# Project Team

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April 16, 2013
The South Gate Educational Center (SGEC) is a project of East Los Angeles College (ELAC). It will create a new satellite campus to serve the increasing needs of a growing student population in the southern portion of the college's service district.

The SGEC is warranted by student demand and the impending lease expiration of ELAC's existing satellite campus. ELAC's existing satellite, the South Gate Educational Center (SGEC), operates in a leased building a short distance from the SGEC site. The SGEC is operating at full capacity and is unable to accommodate growth, even though student demand is increasing. Moreover, its lease is soon to expire and cannot be renewed. Without the SGEC, ELAC will find itself within a few years unable to serve the needs of students in the area.

The South Gate site was originally purchased by the Los Angeles Community College District because it offered a large parcel of underutilized land for a new campus, unobtainable elsewhere in the area, with landmark industrial buildings that potentially could become educational facilities. Since this initial purchase, plans for the SGEC have gone through many iterations in response to changing thinking about project scope, adaptive re-use of existing buildings, academic program, student population, and budget considerations. The current master plan is the culmination of a long and thoughtful process.

The 2015 SGEC Master Plan offers a realistic vision to achieve the college's educational goals and revitalize a pivotal site in the City of South Gate.
The goal of the SGEC Master Plan is to create an educational facility offering ELAC students a comprehensive academic program beyond anything available in the area today.

Previous programs for the SGEC anticipated a larger project with a final population of 12,000 students. Why the change? The Los Angeles Community College District (LACCD) has become increasingly aware of the need to justify growth and expenditures, with a concern about “over-building” and a renewed focus on analyzing capacity load ratios to ensure new projects are appropriate in concept, scale, and budget. The SGEC project has been re-sized in response to these concerns.

The 12,000-student population previously projected for the SGEC anticipated a two-phase project that would ultimately adapt an existing industrial building for academic use. The current plan is instead a single-phase project wherein this industrial building and others on the site will remain in their non-SGEC functions.

### Building Efficiency
LACCD evaluates building efficiency by percentages, and has targeted 68% as the efficiency for the SGEC. This means the total building is to be at least 68% assignable space, with 32% non-program space at most.

<table>
<thead>
<tr>
<th>Building Efficiency</th>
<th>Assignable Square Feet</th>
<th>Total Building Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency Factor</td>
<td>68%</td>
<td>100%</td>
</tr>
<tr>
<td>ASF</td>
<td>69,980</td>
<td>102,911 GROSS SQUARE FEET (GSF)</td>
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### Academic Group

<table>
<thead>
<tr>
<th>Academic Group</th>
<th>46,501 ASSIGNABLE SQUARE FEET (ASF)</th>
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<tbody>
<tr>
<td>Administrative Group</td>
<td>14,522 ASF</td>
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<tr>
<td>Shared Facilities Group</td>
<td>8,957 ASF</td>
</tr>
<tr>
<td>Non-Program Spaces</td>
<td>32,888 SF</td>
</tr>
</tbody>
</table>

### Academic Support Center
- Shared study room, computer classroom and lab, tutoring area, workshop room, etc.

### Science Cluster
- Shared science classrooms, labs, studio room, offices, etc.

### Arts Cluster
- Music and Art classrooms, Mac classroom, large lecture hall, etc.

### CTE Cluster
- CTE classroom, CFES classroom and lab, Arch/Engineering classroom, collaborative and computer lecture rooms, computer lab, lecture classroom, flexible classroom, etc.

### Shared Classrooms
- 21 lecture classrooms, 4 flexible classrooms, Psychology, Philosophy, Phys Ed. Men’s/Women’s Health, Math, English, Chicano Studies, Foreign Language, Speech & Theatre Arts (with Arts Cluster)

### Student Services
- Admissions, counseling, Financial Aid, DSPS, CalWORKS, matriculation, etc.

### Administration
- Fiscal, payroll, Dean’s office, offices, conference room, data center, workroom, faculty/staff lounge, reps, and mail room, etc.

### Health Center
- Student Lounge

### Library
- Bookstore

### Non-Program Spaces
- Necessary non-program functions such as lobby and circulation space, restrooms, maintenance and storage facilities, mechanical rooms, etc.

### Building Size
- Total Building Size: 100%
- Gross Square Feet: 102,911

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April 16, 2013

**SOUTH GATE EDUCATIONAL CENTER MASTER PLAN**
The site for the proposed South Gate Educational Center is located in the City of South Gate, approximately 7 miles from the main East Los Angeles College campus in Monterey Park.

Formerly a Firestone Tire manufacturing and warehousing complex, the site is now owned by the Los Angeles Community College District. It is bounded by Firestone Boulevard on the south, Santa Fe Avenue on the east, Southern Pacific Railroad’s right-of-way on the north, and currently-unoccupied industrial property on the west.

South Gate Educational Center, a satellite campus of ELAC, operates nearby today in a building south of Firestone Boulevard. Commuting from here to the main ELAC campus takes approximately 18 minutes.

The SGEC site is well located for its intended students, who are drawn from the southern portion of the college’s service district. This area includes Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, South Gate and Vernon.

The site is also midway between the Harbor and Long Beach Freeways on Firestone Boulevard, an accessibility advantage for commuting students and faculty.
Project Site: Features and Conditions

The site offers ELAC a large, contiguous parcel of land for its new satellite campus. The SGEC will use only a portion of the property owned here by LACCD.

The site is zoned by the City of South Gate as being in an M-3 Heavy Manufacturing Zone. The Firestone Tire Company vacated the property in 1980, and its main use today is for warehousing in Buildings 1, 3, and 4, and offices in Building 2. The buildings are partially occupied, not full to capacity.

The site is almost totally flat, with barely any landscaping. Although LACCD owns 18.5 acres, the SGEC will use about 18.1 acres (area outlined in orange). The rest of the site will remain in its present use.

The property west of the SGEC site, known as the HON site for a former tenant, is currently unused. Its future development is uncertain.

Building Data

1. Building 1 Warehouse
   - Ground floor: 259,696 SF
   - Second floor: 55,939 SF
   - Basement: 140,314 SF
   - Total: 455,949 SF

2. Building 2 Offices
   - 2 Stories total: 16,287 SF
   - Basement: 8,400 SF
   - Total: 24,687 SF

3. Building 3 Warehouse
   - 4 Stories total: 296,358 SF
   - Basement: 79,013 SF
   - Total: 375,371 SF

4. Building 4 Warehouse
   - 2 Stories: 220,550 SF
   - Grand Total: 1,067,957 SF

Existing ELAC South Gate Educational Center Classroom/office building -- leased property
- Land: 4.2 acres
- Building: 51,000 SF
- Student population (Fall 2011): 4,912

Access: Streets and Transit
Firestone Boulevard is the major access to the site today. Santa Fe Avenue has significant traffic but no access to the SGEC site. There is bus service along Firestone with connection to light rail. South Gate’s General Plan 2035 classifies Firestone as a Primary Arterial and Primary Transit Street, and Santa Fe as a Collector street.

Existing signalized street intersections
- Bus Lines 315 and 115 on Firestone Boulevard
- Bus Line 215 on Santa Fe / Firestone
- One mile to Metro Blue Line light rail station
- Southern Pacific Railroad Right-of-Way - infrequently used, freight only

Other Notes:
1. The only vehicular entry to SGEC site today is the driveway off Firestone.
2. The SGEC property line bisects the driveway. Improvements must be kept on SGEC property.
3. “Cul-de-sac” on civil engineering plans is a City utility easement that must be respected.
4. Building Restriction Areas dedicated to the City can be removed by consent of the City Council.
5. The Building 2 corner is separated from the rest of the site; there is no vehicular through-traffic.
6. The City of South Gate 2035 General Plan calls for widening of Firestone Boulevard.
7. Existing buildings block access from Santa Fe into the SGEC site.
Commercial uses such as retail, auto service and fast food line the major streets near the site. Behind the commercial edge are single-family residences and apartment buildings.

Firestone Boulevard and Santa Fe Avenue are lined with commercial uses in a mix of free-standing buildings and strip malls, set back from the sidewalk in parking lots.

Along Firestone from Santa Fe westbound are a gas station, a small strip mall (donut shop, laundromat, and convenience store), and a used automobile dealership and service garage (Images A, B, C). Further west are ELAC's current satellite campus South Gate Educational Center and more fast-food (Images D, E). Past Alameda is another small strip mall with an adult bookstore, florist, salon, coffee shop and check cashing store.

At the northeast corner of the Firestone and Santa Fe intersection is a large shopping plaza with retail and fast food (Image F). Beyond this there are few commercial establishments north along Santa Fe, other than a take-away snack stand and a second hand goods store (Image G).

The advent of the SGEC and its student population may have a positive effect on the quality and character of the commercial neighborhood.

Surrounding residential neighborhoods are predominantly single-family homes in the areas south of Firestone (Image H) and north of the Southern Pacific Railroad, and multi-family apartments in the area east of Santa Fe (Image I).

The HON site, an industrial property, adjoins the SGEC site at west and is its closest “neighbor”. The two sites were integrated in the past, as evidenced by their compatible architecture, but a chain link fence now separates them. The HON site is vacant and run-down (Images J, K). While there is talk of its possible redevelopment, the site’s ultimate disposition is uncertain.
The site is characterized by buildings that are monuments to manufacturing history and landmarks in the City of South Gate. Below ground are remnants of former uses.

The Firestone Boulevard frontage is dominated by the 743-foot long facade of Building 1, behind a truck yard, decorative perimeter fence and street trees. Originally used for manufacturing, it now serves LACCD storage uses.

At the corner of Firestone and Santa Fe Avenue is the site’s most prominent feature, the tower of Building 2. This was the original office building of the Firestone Tire and Rubber Company and still contains offices.

The Santa Fe frontage of the site is a mix of varied facades, parking and truck loading areas. Building 4 stands on the property line, and blocks views and access into the heart of the site from Santa Fe. There is no landscaping anywhere along the frontage.

Visually, Buildings 1, 2 and 3 are distinctive for their attractive Mediterranean Revival architectural style, but Building 4 is perfunctory and lacks character. This was once an active manufacturing site, and several small and large structures such as small shops and storage buildings not present today previously existed in the large truck yard. Two abandoned 10,000 gallon fuel oil tanks, plus water tower footings and a well head have been discovered below ground in the area, along with an abandoned 19,000 SF underground reservoir that has been backfilled. The fuel oil tanks have been removed, and a closure report has been submitted.
The project site and its existing buildings are eligible for listing in the California Register of Historic Places as the Firestone Tire and Rubber Company South Gate Historic District.

Due to their large scale and architectural distinctiveness, the Buildings 1 and 2 have iconic presence in the South Gate community. Building 3, though not as noticeable from the street, is integral to the ensemble.

The Master Plan proposes Buildings 1, 3 & 4 to be demolished for the SGEC. Building 4 is the least attractive building on site, and architecturally unrelated to the others.

The fence wall and associated gateways and gatehouse (Images G,H on Page 6) on the street front property line are elements that contribute to the Historic District. The fence wall and associated gateways will be demolished along the frontage of the SCEG project and only the wall fronting Building 2 shall remain.

The Historical Report in the appendix of this Master Plan document describes historic issues in greater detail.
Buildings 2 is not part of the South Gate Educational Center, and will remain in vacant. Buildings 1, 3 & 4 will be demolished to make room for the new SGEC campus.

Building 1 is a large-span, steel-framed industrial building with a 259,696 SF footprint, used as a warehouse by LACCD and others who lease space from the District.

Building 2 is an office building outside the boundary of the SGEC project, and no alterations to it are proposed.

Building 4 is a warehouse with a 220,550 SF footprint that will be demolished for the SGEC campus. The 3rd floor bridge and 1st floor passageway connecting it with Building 3, and the small extension of Building 4 between the two buildings, will also be demolished.

The north-south driveway west of Buildings 1 and 3 is currently utilitarian, unadorned and unattractive. It will be improved as part of the Master Plan to make it suitable for its new role as an entry to the SGEC campus. Improvements will include new pavement, a sidewalk, landscaping and lighting.
This general overview identifies key parameters that affect the Master Plan. It also outlines the site improvements and new construction proposed in the Plan, explained in more detail on the following pages.

Zoning
The SGEC site is zoned M3 Heavy Manufacturing by the City of South Gate.

Permitted Height
Buildings may be up to 85’ high providing they are set back 20’ or more from property lines not on streets or alleys. Proposed SGEC buildings are within this limit.

Floor/Area Ratio (FAR):
Maximum total floor area in all buildings may not exceed four times the area of the lot. The SGEC’s total floor area of existing buildings plus proposed new buildings is less than half this allowable maximum.

Setbacks
Setbacks are subject to review by the City of South Gate. The Master Plan proposes a “front yard” between the new SGEC building and the street.

Project Timeline
The design/build team will be selected November 2016, design will be completed October 2017, Division of the State Architect (DSA) review will be completed June 2018, and construction will occur from July 2018 to December 2020.

SGEC Projected Population 2019-2031
The initial SGEC student population for 2019 is projected at 5,000. By comparison, the existing South Gate Educational Center has 5,000 students. There will be approximately 150 faculty and staff at the SGEC.

SGEC Campus Boundary and Entries
Buildings 1, 2, 3 & 4 are part of the campus. The SGEC campus area will be south side of the site.

On Firestone Boulevard, an improved existing entry will access the campus via an improved existing roadway.

New Internal Roadway
The Master Plan proposes a new 28-foot-wide roadway to provide vehicular circulation within the campus. It will serve fire truck access, and have landscaped edges to enhance its appearance. Passenger drop-offs will be located along this internal roadway; there will be no drop-offs on public streets.

Enhanced Existing Roadway
The existing roadway west of Buildings 1 and 3 will be repaved and enhanced with a sidewalk and landscaping along its eastern side.

New SGEC Building
The Master Plan proposes a new SGEC classroom/office building of 102,911 GSF, a “campus in a building” housing administrative offices, classrooms, labs, academic support and student services and more as required by the college. It will be three stories and approximately 50 feet high.

SGEC Parking Requirements
SGEC requires at least 1,350 parking stalls for its 9,000 students and 150 faculty/staff. A 750 stall parking lot will initially be built along the southern part of the property for this project. Development on the northern part of the property for the remaining 600 vehicles are planned for the future.

New SGEC Surface Parking
Surface parking for the SGEC, designated for faculty staff and visitors will be provided.

SGEC Building Service Access
The Master Plan does not specify the location of service access for the proposed new building, as this is contingent on the building design as developed by the design/build team selected for the project.

Open Space and Landscaping
The Master Plan proposes a new, landscaped central open space as a campus gathering place for casual activity and special events. Other landscaping will accent the street frontage, internal roadway, and other areas within the project site.

Existing Building Usage
Buildings 2 will remain in their current use. Access to this building will be maintained on the south and east sides corner of the property per existing, but truck access on the west side will remain.

Existing Building Parking Requirements
Provision of parking for the existing office Building 2 will be provided per requirements to be verified.

Program and Design Criteria
Along with the Master Plan, a South Gate Educational Center Program and Design Criteria book has been prepared providing detailed specifications for the site improvements and buildings described here in overview. This will be the reference used by design/build team selected to implement the project.

NOTE: Diagrams on this and other pages illustrate concepts of the Master Plan but are not actual designs. The final design of the SGEC will be determined by the Design/Build Team selected for the project by ELAC and LACCD.
SGEC master Plan: Key Concepts

KEY CONCEPTS HAVE BEEN SUPERSEDED PER NEW MASTER PLAN

The characteristics of the site, the goals and needs of East Los Angeles College and the concerns of the City of South Gate are addressed in the SGEC Master Plan.

A) Clearance of the Campus Site. To create space for the campus, Buildings 1, 3 & 4 will be demolished. It is unneeded, has no potential for adaptive re-use, and blocks access from Santa Fe. The truck yard will be abandoned; retaining it even in part would be incompatible with the campus. The loading dock at Building 3 will remain in place but will not be used.

B) Perimeter Definition. The SGEC campus proper will be in the area north of Building 4. This area will have a secure, gated perimeter (fences, walls, etc.) aesthetically complementary to the campus and the neighborhood. Gates will be few in number for security, but located conveniently for vehicular and pedestrian traffic. The roadway connecting to Firestone Boulevard is not in the gated area, because it is shared with Buildings 1 and the HON site, but it will be improved as part of the Master Plan.

C) Operations Outside the SGEC Campus. Buildings 1 and 3 will remain in use as warehouses. Trucks will use loading docks and ramps on the buildings’ east and south sides; those on the west side will be closed. Building 3 can share Building 1’s loading docks, as the two are internally connected. The buildings will be fenced from campus areas because they are on LACCD property but do not comply with DSA codes. Access to the HON site will not be hindered by SGEC development, but will remain per existing. Building 2 will remain as an office building.

D) Entry Locations and Hierarchy. The SGEC campus will be visible from Santa Fe Avenue but not Firestone Boulevard. Thus, the Master Plan proposes the main SGEC entries be on Santa Fe, and the Firestone entry be secondary though enhanced with SGEC identity. Santa Fe entries will align with existing streets.

E) Parking Strategy. Parking will be located so as to allow maximum area at the campus “heart” for the new SGEC building and open space. The parking structure necessary to serve the SGEC’s population will be located at the north to screen railroad views and noise. It will offer direct Santa Fe access for its energy. City users. Campus entries on Santa Fe and Firestone will lead to surface parking at the west of the site designated primarily for visitors, and to the parking structure.

F) Internal Roadway. An internal roadway will connect entries with parking. It will have sidewalks, and pull-out lanes for passenger - drop-offs. Surface parking lot will be a turn-around for vehicles to return to the entry from which they entered the site.
The new SGEC Building is located for visibility and presence in the community. The Master Plan acknowledges future changes that may affect the site.

F,G) New Building and Open Space. The Master Plan proposes locating the new SGEC classroom and office building close to Santa Fe Avenue for maximum visibility and “street presence”, and for easiest pedestrian access to Metro bus stops on Firestone Boulevard. The Plan proposes a major campus open space west of the building as an “oasis” from dense urban development, a centralized pedestrian circulation and activity space secluded from street traffic.

H) Fire Access. In the City of South Gate, the LA County Fire Department is the responding agency and determines fire code requirements. Per requirements, the Master Plan provides for fire truck access to within 150 feet of all building exterior walls by means of code-compliant fire access lanes and use of city streets. For public schools, the minimum access lane width is 20 feet. Elsewhere, fire trucks will use the internal roadway having a 28-foot width.

I) Traffic Control. The Environmental Impact Report (EIR) for the SGEC warrants signalization (traffic lights) at main entries. The SGEC Master Plan proposes signalization at the entry on Santa Fe Avenue at Orchard Place (main building & lot entry) which will have the highest traffic volume and the entry on Firestone Boulevard. Left-turn lanes on the streets are proposed at all two entries.

J) Future Widening of Firestone Boulevard. The South Gate General Plan 2035 calls for widening Firestone by eight feet on each side. This will narrow the space in front of Buildings 1 and 2. The Master Plan eliminates the wall/fence along the frontage of building 1 but not Building 2.

NOTE: Diagrams on this and other pages illustrate concepts of the Master Plan but are not actual designs and have been superseded. The final design of the SGEC will be determined by the Design/Build Team selected for the project by ELAC and LACCD and based on the updated Master Plan.
### SGEC Master Plan: Vehicular and Pedestrian

**Vehicular Circulation:** New and enhanced street entries, internal roadways, and parking will serve autos, service, and emergency vehicles.

**Pedestrian Circulation:** Most pedestrian traffic will be between parking and the SGEC building; some will walk-in from transit stops on Firestone.

#### VEHICULAR CIRCULATION

- The SGEC campus will be visible only from Santa Fe Avenue, so the “front door” entry for visitors will be here, aligned with Orchard Place. A left-turn lane for northbound vehicles is proposed on Santa Fe. Traffic volume is anticipated to be less than at other entries, so signalization is not proposed.

- The existing entry at Firestone Boulevard will be improved, with new SGEC identity. Due to anticipated traffic volume, signalization is proposed. South Gate’s General Plan 2035 shows a median in Firestone; the SGEC Master Plan proposes a left-turn lane.

- The existing entry drive from Firestone will be repaved, and its east side will be improved with a new sidewalk and landscaping. Existing truck loading docks, ramps and structures will remain in place but truck access will no longer be allowed.

- Access to the HON site will be maintained per existing.

- Security gates will be installed at all vehicular entries to the main area of the campus to control after-hours access.

- A two-lane internal campus roadway will connect all entries, surface parking, and parking structure. Turn-out lanes for passenger drop-offs will be located along this roadway.

- A parking lot designated primarily for visitors will be located with visibility to the entry of the SGEC building. It is estimated to park 60 cars.

- A parking structure mainly for students, faculty, and staff will hold an estimated 1,600 cars, one level at grade, five above, and a partial level below. Its main entry will be directly off Santa Fe Avenue at Ardmore Avenue. This is anticipated to have the highest traffic volume of all campus entries, so signalization and a northbound left-turn lane on Santa Fe are proposed here.

- Optimal location of delivery, trash pick-up and service access to the SGEC building will depend on the design of the building. It may be via the site’s internal roadway or a turnout from Santa Fe. Access will be designed to screen unsightly views and undesirable noise and odors from the street and campus.

**NOTE:** Diagrams on this and other pages illustrate concepts of the Master Plan but are not actual designs. The final design of the SGEC will be determined by the Design/Build Team selected for the project by ELAC and LACCD.

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**SOUTHWEST GATE EDUCATIONAL CENTER MASTER PLAN**
The SGEC site currently has no dedicated pedestrian space and virtually no greenery. The Master Plan proposes new open spaces and landscaping to create an urban campus.

The term “landscape” here refers to the combination of greenery, varied plant materials, pedestrian spaces, decorative hardscape and other elements that will be used to create a pleasant open space environment within the SGEC campus and an attractive “face” to the surrounding streets.

Sustainability in landscaping is a goal of LACCD. The arid conditions of the region call for water-saving landscape strategies. At the SGEC these will include use of drought-tolerant plants, low-volume irrigation design, and minimization of runoff.

The Master Plan identifies distinct landscape zones on the site. The diagrams and images on this page illustrate the concepts but are not actual designs. The final designs will be determined by the Design/Build Team selected for the project by ELAC and LACCD.

The large open space at the center of the campus will be developed as a place for student gatherings, a forecourt for the SGEC building and a counterpoint to the mass of Building 3 and the parking structure. As the symbolic “heart” of the campus, it will include active and passive recreation space, amenities for performances and ceremonies, study areas, public art, and greenery and shade.

Campus entries will have special landscaping and signage to highlight their presence and identify the SGEC.

The street edge of the campus along Santa Fe Avenue will be landscaped compatibly with City of South Gate standards.

Landscape near the parking structure will use vertical elements to mitigate the structure’s visual impact on Santa Fe Avenue and the campus.

The area between Building 3 and the campus security fence will be landscaped to relieve views of the loading dock and building. Alternately, the “fence” may itself be a green wall.

The internal roadway will be flanked with street trees and/or other landscape elements to visually separate it from campus public spaces and control pedestrian crossing points.

The east side of the entry drive from Firestone Boulevard will be landscaped to screen views of the building and abandoned loading areas. Landscaping will incorporate the new sidewalk running from Firestone to the campus.

Trees will be planted throughout the surface parking area to provide shade and visual relief.

Landscape screens (tall shrubs, green walls, etc.) may be used to control views from the SGEC to the HON site and the railroad.

Beyond the campus entries and campus frontage described above, the Master Plan does not propose any other landscape along Firestone Boulevard or Santa Fe Avenue.

Screen walls or other devices compatible with the SGEC landscape will be used to hide service areas, trash enclosures and utility fixtures from view.
Site furnishings, lighting, signage and amenities are among the elements that will create an attractive, distinctive, and user-friendly SGEC campus.

The SGEC is an urban campus with an industrial heritage, a college with an eye toward the technologies of tomorrow.

The campus environment will express the character of the college with a sense of welcome, openness, and visual interest in a variety of settings to accommodate many different uses. It will offer spaces of varying scale for special events, social interaction and quiet study. It will project a distinctive identity through quality design to establish a special sense of place in the South Gate community.

The images on this page suggest some of the many possibilities for the SGEC campus. The actual design of the campus will be the result of a collaboration between ELAC, LACCD, and the Design/Build Team selected for the project.

Beyond architecture and landscaping, the Design/Build Team will be encouraged to achieve these goals through distinctive lighting, signage, street furniture, and amenities such as sunshades and decorative paving. Artworks may be incorporated to further enhance the campus environment.
The SGEC Building's architecture will embody and support the college's mission to provide excellence in education. The parking structure will complement the character of the campus and be designed for safety, security, and aesthetic quality.

**SGEC BUILDING**

The Master Plan proposes a new three-story classroom and office building of approximately 102,911 gross square feet (GSF). It will be a "college in a building," serving all the college's academic and support needs in one place.

Aesthetically, the SGEC Building will be seen in the context of existing Buildings 1, 2 and 3, which have been community landmarks for many decades. The building must, however, serve the requirements of its program and express a forward-looking attitude in keeping with the spirit of the college itself.

It will be the Design/Build Team's task to establish an appropriate architectural character for the SGEC Building. The concept may bridge old and new through elements such as warm-toned coloration, a high percentage of walls to windows, rhythmic window shapes (no ribbon windows), recesses creating depth and strong shadows, towers at main entries and decorative accents. A very different approach may be to position the SGEC Building as a counterpoint to the existing buildings, which then become a backdrop against which the new building stands in deliberate contrast.

Functionally, the building's administrative and student services offices, being primary destinations for visitors and many students, will be located on the ground floor near the main entry. Classrooms, labs and other student support spaces will be on upper floors. Vertical circulation will be clearly emphasized and designed to knit the levels together perceptually into a cohesive whole.

The concepts and images here indicate a direction for the building's architecture and configuration based on input from the college. The actual design will be developed by the Design/Build Team selected by ELAC and LACCD to carry the SGEC project forward.

**PARKING STRUCTURE**

To meet the parking requirement for the SGEC's estimated 9,150 students, faculty and staff, a parking structure is required. The overall concept is described here, and the final design will be developed by the Design/Build Team.

The structure will provide approximately 1,600 parking stalls with one level at grade, five above, and one partial level below grade. Levels will be naturally ventilated except the below-grade level, which may have lightwells to qualify for S2 occupancy but will require supplemental mechanical ventilation. The structure will be Type 1 construction, fully sprinkled, with three means of egress provided for each level.

'Everyday' users - students, faculty, and staff - will mostly use the structure's direct entrance off Santa Fe Avenue. A traffic signal will be provided at this intersection with Santa Fe and Antimnio Avenues to handle the large volumes of traffic anticipated. All other campus entries will lead to the structure as well. Self-parking with prepaid passes or pay-by-space machines will eliminate queueing at "ticket spitters" at structure entries. The Traffic Analysis in the Appendix of this document provides further details on anticipated traffic.

As a dominant part of the campus approximately 60' high, the structure will be designed as an aesthetic asset to the campus and neighborhood and will be well illuminated inside and out for nighttime operations.

Photovoltaic panels on the top level will shade parked vehicles and generate electricity for the SGEC per LACCD mandate.
The SGEC will be LEED certified in the categories of Indoor Environmental Quality, Sustainable Sites, Water Efficiency, Energy & Atmosphere, Materials & Resources, and Innovation in Design Process.

In accordance with LACCD directives, the SGEC will be designed and constructed using the United States Green Building Council Leadership in Energy and Environmental Design New Construction (USGBC LEEDNC) rating system. The goal is to reach the highest certification level feasible. The project has been preregistered as LEEDNC v3.0.

The diagram shown here highlights the credits most relevant to the SGEC in the categories of the LEED checklist. For detailed descriptions of LEED strategies specifically prepared for the SGEC and estimated costs for obtaining associated credits, see the LEED Strategy Narrative and scenarios in the Appendix of this document.
This Master Plan document is supplemented by a separate Appendix document that goes into the project’s technical issues in greater detail. Its contents are summarized below.

### Structural Analysis

**Analysis**

- **Prepared by:** John A. Martin & Associates
- **Prepared by:** Glumac
- **Prepared by:** Antea Group
- **Prepared by:** Linscott Law & Greenspan, Engineers
- **Prepared by:** John A. Martin & Associates
- **Prepared by:** Glumac
- **Prepared by:** Antea Group

**NARRATIVE OUTLINE**

- **Mechanical Design**
  - Description of applicable codes and standards.
  - Analysis of HVAC design criteria: outdoor and indoor design criteria, building envelope, air distribution and pipework design criteria, interior plant systems temperatures.
  - Recommendations of HVAC systems to be considered: basement precooling/cooling system, radiant heating/cooling, central plant, geothermal and building management systems and energy reducing HVAC strategies.
- **Electrical Design**
  - Description of applicable codes and standards.
  - Analysis of incoming service, recommendations for power distribution for existing buildings, new building and parking structure, emergency power, lighting, telephone and data, fire alarm and security systems.
  - Analysis of solar power generation and feasible locations for solar panel arrays.
- **Plumbing Design**
  - Description of applicable codes and standards.
  - Analysis of existing domestic water service.
  - Recommendations for efficient domestic water heating, grey water treatment, low-flow plumbing fixtures/drains, piping and insulation materials.
- **Existing Utilities**
  - Identification of existing electrical utility equipment locations, points of electrical service to existing buildings, existing domestic water and sewer lines, existing gas lines.
  - Recommendations for meeting power load requirements.

### MEP Strategies

**Analysis**

- **Prepared by:** KPFF
- **Prepared by:** Glumac
- **Prepared by:** Antea Group
- **Prepared by:** KPFF
- **Prepared by:** Glumac
- **Prepared by:** Antea Group

**NARRATIVE OUTLINE**

- **Mechanical Engineering**
  - Description of applicable codes and standards.
  - Analysis of HVAC design criteria: outdoor and indoor design criteria, building envelope, air distribution and pipework design criteria, interior plant systems temperatures.
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  - Recommendations for meeting power load requirements.

### Structural Analysis

**Analysis**

- **Prepared by:** John A. Martin & Associates
- **Prepared by:** Glumac
- **Prepared by:** Antea Group
- **Prepared by:** Linscott Law & Greenspan, Engineers
- **Prepared by:** John A. Martin & Associates
- **Prepared by:** Glumac
- **Prepared by:** Antea Group

**NARRATIVE OUTLINE**

- **Mechanical Design**
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  - Recommendations for meeting power load requirements.

### Structural Analysis

**Analysis**

- **Prepared by:** John A. Martin & Associates
- **Prepared by:** Glumac
- **Prepared by:** Antea Group
- **Prepared by:** Linscott Law & Greenspan, Engineers
- **Prepared by:** John A. Martin & Associates
- **Prepared by:** Glumac
- **Prepared by:** Antea Group

**NARRATIVE OUTLINE**

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  - Description of applicable codes and standards.
  - Analysis of HVAC design criteria: outdoor and indoor design criteria, building envelope, air distribution and pipework design criteria, interior plant systems temperatures.
  - Recommendations of HVAC systems to be considered: basement precooling/cooling system, radiant heating/cooling, central plant, geothermal and building management systems and energy reducing HVAC strategies.
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  - Description of applicable codes and standards.
  - Analysis of existing domestic water service.
  - Recommendations for efficient domestic water heating, grey water treatment, low-flow plumbing fixtures/drains, piping and insulation materials.
- **Existing Utilities**
  - Identification of existing electrical utility equipment locations, points of electrical service to existing buildings, existing domestic water and sewer lines, existing gas lines.
  - Recommendations for meeting power load requirements.
The Appendix contains reports provided by the Civil, Mechanical/Electrical/Plumbing, Structural, Historical, Traffic, and LEED consultants of the SGEC Master Plan Team. These give an overview of the existing site and its buildings together with general recommendations for the Master Plan, and are based on the following resources:

- ELAC South Gate Educational Center Final Environmental Impact Report 2009 prepared by: Terry Hayes Associates LLC 8522 National Boulevard, Suite 102 Culver City, CA 90232
- City of South Gate General Plan 2035 prepared by: City of South Gate, December 2009

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CIVIL REPORT
PREPARED BY: KPFF
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Shalzrad Bigonah, P.E.
sbigonah@kpff-la.com

NARRATIVE OUTLINE
Easements
• Descriptions and locations of existing easements on SGEC property

Storm Water
• Analysis of 11 hydrologic sub-tributary areas, storm water peak flow, storm water runoff and identification of existing storm drain locations.
• Recommendations for on-site storm drain pipes (remove any existing on-site storm drains interfering with new building and parking structure construction), storm water treatment requirements, Best Management Practice (BMP) selection, connection to LA County storm drain pipes.

Sanitary Sewer System
• Identification of sanitary sewer pipes, analysis of sewer system capacity.
• Recommendations for sewer pipe work (Remove all sewer pipes located at the north side of the project and provide temporary cap at the 16th lateral located on Santa Fe Avenue for future connection).

Water Systems
• Analysis of existing domestic and fire re water systems, fire re flow availability, identification of existing water meter, hydrant and fire hose connections on site (two 2" domestic water meters and one 8" fire re service meter on Firestone Boulevard, seven on-site fire hydrants, three off-site hydrants).
• Recommendations for new fire hydrant locations, design guidelines (A new fire service, minimum 6", should be installed to serve the new building).

MEP STRATEGIES
PREPARED BY: GLUMAC
617 W. 7th Street, Suite 500
Los Angeles, CA 90017-3830
Edwin Lee, P.E., Managing Principal
elee@glumac.com

NARRATIVE OUTLINE
Mechanical Design
• Description of applicable codes and standards.
• Analysis of HVAC design criteria: outdoor and indoor design criteria, building envelope, air distribution and pipework design criteria, central plant systems temperatures.
• Recommendations of HVAC systems to be considered: basement pre-cooling/heating system, radiant heating/cooling, central plant, geothermal and building management systems and energy-reducing HVAC strategies.

Electrical Design
• Description of applicable codes and standards.
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• Analysis of solar power generation and feasible locations for solar panel arrays.

Plumbing Design
• Description of applicable codes and standards.
• Analysis of existing domestic water service.
• Recommendations for efficient domestic water heating, grey water treatment, low-flow plumbing fixtures/drains, piping and insulation materials.

Existing Utilities
• Identification of existing electrical utility equipment locations, points of electrical service to existing buildings, existing domestic water and sewer lines, existing gas lines.
• Recommendations for meeting power load requirements.

STRUCTURAL ANALYSIS
PREPARED BY: John A. Martin & Associates
25129 The Old Road, Suite 316
Slovenian Ranch, CA 91381
Chuck Whitaker, Principal
WHITAKER@johnmartin.com

NARRATIVE OUTLINE
New SGEC Building
• General description of proposed SGEC Building.
• Vertical load system and vibration requirements.
• Lateral load system requirements.
• Foundation elements and superstructure-to-foundation connections.
• Structural Parameters.
• Structural Observations.
• Testing and Inspections.
• Modifications to existing structures.

HISTORICAL REPORT
PREPARED BY: SWCA
625 Fair Oaks Avenue, Suite 190
South Pasadena, CA 91030
Shannon Carmack, Architectural Historian
scarmack@swca.com

NARRATIVE OUTLINE
Property Significance and History
• Property Background and History
• Project Plan

Historic Preservation Goals
• Character-Defining Features
• Site and Buildings

Project Implementation
• Recommendations
• Construction of new buildings shall be differentiated from the old and shall be compatible with their massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.

TRAFFIC ANALYSIS
PREPARED BY: Antea Group
600 South Lake Avenue, Suite 500
Pasadena, CA 91106
Clare M. Look-Jaeger, P.E., Principal
look-jaeger@anteagroup.com
Alfred C. Ying, P.G., P.T.P.
ying@anteagroup.com

NARRATIVE OUTLINE
Transportation System/Network
• Description of existing multi-modal transportation network including major freeways, arterials, transit and bicycle systems.
• Description of adjacent roadway characteristics.

Transportation Master Planning Principles/Goals
• Description of transportation strategies employed in SGEC Master plan including: multi-modal access opportunities, transit/shuttle integration, efficient circulation system for all users, and a safe and effective pedestrian experience.

Master Plan Circulation And Parking
• Analysis of vehicular circulation and recommended signals for new campus access points
• Analysis of non-vehicular circulation and pedestrian pathways from entries at Santa Fe Avenue and Firestone Boulevard to all buildings.

Analysis of proposed new parking structure including parking counts, appropriate control lanes to mitigate congestion.

LEED STRATEGIES
PREPARED BY: Antea Group
3229 E. Spring Street, Suite 201
Long Beach, CA 90806
Amber Keenoy, LEED AP BD+C, Senior Consultant
amber.keenoy@anteagroup.com

NARRATIVE OUTLINE
Overview
• Description of LEED certification process and certification levels.

Credit Summaries & Recommendations
• Descriptions of strategies and associated costs to achieve LEED credits in each of the LEED NC 2.2 Rating System categories: Sustainable Sites, Water Efficiency, Energy & Atmosphere, Materials & Resources, Indoor Environmental Quality, and Innovation in Design.

Sample Scorecards
• Sample scorecards for three SGEC certification scenarios: two at Gold level and one at Platinum.

April 16, 2013
FIRESTONE EDUCATIONAL CENTER MASTER PLAN 2013 APPENDIX A 2
PROJECT DESCRIPTION

The South Gate Educational Center (SGEC) is located in the City of South Gate between Southern Pacific Railroad to the north, Santa Fe Avenue to the east, Firestone Boulevard to the south, and an existing industrial establishment to the west. The site is 18.5 acres, and has four two-to-four story buildings, truck yards and surface parking lots. The SGEC project consists of demolition of existing Buildings 1, 3 & 4, and construction of a new 3-story classroom/office building, new parking structure (five levels above ground, one level below) and new surface parking, internal roadways, and open space.

EASEMENTS

There are currently ten (10) easements associated with the project site. See below for the description of the easements:

1. 64.0’ and variable width easement to the City of South Gate for utility purposes per Parcel Map No. 40, Book 165, Pages 70 to 75, of Parcel Maps, of which only 32.0’ of the easement falls within South Gate Educational Center parcel.

2. Variable width easement for street purposes recorded 06-06-1986 as Instrument No. 86-710942, O.R., located at the west.

3. 6.0’ wide underground utility easement recorded 05-06-1982 Instrument No. 82-469199, O.R., located at the west.


5. 10.0’ wide public utility easement recorded 11-10-1950 Instrument No. 2520, O.R. located at the north.


7. 13.0’ wide underground utility easement recorded 09-29-1983 as Instrument No. 83-1149966, O.R. located at the south.

8. Easement for pole lines recorded 08-10-1955 as Instrument No. 3350, O.R.

9. 6.0’ wide public utility easement recorded 05-06-1982 Instrument No. 82-1030298, O.R. located at the west.

10. Variable width easement for street purposes recorded 06-06-1986 as Instrument No. 86-710942, O.R., located at the west.

See Exhibit 1 for the existing easement locations and alignments.
Sub-tributary E and F: Located at the east side of the property and currently designated as a loading area.

Sub-tributary G and H: Located at the south-east corner of the property and currently designated as a vehicular parking and loading area.

Sub-tributary I: Existing Building 2 (to remain).

Sub-tributary J: Existing Buildings 1 and 3 (to be demolished).

Sub-tributary K: Existing Building 4 (to be demolished).

The hydrology analysis performed for the SGEC shows that the campus generates peak flows of 2.98 and 2.58 cfs/acre during storm events of 50 and 25 year frequency.

Exhibit 2 shows the hydrologic analysis performed on 50 and 25 year storm events based on the Los Angeles County Modified Rational Method and the mitigated volume of storm water (Vm) to be treated and infiltrated (if feasible) to comply with the California Water Resources Storm Water Quality Control Board.

The storm water runoff generated by the site is discharged to the County of Los Angeles 36" storm drain line on Santa Fe Avenue and 42" storm drain line on South Gate Boulevard. The runoff generated by sub-tributary area A-D sheet flows to existing valley gutter and catch basins and discharges to an existing County of Los Angeles 42" storm drain line on Firestone Boulevard. The runoff generated by sub-tributary area E-F sheet flows to County of Los Angeles (off-site) side opening catch basins on Santa Fe Avenue. The runoff generated by sub-tributary area G-H sheet flows to County of Los Angeles (off-site) side opening catch basins on Firestone Boulevard. The runoff generated by sub-tributary area I-K is channelized from buildings to underground storm drain system (further investigation will be required during the design phase).

**Description and Observations**

The boundary of the South Gate Educational Center encompasses an area of 18.5 acres. The majority of surface area is impermeable (asphalt, concrete and buildings).

Based on our site visit and the topographic survey provided by the college, the campus’ hydrologic boundary and sub-tributary areas are established as indicated on Exhibit 2.

Eleven main hydrologic sub-tributary areas are established:

- Sub-tributary areas A, B and C: Located at the northwest corner of the property and currently designated as a loading area.

- Sub-tributary D: Located at the west side of the property, currently designated as a driveway.

- Sub-tributary E and F: Located at the east side of the property and currently designated as a loading area.

- Sub-tributary G and H: Located at the south-east corner of the property and currently designated as a vehicular parking and loading area.

- Sub-tributary I: Existing Building 2 (to remain).

- Sub-tributary J: Existing Buildings 1 and 3 (to be demolished).

- Sub-tributary K: Existing Building 4 (to be demolished).
RECOMMENDATIONS

EXISTING ROOF DRAINS AND ON-SITE STORM DRAIN PIPES

We recommend that the Design/Build team remove and cap all the existing Building 4 roof drains (after the locations are verified in field) and remove any portion of existing on-site storm drain pipes which may interfere with the new building and parking structure construction.

STORM WATER TREATMENT REQUIREMENTS

Land development and construction activities have the potential to significantly alter drainage and runoff flow rates/volumes, and contribute pollutants to urban runoff. During construction, erosion and removal of existing soils and vegetation can impact downstream conditions. After construction, impervious surfaces created by buildings, site pavements, roads, and parking lots prevent storm water from directly percolating into the soil, and create increased in-flows and potential adverse impacts to water quality.

With growing concerns about urban storm water pollution, Federal and State regulations require projects to implement controls that treat polluted runoff and control discharge rates. The Los Angeles Community College District (LACCD) and City of South Gate requirements need to be met for South Gate Educational Center project.

LACCD requires implementing a storm water management plan that reduces impervious cover, promotes infiltration, and captures and treats the storm water runoff from 90% of the average annual rainfall using acceptable best management practices (BMPs). BMPs used to treat runoff must be capable of removing 80% of the average annual post development total suspended solids (TSS) load based on existing monitoring reports.

Also, LACCD has mandated that no storm water shall leave the campus; it must be collected and stored for re-use or infiltration on-site (if feasible). They recommend reduction in the amount of impervious area as a most effective method to minimize the storm water runoff volume as well as using pervious paving materials and/or open grid paving (depending on soils percolation rate), storm water harvesting for reuse in irrigation and/or buildings, green roofs, bioswales/vegetated filter strips, and retention ponds. Refer to LACCD Sustainable Design Standards, May 2009 Edition, for more details.

In addition, the State Water Resources Control Board has adopted the National Pollutant Discharge Elimination System (NPDES) Permit for all California Boards and Los Angeles County has adopted Low Impact Design (LID), which affects the South Gate Educational Center project. LID requires all large scale nonresidential development projects to prioritize selection of BMPs to treat storm water pollutants, reduce storm water runoff volume, and promote groundwater infiltration (if feasible) and storm water reuse in an integrated approach to protecting water quality and managing water resources. Refer to the Los Angeles County Low Impact Development Standards Manual for more details.

BEST MANAGEMENT PRACTICES (BMP) SELECTION

A soils report was done on for the project by Byer Geotechnical, Inc., dated January 28, 2011. Fill soils of varying depths were encountered on site. Natural alluvium underlies the project site, the upper 10 to 17 feet of which consists of sand; below that the alluvium consists of stratified layers of sandy silt, silty clay, clayey sand and sand to an approximate depth of 47 feet below grade. Below that, the alluvium consists of sand. Byer conducted an in situ percolation test on November 11, 2010 and determined that the percolation rate of the upper soils is expected to range from 292 to 436 inches per hour. Based on these results, infiltration trenches or bioswales or drywells can be implemented for storm water treatment and infiltration at upper level of soil.

It is recommended by the geotechnical engineer that the proposed location of the infiltration system be advanced below the existing future fill. It is also recommended that the infiltration system be set back at least 10 feet from adjacent private property boundaries and at least 20 feet from structural foundations or retaining/basement walls. A geotechnical engineer should review the final plans to verify the location and design of the infiltration system. If percolation rates vary from the report, and infiltration is determined to be not feasible by the geotechnical and civil engineer, then implementation of hard bottom planter boxes or bioswales is recommended.

CONNECTION TO LOS ANGELES COUNTY STORM DRAIN PIPES

The existing storm drain pipes are likely to be in bad shape considering their age, and very likely there will be a lot of conflict between the location of existing lines and new buildings. Therefore, we recommend the Design/Build Team bring new storm drain pipe connections onto the site from LACDPW storm drain lines on Santa Fe Avenue and Firestone Boulevard. New pipe connection permits need to be obtained from Los Angeles County Department of Public Works.

Based on the Q allowable provided by LACDPW, only 9 acres of the site stormwater runoff can be discharged to the 36” line on Santa Fe Avenue with Q allowable of 1.67 cfs/acre. See Exhibit SD.1. The rest of the site stormwater runoff can discharge to the 42” storm drain line of Firestone Boulevard (if hydraulically feasible) with Q allowable of 1.00 cfs/acre. See Exhibit SD.2.

Storm drain system shall be designed in conformance with latest LACCD design guide, May 2009 Edition.
INFORMATION REQUEST SUMMARY

INFORMATION REQUESTED BY
Requester's Name: Shahrzad Bigonah
Company: KPFF
Phone Number: 310-665-2800 Fax Number: 310-850-8279
Email: sbigonah@kpff-la.com

Method of Contact: Walk-in Phone Fax Email Prelim. Mtg. Date: 10/14/10

Intended Use: Planning
Proposed Project Type: Educational Acreage Involved: 18.7

Will information be used in any litigation? YES NO
Case Info Name: No Location:

Requester's Signature:

INFORMATION REQUESTED

LACFCD Facility: Name: Santa Fe Ave. Drain
Station: 1+00 to 7+06 City: South Gate
Street/Cross-street: Firestone Blvd and Independence Ave.

Hydrologic Data, Hydraulic Calculation

BELOW SECTION TO BE COMPLETED BY THE HYDRAULIC ANALYSIS UNIT

INFORMATION PROVIDED:

REFERENCES SEARCHED:

COMMENTS, ETC:

FOLLOW-UP REQUIRED:

INFORMATION PROVIDED BY:

REFERENCES SEARCHED:

COMMENTS, ETC:

FOLLOW-UP REQUIRED:

INFORMATION PROVIDED BY:

REFERENCES SEARCHED:

COMMENTS, ETC:

FOLLOW-UP REQUIRED:
There are four (4) sewer lateral connections serving South Gate Educational Center and HON site. Three (3) lateral connections are on Santa Fe Avenue and one (1) lateral connection is on Firestone Boulevard (See Exhibit ).

All of existing Building 1 and the majority of existing Building 3 sewage discharges to the City of South Gate existing 15” Vitrified Clay Pipe (VCP) line by two 12” VCP laterals, for conveyance to the District’s Mountain View-Belle Vernon Relief Extension Trunk Sewer, located in Truba Avenue at Missouri Avenue. The sewage from the showers and washroom located at the northwest corner of Building 3 and the sewage generated by existing Building 4 discharge to existing City of South Gate 15” VCP line by a 16” VCP lateral, for conveyance to the District’s Mountain View-Belle Vernon Relief Extension Trunk Sewer, located in Truba Avenue at Missouri Avenue. The 18-inch diameter Mountain View-Belle Vernon Relief Extension Trunk Sewer has a design capacity of 1.9 million GPD and conveyed peak flow of 1.3 million GPD when last measured in 2009.

The sewage generated by the western part of the campus and the washroom located at the northwest corner of Building 3 discharges to 21” pipe by a privately maintained 18” VCP sanitary sewer pipe running parallel to Calden Avenue for conveyance to the Los Angeles County Sanitation District Alameda Street Extension Trunk Sewer, located in a right-of-way east of railroad tracks just north of Southern Avenue. The 21-inch diameter Alameda Street Extension Trunk Sewer has a design capacity of 400 Million GPD and currently process an average of 280.5 Million GPD.

The total sewage generated by maximum estimated 9,000 students will be about 180,000 Gallons per Day (167 gpm), according to Los Angeles Sanitation District Table 1 (See Exhibit SS.1). Loading for each Class of Land Use (20 Gallon Per Day per Student), which is equal to 666 Fixture Unit.

**RECOMMENDATIONS**

The proposed new building setting will impact the sewer system at the north side of the project. We recommend the design build team remove all the sewer pipes and appurtenances at the north side of the project and provide a temporary cap at the 16” lateral located on Santa Fe Avenue for future connection. The existing 16” sanitary sewer lateral seems to have a high capacity (more than what is expected for the proposed new building); we recommend the design build team re-size the lateral based on New Building demand with minimum 2 ft/s velocity at 2.0% slope and 50% full flow and obtain a connection permit from City of South Gate.

The sanitary sewer system shall be designed in conformance with the latest LACCD design guidelines.

---

**EXISTING SANITARY SEWER SYSTEM**

<table>
<thead>
<tr>
<th>Size</th>
<th>Street</th>
<th>Location</th>
<th>Capacity at 1% Slope</th>
<th>Capacity at 2% Slope</th>
</tr>
</thead>
<tbody>
<tr>
<td>16”</td>
<td>Santa Fe Avenue</td>
<td>592 ft N of Firestone</td>
<td>&gt;8,300</td>
<td>&gt;8,300</td>
</tr>
<tr>
<td>12”</td>
<td>Santa Fe Avenue</td>
<td>430 ft N of Firestone</td>
<td>6,560</td>
<td>8,200</td>
</tr>
<tr>
<td>12”</td>
<td>Santa Fe Avenue</td>
<td>144 ft N of Firestone</td>
<td>6,560</td>
<td>8,200</td>
</tr>
<tr>
<td>18”</td>
<td>Firestone Boulevard</td>
<td>1,338 ft E of Santa Fe</td>
<td>&gt;8,300</td>
<td>&gt;8,300</td>
</tr>
</tbody>
</table>

**CIVIL REPORT: SANITARY SEWER SYSTEM**

EXHIBIT 3. EXISTING SANITARY SEWER SYSTEM
### TABLE 1
**LOADINGS FOR EACH CLASS OF LAND USE**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>UNIT OF MEASURE</th>
<th>FLOW (Gallons Per Day)</th>
<th>COD (Pounds Per Day)</th>
<th>SUSPENDED SOLIDS (Pounds Per Day)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RESIDENTIAL</strong></td>
<td></td>
<td></td>
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<tr>
<td>Single Family Home</td>
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<td>260</td>
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<td>Duplex</td>
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<td>Triplex</td>
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<td>Fourplex</td>
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<td>Condominiums</td>
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<td>0.92</td>
<td>0.44</td>
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<td>Single Family Home (reduced rate)</td>
<td>Parcel</td>
<td>156</td>
<td>0.73</td>
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</tr>
<tr>
<td>Five Units or More (No. of Dwlg. Units)</td>
<td>156</td>
<td>0.73</td>
<td>0.35</td>
<td></td>
</tr>
<tr>
<td>Mobile Home Parks (No. of Spaces)</td>
<td>156</td>
<td>0.73</td>
<td>0.35</td>
<td></td>
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<tr>
<td><strong>COMMERCIAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hotel/Motel/Rooming House</td>
<td>Room</td>
<td>125</td>
<td>0.54</td>
<td>0.28</td>
</tr>
<tr>
<td>Store</td>
<td>1000 ft²</td>
<td>100</td>
<td>0.43</td>
<td>0.23</td>
</tr>
<tr>
<td>Supermarket</td>
<td>1000 ft²</td>
<td>150</td>
<td>2.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Shopping Center</td>
<td>1000 ft²</td>
<td>325</td>
<td>3.00</td>
<td>1.77</td>
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<tr>
<td>Regional Mall</td>
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<td>0.77</td>
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<td>200</td>
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<tr>
<td>Professional Building</td>
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<td>300</td>
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<td>Indoor Theatre</td>
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<td>Car Wash</td>
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<td>3,700</td>
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<td>Tunnel - No Recycling</td>
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<td>2,700</td>
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<td>Tunnel - Recycling</td>
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<td>Financial Institution</td>
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<td>Service Shop</td>
<td>1000 ft²</td>
<td>100</td>
<td>0.43</td>
<td>0.23</td>
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<tr>
<td>Animal Kennels</td>
<td>1000 ft²</td>
<td>100</td>
<td>0.43</td>
<td>0.23</td>
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<tr>
<td>Service Station</td>
<td>1000 ft²</td>
<td>100</td>
<td>0.43</td>
<td>0.23</td>
</tr>
<tr>
<td>Auto Sales/Repair</td>
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<td>100</td>
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<td>Wholesale Outlet</td>
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<td>100</td>
<td>0.43</td>
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<tr>
<td>Nursery/Greenhouse</td>
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<td>Manufacturing</td>
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<td>Dry Manufacturing</td>
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<td>0.23</td>
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<tr>
<td>Lumber Yard</td>
<td>1000 ft²</td>
<td>25</td>
<td>0.23</td>
<td>0.09</td>
</tr>
<tr>
<td>Warehousing</td>
<td>1000 ft²</td>
<td>25</td>
<td>0.23</td>
<td>0.09</td>
</tr>
<tr>
<td>Open Storage</td>
<td>1000 ft²</td>
<td>25</td>
<td>0.23</td>
<td>0.09</td>
</tr>
<tr>
<td>Drive-in Theatre</td>
<td>1000 ft²</td>
<td>20</td>
<td>0.09</td>
<td>0.05</td>
</tr>
</tbody>
</table>
DESCRIPTION AND OBSERVATIONS

There are two 2" domestic water meters and one 8" fire service meter located on Firestone Boulevard. Based on the information obtained from the City of South Gate for fire flow availability, the hydrant located at the northeast corner of the site on Santa Fe Avenue has a residual pressure of 42 PSI and flow rate of 2,648 gpm at 20 PSI, and the hydrant at the southwest corner of the site on Firestone Boulevard has a residual pressure of 45 PSI and flow rate of 2,307 gpm at 20 PSI. See Exhibit FW.1 for the existing fire flow and pressure information provided by the City of South Gate.

There are currently seven on-site fire hydrants. Two of them are associated with new building construction. There are three off-site hydrants, one on Santa Fe Avenue and two on Firestone Boulevard. See Figure FW.1 for the existing fire flow and pressure provided by the City of South Gate.

There is a backflow preventer device located at the southwest of property with connection to the fire service room. Based on visual observation, there appear to be several fire hose connections on the west side of the room and a pressure reducing valve located at the south side of existing Building 1.

According to the on-site water as-built plan received from the city of South Gate, it appears that there was a water tower at the northwest corner of the site which has been removed previously. How or why it was abandoned is not clear; there is no record on how abandonment was accomplished. What appeared to be a water well head and partial support structure were found during Anderson Environmental’s exploration which likely used to feed the water tower.

RECOMMENDATIONS

No utilities shall be located under new building and parking structure; existing utilities that fall within new building footprints shall be relocated as required. The future Design-Build Team is responsible for complete removal of the well structure and all appurtenances and coordination with the city.

Existing on-site fire hydrants that are located within the driveway area shall be relocated as required. No fire hydrant should be located within the vehicular and pedestrian access areas.

New fire service should be installed to serve new building. It is anticipated that this line (minimum 6") would be fed from the existing City water main on Santa Fe Avenue. Hydraulic calculations for fire flow by a California Licensed Professional Engineer should be performed to ascertain if a fire sprinkler pump is required. If it is, provisions for pump housing, tank and electrical requirements shall be provided.

Approvals need to be obtained from the Local Fire Department (City of South Gate) for fire flow, site access, dispersal areas, and on-site fire hydrants.

The domestic water and fire water distribution system shall be designed in conformance with LACCD latest design guide.
### Information on Fire Flow Availability for Building Permit

**For All Buildings Other Than Single Family Dwellings (R-3)**

**INSTRUCTIONS:**
- Complete parts I. (A) when:
  - Verifying fire flow, fire hydrant location and fire hydrant size.
- Complete parts I. (A), II. (A) when:
  - For buildings equipped with fire sprinkler systems, and/or private on-site fire hydrants.

#### PART I

**Building Address:** 2525 Firestone Blvd  
**City or Area:** South Gate  
**Nearest Cross Street:** Alameda St  
**Distance of Nearest Cross Street:** 10 Feet  
**Applicant:** Shahmirzad Bigonah  
**Telephone:** (310) 665-2900  
**Address:** 6180 Center Dr Unit 700  
**City:** Los Angeles CA 90045  
**Occupancy (Use of Building):** Educational  
**Sprinklered: Yes X No**  
**Type of Construction:**  
**Square Footage:** 111,470  
**Number of Stories:**  
**Present Zoning:**  
**Inspector's Signature:**  
**Date:** October 4, 2010  

#### PART II

**Location:** 2525 Firestone Blvd  
**Distance from Nearest Property Line:** 50'  
**Size of Hydrant:** 6"  
**Size of Water Main:** 10"  
**Static PSI:** 60  
**Residual PSI:** 42  
**Orifice size:** 4"  
**Flow Test Date / Time:** 10/30/10 10:30AM  
**Location:** 2525 Firestone Blvd on Santa Fe Ave  
**Distance from Nearest Property Line:** 50'  
**Size of Hydrant:** 6"  
**Size of Water Main:** 12"  
**Static PSI:** 60  
**Residual PSI:** 45  
**Orifice size:** 4"  
**Flow Test Date / Time:** 10/30/10 11:00AM  

**Location:** 2525 Firestone Blvd on Santa Fe Ave  
**Distance from Nearest Property Line:** 50'  
**Size of Hydrant:** 6"  
**Size of Water Main:** 12"  
**Static PSI:** 60  
**Residual PSI:** 45  
**Orifice size:** 4"  
**Flow Test Date / Time:** 10/30/10 11:00AM  

**PART II-B SPRINKLERED BUILDINGS/PRIVATE FIRE HYDRANTS ONLY**

**Detector Location (check one):**  
- Above Grade  
- Below Grade  
- Either  

**Backflow Protection Required (Fire Sprinklers/Private Hydrant) (check one):**  
- Yes  
- No  

**Minimum Type of Protection Required (check one):**  
- Single Check Detector Assembly  
- Double Check Detector Assembly  
- Reduced Pressure Principle Detector Assembly  

**City of South Gate:**  
**Date:** 10/30/10  
**Title:** Firestone Educational Center Master Plan 2013 Appendix

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**EXHIBIT FW.1**
HVAC GOVERNING CODES AND STANDARDS

The HVAC design will comply with all current applicable codes and standards, including those listed below:

2. 2007 California Mechanical Code based on the 2006 Uniform Mechanical Code (UMC), with City of Los Angeles Amendments.
3. 2007 California Energy Code based on Title 24, Part 6, 2005 standards.
4. Americans with Disability Act (ADA)

Standards

1. American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)
   • Handbooks: Fundamentals, Applications, Systems and Equipment
   • Standard 15: Safety Code for Mechanical Refrigeration
   • Standard 52: Gravimetric and Dust – Spot Procedures for Testing Air-Cleaning Devices Used in General Ventilation for Removing Particulate Matter
   • Standard 55: Thermal Environmental Conditions for Human Occupancy
   • Standard 62: Ventilation for Acceptable Indoor Air Quality
   • Standard 90.1: Energy Efficient Design of New Buildings except Low Rise Residential Buildings
   • Standard 105: Standard Method of Measuring and Expressing Building Energy Performance
   • Standard 114: Energy Management Control Systems Instrumentation
   • Standard 135: BACnet a Data Communication Protocol for Building Automation and Control Networks
   • NFPA 90A – Installation of Air Conditioning and Ventilating Systems
   • NFPA 92A – Smoke-Control Systems
   • NFPA 96 – Ventilation and Fire Protection of Commercial Cooking Operations
   • NFPA 101 – Life Safety Code
   • NFPA 101 – Life Safety Code
   • NFPA 92A – Smoke-Control Systems
   • NFPA 96 – Ventilation and Fire Protection of Commercial Cooking Operations
   • NFPA 101 – Life Safety Code
   • NFPA 90A – Installation of Air Conditioning and Ventilating Systems
   • NFPA 92A – Smoke-Control Systems
   • NFPA 96 – Ventilation and Fire Protection of Commercial Cooking Operations
   • NFPA 101 – Life Safety Code
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   • NFPA 96 – Ventilation and Fire Protection of Commercial Cooking Operations
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   • NFPA 90A – Installation of Air Conditioning and Ventilating Systems
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   • NFPA 96 – Ventilation and Fire Protection of Commercial Cooking Operations
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   • NFPA 90A – Installation of Air Conditioning and Ventilating Systems
   • NFPA 92A – Smoke-Control Systems
   • NFPA 96 – Ventilation and Fire Protection of Commercial Cooking Operations
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   • NFPA 96 – Ventilation and Fire Protection of Commercial Cooking Operations
   • NFPA 101 – Life Safety Code
   • NFPA 90A – Installation of Air Conditioning and Ventilating Systems
   • NFPA 92A – Smoke-Control Systems
   • NFPA 96 – Ventilation and Fire Protection of Commercial Cooking Operations
   • NFPA 101 – Life Safety Code

2. Air Conditioning and Refrigeration Institute (ARI) Standards
   • NFPA 90A – Installation of Air Conditioning and Ventilating Systems
   • NFPA 92A – Smoke-Control Systems
   • NFPA 96 – Ventilation and Fire Protection of Commercial Cooking Operations
   • NFPA 101 – Life Safety Code

3. International Fire Protection Association (NFPA) Standards
   • NFPA 90A – Installation of Air Conditioning and Ventilating Systems
   • NFPA 92A – Smoke-Control Systems
   • NFPA 96 – Ventilation and Fire Protection of Commercial Cooking Operations
   • NFPA 101 – Life Safety Code

4. Sheet Metal Air Conditioning Contractors National Association (SMACNA)
   • NFPA 90A – Installation of Air Conditioning and Ventilating Systems
   • NFPA 92A – Smoke-Control Systems
   • NFPA 96 – Ventilation and Fire Protection of Commercial Cooking Operations
   • NFPA 101 – Life Safety Code

5. National Fire Protection Association (NFPA) Standards
   • NFPA 90A – Installation of Air Conditioning and Ventilating Systems
   • NFPA 92A – Smoke-Control Systems
   • NFPA 96 – Ventilation and Fire Protection of Commercial Cooking Operations
   • NFPA 101 – Life Safety Code

6. Environment Protection Safety Agency Regulations
   • NFPA 90A – Installation of Air Conditioning and Ventilating Systems
   • NFPA 92A – Smoke-Control Systems
   • NFPA 96 – Ventilation and Fire Protection of Commercial Cooking Operations
   • NFPA 101 – Life Safety Code

7. American National Standards Institute (ANSI) publications
   • NFPA 90A – Installation of Air Conditioning and Ventilating Systems
   • NFPA 92A – Smoke-Control Systems
   • NFPA 96 – Ventilation and Fire Protection of Commercial Cooking Operations
   • NFPA 101 – Life Safety Code

HVAC DESIGN CRITERIA

OUTDOOR DESIGN CRITERIA – SOUTH GATE, CALIFORNIA

INDOOR DESIGN CRITERIA

In order to meet the project’s energy conservation goals, Title 24 minimum requirements are to be exceeded by 24%, the minimum energy requirement mandated by LACCD and implemented in all current LACCD projects.

1. Lighting:
   • Per Title 24 maximum allowed values based on occupancy

2. Receptacle power:
   • Per ASHRAE Standard 62 and Title 24, whichever value is greater.

3. Exhaust to outdoors:
   • Type I grease exhaust for concession area and outside vendor food service spaces.
   • Restrooms and Lockers: 12-15 air changes per hour.
   • High Volume Copy Rooms: Dedicated exhaust and supply to maintain negative pressure in copy room in relation to the adjoining spaces.
   • Large Storage and Equipment Areas: 0.25 CFM per square foot of floor area.

BUILDING ENVELOPE

AIR DISTRIBUTION DESIGN CRITERIA

1. All ductwork: 0.08” w.g./100 ft. max
2. Overhead Air Distribution System:
   • 1500 fpm max above ceiling
3. Exhaust Velocity:
   • 1500-2000 fpm

PIPEWORK DESIGN CRITERIA

1. Maximum Drop: 3 ft. w.g / 100 ft.
2. Overhead Air Distribution System:
   • 1500 fpm max above ceiling
3. Exhaust Velocity:
   • 1500-2000 fpm

CENTRAL PLANT SYSTEMS TEMPERATURES

1. Recommended Chilled Water
   • Entering water temperature: 42°F
   • Leaving water temperature: 58°F
2. Recommended Heating Water
   • Entering water temperature: 180°F
   • Leaving water temperature: 140°F

This campus is intended to incorporate, as much as possible, sustainable MEP design features into the project and integrate with the overall buildings design to achieve the most sustainable design approach.
MEP STRATEGIES: MECHANICAL DESIGN

HVAC SYSTEMS TO BE CONSIDERED BY DESIGN BUILD TEAM

BASEMENT PRE-COOLING/HEATING SYSTEM
This concept involves routing air through a basement to achieve cooling or heating depending on ambient air conditions. Such a precooling/heating system can reduce the mechanical cooling/heating load. Earth temperatures and, consequently, precooling performance vary significantly from sunny to shady locations. Where possible, inlets should be placed in shady areas. There is no simple formula for determining the amount of precooling desired. The precooling will be even more effective if the duct can be buried and insulated underground. Local soil conditions, soil moisture, and other site-specific factors should be considered to determine the amount of precooling. The ground temperature in South Gate (Climate zone 8) is about 58-68 °F at a depth of 6 feet and 59-66 °F at a depth of 13 feet.

RADIANT FLOOR SYSTEM
Traditionally, radiant floors have been used primarily for heating in the winter. Radiant floor heating turns the floor into a large, low temperature radiator and warms all the surfaces of a room. These surfaces surround a person with warmth. Recently, cooling with radiant floors has increased in popularity. Radiant floor cooling operates on the same principle as radiant floor heating, with the floor in reverse. Radiant floors may consist of PEX tubing built into the floor construction. The tubing carries heating hot water or chilled water to heat/cool the floor, which in turn heats/cools the rest of the room. The tubing can be embedded in a concrete topping slab. This layer of concrete acts as an excellent heat storage device, stabilizing the space temperature. A layer of rigid foam insulation is required under the radiant slabs. An insulation thickness of 4” is recommended.

In cooling mode, condensation on radiant floors is a consideration. During the design process, a finite element analysis model will be used to calculate the heat transfer and temperature distribution through the floor. The cooling output of the floor will be determined for a surface temperature that is above the design dew-point, so that cooling output and thermal comfort will be known for the design conditions and condensation will not occur. The HVAC controls system will incorporate humidity sensors, floor surface temperature sensors, and controls logic to ensure that condensation does not occur during all operating conditions. The radiant floor system would be ideal for Building 1.

OTHER SYSTEMS
It is recommended that the new building have floor mounted VAV indoor air handlers with chilled water coils for cooling and VAV terminal boxes with heating hot water reheat coils for heating. Some of the large indoor air handlers will require heating coils in the air handler, such as those with extended operating hours or 100% outside air system. Air handling units with UV lamps provide better indoor air quality. The condensate water can be piped to a collection tank and recycled for cooling tower make up.
**Electrical Systems to Be Considered by Design Build Team**

The electrical design must comply with the most recent editions of all applicable codes and standards, including those listed below:

**Codes**
2. California Electrical Code based on the National Electrical Code, with City of Los Angeles Amendments.
4. Americans with Disability Act (ADA)

**Standards**
1. National Fire Protection Association (NFPA) Standards
2. Underwriters Laboratory (UL)
3. Illuminating Engineering Society of North America (IES-NA)
4. Institute of Electrical and Electronics Engineers (IEEE)
5. American National Standards Institute (ANSI)

**Incoming Service**

The existing site plan shows a number of transformers located around the existing buildings on or close to existing underground utility easements. Therefore, any new power supply to new buildings will need to be obtained from SCE.

There are at least two existing transformers located on the site currently serving Building 1. There is an existing transformer feeding Building 3. It is recommended that the Design-Build Team determine the power load requirements for the new SGEC Building and parking structure based on the new program and determine if the existing incoming services to these buildings are adequate. If the power demand exceeds the existing capacity, a new service will be required from SCE.

The locations of the electrical utility equipment and easements are identified on Exhibit 1: Existing Site Utilities (page A16).

As the exact details (service voltage, feeder locations, etc.) are unknown, there are two options which should be considered for the new building power supply:

- **Option #1:** Assuming there is adequate power for the new buildings from the SCE service at 480Y/277V, 3 phase, 4 wires, the existing main switchboard should be replaced with a new switchboard of equal capacity and size for the new project.

- **Option #2:** Assuming there is an inadequate power for the new buildings, a new power supply should be part of the site electrical infrastructure. The site electrical infrastructure should not be formed as part of the new building. A separate site electrical infrastructure should cover the power supply upgrade from SCE and distribute the power to the new buildings. It is assumed that the new service to the renovated building will be rated at 480Y/277V, 3 phase, 4 wires.

**Power Distribution for New SGEC Building**

All the panel boards should be designed with 42 circuits and a main breaker.

Dry-type step down transformers should be provided for the 208Y/120V power and located at strategic locations throughout the first floor and on second floor. A 208Y/120V, 3 phase, 4 wires distribution board with ground bus should be provided in each location to feed the 208Y/120V panel boards. All the equipment should be located in the electrical room.

Dedicated panel boards should be provided at strategic locations for lighting with lighting control panels. Dedicated distribution boards should be provided in mechanical rooms for power feeders to mechanical and plumbing equipment.

**Power Distribution for New Parking Structure**

All the panel boards should be designed with 42 circuits and a main breaker.

Dedicated panel boards should be provided at strategic locations for lighting with lighting control panels. Dedicated distribution boards should be provided in mechanical rooms for power feeders to mechanical and plumbing equipment.

**Lighting and Lighting Control**

The lighting levels should be designed in accordance with Illuminating Engineers Society (IES) standards and the lighting power density in accordance with the California Energy Code. The lighting system shall exceed Title 24 energy standards by 20%. Besides compact fluorescent lamps with direct and indirect luminaries, other advanced light sources such as LED lights should be considered in the lighting design. LED lights have several advantages such as low energy power and extended lamp life as well as high light quality. Incandescent lighting is not recommended due to low energy efficiency.

The lighting control package should include such provisions as dual technology occupancy sensors, photocells, timers, override switches and central lighting controls for power feeders to mechanical and plumbing systems.

**Emergency Power**

Emergency generators using ultra low sulphur diesel fuel should be provided for emergency power to this facility. Generators should be located adjacent to the buildings, and have an integral under frame tank for fuel storage. The generators should be rated for the building voltage. The following is a preliminary list of equipment that is anticipated to have emergency power requirements:

- **Power systems for critical control and communication equipment (e.g. server & IDF rooms)**

**MEASUREMENT**

Digital metering should be provided for new building and parking structure power consumption. Additional meters should be provided to meter the power consumption of lighting and HVAC panels. Net metering should be provided for interconnecting on-site generation from any photovoltaic panels. Additional, customer-owned load monitoring should be provided and interfaced with the site building management system (BMS).

**EMERGENCY POWER**

Emergency generators using ultra low sulphur diesel fuel should be provided for emergency power to this facility. Generators should be located adjacent to the buildings, and have an integral under frame tank for fuel storage. The generators should be rated for the building voltage. The following is a preliminary list of equipment that is anticipated to have emergency power requirements:

- Emergency elevators
- Egress lighting (hallways, common areas and spaces with high occupancy)
- Exit signs
- Fire alarm system
- Power and cooling systems for the server room, UPS/battery room and IDF rooms

A low-voltage lighting control system should be incorporated to provide the following functions:

- Time clock auto-off function for open office and common areas
- Photocell-on and time clock-off function for exterior lighting
- Daylight harvesting controls for dimming light fixtures when daylight is available.
- Peak demand auto-load-shedding by dimming light fixtures as described above.

Exterior lighting should include only full cutoff fixtures which prevent upward light that causes light pollution. In addition, exterior lighting should be placed to avoid excessive light trespass behind the project boundary. High mercury content HID fixtures such as metal halide should not be included in the lighting package.

Parking structure lighting should be LED type and controlled via an occupancy sensor.
PLUMBING SYSTEMS TO BE CONSIDERED BY DESIGN-BUILD TEAM

SECURITY SYSTEM

Security systems should be provided for each building as necessary. The electrical infrastructure should outline provisions for security stations, card readers, security cameras, and other necessary equipment per LACCD standards.

PHOTOVOLTAIC PANELS

Photovoltaic cells consist of thin semiconductor plates that convert light energy into electrical energy. The electrical energy is converted by a transformer and inverter, and utilized for building power. The connection to the main switchboard is in parallel with the utility electrical service, and all the utility continuously provides all power in excess of what is produced by the photovoltaic system. Conversely, the utility company provides all surplus power produced by the photovoltaic system.

MECHANICAL EQUIPMENT CONNECTIONS

Connections should be made for all mechanical equipment. All motors 1/2 hp and larger should be wired for 480 volt, 3 phase power. Motors less than 1/2 hp should be wired for 120 volt, 1 phase power. Where there is a large concentration of motors (greater than six motors within one room with across the line starters), Motor Control Centers should be provided.

DOMESTIC WATER SERVICE

Domestic water service from the local utility would serve the project. A 4” to 6” water main with double check valve on the incoming service should be provided for the building. Water hammer arresters should be located at all banks of 5 xeris as well as at all locations where fast closing valves are located. Domestic water may be extended to irrigation systems and hose bibs with backflow prevention devices as required.

The California Plumbing Code requires the maximum pressure at plumbing fixtures to be 80 psi, the min is 25 psi. We recommend the pressures be limited to a maximum of 75 psi and a minimum of 30 psi.

Per project requirements, the buildings will be “double-piped” for the gray water system. That is, water closets will be supplied from a separate water distribution system and gray water will be provided to the building for fixture flushing.

A 10” water main is available from Santa Fe Ave, and a 12” water main is available on Firestone Blvd. Refer to Civil (Page A07, A09) and underground utilities drawings (Page A15) for details.

DOMESTIC WATER HEATING

It is recommended that dedicated gas-fired tankless water heaters be utilized. Accommodations should be made for heater flues and combustion air. The Raychem HWAT system is recommended, which delivers hot water with zero waste and zero waiting. The system maintains hot water temperature utilizing self-regulating electric heating cables, a set of connection kits, and an electronic controller to provide immediate hot water at the tap without the use of a water recirculation system. Solar hot water system should also be considered. The domestic hot water system should be integrated into the BMS system for control.

WASTE AND VENT

Connections with site utilities include multiple waste lines to serve the new building and the parking structure. There is a 16’ waste line running across the building and parking structure area. The combined sewer storage tank materials may include concrete, steel, fiberglass, plastic, etc. The tank must be structurally sound and light cover must be provided to prevent algae and mosquito growth. Gray water should not be stored without treatment for longer than a day, it is recommended that a high bacteria content and there is risk of going septic. The tank must be pumped out every 3-4 years. An alternate source of potable water may be necessary to supplement gray water at times of decreased supply. Backflow protection is necessary on the make-up water. Treatment depends on the quality of the incoming water and owner preferences, and its success depends on the maintenance of the equipment.

A gray water system includes:

- filters to remove sediments
- chlorine or iodine to disinfect the water
- aeration to replenish oxygen levels
- ultraviolet treatment
- reverse osmosis
- ozone treatment
- addition of a food-grade dye to the water to distinguish it from potable water

Treated gray water requires periodic testing to make sure the process is operating properly. Samples are sent to an independent testing laboratory. The gray water may then be used for toilets and urinals, and for below-grade irrigation systems and cooling tower water make-up. It requires a separate plumbing system clearly marked as non-potable. Pumping systems shall provide sufficient water pressure to fixtures at the design flow rate, sized similarly to a domestic house pump system.

The design flow is based on the number of the people useable.

THERMAL ENERGY SYSTEM

Thermal energy systems are based on power and heat production by piping systems that provide hot water at the tap without the use of a water recirculation system. Solar hot water system should also be considered. The domestic hot water system should be integrated into the BMS system for control.

RAINWATER AND GRAY WATER SYSTEMS

Rainwater collection system stores rainwater from rooftops or land surfaces to be used for toilet flushing, irrigation, cooling tower make-up water, drinking water, etc. Rainwater is channeled into enclosed/covered storage via gutters and pipes. The collected water may then be treated or filtered and pumped back to the system.

Graywater collection system is a similar concept, but collects water from domestic activities such as laundry, dishwashing, and bathing, which needs more treatment before it can be used for irrigation and other purposes. It is not potable since it may contain bacteria and other harmful pathogens. It is collected from the appropriate flues; a separate plumbing system is required to divide the waste from black water flues, which should go directly to the sanitary sewer. Local code approval from the authority having jurisdiction is required prior to installation of the system.

Gray water can be stored under or above ground. Storage tank materials may include concrete, steel, fiberglass, plastic, etc. The tank must be structurally sound and light cover must be provided to prevent algae and mosquito growth. Gray water should not be stored without treatment for longer than a day: it is recommended that a high bacteria content and there is risk of going septic. The tank must be pumped out every 3-4 years. An alternate source of potable water may be necessary to supplement gray water at times of decreased supply. Backflow protection is necessary on the make-up water. Treatment depends on the quality of the incoming water and owner preferences, and its success depends on the maintenance of the equipment. Gray water system includes:

- filters to remove sediments
- chlorine or iodine to disinfect the water
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The design flow is based on the number of the people useable.
in the building and lavatory, shower, laundry use versus toilet and urinal use. The storage tank should be large enough to hold twice the expected daily flow rate plus surge loads. Overflow is drained to the sanitary sewer, but treatment may be required to remove added chemicals before flowing to the municipal sewer. Rainwater harvested from the building storm drain system can also be reused for irrigation and toilets.

NATURAL GAS
Natural gas shall be provided for HVAC boilers, domestic water heaters, and other gas appliances.

PIPING AND INSULATION MATERIALS
The recommended pipe and insulation specifications for the project are as follows:

• Domestic Cold and Hot Water: Type L copper with soldered or brazed joints is recommended for domestic hot and cold water piping systems. The main domestic cold water risers may be Victaulic joints to accommodate shop fabrication and field installation with mechanical couplings. All branch piping is expected to be field installed.

• Piping Insulation: Fiberglass pipe insulation is required for domestic hot water piping systems. Domestic cold water piping, condensate drain piping, storm drain and overflow drain piping, and roof drain bodies shall be insulated to prevent condensation.

FIRE PROTECTION SYSTEMS
We recommend the entire facility to be protected by an automatic fire protection system in accordance with NFPA 13 and 14.

EXISTING UTILITIES

ELECTRICAL
Electrical utility equipment and easement locations are identified on Exhibit 1. There are at least three existing transformers, two on the south side of the facility serving Building 1 and one serving Building 3. Electrical service can be obtained from these transformers, but new service will be required if power load requirements exceed their capacity. Location of new service must be coordinated and confirmed from SCE. There are power poles on the east side of the facility along Santa Fe Avenue and electrical easements along the south and northwest side. SCE must confirm whether there is electrical service located along them.

PLUMBING
Plumbing utility locations are identified on the Exhibit.

1. There is a 10" water line running along Santa Fe Avenue east of the facility and a 12" water line running next to Firestone Boulevard south of the facility. Water service can be obtained from these. There are existing sewer lines currently located around the facility. New building sewer lines can be tapped into these.

GAS
There is a gas line serving Building 1 located on the west side of the building. There are also two additional gas lines which serve existing Buildings 2 and 3. Gas service can be obtained from these lines.
The South Gate site today consists of four buildings (referred to in this report as Building 1, Building 2, Building 3, and Building 4). It is our understanding that currently the owner plans to demolish Buildings 1, 3 & 4 entirely, as well as the bridge, passageway, and other small structure between Buildings 4 & 3 and 1 & 2. Building 2 will be unoccupied by the college and will remain untouched except as described below.

Building 4 was constructed relatively recently, but Buildings 1-3 at the South Gate site were constructed in the late 1920’s. Although original drawings are not available, information relating to the buildings’ construction in this report has been obtained through site observation and investigation, and as-built drawings provided by East LA College from recent surveys conducted in 1998 and 2008.

Our office has assisted the owner in the development of a survey and testing program to obtain accurate information relating to the buildings’ construction. The intent of this program was to obtain a comprehensive structural package outlining not only the physical information of structural elements (sizes, locations, etc.), but also to provide information related to the strength and other material properties of the different structural elements. Based on the results of limited material testing it has been determined that at several locations the concrete used in some of the construction is of low strength.

A brief description of each of the buildings follows with accompanying typical plans of each.

• Building 1 is a one-story structure that also has a large below grade basement level and a partial mezzanine level between the ground floor and the roof. The building is rectangular in plan and has a footprint of approximately 367 feet by 746 feet. Existing construction type as observed typically consists of concrete slabs, steel and concrete framing members, and exterior concrete walls. (Figures 1A & 1B).

• Building 2 is a three-story structure with a below grade basement level. The building is skewed in plan with a footprint of approximately 110 feet by 125 feet. The building also has an approximately 70 foot tall tower at the intersection of the wings. (Figures 2A & 2B).

• Building 3 is a four story above grade structure with a below grade basement level. The building is a long, narrow rectangle in plan and has a footprint of approximately 112 feet by 688 feet. (Figures 3A & 3B).

• Building 4 is a two story structure, trapezoidal in plan with a building footprint of approximately 300 feet by 440 feet. (Figures 4A & 4B)

**Impact on Building 3**

When Building 4 is demolished, an existing bridge connecting it to Building 3 will be removed. This will leave an opening in the exterior wall of Building 3. It is not expected that this will have any structural impact on the building. This opening will need to be filled in a manner compatible with the surrounding walls.

It is our recommendation that the owner validate our opinion with the governing agency having jurisdiction over Building 3. Please note since this building does not meet the current code requirements for use as an educational building, a fence will need to be installed to prevent the occupants of the campus from gaining access. The exact location and requirements for the design and installation of this fence will need to be discussed with DSA.
in the current Master Plan site, designed by the Los Angeles-based architecture firm Curiel & Beelman in an Italianate Mediterranean Revival style. This was the first Firestone facility outside of Akron, Ohio. Over the years, the company developed to meet the growing demands of the automobile industry in the West, and the expanded to include the adjacent parcel to the west on which a new warehouse facility, known as Building 5, was constructed in 1941. Four related outbuildings (including the eligible Quansec Hut) on the western parcel were constructed circa 1940-1950’s.

Many factors influenced the development of the property, including demand for Firestone products in West Coast markets, availability of rubber from Asia, proximity to the shipping ports already receiving raw materials for Firestone, availability of labor forces, land for future expansion and proximity to railroad lines. New work areas, conveyer lines, storage facilities, utility buildings, and manufacturing areas were all part of the booming tire and rubber complex. Not well if the feature is intact as originally designed and altered so as to no longer convey significance.

The SGEC project will include demolition of Buildings 1, 3 & 4 to make room for the new campus and construction of a new classroom/office building and new parking structure. The SGEC will accommodate rapid student population growth, meet current and future community needs, provide a full-service college curriculum for up to 9,000 students, preserve historic resources, support economic growth and redevelopment, and conserve nonrenewable resources.

Historic Preservation Goals

The SGEC Master Plan intends that development on the site complies with the Secretary of the Interior’s Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings (Standards) or the Secretary of the Interior’s Standards for Rehabilitation and Illustrated Guidelines for Rehabilitating Historic Buildings, (Rehabilitation Standards). In California, a project in conformance with the Standards is considered to have mitigated effects on historical resources to a less than significant level.

The goal of the Standards is to preserve historic materials and character. The Standards and associated Guidelines make broad-brush recommendations for maintaining, repairing, and replacing historic materials, as well as designing new additions or making alterations. They cannot be used to make essential decisions about which features should be saved or changed. But, the Standards provide philosophical consistency for such work.

There are Standards for four distinct but interrelated approaches to the treatment of historic properties: preservation, rehabilitation, restoration, and recon- struction. The Rehabilitation Standards allow the most change in a historic resource, and make accommoda-

Turing for the 1980 closure due to economic con- straint and hardship. The complex was divided, and the west parcel at 2323 Firestone Boulevard was sold to the HON Furniture Company.

The District is eligible for the California Register for its contributions to development in Southern California including associations with the Harvey S. Firestone family, development of the tire and rubber industries in California, the automobile revolution and culture, and the early twentieth century industrial boom of Los Angeles. The District is also eligible for its representation of Italianate Mediterranean Revival style architecture in 1920’s Southern California and the work of Curiel & Beelman. The use of Mediterranean Revival architectural styles in Southern California was particularly popular in the 1910’s and 1920’s, rooted in concepts and ideals emerging about the development of California’s regional identity. The Firestone plant is a direct connection to this expression of California regionalism. The buildings also serve as important representations of early twentieth century factory planning and architecture.

Project Plan

The future East Los Angeles Community College campus, the South Gate Educational Center (SGEC), will be remarkable among community colleges as an expression of social change within a context of architectural compatibility. The resulting cohesive character of the future campus will be the beneficiary of the historic development of the Firestone Tire & Rubber Company site from the late 1920’s.

Key components of the SGEC Master Plan include retention of Building 2, which will remain in its current condition and uses.

The SGEC project will include demolition of Buildings 1, 3 & 4 to make room for the new campus and construction of a new classroom/office building and new parking structure. The SGEC will accommodate rapid student population growth, meet current and future community needs, provide a full-service college curriculum for up to 9,000 students, preserve historic resources, support economic growth and redevelopment, and conserve nonrenewable resources.

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The goal of the Standards is to preserve historic materials and character. The Standards and associated Guidelines make broad-brush recommendations for maintaining, repairing, and replacing historic materials, as well as designing new additions or making alterations. They cannot be used to make essential decisions about which features should be saved or changed. But, the Standards provide philosophical consistency for such work.

There are Standards for four distinct but interrelated approaches to the treatment of historic properties: preservation, rehabilitation, restoration, and reconstruction. The Rehabilitation Standards allow the most change in a historic resource, and make accommodations for new uses, stating “when repair and replacement of deteriorated features are necessary; when alterations or additions to the property are planned for a new or continued use; and when its depiction at a particular period of time is not appropriate, rehabilita-

tion may be considered as a treatment” (Weeks and Grimm 1995). Building 2 will not be touched at all by the SGEC project. Building 1 requires only the closure of the opening in its north wall resulting from demolition of the bridge to Building 4.

Character-Defining Features

To comply with the Standards, it is important to iden- tify the character-defining features of each historic building. These are the tangible, visual elements of a building that collectively create its historic identity and convey its significance. These may include but are not limited to materials, craftsmanship, construction details, overall shape and size of rooms and spaces, features and details, spatial relationships, and contrib- uting setting. For most projects, the exterior physical features of buildings, structures, objects, sites and districts are the most critical because they are most likely to be affected by proposed projects and are generally visible to the public.

Character-defining features are comprised of a rela- tively definable permutation of craftsmanship and ability to convey historic significance, public benefit, and integrity. Craftsmanship can range from high, possessing special artistic value, to low, where features are standard historic fabric common during the period of significance. A feature may be quintessential and indispensable, where without it the significance of the resource would be lost, to medium where withi- out it the significance of the resource is diminished; to low, where its loss may have little effect. For public benefit, value can span from high, where the public can use or enjoy the feature with little or no effort, to medium if there is limited opportunity, to low if there is no opportunity for public use. Visibility ranges from primary, salient features visible from the street or a public space, to secondary, somewhat obscured features observable through doors and windows, to low visibility, such as private spaces. Integrity is conveyed well if the feature is intact as originally designed and built, medium if it is somewhat altered but still conveys significance, and low if the feature is substantially altered so as to no longer convey significance.

April 16, 2013
BUILDING 1

The following character-defining features of Building 1 are considered significant, and as the building will not be altered by the SGEC project they will be retained:

- Urban setting
- Two-story height and rectangular massing
- Italianate Mediterranean Revival architecture
- Tan stucco cladding
- Curved red terra cotta roof tiles
- Simple roofline stringcourses
- Symmetrical multi-light, metal sash fenestration
- Square pyramidal-roofed portals
- Exposed steel trusses and beams
- Large unobstructed interior spaces for manufacturing

BUILDING 2

The SGEC makes no use of Building 2, and its character-defining features thus will be retained:

- Urban setting
- Southeasterly orientation
- Volumes arranged with a central three-story tower and two-story receding wings
- Italianate Mediterranean Revival architecture
- Tan stucco cladding
- Curved red terra cotta roof tiles
- Arched and rectangular multi-light metal sash windows
- Sunken window panels on wings two-stories in height
- Simple stringcourse detailing
- Central square tower with prominently-featured clock and sculpted copper capped steeple
- Copper ornamented sconces
- Symmetrical multi-light, metal sash fenestration
- Corner entry with glass doors and projecting glass and steel alcove.
- Elaborate keystone entry arch with bas-relief head.
- Interior entry lobby, with glazed-tiles walls and 10 foot and mural mosaics
- Vaulted ceilings and arches
- Spherical light fixtures
- Wood panel and glass partition walls within building wings

BUILDING 3

The character-defining features of Building 3 are similar to those of Building 1 and will be retained:

- Urban setting
- Four-story height and rectangular massing
- Italianate Mediterranean Revival architecture
- Tan stucco cladding
- Curved red terra cotta roof tiles
- Simple roofline stringcourses
- Symmetrical multi-light, metal sash fenestration
- Square pyramidal-roofed portals

OTHER FEATURES

The gateposts and walls that surround the property should be retained on the Firestone and Santa Fe frontages to the greatest degree feasible.

REFERENCES


EXISTING SETTING AND CONTEXT
The South Gate Educational Center (SGEC) site is uniquely and centrally located within a multi-modal transportation network including major freeways, arterials, and transit and bicycle systems and corridors.

The site is served by major freeways including the Glenn Anderson Freeway Transit Way (I-110), the Harbor Freeway (I-110) and the Long Beach Freeway (I-710). The Metro Green Line light rail system is less than two miles south of the site and the site is one mile from the Metro Blue Line light rail station at Firestone Boulevard in adjacent Walnut Park.

Students, faculty and staff can access the site via multiple modes of transportation in lieu of using personal automobiles. Bus service is provided to the vicinity by the Los Angeles County Metropolitan Transportation Authority (Metro) via Lines 115 and 612. Until recently, a shuttle bus service by ELAC provided free service to students between the main ELAC campus and the existing satellite site across Firestone from the SGEC site. Nine shuttles per day in each direction were provided Monday through Thursday. This service is scheduled to resume in Spring 2013.

Firestone Boulevard is designated as a “Transit Corridor” in the City of South Gate’s General Plan 2035 Mobility Element. In addition, the project site is also an identified “bicycle hub” in the City of South Gate’s General Plan 2035 Mobility Element.

The South Gate Educational Center site adjoins a Union Pacific Railroad right-of-way at north, currently used for freight, which has signalized at-grade crossings at Santa Fe Avenue.

ADJACENT ROADWAY CHARACTERISTICS

Both Firestone Boulevard and Santa Fe Avenue provide vehicular access to and from the site. Firestone is classified as a Boulevard (Primary Arterial) in the City’s Mobility Element and is also a designated Primary Transit Street. Firestone carries approximately 29,000 vehicles per day (Average Daily Traffic). Santa Fe Avenue is classified as a Street (Collector) in the City’s Mobility Element and is also a designated Class II Bike Lane. Santa Fe carries approximately 16,000 vehicles per day (Average Daily Traffic).

The adjacent intersection of Santa Fe Avenue and Firestone Boulevard is currently operating at Level of Service (LOS) D during weekday AM and PM peak hours. The adjacent intersection of Alameda Street and Firestone Boulevard is currently operating at LOS D and LOS E (LOS E represents more congestion than LOS D) during weekday AM and PM peak hours respectively. While these operations indicate some level of existing congestion, the design of the Master Plan takes these conditions into account to provide a circulation plan that integrates well with the surrounding roadway system. Refer to the SGEC Master Plan document for the vicinity map and descriptions of adjacent roadway characteristics in more detail.

The Master Plan circulation plan is important to the success of the South Gate Educational Center. Im- proved multi-modal access, enhanced internal and external circulation and connectivity, as well as evident and efficient parking opportunities are essential. The overall accessibility and integration of existing and future planned transit services is also a critical element of the circulation plan.

PRINCIPLES AND GOALS

Provide Multi-Modal Access Opportunities
Every effort is being made to reduce the reliance on private automobiles by enhancing opportunities for transit ridership, walking and bicycling. Firestone Boulevard is designated as a Primary Arterial and a Class II Bike Lane is identified on Santa Fe Avenue between Independence/Andmore Avenues and Southern Avenue in the South Gate General Plan 2035 Mobility Element, which also identifies a designated bicycle hub at the South Gate Educational Center site.

Transit/Shuttle Integration
A key goal of the City’s Mobility Element and the SGEC Master Plan is to expand and enhance the existing transit service connections so that the site is more accessible and convenient to the SGEC population group (including expanded route coverage, increased service frequencies, extended operating hours, and provision of transit-related amenities). Also, a key component of the Mobility Element is the introduction and operation of a local bus transit service with convenient bus transfer points that would circulate around the City connecting all residential neighborhoods to key commercial, institutional, and recreational destinations. Through these connections, transfers to other more regional transportation systems (e.g., Metro Green and Blue Lines) will be possible.

An Efficient Circulation System for All Users
The Master Plan focuses on providing a safe, efficient circulation system that is well integrated and inter-connected for all students, faculty, staff as well as visitors. The Master Plan also proposes a comprehensive way-finding sign program.

A Safe and Effective Pedestrian Experience On Site
The Master Plan is designed to facilitate pedestrian connections between the SGEC and transit services along Firestone Boulevard and Santa Fe Avenue as well as internal to the site. It focuses on the design and integration of an internal campus circulation plan whereby all users can interact, with places for community events.

Vehicular Circulation
The circulation scheme for vehicular traffic has been carefully reviewed and considered in the Master Plan. Standard traffic signal warrant calculations have been prepared to determine whether traffic signals should be installed at the project driveway locations. It has been determined on a preliminary basis that main access points on Santa Fe Avenue and Firestone Boulevard will be signalized.

It is proposed that the driveway intersection on Santa Fe Avenue at Andmore Avenue will be signalized in order to allow direct access to/from the parking structure. Based on the results of peak hour traffic signal warrant analyses, signal installation at this location should occur prior to occupancy. The traffic signal should include a protected left-turn phase for northbound Santa Fe Avenue motorists in order to facilitate the safe and efficient processing of vehicles during peak student arrival time periods.

It is proposed that the driveway intersection on Firestone Avenue at Andmore Drive will also be signalized to provide efficient shared access for the SGEC and the adjacent HON property. Based on the results of peak hour traffic signal warrant analyses, signal installation at this location should also occur prior to the opening of the SGEC. The traffic signal should include a protected left-turn phase for eastbound Firestone Boulevard motorists, in order to facilitate the safe and efficient processing of vehicles during peak student arrival time periods.

An existing internal north-south roadway from Firestone Boulevard into the site is envisioned to be enhanced in the Master Plan.

Non-Vehicular Circulation

Circulation for non-vehicular travel is provided along clear pedestrian pathways between the Santa Fe Avenue and Firestone Boulevard entrances and the SGEC building and parking. Adequate sidewalks, raised curbs, and striped crosswalks other features will be implemented in the Master Plan at key roadway crossing points internal to the site. Pedestrian crosswalks are also planned to be installed at the signalized intersections at both the Santa Fe Avenue and Firestone Boulevard intersections.

Parking
Approximately 1,600 parking spaces will be provided for the SGEC, a multi-level parking structure with ap- proximately 1,600 parking spaces near the north end of the site, and a surface lot with approximately 40 parking spaces at the west end of the site. One of the structure’s entries will be directly off Santa Fe Avenue, and will be provided with an appropriate multi-bar of lane and adequate median or curbside to ensure access on the adjacent street system. Parking facilities will be sized to meet all demands from the various SGEC users, including students, faculty, staff and visitors.
INTRODUCTION
This report is an outline to help the Design/Build Team understand the Leadership in Energy and Environmental Design (LEED) certification process and strategies for achieving increased energy and water efficiency, greater occupant health, and reduced negative environmental impact for the South Gate Educational Center (SGEC).

This report includes a review of the LEED certification process, fees, and other pertinent information, and provides a summary of each credit and recommendations on how to achieve it. The credit summaries and recommendations are organized according to LEED NC-2.2 Rating System categories (NC refers to New Construction). The categories are: Sustainable Sites, Water Efficiency, Energy & Atmosphere, Materials & Resources, Indoor Environmental Quality, and Innovation in Design. Overarching strategies that help achieve the LEED credits are summarized. The purpose of the strategies is to enable the project to position itself to achieve a LEED NC-3.0 Gold or Platinum rating from the Green Building Certification Institute (GBCI). LEED certification was formerly obtained by the United States Green Building Council.

This report also contains preliminary LEED-NC checklists for the project. In the checklists, the likelihood of each LEED point is predicted, and an estimated project score is totalled.

EXECUTIVE SUMMARY

SGEC Master Plan
The SGEC Master Plan proposes demolition of existing Building 4, preparation of the site, and construction of a new classroom/office building, parking structure, and associated surface parking, road-ways, hardscape areas and landscaping to create a new satellite campus for East Los Angeles College.

LEED Certification is Required
In accordance with LACCD and other directives, the SGEC shall be designed and constructed using the USGBC LEED-NC rating system. The minimum rating level for the project to achieve is LEED-NC Gold; however, the goal is the reach the highest certification level feasible. The project has been pre-registered as LEED-NC v2.2.

What is LEED?
LEED is a green building rating system administered by the U.S. Green Building Council (USGBC) and the Green Building Certification Institute (GBCI). LEED is based on points, or credits. Projects must achieve certain prerequisites and then accumulate credits by meeting additional criteria. Projects can achieve various levels of certification: "Certified," "Silver," "Gold," and "Platinum," depending on the number of credits achieved. Achieving LEED certification for a project involves a number of steps which are summarized below.

It is feasible for the SGEC to meet high-levels of energy efficiency and achieve LEED Gold at minimum. Means and methods are up to the Design Build Team; however, there are several strategies outlined in this document which through careful design integration and planning will help to attain LEED Gold at minimum.

LEED for College Campuses
There are three approaches to LEED-certifying buildings in a campus setting; the following two are relevant to the SGEC. The Design/Build Team can choose which option makes the most sense.

- Certifying a group of new buildings as a package where the entire building set will be rated as a package and only one rating received. These buildings may constitute the entire campus or be a subset of an existing campus.
- Certifying new buildings where each is constructed to a set of standards and will receive an independent rating based on achievement of credits beyond the standards specified in that building. These buildings may constitute the entire campus or a subset of an existing campus.

Documentation
Once a project is registered, the project team begins to collect information and perform calculations to be submitted to LEED to prove compliance with the various credits and prerequisites. Various team members including the architect, engineers, and contractor are involved in LEED documentation. Project teams can take advantage of LEED-Online (https://leedonline.usgbc.org/Login.aspx) to submit all of their application materials.

Submitting for Certification
There are two options for submitting credits for certification: 1) two-phase submission and 2) one submission. With the two-phase submission, design credits can be submitted and reviewed earlier in the project and are issued either “approval pending” or “denied.” Upon completion of the project, the final construction credits are submitted. With the one submission option, design and construction credits are submitted together at the end of construction.

Credit Interpretation Requests (CIRs) and Appeals
In some cases, project teams may encounter difficulties applying a LEED prerequisite or credit to a specific project. USGBC has established a review process for registered project inquiries, called credit interpretation requests (CIRs), to ensure that rulings are consistent and available to other projects. The cost for each CIR is $250. Upon submitting documentation for all LEED credits for all phases, the project will then be reviewed by a GBCI LEED credit reviewer. If credits are denied, the team has the option of appealing that ruling. Each appeal is $500 per credit.

LEED Certification Fees
The certification fee is based on the rating system that the project is certifying under and the size of the project. Our current estimate of certification fees for the South Gate Educational Center is $6,150. However, Teams should contact GBCI for special pricing due to the fact that this project entails multiple buildings and is slated for LEED NC. Multiple Buildings for College Campuses and is already pre-registered as LEED NC v3.0.

CALGreen DSA Mandatory Provisions
As of January 1, 2013, CALGreen DSA mandatory provisions went into effect with other provisions effective July 1, 2013. CALGreen is part of the California Code of Regulations, Title 24, Part 11 and must be adhered to. CALGreen mandatory provisions are outlined throughout this sustainability narrative and related appendices. All mandatory provisions must be outlined and compiled with the project onset. The DSA reviews submittals for compliance at the application intake (same as for the California Energy Code). Refer to the Appendix section 8.4 CALGreen Mandatory Provisions Comparison Checklist for an overview of CALGreen mandatory provisions, and LACCD sustainable mandates with tie in to LEED synergies.
SUSTAINABLE SITES

Site Design Overview
Site design and selection incorporates a number of interrelated components that broadly address suitability for use. The topics include transportation, pedestrian connectivity and safety, habitat conservation, open space, site disturbance, light pollution, surface hydrology and storm water design, acoustics and view.

GENERAL SITE DESIGN STRATEGIES

S1. BUILDING ORIENTATION - MAXIMIZE SOUTH FACING EXPOSURE
Description:
To the extent possible, the SGEC should enhance south-facing exposure and minimize or protect west-facing windows.

Costs:
The cost associated with this strategy is minimal to no cost.

Benefit:
Provides a visually appealing, useful environment for occupants and can reduce building energy consumption by reducing heat islands.

S2. LANDSCAPING – MAXIMIZE VEGETATED OPEN SPACE
Description:
Providing outdoor vegetated open space can have a significant impact on occupants’ quality of life by maximizing areas for recreational activities and interaction with other community members. It also has a significant positive effect on local habitats, micro-climate and storm water management.

Costs:
The cost associated with this strategy is minimal to no cost.

Benefit:
Provides a visually appealing, useful environment for occupants and can reduce building energy consumption by reducing heat islands.

S3. STORM WATER DESIGN – MAXIMIZE INFILTRATION ON-SITE
Description:
Implement a storm water management plan that reduces impervious cover, promotes infiltration, and captures and treats the storm water runoff on-site. Aim to improve storm water management using methods that restore the natural functions of the site to the maximum extent practicable. A technique that could be easily utilized is using pervious pavement for hardscape.

Costs:
Pervious pavement: Minimal first-cost increase for pervious pavement, on average $1 more per SF as compared to asphalt concrete pavement. Storm water collection: Costs depend upon the size of the system but can be integrated into the landscape at minimal cost.

Benefit:
Maximize infiltration on-site. Each storm water strategy reduces or eliminates the need for other strategies such as retention ponds which consume site space.

SUSTAINABLE SITES CREDIT SUMMARY

SS PREREQUISITE 1: CONSTRUCTION POLLUTION PREVENTION ACTIVITY

Responsible Party: Civil Engineer
Intent:
To reduce pollution from construction by controlling soil erosion, waterway sedimentation and airborne dust generation.

Requirements:
The Team shall create and implement an Erosion and Sedimentation Control (ESC) Plan for all construction activities associated with the project. It must conform to the erosion and sedimentation requirements of the 2003 EPA Construction General Permit and shall describe the measures implemented to accomplish the following:
- Prevent loss of soil during construction by storm water runoff and/or wind erosion; stockpile topsoil for reuse.
- Prevent sedimentation of storm sewer or receiving streams.
- Prevent polluting the air with dust and particulate matter.

Status:
This is a prerequisite and is mandatory for certification.

Recommended Project Strategy:
- Civil Engineer develops an ESC Plan during design phase.
- Employ temporary or permanent seeding, mulching, earth dikes, silt fencing, sediment traps and basins, etc.

Costs:
No additional cost as the design team will be required to develop an ESC Plan as part of the NPDES Stormwater Quality Requirements for Construction Activities to meet local permitting requirements.

Benefit:
- Protect receiving waters from sedimentation/pollutants.
- Minimize/eliminate difficult/expensive mitigation measures.

Payback:
There is no direct payback associated with ESC measures.

Additional Resources:
- EPA Construction General Permit information: http://cfpub.epa.gov/nepdes/stormwater/cgp.cfm
- The Erosion Control Technology Center provides guidance on the application and installation of erosion control products: www.ectc.org

SS CREDIT 1: SITE SELECTION

Responsible Party: Civil Engineer
Intent:
To avoid development of inappropriate sites and reduce the environmental impact from the location of the project.

Requirements:
Do not develop buildings, hardscape, roads, or parking areas on portions of the site that:
- are defined as prime farmland by the USDA
- were previously undeveloped and have an elevation lower than 5-feet above a 100-year flood plain defined by FEMA
- are specifically identified as habitat for any species on Federal or State threatened or endangered lists
- are within 100-feet of any wetlands
- were previously undeveloped land within 50 feet of a water body defined by sea, lakes, river, stream or tributary which could support fish, recreation, or industrial use in accordance with the Clean Water Act
- were prior to acquisition public parkland

Status:
South Gate Educational Center meets the requirements of this credit.

Recommended Project Strategy:
To achieve this credit, the civil engineer shall verify that the development footprint does not encroach on any of the above mentioned criteria, and complete the LEED Submittal template to reflect such.

Costs:
No additional costs.

Benefit:
Not building on inappropriate sites preserves sensitive areas for wildlife habitat, recreation, and ecological balance. Additionally, building away from flood-prone areas reduces the risk of property damage.

Payback:
There is no direct payback.
SS CREDIT 2: DEVELOPMENT DENSITY & COMMUNITY CONNECTIVITY

Responsible Party: Architect

Intent:
To channel development to urban areas with existing infrastructure, protect greenfield, and preserve habitat and natural resources.

Requirements:
The SGEC will likely use Option 2 – Community Connectivity. To meet the requirements, the project must be on a previously developed site AND within ½ mile walk of an existing residential zone or neighborhood with an average density of 10 units per acre AND within ¼ mile of at least ten basic services. Only two services can be within the planned project. Only two restaurants may be counted. Pedestrian access must be provided between the building and the services.

Status:
Confirmed what resources exist within ½ mile. Preliminary data indicates the SGEC meets the requirements for this credit.

Recommended Project Strategy:
The architect shall document that the project is on a site that was previously developed and document the location of services within a ½ mile radius of the project and the residential neighborhood(s). Services that meet the requirements include gym, museum, hospital, theater, community center, fire station, restaurants, pharmacy, post office, bank, church and library.

Costs:
No additional cost.

Benefits:
Reduced transportation impact.

Payback:
There is no direct payback.

Additional Resources:
The Urban Land Institute promotes responsible land use as a means for enhancing environmental quality: www.washington.uli.org

Additional Resources:
The ASTM International website provides information about conducting a Phase II environmental site assessment: www.astm.org.

SS CREDIT 3: BROWNFIELD REDEVELOPMENT

Responsible Party: Owner/Architect

Intent:
To rehabilitate damaged sites where development is complicated by contamination, reducing pressure on undeveloped land.

Status:
No portion of the SGEC project site is suspected to be considered brownfield. However, volatile organic compounds (VOCs) were found in preliminary soil samples collected near Building 1.

Recommended Project Strategy:
Sampling at the project site should be considered to ensure VOC migration has not occurred.

Costs:
There is added cost if an Environmental Phase II Assessment is required. There would also be cost associated with any required remediation, an average range from <1% of overall budget up to 5%.

Benefit:
Reduces development pressure on pristine land.

Payback:
There is no direct payback.

Additional Resources:
The EPA’s Office of Transportation and Air Quality website provides an array of web links to resources for organizations that are interested in promoting commuter choice programs: www.epa.gov/otaq

SS CREDIT 4.2: TRANSPORTATION: BICYCLE STORAGE & CHANGING ROOMS

Responsible Party: Architect

Intent:
To reduce pollution and land development impacts from automobile use by encouraging and facilitating use of bicycles as an alternative.

Requirements:
The SGEC will likely use Option 1 – Commercial/Institutional Build-ings. To meet the requirements the design must provide covered storage facilities for securing bicycles for 5% or more of building occupants. The storage facilities must be located within 200 yards of a building entrance. Additionally, shower facilities must be placed for .05 % of the building’s full-time employees (FTE).

Status:
Need to locate places for bicycle storage per Mitigation Monitoring and Reporting Program (MMRP) Traffic and Parking and to provide for and encourage the use of bicycles.

Recommended Project Strategy:
Document nearby public transportation options accessible by SGEC occupants.

Costs:
No added cost above and beyond requirements outlined in MMRP (ensuring a bus shuttle is put into place for ELAC and South Gate).

Benefits:
Reduced transportation impacts and improved air quality

Payback:
There is no direct payback.

Additional Resources:
The U.S. Environmental Protection Agency (EPA)’s Office of Transportation and Air Quality provides an array of web links to resources for organizations that are interested in promoting commuter choice programs: www.epa.gov/otaq

SS CREDIT 4.3: TRANSPORTATION: LOW EMITTING/ FUEL EFFICIENT VEHICLES

Responsible Party: Architect

Intent:
To reduce pollution from automobile use.

Requirements:
There are three options for achieving this credit. Option 1 requires purchasing low-emissions vehicles for 3% of full-time employees. Option 2 requires preferred parking (closest to project entrances) for 3% of the building’s full-time employees (FTE).
for low-emitting and fuel-efficient vehicles for 5% of the total parking capacity on site. Option 3 requires installation of alternative fuel refueling stations for 3% of the total parking capacity on site.

**Status:**
Option 1 is not practical for the SGEC. Option 2 requires locating and striping 86 preferred parking stalls. Option 3 requires providing 52 alternative fuel (EV charging) stations.

**Recommended Project Strategy:**
Team to provide 52 pay-for-use EV charging stations. Users would pay approximately 2 cents per kWh. Initial cost would be recouped in 7-10 years, with $6000-$8000 annual income afterwards.

**Costs:**
Parking striping for low-emitting vehicles stalls averages $0.25 per SF. The average cost for an electric refueling station ranges from $5,000 to $15,000 for a two car recharging station.

**Benefit:**
- Reduced transportation impacts
- Improved air quality
- Improved quality of life for tenants

**Payback:**
Break-even in 7-10 years, $6-10K annual revenue afterwards.

**Additional Resources:**
ACEEE’s Green Book for Cars defines low-emitting and fuel-efficient vehicles as scoring 40 or above: www.greenercars.org

**SS CREDIT 4.4: ALTERNATIVE TRANSPORTATION: PARKING CAPACITY**

**Responsible Party:** Architect

**Intent:**
To reduce pollution and land development impacts from auto use.

**Status:**
The SGEC does not qualify for this credit. The SGEC does not fall within the City of South Gate planning and zoning requirements regarding number allowable parking stalls, so per LEED requirements must meet City of Portland, Title 33, Planning and Zoning requirements in which the maximum number of allowable stalls is 1,473.

**SS CREDIT 5.1: SITE DEVELOPMENT: PROTECT/RESTORE HABITAT**

**Responsible Party:** Landscape Architect

**Description:**
The intent is to conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity.

**Requirements:**
For the SGEC, the suggestion is to use Option 2 – Previously Developed Site. To meet the requirements for this credit the Team must restore or protect a minimum of 50% of the site area (excluding the building footprint) with native and/or adapted vegetation. The use of Green Roofing is strongly suggested, because the Tram it may apply the vegetated roof surface in the calculations and the area is reduced to 20% of the site.

“Native/adapted vegetation” are plants indigenous to a locality or cultivates of native plants that are adapted to the local climate and are not considered invasive species or noxious weeds.

**Status:**
The project will mostly likely use Option 2 – Existing Impervious is greater than 50%. The Civil Engineer must implement a storm water management plan that results in a 25% decrease in the volume of storm water runoff from two-year, 24-hour design storms.

**SS CREDIT 5.2: SITE DEVELOPMENT: MAXIMIZE OPEN SPACE**

**Responsible Party:** Landscape Architect

**Intent:**
To provide a high ratio of open space to development footprint to promote biodiversity.

**Requirements:**
To meet the requirements for this credit the project must provide vegetated open space area adjacent to the building that is equal to the building footprint.

**Status:**
Given the expected size of the new classroom/office building and necessary surface parking and roadways, the SGEC site appears not large enough to qualify for this credit.

**SS CREDIT 6.1: STORM WATER DESIGN: QUANTITY CONTROL**

**Responsible Party:** Civil Engineer

**Intent:**
To limit disruption of natural hydrology by increasing on-site infiltration and managing storm water runoff.

**Requirements:**
The project will mostly likely use Option 2 – Existing Imperviousness is greater than 50%. The Civil Engineer must implement a storm water management plan that results in a 25% decrease in the volume of storm water runoff from two-year, 24-hour design storms.
LEED STRATEGIES: SUSTAINABLE SITES

Pollutant Discharge Elimination System (NPDES) provides extensive information about storm water control measures and BMPs: http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm.

SS CREDIT 7.1: HEAT ISLAND EFFECT: NON-ROOF

Responsible Party: Architect

Intent: To reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impact on micro-climate and habitat.

Requirements:
- For the SGEC the suggestions are Option 1 – SRI Roof or Option 3 – High Albedo and Vegetated Roof. To meet the requirements for Opt-1 roof materials must have a Solar Reflectance Index (SRI) of at least 78 for low-sloped roofs less than or equal to 2:12, or 29 for steep-sloped roofs greater than or equal to 2:12 for a minimum of 75% of the roof area. For Option 3 the Architect must use high albedo and vegetated roof surfaces so that: (Area of SRI Roof/0.78) + (Area of vegetated roof/0.5) = Total Roof Area

Status:
- Confirm if roof is designed to be compliant.

Recommended Project Strategy:
- Architect to specify and design for green roofing to reduce heat absorption and reduce storm water runoff.

Costs:
- Average costs for a cool roof is at $1 to $2 more per SF of roof space in comparison to a standard tar-based black roof.

Payback:
- There is payback associated with this credit in the sense of reducing cooling energy costs/HVAC equipment needs.

SS CREDIT 7.2: HEAT ISLAND EFFECT: ROOF

Responsible Party: Architect

Intent: To reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impact on micro-climate and habitat.

Requirements:
- For the SGEC the suggestions are Option 1 – SRI Roof or Option 3 – High Albedo and Vegetated Roof. To meet the requirements for Option 1 roofing materials must have a Solar Reflectance Index (SRI) of at least 78 for low-sloped roofs less than or equal to 2:12, or 29 for steep-sloped roofs greater than or equal to 2:12 for a minimum of 75% of the roof area. For Option 3 the Architect must use high albedo and vegetated roof surfaces so that: (Area of SRI Roof/0.78) + (Area of vegetated roof/0.5) = Total Roof Area

Status:
- Confirm if roof is designed to be compliant.

Recommended Project Strategy:
- Architect to specify and design for high-albedo concrete topping roofs to reduce heat absorption.
- SRI compliant material must cover 75% of the total roof area. Exclude areas of equipment and appurtenances from calculations.
- Include clear specification requirements assuring SRI performance of material submittal.
- Architect to specify and design for green roofing to reduce heat absorption and reduce storm water runoff.

Costs:
- Average costs for a cool roof is at $1 to $2 more per SF of roof space in comparison to a standard tar-based black roof.

Payback:
- There is payback associated with this credit in the sense of reducing cooling energy costs/HVAC equipment needs.

Benefit:
- Reduced heat absorption by building infrastructure reduces impact on local micro-climate
- Non-impacted micro-climates reduce cooling energy costs and HVAC equipment needs

Additional Resources:
- Stormwater PA details non-structural storm water best management practices: www.stormwaterpa.org/5-8-2.html#bmp. The EPA offers design guides, fact sheets and cost estimates for strategies that reduce storm water runoff: www.epa.gov/owow/nps/lid.

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faces and low-angle spotlights. Attention should be given to energy efficiency, brightness ratio control and shielding.

Costs:
Computer modeling may add cost. Cost savings may be realized through reduced fixture count. Operational cost savings may be achieved through appropriate site lighting levels.

Benefit:
- Electricity cost savings
- Reduced night sky light pollution
- Reduced heat absorption by building infrastructure reducing impact on micro-climate

Payback:
There is payback associated with this credit in the sense of reducing cooling electricity costs.

Additional Resources:
ASHRAE Standard 90.1-2004 is available for purchase at www.ashrae.org/technology/page/548
The International Dark-Sky Association provides information regarding night sky preservation: www.darksky.org

General Water Efficiency Design Strategies

W1. Low Flow Plumbing Fixture Selection
It is recommended that all plumbing fixtures meet the suggested flow rates outlined below.

Suggested Maximum Flow Rates:
- Lavatories 0.5 gpm aerators with meter controls
- Water Closets <1.3 gpf or dual-flush
- Urinals 0.125 gpf or waterless urinals
- Kitchen Sinks 0.5 to 1.8 gpm (the lower the better)
- Showerheads 1.5 gpm

W1.1 Lavatory Faucets, Water Closets and Urinals, and Showerheads
Description:
A number of low-flow electronic faucets have been introduced by major manufacturers, including but not limited to:
- Sloan - Solis Solar-Powered Faucet, with 0.5 gpm aerator
- Toto - EcoPower Electronic Faucet, with a hydropower self-generating system.

Specify dual-flush toilets for women’s rooms. These typically provide a 1.6 gallon flush when the handle is pushed one way and a 0.8 gallon flush when pushed the other way. Specify low-flow single-flush (1.3 gallons per flush) toilets and waterless urinals for men’s rooms.

All major manufacturers offer low-flow products and many offer waterless urinals. East Los Angeles College uses Falcon/Sloan for their waterless urinals.

Specify low-flow showerheads in all applicable areas.

Benefits:
- Lower water consumption
- Lower water bills (operational costs)

WATER EFFICIENCY CREDIT SUMMARY

WE CREDIT 1.1: WATER EFFICIENT LANDSCAPING: REDUCE 50%
Responsible Party: Landscape Architect
Intent:
To limit or eliminate use of potable water or natural surface or subsurface water on or near the project site, for landscape irrigation.

Requirements:
To meet the requirements the design must use water savings plant species to demonstrate 50% minimum savings in irrigation.

Status:
Design should accommodate credit requirements.

Recommended Project Strategy:
Provide a landscape plan that includes native grasses and other appropriate native and adapted plant species suited to soil and climate.

Benefits:
Reduced water use and landscape maintenance.

Payback:
Immediate: good design eliminates need for infrastructure.

WE CREDIT 1.2: WATER EFFICIENT LANDSCAPING: NO POTABLE WATER
Responsible Party: Landscape Architect
Intent:
To limit or eliminate the use of potable water, or natural surface or subsurface water on or near the project site, for landscape irrigation.

Requirements:
Do not propose permanent irrigation systems. Temporary irrigation systems used for plant establishment are allowed if removed within one year of installation.

Status:
Design should accommodate credit requirements.

Recommended Project Strategy:
Eliminate permanent irrigation needs if possible. Consider gray water system otherwise if allowable by local code.

Benefits:
Reduced water use and landscape maintenance.

Payback:
Immediate: good design eliminates need for infrastructure.
WE CREDIT 2: INNOVATIVE WASTEWATER TECHNOLOGIES

Responsible Party: Plumbing Engineer

Intent:
To maximize water efficiency within buildings to reduce the burden on municipal water supply and wastewater systems.

Requirements:
Reduce sewage conveyance by 50%.

Status:
LACCD Board of Trustees mandates the use of waterless urinals. Combine this strategy with low flow toilets and faucets and consider using a graywater system.

Recommended Project Strategy:
Utilize Option 1 – reduce potable water use for building sewage conveyance by 50%.

Costs:
For graywater and rainwater systems the average cost will range from $4 to $8 per SF. For recommended strategy of using dual plumbing, the cost typically ranges at $1.50 per SF.

Benefit:
Reduced water consumption.

Payback:
With reduced potable water consumption there will be savings on operations with reduced water costs.

Additional Resources:

WE CREDIT 3.1/3.2: WATER USE REDUCTION: 20% AND 30%

Responsible Party: Plumbing Engineer

Intent:
To maximize water efficiency within buildings to reduce burdens on municipal water supply and wastewater systems.

Requirements:
• Credit 3.1: 20% Reduction in Interior Water Use from toilets, urinals, lavatory faucets, showers, kitchen janitorial sinks
• Credit 3.2: 30% Reduction (which is an additional 10% savings above Credit 3.1)
• Innovation Credit Potential: 40% Reduction (which is an additional 10% savings above Credit 3.2)

Status:
Provide manufacturer, model, and product data sheet of plumbing fixtures included in design.

Recommended Project Strategy:
Flush Fixtures:
• Dual flush toilets with 1.28 gallon net per flush
• Waterless urinals in multi-occupant men’s rooms

Flow Fixtures (based on 80 psi water pressure):
• Provide in-line flow restrictors (Watermiser or similar) at point of use to restrict flow rates to limits listed below.
• Provide showerheads and faucet aerators to match these flow rates at the supplied building water pressure.
• Showerheads rated at 1.5 gallon per minute flow rate
• Kitchen faucet aerators rated at 1.8 gallons per minute
• Lavatory faucet aerators rated at 1.0 gallons per minute
• Janitor sinks to be fitted with foot pedal controls and provided with aerators rated at 2.0 gallons per minute
• Confirm that selected fixtures will satisfy end user and maintenance requirements.

Costs:
Evaluate costs by manufacturer. Fixtures can be ordered with varying flow rates at no additional cost. In-line flow restrictors may add a nominal cost increase to the project of less than $5 per item plus cost of installation.

Benefit:
• Operational water costs reduced over life of buildings
• Lower fuel use for heating hot water
• Reduced sewage conveyance
• Reduced environmental impacts of wastewater
• Efficient technologies deliver the same level of occupant service through efficiency and create conservation opportunities as well as environmentally responsible credibility.

Payback:
Typically less than 3 years when water and energy savings are considered.

ENERGY & ATMOSPHERE

Energy Design Overview
Building energy consumption accounts for 40% of the USA’s carbon footprint. Energy use is a substantial cost of building operation and strategies to reduce consumption are important for the environment and the cost of building operation. A combination of strategies is necessary to reduce energy consumption.

GENERAL ENERGY DESIGN STRATEGIES

E1. HIGH PERFORMANCE BUILDING ENVELOPE: INSULATION

Description:
Insulation is one of the most effective ways to improve energy efficiency. For this project, the following should be considered:
• Roof: R-30 insulation, resulting in an overall U-value of 0.033 Btu/hr-ft²-°F
• Exterior Walls: R-19 insulation, resulting in an overall U-value of 0.036 Btu/hr-ft²-°F

Costs:
There is increased soft cost to support an investigation into energy performance. Increased insulation costs will depend on design.

Benefits:
• Reduced energy consumption and lower energy bills
• Decreases capacity size of the HVAC equipment
• Increased thermal comfort (buffers the extremes) and reduced mean radiant temperature in occupied spaces

E2. HIGH PERFORMANCE BUILDING ENVELOPE: OPTIMIZED SHADING

Description:
Building façades should balance daylight, views, and wanted and unwanted heat gain. Consider window awnings or fixed louvers to
balance these needs for the south and west facades of the building. For the south facade, maintain a cut-off angle of 60 degrees (measured from horizon). Where adequate shading is not provided on the east, west, and south facades, use glass with a lower solar heat gain coefficient.

Costs:
Exterior shading devices: $150-200 per linear foot of shading device (cost will depend on facade design). Also, analysis to support optimized facade shading will incur soft cost.

Benefit:
Reduced energy consumption and lower energy bills through efficient daylighting. Decreased capacity size of cooling equipment.

E3. HIGH PERFORMANCE BUILDING ENVELOPE: HIGH PERFORMANCE GLAZING

Description:
High-performance glazing should be considered for thermal comfort and energy saving potential. The amount of glazing should balance the thermal benefit of opaque walls with ventilation requirements. Consider limiting glazing to 20 percent of the walls. More may be considered on the south facade if optimized shading is included. Consider super-high-performance glazing with an R-Value of 5 (triple-paned, dual low-e, krypton filled) or high performance glazing with an R-value of 3.03 (double-paned, low-e, argon filled glazing).

Costs:
Costs associated with glazing can vary widely from low to significant. On average high performance glazing will be around $5 to $10 added cost per SF of glazing area.

Benefit:
- Reduced energy consumption and lower energy bills (may impact up to 15% of winter heating energy consumption)
- Decreased capacity size of the HVAC equipment
- Increased thermal comfort (buffers the extremes) and reduced mean radiant temperature in occupied spaces

E4. VENTILATION

Description:
Ventilation design is an important topic affecting both energy consumption and occupant health.

Costs:
Operable windows add increased first cost. Further analysis required to support design evolution. Inter-operability controls with mechanical system can add first cost.

Benefit:
- Improved air quality without requiring energy
- Connection to the outdoors for occupants
- Reduced operating costs

ENERGY & ATMOSPHERE CREDIT SUMMARY

EA PREREQUISITE 1: FUNDAMENTAL COMMISSIONING

Responsible Party: Commissioning Agent

Intent:
To ensure the building’s energy-related systems are installed and perform in compliance with construction documents.

Requirements:
To meet the requirements the owner must engage a Commissioning Agent (CxA) to implement the commissioning process.

Status:
LACCD hires Commissioning Agents; this prerequisite will be met.

Recommended Project Strategy:
Prior to the start of construction documents, the owner engages a CxA to lead, review and oversee the completion of all commissioning process activities. The following commissioning (Cx) process activities will need to be completed by the Cx team:
- Select an individual as the Commissioning Authority (CxA) to lead, review and oversee the completion of the commissioning process activities.
- The CxA shall be independent of the project’s design and construction management, but may be an employee of the firms providing those services or a qualified employee or consultant of the owner.
- The CxA shall report results, findings and recommendations directly to the Owner.
- The Owner shall document the Owner’s Project Requirements (OPR). The design team shall develop the Basis of Design (BOD). The CxA shall review these documents for clarity and completeness. The Owner and design team shall be responsible for updates to their documents.
- The design team shall develop and incorporate CxA requirements into the construction documents.
- The CxA shall develop & implement a commissioning plan.
- The CxA shall verify the installation and performance of the systems to be commissioned.
- The CxA shall complete a commissioning report summary.

Costs:
Costs are typically $0.25 to $0.50/sf for fundamental commissioning.

Benefit:
- Reduced likelihood of maintenance & resident complaints
- Improved building systems quality and performance
- Documented building energy savings

Payback:
Generally less than 5-years based on energy savings alone.

Additional Resources:
Customized commissioning templates can be produced using the Commissioning Assistant Tool available at www.energydesignresources.com.

EA PREREQUISITE 2: MINIMUM ENERGY PERFORMANCE

Responsible Party: Mechanical Engineer

Intent:
To establish minimum energy efficiency requirements for the project.

Requirements:
To meet the requirements, the design must comply with mandatory and prescriptive provisions of ASHRAE/IESNA Standard 90.1-2004 and also comply with CALGreen 2010 mandatory energy efficiency provision as well as LACCD sustainable mandatory provision.

Status:
Design must meet the credit requirements.

Recommended Project Strategy:
To achieve the minimum requirements, provide energy model outputs and results in report format and complete EA1 LEED submittal template. The energy model will be based on the following criteria:
- Current design exterior wall structure
- Current design glazing
- Current design lighting layout and selection
- Current design and efficiencies for the HVAC system

Costs:
No added cost to the project.

Benefit:
Improved energy performance reduces consumption and cost.

EA PREREQUISITE 3: FUNDAMENTAL REFRIGERANT MANAGEMENT

Responsible Party: Mechanical Engineer

Intent:
To reduce ozone depletion.

Requirements:
To meet the requirements for this credit the design must use no CFC-based refrigerants.

Status:
Design must meet the credit requirements.

Recommended Project Strategy:
Select a HVAC system that uses no CFC-based refrigerants. May use a R410A based refrigerant system meeting credit requirements.
LEED STRATEGIES: ENERGY AND ATMOSPHERE

EA CREDIT 1: OPTIMIZE ENERGY PERFORMANCE

Responsible Party: Team

Intent:
To reduce environmental and economic impacts.

Requirements:
To meet the requirements, develop a whole building energy model using an approved energy simulation program to demonstrate a minimum 20% energy savings above the Title-24 baseline.

Status:
2 points are mandatory for certification. LACCD Board of Trustees mandates a minimum 20% energy savings above Title-24 baseline.

Recommended Project Strategy:
To achieve the required minimum points (20% improvement above Title-24 2005) provide energy model outputs and results in report format and complete EAc1 LEED submittal template. The energy model will be based on the following criteria:
- Current design exterior wall structure
- Current design glazing
- HVAC system efficiencies and design

To achieve energy savings above the required minimum develop a whole building energy model based on the following:
- Using high performance glazing
- Increased wall and roof insulation values
- Increased lighting efficiency via design and fixture selection
- Radiant heating and cooling via the use of cross-linked polyethylene (PEX) installed in the floor
- Renewable energy sources (such as PV arrays),

Costs:
No added cost to the project

Benefit:
Helps the environment by reducing carbon footprint.

Payback:
N/A

EA CREDIT 2: ON SITE RENEWABLE ENERGY

Responsible Party: Team

Intent:
To encourage on-site renewable energy self-supply to reduce environmental and economic impacts associated with fossil fuel use.

Requirements:
Use on-site renewable energy systems to offset the building energy cost. Performance is expressed as a percentage of the building's annual energy cost. Building energy use is the cost calculated in EAc1 or the estimated electricity use according to the Dept. of Energy Commercial Buildings Energy Consumption Survey database.

Status:
Confirms on-site renewable energy systems will be included in scope.

Recommended Project Strategy:
Specify the use of on-site photovoltaic, solar thermal, wind, biomass, or bio-gas technologies to provide energy to the project.

Costs:
Costs vary widely depending upon renewable energy sources and methods of harnessing.

Payback:
The payback can be quite significant on operations with significantly reduced utility costs.

EA CREDIT 3: ENHANCED COMMISSIONING

Responsible Party: Team

Intent:
To begin the commissioning process early in the design process to provide an opportunity to effect changes in the design, followed by functional testing during and after construction.

Requirements:
To meet the requirements the owner needs to have a contract in place with a commissioning agent (CxA) to implement the commissioning process (in addition to the requirements of EAp1).

Status:
Project can meet credit requirements as LACCD engages independent commissioning agents.

Recommended Project Strategy:
Prior to the start of construction documents the owner engages an independent CxA to lead, review and oversee the completion of all commissioning process activities. The following are required:
- The CxA will assist the owner to develop the Operational Procedures Requirements (OPR).
- The OPR document is developed to assist the design team understand expectations on design and delivery quality.
- The CxA will assist the mechanical engineer to develop a "Baseline Design" for the mechanical / electrical systems.
- The Basis of Design (BOD) document is developed by the design team to assist the owner and review teams in understanding the guiding principles of the design and the building systems proposed.
- The CxA will provide a commissioning section for the specification.
- The CxA will complete a review of the design documents.
- The CxA will review contractor submittals to ensure minimum owner’s requirements are met.
- The CxA shall assist in the development of a systems manual that provides future operating staff information needed to understand and operate commissioned systems.
- The CxA shall assist in developing requirements for training operating personnel and a building occupant handbook.
- Assume the involvement by the CxA in reviewing operation within 10 months after substantial completion with O&M staff and occupants. Include a plan for resolution of outstanding commissioning-related issues.
- To achieve this credit coordination with EA-Prerequisite 1 is necessary.

Costs:
Capital costs typically 0.75% to 2.0% per SF.

Benefits:
- Reduce maintenance and occupant complaints
- Improve building systems quality and performance
- Documented building energy savings

Payback:
Case studies verify commissioning payback average 3 - 5 years
M1. OCCUPANT RECYCLING PROGRAM

Description:
The EPA estimated in 2005 that Americans generate 4.5 lbs of waste per person per day. Provide a centralized space and containers for the storage and pick-up of recyclables (paper, plastic, metal, glass, and cardboard at a minimum). Consider fire safety and pest control at recycling storage, and signage to aid in recycling.

Costs:
Minimal increased capital cost to provide infrastructure for recycling.

Benefits:
• Landfill avoidance
• Resource conservation

M2. RECYCLED CONTENT

Description:
Use materials with a high percentage of recycled, and especially post-consumer, content. The following list includes readily available materials that contain recycled content:
• Parking bumpers
• Site furniture
• Concrete Reinforcement
• Structural Steel
• Concrete

Payback:
No payback associated with Green Power purchasing.
LEED STRATEGIES: MATERIALS & RESOURCES

• Metal Decking
• Cold-Formed Metal Framing
• Composite Wood/Fiber Products
• Building Insulation
• Metal Siding and Roofing
• Steel Doors and Frames
• Gypsum Board
• Ceramic Tile
• Acoustic Ceilings
• Resilient Flooring
• Carpeting
• Paints and Coatings

1. Metal Decking
   - MR CREDITS 1.1/1.2: BUILDING REUSE: MAINTAIN MATERIALS & RESOURCES CREDIT
   - Responsible Party: Team
   - This credit cannot be pursued -- no buildings are being reused.

2. Cold-Formed Metal Framing
   - MR PREREQUISITE 1: STORAGE AND COLLECTION
   - Responsible Party: Architect/Owner
   - This is a mandatory prerequisite.
   - Description: Required to divert construction waste from landfills and incinerators.
   - Recommendations: To divert recyclable material back to the manufacturing process, and redirect reusable materials to appropriate sites.
   - Benefits: Increases tenant recycling, reduces demand for virgin resources.
   - Requirements: To meet the requirements of the General Contractor must develop and implement a waste management plan that, at a minimum, identifies the materials to be diverted from disposal and whether they will be sorted on-site or commingled. All contractors must recycle and/or salvage at least 50% of non-hazardous construction material for Credit 2.1 and at least 75% for Credit 2.2. Excavated soil and land-clearing debris do not count. Calculations can be done by weight (tons) or volume (cubic yards), but must be consistent throughout.
   - Status: Confirmed that 75% recycling/diversion rate can be achieved. General Conditions of all LACCD contracts mandate a minimum of 90% construction and demolition waste be diverted from landfill. Ergo it is suggested to aim for 95% to 100% diversion rate and receive an ID point for Exemplary Performance in this credit.

3. Composite Wood/Fiber Products
   - Responsible Party: Team
   - This credit cannot be pursued -- no buildings are being reused.

4. Tropical Hardwoods
   - MR CREDITS 2.1/2.2: WASTE MANAGEMENT: DIVERT MATERIALS
   - Responsible Party: Team
   - Description: Recommended Project Strategy: Designate space for the collection of recyclables and storage that is appropriately sized and located in a convenient area. Consider employing recycling chutes, cardboard balers, aluminum can crushers and other technologies to enhance the recycling program.
   - Benefits: Elimination of tipping fees and landfill avoidance.
   - Requirements: To meet the requirements the General Contractor must develop and implement a waste management plan that, at a minimum, identifies the materials to be diverted from disposal and whether they will be sorted on-site or commingled. All contractors must recycle and/or salvage at least 50% of non-hazardous construction material for Credit 2.1 and at least 75% for Credit 2.2. Excavated soil and land-clearing debris do not count. Calculations can be done by weight (tons) or volume (cubic yards), but must be consistent throughout.
   - Status: Confirmed that 75% recycling/diversion rate can be achieved. General Conditions of all LACCD contracts mandate a minimum of 90% construction and demolition waste be diverted from landfill. Ergo it is suggested to aim for 95% to 100% diversion rate and receive an ID point for Exemplary Performance in this credit.

5. Resource conservation (materials and energy)
   - May be a 5-10 percent premium on new wood products. Increased first cost can be reduced by including certified lumber in the project from the earliest stages and making early contact with the local mills and suppliers to let them know the project needs.

6. Potential reduced costs
   - Varying costs depending on products and applications.

7. Landfill avoidance
   - Resource conservation (materials and energy)
   - Potential reduced costs

8. Additional Resources:
   - http://www.p2pays.org/ref/01/00012.htm

MATERIALS & RESOURCES CREDIT SUMMARY

MR PREREQUISITE 1: STORAGE AND COLLECTION OF MATERIALS

MR CREDITS 1.1/1.2: BUILDING REUSE: MAINTAIN 75%/95% OF EXISTING FLOORS, WALLS, ROOF

MR CREDITS 2.1/2.2: WASTE MANAGEMENT: DIVERT 50%/75% FROM LANDFILL

MATERIALS & RESOURCES CREDIT SUMMARY

MR CREDITS 1.1/1.2: BUILDING REUSE: MAINTAIN 75%/95% OF EXISTING FLOORS, WALLS, ROOF

MR CREDITS 2.1/2.2: WASTE MANAGEMENT: DIVERT 50%/75% FROM LANDFILL

RESPONSIBLE PARTY: TEAM

This credit cannot be pursued -- no buildings are being reused.

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RESPONSIBLE PARTY: TEAM

This credit cannot be pursued -- no buildings are being reused.
LEED STRATEGIES: MATERIALS & RESOURCES

Recommended Project Strategy:
- Establish goals for landfill diversion and incinerators, and adopt a construction waste management plan to achieve these goals. Consider recycling cardboard, metals, brick, acoustical tile, concrete, plastic, clean wood, glass, gypsum, wallboard, carpet, and insulation.
- Designate a specific area on the construction site for recycling and track recycling efforts throughout construction.
- Identify construction haulers and recyclers to handle the designated materials. Diversion may include donation of materials to charitable organizations.

Requirements:
To meet the requirements the Architect must specify materials with high levels of recycled content for items having the highest impact on materials cost in the project. Pre-consumer recycled content receives half credit. The calculation for credit achievement is:

- Post-consumer + ½ Pre-consumer = 10% of the total value of the materials in the project
- Post-consumer + ½ Pre-consumer = 20% of the total value of the materials in the project

Additional Resources:
- The Sourcebook for Green and Sustainable Building provides guidance on construction waste management: www.greenbuilder.com/sourcebook/ConstructionWaste.html

MR CREDITS 3.1/3.2: MATERIALS REUSE: 5%/10%

Responsible Party: Architect

This credit will likely not be pursued.

MR CREDITS 4.1/4.2: RECYCLED CONTENT: 10%/20%

Responsible Party: Team

Intent:
To increase demand for building products that incorporate recycled content materials, therefore reducing impacts resulting from extraction and processing of new virgin materials.

Requirements:
To meet the requirements the Architect must specify materials with high levels of recycled content for items having the highest impact on materials cost in the project. Pre-consumer recycled content receives half credit. The calculation for credit achievement is:

- Post-consumer + ½ Pre-consumer = 10% of the total value of the materials in the project
- Post-consumer + ½ Pre-consumer = 20% of the total value of the materials in the project

Recommended Project Strategy:
- Establish a project goal for recycled content materials and identify suppliers to achieve this goal. This relates to materials in CSI MasterFormat 1995 divisions 2 through 10.
- Concrete, reinforcing bars, light steel framing and gypsum board will be large parts of the total materials cost. Investigate the acceptability of some recycled aggregate in concrete mixes. Obtain data on pre- and post-consumer recycled content of rebar, framing, and gypsum board.
- Determine the next top ten items by cost in the preliminary budget and explore products that contain recycled content.
- Architect to include recycled content material in specifications and estimates.
- During construction, Contractor to ensure that the specified recycled content materials are installed and quantify the total percentage of recycled content materials installed.

Costs:
Generally no added cost impact with careful selection of materials. Concrete and steel have high recycled content values. With proper specification of recycled content steel can be up to 90% recycled content, and concrete can utilize recycled content such as fly ash and recycled aggregate.

Benefit:
Reduced demand for virgin resources.

Payback:
No payback associated.

Additional Resources:
http://www.ca recycling.ca.gov/RCP/Search.asp

MR CREDITS 5.1/5.2: REGIONAL MATERIALS: 10%/20%

Responsible Party: Team

Intent:
To increase demand for building materials and products that are extracted and manufactured in the region, supporting use of indigenous resources and reducing environmental impacts from transportation.

Recommended Project Strategy:
- Team must use building materials and products that have been extracted, harvested or recovered and manufactured within 500 miles of the project site for a minimum of 10% (based on cost) of total materials value. Mechanical, electrical and plumbing components are not included in cost calculations.

Status:
Credit requirements to be reflected in design.

Costs:
Generally no added cost impact with careful selection of materials.

Benefit:
Reduced transportation impacts, supporting local companies.

Payback:
No payback associated.

Additional Resources:
http://www.forb elfo products/Marmoleum/
Marmoleum-Global-3/
LEED STRATEGIES: MATERIALS & RESOURCES / INDOOR AIR QUALITY

**MR CREDIT 7: CERTIFIED WOOD**

**Responsible Party:** Team

**Intent:** To encourage environmentally responsible forest management.

**Requirements:**
- Use a minimum of 50% of wood-based materials and products that are certified in accordance with the Forest Stewardship Council (FSC) Principles and Criteria, including framing, flooring, sub-flooring, doors, and finishes.

**Status:** Credit requirements to be refl ected in design.

**Recommended Project Strategy:**
- Generally the cost of the materials is not the barrier to obtaining this credit, but using sufficient material to meet the credit threshold. If the structure is likely to be mainly concrete and steel, consider the use of FSC certifi ed wood for fl ooring and fl nishes.

**Costs:** Costs for FSC certifi ed wood vary signifi cantly based on the type of wood specifi ed.

**Benefi ts:**
- The Forest Stewardship Council encourages responsible forestry practices to improve the health of forest ecosystems by reducing the destruction of forests, loss of habitat, soil erosion, and stream sedimentation.

**Payback:** No payback associated.

**Additional Resources:** N/A

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**INDOOR ENVIRONMENTAL QUALITY**

**Indoor Environmental Quality Design Overview**

High-occupant use requires not only adequate ventilation, but also special attention to internal loads from computers and people. The aspects of Indoor Environmental Quality (IEQ) include views, day-light and thermal comfort, visual comfort and glare, and acoustical comfort and safety.

**GENERAL INDOOR ENVIRONMENTAL QUALITY DESIGN STRATEGIES**

**11. MANUALLY OPERABLE WINDOWS**

**Description:** Optimize the eff ectiveness of operable windows. The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) standard 62.1 recommends a minimum operable area of 4 percent of fl oor area and that all areas are within 25 feet of the window perimeter for natural ventilation. Attempt to mediate issues of security, odors, noise, or other deterrents to window use.

**Costs:** Costs depend upon a variety of factors, including size, type of window, window frame material, type of glass, etc.

**Benefi t:**
- Reduces energy use on temperate days. Initial analysis indicates a signifi cant benefi t for natural ventilation for this project combined with other systems. Operable windows provide good ventilation, a connection to the outdoors, and the ability to control one’s local thermal environment.

**Payback:** No payback associated.

**Additional Resources:** N/A

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**12. LOW VOC MATERIALS**

**Description:** Designers should select low-emitting materials. Composite wood products should be urea-formaldehyde free. Specify paints and fl nishes with low VOC levels in compliance with the standards listed below. Carpet installed in the building interior should meet the testing and product requirements of the Carpet and Rug Institute’s Green Label program. Adhesives, sealants and sealant primers should comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168. Aerosol adhesives should comply with the Green Seal Standard for Commercial Adhesives GS-36. Architectural paints, coatings and primers applied to interior walls and ceilings should comply with Green Seal Standard GS-11, and anti-corrosive and anti-rust paints applied to interior ferrous metal substrates should comply with Green Seal Standard GC-03. Clear wood fl nishes, fl oor coatings, stains, and sealers applied to interior elements should comply with South Coast Air Quality Management District (SCAQMD) Rule 1113.

**Costs:**
- Including these performance requirements into the earliest stages of design typically allows them to be met without adding capital cost.

**Benefi t:**
- Reduced level of off -gassing initially and over time, which enhances the indoor air quality and reduces the potential for chemical sensitivity responses.

**13. OUTDOOR AIR DELIVERY MONITORING**

**Description:** Install a CO₂ alarm in the breathing zone for each multi-occupant space (classroom and multipurpose rooms). Additional airfl ow sensors to measure outdoor air must be provided to ensure adequate outdoor air is provided for all AHUs (Air Handling Unit).

**Costs:**
- The sensors will add capital cost to the project. ROM cost is $300-450 installed per sensor.

**Benefi t:**
- Aids the integration of natural ventilation and mechanical ventilation by providing user feedback in the space.

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**14. POST-CONSTRUCTION FLUSH OUT**

**Description:** The construction process produces signifi cant indoor air contamination, and building material off -gassing tends to be exponentially higher the newer the material. Therefore, construction pollutants should be removed before building occupants arrive. After construction and prior to occupancy, fi ll-out the indoor air. It is recommended to supply a total volume of 14,000 cubic feet of outdoor air per square foot of fl oor area while maintaining an internal temperature of at least 60 degrees and relative humidity no higher than 60 percent.

**Costs:**
- This approach does not necessarily add capital cost. Depending on the time of year, heating and cooling of ventilation air would consume energy. The time required for fill-out should be incorporated into the construction and occupancy schedule.

**Benefi t:**
- Reduced level of pollutants enhances the indoor air quality and reduces the potential for chemical sensitivity responses.

**15. HEALTHY MATERIALS**

**Description:** Persistent Bioaccumulative Toxics (PBTs) are toxic chemicals that do not break down easily in nature but remain in animal tissue and accumulate as they move up the food chain, creating a growing health problem for the ecosystem, including humans. Avoid materials whose manufacture, use, or disposal releases PBTs, such as:
- Chlorinated materials such as PVC (or vinyl) and Polychloro-prene (or Neoprene)
- PBDE based material treatments such as:
  - Brominated Flame Retardants (BFRs), especially polybrominated diphenyl ether found in furniture foam and fabrics
  - Perfluorooctanoic acids (PFOA), especially PFDA found in many stain and non-stick treatments
- Toxic heavy metals such as:
  - Mercury: in thermostats, switches and light bulbs
  - Lead: in fl ashing, solder, roof tile, wire insulation

**Payback:** N/A

**Additional Resources:**
- N/A
• Wood preserved with chromium copper arsenic (CCA), creosote, or pentachlorophenol
• Instead of PVC piping, consider cast iron or polyethylene (LDPE and HDPE.)
• Consider TPO instead of PVC membrane roofing.
• Consider rubber, wood, or ceramic tile instead of vinyl baseboard.
• Consider linoleum or ceramic tile instead of VCT floors.
• Avoid vinyl siding.
• Use low-mercury fluorescent light bulbs wherever possible.

Costs:
Very rarely do these materials add any significant capital cost to the project. TPO membrane roofing is often less cost than PVC.

Benefits:
Improved occupant comfort.

EQ CREDIT 1: OUTDOOR AIR DELIVERY MONITORING

Responsible Party: Mechanical Engineer

Intent:
To provide capacity for ventilation system monitoring to help sustain occupant comfort and well-being.

Requirements:
Install permanent monitoring systems that provide feedback on ventilation system performance to ensure systems maintain design minimum ventilation requirements. An alarm shall sound when conditions vary by 10% or more from the set point.

Status:
Design shall meet credit requirements.

Recommended Project Strategy:
Design monitoring systems in accordance with credit requirements.

Costs:
Typically little to no hard cost, but additional soft costs associated with building operation when outdoor air temperatures are significantly different from required indoor temperatures.

Benefits:
Improved occupant comfort.

EQ CREDIT 3.1: IAQ MANAGEMENT PLAN: DURING CONSTRUCTION

Responsible Party: Contractor

Intent:
To reduce indoor air quality issues resulting from construction for the comfort and well-being of workers and building occupants.

Requirements:
Develop and implement an IAQ Management Plan for the construction and pre-occupancy phases of the building that includes:
- Control measures based on five common construction practice areas
- Protection of stored on-site or installed absorptive materials from moisture damage

Costs:
For mechanically ventilated spaces, increase breathing zone outdoor ventilation rates to all occupied spaces by at least 30% above the minimum rates required by ASHRAE Standard 62.1. It is assumed the SGEC building will not utilize natural ventilation only.

Status:
Design shall meet credit requirements.

Recommended Project Strategy:
Design to meet ventilation requirements.

Benefits:
Improved occupant comfort.

INDOOR ENVIRONMENTAL QUALITY CREDIT SUMMARY

EQ PREREQUISITE 1: MINIMUM IAQ PERFORMANCE

Responsible Party: Mechanical Engineer

Intent:
To establish minimum indoor air quality performance to enhance the indoor air quality of the building.

Requirements:
Meet the minimum requirements of Sections 4 through 7 of ASHRAE 62.1, Ventilation for Acceptable Indoor Air Quality.

Status:
This is a mandatory prerequisite. Design shall meet ASHRAE 62.1

EQ PREREQUISITE 2: ENVIRONMENTAL TOBACCO SMOKE CONTROL

Responsible Party: Owner

Intent:
To minimize exposure of building occupants, indoor surfaces, and ventilation air distribution systems to environmental tobacco smoke.

Requirements:
This project will likely pursue Option 1 which prohibits smoking in the building and in exterior areas at least 25 feet away from entries, outdoor intakes, and operable windows.

Status:
This is a mandatory prerequisite.

EQ CREDIT 2: INCREASED VENTILATION

Responsible Party: Mechanical Engineer

Intent:
To provide outdoor air ventilation to improve indoor air quality for improved occupant comfort and well-being.

Requirements:
Develop and implement an IMQ Management Plan for the construction and pre-occupancy phases of the building that includes:
- Control measures based on five common construction practice areas
- Protection of stored on-site or installed absorptive materials from moisture damage

Costs:
As the project should have a BMS system as required by ELAC Campus Standards and LACCD requirements, the added cost for the sensors is minimal, up to $1.00 per SF.

Benefits:
Improved occupant comfort.

Payback:
No payback associated.

Additional Resources:
N/A
LEED STRATEGIES: INDOOR AIR QUALITY

- No usage of permanently installed air handlers during the construction period
- OR
- Replacement of all filtration media immediately prior to occupancy if permanently installed air handlers are used during construction, specifying that filtration media with a MERV 8 to be used at each return air grille.

**Status:** Sequence of operations and GC team shall meet requirements.

**Recommended Project Strategy:**

- Develop an Indoor Air Quality Management Plan based on standard template. Review the following list of suggested common control measures and include all feasible options in the Plan:
  - HVAC protection
    - Protect HVAC equipment to prevent construction debris from entering ductwork and spaces
    - Seal all duct and equipment openings with plastic
    - Do not use HVAC equipment during construction, or, if used, replace filters to occupancy
  - Source control
    - Reduce introduction of airborne contaminants and emitting materials
    - Specify Low or No VOC paints, adhesives, sealants, and materials
    - Maintain a clean and dry storage and construction site
  - Pathway interruption
    - Prevent migration of contaminants through building during construction
    - Ventilate during installation of VOC-emitting materials
    - Install temporary physical barriers between work activities that produce airborne contaminants and non-work area
  - Housekeeping
    - Frequently clean to remove construction dust and debris
    - Immediately clean up spills or accumulated water
  - Scheduling
    - Include adequate time for replacement of filter media prior to occupancy
    - Stagger installation of emitting materials and materials that can absorb VOCs during construction.
    - Coordinate with construction team in the beginning order to minimize or eliminate scheduling delays

**Other**

- Include a declaration that all on-site or installed absorptive materials will be protected from moisture
- Determine whether or not permanently installed air handlers will be used during construction. If they will, specify that MERV 8 filters or better will be used at each return grill and will be replaced immediately prior to occupancy.
- Develop a schedule to photograph and highlight implemented construction IAQ practices (i.e. protected absorptive materials, duct and equipment openings sealed with plastic, temporary barriers, etc.).

**Costs:** Soft costs for documentation and management, generally minimal.

**Benefit:** Contaminant reduction is beneficial to construction team and building occupants in terms of greater comfort and productivity. Source control of construction materials minimizes or eliminates future issues with moisture, mold, etc.

**Additional Resources:**


**EQ CREDIT 3.2: IAQ MANAGEMENT PLAN: BEFORE OCCUPANCY**

**Responsible Party:** Contractor

**Intent:** To reduce indoor air quality issues resulting from construction in order to sustain the comfort and well-being of construction workers and building occupants.

**Requirements:**

- To meet the requirements for this credit, choose an option:
  - **Option 1 -- Flush Out**
    - Pre-occupancy: After construction ends, prior to occupancy and with all interior finishes installed perform a building flush-out by supplying a total volume of 14,000 cu. ft. of outdoor air per SF of floor area while maintaining a temperature of at least 60 degrees and relative humidity no higher than 60%.
    - Early occupancy: If occupancy is desired before flush out is complete, the space may be occupied following delivery of at least 3,500 cu.ft. of outdoor air per sq.ft. of floor area. After the space is occupied, it must be ventilated at a minimum of 0.30 cfm/sq.ft. of outside air or the design minimum outside air rate determined in EQp1, whichever is greater. Ventilation must begin a minimum of three hours prior to occupancy each day of the flush-out period and continue during occupancy until a total of 14,000 cu.ft/sq.ft. of outside air has been delivered.
  - **Option 2 -- Air Testing**
    - Conduct baseline IAQ testing after construction and prior to occupancy using testing protocols consistent with the EPA Compendium of Methods for Determination of Air Pollutants in Indoor Air. Demonstrate that the contaminant maximum concentrations listed in Appendix B are not exceeded. Conduct additional fl ush out and retest until maximum concentration requirements are met.

**Status:** Sequence of operations and GC team shall meet credit requirements.

**Recommended Project Strategy:**

Option 2 -- Air Testing is the suggested path to achieving this credit.

Contract with a service provider for IAQ Testing services, including a copy of the project’s Indoor Air Quality testing report, after construction completion. To achieve additional credits, coordinate with EQ Credits 3.1 and 5 to determine the appropriate specifications and schedules for filtration media.

**Costs:**

- Costs generally range from $0.25 to $0.50 per SF.

**Benefits:**

- Contaminant reduction is beneficial to construction team and building occupants in terms of greater comfort and productivity. Source control of construction materials minimizes or eliminates future issues with moisture, mold, etc.

**Payback:** No payback associated.

**Additional Resources:**

- EQ CREDITS 4.1 - 4.4: LOW EMITTING MATERIALS & ADHESIVES

**Responsible Party:** Team

**Intent:** To reduce the quantity of indoor air contaminants that are odorous, irritating, and/or harmful to the comfort and well-being of installers and occupants.

**Requirements:**

- **Credit 4.1: Adhesives & Sealants** applied on the interior of the building: Adhesives, sealants and sealant primers must be less than the referenced VOC limits outlined in South Coast Air Quality Management District (SCAQMD) rule #1168 and the Green Seal Standard for Commercial Adhesives GS-36.
  - **Credit 4.2: Paints & Coatings** applied on the interior of the building:
Paints, coatings, clear wood finishes, floor coatings, stains, sealers, and shellacs applied to interior elements shall not exceed the referenced VOC and chemical component limits outlined in Green Seal Standard GS-11 and GC-03 also reference SCAQMD rule #1113.

Credit 4.3. Carpet Systems: All carpet shall meet the testing and product requirements of the Carpet and Rug Institute’s Green Label Plus program. Carpet adhesives must meet requirements of EQ Credit 4.1.

Credit 4.4 Composite Wood & Agrifiber Products: Composite wood and agrifiber must not contain added urea-formaldehyde resins.

To achieve additional credits, coordinate requirements for MR4 and EQc4.3 as many carpet products are applicable for both points.

To minimize exposure of building occupants to potentially hazardous particulates and chemical pollutants.

Employ permanent entryway systems at least 6 feet in length in the primary direction of travel at entries directly connected to the outdoors and regularly used.

In areas where hazardous gases or chemicals are present or used (i.e. garages, housekeeping/laundry and copying/printing areas), exhaust each room sufficiently to create negative pressure with respect to adjacent spaces with the doors to the room closed. For these spaces provide deck to deck partitions, a hard lid ceiling, and self closing doors.

In mechanically ventilated buildings provide regularly occupied areas of the building with air filtration media of MERV 13 or better if filter both return and outside air that is delivered as supply air.

To provide a high level of lighting system control by individual occupants or by specified groups in multi-occupant spaces.

Recommended Project Strategy:
Design project to meet the requirements of this credit.

Costs:
Design shall meet credit requirements.

Status:
Design shall meet credit requirements.

Payback:
No payback associated.

Additional Resources:
http://www.epa.gov/iaq/voc.html

EQ CREDIT 5: INDOOR CHEMICAL & POLLUTANT SOURCE CONTROL

EQ CREDIT 6.1: CONTROLLABILITY OF SYSTEMS: LIGHTING

Responsible Party: Team

Intent:
To achieve additional credits, coordinate requirements for MR4 and EQc4.3 as many carpet products are applicable for both points.

To provide a high level of lighting system control by individual occupants or by specified groups in multi-occupant spaces.

Providing individual lighting controls for 90% minimum of the building occupants to enable adjustments to suit individual task needs and preferences. Provide lighting system controllability for all shared multi-occupant spaces to enable lighting adjustment that meets group needs and preferences.

Recommended Project Strategy:
Design project to meet the requirements of this credit.

Costs:
On average, lighting controls cost $0.50 per SF.

Benefits:
Improved occupant comfort.

Payback:
No payback associated.

Additional Resources:
N/A

EQ CREDIT 6.2: CONTROLLABILITY OF SYSTEMS: THERMAL COMFORT

Responsible Party: Mechanical Engineer

Intent:
To provide a high level of thermal comfort system control by individual occupants or by specified groups in multi-occupant spaces.

Recommended Project Strategy:
• Determine the approach to thermal comfort within the proj-
LEED STRATEGIES: INDOOR AIR QUALITY

Costs:
• Minimal cost associated with design and distribution of survey and synthesis of results. Monitoring, managing, and maintaining thermal comfort space based on ASHRAE 55-2004:

Requirements:
• To meet the requirements the project team must:
  • Design and distribute a thermal comfort survey of building occupants within a period of 6 to 18 months after occupancy. This survey must collect anonymous responses about thermal comfort in the building and meet all of the referenced requirements.
  • Develop and implement a plan for corrective action if the survey results indicate that more than 20% of occupants are dissatisfied with thermal comfort in the building. This plan should include a measurement of relevant environmental variables in problem areas in accordance with ASHRAE Standard 55-2004.

Benefits:
• Improved occupant well being and connection to the outdoors.

Payback:
N/A

Additional Resources:
EQ CREDIT 8.2: DAYLIGHT & VIEWS: VIEWS 90%
Responsible Party: Architect
Intent:
To provide building occupants a connection between indoors and outdoors through daylight and views in regularly-occupied spaces.
Requirements:
• Achieve direct line of sight to the outdoors via vision glazing between 2'6” and 7'6” above the finished floor for building occupants in 90% of all regularly occupied areas.

Status:
N/A

Additional Resources:

EQ CREDIT 7.2: THERMAL COMFORT: VERIFICATION
Responsible Party: Owner
Intent:
To assess and maintain the building thermal comfort over time. This credit is dependent upon EQ credit 7.1.

Requirements:
• Develop a narrative that includes:
  • Description of the survey, including the proposed time of administration (within 6 to 18 months after occupancy) and the method of administration (in-person, over the phone, over networked computers, or via mail)
  • A corrective action plan that addresses any thermal comfort issues resulting from the survey. Corrective actions typically include control adjustments (temperature setpoints, schedules, operating modes), diffuser airflow adjustments, and solar controls.
  • Design the survey to include:
    • Satisfaction with thermal environment posed in a 7 point scale running from very satisfied (+3) to very dissatisfied (-3) with the center (0) signifying the neutral.
    • The approximate location of survey respondents by building zone or exact location voluntarily
    • Follow-up questions for respondents that indicate dissatisfaction in order to identify the nature and cause of the problem and provide corrective action.
  • Coordinate with EQc7.1. EQc7.2 cannot be achieved if EQc7.1 is not awarded.

Costs:
Small added cost for calculations related to the credit requirements.

Benefits:
Improved occupant well being and connection to the outdoors.

Payback:
N/A

Additional Resources:
Radiance software can be downloaded for free: http://radstudio.lbl.gov/deskrad/download.htm
**INNOVATION & DESIGN PROCESS**

Innovation & Design Overview

Innovation & Design Process incorporates strategies which relate to innovation in design, exemplary performance in some credit categories, or a new and innovative approach. Topics include, but are not limited to, transportation, pedestrian connectivity and safety, habitat conservation, open space, site disturbance, light pollution, surface hydrology, storm water management, acoustics, indoor air quality, energy performance, renewable energy, and waste diversion.

The Innovation & Design credits are left open to the Design/Build Team. Following is a short summary of potential strategies, but this does not preclude other strategies the Team may choose.

**GENERAL DESIGN STRATEGIES**

**ID1. GREEN CLEANING PROGRAM**

**Description:**
A green cleaning program will reduce exposure of building occupants and maintenance personnel to potentially hazardous chemical contaminants that adversely impact air quality, occupant well-being, and the environment.

**Costs:**
There is no anticipated increase in capital cost for this strategy.

**Benefit:**
Increased health for occupants and maintenance personnel.

**ID2. KIOSK AND SIGNAGE GREEN EDUCATION PROGRAM**

**Description:**
Green Education is important in promoting green building practices and heightening public awareness of sustainability. By using the project and its buildings as a teaching tool to provide public education focusing on green building strategies and solutions, this can help to establish an educational program that is actively instructional.

**Costs:**
The costs associated with this strategy vary depending on number of signs and complexity of kiosk content.

**Benefit:**
Provides an educational and visual link to useful environmental data and raises awareness of sustainability.

**ID3. EXEMPLARY PERFORMANCE**

**Description:**
An innovation point can be earned for exemplary performance in selected credits. For example, by reaching a 40% threshold in WE credit 3.2, an additional innovation point can be earned. Credits that are available for an innovation credit are:

- SS Credit 2
- SS Credit 4.1
- SS Credit 4.2
- SS Credit 4.3
- SS Credit 4.4
- SS Credit 5.1
- SS Credit 5.2
- SS Credit 7.1
- SS Credit 7.2
- WE Credit 2
- WE Credit 3
- MR Credit 3
- MR Credit 4
- MR Credit 5
- MR Credit 6
- MR Credit 7
- EA Credit 6
- EQ Credit 8.1
- EQ Credit 8.2

**Costs:**
Costs vary depending on credit and strategy chosen.

**Benefit:**
Benefits vary widely depending on credit and strategy.
### LEED Scorecard: Gold Scenario ‘A’

#### LEED-NC Version 2.2 Project Checklist
2525 Firestone Blvd, City of Southgate, CA
East LA College - Satellite Campus Project “South Gate Educational Center” LEED Gold Scenario “A”

#### Sustainable Sites

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April 16, 2013

FIRESTONE EDUCATIONAL CENTER MASTER PLAN 2013 APPENDIX

A 39
### LEED Scorecard: Gold Scenario ‘A’

#### Materials & Resources

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<tr>
<th>Credit</th>
<th>Description</th>
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#### Per Annum after Payback Period

- **Materials & Resources**
  - Low-Emitting Materials: **Minimal to nothing with careful specification.**
  - Benefits: Improved air quality for occupants.
  - No Payback timeline.

- **Innovation & Design Process**
  - **Exemplary performance**
    - This credit is open but generally attainable for at least 50% of credits.
    - Benefits: Improved air quality for occupants.
    - No Payback timeline.

- **Construction IAQ Management Plan**
  - **Minimum IAQ Performance**
    - Requires: Reduced ventilation for 1% of occupied time.
    - Benefits: Improved air quality for occupants.
    - No Payback timeline.

- **Recycled Content**
  - **Regional Materials**
    - 10% Extracted, Processed & Manufactured Regionally
      - Benefits: Improved air quality for occupants.
      - No Payback timeline.

- **Energy & Atmosphere**
  - **Controllability of Systems**
    - **Thermal Comfort**
      - **Indoor Air Quality**
        - No Payback timeline.
      - **Lighting**
        - No Payback timeline.
      - **Daylight & Views**
        - No Payback timeline.

- **Materials Reuse**
  - **Solid Waste**
    - 20% Diverted from Disposal
      - Benefits: Improved air quality for occupants.
      - No Payback timeline.

- **Regional Materials**
  - **Minimum IAQ Performance**
    - Requires: Reduced ventilation for 1% of occupied time.
    - Benefits: Improved air quality for occupants.
    - No Payback timeline.

- **Construction Waste Management**
  - **Construction Waste Management, Divert 100% from Disposal**
    - Benefits: Improved air quality for occupants.
    - No Payback timeline.

- **Credit 1.1**
  - **Low-Emitting Materials, Adhesives & Sealants**
    - Benefits: Improved air quality for occupants.
    - No Payback timeline.

- **Credit 2**
  - **Thermal Comfort, Design**
    - Benefits: Improved air quality for occupants.
    - No Payback timeline.

- **Credit 3.1**
  - **Low-Emitting Materials, Composite Wood & Agrifiber Products**
    - Benefits: Improved air quality for occupants.
    - No Payback timeline.

- **Credit 4.1**
  - **Low-Emitting Materials, Glass**
    - Benefits: Improved air quality for occupants.
    - No Payback timeline.

- **Credit 5.2**
  - **Low-Emitting Materials, High-VOCatable Materials**
    - Benefits: Improved air quality for occupants.
    - No Payback timeline.

- **Credit 6.2**
  - **Low-Emitting Materials, Low-VOCatable Materials**
    - Benefits: Improved air quality for occupants.
    - No Payback timeline.

- **Credit 7.1**
  - **Low-Emitting Materials, Low-VOCatable Materials**
    - Benefits: Improved air quality for occupants.
    - No Payback timeline.

- **Credit 8.1**
  - **Low-Emitting Materials, Low-VOCatable Materials**
    - Benefits: Improved air quality for occupants.
    - No Payback timeline.

- **Credit 9.1**
  - **Low-Emitting Materials, Low-VOCatable Materials**
    - Benefits: Improved air quality for occupants.
    - No Payback timeline.

- **Credit 10.1**
  - **Low-Emitting Materials, Low-VOCatable Materials**
    - Benefits: Improved air quality for occupants.
    - No Payback timeline.

- **Credit 11.1**
  - **Low-Emitting Materials, Low-VOCatable Materials**
    - Benefits: Improved air quality for occupants.
    - No Payback timeline.

- **Credit 12.1**
  - **Low-Emitting Materials, Low-VOCatable Materials**
    - Benefits: Improved air quality for occupants.
    - No Payback timeline.

- **Credit 13.1**
  - **Low-Emitting Materials, Low-VOCatable Materials**
    - Benefits: Improved air quality for occupants.
    - No Payback timeline.

- **Credit 14.1**
  - **Low-Emitting Materials, Low-VOCatable Materials**
    - Benefits: Improved air quality for occupants.
    - No Payback timeline.

- **Credit 15.1**
  - **Low-Emitting Materials, Low-VOCatable Materials**
    - Benefits: Improved air quality for occupants.
    - No Payback timeline.

- **Credit 16.1**
  - **Low-Emitting Materials, Low-VOCatable Materials**
    - Benefits: Improved air quality for occupants.
    - No Payback timeline.

- **Credit 17.1**
  - **Low-Emitting Materials, Low-VOCatable Materials**
    - Benefits: Improved air quality for occupants.
    - No Payback timeline.

- **Credit 18.1**
  - **Low-Emitting Materials, Low-VOCatable Materials**
    - Benefits: Improved air quality for occupants.
    - No Payback timeline.

- **Credit 19.1**
  - **Low-Emitting Materials, Low-VOCatable Materials**
    - Benefits: Improved air quality for occupants.
    - No Payback timeline.

- **Credit 20.1**
  - **Low-Emitting Materials, Low-VOCatable Materials**
    - Benefits: Improved air quality for occupants.
    - No Payback timeline.

- **Credit 21.1**
  - **Low-Emitting Materials, Low-VOCatable Materials**
    - Benefits: Improved air quality for occupants.
    - No Payback timeline.

- **Credit 22.1**
  - **Low-Emitting Materials, Low-VOCatable Materials**
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    - No Payback timeline.

- **Credit 23.1**
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    - No Payback timeline.

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    - Benefits: Improved air quality for occupants.
    - No Payback timeline.

- **Credit 25.1**
  - **Low-Emitting Materials, Low-VOCatable Materials**
    - Benefits: Improved air quality for occupants.
    - No Payback timeline.

- **Credit 26.1**
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    - Benefits: Improved air quality for occupants.
    - No Payback timeline.
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**Cost Analysis**

**Per Annum After Construction Activity Pollution Prevention**

- **Credit 1.1**: Water Efficient Landscaping
  - **Points**: 5
  - **Cost**: $ -
  - **Payback Period**: Not applicable
  - **Savings**: 
  - **Initial Cost Varies, However, Potable Water Use Reduced by 50%**

- **Credit 1.2**: Water Efficient Landscaping
  - **Points**: 1
  - **Cost**: $ -
  - **Payback Period**: Not applicable
  - **Savings**: 
  - **Initial Cost Varies, However, Potable Water Use Reduced by 50%**

- **Credit 1.3**: Water Use Reduction
  - **Points**: 1
  - **Cost**: -
  - **Payback Period**: Not applicable
  - **Savings**: 
  - **Initial Cost Varies, However, Potable Water Use Reduced by 50%**

- **Credit 1.4**: Water Use Reduction
  - **Points**: 1
  - **Cost**: -
  - **Payback Period**: Not applicable
  - **Savings**: 
  - **Initial Cost Varies, However, Potable Water Use Reduced by 50%**

- **Credit 1.5**: Water Use Reduction
  - **Points**: 1
  - **Cost**: -
  - **Payback Period**: Not applicable
  - **Savings**: 
  - **Initial Cost Varies, However, Potable Water Use Reduced by 50%**

- **Credit 1.6**: Water Use Reduction
  - **Points**: 1
  - **Cost**: -
  - **Payback Period**: Not applicable
  - **Savings**: 
  - **Initial Cost Varies, However, Potable Water Use Reduced by 50%**

- **Credit 1.7**: Water Use Reduction
  - **Points**: 1
  - **Cost**: -
  - **Payback Period**: Not applicable
  - **Savings**: 
  - **Initial Cost Varies, However, Potable Water Use Reduced by 50%**

---

**Energy & Atmosphere**

- **Credit 2.1**: Fundamental Commissioning of Hot Building Energy Systems
  - **Points**: 1
  - **Cost**: -
  - **Payback Period**: Not applicable
  - **Savings**: 
  - **Initial Cost Varies, However, Potable Water Use Reduced by 50%**

- **Credit 2.2**: Maximum Energy Performance
  - **Points**: 1
  - **Cost**: -
  - **Payback Period**: Not applicable
  - **Savings**: 
  - **Initial Cost Varies, However, Potable Water Use Reduced by 50%**

- **Credit 2.3**: Fundamental Refrigerant Management
  - **Points**: 1
  - **Cost**: -
  - **Payback Period**: Not applicable
  - **Savings**: 
  - **Initial Cost Varies, However, Potable Water Use Reduced by 50%**

- **Credit 2.4**: Optimize Energy Performance
  - **Points**: 1
  - **Cost**: -
  - **Payback Period**: Not applicable
  - **Savings**: 
  - **Initial Cost Varies, However, Potable Water Use Reduced by 50%**

- **Credit 2.5**: On-Site Renewable Energy
  - **Points**: 1
  - **Cost**: -
  - **Payback Period**: Not applicable
  - **Savings**: 
  - **Initial Cost Varies, However, Potable Water Use Reduced by 50%**

- **Credit 2.6**: Enhanced Commissioning
  - **Points**: 1
  - **Cost**: -
  - **Payback Period**: Not applicable
  - **Savings**: 
  - **Initial Cost Varies, However, Potable Water Use Reduced by 50%**

- **Credit 2.7**: Enhanced Refrigerant Management
  - **Points**: 1
  - **Cost**: -
  - **Payback Period**: Not applicable
  - **Savings**: 
  - **Initial Cost Varies, However, Potable Water Use Reduced by 50%**

- **Credit 2.8**: Measurement & Verification
  - **Points**: 1
  - **Cost**: -
  - **Payback Period**: Not applicable
  - **Savings**: 
  - **Initial Cost Varies, However, Potable Water Use Reduced by 50%**

- **Credit 2.9**: Green Power
  - **Points**: 1
  - **Cost**: -
  - **Payback Period**: Not applicable
  - **Savings**: 
  - **Initial Cost Varies, However, Potable Water Use Reduced by 50%**
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### LEED Scorecard: Platinum Scenario ‘B’

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### LEED Accredited Professional

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<td>1</td>
<td>Credit 1</td>
<td>LEED Accredited Professional</td>
<td>1</td>
<td>Not applicable</td>
<td>$ -</td>
</tr>
</tbody>
</table>

### Project Totals (pre-certification estimates)

<table>
<thead>
<tr>
<th>Points</th>
<th>Cost Analysis</th>
<th>Payback Period</th>
<th>SAVINGS CAPTURED PER ANNUM AFTER PAYBACK PERIOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>26-32 points</td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>39-51 points</td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>52-69 points</td>
<td></td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>

April 16, 2013

FIRESTONE EDUCATIONAL CENTER MASTER PLAN 2013 APPENDIX

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