Exhibit K
MST General Development Plan

The Redevelopment Agency of
Monterey County
The Monterey-Salinas Bus
Maintenance and
Administrative Facility and
Whispering Oaks Business Park
PLN090071

Appeal PLN110231
Board of Supervisors
June 14, 2011
Bus Maintenance and Operations Center

General Development Plan and Preliminary Design Report

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Chapter 1
Purpose and Intent

1.1 Overview of Combined General Development Plan for Monterey Salinas Transit (MST) Bus Maintenance and Operations (M&O) Center and Whispering Oaks Business Park

The County of Monterey Redevelopment Agency owns five parcels totaling 161 acres surrounding the closed landfill ("Landfill Border Parcels") on the former Fort Ord. The Redevelopment Agency is applying for a Combined Development Permit (CDP) to facilitate development of the Monterey-Salinas Transit (hereinafter referred to as MST) Maintenance and Operations (M&O) Center and a proposed business park called "Whispering Oakes" on approximately 115.5 acres of the larger 308-acre "Landfill Planning Area" within the former Fort Ord. The proposed CDP application consists of a General Development Plan for the Whispering Oaks Business Park, a project specific General Development Plan for the M&O Center, and a Vesting Tentative Map for the entire combined project. The application consists of the proposed subdivision of two of the five existing parcels as follows:

- APN 031-101-041, COE Parcel E8a.1.4  30.3 acres
- APN 031-101-056, COE Parcel E8a.1.1.2  85.2 acres

The parcels will be divided into two development projects (as described above) and two remaining parcels designated for habitat reserve.

The following detailed actions are contemplated as part of this CDP:

1.1.1 General Development Plan Application and Zone Changes

- Rezoning of approximately 58 acres of land from Public and Quasi/Public to Heavy Commercial.
- A General Development Plan (GDP) to provide the framework for future physical development within the Whispering Oaks Business Park site.
- A project-specific GDP to allow for the development of the Monterey-Salinas Transit (MST) Maintenance and Operations (M&O) Center on approximately 24.3 of the 58 acres.

1.1.2 Use Permits

- A Use Permit to allow removal of approximately 2,400 coast live oak trees on the MST parcel.
- A Use Permit will be required for the removal of approximately 2,000 coast live oak trees on the Whispering Oaks parcels.

1.1.3 Vesting Tentative Subdivision Map

- A phased Standard Subdivision and GDP to create 18 parcels including creation of a new 24.3-acre parcel for the MST M&O Center, 13 lots (1.5 to 2.5 acres each) with interior street
circulation being developed as the Whispering Oaks Business Park, and two parcels dedicated to open space. Five of the parcels comprising approximately 10 acres will remain untouched during this process to be utilized for a future Business Park Development; the other remaining acreage will be undesignated.

1.1.4 Development Agreements

- Approval of the Dispensation and Development Agreement conveying a 24.3-acre parcel from the County of Monterey Redevelopment Agency to Monterey Salinas Transit.

1.1.5 Regulatory Permits

- Section 2081(b) and (c) Incidental Take Permit.

1.1.6 Infrastructure / Public Utilities

- **Water Supply & Distribution/Ground Water.** Water to the site will be purveyed by the Marina Coast Water District (MCWD). There is an existing 18-inch waterline located in Inter-Garrison Road. The Fort Ord Base Reuse Plan includes a Development Resource Management Plan that lists annual water allocations by jurisdiction. The County of Monterey has 710 acre-feet of water allocated for the County properties within the Fort Ord area. MST's anticipated water use is estimated to be 15.24 acre feet per year (AFY) before accounting for the potential availability of utilizing bus wash graywater for irrigation. Estimated annual consumption with a graywater recovery system is 13.91 AFY. A Water Supply Assessment (WSA) addressing both the MST and Whispering Oaks developments will be prepared and summarized in the Environmental Impact Report. The potential for reclaimed water use will also be explored.

The US Army is currently operating a groundwater contamination monitoring-recovery-remediation system on the closed landfill.

- **Wastewater Generation & Conveyance.** Wastewater from proposed development will be disposed of through MCWD’s existing sewer collection system. There is an existing 8-inch gravity sewer line located in inter-Garrison Road, and an existing 15-inch gravity sewer line located west of 6th Avenue on CSUMB property. MST's wastewater projections are detailed in Monterey – Salinas Transit Maintenance & Operations Center General Development Plan & Preliminary Design Report prepared by AECOM dated June 9, 2009. Average daily flows are estimated to be approximately 40,000 gallons per day (gpd). It is anticipated that a new lift station and force main heading west from the site will be constructed to handle flows from Whispering Oaks and MST (if they determine the need to connect in the future). Whispering Oaks wastewater would be pumped west along Engineers Road to the existing 15-inch main. MST's wastewater would be pumped from the new lift station to the 8-inch line in Inter-Garrison Road.

- **Storm Drain Improvements / Detention Basins.** Each development area will be responsible for mitigating its own stormwater impacts generated by future site development. All new developments within the former Fort Ord are required to percolate all runoff generated from the development. MST will be providing on-site percolation facilities for their proposed development, and Whispering Oaks will provide a combination of regional percolation facilities and on-site percolation. Off-site drainage that currently drains onto the site, will be rerouted to off-site percolation facilities. A Preliminary Drainage Study will be included as part of the tentative map submittal and analyzed in the Environmental Impact Report.
1.1.7 Circulation

- **Vehicular Access.** In addition to the improvements to the portions of Inter-Garrison Road and Engineering Road that are MST's responsibility, the access to the Whispering Oaks Subdivision involves a series of off-site street improvements that are outside the scope of the project-specific GDP for MST. These other anticipated improvements consist of realigning Imjin Road to 6th Avenue, the opening of 6th Avenue between Imjin Road and 8th Street cutoff, the realignment of 8th Street to tie into 6th Avenue and the closure of the 8th Street cutoff. The primary access to the MST M&O Center is Inter-Garrison Road. The primary access to the Whispering Oaks Business Park will be Engineer's Equipment Road and Inter-Garrison Road.

- **Bikeway / Pedestrian Access.** Inter-Garrison Road currently has no sidewalks and 2 Class II bike lanes on both sides of the roadway along the shoulders. As part of the M&O Center project, a meandering pedestrian trail is planned along the north side of Inter-Garrison Road within a 24’ wide landscaped frontage and the bike lane along the north shoulder will be replaced by a new Class II bike lane located inside the roadway between the right turn lanes for the M&O Center site and the primary westbound lane.

- **Public Transportation.** As part of the development review process, the Fort Ord Reuse Authority (FORA) and its member agencies will approve an MOU for the establishment of the plan line for the future multimodal corridor on Inter-Garrison Road and within the limits of the City of Marina. Public transportation would be accessible via this planned corridor.

- **Parking.** Parking will be provided consistent with the Monterey County Zoning Ordinance Title 21 based on the anticipated mix of uses within the site development.

1.1.8 Easements/Buffers

Because of the site’s proximity to the former base landfill, it is subject to land use limitations. There is a required 1,000-foot buffer from the base landfill property. None of the MST buildings are located within this buffer.

PG&E has recorded and prescriptive easements throughout the site for their electric and gas facilities. Since the facilities will be relocated outside of the MST parcel the easements will be quitclaimed.

Part of the existing PG&E gas facilities includes the main gas service line for California State University Monterey Bay’s (CSUMB) campus. This main gas service line will be relocated, but portions of the line may still remain within the MST parcel. New easements will be created for any CSUMB owned gas facilities located within the MST parcel.

1.1.9 Phasing

Phase 1 of the project is the build-out of the of the MST facility (Lot 1). The subsequent build-out of the Whispering Oaks parcel will occur in phases as dictated by market demand, but is anticipated to occur sequentially as follows: Phase 2 would include development of Lots 2 through 9 (see the Vesting Tentative Map (VTM), dated, 11/24/09, prepared by Whitson Engineers) on Parcels A and B; and Phase 3 would result in development of the approximate 10-acre Future Development Area on Lots 10 through 14.
1.1.10 Habitat / Conservation Area

As part of the standard subdivision, two parcels will be created for the exclusive purpose of habitat preservation and restoration. A conservation easement will be developed for these habitat mitigation areas.

1.2 Project-Specific General Development Plan for Monterey Salinas Transit (MST) Bus Maintenance and Operations Center

This document has been prepared to fulfill the requirement of Zoning Ordinance Section 21.20.030 for a project-specific General GDP and to provide a framework for the physical development of the MST M&O Center. The intended daily use of the M&O Center is the parking, dispatching, maintenance, fueling and washing of the entire MST bus fleet (see Section 4.3 for the number of buses to be housed on site at move-in and build-out). In addition, driver dispatch and offices for the MST executive and operations staff will be located in the Operations Building. A Board Room will also be provided in the Operations Building, for MST Board of Directors meetings that occur once per month and are attended by the Board, MST staff and small groups of the public (see Section 4.3 for an outline of the staff and public that will be present on site at move-in and build-out.)

The M&O Center will be located on 24 acres consisting of three parcels of the former Fort Ord Military Reservation, at 10601 Inter-Garrison Road (intersections of 7th and 8th Avenues) in Monterey County, California. These 21 acres are within the 53.8-acre Whispering Oaks Business Park. The County of Monterey Redevelopment Agency (Agency) is planning and processing a mixed use business park on this 53.8-acre parcel, which is a portion of a 308-acre Landfill Planning Area within the former Fort Ord. The Agency is responsible for developing a project-specific GDP for the County of Monterey's (County) portion of the Whispering Oaks site, but the County’s portion of the Whispering Oaks site will ultimately be developed by a master developer.

The Inter-Garrison Road site is not the original project site. The original site was located a few blocks away, on Gigling Road, between 7th and 8th Avenues. The County requested that the M&O Center not be located at the Gigling Road site and suggested relocation to the Inter-Garrison Road site adjacent to the planned business park and a closed landfill. The County feels that the M&O Center is an excellent use for the Inter-Garrison site, as most other uses are not well suited to be located adjacent to a closed landfill. The new site is also located on the intermodal transportation corridor that MST has planned for Inter-Garrison Road, and the planned uses around the Inter-Garrison site are more compatible for properties adjacent to a bus M&O Center. A Memorandum of Understanding (MOU), agreeing in principle that MST and the County will exchange land to provide the new site to MST, has been signed by MST and the County. Additional MOUs with the City of Marina and Fort Ord Reuse Authority will be prepared if needed.

MST operates fixed-route bus service out of its M&O Centers currently located in Monterey and Salinas. The facility operates 22 hours per day. On weekdays, a dispatcher opens the facility at approximately 2:30 a.m. and the first driver pulls out at approximately 3:15 a.m. At approximately 4:00 a.m., other drivers begin arriving and the pullout of buses continues, with the majority of bus pullouts occurring between 5:00 a.m. and 7:00 a.m. On weekends, a dispatcher opens the facility at approximately 4:00 a.m. and the first driver pulls out at approximately 6:30 a.m. Also at approximately 6:30 a.m., other drivers begin arriving and the pullout of buses continues, with the majority of bus pullouts occurring between 6:30 a.m. and 7:30 a.m.

A sound study of MST current operations at the Monterey facility was submitted to County Planning. The study measured the sound levels for bus arrivals and departures, as well as on-site maintenance and fueling activities.

In addition to the scheduled drivers, there are a number of drivers who report to duty as standby operators in the event that a problem arises or to serve as relief drivers.
During the day, relief drivers leave and return to the facility in hybrid automobiles ("relief units"). Relief units are used to transport relief drivers to and from rendezvous locations off site. The scheduled drivers that have been relieved are then shuttled back to the operations center for lunch breaks or to end their work shifts. There are occasions throughout the day when buses return to the yard and are then dispatched again based on their schedule. In the afternoon, the majority of buses will start returning to the bus yard between 5:30 p.m. and 6:30 p.m., with the last nine buses returning to the bus yard between 10 p.m. and 12:30 a.m.

The bus routes and schedules are fixed with the exception of when there is a "service change" and adjustments are made to routes and schedules. MST generally has minor service changes once or twice a year. Service changes are based on rider surveys, service requests and special funding to pay for special service. As an example, in July of 2009, MST added nine new routes to the Presidio of Monterey.

MST's maintenance department currently supports a fleet of 76 buses. It is anticipated that the fleet will have grown to include approximately 85 buses when the new facility opens and the new facility will ultimately serve approximately 250 buses. On a daily basis, the buses are cleaned inside and out, fueled, and undergo minor repair as required. For the most part, these activities occur between the hours of 4:00 pm to 12:00 am. In addition, the buses are scheduled for preventive maintenance every 3,000 miles. This regular maintenance service schedule provides a high level of reliability to MST's customers. The 3,000-mile scheduled service includes cleaning the inside and outside of the bus, refueling, and adding fluids such as engine oil or transmission oil. In the service bays, maintenance staff completes oil changes, inspects brakes and repairs most mechanical breakdowns. The new facility provides MST the opportunity to become more efficient and to provide their bus drivers with high-quality vehicles to serve the needs of the people of Monterey County.

The new facility will include four new buildings, parking, maintenance, and dispatch areas for buses, as well as parking for automobiles to the serve the employees of MST, visitors, and vendors. The existing MST M&O facilities at two other sites will be converted to other uses or developed or sold to generate income for MST. MST and San Joaquin Regional Transit District (RTD) both toured the new Orange County Transportation Authority (OCTA) M&O Center in Santa Ana, California, and reviewed and analyzed that facility with respect to the future needs of both MST and RTD. MST and RTD determined that a facility similar to the OCTA facility would meet the needs of both transit districts and have elected to construct similar projects using the OCTA facility as the basis for design. The AECOM design team conducted a joint meeting with MST and RTD and facilitated an understanding of how the MST and RTD building-adapt designs differ from the OCTA facility.

With the exception of the Operations (OPS) Building, the new MST buildings will be "building-adapt" versions of the OCTA buildings, meaning that the design of the OCTA buildings have been duplicated except as required to address changes in the building codes since the OCTA facility was designed and design changes to address site-specific criteria. The MST OPS Building is an original design, with approximately the same footprint as the OCTA OPS Building, but it has been expanded to three floors to accommodate additional administrative and meeting functions.
The project will include the following facilities:

- A 96,450-square-foot, two-story Maintenance Building, which will include equipment related to bus maintenance. The completed facility will be capable of maintaining 250 large buses with 21 bus repair bays including four bays for articulated buses and two bays for automotive service; rebuild shop for engines, transmissions, and small components; machine shop; brake shop; three bays for body shop; paint spray booth; bus hoists; two brake pits; a brake dyno bay; overhead consumable services; HVAC and exhaust systems; parts storage area; offices; lunch room; restrooms; specialty repair shops; utilities; underground storage tanks; and parts cleaning facilities. The building will be identical to the OCTA Maintenance Building, except for modifications described in Section 4 of this report and the Schematic Design drawings.

- An 18,620-square-foot Fuel/Brake/Tire Repair Building, which will include fueling equipment to dispense diesel and unleaded gasoline fuels, storage tanks, four bus servicing drive lanes, and a tire shop with tire storage facilities. Storage tanks will provide a minimum capacity for two 30,000-gallon diesel fuel tanks, two 75,500-gallon unleaded fuel tanks, two 1,000-gallon split tanks for engine oil, a 1,000-gallon split tank for automatic transmission fluid, a 100-gallon day use diesel tank, a 500-gallon waste coolant tank, a 4,000-gallon waste oil tank, and a 250-gallon urea tank. The building will be identical to the OCTA Fuel/Brake/Tire Repair Building, except for modifications described in Section 4 of this report and on the Schematic Design drawings.

- An 8,373-square-foot Bus Wash/Steam Clean Building, which will include bus washers, water reclamation equipment, a reverse osmosis final rinse water system, bus air dryers, a steam clean facility, a water-softening system, and an equipment room. Two wash bays will be identical to the OCTA Wash Building, but the two north bays will be converted to steam clean bays. Note that the Wash Building has been shifted relative to the Fuel Building, in order to align the four drive aisles in...
each building. The canopy roof has also been shifted and enlarged in order to protect all 4 drive
aisles between the two buildings. See Section 4 of this report and the Schematic Design drawings for
additional modifications.

- A 39,800-square-foot, three-story, OPS Building for administration personnel, operations personnel,
  bus operators, board meetings, offices, drivers’ support facilities, storage, restroom areas, and a
  covered patio. The first floor will have approximately the same footprint as, and will be similar in
  many respects to, the OCTA OPS Building.

- A small Outside Storage Building, Smoker’s Canopy and HVAC enclosure.

1.3 Development Standards

The general design principles for the MST M&O Center are to reinforce the natural landscape setting
consistent with the character of the Monterey Peninsula and to create a distinctive and visually pleasing
streetscape, particularly along Inter-Garrison Road. A 24-foot-wide permanent landscape buffer will be
provided along Inter-Garrison Road. Site access from Inter-Garrison will focus on safety and efficiency.

In addition to the landscaping provided along Inter-Garrison, additional landscaping will provide screening
and shading within the site. Landscape strips will be provided between auto parking areas and any portion of
structures. Due to the nature of bus storage and circulation, no landscaping will be provided within the bus
yard, including around the majority of the buildings, except for the Operations Office Building. Landscaping
and pervious land area shall total no less than 10 percent of the total site area. Project entrances shall be
emphasized with formal landscaping, monument and wall-mounted signage, and accent lighting.

Outdoor yards, trash enclosures, storage areas and delivery bays shall be screened from public viewing
areas (particularly along Inter-Garrison Road) by a combination of decorative screening material, site design
and landscaping. Service areas will be located at the sides and rear of buildings.

Exterior building materials and textures will be designed to complement the oak-prominent landscape. The
range of proposed materials includes subdued earth-tones and textures to complement the existing
landscape and surrounding environment. Regardless of design theme, materials will be durable and of high
quality. Examples include stone, tile, terra cotta, steel, brick, and sculpted concrete. Highly reflective glass
and similarly inconsistent materials will be avoided.

The following are the Development Standards proposed for the MST M&O Center and are based on the
development standards of the Heavy Commercial District, but in some cases vary from the standards applied
to a more typical heavy commercial area.

- Building Site Coverage: 50% maximum
- Landscaped Area: 10% minimum
- Open Space: No requirement
- Main Building Setbacks (street lot lines): 40 feet minimum
- Main Building Setbacks (interior lot lines): 20 feet minimum
- Accessory Building Setbacks (street lot lines): 10 feet minimum
- Accessory Building Setbacks (interior lot lines): 10 feet minimum
• Perimeter Wall or Fence Setback (street lot lines): 0 feet minimum from right-of-way
• Perimeter Wall or Fence Setback (interior lot lines): 0 feet
• Distance between Main Buildings: 20 feet minimum
• Distance between Main & Accessory Buildings: 15 feet minimum
• Distance between Accessory Buildings: 10 feet minimum
• Building Height Limit (OPS Building): 60 feet maximum, except for spires, aerials, etc.
• Building Height Limit (all other Main Buildings): 40 feet maximum, except for spires, aerials, etc.
• Building Height Limit (Accessory Buildings): 30 feet maximum, except for spires, aerials, etc.
• Perimeter Wall or Fence Height Limit: 12 feet maximum
• Lighting Plan Requirements: All exterior lighting shall be unobtrusive, harmonious with the local area and constructed or located so that only the area intended is illuminated and off-site glare is fully controlled. The County "dark sky" and "no-light-spill" onto adjoining properties requirements apply, including the provision of "cutoff" type light fixtures. The location, type and wattage of the exterior lighting must be approved by the Director of Planning and Building Inspection prior to the issuance of building permits.
• Sign Regulations: Signing for all development shall be established pursuant to Chapter 21.60.090 & 21.06.065
• Auto Parking: See Section 4.3
• Parking spaces within setbacks: Parking within setbacks may be counted toward the amount of required parking.
• Disabled Accessible Parking: Meet 2007 CBC with disabled accessible parking located to serve both the OPS and Maintenance Buildings.
• Compact Parking: 25% maximum of total non-bus parking, not including support vehicles, \((435 - 35) \times 25\% = 100\) compact stalls maximum.
• Bicycle Parking: One bicycle rack per 15 parking spaces, not including relief vehicles, support vehicles and vendor vehicles, \((435 - 16 - 35 - 5) / 15 = 25\) bike racks required.
Chapter 2
Site Demolition

2.1 Introduction

Site demolition for the proposed MST Bus M&O Center will consist of removing and disposing of three buildings, fencing, trees, site lighting fixtures, storm drain facilities, asphalt and concrete hardscaping (roads, walkways, etc.), and underground piping, conduits, and duct banks. The project will also include relocating existing utility poles, overhead utility lines, and underground natural gas pipelines that conflict with the proposed M&O Center facilities and site improvements. Sheet C-4, Site Demolition Plan, of the GDP Submittal Drawings shows the planned demolition and other aboveground site improvements.

2.2 Site Demolition

Building demolition will include removing and disposing of walls, roof structures, foundations, and other related building equipment. The buildings being demolished include various types of field offices. The buildings were built for use during the landfill closure and base cleanup projects and are no longer needed.

Fencing demolition will include removing chain link fabric, barbed wire, posts, and footings. The chain-link fence is approximately 6 feet tall.

Storm drain system demolition will include modifications to two 24-inch culverts that discharge onto the M&O Center site. The outlets of these culverts are protected by concrete headwalls located along the southern portion of the existing site near Inter-Garrison Road. The concrete headwalls will be removed to allow for connecting the proposed storm drain system to the culverts.

It has yet to be determined which overhead utilities can be demolished and removed and which will need to be rerouted. Replacement will be by either realigning overhead lines or by undergrounding the utility. Some of the utility lines may need to be rerouted prior to demolition or provided with temporary connections in order to maintain continuity of service.

Demolished asphalt and concrete materials will be recycled to the extent feasible as part of the LEED certification for this project. It is anticipated that most of this material will be recovered except that some portion of the foundation concrete from the site may require disposal due to the presence of steel reinforcement. The materials will be crushed for use as aggregate base/subbase for pavement construction, crushed rock base for structures, pipe bedding, and other applications where granular materials are required. Some portion of the existing aggregate base under the roads may also be recoverable and reused if it is acceptable. The crushed materials and reused aggregate base will be required to meet the specification requirements for granular materials or for select backfill material.

2.3 Tree Demolition

The existing site has many mature trees, which are primarily coast live oaks. In order to accommodate the new buildings and hardscaping at the proposed M&O Center, the majority of the existing trees must be removed. The removal of coast live oaks will require additional mitigation measures that will be addressed in the Environmental Impact Report to be completed by the County of Monterey.
The trees slated for removal consist of those trees located in areas where there will be site improvements. The site improvement design will retain existing trees and vegetation to the maximum extent practicable. The contract documents will include requirements for protection of native trees and vegetation during construction.

The trees within the Oak Tree Buffer Zone Area in the southwest portion of the MST parcel and select trees along the Inter-Garrison Road frontage will be preserved. See C-11 and C-12 of the GDP Submittal Drawings.

2.4 Underground Utilities Demolition

Demolition of underground utilities will consist of removing and disposing of all piping and appurtenances within the proposed M&O Center site, including the existing water distribution, natural gas distribution, and electrical and communications conduits and duct banks. Outside the perimeter of the proposed M&O Center, unneeded existing utilities will be capped or plugged, typically near a pipeline or manhole to remain, and abandoned in place.

Sheet C-4 shows the underground utilities known or presumed to exist within the M&O Center site that require demolition. The utilities shown are based on record drawings, survey information, and field reconnaissance. The quality of the information varies, so some utilities are shown more accurately than others. It is recommended that utilities appearing to be critical with regard to construction be potholed to verify location, depth, material type, and condition.

Demolition of the water distribution system will include removing and disposing of surface and subsurface facilities. Surface facilities include fire hydrants, backflow devices, valve boxes, etc.; subsurface facilities include piping, valves, concrete thrust blocks and encasement, etc.

Demolition of the natural gas distribution system will include removal and replacement of surface and subsurface facilities. Surface facilities include gas regulators and pipeline markers; subsurface facilities include piping, valves, concrete encasement, etc. The 14-inch gas line that runs through the site will need to be rerouted and connected prior to the demolition of the existing piping to maintain continuity of service. The 14-inch gas line is the main service for the Fort Ord community, and is connected to the primary metering station located just north of the site. PG&E has plans to relocate the metering station, and rerouting of the 14-inch gas line may be dictated by the new metering station location.

Demolition of the underground electrical and communications systems will include removing and disposing of conduits, duct banks, concrete vaults, and appurtenances.
Chapter 3
Civil and Site

3.1 Water Supply and Demand

3.1.1 Introduction

Water for the proposed MST M&O Center will be purveyed by the Marina Coast Water District (MCWD). MCWD provides water, reclaimed water, and sewer services to the City of Seaside, the central portion of the City of Marina, and the Fort Ord community. The M&O Center project site is located adjacent to an existing 18-inch waterline located along Inter-Garrison Road.

MCWD has indicated it will serve the new M&O Center with potable water to meet domestic and fire protection water demands. Any MCWD water facility improvements, if required to meet the new M&O Center water demands, will be the responsibility of the water district to evaluate and identify. The costs for these improvements will be incorporated into the service fees that MCWD will assess MST.

MST intends to participate in the usage of recycled water in the future, but the project site is not located near the existing recycled water system, which is currently along General Jim Moore Boulevard. This recycled water supply, when made available, will provide the M&O Center with water for landscape/irrigation uses. Until recycled water becomes available at the site, the landscape/irrigation water uses will be supplied from the MCWD potable water distribution system. The systems will be designed with appropriate stubouts to allow future conversion of the irrigation system to recycled water.

3.1.2 Water Supply

The Fort Ord Reuse Plan, the governing planning document for the Fort Ord Community, includes a Development Resource Management Plan that lists annual water allocations by jurisdiction. The water allocations are for buildout conditions, which the Fort Ord Reuse Plan considers will occur in 2015. The County of Monterey was allocated 710 acre-feet per year (AFY), and MST has informal arrangements with the County to obtain a portion of the County’s allocation. The annual amount to be allocated to MST has yet to be determined, but the design criteria will be based on the facilities estimated water consumption described in the following section.

Water for the new M&O Center will be supplied from the existing 18-inch-diameter waterline through three points of connection (POC) at Inter-Garrison Road. This water supply will provide for potable, landscape/irrigation, and fire protection uses. The potable water service (POC #1) will include a meter and RP backflow preventer assembly. The landscape/irrigation water service (POC #2) will include a meter and RP backflow preventer. The fire protection water service (POC #3) will include a double check valve and a detector meter. The meter and backflow preventer assemblies will be constructed per MCWD standards of construction.

3.1.3 Water Consumption

The M&O Center will have three primary types of water consumption:

1. Domestic water usage from the three main buildings (Operations, Maintenance, and Fuel/Brake/Tire)
2. Landscape irrigation
3. Bus Wash

The annual domestic water consumption was based on various factors and estimates that were in the 2007 California State University Monterey Bay (CSUMB) Environmental Impact Report (EIR) prepared by Denise Duffy & Associates and MCWD’s 2005 Urban Water Management Plan (UWMP). The M&O Center’s total estimated annual water consumption at full occupancy is 15.24 AFY. MST is also considering implementing a graywater recycling system that will re-use un-recycled bus wash water for landscape irrigation. Potentially, MST could reduce their annual water consumption by 1.56 AFY if all of the unrecycled bus wash water is reused for landscape irrigation.

<table>
<thead>
<tr>
<th>Water Consumption</th>
<th>Equivalent Bldg</th>
<th>Demand Factor $^1$</th>
<th>Annual Consumption (AFY)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Square Footages</td>
<td>(AFY/sf)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Based on</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Approximate</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fixture Counts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buildings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operations</td>
<td>31,800</td>
<td>0.000112</td>
<td>3.82</td>
</tr>
<tr>
<td>Maintenance</td>
<td>21,020</td>
<td>0.000112</td>
<td>2.52</td>
</tr>
<tr>
<td>Fuel/Brake Tire</td>
<td>4,834</td>
<td>0.000112</td>
<td>0.58</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td></td>
<td><strong>6.92</strong></td>
</tr>
<tr>
<td>Landscaping $^2$</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Landscaping (of improved areas only)</td>
<td></td>
<td></td>
<td><strong>6.76</strong></td>
</tr>
<tr>
<td>Bus Wash $^3$</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bus Wash w/ 75% Recycling</td>
<td></td>
<td></td>
<td><strong>1.56</strong></td>
</tr>
</tbody>
</table>

**Total Estimated Annual Consumption** 15.24

| Amount of bus wash graywater potentially available for irrigation | 1.56 |
| Graywater lost to evaporation (Assume 15%) | 0.23 |
| Net amount of graywater available for irrigation | 1.33 |

**Total Estimated Annual Consumption w/ Graywater Recovery System for Landscape Irrigation** 13.91

$^1$ A demand factor of 0.00012 was used based on the demand factor used by MWCD for General Office use type. This factor is comparable with the office-use factors used in the CSUMB EIR.

$^2$ Landscape irrigation demand is based on a Total Water to Apply (TWA) estimate that accounts for landscape evapotranspiration (ET$_{a}$) rates for the Monterey-Salinas area and includes 5 acres of landscaped area.

$^3$ Bus wash estimates assume 230 buses washed twice a week (104 times a year). Each wash for a single bus requires 85 gallons of water, but approximately 75% of this bus wash can be recycled. Therefore, only 21.25 gallons of new water is used for each wash.
3.1.4 Fire Protection Water Demand Rates

The M&O Center is under the fire protection jurisdiction of the Salinas Rural Fire Protection District (SRFPD). The SRFPD adopted the 2007 California Fire Code along with some amendments.

The SRFPD Fire Marshal’s preliminary indication is that a fire hydrant flow of 3,250 gpm for 4 hours will be required. This is based on supplying the required fire flow for the proposed building requiring the highest flow (Maintenance Building) for the longest duration per the 2007 California Fire Code, Table B105.1. The required fire hydrant flow for the Maintenance Building based on Table B105.1 is 6,500 gpm. However, because the Maintenance Building will be equipped with an approved automatic sprinkler system, SRFPD has allowed a reduction of 50 percent, resulting in a required demand of 3,250 gpm.

The building fire sprinkler flow and pressure requirements range from 250 to 500 gpm at ~50 psi. Fire protection demands for the hydrant and building sprinkler system were added to the estimated MDD to evaluate the proposed fire protection water distribution system and the fire hydrant layout.

Table 3.1-3 presents a summary of the fire flow requirements based on the 2007 California Fire Code and modifications per the SRFPD Fire Marshal.

<table>
<thead>
<tr>
<th>Building Type (per CBC)</th>
<th>Occupancy Type</th>
<th>Gross Sq. Ft.</th>
<th>Fire Hydrant Req’d Fire Flow (gpm)</th>
<th>Flow Duration (hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operations Building</td>
<td>III-B Sprinklered</td>
<td>A3, B</td>
<td>39,800</td>
<td>2</td>
</tr>
<tr>
<td>Maintenance Building</td>
<td>II-A &amp; B Sprinklered</td>
<td>B, H2, H4</td>
<td>96,445</td>
<td>4</td>
</tr>
<tr>
<td>Fuel/Brake/Tire Repair and Bus Wash/Steam Clean Buildings Combined</td>
<td>II-B Sprinklered</td>
<td>H4</td>
<td>32,051</td>
<td>2</td>
</tr>
<tr>
<td>Outside Storage Building</td>
<td>V-B Sprinklered</td>
<td>S1</td>
<td>2,763</td>
<td>2</td>
</tr>
</tbody>
</table>

3.1.5 Water Storage

The M&O Center will not have onsite water storage for domestic water usage.

3.2 Water Distribution

3.2.1 Introduction

The proposed potable water distribution systems will supply water to the M&O Center to meet domestic demands and provide fire protection. The landscape irrigation water system will be designed so that in the future it can be connected to the planned expansion of the MCWD recycled water distribution to this site. Each of the water distribution systems will have its own point of connection to the existing MCWD potable distribution system.

MCWD maintains system pressures between 30 and 70 psi throughout their water distribution system. MCWD has indicated that the MST site is located in their 70-psi pressure zone. According to MCWD, this approximate static pressure is maintained constant independent of the varying system demands. This study
considers a minimum system pressure of 50 psi as the basis of design for sizing the new M&O Center’s water utilities.

The water mains and most of the building services will be located to maintain a 10-foot clear separation from parallel sanitary sewer lines. Where water mains cross over sanitary sewer pipelines, a minimum vertical separation of 12 inches will be maintained with sewer lines being below water.

Valves will be placed throughout the water distribution systems to isolate sections for maintenance. The minimum cover over water mains and service laterals will be 3.5 feet. All PVC water mains and laterals will be buried with a detector wire to aid in locating the pipes in the field along with warning tape. There will be a 6-inch backflow-prevention device and 6-inch main meter inside a buried vault at the connection to the MCWD system, as well as individual meters to each building and any other major water demand sources, to allow tracking of water use through the domestic water distribution system. There will be a 10-inch double-check backflow preventer at the fire protection water distribution system connection to the MCWD system.

Air-release valves and blowoffs will be located as needed throughout the distribution system. Air valves automatically vent air from high points in the pipeline and allow air to enter when draining a section of pipe or during downsurge events. Blowoffs allow flushing and dewatering pipelines.

3.2.2 Proposed Domestic Water Distribution System

As shown on Sheets C-18 through C-21, the proposed domestic water distribution system will consist mainly of a 6-inch backbone line with branched water services to serve the various buildings throughout the M&O Center.

The water services were sized based on each of the building nominal domestic and/or bus wash/steam cleaning demands. The building nominal domestic water demands are based on the water demand expected from the number of fixtures on each building and represent PHDs. Table 3.2-1 presents the nominal domestic water demands and other miscellaneous building demands with required water service sizes for the various buildings. Some of the buildings will have multiple services for their water demands so their sizes may vary from what is shown in the table below.

<table>
<thead>
<tr>
<th>Building</th>
<th>WSFU</th>
<th>Service Size (in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operations</td>
<td>222</td>
<td>3</td>
</tr>
<tr>
<td>Maintenance (2 services)</td>
<td>170</td>
<td>2.5</td>
</tr>
<tr>
<td>Fuel/Brake/Tire Repair</td>
<td>43</td>
<td>2</td>
</tr>
<tr>
<td>Bus Wash/Steam Clean</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

All of the water distribution lines will consist of AWWA C-900 Class 200 PVC pipe. The water service laterals will consist of Type "K" copper tubing, polyethylene, or Schedule 40 PVC in larger sizes. Each building will have one or more domestic water services with a corporation stop at the main for shutoff purposes.

3.2.3 Proposed Fire Protection Water Distribution System

As shown on Sheet 0FP-1, the proposed fire protection water distribution system will consist of 10-inch waterlines looped throughout the site to serve the fire hydrants and the building sprinkler system connections within the M&O Center. The pipes were sized based on the design criteria outlined herein and with capacity to handle an instantaneous hydrant flow of 3,250 gpm in combination with any of the building fire sprinkler flows listed on Table 3.1-2 of this report. The required hydrant flow is to be obtained from any three fire
hydrants as indicated by the Fire Marshal. Each building will have one or more firewater service consisting of a PVC pipeline with a shutoff valve at the water main connection. The fire hydrant laterals and building fire sprinkler system laterals will be 6 inches in diameter.

The fire sprinkler system will be installed within each of the buildings of the M&O Center, but not within the smokers canopy and HVAC enclosure. Fire hydrants will be installed at various locations on the water distribution system for fire protection as required by the Fire Marshal. The SRFPD requires, per the 2007 California Fire Code, that fire hydrants be placed around the site so that all points on the various building perimeters are within 150 feet of a hydrant. The hydrant spacing will also be no greater than 300 feet throughout the site.

The fire hydrants will be equipped with one 4-inch-diameter pumper nozzle and two 2.5-inch-diameter hose connections, and will be of the wet barrel type. Each hydrant run will be equipped with a buried shutoff valve at the main with a valve box and lid, similar to the distribution system isolation valves. The hydrants will be capable of delivering 1,000 gpm at the pumper nozzle with a pressure loss of less than 5 psi.

3.3 Wastewater Collection

3.3.1 Introduction

Wastewater generated by the proposed M&O Center will be collected onsite and disposed of through MCWD's existing sewer collection system. The MST project site is located adjacent to an existing 15-inch sewer line located along Inter-Garrison Road. MCWD has indicated their system has capacity to receive and convey wastewater from the M&O Center for proper treatment and disposal.

Due to the natural terrain of the new MST site a lift station and force main pipeline are needed. The onsite sewer system gravity flows to the lift station to be located in the northwest corner of the site and a force main will run to the south.

The following additional criteria were used for designing the wastewater collection system:

Hydraulic Design:

- Building peak wastewater flows were based on drainage fixture units for each building.
- Building sewer services and sewer mains were sized based on peak flows and on Manning's formula using an “n” of 0.011 (PVC pipe).
- Building sanitary sewer service laterals will have a minimum diameter of 4 inches and a minimum slope of 0.010.
- Sewer mains will have a minimum diameter of 6 inches.
- Allowable depth of flow to diameter of pipe (d/D) ratios at peak flow:
  - 10 inches and less: d/D = 0.50
  - 12 inches and larger: d/D = 0.67
- Minimum slopes for sewer mains were selected to maintain a self-cleansing velocity of 2.0 feet per second or greater when flowing half full (d/D = 0.50):
- 6 inches: Slope = 0.0035 ft/ft
- 8 inches: Slope = 0.0024 ft/ft
- 10 inches: Slope = 0.0018 ft/ft
- 12 inches: Slope = 0.0014 ft/ft

- Head losses in manholes were neglected at straight-through manholes; a head loss of 0.10 foot was used at manholes with pipe size changes or changes in direction.

Manhole Locations:
- 350-foot maximum spacing
- Changes in slope or direction of sewer
- Changes in pipe size
- Junctions of main sewers
- Junctions of main sewer and lateral if lateral is the same size as the main

Cleanouts were located at pipe terminations where there is no manhole and where building service laterals change direction.

Drop manholes were used only where necessary due to differences in elevation between sewer mains and/or service laterals.

3.3.2 Proposed Sewer Collection System

The proposed wastewater collection system for the M&O Center will collect and transport sanitary wastewater and interior building floor drainage from the facility and discharge it into the existing MCWD sewer collection system.

A lift station with a capacity of at least 225 gpm will be located on-site to discharge the on-site wastewater flow to the adjacent 8-inch sewer main via a 6-inch force main. The lift station will be a duplex submersible pump system with a wet well sized for operational storage. The duplex pump system has two pumps for redundancy and for handling wastewater flows exceeding the design on-site peak flows. Oil-water separators have been included in the design to treat portions of the wastewater generated at the Maintenance, Bus Wash/Steam Clean, and Fuel/Brake/Tire Repairs Buildings before it discharges to the on-site wastewater collection system. These drainage flows will come from miscellaneous industrial uses, such as bus-wash water, floor-wash water and bus drippings on rainy days. The volume of these drainage flows will be significantly reduced by recycling 75% of the bus-wash water.

The sewer services were sized based on each of the building nominal sanitary and/or bus wash/steam cleaning wastewater flows. The building nominal sanitary wastewater flows were based on the water discharges expected from the number of fixtures on each building and represent peak-hour flows. The bus wash/steam cleaning wastewater flows were determined in previous sections of this report. Table 3.3-2 presents the nominal sanitary wastewater flows and other miscellaneous discharges with required sewer service sizes for the various buildings. Some of the buildings will have multiple services for their wastewater discharges, so their sizes may vary from what is shown in Table 3.3-2.
<table>
<thead>
<tr>
<th>Building</th>
<th>WSFU</th>
<th>Wastewater Flow (gpm)</th>
<th>Service Size (in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operations</td>
<td>162.5</td>
<td>83.4</td>
<td>4</td>
</tr>
<tr>
<td>Maintenance</td>
<td>111.5</td>
<td>70.7</td>
<td>4</td>
</tr>
<tr>
<td>Fuel/Brake/Tire Repair</td>
<td>20.5</td>
<td>35.9</td>
<td>4</td>
</tr>
<tr>
<td>Bus Wash/Steam Clean</td>
<td>-</td>
<td>116.0</td>
<td>6</td>
</tr>
</tbody>
</table>

It should be noted that the total nominal or per-unit fixture wastewater flow from all of the buildings does not match the onsite total wastewater flow used to size the sewer mains. The building sanitary wastewater flows shown in the table above were prorated based on the onsite total wastewater flow discussed previously in this section. These prorated flows were used to represent the distribution of the onsite total wastewater flow to each of the buildings within the M&O Center and, consequently, were used to size the sewer mains. If the building nominal flows had been used to size the sewer mains, the required pipe sizes would be much larger. However, since it is not practical to assume that all the fixtures will be used at the same time, the design sized the sewer collection system for facilities (such as the M&O Center) using a reduced wastewater flow value to account for the time lag between fixture uses.

3.4 Natural Gas Distribution

3.4.1 Natural Gas Service

Pacific Gas and Electric Company (PG&E) provides natural gas service to the Fort Ord community. The primary metering station serving the Fort Ord community is located immediately north of the proposed M&O Center adjacent to Engineer Equipment Road just slightly west of the 8th Avenue alignment. PG&E has plans to relocate the metering station, but the location and timeline for the relocation is not decided. The primary gas customer within Fort Ord is CSUMB, which receives gas and electricity from PG&E but owns and operates their own facilities. From the metering station there is an existing 14-inch line serving CSUMB that heads southwest and a high-pressure transmission line that heads west-northwest. The line serving CSUMB will need to be relocated within a new easement during or prior to construction due to the proposed Maintenance Building location, which is situated directly over the existing line.

3.4.2 Proposed Gas Distribution System

The gas system will be constructed of flexible, heat-fused polyethylene pipe with polyethylene valves. Unlike steel pipe, polyethylene pipe is not subject to corrosion and will not require cathodic protection. The gas system will be routed adjacent to the domestic water distribution mains wherever possible (See Sheets C-18 through C-21). Underground gas piping will be buried with a copper locating wire and plastic locating tape. The plastic locating tape will be located approximately 1 foot above the pipe to alert future excavation operations.

The gas laterals have been sized based on pipe friction losses to obtain a minimum pressure of 3.0 to 5.0 psig at the inlet side of the building pressure regulator. The building service entrance gas pressure will be further reduced, through pressure regulators, for distribution within the individual buildings as needed/required by the installed equipment therein.

Three laterals will serve the Maintenance Building—a 1.5-inch and a 2-inch lateral to the maintenance bays and a 1.5-inch lateral to the Body Shop area.
A 1-inch lateral will serve the Operations Building. Within the Operations Building, natural gas is supplied to the Hot Water/Janitor Room 138, where the water heaters are located.

A 1.25-inch lateral will serve the Wash Building. The Wash Building has heated water steam cleaning and pressure washing equipment that has gas hot water heaters. Design of the gas distribution system was based on the latest edition of the National Fuel Gas Code (ANSI Z223.1 & NFPA 54), NFPA 58, OSHA, and federal, state, and local building codes.

3.4.3 Estimated Gas Loads

Three of the four main facilities will have connections to the natural gas distribution system: the Maintenance Building, the Operations Building, and the Wash Building. Gas loads for the proposed M&O Center are summarized in Table 3.4-1.

<table>
<thead>
<tr>
<th>Building Name</th>
<th>Total Bldg Gas Load (CFH)</th>
<th>Bldg Lateral Pipe Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operations</td>
<td>225</td>
<td>1-inch</td>
</tr>
<tr>
<td>Maintenance</td>
<td>8,023</td>
<td>Two 1.5-inch / one 2-inch</td>
</tr>
<tr>
<td>Wash</td>
<td>600</td>
<td>1.25-inch</td>
</tr>
</tbody>
</table>

3.5 Grading and Storm Drainage

3.5.1 Introduction

The project site for the Monterey-Salinas Transit Bus Maintenance & Operations Center is primarily undeveloped with only minimal hardscape and pavement. The majority of the site is occupied by coast live oak woodland and dune plant habitat. The only pavement is an access road off Inter-Garrison Road that provides access to the interior of the site just east of the 8th Avenue alignment. There are also some clearings with temporary structures that have been abandoned. The site does not have any existing storm drainage facilities, but there are three storm drain culverts that cross Inter-Garrison Road and discharge onto the project site. The discharges are due to runoff from areas to the south owned by California State University, Monterey Bay (CSUMB) and the United States Army (Army).

Nearly the entire project site will be improved by new construction of buildings, pavement areas, and landscaping. A new storm drainage collection/retention system also will be incorporated into the site to manage the additional runoff resulting from an increase in impervious surface areas.

3.5.2 Site Characteristics

The topography of the western half of the site has a prevailing southeast to northwest slope of approximately 5 percent. The eastern half of the site slopes downward from Inter-Garrison Road halfway into the site and then slopes back up ultimately to the highest portion of the entire site in the far northeast corner.

Surface elevations at the project site range from approximately 208 feet above mean sea level (MSL) in the northwest corner, up to approximately 263 feet above MSL in the northeast corner. Local runoff flows generally in a westerly and northwesterly direction, and the proposed finish grading follows a similar runoff pattern.
The neighboring drainage areas to the west and the north are situated lower and are not tributary to the project site. The drainage area(s) to the south, predominantly occupied by CSUMB and the Army, are currently tributary to the project site. MST proposes to assist CSUMB with capturing the runoff before it enters the culverts crossing Inter-Garrison Rd. and discharging the runoff into a new basin to be located on CSUMB property at the southeast corner of Inter-Garrison Rd. and 7th Avenue. The hydrologic evaluation and conceptual design of how the off-site storm drainage runoff from the south will be handled is described within the report prepared by Whitson Engineers titled Preliminary Drainage Calculations for the Whispering Oaks Subdivision (November 24, 2009).

3.5.3 On-site Analysis

The on-site hydrology and hydraulic sizing of the conveyance facilities were performed using Bentley's StormCAD. StormCAD uses the Rational Method, which is an empirical method for estimating peak flow rates. The Rational Method is based on the formula \( Q = C \times i \times A \), where \( Q \) is the peak flow rate in cubic feet per second (cfs), \( C \) is the runoff coefficient representing the ratio of runoff to rainfall for a certain type of surface, \( i \) is the average rainfall intensity in inches per hour for the selected rainfall frequency and for a duration equal to the time of concentration, and \( A \) is the watershed area tributary to the point of concentration. Peak onsite runoff was estimated using the following intensity-duration-frequency curves (IDF curves):

![Monterey County Intensity-Duration-Frequency Curves](image)

Runoff generated from the site will be drained by a network of storm drainage pipes and drainage inlets that will collect and convey stormwater to a detention/retention/percolation basin system in the northwest corner of the site (See Sheets C-9 through C-12). A summary of the analysis results are as follows:
### Onsite Stormwater Runoff Analysis

<table>
<thead>
<tr>
<th></th>
<th>Proposed M&amp;O Center</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall catchment area ($A$)</td>
<td>25.94 ac</td>
</tr>
<tr>
<td>Prorated runoff coefficient ($C$)</td>
<td>0.74</td>
</tr>
<tr>
<td>System time of concentration ($T_c$)</td>
<td>20 min</td>
</tr>
<tr>
<td>Rainfall intensity ($I$) for 10-year storm</td>
<td>1.3 in/hr</td>
</tr>
<tr>
<td>10-year peak runoff ($Q_{10}$) [rounded up to nearest 1]</td>
<td>25 cfs</td>
</tr>
<tr>
<td>Rainfall intensity ($I$) for 100-year storm</td>
<td>1.9 in/hr</td>
</tr>
<tr>
<td>100-year peak runoff ($Q_{100}$) [rounded up to nearest 1]</td>
<td>36.5 cfs</td>
</tr>
</tbody>
</table>

1 The $T_c$ value of 20 minutes reflects the governing system time of concentration within the storm drain system illustrated in Appendix A.

2 Rainfall Station D20 3186 00 (Fort Ord).

#### 3.5.4 Detention/Retention/Percolation Basin System Design

Monterey County Water Resources Agency requires that the basin storage volume be sized to store or dispose the difference between the 100-year post-development runoff rate and the 10-year pre-development runoff rate, while limiting the discharge to the 10-year pre-development rate. The Modified Rational Method, which is an extension of the conventional rational method that combines the inflow and outflow hydrographs to yield a peak storage requirement, was used to size the detention/retention basin for the M&O Center (See Attachment 1 / Appendix B – Stormwater Basin Required Storage Volume Calculation). The Modified Rational Method analysis was based on the following assumptions and criteria:

- Rainfall intensities from the Monterey County's North & Central Monterey Rainfall Intensities Chart (County of Monterey Public Works Department, Plate No. 25, October 24, 1977)
- Site pre-development runoff coefficient: 0.20 (primarily undeveloped, see below)

- Site post-development runoff coefficient: 0.77 (See Attachment 1 / Appendix C – Site Runoff Coefficients Map)
- Site Area: 25.94 acres = 1,129,946 square-feet (includes 1.54 acres of off-site runoff from adjacent roads and portions of Whispering Oaks Business Park).
- Pre-development 10-year event runoff rate: 4.9 cfs (See Attachment 1 / Appendix B - Stormwater Basin Required Storage Volume Calculation)

- Percolation rate = 7.2 cfs (Based on 25,934 square-feet of percolation area and a percolation rate of 12 inches/hr per the City of Marina maximum allowed percolation rate. The 2 on-site percolation tests performed by Fugro West Inc. on March 9, 2009 showed higher percolation rates.)

- Due to the severe grades of the existing topography around the proposed retention basin area, the retention basin storage capacity will be maximized by using a series of 4 separate basins at varying elevations in order to maximize the usable storage volume.

The net hydrograph illustrating the storage requirement is presented in the following chart:

The detention/retention basin shall be a minimum of 1.75 acre-feet (AF) in order to accommodate the peak runoff volume that would occur at T=230 minutes (3 hours and 50 minutes).

3.5.5 Outlet Pipe/Basin Spillway Sizing

The outlet pipe will be sized to convey the 10-year pre-development rate, 5 cfs, under normal depth flow conditions (not surcharged). The outlet pipe will connect to the inlet/outlet structure in the basin, cross Engineer Equipment Road below ground, and discharge north of the road to the open area west of the habitat preserve area. This discharge location maintains the existing drainage patterns since the site runoff currently is tributary to the area west of the Habitat Area.

The outlet pipe will be an 18-inch diameter pipe and constructed at a minimum slope of S=0.002, which would yield a pipe capacity of 5-6 cfs depending on the pipe material selected.
The basin system will not have a dedicated spillway. The basins will be designed so flows will disperse outwards uniformly if the basins flood. The outer perimeter of the basins will be planted with special shrubs and ground cover for erosion control.

3.5.6 Stormwater Treatment

The proposed stormwater collection system will include 2 Contech CDS Hydrodynamic Separation Units intended to screen, separate, and trap solids, oils, and greases from stormwater. The units will be located inline immediately upstream of the pipes discharging into the basins.

Each stormwater treatment unit will be sized for a hydraulic capacity of approximately 20 cfs each (40 cfs total) to meet the peak conveyance requirement of 35 cfs from a 100-year rainfall event. The treatment capacity for each unit is 3.8 cfs (7.6 cfs total), which is expected to treat approximately 30% of the runoff from the design storm, the 10-year rainfall event.

3.5.7 Stormwater Collection

The storm drain system was designed to convey the 10-year event while maintaining the hydraulic grade line a minimum of 1 foot below catch basin grates at all locations and to accommodate the FEMA requirement of carrying the a 100-year event such that the hydraulic grade line is 3 inches below the finished floor elevation of each building.

The storm drain system includes underground piping, precast concrete catch basins, manholes, and junction structures. Pipes 18 inches and larger as well as any exposed culverts will be reinforced concrete with rubber gaskets (ASTM C76, likely Class II/Wall B, or equivalent). Smaller pipes will be PVC (SDR 35).

3.6 Roads, Paving, Perimeter, and Miscellaneous Facilities

3.6.1 Asphalt Paving

The staff/visitor auto parking area and the access road off of Inter-Garrison Road leading into the staff/visitor parking area are both designed as concrete paving. However, depending on the estimated construction costs determined during the design development or construction documents phase, the pavement design will allow for a bid alternate for asphalt paving as a cost saving measure.

3.6.2 Concrete Paving

The design will specify concrete paving in the bus yard parking area, the paved aprons around the buildings, and the access roads into the bus yard. The onsite sidewalks will also be concrete pavement.

3.6.3 Site Perimeter Fencing

The M&O Center site will be surrounded by a 10-foot-tall (8-foot minimum at graded banks) concrete masonry unit (CMU) wall with a split-face surface on the exterior. (See GDP drawing sheet DC-8).

3.6.4 Site Signage

Monument signs will be provided at the auto entry and main bus entry on Inter-Garrison Road, and a sign will be mounted on the CMU wall located east of the auto entry (See GDP drawing Sheets C-2 for monument
sign locations on site and DC-8 for sign details. See GDP drawing sheets 4A-5.2, 5A-9, 6A-2, 7A-2 & 10A-1 for locations on building exteriors). The Engineering Road entry will have a utilitarian sign that will read, "Entry for Authorized Employees Only." There will not be any signage at the future Whispering Oaks entry to the auto-parking area.

The Operations Building will not have any signage, other than the facility address and a small MST logo sign at the bridge entry canopy. The other buildings will be identified with building names consisting of 14" high black cast-aluminum projected Helvetica letters, facing the interior of the site, and will have addition minor signage, e.g., 12" high numbers to identify individual service bays.

In addition to building signage, other signage within the site will consist of directional arrows painted on pavement and illuminated post-mounted Stop and Yield signs. There will signage posted to minimize speed on the property to seven mph. For building evacuation, designated meeting points will be signed to inform staff of where to gather. Fire lane, no parking, no smoking signage will also be provided. The storm drains will be marked with a "Flows-to-Bay" stencil.

3.7 Traffic Circulation and Road Improvements

As part of the environmental research work performed by Denise Duffy & Associates (DD&A) for the Environmental Impact Report (EIR) to be provided by others, level-of-service evaluations of the traffic impacts/conditions were performed for 17 intersections and three roadway segments that could potentially be impacted by the new M&O Center. An additional 5 intersections are being analyzed to address comments that were provided by the County. The results of the initial evaluation can be found in the report prepared by Hatch Mott Macdonald titled Monterey-Salinas Transit Operations Center and Whispering Oaks Business Park Traffic Impact Analysis dated November 20, 2009. A supplemental report summarizing the results of the evaluation of the additional 5 intersections is anticipated to be available in early February.

In addition to the environmental research work for the EIR, AECOM is in the process of coordinating with the County of Monterey (County) Planning and Public Works Departments on the future configuration of Inter-Garrison Road. Currently, Inter-Garrison Road consists of two 12' wide traffic lanes and two Class II bike lanes. As part of the M&O Center construction, improvements to Inter-Garrison Road will consist of widening to the north along portions of the roadway for new turn pockets and acceleration/deceleration lanes as shown on Sheets 2C-1 through 2C-3. The final configuration will include:

- 2 drive through lanes (one westbound and one eastbound)
- 2 Class II bike lanes
- Turn pockets for eastbound traffic making left turns onto the M&O Center
- Turn pockets for westbound traffic making right turns onto the M&O Center
- Turn pocket for westbound traffic making left turns onto 8th Ave
- A new pedestrian walkway within the 24' wide landscape buffer along the frontage of the M&O Center

The County is also master planning County-owned land adjacent to the M&O Center for the Whispering Oaks Business Park, which the County intends on developing in the near future. The County has met with all impacted stakeholders around the Whispering Oaks Business Park, including CSUMB, University of California Santa Cruz, City of Marina, and City of Seaside, and has master planned the surrounding road network (see the Vesting Tentative Map, dated November 24, 2009, prepared by Whitson Engineers).
3.8 Hazardous Materials, Waste and Recycling

Non-hazardous waste, including recycling, will be collected from the entire site and transported by cart to the Outside Storage Structure (See Sheets C-2 and 9A-2). MST staff will separate general waste from materials to be recycled. Monterey County Waste Management will remove non-hazardous waste from the Outside Storage Structure once per week.

Hazardous waste, including hazardous recycling, will be collected from the entire site and transported by cart to the hazardous material storage room in the Outside Storage Structure (See Sheets C-2 and 9A-2 in the GDP drawing set). An approved vendor will remove hazardous waste from the Outside Storage Structure once per month, and separate out the recyclable hazardous waste off-site.

The hazmat removal tracking process that is currently in use at the existing MST facility in Monterey will also be used at the new facility on Inter-Garrison Road. The hazardous material will be collected by Evergreen Environmental Services on a monthly basis (contract # 06-24). A manifest is filled out by the driver of the hazmat-pickup vehicle and then signed by a MST Representative. A copy is given to MST to verify that a pickup has been made. When the material reaches the final destination, a duplicate copy of the manifest is sent to MST with the invoice. All copies are then inserted into MST’s Hazmat Binder, to be reviewed with Monterey County Environmental Department during an annual inspection.

MST has submitted a notice-to-comply letter to the Environmental Health Department, with a copy to County Planning, and the required environmental documentation, including a Business Response Plan and a Hazardous Material Questionnaire, will be submitted to the Environmental Health Department in the future, to be forwarded to the Monterey County Planning Department. Also, an inventory of hazardous materials to be contained on site has been submitted to the Salinas Rural Fire District and the County Health Department, with a copy provided to the Planning Department.

3.9 Landscaping and Landscape Lighting

The MST M&O Center will be located within the maritime chaparral plant community. This plant community is comprised primarily of coast live oak and dune plants that are typical of the Fort Ord area. Many of the native plants found in this region are readily adapted to use in designed landscapes. Therefore, the plant palette will be derived primarily from the native plant types found in this area along with other plants that are adapted to this coastal setting and climate.

The plantings facing the street and surrounding the OPS Building will have a scattering of coast live oak trees to tie into the larger landscape of Fort Ord and to frame the buildings. All planting adjacent to the buildings will draw from the native plant palette as well as including more ornamental plants to provide additional color and to define the space as a place for people to be in the landscape. The OPS Building patio will allow for people to spill out into the landscape and experience the textures and colors of the planting, as will the smoker’s canopy. The landscape along the south side of the Maintenance Building will consist of evergreen trees and lower-level planting to enhance the architectural elevation of the building.

The character of the native landscape will be carried into the staff and visitor parking lot by using native understory perennials and grasses in the 5- to 6-foot-wide planting areas that will serve as bioswales to capture and percolate the parking lot runoff. Overflow runoff will be piped and released into the large detention/retention area at the northwest end of the site that will be planted primarily with sedges and rushes. The parking lot trees will be evergreen species that will provide shade. The plantings on the slopes down from the parking lot toward the OPS and Maintenance Buildings will have a scattering of new oak trees with a mixture of stabilizing groundcovers and mid-story shrubs.
All new plantings will receive irrigation with a fully automated controller and rain sensor. The irrigation system will be drip and designed to conserve water in the sandy and windy environment while encouraging plant growth and health.

Select portions of the M&O Center site will have accent lighting accenting various landscaping features.

3.10 Oak Tree Preservation

A screening buffer consisting of a significant group of existing oak trees will be preserved to the south of the Maintenance Building, the largest building on the M&O Center site. This buffer will screen view of the Maintenance Building and the west portion of the bus yard from Inter-Garrison Road and from significant portions of adjacent properties (See Sheet C-2).

In addition, other individual existing oak trees will be saved along Inter-Garrison Road. As part of the environmental research work performed by DD&A, a Forest Management Plan was developed for the MST and Whispering Oaks Business Park parcels (See Forest Management Plan for Monterey-Salinas Transit Bus Maintenance & Operations Facility Fort Ord, Monterey, dated August, 2009, prepared by Bill Ruskin. The Forest Management Plan includes a tree survey identifying oak trees along the Inter-Garrison Road frontage of the M&O Center that are good candidates to salvage. The design engineers and County staff also field investigated the trees and further evaluated the potential salvaging of the oaks identified in the tree survey.

The M&O Center grading improvements have been designed to minimize cut or fill around salvageable oak trees to the maximum extent practicable. The layout of the proposed meandering walkway within the 24’ wide landscape buffer along the frontage has also been configured to avoid the salvageable oak trees to the maximum extent practicable. Note that new trees will also be provided in the landscape buffer area south of the staff and visitor parking in order to providing screening in addition to that provided by the existing oaks to remain. See Sheets C-11 & C-12 (Grading, Paving & Drainage Plans) for the grading improvements and the locations of the existing oaks to be salvaged.

3.11 Storage Tank and Gas Facilities

The fuel-storage tanks (two 30,000 gallons diesel tanks and two 7,500 unleaded gasoline tanks) will be located at the northern end of the site, adjacent to the existing PG&E regulator lot. The tanks will be double-contained, pad-mounted, above-ground tanks. The locations of the fuel storage tanks are subject to change depending on comments received from PG&E. There will be a separate 4000 gallon diesel above-ground tank to fuel a large generator to serve most of the site; the 4000 gallon tank will be a stand-alone double-contained, pad-mounted tank. There will also be a separate 20 gallon tank to fuel a small 30kW generator for the main server room for approximately eight-hours; the 20 gallon tank will be mounted within the generator skid. Both the 4000 gallon tank and 20 gallon tank will be located adjacent to the west property line. All of the above-ground storage tanks will be within a secondary-containment berm for additional spill protection. All storage tanks will be screened by landscaping and/or a chain link fenced enclosure with vinyl slats.

Fuel will be delivered to the site by a local vendor’s bulk tank truck. Bulk fluids such as motor oil and coolant will be delivered to the Lube Room at the north end of the Maintenance Building. Other materials in smaller quantities will be delivered in drums or small containers to the loading dock at the Maintenance Building and to the Fuel/Brake Building.

The following table summarizes the tanks that will be present on the M&O Center site and its respective locations.
<table>
<thead>
<tr>
<th>Tank/Location</th>
<th>Total Size (gallons)</th>
<th>Location</th>
<th>AG or BG</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesel/Near Fuel Building</td>
<td>60,000</td>
<td>Outside</td>
<td>AG</td>
<td>2 separate 30,000 gal tanks</td>
</tr>
<tr>
<td>Unleaded/Near Fuel Building</td>
<td>15,000</td>
<td>Outside</td>
<td>AG</td>
<td>2 separate 7,500 gal tanks</td>
</tr>
<tr>
<td><strong>Maintenance Building</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tank LP-7(1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MST: Pumps LP-1 &amp; LP-2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTD: Pump LP-1</td>
<td>1,000</td>
<td>Lube Room #183</td>
<td>AG</td>
<td>Split tank, 500 gal. Engine Oil 500 gal. Low Ash Engine Oil</td>
</tr>
<tr>
<td>Tank LP-7(2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MST: Pumps LP-3 &amp; LP-9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTD: Pump LP-2</td>
<td>1,000</td>
<td>Lube Room #183</td>
<td>AG</td>
<td>Split tank, 500 gal. ATF 500 gal. Synthetic ATF</td>
</tr>
<tr>
<td>Tank LP-7(3) @</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MST: Pumps LP-4 &amp; LP-5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTD: Pumps LP-3 &amp; LP-4</td>
<td>1,000</td>
<td>Lube Room #183</td>
<td>AG</td>
<td>Split tank, 500 gal. Gear Oil 500 gal. Coolant</td>
</tr>
<tr>
<td>Waste Oil Tank LP-8</td>
<td>4,000</td>
<td>Running Repair #001 Brake Pit Basement</td>
<td>AG</td>
<td>2 separate 2,000 gal tanks</td>
</tr>
<tr>
<td>Waste Coolant Tank LP-12</td>
<td>500</td>
<td>Storage #180</td>
<td>AG</td>
<td>Follow OCTA</td>
</tr>
<tr>
<td>Diesel Day Tank RB-22</td>
<td>N/A</td>
<td></td>
<td>REMOVED</td>
<td></td>
</tr>
<tr>
<td><strong>Fuel/Brake/Tire Building</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tank F-16(1) @ F-17 &amp; F-18</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,000</td>
<td>Fluid Tanks #110</td>
<td>AG</td>
<td>Split tank, 500 gal. Engine Oil 500 gal. Low Ash Engine Oil</td>
<td></td>
</tr>
<tr>
<td>Tank F-16(2) @ F-19 &amp; F-20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,000</td>
<td>Fluid Tanks #110</td>
<td>AG</td>
<td>Split tank, 500 gal. ATF 500 gal. Synthetic ATF</td>
<td></td>
</tr>
<tr>
<td>Tank F-16(3) @ F-21 &amp; F-22</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,000</td>
<td>Fluid Tanks #110</td>
<td>AG</td>
<td>Split tank, 500 gal. Gear Oil 500 gal. Coolant</td>
<td></td>
</tr>
<tr>
<td>Tank F-14 w/ RTD: Pump F-13</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urea Fuel Additive</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MST: Tank/Dispenser F-23</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTD: Tank F-24</td>
<td>2500</td>
<td>Fluid Tanks #110</td>
<td>AG</td>
<td>New</td>
</tr>
<tr>
<td>Emergency Generator Day Tank</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4,000</td>
<td>Outside</td>
<td>AG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IT Emergency Generator Day</td>
<td>incl. above</td>
<td>Outside</td>
<td>AG</td>
<td></td>
</tr>
<tr>
<td>Tank</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**AG = above ground**  **BG = below ground**
Chapter 4
Architectural

4.1 Introduction

The architectural design of the new Monterey-Salinas Transit Bus Maintenance and Operations Center (M&O Center) has as the basis for design the following project provisions and other design reference documents. This section summarizes the architectural design concepts and the criteria for which the project will be designed. For the building-adapt buildings (i.e., all but the OPS Building), the designs built at the Orange County Transit Authority (OCTA) in Santa Ana, California, will be used as prototypes. The OCTA design will be revised as required to address changes in the building codes since OCTA was designed, design changes initiated by MST, and site-specific criteria such as local regulatory requirements, building orientation, etc. The OPS Building will be an original design, though approximately matching the footprint of the OCTA OPS Building.

Codes and Standards

- California Building Code (CBC), 2007
- California Fire Code (CFC), 2007
- American with Disabilities Act Accessibility Guidelines (ADAAG)
- Applicable federal, state, and local codes and regulations

4.2 General Building Criteria

The site design concept provides bus maintenance and operations in a layout that least interferes with the specific functions of each use yet fosters the convenient interaction of all site users, i.e., management, operations staff, maintenance staff, bus operators, and visitors. The development of alternative site plans has channeled and separated vehicular and pedestrian movement from bus circulation, maintenance operations, and parking. While the two primary buildings (OPS and Maintenance) are physically separated to accommodate necessary vehicular patterns and reduce noise for operations, they are architecturally united by use of similar and complimentary building materials, colors, design elements, and details.

4.2.1 Building-Adapt Buildings

With the exception of the OPS Building, all of the new MST buildings will be "building-adapt" versions of the OCTA buildings and will meet the same criteria as the OCTA buildings. The following is a summary of the building-adapt criteria.

Maintenance Building

- Area: 96,450 square feet. Occupancy Type: H2, H4, S1, and B (second floor). Type of Construction: II-B-sprinklered. Number of stories: two. Three and four-hour fire walls are used to divide the building into three separate portions (area separations). A fire-barrier floor assembly provides an occupancy separation between the first and second floors. Concrete slab on grade, CMU load-bearing walls, composite concrete, and steel decking at the second floor, "flat" single-ply bituminous roofing over rigid insulation (over lightweight concrete in some areas), over steel decking on steel roof framing, and double-glazed, low-E glass.
The following revisions to the OCTA design are required for compliance with CBC 2007:

- Additional plumbing fixtures have been provided to meet more stringent fixture-count requirements.
- Areas of refuge have been provided at the second floor stair landings.
- The stairs have been enclosed to provide smoke-proof enclosures for the areas of refuge.
- The allowable area for an H-4 occupancy have been increased, therefore the rated wall along column line 3.51 will not be rated at MST.
- Type II-B construction will be used throughout the Maintenance Building. Type II-A construction, as used for portions of OCTA, is no longer required by code. Note that even though no longer required, in most cases the rated assemblies used at OCTA will still be provided at MST, as provided by the terms of the “building-adapt” approach to this project.
- After consultation with the Monterey County Deputy Building Official, he ruled that an exit passageway must be provided for the occupants exiting the second floor through Stair 221. In order to not rate corridor 101, the Building Official has further agreed to allow a “horizontal exit” to be provided between the stair and the parts room, so that a person exiting the second floor can pass through the horizontal exit in the area separation wall, exit into the parts room, which is a “separate building.” Then the person can exit through this separate building to an exit door in the west exterior wall of the parts room. Painted striping and signage has been provided to require that this path-of-exit-travel is kept clear.

Fuel/Brake/Tire Repair Building

- Area: 18,620 square feet. Occupancy Type: H4. Type of Construction: II-B-sprinklered. Number of stories: one. Concrete slab on grade, CMU bearing walls, “flat” single-ply bituminous roofing over rigid insulation over steel decking on steel roof framing, and double-glazed, low-E glass.

Bus Wash/Steam Clean Building

- Area: 8,373 square feet. Occupancy Type: H4. Type of Construction: II-B-sprinklered. Number of stories: one. Concrete slab on grade, CMU bearing walls, “flat” single-ply bituminous roofing over rigid insulation over steel decking on steel roof framing.

Outside Storage Building

- Area: 2,763 square feet. Occupancy Type: S1. Type of Construction: V-B-sprinklered. Number of stories: one. Concrete slab on grade, CMU bearing walls, “flat” single-ply bituminous roofing over rigid insulation over steel decking on steel roof framing.

Smoker’s Canopy

- Area: 388 square feet. Occupancy Type: B. Type of Construction: V-B. Number of stories: one. Concrete slab on grade, CMU bearing columns, “flat” single-ply bituminous roofing over rigid insulation over steel decking on steel roof framing.
4.2.2 Operations Building

The OPS Building is being designed as a "Class A" commercial structure (steel framed, with composite concrete on steel decking), as opposed to Class B (wood framed or a combination of steel and wood framed). The following is a summary of the OPS Building criteria.

- Area: 39,800 square feet. Occupancy Type: A3 & B. Type of Construction: III-B-sprinklered – multi-occupancy building with separated occupancies. Occupancies A-3 and B will be separated by a 1-hour occupancy-separation wall. Number of stories: three. Concrete slab on grade, steel framed structure, composite concrete and steel decking at second and third floors, CMU non-bearing walls at first floor, metal siding and metal panels on metal stud walls at upper floors, standing seam curved metal roof, and double-glazed, low-E glass.

4.3 Staffing and Parking Requirements

The term, "staffing," as used in this section includes all people who are expected to be on the MST site, not just those who are the employees of MST. The reason to include non-employees, such as visitors and vendors, is to project onsite parking in order to define both the number and location of required parking spaces. The site proposed for the MST M&O Center is not currently within a specific zone of the County of Monterey Zoning Standards, is currently classified by the County as a "Planned Development (PD) for a Business Park," but will be rezoned as "Heavy Duty Commercial." The required entitlement approvals are a General Development Plan (GDP) application and a Use Permit. Therefore, to both adequately serve MST's needs and to meet the County's overall requirements for the development of Fort Ord, the County will not apply required parking development standards as a function of a specific zone, but will work with MST to determine the appropriate amount of vehicle parking based on comparison to the parking standards of the Heavy Duty Commercial zone, and on a review of MST's actual "staffing" projections.

After interviews with MST staff, the design team and MST staff provided initial input on how much parking should be provided based on MST's two existing facilities, MST's projected growth, lessons learned from the OCTA parking layout, County parking standards for similar zones, and opportunities and constraints identified by the development of the various site design alternatives. The various totals generated were then reviewed by MST and the design team and reconciled to accurately project required parking both at "move-in" (when MST will first move into the facility in early 2012) and at "buildout" (when MST will grow to the maximum planned capacity of this facility).

Tables 4.3-1 through 4.3-4 list the projected staffing at move-in and at buildout, the number of auto/truck parking stalls required as a function of those projected staffing levels, and the number of bus parking stalls. Note that MST has chosen to make all auto-parking stalls standard size despite the fact that County zoning allows up to 25 percent of parking stalls to be compact.
### Table 4.3-1
**Staff at Move-In**

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admin staff</td>
<td>55</td>
<td>10% part-time, Male/Female ratio: 49/51%</td>
</tr>
<tr>
<td>Maintenance staff</td>
<td>45</td>
<td>0% part-time, includes second floor of Maintenance Building, Male/Female ratio: 91/9%</td>
</tr>
<tr>
<td>Operators</td>
<td>125</td>
<td>70 max per shift, 100% transient (3.5 hours max/shift in OPS Building), Male/Female ratio: 80/20%</td>
</tr>
<tr>
<td>Training</td>
<td>12</td>
<td>Classes of 6 to 12 new operators start every three months, classes last 5 to 6 weeks, i.e., there is a 5- to 6-week break between the graduation of one class and the beginning of the next.</td>
</tr>
<tr>
<td>Contract employees</td>
<td>40</td>
<td>35 in OPS, 5 in Maintenance. The existing contractor could end their contract at any time, so include in move-in counts.</td>
</tr>
<tr>
<td>Sublease employees</td>
<td>14</td>
<td>Maximum capacity of potential sublease space on the second floor of OPS Building (vacant at move-in, if not leased out)</td>
</tr>
<tr>
<td>Visitors (not including Board meetings)</td>
<td>3</td>
<td>3 at most at one time, though visits occur throughout the day. Virtually all visits are to the OPS Building</td>
</tr>
<tr>
<td>Visitors during Board meeting</td>
<td>25</td>
<td>10 Board members plus 10 to 15 max outside attendees (MST staff attendees are not included here, as they are already parked on site)</td>
</tr>
<tr>
<td>Vendors</td>
<td>3</td>
<td>3 max at one time, 90% of vendors visit Maintenance Building only.</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>326</td>
<td></td>
</tr>
</tbody>
</table>

### Table 4.3-2
**Staff at Buildout**

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admin staff</td>
<td>75</td>
<td>10% part-time, Male/Female ratio: 45/55%</td>
</tr>
<tr>
<td>Maintenance staff</td>
<td>65</td>
<td>0% part-time, includes second floor of Maintenance Building, Male/Female ratio: 88/12%</td>
</tr>
<tr>
<td>Operators</td>
<td>225</td>
<td>135 max per shift, 100% transient (3.5 hours max/shift in OPS Building), Male/Female ratio: 75/25%</td>
</tr>
<tr>
<td>Training</td>
<td>15</td>
<td>Classes of 8 to 15 new operators start every 3 months, classes last 5 to 6 weeks, i.e., there is a 5- to 6-week break between the graduation of one class and the beginning of the next.</td>
</tr>
<tr>
<td>Contract employees</td>
<td>50</td>
<td>45 in OPS, 5 in Maintenance.</td>
</tr>
<tr>
<td>Sublease employees</td>
<td>0</td>
<td>Occupied by MST at ultimate</td>
</tr>
<tr>
<td>Visitors (not including Board meetings)</td>
<td>5</td>
<td>5 at most at one time, though visits occur throughout the day. Virtually all visits are to the OPS Building</td>
</tr>
<tr>
<td>Visitors during Board meeting</td>
<td>46</td>
<td>16 Board members plus 10 to 30 max outside attendees (MST staff attendees are not included here, as they are already parked on site)</td>
</tr>
<tr>
<td>Vendors</td>
<td>3</td>
<td>3 max at one time, 90% of vendors visit Maintenance Building only.</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>484</td>
<td></td>
</tr>
</tbody>
</table>

Fuel/Brake (FB) & Wash Buildings (WB) Usage (Staff included in the Maintenance staff in the table):
- Ultimate: Day shift: 2 employees. Night shift: 8 employees
- Usually, operators will not spend more than 2 hours max in the OPS building, but occasionally they will spend 3.5 hours during their entire "split shift" (3.5 is max split allowed under contract).
<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Stalls**</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admin staff</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Maintenance staff</td>
<td>35</td>
<td>25 per shift plus 10 for overlapping shifts</td>
</tr>
<tr>
<td>Operators</td>
<td>70</td>
<td>Max per shift</td>
</tr>
<tr>
<td>Training</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Contract employees</td>
<td>40</td>
<td>35 in OPS, 5 in Maintenance</td>
</tr>
<tr>
<td>Sublease employees</td>
<td>14</td>
<td>In OPS Building</td>
</tr>
<tr>
<td>Visitors</td>
<td>25</td>
<td>10 Board members plus 10 to 15 max outside attendees (MST staff attendees are not included here, as they are already parked on site)</td>
</tr>
<tr>
<td>Relief units (RU)</td>
<td>12</td>
<td>Hybrids used by operators to relieve other operators offsite.</td>
</tr>
<tr>
<td>Support vehicles</td>
<td>28</td>
<td>Pickups, administration vehicles, etc.</td>
</tr>
<tr>
<td>Vendors</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td>291*</td>
<td>*435 provided compared to 355 required by Heavy Commercial Zoning (See calculation below)</td>
</tr>
</tbody>
</table>

**All stalls will be standard size (19 ft x 9 ft). No compact stalls. Some stalls are 17 ft. long with 2 ft. overhang into landscaping or sidewalks areas.
### Table 4.3-4

Auto/Truck Parking at Buildout

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Stalls**</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admin staff</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>Maintenance staff</td>
<td>50</td>
<td>40 per shift plus 10 for overlapping shifts</td>
</tr>
<tr>
<td>Operators</td>
<td>135</td>
<td>Max per shift</td>
</tr>
<tr>
<td>Training</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Contract employees</td>
<td>50</td>
<td>45 in OPS, 5 in Maintenance</td>
</tr>
<tr>
<td>Sublease employees</td>
<td>0</td>
<td>Occupied by MST at ultimate</td>
</tr>
<tr>
<td>Visitors</td>
<td>46</td>
<td>16 Board members plus 10 to 30 max outside attendees</td>
</tr>
<tr>
<td>Relief units</td>
<td>16</td>
<td>Hybrids used by operators to relieve other operators offsite.</td>
</tr>
<tr>
<td>Support vehicles</td>
<td>35</td>
<td>Pickups, administration vehicles, etc.</td>
</tr>
<tr>
<td>Vendors</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>427</strong></td>
<td>*435 provided compared to 355 required by Heavy Commercial Zoning (See calculation below)</td>
</tr>
</tbody>
</table>

**All stalls will be standard size (19 ft x 9 ft). No compact stalls. Some stalls are 17 ft. long with 2 ft. overhang into landscaping or sidewalks areas.**

There are no employees that are unique to the Fuel/Brake/Tire Building & Bus Wash/Steam Clean Building; therefore, additional parking is not required for these buildings.

### Heavy Commercial Zoning Required Parking Calculation

- Net Building Area Method:
  - OPS Bldg. Board Room: 1697 sf / 35 (auditorium) = 49 stalls
  - OPS Bldg. Remainder: 31040 sf / 250 (office) = 124 stalls
  - 1st Floor Maintenance: (68331 sf x 90%) / 500 (repair/warehouse) = 159 stalls
  - 2nd Floor Maintenance: (7865 sf x 85%) / 300 (indust. office) = 23 stalls
  - Fuel & Wash Bldgs: No dedicated employees = 0 stalls

Total Parking Stalls Required = 355 stalls
Tables 4.3-5 and 4.3-6 list projected bus parking at move-in and at build-out.

<table>
<thead>
<tr>
<th>Table 4.3-5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bus Parking at Move-in</strong></td>
</tr>
<tr>
<td><strong>Category</strong></td>
</tr>
<tr>
<td>Medium-size buses (30 feet or less)</td>
</tr>
<tr>
<td>Large buses</td>
</tr>
<tr>
<td>Articulated buses (60 feet)</td>
</tr>
<tr>
<td>Bad order parking/in-processing buses</td>
</tr>
<tr>
<td>Hold line - defect buses</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
</tr>
</tbody>
</table>

*Assumes contract services are moved in-house

<table>
<thead>
<tr>
<th>Table 4.3-6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bus Parking at Buildout</strong></td>
</tr>
<tr>
<td><strong>Category</strong></td>
</tr>
<tr>
<td>Medium-size buses (30 feet or less)</td>
</tr>
<tr>
<td>Large buses</td>
</tr>
<tr>
<td>Articulated buses (60 feet)</td>
</tr>
<tr>
<td>Bad order parking/in-processing buses</td>
</tr>
<tr>
<td>Hold line - defect buses</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
</tr>
</tbody>
</table>

*Assumes contract services are moved in-house

4.4 Architecture

The project aesthetics will be based on the contemporary industrial style and economical use of finishes at OCTA. However, the new design will take advantage of the expansion of the OPS Building to three stories to create a signature building for MST and to create a separate identity for their project and for the Monterey Bay community. The OPS Building will be designed as a “Class A” office building because it houses MST management. It will also be MST’s public face to those attending Board meetings and to those requiring public service that may not be available at the off-site customer service centers. At the same time, the aesthetics of the OPS Building will reflect the industrial vernacular of the project context to architecturally unite the facility and to convey the appropriate use of public funds.

The quality and durability of architectural materials and finishes will be chosen for cost control, thermal and noise control, fire ratings, durability, longevity, and low maintenance. The industrial and marine environment of this site, and MST image requirements, will be considered for the selection of the material finishes. Virtually all exterior finishes will be factory or shop applied so that refinishing will not be required during the lifetime of the materials.

This facility will withstand a high level of wear and abuse common to bus and vehicle maintenance and operations facilities. It will provide durable, easily cleaned, and repairable material finishes at building
surfaces that will be subjected to physical and mechanical contact, particularly in shop and maintenance areas.

All metals exposed to the exterior air, including that in open and semi-open repair bays and shops, will be factory galvanized, shop galvanized or stainless steel, and any field damage to the galvanizing will be required by the contract documents to be field repaired. Except where specifically noted that field priming and/or finishing is acceptable, all such metal will be factory or shop primed and finished. All galvanized metals will be primed and finished unless the drawings specifically call for exposed 8-mil galvanized finish.

Special seal coatings shall be used to facilitate cleaning in those areas that are subject to oil and grease exposure.

Acoustic Design: Acoustic design will consider the industrial nature of the project and sound levels generated by bus operations. Consideration will also be given to controlling noise generated by operational and HVAC equipment located in each building. Noise level control will be provided using appropriate sound-insulating building materials and/or sound barriers such as sound walls, space separation, and landscaping. Design of sound barrier construction assemblies will provide sufficient sound attenuation to minimize the noise impact on adjacent workspaces. Ambient noise within interior workspaces will be maintained at levels that will support the efficient operation of terminal staff.

Exterior Walls: Integral color concrete masonry unit (CMU) walls with clear sealer will be the dominant structural element as well as the finish for both the exterior and the interior of the open work areas of most buildings. The wall-finish system for the OPS Building is factory-finished metal sidings on metal studs and/or girts set atop a CMU base that matches the other buildings. This provides building durability at the ground plane of all buildings, the area of greatest abuse and impact.

OPS Building Roof Finishes: Standing-seam metal roofing will be used over structural metal decking. Roofing must meet the Solar Reflectivity Index (SRI) “cool-roof” requirement of California Title 24 (SRI = 104 or greater) and/or the SRI voluntary requirement of LEED (76 SRI or greater). However, these requirements are more difficult to meet with metal roofing than with “flat” built-up roofing. The only metal roofing colors that meet either SRI requirement are white and very light grey. Since neither of these colors is consistent with the desired exterior color scheme, the “cool-roof” requirements will be met as follows:

- Title 24 requirement of a SRI of 104. If the prescriptive compliance method is not used (i.e., the building is shown by calculation to meet the overall Title 24 energy savings requirements), then the SRI requirement does not have to be met. Therefore, the intent is to improve the other energy-saving features of the building so that the lower roof SRI is acceptable.

- LEED requirement of a SRI of 76. This is a voluntary requirement that must be met only to obtain LEED Credit SS.C7.2, Heat-Island Effect, Roof. Therefore, the intent is to improve the other energy-saving features of the building (e.g., the HVAC system), so that an overall higher level of energy savings is attained in order to qualify for additional credits and to offset the loss of the heat-island effect credit.

Building-Adapt Roofing Finishes: A “flat” single-ply bituminous roofing system, similar to that used at OCTA, will be used. However, the bituminous roofing will be topped with a white elastomeric top coat with an SRI of greater than 104.
Chapter 5
Electrical Engineering

5.1 Introduction

The electrical design of the new MST Bus Maintenance and Operations (M&O) Center has as the basis for design the following project provisions and other design reference documents. This section summarizes the site electrical, communications, and security concepts and the criteria for which the project will be designed. For the building-adapt buildings (all but the OPS Building), the designs used for OCTA in Orange County, California, will be used and revised as required to address changes in the building codes since OCTA was designed, minor design changes initiated by MST, and site-specific criteria such as site layout, building orientation, etc. The OPS Building will be an original design and analysis.

5.2 Codes and Standards

- National Electrical Code (NEC), 2006
- California Electrical Code, Title 24, 2007

5.3 Site Power Distribution

Utility power will be provided by Pacific Gas and Electric (PG&E). A pad-mounted transformer will be installed in the northwest corner of the property. Incoming power to the transformer will be via an underground primary service.

A 277/480-volt, 3-phase, 4-wire main switchboard (MSB) will be provided in the main electrical room located within the Maintenance Building. The MSB will include a utility meter, a 3,000-ampere main circuit breaker, and automatic transfer switch and site distribution equipment.

An outdoor standby generator will be provided to power the entire site. The generator will be sized such that no load shedding will be required during a utility power outage. An additional small generator will be provided to serve as a backup power source for the IT room in the Maintenance Building.

Each building will, in general, have the following in its dedicated electrical room:

- One or more 277/480-volt, 3-phase, 4-wire distribution panels
- One or more 277/480-volt, 3-phase, 4-wire panelboards
- One or more 120/208-volt, 3-phase, 4-wire, general-purpose panelboards

5.4 Site Lighting

5.4.1 Site Lighting Types

Parking-area lighting for the MST M&O Center will consist of 30-foot high, pole-mounted, 400-watt metal halide, cutoff-type luminaires with a black finish in the bus parking areas, and 250-watt metal halide, cutoff-type luminaires in the auto parking area. The site-lighting poles will accommodate single, double or
quadruple fixture heads, depending on the location of the fixture on the site. Site-lighting poles will have a 3-foot-diameter concrete base, and the top of the base will be approximately 3 feet above ground level.

For additional security, cut-off type luminaires will be mounted on the buildings to augment the pole-mounted lights and to avoid any dark spots around the buildings. Also, supplemental low-level site-entry, path and landscape lighting will be provided in selected areas (See Section 3.9).

The average lighting level for the site will be 2 foot-candles minimum around buildings and work areas and 2 foot-candles average in the parking areas. See Sheet E-1 in the GDP drawing set for horizontal foot-candles for the proposed lighting design. The catalog data sheets for the proposed pole-mounted and building-mounted light fixtures can be found in Appendix __. All exterior lights will be controlled by photocell with bypass test switch.

5.4.2 Off-site Light Spill Requirements

The California Energy Commission 2008 Building Energy Standards, effective January, 2010, require all outdoor luminaires greater than 175 watts to be designated “cutoff” for light distribution, as defined in the state energy standards.

To comply with LEED SS Credit 8, the maximum initial luminance at the site boundary or curb line at public rights-of-way must not exceed 0.20 horizontal and vertical foot-candles, and must not exceed 0.01 horizontal foot-candles fifteen feet beyond the site boundary. In addition, no more than five percent of the total initial designed fixture lumens shall be emitted at an angle of 90 degrees or higher from nadir (straight down).

The Monterey County Zoning Ordinance requires "dark sky" and "no-light-spill" onto adjoining properties, but there are not any maximum foot-candle level requirements. The Monterey Planning Department has confirmed that the proposed cutoff-type fixtures and shields will comply with the County requirements.

The site will be enclosed by open-picket ornamental-metal perimeter fencing. Despite the light spill through the open-picket fencing, the proposed cutoff-type fixtures and shields will comply with the off-site light spill requirements of the California Energy Commission 2008 Building Energy Standards, LEED SS Credit 8, and the Monterey County dark-sky and no-light-spill ordinance. See Sheet E-1.

5.5 Site Telephone and Data Systems

Telephone service will be provided by AT&T. The underground telephone conduits will come from an off-site point of connection to the main telephone/data room located in the OPS Building.

5.6 Photovoltaic Solar Cells

Photovoltaic solar cells will be provided on the roof of the Maintenance Building in order to obtain the On-Site Renewable Energy credit for LEED certification of the OPS Building. Photocell generating capacity of 12.5 percent of the OPS Building’s peak demand is required to obtain three LEED credits. With an estimated OPS Building peak demand of 350 kW, 44 kW of photocells are proposed. The systems will include the solar cells, mounting, inverters, and utility interface. Quantity of solar cells will be determined during design phase. If MST can obtain additional funding through federal grants for "green" design features in addition to those used for the LEED certification of the OPS Building, additional photovoltaic solar cells may be added to the Maintenance Building roof and possibly to one or more of the building-adapt buildings.
Chapter 6
Sustainable Building Design

6.1 General

MST has indicated a strong desire to incorporate sustainable features into their design since the onset of this project. It is MST’s intent to build a high-quality project that is environmentally sensitive, encouraging the use of state-of-the-art, energy-efficient, and sustainable building methods. It is also MST’s goal, at a minimum, to attain a LEED rating of Certified, but currently enough probable credits have been identified to attain LEED Silver.

LEED, which stands for Leadership in Energy and Environmental Design, was developed by the U.S. Green Building Council (USGBC) to promote the design and construction of environmentally responsible buildings. Its purpose is to provide a common standard of measurement, as well as to provide guidance in assessing building performance and meeting sustainability goals. There are several rating systems within LEED to account for different types of projects. For this project, it was determined that LEED for New Construction Version 2.2 (LEED-NC) was most appropriate, utilizing the LEED-NC “Application Guide for Multiple Buildings and On-Campus Building Projects.” LEED-NC includes mandatory credits (also known as prerequisites) and 69 optional credits. To achieve a rating of LEED Certified, all mandatory credits and a minimum of 26 optional credits must be achieved.

The LEED checklist, which identifies all LEED credits that will be pursued, is a live document that continues to evolve throughout the length of the project. A LEED Assessment was completed in November 2008 and included a detailed LEED checklist. Since that time, MST has changed the project location, made design decisions/changes, and worked with RTD to synchronize projects where possible.

The following is a review of the LEED highlights and milestones.

- A LEED Assessment report was issued November 2008, which confirmed that achieving LEED Certified, possibly LEED Silver, is readily achievable. The LEED Assessment indicated that many of the LEED-related measures will be included in the currently proposed OPS Building design, including six of the eight mandatory credits. Further, the Assessment identified all achievable optional LEED credits and included associated design/construction costs.

- In December 2008, MST agreed to pursue certification for the OPS Building only, because it became clear that it would be very difficult to achieve the mandatory LEED requirements for energy and air quality standards in the other proposed buildings. At this time, MST also reviewed all of the optional LEED credits and identified 37 LEED credits to target, which equates to a level of LEED Silver.

- In February 2009, MST decided to officially pursue LEED certification under the LEED for New Construction v2.2 scheme, utilizing the Campus Application, and registered the project with the USGBC. MST committed to achieving LEED Certified status, but the project team is internally aiming for achieving LEED Silver.
6.2 LEED Review Summary: 65% Construction Documents Update

A LEED checklist review was undertaken as part of the 65% Construction Document submittal to ensure that the design of the proposed MST Maintenance and Operations Center is on track to achieving LEED certification.

The project currently has 37 Target credits. If all credits are implemented by the design team and at least 33 target credits are accepted by the USGBC, the project will achieve LEED-NC Silver status. It should be noted that the scores below are subject to change due to:

- Design changes
- USGBC rejection of submitted credits

To lessen the impact of these possible changes, we have assumed a safety net of 4 credits.

<table>
<thead>
<tr>
<th>LEED Scorecard Summary</th>
<th>MST LEED* Checklist Milestones</th>
<th>LEED Credits</th>
<th>Certification Level**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LEED Assessment Report, November 2008</td>
<td>28 Yes, 29 Maybe, 12 No</td>
<td>Certified</td>
</tr>
<tr>
<td></td>
<td>PDR, May 2009</td>
<td>38 Yes, 16 Maybe, 15 No</td>
<td>Silver</td>
</tr>
<tr>
<td></td>
<td>35% CD’s, August 2009</td>
<td>34 Yes, 19 Maybe, 16 No</td>
<td>Silver</td>
</tr>
<tr>
<td></td>
<td>65% CD’s, November 2009</td>
<td>37 Yes, 9 Maybe, 23 No</td>
<td>Silver</td>
</tr>
<tr>
<td></td>
<td>90% CD’s</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bid Set</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>USGBC Design Phase Submission</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>USGBC Design Phase Confirmation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*MST was registered under the LEED for New Construction V2.2 rating system in February 2009.

**Assumes achievement of all submitted credits.
Chapter 7
Entitlements

Entitlements—the regulatory approvals that the project must obtain before construction of the project can commence—are very complex in this case. As described in the introduction, MST has agreed to relocate their proposed M&O Center to a new site on Inter-Garrison Road at the request of the County of Monterey. This relocation required new environmental research effort for the EIR and traffic study effort, which has been completed and submitted to the County. An EIR consultant has been retained by the County and, using the environmental and traffic data already submitted to the County, said consultant is scheduled to submit the final EIR in June, 2010. The site relocation also required a new site design that has been reviewed and commented on by the County and the neighboring landowners. MST has approved the new site design and has given their design team notice to proceed with the development of construction documents concurrently with the entitlement process.

The County has determined that a Use Permit and a General Development Plan (GDP), including public hearings, will be required for approval of the proposed MST project. A General Plan Amendment and a Coastal Plan Amendment are not required. It has been confirmed that the MST site is not in the Coastal Zone. The County requires a rezone of the MST property from the existing designation of a Planned Development (PD) for a Business Park to a Heavy Duty Commercial District. The Development Standards proposed for the MST M&O Center are based on the development standards of the Heavy Commercial District. However, due to the unique location of the MST M&O Center, the proposed development standards vary in some cases from the standards applied to a more typical heavy commercial area.

MST submitted their application for the Use Permit and GDP in June, 2009. The revised Use Permit and GDP re-submittal, dated 2/3/2010, is responding to comments received from the County Planning Department in July, 2009. The re-submittal has been delayed by the EIR and traffic study process. The Building Official of Monterey County has ruled that MST will be allowed to submit for building-permit plan check prior to the certification of the EIR and the granting of the Use Permit and GDP, but that the building permit will not be issued until these approvals are in place.

The new site is bounded on the south and southwest by the campus of California State University Monterey Bay (CSUMB), on the west by UC Santa Cruz (MBEST) and Golden Gate University, on the north by the City of Marina and a closed US Army landfill, and on the east by County land slated for the development by the County of the Whispering Oaks Business Park. A series of meetings with most of these entities have been held to discuss and negotiate how best to meet the needs of all parties. The County is very supportive of MST's proposed design, including main access to the M&O Center from Inter-Garrison Road. As the entitlement process continues, the County is facilitating a meeting every one to two weeks to coordinate the efforts of MST, the MST design-team, the engineers preparing the Tentative Map, the neighboring landowners, and representatives of the County and other public agencies.

CSUMB raised concerns about views of the M&O Center from the sites of future university administration and housing buildings. MST has agreed to move all bus parking to the far northeast corner of their site and to maintain a significant buffer of existing oak trees between the southwest corner of the MST site and CSUMB. In addition, the auto parking will be screened from Inter-Garrison Road by dense new planting along the right-of-way, to be provided in a twenty four feet wide permanent new landscape buffer immediately south of the MST property line. Also, in order to reduce the profile of the tallest building proposed for the site, the project will be graded such that the ground floor of the three-story Operations Building adjacent to Inter-Garrison Road will be approximately two stories below the street level (20 feet). Finally, in order to reduce the profile of the largest building proposed for the site, the project will be graded such that the ground floor of
the Maintenance Building adjacent to Inter-Garrison Road will be approximately one story below the street level (12 feet). Said grade differentials are illustrated on the site sections on Sheet 4A-6.2 of the submitted GDP drawings.

CSUMB also raised concerns about pedestrian access on the north side of Inter-Garrison Rd. MST has agreed to add a meandering pedestrian walkway along the frontage of Inter-Garrison Road within the 24' wide landscape buffer area.

Also, CSUMB and PG&E had proposed to locate a CSUMB-owned gas metering station immediately adjacent to the Inter-Garrison right-of-way, but it has now been determined the PG&E metering station will remain in the present location and only the CSUMB meter will be relocated. The CSUMB gas meter yard is currently planned for location in the northwest corner of the MST site. MST has proposed to relocate the gas transmission line between the PG&E regulator lot and the proposed CSUMB meter along Engineer’s Equipment Road. A new gas line is needed between the proposed CSUMB meter and the connection to the existing CSUMB gas transmission lines in Inter-Garrison Road. If the gas line is constructed on MST property, an easement along the corridor of the gas line would be granted to CSUMB.

It has been determined that Inter-Garrison Road is not a public street, but is the property of CSUMB. The County has expressed their support of the conveyance of Inter-Garrison Road to the County and the Whispering Oaks Business Park Vesting Tentative Map shows a new but undesignated right-of-way. In addition, the County has submitted a preliminary reconfiguration of the road network in the area immediately to the west of the MST site. This road network will better serve CSUMB and MBEST’s desire to improve access to their main campus entries and reduce through traffic within the campuses. It will also assist with meeting MST’s requirement to provide main access to their site from Inter-Garrison Road and to better serve the campus populations and reduce the traffic impacts of the campus growth. Public transit service for the remainder of the people of Monterey County will also be improved.
Memorandum

Date:  January 28, 2010
To:  Monterey County Planning & Water Resources Agency
From:  AECOM Water
Subject:  Monterey-Salinas Transit (MST) Bus Maintenance & Operations (M&O) Center Storm Drainage Evaluation/Hydrology Report

Distribution:  John Ford, County of Monterey
              MCWRA (Monterey County Water Resources Agency)
              Carl Wulf, MST

Introduction

The project site for the Monterey-Salinas Transit Bus Maintenance & Operations Center is primarily undeveloped with only minimal hardscape and pavement. The majority of the site is occupied by coastal live oak woodland and dune plant habitat. The only pavement is an access road off Inter-Garrison Road that provides access to the interior of the site just east of the 8th Avenue alignment. There are also some clearings with temporary structures that have been abandoned. The site does not have any existing storm drainage facilities, but there are three storm drain culverts that cross Inter-Garrison Road and discharge onto the project site. The discharges are due to runoff from areas to the south owned by California State University, Monterey Bay (CSUMB) and the United States Army (Army).

Nearly the entire project site will be improved by new construction of buildings, pavement areas, and landscaping. A new storm drainage collection/retention system also will be incorporated into the site to manage the additional runoff resulting from an increase in impervious surface areas.

Site Characteristics

The topography of the western half of the site has a prevailing southeast to northwest slope of approximately 5 percent. The eastern half of the site slopes downward from Inter-Garrison Road halfway into the site and then slopes back up ultimately to the highest portion of the entire site in the far northeast corner.

Surface elevations at the project site range from approximately 208 feet above mean sea level (MSL) in the northwest corner, up to approximately 263 feet above MSL in the northeast corner. Local runoff flows generally in a westerly and northwesterly direction, and the proposed finish grading follows a similar runoff pattern.
The neighboring drainage areas to the west and the north are situated lower and are not tributary to the project site. The drainage area(s) to the south, predominantly occupied by CSUMB and the Army, are currently tributary to the project site. MST proposes to assist CSUMB with capturing the runoff before it enters the culverts crossing Inter-Garrison Rd. and discharging the runoff into a new basin to be located on CSUMB property at the southeast corner of Inter-Garrison Rd. and 7th Avenue. The hydrologic evaluation and conceptual design of how the off-site storm drainage runoff from the south will be handled is described within the report prepared by Whitson Engineers titled Preliminary Drainage Calculations for the Whispering Oaks Subdivision (November 24, 2009).

Onsite Analysis

The on-site hydrology and hydraulic sizing of the conveyance facilities were performed using Bentley's StormCAD. StormCAD uses the Rational Method, which is an empirical method for estimating peak flow rates. The Rational Method is based on the formula $Q=C\times i\times A$, where $Q$ is the peak flow rate in cubic feet per second (cfs), $C$ is the runoff coefficient representing the ratio of runoff to rainfall for a certain type of surface, $i$ is the average rainfall intensity in inches per hour for the selected rainfall frequency and for a duration equal to the time of concentration, and $A$ is the watershed area tributary to the point of concentration. Peak onsite runoff was estimated using the following intensity-duration-frequency curves (IDF curves):

![Monterey County Intensity-Duration-Frequency Curves](image)

Runoff generated from the site will be drained by a network of storm drainage pipes and drainage inlets that will collect and convey stormwater to a detention/retention/percolation basin system in the northwest corner of the site (See Appendix A – Onsite Storm Drainage System). A summary of the analysis results are as follows:
Onsite Stormwater Runoff Analysis

<table>
<thead>
<tr>
<th>Overall catchment area (A)</th>
<th>Proposed M&amp;O Center</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>25.94 ac</td>
</tr>
<tr>
<td>Prorated runoff coefficient (C)</td>
<td>0.74</td>
</tr>
<tr>
<td>System time of concentration (Tc)</td>
<td>20 min</td>
</tr>
<tr>
<td>Rainfall intensity (I) for 10-year storm</td>
<td>1.3 in/hr</td>
</tr>
<tr>
<td>10-year peak runoff (Q10) [rounded up to nearest 1]</td>
<td>25 cfs</td>
</tr>
<tr>
<td>Rainfall intensity (I) for 100-year storm</td>
<td>1.9 in/hr</td>
</tr>
<tr>
<td>100-year peak runoff (Q100) [rounded up to nearest 1]</td>
<td>36.5 cfs</td>
</tr>
</tbody>
</table>

1 The Tc value of 20 minutes reflects the governing system time of concentration within the storm drain system illustrated in Appendix A.
2 Rainfall Station D20 3186 00 (Fort Ord).

Detention/Retention/Percolation Basin System Design

Monterey County Water Resources Agency requires that the basin storage volume be sized to store or dispose the difference between the 100-year post-development runoff rate and the 10-year pre-development runoff rate, while limiting the discharge to the 10-year pre-development rate. The Modified Rational Method, which is an extension of the conventional rational method that combines the inflow and outflow hydrographs to yield a peak storage requirement, was used to size the detention/retention basin for the M&O Center (See Appendix B – Stormwater Basin Required Storage Volume Calculation). The Modified Rational Method analysis was based on the following assumptions and criteria:

- Rainfall intensities from the Monterey County’s North & Central Monterey Rainfall Intensities Chart (County of Monterey Public Works Department, Plate No. 25, October 24, 1977)

- Site pre-development runoff coefficient: 0.20 (primarily undeveloped, see below)
- Site post-development runoff coefficient: 0.77 (See Appendix C – Site Runoff Coefficients Map)

- Site Area: 25.94 acres = 1,129,946 square-feet (includes 1.54 acres of off-site runoff from adjacent roads and portions of Whispering Oaks Business Park).

- Pre-development 10-year event runoff rate: 4.9 cfs (See Appendix B)

- Percolation rate = 7.2 cfs (Based on 25,934 square-feet of percolation area and a percolation rate of 12 inches/hr per the City of Marina maximum allowed percolation rate. The 2 on-site percolation tests performed by Fugro West Inc. on March 9, 2009 showed higher percolation rates.)

- Due to the severe grades of the existing topography around the proposed retention basin area, the retention basin storage capacity will be maximized by using a series of 4 separate basins at varying elevations in order to maximize the usable storage volume.

The net hydrograph illustrating the storage requirement is presented in the following chart:

![Required Storage Volume](chart)

- T = 230 min
- V = 1.75 AF

The detention/retention basin shall be a minimum of 1.75 acre-feet (AF) in order to accommodate the peak runoff volume that would occur at T=230 minutes (3 hours and 50 minutes).
Outlet Pipe/Basin Spillway Sizing

The outlet pipe will be sized to convey the 10-year pre-development rate, 5 cfs, under normal depth flow conditions (not surcharged). The outlet pipe will connect to the inlet/outlet structure in the basin, cross Engineer Equipment Road below ground, and discharge north of the road to the open area west of the habitat preserve area. This discharge location maintains the existing drainage patterns since the site runoff currently is tributary to the area west of the Habitat Area.

The outlet pipe will be an 18-inch diameter pipe and constructed at a minimum slope of S=0.002, which would yield a pipe capacity of 5-6 cfs depending on the pipe material selected.

The basin system will not have a dedicated spillway. The basins will be designed so flows will disperse outwards uniformly if the basins flood. The outer perimeter of the basins will be planted with special shrubs and ground cover for erosion control.

Stormwater Treatment

The proposed stormwater collection system will include 2 Contech CDS Hydrodynamic Separation Units intended to screen, separate, and trap solids, oils, and greases from stormwater. The units will be located inline immediately upstream of the pipes discharging into the basins.

Each stormwater treatment unit will be sized for a hydraulic capacity of approximately 20 cfs each (40 cfs total) to meet the peak conveyance requirement of 35 cfs from a 100-year rainfall event. The treatment capacity for each unit is 3.8 cfs (7.6 cfs total), which is expected to treat approximately 30% of the runoff from the design storm, the 10-year rainfall event.

P/N: 60061157
APPENDIX A

ON-SITE STORM DRAINAGE SYSTEM
APPENDIX B

STORMWATER BASIN

REQUIRED STORAGE VOLUME CALCULATION
### Monterey-Salinas Transit

**FJL Center M&O Facility**

#### Modified Rational Method Stormwater Basin Volume - 100 Year Storm Event

**Assumptions:**
- Site Peak Development Runoff
- Site Pre-Development Runoff
- Coefficient, C: 0.74
- Area (Acres): 25.94

#### Parameters:
- **Time of Concentration, Tc:** 1.25
- **Site Pre-development Runoff Coefficient, C:** 0.7
- **Percolation Coefficient, C:** 7.2
- **2.95,805,162**

#### Result:
- Peak Outflow: 12,100,874

#### Calculation:

- **Volume_{ci} = Q_{ci} / C**
- **Volume_{c} = Q_{c} / C**
- **Volume_{ci} = Q_{ci} / C**
- **Volume_{c} = Q_{c} / C**

#### Water Quantity Table:

<table>
<thead>
<tr>
<th>Time (min)</th>
<th>Intensity (in/hr)</th>
<th>i (in/hr)</th>
<th>I (in/hr)</th>
<th>Volume_{ci} (cfs)</th>
<th>Volume_{c} (cfs)</th>
<th>Volume_{ci} (cfs)</th>
<th>Volume_{c} (cfs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
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<td>0.000869</td>
<td>0.84</td>
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<td>54,872.18</td>
<td>54,872.18</td>
<td>54,872.18</td>
</tr>
<tr>
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<td>0.059</td>
<td>0.001292</td>
<td>1.62</td>
<td>87,454.46</td>
<td>87,454.46</td>
<td>87,454.46</td>
<td>87,454.46</td>
</tr>
<tr>
<td>30</td>
<td>0.135</td>
<td>0.001705</td>
<td>2.25</td>
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<td>119,936.78</td>
<td>119,936.78</td>
<td>119,936.78</td>
</tr>
<tr>
<td>40</td>
<td>0.205</td>
<td>0.002113</td>
<td>2.81</td>
<td>152,419.10</td>
<td>152,419.10</td>
<td>152,419.10</td>
<td>152,419.10</td>
</tr>
<tr>
<td>50</td>
<td>0.286</td>
<td>0.002516</td>
<td>3.36</td>
<td>184,891.42</td>
<td>184,891.42</td>
<td>184,891.42</td>
<td>184,891.42</td>
</tr>
<tr>
<td>60</td>
<td>0.360</td>
<td>0.002918</td>
<td>3.91</td>
<td>217,363.75</td>
<td>217,363.75</td>
<td>217,363.75</td>
<td>217,363.75</td>
</tr>
<tr>
<td>70</td>
<td>0.435</td>
<td>0.003311</td>
<td>4.46</td>
<td>249,836.07</td>
<td>249,836.07</td>
<td>249,836.07</td>
<td>249,836.07</td>
</tr>
<tr>
<td>80</td>
<td>0.510</td>
<td>0.003703</td>
<td>5.01</td>
<td>282,308.39</td>
<td>282,308.39</td>
<td>282,308.39</td>
<td>282,308.39</td>
</tr>
<tr>
<td>90</td>
<td>0.585</td>
<td>0.004095</td>
<td>5.56</td>
<td>314,780.71</td>
<td>314,780.71</td>
<td>314,780.71</td>
<td>314,780.71</td>
</tr>
<tr>
<td>100</td>
<td>0.660</td>
<td>0.004488</td>
<td>6.11</td>
<td>347,253.03</td>
<td>347,253.03</td>
<td>347,253.03</td>
<td>347,253.03</td>
</tr>
</tbody>
</table>

#### Graph:
- Time (min) vs. Required Storage Volume (cfs)
- North & Central Monterey Rainfall Intensities
- Monterey County Department of PW, 1982/37 Charts [See Attachment 4]

### Attatchments:
1. PERCOLATION TEST RESULTS
2. PRELIMINARY STEPPLAN
3. MCWRA DRAINAGE PLAN GUIDELINES
4. RAINFALL INTENSITIES CHART

* Intensity for storms of various durations is determined by the formula: I = 7.75 / P0.33 where "I" is the hour rainfall intensities and "P" is the time of concentration.
APPENDIX C
PERCOLATION TEST RESULTS

Percolation tests were performed at the MST IGR alternative site to evaluate the infiltration capacity of near-surface soils. Project design may incorporate storm water detention or infiltration basins. The locations of the detention basins are unknown at the time of this report but are anticipated to be in the northwestern portion of the site based on conversations with AECOM. We performed percolation testing in two of the test pits (TP 1 and TP 2) excavated during our field exploration. The approximate locations of test pits TP-1 and TP-2 are presented on Plate 3 - Subsurface Exploration Location Plan.

Percolation tests were conducted in general accordance with procedures outlined in the Ventura County Environmental Health Division guidelines for Individual Sewage Disposal Systems (1997). Based on our data review, guidelines are not available for detention basin testing. The test pits were initially excavated to approximately 2 1/2 to 5 feet below ground surface (bgs). Approximately 1-foot square percolation test holes were excavated by hand in the bottom of the backhoe test pits to depths of approximately 14 inches. Two inches of pea gravel were placed in the bottom of the percolation test holes. The hole was then filled with water to presoak the hole. Earth materials in the percolation test holes included poorly-graded sand with silt (SP-SM), and silty sand (SM).

The holes were filled with water to a depth of approximately 6 inches and water depth measurements were recorded at approximately ten minute intervals (or when the hole was refilled with water). The field percolation rate (expressed in minutes per inch) was estimated as the average time in minutes per 1-inch change in water level over the recording period. The results of the percolation testing are summarized in the table below. Percolation test data sheets are presented on Plates C 1a and C-1b. Percolation Test Data Sheet.

Summary of Percolation Test Data

<table>
<thead>
<tr>
<th>Location</th>
<th>Depth of Percolation Test (below adjacent ground surface)</th>
<th>Percolation Rate at End of Testing (min/inch)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP-1</td>
<td>4 1/2 ft</td>
<td>1.7 (35.3 in/hr)</td>
</tr>
<tr>
<td>TP-2</td>
<td>5 ft</td>
<td>2.9 (20.7 in/hr)</td>
</tr>
</tbody>
</table>

The test pits were backfilled with the excavated materials, tamped and track-walked, following completion of the percolation testing.
# PERCOLATION TEST DATA SHEET

Project No.: 3044.078  
Percolation Test No.: 1  
Date: 3/9/2009  
Surface Elevation: 218 ft (MSL)  
Location: TP - 1  
Completion Depth: 5.5 ft  
Backfilled With: Cuttings

## Log of Test Hole/Pit

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample</th>
<th>Material Description</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Bulk</td>
<td>Silty SAND (SM)</td>
<td>Abundant Roots and Rootlets</td>
</tr>
<tr>
<td>2</td>
<td>Bulk</td>
<td>Silty SAND (SM)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Bulk</td>
<td>SAND with Silt (SP-SM)</td>
<td></td>
</tr>
</tbody>
</table>

## Percolation Test Data Table

<table>
<thead>
<tr>
<th>Time</th>
<th>H (inches)</th>
<th>D (inches)</th>
<th>T (minutes)</th>
<th>R (min./inch.)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:03</td>
<td>6</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>10:12</td>
<td>12</td>
<td>6</td>
<td>9</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>10:22</td>
<td>12</td>
<td>6</td>
<td>10</td>
<td>1.7</td>
<td></td>
</tr>
<tr>
<td>10:32</td>
<td>12</td>
<td>6</td>
<td>10</td>
<td>1.7</td>
<td></td>
</tr>
<tr>
<td>10:42</td>
<td>12</td>
<td>6</td>
<td>10</td>
<td>1.7</td>
<td></td>
</tr>
<tr>
<td>10:52</td>
<td>11.5</td>
<td>5.75</td>
<td>10</td>
<td>1.7</td>
<td></td>
</tr>
<tr>
<td>11:02</td>
<td>11.5</td>
<td>5.75</td>
<td>10</td>
<td>1.7</td>
<td></td>
</tr>
</tbody>
</table>

Test ended at 11:02

---

**LEGEND:**

H = Distance from Reference Point to Water Level  
D = Drop in water level between observations  
T = Time interval between observation  
R = Percolation Rate, min./inch.

PLATE C-1a
PERCOLATION TEST DATA SHEET

<table>
<thead>
<tr>
<th>Project No.: 3044.070</th>
<th>Percolation Test No.: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Name: MST Bus M&amp;O Facility IGR Alternative</td>
<td>Date: 3/9/2009</td>
</tr>
<tr>
<td>Project MGR: L. Prentice</td>
<td>Surface Elevation: 228 ft (MSL)</td>
</tr>
<tr>
<td>Field Technician: G. Eckrich</td>
<td>Location: TP – 2</td>
</tr>
<tr>
<td>Excavation Method: Backhoe &amp; Posthole Digger</td>
<td>Completion Depth: 6.0 ft</td>
</tr>
<tr>
<td>Weather: Sunny, Clear</td>
<td>Backfilled With: Cuttings</td>
</tr>
</tbody>
</table>

Log of Test Hole/Pit

<table>
<thead>
<tr>
<th>Depth</th>
<th>Sample</th>
<th>Material Description</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 ft</td>
<td>Bulk</td>
<td>Silty SAND (SM)</td>
<td>Abundant Roots and Rootlets</td>
</tr>
<tr>
<td>3 ft</td>
<td>Bulk</td>
<td>Silty SAND (SM)</td>
<td></td>
</tr>
<tr>
<td>7 ft</td>
<td>Bulk</td>
<td>SAND with Silt (SP-SM)</td>
<td></td>
</tr>
</tbody>
</table>

Percolation Test Data Table

<table>
<thead>
<tr>
<th>Time</th>
<th>H (inches)</th>
<th>D (inches)</th>
<th>T (minutes)</th>
<th>R (min./inch.)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:24</td>
<td>5</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>12:34</td>
<td>10.5</td>
<td>5.5</td>
<td>10</td>
<td>1.8</td>
<td></td>
</tr>
<tr>
<td>12:44</td>
<td>8.5</td>
<td>3.5</td>
<td>10</td>
<td>2.9</td>
<td></td>
</tr>
<tr>
<td>12:54</td>
<td>9</td>
<td>4</td>
<td>10</td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>13:04</td>
<td>8.5</td>
<td>3.5</td>
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<td>2.9</td>
<td></td>
</tr>
<tr>
<td>13:14</td>
<td>8.5</td>
<td>3.5</td>
<td>10</td>
<td>2.9</td>
<td></td>
</tr>
<tr>
<td>13:24</td>
<td>8.5</td>
<td>3.5</td>
<td>10</td>
<td>2.9</td>
<td>Test ended at 13:24</td>
</tr>
</tbody>
</table>

LEGEND:

H = Distance from Reference Point to Water Level
D = Drop in water level between observations
T = Time interval between observation
R = Percolation Rate, min./inch.

PLATE C-1b