


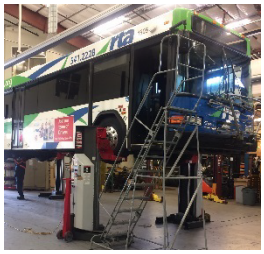

SAN LUIS OBISPO REGIONAL TRANSIT AUTHORITY
BUS MAINTENANCE FACILITY

PROGRAMMING AND MASTER PLAN REPORT

April 16, 2019

Prepared For:

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Executive Summary

This Technical Design Report was prepared by Stantec Architecture Inc. (Stantec) for San Luis Obispo Regional Transit Authority (RTA) as part of the Bus Operations and Maintenance Facility project. This report provides a description of the proposed technical design process for the Bus Maintenance Facility (BMF) based on an analysis of stakeholder needs and industry standards that has resulted in the preliminary program space requirements, referred to as the 'program'. The result of the programming effort has informed a subsequent master plan design charrette process. The master plan charrette process was used to develop and establish a conceptual building layout with functional adjacencies and interdependencies identified.

The San Luis Obispo Regional Transit Authority consists of a highly mixed-vehicle fleet that is being planned to grow to a total fleet of approximately 112 vehicles in the future. The facility has therefore been programmed and planned for a slightly larger vehicle fleet than RTA currently operates so that the site and building can accommodate future fleet growth without an expansion of the facility. The Stantec team understands that RTA operates several 'park-out' facilities for transit operations in more remote locations to avoid excessive dead-head and therefore not all vehicles and employees are parked at the proposed new facility at any given time, but all vehicles will be serviced and maintained at the new facility. Lastly, the outdoor areas, which support the facility, including employee and non-revenue vehicle fleet parking, delivery staging, miscellaneous site storage, utility infrastructure, landscaping and general circulation, etc., are also identified in the master plan and will be developed in greater detail in subsequent phases of the design.

Transit Bus in Maintenance Bay at Existing RTA Facility

1 Introduction

In 2014 and 2015, RTA went through an initial programming study in order to proceed with a site selection and evaluation process to ultimately purchase land to develop a new maintenance facility. With the goal of creating a new purpose-built facility to serve RTA's transit needs across San Luis Obispo County and beyond, RTA selected the property at the corner of Elks Lane and Prado Road just south of central San Luis Obispo as outlined in the RTA Staff Report dated January 7, 2015.

RTA continued by proceeding with the environmental review process which resulted in a mitigated negative declaration as outlined in the IS-MND report prepared by Rincon Consultants, Inc. dated September 2017. A NEPA categorical exemption was subsequently granted by the FTA based on the MND findings. During the environmental process RTA also developed a Joint master plan between RTA and CAPSLO (Homeless Services Center) to utilize the full parcel. The MND report utilized this site plan to evaluate the impacts of a proposed facility. This site plan will be referred to later in this report as the *Original Master Plan* for the RTA facility.

The Stantec team begins our scope by reviewing the aforementioned existing documents to understand the history of the project. This report seeks to outline the continuation of the design process as Stantec evaluates in detail, the future space needs for RTA and how those needs can be accommodated on RTA's acquired parcel of land. Refer to Appendix A for a list of referenced documents and material utilized by the Design Team in preparation and execution of this report.

This report identifies the specific needs of the new Bus Maintenance Facility as defined by input from the primary stakeholder groups:

- RTA's Maintenance, Operations, and Administration staff
- Public Agencies: City of San Luis Obispo - Community Development & Public Works; County of San Luis Obispo
- The Stantec Design Team's collective expertise, experience, and understanding of current industry standards from work on current and previous vehicle maintenance and service facilities.

1.1 Purpose of This Document

This report identifies and defines the needs and requirements for the new SLO RTA Bus Maintenance Facility based on industry best practices, the design team's expertise, and RTA staff recommendations and requests. This documents also describes the process through the Final Master Plan by including all relevant supporting documents produced by the Design Team in the appendices at the end of this report. This information is intended to inform the next phases of design.

1.2 Terminology

Appendix B expands and defines abbreviations and terminology used throughout this document.

2 Program

The following section outlines the process and results of the coordinated design team and RTA efforts to refine, define and evaluate current and future needs to develop a detailed space needs program. This section starts with a brief summary of the process and then defines the specific space categories understood to be critical to the proposed facility. The space needs program illustrates the space requirements for the proposed RTA facility. The programming effort involved the analysis of RTA provided information as summarized in Appendix C – RTA Provided Data prior to and during the workshops outlined below. The final program is summarized in Appendix D – Final Space Needs Program which includes projected square footage needs for the building and associated exterior spaces. These projected needs are subtotaled to include area, staffing and space quantities.

2.1 Programming Workshop

To kick-off the project, the Stantec design team facilitated two days of programming workshops with various stakeholder and user groups on September 26th and 27th, 2018. The primary goal of these meetings was to introduce our process and ourselves to the various stakeholders. These meetings were intentionally informal and meant to be an open discussion and information gathering process. RTA staff toured the Stantec team through their existing facility to explain how the agency currently operates. The paragraphs below outline the categories and general feedback received from RTA.

As a result of reviewing the initial program developed by RTA and the programming workshop, the program categories necessary for the proposed facility were outlined as follows:

- Maintenance (includes Parts Storage)
- Facility Maintenance / Utilities
- Vehicle Servicing (Fuel and Wash functions)
- Fare Collections
- Operations
- Administration
- Shared Spaces (spaces specifically designed to accommodate multiple departments)
- Exterior Spaces (miscellaneous spaces not accounted for elsewhere)
- Parking (Transit vehicles, employees, visitors, non-revenue vehicles)

During the programming workshop the design team and RTA also met with City staff to discuss the approval process and the offsite projects involved in the realignment of Elks Road/Lane, the Prado Overpass, and the WRRF project to the south. The following items were discussed during this meeting:

- Tyler Corey, Principal Planner, will be the initial point of contact for the Community Development Department. Additional staff may be assigned to the project once we submit the project design for Architectural Review. (Rachel Cohen, Associate Planner was assigned to the provide following this meeting.)
- The project will be required to follow the City's Community Design Guidelines and submitted and approved through the City's Architectural Review process.

- The City's WRRF (Water Resource Recovery Facility) project, opposite the RTA property on Prado Rd., would like RTA to consider allowing their contractor use of RTA's property for construction staging. Since the RTA facility may be under construction at the same time as the WRRF project, both RTA and the City agreed to coordinate as each project progresses.
- Jake Hudson, Traffic Manager, and Luke Schwartz, Transportation Planner/Engineer, discussed the Prado Overpass project. The design is ongoing and is tentatively scheduled for construction Q4/2021 – Q1/2022. The City will share the current status of its design with the RTA / Stantec team.
- The 'CalTrans Right-of-Way' on the south and west sides of the RTA parcel are planned to be utilized for the widening of Prado, the on/off ramps, and the necessary abutments for the bridge over the US-101 freeway.
- The City ROW to the north side will be used by the City to realign Elks Lane to connect to Prado Road.
- General discussion regarding flood plain issues. The City is doing comprehensive flood analysis for the overpass and surrounding improvements.

2.2 Fleet Data

RTA provided multiple documents to Stantec for the purposes of documenting current and potential future fleet size. Those documents are summarized and compiled in Appendix C – RTA Provided Data. The Fleet Counts are also summarized in the tables below.

Table 2.2.1: Fleet Count Summary

SLO RTA : FLEET COUNT SUMMARY [2]

CURRENT FLEET COUNT						FUTURE FLEET COUNT FOR DESIGN				
DESCRIPTION	TOTAL	Large Vehicles (25ft and longer)		Small Vehicles (Cars, SUV, Minivans)		TOTAL[4]	Large Vehicles (25ft and longer)		Smaller Vehicles (Cars, SUV, Minivans)	
		Rev	Non- Rev	Rev	Non-Rev		Rev	Non_Rev	Rev	Non_Rev
RTA Fleet Vehicles	**89**	57	0	15	17	**110**	70	0	19	21
RTA Fleet Stored On-Site	**50**	28	0	10	12	**63**	35	0	13	15
RTA Fleet Stored Off-Site	**36**	29	0	5	5	**50**	36	0	7	7
CURRENT FLEET COUNT BY FUEL TYPE						**FUTURE FLEET COUNT FOR DESIGN (PRE-ELECTRIFICATION OF FLEET)**				
RTA Gasoline	**47**	15	16	0	16	**59**	19	20	0	20
RTA Diesel	**42**	42	0	0	0	**52**	52	0	0	0

Table 2.2.2: Fleet Count by Vehicle Type

	SLO RTA : COUNT by VEHICLE TYPE [2,3]												
	VEHICLE TYPES	Vehicle Count for Maintenance	Vehicle Count for Storage-Parking										
		TOTAL	SLO		Paso		SCT		Cambria		Nipomo		
			Revenue Fleet	Non-Rev Fleet	Revenue Fleet	Non-Rev Fleet	Revenue Fleet	Non-Rev Fleet	Revenue Fleet	Non-Rev Fleet	Revenue Fleet	Non-Rev Fleet
Maintained in LONG Repair Bays	Buses 45 ft long	4	3	0	1	0	0	0	0	0	0	0
	Buses 35 to 40 long	31	16	0	7	0	8	0	0	0	0	0
	Trolley Buses	2	0	0	0	0	2	0	0	0	0	0
	Mini Bus	7	1	0	6	0	0	0	0	0	0	0
	Cutaways	13	8	0	1	0	0	0	2	0	2	0
Maintained in SHORT Repair	Pickup Trucks	4	0	3	0	0	0	1	0	0	0	0
	Minivans	19	10	2	4	0	1	2	0	0	0	0
	SUVs	4	0	3	0	1	0	0	0	0	0	0
	Cars	4	0	3	0	1	0	0	0	0	0	0
	Forklift	1	0	1	0	0	0	0	0	0	0	0
	CURRENT TOTAL	89	38	12	19	2	11	3	2	0	2	0
	FUTURE Fleet Increase[1]	23	9	3	4	1	3	1	1	0	1	0
	DESIGN TOTAL[4]	**112**	**47**	**15**	**23**	**3**	**14**	**4**	**3**	**0**	**3**	**0**

Notes:
1. Future increase in fleet = 1% compounded per year for 20 year planning horizon = 22%. Numbers are rounded-up to be conservative.
2. See RTA provided vehicle data for reference - Appendix C
3. Vehicle Types are catagorized for convenience for planning purposes.
4. Total project fleet counts are different between the two tables due to rounding calculations of each table. The higher of the two values will be used for design purposes.

NOTE: Summary Tables compiled by Stantec from RTA provided data.

2.3 Maintenance

The Maintenance department is responsible for servicing and maintaining RTA's vehicles whether stored onsite or offsite. Maintenance activities will include, but are not limited to:

- Service and Inspection
- Heavy and light repairs, including overhead equipment
- Tire replacement and storage
- Parts storage, inventory control
- General management and administrative functions directly associated with Maintenance functions

The size and functional requirements of the facility are determined by the number and size of vehicles being serviced, the type of maintenance performed, and vehicle miles operated. The initial fleet size to be maintained at the facility is 89 vehicles per Table 2.2.2, with expectation to grow into a fleet of 111 vehicles in the future. Due to RTA's off-site storage of vehicles and the expectation that this scenario will not change, the on-site vehicle storage requirement is significantly less than the total fleet size. Vehicle parking will be discussed further in Section 2.10 – Vehicle Storage.

Safety is the highest priority of a vehicle maintenance facility design. The safety of all staff and visitors will be considered paramount in the layout and design of spaces, as well as the safe operation, maintenance, and service of vehicles, associated equipment and building systems.

Training is an integral part of the Maintenance department, but the trainers and the training facilities are shared by all departments within RTA. See Section 2.9 below for further information.

2.3.1 Service and Inspection (S&I)

Service and Inspections (S&I) bays typically consist of a pit called a lower level work area (LLWA) or a dedicated bay with an in-ground lift. However, due to the relatively small size of RTA's fleet and the preference to have drive-through maintenance bays a dedicated or specially designed S&I bay was deemed unnecessary for this facility. The S&I functions will be developed and discussed further with RTA once a building and site plan are established.

2.3.2 Repair Bays

The Repair Bays or Maintenance Bays are where all major and minor repairs are performed, including overhaul and component replacement. Ideally a Repair Bay is 20' wide by the length of the vehicle + 10' beyond the vehicle at each end being repaired (20'x60' for a 40' bus). At least one bay will be provided with overhead safety/fall arrest equipment for work on the top of the vehicles. The Repair Bays are proposed to be connected via dedicated fork-lift/access aisle for distribution of materials and visibility throughout the length of the shop.

Repair Bays will be equipped with a mix of in-ground and portable vehicle lifts depending on budget availability - to be confirmed during the detailed development of the design. RTA expressed comfort with the use of portable lifts but prefers some Bays equipped with in-ground lifts.

Drive-Through Maintenance Bay with In-Ground Vehicle Lift
(LA Metro Division 13 Bus OMF, Los Angeles, CA)

2.3.3 Specialty Repair Shops & Spaces

Within the facility there are shops and spaces for performing specific maintenance and repair tasks on components removed from the vehicle that may require tools and equipment not located in the Repair Bays. Many shops are uniquely purposed for this type of work. The following shops are typically found in a vehicle maintenance facility:

- **Common Work Area (CWA)** is a dedicated space typically adjacent to the Repair Bays. This space includes fixed equipment such as parts washers, drill presses, buffer/grinders, steel workbenches with a vise, abrasive blast cabinets, etc. CWAs are best located centrally and accessible to all repair positions. However, due to noise considerations the CWA may be suitable located away from Maintenance office areas.
- **Welding (part of CWA)** is a specialty operation that will be included as part of the CWA. Dependent on the space layout and the intensity/frequency of work, dedicated ventilation will have to be assessed for overall shop safety. Welding Tables with complementing ventilation units, drill press, buffer/grinder and metal fabrication machines are typical tools for this space.
- **Electronics Repair Shop** is a dedicated space for repair of a vehicle's onboard electrical and electronic components, procedures and testing equipment. A clean environment with anti-static dissipative floors and work surfaces is required. Electronic and video equipment, fare collection equipment and/or card readers, can also be serviced and maintained in this shop.
- **Mobile Equipment Storage space** is required within the facility for its organized, clean, safe, and efficient operation. On the main shop floor, mobile equipment, used routinely, need dedicated spaces to be stored at the end of each maintenance task and/or shift as required by the functions performed.
- **Tool Box Storage** is typically allocated in a designated space within the Repair Shop. However, due to the relatively small staff count and the nature of the highly-mixed fleet, RTA is agreeable with staff tool boxes being stored between/within the Repair Bays for easy access by mechanics.
- **Tire Shop & Storage** is a space directly adjacent to the Repair Bay(s). For RTA's needs a dedicated tire bay is not required, but a dedicated space for all the tire maintenance functions and equipment is required. The space will include tire balancing and mounting equipment, new and used tire storage racks. The Tire Shop should also have direct access to the exterior through a roll-up door.
- **Chassis Wash Bay** serves for detailed vehicle cleaning as well as for cleaning of smaller items too large for a parts washer cabinet. This Bay has a grated drainage pit with a high-pressure hand-held washer wand, and waste water collection system. This space typically has high-performance coatings/finishes for durability and longevity of the space and equipment. This area can either be an open bay, separated from or integrated with the Maintenance Building. This Bay can either be equipped with waterproof portable lifts or a drive-on platform lift.

2.3.4 Parts Warehouse / Storeroom

Typically, the Parts Warehouse or Storeroom is comprised of Small Component Storage, Large Component Storage, Shipping & Receiving spaces, a receiving counter and a work station for the Clerk.

- **Small Component Storage** is comprised of anything from nuts and bolts to medium sized items, that will fit on a shelf or in high density drawer units. Storage units in this space include high density drawer, shelving, and bulk units. As the fleet grows and the need to store more parts increases, large computer

controlled vertical storage units are efficient and effective. Additional height is required for these storage towers and planning early in the design phase is required.

- Specialty hand tools are also stored within in a dedicated **Secure Tool Room** or cabinet. Tool Storage can also be accommodated adjacent to the Supervisor area dependent on user preferences.
- **Large Component Storage** is space assigned to store large components such as engine blocks, transmissions, etc. that may be palletized. The space requires high bay materials warehouse space with access to the mezzanine if provided.
- **Battery Storage Room** with adequate ventilation, is required for charging capabilities. It is usually equipped with corrosion resistant racking, and an emergency eyewash/shower station.
- **Hazardous Materials Storage** comprising mostly of fluids and solvents can be adequately and safely be stored in specialty cabinets within the Storeroom.
- **Mezzanine** storage is a useful way to take advantage of the large floor to ceiling height typical of vehicle maintenance buildings. A mezzanine can add valuable long-term storage space or room for building utility equipment. The allocated space for Small Component Storage and Large Component Storage is anticipated to be split between two levels. The mezzanine should have direct forklift access from the large component area and the shipping/receiving area and an easily accessed stair for staff access.

Typical Mezzanine Storage with Monorail Crane and Swing Gates
(Q-Line Streetcar Vehicle Maintenance Shop, Detroit, MI)

- **Shipping and Receiving** is often a dedicated space to accept deliveries via an exterior roll-up door if space permits, outfitted with a dock leveler and recessed loading dock to accommodate varying truck-bed heights. Without conflicting with daily operations within Parts Storage, this space also needs lay-down area for staging of received deliveries and goods prepared for shipping. Accommodation of a charging station for a standing-operated forklift is generally desired.

2.4 Fueling

RTA currently 'splash-fuels' at their existing SLO, Arroyo Grande and Paso Robles facilities which is a relatively expensive and less than ideal process. This process takes place due to lack of on-site fueling facilities, in part because of the capital expense of installing at a leased facility is not an ideal investment. Therefore, on-site vehicle fueling at the new facility should be considered for RTA to reduce operating costs and to allow for a complete and efficient on-site vehicle service cycle.

Both diesel and unleaded gasoline fuel will be planned for in an appropriate ratio to balance actual usage requirements and delivery expenses, i.e. larger tanks equal less frequent delivers and more economical fuel costs. The design team will explore both above-ground and below-ground storage tanks but keeping in mind that the environmental report indicated that the fuel tanks would be above-ground. Whether below or above, the fuel tanks and dispensers will follow all code and authority requirements. Further details on capacity and configuration will be provided in the forthcoming Concept Design Report. Refer to Section 2.2 – Fleet Data of this report for vehicle counts by fuel type.

Electrical infrastructure and space planning for Battery Electric Bus (BEB) charging at the new facility will also be planned for as part of the design process. More information on this can be found in Appendix K - BEB Readiness Plan.

2.5 Service & Cleaning

All transit vehicles require service and cleaning upon returning to the facility. RTA refers to the staff that perform these functions as Utility workers. The Utility workers are responsible for both internal and external cleaning of the vehicles and will likely be responsible for fueling of vehicles at the new facility. Typically located adjacent to or in line with the vehicle wash function, the service lane can be located in a standalone building or be attached to the Maintenance Building but should be located before the vehicle wash in the service cycle. The following are functions typical of the Service and Cleaning function:

- Service Lane is equipped with fuel dispensers, fluid hose reels, and interior cleaning equipment. Commonly, light interior cleaning is done while a vehicle is being fueled to take advantage of the time required to fuel, and fluids are topped off if necessary.
- An automated drive through exterior bus wash system, in a partially enclosed Wash Bay, is preferred by RTA. This system can be touchless or may use brushes, depending on agency preference and fleet requirements. A wash equipment area or enclosure is required and typically sized to accommodate all associated wash equipment, cleaning supplies, and water utility controls and equipment.
- Interior detailed cleaning at the facility will be provided via mobile cleaning carts and equipment in the yard or within the facility. Due to the relatively small size of the fleet, a dedicated deep-clean area is not deemed to be necessary. However, interior detailed cleaning of vehicles could easily be accommodated in the Chassis Wash bay if that bay is not regularly used by Maintenance staff.
- A Chassis Wash bay will be provided for detailed cleaning of the underside of vehicles and large component cleaning. The Chassis Wash will have heated pressure washers and dedicated sewer drainage connected to the facilities' clarifier. The Chassis Wash should be provided with an in-ground, platform lift in a recessed pit or with a set of portable column lifts suitable for use in a wet environment.

2.6 Fare Collection

RTA currently manages its fare collection through multiple methods. For vehicles parked onsite, vaults are retrieved from the vehicles, carted to the vault room, emptied, and then returned and reinstalled in the vehicles. For vehicles parked offsite, their vaults are retrieved, and replaced with an empty farebox, and then the full fareboxes are returned to the facility. The current Fare Room is equipped with a stationary Genfare vault system with the access port accessible from the outside of the facility.

The design team discussed fare retrieval options with RTA during the programming sessions. The consensus was that the fare collection function would ideally be located close to Administrative staff since they currently manage the revenue collection and counting process. The close proximity of the fare retrieval process will support a more secure operation. Alternatively, fare vaults could be accommodated at the Service Lane, but the collection and counting operation would also need to be close to the Service Lane.

Fare collection options will be further explored as part of the Master Plan charrette.

2.7 Operations

The Operations department is responsible for the dispatching and supervision of the transit fleet. The main building component of this function centers around the dispatch suite. Within the dispatch suite dispatchers are responsible for both fixed route and dial-a-ride dispatching. Road Supervisors, an office for the Lead Supervisor, and small conference room, and a small storage room can either be in separate but close-by spaces or can be accessed directly from one large suite.

The suite shall also include the following features:

- Window/counter facing the Bus Operators entry/exit vestibule and adjacent break room area
- Views to bus yard
- Views to employee entry/exit area to see Bus Operators as they come to work
- Small coffee bar inside suite
- Rear-loading mailboxes for Bus Operators accessed from inside the suite
- Large monitors for video cameras systems display of the facility
- Separate lighting controls zoned for each workstation
- Space for general office storage furniture within the suite
- Lost and Found storage (could also be located near Admin)

Operator amenities are outside of the Dispatch Suite. These amenities include, but are not limited to:

- Break area and kitchenette (could potentially be shared with other departments)
- Small workstations for report writing or other paperwork tasks
- Lockers
- Toilet rooms, showers, and changing areas

Training is an integral part of the Operations department, but the Trainers and the training facilities are shared by all departments within RTA. See Section 2.9 below for further information.

2.8 Administration

Administration provides connectivity between the internal departments but should also be an area that can be separated from the rest of the facility due to more regularly scheduled nature of admin staff. While most maintenance and operations facilities have limited visitation, a defined point of entry that is secure and safe will accommodate infrequent visitors. Administration includes, but is not limited to:

- Entry lobby with minimal waiting area and customer service counter/window
- Reception area with clerk workstation and access to lost and found
- Admin Offices and open workstation areas
- Storage and workrooms
- Conference space(s)
- Coffee bar - small break area
- Unisex restrooms for visitors and admin staff
- Fare revenue room for fare vault, storage, and counting of revenue – see Section 2.6 above.

2.9 Shared Spaces

Due to the relatively small size of the agency and the limited budget of the project, a direction to combine and share spaces within the facility became an early discussion topic. The result of the refined program was to identify spaces such as restrooms and breakrooms that could be combined into one larger space to serve multiple departments, thereby reduced total required square footages and associated budgets.

- Training
    - Training Room equipped with necessary projectors, monitors, IT storage, and table/chair storage. Dependent on space constraints and user preferences, the Training Room may also be designed as an adjoining space to the Administration's conference space(s) to allow for a movable partition to subdivide or enlarge the space for various sized meetings and events
- Break Room and Kitchenette
    - The break room is envisioned as the central activity area for employees to relax, take a break, and transition in and out of the working environment. The break room should open-up to an exterior patio space, but also have high visibility by various departments. This space should also be equipped with vending machines and appliances to suit RTA's needs.
- Exercise Room – equipped for 2 – 3 pieces of cardio equipment.
- Quiet Room – space away from the commotion of the rest of the facility with 2 – 3 comfortable chairs.
- Restrooms
    - Combined for both Operations and Maintenance
    - Maintenance staff lockers
    - Minimum of one shower for each of men's and women's restrooms
- Unisex Restroom – California Labor Code requires public facilities to accommodate at least one gender neutral restroom. A shower should also be included since showers are provided elsewhere.
- Lactation Room – California Labor Code also requires a private, secure room be provided for nursing mothers employed at the facility.

2.10 Vehicle Storage

The storage of vehicles in a typical open/exterior parking lot is a common practice for the southern California climate. The configuration of the parking will be discussed and developed during the Master Plan Charrette. Maintaining maximum flexibility of the parking areas will be important for RTA's mixed fleet of vehicles and the tight site constraints. Other considerations that impact vehicle storage/parking include:

- Potential photovoltaic canopies
- Charging infrastructure for Battery Electric Buses
- Site lighting poles and camera locations
- Stormwater collection and treatment areas
- View angles and street access

2.11 General Site Requirements

There are specific site requirements necessary to ensure a safe, efficient, and functional facility. These requirements include, but are not limited to the following:

- Ensuring the building meets the flood plain design requirements begun as part of the environmental clearance process.
- Site circulation patterns should be clearly defined and understandable. Separation of employee and visitor parking from the fleet parking is critical for safety. One-way fleet circulation is preferred to ensure a safe and efficient service cycle.
- CalTrans ROW setbacks on the West and South property lines and City ROW for Elks Lane on the North.
- Utility infrastructure improvements planned for Prado and Elks Lane realignment.
- A security surround (fencing or walls) should extend around the perimeter of the entire site. Points of entry, CPTED (crime prevention through environmental design) measures, and CCTV should be employed to assist security of gaps in the site surround. The building itself can also be part of the secured perimeter. Fencing and/or walls should meet the City's design guidelines.
- Local authority's requirements for setbacks, employee parking, and landscaping.
- Honoring the PG&E electrical utility easement through the site. No building can located within the 80' wide easement.
- Walls/visual barriers to control direct views from neighboring properties.
- Lighting to provide efficient, effective and even illumination throughout the entire site without creating light pollution, especially to the Sunset drive-in theater to the north.
- Storm drainage, storage, and treatment requirements.
- The site should allow for fire truck access around the building with minimum driveway widths.
- Fuel tanks and equipment should be located at code required minimum distances from property lines.
- Delivery access for the facility should also occur in the same site circulation pattern as fleet vehicles.
- Video surveillance is required.
- Drive-through maintenance bays are the most flexible but require additional drive aisle space.

2.12 Facility Expansion

When planning any new facility, it is important to consider the possible growth of the facility and fleet. It is understood through discussions with RTA staff that the transit fleet is not expected to grow significantly and

that a modest growth of 1% per year compounded annually should be accounted for in the planning of the new facility. In order to project a reasonable timeframe, the growth period will be projected to 20-years so a growth in fleet of about 22% will be accounted for in the Space Needs Program.

The major impact to the building in future growth would be for the need to have additional maintenance bays. A conservation approach has been taken to projecting the number of maintenance bays for the facility.

2.13 Industrial Equipment Design

To safely, efficiently and effectively maintain transit vehicles, specific maintenance equipment, tools, and systems are required to perform service tasks properly and efficiently. During the design process, the Stantec team will lead the Industrial Equipment Design. Industrial Equipment Design locates specific equipment and systems within the bus maintenance facility and other service spaces based on functional, operational, and safety requirements. Specified equipment is coordinated with the Design Team to fully address civil, architectural, structural, mechanical, plumbing, electrical, and system requirements. Design starts with RTA input, leveraged by selection of industry standard equipment, and previous experience. This equipment includes, but is not limited to the following:

- Fixed and mobile equipment
- Steel top workbenches in Repair Bays and shops with swivel base vice and anvils
- Mobile electric column lifts (sets of 2 and/or 4)
- Monorail hoist in one of the Bays for removing overhead rooftop equipment, including fall arrest system
- Parts carts (tools and parts mobility)
- Lubrication fluid distribution and recovery system - distribution system including bulk tanks, pumps, distribution piping, retractable hose reels, and recover systems, including used fluid receptacles, pump stations and storage tanks
- Equipment storage cabinets, shelving, and large storage rack (pallet rack systems)
- Air compressor and distribution system
- Shop fabrication equipment - buffer/grinder, drill press, universal press, sand blaster, and sanders
- Welding equipment with associated exhaust systems and work tables
- Battery bench and chargers
- Electronic dissipative equipment (improved safety and efficiency for Electronics Shop)
- Tire mounting, balancing and storage equipment
- Tail pipe exhaust capture system

2.14 Final Space Needs Program

The Space Needs Program for the new facility is based on the current fleet size and data provided by RTA with a modest future growth factor. The program outlines the space needs for a safe and efficient operation. See Appendix D for the Final Space Needs Program and summary. The summary includes the area needs for all departments and exterior spaces associated to the facility, including site and parking requirements. These projected space needs include a factor which provides for site access, landscaping, and setbacks, for total site area requirements. The assumptions made regarding staffing and vehicle counts are derived from direct feedback and input from RTA, projects similar in size, and collective design team and RTA experience at current and previous operations and maintenance facilities.

2.14.1 Reading the Program Summary and Tables

The Space Needs Program table is broken down into the relevant departments outlined earlier in this report. These departments are color coded to correlate to the departments blocked-out on the plans produced during the Master Plan Charette.

Space standard dimensions are applied where applicable. Where no standard exists, or a specific dimension of a space is not required, those fields are left blank. These are based on industry standards or the specific requirements of RTA.

The staff, space, and area counts are all tabulated under the 'Program' heading. These numbers are the critical factors in planning and right-sizing the facility. Each department is sub-totaled and has a grossing factor applied for circulation, building structure, and utility spaces.

The right half of the table (headings: Adjacency, Equipment/Furniture, Special Requirements, and Notes) is intended to further detail the needs of those spaces. These fields are a record of what was discussed during the programming sessions, but also used as a starting point to design the facility. In some cases, the information in these fields may vary slightly from the final master plan and concept design plans as the design evolves.

This program is a working document that will be used by the design team and RTA to refine required spaces and confirm all functional requirements are being accounted for as the project progresses into the next tasks.

2.14.2 Grossing/Circulation Factors

The space requirements indicated in the program for each function are net usable area. There are four Grossing /Circulation Factors Utilized in the Space Needs Program to approximate the total space needs. These factors are as follows:

- 15% for Maintenance Shops, Storage, Support spaces, and offices: This number is typically higher, but the Program has accounted for some of the utility and circulation spaces required for the maintenance department.
- 25% for Vehicle Servicing Spaces
- 20% for FM/Utility, Operations, Administration, Training, and Shared Spaces: A larger percentage would typically be accounted for these spaces as well, but due to the likelihood that the facility will be a one-story building this factor should be sufficient.

- 10% for Exterior Areas (non-parking): Accounts for a minimal factor for site elements like utilities, trash enclosures, etc. which would be in addition to the Parking Areas.
- 100% for Parking Areas**:** This additional space must be included in the calculation to account for the drive aisles, walkways, islands, landscape medians, and other areas associated with parking areas.
- 50% for Site Circulation Factor: This factor is also applied to the program as a percentage of the total program area. It accounts for landscaped areas around buildings, setbacks, site inefficiencies, etc. not accounted for elsewhere.

3 Master Plan Design Process

Following the programming workshop, the design team proceeded with developing a Master Plan for the new RTA facility. The kick-off for this process was a three-day Master Plan Design Charrette workshop held at RTA's offices on October 9th – 11th, wherein RTA stakeholders participated in meetings to review Stantec's draft of the space needs program and drafts of the site master plan. The design team focused on further refining the program to 'right-size' the facility and simultaneously outlined those program elements within the site constraints. The purpose of the Design Charrette was also to further refine RTA's expectations of daily functions and processes at the new facility. All staff were invited to initiate and extend dialog during the entire process. Sessions were typically two hours, with questions for staff who have extensive expertise and experience in their discipline, and good working knowledge of the agency's existing operations and maintenance practices. The design team prepared draft master plan options for each review session, also began developing process flow diagrams and clearance diagrams (see Appendixes E and F respectively) used to document, confirm, and clarify the operational-processes planned for the new facility.

The following is a summary of the master plan charrette process and the subsequent iterations of the master plan. The draft master plan options can be found in Appendix G – Draft Master Plan Drawings and the Final Master Plan can be found in Appendix H.

3.1 Master Plan Charrette – Day 1 (October 9, 2018)

Day One consisted of refining the space needs program and reviewing questions between the design team and RTA staff. The architectural team reviewed in detail the initial draft of the program with RTA staff. The primary goal of this effort was to review the needs of each space required for the new facility in order to ensure the design team was proceeding with a reasonable approximation of the size of each department and the overall size of the building(s).

3.2 Master Plan Charrette – Day 2 (October 10, 2018)

The Stantec design team came to the first day of the Charrette with multiple schemes/layouts already prepared but did not discuss in detail with RTA until the beginning of Day 2. After reviewing the Initial Study site plan as well as the conditions of approval and the City's Community Design Guidelines, the following were some of the initial constraints understood by the design team to have the most significant impacts on the planning of the new RTA facility:

- → The future Prado Overpass and Elks Realignment project(s) are major impacts to RTA's property. The overpass and realignment of Elks Lane effectively dictate that all ingress and egress for vehicles would be restricted to the future Elks Lane along the northern property line.
- → Building orientation in north-south direction is more desirable and possibly necessary due to the flood plain constraints. An east-west orientation of the building would essentially act as a dam to the flowing flood water coming generally from the north.
- → The 80' wide PG&E overhead transmission line easement cutting diagonally through the site dictates that the building can only be located on the south-eastern area of the site. There simply isn't enough

real estate on the northern side of the easement to fit the entire facility and even if there was the building would have to be oriented in the east-west direction.

- → The facility should also only consist of one building, not broken-up into multiple smaller buildings. The environmental study process indicated throughout that the facility would be one building. However, the plan did indicate a 'potential service lane/wash area' along the western edge of the property.
- → A complete service cycle was not accounted for on the previous site plan developed for the environmental clearance process and would need to be addressed on the site.
- → The initial program was generous and its two-story, 45,000 sqft facility was not going to be necessary to service RTA's fleet. A single-story facility would also likely be a less expensive facility due to the lack of vertical circulation requirements and overall building mass.
- → Budget is a major concern and any effort to reduce the overall scope of the project should be discussed.

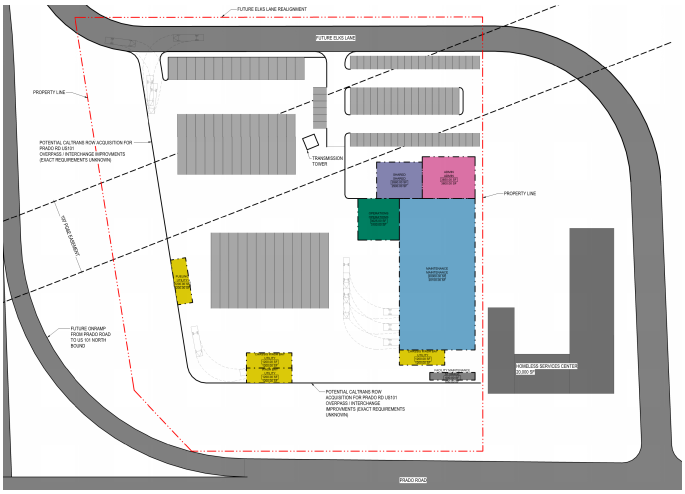
Given all of these constraints, very few options were left on the drawing board for viable schemes to develop. The design team considered the site plan developed for the Initial Study as a viable option to remain on the table, but needed to develop alternative schemes that sought to provide an even better solution than the Initial Study site plan. The design team developed two additional schemes as starting points for discussion and development during the charrette. The following outlines the big-picture pros/cons of the two schemes:

<u>Scheme 1 – The Drive-through Option:</u>

- Allows for drive-through Repair Bays, ensuring maximum flexibility for use by RTA's fleet of small to large vehicles.
- Service cycle fully accounted for on the site will allow one-way traffic.
- Circulation is in clockwise direction. Counter-clockwise is preferred but due to small fleet size, clockwise circulation is acceptable.
- Removes unsafe condition of mixing fleet and employee parking entry/exit driveway.
- Accommodates an appropriate quantity of employee and fleet parking spaces.
- Entire facility fits on one level but could be two stories if necessary.

<u>Scheme 2 – The Non-drive-through Option:</u>

- Generally follows Initial Study site plan.
- Separates driveways (same as Scheme 1).
- Allows for counter-clockwise onsite circulation.
- Does not allow for drive-through Repair Bays.
- Service cycle accounted for but requires some two-way traffic.



The following are the main discussion topics and notes from the morning session with RTA and Stantec staff:

- In Scheme 1, the fare collection/revenue room should be located at the Admin department as opposed to at the service lane, but a second fare probe should be planned for somewhere within the facility. In scheme 2, fare collection would need to happen at remote service lane since service cycle wouldn't be conducive to circulating past the main building.
- The design team and RTA reviewed annual maintenance hours, fleet data, bus-yard activity data, and operating statistic data provided by RTA. The consolidated and final versions of this data can be found in Appendix C – RTA Provided Data.
- Lengthy discussion on confirming/calculating the number of maintenance bays that should be required:
    - Number of bays as a factor of fleet size, repair/service durations and schedules
    - Design team requested further breakdown of PMI's to assess durations and total inspection hours
    - Summary of analysis:
        - ~10,000 hours of repair and service time (projected w/ 22% future growth) based on RTA provide service data.
        - Divided by ~100 hours/week (based on staffing)
        - Therefore: 10,000 / 100 = 100; 100 / 52 weeks per year = ~2 Maintenance Bays
        - RTA indicated utilization is ~58%
        - Therefore 2 Maintenance Bays x ~50% utilization = minimum of 4 Maintenance Bays
- A location for doing accessibility assessments should be provided on site. This should consist of a similar on-street condition of a bus pulled-up to a curb where someone could board a bus.
- Discussion on components of service cycle:
    - Automatic bus wash should be planned for but could be construction alternate.
    - Chassis wash could double as detailed cleaning bay/canopy.
    - Window washing station should be provided at the service lane or near facility exit.
    - Fueling system should be planned for as well but could also be an alternate due to budget.

Following the morning discussion on these two options, the consensus was that Scheme 1 was the preferred approach and should be discussed further with the City during the afternoon session extended to various City of SLO staff. In addition to the design team and RTA admin staff, the afternoon session was attended by Carrie Mattingly, City of SLO Utilities Director, and Alan Fields, RTA Bus Operator. The following are the main discussion topics and notes from the afternoon review session:

- General discussion on master plan layout and Scheme 1 direction. No opposition towards this scheme.
- Carrie recommends that the design team investigate using the City's recycled water 'purple pipe' system for vehicle washing. Use of recycled water is required for landscape irrigation.
- Carrie indicated that we should be mindful of the City's frontage requirements but acknowledges that the standards might be difficult to accommodate with site's constraints.
- Carrie stated that the LOMR for the San Luis Ranch project across US-101 to the east has been published. The design team may want to review.
- Carrie also indicates that they could share existing utility information along Prado.
- Brief discussion on the City's WRRF project utilizing RTA's property for construction staging – may be possible but depends on construction schedule of WRRF project.

3.3 Master Plan Charrette – Day 3 (October 11, 2018)

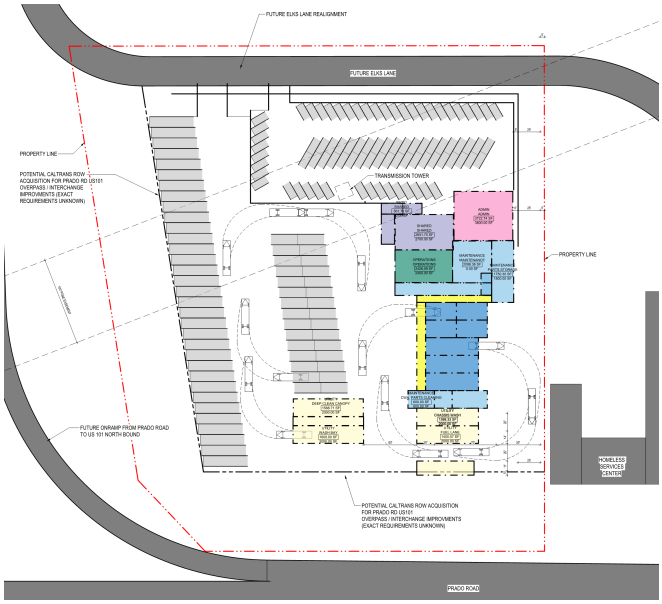
The third day of the charrette began with a working session for the design team in the morning. The master plan was further refined primarily by accommodating additional setback space along the realigned Elks Lane which resulted in angled parking being required for the employee lot due to the tight constraint between the back of the street setback and the PG&E transmission tower. The master plan reduced the fleet parking to an appropriate quantity and mix of vehicle sizes for the parking needs at the facility.

The afternoon review session focused on the fueling aspects for the project. The session was attended by the design team, RTA, and Reb Guthrie of Fuel Solutions. The following are the main discussion topics and notes from that review session:

- A 6000-gallon diesel tank would be preferred to minimize cost and maximize fuel deliveries. A larger system would likely not be considered because trend is moving towards electric vehicles.
- A split-tank with diesel and unleaded would likely be the most economical solution. Fuel Solutions would review options for payback for having an onsite fuel system.
- Industry trend is moving towards electric transit buses, not cutaways or similar vehicles. Facility should plan accordingly.
- Electric bus charging infrastructure could be the in the 2MW range for realistic usage; 3MW for peak usage.
- Discussion on what RTA wants out of BEB Readiness Plan. Fuel Solutions to work with Gray Electrical to begin researching background for study.

The master plan charrette concluded without a fully-resolved master plan, but the team and RTA agreed upon a general direction and consensus at the end of the master plan charrette. The design team would continue developing the master plan with frequent input from RTA. The overall 'big-picture' aspects of the direction were as follows:

- ✓ Scheme 1 is the preferred approach for the new facility.
- ✓ A main building including a service lane (excluding separate wash building) of less than 30,000 sqft total would be adequate.
- ✓ All buses and employees are not on-site at any given time due to RTA's remote 'park-out' facilities and therefore the site does not need to accommodate parking for all of RTA's vehicles and staff. This condition is not expected to change due to the large dead-head costs of consolidating operations.
- ✓ A north-south orientation of the main building would be required to mitigate further floodplain issues.
- ✓ All vehicles will enter/exit the site from the future Elks Lane realignment, but a temporary driveway may need to be constructed depending on the phasing of the Elks Lane construction.
- ✓ Phasing of the construction of the facility was not seen as necessary but bid alternates for certain non-essential aspects of the facility may be considered.



Scheme 1v3 – See Appendix G

3.4 Post-Charrette Master Plan Refinement

The final site plan developed during the charrette only represented each department as one large area per department, with the exception of the maintenance bays. So, following the charrette, the design team continued to refine the general master plan direction defined during the charrette. The next iteration placed each space identified in the program onto the site plan. Each space was color-coded by department to graphically show continuity of each department, but also highlight the critical adjacencies. This development can clearly be seen in the refinement from Scheme 1v3 to Scheme 1v4. The following is the summary of these sequential refinements the full-size drawings can be found in Appendix G:

Scheme 1 v4:

- Building and Site Plan includes all programmed rooms/spaces applied to general department areas identified in previous version. Building Plan starts developing adjacencies and internal building circulation and utility spaces.
- Inclusion of landscaped areas around employee parking.
- Large bus parking on west edge shown as angled to allow for back-in parking.

Scheme 1 v5:

- Further development of landscaping, sidewalks, etc. on the Site Plan and tightening of building footprint.

The design team felt that further due diligence should be given to attempting to develop two-story building options to evaluate whether this was a viable option to reduce building footprint and free-up site area. Schemes 3 and 4 are the design team's attempt at these options.

Scheme 3 – Two Story Option 1:

- Admin department mostly located on second floor, but few other spaces would be appropriate for a second floor.
- Increases available site area around the front of the building and would allow for some non-revenue parking on the east side of the building.

Scheme 4 – Two Story Option 2:

- Focus on 'regularizing' the structure to evaluate if efficient structural system could be used.
- Option further increases available site area around the north/east corner of the building.

Ultimately the two-story schemes did not prove to be viable options primarily due to several factors. There is not a suitable split between spaces that would be suitable for a second level vs the ground level. RTA's desire is to avoid a separation between management and the rest of the staff. The small nature of the building creates a disproportionate amount of vertical circulation (stairs and elevator) relative to the area served. A two-story option would also increase the cost of the facility relative to a single-story option. Lastly, the area gained on the ground level was not significant enough to overcome the negatives of the two-story options.

Scheme 1 v6:

- Massages building into a more regular footprint and pushes Operations department further west into bus yard.
- Moved Chassis Wash to be paired with Wash Bay to free-up space at south end of main building.
- No change to general site plan layout.

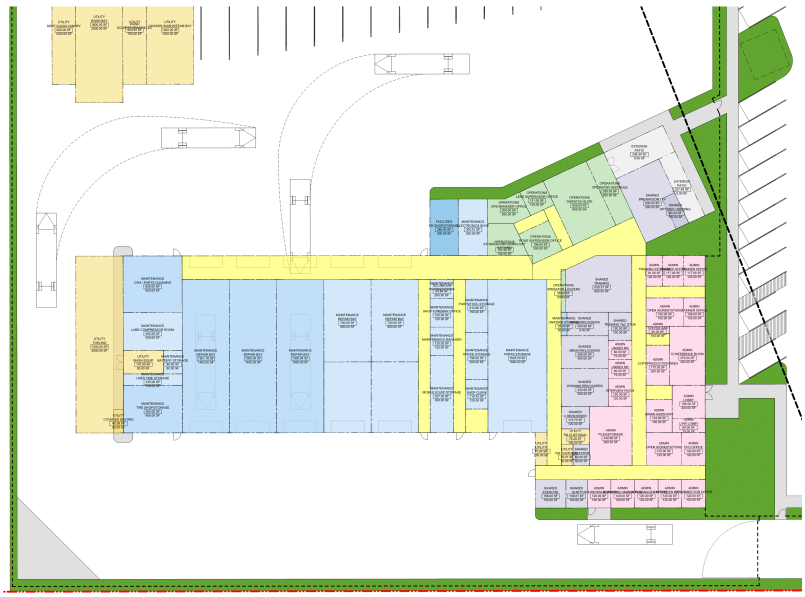
Scheme 1 v7:

- Version 7 is essentially the same as v6 but the Operations department and Break Room are angled to gesture this part of the building separately from the rest of the geometry of the building. Angled spaces help identify employee entry through Break Room and Dispatch area. Plan change also helps align Dispatch operations to the bus yard, increasing visibility.
- Site plan same as previous versions.

Schemes 3, 4, 1v6, and 1v7 were reviewed with RTA via Skype conference call on 10/19/18. The following is a summary of the items discussed:

- RTA agreed that the two-story options were not a direction that the agency wanted to pursue.
- RTA staff had questions regarding the functionality and layout of the dispatch suite. The design team assured RTA that further clarity would be developed with the forthcoming Concept Design.
- RTA liked the flow and shape of the employee entry.
- RTA requested that the Mechanics Workstation area be an enclosed, clean, and quiet space for them to work. Space should be more like an office than a shop.
- RTA would like the design team to study flipping the Conference Room with the Lobby and Admin Assistant so that the Admin department would be better consolidated.
- The design team was directed to proceed with developing the Final Master Plan for RTA's review.

Stantec proceeded with addressing RTA's comments for the Final Master Plan. The Final Master Plan drawings (see Appendix H) were transmitted to RTA on 10/24/18 for their review and comment prior to the design team proceeding with the Conceptual Design of the facility. RTA provided comments on the Final Master Plan, see Appendix J – Final Master Plan Comments from RTA. RTA's comments were reviewed with the Stantec design team on 11/1/18 via Skype conference call. RTA's comments were relatively minor in nature and all comments would be addressed with the next iteration of the plans in the Concept Design phase.

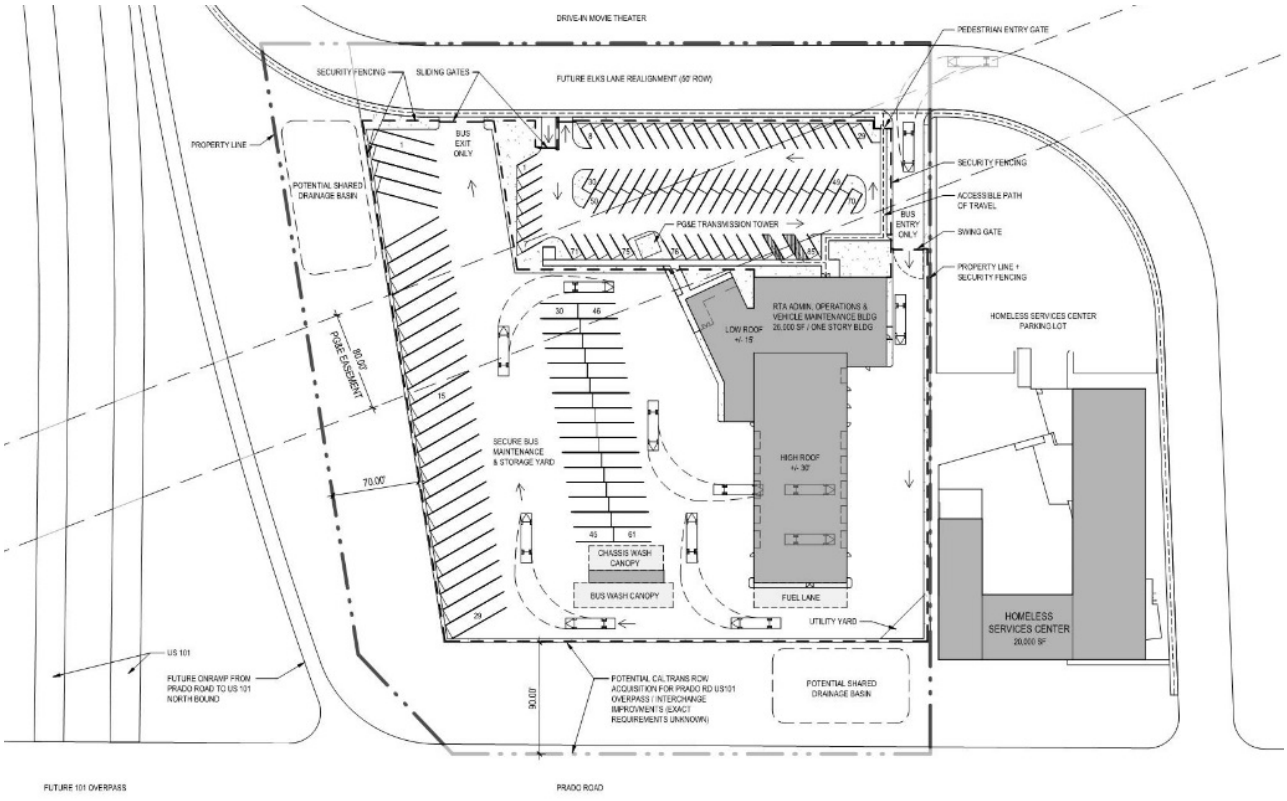


Final Master Plan – Building Plan for the new RTA Facility (See Appendix H for full-size plan)

4 Conclusion

The program review and initial master plan design charrette confirmed the site has the area required to accommodate RTA's facility and all departments (maintenance, service, operations, and administration), including adequate area for the appropriate number of fleet vehicles stored onsite, as well as adequate employee and visitor parking. The subsequent refinements to the Program and the Master Plan further confirmed feasibility of the project.

The initial space needs produced by RTA in 2013 was very generous in the amount of programmed square-footage and called for a facility that would have been slightly oversized. Through the programming meetings, master plan charrette, reviews, site visits, and coordination with project stakeholders have identified the full and appropriate long-term needs of the program. The selected site – while having some significant challenges – is adequate and capable of containing all the required areas and program. Collaboration with all authorities, stakeholders, and the client, during the programming and master planning process, has resulted in a site and building layout that captures the current and future needs of the agency. However, significant concern is still had by both the design team and RTA staff that the offsite improvements to the Prado Overpass and Elks Realignment projects will play a major role in the construction phasing of the new RTA facility. Close collaboration and coordination with the City of San Luis Obispo will need to happen in order to ensure all contingencies are planned for during the final design and construction phases of the project.



Master Plan Exhibit prepared for RTA

Appendix A Reference Documents

This appendix lists referenced material used to inform this document.

Date	Title	Author
1/7/2015	RTA Staff Report	RTA, Geoff Straw
9/2017	Initial Study - Mitigated Negative Declaration Report	RTA and Rincon Consultants
6/2010	City of San Luis Obispo Community Design Guidelines	City of San Luis Obispo
10/2018	City of San Luis Obispo Title 17 Zoning Regulations	City of San Luis Obispo
1/2015	City of San Luis Obispo Zoning Map	City of San Luis Obispo
5/2018	City of San Luis Obispo Standard Specifications & Engineering Standards (parking standards)	City of San Luis Obispo, Public Works Department
8/9/2012	County Code Ordinance - Title 19 Amendment (CALGreen Tier 1 requirements)	County of San Luis Obispo
12/2016	CALGreen Verification Guidelines - Tier 1 Checklist	State of California, Department of General Services

Appendix B Abbreviations & Definitions

This appendix lists abbreviations and definitions of terms used in this document.

Abbreviation	Unabbreviated Form
Agency	Refers to RTA
BEB	Battery Electric Bus
BMF	Bus Maintenance Facility
CALGreen	California Green Building Standards Code
CalTrans	California Department of Transportation
CEQA	California Environmental Quality Act
the City	City of San Luis Obispo
CPTED	Crime Prevention Through Environmental Design
CWAs	Common Work Areas
Design Team	Refers to Stantec and Stantec's subconsultants
Dims	Dimensions
E	east
FTA	Federal Transportation Administration
LOMR	Letter of Map Revision, refers to FEMA's flood insurance rate map
MEP	Mechanical, Electrical, & Plumbing engineering
N	north
NEPA	National Environmental Policy Act
O&M	Operations & Maintenance
OMF	Operations and Maintenance Facility
Qty	Quantity
RTA or SLO RTA	San Luis Obispo Regional Transit Authority
S	south
SE	southeast
S&I	Service and Inspections
Sqft	Square feet / Square foot / Square footage
this report	Master Plan Report, also known as "this document"
W	west
w/	with
w/o	without

Appendix C RTA Provided Data

The following are summaries and combined data provided by RTA during the Programming and Master Plan Charrette process:

- Summary Table – compiled by Stantec:
  - Fleet Count Summary
  - Count by Vehicle Type
- RTA Current Operating Statistics for Facility Planning Purposes – October 1, 2018
- RTA Fleet Roster - July 1, 2018
- RTA Summary of Typical SLO Bus Yard Weekday Vehicle Activity by Time of Day – October 1, 2018

SLO RTA : FLEET COUNT SUMMARY [2]

DESCRIPTION	CURRENT FLEET COUNT TOTAL	Large Vehicles (25ft and longer) Rev	Large Vehicles (25ft and longer) Non- Rev	Small Vehicles (Cars, SUV, Minivans) Rev	Small Vehicles (Cars, SUV, Minivans) Non-Rev	FUTURE FLEET COUNT FOR DESIGN TOTAL[4]	Large Vehicles (25ft and longer) Rev	Large Vehicles (25ft and longer) Non_Rev	Smaller Vehicles (Cars, SUV, Minivans) Rev	Smaller Vehicles (Cars, SUV, Minivans) Non_Rev
RTA Fleet Vehicles	**89**	57	0	15	17	**109**	70	0	19	21
RTA Fleet Stored On-Site	**50**	28	0	10	12	**61**	35	0	13	15
RTA Fleet Stored Off-Site	**36**	29	0	5	5	**44**	36	0	7	7
CURRENT FLEET COUNT BY FUEL TYPE						**FUTURE FLEET COUNT FOR DESIGN (PRE-ELECTRIFICATION OF FLEET)**				
RTA Gasoline	**47**	15	16	0	16	**58**	19	20	0	20
RTA Diesel	**42**	42	0	0	0	**52**	52	0	0	0

SLO RTA : COUNT by VEHICLE TYPE [2,3]

	VEHICLE TYPES	Vehicle Count for Maintenance TOTAL	Vehicle Count for Storage-Parking SLO Revenue Fleet	SLO Non-Rev Fleet	Paso Revenue Fleet	Paso Non-Rev Fleet	SCT Revenue Fleet	SCT Non-Rev Fleet	Cambria Revenue Fleet	Cambria Non-Rev Fleet	Nipomo Revenue Fleet	Nipomo Non-Rev Fleet
Maintained in LONG Repair	Buses 45 ft long	4	3	0	1	0	0	0	0	0	0	0
	Buses 35 to 40 long	31	16	0	7	0	8	0	0	0	0	0
	Trolley Buses	2	0	0	0	0	2	0	0	0	0	0
	Mini Bus	7	1	0	6	0	0	0	0	0	0	0
	Cutaways	13	8	0	1	0	0	0	2	0	2	0
Maintained in SHORT Repair	Pickup Trucks	4	0	3	0	0	0	1	0	0	0	0
	Minivans	19	10	2	4	0	1	2	0	0	0	0
	SUVs	4	0	3	0	1	0	0	0	0	0	0
	Cars	4	0	3	0	1	0	0	0	0	0	0
	Forklift	1	0	1	0	0	0	0	0	0	0	0
CURRENT TOTAL		89	38	12	19	2	11	3	2	0	2	0
FUTURE Fleet Increase[1]		23	9	3	4	1	3	1	1	0	1	0
DESIGN TOTAL[4]		**112**	**47**	**15**	**23**	**3**	**14**	**4**	**3**	**0**	**3**	**0**

Notes:
1. Future increase in fleet = 1% compounded per year for 20 year planning horizon = 22%. Numbers are rounded-up to be conservative.
2. See RTA provided vehicle data for reference - Appendix C
3. Vehicle Types are catagorized for convenience for planning purposes.
4. Total project fleet counts are different between the two tables due to rounding calculations of each table. The higher of the two values will be used for design purposes.

NOTE: Summary Tables compilied by Stantec from RTA provided data.

RTA Current Operating Statistics for Facility Planning Purposes

1-Oct-2018

MEASURE		UNITS
Maximum number RTA employee cars on-site (1:00-1:59PM) (Note 1)		57
Number of RTA employees arriving during 7:00 to 9:00 morning peak		19
Number of RTA buses departing during 7:00 to 9:00 morning peak		6
Number of RTA buses arriving during 4:00 to 6:00 afternoon peak		4
Number of RTA employees departing during 4:00 to 6:00 afternoon peak		16
Max number of RTA full-size buses parked on-site (Note 2)		23
Max number of RTA minivans parked on-site (double-stacked)		10
Max number of RTA cutaway vans parked on-site (Note 3)		8
Number of RTA staff cars, trucks & vans parked on-site		9
Annual RTA & SCAT use of Hazardous Materials:		
	Motor Oils (15W40 & 5W20, gallons)	2,960
	Gear Oil (85W140, gallons)	175
	Coolant (gallons)	113
	Auto Transmission Fluid (gallons)	1,060
	Grease (pounds)	110
Annual RTA use of natural gas for facility heating purposes (therms)		1,128
Annual RTA use of electricity (Kilowatts)		185,900
Annual RTA use of water (potable & irrigation combined, gallons)		565,488
Annual RTA service miles		1,494,405
Annual Paso Express & Paso DAR service miles		98,484
Annual SCT service miles		212,964
Annual number of RTA & SCAT vehicle Preventive Maintenance Inspections, by type:		
	PMI-A (every 3,000 miles)	572
	PMI-B (every 6,000 miles)	409
	PMI-C (every 12,000 miles)	196
	PMI-D (every 24,000 miles)	80
Annual RTA use of red-diesel for SLO-based buses		271,400
Annual RTA use of gasoline for SLO-based buses		93,930

Note 1: Many RTA employees carpool or commute by bus, or report to park-outs. See attached summary for activity by hour.

Note 2: Six Paso Express, 2 Paso DAR, 6 Runabout, and 8 full-size RTA buses parked in Paso Robles yard. Eight 35-foot SCT, 1 40-foot RTA, two Trolley, and one Runabout van parked-out in Arroyo Grande. Five non-revenue cars also split between Paso & Arroyo.

Note 3: Four DAR and cutaway fixed-route vans parked-out (2 DAR in Nipomo & 2 FR in Cambria)

RTA Fleet Roster - Updated 2/15/2019

VEHICLE #	LIFE MILES	MAKE	MODEL	YEAR	DEPARTMENT	FUEL	INSERVICE DATE	PASSENGER COUNT		Stored on-site (Y/N)	Serviced on-site (Y/N)	Non-Revenue Fleet (Y/N)	Future Fleet	Fuel gallons	PM Annual Hours		Vehicle Info (TBC) Type	L (in)	W (in)	WB (in)	H (in)	Weight (lbs)
Active																						
159	627,816	GILLIG	PHANTOM	2003	RTA-FIXED	Diesel	9/12/2013	43 + 2 w/c	To be replaced with 2019 Gillig low-floor		Y	N	Y (see note in col. L)	164	87		Bus 40	480	102	284	116	
161	770,382	GILLIG	PHANTOM	2003	RTA-FIXED	Diesel	9/30/2003	43 + 2 w/c	To be replaced with 2019 Gillig low-floor		Y	N	Y (see note in col. L)	148	133		Bus 40	480	102	284	116	
162	690,387	GILLIG	PHANTOM	2003	RTA-FIXED	Diesel	9/30/2003	43 + 2 w/c	To be replaced with 2019 Gillig low-floor		Y	N	Y (see note in col. L)	224	86		Bus 40	480	102	284	116	
167	515,183	GILLIG	PHANTOM	2008	RTA-FIXED	Diesel	6/1/2008	43 + 2 w/c			Y	N	Y	672	203		Bus 40	480	102	284	116	
168	515,633	GILLIG	PHANTOM	2008	RTA-FIXED	Diesel	6/1/2008	43 + 2 w/c			Y	N	Y	886	221		Bus 40	480	102	284	116	
201	459,831	GILLIG	PHANTOM	2003	SCT-FIXED	Diesel	7/30/2003	35 + 2w/c		SCT	Y	N	Y	0	134	*	Bus 40	480	102	284	116	
204	493,976	GILLIG	PHANTOM	2003	SCT-FIXED	Diesel	7/30/2003	35 + 2w/c		SCT	Y	N	Y	0	187	*	Bus 40	480	102	284	116	
504	175,486	DODGE	RAM 2500	2002	SCT-SUPPORT	Unleaded	8/17/2009			SCT	Y	Y	Y	0	29		Pickup Trk	224.1	79.7	169		
506	70,753	HONDA	CIVIC HYBRID	2009	RTA-SUPPORT	Unleaded	2/5/2010				Y	Y	Y	0	23		Car	177.3	69	106.3		
511	48,641	FORD	F-250	2014	RTA-SUPPORT	Unleaded	3/1/2014				Y	Y	Y	0	31		Pickup Trk	263	110	172.4		
512	26,518	FORD	F-250	2014	RTA-SUPPORT	Unleaded	3/1/2014				Y	Y	Y	0	27		Pickup Trk	263	110	172.4		
513	59,462	FORD	FOCUS	2014	RTA-SUPPORT	Unleaded	3/1/2014			PASO	Y	Y	Y	0	26		Car	171.6	71.8	104.3		2,948
514	82,084	FORD	FOCUS	2014	RTA-SUPPORT	Unleaded	3/1/2014				Y	Y	Y	0	21		Car	171.6	71.8	104.3		2,948
515	81,225	FORD	FOCUS	2014	RTA-SUPPORT	Unleaded	3/1/2014				Y	Y	Y	0	24		Car	171.6	71.8	104.3		2,948
516	52,703	DODGE	GRAND CARAVAN	2014	SCT-SUPPORT	Unleaded	9/16/2014			SCT	Y	Y	Y	0	27		Minivan	202.8	88.5	121.2	68.9	6,050
517	27,120	DODGE	GRAND CARAVAN	2014	SCT-SUPPORT	Unleaded	11/15/2014			SCT	Y	Y	Y	0	33		Minivan	202.8	88.5	121.2	68.9	6,050
518	69,920	FORD	ESCAPE	2015	RTA-SUPPORT	Unleaded	12/18/2014			PASO	Y	Y	Y	0	26		SUV	178.1	81.8	105.9	66.3	3,769
519	107,165	FORD	ESCAPE	2015	RTA-SUPPORT	Unleaded	12/18/2014				Y	Y	Y	0	33		SUV	178.1	81.8	105.9	66.3	3,769
520	25,592	FORD	ESCAPE	2015	RTA-SUPPORT	Unleaded	12/18/2014				Y	Y	Y	0	26		SUV	178.1	81.8	105.9	66.3	3,769
521	25,470	FORD	ESCAPE	2017	RTA-SUPPORT	Unleaded	7/25/2016				Y	Y	Y	0	29		SUV	178.1	81.8	105.9	66.3	3,769
522	23,879	FORD	F-250	2016	RTA-SUPPORT	Unleaded	8/4/2016				Y	Y	Y	0	18		Pickup Trk	178.1	81.8	105.9	66.3	3,769
523	59	TOYOTA	FORKLIFT	2016	RTA-SUPPORT	Unleaded	8/23/2016				Y	Y	Y	0	0		Forklift					
635	409,150	MCI	102-DL3	2000	RTA-FIXED	Diesel	1/26/2016	43 + 2 w/c		PASO	Y	N	Y	682	102		Bus 45	545	102	336	138	48,000
637	398,391	MCI	102-DL3	2000	RTA-FIXED	Diesel	1/26/2016	43 + 2 w/c			Y	N	Y	0	0		Bus 45	545	102	284	116	48,000
638	147,094	MCI	102-DL3	2000	RTA-FIXED	Diesel	1/26/2016	43 + 2 w/c			Y	N	Y	376	102		Bus 45	545	102	284	116	48,000
644	394,874	MCI	102-DL3	2000	RTA-FIXED	Diesel	1/26/2016	43 + 2 w/c			Y	N	Y	0	116		Bus 45	545	102	284	116	48,000
723	164,197	CHEVY	EL DORADO	2009	PASO-FIXED	Diesel	6/1/2014	29 + 2 w/c		PASO	Y	N	Y	280	165		MiniBus	301	96	182	115	14,500
724	79,722	FORD SD	EL DORADO	2012	PASO-FIXED	Diesel	6/1/2014	29 + 2 w/c		PASO	Y	N	Y	0	0		MiniBus	301	96	186	115	14,500
725	84,204	INTERNATIONAL	EL DORADO	2013	PASO-FIXED	Diesel	6/1/2014	29 + 2 w/c		PASO	Y	N	Y	0	129		MiniBus	301	96	182	115	14,500
726	79,711	INTERNATIONAL	EL DORADO	2013	PASO-FIXED	Diesel	6/1/2014	29 + 2 w/c		PASO	Y	N	Y	0	157		MiniBus	301	96	182	115	14,500
727	91,479	INTERNATIONAL	EL DORADO	2013	PASO-FIXED	Diesel	6/1/2014	29 + 2 w/c		PASO	Y	N	Y	353	183		MiniBus	301	96	182	115	14,500
728	91,578	INTERNATIONAL	EL DORADO	2013	PASO-FIXED	Diesel	6/1/2014	29 + 2 w/c		PASO	Y	N	Y	0	156		MiniBus	301	96	182	115	14,500
729	49,157	DODGE	BRAUN ENTRAVAN	2013	PASO-DAR	Unleaded	6/1/2014	4 + 1 w/c		PASO	Y	N	Y	0	33		MiniVan	202.7953	78.661	121.18	67.9	6,039
730	48,899	DODGE	BRAUN ENTRAVAN	2013	PASO-DAR	Unleaded	6/1/2014	4 + 1 w/c		PASO	Y	N	Y	0	43		MiniVan	202.7953	78.661	121.18	67.9	6,039
1011	259,548	THOR	EZ RIDER	2010	SCT-FIXED	Diesel	11/17/2010	43 + 2 w/c		SCT	Y	N	Y	0	147	*	Bus 40					
1012	186,554	THOR	EZ RIDER	2010	SCT-FIXED	Diesel	11/17/2010	43 + 2 w/c		SCT	Y	N	Y	0	147	*	Bus 40					
1013	98,065	DOUBLE K	VILLAGER	2011	CO-TROLLEY	Unleaded	2/2/2011	29 + 2 w/c		SCT	Y	N	Y	0	50		Trolley	384	99	160	138	32,000
1101	198,390	EL DORADO	BRT	2011	RTA-FIXED	Diesel	7/1/2011	37 + 2 w/c			Y	N	Y	171	115		MiniBus					
1201	181,174	DODGE	BRAUN	2012	RTA-SUPPORT	Unleaded	2/1/2012	4 + 1 w/c			Y	Y	Y	0	39		Minivan	202.8	88.5	121.2	68.9	6,050
1203	144,468	DODGE	BRAUN	2012	RTA-SUPPORT	Unleaded	7/18/2012	4 + 1 w/c			Y	Y	Y	0	31		Minivan	202.8	88.5	121.2	68.9	6,050
1204	116,805	FORD	STARCRAFT	2013	CO-DAR	Unleaded	12/1/2012	20 + 2 w/c		NIPOMO	Y	N	Y	0	89		Cutaway	300				
1301	298,501	GILLIG	LOW FLOOR	2013	RTA-FIXED	Diesel	6/1/2013	38 + 2 w/c			Y	N	Y	456	248		Bus 40	480	102	284	116	
1302	249,246	GILLIG	LOW FLOOR	2013	RTA-FIXED	Diesel	8/7/2013	38 + 2 w/c			Y	N	Y	1420	171		Bus 40	480	102	284	116	
1303	325,354	GILLIG	LOW FLOOR	2013	RTA-FIXED	Diesel	8/7/2013	38 + 2 w/c			Y	N	Y	1386	228		Bus 40	480	102	284	116	
1304	294,862	GILLIG	LOW FLOOR	2013	RTA-FIXED	Diesel	8/7/2013	38 + 2 w/c			Y	N	Y	966	202		Bus 40	480	102	284	116	
1305	269,605	GILLIG	LOW FLOOR	2013	RTA-FIXED	Diesel	8/7/2013	38 + 2 w/c			Y	N	Y	1244	177		Bus 40	480	102	284	116	
1306	299,805	GILLIG	LOW FLOOR	2013	RTA-FIXED	Diesel	8/7/2013	38 + 2 w/c			Y	N	Y	1386	213		Bus 40	480	102	284	116	
1307	303,350	GILLIG	LOW FLOOR	2013	RTA-FIXED	Diesel	8/7/2013	38 + 2 w/c			Y	N	Y	1346	180		Bus 40	480	102	284	116	
1308	233,363	GILLIG	LOW FLOOR	2013	SCT-FIXED	Diesel	8/14/2013	32 + 2 w/c		SCT	Y	N	Y	1116	167	*	Bus 40	480	102	284	116	
1309	216,668	GILLIG	LOW FLOOR	2013	SCT-FIXED	Diesel	8/14/2013	32 + 2 w/c		SCT	Y	N	Y	814	191	*	Bus 40	480	102	284	116	
1310	228,314	GILLIG	LOW FLOOR	2013	SCT-FIXED	Diesel	8/14/2013	32 + 2 w/c		SCT	Y	N	Y	976	149	*	Bus 40	480	102	284	116	
1401	148,707	FORD	STARCRAFT E450	2014	RTA-RUNABOUT	Unleaded	9/5/2014	8 + 2 w/c			Y	N	Y	0	75		Cutaway	226.5	106	176		14,500
1402	135,047	FORD	STARCRAFT E450	2014	RTA-RUNABOUT	Unleaded	9/4/2014	8 + 2 w/c			Y	N	Y	0	68		Cutaway	226.5	106	176		14,500
1403	134,173	FORD	STARCRAFT E450	2014	RTA-RUNABOUT	Unleaded	9/5/2014	8 + 2 w/c			Y	N	Y	0	68		Cutaway	226.5	106	176		14,500
1404	142,498	FORD	STARCRAFT E450	2014	RTA-RUNABOUT	Unleaded	9/20/2014	8 + 2 w/c			Y	N	Y	0	72		Cutaway	226.5	106	176		14,500
1405	138,249	FORD	STARCRAFT E450	2014	RTA-RUNABOUT	Unleaded	9/21/2014	8 + 2 w/c			Y	N	Y	0	82		Cutaway	226.5	106	176		14,500
1406	125,793	FORD	STARCRAFT E450	2014	RTA-RUNABOUT	Unleaded	10/30/2014	8 + 2 w/c			Y	N	Y	0	73		Cutaway	226.5	106	176		14,500
1407	131,147	FORD	STARCRAFT E450	2014	RTA-RUNABOUT	Unleaded	10/30/2014	8 + 2 w/c			Y	N	Y	0	85		Cutaway	226.5	106	176		14,500
1408	122,156	FORD	STARCRAFT E450	2014	RTA-RUNABOUT	Unleaded	10/30/2014	8 + 2 w/c		Paso	Y	N	Y	0	93		Cutaway	226.5	106	176		14,500

1501	218,056	GILLIG	LOW FLOOR	2015	RTA-FIXED	Diesel	4/1/2015	38 + 2 w/c		Paso	Y	N	Y	1357	206		Bus 40	480	102	284	116		
1502	195,000	GILLIG	LOW FLOOR	2015	RTA-FIXED	Diesel	4/1/2015	38 + 2 w/c		Paso	Y	N	Y	1314	146		Bus 40	480	102	284	116		
1503	215,452	GILLIG	LOW FLOOR	2015	RTA-FIXED	Diesel	4/1/2015	38 + 2 w/c		Paso	Y	N	Y	1151	201		Bus 40	480	102	284	116		
1504	215,429	GILLIG	LOW FLOOR	2015	RTA-FIXED	Diesel	4/1/2015	38 + 2 w/c		Paso	Y	N	Y	501	175		Bus 40	480	102	284	116		
1505	207,587	GILLIG	LOW FLOOR	2015	RTA-FIXED	Diesel	4/1/2015	38 + 2 w/c		Paso	Y	N	Y	711	182		Bus 40	480	102	284	116		
1506	223,486	GILLIG	LOW FLOOR	2015	RTA-FIXED	Diesel	4/1/2015	38 + 2 w/c		Paso	Y	N	Y	1153	170		Bus 40	480	102	284	116		
1507	214,124	GILLIG	LOW FLOOR	2015	RTA-FIXED	Diesel	4/1/2015	38 + 2 w/c		Paso	Y	N	Y	1867	158		Bus 40	480	102	284	116		
1508	206,544	GILLIG	LOW FLOOR	2015	RTA-FIXED	Diesel	4/1/2015	38 + 2 w/c			Y	N	Y	1998	225		Bus 40	480	102	284	116		
1509	154,808	GILLIG	LOW FLOOR	2015	SCT-FIXED	Diesel	4/1/2015	38 + 2 w/c		SCT	Y	N	Y	841	121	*	Bus 40	480	102	284	116		
1510	157,775	FORD	STARCRAFT E450	2015	RTA-FIXED	Unleaded	10/19/2015	20 + 2 w/c		CAMBRIA	Y	N	Y	377	138		Cutaway	300	106	176		14,500	
1511	63,547	FORD	STARCRAFT E450	2015	CO-DAR	Unleaded	10/19/2015	20 + 2 w/c		NIPOMO	Y	N	Y	0	57		Cutaway	300	106	176		14,500	
1512	166,564	FORD	STARCRAFT E450	2015	RTA-FIXED	Unleaded	10/19/2015	20 + 2 w/c		CAMBRIA	Y	N	Y	1004	156		Cutaway	300	106	176		14,500	
1601	36,996	DODGE	BRAUN	2015	RTA-RUNABOUT	Unleaded	4/1/2016	5 + 1 w/c		Paso	Y	N	Y	0	34		Minivan	202.8	88.5	121.2	68.9	6,050	
1602	37,891	DODGE	BRAUN	2015	RTA-RUNABOUT	Unleaded	4/1/2016	5 + 1 w/c		Paso	Y	N	Y	0	33		Minivan	202.8	88.5	121.2	68.9	6,050	
1603	47,036	DODGE	BRAUN	2015	RTA-RUNABOUT	Unleaded	4/1/2016	4 + 1 w/c		SCT	Y	N	Y	0	33		Minivan	202.8	88.5	121.2	68.9	6,050	
1604	52,617	DODGE	BRAUN	2015	RTA-RUNABOUT	Unleaded	4/1/2016	4 + 1 w/c			Y	N	Y	0	39		Minivan	202.8	88.5	121.2	68.9	6,050	
1605	50,767	DODGE	BRAUN	2015	RTA-RUNABOUT	Unleaded	4/1/2016	4 + 1 w/c			Y	N	Y	0	39		Minivan	202.8	88.5	121.2	68.9	6,050	
1606	58,736	DODGE	BRAUN	2015	RTA-RUNABOUT	Unleaded	4/1/2016	4 + 1 w/c			Y	N	Y	0	36		Minivan	202.8	88.5	121.2	68.9	6,050	
1607	54,597	DODGE	BRAUN	2015	RTA-RUNABOUT	Unleaded	4/1/2016	4 + 1 w/c			Y	N	Y	0	42		Minivan	202.8	88.5	121.2	68.9	6,050	
1608	64,915	FORD	STARCRAFT E450	2016	RTA-RUNABOUT	Unleaded	6/1/2016	8 + 2 w/c			Y	N	Y	0	60		Cutaway	226.5	106	176		14,500	
1701	27,202	DODGE	BRAUN	2017	RTA-RUNABOUT	Unleaded	3/1/2017	4 + 1 w/c			Y	N	Y	0	31		Minivan	202.8	88.5	121.2	68.9	6,050	
1702	32,220	DODGE	BRAUN	2017	RTA-RUNABOUT	Unleaded	3/1/2017	4 + 1 w/c			Y	N	Y	0	37		Minivan	202.8	88.5	121.2	68.9	6,050	
1703	34,401	DODGE	BRAUN	2017	RTA-RUNABOUT	Unleaded	3/1/2017	4 + 1 w/c			Y	N	Y	0	36		Minivan	202.8	88.5	121.2	68.9	6,050	
1704	31,975	DODGE	BRAUN	2017	RTA-RUNABOUT	Unleaded	3/1/2017	4 + 1 w/c			Y	N	Y	0	35		Minivan	202.8	88.5	121.2	68.9	6,050	
1705	30,966	DODGE	BRAUN	2017	RTA-RUNABOUT	Unleaded	3/1/2017	4 + 1 w/c			Y	N	Y	0	29		Minivan	202.8	88.5	121.2	68.9	6,050	
1706	23,343	DODGE	BRAUN	2017	RTA-RUNABOUT	Unleaded	3/1/2017	4 + 1 w/c			Y	N	Y	0	35		Minivan	202.8	88.5	121.2	68.9	6,050	
1707	11,295	FORD F550	VILLAGER	2017	CO-TROLLEY	Unleaded	5/16/2017	29 + 2 w/c		SCT	Y	N	Y	727	88		Trolley	384	99	160	138	32,000	
1801	0	GILLIG	LOW FLOOR	2018	RTA-FIXED	Diesel	9/1/2018	38 + 2 w/c	Have replaced 2003 Gillig Phantoms below		Y	N	Y	0	0		Bus 40	480	102	284	116		
1802	0	GILLIG	LOW FLOOR	2018	RTA-FIXED	Diesel	9/1/2018	38 + 2 w/c	Have replaced 2003 Gillig Phantoms below		Y	N	Y	0	0		Bus 40	480	102	284	116		
1803	0	GILLIG	LOW FLOOR	2018	RTA-FIXED	Diesel	9/1/2018	38 + 2 w/c	Have replaced 2003 Gillig Phantoms below		Y	N	Y	0	0		Bus 40	480	102	284	116		

Inactive (still on property) — Out of Service

163	707,326	GILLIG	PHANTOM	2003	RTA-FIXED	Diesel	9/30/2003	43 + 2 w/c	Authorized for salvage by RTA Board				N	0	0		STD 40	480	102	284	116		
164	754,800	GILLIG	PHANTOM	2003	RTA-FIXED	Diesel	9/30/2003	43 + 2 w/c	Authorized for salvage by RTA Board				N	0	0		STD 40	480	102	284	116		
165	885,653	GILLIG	PHANTOM	2003	RTA-FIXED	Diesel	9/30/2003	43 + 2 w/c	Authorized for salvage by RTA Board				N	0	0		STD 40	480	102	284	116		

*Bus is actually 35', but is scheduled as 40' for planning purposes

RTA Summary of Typical SLO Busyard Weekday Vehicle Activity By Time of Day

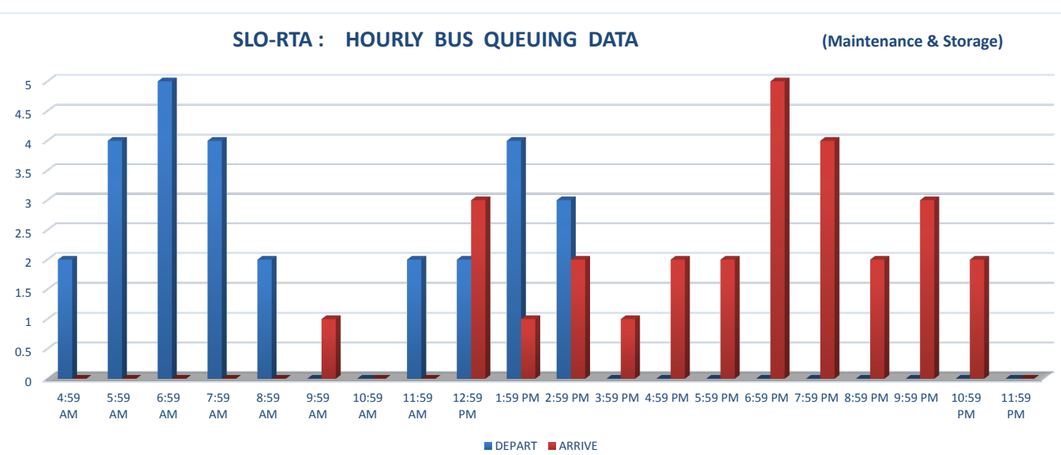
1-Oct-2018

From:	To:	Admin. Staff Car Arrive	Ops. Staff Car Arrive	Maint. Staff Car Arrive	Bus Drivers						Maint. Staff Car Depart	Ops. Staff Car Depart	Admin. Staff Car Depart	DAILY EMPLOYEE CAR ACTIVITY		DAILY MINIBUS ACTIVITY		DAILY FULL-SIZE BUS ACTIVITY		TOTAL VEHICLE ACTIVITY	
					Bus Driver Car Arrive	Minibus Depart	Full-Size Bus Depart	Full-Size Bus Arrive	Minibus Arrive	Bus Driver Car Depart				ARRIVE AT BUS YARD	DEPART BUS YARD	DEPART BUS YARD	ARRIVE BACK AT BUS YARD	DEPART BUS YARD	ARRIVE BACK AT BUS YARD	DEPART BUS YARD	ARRIVE AT BUS YARD
4:00 AM	4:59 AM	0	3	2	2	0	2	0	0	0	0	0	0	7	0	0	0	2	0	**2**	**7**
5:00 AM	5:59 AM	0	0	0	4	1	3	0	0	0	0	0	0	4	0	1	0	3	0	**4**	**4**
6:00 AM	6:59 AM	0	2	4	5	2	3	0	0	0	0	0	0	11	0	2	0	3	0	**5**	**11**
7:00 AM	7:59 AM	0	1	3	4	4	0	0	0	0	0	0	0	8	0	4	0	0	0	**4**	**8**
8:00 AM	8:59 AM	7	5	3	2	2	0	0	0	0	0	0	0	17	0	2	0	0	0	**2**	**17**
9:00 AM	9:59 AM	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	1	**1**	**1**
10:00 AM	10:59 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
11:00 AM	11:59 AM	0	0	0	2	0	2	0	0	0	0	0	0	2	0	0	0	2	0	**2**	**2**
12:00 PM	12:59 PM	0	1	0	2	0	2	3	0	3	0	0	0	3	3	0	0	2	3	**5**	**6**
1:00 PM	1:59 PM	0	2	3	4	1	3	1	0	1	4	3	0	9	8	1	0	3	1	**12**	**10**
2:00 PM	2:59 PM	0	0	0	3	2	1	1	1	2	2	0	0	3	4	2	1	1	1	**7**	**5**
3:00 PM	3:59 PM	0	0	0	0	0	0	0	1	1	3	2	0	0	6	0	1	0	0	**6**	**1**
4:00 PM	4:59 PM	0	0	0	0	0	0	0	2	2	3	1	4	0	10	0	2	0	0	**10**	**2**
5:00 PM	5:59 PM	0	0	0	0	0	0	0	2	2	0	5	3	0	10	0	2	0	0	**10**	**2**
6:00 PM	6:59 PM	0	0	0	0	0	0	2	3	5	0	0	0	0	5	0	3	0	2	**5**	**5**
7:00 PM	7:59 PM	0	0	0	0	0	0	2	2	4	0	0	0	0	4	0	2	0	2	**4**	**4**
8:00 PM	8:59 PM	0	0	0	0	0	0	2	0	2	0		0	0	2	0	0	0	2	**2**	**2**
9:00 PM	9:59 PM	0	0	0	0	0	0	2	1	3	0	1	0	0	4	0	1	0	2	**4**	**3**
10:00 PM	10:59 PM	0	0	0	0	0	0	2	0	2	3	2	0	0	7	0	0	0	2	**7**	**2**
11:00 PM	11:59 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Total Activity		**7**	**14**	**15**	**28**	**12**	**16**	**16**	**12**	**28**	**15**	**14**	**7**	**64**	**64**	**12**	**12**	**16**	**16**	**92**	**92**

(Summarized by Stantec)

TIME		TOTAL BUS + MINIBUS	
From	To:	DEPART	ARRIVE
4:00 AM	4:59 AM	2	0
5:00 AM	5:59 AM	4	0
6:00 AM	6:59 AM	5	0
7:00 AM	7:59 AM	4	0
8:00 AM	8:59 AM	2	0
9:00 AM	9:59 AM	0	1
10:00 AM	10:59 AM	0	0
11:00 AM	11:59 AM	2	0
12:00 PM	12:59 PM	2	3
1:00 PM	1:59 PM	4	1
2:00 PM	2:59 PM	3	2
3:00 PM	3:59 PM	0	1
4:00 PM	4:59 PM	0	2
5:00 PM	5:59 PM	0	2
6:00 PM	6:59 PM	0	5
7:00 PM	7:59 PM	0	4
8:00 PM	8:59 PM	0	2
9:00 PM	9:59 PM	0	3
10:00 PM	10:59 PM	0	2
11:00 PM	11:59 PM	0	0
Total Activity		**28**	**28**

SLO-RTA : HOURLY BUS QUEUING DATA (Maintenance & Storage)



Appendix D Final Space Needs Program

The following is the recommended space needs programs for each major space broken down by department as described earlier in Section 2 of this report.

Stantec

San Luis Obispo RTA Bus O&M Facility

Space Needs Program

Stantec Project Number: 2270449601

Updated: 2/14/2018

SPACE CATEGORY	SPACE NAME	FUNCTION	SPACE STANDARD W x L x H	MIN SIZE	PROGRAM QUANTITY TOTAL STAFF	SHIFTS	VISITORS	PEAK	SPACE	AREA SQFT	ADJACENCY PRIMARY	ADJACENCY SECONDARY	Equipment / Furniture	Special Requirements	NOTES
MAINTENANCE	Maintenance Manager	Admin for Maintenance; private office		120	1	1	2	3	1	120	View of Shop	Shop Foreman	File Cabinets, Workstation (TYP)		
	Shop Foreman	Admin for Maintenance; private office		120	1	1	2	3	1	120	Direct view of Shop floor		File Cabinets; Security Monitor (TBD), Workstation (TYP)		
	Shop / Accounting Clerk	Receive parts, invoicing; open office suite w/ access to exterior		120	1	1	1	2	1	120	adjacent to OH receivnging door		File Cabinets, Workstation w/ receiving counter		
	File / Office Storage	General office/supply storage room		200	-	-	-	-	1	200	Maint Offices, Clerk		File cabinets, open shelves		
	Mechanics / Utility Workers	*Program Line for staffing only; see Restrooms/Lockers in Shared Department for*		0	13	3	6	12	0	0	-				Staff: 8 mechanics, 4 utility, + 1 future mech (general 0.5% growth in staff qty)
	Uniform Storage	Alcove for clean uniform rack and dirty bin		50	-	-	1	1	1	50	ADJ to Locker Rooms		Closet Rod and Shelves		
	Techician Counter, Library	Technicians counter/workstation: Parts ordering; entering work order data into computerized		200	-	-	2	2	1	200	open to shop, adjacent to maint offices and parts storage		Storage Shelves, file cabinets, (3) small workstations		
	Repair Bays - Large Vehicles (25' - 45')	Drive-thru repair bays w/ bus hoists (preferred) to perform brake repair / tire change; Parallelogram (TBD) for Inspections Bay; Fall-protection in one bay for OH Repair (53 Total = 32 Buses + 2 Trollys + 9 Minibus + 9 Future Buses)	20 x 70 x 20	1,400	-	-	-	-	3	4,200	Battery Room; Parts Storage		Work bench w/ vice at each bay, other mobile equipment and tool boxes	OH Repair Jobs Require: one bay with roof top work requiring fall protection (line or gantry); Roof top antennas, A/C and batteries.	Minor welding capability, minor touch-up paint; NO Frame Straightening; Rolling Dolly for Engines / Rolling Pick for transmissions; engine hoist for Vans; re/re brakes. Require Service Reels for: (2)EO, (2)TO, 1(C), 1(G). Farm-out mid-life refurb. Consider monorail and wide bay for battery bus; possible double deckers.
	Repair Bays - Small Vehicles (< 25')	(54 Total vehicles max 25' long = 45 + 9 Future)	20 x 40 x 20	800	-	-	-	-	4	3,200					
	Common Work Area	Space to perform minor fabrications		450	-	-	1	-	1	450	Repair Bays		grinder, drill press, work bench, weld table, welding equip., etc.		
	Tire Shop and Storage	Space to store new and used tires on multi-tier (currently in 3-level) racks.	25 x 24	600	-	-	1	-	1	600			Multi-tier racks for 106 new tiers; 60 old tires		3 tire sizes (cutaways, minivans, buses) 305/85-R22.5 Tires x 106 Total (240L x 60D x 48H - 5 Tier Rack); 14ft clearance for Forklift + 160 sqft clearance for Tire equipment.
	Battery Room	Enclosed room for battery storage (10 new + 10 old)	10 x 10	100	-	-	-	-	1	100	Repair Shop		non-corrosive charging rack/bench	Double doors, acid resist. floor finish; emergency wash. Non-corrosive exhaust system.	Accessed by Pallet Jack
	Electronics Shop	Maintenance/Repair of onboard eletrical equipment	12 x 20	240	-	-	-	-	1	240	Adjacent to spaces with cleaner environment, away from repair bays		Work bench, task lighting, storage racks/shelving	Does NOT require special clean-room requirements	Repair functions include multiplex wiring; electronic fareboxes, GPS-based automatic vehicle location system; Destination signs
	Lube / Compressor Room	Enclosed room to house bulk fluid tanks	16 x 25	400	-	-	1	-	1	400	Close to Fuel / Service lane(s) and Inspection Bay(s) if possible		Fluid tanks for: (2) engine oils, (1) Coolant, (2) Transmission oils, (1) Gear oil, (1 Waste Oil; Air Compressor	Fire Rating (TBD), exhausted	
	Parts Cleaning	Area for parts cleaning equipment	12 x 12	144	-	-	-	-	1	144	May be combined with or located within the Common Work Area		(2) Mobile Ozzi tanks; Enclosed sand/bead blaster; Parts Washer (TBD)	Temperature Controlled	12ft x 4ft for tanks; sand blaster, parts washer 12ft x 12ft clearance for mobile eqiupment
	Parts Storage	Space to store parts (engine/transmission blocks, windshields, seats/covers, wheel-rims, misc parts, cleaners, flam cabinets, etc.)	25 x 72 x 20	1,800	-	-	-	-	1	1,800	Adjacent to Repair Shop, access through exterior receiving OH Door; Shop Clerk office		Storage rack quantity and height (TBD); High-density storage equipment (TBD)	Space does not need to be walled-off, chainlink fencing would be sufficient.	Includes 12ft x 12ft allowance for parts receiving space. Contains large and small parts storage racks/shelving. Space for future clerk. Space for receiving table or counter. Additional storage on Mezzanine above (TBD)
	Tool Crib (Shop Tools Storage)	Secure Cabinet or Cage for tool storage	10 x 10	100	-	-	-	-	1	100	Shop Foreman, Repair Bays				
	Mobile Equipment Storage	Storage of mobile equipment	15 x 20	300	-	-	-	-	1	300	Repair Bays		Mobile lifts, ladders, platforms, (1) manual pallet manual; DOES NOT INCLUDE STORAGE FOR FORKLIFT OR MOBILE LIFTS		
	Hazardous Material Storage	Space for hazardous gas cylinders, chemicals (paint thinners, etc.). NOT REQUIRED (TBD)	5 x 10	50	-	-	-	-	0	0					
	Tool Box Storage	Designated space for tool boxes and carts to be parked. NOT REQUIRED (TBD)	4 x 5	20	-	-	-	-	0	0				power receptacles	(1) full-size tool box + (1) cart per mechanic Tool Boxes to be stored within Bays per direction from RTA
		MAINTENANCE SUMMARY:			**16**	**3**	**17**	**23**	**22**	**12,344**					
		Grossing Factor (Circ, Elec, Mech, Struct):		**15%**						**1,852**					
		MAINTENANCE TOTAL:								**14,196**					

SPACE CATEGORY	SPACE NAME	FUNCTION	SPACE STANDARD W x L x H	MIN SIZE SQFT	PROGRAM QUANTITY TOTAL STAFF	SHIFTS	VISITORS	PEAK	SPACE	AREA SQFT	ADJACENCY PRIMARY	ADJACENCY SECONDARY	Equipment / Furniture	Special Requirements	NOTES
FACILITY MAINT / UTILITY	FM Shop		10 x 15	150	1	1	1	2	1	150	Small repair bay, common work area		Work bench, storage racks; OH Door to exterior for access to utility truck		
	FM Storage		10 x 15	150	-	-	-	-	1	150					
	Custodial		10 x 10	100	2	-	1	2	2	200					
	Main Electrical Room	TBD		0	-	-	-	-	1	0					
	Main IT/Data Room	Central IT room for entire facility.		120	-	-	-	-	1	120	Centrally located within Admin/Ops Areas		IT racks, etc. as required	dedicated spilit unit system	Refer to notes from RTA IT vendor (Colin Slaughter at Mustang Computers) via email 11/28/18
	Main Plumb/Mech Room	TBD		0	-	-	-	-	1	0					
	Sprinkler Room	TBD		0	-	-	-	-	1	0					
			FM/UTILITY SUMMARY:		**3**			**4**	**48**	**620**					
			Grossing Factor (Circ, Elec, Mech, Struct):	**20%**						**124**					
			SERVICE TOTAL:							**744**					

SPACE CATEGORY	SPACE NAME	FUNCTION	SPACE STANDARD W x L x H	MIN SIZE SQFT	PROGRAM QUANTITY TOTAL STAFF	SHIFTS	VISITORS	PEAK	SPACE	AREA SQFT	ADJACENCY PRIMARY	ADJACENCY SECONDARY	Equipment / Furniture	Special Requirements	NOTES
VEHICLE SERVICING / UTILITY	Wash Bay	Automated, covered, drive-through Bus Wash operation	20 x 100	2000	-	-	-	-	1	2,000	Exterior space; adjacent to Service Line Spaces.		washer + dryer for wash cloth; rags.		5ft clr + 45ft bus + 45ft drying + 5ft clr; assume buses are washed once every three days
	Deep Cleaning Bay	Exterior covered space for detailed inteior/exterior clean functions	20 x 60	1200	-	-	-	-	1	1,200	Exterior space; adjacent to Service Line Spaces.				10ft clr at rear + 47ft bus+ 3ft clr at front
	Chassis Wash / Steam Bay	Exterior covered space for pre-inspection/repair under-carriage bus-wash	20 x 60	1200	-	-	-	-	1	1,200	Exterior space; adjacent to Service Line Spaces.				10ft clr at rear + 47ft bus+ 3ft clr at front
	Fueling	Ext. covered space. (2) dispensers TBD	20 x 60	1200	-	-	-	-	1	1,200	Exterior space; adjacent to Service Line Spaces.				7ft clr at rear + 47ft bus + 6ft clr at front
	Wash Equip Room	Equip Rm for Wash and Steam Clean bays		400	-	-	-	-	1	400	Exterior space; adjacent to Service Line Spaces.				
	Fare / Revenue Room	Fare Vault room, include fare vault IT equip		100	-	-	-	-	1	100	Adjacent to Admin and bus site entrance gate		fare vault, safe, counter w/cabinets	conditioned space, access control	
	Cleaning Storage Room	Cleaning supplies, etc.		200	-	-	-	-	1	200	Adjacent to Service Lane				
	Electrical Room	Elec for fueling equipment		100	-	-	-	-	1	100	panels/equipment for fueling			conditioned as req'd	
	Covered Seating Area	Utility worker area		50	-	-	-	-	1	50	visible to maint bldg			conditioned as req'd	
			VEHICLE SERVICING SUMMARY:		**-**			**-**	**87**	**6,450**					
			Grossing Factor (Circ, Elec, Mech, Struct):	**25%**						**1,613**					
			SERVICE TOTAL:							**8,063**					

SPACE CATEGORY	SPACE NAME	FUNCTION	SPACE STANDARD W x L x H	MIN SIZE	PROGRAM QUANTITY TOTAL STAFF	SHIFTS	VISITORS	PEAK	SPACE	AREA SQFT	ADJACENCY PRIMARY	ADJACENCY SECONDARY	Equipment / Furniture	Special Requirements	NOTES
OPERATIONS	Ops Manager's Office	Requires space for counseling		180	1	1	1	2	1	180	Dispatch suite and Lead Super		Workstation (TYP), 4-top conf table		
	Lead Supervisor's Office	In Dispatch Suite; need privacy; needs direct line of sight to dispatchers and operators		120	1	1	1	2	1	120	Direct access to Disptach suite		Workstation (TYP), file storage		
	Dispatch Suite (Fixed Route & Dial-a-Ride)	Office space for 2 FR + 4 DAR (6 total); space for 2 at counter/window with direct access to operators.		600	16	2	0	6	1	600	Direct view of bus yard and Operator Entry/Exit	Break Room	Adjustable Height Workstations, file storage; IT equip: large security monitors mounted high on wall	receptacles for large monitors, IT closet closeby	DAR w/ taller glass furniture partitions for acoustics. IT closet. Security Monitors visible to Dispatchers but not to Operators. Coffee Bar + refridgerator within Suite. No portable radios. Operator mailboxes - rear load from within suite.
	Road Supervisors Room	Shared office for supervisors.		250		2	0	3	1	250	Ops Manager	Dispatch	(2) Standing Workstations, (1) typical workstation, file/supply storage furniture		Space contains workstation for special projects (quiet workstation); (2) small, shared workstations, (1) larger more private wkst
	Lost & Found Storage	Space to store lost and found items. Items locked for 90 days typ. Lost bikes may be stored outside.		80	-	-	-	-	1	80	Reception	Lead Supervisor	Open storage shelves	Increased ventilation due to potential for soiled items being stored in room.	
	Storage Room	Uniform Storage, open Shelving		100	-	-	-	-	1	100	Dispatch Suite		File cabinets, open shelving		
	Operator Vestibule	Adjacent to Dispatch Counter, space for (2) Standup Workstations + (1) printer; rear-loaded mailboxes		200	-	-	-	-	1	200	Dispatch Suite	Break Room	Counter w/ storage for paperwork, tackboards, notice boards		
	Bus Operator's Lounge	(room moved to 'SHARED' department as 'Break Room')								0	-				
	Operators' Lockers	(60) Lockers 3-tier configuration	1 x 2	0.75	65	3	0	24	60	45	Break Room	Restrooms	3-tier Lockers: 12W x 12D x 24H EA		
	Trainer Office	Typical office		120	3	1	2	5	3	360	Near Training Room	other admin staff	Workstation (TYP), file storage		
	Training Room	(room moved to 'SHARED' department)								0	-				
	Interview Room	Small conference room		100	-	-	-	-	1	100	Adj to Dispatch Suite and Lead Supervisor		Conference table for (4); Large monitor	elec for monitor	
	Restrooms	(combined w/ Maint RR and moved to SHARED)		0					1	0	-				
	Quiet Room	(room moved to 'SHARED' department)								0	-				
	Exercise Room	(room moved to 'SHARED' department)								0	-				
		OPERATIONS SUMMARY:			**86**	**2**	**4**	**42**	**72**	**2,035**					
		Grossing Factor (Circ, Elec, Mech, Struct):		**20%**						**407**					
		OPERATIONS TOTAL:								**2,442**					

SPACE CATEGORY	SPACE NAME	FUNCTION	SPACE STANDARD W x L x H	MIN SIZE	PROGRAM QUANTITY TOTAL STAFF	SHIFTS	VISITORS	PEAK	SPACE	AREA SQFT	ADJACENCY PRIMARY	ADJACENCY SECONDARY	Equipment / Furniture	Special Requirements	NOTES
ADMINISTRATION	Executive Director	Private Office		9	**150**	1	1	2	3	1	150	Admin Offices		Workstation (TYP), file storage		
	Deputy Director/CFO	Private Office		9	**150**	1	1	1	2	1	150	Admin Offices		Workstation (TYP), file storage		
	Grants Manager	Private Office		9	150	1	1	1	2	1	150	Admin Offices		Workstation (TYP), file storage		
	Finance Admin Assistant	Private Office or Open Workstation		9	120	1	1	0	1	1	120	Admin Offices		Workstation (TYP), file storage		
	HR Officer	Private Office		9	150	1	1	1	2	1	150	Admin Offices		Workstation (TYP), file storage		
	Marketing/Comm Relations Mgr	Private Office		9	150	1	1	1	2	1	150	Admin Offices		Workstation (TYP), file storage		
	Intern Workstations	Open Workstations (not a current position)		9	150	2	1	0	2	1	150	Admin Offices		Open Workstations w/ partial height partitions		
	Special Project Coordinator's Office	Private Office (not a current position)		9	150	1	1	0	1	1	150	Admin Offices		Workstation (TYP), file storage		
	Admin Assistant	At Reception Desk; Administrative work, receives supplier, clients, guests. Performs customer service duties		9	150	1	1	0	1	1	150	Lobby	Admin Offices	Workstation w/ Transaction Counter	Secure window/counter into Lobby for public interaction	
	Files and Storgae Area	Storage of files		-	500	0	1	0	0	1	500	Admin Offices		Shelving, cabinets; step ladder		
	Copy/Production Area	Space for general office supplies, copy/printing functions		-	200	0	-	0	0	1	200	Admin Offices		Copy machine, counters, open/closed shelving		
	Restrooms	Gender neutral restrooms		9	75	0	-	0	0	2	150	Near Conf and Training Rooms				
	Coffee Bar	Small kitchenette, adjacent to conf rm		-	100	0	-	0	0	1	100			Cabinets w/ Sink, Refrigerator		
	Conference Room	Sized for 12 to 14, w/ coffee bar if not close to admin coffee bar		9	400	0	-	0	0	1	400	Near Admin Offices, close to Reception		tables/chairs, Typical AV		
	Fare / Revenue Room	Fare Vault room, include fare vault IT equip		-	100	0	-	0	0	1	100	Adjacent to admin spaces		fare vault, safe, counter w/cabinets	conditioned space, access control	
	Reception / lobby	Includes front desk / customer service counter (Staffed by Admin Assistant)		9+	200	-	-	2	2	1	200	At Front Door	Accessible Parking	lounge/waiting chairs, display materials		
	Lobby Restroom	Accessed only from Lobby		9	75	-	-	-	-	1	75	Lobby				
	Interview room	Secure conf room for discipline or interviews		9	120	-	-	-	-	1	120	Reception	Admin Offices	6-top conf table		
		ADMINISTRATION SUMMARY:			**10**	**1**	**8**	**18**	**19**	**3,165**					
		Grossing Factor (Circ, Elec, Mech, Struct):		**20%**						**633**					
		ADMINISTRATION TOTAL:								**3,798**					

SPACE CATEGORY	SPACE NAME	FUNCTION	SPACE STANDARD W x L x H	MIN SIZE	PROGRAM QUANTITY					PROGRAM AREA	ADJACENCY		Equipment / Furniture	Special Requirements	NOTES
				SQFT	TOTAL STAFF	SHIFTS	VISITORS	PEAK	SPACE	SQFT	PRIMARY	SECONDARY			
SHARED SPACES	Unisex RR/Shower	Centrally located and for use by all staff	-	120	-	-	-	-	1	120					Separate from Ops, Maint, and Admin
	Lactation Room	Secure Room, 'Wellness Room'	-	80	-	-	-	-	1	80			Sink, counter, mini-refrigerator, chair		Space required by CA labor code
	Break Room	Central break room/lounge space to be used by all staff. Connected to all dept., direct connection to exterior; space for 40-50 people during large events	9+	500	-	-	-	-	1	500	Dispatch Suite, Operator lockers	training room, tv alcove	Lounge furniture, tables and chairs for 20+, pool or foosball table, drinking fountain w/ bottle filler, notice/bulletin boards,		
	Kitchen	Open kitchen space integrated with Break Room, mix of seating options	-	100	-	-	-	-	1	100	Connected to Break Room		refridgerator, 3 vending machines, oven/range, microwaves, Garb. Disp., no dishwasher		All cabinets w/ locks
	TV Alcove	space connected to Break Room, but semi-enclosed for acoustic separation	-	100	-	-	-	-	1	100	Connected to Break Room		Lounge chairs	Connections for TV, cable	
	Exercise Room	Space to accommodate employee exercise and fitness	9	150	-	-	-	-	1	150	view to exterior	locker rooms, shower room	Treadmill, cardio equipment, TV	Connections for TV, cable	Space to be for exercise equipment, floor exercise space; but nothing with tripping hazard or free weights
	Quiet Room	Separate quiet break room away from larger Break Room	-	100	-	-	-	-	1	100	Away from Break Room		lounge furniture		
	Training Room	Flexible, large room with dividable partition.	10+	600	-	-	-	-	1	600	Break Room	Training Offices	movable training tables/chairs; monitors on multiple walls; operable partition for space division	Connections for AV and Monitors	Potentially used as extension of Break Room for large events. Room should have 'buffet' cabinets/counter within room.
	Chair/Table Training Storage	Storage specifically for training storage	-	100	-	-	-	-	1	100	Access through Training Room				
	Mens RR/Lockers	Toilet room, lockers, and shower	9	400	-	-	-	-	1	400			Full-hgt locker 18x24 w/ boot drawer, integral bench		Lockers for Maintenance
	Womens RR/Lockers	Toilet room, lockers, and shower	9	250	-	-	-	-	1	250			Full-hgt locker 18x24 w/ boot drawer, integral bench		Lockers for Maintenance
		SHARED SUMMARY:			**-**	**-**	**-**	**-**	**11**	**2,500**					
		Grossing Factor (Circ, Elec, Mech, Struct):	**20%**							**500**					
		SHARED TOTAL:								**3,000**					

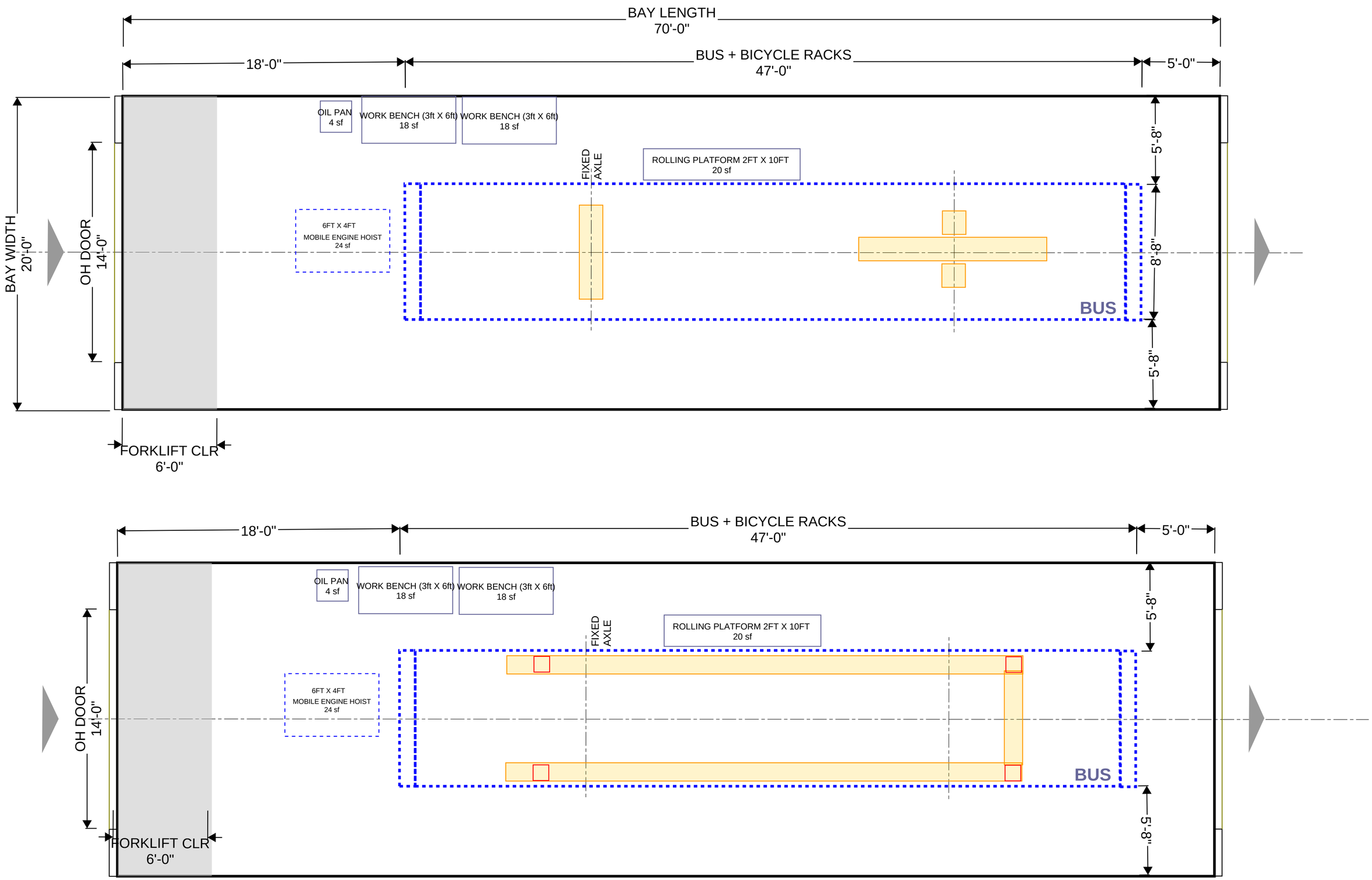
SPACE CATEGORY	SPACE NAME	FUNCTION	SPACE STANDARD W x L x H	MIN SIZE SQFT	PROGRAM QUANTITY TOTAL STAFF	SHIFTS	VISITORS	PEAK	SPACE	PROGRAM AREA SQFT	ADJACENCY PRIMARY	ADJACENCY SECONDARY	Equipment / Furniture	Special Requirements	NOTES
EXTERIOR SPACES	Employee Patio	Partially covered space connected directly to Break Room; BBQ area (size dependent of space configuration), landscaping	-	1000					1	1,000	Break Room	Employee Entry	Exterior tables/chairs; patio furniture; BBQ		Space should be close to where employees will enter and should be visually separate and secured from visitor/public entry
	Designated Smoking Area	Covered space at least 25 feet from building openings for smoking		100					1	100					
	Trash Enclosure	City/County standard enclosure	10 x 25	250					1	250					
	Misc Ext Storage	FM, Utility, Bus Stops	10 x 50	500					1	500			delivery access		
	Electrical Utility	XMFR, Switchgear, etc.		TBD											
		EXTERIOR SPACE SUMMARY:			-	-	-	-	**4**	**1,850**					
		Grossing Factor (Circulation):		**10%**						**185**					
		EXTERIOR SPACE TOTAL:								**2,035**					
PARKING	**PARKING WITHIN MAINTENANCE YARD:**														
	Large Bus Parking	35 Total = 20 Buses + 9 Minibus + 6 Future	12 x 50	600					35	21,000					Program accounts for only the vehicles stored on-site, not parked-out at remote facilities. Pre-inspection performed in parking spot; post-trip inspection could be performed in parking stall or at service lane
	Small Rev Vehicle Parking	14 Total (max 25' long) = 11 Vehicles + 3 Future	12 x 30	360					14	5,040					
	Non-Revenue Vehicle		10 x 20	200					16	3,200					
	Down Bus Parking		12 x 50	600					4	2,400					
	PARKING WITHIN EMPLOYEE / VISITOR LOT:														
	Employee Parking		9 x 18	162					80	12,960					
	Visitor Parking		9 x 18	162					4	648	As close as possible to main visitor and employee entries				
	Accessible Parking		12 x 18	216					4	864	As close as possible to main visitor and employee entries				QTY: As required by CA Bldg Code (11B-208.2) for 75-100 space provide (4) accessible spaces, including (1) van space
	Clean-Air Vehicle; EV Ready Parking		9 x 18	162					8	1,296	As close as possible to main visitor and employee entries				QTY: As required by CalGreen Building Code: (8) Clean Air Vehicle spaces required; (5) EV Ready spaces required. EV can overlap CAV spaces. SLO Zoning code requires 10% of parking total to be EV parking and chargers are to be installed at project completion.
	Motorcycle Parking		3 x 10	30					5	150					SLO Zoning code (17.72.080) requires (1) per (20) car spaces
	Long-tern Bike Parking		3 x 6	18					4	72	Behind security fence				QTY: As required by CalGreen Building Code 5.106.4.1.2: Provide 5% of employee parking = 80 x 5% = (4)
	Short-term Bike Parking		3 x 6	18					2	36	Outside of security fence				QTY: As required by CalGreen Building Code 5.106.4.1.1.: Provide 5% of visitor parking, but not less than (2)
		PARKING SUMMARY:			-	-	-	-	**176**	**47,666**					
		Grossing Factor (Circulation):		**100%**						**47,666**					
		PARKING SPACE TOTAL:								**95,332**					

PROGRAM TOTALS							
	GRAND TOTALS:	112	6	29	83	124	AREA
	TOTAL BUILDING & SPACE AREA:						32,242
	TOTAL SITE AREA:						97,367
	SITE FACTOR: 50%						48,684
	TOTAL PROGRAM AREA:	**4.09 ACRES**					**178,293**

Appendix E Clearance Diagrams

The following are the clearance diagrams developed during the Master Plan Charrette and refined in more detail following the charrette:

- HC-1 – 45 Feet Bus Repair Bays
- HC-2 – Parts Storage
- HC-2(alt) – Parts Storage (Alternate)
- HC-3 – New and Used Tire Storage
- HC-4 – Common Workshop
- VC-1 – Maintenance Bays – Vertical Clearance
- VC-2 – Stock Room – Vertical Clearance

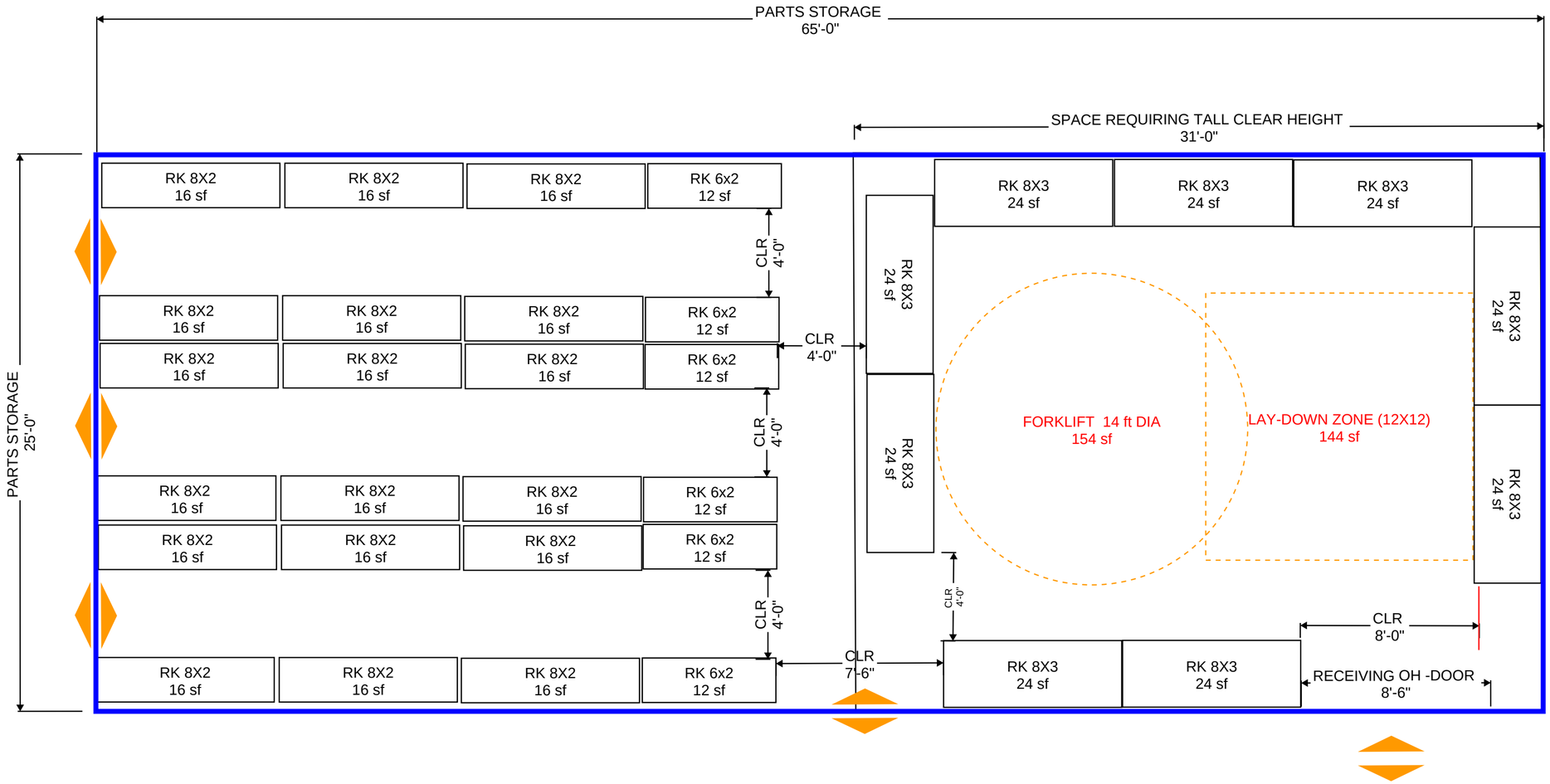


45 FEET BUS REPAIR BAYS

Date:	2018 / 10 / 18
Version No. :	A
Diagram:	HC-1

NOTES:

1. RACKS 8X2 & 6X2 ARE ESTIMATED TO BE 10ft TALL FOR A CLEAR 12ft CEILING HEIGHT TO ALLOW TOP TIER STORAGE
2. RACKS 8X3 ARE INDUSTRIAL HEAVY DUTY ESTIMATED TO BE 16ft TALL FOR A CLEAR 20ft CEILING HEIGHT TO ALLOW TOP TIER STORAGE
3. FORKLIFT = TOYOTA 8FGU30 WITH MAX FORK HEIGHT = 16ft - 4in



Stantec

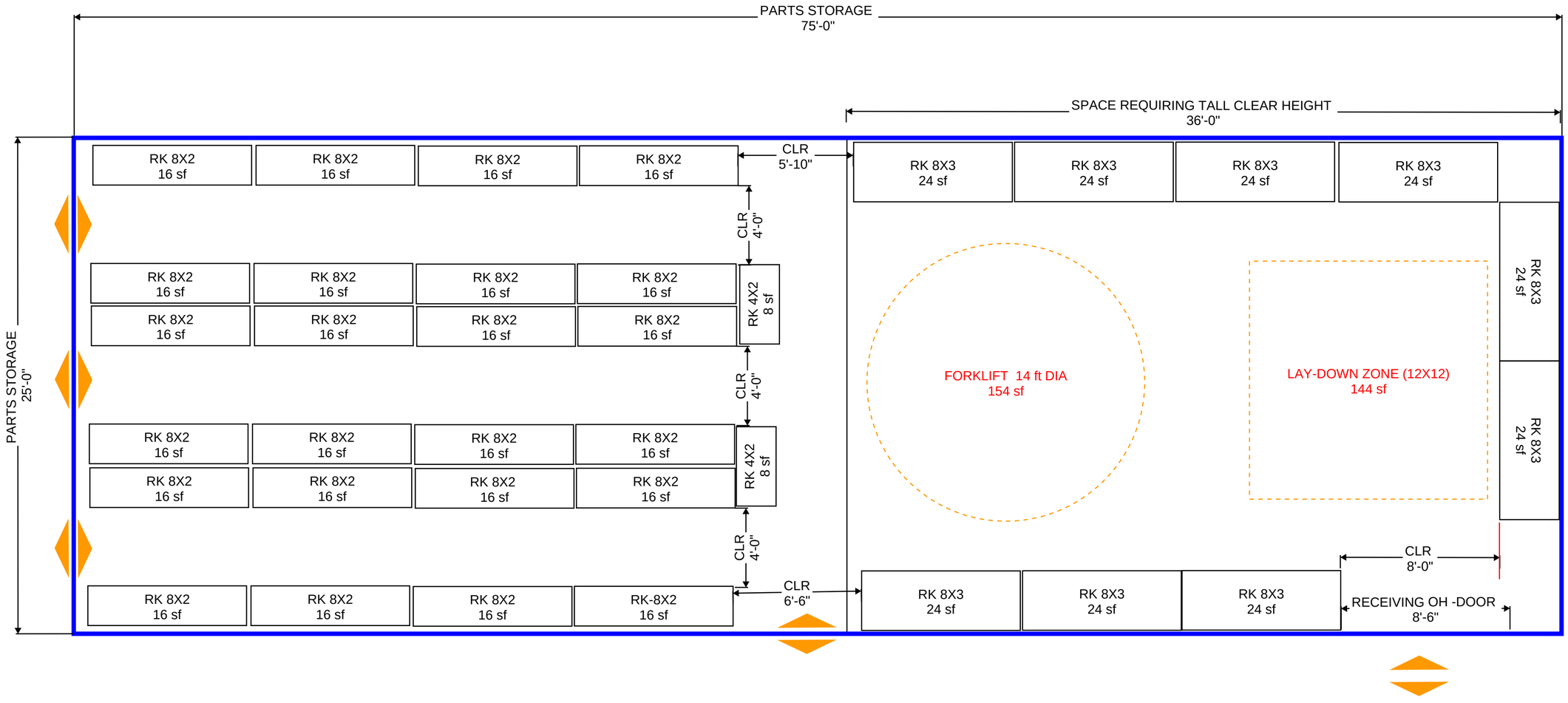
PARTS STORAGE

Date:	2018 / 10 / 18
Version No. :	A
Diagram:	HC-2

rta REGIONAL TRANSIT AUTHORITY

NOTES:

1. RACKS 8X2 ARE ESTIMATED TO BE 10ft TALL FOR A CLEAR 12ft CEILING HEIGHT TO ALLOW TOP TIER STORAGE
2. RACKS 8X3 ARE INDUSTRIAL HEAVY DUTY ESTIMATED TO BE 16ft TALL FOR A CLEAR 20ft CEILING HEIGHT TO ALLOW TOP TIER STORAGE
3. FORKLIFT = TOYOTA 8FGU30 WITH MAX FORK HEIGHT = 16ft - 4in



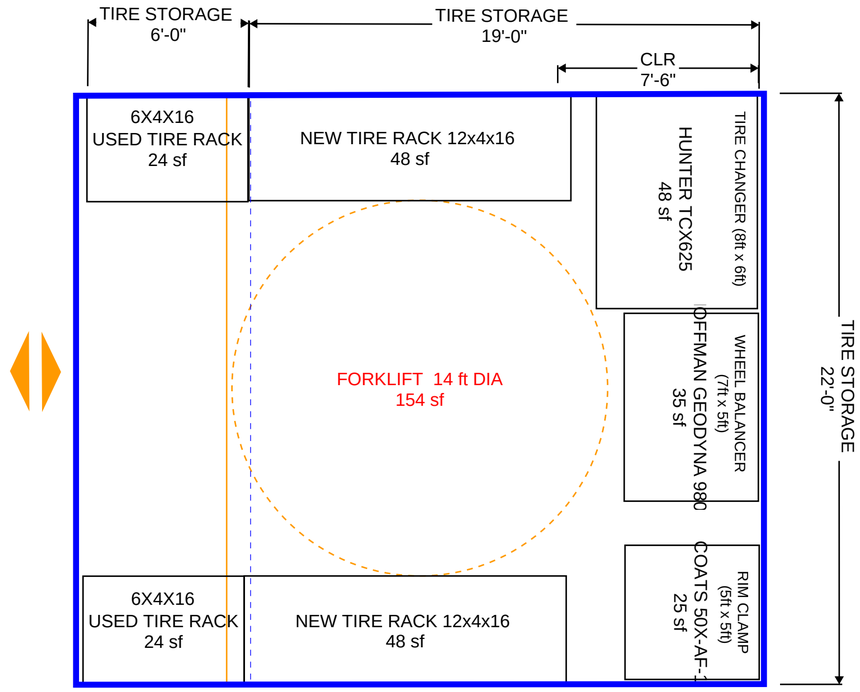
PARTS STORAGE (ALTERNATE)

Date:	2018 / 10 / 18
Version No. :	A
Diagram:	HC-2 (alt)

NOTES:

1. TIRE RACKS ARE SIZED FOR LARGEST TIRES 308/85R22.5
   MAX TIRE DIA = 43 inches
   MAX TIRE WIDTH = 12 inches

2. NEW TIRES = 110 TOTAL
3. USED TIRES = 50 TOTAL



NEW & USED TIRE STORAGE

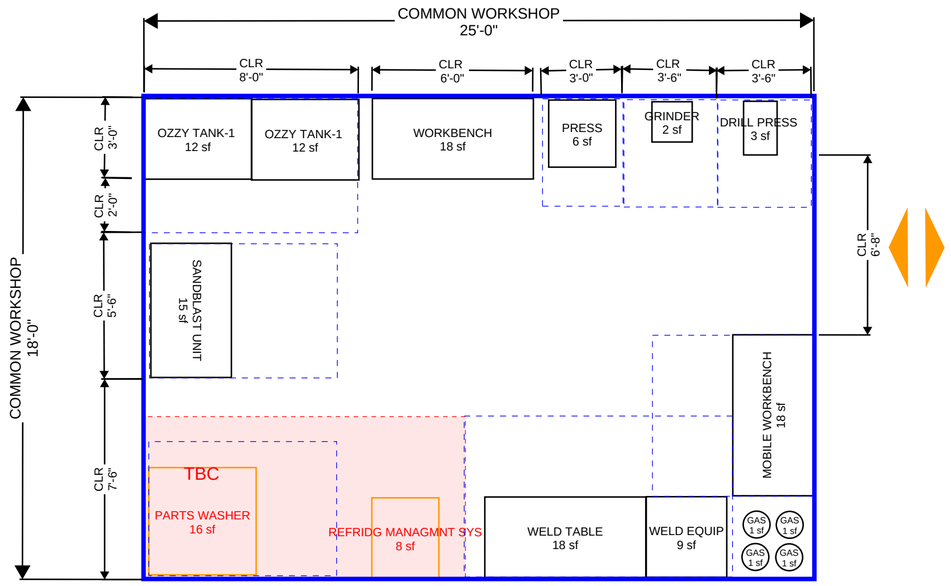
Date:	2018 / 10 / 18
Version No. :	A
Diagram:	HC-3

Ref:

http://www.canablast.com/en/produit/eco-420-3/
https://sunextools.com/product/8-bench-grinder-wlight/
http://www.aescosc.com/yellowjacket.html
https://chemfree.com/portfolio-items/sw-37/?portfolioCats=46
https://www.grithappens.com/mediadata/manufpdfs/crc-2_1466609244.pdf

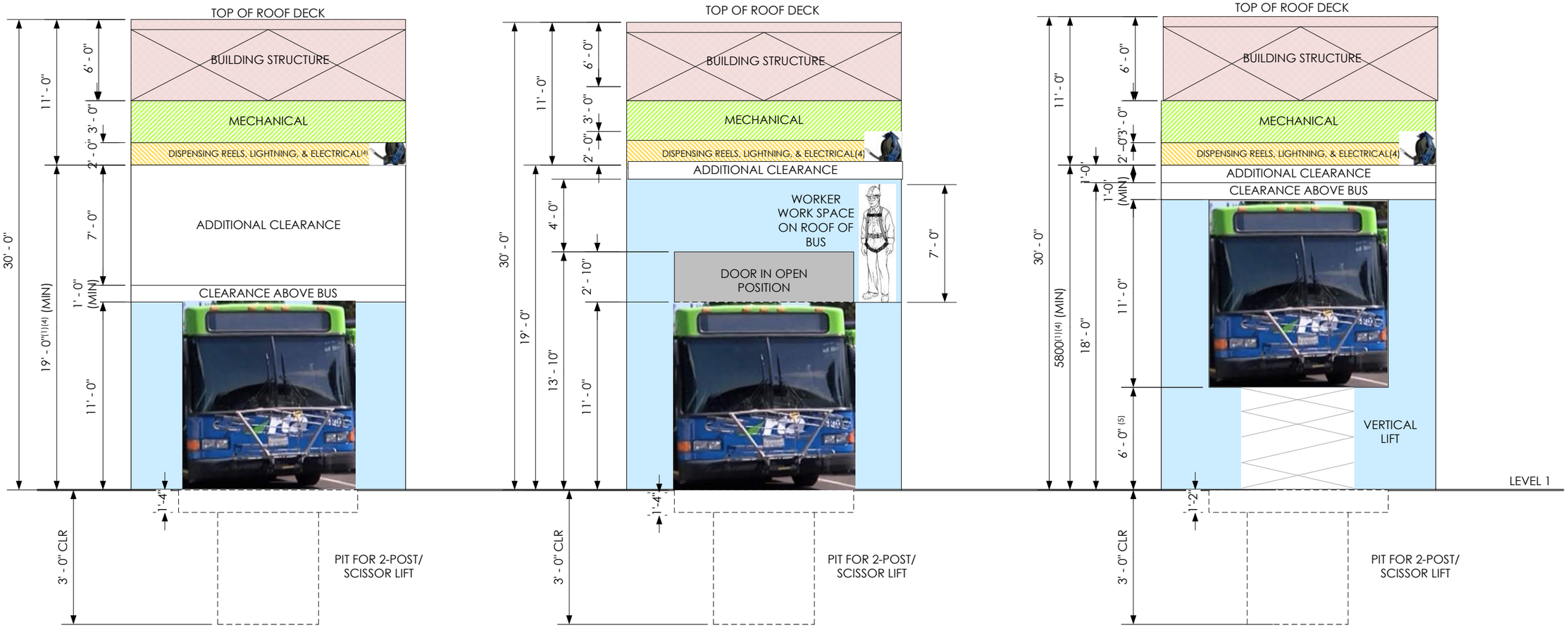
NOTES:

1. MINOR BODY WORK IS PERFORMED HERE
2. MINOR STEEL WELDING IS PERFORMED HERE
3. MNIOR PAINT MAY BE PERFORMED, PAINT SHOP NOT REQUIRED
4. INDUSTRIAL PARTS WASHER TO BE CONFIRMED
5. EYE WASH STATION PROVIDED IN ADJACENT REPAIR SHOP
6. NEED FOR COMPRESSED AIR, AND GREASE GUN TO BE CONFIRMED



COMMON WORKSHOP

Date:	2018 / 10 / 18
Version No. :	A
Diagram:	HC-4



1 / - CASE VC-1.1
NTS

2 / - CASE VC-1.2 (ONLY FOR 1 STANDARD BAY WITH MONORAIL CRANE SYSTEM)
NTS

3 / - CASE VC-1.3 (BUS ON RAISED LIFT)
NTS

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MAINTENANCE BAYS - VERTICAL CLEARANCE

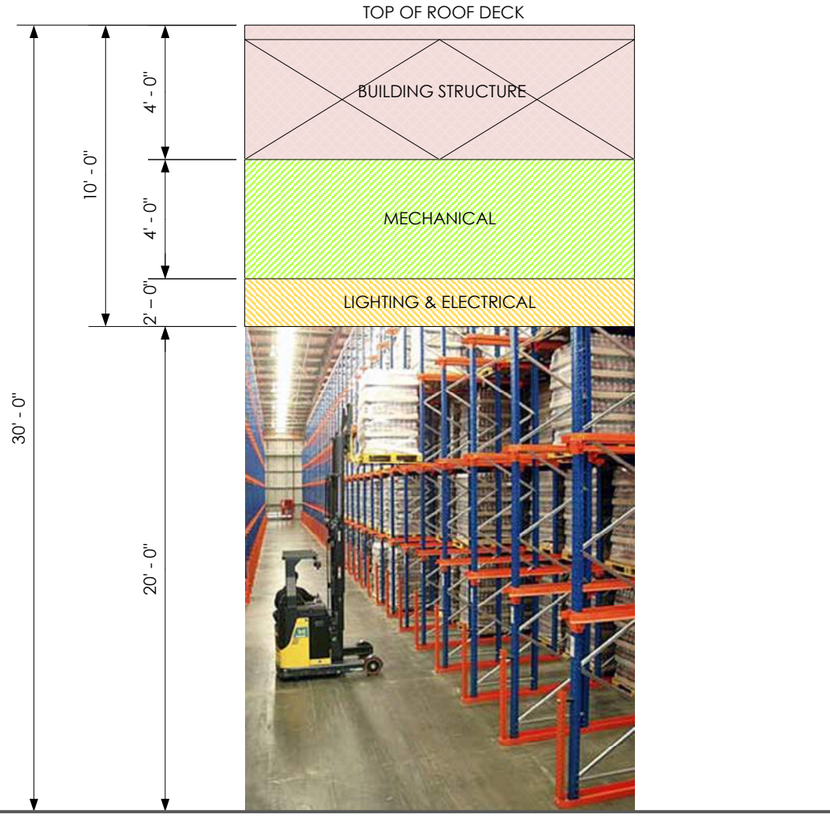
SLO RTA - Bus Garage

Date: 2018/10/9	
Version No. : A	
Diagram: VC-1	

REGIONAL TRANSIT AUTHORITY

DESIGN NOTES:

(1) 20 FT CLEAR HEIGHT IS SET FOR 16 FEET TALL RACK WITH A 4 FEET TALL PALLET AT TOP OF RACK.



1 - CASE VC-11.1 (AT STOCK ROOM STORAGE SPACE)
NTS

2 -

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STOCK ROOM - VERTICAL CLEARANCE
SLO RTA - Bus Garage

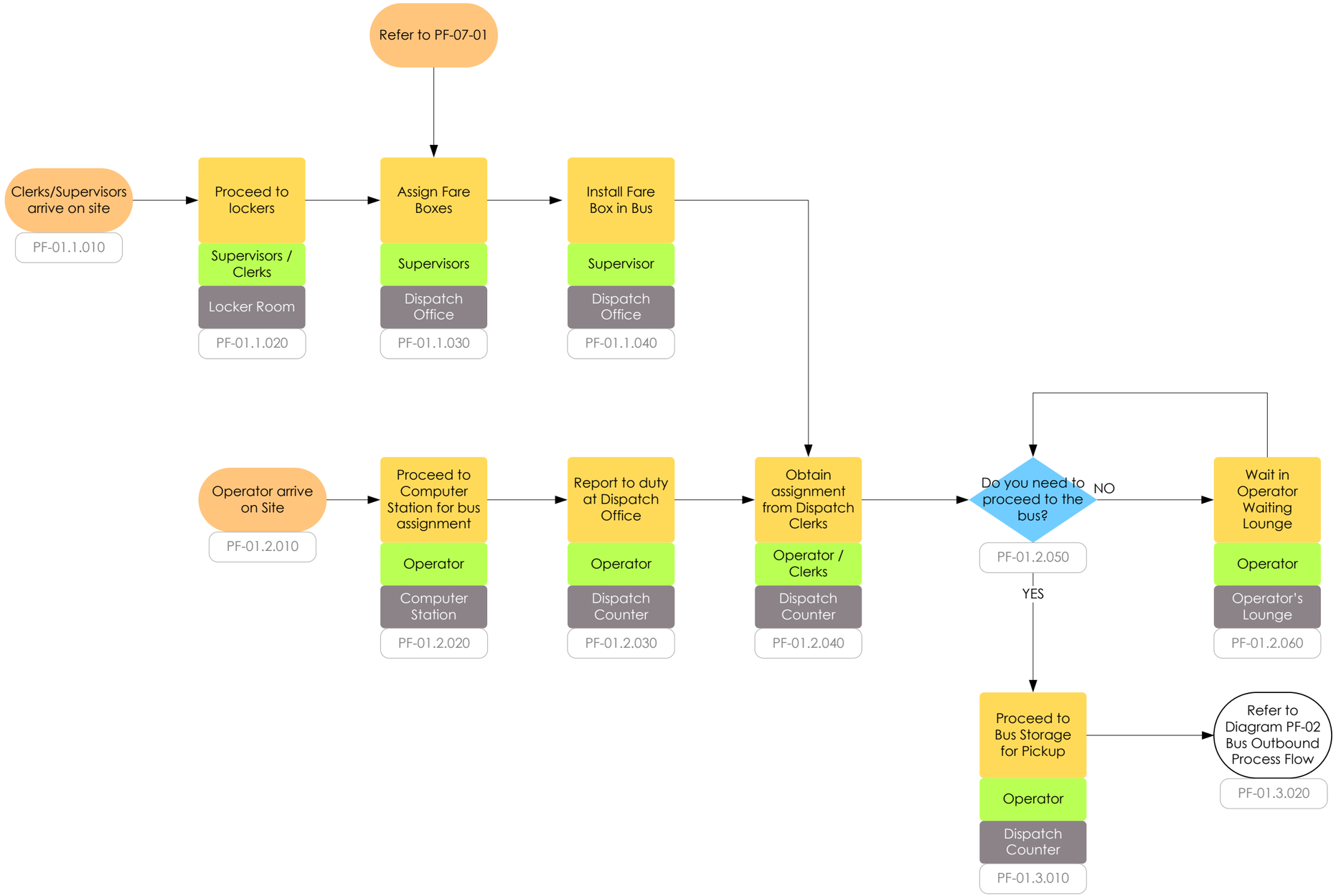
Date: 2018/10/9	
Version No. : A	
Diagram: VC-2	

rta REGIONAL TRANSIT AUTHORITY

Appendix F Process Flow Diagrams

The following are the Process Flow diagrams developed during the Master Plan Charrette and refined in more detail following the charrette:

- PF-1 – Operator Outbound
- PF-2 – Bus Outbound
- PF-3 – Bus Inbound
- PF-4 – Operator Inbound
- PF-5 – Bus Defects
- PF-6 – Light Duty Maintenance Flow
- PF-7 – Farebox Activity



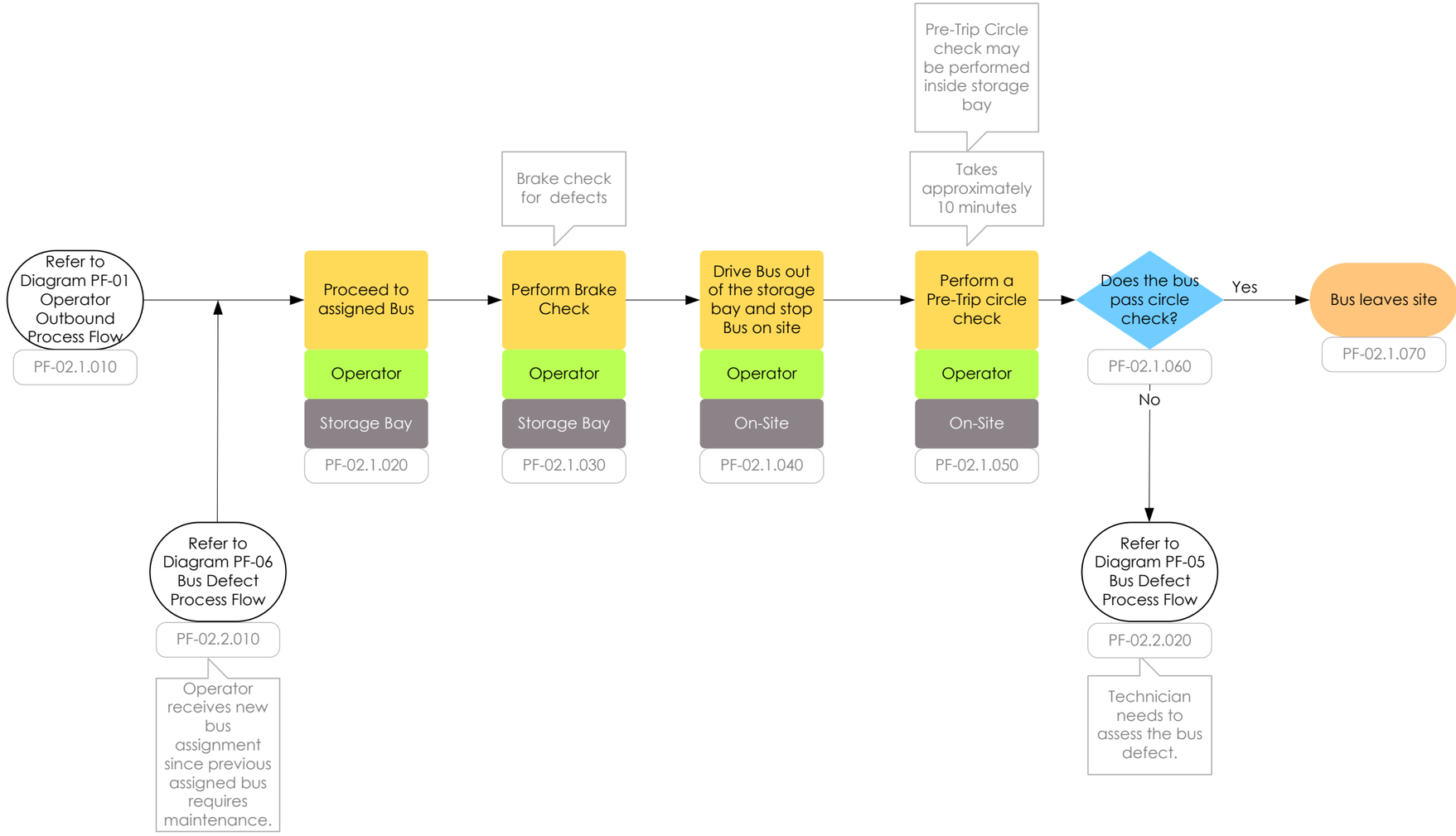
Operator Outbound - Process Flow

SLO RTA Bus Garage

Date: 10/18/2018

Version No. : 0

Diagram: PF-1



Bus Outbound - Process Flow

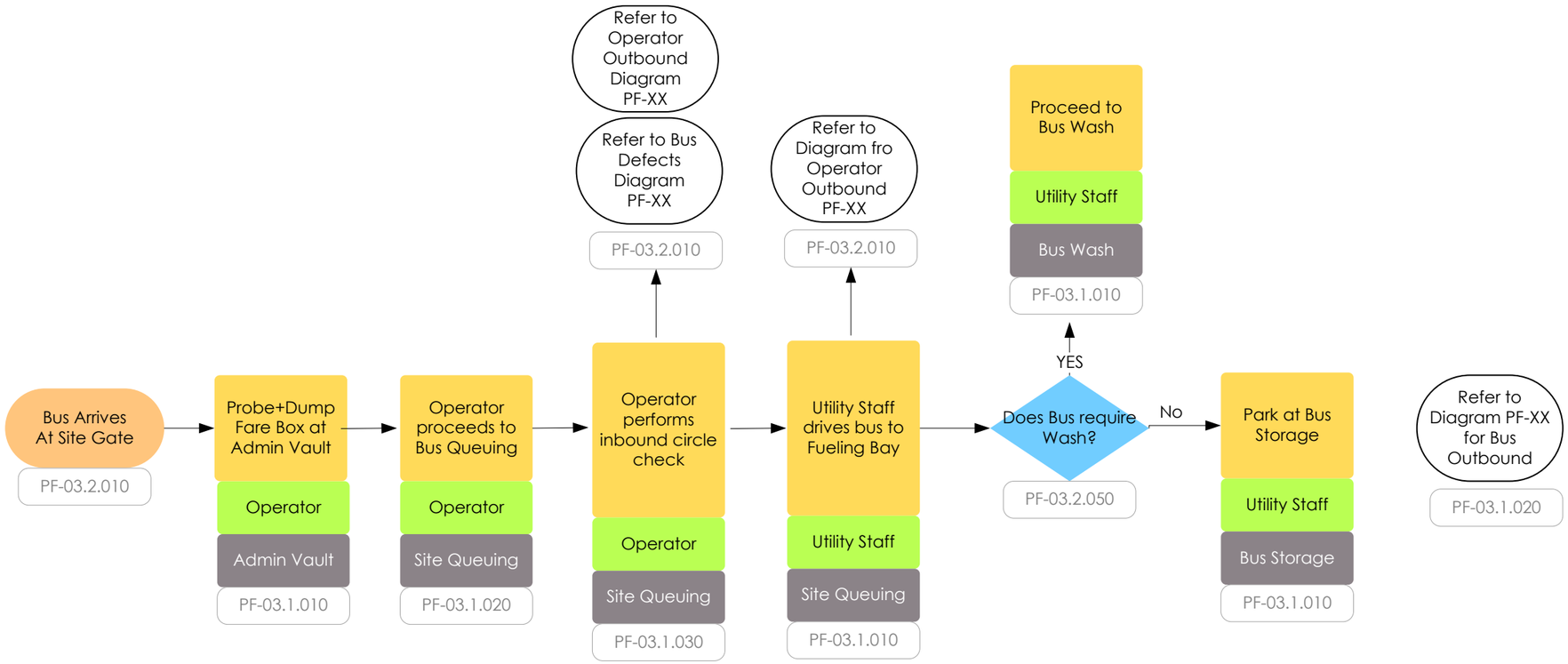
SLO RTA Bus Garage

Date: 10/18/2018

Version No. : 0

Diagram: PF-2

#2270449601



Bus Inbound - Process Flow

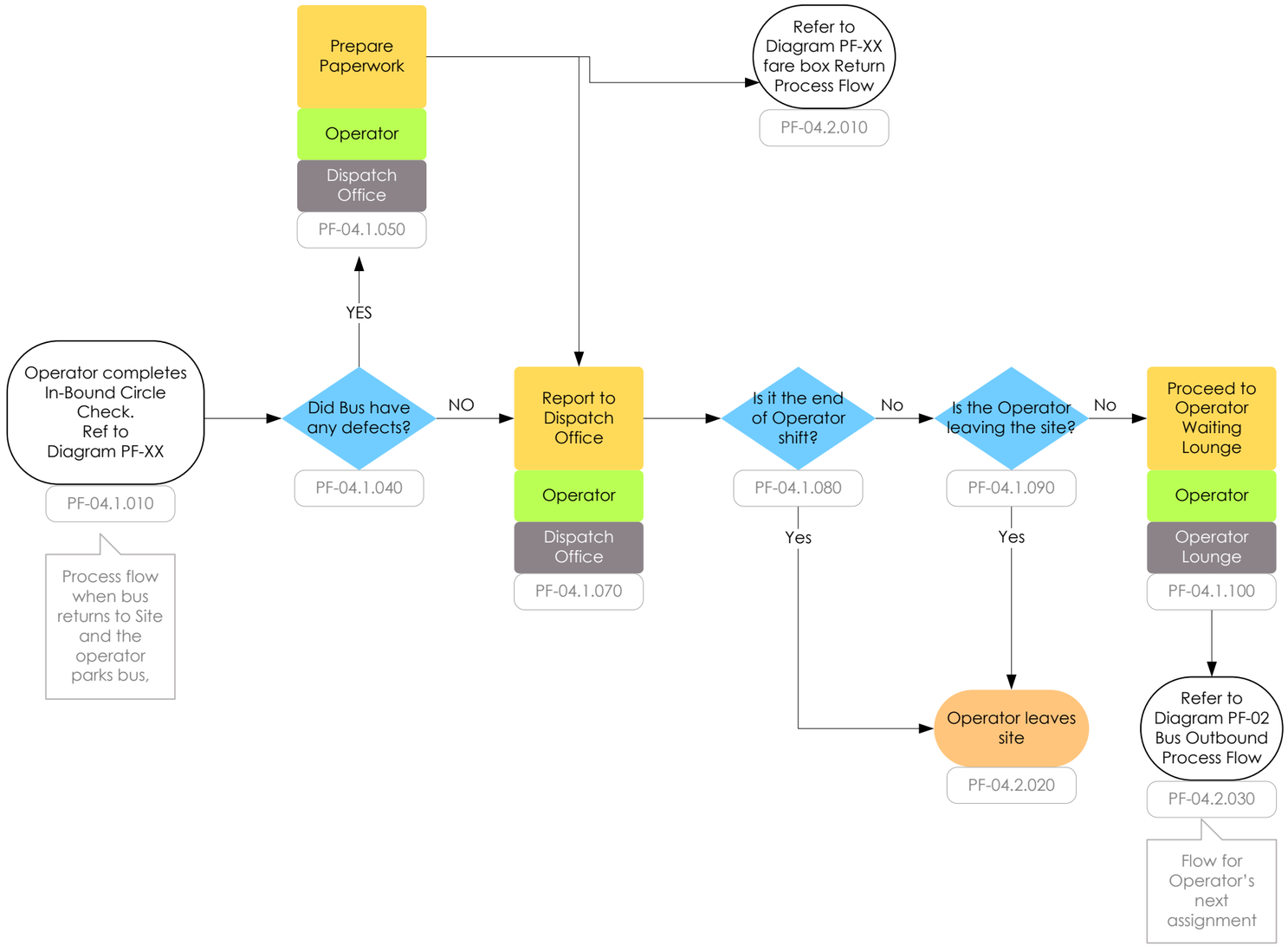
SLO RTA Bus Garage

Date: 10/18/2018

Version No. : 0

Diagram: PF-3

#2270449601



Operator Inbound - Process Flow

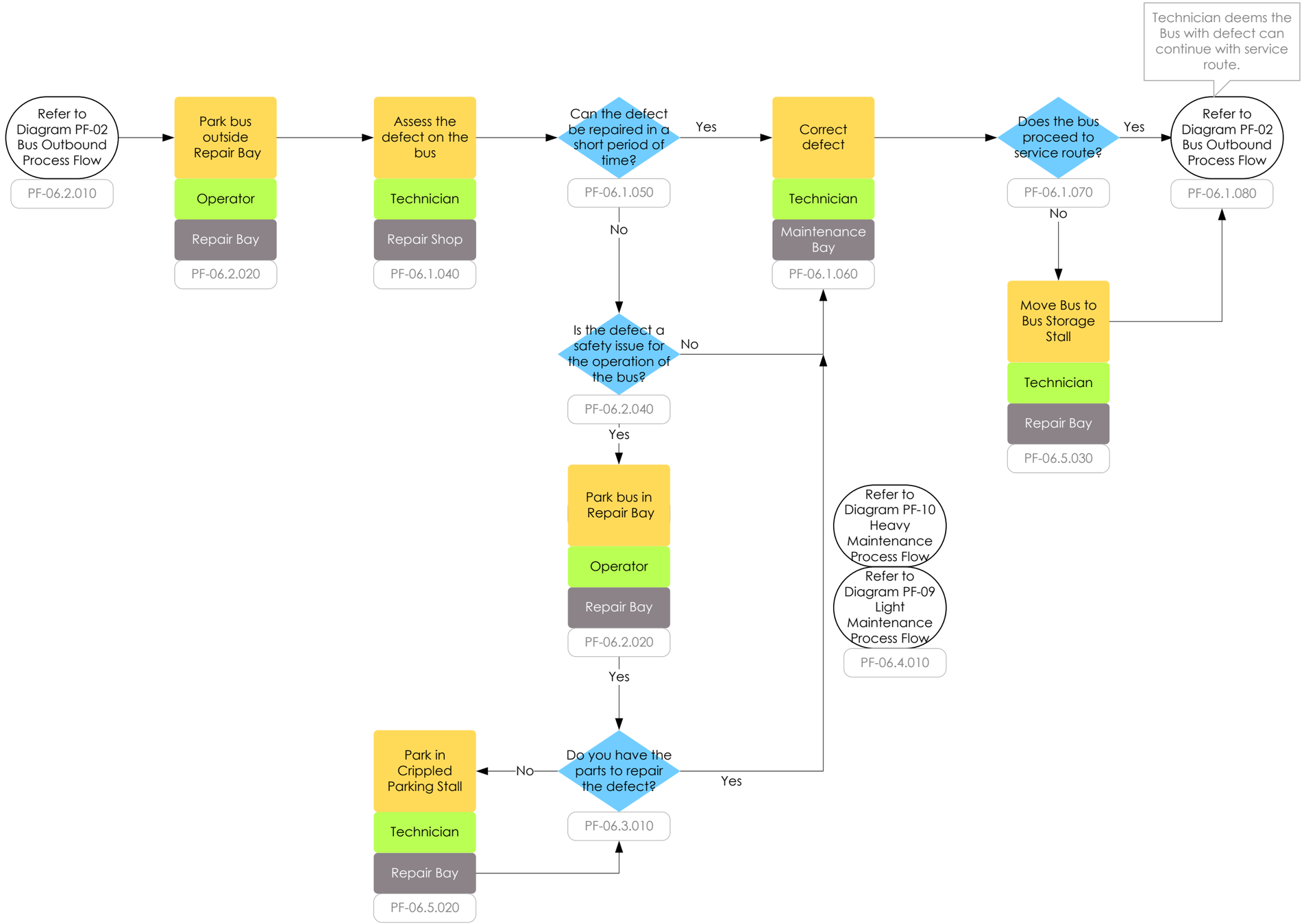
SLO RTA Bus Garage

Date: 10/18/2018

Version No. : 0

Diagram: PF-4

#2270449601



Bus Defects - Process Flow

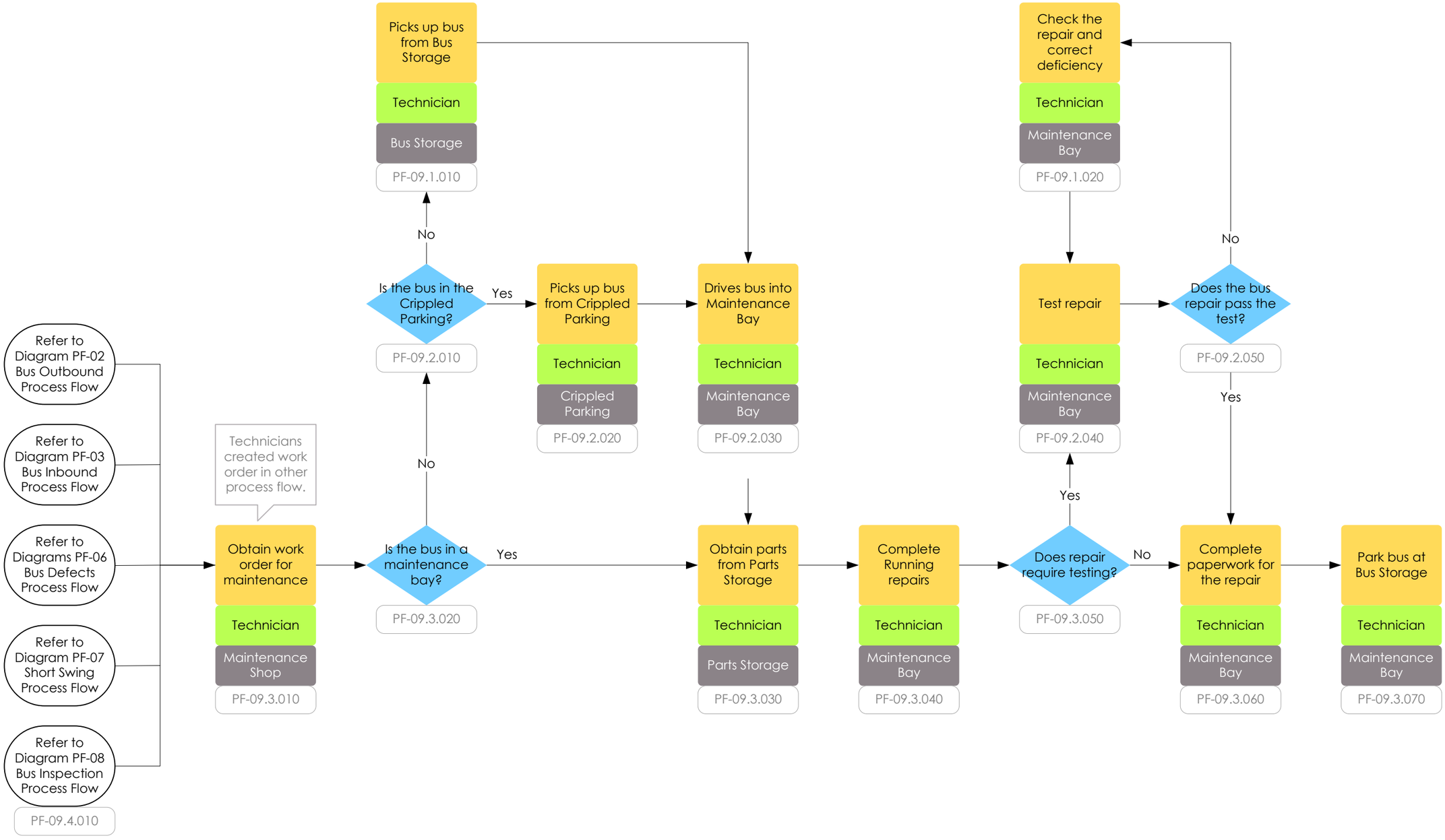
SLO RTA Bus Garage

Date: 10/18/2018

Version No. : 0

Diagram: PF-5

#2270449601



Light Duty Maintenance Flow - Process Flow

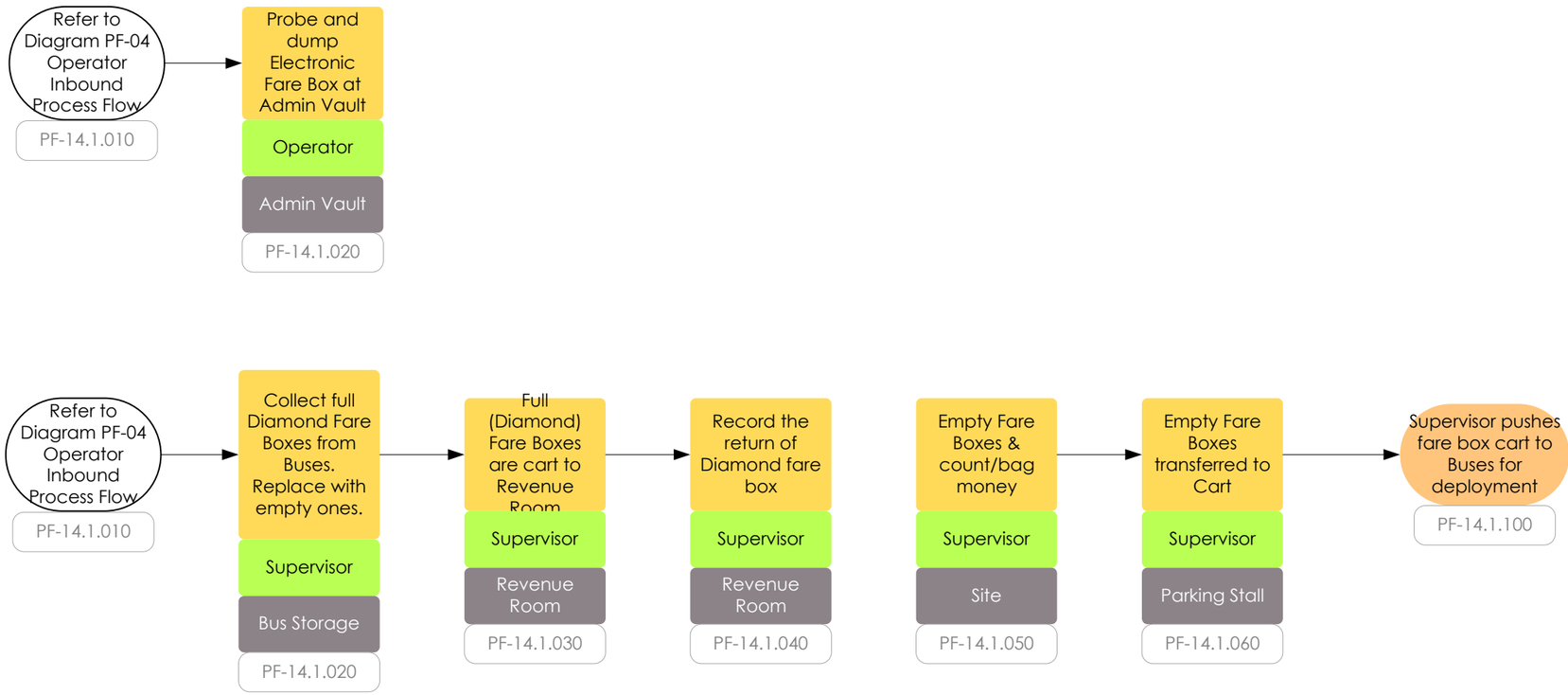
SLO RTA Bus Garage

Date: 10/18/2018

Version No. : 0

Diagram: PF-6

#2270449601



Farebox Activity - Process Flow

SLO RTA Bus Garage

Date: 10/18/2018

Version No. : 0

Diagram: PF-7

#2270449601

Appendix G Draft Master Plan Drawings

The following are the master plan design options from the October 9 - 11, 2018 Master Plan Charrette Meetings and the subsequent refinements of the master plan through October 19, 2018. Refer to Section 3 of this report:

- Scheme 1 – Master Plan Charrette Day 2 – 10/10/18
- Scheme 2 – Master Plan Charrette Day 2 – 10/10/18
- Scheme 1 v2 – Master Plan Charrette Day 2 – 10/10/18
- Scheme 1 v3 – Master Plan Charrette Day 3 – 10/11/18
- Scheme 1 v4 – 10/16/18
- Scheme 1 v4 – Building Plan – 10/16/18
- Scheme 1 v5 – 10/19/18
- Scheme 1 v5 – Building Plan – 10/19/18
- Scheme 3 – Building Level 1 – 10/19/18
- Scheme 3 – Building Level 2 – 10/19/18
- Scheme 4 – Building Level 1 – 10/19/18
- Scheme 4 – Building Level 2 – 10/19/18
- Scheme 1 v6 – Building Plan – 10/19/18
- Scheme 1 v7 – Building Plan – 10/19/18

FUTURE ELKS LANE REALIGNMENT

FUTURE ELKS LANE

PROPERTY LINE

POTENTIAL CALTRANS ROW ACQUISITION FOR PRADO RD US101 OVERPASS / INTERCHANGE IMPROVMENTS (EXACT REQUIREMENTS UNKNOWN)

TRANSMISSION TOWER

PATIO
SHARED
689.07 SF
0.00 SF

SHARED
SHARED
2816.57 SF
2900.00 SF

ADMIN
ADMIN
3824.29 SF
3800.00 SF

OPERATIONS
OPERATIONS
3008.41 SF
3100.00 SF

MAINTENANCE
MAINTENANCE
3456.91 SF
0.00 SF

MAINTENANCE
REPAIR BAY
1600.00 SF
1600.00 SF

MAINTENANCE
SHOPS
2014.05 SF
2000.00 SF

MAINTENANCE
SM REPAIR BAY
800.00 SF
700.00 SF

UTILITY
CHASSIS WASH
1200.00 SF
2000.00 SF

UTILITY
DEEP CLEAN / BYPASS
1200.05 SF
2000.00 SF

UTILITY
FUEL LANE
1200.00 SF
2000.00 SF

UTILITY
WASH BAY
1800.00 SF
2000.00 SF

PROPERTY LINE

100' PG&E EASEMENT

FUTURE ONRAMP FROM PRADO ROAD TO US 101 NORTH BOUND

US 101

US 101

HOMELESS SERVICES CENTER

POTENTIAL CALTRANS ROW ACQUISITION FOR PRADO RD US101 OVERPASS / INTERCHANGE IMPROVMENTS (EXACT REQUIREMENTS UNKNOWN)

PRADO ROAD

Drawing Scale: 1" = 30'-0"

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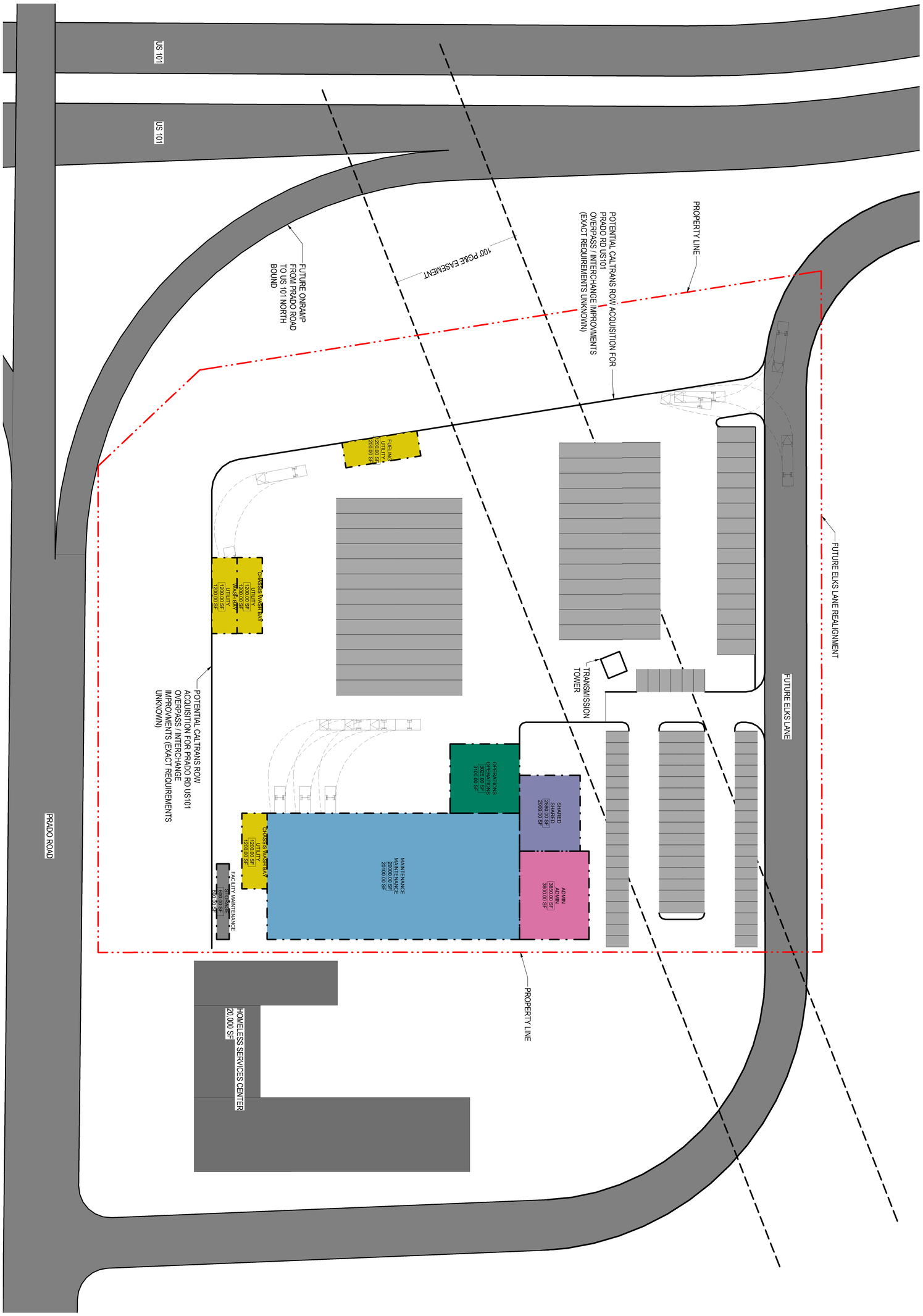
APPENDIX G - DRAFT MASTER PLAN DRAWINGS
APPENDIX G - PAGE 1

San Luis Obispo Retional Transit Authority Bus Maintenance Facilty

253 Elks Lane/40 Prado Road,
San Luis Obispo, CA 93401

Draft Master Plan: Scheme 1

10/10/18 - Master Plan Charrette Day 2



Drawing Scale: 1" = 30'-0"

Draft Master Plan: Scheme 2

10/10/18 - Master Plan Charrette Day 2

San Luis Obispo Retional Transit Authority Bus Maintenance Faciltiy

253 Elks Lane/40 Prado Road,
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APPENDIX G - DRAFT MASTER PLAN DRAWINGS
APPENDIX G - PAGE 2

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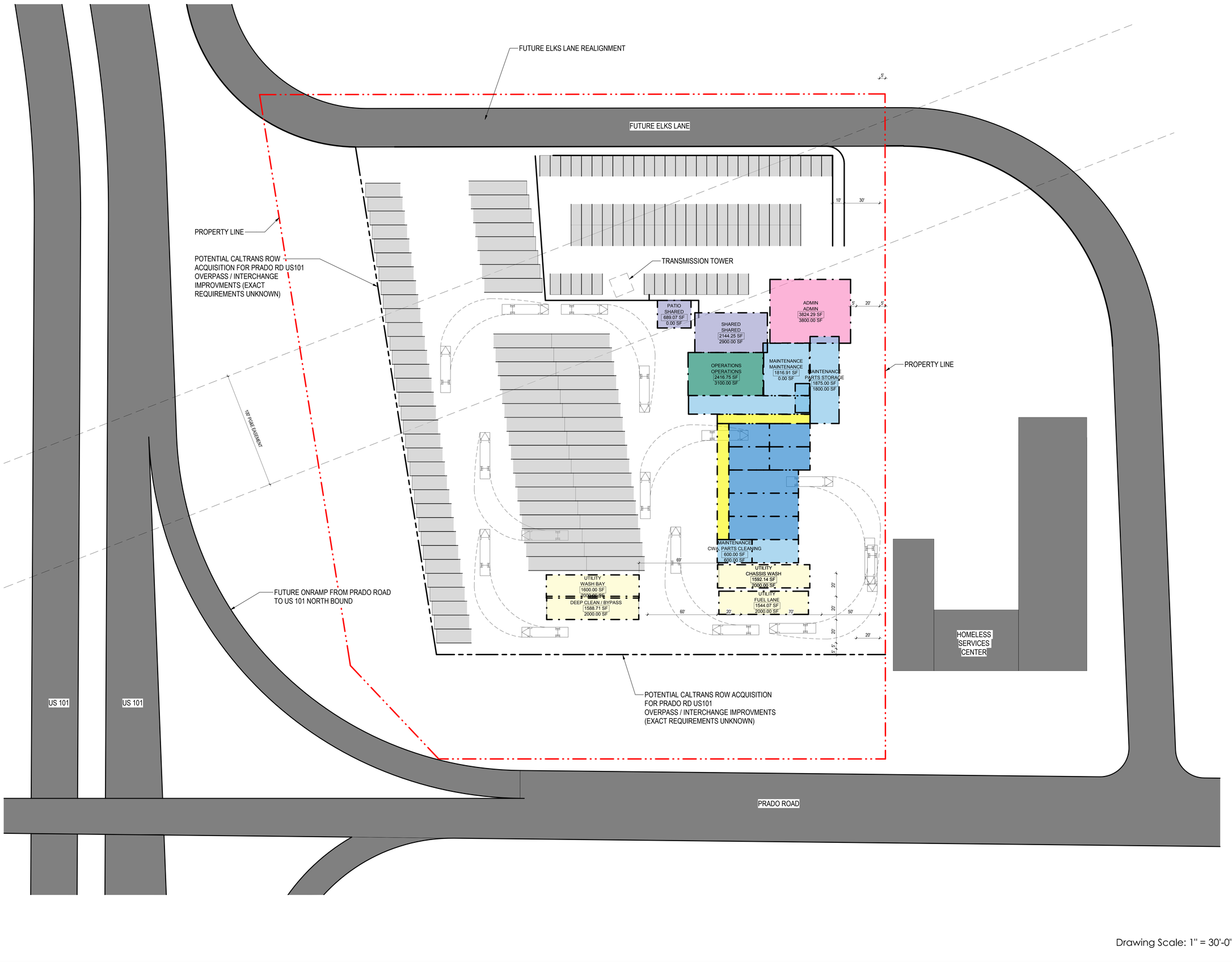

Drawing Scale: 1" = 30'-0"

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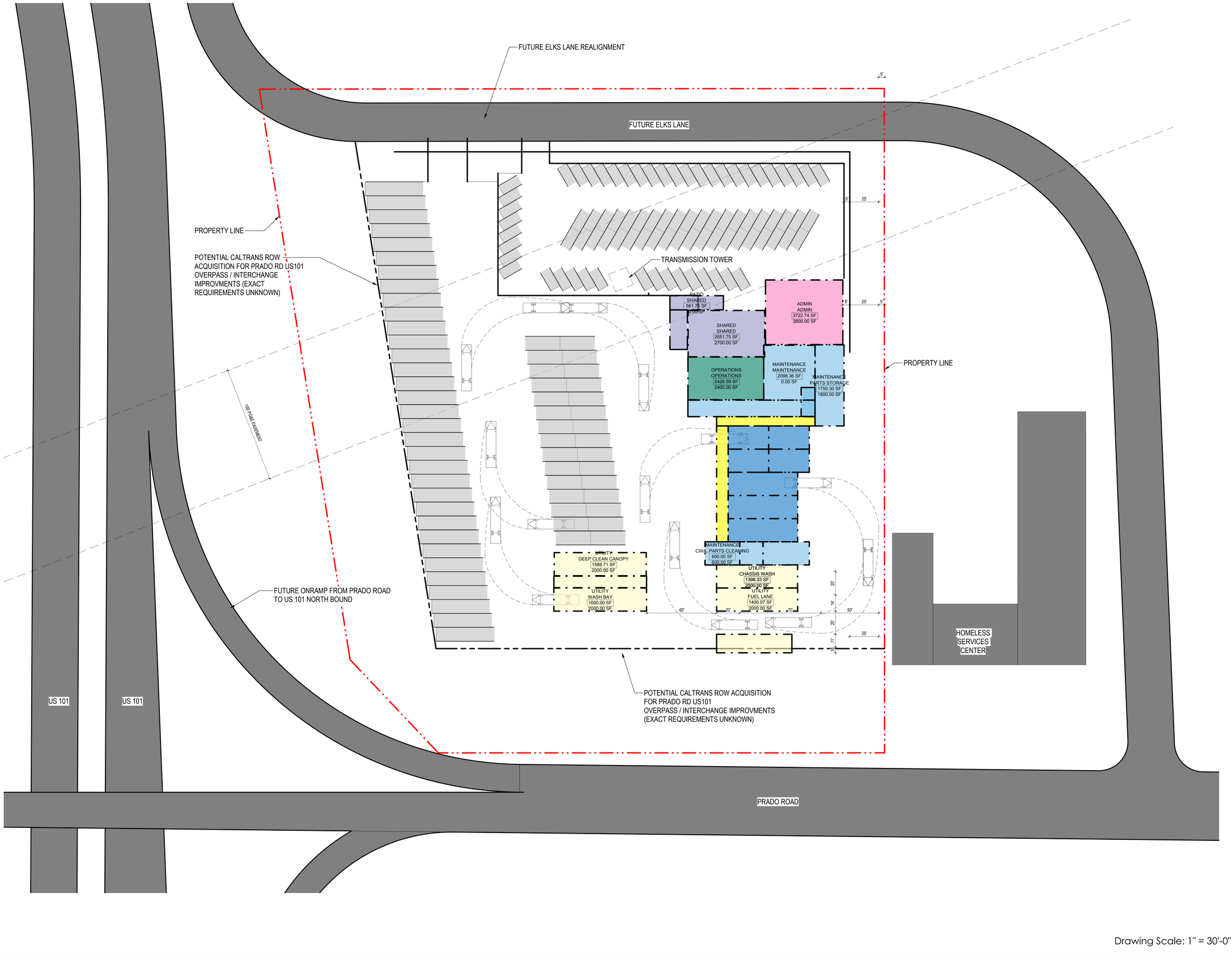
APPENDIX G - DRAFT MASTER PLAN DRAWINGS
APPENDIX G - PAGE 3

San Luis Obispo Retional Transit Authority Bus Maintenance Facility

253 Elks Lane/40 Prado Road,
San Luis Obispo, CA 93401

Draft Master Plan: Scheme 1 v2

10/10/18 - Master Plan Charrette Day 2



Drawing Scale: 1" = 30'-0"

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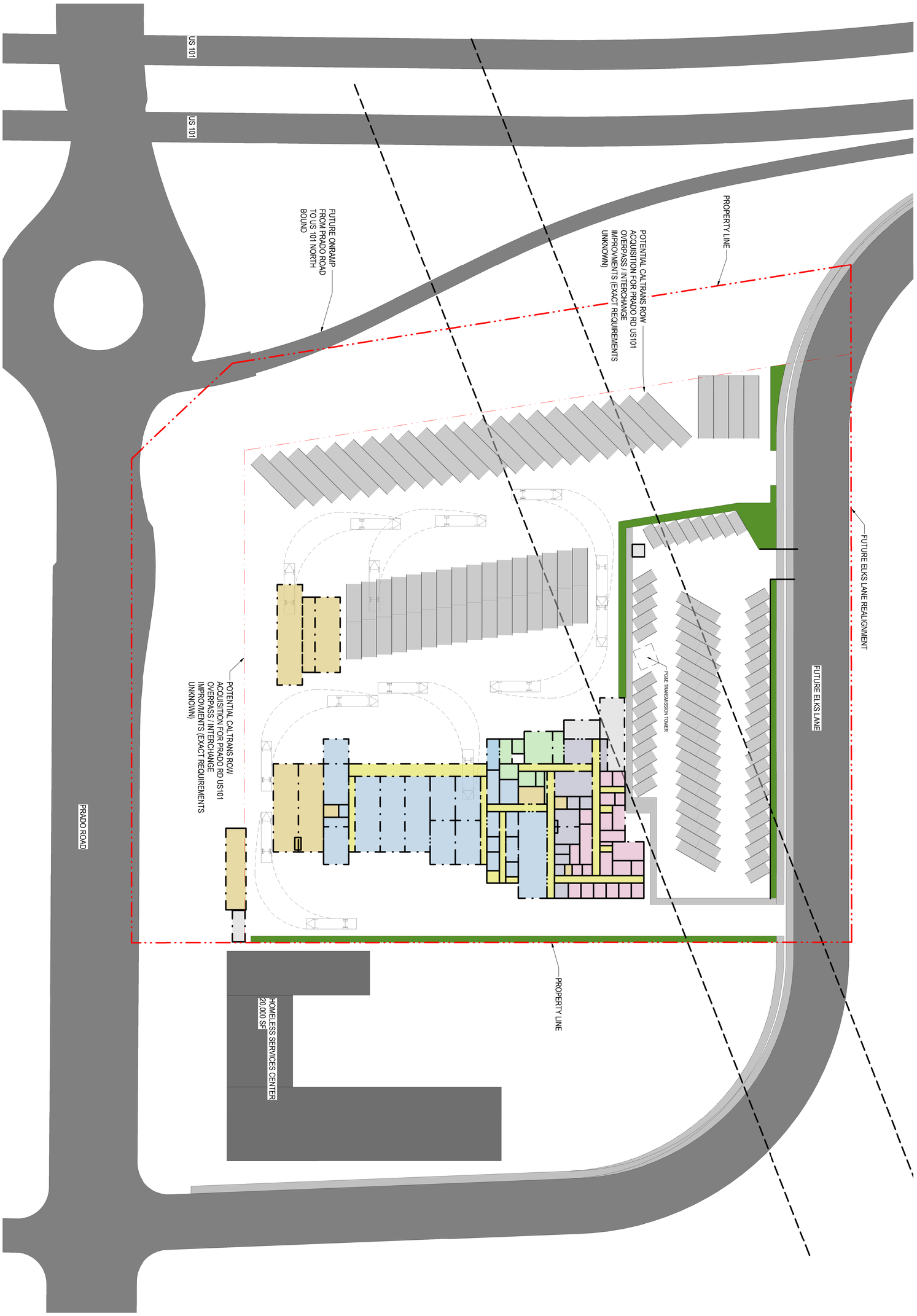
APPENDIX G - DRAFT MASTER PLAN DRAWINGS
APPENDIX G - PAGE 4

San Luis Obispo Regional Transit Authority
Bus Maintenance Facility

253 Elks Lane/40 Prado Road,
San Luis Obispo, CA 93401

Draft Master Plan:
Scheme 1 v3

10/11/18 - Master Plan Charrette Day 3



Drawing Scale: 1" = 30'-0"

Draft Master Plan: Scheme 1 v4

10/16/18

San Luis Obispo Retional Transit Authority Bus Maintenance Faciltiy

253 Elks Lane/40 Prado Road,
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APPENDIX G - DRAFT MASTER PLAN DRAWINGS
APPENDIX G - PAGE 5

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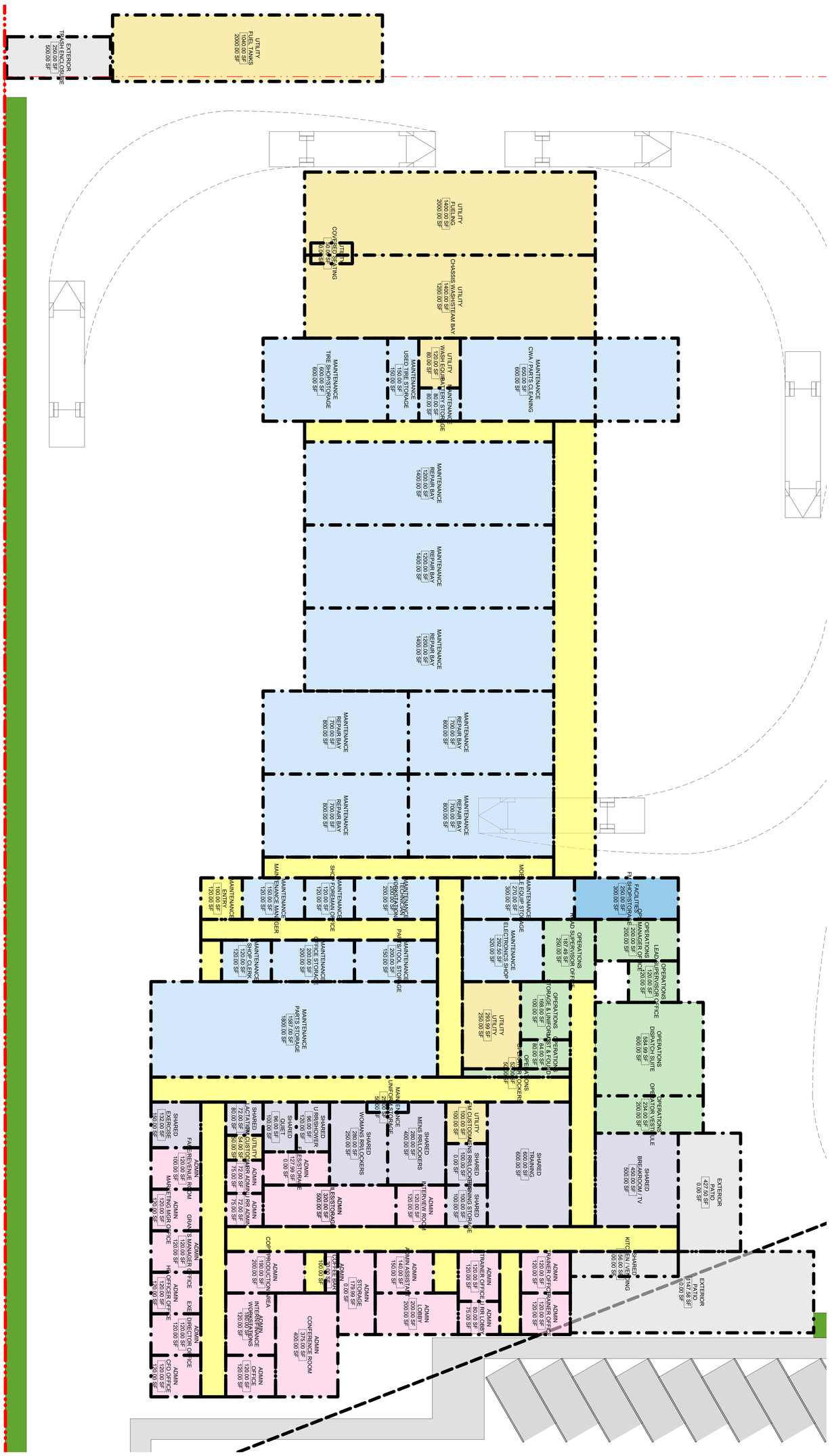

Drawing Scale: 1" = 10'-0"

Draft Master Plan: Scheme 1 v4 - Bldg Plan

10/16/18

San Luis Obispo Retional Transit Authority Bus Maintenance Faciltiy

253 Elks Lane/40 Prado Road,
San Luis Obispo, CA 93401

APPENDIX G - DRAFT
MASTER PLAN DRAWINGS
APPENDIX G - PAGE 6

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DRIVE-IN MOVIE THEATRE

FUTURE ELKS LANE REALIGNMENT

SLIDING GATES

FUTURE ELKS LANE

SECURITY FENCING

BUS EXIT ONLY

BUS ENTRY ONLY

PROPERTY LINE

POTENTIAL CALTRANS ROW ACQUISITION FOR PRADO RD US101 OVERPASS / INTERCHANGE IMPROVMENTS (EXACT REQUIREMENTS UNKNOWN)

SMOKING AREA

PG&E TRANSMISSION TOWER

SECURITY FENCING

SWING GATE

PATIO

ADMIN

SHARED

FARE/REVENUE ROOM

OPS

PROPERTY LINE + SECURITY FENCING

70'

PG&E EASEMENT

80'

MAINTENANCE

WASH

FUEL

HOMELESS SERVICES CENTER

FUTURE ONRAMP FROM PRADO ROAD TO US 101 NORTH BOUND

SECURITY FENCING

90'

POTENTIAL CALTRANS ROW ACQUISITION FOR PRADO RD US101 OVERPASS / INTERCHANGE IMPROVMENTS (EXACT REQUIREMENTS UNKNOWN)

US 101 SB

US 101 NB

FUTURE 101 OVERPASS

PRADO ROAD

PARKING SUMMARY:
- (29) 50' STALLS
- (32) 30' STALLS
- (84) EMPLOYEE PARKING

BUILDING AREA SUMMARY:
ALL NUMBERS ARE APPROXIMATE
- BUILDING(S): 29,000 SF
  MEZZANINE: ~2800 SF
- OPEN CANOPIES (FUEL, DAYCLEANING): 2500 SF

N

Drawing Scale: 1" = 30'-0"

ORIGINAL SHEET - ARCH E1

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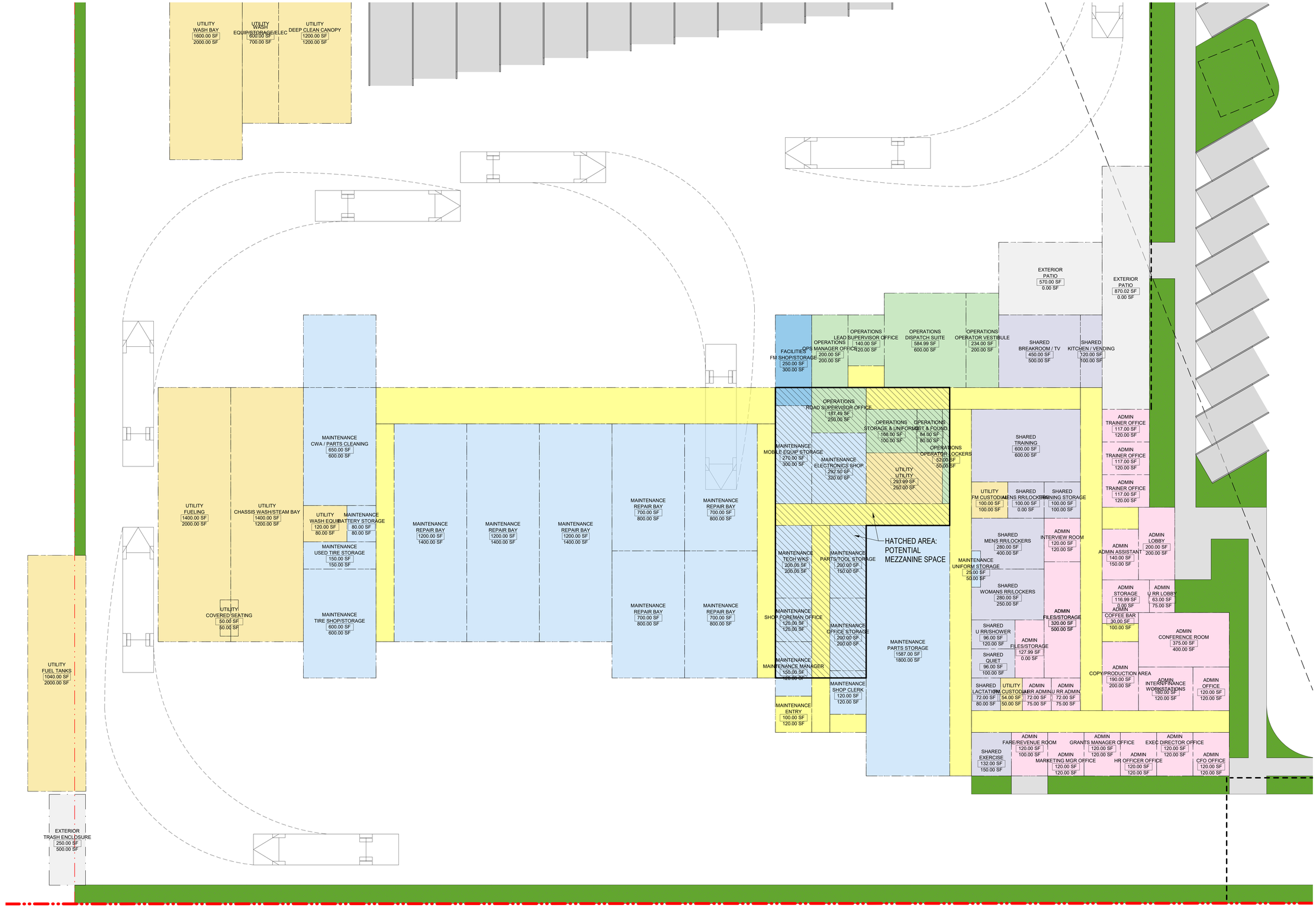
APPENDIX G - DRAFT MASTER PLAN DRAWINGS
APPENDIX G - PAGE 7

San Luis Obispo Regional Transit Authority
Bus Maintenance Facility

253 Elks Lane/40 Prado Road,
San Luis Obispo, CA 93401

Draft Master Plan:
Scheme 1 v5

10/19/18



PARKING SUMMARY:

- (29) 50' STALLS
- (32) 30' STALLS
- (84) EMPLOYEE PARKING

SUMMARY:

- ONE LEVEL BUILDING
- ALL DRIVE-THROUGH MAINTENANCE AND SERVICE BAYS
- IRREGULAR BUILDING FOOTPRINT
- CHASSIS WASH ATTACHED TO BUILDING

Drawing Scale: 1" = 10'-0"

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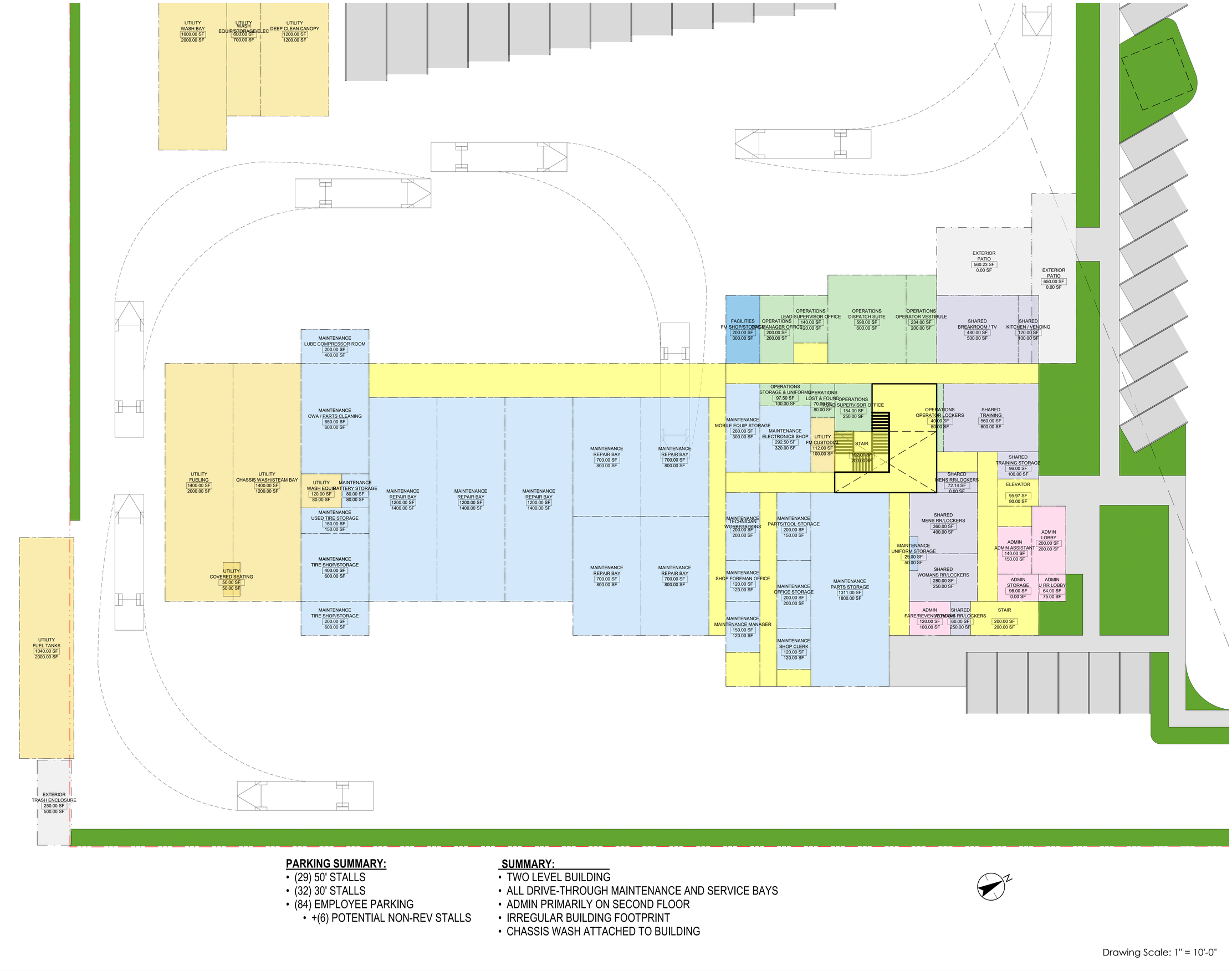
APPENDIX G - DRAFT MASTER PLAN DRAWINGS
APPENDIX G - PAGE 8

San Luis Obispo Retional Transit Authority
Bus Maintenance Facility

253 Elks Lane/40 Prado Road,
San Luis Obispo, CA 93401

Draft Master Plan:
Scheme 1 v5 - Bldg Plan

10/19/18



PARKING SUMMARY:

- (29) 50' STALLS
- (32) 30' STALLS
- (84) EMPLOYEE PARKING
  - +(6) POTENTIAL NON-REV STALLS

SUMMARY:

- TWO LEVEL BUILDING
- ALL DRIVE-THROUGH MAINTENANCE AND SERVICE BAYS
- ADMIN PRIMARILY ON SECOND FLOOR
- IRREGULAR BUILDING FOOTPRINT
- CHASSIS WASH ATTACHED TO BUILDING

Drawing Scale: 1" = 10'-0"

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APPENDIX G - DRAFT MASTER PLAN DRAWINGS
APPENDIX G - PAGE 9

Draft Master Plan: Scheme 3 - Bldg Level 1

San Luis Obispo Retional Transit Authority | Bus Maintenance Facilty

253 Elks Lane/40 Prado Road,
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10/19/18

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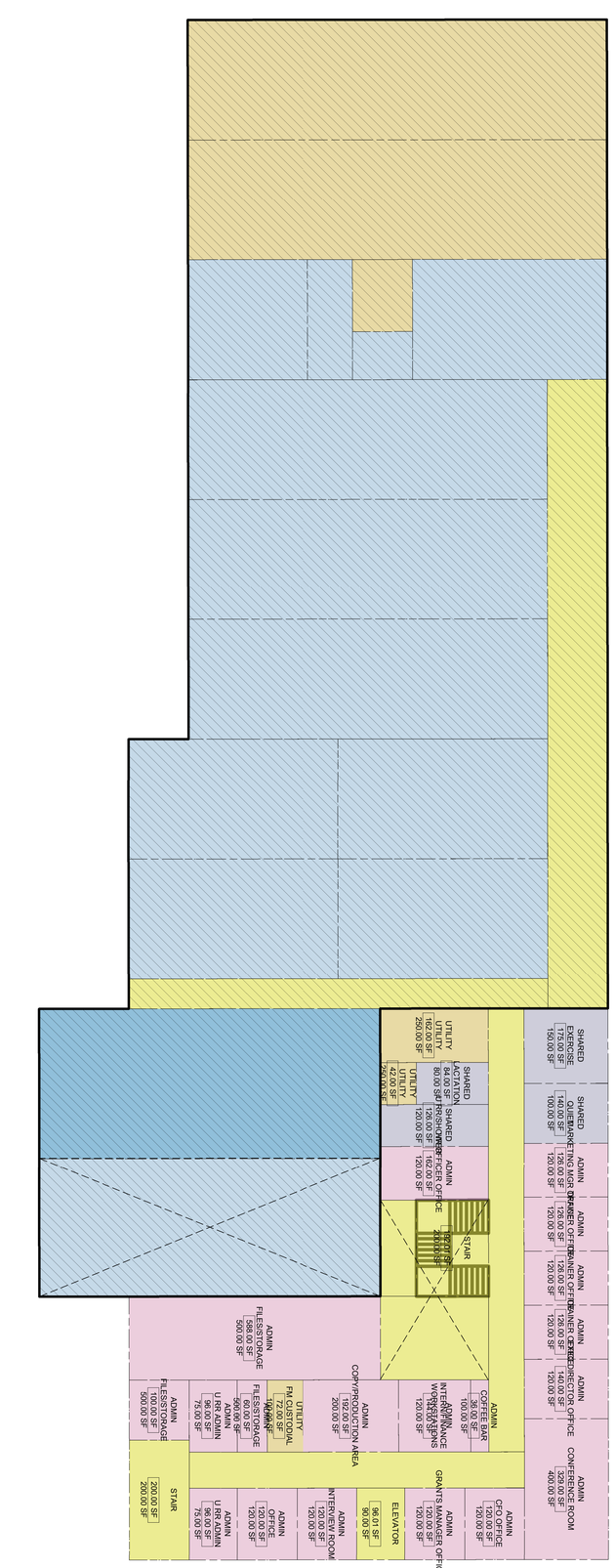

SUMMARY:

- TWO LEVEL BUILDING
- ALL DRIVE-THROUGH MAINTENANCE AND SERVICE BAYS
- ADMIN PRIMARILY ON SECOND FLOOR
- IRREGULAR BUILDING FOOTPRINT
- CHASSIS WASH ATTACHED TO BUILDING

N

Drawing Scale: 1" = 10'-0"

Draft Master Plan: Scheme 3 - Bldg Level 2

10/19/18

San Luis Obispo Retional Transit Authority Bus Maintenance Faciltiy

253 Elks Lane/40 Prado Road,
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APPENDIX G - DRAFT MASTER PLAN DRAWINGS
APPENDIX G - PAGE 10

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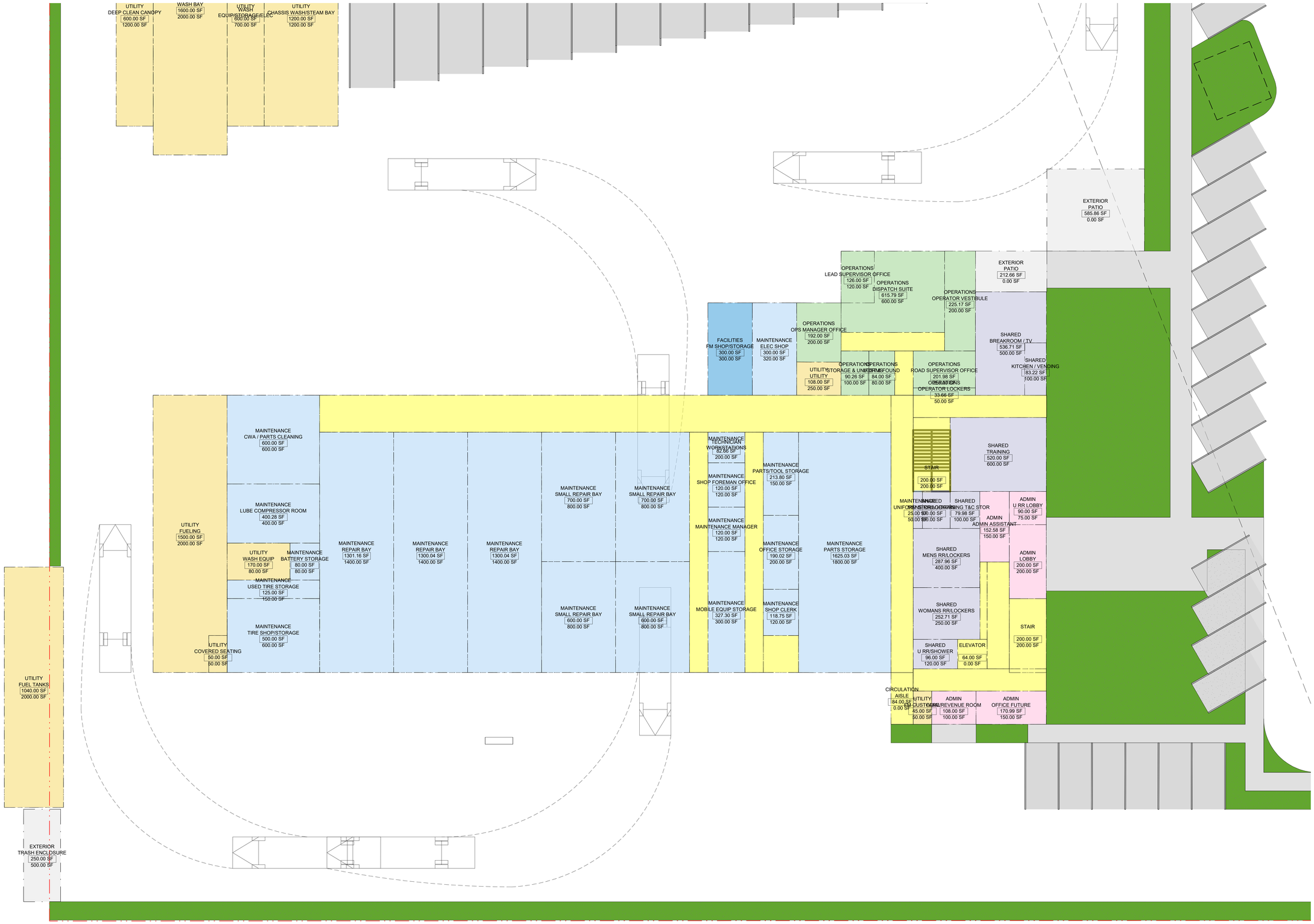

PARKING SUMMARY:

- (29) 50' STALLS
- (32) 30' STALLS
- (84) EMPLOYEE PARKING
  - +(6) POTENTIAL NON-REV STALLS
  - +(4) POTENTIAL EMPLOYEE STALLS

SUMMARY:

- TWO LEVEL BUILDING
- ALL DRIVE-THROUGH MAINTENANCE AND SERVICE BAYS
- ADMIN PRIMARILY ON SECOND FLOOR
- MORE REGULAR BUILDING FOOTPRINT
- CHASSIS WASH ATTACHED TO WASH BUILDING/CANOPY
- ADDITIONAL BUFFER SPACE BETWEEN BUILDING & PARKING

Drawing Scale: 1" = 30'-0"

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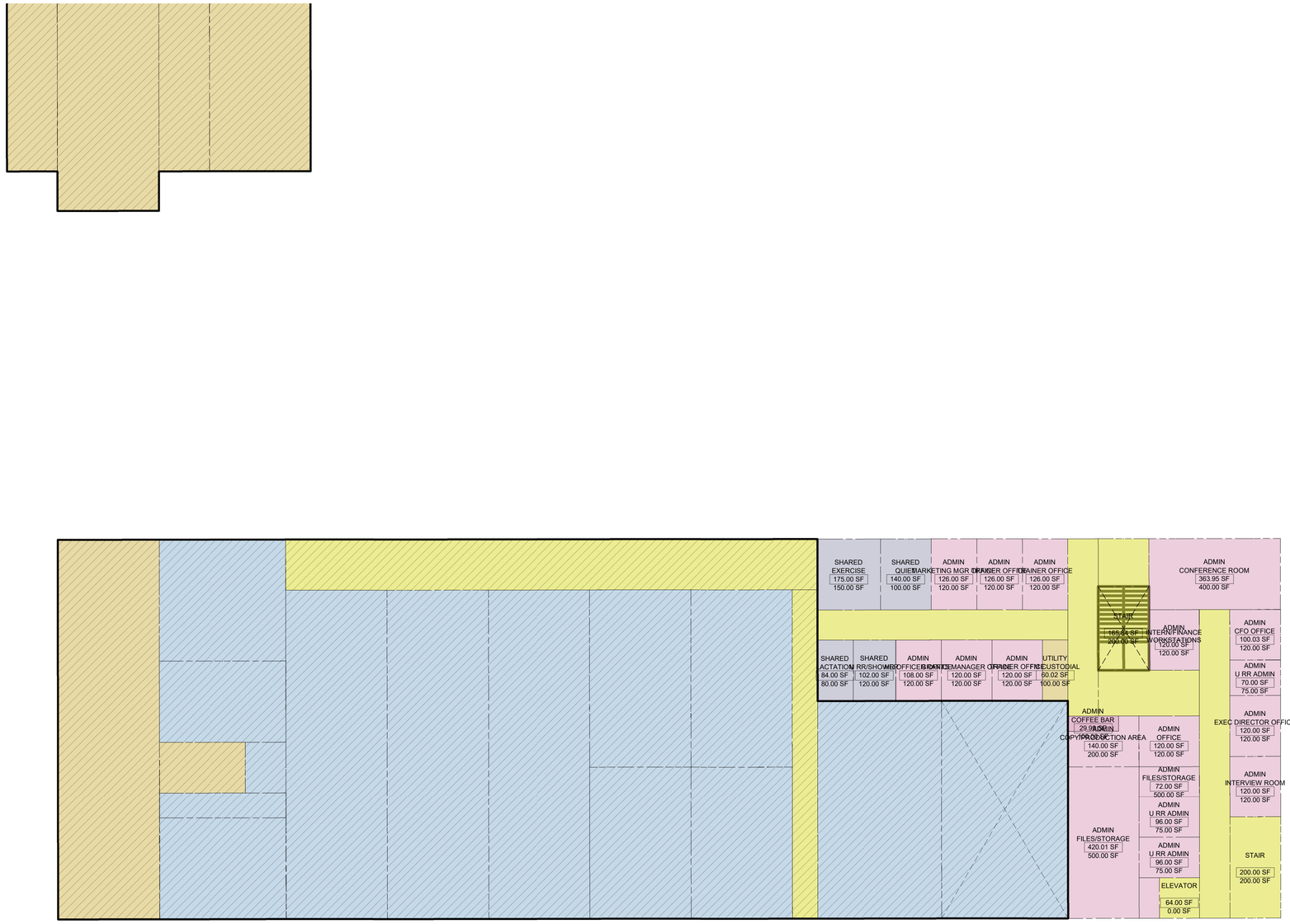
APPENDIX G - DRAFT
MASTER PLAN DRAWINGS
APPENDIX G - PAGE 11

San Luis Obispo Retional Transit Authority
Bus Maintenance Facilty

253 Elks Lane/40 Prado Road,
San Luis Obispo, CA 93401

Draft Master Plan:
Scheme 4 - Bldg Level 1

10/19/18



SUMMARY:

- TWO LEVEL BUILDING
- ALL DRIVE-THROUGH MAINTENANCE AND SERVICE BAYS
- ADMIN PRIMARILY ON SECOND FLOOR
- MORE REGULAR BUILDING FOOTPRINT
- CHASSIS WASH ATTACHED TO WASH BUILDING/CANOPY
- ADDITIONAL BUFFER SPACE BETWEEN BUILDING & PARKING

Drawing Scale: 1" = 10'-0"

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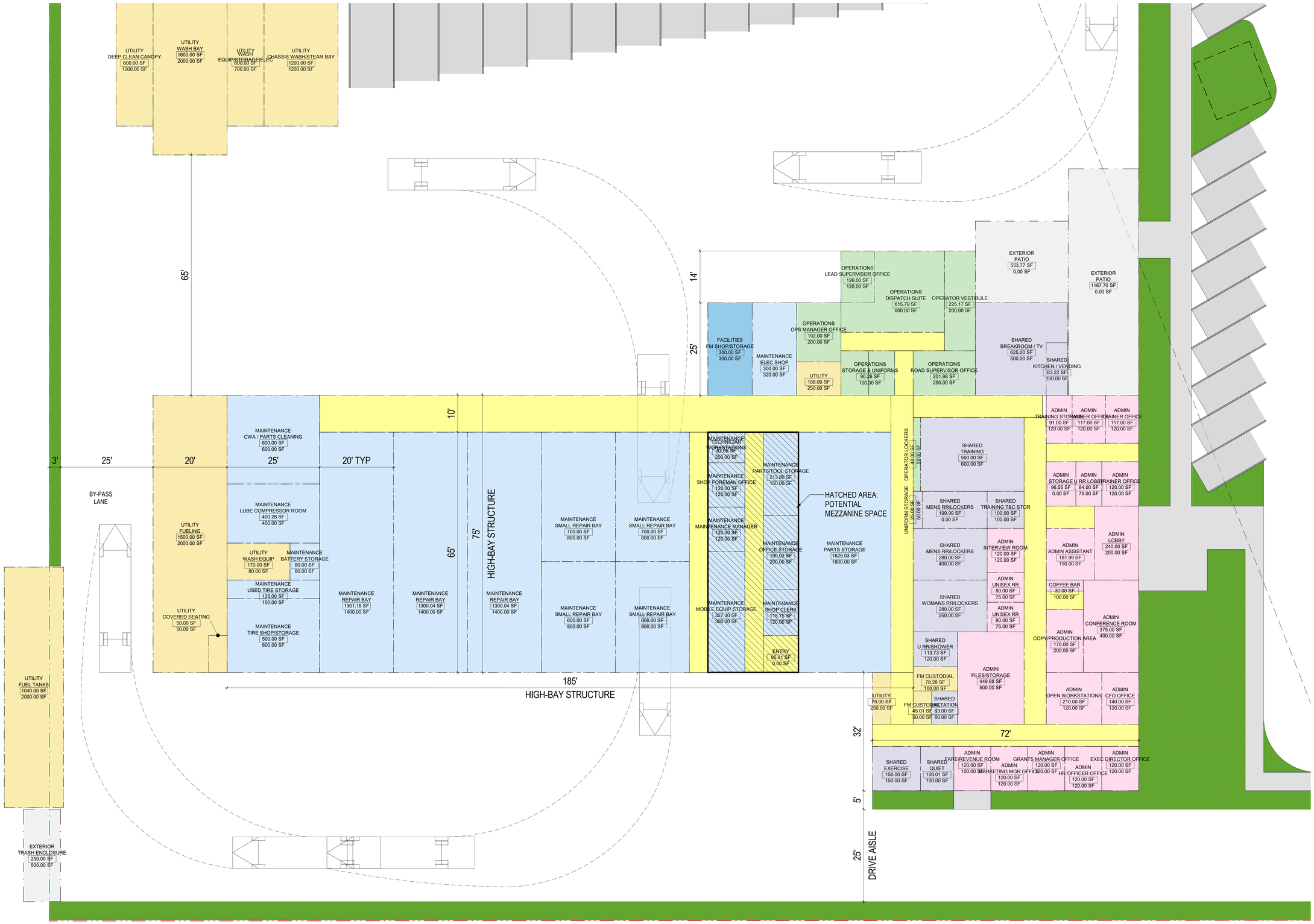
APPENDIX G - DRAFT MASTER PLAN DRAWINGS
APPENDIX G - PAGE 12

San Luis Obispo Retional Transit Authority
Bus Maintenance Facilty

253 Elks Lane/40 Prado Road,
San Luis Obispo, CA 93401

Draft Master Plan:
Scheme 4 - Bldg Level 2

10/19/18



PARKING SUMMARY:

- (29) 50' STALLS
- (32) 30' STALLS
- (84) EMPLOYEE PARKING
  - +(4) POTENTIAL EMPLOYEE STALLS

SUMMARY:

- ONE LEVEL BUILDING
- ALL DRIVE-THROUGH MAINTENANCE AND SERVICE BAYS
- MORE REGULAR BUILDING FOOTPRINT & STRUCTURAL GRID
- CHASSIS WASH ATTACHED TO WASH BUILDING/CANOPY
- ADDITIONAL BUFFER SPACE BETWEEN BUILDING & PARKING

Drawing Scale: 1" = 10'-0"

Stantec
Stantec Architecture Inc.
523 West 6th Street Suite 1200
Los Angeles, CA 90014-1218
Tel: (213) 955-7778 www.stantec.com

Stantec Project No.:
2270449601

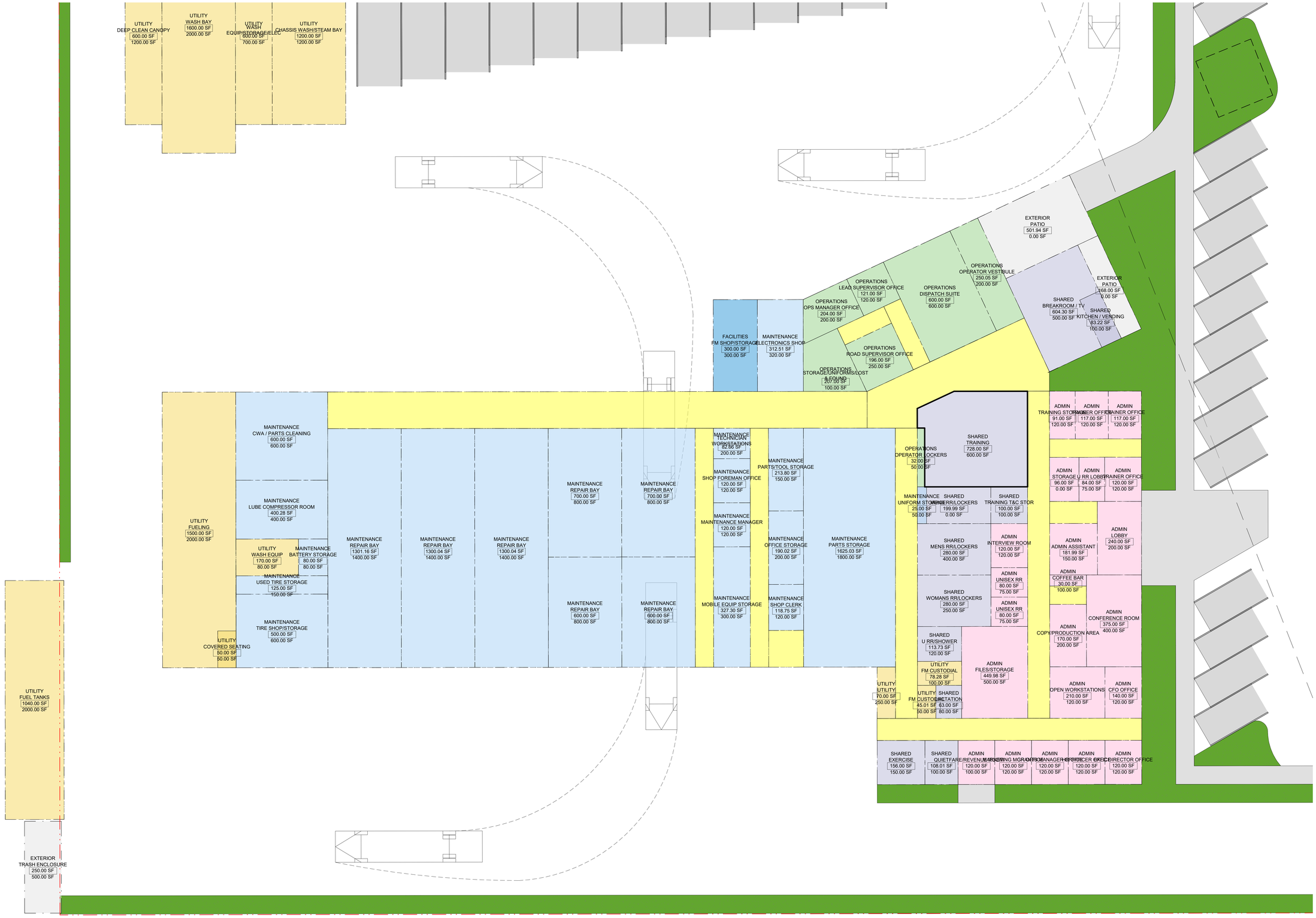
APPENDIX G - DRAFT MASTER PLAN DRAWINGS
APPENDIX G - PAGE 13

Draft Master Plan: Scheme 1 v6 - Bldg Plan

San Luis Obispo Retional Transit Authority | Bus Maintenance Facilty

253 Elks Lane/40 Prado Road,
San Luis Obispo, CA 93401

10/19/18



PARKING SUMMARY:

- (29) 50' STALLS
- (32) 30' STALLS
- (84) EMPLOYEE PARKING
  - +(4) POTENTIAL EMPLOYEE STALLS

SUMMARY:

- ONE LEVEL BUILDING
- ALL DRIVE-THROUGH MAINTENANCE AND SERVICE BAYS
- MORE REGULAR BUILDING FOOTPRINT & STRUCTURAL GRID
- CHASSIS WASH ATTACHED TO WASH BUILDING/CANOPY
- ADDITIONAL BUFFER SPACE BETWEEN BUILDING & PARKING
- FURTHER DEVELOPED 'SHARED' SPACES

Drawing Scale: 1" = 10'-0"

Stantec

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Los Angeles, CA 90014-1218
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Stantec Project No.:
2270449601

APPENDIX G - DRAFT
MASTER PLAN DRAWINGS
APPENDIX G - PAGE 14

San Luis Obispo Retional Transit Authority
Bus Maintenance Facilty

253 Elks Lane/40 Prado Road,
San Luis Obispo, CA 93401

Draft Master Plan:
Scheme 1 v7 - Bldg Plan

10/19/18

Appendix H Final Master Plan

The following pages represent the final Master Plan developed by the Design Team following the charrette. Refer to Section 3 of this report.

- Final Master Plan - Site Plan – 10/24/18
- Final Master Plan - Building Plan – 10/24/18

DRIVE-IN MOVIE THEATRE

FUTURE ELKS LANE REALIGNMENT

SLIDING GATES

FUTURE ELKS LANE

PROPERTY LINE

SECURITY FENCING

POTENTIAL SHARED DRAINAGE BASIN

BUS EXIT ONLY

BUS ENTRY ONLY

SECURITY FENCING

SWING GATE

SMOKING AREA

PG&E TRANSMISSION TOWER

PATIO

ADMIN

SHARED OPS

FARE/REVENUE ROOM

PROPERTY LINE + SECURITY FENCING

MAINTENANCE

CHASSIS WASH

VEHICLE WASH

FUEL

HOMELESS SERVICES CENTER

PG&E EASEMENT 80'

70'

90'

SECURITY FENCING

POTENTIAL CALTRANS ROW ACQUISITION FOR PRADO RD US101 OVERPASS / INTERCHANGE IMPROVMENTS (EXACT REQUIREMENTS UNKNOWN)

POTENTIAL SHARED DRAINAGE BASIN

US 101 SB

US 101 NB

FUTURE ONRAMP FROM PRADO ROAD TO US 101 NORTH BOUND

FUTURE 101 OVERPASS

PRADO ROAD

PARKING SUMMARY:

- (29) 50' STALLS
- (32) 30' STALLS
- (85) EMPLOYEE PARKING

BUILDING AREA SUMMARY:

ALL NUMBERS ARE APPROXIMATE

- BUILDING(S): 29,000 SF
  MEZZANINE: ~2800 SF
- OPEN CANOPIES (FUEL, DAYCLEANING): 2500 SF

Drawing Scale: 1" = 30'-0"

Stantec

Stantec Architecture Inc.
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Tel: (213) 955-7777 • www.stantec.com

Stantec Project No.:
2270449601

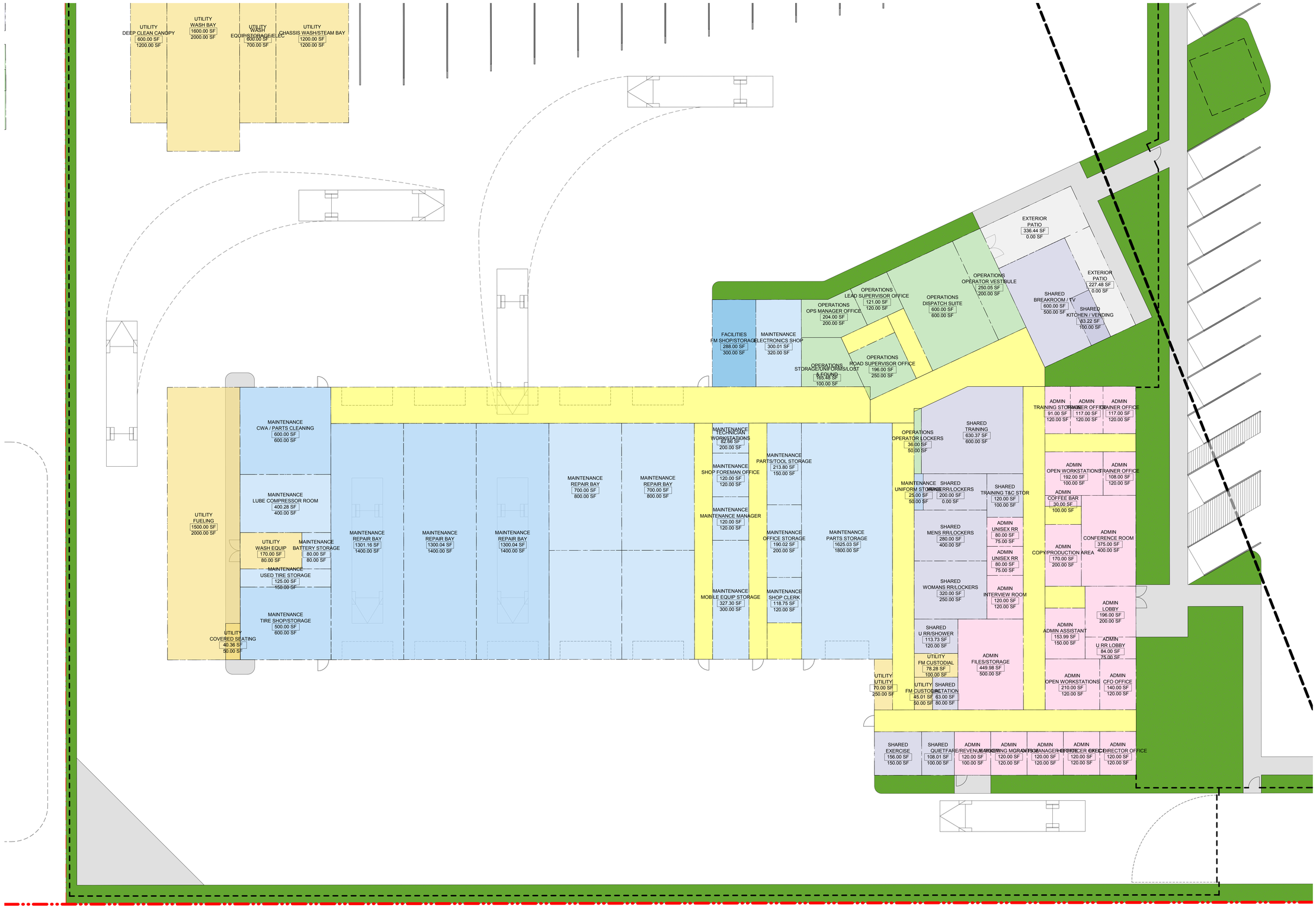
APPENDIX H - FINAL
MASTER PLAN DRAWINGS
APPENDIX H - PAGE 1

San Luis Obispo Rethonal Transit Authority
Bus Maintenance Facilitiy

253 Elks Lane/40 Prado Road,
San Luis Obispo, CA 93401

Final Master Plan
Site Plan

10/24/18



PARKING SUMMARY:

- (29) 50' STALLS
- (32) 30' STALLS
- (84) EMPLOYEE PARKING
  - +(4) POTENTIAL EMPLOYEE STALLS

SUMMARY:

- ONE LEVEL BUILDING
- ALL DRIVE-THROUGH MAINTENANCE AND SERVICE BAYS
- MORE REGULAR BUILDING FOOTPRINT & STRUCTURAL GRID
- CHASSIS WASH ATTACHED TO WASH BUILDING/CANOPY
- ADDITIONAL BUFFER SPACE BETWEEN BUILDING & PARKING
- FURTHER DEVELOPED 'SHARED' SPACES

Drawing Scale: 1" = 10'-0"

Stantec
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Stantec Project No.:
2270449601

APPENDIX H - FINAL
MASTER PLAN DRAWINGS
APPENDIX H - PAGE 2

San Luis Obispo Retional Transit Authority
Bus Maintenance Facilty

253 Elks Lane/40 Prado Road,
San Luis Obispo, CA 93401

Final Master Plan
Building Plan

10/24/18

Appendix J Final Master Plan Comments from RTA

The following pages are the comments RTA provided to Stantec via email on the Final Master Plan. See Section 3.4 of this report for additional information.

RTA Bus Garage Project

Staff Comments on October 24th Concept Plans

1. Operations (Shelly Horton) – her suggestions were drawn up in the Punch software program; see the scan with "Shelly" at the top

    a. Closest bathroom to Dispatch is too far? Conversely, it is probably just as close as the current two restrooms (yet likely further than the current shared restroom by the breakroom).

    b. Dispatchers need to step away from the Dispatch office occasionally to consult mechanics, and sometimes go to Shop Clerk (Carrie). Want that office to be relatively close to Dispatch office.

    c. Lost and Found is too far away from the Admin Lobby, since that is where the customers should go. If it can be moved to the current Admin Open Workstation area and the door moved back, then evening Supervisors can place items in the room.

    d. Distance is too far from Shared Breakroom (although we joked that it provides extra steps to get there). Will the noise from the Exercise Room impede on the calm of the Quiet Room ? Should the door on the Shower hallway be moved to in front of the Fare Revenue Room so that access to the Quiet area is provided for drivers?

    e. Road Supervisor Room is too big; shouldn't be too comfortable.

    f. Need one Interview Room for both Road Supervisors and the Lead Supervisor (see the Punch layout)

    g. Lead Supervisor Room should be placed within Dispatch, but with glass walls (see the Punch layout)

2. Administration (Tania and Geoff) – see the scan with "Tania" at the top.

    a. Can the Admin Conf Room be placed next to Training Room and be divided with a moveable wall?

    b. The Coffee Bar in the Admin area has prompted a request for the same in the Maintenance area. Can or should either/both be implemented?

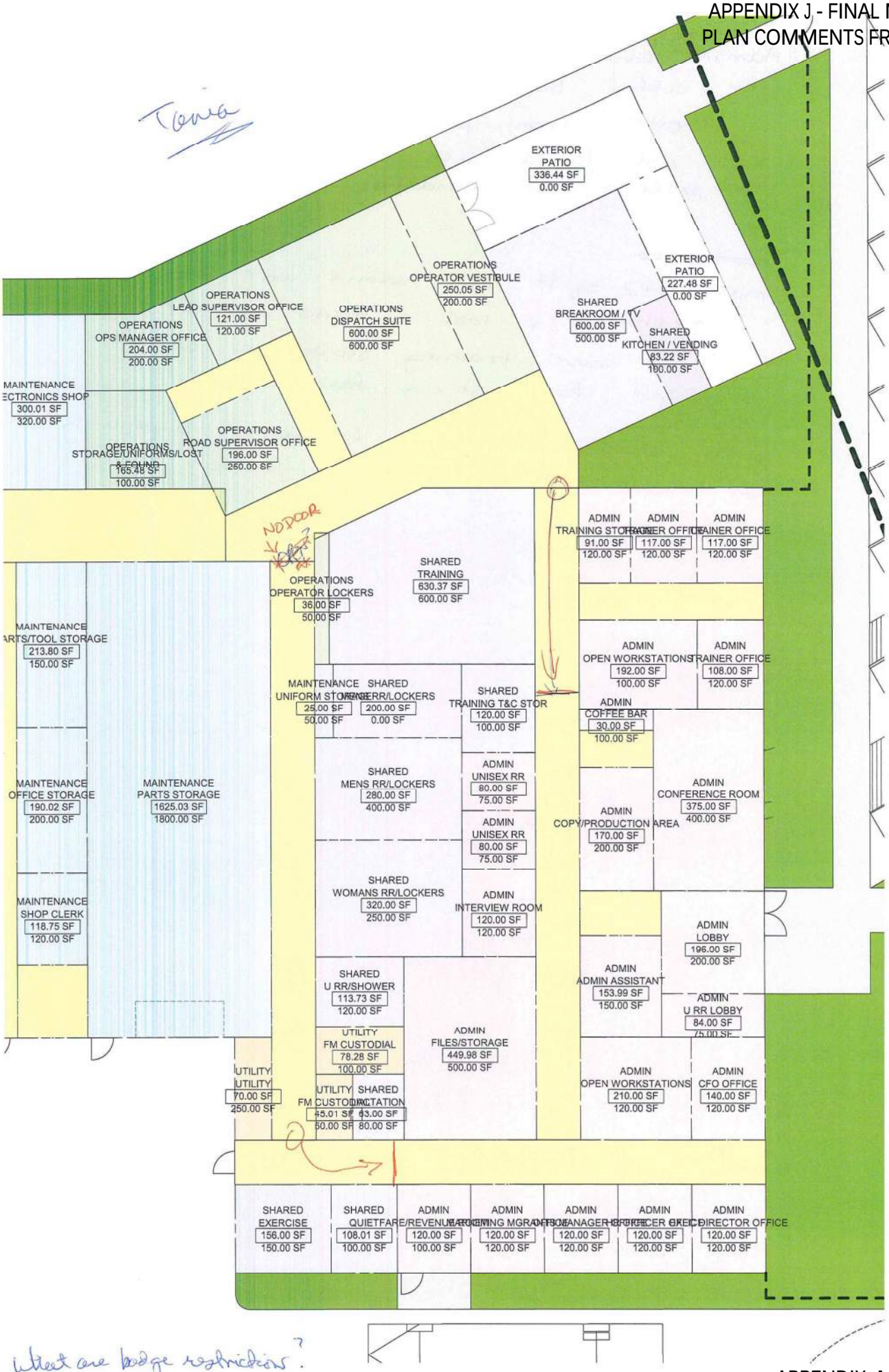
    c. Echo Ops concern about Lost & Found being too far away from public lobby. Might require moving

   d. Need to figure out adjacencies necessary for Lost & Found, Admin Open Workstations (192 sq. ft.) and Shared Training & Storage areas. This whole what goes where is going to require additional discussion!

   e. Is the Shared Breakroom 500 sq. ft. separate from the 100 sq. ft. Shared Kitchen/Vending area?

3. Training (Patricia) – Mail slots for Bus Operators should be placed in the Operator Vestibule, and lockers on a wall in the Exterior Patio (assuming it is covered?).

4. Maintenance (Carrie and David) – see the scan with "Carrie/shop" on top. Also, the Mechanics' access to the HR office and its location is important, since many of them go to/from that office (remember that grease sometimes gets tracked by the Mechanics when they go to Admin!).


EXTERIOR PATIO
336.44 SF
0.00 SF
OPERATIONS OPERATOR VESTIBULE
250.05 SF
200.00 SF
EXTERIOR PATIO
227.48 SF
0.00 SF
OPERATIONS LEAD SUPERVISOR OFFICE
121.00 SF
120.00 SF
OPERATIONS DISPATCH SUITE
600.00 SF
600.00 SF
SHARED BREAKROOM / TV
600.00 SF
500.00 SF
SHARED KITCHEN / VENDING
83.22 SF
100.00 SF
OPERATIONS OPS MANAGER OFFICE
204.00 SF
200.00 SF
MAINTENANCE ECTRONICS SHOP
300.01 SF
320.00 SF
OPERATIONS ROAD SUPERVISOR OFFICE
196.00 SF
250.00 SF
OPERATIONS STORAGE/UNIFORMS/LOST & FOUND
165.48 SF
100.00 SF
NO DOOR
ADMIN TRAINING STORAGE
91.00 SF
120.00 SF
ADMIN TRAINER OFFICE
117.00 SF
120.00 SF
ADMIN TRAINER OFFICE
117.00 SF
120.00 SF
SHARED TRAINING
630.37 SF
600.00 SF
OPERATIONS OPERATOR LOCKERS
36.00 SF
50.00 SF
MAINTENANCE RTS/TOOL STORAGE
213.80 SF
150.00 SF
ADMIN OPEN WORKSTATIONS
192.00 SF
100.00 SF
ADMIN TRAINER OFFICE
108.00 SF
120.00 SF
MAINTENANCE UNIFORM STORAGE
25.00 SF
50.00 SF
SHARED MENS RR/LOCKERS
200.00 SF
0.00 SF
SHARED TRAINING T&C STOR
120.00 SF
100.00 SF
ADMIN COFFEE BAR
30.00 SF
100.00 SF
SHARED MENS RR/LOCKERS
280.00 SF
400.00 SF
ADMIN UNISEX RR
80.00 SF
75.00 SF
ADMIN CONFERENCE ROOM
375.00 SF
400.00 SF
MAINTENANCE OFFICE STORAGE
190.02 SF
200.00 SF
MAINTENANCE PARTS STORAGE
1625.03 SF
1800.00 SF
ADMIN COPY/PRODUCTION AREA
170.00 SF
200.00 SF
ADMIN UNISEX RR
80.00 SF
75.00 SF
SHARED WOMANS RR/LOCKERS
320.00 SF
250.00 SF
ADMIN INTERVIEW ROOM
120.00 SF
120.00 SF
MAINTENANCE SHOP CLERK
118.75 SF
120.00 SF
ADMIN LOBBY
196.00 SF
200.00 SF
SHARED U RR/SHOWER
113.73 SF
120.00 SF
ADMIN ADMIN ASSISTANT
153.99 SF
150.00 SF
ADMIN U RR LOBBY
84.00 SF
75.00 SF
UTILITY FM CUSTODIAL
78.28 SF
100.00 SF
ADMIN FILES/STORAGE
449.98 SF
500.00 SF
UTILITY UTILITY
70.00 SF
250.00 SF
UTILITY FM CUSTODIAL
45.01 SF
50.00 SF
SHARED DICTATION
63.00 SF
80.00 SF
ADMIN OPEN WORKSTATIONS
210.00 SF
120.00 SF
ADMIN CFO OFFICE
140.00 SF
120.00 SF
SHARED EXERCISE
156.00 SF
150.00 SF
SHARED QUIETFARE/REVENUE
108.01 SF
100.00 SF
ADMIN
120.00 SF
100.00 SF
ADMIN
120.00 SF
120.00 SF
ADMIN
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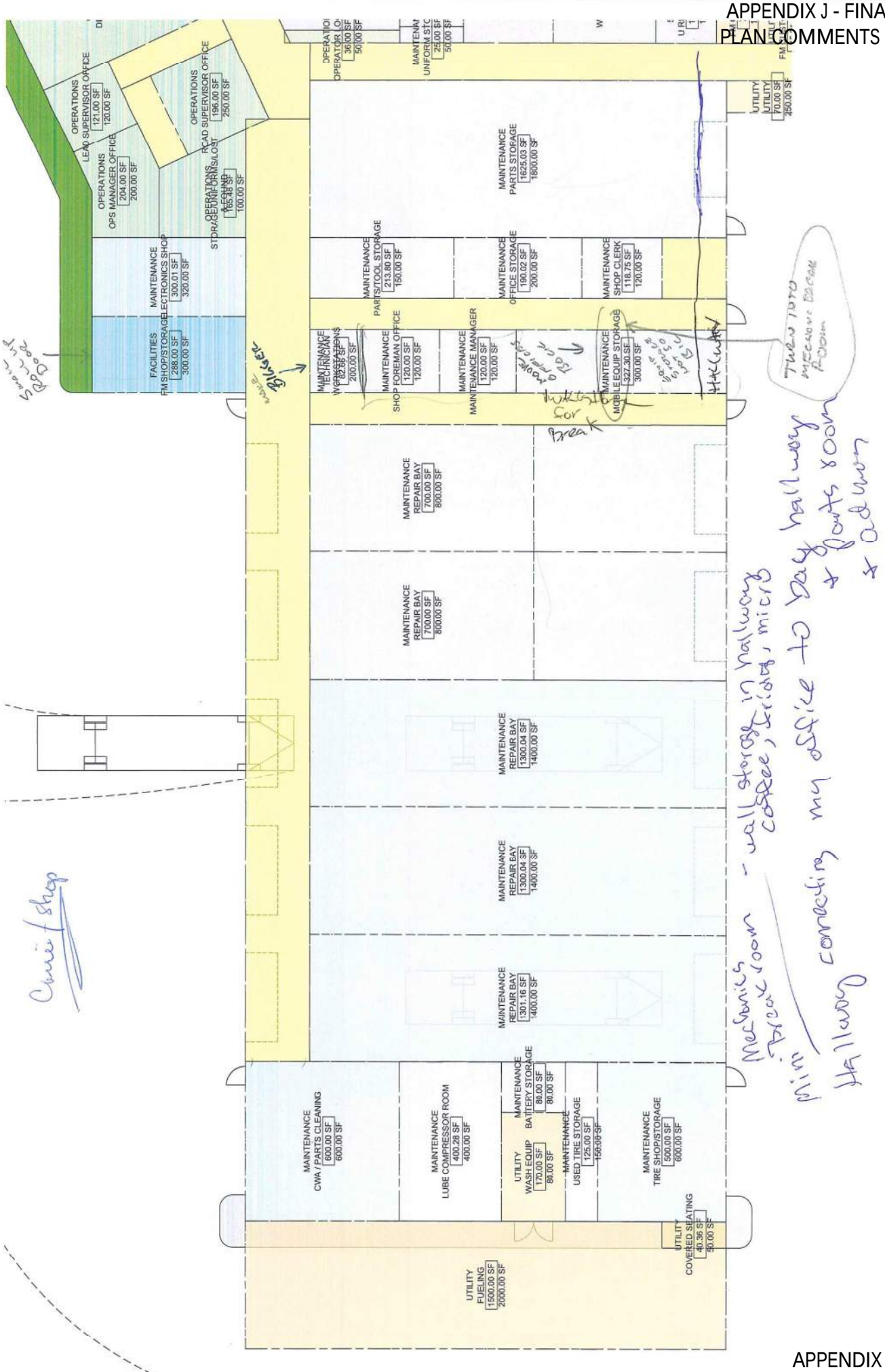
ADMIN DIRECTOR OFFICE
120.00 SF
120.00 SF


OPERATIONS LEAD SUPERVISOR OFFICE 121.00 SF 120.00 SF
OPERATIONS OPS MANAGER OFFICE 204.00 SF 200.00 SF
OPERATIONS ROAD SUPERVISOR OFFICE 196.00 SF 250.00 SF
OPERATIONS STORAGE/ITEMS/LOST 165.41 SF 100.00 SF
MAINTENANCE ELECTRONICS SHOP 300.01 SF 320.00 SF
FACILITIES FM SHOP/STORAGE 288.00 SF 300.00 SF
MAINTENANCE PARTS STORAGE 1625.03 SF 1800.00 SF
MAINTENANCE PARTS/TOOL STORAGE 213.80 SF 150.00 SF
MAINTENANCE OFFICE STORAGE 190.02 SF 200.00 SF
MAINTENANCE SHOP CLERK 118.75 SF 120.00 SF
MAINTENANCE WORKSTATIONS 82.66 SF 200.00 SF
MAINTENANCE SHOP FOREMAN OFFICE 120.00 SF 120.00 SF
MAINTENANCE MAINTENANCE MANAGER 120.00 SF 120.00 SF
MAINTENANCE MOBILE EQUIP STORAGE 327.30 SF 300.00 SF
MAINTENANCE REPAIR BAY 700.00 SF 800.00 SF
MAINTENANCE REPAIR BAY 700.00 SF 800.00 SF
MAINTENANCE REPAIR BAY 1300.04 SF 1400.00 SF
MAINTENANCE REPAIR BAY 1300.04 SF 1400.00 SF
MAINTENANCE REPAIR BAY 1301.16 SF 1400.00 SF
MAINTENANCE CWA / PARTS CLEANING 600.00 SF 600.00 SF
MAINTENANCE LUBE COMPRESSOR ROOM 400.28 SF 400.00 SF
MAINTENANCE BATTERY STORAGE 80.00 SF 80.00 SF
UTILITY WASH EQUIP 170.00 SF 80.00 SF
MAINTENANCE USED TIRE STORAGE 125.00 SF 150.00 SF
MAINTENANCE TIRE SHOP/STORAGE 500.00 SF 600.00 SF
UTILITY COVERED SEATING 40.36 SF 50.00 SF
UTILITY FUELING 1500.00 SF 2000.00 SF
UTILITY 70.00 SF 250.00 SF
Hallway
Break
Mechanics Breakroom - wall storage in hallway coffee, fridge, micro
mini hallway connecting my office to bay + parts room + admin


15'-7" x 7'-11"
123 sq.ft.
15'-7" x 27'-1"
421 sq.ft.
15'-7" x 3'-10"
52 sq.ft.
Verdunsg
Patio
Vestbule
26'-5" x 24'-8"
653 sq.ft.
Shelly
Operations Dispatch
Coffee Bar
12'-3" x 13'-3"
162 sq.ft.
Road Supervisor 1 regular desk 3 standing
12'-3" x 11'-1"
135 sq.ft.
Private interview room vidoe watching etc
operation manager
14'-1" x 13'-3"
185 sq.ft.
storge lost n found

Appendix K Battery Electric Bus Readiness Plan

The following document has been prepared to outline the future requirements to adequately plan for battery electric buses to be phased into the fleet over the next couple of decades.

- Electrification-readiness plan and deployment of battery-electric buses by San Luis Obispo RTA – Report Memo - from Fuel Solutions dated 4/4/19
- Cost Estimate information on Facility Electrification - from GECE dated 4/3/19
- Battery Electric Bus Infrastructure Plan Exhibit from Stantec dated 4/4/19

FUEL SOLUTIONS

REPORT MEMORANDUM

TO: Geoff Straw, Executive Director, San Luis Obispo RTA

CC: Will Todd, AIA, Stantec; Heather Gray, PE, GECE

FROM: Reb Guthrie

DATE: April 4, 2019

SUBJECT: Electrification-readiness plan and deployment of battery-electric buses by San Luis Obispo RTA

Background & Summary

The San Luis Obispo RTA is developing plans for a new bus maintenance facility, which will be located at 253 Elks Lane, SLO, CA. All of RTA's buses are currently fueled by conventional petroleum fuels. The State of California is enacting regulations[1] that will require all transit agencies in the state – including SLO RTA – to deploy 100% 'zero emission buses'[2] (ZEBs). As a small transit agency with fewer than 100 buses, the ICT regulation will require new buses purchased by SLO RTA to be ZEB's beginning in 2026.

Though battery electric bus (BEB) propulsion technology is still developing, it is widely considered to be more mature and viable than the alternative of hydrogen fuel-cell propulsion. Accordingly, this report considers and assumes use of BEBs by the RTA to meet the ZEB mandate. The report also discusses the requirements for planning for adequate electrical-charging infrastructure ('electrification') of the planned bus maintenance facility. Deployment of ZEBs/BEBs and associated infrastructure at the RTA's three other facilities are only briefly and generally considered in this report.

In order to support electrification of all revenue and non-revenue vehicles at the SLO facility (including 1% annual fleet growth), about 2,220 kW (2.2 MW) for charging power will be needed. This assumes the use of multiple dispensers per charger, so that available charger power is distributed during the total time available each night for charging[3]. Based on the required deployment of RTA BEB's, this electrical service will need to be in place by 2028, as limited interim charging from the main building power will be adequate from 2026-2027.

The total direct cost of providing the electrical-service extension by Pacific Gas & Electric (PG&E) and establishing the associated on-site utility electric service and conduit-only

---

[1] Innovative Clean Transit (ICT) regulation, proposed for implementation in 2019 by California Air Resources Board; https://ww2.arb.ca.gov/rulemaking/2018/innovative-clean-transit-2018

[2] ZEB is defined as having no tailpipe emissions; buses must be powered by battery or hydrogen fuel cells to meet the ICT zero-emission requirement.

[3] A more-aggressive strategy that uses one charger per bus is possible, but the power demands are ~ 3x of this projection, and would result in unused charging time each night, and thus would be inefficient.

provisions for charging infrastructure is about $453,618[4], which includes allowances for contractor markups, contingency and 2-year escalation. This does not include the costs for bus chargers, wiring and related infrastructure that will be constructed downstream of the electrical service.

Separately, the Paso Robles facility will require about 130 kW, the Cambria yard will require about 1,185 kW, and the SCT yard will require about 560 kW to support eventual full electrification of their respective bus fleets.

This report assumes that all RTA BEB charging will be done in each facility using plug-in chargers. Alternately, some use of opportunity or en-route charging, where buses receive higher power charging for brief periods (typically 3-15 minutes) either during protracted route stops or at layover locations is possible. However, this strategy introduces new issues such as land acquisition or ownership for the charging equipment, use of more-sophisticated and expensive overhead (pantograph) chargers, buying energy during the day when it is most expensive, and decentralizing equipment and RTA physical plant, which tends to increase maintenance costs.

Electrical Energy Needed for Electrification Charging at Each Facility

So that the amount of fuel needed for bus charging at each of the four facilities can be determined, we have aggregated data from average daily mileage (SLO) and route blocks (the other three facilities) to estimate charging energy that will be needed. Tables 1A-1D below show this data for the SLO, Cambria, Paso, and South County locations respectively. It is important to note that multiple buses comprise some blocks, and that since BEB range is less than current diesel range, multiple and additional electric buses will be needed to meet the kWh/day requirements of many of the blocks.[5]

[4] PG&E fees have been estimated at this time. The utility company has not commented on service fees for infrastructure due to the unknown impact of the Prado Road Overpass project.
[5] Depending on route conditions and battery capacity, currently available 40' BEB's have a usable capacity of about 380-400 kWh.

Table 1A – kW demand and kWh energy needed for buses deployed from SLO facility

	Description	40ft. Bus	Cutaway	Minivan	LD NRV
Bus Demand & Energy	Average Bus Miles/Day	248	77	62	38
	x Combined kWh/Mile Usage Rate	3.10	2.00	0.60	0.40
	= kWh charge required / bus / day	768.8	154.0	37.2	15.2
	+ safety margin	0%	0%	0%	0%
	= Final kWh charge req'd / bus / day	769	154	37	15
	/ available charge hours	10.00	8.00	9.00	10.00
	= Charger kW / bus (reference)	76.9	19.3	4.1	1.5
Dispenser Ratio					
	Selected dispenser ratio:	2	6	5	10
	= Req'd charger kW @ selected ratio:	*153.8*	*115.5*	*20.7*	*15.2*
	Available charger kW	156.0	156.0	20.4	20.4
	Charger kW margin (req'd < available)	*2.2*	*40.5*	*~ 0*	*5.2*
Facility kW Demand	Future gross BEB's / fleet segment	26	13	13	14
	Less spare ratio	20%	20%	10%	10%
	Net BEB/EV rollout / fleet segment	21.0	11.0	12.0	13.0
	/ dispenser ratio (@ ≤ 156kW or 20kW)	2	6	5	10
	= total chargers / fleet segment	**11.0**	**2.0**	**3.0**	**2.0**
	x kW rating / charger	156.0	156.0	20.7	20.4
	/ ~ charger efficiency	96%	96%	96%	96%
	= adjusted kW demand / charger	162.5	162.5	21.5	21.3
	= kW charger demand / fleet segment	1,788	325	65	43
Total kW Demand for BEB & Fleet EVs @ SLO Facility		**2,220**			
kWh Energy / Fleet Segment		16,145	1,694	446	198
Total kWh Energy / Day for BEB & Fleet EVs @ SLO Facility		**18,483**			

Per table 1A above, the revenue buses, cutaways and minivans as well as the non-revenue vehicles (NRVs) that will be based at the SLO facility (including fleet growth) will require about 18,483 kWh of fuel to recharge vehicles each night. The electrical demand required to meet this load is about 2,220 kW. This demand is comprised of 11 plus 2 high-power 150- or 156-kW chargers with 1:2 and 1:6 dispenser ratios for 40' and cutaway buses respectively. Additional demand is derived from 3 plus 2 commercial-type 20kW chargers with 1:5 and 1:10 ratios for revenue minivans and NRVs respectively[6].

Table 1B – KWh fuel needed per day for buses deployed from CAMBRIA facility

Location	Route	Block	Bus Type	Mi/Day	kWh/mi	kWh/Day
CAMB	RTA Rt-15	151	Cutaway	187	1.8	336
CAMB	RTA Rt-15	152	Cutaway	116	1.8	209
Totals & Averages				**303**	**1.8**	**545**

[6] The actual power rating and number of chargers and their dispenser ratios may vary, but their aggregate power rating must equal the kW power ratings listed.

Per table 1B above, the buses that comprise the two blocks that originate from the Cambria facility (which consists entirely of RTA route 15), travel an average of 303 miles per day, and will require about 545 kWh of fuel to recharge buses each night.

Table 1C – KWh fuel needed per day for buses deployed from PASO facility

Location	Route	Block	Bus Type	Mi/Day	kWh/mi	kWh/Day
PASO	RTA Rt-9	91	40-foot	152	2.5	380
PASO	RTA Rt-9	92	40-foot	148	2.5	370
PASO	RTA Rt-9	93	MCI	71	3.5	249
PASO	RTA Rt-9	94	MCI	79	3.5	277
PASO	RTA Rt-9	95	40-foot	195	2.5	487
PASO	RTA Rt-9	96	40-foot	169	2.5	423
PASO	RTA Rt-9	97	40-foot	136	2.5	340
PASO	RTA Rt-9	98	40-foot	147	2.5	367
PASO	RTA Rt-9	913	40-foot	148	2.5	370
PASO	Pas Exp-Local	71	32-foot	82	2.1	173
PASO	Pas Exp-Local	72	32-foot	52	2.1	110
PASO	Pas Exp-Local	81	32-foot	75	2.1	157
PASO	Pas Exp-Local	82	32-foot	51	2.1	107
Totals & Averages				**1,506**	**2.5**	**3,810**

Per table 1C above, the buses that comprise the 13 blocks that originate from the PASO facility (which consists of RTA route 9 and Paso Express Local), travel an average of 1,506 miles per day, and will require about 3,810 kWh of fuel to recharge buses each night.

Table 1D – KWh fuel needed per day for buses deployed from SCT facility

Location	Route	Block	Bus Type	Mi/Day	kWh/mi	kWh/Day
SCT	SCT Local-Fix	21	35-foot	213	2.2	468
SCT	SCT Local-Fix	24	35-foot	166	2.2	365
SCT	SCT Local-Fix	27	35-foot	181	2.2	398
SCT	SCT Local-Fix	28	35-foot	178	2.2	392
SCT	SCT Local-Fix	Tripper	40-foot	24	2.5	59
SCT	SCT Local-Fix	Trolley	Trolley	50	2.2	109
Totals & Averages				**811**	**2.3**	**1,792**

Per table 1D above, the buses that comprise the two blocks that originate from the SCT facility (which consists entirely of SCT local fixed route), travel an average of 811 miles per day, and will require about 1,792 kWh of fuel to recharge buses each night.

100% Electrical-Power Requirements and Calculations at Each Facility

So that the minimum electrical power needed for BEB charging at each yard can be determined, we have divided the kWh of total electrical fuel per facility per day by the minimum available nightly recharging window of eight hours. As shown in Table 2 below, the four facilities will

require recharging capacities ranging from 104 kW to 922 kW when 100% of the fleet is electrified.

Table 2 – Summary daily kWh fuel needed and ideal kW needed per facility

Yard	Miles / Day [A]	kWh / Day [A]	kW / 8 Hrs [B]
SLO	See Table 1A		2,220
CAMB	303	545	68
PASO	1,506	3,810	476
SCT	811	1,792	224

Notes. A) Yard values are based on totals from Tables 1A-1D.
B) Values assume ideal load balancing across the nightly charging window and are below actual load requirements.

However, the kW power ratings listed above are optimized minimums, and assume perfect power distribution to each bus such that the entire eight-hour charging window is used evenly for all buses. At this time charging technology does not allow for such optimization.

Calculations to determine needed electrical power for BEB build-out at all RTA facilities are provided below, including worst-case (rated) demand for all chargers, as well as optimized demand at the three smaller facilities (see Note C under Table 3).

Table 3 – Calculations to determine projected kW demand at each Facility (full and optimized)

–	Vehicles Deployed	kW per Charger / Bus [A]	Total kW (Full kW) [B]	Total kW (optimized) [C]
Buses & Trolleys Cutaways	(See Table 1A)			
Totals SLO	57	–	–	**2,220**
Buses & Trolleys	0	150	0	0
Cutaways	2	65	130	78
Totals Cambri	2	-	**130**	**78**
Buses & Trolleys	4	150	600	360
Cutaways	9	65	585	351
Totals PASO	13	-	**1,185**	**711**
Buses & Trolleys	2	150	300	180
Cutaways	4	65	260	156
Totals SCT	6	-	**560**	**336**

Notes: A) Power ratings per charger are estimates and may vary by manufacturer. B) Represents rated power of all connected BEB chargers and that all BEB's are charged daily with a dedicated charger; provides maximum operational flexibility. C) Assumes power of all chargers at Cambria, Paso and SCT are reduced by 40% by a demand-optimization scheme, so that charge power is distributed more evenly across the available charge-time window; power for SLO is optimized by using multiple dispensers per charger, as shown in Table 1A.

Requirements for Electric Utility Supply and Connection at SLO

Power for Charging Early BEBs and Light Vehicles:
Though the substantial deployment of battery-electric buses at the SLO facility will not begin until 2026, the RTA will likely deploy two to four BEBs at the SLO facility in advance of that date. To support charging for these BEBs, the SLO facility will include provisions to power two 150kW-rated chargers, each of which can support two full-size buses. To account for the approximate 96% efficiency of the chargers, the combined 300kW-output rating of the two chargers will require an input of about 315kW[7]. This power can be provided by the main 480V building power, and thus is not dependent on additional electric service provisions to the site.

In the 2026 timeframe – when larger-scale bus electrification at the SLO facility is planned – the RTA also could potentially electrify its light-duty vehicles, although not required by the CARB. Once the larger service is in place and full BEB-charging infrastructure has begun to be deployed, the two to four early BEB's mentioned in the preceding paragraph can be transitioned off the two initial 150kW chargers. The ~ 315kW power for these chargers can then be transitioned to power up to (27) 10kW chargers, which will adequately serve the RTA's light-duty vehicle fleet, to include its revenue minivans and its white-fleet sedans and light trucks.

Power for Bus Charging:
Since the power levels required to support bus electrification are significantly higher at SLO and is the focus of the study, only the costs for this facility are considered below. The other three sites can be served from conventional 480V service.

To meet the optimized scheme described in Table 3 for SLO of about 2,220 kW[8], supplemental capacity from the building's 277/480v, 3-phase electric service will be needed. The electrical distribution approach and consideration for system loading have been developed over two phases as discussed below.

Phase 1 – Installation of Building Electric Service

Assessment of the electric service capacity needs for the new RTA building identify the electric service capacity requirement of approx. 1,000 kVA connected load, with additional load provisions for two (2) BEB's (150 kW x 2 = 300 kW or 312.5 kVA at a power factor of 0.96), bringing the total Phase 1 estimated electric service needs to approximately 1,312.5 kVA (1,579A at 277/480v, 3-phase). Electrical service infrastructure (i.e. utility primary service conduit, secondary service conduit, utility transformer pad, and main electric service switchgear) will be sized to incorporate the building and electrification load profile for Phase 1, and future Phase 2 (discussed below), accommodating a combined total estimated connected load of 3,048 kVA.

[7] 300kW / 96% = 312.5, which is rounded up to 315kW.
[8] Analysis does not include consideration for long continuous load per National Electric Code.

Phase 2 – Expansion of Building Electric Service

Electrification expansion to accommodate approximately 2,220 kW (2,672 kVA[9]) of Bus electrification at the RTA building would require assessment of the Phase 1 electric service demand load profile (i.e. actual energy usage over a min. of 1-year historical usage data from PG&E). Pursuant to comparable facilities within the San Luis Obispo area, we estimate the building could see a demand load of approximately 30% of the building electrical connected load. Assessment of the Phase 1 demand analysis and inclusion of the Phase 2 connected load expansion is outlined in Table 4.

Table 4 – Electric Service Load Estimate (Connected and Demand)

Phase 1					
Estimated Commercial Building Load					
Estimated Calculated Load:			1002.0 kVA		
Estimated Demand:	**30%**		300.6 kVA		
Estimated Demand per NEC 220.87:			375.7 kVA	452	Amps @ 277/480v, 3-phase
Phase 2					
Electrification Expansion					
	Qty.				
40LF Bus Charger	11.0	150 KW	1719 kVA, pf = 0.96		
Cutaway Bus Charger	2.0	150 KW	313 kVA, pf = 0.96		
Mini Van Charger	3.0	20 KW	64 kVA, pf = 0.96		
LD NRV Charger	2.0	20 KW	43 kVA, pf = 0.96		
Subtotal with Long Continuous Load (25%, operation > 3hrs):			2671.9 kVA	3215	Amps @ 277/480v, 3-phase
Phase 1 and 2 Summary					
Estimated Service Connected Load			**3047.6 kVA**		
			3,666 Amps @ 277/480V, 3-phase		

Electrical distribution for the electrification expansion planned for Phase 2 would include provisions for a distribution switchboard, centrally located onsite such that electrical feeders to BEB chargers are minimized (not exceeding 200' in length). Such electrical distribution will require a reserve area measuring about 15' by 20' including clearances and protection.

PG&E has indicated they have adequate service provisions along Prado Road near the site to serve Phase 1 building and electrification loads. However, long range planning and assessment by PG&E will be required to ensure sufficient service provisions for the full expansion in Phase 2 by 2026. Though PG&E service extension costs and fees for Phase 1 and 2 are unknown, the

[9] Calculated value is determined with consideration for long continuous load as per the National Electrical Code, i.e. (2,220 / 0.96 power factor) * 1.25% = 2,672 kVA

utility is in the process of rolling out a new EV-charging tariff that may offset some of the costs associated with the building electric service (Phase 1) and bus electrification net load (Phase 2). However, it is unknown if the RTA project would meet all the criteria of the tariff. Assuming that the RTA may be required to cover the Phase 1 service-extension and distribution costs, those costs are estimated in Table 5 below.

Table 5 – Cost estimate for Phase 1 Utility and Electrical Distribution Costs at SLO

Item	$ Cost [A]	$ Two-year Escl. Cost [B]
Utility costs	$162,910	$208,363
Electrical distribution and commissioning	$191, 754	$245,255
Less credit allowances for expected usage	N/A	TBD [C]
Net Cost to SLO RTA	**$354,664**	**$453,618**

Table notes: A) Costs do not include mark-ups for general contingency, contractor overhead, and contractor profit. Refer to GECE engineering cost estimate for further detail. B) Costs include mark-up for general contingency, contractor overhead, contractor profit, and escalation. Refer to GECE engineering cost estimate for further detail C) Estimated value of credit still pending from PG&E.

On-Site Electrical Distribution

Phase 1 – This scope will be performed as part of the initial construction of the facility and will include empty conduit and pull boxes from the building electric service and electrical distribution area to future charger locations. Provisions for two 150 kW BEB chargers will be provided (including power wiring, chargers, dispensers, and related work). However, installation of actual power wiring, communication wiring, chargers, dispensers and related work for the electrification expansion of the full SLO bus fleet – less two BEB chargers – will be deferred until Phase 2.

Table 6 – Cost estimate for on-site Phase 1 electrification costs[10]

Item	$ Cost [A]	$ Two-year Esc. Cost [B]
Empty conduit to future chargers [C]	$51,780	$66,227
Pull boxes near location of future chargers [D]	$10,280	$13,148
Charger, Wiring, Footing, Bollard, and Charger Base (Qty. 2)	**$137,200**	**$175,480**
Total On-Site Costs (Phase 1)	**$199,260**	**$254,855**

Table notes: A) Costs do not include mark-up for general contingency, contractor overhead, and contractor profit. Refer to GECE engineering cost estimate for further detail. B) Costs include mark-up for general contingency, contractor overhead, contractor profit, and escalation. Refer to GECE engineering cost estimate for further detail C) Includes an estimate for trenching. D) Current pull box concept includes one pull box for every two charger units.

[10] See 'Schematic Electrification Engineering Cost Estimate_r6_04-03-2019' prepared by GECE for further breakdown of costs.

Phase 2 – This portion of the electrification project will include all remaining infrastructure needed to support up to 16 total BEB's, including nine (9) 150kW bus chargers, two (2) cutaway chargers, three (3) minivan chargers, and two (2) LDNRV chargers. This will include installation of 16 chargers, the structural pads for the charger bases and dispensers, the wiring from the distribution boards to the chargers, and the wiring from the chargers to the dispensers.

Table 7 – Cost estimate for on-site Phase 2 electrification costs[11]

Item	$Cost [A]	$ 10-year Escl. Cost [B]
Electrical distribution and commissioning	$145,130	$335,406
Charger, Wiring, Footing, Bollard, and Charger Base (Qty. 16)	$1,337,075	$3,090,086
Total On-Site Costs (Phase 2)	**$1,482,204**	**$3,425,492**

Table notes: A) Costs do not include mark-up for general contingency, contractor overhead, and contractor profit. Refer to GECE engineering cost estimate for further detail. B) Costs include mark-up for general contingency, contractor overhead, contractor profit, and escalation. Refer to GECE engineering cost estimate for further detail.

Electrification-Cost Summary

All infrastructure-related costs for electrification of the planned SLO RTA bus maintenance facility – including initial, future, on-site and offsite expenditures – are summarized in 8 below. As noted, these are derived from the totals in Tables 5, 6 and 7 above.

Table 8 – Summary of estimates for all electrification costs

	$ Cost	$ Escl. Cost
Phase 1 Utility costs (from Table 5)	$354,664	$453,618
Phase 1 On-site costs (from Table 6)	$199,260	$254,855
Phase 2 On-site costs (from Table 7)	$1,482,204	$3,425,492
TOTAL ESTIMATED COSTS	**$2,036,128**	**$4,133,965**

# # #

[11] See 'Schematic Electrification Engineering Cost Estimate_r6_04-03-2019' prepared by GECE for further breakdown of costs.

PROJECT INFORMATION

Project:	**San Luis Obispo RTA Maintenance Facility Electification**
Estimate Date:	4/3/2019 r6
Prepared By:	Gray Electrical Consulting & Engineering, CORP.
Note:	This estimate is based on our best estimate of the components of the electrical design. The client understands this estimate for probable cost is not a guarantee, and is our opinion, intended to be a guide for the project owner. The electrical engineering estimate for probable cost shall not be substituted for actual cost of construction. GECE shall not be financially liable in any way for discrepancies between probable and actual for construction cost data.

BACKGROUND SUPPORTING MATERIAL (Scope of Work):

Electrical improvements included as part of this engineering cost estimate are as follows: (1) Conduit infrastructure costs for electric service from PG&E, (2) Onside distribution costs local 480v distribution, and (3) individual power branch circuit extension to busses, cutaways, minivans, and light duty vehicles. It is understood that utility service fees are an estimate only at this time. **This estimate has been prepared based on a schematic level electrical design.**

SOURCE OF COST DATA:

Cost Data Sources include: RMS Means Building Construction Cost Data (2014); PG&E Unit Cost Guide (Updated 3/31/2018)

OTHER COMMENTS & ASSUMPTIONS

This estimate does not include adjustments made for standard general conditions, agency conditions, contracting method of adjustment, inflation, etc. Hourly electrican wages assumed as $90/hour. **This estimate may not reflect final utility contract value, fees, or costs, as these will be determined during contract negotiations between the project owner and individual utility companies.**

Relocation of existing utility infrastructure has been excluded from this estimate. Should relocation of existing infrastructure be deemed necessary at a future time, additional cost estimating can be preformed upon ownership request. This estimate does not include utility company specific equipment including, but not limited to, the following: aerial or pad-mounted switches, fuses, reclosers, capacitors, communications pedestals, nodes, or similar.

Estimated Contingeny, Mark-up, and Escalation:

Design Contingency	15.0%
Contractor Overhead	16.0%
Contractor Profit	25.0%
Escalation (2-year)	19.1%
Escalation (10-year)	89.8%

Escalation has been prepared pursuant to Jacobus & Yuang, Inc. including a 24-month construction duration and 6% assumed annual escalation rate.

ESTIMATE SUMMARY

Phase 1 - Building Electrification Costs

Table 5		$ Cost	$ 2-year Esc. Cost*
Utility Costs		$162,910	$208,363
Electrical Distribution		$191,754	$245,255
	Subtotal	**$354,664**	**$453,618**
Table 6			
Electrical Conduit		$51,780	$66,227
Pull Boxes		$10,280	$13,148
Wiring		$137,200	$175,480
	Subtotal	**$199,260**	**$254,855**
	Total Phase 1	**$553,924**	**$708,473**

**** Costs reflect escalation, contingency, and mark-up applied.***

Phase 2 - Electrification Expansion Costs

Table 7		$ Cost*	$ 10-year Esc. Cost*
Electrical Distribution		$145,130	$335,406
Wiring		$1,337,075	$3,090,086
	Total Phase 2	**$1,482,204**	**$3,425,492**

**** Costs reflect escalation, contingency, and mark-up applied.***

Phase 1 and 2 Summary

	$ Cost*	$ Esc. Cost*
Total Phase 1 and 2	**$2,036,128**	**$4,133,965**

PROJECT INFORMATION	
Project:	San Luis Obispo RTA Maintenance Facility Electification
Estimate Date:	4/3/2019
Prepared By:	Gray Electrical Consulting & Engineering, CORP.

Phase 1 - Building Electrification Costs

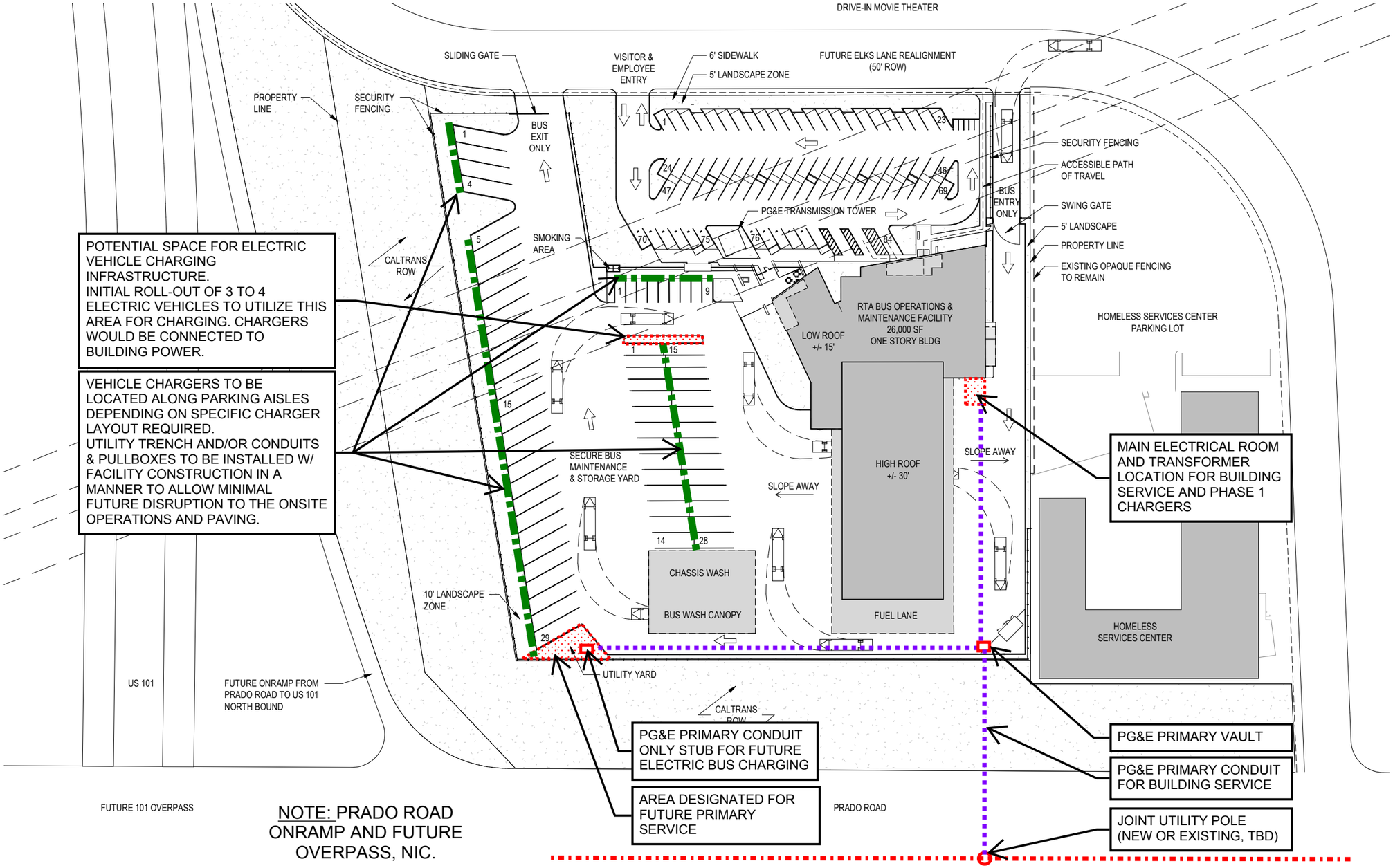
DESCRIPTION	UNIT	QTY.	MATERIAL COST		LABOR COST		COST SUMMARY	
			UNIT COST	TOTAL COST	UNIT COST	TOTAL COST	TOTAL UNIT COST	GRAND TOTAL
Table 5 - Building Electrification Costs								
Utility Costs								
Underground Conduit (2) 4" PVC	LF	180	*$3.0*	$540	*$5*	*$963*	$8	$1,503
Underground conduit fittings, etc. 5% cost allowance	LS	5%						$75.15
Trenching for Underground Utilities, Including excavation and	LF	180					*$4*	$720
Electric (#6 Vault)	EA	1	$8,612	$8,612	$2,000	$2,000	$10,612	$10,612
Estimate of PG&E utility service fees	LS	1						$150,000
2500kva TX and Secondary Service (277/480)	EA	1					$145,000	$145,000
Secondary Service Metering	EA	1					$5,000	$5,000
						SUB TOTAL (BUILDING ELECTRIC SERVICE)		**$162,910**
						Escalation (2-year)	19.11%	$31,132.13
						Contractor Overhead and Profit	31%	$9,650.96
						Contingeny	15%	$4,669.82
						SUB TOTAL (BUILDING ELECTRIC SERVICE)		**$208,363**
Electrical Distribution								
4,000A 277/480v, 3-phase meter / main	EA	1	$10,000	$10,000	$2,000	$2,000	$12,000	$12,000
Main Circuit Breaker and CT	EA	1	$20,000	$20,000	$2,000	$2,000	$22,000	$22,000
300a, 3p	EA	2	$2,775	$5,550	$133	$266	$2,908	$5,816
Ground fault protection	EA	1	$6,750	$6,750	$158	$158	$6,908	$6,908
Equipment Grounding								
Ground rod, 10'	EA	5	$39	$195	$97	$485	$136	$680
Bare Copper Ground Wire Ring - #250kcmil	LF	170	$545	$92,650	$178	$30,260	$723	$122,910
Testing and Commissioning	EA	1	$0	$0	$11,500	$11,500	$11,500	*$11,500*
Electrical Distribution Barrier Post - Fixed	EA	20	$400	$8,000	$97	$1,940	$497	$9,940
							SUB TOTAL	**$191,754**
						Escalation (2-year)	19.11%	$36,644.19
						Contractor Overhead and Profit	31%	$11,359.70
						Contingeny	15%	$5,496.63
							TOTAL	**$245,255**
Table 6 - Conduit Provisions								
Electrical Conduit								
DPEV Distribution Feeder	EA	7						$18,521.13
Underground Conduit (7) 5" PVC	LF	250	*$2.0*	$500	*$4*	*$1,068*	$6	$1,568
Underground conduit fittings, etc. 5% cost allowance	LS	5%						$78.38
Trenching, Including excavation and backfill.	LF	250					*$4*	$1,000
Bus Charging Branch Circuit (150kw)	EA	11						$20,950.60
Underground Conduit (1) 3" PVC	LF	200	*$1.0*	$198	*$4*	*$854*	$5	$1,052
Underground conduit fittings, etc. 5% cost allowance	LS	5%						$52.60
Trenching, Including excavation and backfill.	LF	200					*$4*	$800
Cutaway Charging Branch Circuit (150kw)	EA	2						$3,809.20
Underground Conduit (1) 3" PVC	LF	200	*$1.0*	$198	*$4*	*$854*	$5	$1,052
Underground conduit fittings, etc. 5% cost allowance	LS	5%						$52.60
Trenching, Including excavation and backfill.	LF	200					*$4*	$800
Minivan (20.4 kw)	EA	3						$5,099.55
Underground Conduit (1) 2" PVC	LF	200	*$0.7*	$145	*$4*	*$712*	$4	$857
Underground conduit fittings, etc. 5% cost allowance	LS	5%						$42.85
Trenching, Including excavation and backfill.	LF	200					*$4*	$800
LDNRV (20.4kw)	EA	2						$3,399.70
Underground Conduit (1) 2" PVC	LF	200	*$0.7*	$145	*$4*	*$712*	$4	$857
Underground conduit fittings, etc. 5% cost allowance	LS	5%						$42.85
Trenching, Including excavation and backfill.	LF	200					*$4*	$800
							SUB TOTAL	**$51,780**
						Escalation (2-year)	19.11%	$9,895.19
						Contractor Overhead and Profit	31%	$3,067.51
						Contingeny	15%	$1,484.28
							TOTAL	**$66,227**
Pull Boxes								
Electric (18"x24" Vault)	EA	4	$435	$1,740	$500	$2,000	$935	$3,740
Electric (2x3 Vault)	EA	6	$535	$3,210	$555	$3,330	$1,090	$6,540
							SUB TOTAL	**$10,280**
						Escalation (2-year)	19.11%	$1,964.51
						Contractor Overhead and Profit	31%	$609.00
						Contingeny	15%	$294.68
							TOTAL	**$13,148**
Wiring								

Bus Charging Branch Circuit (150kw)	EA	2						$9,574.00
4-#4/0 Awg THWN CU Conductor	LF	800	*$4*	*$3,160*	*$2*	*$1,368*	*$6*	*$4,528*
1-#6 Awg CU Ground	LF	200	*$1*	*$128*	*$1*	*$131*	*$1*	*$259*
Footings and Bollards for Charger Bases	EA	2						$3,266.00
Concrete Footing at Charger	EA	1					*$1,000*	$1,000
Ground rod, 10'	EA	1	$39	$39	$97	$97	$136	$136
Charger Barrier Post - Fixed	EA	1	$400	$400	$97	$97	$497	$497
Chargers								
Bus / Trolly Charger (150kw)	EA	2	$62,000	$124,000	$180	$360	$62,180	$124,360
							SUB TOTAL	**$137,200**
							Escalation (2-year) 19.11%	$26,218.92
							Contractor Overhead and Profit 31%	$8,127.87
							Contingeny 15%	$3,932.84
							TOTAL	**$175,480**
SUB TOTAL								**$553,924**
TOTAL AFTER MARK-UP, CONTINGENCY, AND 2-YEAR ESCALATION								**708,473**

PROJECT INFORMATION	
Project:	San Luis Obispo RTA Maintenance Facility Electification
Estimate Date:	4/3/2019
Prepared By:	Gray Electrical Consulting & Engineering, CORP.

Phase 2 - Electrification Expansion Costs

DESCRIPTION	UNIT	QTY.	MATERIAL COST		LABOR COST		COST SUMMARY	
			UNIT COST	TOTAL COST	UNIT COST	TOTAL COST	TOTAL UNIT COST	GRAND TOTAL
Table 7 - Building Electrification Costs								
Electrical Distribution								
277/480v, 3-phase distribution switchboard	EA	1	$10,000	$10,000	$2,500	$2,500	$12,500	$12,500
300a, 3p	EA	9	$2,775	$24,975	$133	$1,197	$2,908	$26,172
35a, 3p	EA	7	$730	$5,110	$81	$564	$811	$5,674
Ground fault protection	EA	1	$6,750	$6,750	$158	$158	$6,908	$6,908
Equipment Grounding								
Ground rod, 10'	EA	1	$39	$39	$97	$97	$136	$136
Bare Copper Ground Wire Ring - #250kcmil	LF	100	$545	$54,500	$178	$17,800	$723	$72,300
Testing and Commissioning	EA	1	$0	$0	$11,500	$11,500	$11,500	*$11,500*
Electrical Distribution Barrier Post - Fixed	EA	20	$400	$8,000	$97	$1,940	$497	$9,940
							SUB TOTAL	**$145,130**
						Escalation (10-year)	89.80%	$130,326.29
						Contractor Overhead and Profit	31%	$40,401.15
						Contingeny	15%	$19,548.94
							TOTAL	**$335,406**
Wiring								
DPEV Distribution Feeder	EA	7						$462,693.00
4-#1000 THWN AL Conductor	LF	200	*$5.5*	$1,100	*$6*	*$1,200*	$12	$2,300
1-#600 THWN AL Ground	LS	200	*$0.7*	$140	*$1*	*$200*	$2	$340
Bus Charging Branch Circuit (150kw)	EA	9						$63,459.00
4-#4/0 Awg THWN CU Conductor	LF	1,200	*$4*	*$4,740*	*$2*	*$2,052*	*$6*	*$6,792*
1-#6 Awg CU Ground	LF	200	*$1*	*$128*	*$1*	*$131*	*$1*	*$259*
Cutaway Charging Branch Circuit (150kw)	EA	2						$14,102.00
4-#4/0 Awg THWN CU Conductor	LF	1,200	*$4*	*$4,740*	*$2*	*$2,052*	*$6*	*$6,792*
1-#6 Awg CU Ground	LF	200	*$1*	*$128*	*$1*	*$131*	*$1*	*$259*
Minivan (20.4 kw)	EA	3						$6,487.50
3-#3 Awg THWN CU Conductor	LF	900	*$1*	*$1,134*	*$1*	*$770*	*$2*	*$1,904*
1-#6 Awg CU Ground	LF	200	*$1*	*$128*	*$1*	*$131*	*$1*	*$259*
LDNRV (20.4kw)	EA	2						$4,325.00
3-#3 Awg THWN CU Conductor	LF	900	*$1*	*$1,134*	*$1*	*$770*	*$2*	*$1,904*
1-#6 Awg CU Ground	LF	200	*$1*	*$128*	*$1*	*$131*	*$1*	*$259*
Footings and Bollards for Charger Bases	EA	16						$26,128.00
Concrete Footing at Charger	EA	1					*$1,000*	$1,000
Ground rod, 10'	EA	1	$39	$39	$97	$97	$136	$136
Charger Barrier Post - Fixed	EA	1	$400	$400	$97	$97	$497	$497
Chargers								
Bus / Trolly Charger (150kw)	EA	9	$62,000	$558,000	$180	$1,620	$62,180	$559,620
Cutaway Charger (150kw)	EA	2	$62,000	$124,000	$180	$360	$62,180	$124,360
Minivan Charger (20.4kW)	EA	3	$15,000	$45,000	$180	$540	$15,180	$45,540
LDNRV Charger (20.4kw)	EA	2	$15,000	$30,000	$180	$360	$15,180	$30,360
							SUB TOTAL	**$1,337,075**
						Escalation (10-year)	89.80%	$1,200,692.90
						Contractor Overhead and Profit	31%	$372,214.80
						Contingeny	15%	$180,103.94
							TOTAL	**$3,090,086**
SUB TOTAL								**$1,482,204**
TOTAL AFTER MARK-UP, CONTINGENCY, AND 10-YEAR ESCALATION								**3,425,492**



LEGEND:

- APPROX. LOCATION OF EXISTING PG&E OVERHEAD PRIMARY AT PROJECT FRONTAGE
- NEW PG&E UNDERGROUND PRIMARY TO PROJECT SITE FOR BUILDING ELECTRICAL SERVICE
- APPROXIMATE LOCATION OF FUTURE VEHICLE CHARGERS
- POTENTIAL UTILITY YARD SPACE

NOTE:
GROUND-MOUNTED CHARGERS COULD BE SUBSTITUTED FOR OVERHEAD CHARGING INFRASTRUCTURE IF SOLAR CANOPIES ARE INSTALLED OVER THE BUS PARKING AREAS THAT ARE NOT UNDER THE PG&E EASEMENT.

BUILDING SUMMARY:
TOTAL PARCEL AREA:
6.44 ACRES
TOTAL AREA W/I SETBACKS:
4.14 ACRES
OPERATIONS, ADMINISTRATION, AND MAINTENANCE BUILDING:
26,000 SQFT
WASH BUILDING:
2,0000 SQFT

PARKING SUMMARY:

EMPLOYEE PARKING LOT:
STANDARD EMPLOYEE / VISITOR: 69
ACCESSIBLE PARKING: 3 STD, 1 VAN
CLEAN AIR / ELEC VEH: 11
MOTORCYCLE: 5
TOTAL: 89

RTA FLEET PARKING:
50' STALL: 29
30' STALL: 38
18' STALL: 9
TOTAL: 66

Stantec
Stantec Architecture Inc.
523 West 6th Street Suite 1200
Los Angeles, CA 90014-1218
Tel: (213) 955-9775 - www.stantec.com

0 40' 80' 160'

BATTERY ELECTRIC BUS INFRASTRUCTURE PLAN EXHIBIT

4/4/2019 - DRAFT

San Luis Obispo Regional Transit Authority
Bus Operations and Maintenance Facility
Project Location: 253 Elks Lane
San Luis Obispo, CA 93401