding living color and texture



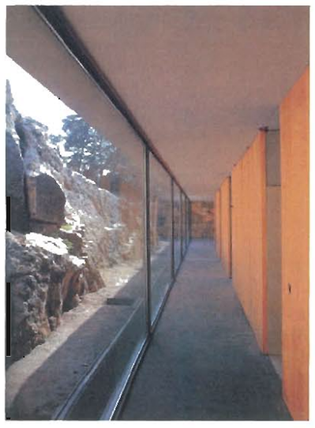
A wall of water adds texture, sound and humidity to a gathering space

Hierarchical white masses with prominent entry

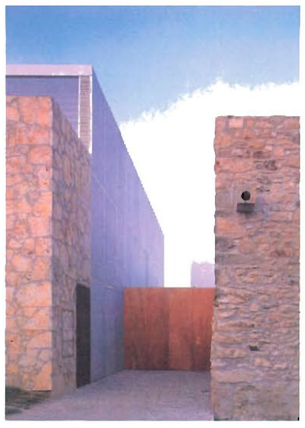
White massing with controlled view-corridors

Massing and Form

Architectural massing and form are an expression of the programmatic content of each individual building and are a response to its site location and surrounding context. Compositional interest is created by various means: between tension and transparency, by use of materiality, and by manipulation of detail and structure. Transparency in building composition is often reflected through material choices, wall cladding, glazing techniques, and reflected color. Tension can be created by juxtaposing volume and void, enclosure and opening, and traditional construction techniques counterpointed with new technology. The Campus Master Planning Committee has expressed an interest in building forms that recognize human scale and proportion. Building composition composed of a tripartite construction expressed with a base, body and cap is a preferred design strategy. Human scale can be expressed through architectural detailing, massing and material selection.



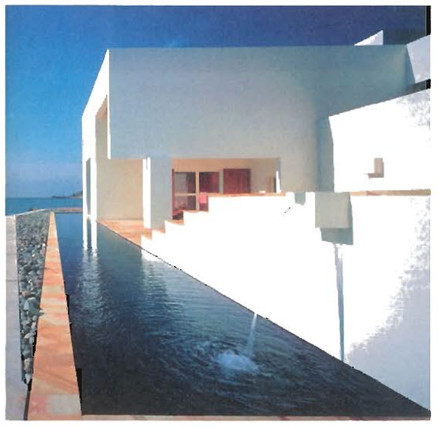
Juxtaposition of materials and texture, rocks viewed as landscape



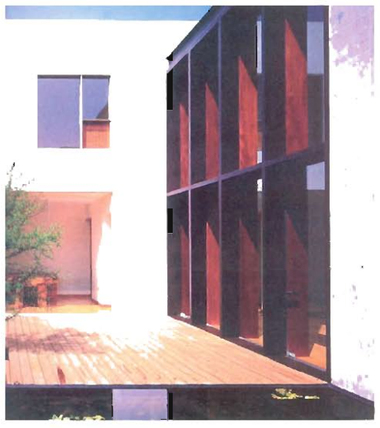
Variety of materials creates tension

Simple, functional massing with ground plane materiality change

Gate detail, metal angle sections and concrete



Variations in massing combine with water elements and hardscape material changes

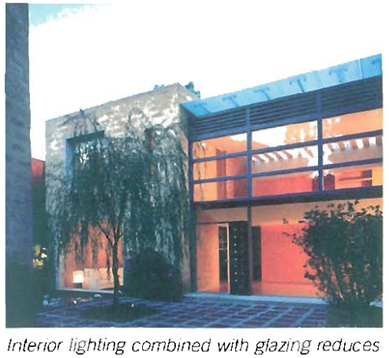


Materials changes articulate programmatic changes

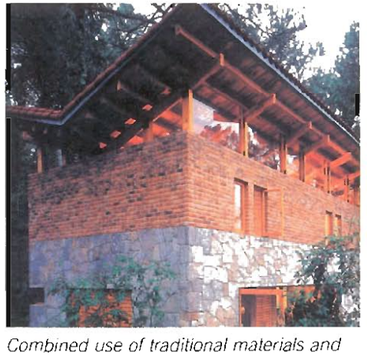
Revealed structure creates rhythm and interest.

Simple details and materials on a human scale

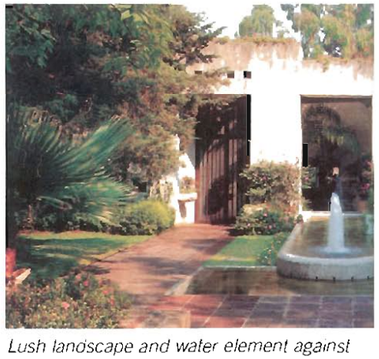
Pivot door and threshold providing drainage and threshold transition



Interior lighting combined with glazing reduces need for exterior lighting



Combined use of traditional materials and modern technology

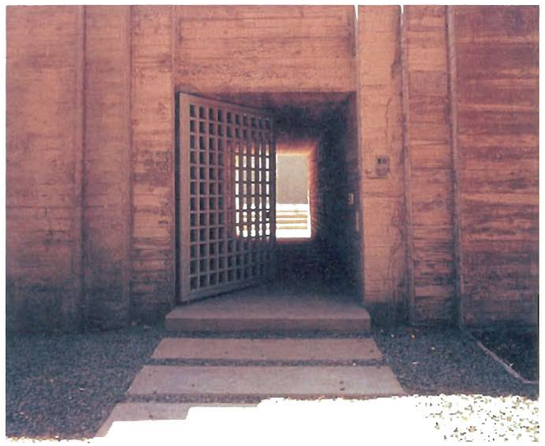


Lush landscape and water element against white building forms

Note: Images represent design intent and are not to be copied literally.

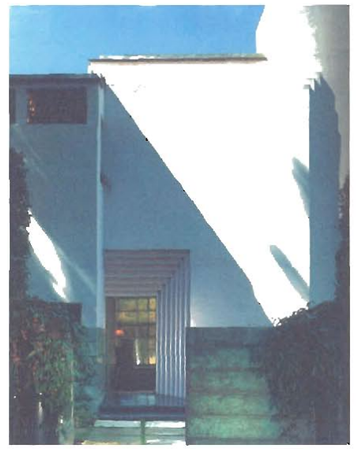
Massing used to delineate entry sequence.

Materiality changes reflect programmatic changes

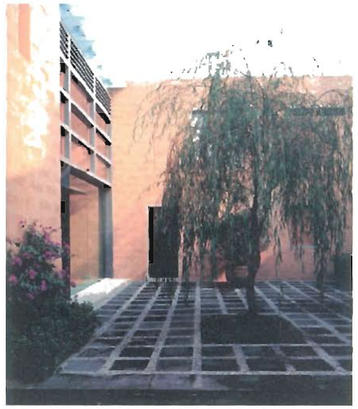


Strong entry transition marked by changes in hardscape materials, narrowing tunnel leading to expansive courtyard

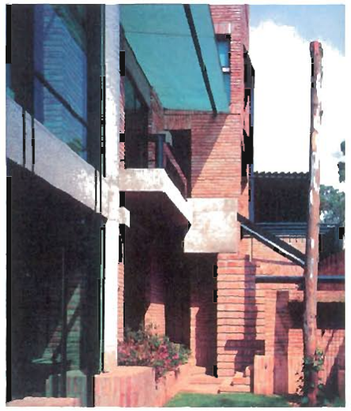
Structural and material rhythms delineate tripartite organization



Use of pre-patinated copper against white plaster

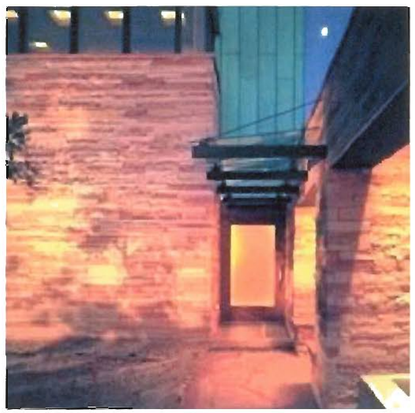


Interlocking grid system used differently in horizontal and vertical planes



Use of concrete (structure), brick (infil) and glass (shading and windows)

Pre-patinated copper, stone, glass and wood



Exterior lighting used to emphasize material changes

Formed concrete adds texture and human scale to large mass

Materials create massing organization

Tripartite organization (base, body, cap) reflected through material and massing

Rhythmic use of form

New blends with old through the use of material and form variety

Formed concrete massing

Interior courtyard garden

Note: Images represent design intent and are not to be copied literally.

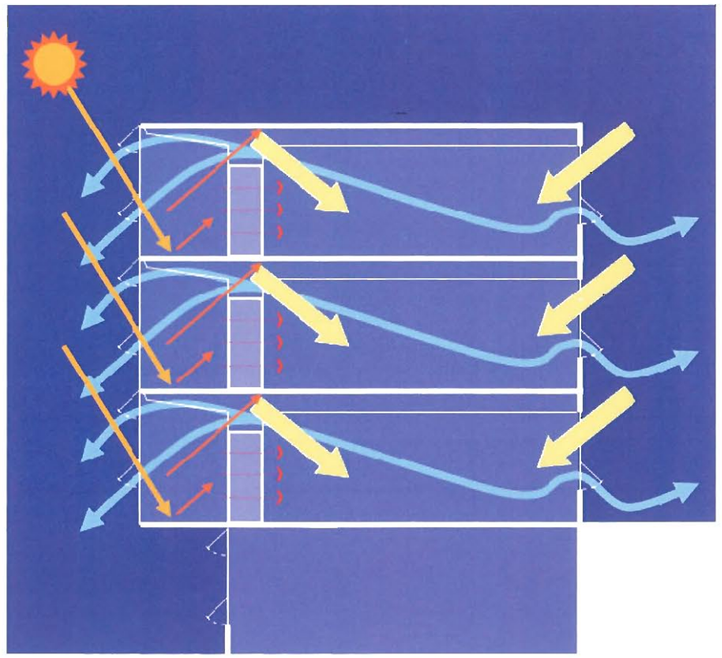


Diagram of sunlight penetration and air flow through a sustainable building.

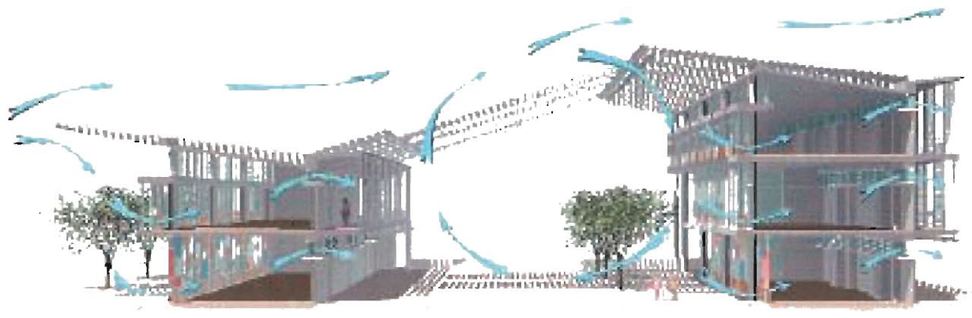


Diagram of airflow at Universidade Agostinho Neto.

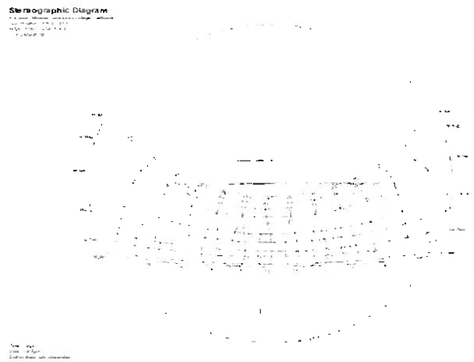
Sustainable Design

Leadership in Energy & Environmental Design (LEED)

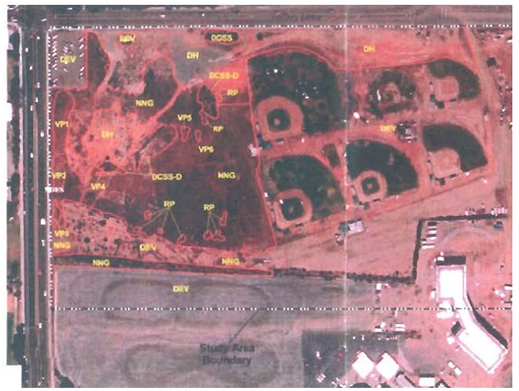
LEED is a voluntary, national standard for developing high-performance, sustainable buildings and provides a framework for assessing building performance and sustainablity. The Master Plan recommends using the following checklist:

Checklist – Basics of Sustainable Design

- Sustainable Sites - erosion control, environmental impact analysis, greenfield protection, brownfield redevelopment, alternative transportation sources, reduced site disturbance, stormwater management, heat island control and light pollution reduction
- Water Efficiency - water efficient landscaping, innovative water technologies, water use reduction
- Energy & Atmosphere - CFC reduction in HVAC equipment, optimize energy performance, explore renewable resource and green energy options, minimize ozone depletion
- Materials & Resources - store and collect recyclables, promote adaptive building reuse when possible, manage construction waste and reuse recyclable materials, use new products with recycled content when possible, use local/regional materials from renewable resources, encourage environmentally responsible forest management
- Indoor Environmental Quality - establish minimum indoor air quality performance, control tobacco smoke, monitor carbon dioxide in air quality, increase ventilation effectiveness, develop an indoor air quality construction plan, use materials with low VOC emissions, control indoor chemical and pollutant sources, provide occupant controls for air quality, temperature and lighting, design to maximize daylighting and view opportunities



Solar diagram for Miramar College Campus site



Environmental Impact Report survey showing existing vernal and road pools

Mass Transit and Bus Lines

Primary vehicular routes

Sustainable Sites - Site Analysis

- Isolate areas and systems requiring protection
- Identify off and on-site factors that require mitigation
- Identify soils-texture and load bearing properties
- Evaluate vegetation-endangered species, indigenous species, water tolerant species. Use vegetation to create beneficial microclimates-shaded areas in the south, control seasonable weather patterns, diurnal extremes created in hot-arid zones, vapor pressure in humid areas
- Determine slope orientation-follow natural slope to minimize grading
- Analyze solar paths to maximize daylighting and solar gain
- Test groundwater and research surface run-off. Establish watershed patterns and identify existing ground water aquifers.
- Utilize natural air movement patterns throughout buildings and landscape to provide natural climate control. Orient classrooms to southwesterly summertime breezes
- Place deciduous trees on south and east sides of buildings
- Identify adjacent development and zoning
- Identify existing climatic zones
- Examine air quality

Support Existing Ecosystems:

- Identify potential natural hazards: flooding, seismic activity, mud slides, etc.
- Locate existing pedestrian & vehicular movement and examine possibilities for improvement
- Identify local transportation resources and infrastructure

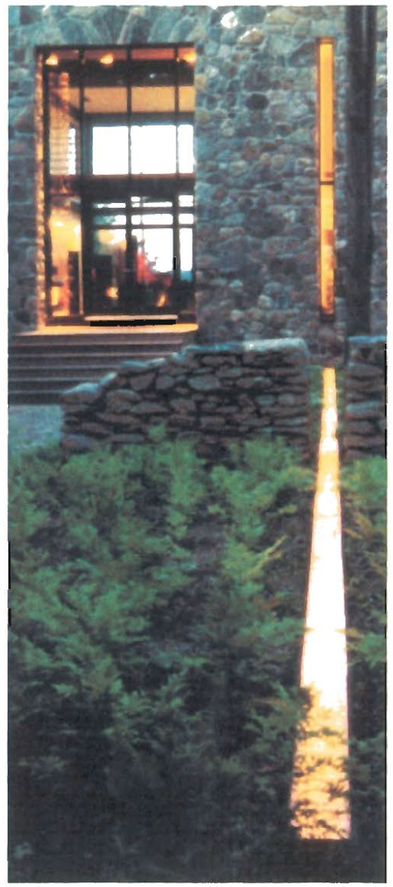
Alternative Transportation:

The campus should make provisions to accommodate all modes of alternative transportation and encourage ride share and other local programs. Alternative transportation may include but is not limited to public transportation, bicycles, alternative fuel vehicles, and carpools.

Black Mountain Road has been identified by SANDAG as a prime #2 collector with high traffic volume. The junction between Hillery and Westview has been designated as #3 collectors, with significant traffic flow. The Master Plan recommends that traffic and signalling studies be prepared before entries to the campus are modified, to ascertain both the street traffic flow requirements and traffic control requirements entering the campus.

A well-lit pathway using moonlighting techniques

Diagram of moonlighting technique



Strip LED Lighting accents pathways and entry thresholds

Light Pollution Reduction and Lighting Design

Exterior Lighting:

Light pollution is generated by landscape up lighting, and a wider than necessary spread of light from exterior light sources. Light pollution is intrusive to neighbors and nearby planetary observatories and can be an unnecessary energy drain. Some communities in San Diego require that parking and other light fixtures comply with night sky or blackout regulations that may place restrictions on the type of fixture specified. Low-pressure sodium fixtures or high pressure sodium fixtures with a sharp cut-off light spread may be alternatives to standard fixtures. Safey and security should be considered in all lighting design strategies.

Suggested exterior lighting strategies include moonlighting (downlighting from trees, building overhangs, etc.) and exterior lighting that meets but does not exceed lighting requirements.

Landscape Lighting

Suggested landscaping lighting techniques are included below. Refer to the landscaping appendix for more information.

UPLIGHTING is usually recessed lighting pointed upward to accent walls, trees, or an interesting landscape feature.

DOWNLIGHTING is a method to light pathways, parking lots and building features. Fixtures are mounted on walls or poles with reflectors. Fixture light spread and mounting height usually indicate number of fixtures required to illuminate a given area.

MOONLIGHTING, Lighting placed in trees and filtered down through tree branches to create a dappled light on a lawn, patio, or driveway.

SILHOUETTING - Lighting from behind objects or planting materials, silhouettes the object in front of the light.

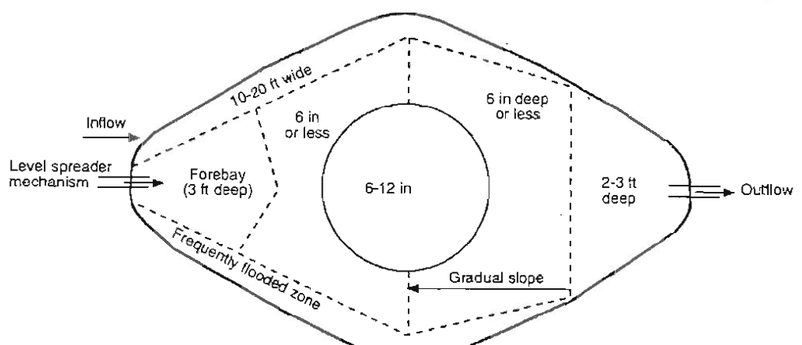
GRAZING - Lighting positioned (usually almost straight up), so that it emphasizes textured surfaces.

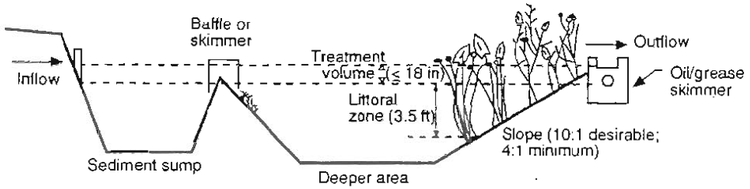
UNDERWATER - Lighting pool and water features. Requires special fixtures.

BORDER LIGHTS - Lighting for thresholds, transitions, to follow pathways, etc.

STEPLIGHTS - recessed or surface mounted lighting for steps. Light spread and placement determine number of fixtures required.

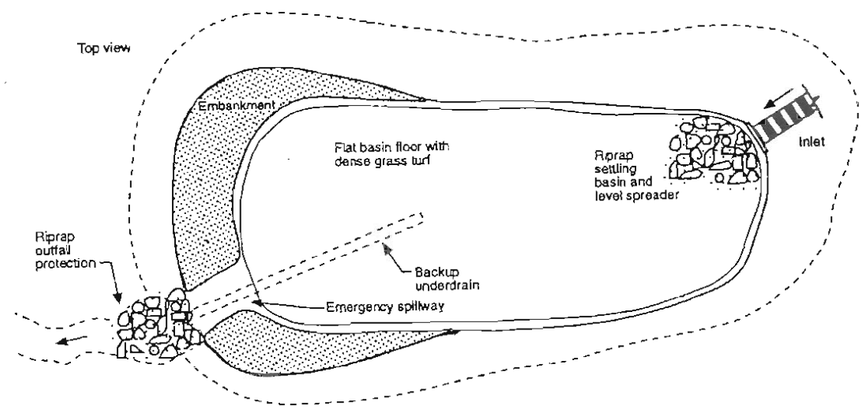
EXAMPLE SHALLOW-CONSTRUCTED WETLAND SYSTEM FOR STORMWATER TREATMENT





Source: Maryland Department of Natural Resources (1987), in U.S. Environmental Protection Agency, Office of Research and Development, Urban Runoff Pollution Prevention and Control Planning, EPA/625/R-93/004 (Washington, D.C.: GPO, 1993).

SAMPLE INFILTRATION BASIN

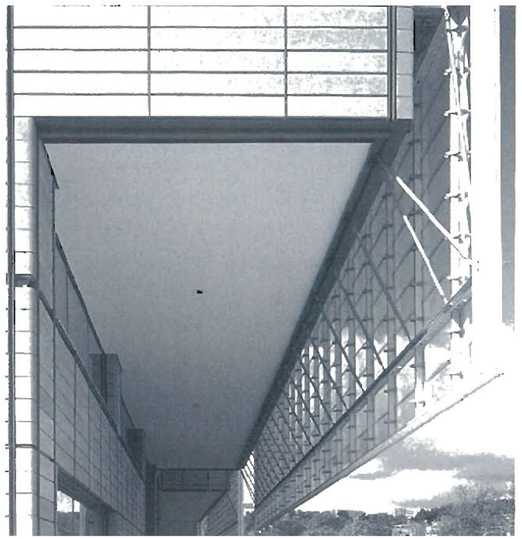


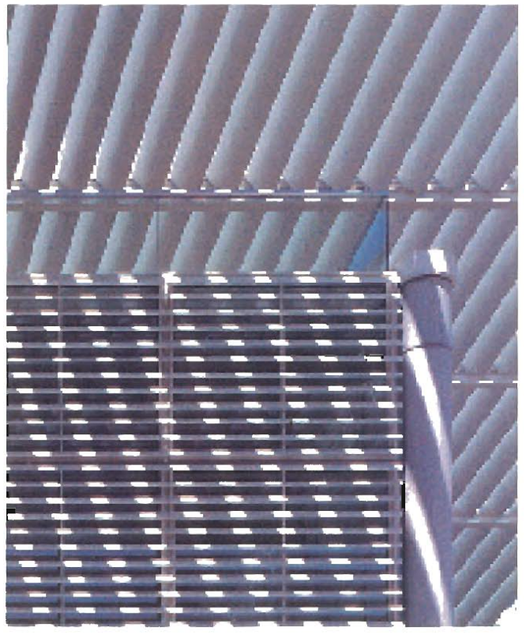
Source: U.S. Environmental Protection Agency, Office of Research and Development, Urban Runoff Pollution Prevention and Control Planning, EPA/625/R-93/004 (Washington, D.C.: GPO, 1993).

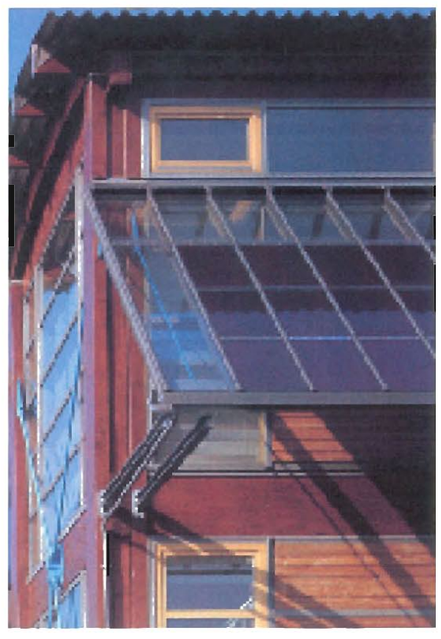
Wetland systems and infiltration basin diagrams

Water Efficiency and Sustainability

- Preserve mature vegetated soils
- Minimize pavement area and use porous asphalt that uses less runoff and preserves groundwater storage
- Install silt fences during construction
- Minimize irrigation, fertilizers high in nitrates, herbicides and pesticides.
- Return roof and drainage run-off to their natural runoff path.
- Construct infiltration basin to collect run-off basin should be located at lowest level of site.
- Consider graywater systems and indoor water conservation





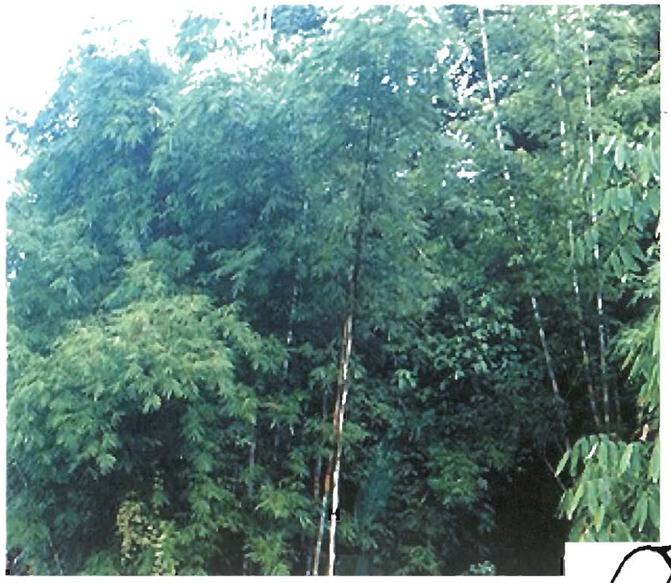


Overhead shading and louver examples

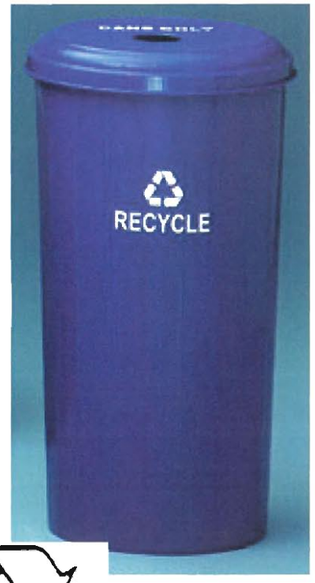
Energy, Atmosphere and Building Orientation

Design using passive solar heating and cooling techniques:

- Shade + airflows = summer cooling.
- Southern exposure + heat retaining material (concrete, glass) = winter heating.
- Place solar collectors for maximum solar gain.
- Locate entrances to maximize security and offer protection from elements (in this case, heat, occasional rain).
- Use sustainable materials whenever possible for furnishings, signage etc.
- Use surfaces with high albedo (surface reflectance) to reflect rather than absorb heat. Especially effective uses include hardscape, roofing, long expanses of concrete or plaster.
- Specify sustainable site construction methods. These include: eliminating unnecessary site disruption from grading, blasting and clearing and resource degradation (ground water contamination, air quality loss).
- Design the most compact building footprint possible and mass buildings together to minimize site disturbance.
- Retractable shading device with solar panels.
- Overhead shading and louver options.
- Site and orient the building to minimize the impact of climactic changes. Size and design building opening using climate as a consideration.
- Use deciduous plants, light shelves and louvers to shade southern and western building envelope.
- Choose double-paned windows with a high "R" value (measure of resistance to heat flow across a wall or window assembly) to reduce heat gain and materials fading from light exposure.
- Prevent moisture build-up within the building envelope.
- Specify building materials that reduce heat transfer. Masonry has a low rate of conductance, wood even less.
- Reduce heat islands - areas of heat gain that alter the natural climate and create an intolerable microclimate.
- Install reflective roofing materials to reduce solar gain on roof, or install solar collectors on roof.
- Utilize program partis like courtyard design to maximize interior daylighting opportunities and provide accessibility and semi-public gathering spaces.
- Examine programmatic traffic patterns to reduce waiting times for campus resources.



Sustainable bamboo forest



Bamboo flooring

Composite wood products

Sustainable carpets

Materials and Resources

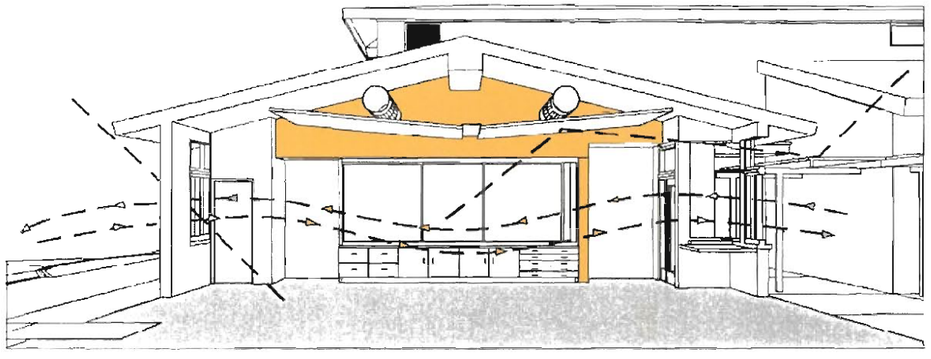
Building Products:

In general, choose products that are environmentally sensitive and responsible; products that are renewable and/or made from recycled products if possible, and can also be easily maintained and replaced. They should be durable and free from hazards such as raw corners, weak structural connections or unreliable materials. Use forestry products that encourage environmentally responsible, sustainable forest management. Building materials should also reflect the design intent of the campus Master Plan.

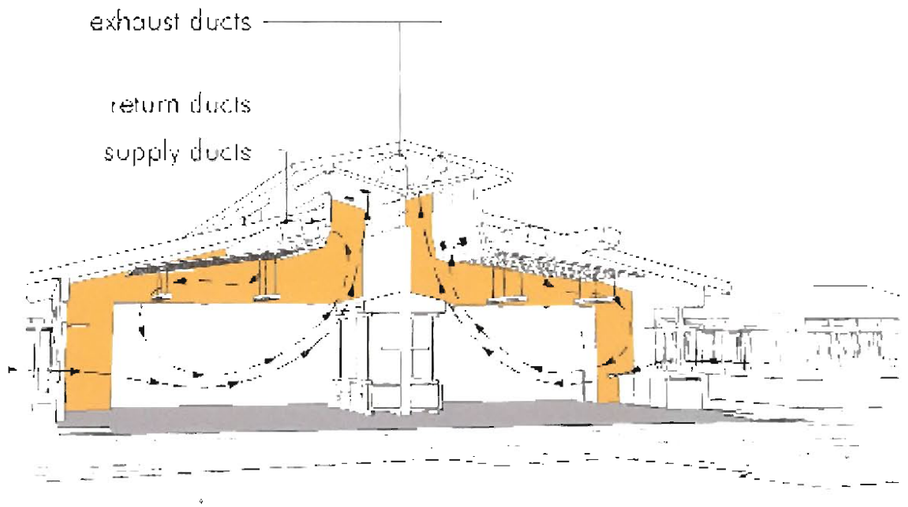
Promote efficient use of materials and provide well identified recyclable storage and collection points at each building and throughout campus.

During construction, manage construction waste by salvaging and recycling building products and land clearing waste. Establish goals for landfill diversion, balancing cut and fill areas. Designate specific, clearly marked construction recycling zones for recyclable materials.

Promote adaptive reuse of existing structures and materials whenever possible. Use local/regional materials to support local economies and avoid long distance materials transportation environmental impacts and expense.



Linear classroom airflow and daylight diagram



Stacked classroom airflow diagram

Indoor Environmental Quality

IAQ Design Guidelines and Utilities requirements:

It is recommended that new construction and remodeling projects meet the minimum requirements of ASHRE (American Society of Heating, Refrigerating and Air Conditioning Engineers) 62-2001 for indoor air quality. Mechanically ventilated spaces should meet the minimum requirements of ASHRE 55-2004 with 1995 addenda, 90.1-2001, 113-1990, and ASHRE 129-1997 for air change effectiveness. Air movement and velocity should also be calculated on a case basis for correct indoor air quality.

In general, it is important to provide individual thermal, ventilation and lighting controls in each classroom and office such as operable windows, occupancy sensors and dimming controls. Develop a maintenance program for filtration change-out.

It is also necessary to consider electric and magnetic field output in equipment selection and orientation.

Interior Air Quality (IAQ):

Indoor air pollutants can be particularly harmful for those with allergy, asthma or airway hyper-reactivity.

Basic requirements for good IAQ should include, "avoidance of environmental tobacco smoke; avoidance of moisture/moulds in the building; avoidance of allergen sources; adequate cleaning and maintenance, practical shaping of the interior to facilitate cleaning and maintenance; good control of the maintenance of heating and ventilation to ensure a satisfactory temperature and ventilation in the classroom; adequate periodical monitoring of the IAQ parameters in schools; appropriate training of students, teachers and school staff who are responsible for management, maintenance and cleaning."[2]

"Controlling indoor humidity levels is a major component of good indoor air quality for an optimum-learning environment. Increased humidity levels can result in indoor microbiological growth and discomfort. Controlling indoor humidity levels while providing adequate ventilation levels can be a challenge, particularly in hot and humid climates. Methods to maintain control of indoor temperatures and humidity can dramatically differ in initial and operating costs, as well as energy usage and costs."[3]

Bibliography

De Haro, Fernando, and Omar Fuentes. Mexican Architects, Space Light & Color. 2000.

De Moura, Eduardo. "Eduardo Souto de Moura." Nexus 2G (1998).

Drain, Thomas. A Sense of Mission, Historic Churches of the Southwest. San Francisco: Chronicle Books, 1994.

Fuses, Josep, and Joan Ma Viader. Documentos de Arquitecura Series, 53.

Kosar, D.R., et al. 1998. *Dehumidification issues of Standard 62-1989,* ASHRAE Journal, 40: 71-75.

Krell, Dorothy, and Paul C. Johnson. The California Missions, A Pictorial History. Menlo Park, CA: Sunset Books, 1979.

Navarro Baldewig, Juan. Juan Navarro Baldewig. Corte Madera, CA: Ginko Press, 2001.

Newcomb, Rexford. Spanish-Colonial Architecture in the United States. New York, NY: Dover Publications, 1990.

Nierman, Daniel, and Ernesto H. Vallejo. The Hacienda in Mexico. Austin, TX: University of Texas Press, 2003.

Polyzoides, Stephanos, Roger Sherwood, and James Tice. Courtyard Housing in Los Angeles. Princeton, NJ: Princeton Architectural Press, 1982.

"Spanish Architecture." El Croquis 70 (1994).

Young, Stanley. The Missions of California. San Francisco, CA: Chronicle Books, 1948.

Miramar Community College Facilities Master Plan

LANDSCAPE MASTER PLAN

San Diego Community College District

June 2005
Updated October 2005

PERKINS
+WILL

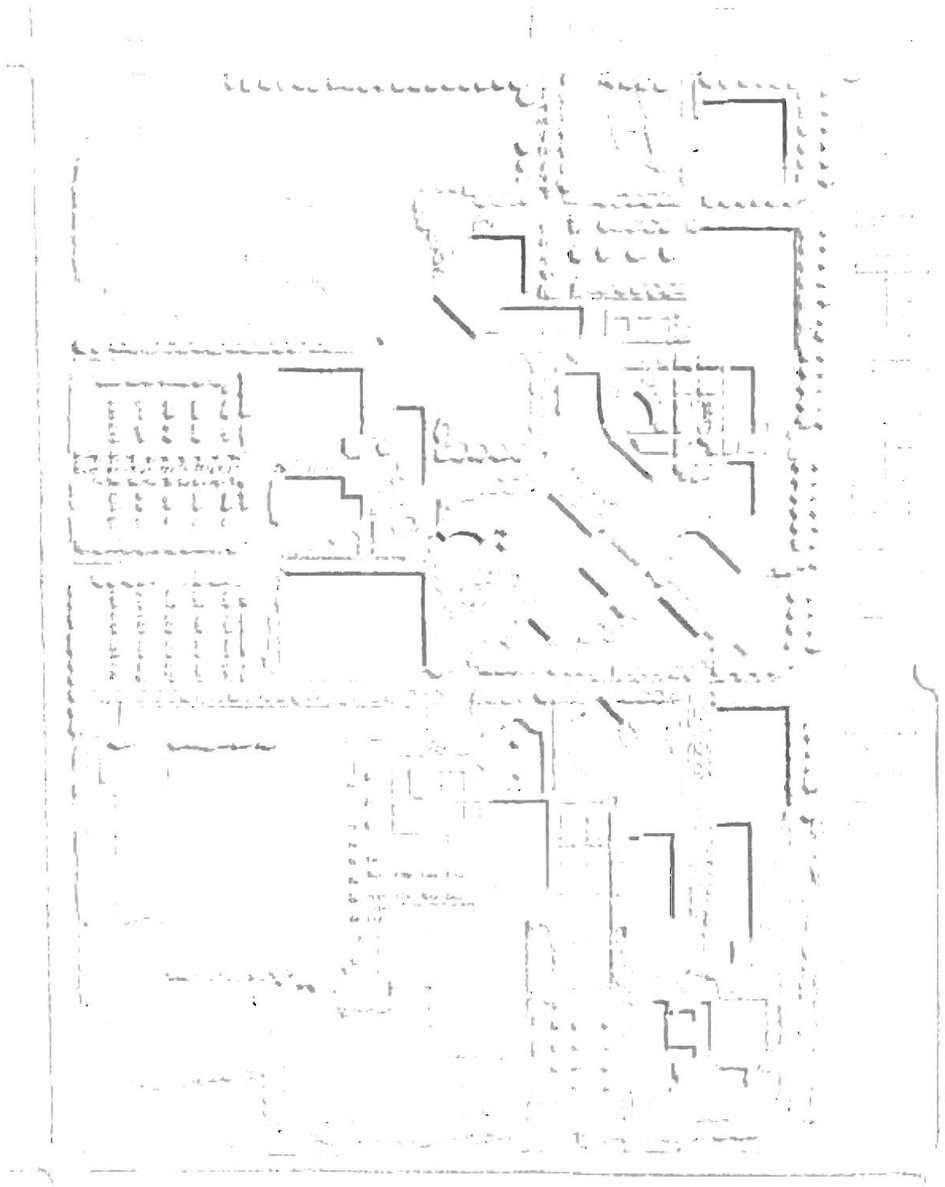


Table of Contents:

Landscape Master Plan

Wimmer Yamada and Caughey
Landscape Architecture | Environmental Planning
3067 Fifth Avenue
San Diego, CA 92103
p. 619.232.4004
f. 619.232.0640
http://www.wyac.com

HELIX Environmental Planning, Inc
8100 La Mesa Blvd
La Mesa, CA 91941
p. 619.462.1515
f. 619.462.0552
www.helixepi.com

MIRAMAR COLLEGE LANDSCAPE MASTER PLAN VISION STATEMENT

Based upon a thorough review of the approved campus Master Plan, the landscape architectural approach to the design of the exterior spaces of Miramar College will describe an array of options that will position the campus to carefully guide their future facility development. The intention of the Landscape Master Plan is to evolve a "kit of parts", a palette of appropriate materials which will set the standard for, but allow flexibility in, the realization of planned areas. The Landscape Master Plan is not intended to limit each individual project design as they move toward realization but rather to establish a framework to guide the planning so as to aid in creating a cohesive aesthetic over the life of the Campus. Just as the Master Plan establishes sustainable design strategies, so too will the Landscape Master Plan. Taking advantage of the pre-existing conditions in the northwestern portion of the campus to restore and subsequently protect an area with valuable ecological resources, the campus landscape will be similarly judicious in its use of natural resources elsewhere and concentrate its more resource-intensive design in areas best suited.

Correct use of the landscape elements will be a key in developing a sense of place and reinforcing the spatial arrangement of the campus as new facilities develop over time. A clear, identifiable image for the campus will be aided by a strong, definitive plant palette around the perimeter and through well articulated and aesthetically pleasing access points. Similarly, the use of a distinct species of tree for such circulation elements as the planned ring road will establish coherent wayfinding. Larger, shade trees will mitigate expanses of paving and parking. Moving from the exterior semi-public spaces of the campus into the core areas, the vegetation will be more ornamental. The scale of materials will reflect the pedestrian use of the allees and outdoor rooms. Several open areas with turf and shade trees will allow both structured and unstructured enjoyment of the favorable San Diego climate. More intimately scaled spaces will be defined with more boldly colored, finely textured materials suitable for more specific uses by the immediate buildings.

Timeless, sustainable, maintainable. These are the principles that guide the development of the landscape architectural expression at Miramar College. The campus has a unique opportunity to demonstrate a commitment to the appropriate use of new and recycled materials and to new technologies. Within the Landscape Master Plan, opportunities exist to extend the teaching/learning relationship into the exterior spaces. From outdoor classrooms to greenhouse development to the joint use of Hourglass Park with the City and the community, the College can use the exterior spaces as a full partner in their educational efforts.

EXISTING CONDITIONS

Just slightly less than one hundred acres, the campus of Miramar College is one with a long history - from its historic origins as an airfield to the modern day development of a vibrant, growing community college. Plans for the future are ambitious - as is evidenced by the facilities proposed in the Master Plan. As with many public institutions that have evolved over time, the campus has developed without a cohesive or guiding set of criteria for its exterior spaces. The result has been that the site suffers from a distinct lack of identity in which wayfinding is difficult and the campus community discouraged by the "look" of their facility. The plant material throughout the site has been developed in an ad hoc manner and lacks the overall themes necessary to establish the various zones of the campus as a unified whole. The joint-use park in the south is green and used for active recreation. The central campus is plagued with too much asphalt and concrete and insufficient foundation planting, screening, and shade. There are no organized gathering spaces which would allow students, faculty and staff to enjoy the benefits of the temperate San Diego climate. The northern campus has a barren field currently used for a variety of activities as well as an ecologically sensitive area that has tremendous potential for use as an educational and aesthetically pleasing preserve.

PROPOSED LANDSCAPE STATEMENT

Although no definitive individual species are proposed within the contents of the Landscape Master Plan, it is the intention of the document to help guide future development of the campus and to provide a framework for subsequent final design as each new facility is realized. The suggested materials are ones that are suitable for the climate, challenging soils conditions, and have consideration given for their longevity and maintenance needs. The general landcape concept is one in which the campus will have an identity - both in its signage, its site furnishings and its plant materials and spatial organization. The perimeter of the site will consist of larger, back-drop species, while the pedestrian allees and ring road will have a strong, identifiable palette. The central campus will be more ornament, with the focus of the more aesthetically interesting materials clustered around building entries and gathering spaces to provide maximum impact with color and texture. Foundation plantings will reduce building scale to one more pedestrian friendly as well as provide screening for the necessary utilitarian areas. Paving materials and site furnishings will take their lead from the building architectural genre to provide a cohesive identity to the overall site. As the first building to be realized, the LLRC facility design will create and establish an appropriate landscape treatment that will set the tone for future Campus development. The materials chosen for hardscape and site furnishings, as well as the planting scheme will aid in the design of future facilities by providing a framework that will be emulated in each subsequent project.

PROPOSED IRRIGATION/RECYCLED WATER STATEMENT

In keeping with the mandate for water conservation that is so critical to the Southwestern United States, the irrigation system for the campus facilities will employ numerous best management practices. Centrally controlled irrigation, with main and lateral line break protection, as well as appropriately design hydrozones will ensure suitable response to both plant material needs as well as consideration for drainage issues of the past. The site will be provided with a new six inch recycled water main. It will be a looped system connecting to City of San Diego recycled water mains in both Hillery Drive as well as Black Mountain Road. This recycled water main will provide adequate water and water pressure to service the existing and proposed landscape areas. The recycled water line is sized sufficiently that should the campus of the future require recycled water for industrial or building facility use, it will be adequately serviced. Complete site-by-site evaluation of each proposed building and campus area will determine the suitability for future conversion to and use of recycled water. It is understood that not every application (such as sports fields) benefits from the use and it is the intention of this Master Plan to encourage its use only when soil and horticultural conditions are appropriate.

IDEA SURVEY SUMMARY

In general, there is considerable consensus about the challenges facing the campus from a landscaping perspective. Similarly there is consistency of opinion about what the goals for the campus are in the long term. This information will be used to guide and prioritize future design decisions to ensure responsiveness to those items identified. More specifically:

Primary Concerns to be Addressed:

- There is far too much hardscape - too many areas of concrete, too many expanses of asphalt and the result is an unattractive campus
- There is no unity or guiding design theme(s) present to create a sense of place for "Miramar College"
- The architecture has evolved in a "hodge-podge" manner with too little consideration given to the overall campus identity and the result is an unattractive campus that is hard to maintain
- There are no attractive, organized and functional means of circulation (paths, drives) and no green spaces for the campus community to gather in
- Access to and design of Bio-Garden is very important

Primary Considerations to be Maintained:

- Openness of the views within/without the campus
- Green spaces such as exist in front of the T-100 building
- Accessible nature of the campus and connections with surrounding community

Primary Visions for the Future of the Campus:

- A unique identity and strong sense of place, clear entries to campus
- A welcoming and safe environment throughout the campus
- Shady, green spaces throughout the campus to gather and congregate informally
- A landscape palette that is colorful and interesting as well as sensitive to the budget and maintenance constraints of the Campus and the District

Considerations for Specific Campus Zones:

- Perimeter: clear identity, welcoming, formal
- Ring Road: safe, well lighted/signed, unique identity, functional for students and staff as well as maintenance vehicles
- Utility Areas: accessible but screened from sight
- Walks/Spines: wide, interesting, colorful, meandering, not asphalt
- Central Quad: open, sunny space for gathering with green perimeter
- Bio-Garden: attractive, focused on education/environmental awareness, helps establish the Campus in the community context
- Hourglass Field: integrated to rest of campus, accessible, green
- Building Perimeters: screen non-pedestrian areas with tall vegetation, blend existing and new development with consistent plant materials
- Building Entries: safe, identifiable, colorful plantings, gathering and seating places proximate

Plant Material Characteristics Summary:

- Overwhelmingly the plant materials that were the most popular amongst all respondents were those which exhibited dramatic flowering color characteristics. Those with bright red, yellow, and purple flowers were the most favored.
- With the exception of cacti, plant form was generally a secondary concern or not mentioned.
- Cacti were not favored for any use.
- Large canopy shade trees were extremely popular with all respondents due to the strong desire for shade.
- Pine trees were not popular.

PROPOSED LANDSCAPE THEME ZONES

Based upon the information collected in the above summarized survey conducted at the last workshop meeting, the following are the extracted ideas to be carried forward in the planning of the landscape:

Perimeter Zone:
- Area around exterior of campus - presents image of campus to community and provides a distinct character to the campus. Perimeter should use some screening materials in utility areas, and some welcoming, distinct materials at entries to campus. Signage is critical and should be attractive and set the tone for the experience on campus and ease wayfinding.

Bio-Garden Zone:
- Area in the northwestern corner of campus - key focal point for community. Need to balance educational/native materials/ environmental constraints with need for organized, attractive and educational space. Some limited access areas may be delineated in conjunction with some open access areas.

Parking and Utility Zone:
- Area needs to provide larger scale tree materials to provide shade and visual mitigation from asphalt expanses. Clear wayfinding is necessary with identifiable materials. Screening of structures with large scale massings of material to provide backdrop. Distinct vehicular access with safe pedestrian links. Appropriate security lighting is critical.

Athletics Zone:
- Integration of Hourglass Field into campus proper through key pedestrian linkages. Green park-like character to be maintained. Site soils conditions to be considered throughout campus. Wayfinding and signage and materials to help tie southern portion of site to main academic areas.

Campus Ring Road:
- Distinct circulation route - needs identifiable tree species for ease of wayfinding. Must serve as easy vehicular corridor for campus students, staff and must provide for maintenance vehicles. Should tie in clearly with entries to campus in terms of welcoming, identifiable plant types.

Original Campus Zone:
- As the new facilities are developed, efforts must focus on tying existing campus buildings into the new plan in a manner that encourages flow easily and directly from north to south and back. Clear, warm and wide pedestrian links must form backbone of spatial organization.

Campus Central Zone:
- Campus quadrangle and tower plaza must function as the central core of the campus. Open grassy areas for both formal and informal gathering should be surrounded by shady congregating areas with plenty of seating and socializing areas. Brightly colored accent materials and clear directional signage shall encourage use of the central areas and should tie seamlessly into the perimeter buildings.

Arts Zone and Technology Zone:
- Ease of wayfinding, safety and security as well as focal accents at building entries are critical. Using landscape materials against a backdrop of the building to develop themes for each area. Areas for break-out and seating will provide students and staff informal gathering areas. Shade and screening are key around buildings.

Transportation and Admin Zone:
- Formal administrative entry to the campus from the north. Area should be very distinct and colorful with clear wayfinding. Transportation hub and visitor entry define this link to the surrounding community. Areas for shady sitting and waiting (for bus, ride, etc) critical. Formal landscaping more important than some of the more casual and relaxed areas within campus proper.

Pedestrian Promenades:
- Key focus of wayfinding effort to draw people along a shady boulevard toward the central core of the campus. Efficient means of access and egress from parking areas to more pedestrian scale spaces. Clear articulation of paths to reach buildings shall build upon this promenade framework. Tower plaza shall form the identifiable line of sight from major pedestrian arteries. Distinct shady and colorful vegetation shall define prominent spines.

Wimmer
Yamada

Caughey

1. What do you think is the best/most attractive physical place/attribute of the Miramar Campus and why?

2. What do you think is the least attractive physical place/attribute of the Miramar Campus and why?

3. In your opinion, what are the three most important things for the design team to consider in developing the landscape master plan for the Campus?

4. What are your three greatest concerns/worries about the development of the landscape architectural master plan for the Campus?

5. In ten years, if someone asked you "what is the landscape of Miramar College like?", how would you like to answer them?

6. Please list three words or short phrases that characterize the theme/image you feel would be most appropriate for each of the following Campus zones:

   The Campus perimeter landscape:_____

   The proposed Campus ring road:_____

   The Campus utility areas:_____

   The proposed main pedestrian spines/walks:_____

   The proposed central quadrangle:_____

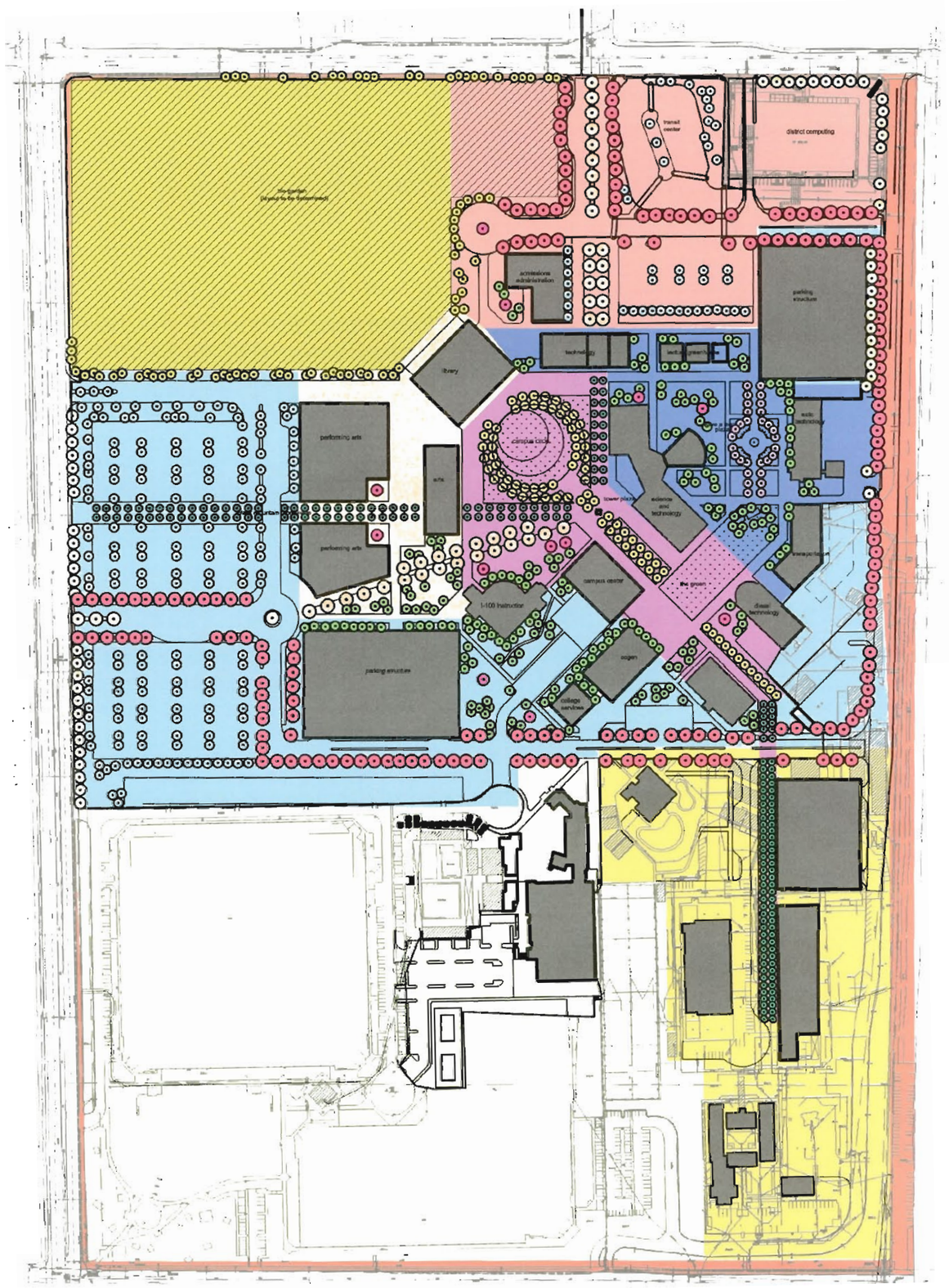
   The ecological/bio-garden area:_____

   The integration of Hourglass Field:_____

   The building perimeters:_____

   The building entry areas:_____

7. Do you have any other thoughts or concerns you would like taken into consideration in the development of the landscape master plan?

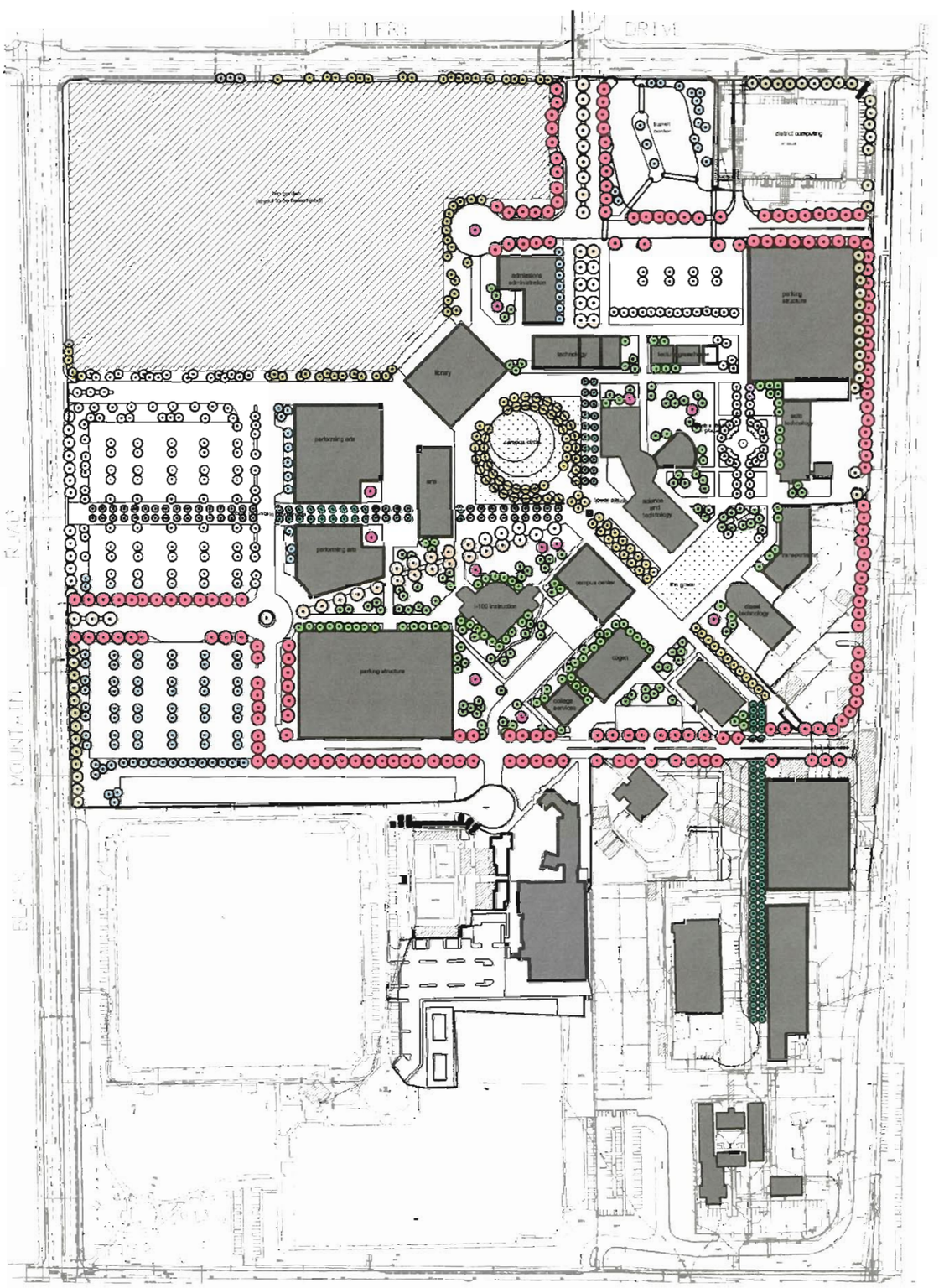


NOTE
ZONES DEPICTED ON THIS GRAPHIC EXHIBIT ARE INTENDED AS A GUIDELINE ONLY. ALL SUBSEQUENT FACILITY DESIGN WILL BE BASED UPON PROGRAMMING UNIQUE TO EACH PROJECT. DEVELOPMENT OF THE LLRC FACILITY IS INTENDED TO ESTABLISH THE BASIS OF DESIGN OF ALL POSSIBLE ELEMENTS SUCH AS PERGOLAS, TRELLISES, SITE FURNISHINGS, LIGHTING AND ARCHITECTURALLY COMPATIBLE LANDSCAPE DESIGN

LEGEND:

- ARTS ZONE
- BIO-GARDEN ZONE
- CENTRAL CAMPUS ZONE
- PARKING AND UTILITY ZONE
- ORIGINAL CAMPUS ZONE
- TRANSPORTATION AND ADMIN ZONE
- ATHLETICS ZONE
- TECHNOLOGY ZONE
- PERIMETER ZONE

Wimmer Yamada Caughey



NOTE:
INFORMATION DEPICTED ON THIS GRAPHIC EXHIBIT ARE INTENDED AS A GUIDELINE ONLY. ALL SUBSEQUENT FACILITY DESIGN WILL BE BASED UPON PROGRAMMING UNIQUE TO EACH PROJECT. DEVELOPMENT OF THE LLRC FACILITY IS INTENDED TO ESTABLISH THE BASIS OF DESIGN OF ALL POSSIBLE ELEMENTS SUCH AS PERGOLAS, TRELLISES, SITE FURNISHINGS, LIGHTING AND ARCHITECTURALLY COMPATIBLE LANDSCAPE DESIGN.

LEGEND:

- RING ROAD TREES
- ENTRY ALLEE TREES
- QUAD/SPINE TREES
- BIOGARDEN AREA TREES
- BUFFER TREES
- INTERIOR SHADE TREES
- PROMENADE TREES
- PARKING LOT SHADE TREES
- SPECIALTY PLAZA TREES
- SPECIMEN TREES

NOTES:
SEE PLANTING LIST FOR DESCRIPTION OF POSSIBLE TREE SPECIES FOR EACH AREA.

Wimmer Yamada and Caughey

PLANT MATERIAL DESIGN GUIDELINE

NOTE
MATERIAL DEPICTED ON THIS GRAPHIC EXHIBIT ARE INTENDED AS A GUIDELINE ONLY. ALL SUBSEQUENT FACILITY DESIGN WILL BE BASED UPON PROGRAMMING UNIQUE TO EACH PROJECT DEVELOPMENT OF THE LLRC FACILITY IS INTENDED TO ESTABLISH THE BASIS OF DESIGN OF ALL POSSIBLE ELEMENTS SUCH AS PERGOLAS, TRELLISES, SITE FURNISHINGS, LIGHTING AND ARCHITECTURALLY COMPATIBLE LANDSCAPE DESIGN

RING ROAD TREES

ARBUTUS UNEDO - STRAWBERRY TREE
CINNAMOMUM CAMPHORA - CAMPHOR TREE
EUCALYPTUS FICIFOLIA - RED FLOWERING GUM
LIQUIDAMBAR STYRACIFLUA 'PALO ALTO' - PALO ALTO LIQUIDAMBAR
METROSIDEROS EXCELSUS - NEW ZEALAND CHRISTMAS TREE
PLATANUS ACERIFOLIA 'COLUMBIA' - LONDON PLANE TREE
TIPUANA TIPU - TIPU TREE
ULMUS PARVIFOLIA - EVERGREEN ELM

RING ROAD SHRUBS

LARGE
Plumbago auriculata - Cape Plumbago
Rhaphiolepsis indica 'Springtime' - India Hawthorn
Calliandra emarginata - Dwarf Powder Puff

MEDIUM
Rhaphiolepsis indica 'Clara' - India Hawthorn
Bougainvillea 'La Jolla' - Bougainvillea
Callistemon viminalis 'Little John' - Bottlebrush

SMALL
Aloe brevifolia - Red Flowering Aloe

GROUND COVERS AND VINES
Anigozanthos hybrids - Kangaroo Paw
Rosmarinus officinalis - Rosemary
Arctotheca calendula - Capeweed
Myoporum parvifolium - Myoporum
Cissus antarctica - Kangaroo Vine

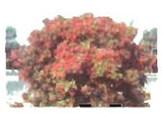
BIOGARDEN AREA TREES

PLATANUS RACEMOSA - CALIFORNIA SYCAMORE
QUERCUS ENGELMANNII - ENGELMAN OAK
QUERCUS AGRIFOLIA - COAST LIVE OAK

BIOGARDEN AREA SHRUBS

LARGE AND SMALL
ENCELIA CALIFORNICA - CALIFORNIA ENCELIA
ERIOGONUM FASCICULATUM - CALIFORNIA BUCKWHEAT
MALOSMA LAURINA - LAUREL SUMAC
HETEROMELES ARBUTIFOLIA - TOYON
OPUNTIA LITTORIS - BEAVERTAIL CACTUS
RHUS INTEGRIFOLIA - LEMONADE BERRY
SALVIA APIANA - WHITE SAGE
SALVIA MELLIFERA - BLACK SAGE
ZAUCHNERIA CALIFORNICA - CALIFORNIA FUSCHIA

GRASSES, VINES AND ANNUALS
ESCHSCHOLZIA CALIFORNICA - CALIFORNIA POPPY
LONICERA HISPIDULA - CALIFORNIA HONEYSUCKLE
LUPINUS ARBOREUS - LUPINE
NASSELA PULCHRA - PURPLE NEEDLEGRASS



ENTRY ALLEE TREES

BRAHEA ARMATA - MEXICAN BLUE PALM
PRUNUS CERASIFERA 'ATROPURPUREA' - PURPLE-LEAF PLUM
SYAGRUS ROMANZOFFIANUM - QUEEN PALM
ULMUS PARVIFOLIA - EVERGREEN ELM

ENTRY ALLEE SHRUBS

LARGE
Plumbago auriculata - Cape Plumbago
Rhaphiolepsis indica, 'Springtime' - India Hawthorn
Calliandra emarginata - Dwarf Powder Puff

MEDIUM
Rhaphiolepsis indica 'Clara' - India Hawthorn
Bougainvillea 'La Jolla' - Bougainvillea
Pittosporum tobira 'Wheeler's Dwarf' - Dwarf Pittosporum

SMALL
Aloe brevifolia - Red Flowering Aloe
Coprosma kirkii - Creeping Coprosma

GROUND COVERS AND VINES
Anigozanthos hybrids - Kangaroo Paw
Rosmarinus officinalis - Rosemary
Arctotheca calendula - Capeweed
Myoporum parvifolium - Myoporum
Parthenocissus tricuspidata - Boston Ivy
Cissus antarctica - Kangaroo Vine
Ficus repens - Creeping Fig

QUADRANGLE / PED SPINE TREES

JACARANDA MIMOSIFOLIA - JACARANDA
KOELREUTERIA BIPINNATA - CHINESE FLAME TREE
PLATANUS ACERIFOLIA 'COLUMBIA' - LONDON PLANE TREE
ULMUS PARVIFOLIA - EVERGREEN ELM
TIPUANA TIPU - TIPU TREE

QUADRANGLE / PED SPINE SHRUBS

LARGE
Plumbago auriculata - Cape Plumbago
Rhaphiolepsis indica, 'Springtime' - India Hawthorn
Calliandra emarginata - Dwarf Powder Puff

MEDIUM
Rhaphiolepsis indica 'Clara' - India Hawthorn
Bougainvillea 'La Jolla' - Bougainvillea
Pittosporum tobira 'Wheeler's Dwarf' - Dwarf Pittosporum

SMALL
Aloe brevifolia - Red Flowering Aloe
Nandina domestica 'Gulf Stream' - Heavenly Bamboo
Coprosma kirkii - Creeping Coprosma
Hesperaloe parviflora - Red Yucca
Nassella cernua - Nodding Needlegrass

GROUND COVERS AND VINES
Anigozanthos hybrids - Kangaroo Paw
Rosmarinus officinalis - Rosemary
Arctotheca calendula - Capeweed
Myoporum parvifolium - Myoporum
Parthenocissus tricuspidata - Boston Ivy
Cissus antarctica - Kangaroo Vine
Ficus repens - Creeping Fig

SPECIMEN TREES

AESCULUS CALIFORNICA - CALIFORNIA BUCKEYE
ARBUTUS 'MARINA' - MARINA STRAWBERRY TREE
BRACHYCHITON ACERIFOLIUS - FLAME TREE
BUTIA CAPITATA - PINDO PALM
ERYTHRINA CAFFRA - CORAL TREE
FICUS RUBIGINOSA - RUSTYLEAF FIG
PLATANUS RACEMOSA - CALIFORNIA SYCAMORE
ROBINIA X AMBIGUA 'PURPLE ROBE' - PURPLE LOCUST
SAPIUM SEBIFERUM - CHINESE TALLOW TREE
SPATHODEA CAMPANULATA - AFRICAN TULIP TREE
TABEBUIA CHRYSTOTRICHA - GOLDEN TRUMPET TREE

CAMPUS BUFFER / PERIMETER TREES

CALOCEDRUS DECURRENS - INCENSE CEDAR
CEDRUS DEODORA -DEODAR CEDAR
CELTIS RETICULATA - NETLEAF HACKBERRY
PINUS TORREYANA - TORREY PINE
PINUS HALEPENSIS - ALEPPO PINE
PISTACIA CHINENSIS - CHINESE PISTACHE
QUERCUS VIRGINIANA - SOUTHERN LIVE OAK
SPATHODEA CAMPANULATA - AFRICAN TULIP TREE

CAMPUS BUFFER / PERIMETER SHRUBS

LARGE
Acacia longifolia - Sydney Golden Wattle
Dodonaea viscosa 'Purpurea' - Purple Hopseed Bush
Ecrium candicans - Pride of Madera
Rhus integrifolia- Lemonade Berry
Heteromeles arbutifolia - Toyon
Leptospermum scoparium - New Zealand Tea Tree
Ceanothus impressus var impressus - Santa Barbara Ceanothus

MEDIUM
Artemesia californica 'Canyon Grey' - California Sagebrush
Acacia redolens - Redlands Acacia
Ceanothus 'Concha' - California lilac
Ribes speciosum - Fuchsia Flowering Gooseberry
Leucophyllum candidum - Cenizo
Justicia californica - Chuparosa

SMALL
Encelia californica - California Encelia
Artemesia californica 'Canyon Grey' - California Sagebrush
Rhamnus californica 'Seaview' - Coffeeberry
Ribes viburnifolium - Catalina Perfume
Arctotheca calendula - Capeweed
Myoporum parvifolium - Myoporum

GROUND COVERS AND VINES
Calliandra californica - Baja Fairy Duster
Anigozanthos hybrids - Kangaroo Paw
Rosmarinus officinalis - Rosemary
Cissus antarctica - Kangaroo Vine
Ficus repens - Creeping Fig

SPECIALTY PLAZA TREES

CERCIS OCCIDENTALIS - WESTERN REDBUD
ERIOBOTRYA DEFLEXA - BRONZE LOQUAT
JACARANDA MIMOSIFOLIA - JACARANDA
LAGERSTOEMIA INDICA 'MUSKOGEE' - CRAPE MYRTLE
LIQUIDAMBAR STYRACIFLUA 'PALO ALTO' - PALO ALTO LIQUIDAMBAR
PRUNUS CERASIFERA 'KRAUTER VESUVIUS' - PURPLE LEAF PLUM
PRUNUS TRILOBA 'MULTIPLEX' - PINK FLOWERING ALMOND

SPECIALTY PLAZA SHRUBS

LARGE
Rhaphiolepsis indica 'Springtime' - India Hawthorn
Calliandra emarginata - Dwarf Powder Puff

MEDIUM
Rhaphiolepsis indica 'Clara' - India Hawthorn
Bougainvillea 'La Jolla' - Bougainvillea
Pittosporum tobira 'Wheeler's Dwarf' - Dwarf Pittosporum

SMALL
Nandina domestica 'Gulf Stream' - Heavenly Bamboo
Coprosma kirkii - Creeping Coprosma

GROUND COVERS AND VINES
Anigozanthos hybrids - Kangaroo Paw
Vinca minor - Periwinkle
Parthenocissus tricuspidata - Boston Ivy
Cissus antarctica - Kangaroo Vine
Ficus repens - Creeping Fig

Wimmer Yamada Caughey

HELIX environmental planning, inc.

PLANT MATERIAL DESIGN GUIDELINE

NOTE
MATERIAL DEPICTED ON THIS GRAPHIC EXHIBIT ARE INTENDED AS A GUIDELINE ONLY. ALL SUBSEQUENT FACILITY DESIGN WILL BE BASED UPON PROGRAMMING UNIQUE TO EACH PROJECT DEVELOPMENT OF THE LLRC FACILITY IS INTENDED TO ESTABLISH THE BASIS OF DESIGN OF ALL POSSIBLE ELEMENTS SUCH AS PERGOLAS, TRELLISES, SITE FURNISHINGS, LIGHTING AND ARCHITECTURALLY COMPATIBLE LANDSCAPE DESIGN

CAMPUS INTERIOR / FOUNDATION / SCREENING TREES

AGONIS FLEXUOSA - PEPPERMINT TREE
ALNUS RHOMBIFOLIA - WHITE ALDER
ARBUTUS UNEDO - STRAWBERRY TREE
BRACHYCHITON POPULNEUS - BOTTLETREE
FEIJOA SELLOWIANA - PINEAPPLE GUAVA
GINKGO BILOBA - MAIDENHAIR TREE
MAGNOLIA GRANDIFLORA - MAGNOLIA
MELALEUCA QUINQUENERVIA - CAJEPUT TREE
METROSIDEROS EXCELSUS - NEW ZEALAND CHRISTMAS TREE
SYAGRUS ROMANZOFFIANUM - QUEEN PALM
TABEBUIA CHRYSTOTRICHA - GOLDEN TRUMPET TREE




CAMPUS INTERIOR / FOUNDATION / SCREENING SHRUBS

LARGE
Plumbago auriculata - Cape Plumbago
Rhaphiolepsis indica 'Springtime' - India Hawthorn
Calliandra emarginata - Dwarf Powder Puff
Fremontodendron californicum - California Fremontia

MEDIUM
Rhaphiolepsis indica 'Clara' - India Hawthorn
Bougainvillea 'La Jolla' - Bougainvillea
Pittosporum tobira 'Wheeler's Dwarf' - Dwarf Pittosporum
Yucca schidigera - Mohave Yucca

SMALL
Aloe brevifolia - Red Flowering Aloe
Nandina domestica 'Gulf Stream' - Heavenly Bamboo
Coprosma kirkii - Creeping Coprosma

GROUND COVERS AND VINES
Anigozanthos hybrids - Kangaroo Paw
Rosmarinus officinalis - Rosemary
Arctotheca calendula - Capeweed
Myoporum parvifolium - Myoporum
Parthenocissus tricuspidata - Boston Ivy
Cissus antarctica - Kangaroo Vine
Ficus repens - Creeping Fig




PROMENADE TREES

METROSIDEROS EXCELSUS - NEW ZEALAND CHRISTMAS TREE
PYRUS CALLERYANA 'CHANTICLEER' - CHANTICLEER PEAR
SOPHORA JAPONICA - JAPANESE PAGODA TREE
ULMUS PARVIFLORA - CHINESE EVERGREEN ELM


PROMENADE SHRUBS

LARGE
Plumbago auriculata - Cape Plumbago
Rhaphiolepsis indica 'Springtime' - India Hawthorn
Photinia x fraseri 'Birmingham' - Birmingham Photinia
Calliandra emarginata - Dwarf Powder Puff

MEDIUM
Rhaphiolepsis indica, "Jack Evans", India Hawthorn
Bougainvillea sp.,"California Gold"
Dietes bicolor, Fortnight Lily

SMALL
Aloe brevifolia, Red Flowering Aloe
Nandina domestica 'Gulf Stream', Heavenly Bamboo
Coprosma kirkii, Creeping Coprosma

GROUND COVERS AND VINES
Anigozanthos hybrids - Kangaroo Paw
Rosmarinus officinalis - Rosemary
Vinca Minor - Periwinkle
Myoporum parvifolium - Myoporum
Parthenocissus tricuspidata - Boston Ivy
Cissus antarctica - Kangaroo Vine
Ficus repens - Creeping Fig
Baccharis pilularis 'Twin Peaks' - Dwarf Coyote Bush



PARKING LOT SHADE / UTILITY AREA TREES

ACER SACCHARINUM - SILVER MAPLE
ARBUTUS UNEDO - STRAWBERRY TREE
LIRIODENDRON TULIPIFERA - TULIP TREE
METROSIDEROS EXCELSUS - NEW ZEALAND CHRISTMAS TREE
RHUS LANCEA - AFRICAN SUMAC
TRISTANIA CONFERTA - BRISBANE BOX



PARKING LOT SHADE / UTILITY AREA SHRUBS

LARGE
Melaleuca nesophila - Pink Melaleuca
Plumbago auriculata - Cape Plumbago
Rhaphiolepsis indica 'Springtime' - India Hawthorn
Calliandra emarginata - Dwarf Powder Puff

MEDIUM
Cistus salvifolius - Sageleaf Rockrose
Ceanothus 'Concha' - California Lilac
Ribes speciosum - Fuchsia Flowering Gooseberry
Rhaphiolepsis indica 'Clara' - India Hawthorn

SMALL
Encelia californica - California Encelia
Artemesia californica 'Canyon Grey' - California Sagebrush
Aloe brevifolia - Red Flowering Aloe
Penstemon parryii - Parry's Penstemon

GROUND COVERS AND VINES
Anigozanthos hybrids - Kangaroo Paw
Rosmarinus officinalis - Rosemary


GATHERING AREA TURF GRASS

AGRONO-TEC BALLFIELD MIX 2-A

Wimmer Yamada and Caughey

BIO-GARDEN CONCEPT STATEMENT

The northwest corner of the campus is planned to become an interpretive bio-garden. The bio-garden will provide Miramar College students and the surrounding community access to some of the historic ecosystems of California including rare vernal pool and coastal sage habitats. A system of pedestrian trails and raised boardwalks will provide access through the preserve without impacting sensitive habitat areas. Trails would be primarily at-grade and constructed of decomposed granite. Elevated walkways constructed of wood or recycled plastic would be used where at-grade walks could adversely affect vernal pool watershed drainage patterns. Interpretive signage will include interesting ethno-botanical facts about the unique properties of the plant material and how Native Americans utilized them.

The interpretive trail alignments indicated on the concept plan are viewed as representative of many possible design solutions. While they do avoid impacts to sensitive vernal pools and associated watersheds other options are possible. Final trail alignments and location of interpretive nodes will be determined after the completion of interactive workshops with interested stakeholders.

HELIX
environmental planning, inc.

I:\ArcGIS\PROJECTS\Miramar College Map Landscape Geo_083015.mxd

150 75 0 150
Feet

- Existing Vernal Pool
- Elevated Boardwalk
- Decomposed Granite Path
- Interpretive Node
- Ecosystem Enhancement/Education Area
- Biological Garden Information Signage

HELIX
environmental planning, inc.

Miramar Community College Facilities Master Plan

UTILITY MASTER PLAN

San Diego Community College District

June 2005

PERKINS + WILL

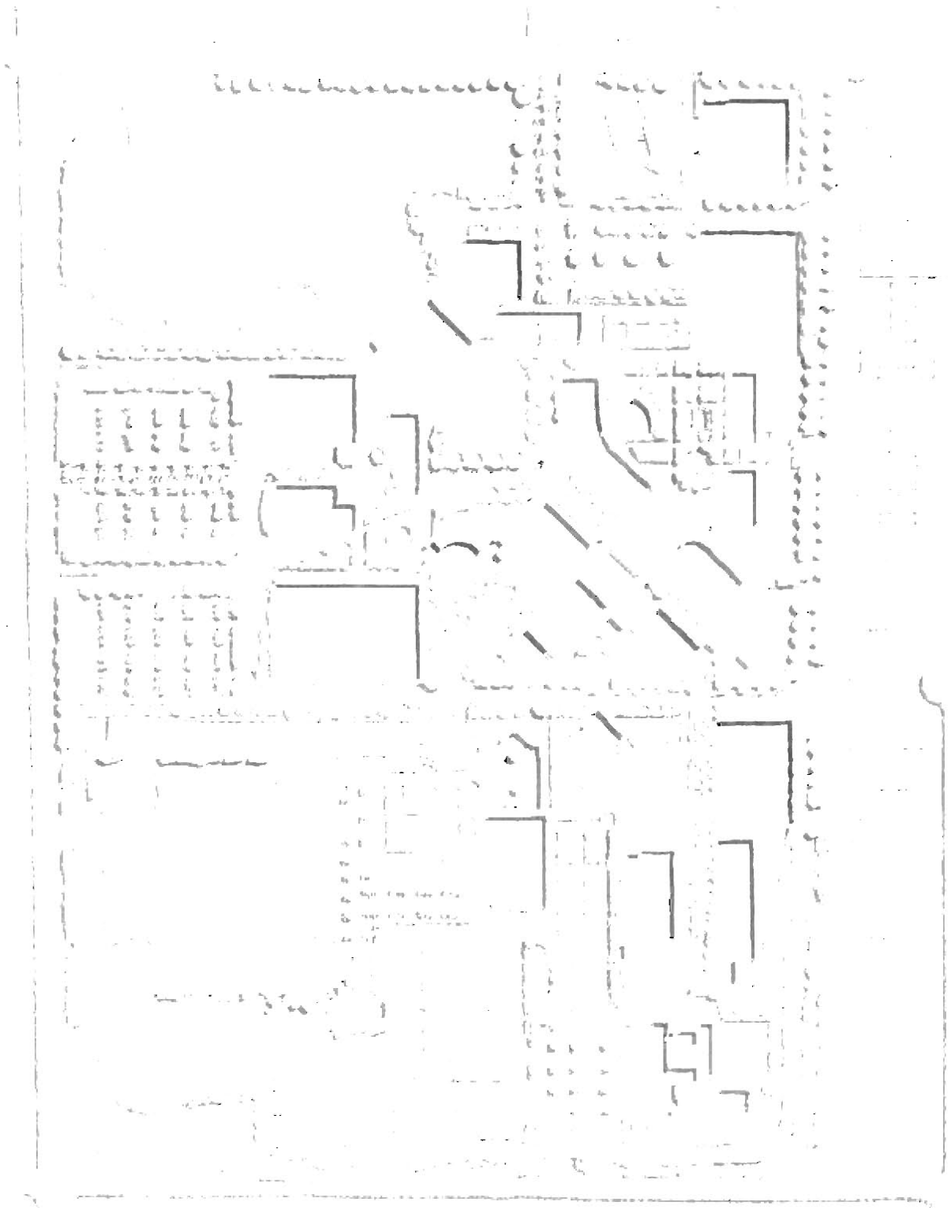


Table of Contents:

RBF CONSULTING
PLANNING ■ DESIGN ■ CONSTRUCTION
8755 CLAIREMONT MESA BOULEVARD, SUITE 100
SAN DIEGO, CALIFORNIA 92124-1324
858.614.5000 • FAX 858.614.5001 • www.RBF.com

MICHAEL WALL ENGINEERING
858.638.0630
858.638.0640 fax
www.mwalleng.com
4115 Sorrento Valley Blvd
San Diego, CA 92121
REGISTERED ELECTRICAL ENGINEERS

ChevronTexaco
Chevron Energy Solutions Company
A Division of Chevron U.S.A. Inc.
150 E. Colorado Blvd. Suite 300
Pasadena, CA 91105

DEC

SITE DESCRIPTION

The site approximately is 98.6 acres located on the eastern side of Black Mountain Road Between Hillery Drive to the north and Gold Coast Drive to the south. In the City of San Diego, California. The southwestern portion (Hourglass Field Community Park) is maintained as a join-use recreation area with the City of San Diego and includes soccer fields, softball fields, and an aquatic center. The site is relatively flat with elevations generally between 494 and 530 feet above mean sea level.

BENCH MARK

City of San Diego Brass Plug at the Northeast curb return at intersection of Hillery Drive and Black Mountain Road elevation = 493.481 M.S.L.

SOILS CONDITIONS

According to limited Geotechnical evaluation prepared by Ninyo & Moore Geotechnical and Environmental Sciences Consultants dated May 4, 2004. The following geotechnical factors should be considered in the planning and implementation of the project:

- The Rose Canyon Fault has been mapped approximately 8 miles to the west of the site. Accordingly, the site has a potential for moderate ground motions due to an earthquake on the active Rose Canyon Fault. Therefore, the potential for moderate seismic accelerations will need to be considered in the design of proposed structures of improvements.

- Fill soils are present on the southern side of the site. The condition of these fill soils is not known and they maybe subject to settlement under foundation loads. To mitigate the potential for future settlement. These soils may need to be removed and replaced as properly compacted fill if future structures are planned in these areas.

- Future buildings may be underlain by a cut/fill transition and be subject to differential settlement. In order to mitigate the potential for differential settlement. Where a cut/fill transition line extends beneath a proposed building location, the cut portion of the pad should be undercut an amount equal to one-third or more of the deepest fill depth beneath the structure or 3 feet. Whichever is greater, and replaced with compacted fill.

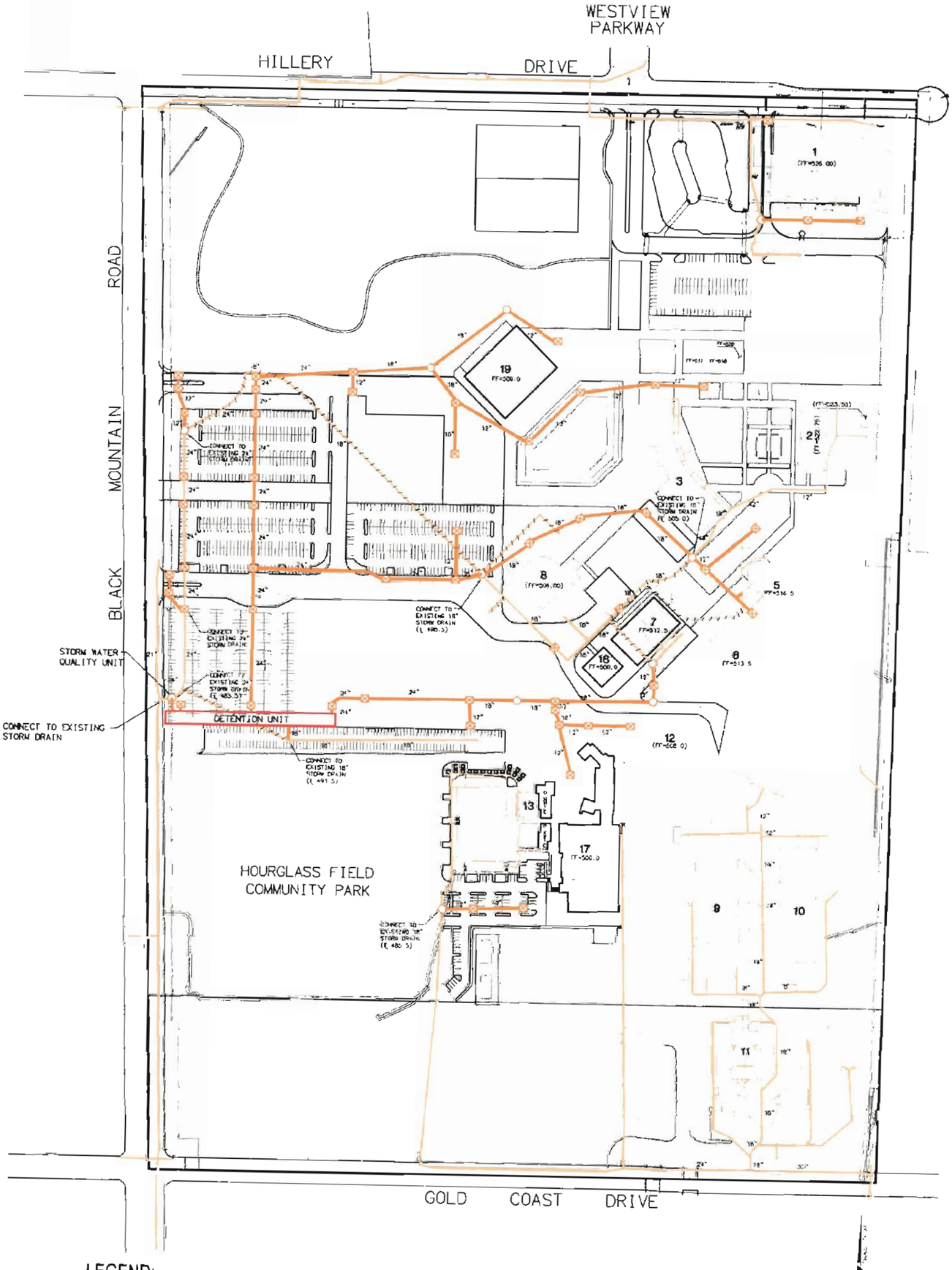
SITE GRADING AND DRAINAGE

Currently most of the site is graded and drains toward Black Mountain Road. The new site Grading and Storm Drain System will continue to drain to the same location. This includes all new catch basins and roof drain connections for new buildings. The proposed finished floor building elevations will tie in with the existing terrain and will include ADA path of travel from public streets, from building to building and from disabled parking stalls to main entrances of buildings. The area of inadequate drainage north of Building 9 will be addressed during Phase II. The City of San Diego Requires Storm Water Detention to restrict the Storm Drain Runoff quantity to current conditions and also requires a Storm Water Quality Unit to treat the storm water before it enters the Public System. The new storm drain system design will meet the City of San Diego's Standard Urbanized Stormwater Management Plan (SUSMP) requirements.

WATER AND SEWER

The new 10" water loop is a separate water system to be connected to an existing water service located on the East side of the site and a new connection on Hillery Drive. The new loop includes water and fire services to each of the new buildings. The existing loop will remain in-place where possible. In locations where the existing loop is in conflict with new buildings the water line will be removed and will be re-routed to re-connect to the existing line.

The new 8" sewer main point of connection is located on the western portion of the site. The existing sewer line will remain in-place where possible. In locations where the existing loop is in conflict with new buildings the sewer line will be removed and will be re-routed to re-connect to the existing or new line.



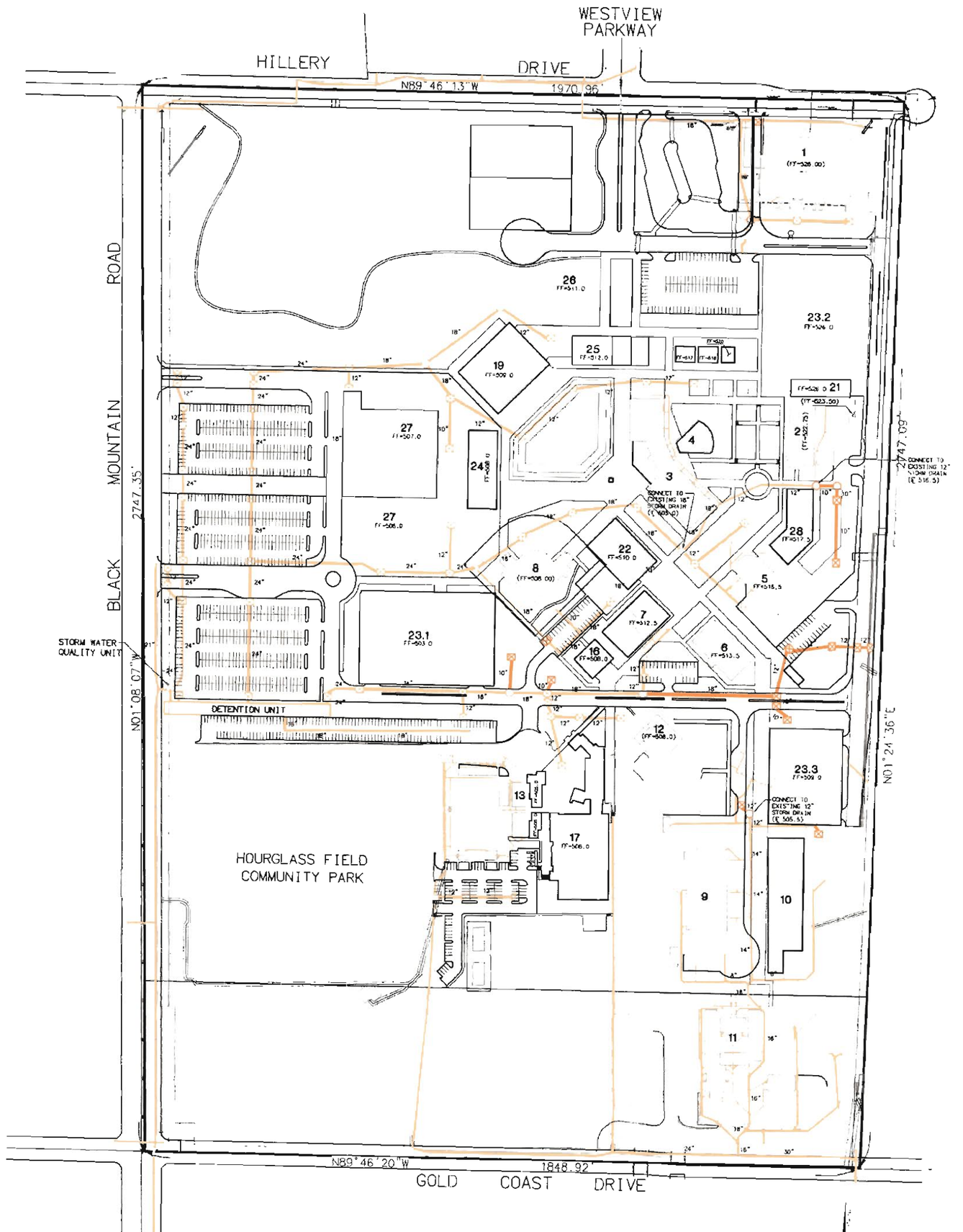
LEGEND:

- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- DRAINAGE INLET
- CLEAN OUT
- EXISTING STORM DRAIN TO BE REMOVED OR ABANDONED

NOTES:

1. THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS.
2. ALL PROPOSED PIPE SIZES ARE PRELIMINARY AND SUBJECT TO CHANGE DUE TO CALCULATIONS PERFORMED DURING FINAL DESIGN.

RBF CONSULTING



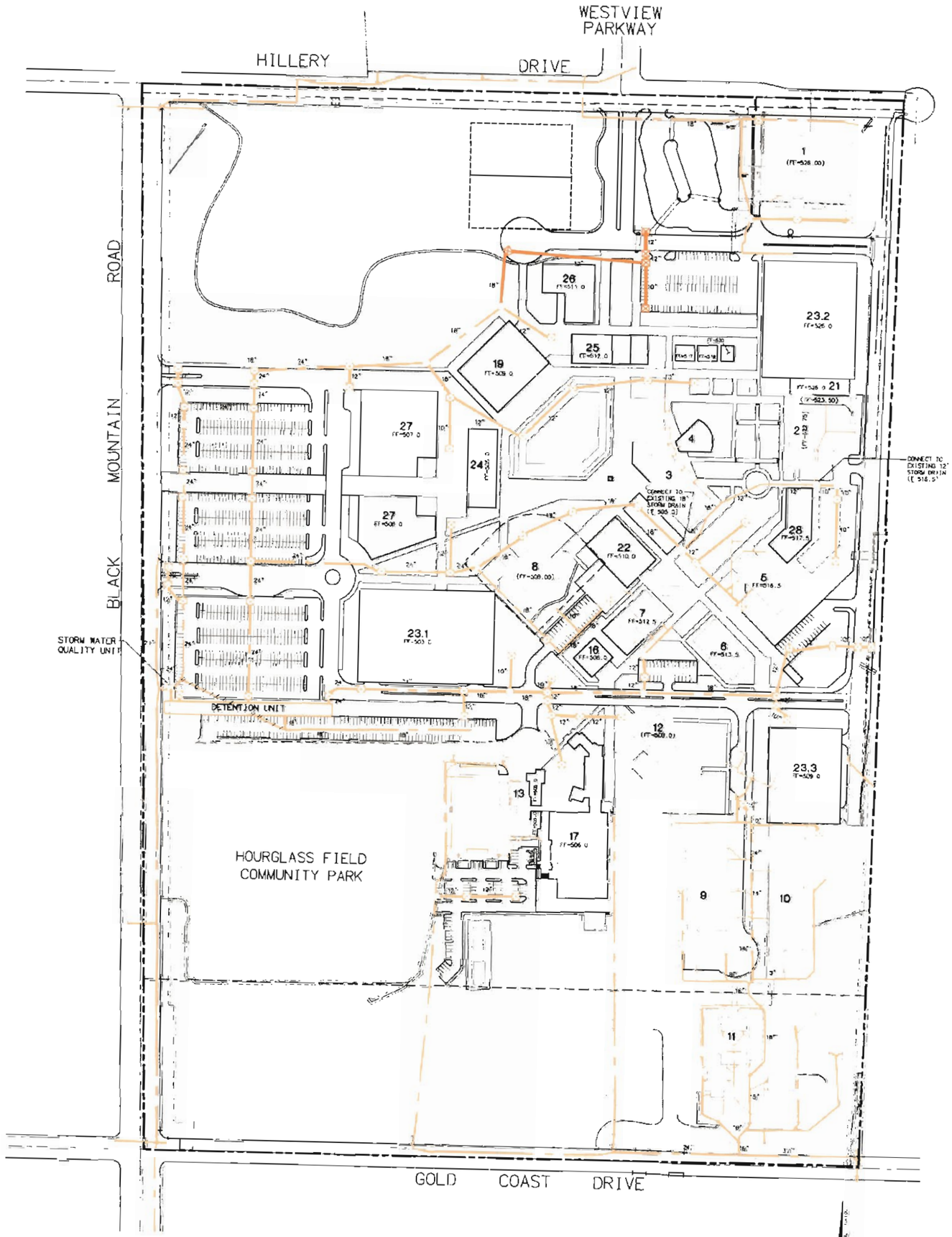
LEGEND:

- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- DRAINAGE INLET
- CLEAN OUT
- EXISTING STORM DRAIN TO BE REMOVED OR ABANDONED

NOTES:

1. THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS.
2. ALL PROPOSED PIPE SIZES ARE PRELIMINARY AND SUBJECT TO CHANGE DUE TO CALCULATIONS PERFORMED DURING FINAL DESIGN.

RBF CONSULTING
PLANNING • DESIGN • CONSTRUCTION
9755 CLAREMONT MESA BOULEVARD, SUITE 100
SAN DIEGO, CALIFORNIA 92124-1824
858.614.5000 • Fax 858.614.5001 • www.RBF.com



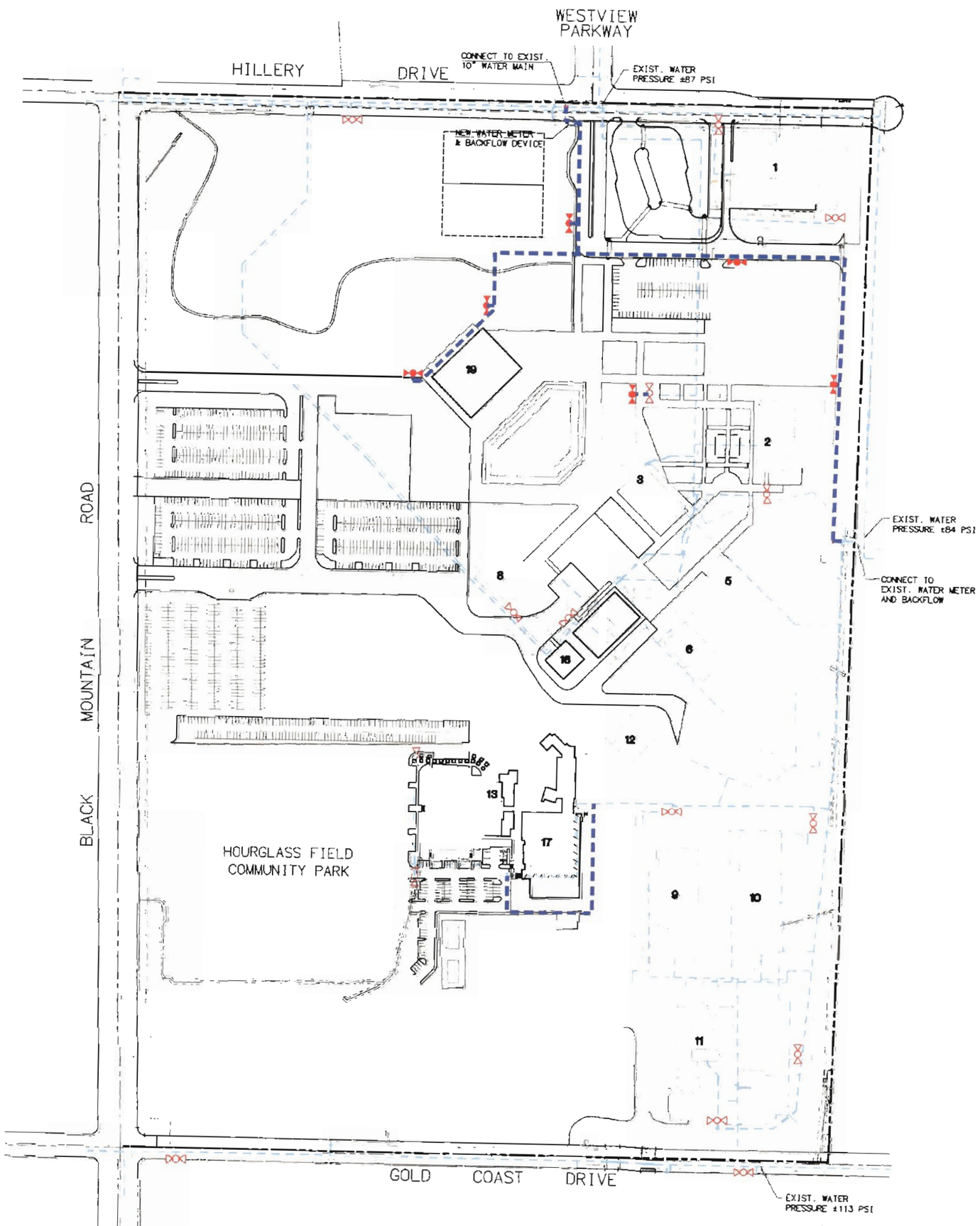
LEGEND:

- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- DRAINAGE INLET
- CLEAN OUT
- EXISTING STORM DRAIN TO BE REMOVED OR ABANDONED

NOTES:

1. THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS.
2. ALL PROPOSED PIPE SIZES ARE PRELIMINARY AND SUBJECT TO CHANGE DUE TO CALCULATIONS PERFORMED DURING FINAL DESIGN

RBF CONSULTING
PLANNING ■ DESIGN ■ CONSTRUCTION



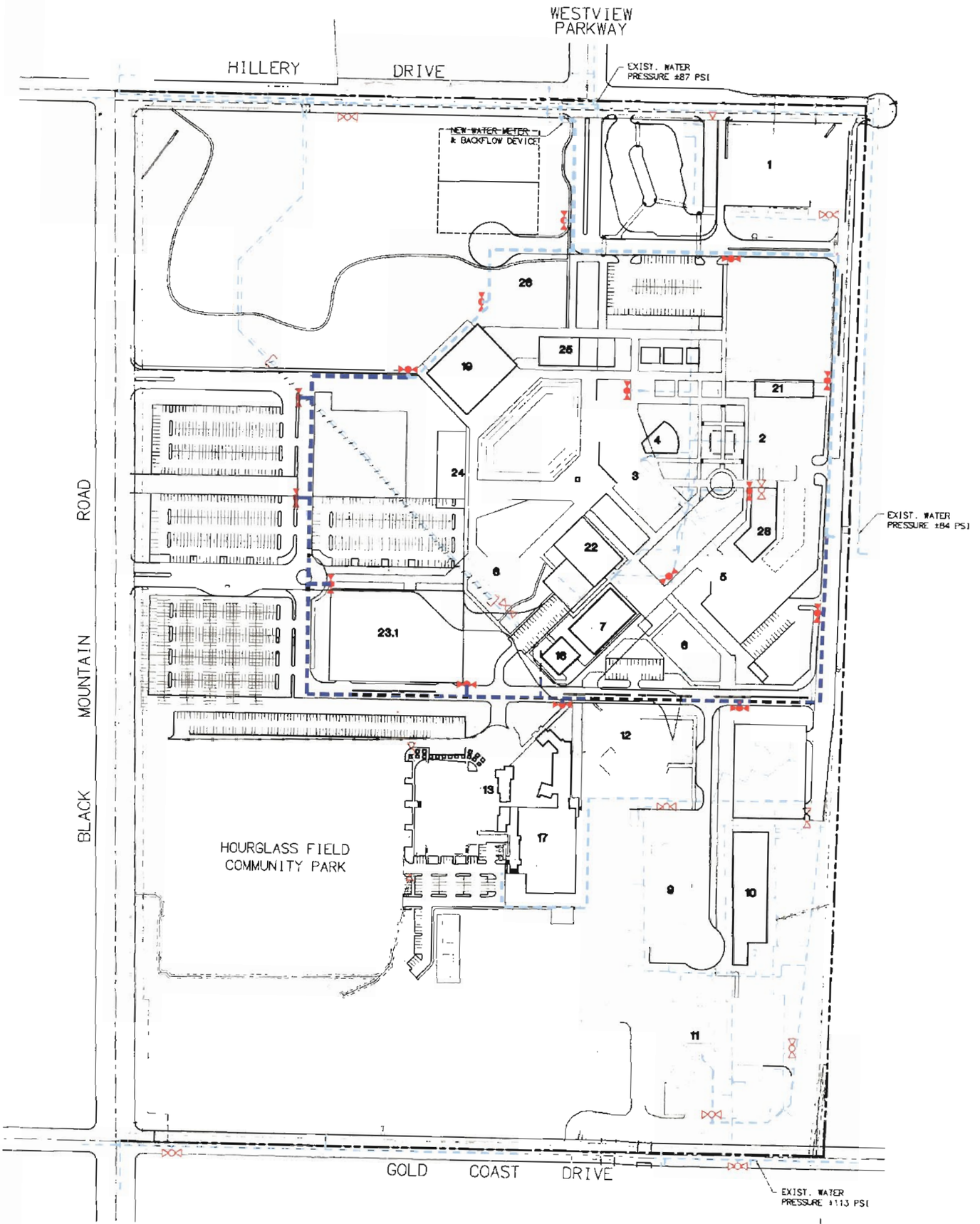
LEGEND:

- PROPOSED 10" WATER MAIN
- EXISTING WATER
- PROP. FIRE HYDRANT
- EXIST. FIRE HYDRANT
- EXISTING WATER TO BE REMOVED OR ABANDONED

NOTES:

1. THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS.
2. ALL PROPOSED PIPE SIZES ARE PRELIMINARY AND SUBJECT TO CHANGE DUE TO CALCULATIONS PERFORMED DURING FINAL DESIGN.

RBF CONSULTING



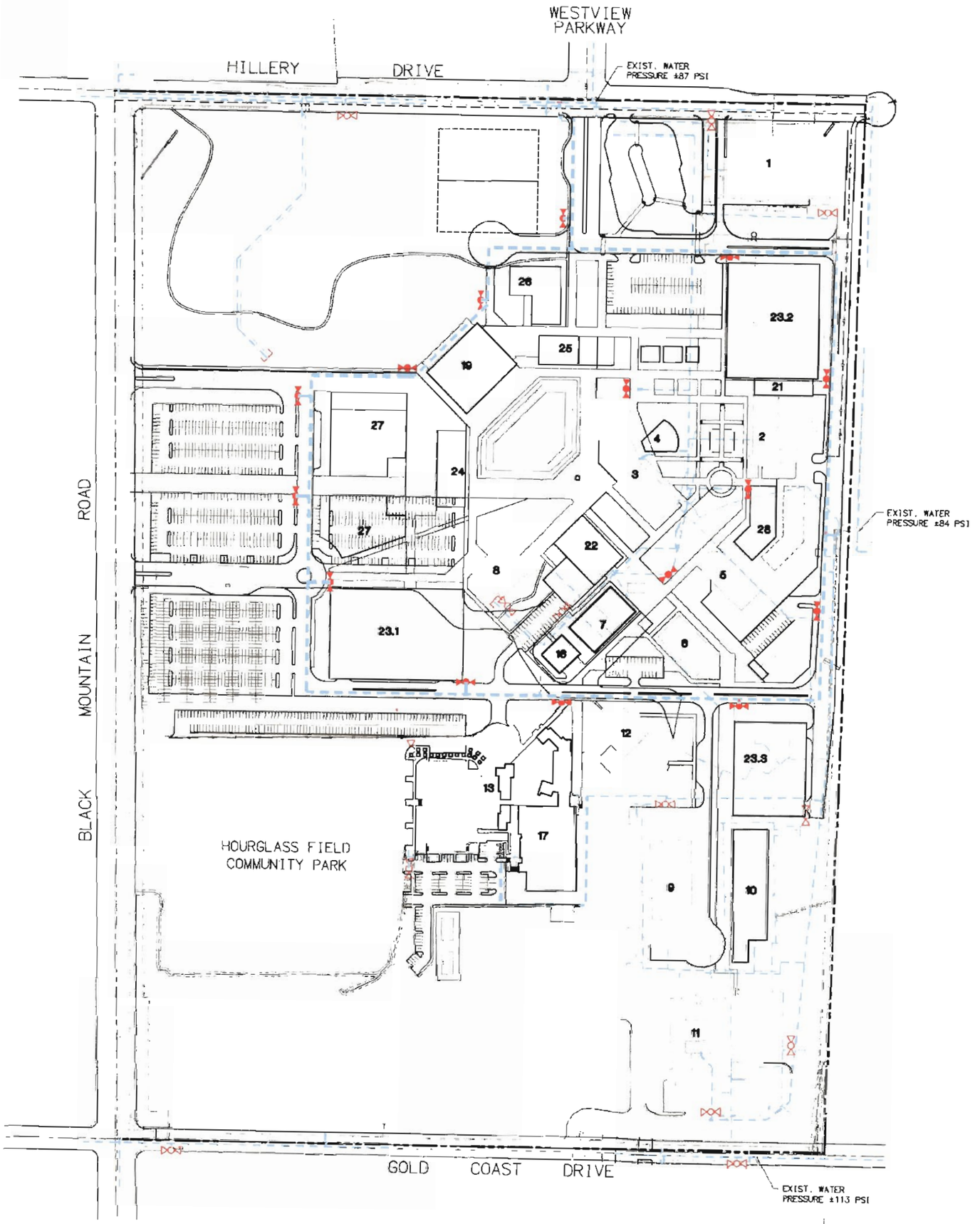
LEGEND:

- PROPOSED 10" WATER MAIN
- EXISTING WATER
- PROP FIRE HYDRANT
- EXIST FIRE HYDRANT
- EXISTING WATER TO BE REMOVED OR ABANDONED

NOTES:

1. THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS.
2. ALL PROPOSED PIPE SIZES ARE PRELIMINARY AND SUBJECT TO CHANGE DUE TO CALCULATIONS PERFORMED DURING FINAL DESIGN

RBF CONSULTING



LEGEND:

EXISTING WATER

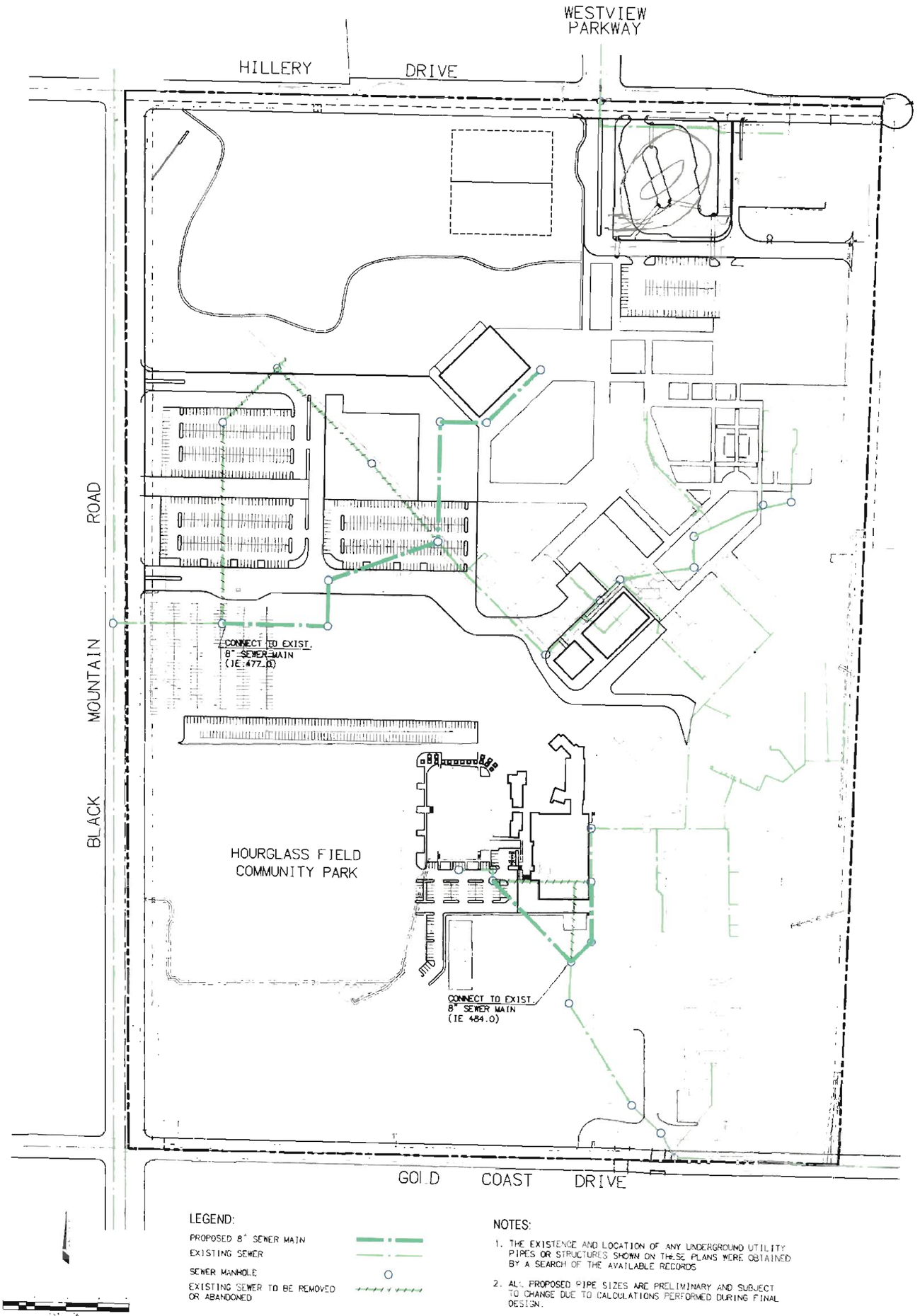
PROP FIRE HYDRANT

EXIST FIRE HYDRANT

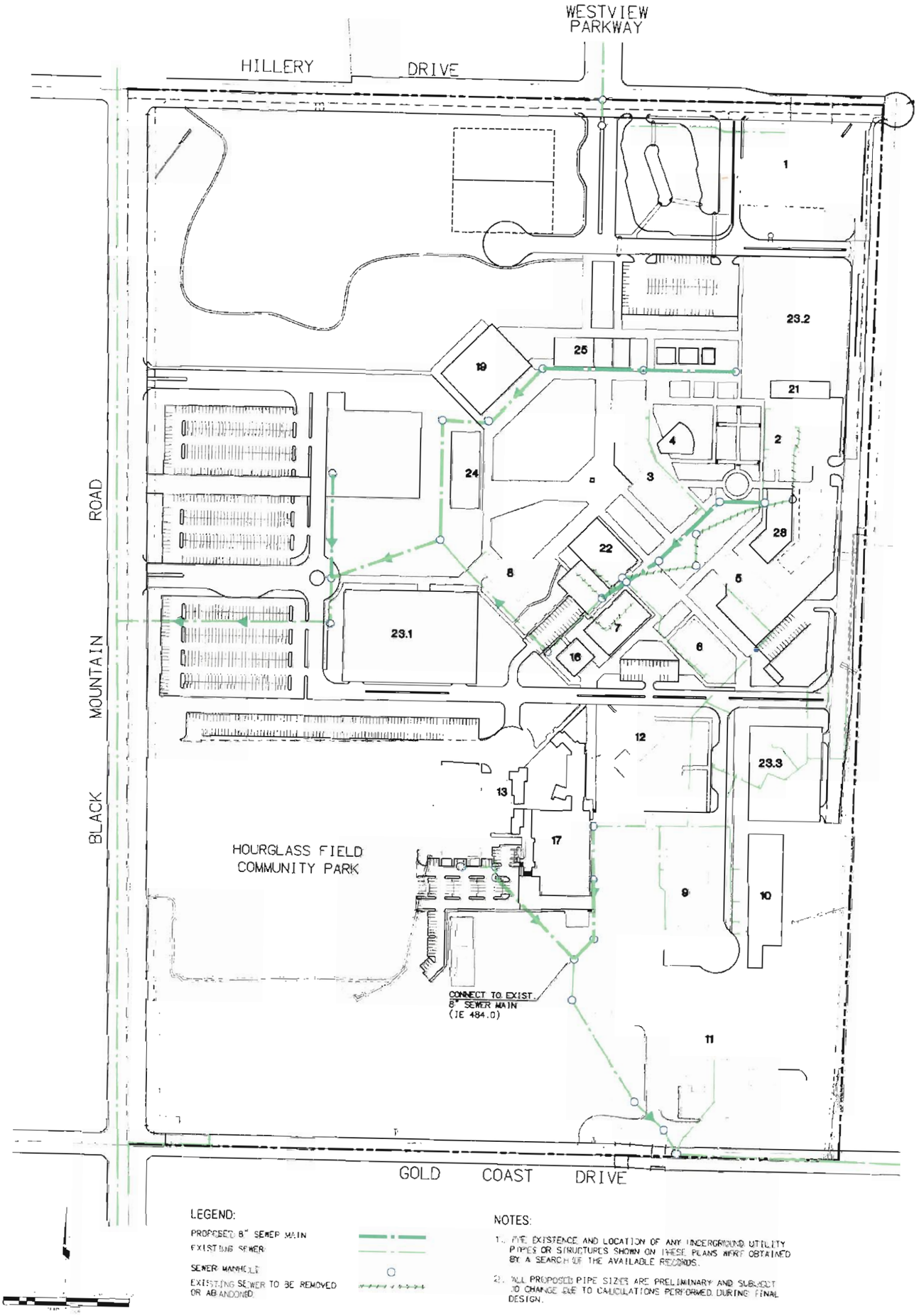
NOTES:

1. THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS.
2. ALL PROPOSED PIPE SIZES ARE PRELIMINARY AND SUBJECT TO CHANGE DUE TO CALCULATIONS PERFORMED DURING FINAL DESIGN.

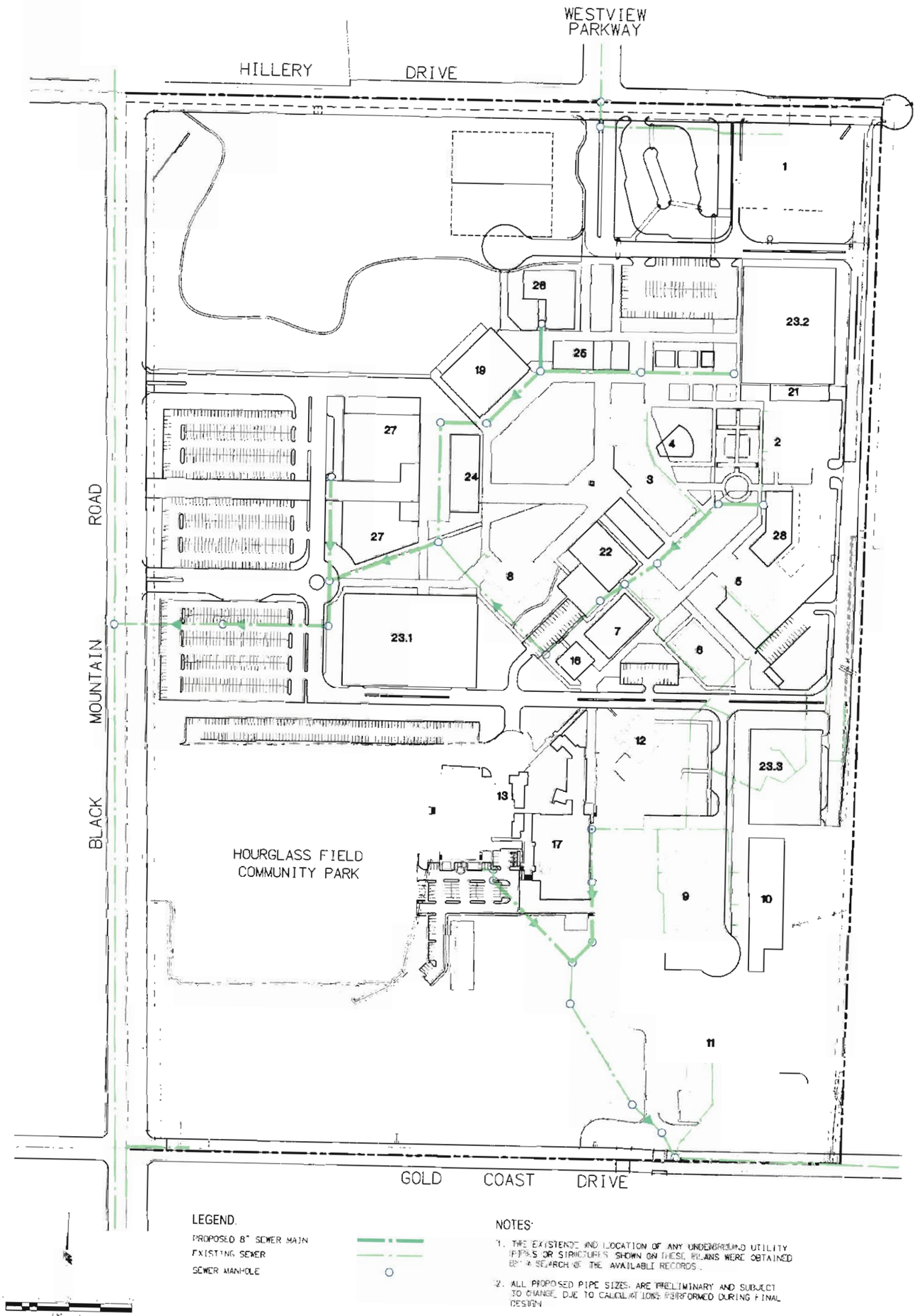
RBF CONSULTING



RBF CONSULTING
PLANNING ■ DESIGN ■ CONSTRUCTION
9755 CLAREMONT MESA BOULEVARD, SUITE 300
SAN DIEGO, CALIFORNIA 92124-1324
858.614.5000 • FAX 858.614.5001 • www.rbf.com



RBF CONSULTING



RBF CONSULTING

SCOPE OF WORK

The scope of work shall generally include all power, lighting, lighting controls, optional standby power, fire alarm, telephone, data network, and low voltage systems associated with the construction of new structures at the Miramar College located in San Diego, California.

BASIS OF DESIGN

1. Codes, Standards and Regulations

a. The facility will comply with the requirements of the 1999 Edition Uniform Building Code (UBC), 1999 Edition National Electrical Code (NEC), California State Administrative Code (Title 24), City of San Diego Municipal Code, Local Fire Department Regulations and all other jurisdictions having authority.

b. The design, products, and installation shall comply with the following electrical industry standards:

- Electronic Industries Association (EIA) Standard 568, 569, 607
- Illumination Engineering Society of North America (IES) Lighting Standards
- Institute of Electrical and Electronic Engineers (IEEE) Standards
- National Electrical Manufacturers' Association (NEMA)
- Insulated Power Cable Engineers' Association (IPCEA)
- Certified Ballast Manufacturers' Association (CBMA)
- Underwriters Laboratories, Inc. (UL)
- National Fire Protection Association (NFPA)
- National Electrical Code (NEC)
- CAC Title 24 Energy Standards
- City of San Diego Fire Department Regulations
- City of San Diego Requirements
- Air Pollution Control District (APCD)
- American National Standards Institute (ANSI)
- All other Authorities Having Jurisdiction (AHJ)

c. Existing power utilities and distribution on site, that is to be retained, shall be protected in place and shall remain in operation unless specifically noted otherwise.

2. System Summary

a. Power service entrance
b. Power distribution
c. Interior lighting
d. Exterior lighting
e. Lighting control
f. Emergency lighting and power systems
g. Structured wiring systems
h. Telephone wiring systems
i. Data wiring systems
j. Fire alarm systems
k. Security systems
l. Audio/Video systems
m. Green design

3. Power Service Entrance

a. The main electrical service entrance primary 12kV feeders shall be from the SDG&E pole located at the northwest corner of the campus. The underground 12kV services shall be routed in below grade ductbanks, consisting of (4) 4" conduits, to pad-mounted transformers and SF6 switches adjacent to the buildings.

b. The ductbank system is roughly composed of a north loop, central loop, and south loop.

c. Ductbank conduit sizing allows for sectionalization of the campus into the (3) adjacent loops. The quantity of conduits in the ductbank is sufficient for the (3) loops and includes a spare conduit.

d. A single main 12kV meter and disconnect is provided at this SDG&E service entrance.

e. All metering switchgear is located indoors and is rated NEMA 1.

4. Power Distribution

a. Main distribution boards are intended to serve HVAC, lighting, convenience, dedicated, and miscellaneous motor loads in each building.

b. Power distribution to the central plant, through the ductbank system, may be increased as the central plant is expanded.

MICHAEL WALL ENGINEERING
858[illegible]-0650
858[illegible]-0840 (fax)
www.michaelwallcom
4115 Spruce Valley Blvd
[illegible], CA [illegible]
REGISTERED ELECTRICAL ENGINEERS

c. Vertical distribution will consist of riser conduits to panelboards located on each floor.
d. Digital metering is provided to monitor demand loads and power quality throughout the distribution system.
e. All conductors, bussing, and transformer windings are copper, unless noted otherwise.
f. All feeder and branch circuit wiring in interior concealed spaces shall be Type THW or THHN conductors in EMT conduit.
g. HVAC fan loads and miscellaneous motor loads shall be served independently from other building systems and are estimated at 8 watts per SF.
h. Window washing power will be provided at the roof.
i. Furniture systems shall be fed through the floor (using fire-rated poke-throughs) or walls; no power poles shall be designed.
j. Convenience power will be provided with a minimum of four receptacles per office and is estimated at 5 watts per SF.
k. Lighting will be provided throughout the building and is estimated at 1.25 watts per SF.

5. Interior lighting

a. Open Office Areas shall utilize indirect/direct low glare lighting fixtures with a spacing and density to supply appropriate light levels for the tasks being preformed while minimizing watts per square foot. These fluorescent fixtures shall be equipped with energy efficient electronic ballasts and T5 or T8 lamps. Compact fluorescent lighting with electronic ballasts will be used in special areas. The color temperature of the lamps will be 3500K.
b. Private offices shall utilize recessed 2' x 4' low-glare parabolic fluorescent fixtures. These fixtures shall be equipped with T8 lamps and energy efficient electronic ballasts. They will be configured to allow for in-board/out-board bi-level control to maximize potential energy savings while allowing for optimal user control. The color temperature of the lamps will be 3500K.
c. All lighting shall be designed to exceed the latest California Title 24 requirements.

6. Exterior lighting

a. Exterior lighting shall utilize high intensity discharge sources.
b. Fixtures shall use optical systems and sources that are in compliance with local lighting ordinances.
c. Light levels shall be in accordance with program documents and as recommended by the Illuminating Engineering Society of North America.
d. All exterior fixtures shall be controlled by the facility lighting control system using a time-clock on/time-clock off/ photocell control strategy.

7. Lighting control

a. Lighting control systems shall use a combination of control relay control panels (with timeclock and photocell functions) and local motion sensors (ultrasonic/infrared type). All lighting controls shall integrate directly to the building automation system (BAS).

8. Emergency lighting and power systems

a. Code requirements
1. Egress lighting will be provided as required by code in interior and exterior areas. The code-required alternate power source shall be batteries.
2. No other code-required standby power systems are known at this time; however, if necessary, standby power shall be provided for any systems as designated by code.
b. Optional systems
1. If required, a standby diesel generator capable of providing all optional standby power requirements, as well as providing backup to the code-required battery systems used for egress lighting, shall be provided. Standby power generation shall have a minimum of eight (8) hours of fuel supply.
2. Remote alarms and annunciation will be required and shall be transmitted to a central location designated by the Client.
a. The following are typical areas and systems that require optional standby power:
   i. Executive offices;
   ii. Facilities management offices;
   iii. Server Room;
   iv. MC/IC facilities;
   v. Telephone systems;
   vi. Building automation systems;
   vii. Building management and support systems;
   viii. Video conferencing facility;
   ix. Chillers, pumps, and fans required to support the above loads on a 24-hour 7-day basis.
   x. Uninterruptible Power Supply systems (UPS) designed to support data processing, MC, IC and other critical loads.

9. Structured Wiring (Proposed criteria only)

a. A new structured wiring system will be installed for this project. The system shall comply with ANSI/EIA/TIA (except as noted below), NFPA, and NEC requirements and shall consist of intrabuilding fiber optic backbone cabling, horizontal Cat 6 cabling, cross connects, racks, patch panels, wall outlets and other devices.

MICHAEL WALL ENGINEERING
858.638.0600
858.638.0640 (fax)
www.mwalleng.com
4115 Sorrento Valley Blvd
San Diego, CA 92121
REGISTERED ELECTRICAL ENGINEERS

b. The data backbone system will utilize multimode, fiber optic cables from the main crossconnect (MC) to each intermediate crossconnect (IC) as required. An IC will be provided for each floor such that the horizontal cable runs do not exceed 90 meters. The backbone cables will terminate on fiber optic patch panels installed in freestanding racks (7' X 19"). The horizontal Cat 6 cabling will run from each workstation outlet to data patch panels mounted in freestanding racks located in the IC.
c. The telephone backbone system will consist of Cat 3, multipair riser cable run from the MC to each IC as required. These multipair cables will terminate on voice patch panels in both the MC and the IC. The horizontal Cat 3 cabling will run from the workstation outlet to the voice patch panels in the IC. A four-pair cross connect will be made from each station cable to the backbone system. This will result in each workstation having all four pairs extended all the way to the MC for final cross connect by SBC.
d. ANSI/EIA/TIA 569 requires a 110 sq. ft. IC room for every 10,000 sq. ft. of gross floor space. This requirement is geared toward a multi tenant situation, where the actual occupancy is unknown. In general, the IC rooms will be approximately 100 sq. ft. in size, rectangular in shape and maintain an aspect ratio of no less than 3 to 4.
e. Cable Runway will be used for wire management in the MC and IC rooms where freestanding racks are used.
f. Conduit pathways will be provided between all IC's and the MC.
g. All horizontal cabling will be plenum rated cable concealed in the ceiling and wall spaces
h. All conduits, racks, equipment and other required items will be bonded together as well as grounded to the main grounding electrode in each building per ANSI/EIA/TIA 607.
i. A typical tele/data outlet location will contain two RJ45, Cat 6, data jacks and two RJ11, Cat 3 voice jacks.

10. Telephone Wiring System (Proposed criteria only)

a. The telephone system will be made up of dedicated fiber optic cables from SBC to the onsite telephone switch.
b. The telephone backbone cabling will be Cat 3 multipair cable terminated on voice patch panels.
c. The telephone horizontal cabling will be plenum rated, 4-pair, Cat 3 wiring, terminated on voice patch panels in the IC's and on RJ11 jacks at the workstation outlet.
d. All required cross connects in the MC and IC rooms will be made by the telecommunications contractor.
e. SBC will provide and install all incoming telephone lines at the MC and will establish a minimum point of entry (MPOE). They will also provide and install all equipment and panels relating to the circuit protection of each incoming line.

11. Data Wiring System (Proposed criteria only)

a. Each workstation outlet will have two Cat 6 data jacks. The horizontal Cat 6 data cabling will run from each workstation outlet to data patch panels in the IC.
b. In general, the horizontal wiring for both the telephone and data systems will be open wiring in the plenum ceiling spaces (no cable tray or conduit will be provided), while the backbone cabling will be run in conduit.

12. Fire Alarm System

a. A new complete fire alarm system will be installed for this project. The fire alarm system shall comply with NFPA, NEC and ADA requirements and shall consist of manual pull stations, combination audio/visual alarms, strobes, water flow / tamper switch connections, and single station detectors. Heat detectors, smoke detectors and duct detectors will be provided as necessary. Audible devices will be installed as required. Interfaces to the elevators (elevator recall), sound systems, and other required systems shall be provided. A new, addressable, Class "B" fire alarm control panel will be provided and installed
b. The entire fire alarm system is to be installed in raceway. The design of the fire alarm system will be coordinated with the local AHJ and the State Fire Marshal's Office. Approval for the design will be obtained and presented to the owner prior to procurement and installation.
c. The fire alarm system shall be a Class "B" fully addressable, voice system.
d. The fire alarm system will be completely interfaced to the other systems (i.e. lighting control, HVAC controls, security, etc.).
e. Smoke detection shall be provided as required by the State Fire Marshal.
f. Elevator recall and shunt trip activation to be provided.
g. No hazardous chemicals will be stored inside of the building.
h. No smoke control will be provided.

13. Security System (Proposed criteria only)

a. A new and complete security system will be installed for this project. The security system shall comply with NFPA, NEC and ADA requirements and shall consist of electric door lock controllers (electric locks to be provided under the hardware specifications), proximity card readers, door contacts, glass break detectors, motion detectors, panic buttons, and other detection devices. Fixed surveillance cameras will be used at all exterior doors as well as the main computer room and other areas as identified by the owner. A new security control panel with central station communication will be provided and installed.
b. The security system is to be installed with plenum rated cable in concealed areas and in raceway when exposed. Approval for the proposed system will be obtained from to the owner prior to procurement and installation.

MICHAEL WALL ENGINEERING
858.638.0600
858.638.0649 (fax)
www.mwaleng.com
4115 Sorrento Valley Blvd
San Diego, CA 92121
REGISTERED ELECTRICAL ENGINEERS

c. The security system will be a Class "B" non-addressable, general perimeter protection system completely interfaced to the other systems (i.e. lighting control, HVAC controls, fire alarm, etc.).
d. Remote panels will all report to one master remote monitor at the front reception desk.
e. Digital storage, a 21" monitor, and the computer for the security system will reside at the front reception desk.
f. The security system will be armed continuously.
g. Bypass switches for selected doors will be provided at the front reception desk.
h. The access and CCTV systems will be fully integrated with the security system.
i. The IC rooms, MC room, and all exterior and stairwell doors will have card access control.
j. The elevators will have access control for each floor. The car readers will be provided under this section and installed under the elevator section (including trolley cable).
k. Except as noted, exit from protected spaces will be provided via request-to-exit motion sensors.
l. Panic override hardware for all fire exit doors will be provided under a separate section. Use of this hardware will cause an alarm to be transmitted to the front desk and the central station.
m. Cameras will be provided at all exterior doors.
n. Protected doors will transmit an alarm should they be forced open (opened with out the use of the card access system) or held open for longer than the allowed time. However, any or all of these doors may be bypassed from the system by activating switches at the front reception computer.

14. Audio/Visual System (Proposed criteria only)

a. Provide cabling and network connectivity for owner furnished and installed (OFOI) tele/video conferencing units (TCU's), video projectors, monitors and other associated equipment. Provide and install motorized projection screens, sound systems and public address systems as follows:
b. In larger conference rooms (occupancy of more than 25 individuals) provide wiring and outlets for a ceiling mounted projector (OFOI), TCU (OFOI), a motorized projection screen, equipment and speakers for a sound system.
c. In mid-sized conference rooms (capacity of less than 25 but greater than 10), provide wiring and outlets for a TCU (OFOI) and a motorized projection screen.
d. The TCU's will have dedicated data lines provided back to the shared T1 lines.
e. Both RF video (CATV) and D15 type (XGA) wiring will be provided to each video projector location. The cables will end in a junction box located within the conference room on a flush mounted plate. The stainless steel plate will have a D15 and "F" type video connectors mounted on it for connection to a local computer, DVD, or DVR.
f. Data and power outlets will be located next to the wall plate described above.
g. The motorized projection screens will be flush mounted in the ceiling and have a wall plate type control.
h. 8" round, flush mounted ceiling speakers will be used as required for larger rooms.
i. The OFOI video projectors will be fixed mounted below the ceiling.
j. Wireless assisted listening devices will be provided and installed by the owner as needed.

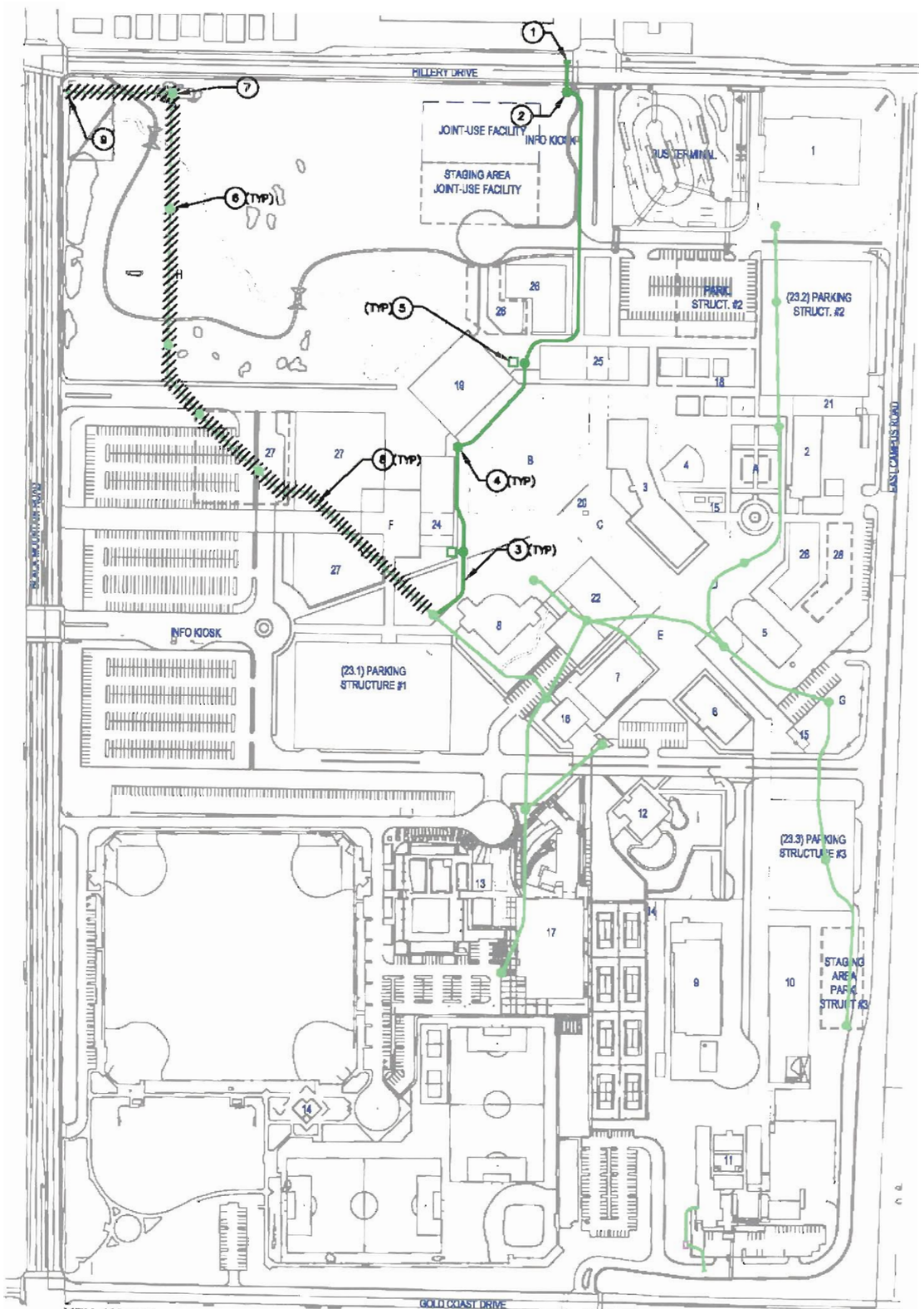
15. Green Design

The electrical system will include the following "Green Design" systems, products, and features:
a. Fluorescent lamps are either T5 or T8, energy efficient type
b. Compact Fluorescent lamps are used in lieu of incandescent lamps
c. LED exit signs are specified
d. Task lighting is specified as part of the systems furniture
e. Central lighting relay control panels utilizing timeclock and/or photocell control is specified
f. Motion sensors are specified for local control in small offices and equipment rooms;
g. Electronic ballasts are specified
h. Tandem wiring is specified for recessed 2'x4' fluorescent fixtures
i. Indirect lighting is used for ambient illumination of open office spaces
j. Selective switching is specified to isolate day lit areas
k. High intensity discharge (HID) lamps, primarily low pressure sodium, are used for parking and area lighting on the exterior
l. Exterior lighting is sharp cut-off, low glare, design
m. All lighting is designed to comply with latest IESNA recommendations
n. All lighting is designed to exceed Title 24 requirements

CONCLUSION

The electrical system shall comply with all San Diego Gas & Electric requirements and with the client program needs. The electrical system shall be flexible and of sufficient capacity to provide ongoing service to the proposed buildings to be built on the campus. The system shall be energy-efficient and of the most current available technology while maintaining a cost-effective initial construction. Power quality and reliability shall be preserved in critical load areas. The electrical system shall comply with all known and applicable codes and standards.

MICHAEL WALL ENGINEERING
858 678-0500
858-678-0840 (fax)
www.mwalleng.com
4145 Sorrento Valley Blvd
San Diego, CA 92121
REGISTERED ELECTRICAL ENGINEERS



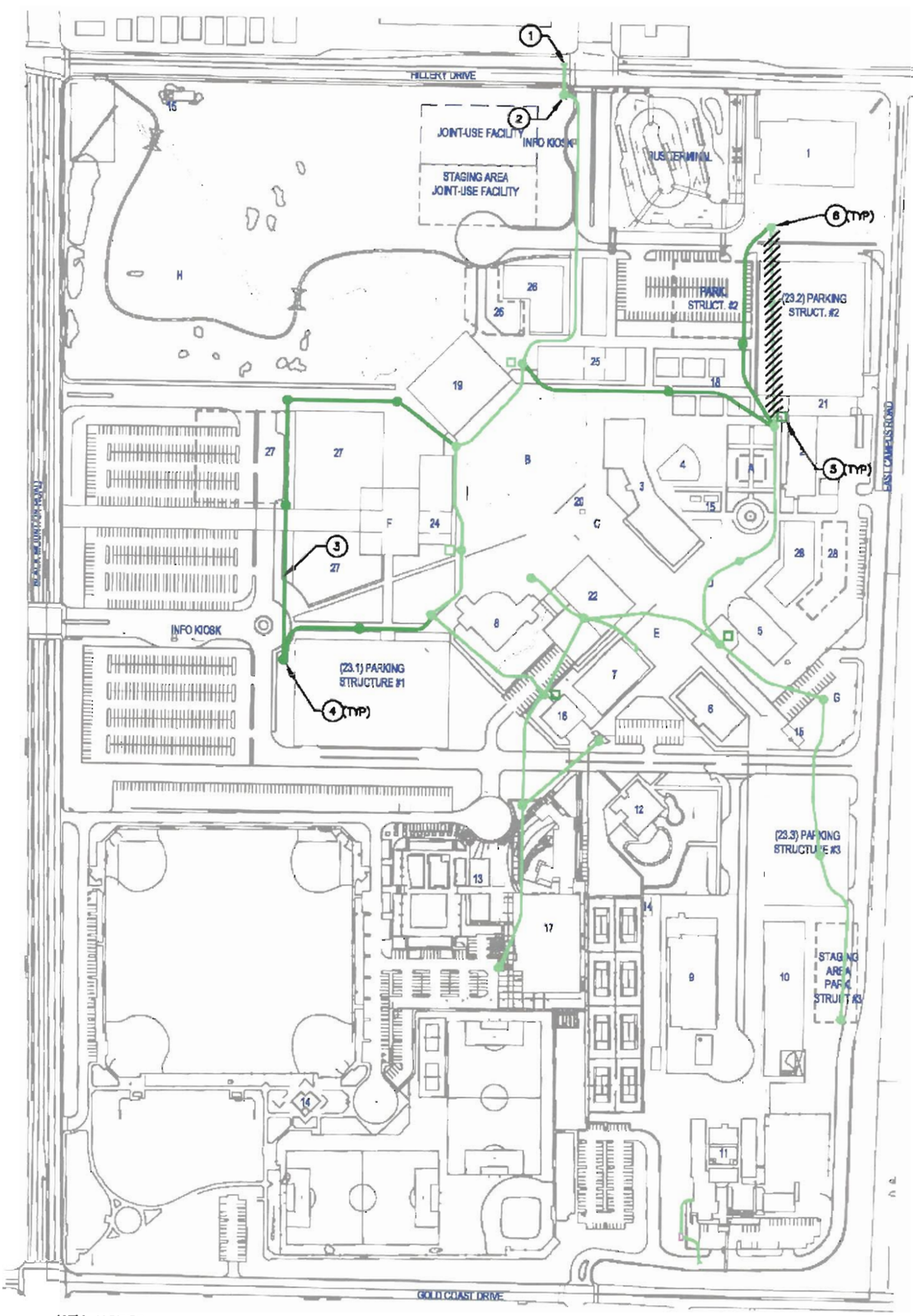
KEY NOTES:

1. NEW SDG&E SERVICE ENTRANCE POINT.
2. NEW 1200A 15KV MAIN SERVICE SWITCHGEAR.
3. NEW (4)4" CONDUIT ONLY DUCT BANK SYSTEM.
4. NEW ELECTRICAL MANHOLE.
5. NEW GAS SWITCH.
6. EXISTING ELECTRICAL MANHOLE.
7. EXISTING MAIN SERVICE SWITCHGEAR TO BE REPLACED WITH NEW.
8. EXISTING ELECTRICAL DUCTBANK SYSTEM.
9. EXISTING SDG&E SERVICE ENTRANCE POINT.

LEGEND:

- EXISTING CONDUIT.
- NEW CONDUIT PHASE I.
- EXISTING ELECTRICAL MANHOLE.
- NEW ELECTRICAL MANHOLE.
- NEW ABOVE GRADE GAS SWITCH.
- EXISTING UTILITY TRANSFORMER TO REMAIN.
- DEMOLITION PHASE I.

MICHAEL WALL ENGINEERING
[illegible]
850[illegible] Fax[illegible]
www.mikeeng.com
415 Eldorado Valley Blvd
San Diego CA 92131
REGISTERED ELECTRICAL ENGINEERS



KEY NOTES:

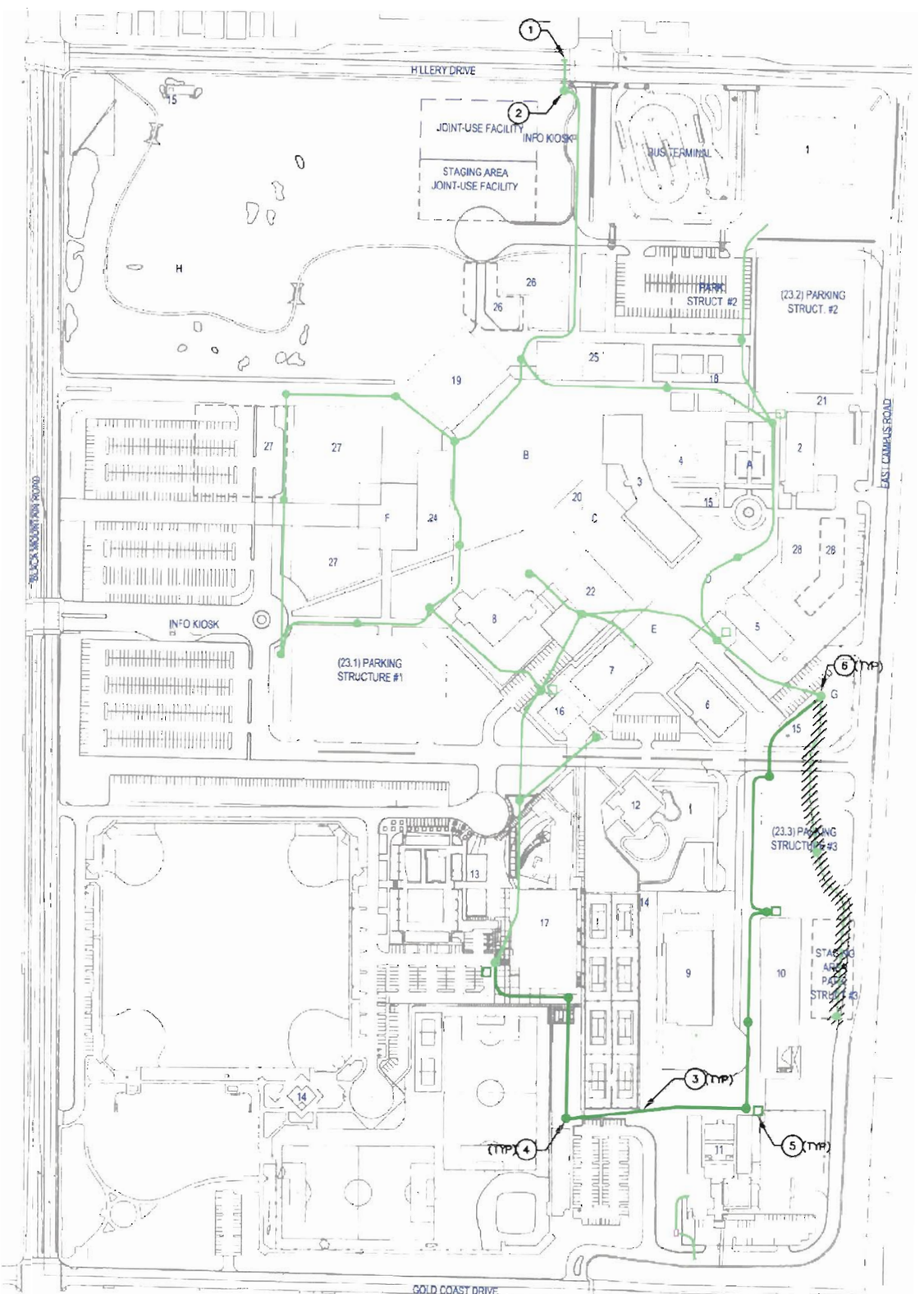
1. SDG&E SERVICE ENTRANCE POINT.
2. 1200A 15KV MAIN SERVICE SWITCHGEAR.
3. NEW (4)4" CONDUIT ONLY DUCT BANK SYSTEM.
4. NEW ELECTRICAL MANHOLE.
5. NEW GAS SWITCH.
6. EXISTING ELECTRICAL MANHOLE.

LEGEND:

- EXISTING CONDUIT.
- NEW CONDUIT PHASE II.
- EXISTING ELECTRICAL MANHOLE.
- NEW ELECTRICAL MANHOLE.
- EXISTING ABOVE GRADE GAS SWITCH.
- NEW ABOVE GRADE GAS SWITCH.
- EXISTING UTILITY TRANSFORMER TO REMAIN.
- DEMOLITION PHASE II.

0' 100' 200' 400' 800'

MICHAEL WALL ENGINEERING



KEY NOTES:

1. SDG&E SERVICE ENTRANCE POINT.
2. 1200A 15KV MAIN SERVICE SWITCHGEAR.
3. NEW (4)4" CONDUIT ONLY DUCT BANK SYSTEM.
4. NEW ELECTRICAL MANHOLE.
5. NEW GAS SWITCH.
6. EXISTING ELECTRICAL MANHOLE.

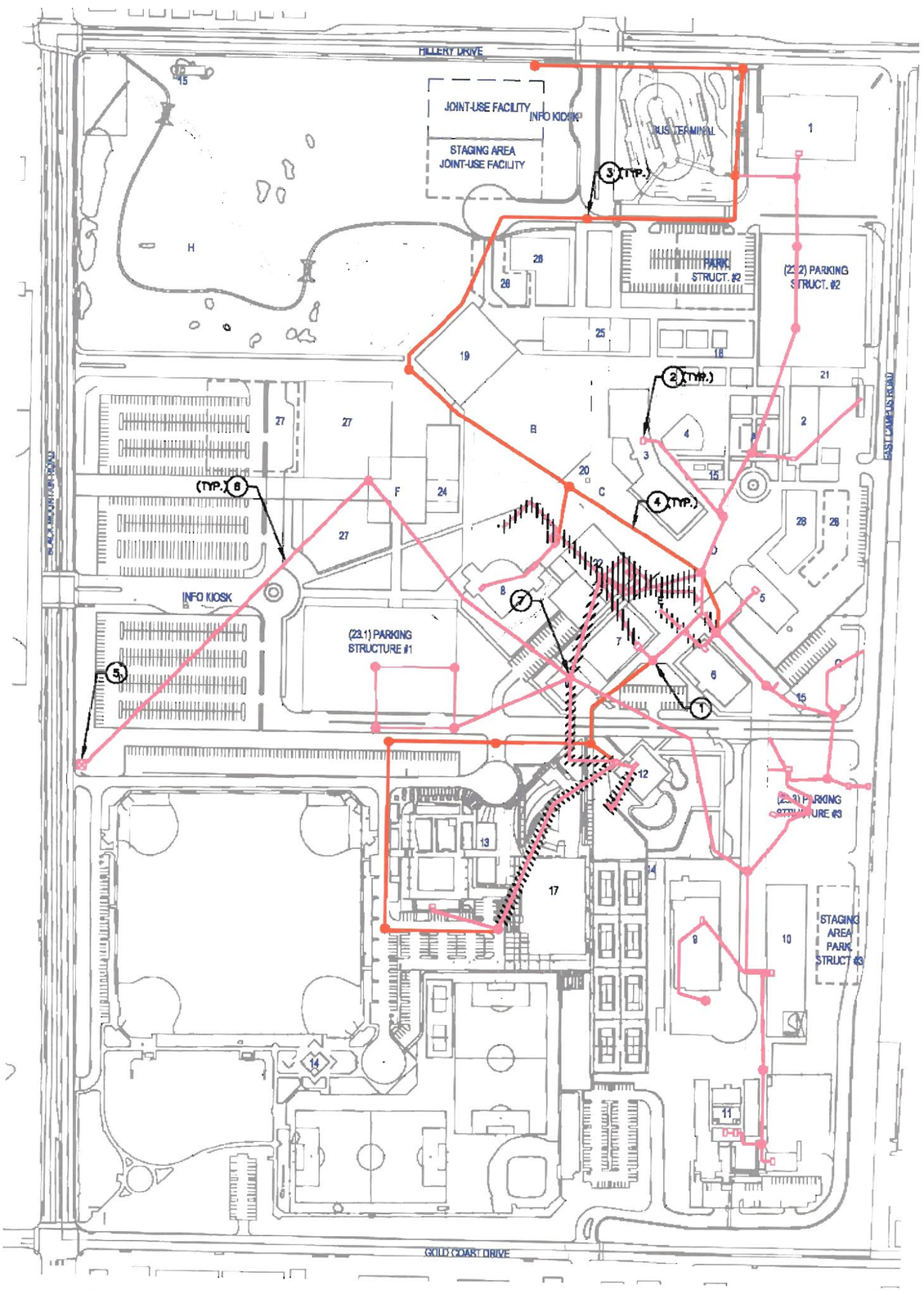
LEGEND:

- EXISTING CONDUIT.
- NEW CONDUIT PHASE III.
- EXISTING ELECTRICAL MANHOLE.
- NEW ELECTRICAL MANHOLE.
- EXISTING ABOVE GRADE GAS SWITCH.
- NEW ABOVE GRADE GAS SWITCH.
- EXISTING UTILITY TRANSFORMER TO REMAIN.
- DEMOLITION PHASE III.

0' 100' 200' 400' 800' N

MICHAEL WALL ENGINEERING

8989 Rio San Diego
Mission Valley, CA 92108
www.mwengr.com
4410 San Diego Bay Blvd
San Diego, CA 92123
(858) 560-1468 ELECTRICAL ENGINEERS



KEY NOTES:

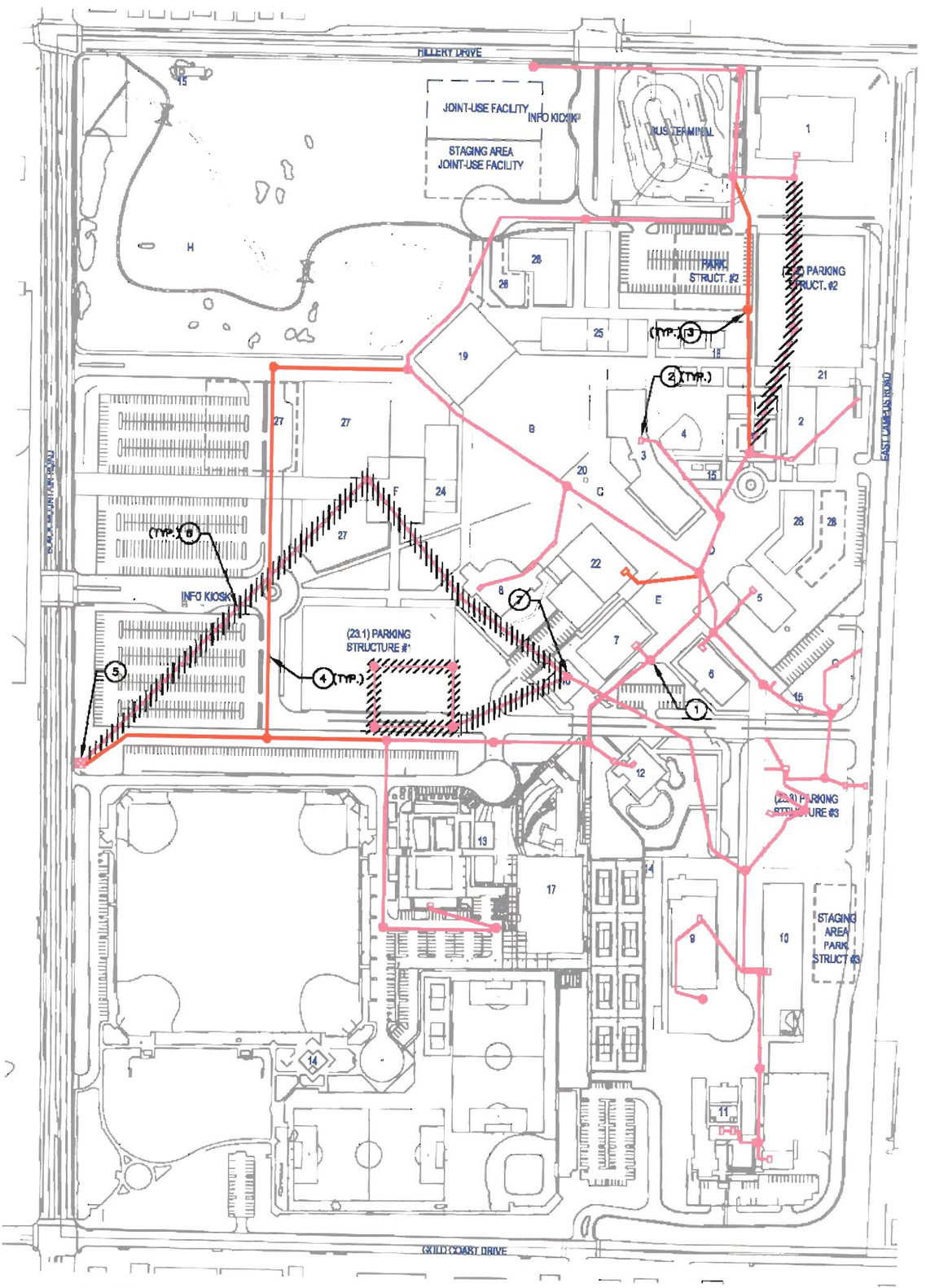
1. NEW RELOCATED SBC TELEPHONE SERVICE ENTRANCE.
2. EXISTING TELEPHONE SERVICE TO REMAIN.
3. NEW TELEPHONE MANHOLE.
4. NEW (4)4" CONDUIT ONLY DUCT BANK SYSTEM.
5. EXISTING SBC TELEPHONE SERVICE ENTRANCE.
6. EXISTING TELEPHONE DUCTBANK SYSTEM.
7. EXISTING MAIN TELEPHONE SERVICE TO BE RELOCATED.

LEGEND:

- EXISTING CONDUIT.
- NEW CONDUIT, PHASE I.
- EXISTING TELEPHONE ROOM.
- EXISTING TELEPHONE MANHOLE.
- NEW TELEPHONE MANHOLE.
- DEMOLITION PHASE I.

0' 100' 200' 400' 800' N

MICHAEL WALL ENGINEERING
858-638-0600
858-638-0640 (fax)
www.mwleng.com
4155 Sorrento Valley Blvd
San Diego, CA 92121
REGISTERED ELECTRICAL ENGINEERS



KEY NOTES:

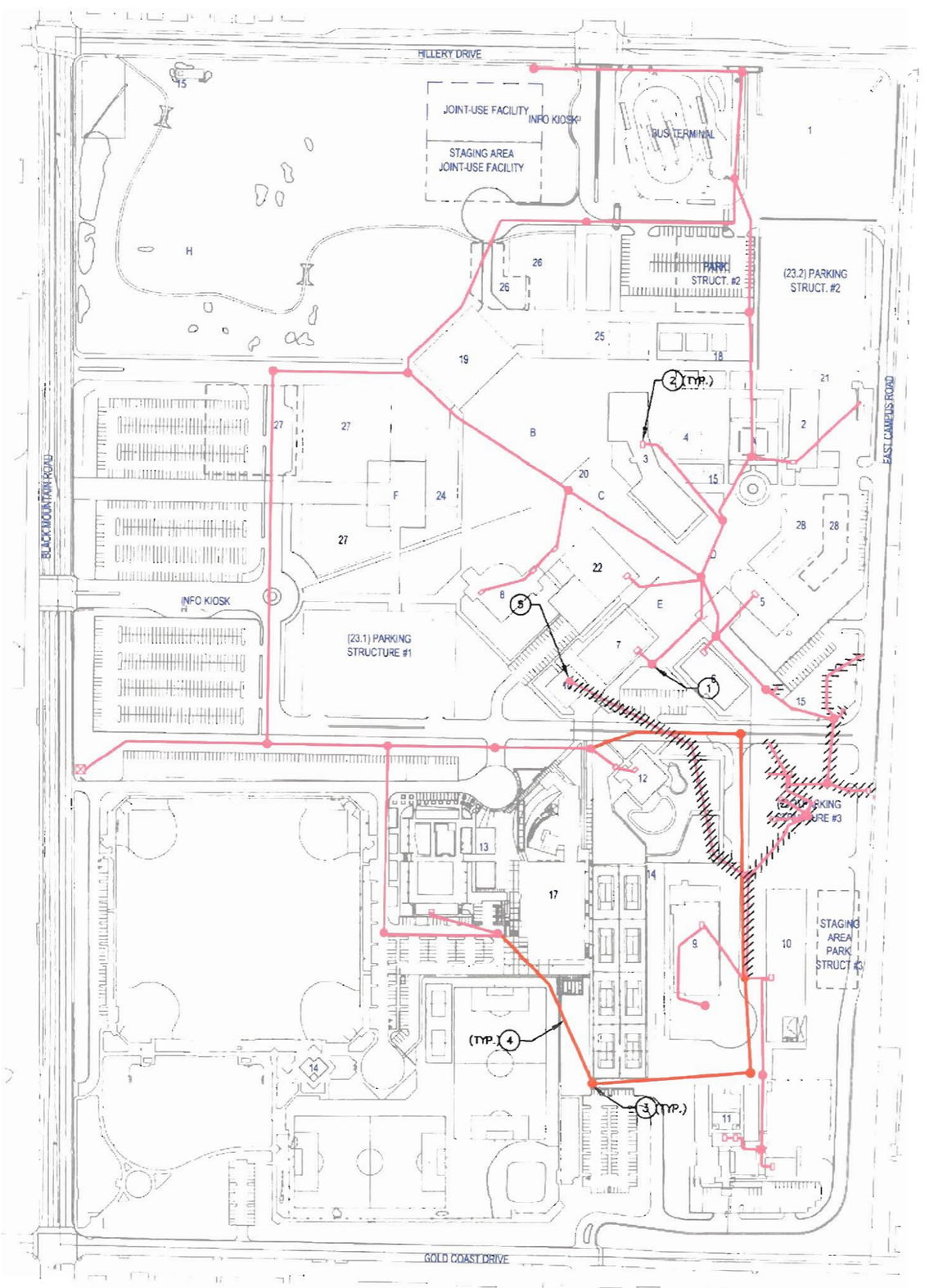
1. SBC TELEPHONE SERVICE ENTRANCE.
2. EXISTING TELEPHONE SERVICE TO REMAIN.
3. NEW TELEPHONE MANHOLE.
4. NEW (4)4" CONDUIT ONLY DUCT BANK SYSTEM.
5. EXISTING SBC TELEPHONE SERVICE ENTRANCE.
6. EXISTING TELEPHONE DUCTBANK SYSTEM.
7. EXISTING MAIN TELEPHONE SERVICE TO BE RELOCATED.

LEGEND:

- EXISTING CONDUIT.
- NEW CONDUIT, PHASE II.
- EXISTING TELEPHONE ROOM.
- EXISTING TELEPHONE MANHOLE.
- NEW TELEPHONE ROOM.
- NEW TELEPHONE MANHOLE.
- DEMOLITION PHASE II.

0' 100' 200' 400' 800' N

MICHAEL WALL ENGINEERING
858.638.0400
858.638.0640 (fax)
www.mwalleng.com
4115 Sorrento Valley Blvd
San Diego, CA 92121
REGISTERED ELECTRICAL ENGINEERS



KEY NOTES:

1. SBC TELEPHONE SERVICE ENTRANCE.
2. EXISTING TELEPHONE SERVICE TO REMAIN.
3. NEW TELEPHONE MANHOLE.
4. NEW (4)4" CONDUIT ONLY DUCT BANK SYSTEM.
5. EXISTING MAIN TELEPHONE SERVICE TO BE RELOCATED.

LEGEND:

- EXISTING CONDUIT.
- NEW CONDUIT, PHASE III.
- EXISTING TELEPHONE ROOM.
- EXISTING TELEPHONE MANHOLE.
- NEW TELEPHONE MANHOLE.
- DEMOLITION PHASE III.

0' 100' 200' 400' 800' N

MICHAEL WALLI ENGINEERING

(858) 638-0870
(858) 638-0871 (fax)
www.mwalleng.com
4115 Torrento Valley Blvd.
San Diego, CA 92121
REGISTERED ELECTRICAL ENGINEERS

OVERVIEW

General

The purpose of this report/study is to evaluate the existing heating and cooling production system (central plant) and site infrastructure to determine what upgrades and modifications are required to support the Architectural Master Plan (AMP). The AMP consists of the addition of several building and support structures throughout the expanded campus which will be constructed in phases over the course of a 10 year period. Keeping the construction time period in mind, the mechanical master plan is conceptual and its purpose is to serve as a general "road map". Given this - minor deviations are expected in terms of exact piping and equipment sizes and locations.

The underlying goal of the campus' mechanical master plan is to move away from packaged cooling/heating equipment and individual building chillers/boilers and shift towards a central plant heating/cooling concept. Among other things, the central plant cooling/heating concept not only reduces overall equipment capital cost by allowing for diversity factors but increases operating efficiencies and equipment redundancy while reducing general maintenance. However a detailed discussion outlining the benefits of the central plant concept is beyond the scope of this exercise. With the above in mind the mechanical master plans aims to provide a means to expand the existing central plant and modify/increase the site piping to provide cooling and heating as the new buildings become occupied. However based on certain physical locations, operating conditions and cooling/heating requirements, not all buildings will be connected to the central plant. The following tables (Table1 "Existing and Future Heating Hot Water Loads" and Table 2 "Existing and Future Chilled Water Loads") list the buildings which will be connected to the central plant as well as the phase and construction sequence.

In determining the building loads, the tables listed above use industry standards for determining building cooling/heating loads on a square foot basis and use building and campus diversity factors in order to project the future central plant and utility requirements. As more detailed information becomes available during the development and construction of the buildings, the load tables should be adjusted accordingly.

Design Guidelines

In order to maintain a consistent campus mechanical design methodology and to have the central plant operate efficiently a few key design guidelines must be adhered two.

Chilled Water Temperatures –The central plant produces 42 degree F chilled water and operates with a temperature differential between the chilled water supply and chilled water return of 12 degrees F. Building cooling coils/equipment should be selected with this in mind.

Heating Hot Water Temperatures –The central plant produces 180 degree F heating hot water and operates with a temperature differential between the heating hot water supply and heating hot water return of 30degrees F. Building heating coils/equipment should be selected with this in mind.

Control Valves – The chilled water and heating hot water systems are designed for variable flow. Two-way control valves should be used to regulate flow for heating/cooling coils.

This report does not attempt to set guidelines for individual building operating parameters. Design values such as interior and exterior temperature and humidity, interior occupancy loading and subsequent ventilation rates, etc should be evaluated during detailed building design. Additionally materials of construction and equipment/system types should be selected based on building usage.

EXISTING CONDITIONS

Central Plant

The existing central plant (Building U-100) currently produces and distributes chilled water and heating hot water for several existing campus buildings and has the ability to provided cooling for future buildings but has limited capacity to provide heating for future buildings. The chilled water system is a hybrid system consisting of one electric chiller and one absorption chiller which is driven by heating hot water produced from a gas powered generator. The chilled water system is installed and operates in a primary/secondary pumping/piping arrangement and can produce 600 tons of cooling and distribute 1,200 gallons per minute of chilled water. The secondary chilled water pumps and piping serve both the north and south campuses. The heating hot water system is installed in a primary/secondary pumping/piping arrangement and has a capacity of 5,800 MBH. A heat exchanger connected to the generator hot water loop preheats campus heating hot water before entering the boilers. The north and south campuses each have dedicated secondary heating hot water pumps and piping.

ChevronTexaco
Chevron Energy Solutions Company
A Division of Chevron U.S.A. Inc
150 E. Colorado Blvd. Suite 360
Pasadena, CA 91105
DEC

The heating system in its condition (March 2005) is slightly undersized for peak loads. The total heating load is slightly greater than the total boiler capacity and required heating hot water flow fro the north campus is more than the capacity of the north campus heating hot water pumps. The south campus pumps are new and sized for the future load.

Before the final build-out of the campus the limits of the central plant will have to be increased to accommodate the campus cooling and heating loads.

Cogeneration System

A 555 kW cogeneration system operates in parallel to the utility, SDG&E, and is designed to operate 24 hours a day, seven day a week. The system is not designed for emergency power or back up power if the utility is down. The Caterpillar engine based unit burn natural gas, generates electricity and the waste heat is reclaimed for heating hot water and charging the absorption chiller. The electrical systems, dedicated natural gas service and heat recovery hot water pump and piping systems have been sized for expansion to accommodate an identical unit.

Site Piping

Chilled Water / Heating Hot Water
Existing service piping is directly buried and routed individually to campus buildings as illustrated in the accompanying drawings. Two of the five buildings currently connected to the central plant have tertiary, building pumps hyrdronically isolating them from the central planet while the remaining buildings have distribution piping directly connected from the central plant to heat transfer equipment. There is a mixture of two and three way control valves within the campus.

Gas Piping
Medium pressure gas enters the site at two different locations and serves both the north and south campuses. A dedicated 60 psig, high pressure gas line enters the site at black mountain road and serves a cogeneration unit at the central plant.

Existing and Future Loads

Tables 1 and 2 consolidate the existing and future campus loads and are organized in conjunction with the campus construction periods (phases) as well as individual building construction sequences. The tables are a guideline to be used to help make decisions concerning central plant heating and cooling upgrades. Actions required to take place within each construction phase are listing in the far right hand column.

PHASE ONE

Central Plant

Heating Hot Water
All modifications to the heating hot water system will need to take place during phase one, but can be divided into sub-phases depending on the specific building construction sequence.

In or around the time Building 17 becomes occupied and operational, the heating hot water production system (boilers) will begin to fall short of capacity. Based on table 1 data, the heating hot water adjusted campus load will rise to above 7,000 MBH. The limits of the central plant will need to be expanded to accommodate the installation of new 6,000 MBH boiler and primary circulation pump. No modifications to the south distribution pumps will be required.

In or around the time Building 19 becomes occupied and operational, the heating hot water distribution system (north distribution pumps) will begin to fall short of capacity as they are currently strained. The existing 1,800 MBH boiler and north distribution pumps will need to be removed. New north variable speed, distribution pumps sized to accommodate the requirements for the entire campus build out will be installed in the location of the removed 1,800 MBH boiler. During the installation of the new distribution pumps a new 6,000 MBH boiler should be installed to complete the build-out of the heating hot water system. The instillation of the new distribution pumps will require piping modifications within the central plant and the connection of new site piping to the existing system. New differential pressure sensors will need to be added at the site to control distribution pump speed.

Chilled Water
The installation of one (1) new 420 ton chiller and associated cooling tower will be required before the end of phase 1. The existing chilled water and condenser water pumping system have reserve capacity to handle the added demand, but redundancy will be reduced. Pipe sizes within the central plant are adequate for the added demand, but minor modifications will be required to connect new distribution piping from the site to the central plant piping. New differential pressure sensors will need to be added at the site to control distribution pump speed.

Site Piping/Work

Chilled Water / Heating Hot Water
New direct buried chilled water and heating hot water piping adequately sized to accommodate flow rates required for the complete campus building out will be installed from the central plant to Building 19. Branch lines terminated with isolation valves accessed through valve boxes will be provided at each future building location for future connection. Branch piping will be brought close to individual buildings to insure landscaping will not be disrupted during future connection. The existing piping serving existing buildings will remain in service during the installation of the new piping and will be abandoned in place after the existing buildings are connected to the new distribution piping.

The use and value of chilled water / heating hot water tertiary pumps and ancillary equipment at Building 8 and Building 6 should be evaluated and addressed. Given the location of these buildings with respect the central plant and the location of Building 19 with respect to the central plant, thought should be given to removing this equipment and directly connecting each building's heat transfer equipment to the central plant piping. Additionally, the removal of all three-way control valves and their replacement with two-way control valves should be evaluated and addressed. The three way control valves do not give the central plant pumping system the full value of campus diversity and can cause it to operate in-efficiently.

Gas
New direct buried medium pressure gas will be intercepted at the central plant an installed to building 19.

PHASE TWO

Central Plant

Heating Hot Water
No upgrades required.

Chilled Water
A major overhaul of the chilled water system will be required during phase two. A new chiller will need to be installed in the space made available from the extension of the central plant walls. A new cooling tower will need to be installed in the cooling tower yard. The existing cooling towers will need to be retrofitted and re-positioned to accommodate this addition. The majority of the main piping within the central plant will have to be removed and replaced with larger pipe. Branch piping to equipment including pumps and trim will likely be satisfactory for reuse.

Cogeneration System

During development of Building 22, the opportunity to add another 555 kW cogeneration unit should be investigated. At this point in the campus expansion, it is estimated that the electrical load and the thermal loads could warrant the analysis effort. Other influential factors such as commodity price, rate structures, incentives and emission regulations, to name a few, should be considered.

Site Piping

The existing chilled water and heating hot water piping serving Building 8 is located under the proposed future location of Building 22. This piping will have to be removed. New branch piping will need to be connected to the main distribution piping installed in phase one, routed around the limits of building 22 and reconnected to the existing piping serving Building 8. Other buildings being constructed will need to be connected to the main distribution piping installed during phase one.

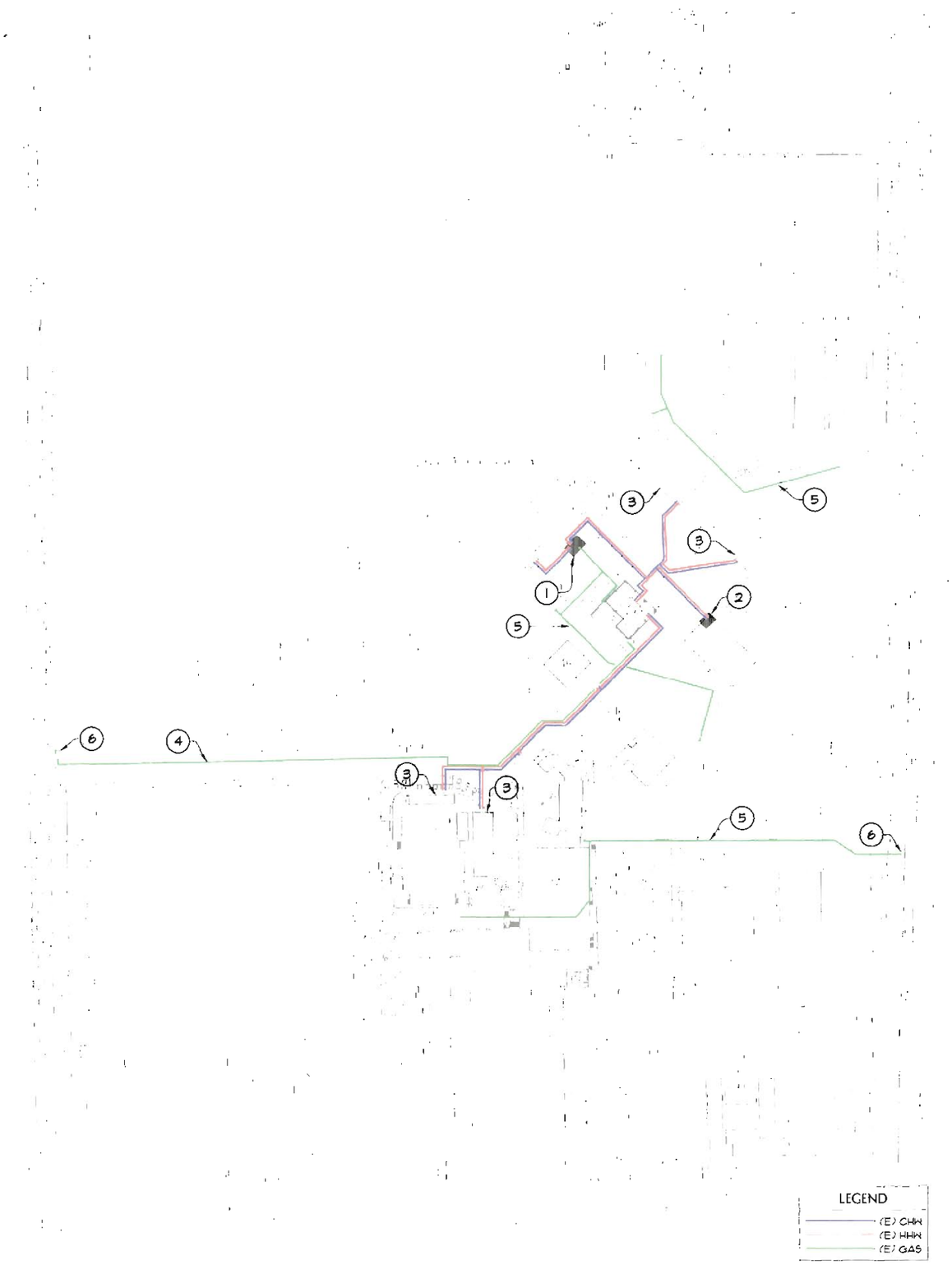
PHASE THREE

Central Plant

Heating Hot Water
No upgrades required.

Chilled Water
No upgrades required.

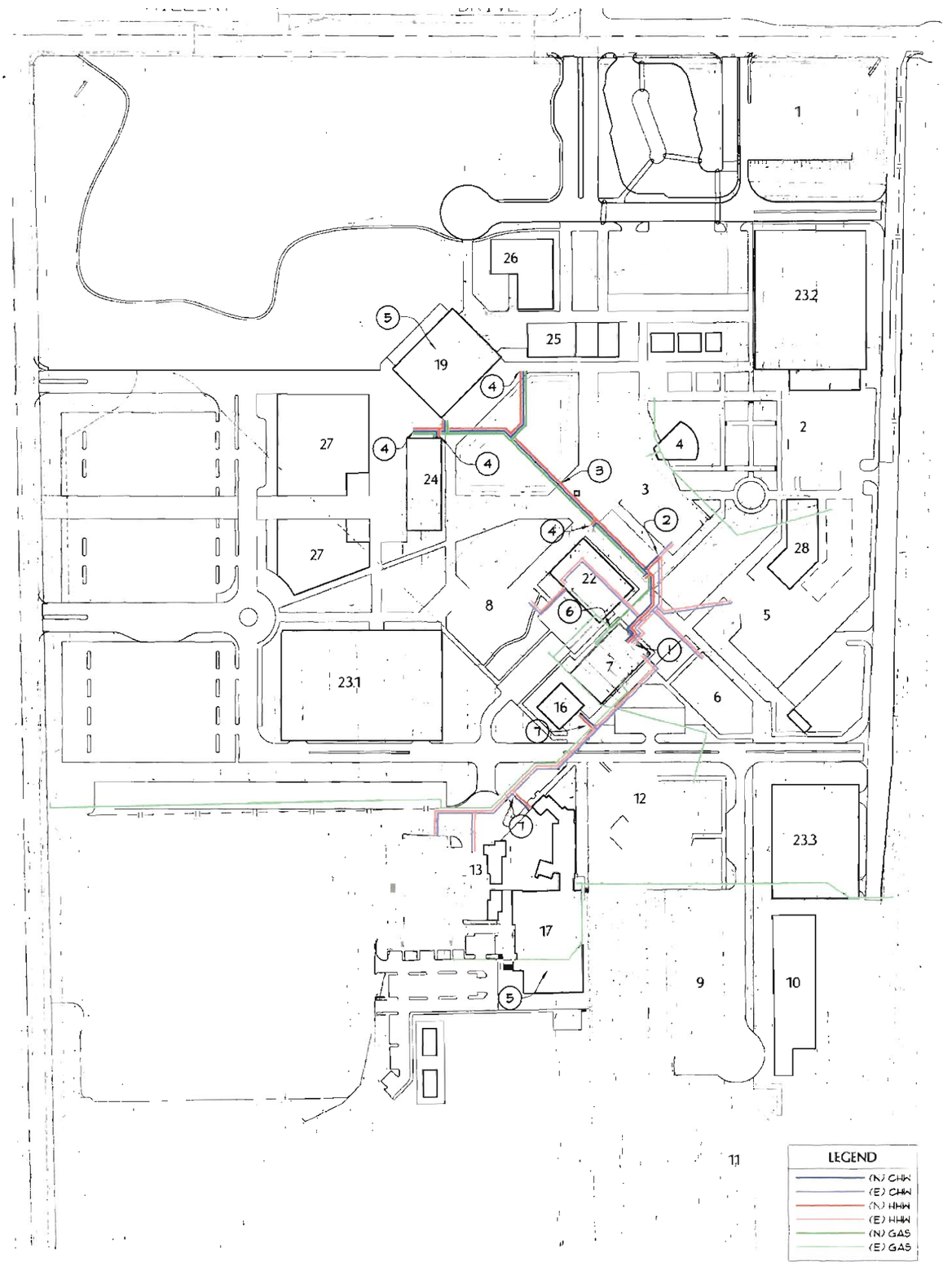
Site Piping
Buildings being constructed will need to be connected to the main distribution piping installed during phase one.



SITE PIPING

1. EXISTING EMERGENCY CHILLER AND BOILER HOUSED IN EQUIPMENT YARD WITH TERTIARY CHILLED WATER AND HEATING HOT WATER PUMPS.
2. EXISTING BUILDING MECHANICAL ROOM WITH TERTIARY CHILLED WATER AND HEATING HOT WATER PUMPS
3. BUILDING HAS CHILLED WATER AND/OR HEATING HOT WATER PIPED DIRECTLY TO COILS/HEAT EXCHANGERS
4. EXISTING DEDICATED 60 PSIG HPG FROM STREET TO COGENERATION UNIT.
5. EXISTING MPG
6. EXISTING GAS METER TO REMAIN.

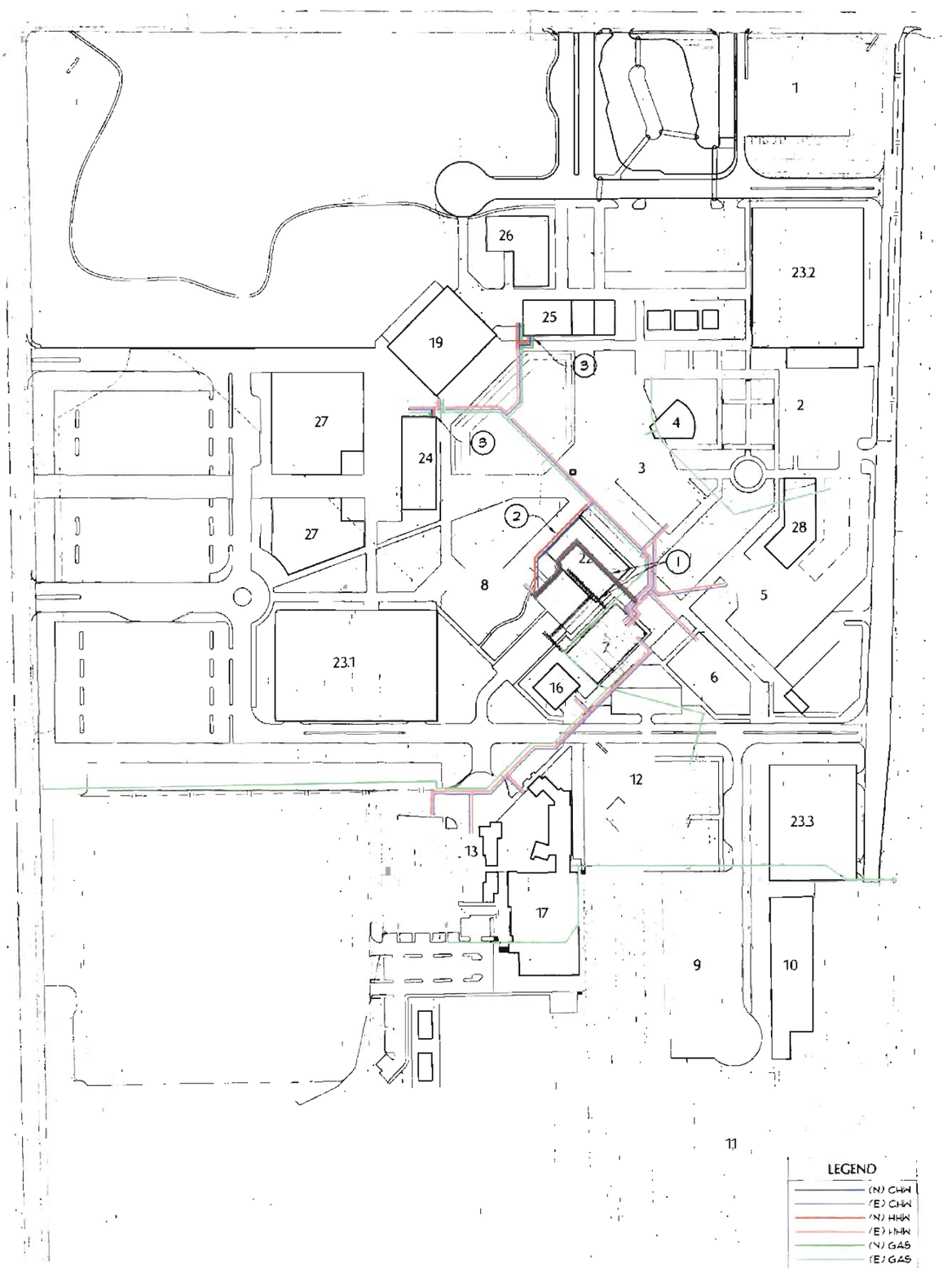
ChevronTexaco
Chevron Energy Solutions Company
A Division of Chevron U.S.A. Inc
150 E. Colorado Blvd. Suite 300
Pasadena, CA 91105



SITE PIPING

1. NEW 14" CHILLED WATER AND 8" HEATING HOT WATER PIPING FROM CENTRAL PLANT. EXISTING 10" CHILLED WATER AND 5" HEATING HOT WATER PIPING TO REMAIN
2. CONNECT CHILLED WATER AND HEATING HOT WATER SERVING BUILDINGS 3, 5 + 6 TO NEW PIPING
3. NEW CHILLED WATER, HEATING HOT WATER AND GAS TO BUILDING 19
4. PROVIDE BRANCH STUB-OUT PIPING AND VALVE WITH VALVE BOX FOR CONNECTION TO FUTURE BUILDING.
5. PROVIDE NEW DIFFERENTIAL PRESSURE TRANSMITTER AT BUILDING 19 ACROSS FURTEST AIR HANDLING UNIT FOR CONTROL OF DISTRIBUTION PUMPS IN CENTRAL PLANT
6. POINT OF CONNECTION TO EXISTING MFG
7. NEW PIPING FROM EXISTING VALVE BOX TO BUILDING CONNECTIONS

ChevronTexaco
Chevron Energy Solutions Company
A Division of Chevron U.S.A. Inc
150 E. Colorado Blvd. Suite 350
Pasadena, CA 91105

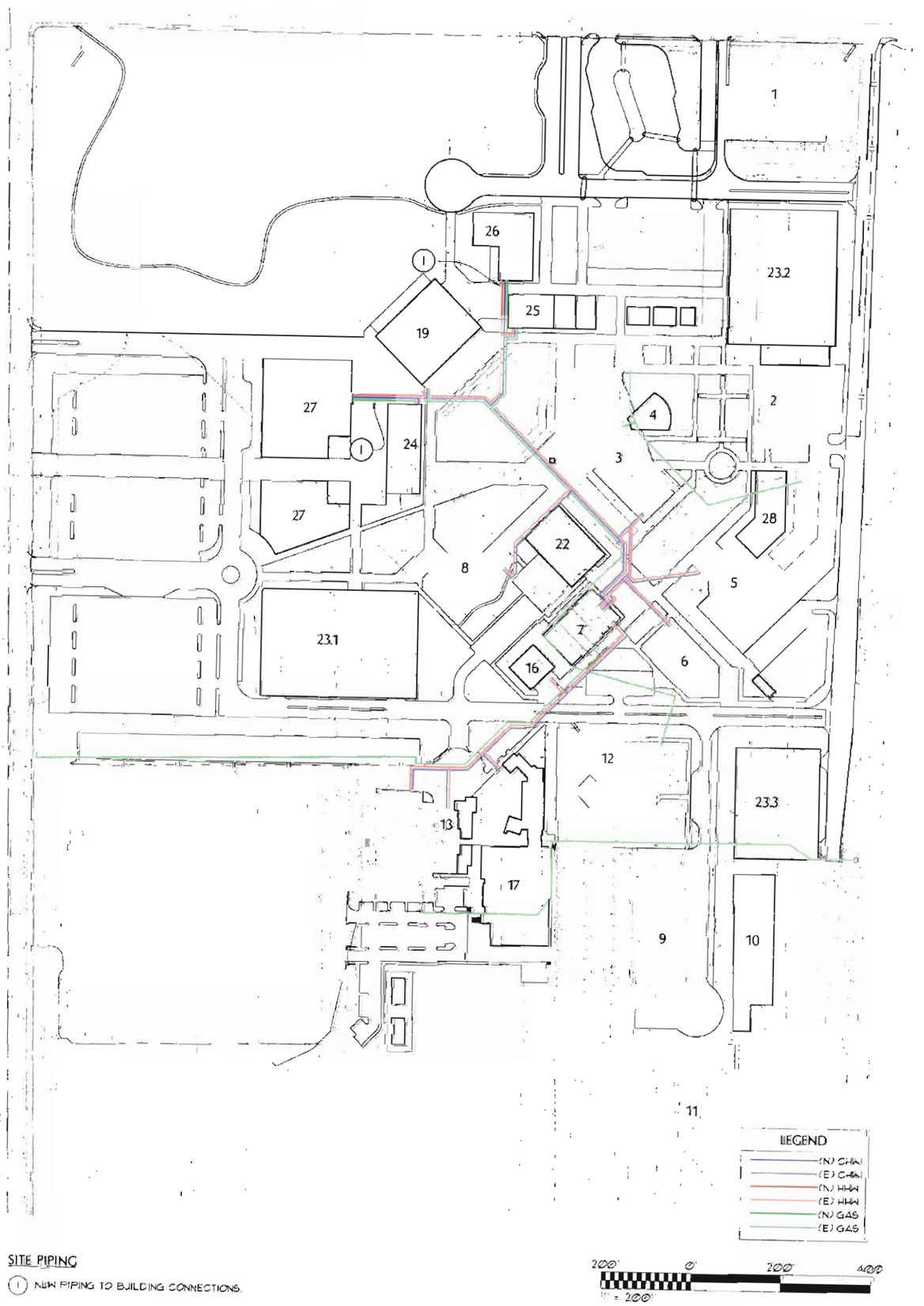


SITE PIPING

1. REMOVE DIRECT BURIED CHW/HHW PIPING FOR CONSTRUCTION OF BUILDING 22
2. NEW CHILLED WATER/HEATING HOT WATER PIPING AROUND LIMITS OF BUILDING 22 CONNECT TO EXISTING DIRECT BURIED PIPING SERVING BUILDING 8
3. NEW PIPING TO BUILDING CONNECTIONS

ChevronTexaco
Chevron Energy Solutions Company
A Division of Chevron U.S.A. Inc.
150 E. Colorado Blvd. Suite 300
Pasadena, CA 91105

DEC

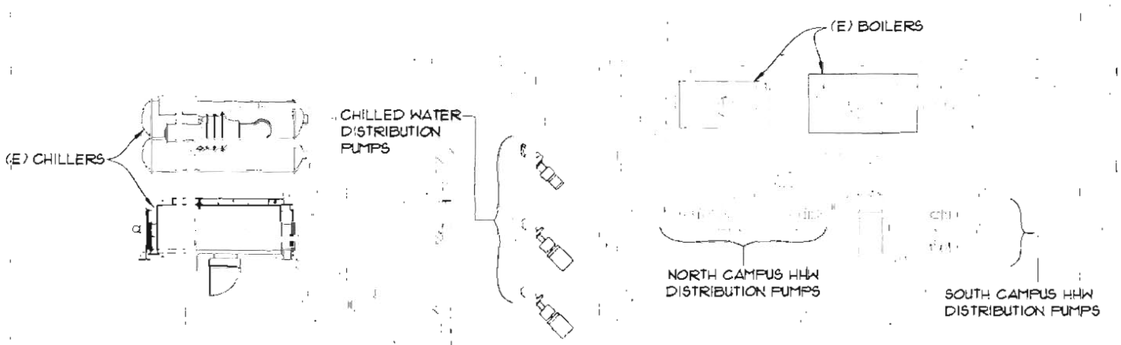


SITE PIPING

(1) NEW PIPING TO BUILDING CONNECTIONS.

ChevronTexaco
Chevron Energy Solutions Company
A Division of Chevron U.S.A. Inc

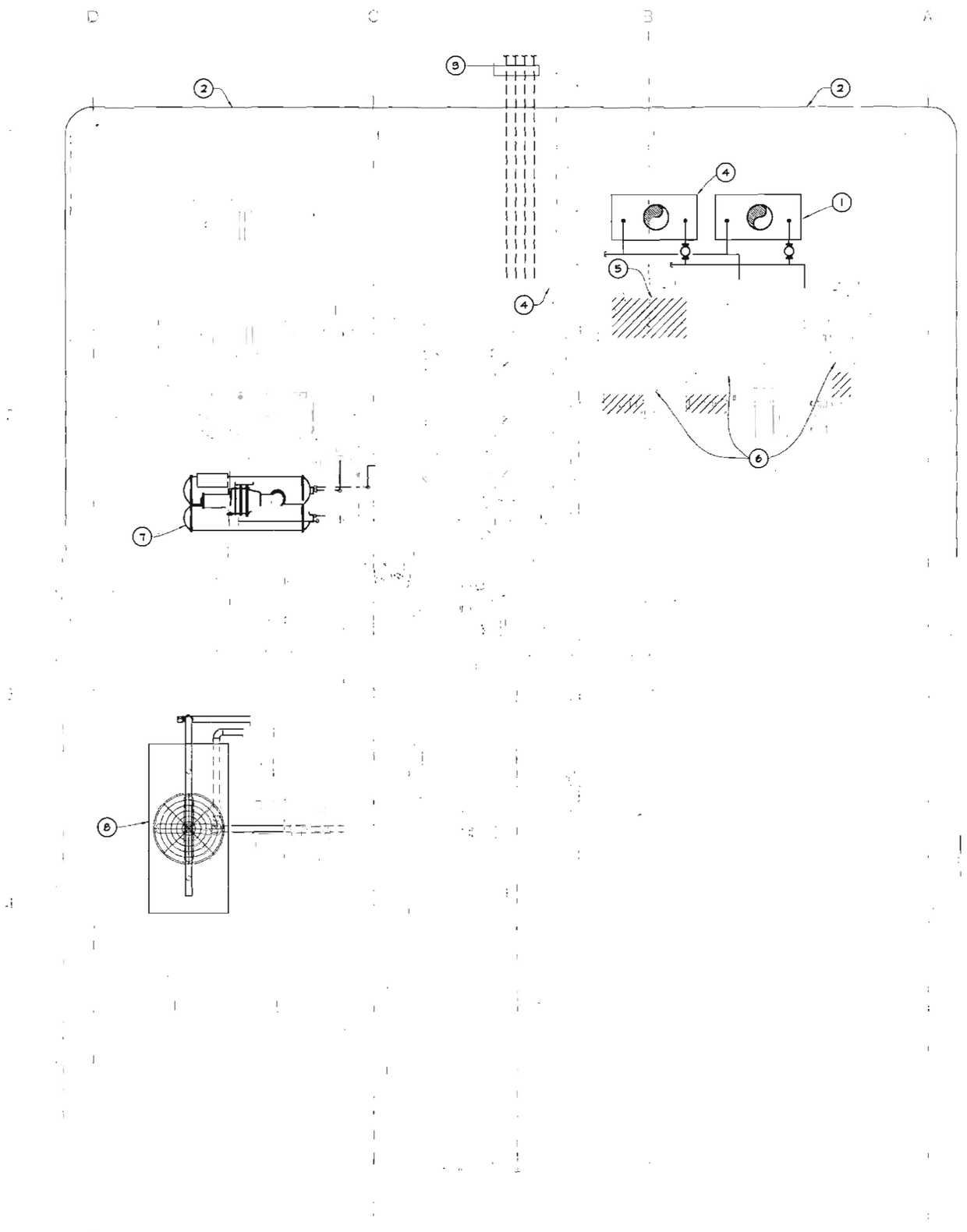
DEC



CENTRAL PLANT

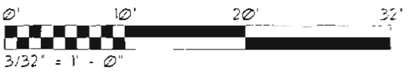
ChevronTexaco
Chevron Energy Solutions Company
A Division of Chevron U.S.A. Inc
150 E. Colorado Blvd. Suite 304
Pasadena, CA 91101

DEC



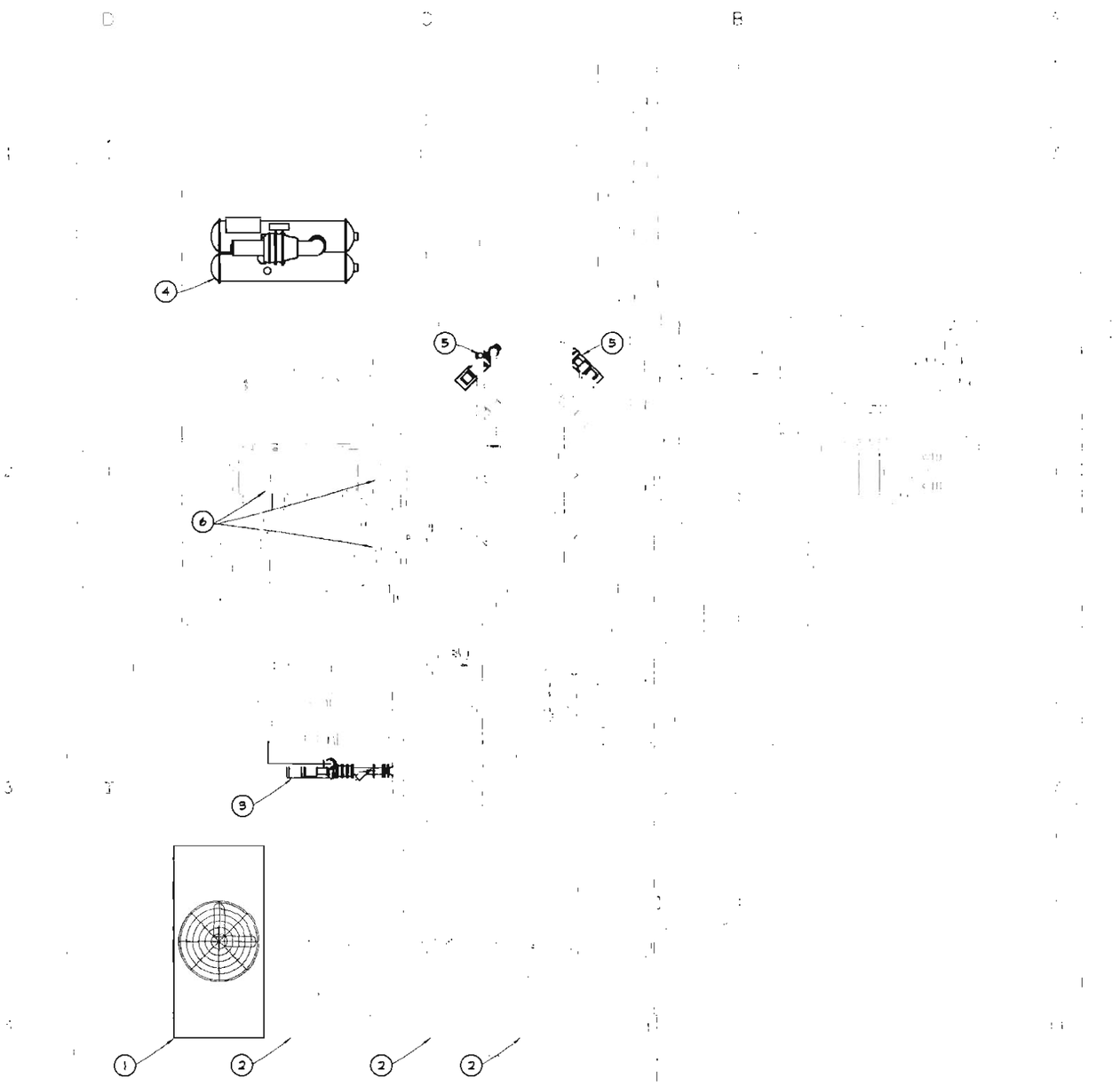
CENTRAL PLANT

1. NEW 6,000 MBH (OUTPUT) BOILER AND ASSOCIATED PRIMARY PUMP, PIPING
2. EXTEND LIMITS OF CENTRAL PLANT.
3. NEW 14" CHW, 8" HHW DIRECT BURIED PIPING ADJACENT TO EXISTING. SEE SITE PLAN.
4. REMOVE EXISTING DIFFERENTIAL PRESSURE TRANSMITTER. SEE PHASE 1 SITE PLAN FOR NEW LOCATION.
5. EXISTING BOILER TO BE REMOVED AND SPACE TO BE UTILIZED FOR NEW SECONDARY HHW DISTRIBUTION PUMPS - 350 GPM/120'.
6. MODIFY PIPING WITHIN BOILER ROOM FOR CONNECTION TO SITE PIPING AND NEW NORTH DISTRIBUTION PUMPS, MODIFY PIPING AT MAKE-UP HEAT EXCHANGER.
7. NEW 420 TON CHILLER BRANCH PIPING
8. NEW 420 TON COOLING TOWER (TOP INLET, BOTTOM OUTLET), BRANCH PIPING



ChevronTexaco
Chevron Energy Solutions Company
A Division of Chevron U.S.A. Inc.
332 E. Colorado Blvd. Suite 206
Pasadena, CA 91101

DEC



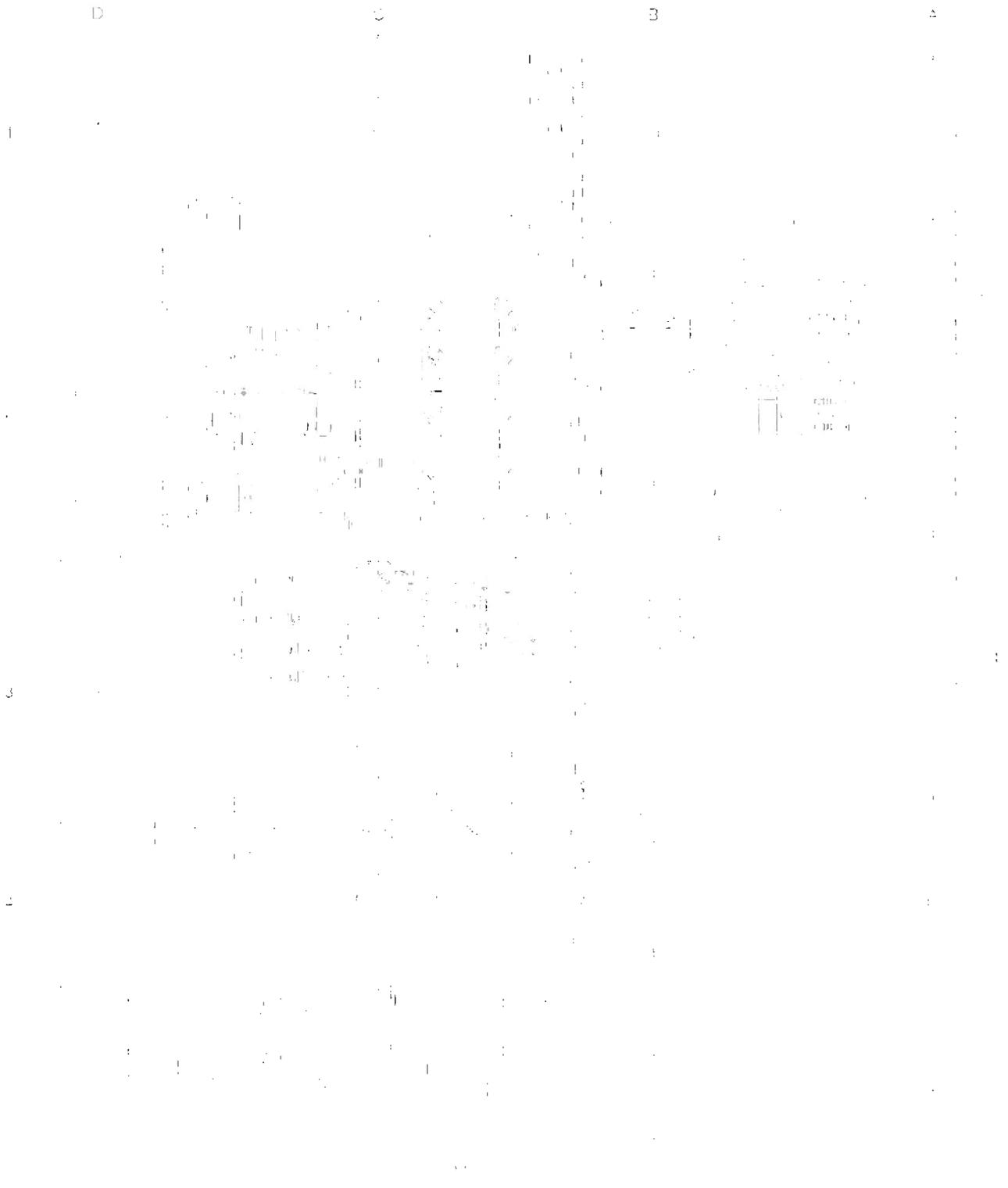
CHILLER PLANT

1. NEW COOLING TOWER.
2. NEW LOCATION OF EXISTING COOLING TOWER - RETROFITTED FOR BOTTOM OUTLET AND TOP INLET
3. NEW CONDENSER WATER PUMP
4. NEW CHILLER (420+ TONS)
5. NEW PRIMARY/SECONDARY CHW PUMP.
6. REMOVE AND REPLACE EXISTING CHILLED WATER PIPING WITHIN CHILLER PLANT. INCREASE PIPE SIZE AS REQUIRED FOR NEW SERVICE.

0' 10' 20' 32'
3/32" = 1' - 0"

ChevronTexaco
Chevron Energy Solutions Company
A Division of Chevron U.S.A. Inc.
350 E. Colorado Blvd. Suite 380
Pasadena, CA 91105

DEC



CHILLER PLANT - NO WORK REQUIRED

ChevronTexaco
Chevron Energy Solutions Company
A Division of Chevron U.S.A. Inc.

DEC

Table 1: Existing and Future Heating Hot Water Loads

Building	Construction Period	Construction Sequence	ASF (SF)	Load Basis (BTU/SF)	Load (BTUH)	Load (MBH)	Cumulative Connected Load (MBH)	Bldg Diversity Factor	Campus Use Diversity Factor	Adjusted Load (MBH)	Cumulative Adjusted Load (MBH)	Plant Capacity (MBH)	Reserve Plant Capacity (MBH)	Action	Remarks
Bldg 3 - Science and Tech - Heating	**Existing**	**0**	**33,500**	**72**	**2,402,500**	**2,403**		**0.8**	**0.95**	**1826**					VAV Fume Hoods
Bldg 5 - C100 Diesel Tech Lab	**Existing**	**0**			**257,000**	**257**		**1.0**	**0.95**	**244**					
Bldg 6 - Overflow Classrooms	**Existing**	**0**			**260,000**	**260**		**1.0**	**1.00**	**260**					
Bldg 8 - Instructional Center	**Existing**	**0**			**650,000**	**650**	**3,570**	**1.0**	**1.00**	**650**	**2,980**				Existing Boiler Capacity
Bldg. 13 - Aquatic Center	**Existing**	**0**	**NA**	**NA**	**4,312,500**	**4,313**	**7,882**	**1.0**	**0.75**	**3234**	**6,215**	**5,800**	**(415)**		
Bldg. 17 - Health Education Science	Phase 1	1	55,000	36	2,000,000	2,000	9,882	1.0	0.95	1900	8,115	11,800	3,685	1	
Bldg. 16 - College Services Center	Phase 1	2	15,000	40	600,000	600	10,482	1.0	0.95	570	8,685	11,800	3,115		
Bldg. 19 - Future LLRC	Phase 1	3	77,000	20	1,540,000	1,540	12,022	1.0	0.95	1463	10,148	16,000	5,852	2,3	
Bldg. 24 - Future Arts and Humanities Classrooms	Phase 2	4	30,000	30	900,000	900	12,922	1.0	0.95	855	11,003	16,000	4,997		
Bldg. 22 - Future Cafeteria/Bookstore	Phase 2	5	45,000	30	1,350,000	1,350	14,272	1.0	0.95	1283	12,286	16,000	3,714		
Bldg. 25 - Future Technology Classroom	Phase 2	6	30,000	30	900,000	900	15,172	1.0	0.95	855	13,141	16,000	2,859		
Bldg 4 - Future Science and Tech Lecture Hall	Phase 2	7	5,000	40	200,000	200	15,372	1.0	1.00	200	13,341	16,000	2,659		
Bldg. 26 - Future Administration and SS	**Phase 3**	**8**	**60,000**	**30**	**1,800,000**	**1,800**	**17,172**	**1.0**	**0.95**	**1710**	**15,051**	**16,000**	**949**		
Bldg. 27 Future Performance Arts	**Phase 3**	**9**	**60,000**	**40**	**2,400,000**	**2,400**	**19,572**	**1.0**	**0.50**	**1200**	**16,251**	**16,000**	**(251)**		
Bldg 1 - District Distributing Center			NA	NA	NA	NA		NA	NA						Stand Alone
Bldg 2 - Automotive Tech			NA	NA	NA	NA		NA	NA						Stand Alone
Bldg 7 - U100 Cogen Plant			NA	NA	NA	NA		NA	NA						No Heating
Bldg 9 - Aviation Maintenance and Tech			NA	NA	NA	NA		NA	NA						Stand Alone
Bldg. 10 - Overflow Classroom			NA	NA	NA	NA		NA	NA						Stand Alone
Bldg. 11 - CET			NA	NA	NA	NA		NA	NA						Stand Alone
Bldg. 12 - Child Development			NA	NA	NA	NA		NA	NA						Stand Alone
Bldg. 14 - Comfort Station			NA	NA	NA	NA		NA	NA						No Heating
Bldg. 15 - Utilities			NA	NA	NA	NA		NA	NA						No Heating
Bldg. 18 - Future Greenhouses and Biological Pond			NA	NA	NA	NA		NA	NA						No Heating
Bldg. 20 - Future Tower			NA	NA	NA	NA		NA	NA						No Heating
Bldg. 21 - Future Automotive Bays			NA	NA	NA	NA		NA	NA						No Heating
Bldg. 23 - Parking Structure			NA	NA	NA	NA		NA	NA						No Heating
Bldg. 28 Future Transportation Tech Bldg			NA	NA	NA	NA		NA	NA						Stand Alone

Action
1. Install new 6000 MBH (output) boiler and associated piping/primary pumps.
2. Install new 6000 MBH (output) boiler. Remove existing 1,800 MBH (output) boiler and use location for new secondary distribution pumps.
3. Install new 8" site heating hot water distribution piping to new library. Parallel existing site piping near Central Plant.

Table 2: Existing and Future Chilled Water Loads

Building	Construction Period	Construction Sequence	Location	ASF (SF)	Load Basis (SF/Ton)	Load (Tons)	Cumulative Connected Load (Tons)	Bldg Diversity Factor	Campus Use Diversity Factor	Adjusted Load (Tons)	Cumulative Adjusted Load (Tons)	Plant Capacity (Tons)	Reserve Plant Capacity (Tons)	Action	Remarks
Bldg 3 - Science and Tech	**Existing**	**0**	**North**	33,500	167.5	**200**		**0.8**	**1.00**	**160.0**					VAV Fume Hoods
Bldg 5 - C100 Diesel Tech Lab	**Existing**	**0**	**North**			**30**		**0.8**	**1.00**	**24.0**					
Bldg 6 - Overflow Classrooms	**Existing**	**0**	**North**			**30**		**0.8**	**1.00**	**24.0**					
Bldg 8 - Instructional Center	**Existing**	**0**	**North**			**110**	**370**	**0.8**	**1.00**	**88.0**	**296**	**600**	**304**		
Bldg. 17 - Health Education Science	Phase 1	1	South	50,000	250	200	570	0.8	1.00	160.0	456	600	144	1	
Bldg. 16 - College Services Center	Phase 1	2	South	15,000	350	42.9	612.9	0.8	1.00	34.3	490	600	110		
Bldg. 19 - Future LLRC	Phase 1	3	North	77,000	250	308	920.9	0.8	1.00	246.4	736	1020	284	2	
Bldg. 24 - Future Arts and Humanities Classrooms	Phase 2	4	North	30,000	250	120	1040.9	0.8	1.00	96.0	832	1020	188		
Bldg. 22 - Future Cafeteria/Bookstore	Phase 2	5	North	45,000	350	128.6	1169.5	0.8	1.00	102.9	935	1440	505	3,4	
Bldg. 25 - Future Technology Classroom	Phase 2	6	North	30,000	250	120	1289.5	0.8	1.00	96.0	1031	1440	409		
Bldg 4 - Future Science and Tech Lecture Hall	**Phase 2**	**7**	**North**	**5,000**	**150**	**33.3**	**1322.8**	**0.8**	**1.00**	**26.6**	**1058**	**1440**	**382**		
Bldg. 26 - Future Administration and SS	**Phase 3**	**8**	**North**	**60,000**	**350**	**171.4**	**1494.2**	**0.8**	**1.00**	**137.1**	**1195**	**1440**	**245**		
Bldg. 27 Future Performance Arts	**Phase 3**	**9**	**North**	**60,000**	**200**	**300**	**1794.2**	**0.8**	**0.50**	**120.0**	**1315**	**1440**	**125**		
Bldg. 13 - Aquatic Center			NA	NA	NA	NA		NA	NA						No Cooling
Bldg 1 - District Distributing Center			NA	NA	NA	NA		NA	NA						Stand Alone
Bldg 2 - Automotive Tech			NA	NA	NA	NA		NA	NA						Stand Alone
Bldg 7 - U100 Cogen Plant			NA	NA	NA	NA		NA	NA						No Cooling
Bldg 9 - Aviation Maintenance and Tech			NA	NA	NA	NA		NA	NA						Stand Alone
Bldg. 10 - Overflow Classroom			NA	NA	NA	NA		NA	NA						Stand Alone
Bldg. 11 - CET			NA	NA	NA	NA		NA	NA						Stand Alone
Bldg. 12 - Child Development			NA	NA	NA	NA		NA	NA						Stand Alone
Bldg. 14 - Comfort Station			NA	NA	NA	NA		NA	NA						No Cooling
Bldg. 15 - Utilities			NA	NA	NA	NA		NA	NA						No Cooling
Bldg. 18 - Future Greenhouses and Biological Pond			NA	NA	NA	NA		NA	NA						No Cooling
Bldg. 20 - Future Tower			NA	NA	NA	NA		NA	NA						No Cooling
Bldg. 21 - Future Automotive Bays			NA	NA	NA	NA		NA	NA						No Cooling
Bldg. 23 - Parking Structure			NA	NA	NA	NA		NA	NA						No Cooling
Bldg. 28 Future Transportation Tech Bldg			NA	NA	NA	NA		NA	NA						Stand Alone

Action
1. Install New 420 Ton Chiller, Cooling Tower and associated piping in location for future chiller in Central Plant
2. Install new 14" site chilled water distribution piping to new library. Parallel existing site piping near Central Plant.
3. Install new chiller, cooling tower, primary/secondary pumps and piping within Central Plant.
4. Evaluate existing campus cooling load profile to determine chiller size. Consider option between absorption vs electrical chiller.

Miramar Community College Facilities Master Plan

APPENDIX

Facilities Services Standards Guide
Building Construction Standards

San Diego Community College District
June 2005

PERKINS
+WILL