Basis of Design Report

StanRTA Bus Operations and Maintenance Facility

Stantec

Prepared for: Stanislaus Regional Transportation Authority (StanRTA)

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Revision Schedule

Revision	Description	Author	Date	Quality Check	Date	Independent Review	Date
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Executive Summary

This report was prepared by Stantec Architecture Inc. (Stantec) for Stanislaus Regional Transportation Authority (StanRTA). This report provides a description of the design process for the new Bus Operations and Maintenance Facility (OMF) based on an analysis of stakeholder needs and industry standards that has resulted in the space needs program requirements, referred to as the 'program'. The result of the programming effort informed a subsequent master plan development process. The master plan process was used to develop and establish a conceptual building layout with functional adjacencies and interdependencies identified.

The StanRTA consists of a mixed transit vehicle fleet that is planned to grow to a total fleet of approximately 163 vehicles for the initial program with a future growth up to 198 vehicles. The baseline facility has therefore been planned for a larger vehicle fleet than StanRTA currently operates so that the site and buildings can accommodate future fleet growth without an expansion of the facility for many years to come. Beyond the detailed building space needs programmed, the exterior and circulation function that support the facility have also been accounted for in the master plan. These include the outdoor areas which support the facility, including employee and non-revenue vehicle fleet parking, fueling systems, 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.

This BOD report should be considered a working document throughout the life of the design phases of the project. It should be updated as the project goals evolve and develop in greater detail. The BOD is also required for the commissioning process during design and will be used a critical document to verify the design continues to develop to meet the agreed upon goals and criteria established for the project.

1 SPACE PROGRAM AND SITE MASTER PLAN PROCESS

1.1 SPACE PROGRAM

To kick-off the project, the Stantec design team facilitated two days of programming workshops with various stakeholder and user groups on September 24th and 25th, 2024. 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. StanRTA staff toured the Stantec team through their existing facility to explain how the agency currently operates and to provide context to their feedback on space needs requirements. The Space Needs Program is the consolidation of that feedback received from StanRTA and refined in subsequent development of building and site plan concepts.

The final program is summarized in **Appendix A – 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.

1.1.1 PROJECT GOALS

During the programming workshops, the design team collected feedback on StanRTA's goals for the new facility. The follow items summarizes the goals discussed and implemented into the programming and master planning efforts.

- Future-ready and flexible
    - Example: standardized offices sizes
    - Program to include future office and workstations
- Dispatch should have a view of the bus yard and entry points to extent possible
- Separate "public" / front-of-house functions with Operations from back-of-house
- Consolidate Administration / Operations / Maintenance on one site
- More meeting spaces and rooms compared to current facilities
- Ability to host community meetings and have boardroom on site
- Bus stop out front or nearby site
- Bring contracted-out services back onto one property
- Design for up to 200 revenue vehicles

- Secure yard (buses & non-revenues) and employee parking, no more on-street employee parking
- Improve culture with on-site roadeos and other skills-based events – need space and facilities to accommodate these functions

1.2 MASTER PLAN

Following the programming workshops, the Stantec team developed multiple initial concepts and worked with the StanRTA to refine and advance various options until consensus was reached on the final master plan approach. The proposed master plan satisfies all of the goals brought forward in the collaboration with the client and other stakeholders during the programming sessions. The final proposed concept balances optimization and anticipated economy of construction for the overall project while allowing for ample space to phase construction to meet the current and future needs of the RTA. The master plan reflects the developed site and building layouts approved by the StanRTA and their user groups.

Please see **Appendix B** for Site Plans, Floor Plans, and 3D imagery for the new facility.

Figure 1: Conceptual Rending of New Facility

1.2.1 FUNCTIONAL RELATIONSHIPS

The following section outlines some of the primary criteria used in developing the facility master plan. See **Appendix A** for the detailed space needs program and adjacency notes when applicable.

Site Planning

- Preference for employees to enter/exit at B Street to utilize future signal at new intersection of B Street and Crows Landing
- Bus entry/exit on B Street to utilize future signal as well. Primary bus service to the north so buses can utilize Crows Landing as primary route north.
- Bus right-in/right-out on Crows Landing and Service Road to maintain safe turning movements offsite
- Close connection between Admin, Ops, and Maintenance functions, but with separated buildings organized around a shared courtyard/patio space
- Admin and Ops building have separate public interfacing components and are organized around a central employee/visitor drive/approach.
- Counterclockwise bus vehicle movements promote safe vehicle movements
- Ample space for stormwater swales/infrastructure throughout the site.
- Potential for revenue generation by allowing corner at Crows Landing and Service Rd for other development.
- Building separations between structures at a minimum of 20 feet to limit code required opening protections for both old and new buildings.
- Plan of bus parking to allow for potential future electric bus charging infrastructure and photovoltaic canopies over the bus parking to shade vehicles and produce onsite power

Administration Building

- Anchor and ‘public’ face to the agency at the corner of B Street and Crows Landing
- Current Admin function is offsite from current Ops and Maintenance function so ability to phase in Admin function at a future date with significant consideration
- Close connection to Operations and Maintenance functions
- Closest connection to potential future bus stop on Crows Landing

Operations Building

- Separated from Admin Building to allow for separation from contracted service operator
- Operations department, particularly the dispatch suite and driver areas to have direct view of bus yard
- Supervisors and drivers have access to relief/non-revenue vehicles parked from within the bus yard but accessed by staff without needing to walk into the bus yard

Maintenance Building

- Long building frontage along Crows landing to partially screen bus yard
- Delivery access to shops/parts/storage without needing to traverse or interfere with bus yard and bus circulation
- Service and non-revenue vehicles similarly do not need to access bus yard

Fuel And Wash Buildings

- Access from Service Road for deliveries/trash and fuel deliveries from separated drive lane reduces need for non-agency vehicles from entering the site.
- Adjacency to potential public hydrogen fueling station

1.2.2 FUTURE DESIGN CONSIDERATIONS & PHASING

The proposed master plan reflects the agencies long term vision for growth of the transit fleet, service, and staff. Therefore the current and immediate needs of StanRTA are less than what is reflected in the master plan and phasing for cost reduction and appropriate allocation of resources is appropriate to not over-build on day 1, but still allow for capital projects and facility expansion to happen in the future while limiting the impacts to the facility that will built on day 1 and be required to remain operational. The following items were discussed during the development of the programming and master plan effort to achieve these goals. These items are not listed in any particular order and the prioritization of these items will need to be discussed during later phases of the project's design.

1. Currently offsite from the operations and maintenance functions, the Administration Building can be phased later when the staff levels become such that a new space is required and/or when funding is available.
2. Associated with the administration building, a portion of the employee parking could be phased and constructed at the same time in lieu of constructing the entire parking lot on day 1.
3. Since the current and near-term transit fleet will likely fit within the eastern and center parking blocks, the westernmost parking block and adjacent site area, could be phased to save on the site development and significant costs of paving such a large area that may technically not be required for a number of years after the facility is occupied. This space is approximately 70 bus parking stalls and about 100,000 sf of pavement.
4. Depending on the agency's procurement schedule of hydrogen buses, the permanent hydrogen fueling system could be phased. Regardless, the full build-out of this system won't be required for years to come when the majority of the fleet transitions to fuel-cell electric buses. When the facility initially opens a 'mobile' or 'temporary' fueling system could be installed at a reduced cost and capacity.
5. Related to the item above, the public hydrogen fueling dispenser along Service Road could be phased in later or omitted entirely depending on cost. Although this could be a revenue generator for the agency to help offset the costs of the system.
6. While creating a significant operating cost benefit, photovoltaic (PV) canopies over the employee and/or bus parking are not required for transit operations. Alternative procurement methods such

as a PPA (power purchase agreement) would save the agency from spending the capital expense while still benefiting from the onsite renewable energy generation.

7. As the Maintenance Building and Site Plans indicate, the master plan allows for additional maintenance bays to be added onto the south end of the Maintenance Building. This area should be planned without utilities or underground infrastructure of any kind to facilitate ease of construction in the future if required. This would also allow for articulated buses to potentially be integrated into the fleet by allowing the construction of longer bays to accommodate those buses.
8. The Wash Building plan illustrates a future wash bay. This equipment could be phased in the future while the space is used for detailed cleaning or other functions on day 1. While not a significant expense relative to items listed above, it would also save on the operational and maintenance costs associated with a second wash bay.

As with any project, the cost of building today will need to be weighed against the future cost, both capital and operational, along with the agency's priorities. Engaged stakeholder meetings and goal setting should be a top priority as StanRTA begins the next phases of the design process to ensure these goals and options are prioritized in the correct order.

2 SITE PLAN AND ZONING

2.1 SITE LOCATION

The selected site is at the northwest corner of Crows Landing Road to the east and Service Road to the south. The parcel will be adjacent to abut the new B Street to the north of the proposed facility. B Street will intersect Crows Landing Road across from the main entry/exit to the Stanislaus County Agricultural Center to the east of Crows Landing Road on Cornucopia Way.

While not a formal 'civic center' for the City of Ceres or Stanislaus County, the adjacency to the county facilities on the east side of Crows Landing Road creates a synergy of governmental facilities in the area even though the functions are unrelated.

2.2 EXISTING CONDITIONS

The existing property consists of farmland and one small residential property fronting Crows Landing Road. The property is being purchased by StanRTA from G3 Enterprises, the developer. *The final parcel map for the property acquisition was still in development at the time of this report.*

Figure 2: Aerial Image of property

2.3 ZONING

Zoning district for the parcel is to be considered as General Industrial M-2 Zone based on ongoing conversations with the City of Ceres planning department. The parcel being acquired by StanRTA is shown in red box with diagonal hatch.

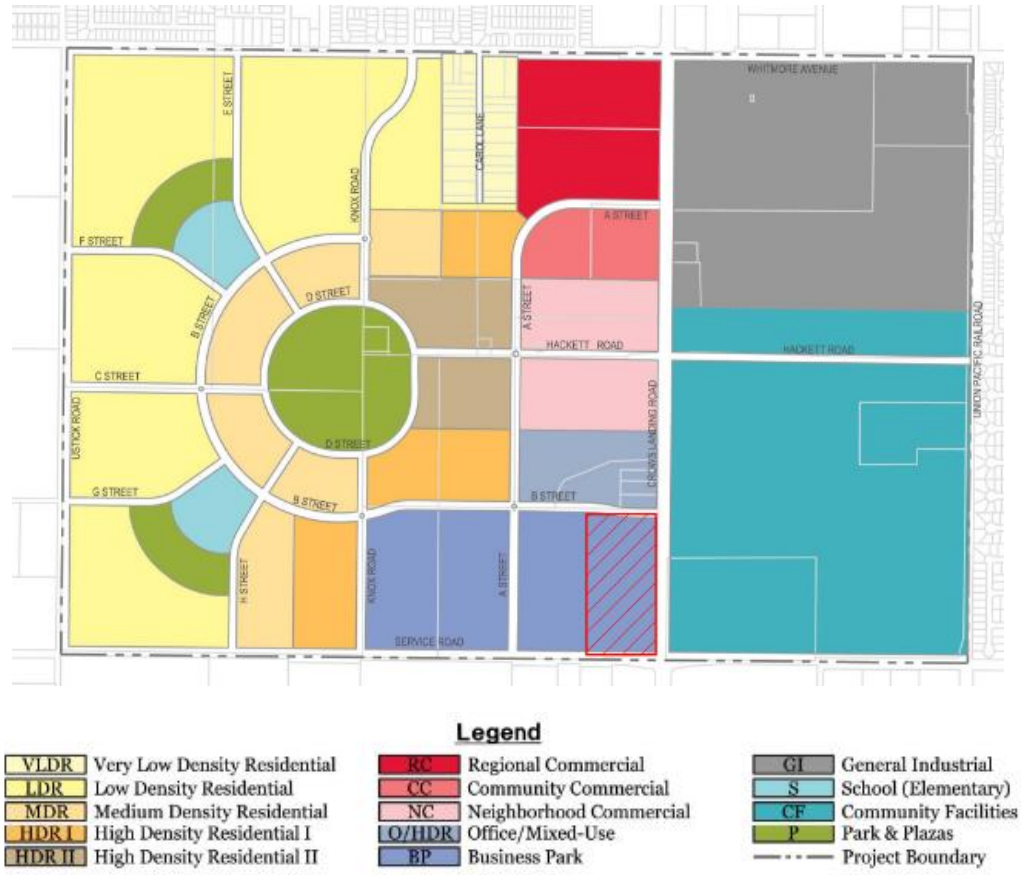


Figure 3: West Landing Specific Plan Zoning Map

The following items show compliance with the current zoning code City of Ceres Chapter 18 requirements for General industrial zone with the proposed basis of design site layout. The site layout is subject to approval by planning commission before commencement of construction.

See description below for applicable Property Development Standards from Chapter 18.20.060 of the city's municipal code.

Lot Area

Planning commission to determine the minimum required area for Industrial Zone property development. The proposed site is approximately 28 acres. At the time of this report, coordination with the City of Ceres and the developer were still ongoing and final property size was still being determined.

Lot coverage

Max impervious lot coverage is 60%. The proposed layout has lot coverage of about 60%. Further coordination will be required to ensure compliance with this requirement through the detailed design phases of the project.

Lot dimensions

Current lot meets and exceeds zoning requirement of min. 100-0” for width and depth. Proposed site exceeds the minimum site dimensions requirement.

Setbacks

Proposed site plan is compliant with minimum requirement of 25’-0” setback on front and side streets

Floor Area Ratio

For the first story of the building the floor area ratio is 0.65:1 as per zoning guidelines. For multi-story building FAR to be determined by Planning Commission.

Building Height requirements

Maximum Building heights as per proposed design is 22-feet. Allowable maximum height to be determined by planning Commission.

New maintenance building may require additional height to meet functional requirements. Typical bus maintenance buildings are approximately 25 feet tall but could be designed to meet this lower heigh restriction.

Site plan approval:

Based on site plan, buildings floor plans, building elevations and landscape plan, the planning commission is to approve the site layout during planning department approval process.

Yards, Landscape and Open spaces

See the Setback criteria above.

Fences, hedges and walls

Fences, hedges and site wall heights to be determined at planning review. Fences are located at setbacks.

The proposed site fencing and walls are typically 8 feet tall for similar bus facilities. Security is a significant concern for public assets such as these facilities.

Off-street parking requirements

Off-street Parking calculations to be determined at 1/ 300 SF floor area for maintenance buildings. For admin building, employee parking can be calculated as 1 Parking space / 2 employees.

Access

Crows Landing Road to the West of site is to be considered Primary Street for access considerations. Off-street parking for employees and visitors has dedicated access from B Street.

3 DESIGN CRITERIA

This section of the document covers the design criteria for Civil, Architecture, Industrial equipment and fueling. It addresses the required compliance with local and national building codes, design assumption and preliminary design criteria.

3.1 CIVIL ENGINEERING

3.1.1 CODES AND STANDARDS

The design of roadways will adhere to the following standards, guidelines, and best practices:

- The California Department of Transportation Highway Design Manual, Seventh Edition - 2020 (HDM)
- AASHTO A Policy on Geometric Design of Highways and Streets, Seventh Edition - 2018 (AASHTO)
- Stanislaus County Standards and Specifications – 2014
- Stanislaus County Post-Construction Standards Plan – 2015
- City of Ceres Standard Specifications, Design Standards and Standard Plans - 2018.

3.1.2 DESIGN VEHICLE

Site elements will be designed to accommodate a wide variety of existing and future bus types documented in StanRTA's Transit Asset Management Plan. These include

- 35-foot Gillig bus
- 40-foot Gillig bus
- 40/45-foot MCI commuter bus
- 40-foot Proterra Battery Electric Bus
- 40-foot NewFlyer CNG Bus
- 60-foot articulated bus (for future BRT service)
- Cutaway transit bus
- Passenger vehicle (AASHTO Policy on Geometric Design of Highways and streets, Table 2-4a).

All turning movements at intersections, busway ingress and egress points, and the transit facility will be designed to accommodate a 45-foot commuter coach and 60-foot articulated bus as the worst-case scenario. All turning movements within staff and visitors parking areas will be designed to accommodate the AASHTO passenger vehicle. All turning movements on the public roadways will be designed to accommodate a WB-67 vehicle.

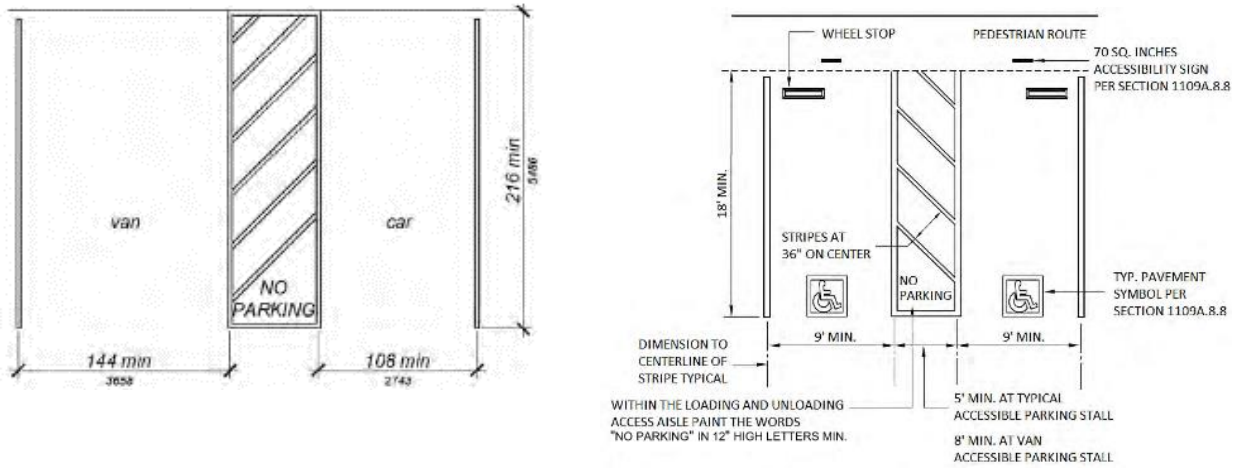
3.1.3 SIGNAGE AND MARKING

Signage and striping will comply with the latest edition of the California Manual on Uniform Traffic Control Devices (CA MUTCD), Caltrans Standard Plans and Specifications, Stanislaus County Standards and Specifications, and City of Ceres Design Standard Specifications and Design.

Signage and marking for accessible stalls will comply with the California Building Code (2025 Edition), section 11B-208 and section 11B-502. Any information not shown will comply with CA MUTCD or CALTRANS standards.

Figure 3: Accessible and Van Accessible Stall Configuration

Source: California Building Code (2019 Edition), Section 11B-812



Signage and marking for EVCs and Accessible EVCs will comply with the California Building Code (2025 Edition), section 11B for accessibility. Any information not specified will comply with CA MUTCD or CALTRANS standards.

3.1.4 SITE GRADING

A geotechnical analysis of the existing site will be necessary to determine site criteria for flexible pavement, rigid pavement, structures and walls, and allowable cut and fill slopes.

The existing site's storm runoff is conveyed to the east. The grading plan aims to minimize concentrated flow of runoff in the site area, provide gently slope breaks for bus operator and passenger comfort, and utilize as much of the existing storm drainage infrastructure as possible to reduce construction costs. In conforming areas, slopes and flow direction will match the existing condition to eliminate unintended low points or high points.

Paved areas utilized by pedestrians, including but not limited to crosswalks, sidewalks, stations, and ramps, will comply with ADA Standards for Accessible Design and CBC Chapter 11B.

GRADING CRITERIA		
LOCATION	**DESCRIPTION**	**GRADE**
Transit Center (Vehicles)	Longitudinal Slope Cross Slope	0.5% to 8% 0.5% to 4.0%
Transit Center (Pedestrian Walkways)	Longitudinal Slope Cross Slope	0.5% to 4.5% 0.5% to1.5%
Curb Ramps	Per City of Ceres Standards	
Busway Embankments	Cut Slopes Fill Slopes	3:1 Max 3:1 Max

3.1.5 PAVEMENT SECTIONS

Pavement sections for flexible and rigid pavement shall be determined by a geotechnical analysis of the site and utilizing the following criteria.

PAVEMENT DESIGN CRITERIA			
LOCATION	**DESCRIPTION**	**TI**	**DESIGN LIFE**
Busways and Transit Center	Hot Mix Asphalt or Jointed Plain Concrete Pavement per Caltrans Standards	8.5	30 Years
Personal / Staff Parking Areas	Hot Mix Asphalt per Caltrans Standards	0.5% to 4.5% 0.5% to1.5%	20 years
Public Roadways – B Street and Service Road	Hot Mix Asphalt per City of Ceres Standards	TBD by City of Ceres	20 years
Pedestrian Walkways	Concrete Sidewalk per City of Ceres standards	N/A	N/A

3.1.6 HYDROLOGY AND HYDRAULICS

All storm drainage retention and detention facilities on site will be designed according to the Stanislaus County Standards and Specifications, using a 100-year, 24-hour storm with a rainfall intensity of 2.88 inches. The on-site retention basin facilities will be designed to empty the design storm within 48 hours by outlet facilities providing positive drainage or through percolation and evaporation.

3.1.7 POST-CONSTRUCTION STORMWATER TREATMENT

The project will disturb more than one acre of land; therefore, the project will be required to obtain coverage under the State of California's Construction General NPDES Permit (CGP). CGP coverage will be required for all construction projects involving the grading, filling, excavating, storage, or the clearing or grubbing of 1 acre or more of land. Any projects with soil disturbance must submit copies of either an Erosion and Sediment Control Plan (ESCP) or a Storm Water Pollution Prevention Plan (SWPPP) as part of the initial plan review submittal requirements. The ESCP or SWPPP must comply with the preparation and submittal requirements as described in the Stanislaus County Municipal Code.

In addition, the project will be subject to requirements designed to protect stormwater quality, such as expanded plan check & review, site control measures, source control measures, stormwater treatment measures, and Low Impact Development (LID) measures. All work will be done in accordance with Stanislaus County's 'Draft' Guidance Manual titled, Post-Development Storm Water Quality Design Manual. These submittal requirements include:

- Storm Water Pollution Prevention Plan (SWPPP)
- Regulated Project Worksheet
- Regulated Project Volume Reduction Calculator
- Statement of Responsibility and Operation & Maintenance Agreement
- Hydromodification Calculations
- WDID Number and Registration with SMARTS system.

3.1.8 UTILITIES

3.1.8.1 Existing Utilities

The following utilities have been identified within the vicinity of the project site:

EXISTING UTILITIES		
UTILITIES	**PROVIDER**	**TYPE**
SEWER	City of Ceres	• 12" Force Main along Service Road
AGRICULTURAL WATER	Turlock Irrigation District (TID)	• Irrigation Facilities crossing Service Road and running north-south through site
WATER	City of Ceres	• 10" Main along Hackett Road • 12" Main along Service Road
ELECTRIC	Turlock Irrigation District (TID)	• Overhead Power Lines along Crows Landing Road and Service Road
NATURAL GAS	Pacific Gas and Electricity (PG&E)	• Underground facilities along Crows Landing Road

EXISTING UTILITIES		
UTILITIES	**PROVIDER**	**TYPE**
COMMUNICATIONS	AT&T	• Overhead facilities along Crows Landing Road and Service Road
CABLE	Charter Communications	• Overhead facilities along Crows Landing Road and Service Road

Identification of dry utilities, including electric, natural gas, communications, and cable, shall be coordinated with utility providers as required during the design phase.

3.1.8.2 Proposed Utilities – On Site

The following utilities will be necessary to service the project site:

PROPOSED UTILITIES – ON SITE		
UTILITIES	**PROVIDER**	**TYPE**
SEWER	City of Ceres	*Pending Final Design*
WATER - DOMESTIC	City of Ceres	*Pending Final Design*
WATER – FIRE SUPPRESSION	City of Ceres	*Pending Final Design*
RECYCLED WATER	City of Ceres	*Pending Final Design*
ELECTRIC	Turlock Irrigation District (TID)	*Pending Final Design*
NATURAL GAS	Pacific Gas and Electricity (PG&E)	*Pending Final Design*
COMMUNICATIONS	AT&T	*Pending Final Design*
CABLE	Charter Communications	*Pending Final Design*

3.1.8.3 Proposed Utilities – Off Site

As part of site development, the project may need to install the following utilities as a condition of development per the West Landing Specific Plan

PROPOSED UTILITIES – OFF SITE		
UTILITIES	**PROVIDER**	**TYPE**
SEWER	City of Ceres	• Various Gravity Mains • 14” Force Mains along Service Road and Crows Landing Road • Lift Station
DRAINAGE	City of Ceres	• Retention Basin

PROPOSED UTILITIES – OFF SITE		
UTILITIES	**PROVIDER**	**TYPE**
AGRICULTURAL WATER	Turlock Irrigation District (TID)	• Irrigation Facilities
WATER	City of Ceres	• 12” Main along Crows Landing Road
RECYCLED WATER	City of Ceres	• Reclaimed Water Main (RCW) along Service Road
ELECTRIC	Turlock Irrigation District (TID)	• Extended Service
NATURAL GAS	Pacific Gas and Electricity (PG&E)	• Extended Service
COMMUNICATIONS	AT&T	• Extended Service
CABLE	Charter Communications	• Extended Service

3.2 ARCHITECTURE

The objectives for site planning and buildings layouts to provide efficiency for storage of materials, increase efficiency of retrieval or movement of materials, and construct the facility in an economical manner. The goal is to provide for the needs identified, not to overreach for equipment or construction that is more expensive or elaborate than necessary.

3.2.1 CODES & STANDARDS

The following codes and standards shall be applied to this project:

- 2025 California Code of Regulations - Title 24
- 2025 California Building Code (CBC)
- 2025 California Green Building Standards (CALGreen)
- 2025 California Fire Code (CFC)
- 2025 City of Ceres Zoning Regulations
- NFPA 2 – Hydrogen Technologies Code
    - Criteria specific to maintenance, fuel and wash buildings

3.2.2 CODE ANALYSIS

Overview

General Buildings information and code considerations for construction type and occupancy are as covered in table below. Figures are from CBC Chapter 5, Sections 503 and 504. Occupant load calculations have not been performed but are to follow CBC section 1004.

Table 1 below shows code compliance with proposed design with maximum allowable area and height and Table 2 showing proposed building construction types and occupancy. All buildings are single story, not including mezzanine at the Maintenance Building. Figures in Tables 1 and 2 assume that all buildings will be equipped with an automatic fire sprinkler system per CBC Section 903.

Table 1: Buildings Areas & Heights

Buildings	Program Area GSF	Max Allowable Area GSF (for Type II-B)	Approx. Height Above Grade Plane	Max Allowable Height Above Grade Plane
Admin Building	18,990 SF	92,000 SF	20’-0”	75’-0”
Operations Building	17,598 SF	92,000 SF	20’-0”	75’-0”
Maintenance	42,028 SF+ 6,750 Mezzanine	70,000 SF	25’-0” +	75’-0”

Table 1: Buildings Areas & Heights				
Buildings	**Program Area GSF**	**Max Allowable Area GSF (for Type II-B)**	**Approx. Height Above Grade Plane**	**Max Allowable Height Above Grade Plane**
Fuel Building	2,447 SF	50,000 SF	20'-0"	75'-0"
Wash Building	2,932 SF	92,000 SF	20'-0"	75'-0"

Table 2: Buildings Construction Type & Occupancy		
Buildings	**Construction Type**	**Occupancy**
Administration Building	II-B	• Non-Separated Mixed Use ○ Main Occupancy: B ○ Accessory Use: A, S-1
Operations Building	II-B	• Non-Separated Mixed Use ○ Main Occupancy: B ○ Accessory Use: A, S-1
Maintenance	II-B	• Separated Mixed Use ○ Main Occupancy: S-1 ○ Accessory Use: B, A
Fuel Building	II-B	○ Main Occupancy: M (motor fuel dispensing)
Wash Building	II-B	○ Main Occupancy: B (car wash)

Construction Materials

- Steel frame construction is typical for primary building structures.
    - Type-V wood construction may also be a suitable and cost-effective construction type for the Administration and Operations Buildings and would be allowable with the size and height of the proposed buildings.
    - Wood construction is not appropriate for Maintenance, Fuel, or Wash Buildings.
- Concrete slab-on-grade, composite decking at mezzanines, and metal decking at roofs
- Metal stud framed exterior walls with continuous exterior cladding system(s)
- Concrete masonry units for maintenance and utility areas

Means of Egress

- Complies with 2025 CBC Chapter 10
- Chapter 11B for Accessibility
- Stairs, corridors, and doors will comply with 2025 CBC

Fire Suppression

- Automatic Fire Sprinklers throughout all buildings per CBC Section 903
- Portable Fire Extinguishers
- Fire separation distances will comply with 2025 CBC

3.2.3 NEXT STEPS

The following list outlines some design factors that are to be developed per the construction type and material assumptions in the next design phases. This is not intended to be an exhaustive list of next steps for the design of the facility.

1. Planning review to be conducted with City of Ceres planning department to confirm zoning assumptions and building placement. Landscape and Civil plans to be further developed in the next design phases to conform with city requirements.
2. Foundation, slab on grade, walls and roof assemblies to be developed per energy design criteria and life-cycle assessment (LCA) of the building materials. Foundation, slab on grade, walls and roof assemblies to be developed by energy design criteria and life-cycle assessment (LCA) of the building materials.
3. Solar output study to be done for EUI (energy use intensity) to determine offset from base line consumption. Energy modeling for building and site usage, as well as potential electric vehicle charging, to determine how much onsite generation would make sense to be installed.

3.3 INDUSTRIAL EQUIPMENT

3.3.1 OBJECTIVES

Proper and effective vehicle maintenance requires specific major and supportive equipment for StanRTA's specialized staff to maintain its fleet in the most suitable, safe, and efficient manner possible. The following sections outline the project team's understanding of the industrial equipment and process, scope for StanRTA and Pre-Design Programming, and a general approach for advancing design. Selection of the project equipment comes from Stantec's experience with facility design and successful implementation and innovation within the industry.

The following design principles will guide and shape the industrial design and equipment planning portion for StanRTA:

- **Safe and Efficient Workflow**
  Review key adjacencies of functional areas to ensure safe and efficient flow of personnel through the site and building.
- **Functional Space Planning**
  Verify that operational clearances follow industry's best practice and equipment clearances allow for ease of maintenance and serviceability.
- **Equipment and Systems**
  In collaboration with the StanRTA, equipment and systems shall be selected and/or specified to:
    - Maintain a degree of uniformity across StanRTA's facilities and/or maintenance.
    - Satisfy the functional and operational requirements.
    - All new equipment shall be selected for an optimal balance of cost-effective efficiency in operations.

3.3.2 EQUIPMENT SELECTION CRITERIA

New equipment shall comply with the "Buy America Act" criteria and applies to entire project scope. Equipment selections are dependent on the building plans, vehicle manufacturer, project construction budget, and additional input from the following sources:

- Equipment list, provided from the Space Needs Programming Meetings
- Equipment Layout and Meeting Minute Markups

3.3.3 PRELIMINARY INDUSTRIAL EQUIPMENT LIST

The following preliminary equipment list offers approximate quantities for the identified equipment. The list of equipment was compiled from programming meetings, client interviews, past documentation, and the design team's experience designing similar facilities.

This list is a starting point for future design teams. Specific pieces of equipment, their configuration, features, and location, as well as the quantity of each piece of equipment, must be verified in later stages of design in coordination with the end users and other disciplines.

Table 3.3.3 PRELIMINARY EQUIPMENT LIST

FLEET MAINTENANCE SHOP & BAY AREAS	QTY
BATTERY ROOM	
BENCH, BATTERY	2
CHARGER, BAR, BATTERY	2
COMMON WORK AREA	
BENCH, BUFFER / GRINDER, WITH DUST COLLECTOR	1
BOARD, PEG, TOOL	2
CABINET STORAGE	2
PARTICULATE, CLEANING, DIESEL (DPF)	1
PRESS, DRILL, VARIABLE SPEED, 20-INCH	1
PRESS, ELECTRIC / HYDRAULIC, 100 TON	1
SAW, BAND, VERTICAL	1
SAW, CUTOFF, ABRASIVE	1
TANK, PARTS, CLEANING	1
WASHER, PARTS	1
WORKBENCH, SEVERE USE, WITH VISE, 6-FEET	1
REEL, HOSE, BULK FLUID (CA)	2
REEL, HOSE, CORD (ELECTRIC)	2
ELECTRONICS REPAIR SHOP	
CABINET, STORAGE, FLAMMABLE, 45 GALLON	2
CHAIR, SHOP, STATIC-DISSIPATIVE	1
DRAWER UNIT	4
EXTRACTOR, FUME, ARM, STATIC-DISSIPATIVE, 4-INCH	1

SHELVING UNIT	15
WORKBENCH, ELECTRONIC, STATIC-DISSIPATIVE, 6-FEET	1
REEL, HOSE, BULK FLUID (CA)	1
LUBE / COMPRESSOR ROOM	
COMPRESSOR, AIR, SCREW, ROTARY, WITH INTEGRAL DRYER	1
DRUM, DOLLY TRUCK, CHASSIS GREASE PUMP	1
FLUID MANAGEMENT SYSTEM	1
PUMP, AIR, PISTON, 10:1 RATIO [ATF SYN., EO]	2
PUMP, DIAPHRAGM [EC, WWF]	2
PUMP, DIAPHRAGM [DEF]	1
TANK, DOUBLE-WALL, CUBE, 90-GALLON [DEF]	1
TANK, DOUBLE-WALL, CUBE, 500-GALLON [UC]	1
TANK, DOUBLE-WALL, CUBE, 500-GALLON [UO]	1
TANK, DOUBLE-WALL, MULTI-COMPARTMENT [ATF SYN., EO, EC]	1
TANK, POLYETHYLENE [WWF]	1
PM / INSPECTION BAYS	
FALL ARREST, OVERHEAD, DOUBLE TRACK	2
PIT, COVER, STEEL	2
REEL, EXHAUST, MOTOR-DRIVEN, 8-INCH	2
REEL, HOSE, BULK FLUID (ATF SYN.)	2
REEL, HOSE, BULK FLUID (CA)	4
REEL, HOSE, BULK FLUID (DEF)	2
REEL, HOSE, BULK FLUID (EC)	2
REEL, HOSE, BULK FLUID (EO)	2
REEL, HOSE, BULK FLUID (WWF)	2
WORKBENCH, SEVERE USE, 6-FEET	2
PORTABLE EQUIPMENT STORAGE	

JACK, STAND, AXLE	20
PLATFORM, WORK, PORTABLE, 120-INCH HIGH	6
REEL, HOSE, BULK FLUID (CA)	2
PUMP, DIAPHRAGM, USED FLUID EVACUATION (UC)	1
PUMP, DIAPHRAGM, USED FLUID EVACUATION (UO)	1
RECEIVER, 25 GALLON, PORTABLE (UC)	1
RECEIVER, 25 GALLON, PORTABLE (UO)	1
REPAIR BAYS	
CRANE, BRIDGE, 5 TON [2 BAYS]	1
FALL ARREST, OVERHEAD, DOUBLE TRACK	8
LIFT, COLUMN, PORTABLE, 18,500 POUNDS	24
LIFT, IN-GROUND, SCISSOR, 60,000 POUNDS	1
LIFT, PLATFORM, 78,000 POUNDS, 48-FOOT	1
REEL, EXHAUST, MOTOR-DRIVEN, 8-INCH	8
REEL, HOSE, BULK FLUID (ATF SYN.)	8
REEL, HOSE, BULK FLUID (CA)	16
REEL, HOSE, BULK FLUID (EC)	8
REEL, HOSE, BULK FLUID (EO)	8
REEL, HOSE, BULK FLUID (WWF)	8
WORKBENCH, SEVERE USE, WITH VISE, 6-FEET	8
SECURE TOOL CRIB (PROXIMITY / ACCESS CARD SECURITY)	
BOARD, PEG, TOOL	1
CABINET, STORAGE, LOCKING	2
SHELVING UNIT	4
TOOL VENDING MACHINE	2
TIRE BAYS	
FALL ARREST, OVERHEAD, DOUBLE TRACK	2

LIFT, IN-GROUND, SCISSOR, 60,000 POUNDS	2
REEL, EXHAUST, MOTOR-DRIVEN, 8-INCH	2
REEL, HOSE, BULK FLUID (CA)	4
WORKBENCH, SEVERE USE, WITH VISE, 6-FEET	2
TIRE RIM STORAGE	
PALLET, STORAGE, TIRE RIM	12
TIRE SHOP	
BALANCER, TIRE	1
CAGE, TIRE	2
CHANGER, TIRE, HEAVY-DUTY	1
CHANGER, TIRE, LIGHT-MEDIUM DUTY	1
REEL, HOSE, BULK FLUID (CA)	1
TIRE STORAGE	
CAROUSEL, TIRE, UNMOUNTED, NEW	1
CAROUSEL, TIRE, UNMOUNTED, USED	1
RACK, TIRE, SINGLE-TIER, NEW	4
RACK, TIRE, SINGLE-TIER, USED	4
REEL, HOSE, BULK FLUID (CA)	1
WELDING / FABRICATION / MACHINE SHOP	
BENCH, BUFFER / GRINDER, WITH DUST COLLECTOR	1
CABINET, BLAST, ABRASIVE, WITH DUST COLLECTOR	1
CRANE, BRIDGE, 1 TON	1
EXTRACTOR, FUME, WELDING, PORTABLE	1
JACK, BRAKE CALIPER	1
PRESS, ARBOR	1
PRESS, DRILL, VARIABLE SPEED, 20-INCH	1
PRESS, ELECTRIC / HYDRAULIC, 100 TON	1

REEL, HOSE, BULK FLUID (CA)	2
SCREEN, WELDING	1
TABLE, WELDING	1
WASHER, PARTS	1
WELDER, PORTABLE	2
WORKBENCH, SEVERE USE, WITH VISE, 6-FEET	1

PARTS STOREROOM	QTY
BULK PARTS STORAGE	
RACK, BULK STORAGE	27
RACK, PALLET, 8-FOOT	10
HIGH-DENSITY STORAGE	
CAROUSEL, PARTS	1
PARTS STORAGE	
CABINET, STORAGE, FLAMMABLE, 45 GALLON	2
CABINET, STORAGE	1
SHELVING UNIT	30

SERVICE AREAS	QTY
BUS WASH LANE / BUS WASH EQUIPMENT ROOM	
WASH, BUS, TOUCHLESS / BRUSH, HYBRID WITH RECLAIM SYSTEM AND REVERSE OSMOSIS	1(2)
CHASSIS WASH BAY / CHASSIS WASH EQUIPMENT ROOM	
LIFT, PLATFORM, WASH, 78,000 POUNDS, 48-FOOT	1
WASHER, HIGH-PRESSURE, HOT WATER, ELECTRIC	1
FARE / MONEY COUNTING ROOM W/ VESTIBULE (TWO-STEP ACCESS SYSTEM)	
CABINET, STORAGE	3
CASH COUNTING MACHINE – BY STANRTA	2
COIN COUNTER – BY STANRTA	1

SAFE – BY STANRTA	1
SHELVING UNIT	2
VAULT, FARE / REVENUE, STATIONARY, THROUGH-WALL	1
FUEL SERVICE POSITIONS	
FLUID MANAGEMENT SYSTEM	1
MOP SINK, HOT/COLD WATER	1
PROBE, FARE / REVENUE, DATA	3
REEL, HOSE, BULK FLUID (ATF SYN.)	3
REEL, HOSE, BULK FLUID (CA)	3
REEL, HOSE, BULK FLUID (DEF)	3
REEL, HOSE, BULK FLUID (EC)	3
REEL, HOSE, BULK FLUID (EO)	3
REEL, HOSE, BULK FLUID (WWF)	3
VAULT, FARE / REVENUE, MOBILE	3
LUBE / COMPRESSOR ROOM	
COMPRESSOR, AIR, SCREW, ROTARY, WITH INTEGRAL DRYER	1
PUMP, AIR, PISTON, 10:1 RATIO [ATF SYN., EO]	2
PUMP, DIAPHRAGM [EC, WWF]	2
PUMP, DIAPHRAGM [DEF]	1
TANK, DOUBLE-WALL, CUBE, 275-GALLON [DEF]	1
TANK, DOUBLE-WALL, MULTI-COMPARTMENT [ATF SYN., EO, EC]	1
TANK, POLYETHYLENE [WWF]	1
VACUUM EQUIPMENT ROOM / STORAGE ROOM	
CABINET, STORAGE	2
SHELVING UNIT	8
VACUUM, BACKPACK – BY CONTRACTOR	X

3.3.4 EQUIPMENT INFORMATION

The selected equipment each feature three subsections.

- The ‘Overview’ subsection describes the function of the equipment and important considerations when designing, selecting, and specifying the equipment.
- ‘Design Assumptions’ subsection offers preliminary assumptions, made by the design team, to the considerations identified in the ‘Overview’ subsection. Depending on the complexity of the equipment, this subsection may be excluded if there are no significant considerations at this preliminary stage of the project.
- ‘Manufacturers’, which provides a list of potential manufacturers. The provided list does not represent all qualified manufacturers, and other manufacturers may be sought out in future design stages.

3.3.5 PROPOSED EQUIPMENT

The following industrial equipment narratives have been developed based on the previously identified industrial equipment from StanRTA Owner Equipment Meetings. Equipment discussed in the following sections includes:

- Cranes and Hoists
- Fall Protection Systems
- Vacuum Systems
- Vehicle Exhaust Systems
- Vehicle Lifts
- Vehicle Wash Systems
- Compressed Air and Lubrication Distribution Equipment
- Storage Equipment
- Support Shop Equipment

3.3.5.1 Cranes and Hoists

3.3.5.1.1 Overview

Crane and hoists allow a user to transport large components and equipment within various areas of a facility. It is important to define what functional areas of a facility need to have crane coverage to define the crane’s travel direction and selection of the correct type. These factors include, but are not limited to:

- Desired area coverage
- Interior clearance
- Building structural systems
- Coordination with other facility systems (such as mechanical, electrical, lighting, fire protection, overhead doors, etc.)

- Maximum desired load

3.3.5.1.2 Design Assumptions

Crane, Bridge, 1 Ton

1. Coverage Area: Full coverage of dedicated shop areas in Welding / Fabrication / Machine Shop.
2. Configuration: Top running or Underhung.
3. Crane Loading Group: CMAA Class C (Moderate Service), indoor.
4. Capacity: 1 Ton, minimum.
5. Hoist, 1 Ton.
6. Crane Controls Pendant.
7. Speeds, Nominal:
    a. Hoist: Minimum 20 / 3.2 feet per minute (FPM), two speed.
    b. Trolley: Minimum 65 FPM, ramp and hold.
    c. Bridge: Minimum 100 FPM, ramp and hold.
8. Manufacturer: Demag Cranes, Konecranes, R&M Materials Handling Inc., SISSCO Material Handling

Crane, Bridge, 5 Ton

1. Coverage Area: Minimum two (2) Repair Bay spaces.
2. Configuration: Top running or Underhung.
3. Crane Loading Group: CMAA Class C (Moderate Service), indoor.
4. Capacity: 5 Ton, minimum.
5. Hoist, 5 Ton.
6. Crane Controls Pendant.
7. Speeds, Nominal:
    a. Hoist: Minimum 20 / 3.2 feet per minute (FPM), two speed.
    b. Trolley: Minimum 65 FPM, ramp and hold.
    c. Bridge: Minimum 100 FPM, ramp and hold.
8. Manufacturer: Demag Cranes, Konecranes, R&M Materials Handling Inc., SISSCO Material Handling

3.3.5.2 Fall Protection Systems

3.3.5.2.1 Overview

Fall protection systems are necessary any time routine maintenance is being performed on the roof of the vehicle and operation of a facility. It is important to note that when fall protection systems are properly

integrated into the overall design of the facility, it is more likely they will be used on a regular basis. Design factors include, but are not limited:

- Other Overhead Systems and/or Equipment
- Facility Budget
- Total floor space available
- Size of work area
- Scope of fall protection coverage required

3.3.5.2.2 Design Assumptions

Fall Arrest, Overhead, Double Track

1. Coverage Area: All bays, one (1) each.
2. Configuration: Overhead, double-track.
3. Hangers and Supports: Provide hangers and supports to mount fall protection system to building structure.
4. Self-locking anchorage snap hook with impact indicating swivel.
5. Lifeline shall have braking mechanism to engage the steel track in the event of a fall to eliminate post-fall drift.
6. Accessories:
    a. Full-Body Harness: Furnish two (2) for each track, four (4) total per equipment.
    b. Self-Retracting Lifeline: Furnish two (2) for each track, four (4) total per equipment.
    c. Electronic Mechanism to raise / lower lifeline.
7. Manufacturer: FallTech, Gorbel, Rigid Lifelines

Pit, Cover, Steel

1. Coverage Area: PM / Inspection Bays.
2. Walk-on cover, Welded Wire Mesh or Solid.
3. Slim, Stackable Panels.
4. Accessories:
    a. High-Density Nylon Glides.
5. Manufacturer: C & A Equipment Services, Dynatect, Flexible Lifeline Systems, Safeguard Industries

3.3.5.3 Vacuum Systems

3.3.5.3.1 Overview

Part of servicing a vehicle fleet means regular interior vacuuming to keep vehicles clean for vehicle operators and passengers, as well as extending the useful life of the interior surfaces. Each agency

needs to carefully evaluate several factors before making a purchase decision. Factors to consider for appropriate selection include, but are not limited to:

- Length of service cycle
- Type, size, and number of vehicles that will be serviced
- Positioning of the vacuum
- Facility size and layout
- Health and welfare of the employees

3.3.5.3.2 Design Assumptions

Vacuum, Backpack

1. Equipment service is contracted.

3.3.5.4 Vehicle Exhaust Systems

3.3.5.4.1 Overview

Vehicle exhaust systems are required to help remove harmful exhaust fumes, such as diesel, gasoline, CNG and/or Hydrogen. Even though vehicles run only a short time indoors and usually with open doors, the exhaust of these vehicles can build up within a building if not properly designed. Without appropriate control and removal of the exhaust, fumes can lead to worker illness, increased facility maintenance, and damage to sensitive components and electronics. The most effective method is to capture and remove the exhaust fumes at the source. Factors to consider while selecting a system include, but are not limited to:

- Type of vehicle
- Size of vehicle exhaust
- Type of vehicle fuel
- Exhaust location on vehicle(s)
- Facility budget
- Functional bays requiring vehicle exhaust
- Orientation of vehicles in bay

3.3.5.4.2 Design Assumptions

Reel, Exhaust, Motor-Driven, 8-Inch

1. Configuration: Motor Driven
2. Fuel Extracted Sources: CNG, Diesel, Gas, Hydrogen.
3. Hose Rating: High Temperature, 1200 degrees Fahrenheit minimum.
4. Hose Size: 6 inches, minimum.

5. Fan Airflow: 1150 cubic feet per minute, minimum.
6. Pendant Controls.
7. Accessories:
    a. Portable Exhaust Cane with Base, Wheels, and Height Adjustment
    b. Stainless Steel Nozzle with locking clamp and damper
    c. High-temperature rubber nozzle with locking clamp and damper
    d. Telescopic Lifting Pole
    e. Quick Safety Coupler
8. Manufacturer: Monoxivent, Nederman LLC., Plymovent

3.3.5.5 Vehicle Lifts

3.3.5.5.1 Overview

Vehicle lifts allow a technician to inspect and maintain the underside of vehicles. Advantages include ease of use, safety, and improved productivity. The selection of the appropriate lift should be carefully considered and designed for the specific functions within the bay. These factors include, but are not limited to:

- Function and size of bay
- Facility budget
- Type of vehicle
- Number of vehicle axles
- Wheelbase range(s) between vehicle axles
- Vehicle access and orientation in bay

3.3.5.5.2 Design Assumptions

Lift, Column, Portable, 18,500 Pounds

1. Coverage Areas: Repair Bays
2. Equipment Type: Battery Powered (Wireless)
3. Lifting Capacity: 18,000 pounds each, minimum.
4. Accessories:
    a. Retractable Electric Power Reel.
    b. Cable Trolley.
5. Manufacturer: Ari-Hetra, Mokawk Lifts, Rotary Lift, Stertil-Koni

Lift, In-Ground, Scissor, 60,000 Pounds

1. Coverage Areas: Repair Bays & Tire Bays

2. Configuration: In-ground
3. Lift Capacities:
    a. Front, Moveable: 30,000 pounds, minimum.
    b. Rear, Stationary: 30,000 pounds, minimum.
4. Moveable Carriage Unit:
    a. The moveable lifting unit shall relocate horizontally fore and aft while in the fully retracted position.
5. Fixed Lifting Unit:
    a. The rear stationary lift shall be of the same design and construction as the front lift unit.
6. Accessories:
    a. Adapters (Variety of axle engaging accessory adapters designed to raise heavy vehicles by the axles or chassis. Shall be capable of easy removal for storage and/or change out.)
    b. Remote Operators Station Pendant with emergency E-Stop button
    c. Sump Pump, air-operated; shall be provided with the lift equipment.
7. Manufacturer: Rotary Lift, Stertil-Koni (Preferred Basis-of-Design)

Lift, Platform, 78,000 Pounds, 48-Foot

1. Coverage Areas: Repair Bays & Chassis Wash Bay
2. Configuration:
    a. Repair Bays: Flush-mounted.
    b. Chassis Wash Bay: Flush-mounted, Wet-rated environment.
3. Lifting Capacity: 78,000 minimum
4. Sized for Articulated Buses.
5. Accessories:
    a. Anti-Skid Epoxy Top Coating Finish
    b. Air Kit (Repair Bay Only)
    c. Automatic Pit Covers (Repair Bay Only)
    d. Jacking Beam (Repair Bay Only)
    e. Runway Lighting
    f. Electrical wiring and conduit for connecting hydraulic operating lift system components and to electrical service.
    g. Hydraulic and pneumatic piping for connecting hydraulic operating lift system components.
6. Manufacturer: Mokawk Lifts, Rotary Lift, Stertil-Koni (Preferred Basis-of-Design)

3.3.5.6 Vehicle Wash Systems

3.3.5.6.1 Overview

Wash Systems play an important role in maintaining the entire fleet. Vehicles that are cleaned properly last longer and create a more enjoyable experience for both the maintenance staff and the public. Understanding the capabilities of each type of system will ensure that the range of vehicle types are washed thoroughly while being conscience of environmental goals for the project. Factors to consider while selecting a vehicle wash system include, but are not limited to:

- Frequency of Wash
- Desired Wash Time
- Desired or Expected Cleanliness
- Number of Vehicles Washed
- Size of Wash Bay
- Facility Budget
- Type of Vehicle
- Profile of Vehicle
- Water Treatment
- Water Reclamation
- Stormwater Capture & Other Sustainable Practices
- Air Dryers / Wipers
- Climate & Environment / Elements
- Bike Racks on Buses
- Vehicle-mounted Equipment

3.3.5.6.2 Design Assumptions

Wash, Bus, Touchless / Brush, Hybrid with Reclaim System and Reverse Osmosis

1. Configuration: Drive-Through, Touchless / Brush, Hybrid, Reclaim System and Reverse Osmosis
2. Vehicles Washed: Fixed Route and Paratransit
3. Service Cycle: Wash every other night
4. Wash System Components / Options:
    a. Sequence Start: Push Button vs. RFID
    b. Tire Guide Rail
    c. Eye Sensors: Infrared photo eye sensors
    d. Detergent Arch(es)
    e. Brush Arch with Roof Mop
    f. High Pressure Tire Wash / Undercarriage Wash
    g. High Pressure Front Spray Arch
    h. Final Rinse Arch

i. Reverse Osmosis Spot-free Rinse Arch
j. Air Blowers Arch
k. Reclaim System
l. Traffic Light(s)

5. Manufacturer: InterClean Equipment LLC., N.S. Wash Systems, Ross & White Company, Westmatic Corporation

Washer, High-Pressure, Hot Water, Electric

1. Configuration: Hot Water, Electric
2. Detergent: 55 gallons, minimum. Acid and Alkaline or Base
3. Wash Wand and Reel: 2, minimum
    a. Wash Wand: 36-inch wand and trigger gun with Scabbard.
    b. Wash Reel: 360-degree Pivot Reel, 50-foot hose.
    c. Nozzle: Type 154 CM, 4,000 PSI hardened steel, Furnish 1 for each wash wand and reel.
    d. Quick Coupler: Furnish 1 for each wash wand and reel.
4. Accessories:
    a. Remote Starter: Furnish 1 for each wash wand and reel.
    b. Soap Solenoid and Switch: Furnish 1 for each wash wand and reel.
    c. Additional Nozzles: Furnish 1 four pack set per washer of 0, 15, 25, and 45 degree quick-coupler nozzles; color coded.
    d. Draft Diverter: Furnish 1 per washer.
    e. Acid Detergent: 55 gallons.
    f. Alkaline Detergent: 55 gallons.
    g. Base Detergent: 55 gallons.
    h. Replacement Nozzle Holder: Wall mounted, fabricated, one each per trigger gun location.
    i. Power Vent (Draft Inducer): Furnish 1 per washer with 90-degree exhaust stack.
5. Manufacturer: Alkota Cleaning Systems Inc., Hotsy Corporation, Landa Inc.

3.3.5.7 Compressed Air and Lubrication Distribution Equipment

3.3.5.7.1 Overview

The compressed air and lubrication distribution systems are two important aspects of a facility that provide ease of use for the mechanics working in a multi-bay facility. The compressed air and lubrication piping must be sized accurately to support the shop equipment throughout the facility. The lubrication equipment needs to support the vehicles being serviced for the most efficient facility design. Factors to consider include, but are not limited to:

- Number of Bays
- Lubrication Fluids needed at each location

- Length of longest piping run
- Monitoring Technology

3.3.5.7.2 Design Assumptions

Compressor, Air, Screw, Rotary, With Integral Dryer

1. Configuration: Rotary Screw, with Integrated Air Dryer
2. Sized to meet needs of facility and equipment.
3. Consistent Flow Rate.
4. Uniform Temperature Distribution.
5. Pressure Ratio and Efficiency.
6. Manufacturer: FS Curtis, Ingersoll Rand, Sullair, Quincy Compressor

Compressed Air Outlets

1. Configuration: Filter / Regulator / Lubricator
2. Convenience Compressed Air in Shop and Bay areas throughout facility.
3. Manufacturer: Balcrank Products, Graco Inc., Samson Corporation

Drum

1. Capacity: 55 Gallons
2. Fluid Types:
    a. Hydraulic Fluid: 55 Gallons
    b. Chassis Grease: 55 Gallons

Fluid Management System

1. Manage and control lubricating oils and bulk fluid mixtures for vehicle and maintenance service applications.
2. Metered dispense and tank level monitor panel.
3. Transceivers to transmit signals.
4. Pump Air Controls (PAC's)
5. Full Line Operating Software.
6. Accessories:
    a. Inlet swivels.
    b. Filter Kits.
    c. Fluid Delivery Kit.
    d. Console Bracket.
    e. Cleanline filter assembly
    f. Cleanline assembly replacement filters.
7. Manufacturers: Balcrank Products, Graco Inc., Lincoln Industrial Corp., Samson Corporation

Pump, Air, Piston, 10:1 Ratio

1. Fluid Types: Automatic Transmission Fluid, Automatic Transmission Fluid Synthetic, Engine Oil, Hydraulic Fluid
2. Manufacturers: Balcrank Products, Graco Inc., Lincoln Industrial Corp., Samson Corporation

Pump, Diaphragm

1. Fluid types: Engine Coolant, Windshield Washer Fluid, Diesel Exhaust Fluid
2. Manufacturers: Balcrank Products, Graco Inc., Lincoln Industrial Corp., Samson Corporation

Pump, Diaphragm, Used Fluid Evacuation

1. Fluid Types: Used Coolant, Used Oil
2. Manufacturers: Balcrank Products, Graco Inc., Lincoln Industrial Corp., Samson Corporation

Receiver, Air, Vertical

1. Tank Orientation: Horizontal or Vertical.
2. Tank Capacity: 25-30% higher than Air Compressor Unit output and working pressure fluctuations and demand.
3. Steel tank construction
4. Accessories:
    a. Adjustable pressure regulator.
    b. Safety valve.
    c. Pressure gauge.
    d. Drain cock.
    e. Automatic pneumatic tank drain.
5. Manufacturer: Champion, Ingersoll Rand, Manchester Tank, Samuel Pressure Vessel Group, Quincy Compressor

Receiver, 25 Gallon, Portable

1. Fluid Types: Used Coolant, Used Oil
2. Receiver Capacity: 25 Gallons, per unit.
3. Evacuation of used fluids to Bulk Fluid Tanks in Compressor / Lubrication Room for collection.
4. Manufacturer: Balcrank Products, Graco Inc., Lincoln Industrial Corp., Samson Corporation

Reel, Hose, Bulk Fluid

1. Configuration: Overhead
2. Reel Bank Assembly: 6 per bank, maximum.
3. Metered or Non-metered.
    a. Metered: Automatic Transmission Fluid, Diesel Exhaust Fluid, Engine Coolant, Engine Oil, Hydraulic Fluid, Windshield Washer Fluid
    b. Non-Metered: Compressed Air, Chassis Grease

4. Fluid Identification Labels.
5. Fluid Types: Automatic Transmission Fluid, Automatic Transmission Fluid Synthetic, Compressed Air, Diesel Exhaust Fluid (Dispensed in PM Inspection Bays and Fuel Lanes), Engine Coolant, Engine Oil, Hydraulic Fluid, Windshield Washer Fluid.
6. Mounting Bracket and Mounting Channels.
7. Manufacturer: Balcrank Products, Graco Inc., Lincoln Industrial Corp., Reelcraft, Samson Corporation

Reel, Hose, Cord

1. Configuration: Overhead or Wall-mounted
2. Reel Bank Assembly: 6 per bank, maximum.
3. Cord Ending: Duplex outlet box.
4. Power Cord:
    a. Length: 50 feet minimum.
    b. Voltage: 120 maximum.
    c. Amperage: 15 maximum.
5. Inlet Type: NEMA 5-15P straight blade plug.
6. Mounting Bracket and Mounting Channels.
7. Manufacturer: Balcrank Products, Graco Inc., Lincoln Industrial Corp., Reelcraft, Samson Corporation

Tank, Double-Wall, Cube

1. Capacity:
    a. Diesel Exhaust Fluid: 90 Gallons
        i. Temperature Controlled Tank
        ii. Heat-traced piping
    b. Used Coolant: 500 Gallons
    c. Used Oil: 500 Gallons
2. Secondary Containment.
3. Accessories:
    a. Solenoid Valve with Strobe Light.
    b. Tank Monitoring System.
    c. Tank Monitoring System with Alarm.
4. Manufacturer
    a. Diesel Exhaust Fluid: Fluidall, KleerBlue Inc., Xerxes
    b. Used Coolant, Used Oil: Containment Solutions Inc., Dynafab Corp., Highland Tanks and Manufacturing

Tank, Double-Wall, Multi-Compartment

1. Capacity:

   a. Automatic Transmission Fluid: 500 Gallons
   b. Automatic Transmission Fluid Synthetic: 280 Gallons
   c. Engine Coolant: 280 Gallons
   d. Engine Oil: 500 Gallons
2. Secondary Containment.
3. Accessories:
   a. Solenoid Valve with Strobe Light.
   b. Tank Monitoring System.
   c. Tank Monitoring System with Alarm.
   d. Spill Box.
4. Manufacturer: Containment Solutions Inc., Dynafab Corp., Highland Tanks and Manufacturing

Tank, Polyethylene

1. Capacity:
   a. Windshield Washer Fluid: 90 Gallons
2. Primary and secondary storage tanks shall be polyethylene.
3. Site level gauge.
4. Flexible connections with fittings are required for plumbing to the tank.
5. Manufacturer: Chem-Tainer, Containment Solutions Inc., Dynafab Corp., NORWESCO

3.3.5.8 Storage Equipment

3.3.5.8.1 Overview

Storage systems play a significant role in the layout and operation of a facility. Storage Equipment can help with the organization of a facility, while promoting efficiency in operation and safety. Appropriately sized and located storage equipment also allows for flexibility of storage and shop spaces. Parts and tool storage areas may consist of a variety of storage equipment items, such as shelving units, drawer units, bulk storage and pallet racks, rack system with forklift / crane or motorized carousel and shuttle units. Factors to consider while selecting equipment include, but are not limited to:

- Desired quantity of stored materials
- Security of stored materials
- Available square footage
- Available height in space

3.3.5.8.2 Design Assumptions

Board, Peg, Tool

1. Metal Board Finish
2. Accessories:
    a. Future design team to verify storage needs with StanRTA to fully design features and layout.
    b. Include heavy duty steel hooks, clips, and accessories capable of locking into the panel perforations.
        i. Single Hooks.
        ii. Double Hooks.
        iii. Plier's Hooks.
        iv. Spring Clips.
        v. Screwdriver unit.
        vi. Wrench Rack.
        vii. Hex Key Unit.
    c. Power Strip Surge Protector.
3. Manufacturer: Kennedy Manufacturing Company, Modern Metal Products, Trion Industries Inc.

Cabinet, Storage

1. Storage Quantity: 4-7 shelves
2. Versatile Storage Options
    a. Future design team to verify storage needs with StanRTA to fully design cabinet unit(s) and layout.
3. Manufacturer: Equipto, Lyon Workspace Products, Tennsco Corp, Vidmar

Cabinet, Storage, Flammable, 45 Gallon

1. Storage Capacity: 15-90 Gallons
2. Cabinet shall comply with NFPA combustible liquids Code No. 30 and OSHA safety requirements.
3. Double-wall construction with air gap for fire resistance.
4. Self-latching doors.
5. Spill containment system.
6. Grounding wire.
7. Warning labels.
8. Manufacturer: Equipto, Lyon Workspace Products, Vidmar

Cabinet, Storage, Locking

1. Storage Quantity: 4-7 Shelves
2. Versatile Storage Options

   a. Future design team to verify storage needs with StanRTA to fully design cabinet unit(s) and layout.
3. Self-latching doors
4. Manufacturer: Equipto, Lyon Workspace Products, Vidmar

Carousel, Parts

1. Tray Capacities: Heavy, Medium, and Light loads.
   a. Furnish mix of tray types as selected by StanRTA. Future design team to verify storage needs with StanRTA to fully design equipment selections.
2. Load Capacity:
   a. Light Load Tray: Nominal 22 pounds per square foot.
   b. Medium Load Tray: Nominal 34 pounds per square foot.
   c. Heavy-Duty Load Tray: Nominal 47 pounds per square foot.
3. Trays shall be interchangeable with existing or future units.
4. Secure access badging.
5. Programmable and customizable controls for fixed, optimized, mixed, or fixed height mixed operating modes.
6. Accessories:
   a. Tray Layout Dividers, fixed or adjustable.
7. Manufacturer: Kardex Remstar, Modula, Vidmar

Carousel, Tire, Unmounted

1. Tire Diameter: 44-inches, maximum
2. Storage Capacity:
   a. New Unmounted: ~130 Tires
   b. Used Unmounted: ~130 Tires
3. Accessories:
   a. Tire Ramp.
   b. Horizontal Security Gate or Tire Kicker.
   c. Tire Carrier Insert.
   d. Dual Controls.
   e. Variable Frequency Drive.
   f. Full Enclosure.
   g. Preventative Maintenance Package.
   h. Seismic Restraint Bracing.
4. Manufacturer: Summit Storage Solutions, Vidmar

Drawer Unit

1. Drawer Quantity: 4-12 Drawers
2. Versatile Storage Options

    a. Future design team to verify storage needs with StanRTA to fully design drawer unit(s) and layout.
3. Front and rear forklift openings.
4. Accessories:
    a. Drawer Divider Kit
5. Manufacturers: Burroughs, Equipto, Lista, Lyon Workspace Products, Vidmar

Pallet, Spill Containment, 2-Drum, 55-Gallon

1. Drum Capacity: 2 drums, 55-gallons each
2. Sump Capacity: 66-gallons
3. Pallet shall be constructed of corrosion resistant durable polyethylene.
4. The deck shall be open grate to contain spills.
5. Forklift Accessible.
6. Accessories:
    a. Supply ramp for loading and unloading of drums
    b. Optional Drain
7. Manufacturer: Eagle Manufacturing, ENPAC

Pallet, Storage, Tire Rim

1. Laydown pallet storage for Tire Rims.

Rack, Bulk Storage

1. Shelf Length: 4-12 feet
2. Shelf / Deck Type: Solid, Wire, or No Decking
3. Accessories:
    a. Anchors: Provide seismic anchors, one for each end, left and right, and the center of bulk shelving rack as required.
    b. Seismic Restraint Components
4. Manufacturer: Borroughs, Equipto, Lyon Workspace Products, Tennsco Corp.

Rack, Pallet

1. Configuration: 8-12-foot length, three tier
2. Shelf / Deck Type: Solid, Wire, or No Decking
3. Forklift access.
4. Accessories:
    a. Anchors: Provide seismic anchors, one for each end, left and right, and the center of pallet rack as required.
    b. Pallet rack guard impact support.
    c. Rear Netting.
5. Manufacturer: Lyon Workspace Products, Modern Equipment Company, Ridg-U-Rak

Rack, Tire, Single-Tier

1. Configuration: All-welded steel construction, fabricated
2. Tire Diameter: 44-inches, maximum
3. Stacking Capacity: 2 tire racks high, maximum

Shelving Unit

1. Shelf Quantity: 4-8 Shelves
2. Versatile Storage Options
    a. Future design team to verify storage needs with StanRTA to fully design shelving unit(s) and layout.
3. Accessories:
    a. Additional Shelves.
    b. Drawers
    c. Drawer Divider Set, if applicable.
4. Manufacturer: Borroughs, Equipto, Lyon Workspace Products, Modern Equipment Company Inc.

3.3.5.9 Support Shop Equipment

3.3.5.9.1 Overview

Support equipment is included in many areas of the facility to supplement the functions associated with vehicle maintenance. Items such as workbenches, vises, buffer / grinders, drill presses, hydraulic presses, saws, blast cabinets, parts washers, jacks and stands, etc. are all part of an industry standard recommended equipment package that the Design Team will specify for StanRTA.

3.3.5.9.2 Design Assumptions

Balancer, Tire

1. Provided by City.
2. Tire Diameter: 52-inches, maximum
3. Capacity: 500 pounds, maximum
4. Accessories:
    a. Wheel balancer adapter kit for 20 to 22-1/2-inches: Provide 1 per balancer.
    b. Wheel balancer adapter kit for 22 to 24-1/2-inches: Provide 1 per balancer.
    c. Budd wheel balancer adapter: Provide 1 per balancer.
    d. Budd cone and backing plate kit for hub centered wheels: Provide 1 per balancer.
    e. Tire / wheel hydraulic lift for mounting tire and wheel assembly to the balancer: Provide 1 per balancer.
5. Manufacturer: Hunter Engineering Company / Smartweight Elite (preferred Basis-of-Design)

Bench, Battery

1. Configuration: Hardwood fabricated construction
2. Finish: Epoxy paint seal and finish; color choice by Owner.
3. Capacity: Provided by Owner
    a. Eight (8) 8D Batteries
    b. Ten (10) Group 65 Batteries

Bench, Buffer / Grinder, With Dust Collector

1. Configuration: Pedestal Mounted, with Dust Collection
2. Wheel Types: Medium grit and Wire type
3. Quenching pot
4. Accessories:
    a. Eye Shield with Lamp: Provide 1 for each grinder.
    b. Pedestal, Cast Iron: Provide 1 for each grinder.
5. Manufacturer: Baldor Electric Company, Cincinnati Electric Tool Inc., Delta Machinery

Cabinet, Blast, Abrasive, With Dust Collector

1. Dry Abrasive Material
2. Recycled abrasive material
3. Media Type: Glass bead and sand
4. Construction: Cabinet, Gloves, Viewing Window, Lighting, Air System, Door, Dust Collector, Nozzle, Blow Off
5. Accessories:
    a. Filter Bags.
    b. Nozzle with Mounting Bracket.
6. Manufacturer: Larry Hess and Associates, Trinity Tool Company, Wheelabrator Technologies Inc.

Cage, Tire

1. Tire Diameter: 54-inches, maximum
2. Inflation Pressure: 120 PSI, maximum
3. Construction: High-tensile strength steel tubing, minimum five bars, welded to steel base plate.
4. Accessories:
    a. Wall Mounting Bracket for Automatic Tire Inflator.
5. Manufacturer: Branick Industries Inc., Kentool, Myers Tire Supply Co.

Chair, Shop, Static-Dissipative

1. Static-Dissipative material construction
2. Grounding mechanisms: Conductive chain or cable connected to grounding point.
3. Manufacturer: Cleanroom World, Global Industrial

Changer, Tire, Heavy-Duty

1. Provided by City.
2. Tire Diameter: 58-inches, maximum
3. Functions close to ground for low mounting of tires.
4. Tire Roller Guide.
5. Tulip-Style Clamping.
6. Accessories:
    a. Entry / Exit Ramps
    b. Aluminum Wheel Clamp.
    c. Steel Wheel Clamp.
    d. Tire Mounting Paste and Brush.
    e. Hook and Hook Pin.
    f. Bead Roller.
    g. Disk Roller.
    h. Mounting Lever.
    i. Bead Lever.
    j. Canvas Cover.
7. Manufacturer: Hunter Engineering Company / TCX 635 HD (preferred Basis-of-Design)

Changer, Tire, Light-Medium Duty

1. Provided by City.
2. Tire Diameter: 46-inches, Maximum
3. Adjustable Tabletop, 10 – 26-inch clamping range.
4. Hi-grip jaw covers.
5. Diameter marks for external clamping.
6. Bead Press System.
7. Accessories:
    a. Wheel Lift.
    b. Blast Inflator.
    c. Storage Shelving.
    d. Pressing Cones (Large and Small) and Pressing Cone Extension.
    e. Tire Mounting Paste and Brush.
    f. Bead Lever.
    g. Plastic Shovel Protectors.
    h. Protector Sleeves.
8. Manufacturer: Hunter Engineering Company / TCX 53 (preferred Basis-of-Design)

Charger, Bar, Battery

1. Battery Capacity: StanRTA storing 18 batteries
2. Battery Charger with Charging Leads
3. Circuit breaker protection with ON/OFF rocker switch
4. Accessories:
    a. Mounting Bracket.
5. Manufacturer: Associated Equipment Corporation, Autometer, LaMARCHE

Extractor, Fume, Arm, Static-Dissipative, 4-Inch

1. Configuration: Wall-mounted
2. Hose Diameter: 4-inches
    a. Future design team to verify exhaust needs with StanRTA to fully design equipment selection.
3. Arm Length: 6-feet, minimum
4. Construction: Extraction Arm, Flexible Hose, Friction Joints, Mounting Bracket, Exhaust Fan, Controls.
5. Fan Capacity: 120 cubic feet per minute, minimum.
6. Static-Dissipative material construction with grounding wire.
7. Accessories:
    a. Integral Hood.
8. Manufacturer: Nederman LLC, Plymovent, Sentry Air Systems Inc.

Extractor, Fume, Welding, Portable

1. Configuration: Portable
2. Exhaust Capacity: 1,200 cubic feet per minute, minimum.
3. At-source fume extraction
4. Joint Adjustment
5. Accessories:
    a. Pressure Gauge Kit.
    b. Regulator.
    c. Silencer.
6. Manufacturer: Nederman LLC, Plymovent, Sentry Air Systems Inc.

Jack, Brake Caliper

1. Designed for heavy-duty vehicles
2. Accessories:
    a. Tool Tray.
    b. Hub Removal Strap.
    c. Extension Bar.

    d. Adapters (Wabco adapter, Volvo Brake Caliper adapter, Stud adapters, Drum adapter).
3. Manufacturer: ARI-HETRA, Dakota Fluid Power, Gray Manufacturing

Jack, Stand, Axle

1. Easy and ergonomic maneuverability.
2. Accessibility.
3. Durable and robust.
4. Fine adjustment adapter.
5. Compliancy with ASME standards.
6. Accessories:
    a. Adapters (Standard, V-Shaped, U-Shaped, Fine Adjustment).
7. Manufacturer: Hein-Werner, Norco, Stertil-Koni, Torin, US Jack

Particulate, Cleaning, Diesel (Dpf)

1. Cleaning Method: Compressed air, thermal cleaning, or aqueous solutions
2. Soot Deposit Nature: uniform across filter channels, primarily organic
3. Requires Overhead Crane Access
4. Integrated Dust Collector.
5. Accessories:
    a. Curved Nozzle Kit.
    b. Filter Rack.
    c. Extension Rings.
    d. Trap Tongs.
    e. HEPA Filter.
    f. Adapter Plate.
    g. Flow Reduction Adapter.
6. Manufacturer: Filtertherm, FSX Equipment

Platform, Work, Portable

1. Configuration: Portable
2. Mobility feature: Wheels or Casters
3. Number of Steps: 2-7 Steps, access sides and roof of vehicle.
    a. Future design team to verify needs with StanRTA to fully design equipment selection.
4. Handrail Height: 30-inches above steps
5. Climbing Angle: 60 degrees
6. Durable Metal Construction
7. Step lock system
8. Accessories:
    a. Swivel Caster Safelock: Provide option with Work Platform equipment.

9. Manufacturer: Cotterman Company, Ladder Man, Louisville Ladder

Press, Arbor

1. Force Generation: Manual or hydraulic input
2. Capacity: 5 tons, minimum
3. Smooth action gears for finite ram control.
4. Friction Brake.
5. Adjustable handle.
6. Cast Iron Base: Base opening and slotted table plate.
7. Manufacturers: American Machine Tools, Dake Machine Tools, Global Industrial

Press, Drill, Variable Speed, 20-Inch

1. Head: 20-inches
2. Mechanical Variable Speed
3. Adjustable LED work light
4. Adjustable Table Surface
5. Accessories:
    a. Quick-release drill adapter.
    b. Drill press vice.
6. Manufacturer: Clausing Industrial, Dake Machine Tools

Press, Electric / Hydraulic, 100 Ton

1. Configuration: Electric / Hydraulic
2. Capacity: 100 tons, minimum.
3. Overload Safety Relief Valve.
4. Self-locking adjustable table hoist.
5. Stroke Indicator.
6. Variable Ram speed.
7. Accessories:
    a. Ram Nose (Flat Ram, V-Ram).
8. Manufacturer: Dake Machine Tools, OTC, Div. of SPX, Ram-Pac Industries

Saw, Band, Vertical

1. Configuration: Vertical
2. Working Material: Metal or Wood
3. 14-inch wheel diameter.
4. Chip Blower and Blade Brush.
5. Accessories:
    a. Rip Fence.

   b. Circle cutting attachment.
   c. Miter gauge.
   d. Table guide inserts.
   e. Work Light.
6. Manufacturer: Clausing Industrial, DoAll Sawing Products, Wellsaw

Saw, Cutoff, Abrasive

1. Wheel Type: Abrasive
2. Cutting Material: Metal, Concrete, Masonry
3. High-speed precision cuts
4. Accessories:
   a. Workpiece clamp.
   b. Spindle Lock.
   c. Quick-release vise.
5. Manufacturer: Makita, Milwaukee

Screen, Welding

1. Configuration: 2 screens, minimum. Portable
2. Heavy-Duty Casters: 4 casters for each screen
3. Flip-on, one piece screen
4. Material: Vinyl coated fabric
5. Accessories:
   a. Welding Screen Replacement Panels.
   b. Fasteners Kit (S-Hooks, Grommets, Velcro Closures, Anchors and Floor Mounts, Bindings, Heavy-duty Staplers and Staples).
6. Manufacturer: Global Industrial, John Tillman Company, Singer Safety Company

Table, Welding

1. Tabletop constructed of machined cast iron
2. Tabletop cross ribbed for durability, heat-resistant
3. Finish: Factory applied baked enamel or powder coat
4. Accessories:
   a. Screw Clamps.
   b. Prism.
   c. Clamping Bolt.
   d. Universal Stop.
   e. Stop and Clamping Squares.
   f. Tool Cart System, Portable.
   g. Maintenance Set.

5. Manufacturer: Acorn Iron and Supply Company, Siegmund, Weldsale Company

Tank, Parts, Cleaning

1. Capacity: 25 Gallons, minimum
2. Filter and sludge collection basket.
3. Small parts basket
4. Powder-coat finish
5. Bottom drain
6. Accessories:
    a. Solvent Filtration Solutions.
    b. Flow through brushes
    c. General purpose parts baskets: variable size.
    d. LED Lamp.
    e. Work Shelves.
    f. Sludge Trays.
    g. Drain Sleeves.
    h. Filter Bags.
    i. Drum Liners.
7. Manufacturer: Graymills Corporation, Safety-Kleen Systems Inc., Zep Inc.

Tool Vending Machine

1. Located in Secure Tool Crib
2. Automated dispensing
3. Enhanced Secure Access, Personnel Pin / Badge Access
4. Manufacturer: Fastenal, Intelligent Dispensing Solutions, IRMATIC, SecuraStock

Vault, Fare / Revenue, Mobile

1. Configuration: Mobile Fare Vault, Data Probe, Data Collection software and license.
2. Locate at Service Lanes to reduce walking – Used as Primary Vaults.
3. Fares to be counted Monday / Thursdays.
4. Data collection and reporting system communication with Vault.
5. Data Probes, each with junction box, probe holder, and lock boxes.
6. Infrared-transparent plastic window with LED and Photosensor communications link.
7. Accessories:
    a. Mobile Bin: Provide 1 spare bin for each Fare Vault, minimum.
8. Manufacturer: Genfare, LECIP

Vault, Fare / Revenue, Stationary, Through-Wall

1. Configuration: Stationary Through-Wall Fare Vault, Data Probe, Data Collection software and license.
2. Locate in Fare / Money Counting Room.
3. Fares to be counted Monday / Thursdays.
4. Data collection and reporting system communication with Vault.
5. Data Probes, each with junction box, probe holder, and lock boxes.
6. Infrared-transparent plastic window with LED and Photosensor communications link.
7. Manufacturer: Genfare, LECIP

Vise

1. Configuration: Swivel Base, Pedestal Mount or Workbench Mount
2. Overall Equipment Dimensions: Future design team to verify size and capacity with StanRTA to fully design equipment selection.
3. Jaws with replaceable facings
4. Semi-steel cast body construction. Durable enamel finish.
5. Accessories:
    a. Pedestal Base.
6. Manufacturer: Milwaukee Tool, Reed Manufacturing Company, Ridgid Tool Company, Wilton Tools, Yost Vises

Washer, Parts

1. Configuration: Front Loading or Top Loading
2. Load Capacity: 500 Pounds, minimum
3. Pump Performance: 50 GPM, minimum
4. Turntable / Parts Basket
5. Air Drying System
6. Automatic Steam Exhaust
7. Cleanout pump
8. Accessories:
    a. Automatic Water Fill
    b. Containment Rings.
    c. Deluxe Kit: Detail and Power Brush with Side-mounted tray, sink and sump.
    d. Filtration and Sump Sweep.
    e. Oil Drain Container.
    f. Additional tier turntable.
    g. Hook parts tree.
    h. Mesh debris screen tray.
    i. Water Rinse Gun.

   j. Small and Large Parts Baskets.
9. Manufacturer: Better Engineering Manufacturing, Cuda Cleaning Systems, Landa Inc.

Welder, Portable

1. Configuration: Welder, Dolly, Welding Gun
2. Built-in Wire Feeder
3. Heavy gage metal cabinet for power source and feeder
4. Accessories:
   a. Canvas Cover.
   b. Control Cable Extension.
   c. Spindle Adapter for Small Spools.
5. Manufacturer: Hobart Welding Products, Lincoln Electric Company, Miller Electric Manufacturing Co.

Workbench, Electronic, Static-Dissipative, 6-Feet

1. Configuration: Static-Dissipative
2. Power Strip receptacles
3. Workbench grounding
4. Finish: Baked enamel or powder coat
5. Accessories:
   a. Cabinet / Drawer Unit Locks.
   b. Adjustable Shelves.
   c. Aerial Shelf Assembly.
   d. Spacer Strips.
   e. Task Light.
   f. Pullout Keyboard Tray.
6. Manufacturer: Equipto, Lista International, Lyon Workspace Products, Vidmar

Workbench, Severe Use

1. Configuration: Severe Use, durable construction
2. Equipment Length: 3 to 8-feet
   a. Future design team to verify needs with StanRTA to fully design equipment selection.
3. Accessories:
   a. Optional Drawer Unit.
   b. Heavy-Duty Wheel Casters.
   c. Vise.
4. Manufacturer: Durham Manufacturing Company, Penn Equipment & Tool Corporation, Strong Hold, Fabricated

3.4 FUELING SYSTEMS

3.4.1 HYDROGEN FUELING

Upon completion of construction and start of operations at the StanRTA Facility, the zero-emission revenue-bus fleet at the facility will account for 6.4% of the total fleet. Of that 6.4%, three 40-foot buses are projected to be FCEB. However, StanRTA anticipates increasing the percentage of FCEBs over the coming years with a goal to deploy a total of 111 hydrogen fuel cell electric buses. Fueling this fleet, within an 8-hour fueling window, will require a liquid hydrogen fueling station with 350 bar (H35) dispensing capabilities. In addition, 700 bar hydrogen (H70) dispensing capability is needed for the proposed public hydrogen dispenser. Both H35 and H70 dispensing systems are outlined in this narrative.

StanRTA also plans to deploy a fully integrated, trailer-based, hydrogen fueling system to serve a limited number of initial buses. That system would be separate from the permanent facility described herein and is not otherwise addressed in this document.

3.4.1.1 DISCIPLINE OVERVIEW

The full buildout of the hydrogen-fueling system will include the following major components:

- Two 18,000-gallon liquid-hydrogen (LH2) tanks
- Four high-pressure reciprocating LH2 pumps (one per dispenser):
    - Three H35 dispensing pumps
    - One H70 dispensing pump
- Four ambient-air LH2 vaporizers (one per active pump)
    - H35 and H70 to match LH2 pump configuration
- Four air-cooled chillers (one per dispenser)
- Up to 12 high-pressure gaseous hydrogen (GH2) storage vessels
    - (8) for H35 bus fueling as well as low- and mid-bank cascade fueling of H70 vehicles
    - (4) for high-bank cascade fueling of H70 vehicles
- Two boiloff-gas recovery compressors (one per LH2 tank) with control valves and warming coils
- One LH2-offload pump (serving both tanks)
- Three high-flow GH2 dispensers for H35 fueling
- One dual-hose H35 and H70 dispenser for public fueling
- Electrical and electronics, including power distribution, motor controllers, PLC controls and safety systems such as flame and gas detection

Depending on the actual rate of FCEB deployment at StanRTA, phasing the installation of this system could be considered. Specifically, a the LH2 tank and its BOG-recovery compressor, the third H35 LH2

pump and vaporizer, third H35 dispenser, and additional H35 GH2 storage vessels could be provided in a second phase, which would coincide with the FC-bus fleet size that requires more than two service lanes.

3.4.1.2 MAJOR SCOPE ITEM DESCRIPTIONS

The hydrogen fueling system has the major subsystems as outlined above and described in further detail below.

Cryogenic Lh2 Storage Tanks

To provide adequate storage for the full fleet buildout, 2 total tanks are required. The tanks will be configured horizontally and will have dimensions of approximately 10’ (diameter) x 43’. Each tank will have a nominal capacity of 18,000-gallon (4,822 kg) and will include the following:

- Super-insulation
- 150 PSIG MAWP
- Specific nozzle (line-connection) configuration
- Top- and bottom-fill configuration
- Pump suction and vapor return
- Dual safety relief tree with burst disc

ASME-Stamped Pressure Relief Valves

The two leading tank manufacturers are Chart Industries and Taylor Wharton.

The tanks will be elevated on 3’ tall concrete pedestals and will include an offload delivery station with one offload pump serving both tanks. In order to minimize tank boil off gas (BOG) losses, a BOG-recovery system is included. Each LH2 tank will be served by its own GH2-outlet valve installed at the top of the tank, a warming coil to raise the temperature of GH2 from an initial low temperature to ambient temperature, and a BOG-GH2 compressor with variable frequency drive (VFD) control.

Lh2 Cryogenic Pumps

To provide adequate pump-dispensing capacity for the full fleet buildout and public dispensing, four LH2-pump skids are required for standard operation. Phase 1 would include installation of two H35 pumps for bus fueling and one H70 pump for public fueling. The third H35 pump would be added in a later phase, phase 2.

The assumed configuration of pumps is reciprocating-type pumps with two cylinders on an integrated skid that will draw directly from the tank-outlet nozzle. The skid includes the pump, drive motor, and PRV. Equipped with a 125 hp motor, each skid will provide an approximate average flow rate of 5 kg/minute.

Though not currently commercially available, a submerged-type LH2 pump from Linde may become available in 2026 or 2027, which would likely reduce total system heat gain and thus reduce boiloff losses. However, these pump skids would be more expensive and may be larger, which would require the equipment compound to be reconfigured. All considered pumps would include VFD control.

Ambient Air Vaporizers

The vaporizer towers are approximately 29' tall heat exchangers that have no mechanical components and have an approximate freeze-over capacity (ability to run continuously without fully freezing) of eight hours. They consist of 9/16" or 3/4" diameter stainless steel (SS) tubing with aluminum fins for added heat-exchange efficiency.

As each vaporizer is fed by an active pump, the phase-1 configuration would include two H35 vaporizers and a single H70 vaporizer. A third H35 vaporizer would be added at phase 2.

Gh2 Storage Vessels

The GH2 storage vessels will store ambient temperature high-pressure gaseous hydrogen that is discharged from the LH2 / vaporizer system and the BOG system (see below). They will serve as a buffer storage system, allowing the LH2 pumps to operate continuously between bus fills (i.e. when a bus is not connected to a dispenser). This strategy will improve efficiency and reduce start-stop cycling of the pumps. Additionally, when pumps are first energized and are in cool-down mode (not generating usable GH2), the storage vessels will provide GH2 for fueling at the H35 and H70 dispensers utilizing a "cascade fueling" strategy. Each of the GH2 banks will be used to dispense fuel, in sequence, depending on pressure and demand conditions. Utilizing storage vessels to cascade fuel allows for fueling to be available earlier while pumps are energized and allowed to reach operating temperature. The GH2 storage vessels will be equipped with ASME-stamped pressure relief valves and have manual isolation valves for servicing vessels and relief valves.

Six to nine H35 and H70 GH2 storage vessels are needed for phase 1, with two additional H35 and one additional H70 vessels being added at phase 2. The final quantity of vessels added in phase 2 is dependent empirical-usage data indicating whether FC buses are typically relatively full or empty when fueling, with fewer vessels being required in the latter case.

Priority-Valve Panel

The valve panel will automatically control and direct GH2 from respective H35 or H70 pump-vaporizer system to either the GH2 storage vessels and/or the dispensers, depending on dispenser-demand conditions and depending on the pressure of the GH2 storage cylinders.

The panel will house actuated solenoid valves that will automatically (utilizing internal logic) isolate the GH2 storage from the dispensing system when the emergency shutdown (ESD) system is activated.

Gh2 Dispensers

The fleet fueling dispensers will support H35 high-flow refueling for transit fleet vehicles per SAE standard J2601-2 with a with a target fill pressure of 350 bar or 5000 PSI. The public fueling dual-hose dispenser will support both H35 and H70 refueling. Dispensers configured to comply with standard J2601-5 standard should be used, once it is finalized and published, as this will allow for an increased peak fueling rate of up to 300 grams per second (18 kg per minute), pending dispensing conditions and upstream supply. Each of the three FC-bus dispensers will include a single-sided, single hose configuration.

An ultra-low temperature refrigerant air-cooled chiller will be mounted near the dispensing area, such as on the roof of the fuel-island canopy or ground mounted and adjacent to the dispenser. Each chiller will be paired to a heat exchanger within a dispenser to cool the hydrogen before dispensing into the vehicle tank.

The fuel-management terminals and systems are specified under the separate petroleum-fueling system and will be connected to the hydrogen dispensers as part of the hydrogen system scope. Four total dispensers will be required for full buildout, with two H35 dispensers and one H70 dispenser being installed at phase 1. The third H35 dispenser would be installed at phase 2.

Bog Recovery System

Even with other BOG-mitigation measures such as offload pumping, submerged LH2 pumps and optimized operations strategies, boiloff losses are inevitable. To mitigate this, each of the LH2 tanks will be equipped with a BOG-recovery system, which will consist of a control valve connected to the top of its tank that will automatically open at about 60-75 PSI tank pressure. This very-cold GH2 will then be routed to a heat-exchanger coil that will warm the gas to ambient temperature, as needed for introduction to the compressor. The four-stage compressor will then increase the GH2 to about 6500 PSIG and route it to the priority-valve panel, where it will then be directed to a GH2-storage bank. The compressor will operate nearly continuously, if GH2 is being generated at the tank in excess of the 60-75 PSI supply set pressure referenced above. It is possible to configure one BOG-recovery system to serve both tanks, but pairing one smaller system per tank will allow for more granular control of boiloff gas and provides some degree of redundancy.

Plc Control Panel

The facility will be controlled by a PLC-based system that will include the following features:

- Allen Bradley ‘Point IO’ architecture, which allows many aspects of field devices (pumps, valve panel, tanks etc.) to be supervised and controlled by simply running an Ethernet communication wire from the PLC system to the field device
- PLC processor including cold-swap exchange capability
- Ethernet data switch
- Touch-panel HMI

- Direct I/O for analog and digital channels
- 120V ESD relay panel for supervising individual and addressable ESD-button inputs + interface to the ESD system at the gasoline system

3.4.1.3 PREFORMANCE CRITERIA

The key performance parameters for the hydrogen-fueling system are:

- A minimum of two reserve days of LH2 storage at each phase
- Fuel each bus with H35 pressure in less than 10 minutes, including exchange time
- Fuel fleet of 111 buses in less than 8 hours
- Public fueling capability for both H35 and H70 pressures

3.4.1.4 Fueling Time Calculation Summary for FC Bus Fleet

The tables below summarize the estimated time required to fuel a fleet of fuel cell (FC) buses based on hydrogen system performance assumptions. Two scenarios are considered: fueling 100% of the fleet (111 buses) and fueling 80% of the fleet (89 buses), assuming 20% are out of service as spares.

Key assumptions:

1. Pump Flow Rate: 5 kg/min per pump (based on Nikkiso 125 hp pump) and one active pump per active dispenser
2. Hydrogen Fill per Bus: 28 kg (assumed average) at H35 pressure
3. Exchange Time between bus fueling at a given lane (setup, disconnect, move, reconnect): 2.5 to 3 minutes each
4. Fueling Time Safety Factor: Added 20% (1.2 multiplier) to account for possible delays during fueling process
5. Except as allowed in #4 above, no interruptions in availability of buses to fuel and no interruption of system operation
6. Use of the public dispenser would be minimal or zero during the evening bus-fueling window

StanRTA - Hydrogen Fueling Calculations

Fleet Inputs		
Active buses	111	
x H2 per fill	28	kg
= H2 usgae per day	3108	kg

Fleet Fueling Time (Duration)		
/ avg. pump flow *per dispr*	5	kg/m
= time to fill bus	5.6	mintutes
+ exchange time	2.5	mintutes
Safety Factor	1.2	
= fill-cycle time	9.7	mintutes
x # active buses	111	-
= fill time (gross)	1078.9	mintutes
= fill time (gross)	18.0	hours
/ fueling lanes	3	-
= fleet-fueling time (net)	**6.0**	**hours**

StanRTA - Hydrogen Fueling Calculations 80% Fleet

Fleet Inputs		
Active buses	89	
x H2 per fill	28	kg
= H2 usgae per day	2492	kg

Fleet Fueling Time (Duration)		
/ avg. pump flow *per dispr*	5	kg/m
= time to fill bus	5.6	mintutes
+ exchange time	2.5	mintutes
Safety Factor	1.2	
= fill-cycle time	9.7	mintutes
x # active buses	89	-
= fill time (gross)	865.1	mintutes
= fill time (gross)	14.4	hours
/ fueling lanes	3	-
= fleet-fueling time (net)	**4.8**	**hours**

3.4.1.5 FUTURE DESIGN CONSIDERATIONS

3.4.1.5.1 FORMAL DESIGN ELEMENTS

The key open items and the next steps for the design of the fueling system are listed as follows:

1. Refinement of design details of the various safety systems.
    a. Flame detection
    b. Gas-leak detection
    c. Emergency shutdown buttons
    d. Pressure-relief valves
2. Refinement of the low-voltage and controls wiring requirements across the hydrogen system to include emergency shutdown system interface with the gasoline-fueling system.
3. Further evaluation of the GH2 cooling system including sizing and locating chillers, as well as possible use of ‘cold capture’ technology, in place of some or all of the air-cooled chillers. In this approach, ‘cold energy’ is transferred from the LH2 at discharge of the LH2-product pumps using a liquid-based heat exchanger. The chilled liquid is then pumped to the dispenses for use in cooling the GH2 per J2601 requirements, but without the need for a mechanical chiller.
4. Developing the details and specificity of all equipment and subsystems.

5. Specific approach and detail for routing the GH2 from the valve panel in the equipment compound to the dispensers, including consideration of burying the lines in sleeves, or using a precast and plated trench to convey the GH2 lines.
6. Development of a detailed procurement and specification and strategy for the hydrogen system, such as whether it will be a subspecialty under the construction of the overall facility or will be a standalone procurement, as well as consideration of delivery method, such as design-build, progressive design-build, CM/GC or other.
7. Consideration of how LH2 commodity and operations and maintenance services will be procured.
8. Further code analysis includes NFPA 2 exposure groups, electrical classifications, and other code requirements.

3.4.1.5.2 CONSIDERATIONS FOR ALTERNATE ADDITIONS

The equipment and system features listed below are not critical for system operation and because of initial cost, are not included in the base design. However, they provide functional benefits, including significant reductions in hydrogen product loss, faster fill performance, and improved resiliency. Accordingly, these can be considered independent alternates and can be implemented at the discretion of StanRTA. Note that all items listed can be added in the future, provided they are considered as part of the initial design.

- LH2 offload pump
- BOG recovery systems (one per LH2 tank)
- Submerged LH2 pumps (instead of conventional reciprocating pumps)
- Additional GH2 storage vessels

3.4.1.5.3 CONSIDERATIONS FOR FUTURE EXPANSION

As StanRTA plans for a future 100% zero-emission fleet, transitioning gasoline cutaways to a zero-emission alternative will be required. Although zero-emission cutaways are not currently available, planning a future expansion of zero-emission vehicles to serve this role can be considered.

As gasoline is phased out and the hydrogen system requires expansion, the proposed diesel/gasoline fueling compound offers an area for future hydrogen-fueling expansion. Expansion of the existing hydrogen fueling system or development of an independent system for zero-emission cutaways can be strategized to occupy that space. Optimization of that area for housing a hydrogen system could be explored in future preliminary planning efforts and would be informed by projected usage and commercial availability of systems suitable for cutaway-type FC buses.

3.4.2 PETROLEUM FUELING

Upon completion of construction and start of operations at the StanRTA Facility, the zero-emission revenue-bus fleet (fueled by a combination of battery-electric and hydrogen fuel-cell technologies) at the facility is expected to account for about 6% of the total fleet. The remaining 94% of the fleet will be fueled by gasoline and diesel buses. The petroleum fueling system needed to support the conventionally fueled buses is described in this basis of design (BOD) section. A separate section describes the BOD for the planned hydrogen fueling facility.

3.4.2.1 DISCIPLINE OVERVIEW

The system will feature two aboveground storage tanks (ASTs) – one each for gasoline and diesel fuels. The ASTs will be located in a compound located to the southwest of the fueling lanes and adjacent fueling building. The two-product gasoline and diesel dispensers will be located on the right or curb side of each of the three fuel-service islands located immediately north of the fueling building. Satellite hoses for each product will be included on the left or street side of each dispenser island, to accommodate paratransit buses of the type used by StanRTA have fill receptacles on that side of the buses. Since the fuel tanks are above ground, the product deliveries will need to be provided by tankers that are equipped with onboard pumping, and which will occur at the west end of the north side of the fuel-equipment compound.

The diesel and gasoline subsystems will be similar to each other, as each will include a 1.5 HP submerged turbine pump (STP) at its respective AST that will discharge to its respective header pipe. Each header pipe will be routed to an underground double-wall pipe that will branch underground and supply each of the three master twin-hose two-product master dispensers at the curbside of the three islands. The system will include a fuel-management terminal at the center of each island, and an automatic leak-monitoring system that will supervise the tank levels and monitor for fuel leaks at the tanks, piping and dispensers. The electrical and leak-monitoring equipment will be housed in an electrical-utility room in the fueling building, just south of the dispenser lanes.

3.4.2.2 MAJOR SCOPE ITEM DESCRIPTIONS

The petroleum-fueling system has three major subsystems – the aboveground storage tanks, the dispensing system (which includes the STPs, piping, dispensers and fuel management terminals), and the leak-monitoring system. These subsystems are described below.

3.4.2.2.1 DIESEL & GASOLINE FUEL STORAGE TANK

Each AST will have a listed gross capacity of 12,000 gallons. Due to tank-fill limit of 90% and because the STP pickups do not fully reach the tank floor, the tank capacities need to be discounted by about 13% to determine usable capacities. Accordingly, the net usable capacity of each tank is about 10,440 gallons.

Both tanks will be double-wall steel per UL142 and include an added concrete lining, per UL2085. The tanks are planned to be round type that will be 32'-7" long x 8'-7" diameter. As the tanks are round (end view), it will be fitted with a catwalk and a fixed ladder to facilitate installation and servicing of the STPs, level probes and other tank-top equipment.

Two remote fill boxes will be provided, with each box being connected to its respective tank with a 3" schedule 40 CS pipe connected to a drop tube and integrated overfill-prevention valve. The gasoline tank will also include a 'stage 1' vapor recovery pipe for capturing vapors during bulk deliveries and returning the vapors to the top of the delivery tanker. The tanks will be supported by pads that include a 4" projection. A leading manufacturer of tanks of this type is Modern Welding, though there are others that can provide tanks that meet these requirements for dimensions, standards and accessories.

3.4.2.2.2 DISPENSING SYSTEM

Submerged Pumps

Starting at the tank end of the fuel-piping/dispensing, the cornerstone of the dispensing system are the two STPs that will be set on top of each tank (one per fuel grade). Both pumps will be fixed-speed with a 1.5 HP motor. The two leading manufacturers of STPs of this type are Red Jacket and Franklin/FE Petro. The system flow and pumping capacity will be configured to provide dispensing-fill rates of at least 20 GPM per hose for diesel with any two diesel hoses in simultaneous operation. Unleaded gasoline will flow at 8-10 GPM because flow is limited to 10 GPM by EPA regulation. Assuming an average fill of 25 gallons per diesel vehicle, this would provide fill times of about 1.25 minute, and in case of large 50-gallon fills, the fill times would be about 2.5 minutes.

Piping

Each pump discharge will be routed from its tank top to a 2" schedule 40 carbon steel (CS) header pipe. Each 2" pipe will then be routed to a common pipe-transition sump. The transition sump will allow each product header to run underground via double-wall (2" primary / 3" secondary) fiberglass reinforced pipe (FRP) towards each dispenser. Each branch pipe will also have a 2" primary / 3" secondary that will be routed to the under-dispenser containment sump that will support each of the three master dispensers. The under-dispenser containment (UDC) sumps will allow the FRP pipe (one per fuel grade at each dispenser) to transition to a 1.5" flex hose and then to the dispenser inlet.

Dispensers

The three master dispensers, located on the curb- or right-side island of each of the three fueling lanes, will be an enhanced high-capacity twin-hose two-product type that will support 20-25 GPM diesel and 8-10 GPM (gasoline), depending on supply rate. The diesel sides of each dispenser will include a high-flow meter, a 1" x 14' hose with a hose mast or retractor, inline breakaway, and a 1" diesel-type nozzle spout. The gasoline side of each dispenser will include an enhanced-capacity meter, ¾" ID hose with inline breakaway with mast/retractor and reduced-diameter spout suitable for ULR dispensing.

The dispensers will be supported by in-ground sumps, which provides under-dispenser containment and rigid support for the shear valves, in case the dispenser is impacted by a vehicle.

The master dispensers will include a tee piped downstream of each product meter, which will be piped underground to the satellite hoses for each product on the right / street side of each lane. The two satellite hoses will be equipped with a twin nozzle rest.

This master/satellite dispenser arrangement will allow the fueler to consistently authorize each fueling event from the curb-side island (where the fuel-management terminal is located), before crossing the fueling lane to the street-side island, if the given bus has a street-side fill receptacle.

Fuel Management Terminal

Each master dispenser will be supervised by a fuel-management terminal on its island that will only allow transactions when properly authorized. The terminals will also record the quantity of fuel dispensed by monitoring the 24V pulses generated by each dispenser meter (100 pulses per gallon). Terminals of this type are available from FuelMaster, Gasboy, OPW/Petrovend, Fuel Focus, and others.

Power-Relay Panelboard

The electrical power for most of the fuel system will be provided by a specialty panelboard that includes several features required by code for petroleum-fueling applications and that are best practice. Depending on the ultimate power rating for the STPs that are selected, the panel will have a main circuit-breaker rating of approximately 70A at 208V single phase power and will be in the electrical room of the fueling building. Other key features of the panelboard will include:

- 208V circuit breakers for pump power (all are FVNR starters located in the designated electrical equipment area):
    - 0.75 HP fixed-speed pump for ULR gasoline
    - 0.75 HP fixed-speed pump for diesel
- Other 120V power is required for the following loads (assumed 20A each except as noted):
    - fuel-management terminal
    - four total petroleum dispensers
    - monitoring console
    - convenience outlet and two spares
- Optional – if DEF dispensing is required at the islands, two or three DEF enclosure, pump, and heater units, each with a combined 30A current requirement will be required
- Switched-neutral circuit breakers to STP / pump controllers and fuel-management terminals
- 120V hook-switch isolation relays
- Contactor for supervision of external 120V emergency shutdown device (ESD) relay
- Transient voltage surge suppressor (TVSS) for all circuits
- Panel to be housed in a NEMA 1 enclosure with a locking feature so that circuits can be locked out and will be located in the designated electrical-equipment area adjacent to the fueling area.

- Low-voltage dispenser-equipment disconnect (DED) subpanel that opens all low-voltage circuits at the fuel-dispensing island, to include 24V product pulsers for diesel, gasoline, DEF, and propane, as well as Ethernet data. All such circuits will be fully opened upon ESD activation or manual switching for servicing of the on-island equipment. The disconnects can be integrated as part of the 'PPS1' panelboard or provided by a standalone system with ESD-interconnect wiring to the PPS1. Typical manufacturers of such panels include Carolina Products, Power Integrity, and Square D.

Leak Monitoring System

The leak monitoring system will automatically monitor the product level in each of the two fuel ASTs. Additionally, the system will have liquid-leak sensors placed in the interstitial space of each AST, in the transition sump near the tank, and the containment sumps of the three dispensers on the islands. An added containment-monitoring feature will be the automatic reconciliation of the amount of fuel in the tanks vs. the amount dispensed. All discrepancies between the tank stored fuel quantity and the quantity of fuel dispensed will activate an alarm. The monitoring console will be a Veeder Root model TLS-450R. The TLS-450R will include serial-control wiring for interfacing with the two fuel-pump controllers.

Per California's Air Resource Board (ARB) requirements, the dispenser and transition sumps will be double-walled and will include hydrostatic-leak monitoring with a level switch connected to the monitoring console. This will allow any break in integrity, of the primary or secondary portion of the sumps, to activate an alarm. Additionally, the double-wall, underground, FRP piping will be monitored for integrity, by vacuum (sourced from one of the STPs), where any loss of vacuum will also activate an alarm at the console.

3.4.2.3 UTILITY CONNECTIONS

Electrical Power

As described in section 1.2.2.5 above, approximately 70A of 208V single-phase electrical power will be required for the fueling system. This power will be fed from an upstream panelboard, with name and location of the upstream panelboard to be determined.

Data Connections

A total of four IP-data connections are required by the fueling system. Each of the three fuel-management terminals needs a network connection to manage and supervise the fill-transaction data that is gathered by the terminal. Additionally, the leak-monitoring console, located in the electrical-equipment room, will need a data connection, as this will allow remote monitoring of tank levels, alarm history, and automatic outbound email notification of alarms for low-fuel level, leaks, and other alarms.

3.4.2.4 KEY SAFETY SYSTEMS

The tanks will be fabricated using double-wall steel construction, and the concrete lining will provide both ballistic and fire resistance, per UL standard 2085. The tanks will include emergency vents for both their primary and secondary compartments.

The emergency shutdown system will stop all fuel-dispensing activity when activated. ESD activation will de-energize the gasoline and diesel STPs, and will close the solenoid valves in all dispensers. An ESD button will be provided at least 25 ft. but less than 75 ft. from each dispenser.

Various safety signs prescribed by NFPA 30A and California Fueling Code chapter 23 will be provided. This will include 'No Smoking Stop Motor' at each dispenser, 'No Open Flames', diamond placards, per NFPA 704, that are appropriate for each product, and others.

The dispensers are protected against direct impact by bollards (6" diameter post with 36" deep x 18" diameter concrete footer) and a raised 6" from the vertical island face . In a dispenser impact event, a spring-closed poppet valve for each product, located at the base of the dispenser, will spring closed. In an extreme case of a dispenser being knocked off of its base, an embedded pipe safety shear feature will allow the pipe above the island to break off, while the poppet valve remains securely closed in-place..

3.4.2.5 FUTURE DESIGN CONSIDERATIONS

The key remaining issues related to the design of the petroleum fueling facility include:

- Verify if DEF dispensing will be required at the dispenser islands, and if so, at which lanes and at what design-storage capacity (such as 330-gallon tote with enclosure or 40- or 55-gallon barrel).
- Validate the configuration of the master dispensers / satellite hoses described in section 1.2.2.3 above, including accommodating satellite hoses on the left/street side of lane 3, as there is no island shown in that location in the current master plan. If appropriate, the satellite hoses could be omitted for lane three.
- Verify and optimize placement of the master dispensers and satellite hoses, as needed to minimize hose length and maximize ergonomics.
- Further coordinate and optimize the location and integration of the planned hydrogen dispensers at the fueling islands. This includes optimizing alignment of fill receptacles by fuel type and bus length, as well accommodating classified-area restrictions of hydrogen dispensers.

Appendix A SPACE NEEDS PROGRAM

Appendix B DRAWINGS

With every community, we redefine what's possible.

Stantec is a global leader in sustainable engineering, architecture, and environmental consulting. The diverse perspectives of our partners and interested parties drive us to think beyond what's previously been done on critical issues like climate change, digital transformation, and future-proofing our cities and infrastructure. We innovate at the intersection of community, creativity, and client relationships to advance communities everywhere, so that together we can redefine what's possible.

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Space Needs Program StanRTA OMF 6/11/2025	Space Standards	Min. Size (SF)	Initial Program Qty. Staff	Initial Program Qty. Space	Initial Program Area (SF)	Future Program Qty. Staff	Future Program Qty. Space	Future Program Area (SF)	Remarks
BUS FLEET									
Paratransit Buses									
Paratransit Bus - CNG	12 x 35			0	0		0	0	
Paratransit Bus - Diesel	12 x 35			0	0		0	0	
Paratransit Bus - Unleaded	12 x 35			62	26,040		72	30,240	Likely transitioning to hydrogen. Provide covered structure over buses.
Paratransit Bus - Zero-Emission Bus	12 x 35			0	0		0	0	
Paratransit Bus - Hybrid	12 x 35			0	0		0	0	
keep this row blank									
Subtotal Paratransit Buses			**0**	**62**	**26,040**	**0**	**72**	**30,240**	
Standard Buses									
Standard Bus - CNG	12 x 45			5	2,700		0	0	
Standard Bus - Diesel	12 x 45			86	46,440		0	0	
Standard Bus - Unleaded	12 x 45			0	0		0	0	
Standard Bus - Zero-Emission Bus	12 x 45			10	5,400		118	63,720	Transitioning from CNG to Hydrogen. Provide covered structure over buses.
Standard Bus - Hybrid	12 x 45			0	0		0	0	
keep this row blank									
Subtotal Standard Buses			**0**	**101**	**54,540**	**0**	**118**	**63,720**	
Articulated Buses									
Articulated Bus - CNG	12 x 60			0	0		0	0	
Articulated Bus - Diesel	12 x 60			0	0		0	0	
Articulated Bus - Unleaded	12 x 60			0	0		0	0	
Articulated Bus - Zero-Emission Bus	12 x 60			0	0		8	5,760	May be diesel on Day 1 (during initial roll-out / testing) but will transition to Zero-Emission. Provide covered structure over buses.
Articulated Bus - Hybrid	12 x 60			0	0		0	0	
keep this row blank									
Subtotal Articulated Buses			**0**	**0**	**0**	**0**	**8**	**5,760**	
Bus Equivalent (1.5)				*0*			*12*		
keep this row blank									
SUBTOTAL BUS FLEET				**163**	**80,600**		**198**	**99,800**	**SFs rounded to nearest 100 SF.**
Bus Equivalent				*163*			*202*		
Circ/Mech/Elec/Struc (Net: Gross)	100%				80,600			99,800	
TOTAL BUS FLEET				**163**	**161,200**		**198**	**199,600**	

Space Needs Program StanRTA OMF 6/11/2025	Space Standards	Min. Size (SF)	Initial Program Qty. Staff	Initial Program Qty. Space	Initial Program Area (SF)	Future Program Qty. Staff	Future Program Qty. Space	Future Program Area (SF)	Remarks
ENCLOSED VEHICLE STORAGE									
Non-Revenue Fleet									
N/A					0			0	
Subtotal Non-Revenue Fleet				**0**	**0**		**0**	**0**	
SUBTOTAL ENCLOSED VEHICLE STORAGE				**0**	**0**		**0**	**0**	**SFs rounded to nearest 100 SF.**
Circ/Mech/Elec/Struc (Net: Gross)									
Circulation/Struct	100%				0			0	
Electrical Room					0			0	
Mechanical Room					0			0	
TOTAL ENCLOSED VEHICLE STORAGE				**0**	**0**		**0**	**0**	
COVERED VEHICLE STORAGE									
Non-Revenue Fleet									
N/A					0			0	
Small Vehicle Space	8 x 10			0	0		0	0	
Standard Vehicle Space	9 x 18			45	7,290		49	7,938	Existing includes (9) staff personal vehicles. Future includes up to (47) Staff Personal Vehicles and (2) Agency Cars (Hybrid or BEB).
Large Vehicle Space	12 x 30			12	4,320		13	4,680	Existing includes (1) Agency Truck, Extended Cab. Future includes (2) Utility Trailers for Crew Trucks and (2) Water/Washer Trailers, (2) Agency Vans, (1) Agency Truck, Heavy Duty, (1) Bus Stop Service Truck, (1) Bus Maintenance Service Truck, and (1) 0.5-ton Pickup Truck. Future includes (2) Agency Vans, (1) Agency Truck, Heavy Duty, (2) Bus Stop Service Trucks, (2) Bus Maintenance Service Trucks, and (2) 0.5-ton Pickup Trucks.
Extra Large Vehicle Space	12 x 40			4	1,920		4	1,920	Future includes (1) Parade Vehicle (Bus/Trolley) and (3) Facilities Crew Trucks.
Subtotal Non-Revenue Fleet				**61**	**13,530**		**66**	**14,538**	
SUBTOTAL COVERED VEHICLE STORAGE				**61**	**13,600**		**66**	**14,600**	**SFs rounded to nearest 100 SF.**
Circ/Struc (Net: Gross)									
Circulation/Struct	100%				13,600			14,600	
TOTAL COVERED VEHICLE STORAGE				**61**	**27,200**		**66**	**29,200**	

Space Needs Program StanRTA OMF 6/11/2025	Space Standards	Min. Size (SF)	Initial Program Qty. Staff	Initial Program Qty. Space	Initial Program Area (SF)	Future Program Qty. Staff	Future Program Qty. Space	Future Program Area (SF)	Remarks
DOWN LINE / READY LINE STORAGE									
Down Line / Ready Line									
Down Line/Ready Line - Paratransit Bus	12 x 35			7	2,940		8	3,360	Assumes 10% of total Paratransit fleet.
Down Line/Ready Line - Standard Bus	12 x 45			11	5,940		12	6,480	Assumes 10% of total Standard Bus fleet.
Down Line/Ready Line - Articulated Bus	12 x 60			0	0		0	0	Share Down Line/Ready Line with 2 Standard Bus positions.
Subtotal Down Line / Ready Line				**18**	**8,880**		**20**	**9,840**	
SUBTOTAL DOWN LINE / READY LINE STORAGE				**18**	**8,900**		**20**	**9,900**	**SFs rounded to nearest 100 SF.**
Circ/Struc (Net: Gross)									
Circulation/Struct	100%				8,900			9,900	
TOTAL DOWN LINE / READY LINE STORAGE				**18**	**17,800**		**20**	**19,800**	

Space Needs Program StanRTA OMF 6/11/2025	Space Standards	Min. Size (SF)	Initial Program Qty. Staff	Initial Program Qty. Space	Initial Program Area (SF)	Future Program Qty. Staff	Future Program Qty. Space	Future Program Area (SF)	Remarks
ADMINISTRATION									
Office Areas									
StanRTA Administration									
CEO Office	400		1		400	1		400	Private office with computer, desk, file storage, conference table and chairs for up to 6. Include sound mitigation / soundproofing. Providing 180 SF for conference table and 220 SF for office furniture. Directly adjacent to large conference room for up to 12 with adjoining door.
CEO Administrative Assistant	120		1		120	1		120	Typical office: Private office with computer, desk, file storage, two guest chairs, soundproofing.
CFO / Finance Manager	220		1		220	1		220	Typical
HR / PR / RM Manager	220		1		220	1		220	Private office with computer, desk, file storage, conference table with chairs for up to 4. Include sound mitigation / soundproofing. Providing 120 SF for conference table and 100 SF for office furniture.
Procurement Manager	120		1		120	1		120	Typical
Grant Manager	120		1		120	1		120	Typical
Legal Counsel	120		1		120	1		120	Typical
Finance Analyst	120		2		240	2		240	Typical
PR / HR Assistant	120		1		120	1		120	Typical
RM Assistant	100		1		100	1		100	Dedicated workstation in a shared office space. Systems furniture with built-in storage and overhead storage bins.
Finance Assistant	100		1		100	1		100	Dedicated workstation in a shared office space. Systems furniture with built-in storage and overhead storage bins.
Procurement Assistant / Receptionist	100		1		100	1		100	Dedicated workstation in a shared office space. Systems furniture with built-in storage and overhead storage bins.
Spare Workstation(s) - Administration	100			2	200		4	400	Provide two flexible workstations.

Space Needs Program StanRTA OMF 6/11/2025	Space Standards	Min. Size (SF)	Initial Program			Future Program			Remarks
			Qty.		Area	Qty.		Area	
			Staff	Space	(SF)	Staff	Space	(SF)	
StanRTA Planning									
Operations & Planning Director / COO	220		1		220	1		220	Typical
Senior Transit Analyst	120		1		120	1		120	Typical
Transit Analyst	120		1		120	1		120	Typical
Transit Planner / Bus Stops	120		1		120	1		120	Typical
Tranist Planner / CAD AVL	120		1		120	1		120	Typical
Tranist Planner	120		1		120	1		120	Typical
ATP Coordinator	120		1		120	2		240	Staff is 0.5 FTE.
Fixed ADA / Contract (DR) Compliance Officer	100		2		200	2		200	Dedicated workstation in a shared office space. Systems furniture with built-in storage.
Capitol Projects Manager	120		1		120	1		120	Typical
Planning Manager	120		1		120	1		120	Typical
Intern (Marketing, Operations, Finance, etc.)	100		1		100	3		300	Shared workstation in a shared office space. Systems furniture with built-in storage.
Customer Service Manager	120		1		120	1		120	Private office with computer, desk, file storage, conference table for up to 4, and wall displays/screens. Should have view of Customer Service Representative workstations. Locate so that this can be combined with Operations Customer Service.
Customer Service Representative	36		6		216	8		288	Shared workstations in a shared office space. Systems furniture with built-in storage. Should have view to Customer Service Manager and wall displays/screens. Locate office so that these can be combined with Operations Customer Service.
Travel Trainers	100		0		0	1		100	Dedicated workstation in a shared office space. Systems furniture with built-in storage. Share space with Admin spare workstations.
Mobility Manager	120		1		120	1		120	Private office with computer, desk, file storage, conference table for up to 4, and wall displays/screens. Should have view of Customer Service Representative workstations.
ADA Eligibility Specialist	120		2		240	4		480	Private office with computer, desk, file storage, two guest chairs. Also functions as interview room with public riders for ADA issues. Include sound mitigation design.
Fleet Director	220		1		220	1		220	Private office with computer, desk, file storage, two guest chairs. **Located in the Maintenance Building**, adjacent to Contractor's Maintenance Manager.
Grants Analyst	120		2		240	2		240	Typical
Spare Office(s) - Planning	120			0	0		1	120	Locate 1 additional spare office near Customer Service Manager and Mobility Manager offices.

Space Needs Program StanRTA OMF 6/11/2025	**Space Standards**	**Min. Size (SF)**	**Initial Program**			**Future Program**			**Remarks**
			Qty.		**Area**	**Qty.**		**Area**	
			Staff	**Space**	**(SF)**	**Staff**	**Space**	**(SF)**	
StanRTA Marketing									
Marketing Head	120		1		120	1		120	Typical
Graphics / Digital Designer	100		1		100	1		100	Typical
Content Creator / Writer	100		1		100	1		100	Dedicated workstation in a shared office space. Systems furniture with built-in storage.
Marketing Storage	800			1	800		1	800	Secure closet to hold marketing collateral, displays, etc. Include wall mounted shelving, mix of bulk and standard storage shelving, wall hanging space, refrigerator, and climate controls.
Marketing Work Room	180			1	180		1	180	Dedicated room for video and content creation. May be conducted in a spare office room. Include space for greenscreen, podcast equipment, storage shevling and cabinets, and sound mitigation.
Open Collaboration / Meeting Space	240			1	240		1	240	Flexible, open office space for informal conversations, quick meetings with guests, breaks, etc. Include bar-style seating and areas, video displays, and wall units.
Subtotal Office Areas			**41**		**6,356**	**49**		**7,408**	

Space Needs Program StanRTA OMF 6/11/2025	Space Standards	Min. Size (SF)	Initial Program			Future Program			Remarks
			Qty.		Area	Qty.		Area	
			Staff	Space	(SF)	Staff	Space	(SF)	
Shared Areas									
Lobby				1	1,000		1	1,000	Includes visitor seating area, receptionist desk, security desk/kiosk, entry/vestibule only. Lobby will be serve Adminstration, Operations, and Maintenance.
Visitor Center / Public Education Space	*2,000*			*0*	*0*		*1*	*2,000*	Included in Lobby. Space to display and educate visitors and riders on emerging bus technology, such as hydrogen, with interchangeable panels and floor and wall displays. May include exterior space for visitors to congregrate near public entry of site.
Men's Restrooms - Lobby					250			250	Public restrooms located at the Lobby.
Toilet(s) / Urinal(s)				*3*			*3*		Verify quantity per Code during design
Sink(s)				*2*			*2*		Verify quantity per Code during design
Women's Restrooms - Lobby					250			250	Public restrooms located at the Lobby.
Toilet(s)				*3*			*3*		Verify quantity per Code during design
Sink(s)				*2*			*2*		Verify quantity per Code during design
Drinking Fountain / Bottle Filling Station				1	10		1	10	
Secure Copy/Supply Room - Marketing	200			1	200		1	200	An enclosed secure copy/supply room for marketing materials, plotter, printing, etc. Locate near Marketing Head.
Copy/Workroom/Supplies	120			1	120		1	120	
Phone Room	40			1	40		1	40	Small room for one individual to take personal calls or participate in virtual meetings/calls.
Conference Room - Small (4 person)			4	1	130	4	1	130	Conference table and chairs.
Coffee Bar				*1*	*10*		*1*	*10*	Part of conference room. Include sink, small refrigerator, countertop, storage cabinets, etc.
Conference Room - Medium (8 person)			8	1	250	8	1	250	Conference table and chairs.
Coffee Bar				*1*	*10*		*1*	*10*	Part of conference room. Include sink, small refrigerator, countertop, storage cabinets, etc.
CEO's Conference Room - Large (12 person)			12	1	370	12	1	370	Conference table and chairs. Locate 1 large conference adjacent to CEO Room for dedicated meetings with CEO.
Coffee Bar				*1*	*10*		*1*	*10*	Part of conference room. Include sink, small refrigerator, countertop, storage cabinets, etc.
Conference Room - Extra Large (20 person)			0	0	0	0	0	0	Training and Board Rooms will be used for this function.

Space Needs Program StanRTA OMF 6/11/2025	Space Standards	Min. Size (SF)	Initial Program Qty. Staff	Initial Program Qty. Space	Initial Program Area (SF)	Future Program Qty. Staff	Future Program Qty. Space	Future Program Area (SF)	Remarks
Board Room				1	2,600		1	2,600	Lecture seating with chairs for up to 200 visitors. Fixed dais for up to 11 council members with side wings to hold staff. Fixed podium for public speaking. Full video systems. Include kitchenette within this room.
Council Seating				*11*	*550*		*11*	*550*	Assumes 11 seats.
Attendee Seating				*200*	*2,000*		*200*	*2,000*	Assumes up to 200 attendee seats.
Board Room Storage				1	520		1	520	Adjacent to Board Room.
Board Conference Room - Large (12 person)			12	1	360	12	1	360	Conference table and chairs. Include space for mini-fridge and kitchenette. Locate near or adjacent to Board Room. Provide separate, secure exit from Board Room.
Non-Gender Restroom(s) - Board Room	120			1	120		1	120	Locate near or adjacent to Board Room.
Men's Restrooms - Administration & Planning					300			300	
Toilet(s) / Urinal(s)				*3*			*3*		Verify quantity per Code during design
Sink(s)				*3*			*3*		Verify quantity per Code during design
Women's Restrooms - Administration & Planning					300			300	
Toilet(s)				*3*			*3*		Verify quantity per Code during design
Sink(s)				*3*			*3*		Verify quantity per Code during design
Non-Gender Restroom(s) and Shower Room(s)	120			1	120		1	120	Includes changing area, personal locker, shower, toilet, and sink. Locate near Wellness Room - Admin.
Break Room / Lunch Room - Admininstration & Planning		600			1,110			1,560	Shared by Administration and Planning staff. Include sink, refrigerator, microwave, dishwasher, stove/oven, ice machine, and table/chairs seating areas.
Eligibility Assessment Room	320			1	320		1	320	A room for public riders that has stations for various ADA assessments conducted by Operations staff, including gait tug, steps, walking dexterity, etc. Locate near Lobby, adjacent ADA Eligibility Specialist offices, and on exterior wall with entry/exit to a outdoor walking track that simulates walking to bus stop.
Wellness Room - Administration & Planning	100			1	100		1	100	Include lounge chair(s), countertop, sink, and small refrigerator.
Fitness Room - Administration & Planning		300			300			300	Dedicated fitness room for Administration and Planning staff. Include mix of exercise equipment.
Subtotal Shared Areas					**11,820**			**12,270**	

Space Needs Program StanRTA OMF 6/11/2025	Space Standards	Min. Size (SF)	Initial Program Qty. Staff	Initial Program Qty. Space	Initial Program Area (SF)	Future Program Qty. Staff	Future Program Qty. Space	Future Program Area (SF)	Remarks
Storage Areas									
Secure Storage					300			300	Storage cabinets for office supplies, secure storage cabinets for archive files, safe storage area for safe, table, and chair. For fare media not kept with the operator. Provide card reader and cameras outside and inside room for 24/7 monitoring.
Lost and Found	100			0	0		0	0	
Bike Lost and Found				0	0		0	0	See Facilities Maintenance area
keep this row blank									
Subtotal Storage Areas					**300**			**300**	
Support Areas									
N/A					0			0	
Data/Comm Room - Board Room		100		1	100		1	100	Dedicated Data/Comm Room for Board Room.
Custodial / Mechanical / Electrical / Data/Comm					0			0	See "Building Support"
keep this row blank									
Subtotal Support Areas					**100**			**100**	
SUBTOTAL ADMINISTRATION			**41**		**18,600**	**49**		**20,100**	**SFs rounded to nearest 100 SF.**
Circ/Mech/Elec/Struc (Net: Gross)									
Circulation/Struct	25%				4,700			5,100	
TOTAL ADMINISTRATION			**41**		**23,300**	**49**		**25,200**	

Space Needs Program StanRTA OMF 6/11/2025	Space Standards	Min. Size (SF)	Initial Program Qty. Staff	Initial Program Qty. Space	Initial Program Area (SF)	Future Program Qty. Staff	Future Program Qty. Space	Future Program Area (SF)	Remarks
OPERATIONS (CONTRACTOR)									
Office Areas									
General Manager	220		1		220	1		220	Typical
Assistant General Manager	120		1		120	1		120	Typical
Operations Manager	120		2		240	2		240	Typical
Safety Manager	120		1		120	1		120	Typical
Customer Service Manager	120		1		120	1		120	Typical
Human Resources Manager	120		1		120	1		120	Typical
Data / IT Manager	120		1		120	1		120	Typical
Payroll Administrator	120		1		120	1		120	Typical
Operations Road Supervisor	36		4		144	4		144	Shared workstations in a shared office space. Systems furniture with built-in storage. Include space for charging and storing equipment.
Lead Fixed Route Dispatcher / ADA Operations Manager	100		1		100	1		100	Private office with computer, desk, file storage, two guest chairs. Requires view of Dispatchers.
Dispatcher	80		6		480	6		480	Shared workstations in a shared office space. Systems furniture with built-in storage. See "Dispatch Workstations". Plan for up to 2 staff for Fixed Route and up to 2 staff for Paratransit
Lead Customer Service Representative	100		1		100	1		100	Dedicated workstation in a shared office space. Systems furniture with built-in storage.
Customer Service Representative	64		6		384	6		384	Dedicated workstation in a shared office space. Systems furniture with built-in storage.
Training Manager	120		1		120	1		120	Private office with computer, desk, file storage, two guest chairs.
Safety Trainer	100		2		200	2		200	Dedicated workstation in a shared office space. Systems furniture with built-in storage.
Spare Office(s)	120			1	120		1	120	
Spare Workstation(s)	100			0	0		0	0	
Subtotal Office Areas			**30**		**2,828**	**30**		**2,828**	

Space Needs Program StanRTA OMF 6/11/2025	Space Standards	Min. Size (SF)	Initial Program Qty. Staff	Initial Program Qty. Space	Initial Program Area (SF)	Future Program Qty. Staff	Future Program Qty. Space	Future Program Area (SF)	Remarks
Operators' Area									
Bus Operators			265			300			
Operator Lockers - Two-tier				280	1,270		316	1,270	Assumes two-tier 12-inch by 18-inch lockers with 72-inches clear. Plan for up to 400 staff lockers.
Operator Mailboxes - 5.5" x 5.5"				280	150		300	150	Assumes minimum 20 linear feet with 5 feet clearance. Plan for up to 400 staff mailboxes.
Operators' Day Room / Lunch Room					1,500			1,500	Shared with Operations (Contractor) staff. Includes refrigerator, vending machines, sink, dishwasher, stove/oven, microwaves, water coolor, ice machine, and table/chairs seating areas.
Operators' Touchdown Space	200			1	200		1	200	Shared touchdown/huddle workstation in a shared office space near Operators' Day Room.
Game Room				1	200		1	200	Area for Operators and staff to play games such as pool, ping pong, etc.
Day Room - Ping Pong Table				*1*			*1*		
TV Room				10	300		10	300	Include tables, chairs, end tables, couches, and large television monitor.
Quiet Room				10	300		10	300	Include space for recliners and massage chairs.
Uniform Locker				20	40		20	40	Assumes 2'-0" deep x 6" two-tier lockers
Subtotal Operators' Area			**265**		**3,560**	**300**		**3,560**	
Dispatch Suite									
Dispatcher Workstation(s)				6	---		6	---	See "Office Areas - Dispatcher" for area total. Secure suite for up to 2 staff for Fixed Route and up to 2 staff for Paratransit. Provide view of bus yard and include, intercoms, up to 3 large television monitors, and wall space for bulletin board and whiteboard.
Dispatcher Counter				2	160		2	160	Counter space for 1 staff for Fixed Route and 1 staff for Paratransit. Adjacent to Dispatcher Workstations.
Dispatch Vestibule	100			1	100		1	100	Adjacent to Dispatcher Counter.
Radio Storage	80			1	80		1	80	Adjacent to Dispatcher Workstations.
Dispatch Storage	100			1	100		1	100	Adjacent to Dispatcher Workstations.
Subtotal Dispatch Suite			**0**		**440**	**0**		**440**	

Space Needs Program StanRTA OMF 6/11/2025	Space Standards	Min. Size (SF)	Initial Program			Future Program			Remarks
			Qty.		Area	Qty.		Area	
			Staff	Space	(SF)	Staff	Space	(SF)	
Shared Areas									
Copy/Workroom/Supplies	200			1	200		1	200	
Conference Room - Large (12 person)			12	1	370	12	1	370	Conference table and chairs.
Coffee Bar				*1*	*10*		*1*	*10*	Part of conference room. Include sink, small refrigerator, countertop, storage cabinets, etc.
Drinking Fountain / Bottle Filling Station				1	10		1	10	Locate near restrooms.
Kitchenette		175		1	175		1	175	1 refrigerator,dishwasher, 1 sink, 2 microwaves, countertop space with cabinetry above and below (Contractor). Separate from Operators' Day Room.
Secure Video Room	120			1	120		1	120	Secure room that includes video surveillance equipment, desk, chair, etc. Locate near Opeartions' Office Areas.
Training Room - Operations				65	2,600		65	2,600	Classroom seating with tables and chairs for up to 65. Include, whiteboards, projector, and sound system. Assumes 40 sf/staff.
Training Room Kitchenette				0	0		0	0	Area to serve meals/coffee during training sessions. Include upper/lower cabinets, countertop, and sink. Integrated into Training Room.
Training Room Chair/Table Storage				1	520		1	520	Adjacent to Training Room.
Training Supply/Storage Room				1	520		1	520	Adjacent to Training Room. Include storage shelving for safety gear and files.

Space Needs Program StanRTA OMF 6/11/2025	Space Standards	Min. Size (SF)	Initial Program Qty. Staff	Initial Program Qty. Space	Initial Program Area (SF)	Future Program Qty. Staff	Future Program Qty. Space	Future Program Area (SF)	Remarks
Men's Restrooms					350			350	
Toilet(s) / Urinal(s)				*5*			*5*		Verify quantity per Code during design.
Sink(s)				*2*			*2*		Verify quantity per Code during design.
Women's Restrooms					350			350	
Toilet(s)				*5*			*5*		Verify quantity per Code during design.
Sink(s)				*2*			*2*		Verify quantity per Code during design.
Non-Gender Restroom(s) - Lobby	120			1	120		1	120	Visitor's restroom
Non-Gender Restroom(s) - Drug Testing	64			1	64		1	64	Includes toilet and sink. Dedciated restroom for drug testing. Include option to turn off water to fixtues.
Non-Gender Restroom(s) and Shower Room(s)	120			1	120		1	120	Includes changing area, shower, toilet, and sink.
Fitness Room - Operations	300			1	300		1	300	Separated fitness room for Operations staff and operators. Include mix of exercise equipment. Locate near Opeartors' Area.
Subtotal Shared Areas					**3,299**			**3,299**	
Storage Areas									
Secure File Storage / HR File Room					200			200	
Lost and Found - Operations	150			1	150		1	150	Locate adjacent to or near Lobby / Customer Service Area.
Bike Lost and Found - Operations				10	200		10	200	Exterior secure storage room for bicycles found after bus route is finished. May be shared with Fleet Maintenance.
Subtotal Storage Areas					**550**			**550**	
Support Areas									
Custodial / Mechanical / Electrical / Data/Comm					0			0	See "Building Support"
Subtotal Support Areas					**0**			**0**	
SUBTOTAL OPERATIONS (CONTRACTOR)			**295**		**10,700**	**330**		**10,700**	**SFs rounded to nearest 100 SF.**
Circ/Mech/Elec/Struc (Net: Gross)									
Circulation/Struct	25%				2,700			2,700	
TOTAL OPERATIONS (CONTRACTOR)			**295**		**13,400**	**330**		**13,400**	

Space Needs Program StanRTA OMF 6/11/2025	Space Standards	Min. Size (SF)	Initial Program Qty. Staff	Initial Program Qty. Space	Initial Program Area (SF)	Future Program Qty. Staff	Future Program Qty. Space	Future Program Area (SF)	Remarks
FLEET MAINTENANCE OFFICE AREAS									
Office Areas									
Fleet Manager	120		1		120	1		120	Contractor. Wraparound desk, chair, industry-standard filing and furniture. StanRTA confirmed during 11/7/24 OMF Programming meeting to remove conference table and chairs.
Fleet Supervisor	120		2		240	2		240	Wraparound desk, chair, industry-standard filing and furniture. StanRTA confirmed during 11/7/24 OMF Programming meeting to remove conference table and chairs.
Administrative Service Technician	100		3		300	3		300	Dedicated workstation in a shared office space. Systems furniture with built-in storage and overhead storage bins.
Heavy Equipment Mechanic Crewleader			4			4			Contractor. Workstation part of Repair Bays.
Heavy Equipment Mechanic			10			10			Workstation part of Repair Bays.
Maintenance Worker			9			9			Includes detail clean pesronnel. Mostly graveyard shift - 1 day(s). Workstation part of Repair Bays.
Dedicated Training Coordinator	120		1		120	1		120	
Equipment Service Technician	12		3		36	3		36	Shared touch-down / huddle workstation in a shared office space. Systems furniture with built-in storage.
Bus Stop Maintenance Supervisor	100		1		100	1		100	Private office with computer, desk, file storage, two guest chairs.
Bus Stop Maintenance Worker	12		3		36	4		48	Shared touch-down / huddle workstation in a shared office space. Systems furniture with built-in storage.
Subtotal Office Areas			**37**		**952**	**38**		**964**	

Space Needs Program StanRTA OMF 6/11/2025	Space Standards	Min. Size (SF)	Initial Program Qty. Staff	Initial Program Qty. Space	Initial Program Area (SF)	Future Program Qty. Staff	Future Program Qty. Space	Future Program Area (SF)	Remarks
Shared Areas									
Vestibule	100			1	100		1	100	
Men's Restrooms/Lockers					1,100			1,100	
Toilet(s) / Urinal(s)				*7*			*7*		Verify quantity per Code.
Sink(s)				*3*			*3*		Verify quantity per Code.
Shower(s)				*2*			*2*		
Technician Lockers - Mens				*42*	*420*		*42*	*420*	Assumes 24-inch by 24-inch full-height locker with 72 inches clear.
Women's Restrooms/Lockers					500			500	
Toilet(s)				*4*			*4*		Verify quantity per Code.
Sink(s)				*3*			*3*		Verify quantity per Code.
Shower(s)				*1*			*1*		
Technician Lockers - Womens				*10*	*100*		*10*	*100*	Assumes 24-inch by 24-inch full-height locker with 72 inches clear.
Non-Gender Restroom(s) and Shower Room(s)	120			2	240		2	240	Includes changing area, shower, toilet, and sink.
Copy/Workroom/Supplies					120			120	Include printer, copier, scanner, storage cabinets, and storage shelving.
Manuals Library					180			180	Include up to 2 computer workstations and storage shelving and drawers for manuals.
Drinking Fountain / Bottle Filling Station				1	10		1	10	
Break Room / Lunch Room			12		500	12		500	Provide full-service kitchen with tables and chairs that includes refridgetor, stove/oven, dishwasher, two sinks, microwave, countertop space with cabinetry above and below for storage for up to 12 staff. Locate adjacent to exterior patio.

Space Needs Program StanRTA OMF 6/11/2025	**Space Standards**	**Min. Size (SF)**	**Initial Program**			**Future Program**			**Remarks**
			Qty.		**Area**	**Qty.**		**Area**	
			Staff	**Space**	**(SF)**	**Staff**	**Space**	**(SF)**	
Training Room - Maintenance			20	1	500	20	1	500	Classroom seating with tables and chairs. Locate training room adjacent to a repair bay for hands-on training demonstrations. Plan for up to 20 staff to host biweekly safety/staff meetings, staff appreciation lunches, and staff training with local vendors/businesses. StanRTA confirmed during 11/7/24 OMF Programming meeting to plan for up to 20 individuals and reduce to 500 SF.
Training Supply/Storage Room		100		1	100		1	100	Combine with Table/ Chair storage
Training Room Chair/Table Storage		100		1	100		1	100	Locate adjacent to Training Room - Maintenance.
Phone Room	40			1	40		1	40	Small room for one individual to take personal calls or participate in virtual meetings/calls.
Conference Room - Medium (8 person)			8	1	250	8	1	240	Conference table and chairs. Locate near Fleet Manager and Fleet Supervisor.
Subtotal Shared Areas					**4,160**			**4,150**	
Storage Areas									
Secure File Storage		80			80			80	May be shared with Administration & Opeartions.
Lost and Found				0	0		0	0	See "Operations"
Bike Storage				0	0		0	0	See "Operations"
Subtotal Storage Areas			**0**		**80**	**0**		**80**	
Support Areas									
Custodial / Mechanical / Electrical / Data/Comm					0			0	See "Building Support"
Subtotal Support Areas			**0**		**0**	**0**		**0**	
SUBTOTAL FLEET MAINTENANCE OFFICE AREAS			**37**		**5,200**	**38**		**5,200**	**SFs rounded to nearest 100 SF.**
Circ/Mech/Elec/Struc (Net: Gross)									
Circulation/Struct	20%				1,100			1,100	
TOTAL FLEET MAINTENANCE OFFICE AREAS			**37**		**6,300**	**38**		**6,300**	

Space Needs Program StanRTA OMF 6/11/2025	Space Standards	Min. Size (SF)	Initial Program Qty. Staff	Initial Program Qty. Space	Initial Program Area (SF)	Future Program Qty. Staff	Future Program Qty. Space	Future Program Area (SF)	Remarks
FLEET MAINTENANCE SHOP & BAY AREAS									
Service, Inspection, Repair Bays									Designed with light-reflective floors, walls, and ceilings.
Handwash Sink / Em. Eye Wash	80			2	160		2	160	Locate throughout Shop & Bay Areas. Verify quantity per Code.
Bus Transit									
Non-Revenue Repair Bay				0	0		0	0	Non-Revenue vehicles can be serviced in Standard Bus Repair Bays.
Repair Bay - Paratransit Bus				0	0		0	0	Paratransit buses can be serviced in Standard Bus Repair Bays.
Repair Bay - Standard Bus	25 x 60			4	4,800		6	7,200	StanRTA requested a maintenance pit for up to 2 Standard Bus Repair Bays. Consider locating adjacent to Articulated Bus Repair Bay with maintenance pit. Plan for additional space in bay for toolbox and portable equipment storage. StanRTA confirmed during 11/7/24 OMF Programming meeting to not plan for surface mounted lifts.
Repair Bay - Standard Bus	20 x 60			6	7,200		6	7,200	StanRTA requested a maintenance pit for up to 2 Standard Bus Repair Bays. Consider locating adjacent to Articulated Bus Repair Bay with maintenance pit. Plan for additional space in bay for toolbox and portable equipment storage. StanRTA confirmed during 11/7/24 OMF Programming meeting to not plan for surface mounted lifts.
Repair Bay - Articulated Bus	25 x 75			0	0		0	0	StanRTA confirmed during 11/7/24 OMF Programming meeting to plan for 0 initial and future Repair Bays for Articualted Buses.
PM/Inspection Bay - Paratransit Bus	20 x 50			0	0		0	0	Paratransit buses can be serviced in Standard Bus PM/Inspection Bay.
PM/Inspection Bay - Standard Bus	25 x 55			2	2,750		2	2,750	StanRTA confirmed during 11/7/24 OMF Programming meeting to not plan for surface mounted lifts.
PM/Inspection Bay - Articulated Bus	25 x 75			0	0		1	1,875	StanRTA confirmed during 11/7/24 OMF Programming meeting to plan for 1 future PM/Inspection Bay for Articulated Buses and to not plan for surface mounted lifts.
Subtotal Service, Inspection, Repair Bays				**12**	**17,660**		**15**	**23,810**	

Space Needs Program StanRTA OMF 6/11/2025	Space Standards	Min. Size (SF)	Initial Program Qty. Staff	Initial Program Qty. Space	Initial Program Area (SF)	Future Program Qty. Staff	Future Program Qty. Space	Future Program Area (SF)	Remarks
Specialty Bays									
Alignment Bay				0	0		0	0	No dedicated Alignment Bay. Alignments will occur in Repair Bays.
AC Bay				0	0		0	0	No dedicated AC Bay. Roof access will occur in Repair Bays. Provide fall protection for every bay.
Tire Bay	30 x 75			0	0		1	2,250	May be combined with Repair Bays. Sized for Articulated Buses. Locate near or adjacent to Tire Shop / Tire Storage. StanRTA confirmed during 11/7/24 OMF Programming meeting that tire work will be completed in PM/Inspection or Repair Bays and to plan for 1 future dedicated Tire Bay.
Subtotal Specialty Bays				**0**	**0**		**1**	**2,250**	
Specialty Shop Areas									
Common Work Area				2	750		2	750	Includes commmon/shared equipment such as workbench(es), vise, drill press, hydraulic press, buffer/grinder, parts cleaning tank, parts washer, etc. Furnish one area at initial and can use the other for storage. StanRTA confirmed during 11/7/24 OMF Programming meeting to plan for 1 during Initial Program and possibly add a 2nd in the future.
Tire Shop				1	500		1	500	Include tire balancer, tire changer, tire cage, compressed air.
Electronics Repair Shop	300			1	300		1	300	Include static-dissipative workbenches, chairs, storage shelving units and drawers, and flammable storage cabinets. No soldering or fume extraction equipment required.
Welding / Fabrication / Machine Shop	1,000			1	1,000		1	1,000	Enclose in separate room/area if welding will occur in this space. Include space for workbench(es) with vise, abrasive blast cabinet, welding table, portable welders and fume extractor equipment, diesel particulate cleaning (DPF) equipment, parts washer, 1-ton hoist for DPF, 50-ton hydraulic press, drill press, buffer/grinder, arbor press, brake caliper jack.
Motor Component Shop				0	0		0	0	Can be part of Fabrication Shop.
Subtotal Specialty Shop Areas			**0**		**2,550**	**0**		**2,550**	

Space Needs Program StanRTA OMF 6/11/2025	Space Standards	Min. Size (SF)	Initial Program Qty. Staff	Initial Program Qty. Space	Initial Program Area (SF)	Future Program Qty. Staff	Future Program Qty. Space	Future Program Area (SF)	Remarks
Storage Areas									
New Tire Storage - Single Tier				20	160		30	240	
Used Tire Storage - Single Tier				10	80		10	80	
New and Used Tire Storage - Carousel		300		2	600		2	600	StanRTA confirmed during 11/7/24 OMF Programming meeting to plan for up to 2 tire carousels that can store up to 130 unmounted tires with a maximum tire diameter of 44-inches. Tire carousels will be roughly 28' 0" tall.
Tire Rim Storage		300			300			300	Provide forlift/pallet jack access. Locate storage equipment and space adjacent to Tire Storage and tire carousel(s).
Battery Room		100			100			100	Include emergency eyewash/shower. Provide dedicated exhaust for battery charging. StanRTA to verify quantity of new batteries stored.
Secure Tool Crib		100			170			200	Storage area for shared, high-value tools and equipment.
Toolbox Storage				0	0		0	0	Per StanRTA, toolboxes will be stored in maintenance bays and not in a separate dedicated room. Provide additional width for maintenance bays.
Portable Equipment Storage		100			900			1,000	
Lube/Compressor Room				1	700		1	800	Provide rotary screw compressor for on-demand air and quieter service. Bulk fluids stored will include 500 gal of Engine Oil (EO), 280 gal of Coolant / Antifreeze, 280 gal of Synthetic Transmission Fluid (Syn. ATF), 500 gal of Transmision Fluid (ATF), 90 gal of Diesel Exhaust Fluid (DEF), and 90 gal of Windshield Washer Fluid (WWF). Provide separate 500 gal bulk fluid storage for used oil (UO) and used coolant (UC). StanRTA to confirm quantity of fluids.
Subtotal Storage Areas			**0**		**3,010**	**0**		**3,320**	
Support Areas									
Custodial / Mechanical / Electrical / Data/Comm					0			0	See "Building Support"
Subtotal Support Areas					**0**			**0**	
SUBTOTAL FLEET MAINTENANCE SHOP & BAY AREAS			**0**		**23,300**	**0**		**32,000**	**SFs rounded to nearest 100 SF.**
Circ/Mech/Elec/Struc (Net: Gross)									
Circulation/Struct	25%				5,900			8,000	
TOTAL FLEET MAINTENANCE SHOP & BAY AREAS			**0**		**29,200**	**0**		**40,000**	

Space Needs Program StanRTA OMF 6/11/2025	Space Standards	Min. Size (SF)	Initial Program Qty. Staff	Initial Program Qty. Space	Initial Program Area (SF)	Future Program Qty. Staff	Future Program Qty. Space	Future Program Area (SF)	Remarks
PARTS STOREROOM									
Office Areas									
Fleet Parts Supervisor	0		1		0	1		0	StanRTA confirmed during 11/7/24 OMF Programming meeting to combine Fleet Parts Supervisor office areas into Parts Window/Counter.
Fleet Parts Specialist	0		3		0	3		0	StanRTA confirmed during 11/7/24 OMF Programming meeting to combine Fleet Parts Specialist office areas into Parts Window/Counter.
Parts Window/Counter	80			2	160		2	160	Parts counter and window accessible between Parts Storeroom and Maintenance Shop floor. StanRTA confirmed during 11/7/24 OMF Programming meeting to combine Fleet Parts Specialist office areas into Parts Window/Counter and plan for 2 shared positions. This area is combined with Manuals Storage
Subtotal Office Areas			**4**		**160**	**4**		**160**	
Storage Areas									
Parts Storage					1,800			2,500	Includes mix of drawer units, shelving units, cabinets, bulk racks, flammable storage cabinets, and pallet racks.
Bulk Parts Storage (slow moving parts)					1,300			1,500	
High-Density Storage				2	300		2	300	Use of VLM(s) or Parts Carousel(s); Assumes 14-foot wide by 10-foot deep by 20-foot high module(s)
Shipping & Receiving Area	16 x 20			1	320		1	320	Locate near exterior delivery area.
Subtotal Storage Areas			**0**		**3,720**	**0**		**4,620**	
Support Areas									
Custodial / Mechanical / Electrical / Data/Comm					0			0	See "Building Support"
Subtotal Support Areas					**0**			**0**	
SUBTOTAL PARTS STOREROOM			**4**		**3,900**	**4**		**4,800**	**SFs rounded to nearest 100 SF.**
Circ/Mech/Elec/Struc (Net: Gross)									
Circulation/Struct	20%				800			1,000	
TOTAL PARTS STOREROOM			**4**		**4,700**	**4**		**5,800**	

Space Needs Program StanRTA OMF 6/11/2025	Space Standards	Min. Size (SF)	Initial Program Qty. Staff	Initial Program Qty. Space	Initial Program Area (SF)	Future Program Qty. Staff	Future Program Qty. Space	Future Program Area (SF)	Remarks
SERVICE AREAS									
Office Areas									
Spare Office(s)	120			1	120		1	120	Used for mustering and safety meetings.
Subtotal Office Areas			**0**		**120**	**0**		**120**	
Shared Areas									
Fare/Money Counting Room	300			1	300		1	300	Secure room at Fuel Island. Includes Fare/Revenue Vault(s), computer, desk, chair, counter, and storage shelving and cabinets. Fareroom vestibule was added to this space.
Service Staff Lockers - Two-tier				0	0		0	0	Will be shared with Fleet Maintenance.
Non-Gender Restroom(s)	120			1	120		1	120	Locate 1 Non-Gender Restroom at Fuel Canopy.
Break Room / Lunch Room					0			0	No dedicated Break Room / Lunch Room is needed for Service Areas. Staff will share Fleet Maintenance Break Room / Lunch Room.
Subtotal Shared Areas					**420**			**420**	
Storage Areas									
Storage Room	100			1	100		1	100	Existing room shared with Vacuum Equipment.
Lube/Compressor Room				1	500		1	500	Includes air compressor, air dryer, and air receiver.
Vacuum Equipment Room	300			1	300		1	300	Existing room shared with Storage. Maintain space allowance for central vacuum. StanRTA may transition to backpack vacuums. Room could be converted to storage.
Subtotal Storage Areas			**0**		**900**	**0**		**900**	

Space Needs Program StanRTA OMF 6/11/2025	Space Standards	Min. Size (SF)	Initial Program Qty. Staff	Initial Program Qty. Space	Initial Program Area (SF)	Future Program Qty. Staff	Future Program Qty. Space	Future Program Area (SF)	Remarks
Service Lanes									
Fuel Service Position	25 x 75			2	3,750		3	5,625	Plan for hydrogen fueling at Fuel Service Positions. Fare Retrieval Positions will be combined with Fuel Service Positions.
Detail Clean Position	25 x 75			1	1,875		1	1,875	StanRTA confirmed during 11/7/24 OMF Programming meeting to plan for 1 dedicated Detail Clean Position at the future Fuel Service Position.
Subtotal Service Lanes			**0**		**5,625**	**0**		**7,500**	
Wash Areas									
Bus Wash Lane	25 x 110			1	2,750		2	5,500	Preference is to have fixed route and paratransit run through the same wash. Consider a mix of drive-through and touchless wash systems.
Bus Wash Equipment Room					1,125			2,250	Locate adjacent to Bus Wash Lane. Plan for access from exterior and Bus Wash Lane. Combined space with Chassis wash equipment room
Non-Revenue Vehicle Wash Bays				0	0		0	0	StanRTA will wash Non-Revenue vehicles offsite.
Chassis Wash Bay	25 x 75			1	1,875		1	1,875	Include wash rated platform lift equipment and sump pit for waste collection. Provide 2 pressure wash wand stations.
Chassis Wash Equipment Room					200			200	Equipment Room for high pressure washer unit(s) and associated soap drum(s).
Subtotal Wash Areas			**0**		**5,950**	**0**		**9,825**	
Support Areas									
Custodial / Mechanical / Electrical / Data/Comm					0			0	See "Building Support"
Subtotal Support Areas			**0**		**0**	**0**		**0**	
SUBTOTAL SERVICE AREAS			**0**		**13,100**	**0**		**18,800**	**SFs rounded to nearest 100 SF.**
Circ/Mech/Elec/Struc (Net: Gross)									
Circulation/Struct	20%				2,700			3,800	
TOTAL SERVICE AREAS			**0**		**15,800**	**0**		**22,600**	

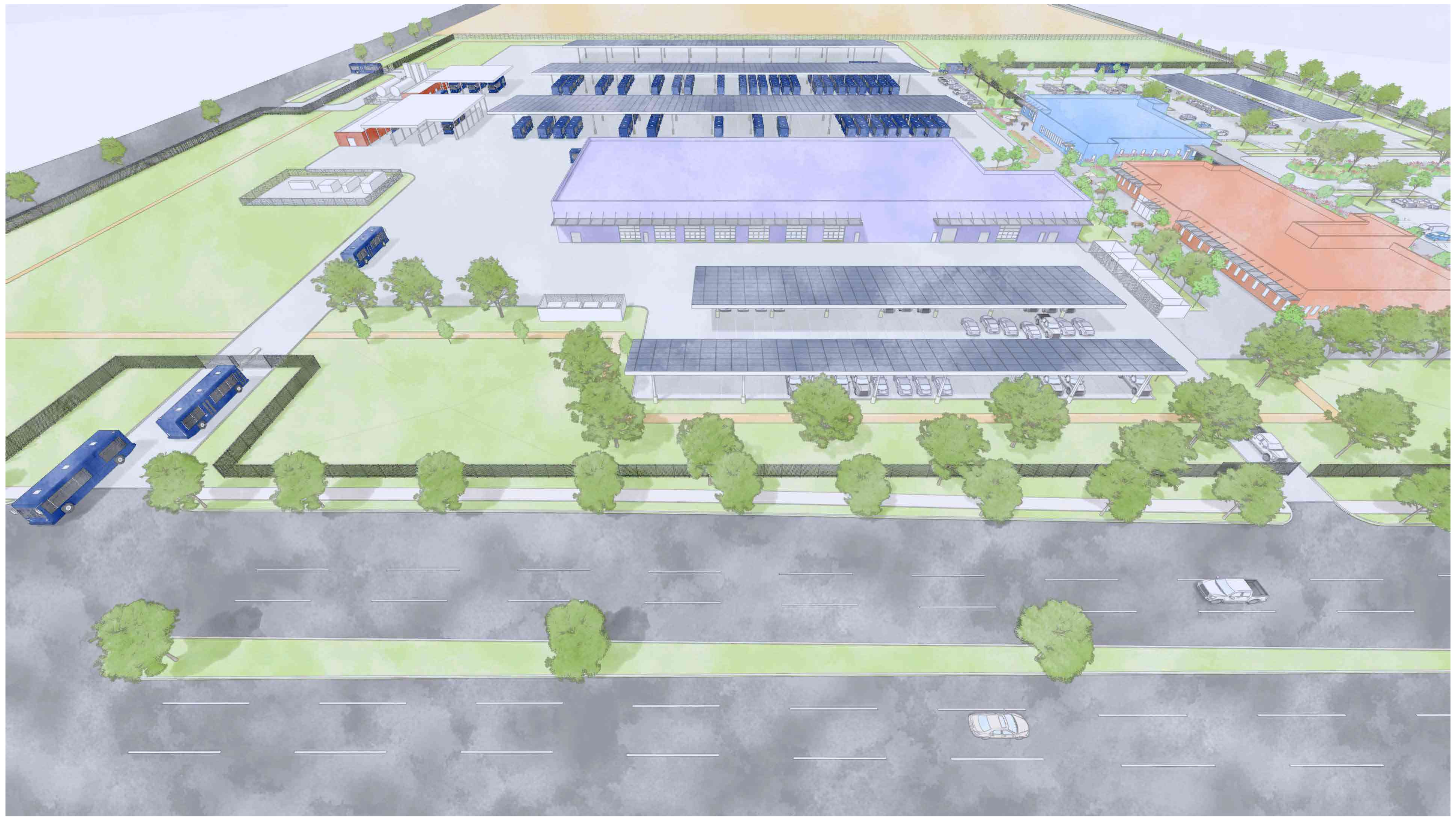
Space Needs Program StanRTA OMF 6/11/2025	Space Standards	Min. Size (SF)	Initial Program Qty. Staff	Initial Program Qty. Space	Initial Program Area (SF)	Future Program Qty. Staff	Future Program Qty. Space	Future Program Area (SF)	Remarks
FACILITY MAINTENANCE									
Office Areas									
Facility Maintenance Manager	100		1		100	1		100	Shared touch-down / huddle workstation in a shared office space. Systems furniture with built-in storage.
Facility Maintenance Technicians	120		1		120	1		120	Private office with computer, desk, file storage, two guest chairs.
Facility / Bus Cleaning Crew	100		3		300	3		300	Dedicated workstations in a shared office space. Systems furniture with built-in storage.
Subtotal Office Areas			**5**		**520**	**5**		**520**	
Shared Areas									Shared Areas will be combined and shared with Operations and Fleet Maintenance.
N/A					0			0	
Subtotal Shared Areas			**0**		**0**	**0**		**0**	
Shop Areas									Shop Areas will be combined and shared with Operations and Fleet Maintenance.
Bus Stop Cleaning Bay	20 x 40			1	800		1	800	Dedicated flat bay for cleaning bus stops. Flatbed truck and forklift access. Include additional hose bibbs and water hose reels.
Subtotal Shop Areas			**0**		**800**	**0**		**800**	
Storage Areas									Storage Areas will be combined and shared with Operations and Fleet Maintenance.
N/A					0			0	
Subtotal Storage Areas			**0**		**0**	**0**		**0**	
Support Areas									Support Areas will be combined and shared with Operations and Fleet Maintenance.
N/A					0			0	
Subtotal Support Areas					**0**			**0**	
SUBTOTALFACILITY MAINTENANCE			**5**		**1,400**	**5**		**1,400**	**SFs rounded to nearest 100 SF.**
Circ/Mech/Elec/Struc (Net: Gross)									
Circulation/Struct	20%				300			300	
TOTAL FACILITY MAINTENANCE			**5**		**1,700**	**5**		**1,700**	

Space Needs Program StanRTA OMF 6/11/2025	Space Standards	Min. Size (SF)	Initial Program Qty. Staff	Initial Program Qty. Space	Initial Program Area (SF)	Future Program Qty. Staff	Future Program Qty. Space	Future Program Area (SF)	Remarks
BUILDING SUPPORT									
Support Areas									
Custodial Room	100	80		3	300		3	300	Locate throughout various building areas. Include mop sink with hot/cold water supply, storage shelving, and area to store cleaning carts, vacuums, mop buckets, etc.
Main Electrical Room		250		1	600		1	600	
Electrical Room		100		12	1,800		12	1,800	Locate throughout various building areas.
Data/Comm Room		100		6	600		6	600	Locate throughout various building areas.
IT Shop/Storage Room				1	160		1	160	Work area for IT staff to support site and building(s).
Mechanical Room		100			1,200			1,200	Assumes shared with other areas. Verify size during design.
Water Entry / Fire/Sprinkler Room		150			300			300	May require multiple rooms if there are multiple buildings.
Subtotal Support Areas					**4,960**			**4,960**	
SUBTOTALFACILITY MAINTENANCE			**0**		**4,960**	**0**		**4,960**	**SFs rounded to nearest 100 SF.**
Circ/Mech/Elec/Struc (Net: Gross)									
Circulation/Struct	20%				300			300	
TOTAL FACILITY MAINTENANCE			**0**		**5,260**	**0**		**5,260**	

Space Needs Program StanRTA OMF 6/11/2025	Space Standards	Min. Size (SF)	Initial Program Qty. Staff	Initial Program Qty. Space	Initial Program Area (SF)	Future Program Qty. Staff	Future Program Qty. Space	Future Program Area (SF)	Remarks
COVERED AREAS									
Fuel Areas									
Public Hydrogen Fuel Lane	20 x 30			1	600		1	600	Potential for future public hydrogen lane.
Subtotal Fuel Areas			**0**		**600**	**0**		**600**	
Covered Storage Areas									
N/A					0			0	
Subtotal Covered Storage Areas			**0**		**0**	**0**		**0**	
SUBTOTALCOVERED AREAS					**600**			**600**	**SFs rounded to nearest 100 SF.**
Circ/Mech/Elec/Struc (Net: Gross)									
Circulation/Struct	100%				600			600	
TOTAL COVERED AREAS					**1,200**			**1,200**	
EXTERIOR AREAS									
Exterior Storage Areas									
Fuel Yard					8,200			9,900	SF/Vehicle is based on estimated fleet size. Allows for Hydrogen infrastructure, gasoline tank(s), and temporary diesel fuel tank(s).
Loading Dock	20 x 70			1	1,400		1	1,400	Sized for flatbed trailer.
Trash/Recycling	200			1	200		1	200	
Scrap Metal Recycling	200			1	200		1	200	
Cardboard Recycling	200			1	200		1	200	
Bike Storage Rack	2 x 6			10	120		10	120	
Emergency / Backup Generator	1,000			1	1,000		1	1,000	Physical size of generator and required clearances may vary based on capacity.
Subtotal Exterior Storage Areas			**0**		**11,320**	**0**		**13,020**	
SUBTOTAL EXTERIOR AREAS					**11,400**			**13,100**	**SFs rounded to nearest 100 SF.**
Circ/Mech/Elec/Struc (Net: Gross)									
Circulation/Struct	50%				5,700			6,600	
TOTAL EXTERIOR AREAS					**17,100**			**19,700**	

Space Needs Program StanRTA OMF 6/11/2025	Space Standards	Min. Size (SF)	Initial Program Qty. Staff	Initial Program Qty. Space	Initial Program Area (SF)	Future Program Qty. Staff	Future Program Qty. Space	Future Program Area (SF)	Remarks
EMPLOYEE/VISITOR PARKING									
Employee Parking									
Employee Parking By Group	9 x 18								Total employees for this facility are 426 people. Provide covered structure over employee parking.
ADMINISTRATION				40	6,480		48	7,776	
OPERATIONS (CONTRACTOR)				24	3,888		65	10,530	
FLEET MAINTENANCE				34	5,508		35	5,670	
PARTS STOREROOM				4	648		4	648	
SERVICE AREAS				0	0		0	0	
FACILITY MAINTENANCE				5	810		5	810	
Contingency / Spare Employee Parking				6	972		8	1,296	Assumes 5% spares.
Subtotal Employee Parking				**113**	**18,306**		**165**	**26,730**	**Peak employees onsite is 157**
Miscellaneous Parking									
Accessible Parking	13 x 18			6	1,404		6	1,404	Verify quantity per Code.
Electric Vehicle Parking	9 x 18			16	2,592		16	2,592	Verify quantity per Code.
Visitor Parking	9 x 18			20	3,240		20	3,240	
Subtotal Miscellaneous Parking				**42**	**7,236**		**42**	**7,236**	
SUBTOTAL EMPLOYEE/VISITOR PARKING				**155**	**25,600**		**207**	**34,000**	**SFs rounded to nearest 100 SF.**
Circ/Struc (Net: Gross)									
Circulation/Struct	100%				25,600			34,000	
TOTAL EMPLOYEE/VISITOR PARKING				**155**	**51,200**		**207**	**68,000**	

STAINSLAUS REGIONAL TRANSIT AUTHORITY
BUS OPERATIONS AND MAINTENACE FACILITY



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STANTEC
ARCHITECT
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FUELING ENGINEER

KIMLEY HORN & ASSOCIATES, INC.
CIVIL ENGINEER

Stantec

Stanislaus Regional Transit Authority
Preliminary Concept Design

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2014339200

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