Mira Costa High School
Manhattan Beach Unified School District,
Manhattan Beach, CA
Project No. 2009-00001

MASTER PLAN FRAMEWORK
FINAL REPORT

October 20, 2009

HARLEY ELLIS DEVEREAUX

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SCOPE OF THE STUDY

With the passage of Manhattan Beach Bond BB in 2008, Manhattan Beach Unified School District received approval from the voters to fund a set of improvement and modernization projects for the Mira Costa High School campus.

A steering committee was designated by the MBUSD Board to direct the Bond BB projects. The committee determined that a master plan vision for the overall campus, including both Bond BB and longer-term projects, was advisable to set a framework for the Bond BB projects that would be compatible with longer term needs.

Harley Ellis Devereaux was hired by MBUSD to complete the master plan study. The scope of the study included an assessment of existing conditions at the campus, an assessment of existing program uses, and the development of a comprehensive master plan vision including both immediate projects to be funded by Bond BB and longer-term projects. The process included four community workshops presenting the findings and proposals to the community, and soliciting community input on them. The results of this work are summarized in this report.

PROJECT TEAM

Manhattan Beach Unified School District Board of Education
Mira Costa High School Master Plan Steering Committee
Harley Ellis Devereaux-Architectural
Harley Ellis Devereaux -Mechanical
Harley Ellis Devereaux -Electrical
Harley Ellis Devereaux –Plumbing
Greenworks Studio, Sustainable Design
Brandow & Johnston, Structural Engineers

EXECUTIVE SUMMARY

This master plan framework for Mira Costa High School summarizes the consensus-based decisions made regarding both the Bond BB projects and anticipated longer term projects. General goals for the master plan include replacing outdated and unsafe facilities, clustering programs on campus with more effective adjacencies, improving heating and ventilation in select buildings, upgrading campus power and IT infrastructure, improving food service distribution, improving campus safety and exterior lighting, improving campus wayfinding and identity, and providing a central open space where all students may gather for school spirit activities. The highest priority is a new building to house math and science classrooms and labs.

The specific projects identified to accomplish these aims include the following:

Bond BB Scope:

- Math/Science Instructional Building
  - New building, approx. 58,000 sf. Includes math, science, computer lab, prep areas and storage. Standard labs to have natural gas, dry compressed air, and water, with vacuum at demonstration station only. Special lab to have these and vacuum at student stations also. Distilled water in prep rooms. Fume hood in biology prep room. 16 feet of fume hoods in each chemistry lab.
  - Provide replacement parking lot on Meadows west of existing pool. Remove existing portable classrooms and adjacent abandoned structures

- General Academics Instructional Buildings
  - Renovate existing fingers buildings A, M, and N, approx. 40,000 sf., including finishes, HV and possibly AC, insulation, windows, roofing.
  - New Multi-purpose Hall, 6,000-8,000 sf.
  - Relocate learning center from Building YY classrooms 121-122, 124-125 to Building E classrooms 14, 17-19
  - New campus-wide IT infrastructure with 100 Gb fiber-optic network accommodating streaming video and wireless access

    - New HV and possibly AC for Buildings E, F, WW, Y, YY, and possibly J.
- Arts Facility Modernization/Relocation
    - Renovate Building W classrooms 3-6 to become rehearsal spaces
    - New addition to Building W for orchestra and choir, approx. 4,000 sf.
    - Renovate Building YY classrooms 121-122, 124-125 to become Media Arts classrooms
    - Renovate Building U Fine Arts classrooms 101, 102
- Career/Technical Skills Center
    - Renovate Building S Room 109 and Maintenance/Operations to become Career/Tech Center, for computer CAD, game development, sheet metal work, CNC, aviation engineering, etc. Provide new HV and possibly AC.
- Student Support Facility
    - Relocate attendance office to Building U (Relocate adult education office as required.)
    - Relocate security office to Building U
    - Relocate student store to Building B at west end of new commons
    - Relocate student activities rooms to Building F classrooms 15 and 16
    - Demolish the old administration building and Buildings C and D to create new commons
    - New hardscape, landscape, stage and seating area, and shade/rain canopies at new commons
- Safety
    - Upgrades to existing perimeter fences and gates
    - Campus identity: create front for campus (arcade, etc.)
    - Exterior lighting
    - Wayfinding signage
    - Relocate security office to Building U
- Enhance Café/Multi-purpose Addition
    - Renovate existing cafeteria with new acoustic finishes, lighting, exterior sun shades, large operable doors, and furnishings. Provide new grease interceptor.
    - New satellite café at west end of new commons, including two single-occupant toilet rooms
    - Relocate food service offices to existing student store at east side of Building M

- Relocate Maintenance/Operations Building
    - New building, approx. 3,000 sf., west of Building WW
    - Exterior paved area for parking, loading, and/or dumpsters
- Furniture and Equipment
    - New seating in Drama classroom
    - PA wiring for gym
- Interim Classrooms
    - Not needed

Future Projects:

- Auditorium and Auditorium Lobby Renovations
- Reorganization of west campus parking and athletic facilities
    - Relocation of tennis courts to site west of pool
    - New parking lot at location of existing tennis courts, with potential new traffic light at the intersection of Meadows and Artesia
    - New access path from new parking lot to Stadium Way
    - Relocate shipping containers for disaster prep, sports equipment, etc.
- Gym expansion and upgrade
- Enhance Stadium Way with new paving, landscaping, lighting, signage
- Improve accessibility of student lockers
- Relocate existing library to a new media center located at the west end of the commons. Relocate the school administration functions to the existing library.

MASTER PLAN DESIGN OVERVIEW

After a review of the Bond BB list of projects and of the exhibit illustrating their proposed layout on campus, the following conclusions were drawn:

- The Bond BB projects should be designed to be compatible with the long-term vision of the campus
- The Bond BB exhibit shows severely deteriorated buildings left in place, while buildings in better condition are demolished
- The costs of leasing temporary portable science labs, math and general classrooms, wood shop, and arts classrooms exceed the budget line item in the Bond BB proposal
- The campus disruption resulting from relocating math and science classrooms twice per the Bond BB layout will be significant

The master plan proposal evolved through a series of steering committee meetings and community workshops, addressing the issues listed above while creating a strong vision for the campus. The new math/science building is located in the Upper Peck Avenue parking lot to minimize campus disruption during construction and to reduce the cost of relocations and portable interim classrooms. Rather than demolishing the original fingers buildings, which have good design and durable construction, seriously deteriorated and obsolete buildings are removed.

The aerial view of the master plan illustrates the various components of the plan, including existing buildings to remain as is, existing buildings to be renovated, new buildings to be funded by Bond BB, and buildings to be renovated or built with separate funding in the short or long term.

The master plan proposal strengthens the identity of the campus by bringing a major building to the street edge at Peck Avenue. It creates a strong front to the campus in line with the south face of the library. This edge can be emphasized still further both aesthetically and functionally with a proposed future arcade, creating a welcoming entry to the campus and rain cover adjacent to a proposed drop-off at parking lot #2.

Internally, the new commons becomes the new center or heart of the campus, uniting major east and west circulation paths and bringing students together for campus-wide events.


EXISTING BUILDING
BOND BB PROJECT - RENOVATION
BOND BB PROJECT - NEW CONSTRUCTION
FUTURE PROJECT

AERIAL VIEW

OPEN SPACE AND CIRCULATION

The master plan creates a new commons at the heart of the campus at the site of the existing old administration building and the obsolete buildings ‘C’ and ‘D’. The commons is large enough for the entire student body to gather for school spirit activities and other events. In addition to this major open space, each of the program clusters will have their own dedicated open space, with a roof garden usable for science experiments on top of the math/science building.

The original main north/south axis through campus began at the entry drive parallel to what is now Artesia Boulevard and connected through the center of the fingers buildings, leading to the gym and track beyond. This remains the main axis, now linking the administration building, the library and the central commons with the finger buildings. Major cross axes occur at the north and south edges of the commons, continuing by the two sides of the cafeteria and on to the new math/science building. At the north end of the central north/south axis, Stadium Way remains the main path of access to the athletic facilities and to the new parking lot on Meadows Avenue.

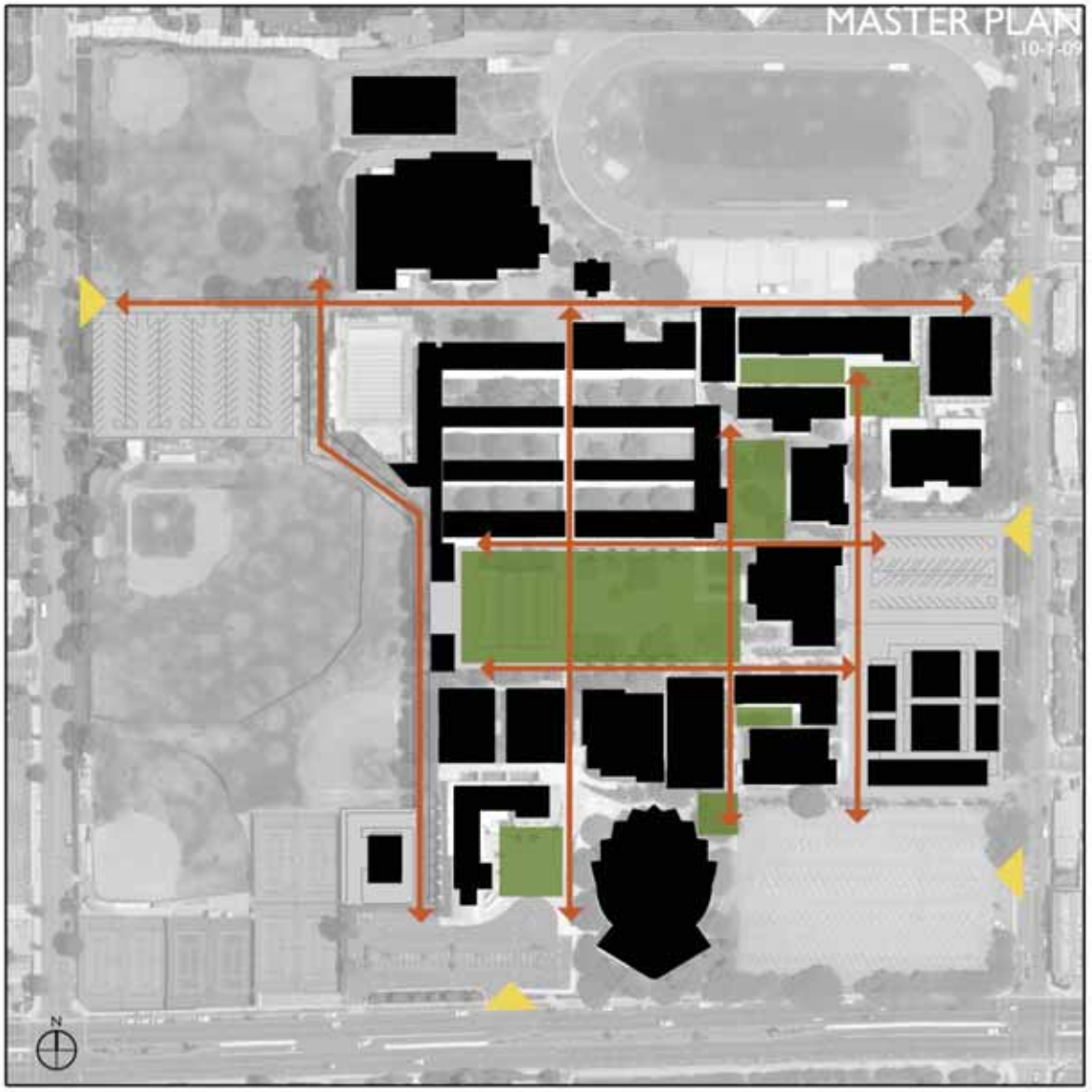
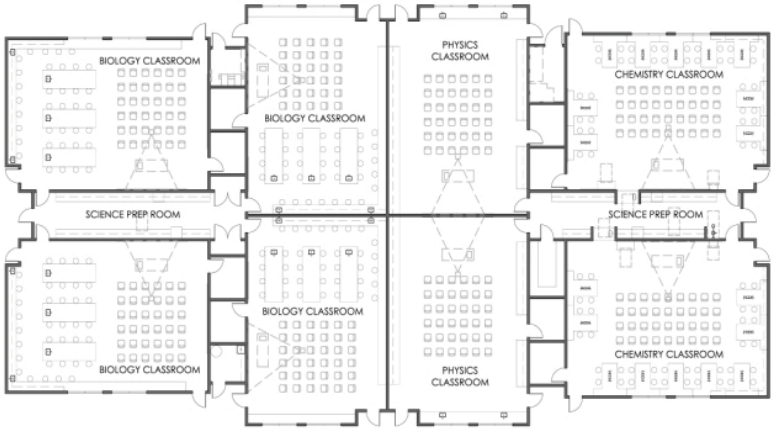


DIAGRAM OF CAMPUS OPEN SPACE AND CIRCULATION

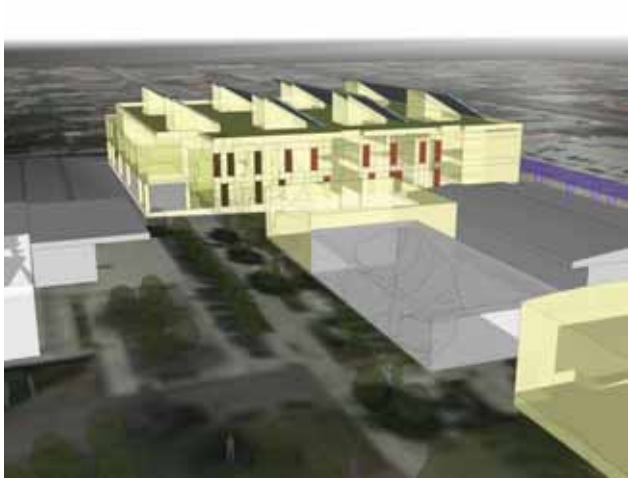
MASTER PLAN COMPONENTS

MATH/SCIENCE INSTRUCTIONAL BUILDING

- 13 science classroom/labs
- 1 demonstration science lab with enhanced facilities
- Common prep rooms
- Adequate area per student
- 16 math classrooms
- Sustainable design features as part of math/science curriculum



EXAMPLES OF TYPICAL LAB ENVIRONMENT AND CLUSTERING



View from the west

View from the southeast

AERIAL VIEWS – MATH/SCIENCE BUILDING

GENERAL ACADEMIC INSTRUCTIONAL BUILDINGS

- Renovation of existing ‘fingers’ buildings ‘A,’ ‘M,’ and ‘N’
- Renovation of general classroom buildings as required to cluster programs on campus and to improve ventilation
- New multi-purpose lecture hall for shared campus use

AERIAL VIEW – GENERAL ACADEMICS INSTRUCTIONAL BUILDINGS

ARTS FACILITIES

- Relocation of arts classrooms to create program clusters
- Improvements to heating, ventilation, and air conditioning as required

CAREER/TECHNICAL SKILLS CENTER

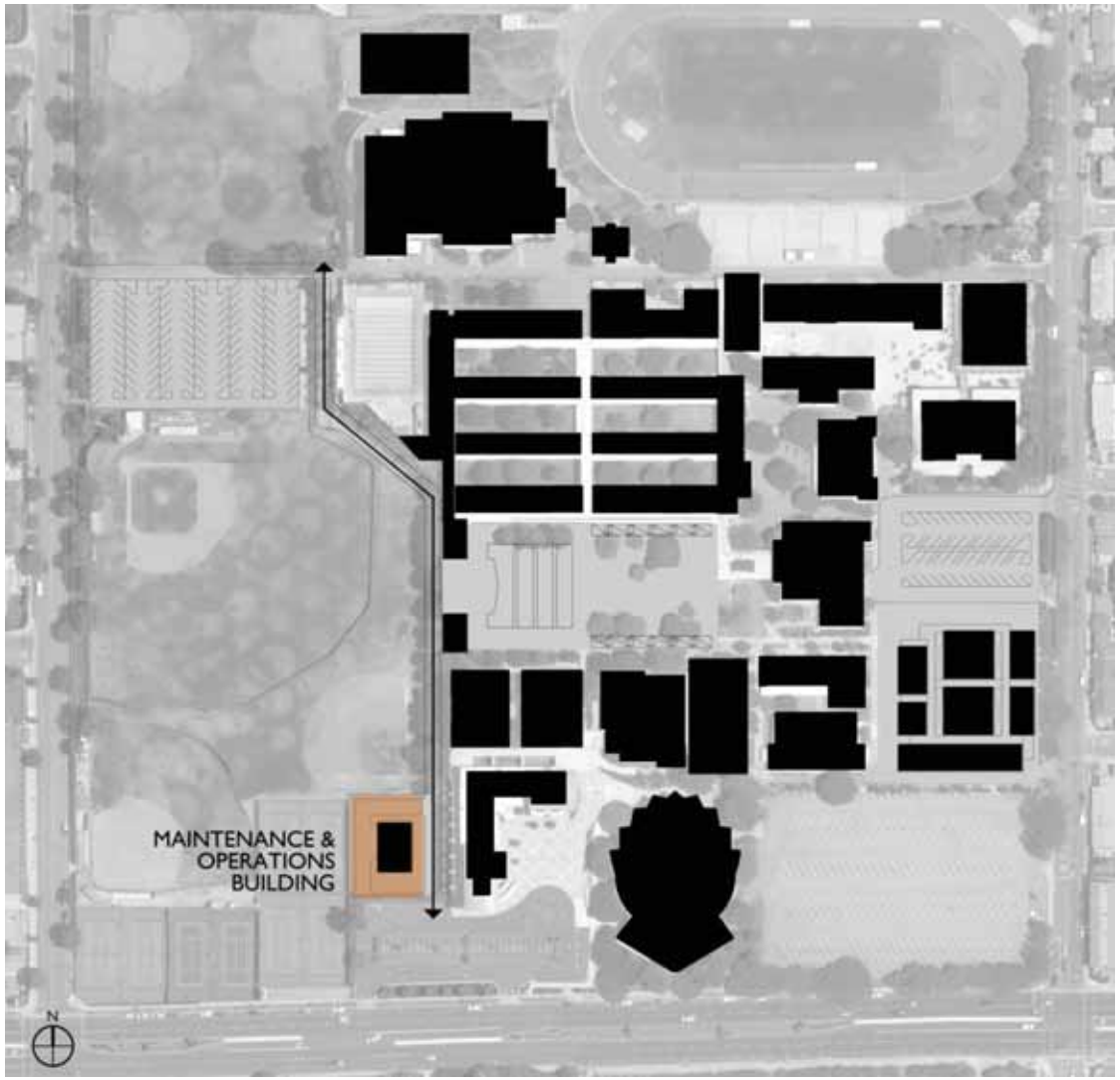
- Renovation of classroom #109 and maintenance/operations area to become center for computer CAD, game development, sheet metal work, CNC, and aviation-related programs

AERIAL VIEW – VISUAL ARTS + CAREER/TECHNICAL SKILLS CENTER

AERIAL VIEW – PERFORMING ARTS

MAINTENANCE & OPERATIONS FACILITY

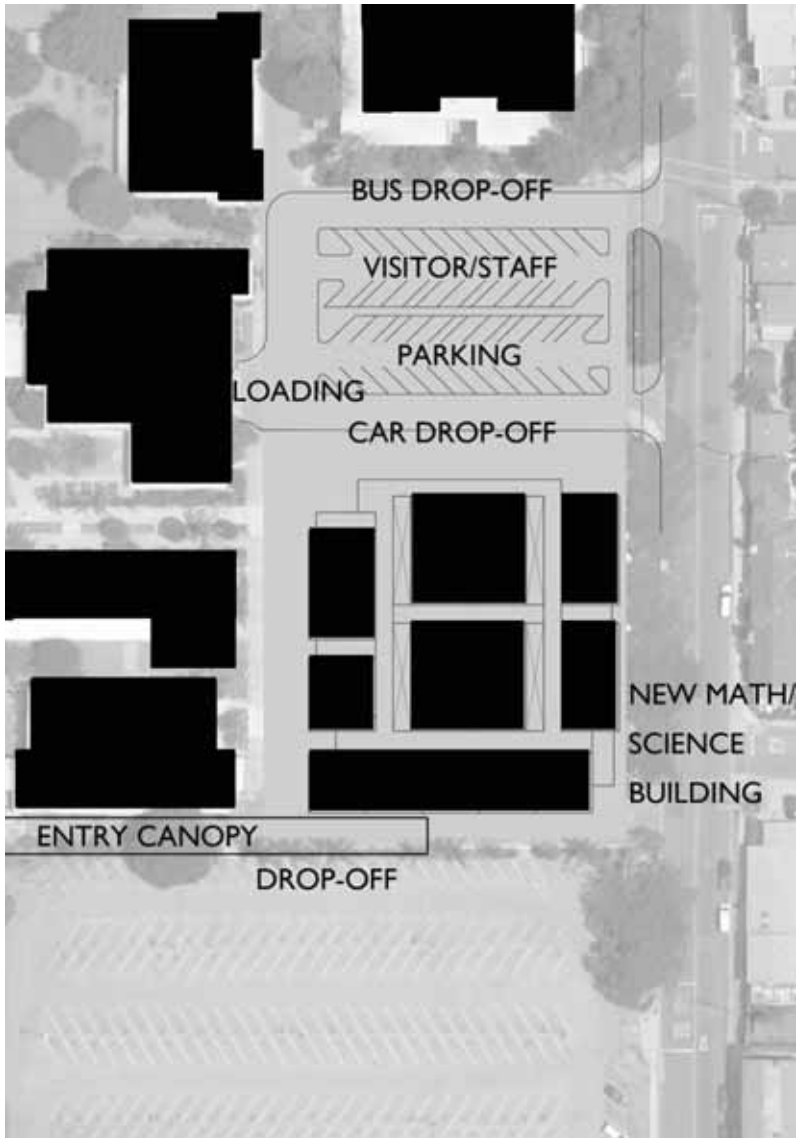
- Relocation of maintenance/operations facility to minimize disruption of athletics traffic along Stadium Way. The new location provides convenient access to the fields.



CAMPUS SITE PLAN WITH MAINTENANCE & OPERATIONS FACILITY

UPPER PECK DROP-OFF AND DELIVERY AREA

- Bus drop-off for learning center students
- Bus loading and unloading zone for athletes and for special events
- Student drop-off/pick-up by parents
- Cafeteria loading/deliveries
- ADA accessible parking
- Visitor/staff parking



ENLARGED SITE PLAN – UPPER PECK PARKING LOT

CAMPUS COMMONS

- Expanded commons created to accommodate school spirit activities for entire student body
- Existing mature trees maintained
- Abundant seating areas provided, both in sun and under shade canopies
- Stage with sloped seating area provided at west end of commons
- Student store and satellite food service frame the stage

FOOD SERVICE

- Satellite food service added west of old administration building
- Existing cafeteria renovated with improved acoustics, reduced solar gain through windows, and enhanced access to outdoors

STUDENT SUPPORT SERVICES

- Student activities classrooms and student store clustered together adjacent to new central commons
- Attendance office relocated adjacent to health office for improved accessibility to students

AERIAL VIEW – CAMPUS COMMONS

CAMPUS PARKING

The master plan for the campus is intended to provide an equal quantity of each type of parking space and of drop-off curb length as is provided on the existing campus. With the completion of the Bond BB projects, the parking spaces will be more equally distributed to the east and west sides of campus with access from Artesia Boulevard, Peck Avenue, and Meadows Avenue. In addition, more convenient parking and drop-off lanes will serve the athletic facilities from the Meadows Avenue parking lot.

PROPOSED PARKING COUNT

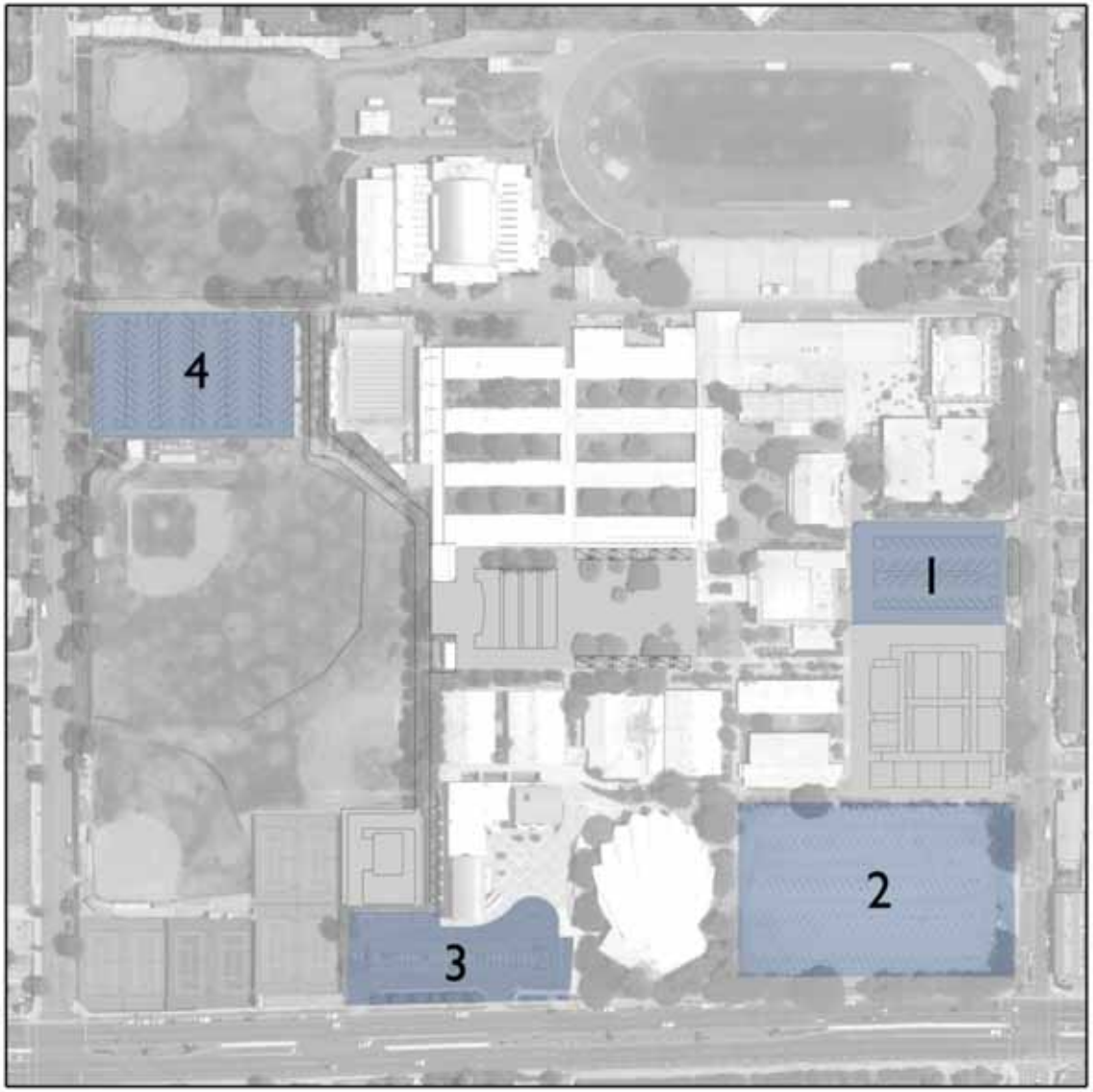
PARKING LOT #1
HC & VAN - 13
STANDARD - 28

PARKING LOT #2
STANDARD - 243

PARKING LOT #3
HC & VAN - 5
STANDARD - 65

PARKING LOT #4
HC & VAN - 5
STANDARD - 122

CAMPUS TOTAL
HC & VAN - 23
STANDARD - 458



PROPOSED CAMPUS PARKING

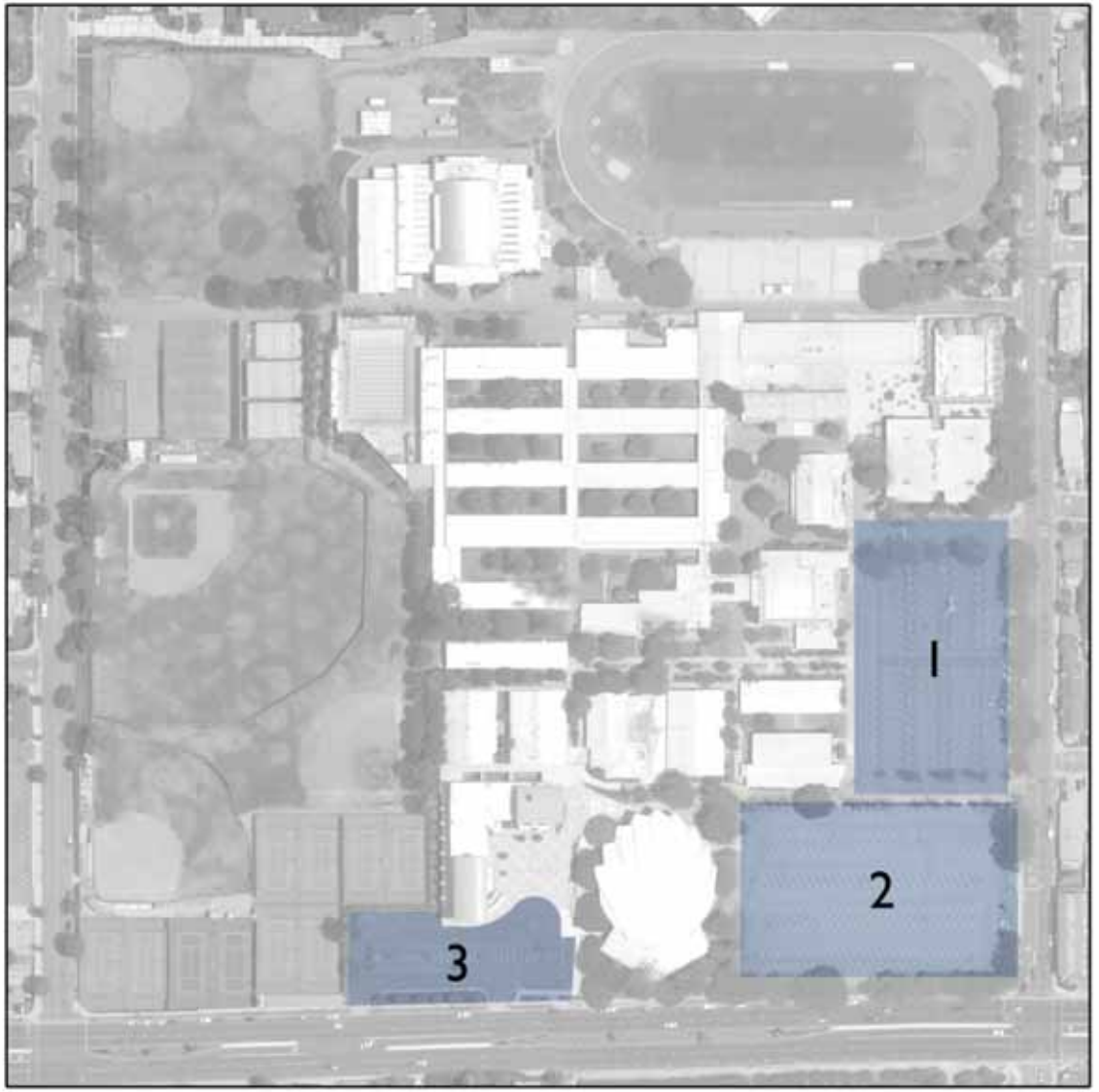
EXISTING PARKING COUNT

PARKING LOT #1
HC & VAN - 13
STANDARD - 141

PARKING LOT #2
STANDARD - 243

PARKING LOT #3
HC & VAN - 5
STANDARD - 65

CAMPUS TOTAL
HC & VAN - 18
STANDARD - 454



EXISTING CAMPUS PARKING

PHASING

A primary aim of the master plan study was to identify an efficient phasing strategy to minimize disruption to students and, if possible, to also minimize costs. Moving the major construction site from the center of the campus to the Peck Avenue upper parking lot became the preferred approach to achieving these aims.

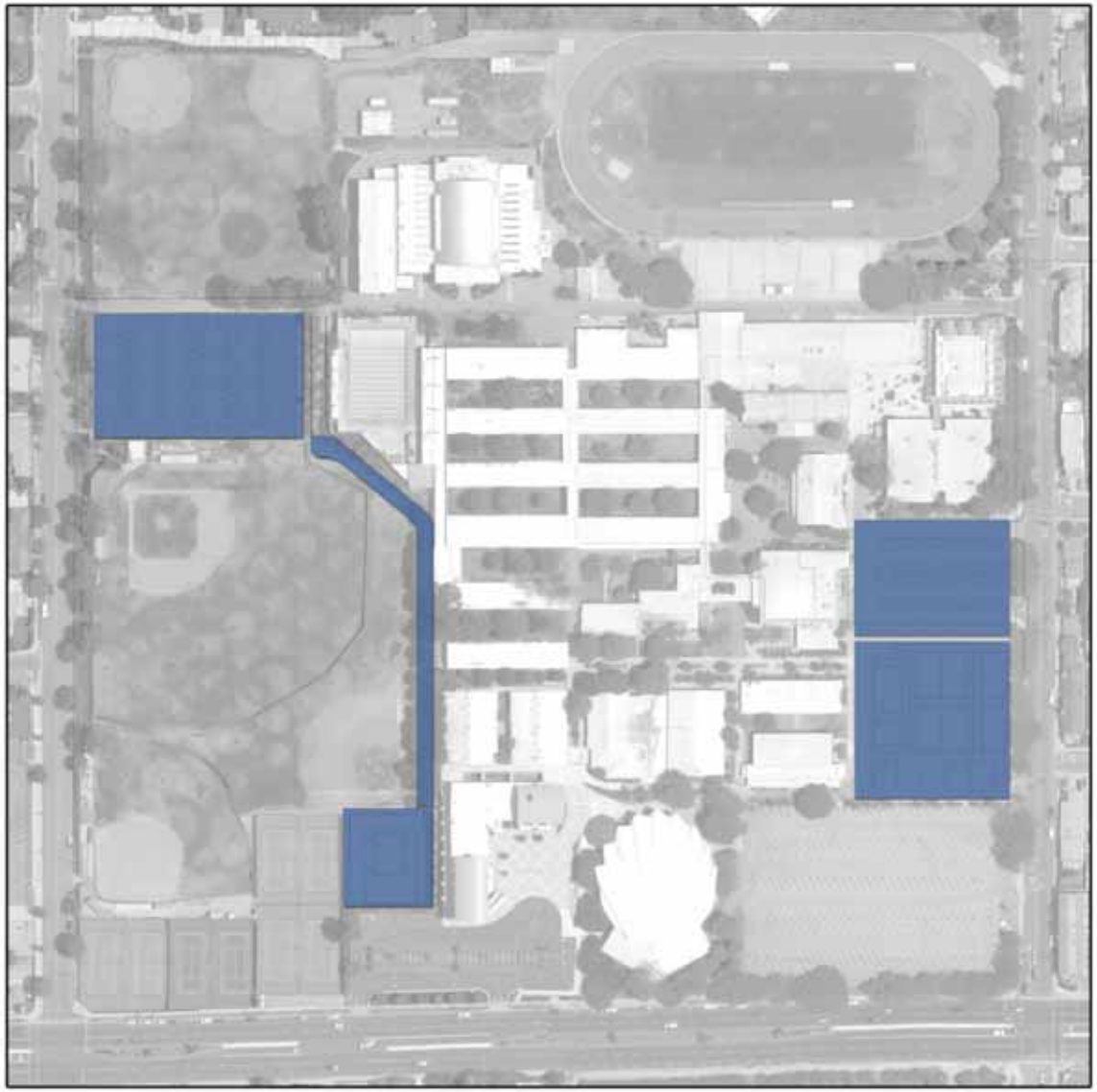
A step-by-step description of each of the construction phases follows.

PHASE 1

The first phase of construction involves removing three portable classrooms and some ancillary structures to create a parking lot off of Meadows Avenue, adjacent to the swimming pool. This will allow construction to start for the new math/science building in part of the existing upper parking lot off of Peck Avenue. The remainder of this parking lot will be re-striped for proper functionality as drop-off zone, delivery area, and visitor/staff parking.

Simultaneously, two tennis courts adjacent to the administration building will be removed to allow construction of the new maintenance and operations building. A new path and fire lane will be built connecting the maintenance and operations building with Stadium Way.

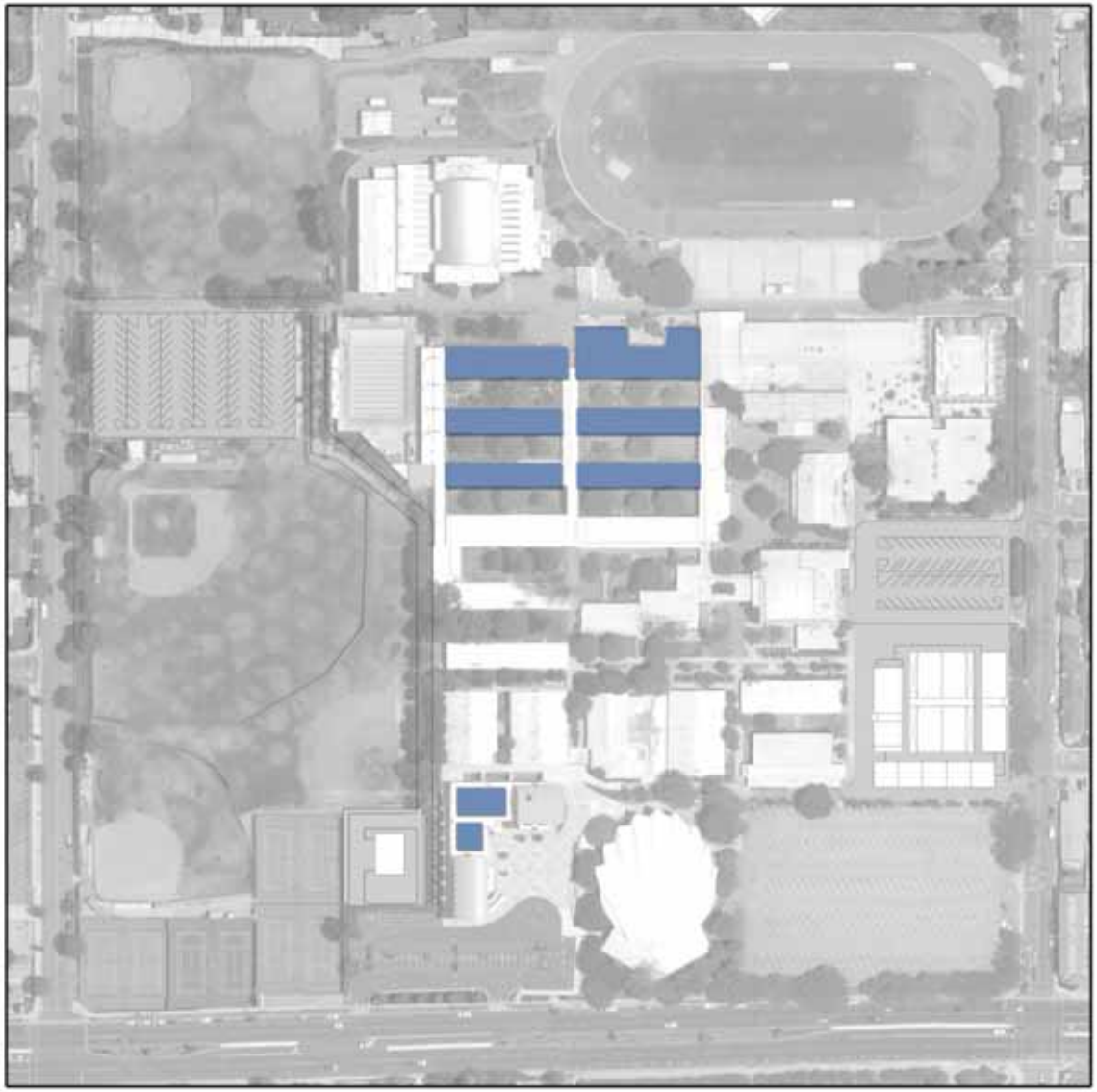
While these projects are underway, campus-wide and localized upgrades to electrical service and information technology infrastructure, will begin.



PHASE 1

PHASE 2

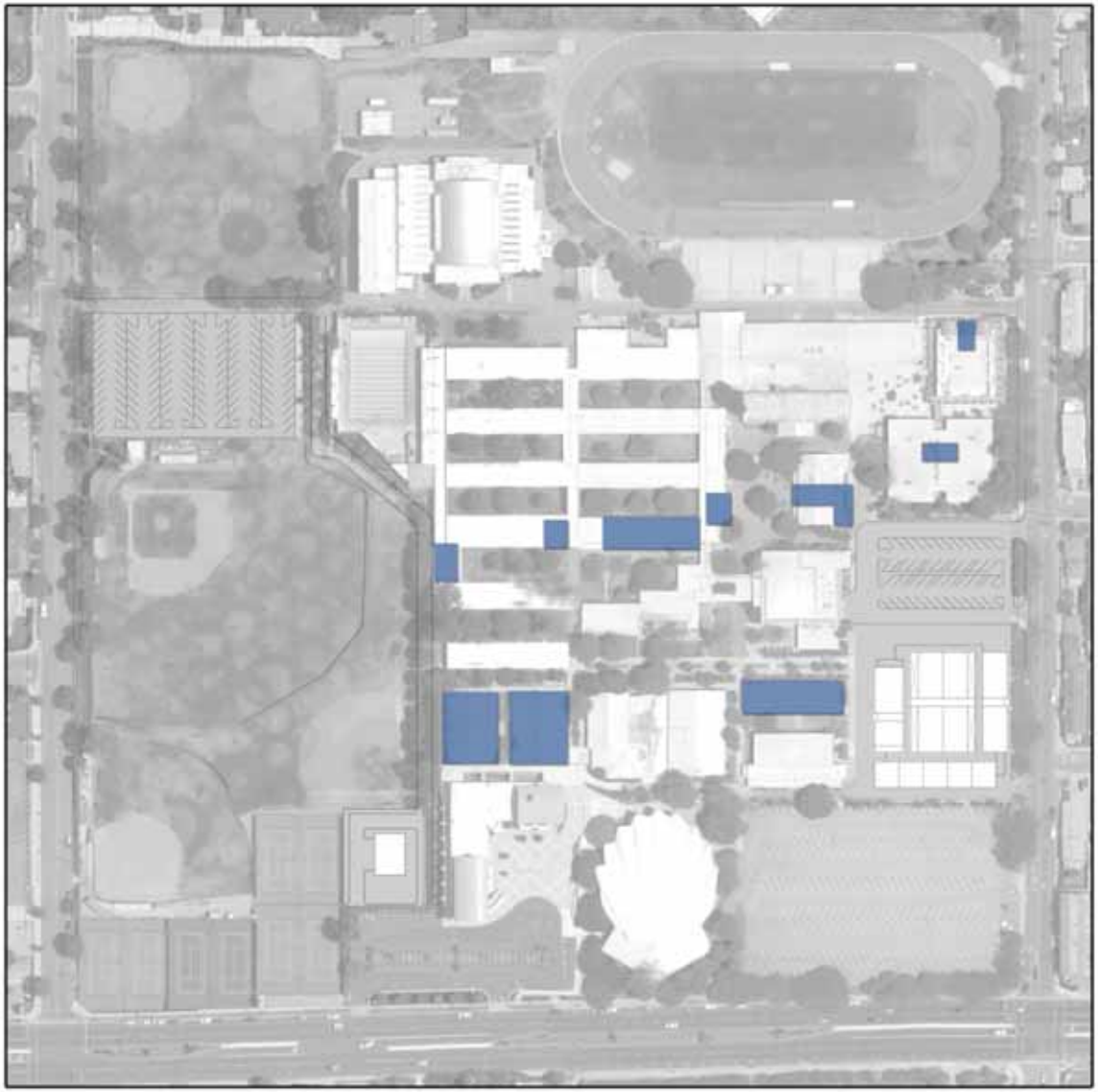
With the construction of the new math/science building completed, the north three wings of the existing fingers building A, M, and N and the classrooms in the administration building will be cleared out to begin their renovation and upgrades. These will then house English, foreign languages, learning center classes, and the adult education office.



PHASE 2

PHASE 3

The classrooms vacated by English, foreign languages, and the learning center will then be renovated and upgraded. Modernized classrooms will then be ready for additional English, foreign language and learning center classrooms, as well as for media arts, social science, the security and health offices, performing arts, the student store, and student activities classrooms.



PHASE 3

PHASE 4

With the relocation of existing classrooms completed, the demolition of the old administration building and of buildings ‘C’, ‘D’, and ‘K’ will take place. Subsequently the construction of the multipurpose hall, the new satellite food service, and the hardscape and landscape for the new commons will occur. At the same time, building ‘S’ will be renovated to become the new career technical center.

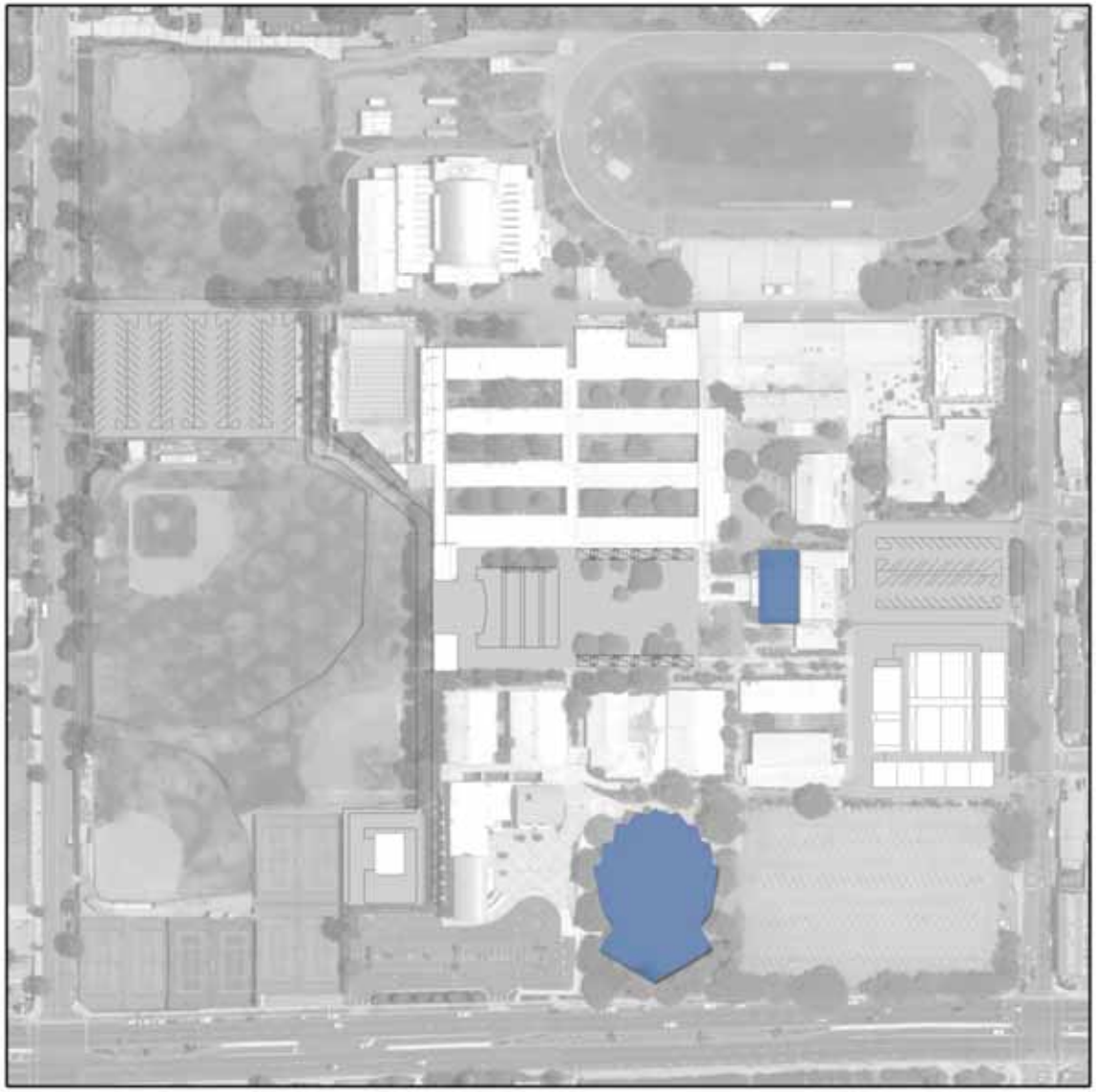
With all major new buildings completed, campus lighting, wayfinding signage, and perimeter fencing will be upgraded and enhanced.

PHASE 4

PHASE 5

Once the satellite food service is operational, the enhancements to the existing cafeteria can take place, completing the projects within the Bond BB scope.

Independent of this phasing sequence, and outside the Bond BB scope, the planned renovations and upgrades to the auditorium and auditorium lobby could occur at any time, depending on availability of sufficient construction staging area.



PHASE 5

FUTURE PHASES

Future projects being considered by the district and campus include a reorganization of the west campus parking and athletic facilities. By relocating the parking lot on Meadows Avenue south to the intersection with Artesia Boulevard, the campus will be able to better cluster the athletic facilities in a contiguous arrangement centered on the gym and lockers facility. A new traffic light may be required for the intersection of Meadows Avenue and Artesia Boulevard.

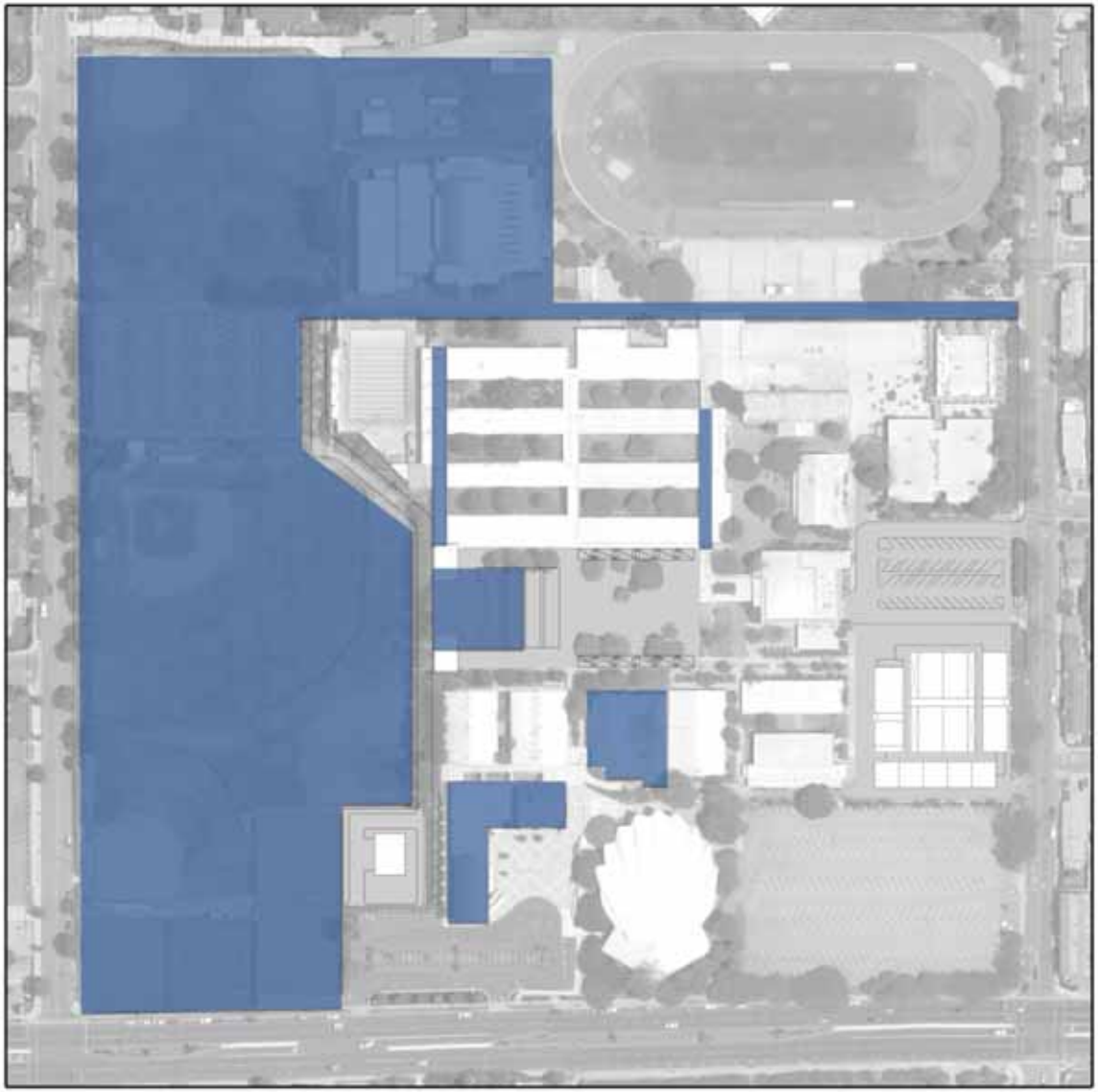
The tennis courts would move to the area then vacated west of the swimming pool. The main baseball field may be relocated to the field west of the gym, for closer proximity to the locker rooms.

Another goal for the athletics facilities is to modernize, reconfigure, and expand the existing gym, to provide better access for all students to the training room, and to provide upgrades and amenities appropriate for a revenue-producing facility. The underutilized area north of the gym is available for additional buildings, fields, or courts. The public address system for the gym will also be upgraded to facilitate home room communications.

A final component to the athletic facility upgrades would be to enhance Stadium Way with new paving, landscaping, lighting, and signage.

A smaller effort mentioned by some stakeholders concerned the need to improve the proximity to lockers for all students. An evaluation of existing locker locations and the suitability of these locations with respect to the master plan would be useful.

For the longer term, a concept being considered for the organization of the campus involves building a new media center to anchor the west end of the commons, allowing the student support services to move to a more central location in the existing library.



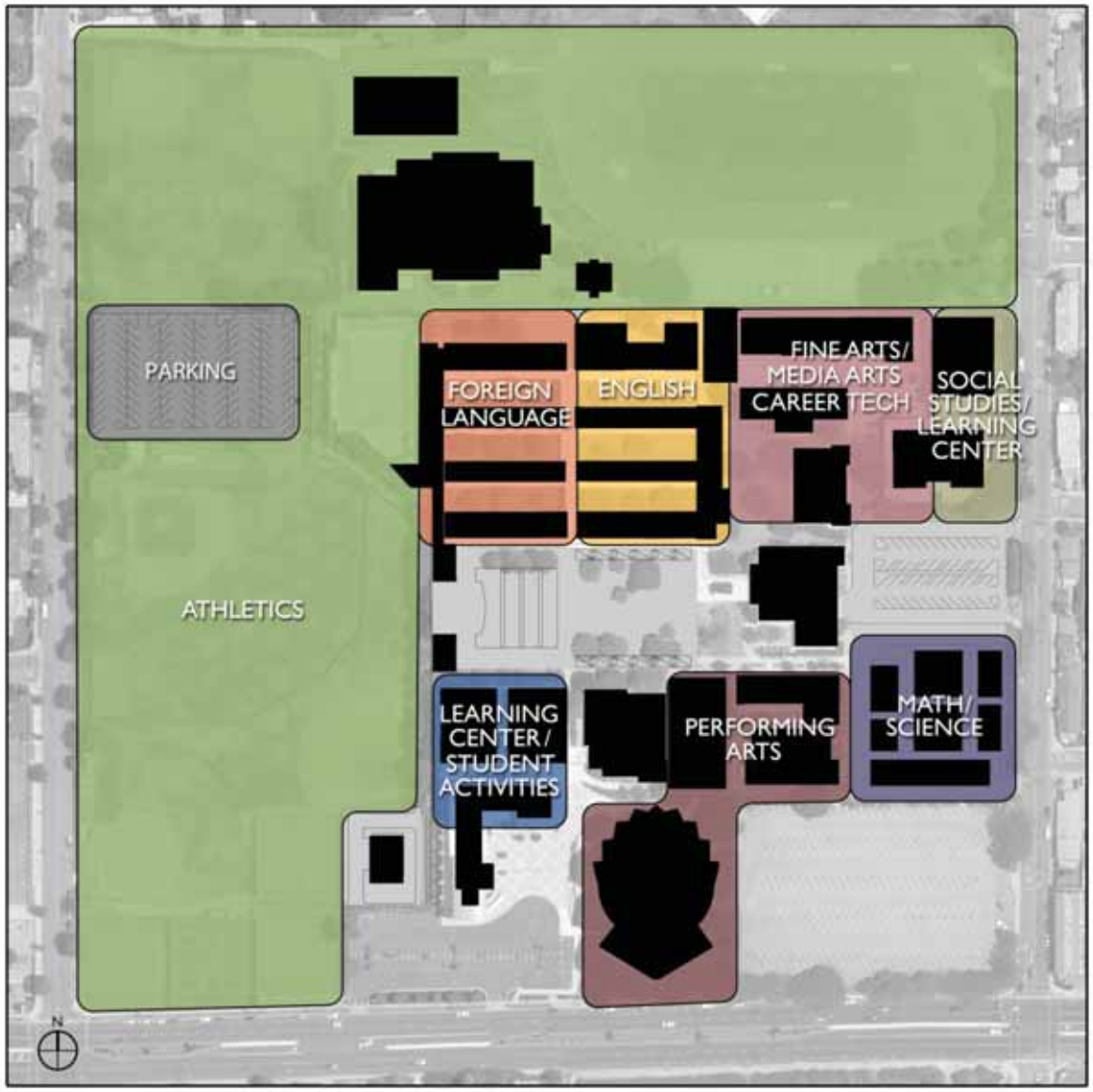
FUTURE PHASES

PROGRAM CLUSTERS

The existing program distribution across the campus poses challenges to students, teachers, and staff. For students, having student support services and food services in locations remote from many classrooms creates difficulties in completing required campus errands and eating lunch in the allocated time. These difficulties are exacerbated by the constricted circulation paths on campus, which are inadequate for the student population.

For many departments, classrooms are scattered across the campus, limiting the ability of teachers within the department to collaborate and share resources. Departments affected by this include the performing and media arts, English, foreign language, math, and science.

The proposed master plan allows for a more effective clustering of programs, creating specific nodes, usually with an identified open space, for each department.



PROGRAM CLUSTERS


PROGRAM DISTRIBUTION
5-26-09
ADMINISTRATION
FACULTY ROOMS
ENGLISH 20.5
FOREIGN LANGUAGE 15
LEARNING CENTER 11
SOCIAL STUDIES 13.5
COMPUTER LAB 3
MATH 16
SCIENCE 16
FINE ARTS 8
PERFORMING ARTS 6
MEDIA ARTS 5
WOOD SHOP/TECH 3
LIBRARY
CAREER CENTER
FOOD SERVICES
ATHLETICS
STUDENT ACTIVITIES 5
ADULT EDUCATION
N
HARLEY ELLIS DEVEREAUX

PROPOSED MASTER PLAN PROGRAM

Description	Qty.	Student Loading	sf/ Student	Area / Room	Total Area	Existing	Renovated	New
Science								
Biology Labs	6	36	52	1,872	11,232			6
Chemistry Labs	4	36	52	1,872	7,488			4
Physics/Earth Science Labs	2	36	52	1,872	3,744			2
Science Prep	6			200	1,200			6
Workroom	1			240	240			1
Storage	2			1,000	2,000			2
Super Lab	1	42	52	2,184	2,184			1
Growth Lab	1	36	52	1,872	1,872			1
Net Subtotal					**29,960**			
25% Construction, Support, Circulation					**7,490**			
Gross Subtotal					**37,450**			
Math								
Math Classrooms - Medium	14	36	26.67	960	13,442			14
Math Classrooms - Large	2	45	32	1,440	2,880			2
Storage	1			120	120			1
Workroom	1			150	150			1
Net Subtotal					**16,592**			
25% Construction, Support, Circulation					**4,148**			
Gross Subtotal					**20,740**			
English								
English Classrooms - Small	7	30	32	960	6,720		7	
English Classrooms - Medium	13	33	29.09	960	12,480		13	
English Classrooms - Large	1	45	32	1,440	1,440		1	
Workroom	1			240	240		1	
Storage	1			120	120		1	
Speech Room	1			960	960		1	
Multi-purpose Hall	1			6,500	6,500			1
Net Subtotal					**28,460**			
10% Construction, Support					**2,846**			
Gross Subtotal					**31,306**			

Foreign Language							
Foreign Lang. Classrooms - Small	4	31	30.96	960	3,839		4
Foreign Lang. Classrooms - Medium	9	35	27.43	960	8,640		9
Foreign Lang. Classrooms - Large	2	39	32	1,248	2,496		2
Foreign Lang. Computer Lab	1			1,200	1,200		1
Workroom	1			420	420		1
Storage	1			200	200		1
Net Subtotal					**16,795**		
10% Construction, Support					**1,680**		
Gross Subtotal					**18,475**		
Social Sciences							
Social Sciences Classrooms - Small	7	32	30	960	6,720	7	
Social Sciences Classrooms - Medium	6	37	25.94	960	5,759	6	
Social Studies Classrooms - Large	1	82	32	2,624	2,624	1	
Offices	8			120	960	8	
Net Subtotal					**16,063**		
10% Construction, Support					**1,606**		
Gross Subtotal					**17,669**		
Learning Center							
Classrooms - Building Y	2			1,400	2,800	2	
Classrooms - Building YY	3			925	2,775		3
Classrooms - Building YY	1			729	729		1
Classrooms - Admin Bldg	1			350	350	1	
Classrooms - Admin Bldg	1			540	540	1	
Classrooms - Admin Bldg	1			690	690	1	
Classrooms - Admin Bldg	1			750	750	1	
Classrooms - Admin Bldg	1			880	880	1	
Offices	3			130	390	3	
Office	1			180	180	1	
Net Subtotal					**10,084**		
10% Construction, Support					**1,008**		
Gross Subtotal					**11,092**		

Media Arts							
Yearbook	1	28	32	896	896		1
Journalism	1	56	32	1,792	1,792		1
Computer Lab	1	28	32	896	896		1
Video Production	1	23		2,317	2,317	1	
Storage	1			975	975		1
Net Subtotal					**6,876**		
10% Construction, Support					**688**		
Gross Subtotal					**7,564**		
Career Technical Center							
Computer lab	1			1,550	1,550		1
Sheet metal/CNC shop	1			2,490	2,490		1
Net Subtotal					**4,040**		
10% Construction, Support					**404**		
Gross Subtotal					**4,444**		
Fine Arts							
Ceramic Studio	1	34		2,911	2,911	1	
Storage	1			199	199	1	
Art	1	28		1,278	1,278	1	
Photography/CGI Lab	1	25		2,200	2,200		1
Fashion Arts	1	34		1,447	1,447	1	
Art	1	39		1,469	1,469	1	
Art History	1	38		925	925	1	
Storage	1			200	200	1	
Net Subtotal					**10,629**		
10% Construction, Support					**1,063**		
Gross Subtotal					**11,692**		

Performing Arts							
Auditorium	1			0		1	
Choir Room	1	40	1,000	1,000			1
Rehearsal Rooms	5		200	1,000		5	
Chorus Booster Club Storage	1		400	400		1	
Music Mac Lab	1		240	240		1	
String Orchestra	1	44	2,490	2,490			1
Drama/English	1	33	1,786	1,786		1	
Band	1	47	1,750	1,750		1	
Net Subtotal				**8,666**			
10% Construction, Support				**867**			
Gross Subtotal				**9,533**			
Woodshop							
Woodshop	2	29	2,058	4,116	1		
Classroom	1		120	120	1		
Storage	1		323	323	1		
Net Subtotal				**4,559**			
10% Construction, Support				**456**			
Gross Subtotal				**5,015**			
Library							
Foyer					1		
Office					1		
Reading Room					1		
Stacks					1		
Computer Lab					1		
Magazine Storage					1		
Workroom					1		
Textbook Storage					1		
Textbook Office					1		
Student Conference					1		
AV Equipment					1		
Electrical/Mechanical Equipment					2		
Restrooms					2		
Net Subtotal				**0**			
10% Construction, Support				**0**			
Gross Subtotal				**0**			

Computer Lab						
Net Subtotal				**0**		
10% Construction, Support				**0**		
Gross Subtotal				**0**		
Career Center						
Career Center	1		2,058	2,058	1	
Offices	1		120	120	1	
Conference Room	1		323	323	1	
Net Subtotal				**2,501**		
10% Construction, Support				**250**		
Gross Subtotal				**2,751**		
Student Activities						
ASB Finance	1		1,000	1,000	1	
Student Store	1		600	600		1
Dance/Drill Team	1		300	300		1
Cheer Office	1		200	200		1
ASB Government	1	28	1,300	1,300		1
Storage	1		240	240		1
Net Subtotal				**3,640**		
10% Construction, Support				**364**		
Gross Subtotal				**4,004**		
Athletics						
Athletic Training	1		567	567	1	
Football Weight Room	1		1,892	1,892	1	
Gym	1				1	
Health/Athletics	1	43	1,800	1,800	1	
Net Subtotal				**4,259**		
10% Construction, Support				**426**		
Gross Subtotal				**4,685**		

Adult Education						
ESL	8	1,247	9,976	0		
Adult Education Office	1	200	200	0		
Net Subtotal			**10,176**			
10% Construction, Support			**1,018**			
Gross Subtotal			**11,194**			
Food Service						
Cafeteria	2	5,000	10,000		1	
Food Service Kitchen	1	5,000	5,000	1		
Mustang Corral	1	2,000	2,000	1		
Food Service Offices	1	180	180		1	
Food Service Offices	1	150	150		1	
Food Service Offices	1	100	100		1	
Food Service Conference Room	1	180	180		1	
Gym Concession	1	500	500	1		
Satellite Café	1		2,000			1
Kiosks	5	25	125	5		
Net Subtotal			**20,235**			
10% Construction, Support			**2,024**			
Gross Subtotal			**22,259**			
Locker Halls						
East	1			1		
West	1			1		
Net Subtotal			**0**			
10% Construction, Support			**0**			
Gross Subtotal			**0**			
Faculty Rooms						
Faculty Dining	1	800	800	1		
Faculty Kitchen	1	200	200	1		
Faculty Restrooms	4	50	200	1		
Net Subtotal			**1,200**			
10% Construction, Support			**120**			
Gross Subtotal			**1,320**			

Administration						
Reception	2			1		
Attendance Office	1	500	500		1	
Principal's Office	1			1		
Principal's Restroom	1			1		
Conference Room	1			1		
Principal's Secretary	1			1		
Archive Room	1			1		
Storage	1			1		
Mail Room	1			1		
Office Supervisor	1			1		
Recorder	1			1		
Athletic Section	1			1		
Testing	1			1		
Test Storage	1			1		
Secretarial Open Office	1			1		
Workroom	1			1		
Secretarial Assistants	1			1		
Vice Principal's Office	3			1		
Guidance Open Office	1			1		
Education Advisor	6			1		
Conference Room	1			1		
Storage	3			1		
Staff Room	1			1		
Restrooms	2			1		
IT Room	1			1		
Electrical Room	1			1		
Janitor's Closet	1			1		
Health Office	1	500	500	1		
Security Office	2	120	240		1	
Net Subtotal			**1,240**			
10% Construction, Support			**124**			
Gross Subtotal			**1,364**			
Maintenance and Operations						
Maintenance and Operations	1	3,000	3,000			1
Net Subtotal			**3,000**			
10% Construction, Support			**300**			
Gross Subtotal			**3,300**			

VISION FOR SUSTAINABILITY

The vision for Mira Costa High School includes comprehensive strategies for sustainability to locate MBUSD on the forefront of green building. A focus on ensuring non-toxic environments, conserving resources, and reducing energy consumption will guide this vision. New buildings and major renovations will be designed and built to LEED Gold standards.

Specific strategies to be promoted include the following:

HEALTHY STUDENTS IN NON-TOXIC ENVIRONMENTS:

Community connectivity and traffic management:

Formalize a strategy to facilitate traffic to and from school: to and from home, lunch, and other activities. Options include links to public transit stops, preferential policies for bicycle riders and carpoolers, and school vanpools or shuttles.

This strategy reduces energy use, pollution, and ozone depletion while improving the quality of life in the neighborhood

Reduction of urban heat island effect:

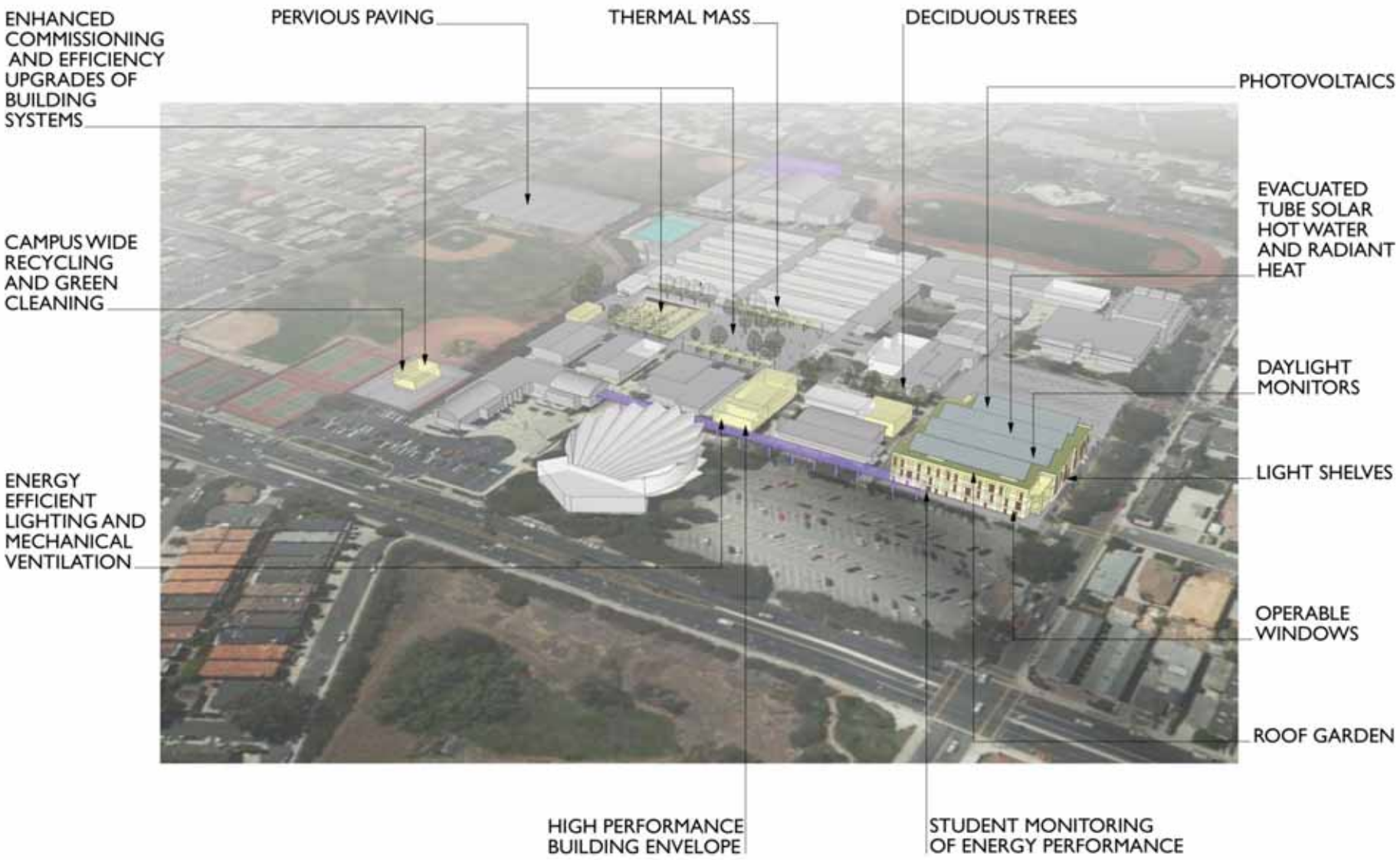
Pervious paving at parking lots and other hardscape areas
Trees
Green roofs

Edible schoolyard:

On a portion of under-utilized school property, propose to establish an organic kitchen garden run by the students and harvested for student use.

Reduction of ozone depletion:

Replace or retrofit any CFC-based refrigerants in existing base building HVAC&R and fire suppression systems.



VISION FOR SUSTAINABILITY

Improve indoor air quality by reducing exposure to toxins:

Specify low-emitting materials
Establish green housekeeping policies

RESOURCE CONSERVATION

Stormwater management:

Pervious paving
Water storage cisterns
Green roofs
Stormwater filters

Reduction of water use:

Reclaimed water for irrigation
Artificial turf rather than grass sports field
Low-flow toilets and showers
Re-use of campus graywater

Minimize unsustainable natural resource consumption:

Re-use existing buildings where feasible rather than demolishing and building anew
Specify recycled, renewable, regional materials, and certified sustainably harvested wood

NET ZERO ENERGY USE

The determination of energy reduction strategies will include the evaluation of the impacts of climate change on the local microclimate, with the potential for increasing needs for air conditioning.

Reduction of energy loads:

Daylighting:

- Light shelves at south-facing glazing combined with sloped ceilings at classrooms
- Solatube daylighting at interior spaces where feasible
- Daylighting monitors for classrooms and possibly corridors/common spaces

Cross-ventilation:

- Operable windows and vents for cross-ventilation for classrooms and common spaces
- Solar thermal chimneys to maximize natural ventilation
- Increased thermal mass through concrete floors and double layer of gypsum board to maximize benefits of night-flushing

High-performance building envelope:

- Green roof modules and/or cool roof
- High performance glazing with higher SHGC at south-facing glazing and lower SHGC elsewhere to maximize passive heating in winter while minimizing solar gain in summer
- High performance insulation; above roof deck min. R-25 c.i., attic min. R-38, walls: min. R-13 with R-3.8 c.i., heated slabs min. R-10 for 24 inches, install air ducts in conditioned space
- High performance airtight windows and doors
- Elimination of thermal bridges
- Airtight envelope construction details

Shading:

- Green screen shading at east-facing and west-facing walls
- Overhangs and horizontal shading at south-facing glazing
- Deciduous trees to provide building shading

Energy-efficient mechanical ventilation:

- Energy recovery ventilators for energy efficient outside air ventilation

- Exhaust fans controlled so as to not create negative pressure which leads to outside air infiltration
- Air ducts installed in conditioned space
- Local controllability of HVAC systems
- HVAC systems designed for efficiency in meeting both current loads and increased temperatures due to climate change

Energy-efficient lighting:

- LED exit signs
- Occupancy sensors and timeclocks for lighting
- Energy efficient lighting with carefully fine-tuned lighting power density
- Individual controllability of lighting

Efficient operation of all building systems:

- Enhanced commissioning of all building systems
- Install and implement building automation systems with trend logging feature, programmable thermostats, management of plug loads, 365-day time clocks for control of outdoor lighting, etc. and with holiday and vacation shutdown programs
- Establish a measurement and verification plan: benchmark the school with Energy Star Portfolio Manager, obtain and analyze load profiles, perform energy audits, use utility bill analysis software, submetering, power monitors, data loggers/recorders and infrared thermography to assess building performance over time (with potential involvement of students)
- Adopt a preventative maintenance program including systems and equipment inventory, inspection program, and preventative maintenance schedule
- Involve all users in the effort: establish and communicate the policy, provide energy efficiency training, assign responsibility for common areas, and establish a recognition program

Production of energy for remaining loads:

- Solar hot water for radiant heating and domestic hot water
- Photovoltaic panels
- Contracts for leasing green power

STRUCTURAL ENGINEERING PROGRAM NARRATIVE

BASIS OF DESIGN:

1. Code and Loading

   a. Governing Code: 2007 California Building Code and California Code of Regulations, Title 24

   b. Design Live Loads: (Table No. 1607A.1)

Classrooms	50 psf
Corridors	100 psf
Storage Room	125 psf

   c. Wind Design: (Section 1609A and ASCE 7 or IR 16-7)

Basic Wind Speed	85 mph

   d. Earthquake Design: (Section 1613A)

2. Material Properties and Stresses

   a. Concrete

Normal Weight	ASTM A 33	f'c = 3000 psi
Lightweight	ASTM A330	f'c = 3000 psi
Reinforcing Steel	ASTM A 615	Grades 40 & 60

   b. Masonry

Concrete Block	ASTM C-90 Grade N-1 Medium-weight
Mortar	Type S 1,800 psi
Grout	2,000 psi

   c. Structural Steel

Typical Framing	ASTM A 992	Fy = 50000 psi
High Strength Steel	ASTM A 572 (Grade 50)	Fy = 50000 psi
Fasteners	ASTM A 307 & A 325 SC	
Metal Deck	ASTM A 446 & A 525	Fy = 60000 psi
Structural Tubing	ASTM A 500, Grade B	Fy = 46000 psi
Structural Pipe	ASTM A 53, Grade B	Fy = 36000 psi

d. Wood

Sawn Lumber	Douglas-Fir No. 1 or better
Plywood	US Product Standard PS1-95 APA Rated Exposure I

Working stresses will conform to CBC maxima for all materials.

All allowable stresses specified for working stress design, and the footing capacities given in the Geotechnical report will be increased one-third when considering wind or earthquake forces acting alone or when combined with vertical loads.

3. Foundation Design

a. Geotechnical Investigation: Geotechnical Investigation Report is pending

b. Slabs on Grade: Average loading is anticipated for grade slabs. Standard deformed bars will be used to reinforce all such slabs. 5" thick with #4@24" on centers placed at center line of the slab.

4. Quality Control

a. Primary quality control for structural elements and will systems be performed by:

Independent testing laboratory of record employed by the District.

Geotechnical engineer of record.

b. Special inspections, sampling and testing per Title 24 California Code of Regulations will be required for:

Cast-in-place concrete
Concrete Block wall
Field welding of reinforcement
Structural steel welding
High-strength bolt installation
Stud welding
Metal deck welding

MATH/SCIENCE INSTRUCTIONAL BUILDING

- New Construction of 58,000 sf
- Building Classification – To be determined
- Foundation System - Conventional spread and continuous footings (Pending geotechnical report)
- Basic Structural Framing
  - Beams, girders and columns of structural steel. Standard rolled shapes will be used wherever possible.
  - Primary connections will be field bolted with high-tensile fasteners.
  - Roof assemblies will consist of rigid insulation over light gage, ribbed metal decking spanning 8' maximum supported by steel beams and girders.
  - Floor framing will consist of 3-1/4" light-weight concrete fill over 3" metal floor deck supported by steel beams and girders. The floor assembly will utilize headed studs welded to beams and girders to act as composite system.
  - Ground floor will be 5” concrete slab on grade over 2" sand over visqueen over 2" sand.
  - Exterior wall will be supported by the perimeter spandrel beams and columns. The perimeter beams, girders and brace frame members will be off-set from the exterior wall.

- The lateral load resisting system will be special concentric braced frame or buckling resisting braced frame.

MULTI-PURPOSE HALL

- New Construction of 6-8,000 sf
- Building Classification – To be determined
- Foundation System - Conventional spread and continuous footings (Pending geotechnical report)
- Basic Structural Framing
  - Building Frame System using structural steel or wood
  - Beams, girders and columns of structural steel. Standard rolled shapes will be used wherever possible.
  - Primary connections will be field bolted with high-tensile fasteners.
  - Roof assemblies will consist of rigid insulation over light gage, ribbed metal decking spanning 8' maximum supported by steel beams and girders.
  - Ground floor will be 5” concrete slab on grade over 2" sand over visqueen over 2" sand.
  - Exterior wall will be concrete block walls or wood stud wall with plywood sheathing acting as shear walls.

MODERNIZATION OF EXISTING BUILDINGS A, M & N

- The existing building is a series of one-story concrete structures with wood roof built in the 1950’s. The total area of the buildings is approximately 40,000 square feet

- The extent of modernization of each of the wings will vary, from minor renovations, to relocation of demising walls and complete gutting of interior, to new additions projecting from the existing shell.

- Our cursory observation of the building indicated that the existing concrete appeared to be in good condition and no visible structural distress was observed during our site visit. No sign of differential settlement of the foundation system or slab on grade was observed.

- The exterior walls are concrete walls acting as shear walls. In addition, every other interior wall between classrooms in Buildings M and N are also concrete shear walls. At Building A, the walls between classrooms are non-ductile concrete moment frames to resist lateral loads. There are two types of roof construction. One is 1" T&G diagonal wood sheathing supported by 2x14 wood rafters spaced at 16" on centers spanning full width of the building. The other roof framing consists of 2" T&G diagonal wood sheathing supported by open web steel joists spaced at 4' on centers and spanning the full width of the building.

- The proposed modernization of the finger building is feasible from structural point of view. The following structural retrofit work may be required:

    - Seismic upgrade of the existing building to current code force level including addition of new plywood sheathing over existing T&G diagonal sheathing and new anchor bolts at exterior and interior concrete walls to transfer diaphragm shear to shear walls.
    - The anchorage of concrete wall to roof diaphragm.
    - Additional framing members to support new mechanical equipment and possibly photovoltaic panels

SATELLITE FOOD SERVICE

- New Construction of 2,000 sf
- Building Classification – To be determined
- Foundation System - Conventional spread and continuous footings (Pending geotechnical report)
- Basic Structural Framing
    - Building framing system using structural steel or wood
    - Roof assemblies will consist of rigid insulation over light gage, ribbed metal decking spanning 8' maximum supported by steel beams and girders or wood framing.
    - Ground floor will be 5" concrete slab on grade over 2" sand over visqueen over 2" sand.
    - Exterior wall will be concrete block or wood stud wall with plywood sheathing acting as shear walls.

MAINTENANCE AND OPERATIONS BUILDING

- New Construction of 3,000 sf
- Building Classification – To be determined
- Foundation System - Conventional spread and continuous footings (Pending geotechnical report)
- Basic Structural Framing
    - Building framing system using structural steel or wood
    - Roof assemblies will consist of rigid insulation over light gage, ribbed metal decking spanning 8' maximum supported by steel beams and girders or wood framing.
    - Ground floor will be 5” concrete slab on grade over 2" sand over visqueen over 2" sand.
    - Exterior wall will be concrete block or wood stud wall with plywood sheathing acting as shear walls.

MECHANICAL SYSTEMS PROGRAM NARRATIVE

Mechanical System Narrative and Assessment of Existing Conditions

Math/ Science Instructional Building:

- This building will be a completely new structure with approximately 58,000 square feet of floor area to be used for classrooms, science, chemistry and computer labs. Because this building will have several lab classrooms with fume hoods, the building will have an airtight envelope construction to ensure balanced ventilation.
- An energy efficient mechanical constant volume heating and ventilation system is required per code as a minimum to be provided for the building. An air conditioning system is not required per code, but due to more extensive equipment heat loads in the building and increased outdoor temperature due to climate changes, we recommend that an a/c system be considered for the building.

General Academics Instructional Buildings:

- Existing buildings “A”, “E”, “F”, “M” and “N” all presently have gas fired forced air furnaces mounted on a platform inside an equipment closet with a short run of ducted supply air distribution into each classroom or occupied space for heating only and the use of opening operable windows for ventilation requirements.
- The recommendation for the renovation as proposed for these buildings would be to provide a new energy efficient mechanical heating and ventilation system for each classroom. The renovation of these buildings will include the restoration of the original ceiling height and operable windows, in order to restore the original cross-ventilation. New roof and wall insulation and high performance windows will minimize heat loss in winter and heat gain in summer, reducing loads for heating and cooling.
- For the new Multi-purpose Hall with approximately 6,000 to 8,000 square feet of floor area, we recommend an HVAC system in lieu of just a heating and ventilation system due to high occupancy heat gain loads within the building.

The HVAC system can utilize an energy saving economizer system during mild weather temperature conditions.

- Existing building “WW” (Administration/Classrooms) presently has two (2) types of mechanical systems installed in the building. The building is two stories high with the first floor and part of the second floor served by a roof mounted package DX cooling VAV unit with a ducted air distribution system to individual zone VAV terminal boxes with heating hot water re-heat coils for heating. The re-heat coils are served by a gas fired boiler located on the roof of the building and a circulating pump system distributing heating hot water to each coil. The classrooms located on the second floor are served by individual gas fired heating and ventilation units with a ducted air distribution system. It appears that the system units are not getting a sufficient amount of outside ventilation air into each classroom as required per code. We recommend a re-evaluation of the way the system was installed and modification of existing conditions as required.
- Existing buildings “Y” and “YY” are two stories high classroom buildings with each presently being served by individual gas fired heating and ventilation units located above each classroom ceiling with a ducted air distribution system. It appears that the system units are not getting a sufficient amount of outside ventilation air into each classroom as required per code. We recommend a re-evaluation of the way the system was installed and modification of existing conditions as required.
- Existing building “J” (Library) presently has three (3) floor mounted gas fired forced air furnace units, located in an mechanical equipment room, with ducted air distribution systems to the spaces within the building. This system is only providing heating and ventilation to the building. Due to high occupancy heat gain loads within the building, we recommend that an HVAC system for this building be considered.

Arts Facility Modernization/Relocation:

- Building “W” will be expanded to approximately 5,000 square feet of floor space for orchestra, choir, and rehearsal rooms, and a computer lab. Due to the internal heat-producing activities and high occupancy heat gain loads for the rooms, we would recommend a HVAC system be provided for this building in lieu of the minimum mechanical heating and ventilation system.

Career/Technical Skills Center:

- Existing building “S” presently has one (1) suspended exposed gas fired heating and ventilation unit with a ducted air distribution system. It appears that the system unit does not get sufficient amount of outside ventilation air into the space as required per code. Since the proposed use of this building as Career/Tech Skills Center will include computer CAD, CNC, aviation engineering, etc. will increase equipment heat gain loads, we would recommend the existing system be upgraded to an HVAC system.

Café’/Multi-purpose Addition:

- The new satellite food service building to be added on the campus will be provided with a new energy efficient mechanical heating and ventilation ducted air distribution system. Provide exhaust and make-up air systems for any ventilation hoods which may be required for the building food preparation area. Roof mounted exhaust fan will be provided for the two single-occupant toilet rooms to be located in the building.

Maintenance/Operations Building:

- The new maintenance/operation building will be a completely new structure with approximately 3,000 square feet of floor area. The building will be provided with a new energy efficient mechanical heating and ventilation ducted air distribution system.

ELECTRICAL SYSTEMS PROGRAM NARRATIVE

This electrical assessment report is based on the site visit done on Wednesday, September 23, 2009, the review of as-built drawings and the interview with building maintenance personnel.

Math/Science Instructional Building

- Electrical Service

  Southern California Edison (SCE), which provides electrical service to Mira Costa High School, has an exterior pad mount transformer located on the north-east side of the campus near the corner of South Peck Avenue and Ruhland Avenue. The transformer is identified as P5488113.

- Power Distribution System

  The main power distribution system consists of a 4,000A, 277/480V, 3-Phase, 4-Wire, NEMA-3R switchboard. The switchboard is identified as NMS and is manufactured by Square-D. Its location is on the north-east side of the campus near the corner of South Peck Avenue and Ruhland Avenue. Switchboard NMS consists of a pull-section, a meter section and two distribution sections. The SCE meter number is V349N-001796. A 12-month demand load reading report from the utility company is required in order to identify the capacity of the system.

- Estimated Load Calculation

  The estimated load for the new building is calculated as follows:

ESTIMATED LOAD CALCULATION							
	Lighting (W/sf)	Power (W/sf)	HVAC (W/sf)	Miscellaneous (W/sf)	Total (W/sf)	Total (kVA)	Total Amps (A) @ 480V
Math/Science Instructional Building (58,000 sf)	1.2	2.8	7	1	12	696	838

The estimated service required is of 1,200 Amps at 480V. This includes allowance for future growth. With the start of schematic design, overall loads for the campus will be evaluated. An assessment of potential impacts of climate change and any resulting future need for increased air conditioning capacity will be included in the evaluation of electricity loads.

If the capacity of the existing power distribution system is unable to support the load for the new building, there are two design options. Option #1 is to request SCE for a new service dedicated to the Math/Science Instructional Building. If this is not acceptable by SCE, option #2 is to upgrade the existing power distribution system.

- Lighting System

  The lighting design should consist of a high level of lighting system control by individual occupants and by groups in multi-occupant spaces. The design should integrate LED exit signs, energy efficient lamps, dual technology occupancy sensors, lighting control panels and individual lighting controls. In general, lighting should be fluorescent and should use T5 and T8 lamps with high CRI and 3500K˚ color temperature, and electronic ballasts with low (<10%) total harmonic distortion (THD).

  The lighting levels will be in accordance with the Illuminating Engineering Society (IES) recommendations and with the CEC Title 24 requirements.

- Telecommunications System

The communication infrastructure is owned by Verizon and leased by AT&T. AT&T is the service provider. The incoming service pole location is in the corner of South Peck Avenue and Nelson Avenue on the east side of the campus. The existing Main Distribution Frame, MDF, is located adjacent to the Electrical Room in the East Utility Corridor of Building M. The telecommunication distribution system consists of fiber-optic cable between MDF and Intermediate Distribution Frames (IDFs) located in each building, and CAT 5 cable between IDFs and terminal stations.

The communication infrastructure should be upgraded to 100GB fiber-optic network. This will accommodate for streaming video and wireless access.

- Public Address System

  The new building public address system should be integrated into the campus wide main public address system.

- Fire Alarm System

  A fully automatic addressable multiprocessor base fire detection system should be provided and should be interconnected to the campus wide Main Fire Alarm System Control Panel (FACP) located in the Electrical Room A129 of the Administration Building via a network loop connection.

  The existing fire alarm system should be extended to the new building, and should be modified in the existing areas to be renovated.

- Energy Conservation

  For energy conservation the following items should be considered:

  - Title 24, Part 1, Energy Building Regulations, as a guideline
  - Lower wattage T5 and T8 lamps
  - Dual technology occupancy sensors for lighting fixture controls
  - Electronic ballast with 10% or less total harmonic distortion (THD)

- Dual switching, dimming systems and day lighting control systems where appropriate

- Sustainable Design

  Design on-site renewable energy system; photovoltaic system on roof to offset building energy usage and cost.

General Academics Instructional Buildings

- New Lighting System for Existing "Finger" Buildings A, M and N

  The lighting design should consist of a high level of lighting system control by individual occupants and by groups in multi-occupant spaces. The design should integrate LED exit signs, energy efficient lamps, dual technology occupancy sensors, lighting control panels and individual lighting controls. In general, lighting should be fluorescent and should use T5 and T8 lamps with high CRI and 3500K˚ color temperature, and electronic ballasts with low (<10%) total harmonic distortion (THD).

  The lighting levels will be in accordance with the Illuminating Engineering Society (IES) recommendations and with the CEC Title 24 requirements.

- Electrical for New Multi-purpose Hall

  Provide electrical power, lighting, telecommunication, public address and fire alarm systems.

- Telecommunication System Upgrade Campus-Wide

  Upgrade should consist of new IT infrastructure with 100GB fiber-optic network accommodating streaming video and wireless access.

- Electrical Power Provision for Buildings E, F, WW, Y, YY and possibly J

  Provide power provision for new HVAC system.

Arts Facility Modernization/Relocation

- New Lighting System for Existing Building W Classrooms 3 thru 6

  The design should integrate LED exit signs, energy efficient lamps, dual technology occupancy sensors, lighting control panels and individual lighting controls. In general, lighting should be fluorescent and should use T5 and T8 lamps with high CRI and 3500K˚ color temperature, and electronic ballasts with low (<10%) total harmonic distortion (THD).

- Electrical for New Addition to Building W for Orchestra and Choir

  Provide electrical power, lighting, telecommunication, public address and fire alarm systems.

- New Lighting System for Existing Building YY Classrooms 121, 122, 124 and 125

  The design should integrate LED exit signs, energy efficient lamps, dual technology occupancy sensors, lighting control panels and individual lighting controls. In general, lighting should be fluorescent and should use T5 and T8 lamps with high CRI and 3500K˚ color temperature, and electronic ballasts with low (<10%) total harmonic distortion (THD).

- New Lighting System for Existing Building U Fine Arts classrooms 101 and 102

  The design should integrate LED exit signs, energy efficient lamps, dual technology occupancy sensors, lighting control panels and individual lighting controls. In general, lighting should be fluorescent and should use T5 and T8 lamps with high CRI and 3500K˚ color temperature, and electronic ballasts with low (<10%) total harmonic distortion (THD).

Career/Technical Skills Center

- Electrical for Existing Building S Room 109 and Maintenance/Operations

The design should integrate LED exit signs, energy efficient lamps, dual technology occupancy sensors, lighting control panels and individual lighting controls. In general, lighting should be fluorescent and should use T5 and T8 lamps with high CRI and 3500K˚ color temperature, and electronic ballasts with low (<10%) total harmonic distortion (THD).

Provide power and telecommunication provisions for computer CAD, game development, sheet metal work, CNC, aviation engineering, etc. and power provision for new HVAC system.

Student Support Facility

- New Lighting System for Existing Buildings B, F and U

  The design should integrate LED exit signs, energy efficient lamps, dual technology occupancy sensors, lighting control panels and individual lighting controls. In general, lighting should be fluorescent and should use T5 and T8 lamps with high CRI and 3500K˚ color temperature, and electronic ballasts with low (<10%) total harmonic distortion (THD).

- Demolition of Electrical Systems of Old Administration Building, and Buildings C and D

  Power, telecommunication and fire alarm conduits to buildings to be demolished should be cap in ground where feasible.

- Lighting System for New Hardscape, Landscape, Stage and Seating Area, and Shade/Rain Canopies at New Commons

  Exterior lighting should be controlled by time-clocks and photocells.

Safety

New exterior lighting should integrate energy efficient lamps and should be controlled by time-clocks and photocells.

Enhance Café/Multi-purpose Addition

- New Lighting for Existing Cafeteria

  The design should integrate LED exit signs, energy efficient lamps, dual technology occupancy sensors, lighting control panels and individual lighting controls. In general, lighting should be fluorescent and should use T5 and T8 lamps with high CRI and 3500K˚ color temperature, and electronic ballasts with low (<10%) total harmonic distortion (THD).

- Electrical for New Satellite Café at End of New West Commons, Including Two Single-Occupant Toilet Rooms

  Provide electrical power, lighting, telecommunication, public address and fire alarm systems.

Relocate Maintenance/Operations Building

- New Electrical for New Building West of Building WW

  Provide electrical power, lighting, telecommunication, public address and fire alarm systems.

Furniture and Equipment

New public address system wiring for Gym.

PLUMBING SYSTEMS PROGRAM NARRATIVE

STANDARD REQUIREMENTS FOR NEW AND MODERNIZATION PROJECTS

The standard plumbing requirements for all projects, both new and modernization, are listed below. Specific requirements for individual projects follow.

Plumbing Systems and Utility Sources

Sustainability is the underlying philosophy for both new and modernization projects on campus. Architectural and engineering systems are integrated into the design and make for the best use of this site to implement conservation in energy, water and material resources which promotes the well being of students and staff. LEED fundamentals will be considered and adopted for major building systems and strategies. Each plumbing system will be implemented to accommodate the criteria set in the programming of the math/science instructional building. This includes practices that take into consideration, the noise reduction as well as efficiencies in system selection to meet local agency and LEED requirements and approvals.

The sanitary sewer proposal involves standard building drain lines, from designated locations with-in the building footprint to a point of connection, (not yet designated) at the existing campus main which was part of the 2002 infrastructure replacement. The piping material for the conventional building drainage system will consist of standard weight no-hub cast iron piping with stainless steel coupling above grade and hub and spigot or cast iron M.G. couplings below grade.

The domestic water supply system will surpass standard water conservation practices and meet local agency requirements to supply the building from its designated location to a point of connection, (not yet designated) at the existing campus main which was part of the 2002 infrastructure replacement. The existing 6” campus main loops around the campus to provide a connection point for each building. The piping material will consist of copper water tube, type K below grade and type L above grade. The on-site domestic water supply line beyond the 5’-0” point will consist of Polyethylene (PE) C901 or Poly (Vinyl Chloride)(PVC) C900; Schedule 40.

The natural gas distribution involves a standard natural gas system supplied to each building from its designated location to a point of connection, (not yet designated) at

the existing campus main which was part of the 2002 infrastructure replacement. The piping material will consist of black steel schedule 40 on the interior to a 5'-0" line outside of the building and polyethylene (P.E.) piping beyond the 5'-0" line to the existing gas meter, including a seismic shut-off valve at the building. Plans will indicate the contractor's responsibility to coordinate with the gas company to determine replacement of the meter to accommodate the added gas load.

The building plumbing systems will be designed and sized in accordance with the 2007 California Plumbing Code.

Domestic Cold Water System

Domestic cold water will be supplied to all plumbing fixtures, including water closets, urinals, lavatories, drinking fountains, service sinks/mop receptors, hose bibbs, and mechanical equipment where required.

Piping will be sized to maintain a minimum pressure of 25 psig at the furthest flush valve. Water velocity in the distribution system piping will not exceed 8 feet per second and provisions will be made to reduce any water hammer with water hammer arresters.

Vacuum breakers will be provided for all domestic water supplying fixtures stipulated by code.

All cold water piping supplying mechanical equipment will be provided with reduced backflow preventers.

Domestic water piping located within building will be type "L" copper for above ground use & type "K" for below grade. The interior cold water distribution systems will be insulated with thermal insulation to include vapor barrier, with 1" fiberglass for pipes up to 4".

Prior to use, the distribution system will be sanitized with a hypochlorite solution.

All valves 4 inches and smaller will be ball type. All valves over 4 inches size will be gate or butterfly type.

Domestic Hot Water System

Domestic hot water will be supplied to staff countertop sinks, lavatories, mop receptors, and other specific equipment where required. Student sinks, lavatories etc. shall not be furnished with hot water.

Gas-fired commercial water heaters shall generate domestic hot water with required storage. An inline recirculating pump will be provided. The hot water system will loop through the building where required. Water heaters shall be installed in allocated janitor closets or designated mechanical rooms.

Piping will be designed for a maximum velocity of 5 feet per second.

All valves 4 inches and smaller will be ball type. All valves over 4 inches size will be gate or butterfly type.

All hot water and hot water return piping will be Type L copper. The entire distribution system will be insulated. Thermal insulation for hot water shall be 1" fiberglass for pipes 1.5" and smaller and 1.5" fiberglass for pipes 2" and larger.

Prior to use, the distribution system will be sanitized with a hypochlorite solution.

Natural Gas System

The natural gas system to the building will serve the roof top units, the domestic water heaters, and the heating equipment where required.

Piping will be black steel schedule 40 with threaded joints for 2" and smaller and butt weld for pipes 2.5" and larger.

Sanitary Waste System

Sanitary waste and vent system will be provided for all plumbing fixtures, including water closets, urinals, lavatories, drinking fountains, mop receptors, floor drains and floor sinks for the mechanical equipment drains in mechanical areas as required.

All sanitary drainage, waste and vent piping will be located either below floor slabs, ceiling spaces, through pipe chases, or in wall cavities as required. Complete accessibility will be available to all cleanouts in the piping system.

All sanitary waste will be collected into a gravity main within the building and connect to the site sanitary sewer system.

Above ground sanitary piping will be service weight no-hub cast iron with neoprene gaskets and stainless couplings. Below ground sanitary waste piping will be cast iron service weight hub and spigot pipe with neoprene gasket joints or no-hub and M.G. couplings.

Roof Drainage/Storm water

Above ground storm drainage piping will be service weight no-hub cast iron with neoprene gaskets and stainless couplings. Below ground storm drainage piping will be cast iron service weight hub and spigot pipe with neoprene gasket joints or no-hubs and M.G. couplings.

Plumbing Fixtures and Specialties

Plumbing fixtures and specialties will be supplied in sufficient quantity to meet or exceed the requirements of the current building code.

- Water closet – wall-hung or floor mounted vitreous china siphon jet type with sensor operated, battery type flush valves, 1.28 gpf. American Standard or Kohler with Sloan flush valves.
- Urinals - wall-hung type vitreous china siphon jet type with sensor operated, battery type flush valves, .125 gpf (1 pint). American Standard or Kohler with Sloan flush valves.
- Lavatories – wall hung sensor operated battery type, with restricted flow faucets at .5gpm. American Standard or Kohler with Chicago faucets.
- Mop receptors - Floor mounted with hose-end type faucet, complete with vacuum breaker and 5’-0” hose. Kohler with Chicago faucet.
- Sinks shall be counter mounted, stainless steel with restricted flow faucets at 1.5gpm. Haws or Just with Chicago faucet.

- Laboratory sink (where occurs) – epoxy resin drop-in sinks including student accessible sinks. Furnished with 1.5gpm faucets and natural gas outlets.
- Drinking Fountains – dual height, enameled cast iron wall-hung, barrier-free. Haws or approved equal.
- Water hammer arrestors - Will be provided to absorb hydrostatic shock pressure in the domestic water piping systems. P.P.P. or approved equal.
- Hose bibbs will be provided around each building as required with vacuum breakers. Acorn or approved equal.

Fire Suppression System - Fire Protection Design Overview

The source for the automatic fire sprinkler system will come from the existing campus dedicated fire water looped system.

The building will be fully protected with a wet pipe automatic fire protection system with automatic sprinkler risers, hydraulically calculated at 0.10 – 0.19 GPM/SF density coverage over the most remote 1,500 SF of application, plus 100 gpm hose allowance or as designated by NFPA 13 and local authorities having jurisdiction. This density will be confirmed with the owner's insurance underwriter and/or local authorities having jurisdiction.

All fire protection equipment, devices, and materials will be Underwriters Laboratories (UL) listed and Factory Mutual (FM) approved for fire protection service as applicable, the owner's insurance underwriter would have to confirm.

Water pressure/flow tests at the campus water tie-in point are required to design the fire protection system. At this point, we assume that no fire pump will be required for any new building. This will be verified based on the pressure/flow tests results.

All fire protection requirements will be evaluated and determined by the authorities having jurisdiction.

ADDITIONAL STANDARD REQUIREMENTS FOR ALL NEW CONSTRUCTION

Space planning issues

Building floor space will be allocated for the utility service entrances, such as the domestic water, fire supply and natural gas piping. Building floor space must be allocated for the automatic sprinkler risers (ASR) and water heaters.

Roof Drainage/Storm water

The roof drainage/storm water proposal involves a standard system design to drain all roof drains from their designated locations to 5'-0" outside of the building. The piping material will consist of no-hub cast iron piping with stainless steel coupling above grade and cast iron M.G. couplings below grade. Civil plans will indicate the storm water connection to the existing on-site storm water system as required to meet local agency and LEED requirements.

A Storm drainage system will be provided for all roof drains as required.

All storm drainage piping will be located either below floor slabs, ceiling spaces, through pipe chases, or in wall cavities as required. Complete accessibility will be available to all cleanouts in the piping system.

All storm drainage will be collected into a gravity main within the building and connect to the site storm drainage system.

Fire Suppression System - Fire Protection Design Overview

The fire protection proposal involves a fully automatic fire sprinkler system compiling with local jurisdiction requirements including the requirements of NFPA 13 and NFPA 24. The dedicated fire water supply to the building will be furnished from the existing campus looped system which was part of the 2002 infrastructure replacement. The existing 8 inch campus main loops from Peck Ave across to Meadows Ave. providing connection points to each building. The automatic sprinkler riser (ASR), service, location, performance guidelines and specifications will be furnished for a deferred, design built sprinkler system. The piping material will consist of schedule 40 black

seamless or welded steel above grade (Inside of building) and AWWA grey or ductile iron or PVC C900 outside of building.

The buildings will be fully protected with a wet pipe automatic fire protection system with automatic sprinkler risers, hydraulically calculated at 0.10 – 0.19 GPM/SF density coverage over the most remote 1,500 SF of application, plus 100 gpm hose allowance or as designated by NFPA 13 and local authorities having jurisdiction. This density will be confirmed with the owner's insurance underwriter and/or local authorities having jurisdiction.

All fire protection equipment, devices, and materials will be Underwriters Laboratories (UL) listed and Factory Mutual (FM) approved for fire protection service as applicable, the owner's insurance underwriter would have to confirm.

Water pressure/flow tests at the campus water tie-in point are required to design the fire protection system. At this point, we assume that no fire pump will be required for any new building. This will be verified based on the pressure/flow tests results.

MATH/SCIENCE INSTRUCTIONAL BUILDING

Plumbing Systems and Utility Sources

The existing 8 inch campus sanitary sewer main runs north to south along the proposed build which provides connection points. The science classrooms will include the means to drain and neutralize the academic laboratory drainage system. The piping material for the laboratory drainage system will consist of polypropylene pipe (PP) (for below grade use); flame retardant in accordance with ASTM F 1412 and D 4101; Schedule 40; PP heat fusion joints and polyvinylidene fluoride (PVDF), for above grade use, in accordance with ASTM F 1673, ASTM D 3222, and ASTM E 84 for flame spread/smoke developed index; schedule 40; PVDF heat fusion joints; or PVDF DWV threaded mechanical joint fittings. A central, underground neutralization tank will be included for the entire building laboratory drainage system.

The existing 6" campus domestic water supply main loops around the campus to provide a connection point between the existing food service building and the existing old administration building.

The existing 8 inch campus fire water main loops from Peck Ave across to Meadows Ave. with distribution running north to south along the proposed build, providing a connection point.

Space planning issues

A central location on site must be allocated for the neutralization tank to be readily accessible.

Domestic Cold Water System

Domestic cold water will be supplied to all plumbing fixtures, including laboratory countertop sinks.

Vacuum breakers will be provided for all domestic water supplying laboratory sinks.

Natural Gas System

The natural gas system to the building will serve roof top units, domestic water heaters, laboratory gas outlets and heating hot water boilers where required.

Sanitary Waste System

Sanitary waste and vent system will be provided for all plumbing fixtures, including laboratory countertop sinks.

Laboratory drainage system will be polypropylene pipe (PP) (for below grade use); flame retardant in accordance with ASTM F 1412 and D 4101; Schedule 40; PP heat fusion joints and polyvinylidene fluoride (PVDF), for above grade use, in accordance with ASTM F 1673, ASTM D 3222, and ASTM E 84 for flame spread/smoke developed index; Schedule 40; PVDF heat fusion joints; or PVDF DWV threaded mechanical joint fittings.

GENERAL ACADEMICS INSTRUCTIONAL BUILDINGS – FINGER BUILDING RENOVATIONS

Plumbing Systems and Utility Sources

The proposal includes the demolition and reconstruction of the plumbing infrastructures as required for programmatic needs and for code compliance, within 5'-0" from the building footprint.

The existing campus sanitary sewer main runs down the center corridor of the buildings as well as on the east and west ends, running from north to south to provide connection points. The existing 6" campus domestic water main loops around the campus to provide a connection point on the east and west ends of the building.

Natural gas lines are fed to the existing buildings from the east and west ends and distributed onto the roof. The existing main lines will be utilized and re-distributed as required. A seismic shut-off valve at the building will be furnished to comply with current code.

Space planning issues

Building floor space will be allocated for the utility service entrances, such as the domestic water and natural gas piping. Building floor space must be allocated for the water heaters where required.

Roof Drainage/Storm water

The existing standard gutter system design draining the entire roof area and spilling onto grade will be retained to the extent feasible.

CAFETERIA RENOVATION

Plumbing Systems and Utility Sources

Code compliance of the existing kitchen will be evaluated to determine if the renovation of the existing cafeteria will necessitate any plumbing upgrades to the kitchen.

Sanitary Waste System

A new grease interceptor will be added to the building's sanitary sewer system. Upgrades to the existing gravity main within the building will be included as required.

NEW SATELLITE CAFÉ BUILDING

Plumbing Systems and Utility Sources

The existing campus sanitary sewer main runs on the west side of the proposed building to provide a connection point.

The existing 6" campus domestic water main loops around the campus to provide a connection point just west of the building.

The existing 8 inch campus fire water main loops from Peck Ave across to Meadows Ave. with distribution running north to south along the proposed building, providing a connection point.

NEW MAINTENANCE & OPERATIONS BUILDING

Plumbing Systems and Utility Sources

The existing campus sanitary sewer main running along the east side of the proposed building will provide a connection point.

The existing 6" campus domestic water main loop around the campus will provide a connection point just east of the proposed building.

The existing 8 inch campus fire water main loop from Peck Ave across to Meadows Ave. includes distribution running north to south on the east side of the proposed building to provide a connection point.

AERIAL PHOTO OF THE CAMPUS

SITE PHOTOS

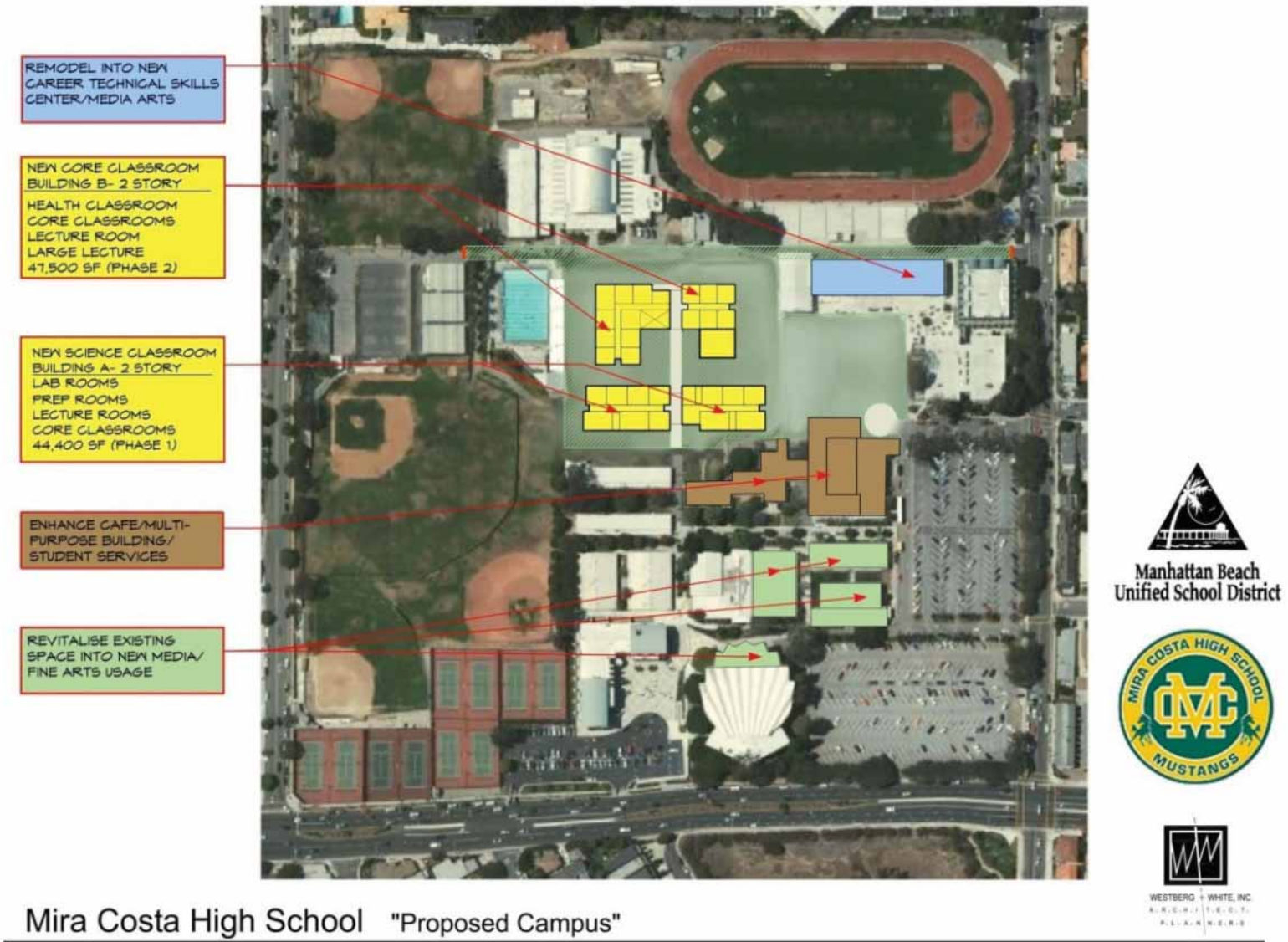
SITE PHOTOS

SITE PHOTOS

SITE PHOTOS

OPINION OF COST

Math/Science Instructional Building	$23,000,000
General Academics Instructional Buildings	$11,000,000
Arts Facility Modernization/Relocation	$2,100,000
Career/Technical Skills Center	$2,000,000
Student Support Facility	$3,000,000
Safety	$800,000
Enhance Café/Multi-purpose Addition	$2,000,000
Relocate Maintenance/Operations Building	$1,000,000
Furniture and Equipment	$400,000
Interim Classrooms	0
Total Bond Projects, including Contingency/Inflation	$45,300,000



BOND BB EXHIBIT

MANHATTAN BEACH UNIFIED SCHOOL DISTRICT

GENERAL OBLIGATION PRELIMINARY BOND BUDGET

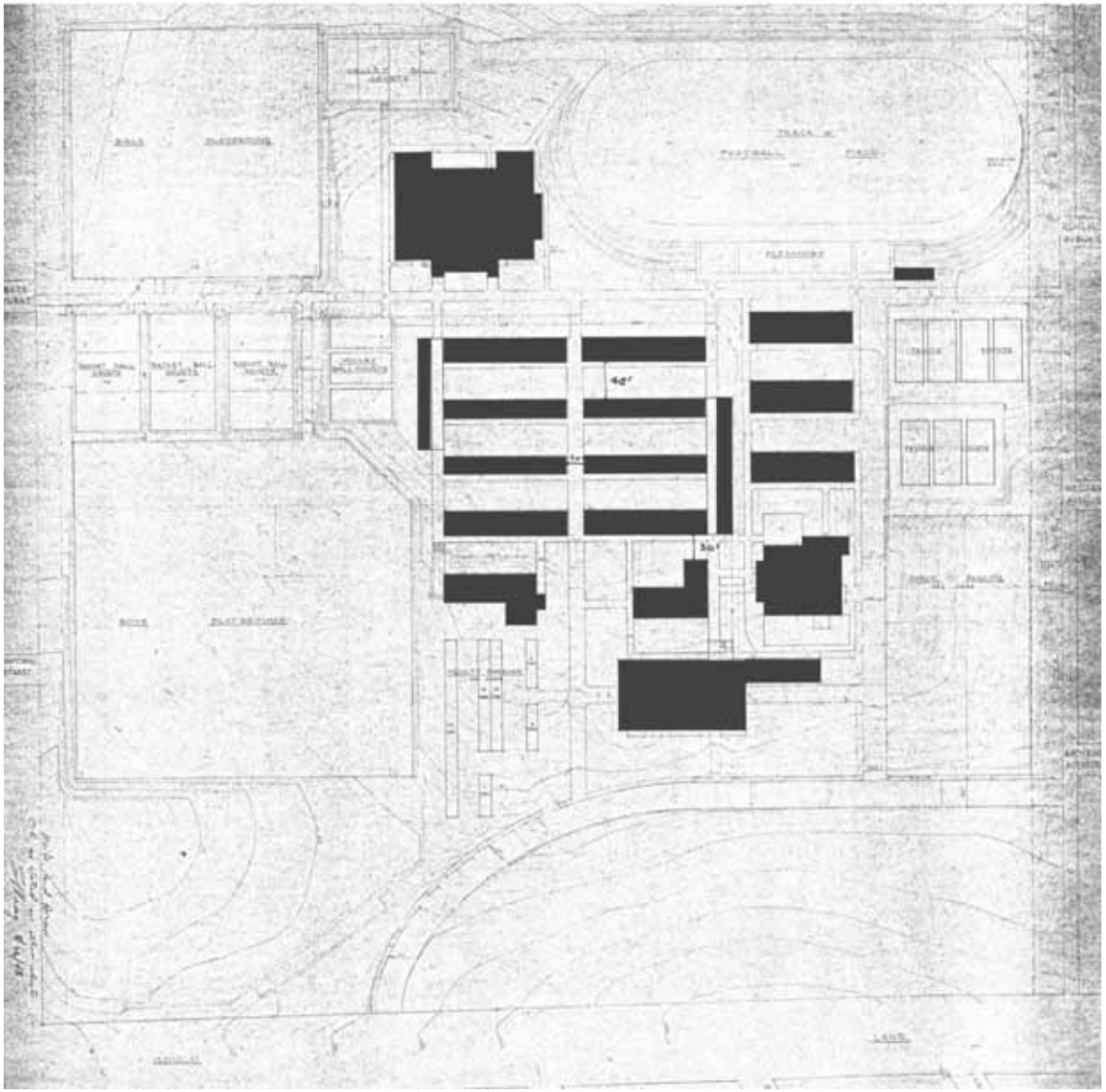
EXHIBIT A

Bond Proceeds	**$**	**67,480,000**
Existing debt payoff	$	12,705,000
Subtotal Bond Proceeds	**$**	**54,775,000**
Bond Projects		
Math/Science Instructional Building	$	12,300,000
General Academic Instructional Building	$	11,350,000
Arts Facility Modernization/Relocation	$	2,000,000
Career/Technical Skills Center	$	1,835,000
Student Support Facility	$	5,850,000
Safety	$	580,000
Enhance Café/Multipurpose Addition	$	2,200,000
Relocate M/O Building	$	860,000
Furniture and Equipment	$	310,000
Interim Classrooms	$	495,000
Total Bond Projects	**$**	**37,780,000**
Construction Support (25%)	**$**	**9,445,000**
Contingency/Inflation (20%)	**$**	**7,556,000**
Total Bond Projects	**$**	**54,781,000**

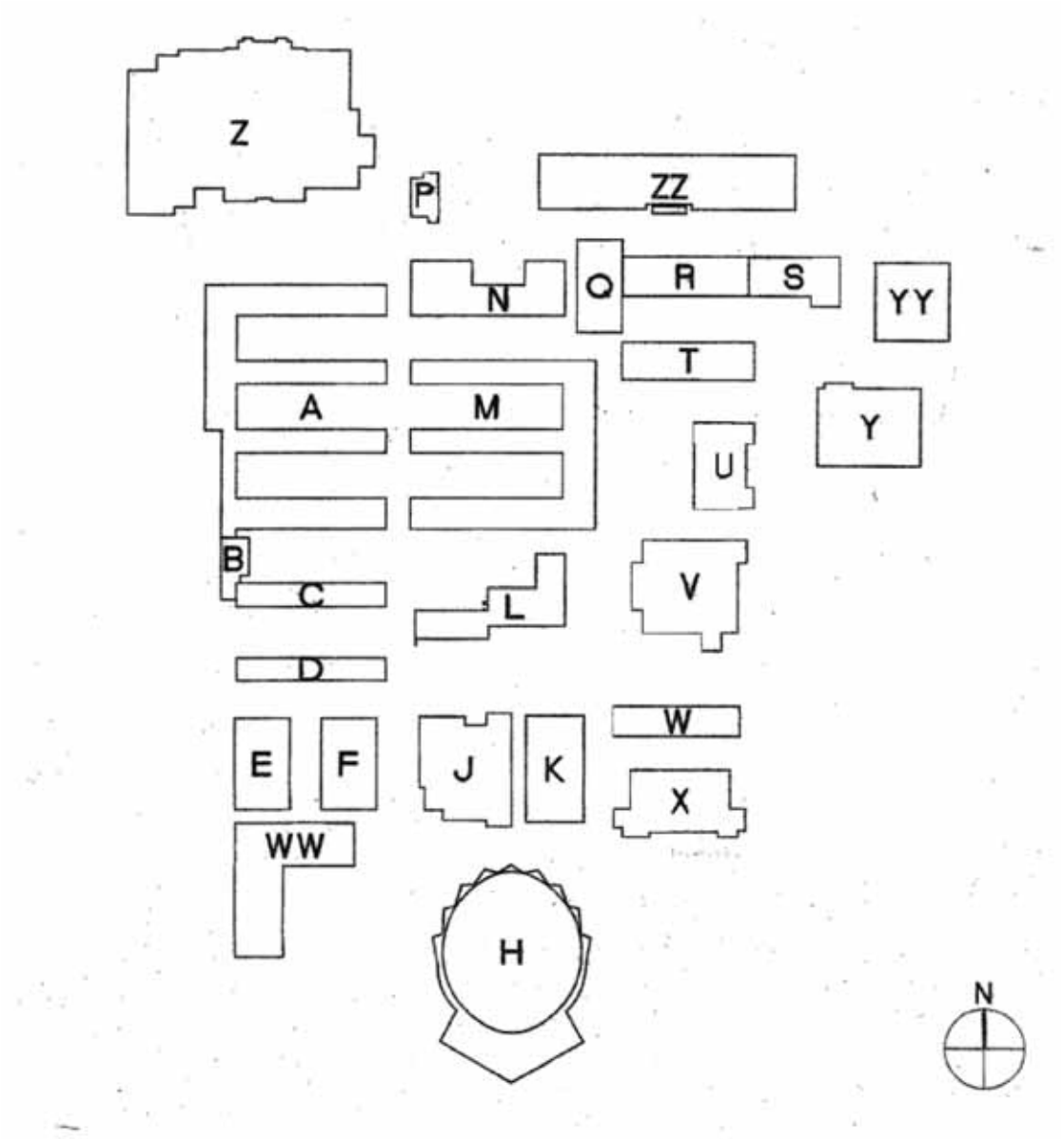
notes

Construction Support, 25% include architect, professional, regulatory fees,
(toxic, epa, soils, waste water)
Contingency 20% of total is a reserve to cover cost increases in the future
Student Support Bld, counseling, admin, sp ed, health services, ind study, student services, food services, restrooms
At locations where renovation, major repairs and/or new construction is undertaken;
Replacement construction if Board of Trustees determines that replacement is more economical then
rehabilitation/renovation of existing classrooms.

11/24/2008



CAMPUS MASTER PLAN 1949



CAMPUS BUILDING KEY PLAN

PROJECT DOCUMENT SOURCES

Bond BB Exhibit A
Bond BB illustration
Construction documents and as-built documentation for existing campus
California Division of School Planning 3A diagrams for Mira Costa H.S., 3/17/00
Mira Costa Master Schedules, 2008-2009 and 2009-2010
Teacher surveys regarding existing classrooms, 2009
List of existing campus sustainability programs, 2009
Manhattan Beach City-wide Bikeway Plan Staff Report, 2-1-05