Basis of Design
South County Operations and Maintenance Facility
Monterey-Salinas Transit
November 15, 2018

1.0 INTRODUCTION

2.0 ARCHITECTURAL

3.0 MECHANICAL, FIRE SPRINKLER & PLUMBING ENGINEERING

4.0 ELECTRICAL – see Attachment 6

5.0 ATTACHMENTS
1. **INTRODUCTION**

This Design Criteria Report (OCR) provides key elements and criteria necessary for the development and design of a new operations and bus maintenance facility (OMF) for Monterey-Salinas Transit (MST) in King City, California. The project consists of designing a new OMF to service the southern portion of Monterey County and service to Paso Robles.
Aerial View of Site

The project shall include the following facilities:

A 10,972 square-foot, Operations and Maintenance Facility (OMF) Building, which will include services for drivers and equipment related to bus maintenance. The building will be designed for the construction of a future phase with 2,128 square feet expansion of the maintenance bays and 3,566 square feet of office space on a second floor.

A 2,860 square-foot Fuel/Service Canopy comprised of a covered service lane. The canopy will be extended to cover the lane. The structure will include fueling equipment to dispense diesel and gasoline fuels, connection to a new above-ground diesel gasoline tank for servicing gas-powered fleet vehicle types.

A new 3,032 square-foot Bus Wash Facility, which will include a bus washer system, water reclamation equipment, a reverse osmosis final rinse water system, bus air dryers. A wash pad for hand-washing trolleys will be covered by the canopy.

A new 2,490 square foot Tire Storage and Canopy and a new 900 square foot covered Hazardous Material Storage with concrete curb containment.
2.0 ARCHITECTURAL

2.1 Codes and Standards

The project site falls within the City of King, which is the Authority Having Jurisdiction (AHJ) for this MST facility. Design of the new and renovated building will need permit approval from the Building and Fire Departments. Below is a list of codes and standards that will apply to the new design:

- California Building Code (CBC), 2016
- California Fire Code (CFC), 2016
- American with Disabilities Act Accessibility Guidelines (ADAAG)
- All applicable federal, state and local codes and regulations

2.2 City Planning and Zoning Regulations

The City of King’s Planning Department has approved a Conditional Use Permit. But the project has added several elements including a story portion of the main building for a future phase. The Design/Build Entity will need to process, apply for, and gain approval of an amendment to the CUP.

2.3 General Building Criteria

The site design concept provides building footprints in a layout that still allows specific processes to function with the least amount of interference. The site plan will allow the interaction of all site users, i.e., management, operations staff, maintenance staff, bus operators, and visitors. The building elements will be architecturally united with the existing by use of similar and complimentary building materials, colors, design elements and details.

Operations & Maintenance Building

- It is assumed the building will be classified as Mixed Occupancy Types B & S1 with Type V-B-sprinklered construction. The structure is an engineered steel building with a concrete slab and footings. Interior walls and framing will be steel and will include the required rated occupancy separation. The roof and exterior walls will be standard steel panels with gutters and downspouts. Windows will be new double-glazed, low-E tinted glass in the same framing system as the storefronts openings. Exterior openings will be aluminum storefront and galvanized steel doors/frames.

Fuel/Service Canopy, Tire Storage and Hazardous Material Storage

- Occupancy Type: S1. Type of Construction: V-B-sprinklered. Number of stories: one. Concrete slab on grade, CMU bearing walls, structural steel frame, uninsulated steel wall and roof panels on steel roof framing.

Bus Wash Building

- Occupancy Type: S1. Type of Construction: V-B-sprinklered. Number of stories: one. Concrete slab on grade, structural steel frame, uninsulated steel wall and roof panels on steel roof framing.
2.4 Architecture

The project aesthetic will be based on a contemporary industrial/factory style and economical use of finishes, working with the existing building interior.

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 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 shall 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, shall be factory or shop galvanized, and any field damage to the galvanization must be repaired. Except where specifically noted that field priming &/or finishing is acceptable, all such metal must be factory or shop primed and finished. All galvanized metals must 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, double-glazed windows, space separation, and landscaping.

Design of sound barrier construction assemblies will provide enough sound attenuation to minimize the noise impact on adjacent workspaces. Ambient noise within interior workspaces will be maintained at levels to support the efficient operation by terminal staff.

Exterior Doors and Interior Doors except in Office Areas: For selection of door materials and finishes, we will consider the industrial coastal environment of this site, MST’s image requirements, and the quality of MST’s existing material finishes. Exterior swing doors and door frames will be steel or aluminum construction. Doors opening onto unconditioned or semi-conditioned spaces, such as service bays, will be constructed as exterior doors. Exterior overhead coiling doors shall be constructed of factory-finished steel. Selection of door construction shall consider the ability to withstand high winds.

Storefront: Frames will be aluminum with a factory-applied high-performance organic coating or anodized finish. Glass shall be tinted to reduce glare. Low-E dual glazing will be used for thermal and acoustic separation.

Windows: Frames will be aluminum with a factory-applied high-performance fluoropolymer coating or anodized finish. Glass will be tinted to reduce glare. Low-E dual glazing will be
used for thermal and acoustic separation.

Interior Partitions: Will be designed as non-load bearing. Enough space will be provided within partitions for the conveyance of utilities, including electricity, telephone, data, and plumbing. Maintenance facility walls will be in accordance with the designer's selection of material finishes, and will consider the industrial environment of this site, MST's image requirements, and the quality of MST's existing material finishes. Water-resistant gypsum board will be provided in toilet rooms, shower rooms, near sinks in kitchens and break rooms, and where used in unconditioned or semi-conditioned space, such as service bays.

Interior Doors in Office Areas only: Typical interior office-area doors will be stain-grade wood solid-core construction, set in steel or aluminum frames. Interior fire-rated overhead coiling doors may be required by code at openings between office spaces and repair bays; these doors will be of the same construction as that used for the exterior roll-up doors.

Floor Finishes: Selected flooring systems will be appropriate for in use in each type of space, providing the highest degree of wear resistance and comfort possible. Below are typical floor finish recommendations for specific uses:

- Repair Bays, Shops, Storage & Utility Spaces: ChemRex Masterplate 200 (light reflective) concrete hardener
- Office Spaces and Conference Rooms: Carpeting (for noise reduction)
- Staff Office Spaces: Resilient flooring or carpeting
- Computer Room and Related Office Spaces: Static dissipating resilient flooring
- Kitchens and Toilet Rooms: Ceramic tile or resilient flooring
- Locker Rooms: Resilient flooring
- Lunch Rooms and Lounges: Resilient flooring
- Storage, File and Work Rooms: Resilient flooring or carpeting

Ceiling Finishes: Provide suspended grid acoustic lay-in tile or equivalent for noise reduction in office areas. Provide painted water-resistant gypsum board ceilings in toilet rooms and shower rooms. Ceilings will be exposed structure, with fire proofing or sound absorbing where needed, in repair bays and shops.

Cabinetry: Cabinets will be constructed of plywood, except for a particleboard (MDF) countertop substrate. Finishes will be high-pressure laminated plastic.

Paint: Interior paint will be durable and washable. A primer/sealer and two coats of finish are required. Paint or other coating systems will protect all exposed structure, unless otherwise noted. Exposed vertical concrete in office areas will be treated with a sealer and two coats of industrial-quality paint.

Toilet Fixtures and Specialties: Standard porcelain plumbing fixtures will be provided. Toilet accessories will be of stainless-steel construction of sufficient gage to resist damage.

2.5 Sustainable Building Design

Over the past few years through contact with the design team, MST has indicated a desire to incorporate environmentally sustainable features into their expansion project. It will be MST's intent to build a high-quality project that is as environmentally sensitive, energy-efficient and uses sustainable building methods to the greatest extent possible. The project will meet many of these objectives by
complying with the California Green Building Code in the development of the project design. MST will not pursue LEED Certification at this time.

3.0 Mechanical, Fire Sprinkler & Plumbing Engineering

3.1 Applicable Codes

2016 Building Standards Administrative Code, Part 1, Title 24 C.C.R.
2016 California Building Code (CBC), Part 2, Title 24, C.C.R.
2016 California Electrical Code (CEC), Part 3, Title 24, C.C.R.
2016 California Mechanical Code (CMC), Part 4, Title 24, C.C.R.
2016 California Plumbing Code (CPC), Part 5, Title 24, C.C.R.
2016 California Energy Code (CEnC), Part 6, Title 24, C.C.R.
2016 California Fire Code (CFC), Part 9, Title 24, C.C.R.
2016 California Green Building Standards Code (CGBSC), Part 11, Title 24, C.C.R.
2016 California Referenced Standards Code, Part 12, Title 24, C.C.R.
Public Safety, State Fire Marshal Regulations, Title 19, C.C.R.
NFPA 13
NFPA 72

3.2 Fire Protection

Riser:
• 6” steel outside building riser terminating at flange 12” above finished floor.
• Standpipe hub drain or floor sink to sanitary sewer at riser location.
• Overhead riser hydraulically sized in accordance with NFPA 13, each riser complete with main indicating control valve, riser check valve, water flow alarm switch, and main drain/alarm test connection.

Piping and fittings:
• UL listed black steel sprinkler piping. 2” pipe and larger shall be schedule 10 with welded or UL listed grooved fittings. 1 ½” pipe and smaller shall be schedule 40 with UL listed cast or ductile iron threaded fittings.
• Mains and branch lines in areas with low ceilings shall be concealed.

Sprinklers:
• Sprinklers in areas with low ceilings shall be semi recessed pendent quick response.
• Sprinklers without low ceilings shall be upright quick response on exposed piping.
• All combustible concealed spaces shall be protected with sprinklers throughout.
• All combustible overhangs over 4 feet wide shall be protected with sprinklers.

Level of Protection:
• Mechanical rooms, electrical rooms, storage, repair garages, and machine shop areas shall be protected with a design density of 0.2 gpm/ sf in and maximum 130 sf head spacing in accordance with NFPA 13 Ordinary Hazard Group 2.
• Other areas shall be protected with a design density of 0.1 gpm/ sf and maximum 225 sf head spacing in accordance with NFPA 13 Light Hazard.
• I.T. room shall be protected with a clean agent fire suppression system. A pre-action style wet sprinkler system shall be provided as backup to the clean agent fire suppression system.
3.3 Plumbing Systems

The flat roof areas shall have primary and secondary roof drainage systems. Roof drains shall have cast-iron domes. Above ground primary and secondary roof drainage piping installed between finished floor level and ten feet above finished floor shall be cast-iron soil pipe with no-hub connectors. Above ground primary and secondary roof drainage piping installed over ten feet above finished floor shall be cast-iron soil pipe with no-hub connectors or ABS or PVC plastic. Below ground primary roof drainage piping shall be ABS or PVC plastic. Secondary roof drainage shall spill to grade through down spout nozzles installed 18" above grade. Primary roof drainage piping shall connect to the underground site storm drainage system.

Above ground sanitary waste and vent piping shall be cast-iron soil pipe with no-hub connectors or ABS or PVC plastic. Below ground sanitary waste and vent piping shall be ABS or PVC plastic. Condensate drain piping shall be Type-DWV copper tubing with soldered joints. Condensate drain piping shall terminate into the sanitary waste system with an air-gap fitting.

Domestic water piping shall be Type-L copper with wrought copper fittings. Domestic hot water piping and hot water recirculation piping shall be insulated with 1" of fiberglass pipe insulation with FSK-SSL jacket. Accessible lavatories and sinks shall be provided with ADA insulation kits covering the p-trap, hot water supply and stop, and cold water supply and stop.

All faucets and fittings shall meet the California Lead-Free requirements. All fixtures shall be selected to comply with the flow restrictions required by the California Green Building Standards Code. Plumbing fixtures shall be as follows:

- Water closets – floor mounted flush valve style with manual flush valve (1.28 gpf)
- Urinals – wall mounted, ultra-low consumption with manual flush valve (1/8 gpf)
- Lavatories – rectangular, wall-hung with manual single lever faucet (0.5 gpm)
- Other sinks – stainless steel bowl with single handle faucet (1.5 gpm)
- Drinking fountains – dual height, stainless steel bowl
- Custodial sink – floor mounted 24x24 mop sink

Domestic hot water shall be generated by a natural gas-fired, condensing style storage tank water heater installed in the custodial closet. A central domestic hot water recirculation pump shall be used to maintain the temperature of the domestic hot water piping loop. An NSF listed domestic water expansion tank shall be provided on the domestic hot water system. Provide water softening and filtering as required for equipment.

Natural gas shall be supplied to the equipment at 7 inches w.g. Natural gas piping shall be schedule 40 black steel piping with welded joints for piping 2-1/2” and larger, and screwed joints for piping 2” and smaller.

Service bay utilities including compressed air, bulk washer fluid, bulk transmission fluid, and bulk lubrication fluid piping systems and central equipment will be part of a turnkey system separate from the domestic plumbing.

3.4 HVAC Systems

Outdoor Conditions

<table>
<thead>
<tr>
<th>Season</th>
<th>Temperature</th>
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<tbody>
<tr>
<td>Summer</td>
<td>90 F Dry Bulb*</td>
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<tr>
<td></td>
<td>63 F Wet Bulb*</td>
</tr>
<tr>
<td>Winter</td>
<td>20 F Dry Bulb**</td>
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Sensible Cooling Equipment
Ambient Air Temperature  95 F Dry Bulb

Heating Degree Days  2,771
Cooling Degree Days 65  1,190

*Based on ASHRAE 2017, 0.4% Design for King City, CA
**Based on ASHRAE 2017, 99.6% Design for King City, CA

Indoor Conditions

Summer  75±3 F Dry Bulb
   Expected RH level 30-50% (not controlled)

Winter  68±3 F Dry Bulb, no humidification control

Outdoor Air Ventilation Rates

Outdoor air ventilation rates shall be in accordance with Chapter 4 of the 2016 California Mechanical Code and table 120.1-A of the 2016 California Energy Code. The repair garage shall have a minimum of 1.5 cfm per square foot of outdoor air provided. The office spaces shall have a minimum of fifteen cubic feet per minute of outdoor air per person or 0.15 cubic feet of outdoor air per square foot of floor area (whichever is greater) provided to the occupied spaces.

Air Change Rates

Minimum air change rates shall be as follows (unless heating/cooling load or applicable code(s) necessitate higher value):

Office, corridor  0.7 cfm per square foot during occupied mode
Toilet rooms, janitors’ closets, bulk storage  8 to 10 air changes per hour during occupied mode with 100% of air exhausted
Gilly, Fitness Room  1.0 cfm per square foot during occupied mode
Repair Shop and Steam Rack  1.5 cfm per square foot of low level exhaust

Building Pressurization

Offices and Gilly shall be kept under slightly positive pressure with respect to the adjacent corridors. Toilet rooms, janitors’ closets, bulk storage and electrical rooms shall be kept under slightly negative pressure with respect to the adjacent spaces.

Duct Sizing Criteria

Supply air ductwork
1000 fpm maximum velocity
0.08”/100 ft. maximum air pressure drop
Shall be insulated with a minimum of 1-1/2” of fiberglass batt insulation with FSK to control condensation

Exhaust air ductwork and Return air ductwork
1000 fpm maximum velocity
0.08”/100 ft. maximum air pressure drop
Shall not be insulated

Office and Exercise (RTU-1)
The Office and Exercise room shall be served by a rooftop mounted, packaged gas-electric air handling unit installed on the roof above the Locker room. The unit shall be sized to provide approximately 2.5 tons of cooling and have the following components:

- Single wall construction
- Combination filter/mixing box with 2” pleated MERV8 filters
- DX cooling coil – copper tubes expanded into aluminum fins, maximum 10 fins per inch, variable speed scroll compressor
- High efficiency modulating gas furnace
- Supply fan – constant speed, forward curve fan, approximately 900 cfm
- Vertical duct connections for supply and return ductwork

Air shall be supplied to the spaces through insulated rigid ductwork installed above the lay-in acoustic tile ceiling via modular core ceiling diffusers. Air shall be returned to the unit via a return air plenum. Air shall be collected by the unit through return ductwork with a bell mouth inlet. Egg-crate style return grilles with acoustically lined boots shall be provided in each room.

A wall-mounted, 7-day programmable commercial thermostat shall be provided adjacent to the door outside the Office. Occupants shall be able to adjust space temperature up and down by a maximum of 3°F and shall be able to place the unit into occupied mode via the space thermostat.

Offices and Gilly (RTU-2)

The Office and Exercise room shall be served by a rooftop mounted, packaged gas-electric air handling unit installed on the roof above the Locker room. The unit shall be sized to provide approximately 4 tons of cooling and have the following components:

- Single wall construction
- Combination filter/mixing box with 2” pleated MERV13 filters
- DX cooling coil – copper tubes expanded into aluminum fins, maximum 10 fins per inch, variable speed scroll compressor
- High efficiency modulating gas furnace
- Supply fan – constant speed, forward curved fan, approximately 1,300 cfm
- Vertical duct connections for supply and return ductwork

Air shall be supplied to the spaces through insulated rigid ductwork installed above the lay-in acoustic tile ceiling via modular core ceiling diffusers. Air shall be returned to the unit via a return air plenum. Air shall be collected by the unit through return ductwork with a bell mouth inlet. A single egg-crate style return grille with acoustically lined boots shall be provided near in each space.

A wall-mounted, 7-day programmable commercial thermostat shall be provided outside the door to the offices. Occupants shall be able to adjust space temperature up and down by a maximum of 3°F and shall be able to place the unit into occupied mode via the space thermostat.

Maintenance Office, Parts room, Clean room and corridor by toilet rooms (RTU-3)

The Maintenance Office, Parts room, Clean room and corridor by the toilet rooms shall be served by a rooftop mounted, packaged gas-electric air handling unit installed on the roof above the Parts room. The unit shall be sized to provide approximately 2.5 tons of cooling and have the following components:

- Single wall construction
- Combination filter/mixing box with 2” pleated MERV8 filters
- DX cooling coil – copper tubes expanded into aluminum fins, maximum 10 fins per inch, variable speed scroll compressor
- High efficiency modulating gas furnace
- Supply fan – constant speed, forward-curve fan, approximately 850 cfm
- Vertical duct connections for supply and return ductwork

Air shall be supplied to the spaces through insulated rigid ductwork installed above the lay-in acoustic tile ceiling via modular core ceiling diffusers. Air shall be returned to the unit via a return air plenum and transfer ducts. Air shall be collected by the unit through short run of return ductwork with a bell mouth inlet. Egg-crate style return grilles with acoustically lined boots shall be provided in each room.

A wall-mounted, 7-day programmable commercial thermostat shall be provided adjacent to the door in the Maintenance Office. Occupants shall be able to adjust space temperature up and down by a maximum of 3°F and shall be able to place the unit into occupied mode via the space thermostat.

I.T. Room

The I.T. room shall be cooled with a dedicated computer room air conditioning unit. The equipment shall be sized to offset the heat load generated by the anticipated computer equipment plus an additional 10% to allow for future equipment. The indoor unit may be floor mounted or wall mounted. The outdoor unit shall be located on grade. The indoor unit shall have an automatic condensate pump to remove the condensate. Condensate shall spill over the service sink in the janitor’s closet.

Janitor, Locker, Men’s Toilet, Women’s Toilet, Shower

The Janitor’s room, Locker, Men’s Toilet, Women’s Toilet, and Shower shall have an exhaust fan that draws 8 to 10 air changes per hour from the space. Air from RTU-3 shall be transferred into these spaces as makeup air. The exhaust fan shall run continuously when the building is occupied. The exhaust fan’s schedule shall be controlled by a wall mounted time clock installed in the Janitor’s room.

Bulk Storage

The Bulk Storage room shall have an exhaust fan that draws a minimum of 1.5 cfm per square foot that runs continuously. The exhaust fan shall be scheduled using a wall mounted time clock that give the occupants the ability to modify the operation schedule. The Bulk Storage room doors shall have louvers to allow makeup air to be drawn into the room.

Electrical Room

The Electrical room shall have a thermostatically controlled exhaust fan sized to draw a minimum of 2 cfm per square foot. On a rise in space temperature above 75 deg F, the exhaust fan is started and runs until the space temperature has dropped below 75 deg F. The Electrical room doors shall have louvers to allow makeup air to be drawn into the room.

Repair Shop

The Repair Shop shall be heated with low-intensity, gas-fired, tube radiant heaters. High volume, low velocity ceiling fans shall be provided in each bay, similar to Big Ass Fans model Basic 6 with VFD and wall control. Suspended column fans shall be provided in each bay, similar to Big Ass Fans model Yellow Jacket with mounting system and remote mounted controls. Provide ducted low-level exhaust as shown on the drawings sized to provide a minimum of 1.5 cfm per square foot.

A separate tail-pipe exhaust system will be provided as part of a turnkey package separate from the comfort HVAC system.

Steam Rack

The Steam Rack shall be heated with low-intensity, gas-fired, tube radiant heaters. High volume, low velocity ceiling fans shall be provided in each bay, similar to Big Ass Fans model Basic 6 with VFD and wall control. Suspended column fans shall be provided in each bay, similar to Big Ass Fans model Yellow Jacket
with mounting system and remote mounted controls. Provide ducted low-level exhaust as shown on the
drawings sized to provide a minimum of 1.5 cfm per square foot.

A separate tail-pipe exhaust system will be provided as part of a turnkey package separate from the comfort
HVAC system.

Work Room

The Work Room shall be heated with a low-intensity, gas-fired, tube radiant heater. Suspended column fans
shall be provided in each bay, similar to Big Ass Fans model Yellow Jacket with mounting system and
remote mounted controls.

Equipment room

The equipment room is open to outdoors. It will not be exhausted or mechanically conditioned.

5.0 ATTACHMENTS

1. East Ranch Specific Plan
2. Project Plans for Planning Permit
3. Conditions of Approval
4. Signage
5. Geotechnical Report
6. Electrical Requirements