

# **CITY OF IOWA CITY**

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## Public Works Master Plan

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## REPORT OVERVIEW

This Master Planning Report prepared by the Master Planning Team consists of six sections. The following is a brief description of the contents of each section:

### Section One - Project Overview

Describes the background of the project and existing conditions, such as site locations and issues. This section also gives an overview of the complete report.

### Section Two - Basis for Design

Presents departmental summaries of the qualitative key planning issues that were noted during the programming interview sessions. These interviews were held with staff from each of the Iowa City Public Works (ICPW) departments. The summaries include a description of the responsibilities of each department, hours of operation, staffing counts, vehicle storage and parking requirements, vehicles maintained, key affinities, and a list of key planning issues.

### Section Three - Space Needs Program

Offers a summary of the total area required for a new Public Works Campus. Also presented is the roster of current and future employees and the parking needs of a new facility. The appendix offers a detailed listing of space requirements for each department to be included in the proposed consolidation and buildout at the Napoleon Site. The intent of the space needs program is to identify (in detail) the spaces and areas needed to fulfill the functional requirements of each department or group. Programmed spaces are further defined by their quantity, area, and any remarks significant to the planning process. Also included are the Space Standards or dimensional standards critical for function or design.

### Section Four - Site Master Plan and Concept Building Design

Provides a descriptive narrative of the master planning goals and addresses the issues and constraints of the site and building. Site master plans and building concepts developed during an on-site master planning charrette are presented in this section. Also featured are conceptual building floorplans that were refined and developed, based on a preferred design option identified through the charrette process. These conceptual floorplans enhance the validity and understanding of the final facility master plan. Additional renderings and diagrams are included to enhance the understanding of building volume, scale, function and necessary clear height requirements based on the preliminary design analysis. *Note: The Landfill Departments will have a separate concept, as this department is not being relocated to the Napoleon Site facility.*

### Section Five - Design Criteria

Presents a detailed technical and functional description and graphic of the areas in the facility. This criterion provides the final design team with a greater understanding of the technical, system and equipment requirements for each programmatic area.

### Section Six - Opinion of Probable Cost

This section presents the Opinion of Probable Costs for the final selected master plan. These costs represent a Rough Order of Magnitude (ROM) or Conceptual Level Estimate, and are based on costs-per-square-foot, conceptual building plans, and program quantities and takeoffs. The summary includes a phasing plan to provide an option for phased project construction.

## Appendices

- Appendix A: Staffing Data
- Appendix B: Fleet Data
- Appendix C: Existing Facility and Site Maps, Data, and Floor Plans
- Appendix D: Existing Facility Photo Documentation
- Appendix E: Charrette Alternative Concepts
- Appendix F: Budget Detail

## ACKNOWLEDGEMENTS

The Master Planning Team would like to acknowledge the efforts and contribution of the Iowa City Public Works staff during the facility programming and master planning effort. This continued enthusiastic participation will ensure the realization of the best possible facility design.

# Section 1 - Project Overview

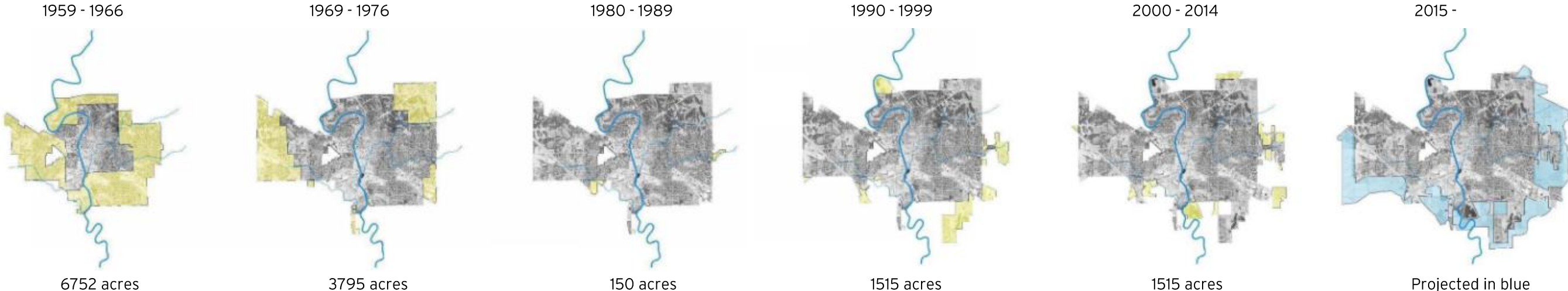
## INTRODUCTION

The City of Iowa City's Public Works (ICPW) consists of a seven functional groups or departments. Each of these groups has a specific purpose or mission related to the on-going maintenance of the City's infrastructure, removal and disposal of waste, and/or maintenance of the City's fleet of vehicles and equipment. Additionally, the City's Transit department is organizationally under Public Works, but generally operates as a stand-alone entity; however, there is a great deal of interdepartmental coordination and sharing of resources and capabilities as needed.

As of the 2010 Census, the City of Iowa City had a total population of 67,862. The Census Bureau estimated the 2014 population at 73,415, making it the fifth-largest city in the state. Iowa City is adjacent to Coralville, which is located to the northwest, and surrounds the small town of University Heights, with which it forms a contiguous urban area. Iowa City is considered the principal city of the Iowa City Metropolitan Statistical Area, which encompasses Johnson County and Washington County and has a population of over 164,000.

The city has a reported area of 25.28 sq miles (65.47 km), and is generally bound by Interstate 80 to the north, Taft Avenue to the east, Napoleon Street to the south, and Highway 218 to the west.

### Diagram of City Growth



## DEPARTMENTS AND FUNCTIONS TO BE CENTRALIZED

ICPW currently utilizes numerous sites for housing different departments and equipment. This approach, borne from growth and necessity, creates numerous inefficiencies and additional “deadhead” or windshield time for some departmental employees who commute between sites. ICPW has expressed a desire to consolidate operations by moving most of the departments to one centralized site, which would allow existing sites to be sold and would eliminate the need to lease or rent other sites. This suggests that centralization is the long-term goal of ICPW to meet their current and future facility and operational needs. A city-owned site at 3800 Napoleon Lane is being considered for this consolidation effort, and the site currently maintains some ICPW functions.

The ICPW departments being considered for consolidation at this site are as follows:

### Public Works (shared spaces)

- Solid Waste/Refuse Department ●
- Streets Department ●
- Traffic Department ●
- Public Works Department ●
- Equipment Maintenance Department ●
- Transit Department ●
- Water Distribution Department ●

### Other non-public works departments to have functions at the centralized site

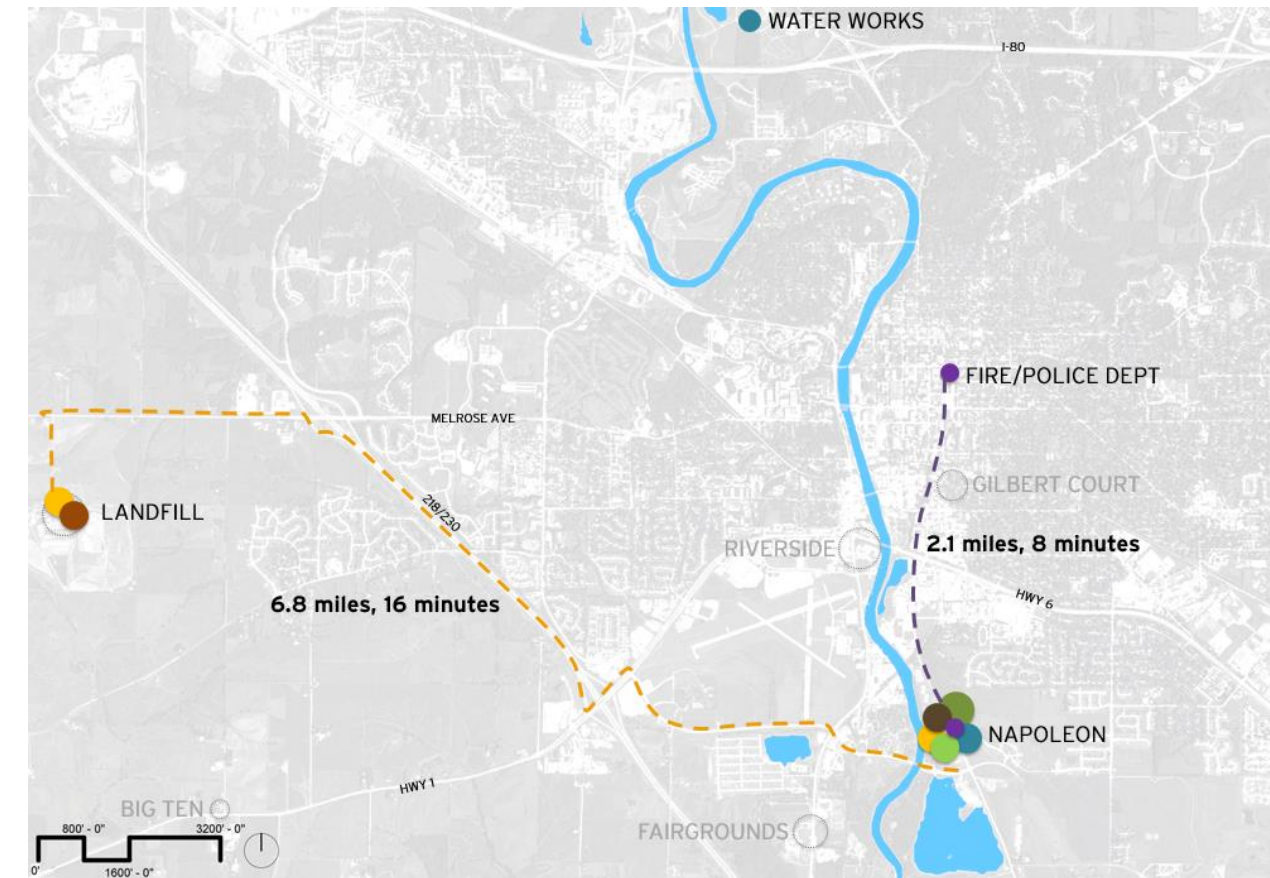
- Fire Department ●
- Police Department ●

### Other Departments (not to be centralized)

- Landfill Operations ●

The ICPW has a relatively new administration facility for the Landfill Department that is located at 3900 Hebl Avenue. The plan for the administration building is to renovate the existing facility so that it better meets the requirements of the Landfill Department. However, the operations building is not efficient. A new facility will be constructed for the Landfill Department’s operations.

## Proposed Site Consolidation

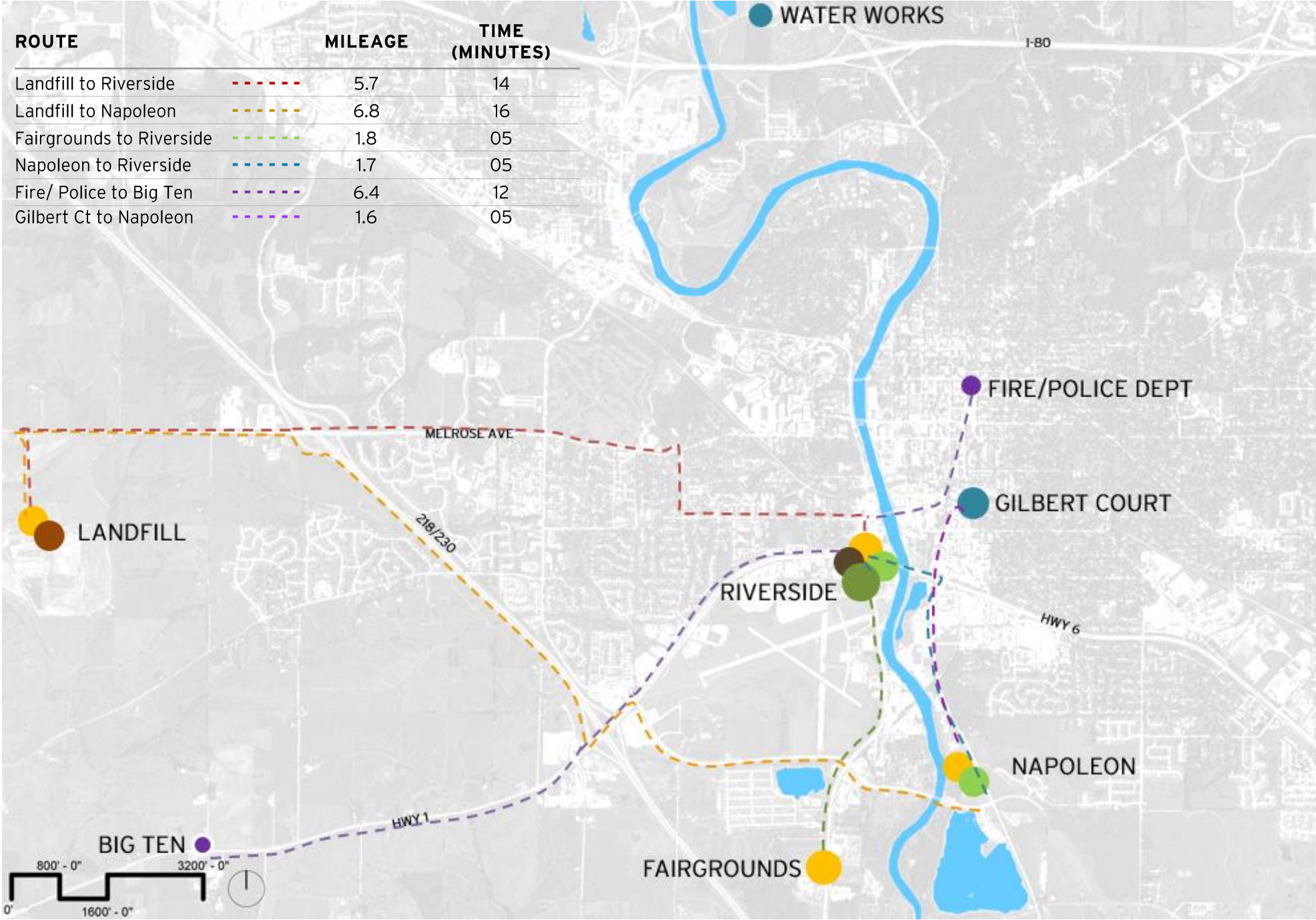


ROUTE	MILEAGE	TIME (MINUTES)
Landfill to Napoleon	6.8	16
Fire/police to Napoleon	2.1	8

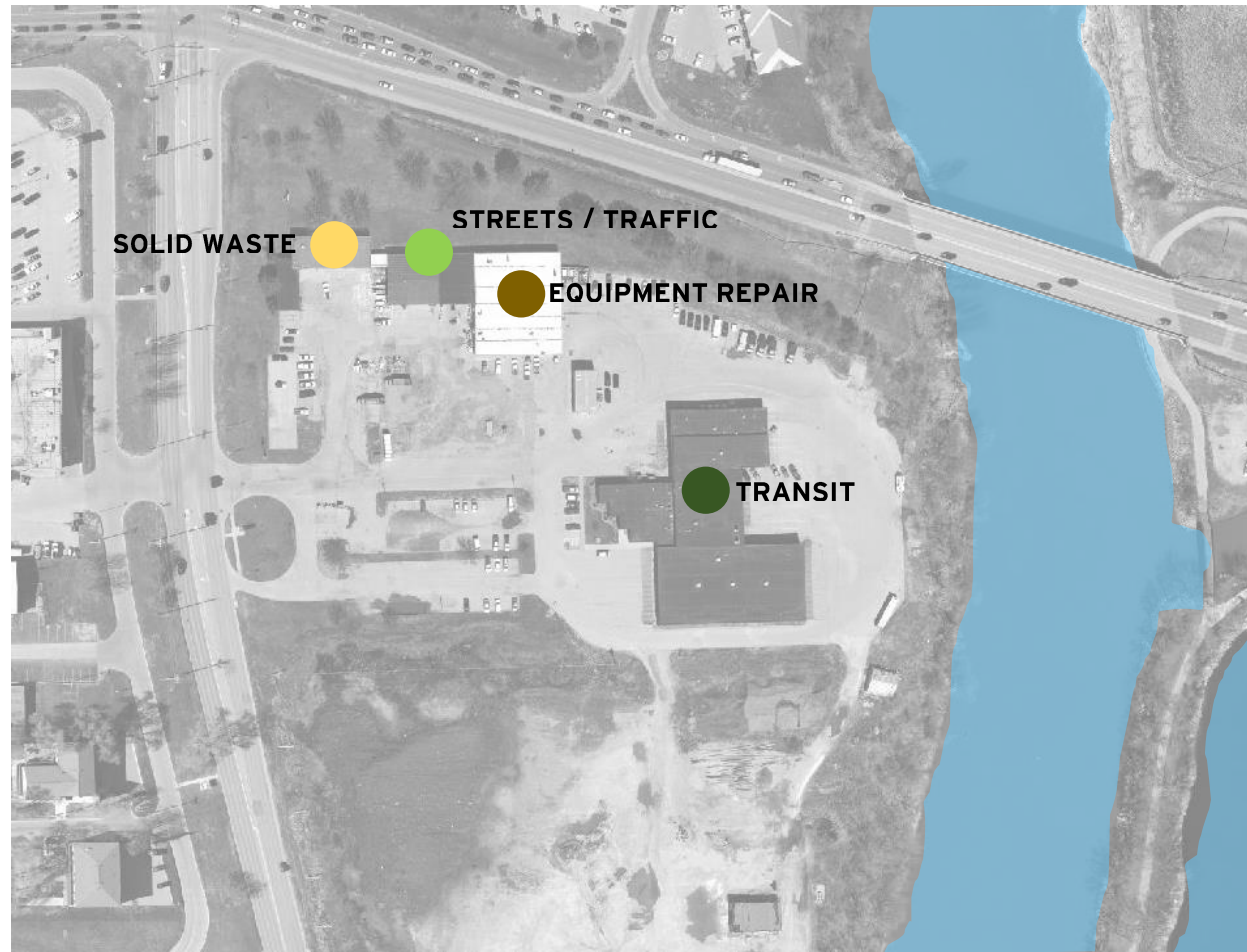
# EXISTING SITES

The ICPW departments occupy several sites throughout the metropolitan area. The following graphics represent the individual sites and the departments that operate at each location. The graphics also depict the relative distances between each site.

## Site Overview - current locations of ICPW sites



## Riverside Site



The Riverside site located at 1200 South Riverside Drive is the current location for the Solid Waste/Refuse Department, Traffic and Signs, Equipment Maintenance, and Transit departments. During the flooding of the Iowa River in the summer of 2008, access routes to the Riverside Drive Facility were cut off due to high water, limiting fuel availability to service and emergency vehicles. Because of the continued threat of future flooding, long term plans to eliminate operations on Riverside Drive and relocate them to Napoleon Lane have accelerated.

## Napoleon Site



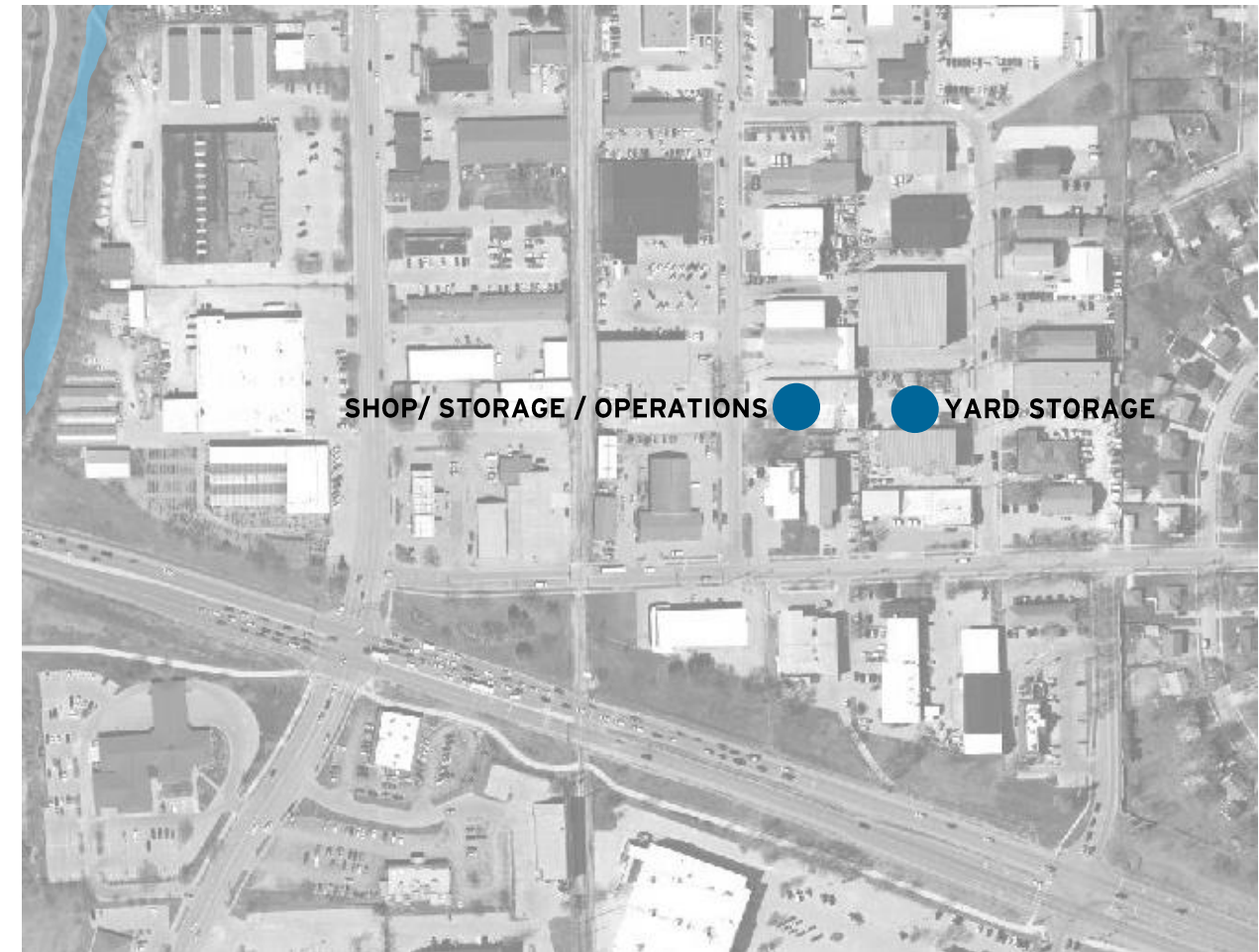
The Napoleon site located at 3800 Napoleon Lane is the proposed future location for most ICPW departments. Currently, the Streets/Traffic Department operates administrative staff and field crews from a main administrative crew building constructed approximately 15 years ago. Additionally, the Traffic Control function and staff are located in the existing main building. Street crew support (crew assembly room, restrooms, and locker rooms) are also in the main building. Street shops and storage functions, and enclosed heated and unheated vehicle and equipment storage (located in aging storage structures), and other vehicle and yard storage functions are located in designated exterior areas. Salt and sand storage buildings house bulk materials, and are generally considered to be adequate for long-term use, with some adjustments and material canopy covers. Solid Waste/Refuse also maintains storage onsite. The City's central fueling facility is located here, and is accessed by all City departments.

## Landfill Site



The Landfill site located at 3900 Hebl Avenue is the City's primary landfill and recycling location. This site is open to private and public waste haulers. The Solid Waste/Refuse Department makes daily routes to the landfill, which makes the final vehicle domicile location for this equipment operationally important as it directly relates to the amount of deadhead mileage generated by the Solid Waste/Refuse Department. The Landfill Department is also responsible for maintaining and storing large equipment used for landfill operations. The maintenance and storage functions are accommodated in two buildings with direct access to the Landfill.

## Gilbert Court Site



The Water Distribution Department is located at 1222 South Gilbert Court. This site maintains administration, operations, and crew support functions for the Water Department. Additionally, the site includes interior heated vehicle/equipment storage, shop areas, and interior material storage. The exterior yard areas are used for equipment and material yard storage.



## Fairgrounds Site



The Johnson County Fairgrounds has buildings that are utilized on a seasonal basis by ICPW. The fairgrounds are located at 4275 Oak Crest Hill Road. The Streets Department and Solid Waste/Refuse currently utilize two buildings to store their vehicles/equipment in the winter months due to limited interior storage at the Riverside and Napoleon Sites.

## MASTER PLANNING TEAM

ICPW selected and contracted with a Master Planning Team led by Neumann Monson Architects and supported by Maintenance Design Group to provide master planning design services for the new Iowa City Public Works facility.

As part of the planning process, this Master Planning Report is developed to document assumptions, the planning theory, planning ratios, space needs, design criteria and other technical data pertaining to the unique functions and equipment required by each department, in order to relocate these groups to a new Iowa City Public Works facility.

## PAST PLANNING EFFORTS

Neumann Monson Architects completed a report outlining the master plan in 2002 with updates by Eclipse Consultants in 2005, and by Kueny Architects LLC with Eclipse Consultants in 2012. Since that time, portions of the plan have been implemented and other portions have changed resulting in the need to update the plan. In addition to the Public Works Campus Master Plan update, the Resource Management Division has requested to create a Landfill Facility Master Plan to evaluate the current facilities and address needed improvements.

## PURPOSE AND USE

The purpose of this report is to define functional requirements and space needs, which will serve as a general basis for design for the new facility. This report is generally intended for ICPW use, coordination, and budget development efforts. The report is also intended to be a helpful tool that encourages the user's involvement in the review and verification of data and assumptions.

## METHODOLOGY

The Master Planning Team believes that the most successful facility planning projects begin by interacting with users to gain an understanding of the functions and operations that need to be performed within their respective facilities. Therefore, the Master Planning Team began this project with data collection, observation, and in-depth interviews with staff, related to operations and maintenance practices of the various ICPW divisions.

The goal of the Master Planning Team is to plan a facility for ICPW that utilizes the available property and resources in the most efficient way possible. By participating in this time-tested process, the resulting Master Plan, Concept Design, Design Criteria, and associated probable cost information will ultimately be more accurate and useful.

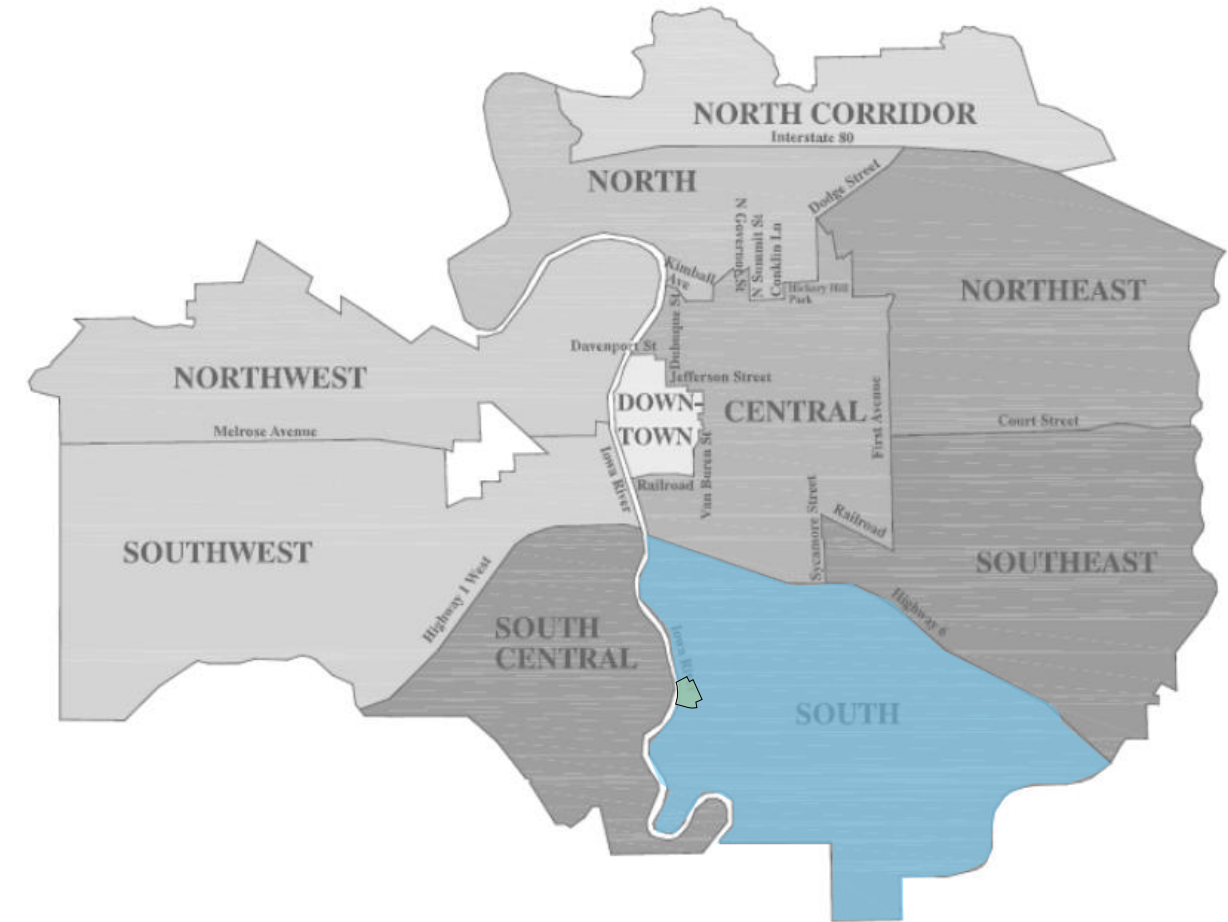
## EXISTING LAND USE

### Overview

The Napoleon site is located in the South District of Iowa City and is bound by the Iowa River to the west, Gilbert Street to the east, Napoleon Park to the north, and McCollister Boulevard / Terry Trueblood Recreation Area to the south. As indicated in the *Iowa City South District Plan*<sup>1</sup>, adopted in 2015, “public parks and trails as well as private open space”, are defining elements of South Iowa City’s identity and sense of place.

#### Some goals of the *Iowa City South District Plan* are as follows:

- Reinforce a shared experience of place. Identify areas within the district that can be enhanced with public art, community gardens, improved bus stops, lighting, or other features that encourage social gathering or interaction.
- Extend the Highway 6 trail system and create better pedestrian connections to commercial and industrial properties along both sides of the highway.
- Accentuate South Iowa City’s connection to the environment and outdoor recreation. Incorporate trees and other landscaping features along major rights-of-way as part of infrastructure improvement projects.
- Provide distinctive landscaping, including low-maintenance native plantings at major entrances to South Iowa City and at intersections of arterial streets.
- Consider unique signage, public art, and other amenities such as bus shelters, seating, and wayfinding along major rights-of-way.
- Collaborate with developers and realtors in promoting South Iowa City’s environmental and recreational assets.
- Promote energy and water conservation features of new development. Identify buildings or sites that could benefit from solar arrays, reflective rooftops, and other energy/conservation upgrades such as new windows, lighting, entryway improvements, plug-in stations, and improved bike, pedestrian, and bus facilities.
- As part of Blue Zones efforts, organize walking clubs at Terry Trueblood Recreation Area for targeted demographics—senior walk days, mommy meet-ups, etc.
- Incorporate local foods, art, and culture as part of revitalization efforts. Extend the City of Literature and other arts programming to South Iowa City.
- Buffer Residential Development from Incompatible Uses: To help ensure the long-term livability of neighborhoods, provide sufficient buffers between residential uses and activities, such as the waste water treatment plant, highways, etc.



<sup>1</sup> South District Plan, <https://www.icgov.org/districtplans>

## Adjacent Zones<sup>2</sup>

### P1

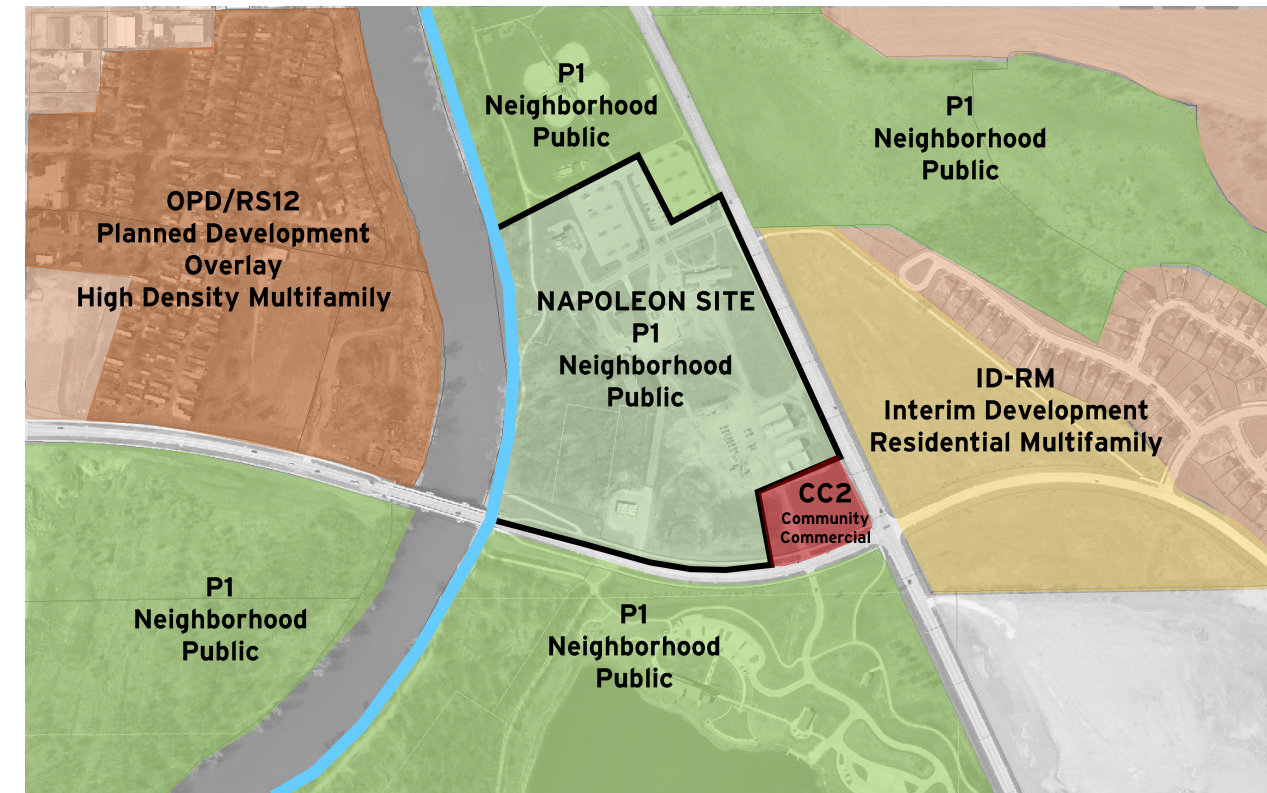
The Neighborhood Public Zone (P-1) includes uses such as schools, parks, police and fire stations, and other civic buildings owned or otherwise controlled by the county, the city, or the Iowa City community school district for such uses will be designated as P-1, neighborhood public zone. These uses are subject to certain development standards in order to create a consonant transition between public and private uses.

### ID-RM

The Interim Development Zone (ID) is to provide for areas of managed growth in which agricultural and other nonurban uses of land may continue until such time as the city is able to provide city services and urban development can occur. The interim development zone is the default zoning district to which all undeveloped areas should be classified until city services are provided. Upon provision of city services, the city or the property owner may initiate rezoning to zones consistent with the comprehensive plan, as amended.

### CC-2

The Community Commercial Zone (CC-2) is to provide for major business districts to serve a significant segment of the total community population. In addition to a variety of retail goods and services, these centers may typically feature a number of large traffic generators requiring access from major thoroughfares. While these centers are usually characterized by indoor operations, uses may have limited outdoor activities; provided, that outdoor operations are screened or buffered to remain compatible with surrounding uses.



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<sup>2</sup> Referenced from the Iowa City Zoning Code, ([http://sterlingcodifiers.com/codebook/index.php?book\\_id=953&chapter\\_id=76528](http://sterlingcodifiers.com/codebook/index.php?book_id=953&chapter_id=76528))

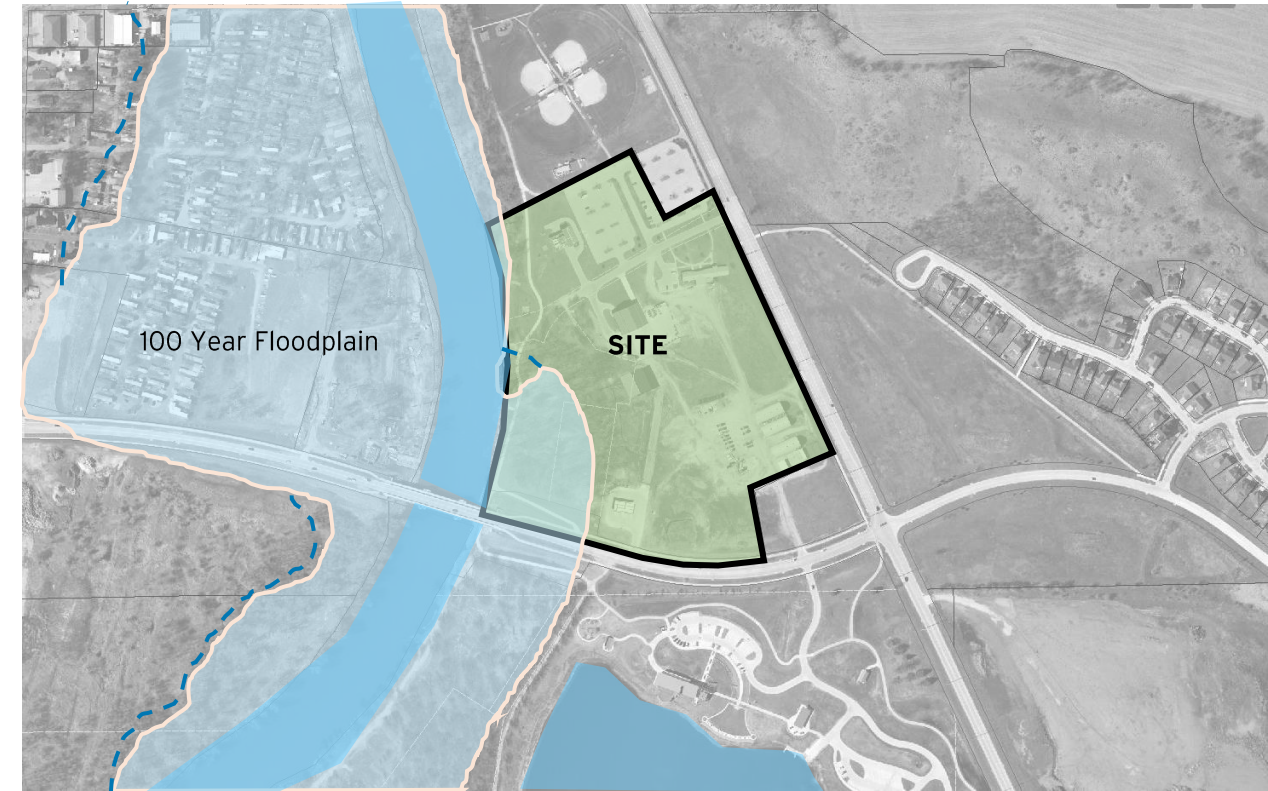
## ENVIRONMENTAL CONSIDERATIONS

### River Flooding

With its proximity to the Iowa River, the western edge of the Napoleon Site is encroached upon by the floodplain of the river. The site is most affected at the southwest corner by the 100-year and 500-year floodplains, as indicated in the adjacent diagram.

### Soils

In 2000, a geotechnical report was conducted by Terracon Consultants Inc, regarding the soil conditions at the Napoleon site. At that time, it was concluded that the "site soils are suitable to support the proposed structures (*as indicated in previous planning efforts*) on spread footings. However, special design and construction considerations will be required due to the presence of very loose to loose sandy deposits.



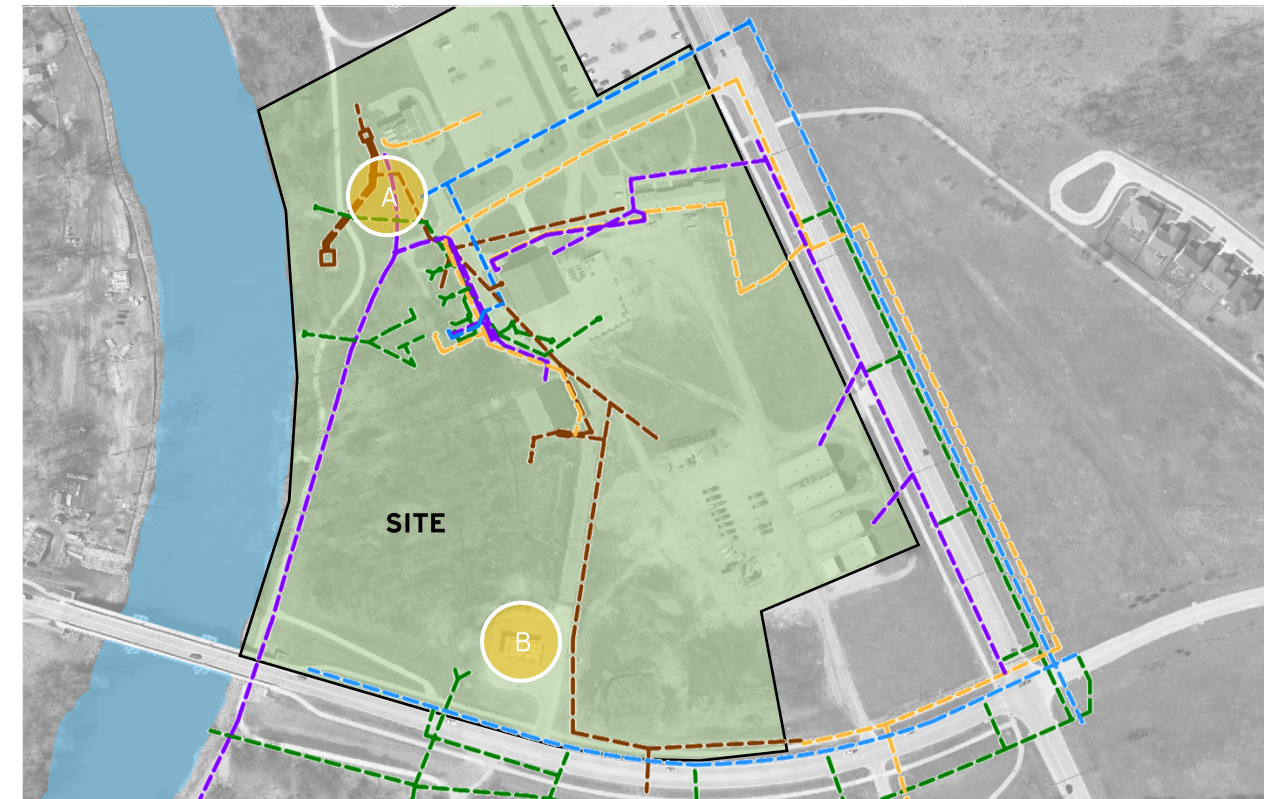
## UTILITIES

### Existing

Based on the site utilities information provided by the City of Iowa City (Appendix - Site Utilities Diagram from the City of Iowa Ci), the proposed building site is largely free of intersecting utilities. To the east, the site is bound by water distribution, gas distribution, and a storm sewer. To the south, the site is bordered by a sanitary sewer and water main. Electric distribution runs to the west of the site, adjacent to the Iowa River.

### Proposed

In 2015, construction of the Iowa City Animal Care & Adoption Center (A) was completed. The facility is located at the northwest corner of the site, and utilities have been revised in this location. In 2013, the City also began construction of a fuel island (B) at south of the site. This location has also seen expanded integration of utilities.



#### UTILITY

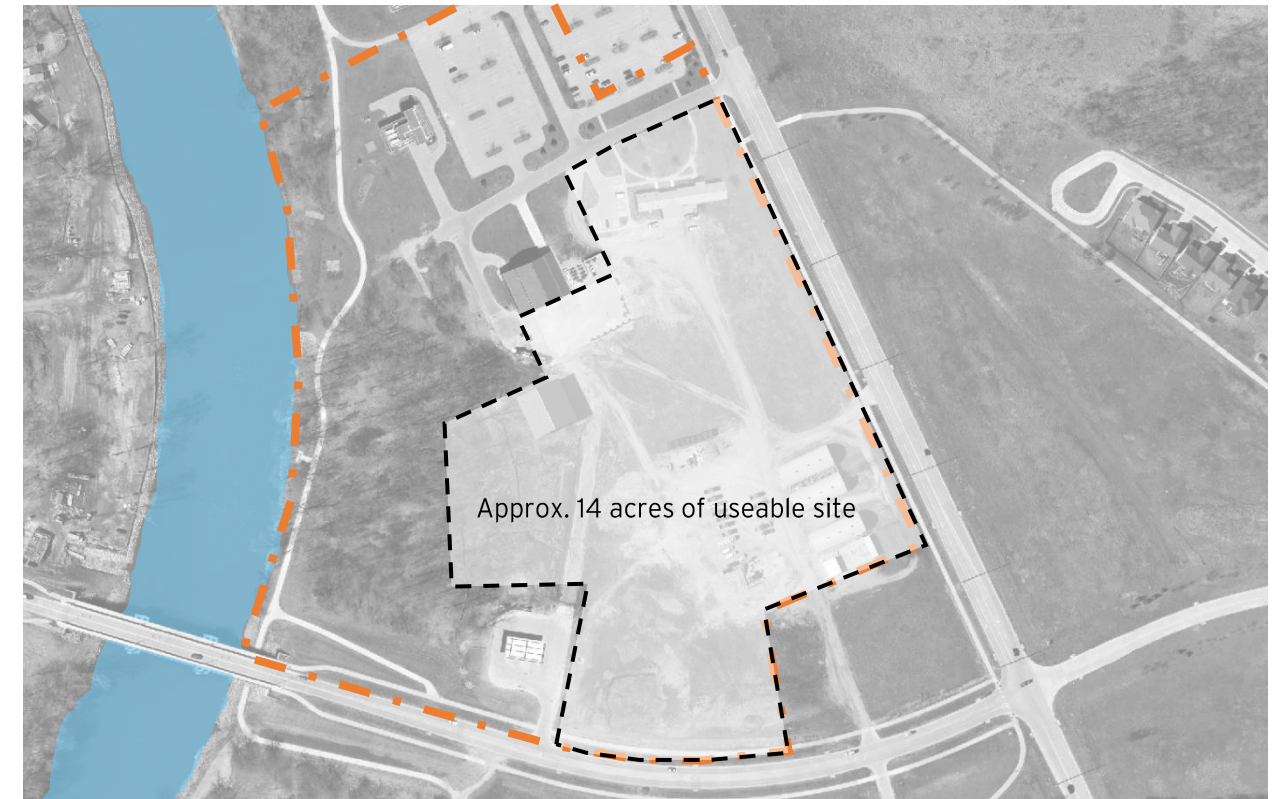
Water Main	--- --
Sanitary Sewer	--- --
Storm Sewer	--- --
Electric	--- --
Gas	--- --

## EXISTING SITE UTILIZATION

The total parcel size of the Napoleon Site is approximately 25 acres. The site includes portions of developed areas that are inaccessible/unuseable to the Public Works development, including the following:

- Iowa River Recreational Trail
- Iowa City Animal Care and Adoption Center
- Fuel Island
- West side of site which lies within the 100-year and 500-year floodplains.

The approximate usable area for the Public Works Master Plan is approximately 14 acres.



# Section 2 - Basis for Design

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## INTRODUCTION

The purpose of this section is to document and define the functional and operational characteristics for the new Iowa City Public Works (ICPW) Facility. The Basis for Design phase is an important element in developing the functional requirements and space needs program. The understanding gained by the Master Planning Team, consisting of Neumann Monson Architects and Maintenance Design Group, during the programming interview sessions will greatly influence the Master Plan and Concept Design decisions for the new ICPW Facility.

The base programming data provided by ICPW in the form of internal evaluation programming questionnaires completed by representatives from each group served as the basis for programming discussions. The questionnaires included functional characteristics, hours of operation, staffing levels, vehicle parking requirements, and key planning issues for each division.

The programming session for the new ICPW Facility took place in Iowa City, Iowa from November 9, 2015 through November 11, 2015. During the three-day effort, the Master Planning Team met with ICPW representatives for the various departments and their staff. This section summarizes the information gathered during the on-site programming session for the following divisions:

- Public Works Shared Areas
- Solid Waste/Refuse Department
- Streets Department
- Traffic Department
- Equipment Maintenance Department
- Water Distribution Department
- Transit Department
- Fire Department
- Police Department
- Landfill Department

For each division, The Master Planning Team identified the function, hours of operation, staffing levels, employee parking requirements, key planning issues, and adjacency requirements. Tables for staff and vehicle data delineate program requirements for the determined staff and functions. Each column indicates the existing conditions (2015 Program) and the 20-year projection in 5-year increments

(2020, 2025, 2035 Program) for staff and vehicles anticipated to support the new ICPW Facility. This section includes recommendations for site development to the extent to which the departments have requested based on input regarding site design.

## PUBLIC WORKS SHARED AREAS

### Function

The Shared Areas of the new ICPW Facility will be occupied by all departments throughout their daily operations. Instead of individual rooms by department, several areas have been consolidated. This reduces the overall cost and square footage of the building, as well as make the site more efficient.

#### **Office Areas**

- A reception/lobby area is to be provided as an entrance into all of the departments
- A file/reference storage room is to be accessible by all departments
- A copy/work area is to be provided for all departments to use

#### **Meeting Areas**

- Multiple conference rooms varying between 350-450 square feet are to be located throughout the facility for use by each department
- A training room is to be provided, having the ability to be sectioned off for multiple meetings. The overall square footage of the training room is to be at least 750 square feet with storage

#### **Crew Support Areas**

- Separate restrooms for men and women are to be shared by all departments
- Employee restrooms are to be equipped with showers
- A large locker room is to be adjacent to the restrooms for personal belongings and work equipment
- A daily workroom is to be provided for copying, file storage, etc
- A crew/break room is to be provided and should include:
  - Tables, workstations, white boards, A/V equipment, and bulletin boards
  - Bunk area
- A kitchen/break room is to be provided for daily use

#### **Building Support Areas**

- An IT/network room is to provide all data communications to each department

- The electrical room is to support all departments
- A janitor/custodial room/closet is to be provided for storing cleaning supplies

**Vehicle Wash Areas**

- Four automated wash bays are to be provided for washing all vehicles that are utilized by the ICPW
- Two rough wash positions are currently provided for washing out any buildup not cleaned by the automated wash bays

## SOLID WASTE/REFUSE DEPARTMENT

### Function

The Solid Waste/Refuse Department is a daily office for all refuse, recycling, and yard waste workers who may be bulky.

### Staffing

It is anticipated that the initial hours of operation will be from 7:00 AM to 5:00 PM, Monday through Friday. The following table summarizes the existing conditions and 20-year projection in 5-year increments for the Solid Waste/Refuse Department.

#### SOLID WASTE/REFUSE DEPARTMENT STAFFING

POSITION	2015	2020	2025	2035	SHIFT TIME	STATUS
Assistant Superintendent	1	1	1	1	Day	Full-time
Special Programs Coordinator	1	1	1	1	Day	Full-time
Maintenance Worker III	1	1	1	1	Day	Full-time
Maintenance Worker II	8	8	9	10	Day	Full-time
Maintenance Worker I	7	7	8	9	Day	Full-time
Seasonal Laborer	1	1	1	1	Day	Part-time
Clerical	–	1	1	1	Day	Part-time
Customer Service Representative	–	1	1	1	Day	Part-time
<b>Total</b>	<b>19</b>	<b>21</b>	<b>23</b>	<b>25</b>		

### Vehicles

The following table summarizes the existing vehicles and 20-year projection in 5-year increments for the Solid Waste/Refuse Department. The table includes the space size and parking requirements for each type of vehicle used by the Solid Waste/Refuse Department.

#### SOLID WASTE/REFUSE DEPARTMENT VEHICLES

VEHICLE TYPE	2015	2020	2025	2035	SIZE	REQUIREMENTS
Heavy Duty Trucks/ Buses	14	15	17	19	12 x 40	Enclosed
Medium Duty Trucks	1	0	1	1	12 x 30	Enclosed
Subtotal	15	15	18	20		
Medium Duty Trucks	2	2	2	3	12 x 30	Uncovered
Light Duty Vehicles	1	1	1	2	10 x 20	Uncovered



VEHICLE TYPE	2015	2020	2025	2035	SIZE	REQUIREMENTS
Subtotal	3	3	3	5		
<b>Total</b>	<b>18</b>	<b>18</b>	<b>21</b>	<b>25</b>		

## Key Planning Issues

The following key planning issues should be considered in planning and design efforts for the Solid Waste/Refuse Department areas.

### Office Areas

- The Assistant Superintendent is to be provided with an office of 168 square feet
- The Special Programs Coordinator and the Level 3 Maintenance Worker(s) are to be provided with private offices of 120 square feet
- All clerical/administrative assistants are to be provided with a 64 square foot workstation

### Shop Areas

- An area is to be designated for cart and bin repair
- The space is to be roughly 600 square feet
- A secure tool storage area is to be provided
- A welding/fabrication shop is to be provided
- The space should be centrally located and shared among the other departments
- A large area for metal storage
- A designated repair bay for welding/fabrication on vehicles only.

### Wash Areas

- A small wash area of at least 150 square feet is to be provided for washing out collection bins and totes

### Storage Areas

- A large storage area is to be provided for storing new and used equipment:
- Roughly 50 pallets of yard waste bags
- 800 Refuse carts and lids (currently 40 stacks of 20 refuse carts)
- 2500 Recycling bins and lids (currently 50 stacks of 50 each)
- At least 2 cabinets are to be provided for stickers used on the bins, totes, and carts

### Vehicle Storage

- All enclosed vehicle storage is to be heated

### Exterior Areas

- At least 2,000 square feet of yard storage is to be provided for general equipment storage
- 19 parking spaces are to be allotted for the Solid Waste/Refuse Department's employees

## STREETS DEPARTMENT

### Function

The existing Public Works Administration Building currently operates as the location for the Streets and Traffic Department. Once moved to a new facility, the two departments will operate under one title, although each has their own function. The Streets Department functions include road maintenance, storm sewer repairs, street cleaning, leaf and snow collection, and field equipment maintenance (signs, traffic lights, etc.). The administration of the Streets Department handles receiving and coordination of goods and services as well as data entry and processing of invoices, time sheets, and work orders.

### Staffing

It is anticipated that the initial hours of operation will be from 7:00 AM to 5:00 PM, Monday through Friday. A limited number of visitors occupy the facility each week. After-hour access is required by all employees, but not visitors. The Streets Department has employees that are on-call 24/7 in case of emergencies, usually regarding weather. The following table summarizes the existing conditions and 20-year projection in 5-year increments for the Streets Department.

#### STREETS DEPARTMENT STAFFING

POSITION	2015	2020	2025	2035	SHIFT TIME	STATUS
Superintendent of Streets and Traffic Engineering	1	1	1	1	Day	Full-time
Assistant Superintendent of Streets and Traffic Engineering	1	1	1	1	Day	Full-time
Senior Clerk	1	1	1	1	Day	Full-time
Clerical Assistant	1	1	1	2	Day	Part-time
Public Information Coordinator	1	1	1	1	Day	Full-time
Senior Maintenance Worker	2	2	2	2	Day	Full-time
Maintenance Worker III	8	9	9	9	Day	Full-time
Maintenance Worker II	8	8	8	9	Day	Full-time
Maintenance Worker I	6	7	7	8	Day	Full-time
Seasonal Laborer	8	10	10	12	Day	Part-time
<b>Total</b>	<b>37</b>	<b>41</b>	<b>41</b>	<b>46</b>		

### Vehicles

The following table summarizes the existing vehicles and 20-year projection in 5-year increments for the Streets Department. The table includes the space size and parking requirements for each type of vehicle used by the Streets Department.

#### STREETS DEPARTMENT VEHICLES

VEHICLE TYPE	2015	2020	2025	2035	SIZE	REQUIREMENTS
Heavy Duty Trucks/ Buses	14	15	17	18	12 x 40	Enclosed
Medium Duty Trucks	3	3	3	3	12 x 30	Enclosed
Light Duty Trucks	9	9	10	12	10 x 20	Enclosed
Construction Equipment	17	17	18	19	12 x 30	Enclosed
Rental Equipment	7	7	7	7	12 x 30	Enclosed
Misc. Equip and Trailers	15	15	17	19	10 x 20	Enclosed
Total Enclosed	65	66	72	78		
Misc. Equip and Trailers	10	10	11	12	10 x 20	Covered
Total Covered	10	10	11	12		
Medium Duty Trucks	2	2	2	2	12 x 30	Uncovered
Light Duty Trucks	4	4	4	4	10 x 20	Uncovered
Total Uncovered	6	6	6	6		
<b>Total</b>	<b>83</b>	<b>87</b>	<b>89</b>	<b>104</b>		

### Specialty Storage

The Streets Department requires several materials to be stored. These items in the following table summarizes the storage requirements for the Streets Department. The table includes the space size and parking requirements for each type of vehicle used by the Streets Department.

#### STREETS DEPARTMENT STORAGE

MATERIAL / ITEM	UNCOVERED	COVERED	ENCLOSED	SECURITY
Emulsion Tank	x			Secure
Tools		x	x	Secure
Brine Tank/s	x			Secure
Brine making equipment		x	x	Secure
Sign Materials	x			Secure
Plow Blades		x		Secure
Equipment attachments		x	x	Secure

MATERIAL / ITEM	UNCOVERED	COVERED	ENCLOSED	SECURITY
JECC Equipment and Materials				Secure
Sand bags		x		Secure
Surplus Manholes/intakes	x			Secure
Bricks	x			Secure
Soil		x		Secure
Cold Mix Asphalt		x		Secure

## Key Planning Issues

The following key planning issues should be considered in planning and design efforts for the Streets Department.

### Office Areas

- The Superintendent is to be provided with an office of 168 square feet
- The Assistant Superintendent is to be provided with an office of 120 square feet
- All Traffic Control workers are to be provided with 100 square foot workstations
- All clerical/administrative assistants are to be provided with a 64 square foot workstation

### Support Areas

- A staging area is to be provided for prepping the trucks with leaf boxes, snowplows, and other equipment

### Shop Areas

- A general shop area for light repair and maintenance of vehicles is to be provided
- A designated area for a 700 square foot formwork shop is to be provided
- Total area is to be at least 2,000 square feet

### Storage Areas

- A secure storage area is to be provided for traffic control, device storage and distribution.
- At least an area of 300 square feet is to be provided for materials such as wood, metal, and PVC
- Area is to be climate controlled
- A secure tool storage area of at least 350 square feet is to be provided
- A cold patch storage area of at least 150 square feet is to be provided

### Vehicle Storage

- All enclosed vehicle storage is to be heated

### Covered Areas

- 1,600 square feet of sand storage bunkers are to be provided and be covered
- A covered area of 1,600 feet is to be provided for mixing the sand and salt
- 3,000 square feet of covered storage bins is to be provided for storing other materials such as asphalt, gravel, etc.

### Exterior Areas

- At least 10,000 square feet of yard storage is to be provided for general equipment storage
- 37 parking spaces are to be allotted for the Solid Waste/Refuse Department's employees

## TRAFFIC DEPARTMENT

### Function

The existing Public Works Administration Building currently operates as the location for the Streets and Traffic Department. Once moved to the new facility, the two departments will operate under one title although each has their own function. The Traffic Department functions include traffic signals, lighting, utility locations, and other power needs. The administration of the Traffic Department handles receiving and coordination of goods and services as well as data entry and processing of invoices, time sheets, and work orders.

### Staffing

It is anticipated that the initial hours of operation will be from 7:00 AM to 5:00 PM, Monday through Friday. A limited number of visitors occupy the facility each week. After-hour access is required by all employees, but not visitors. The Traffic Department has employees that are on-call 24/7 in case of emergencies. The following table summarizes the existing conditions and 20-year projection in 5-year increments for the Traffic Department.

#### TRAFFIC DEPARTMENT STAFFING

POSITION	2015	2020	2025	2035	SHIFT TIME	STATUS
Traffic Signal Technician	1	1	2	2	Day	Full-time
Electrician	1	1	1	1	Day	Full-time
Electronics Technician	1	1	1	1	Day	Full-time
<b>Total</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>4</b>		

### Vehicles

The following table summarizes the existing vehicles and 20-year projection in 5-year increments for the Traffic Department. The table includes the space size and parking requirements for each type of vehicle used by the Traffic Department.

#### TRAFFIC DEPARTMENT VEHICLES

VEHICLE TYPE	2015	2020	2025	2035	SIZE	REQUIREMENTS
Medium Duty Trucks	2	2	2	2	12 x 30	Enclosed
Light Duty Trucks	2	2	3	3	10 x 20	Enclosed
Construction Equipment	1	1	1	1	12 x 30	Enclosed
Total Enclosed	5	5	6	6		
Misc. Equip and Trailer	1	1	1	1	10 x 20	Covered

VEHICLE TYPE	2015	2020	2025	2035	SIZE	REQUIREMENTS
Total Covered	1	1	1	1		
Misc. Equip and Trailer	2	2	2	2	10 x 20	Uncovered
Total Uncovered	2	2	2	2		
<b>Total</b>	<b>8</b>	<b>8</b>	<b>9</b>	<b>9</b>		

### Key Planning Issues

The following key planning issues should be considered in planning and design efforts for the Traffic Department.

#### Office Areas

- A 100 square foot workstation is to be provided for traffic engineering control
- (2) 64 square foot workstations are to be provided for the traffic engineers

#### Support Areas

- A shared computer room is to be provided for the use of the traffic engineering staff members

#### Shop Areas

- 1000 square feet is to be utilized for the Signals Repairs Shop
- A general shop of 700 square feet is to be provided for repairing traffic and testing signals
- A secure workshop area of 300 square feet is to be provided for technical repairs and tool storage
- 1700 square feet is to be utilized for the Sign Repair and Fabrication Shop
- A general shop of 700 square feet is to be provided for sign assembly
- At least 500 square feet is to be utilized for material storage
- A 400 square foot enclosed workshop is to be provided for sign making/printing
- A 100 square foot area is to be utilized for the computer workstation/plotter
- 1300 square feet is to be utilized for the Striping/Marking Shop
- Garage space for the large sign truck and the utility and aerial basket trucks
- At least 600 square feet is to be utilized for paint, bead, and stencil storage

#### Storage Areas

- A secure tool storage area of at least 350 square feet is to be provided

#### Vehicle Storage

- All enclosed vehicle storage is to be heated

### Covered Areas

- At least 500 square feet of covered storage is to be provided for pole storage
- A designated storage area of 500 square feet is to be provided for traffic control equipment, such as barricades and cones

### Exterior Areas

- At least 2,000 square feet of yard storage is to be provided for general equipment storage
- Three parking spaces are to be allotted for the Solid Waste/Refuse Department's employees

## WATER DISTRIBUTION DEPARTMENT

### Function

The Water Distribution Department is responsible for the rebuilding, storing, and installing fire hydrants and large in-ground valves.

### Staffing

It is anticipated that the initial hours of operation will be from 7:00 AM to 5:00 PM, Monday through Saturday. Visitation is limited to approximately four contractors per day during the open hours. The Water Distribution Department has employees that are on-call 24/7 in case of emergencies. The following table summarizes the existing conditions and 20-year projection by 5-year increments for the Water Distribution Department.

#### WATER DISTRIBUTION DEPARTMENT STAFFING

POSITION	2015	2020	2025	2035	SHIFT TIME	STATUS
Supervisor	1	1	1	1	Day	Full-time
Maintenance Worker III	2	2	2	2	Day	Full-time
Maintenance Worker II	4	4	4	4	Day	Full-time
<b>Total</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>		

### Vehicles

The following table summarizes the existing vehicles and 20-year projection in 5-year increments for the Water Distribution Department. The table includes the space size and parking requirements for each type of vehicle used by Water Distribution Department.

#### WATER DISTRIBUTION DEPARTMENT VEHICLES

VEHICLE TYPE	2015	2020	2025	2035	SIZE	REQUIREMENTS
Heavy Duty Trucks/ Buses	1	1	1	1	12 x 40	Enclosed
Medium Duty Trucks	3	3	3	3	12 x 30	Enclosed
Light Duty Trucks	3	3	3	3	10 x 20	Enclosed
Construction Equipment	2	2	2	2	12 x 30	Enclosed
Misc. Equip and Trailers	8	8	8	8	12 x 30	Enclosed
Total Enclosed	17	17	17	17		
<b>Total</b>	<b>17</b>	<b>17</b>	<b>17</b>	<b>17</b>		

## Key Planning Issues

The following key planning issues should be considered in planning and design efforts for the Water Distribution Department.

### **Office Areas**

- The supervisors are to share an office no less than 240 square feet
- (4) 64 square foot workstations are to be provided for field service employees to fill out invoices and daily work orders

### **Support Areas**

- Large lockers are to be provided for gear storage
- Boots, jumpsuits, vests, hardhats, gloves, safety glasses, etc.

### **Shop Areas**

- A 1,100 square foot area is to be designated for a Water Pump/Hydrant shop for the assembly, testing, and storage of hydrants
- There is to be adequate shop floor space for replacement parts storage that is easy to access in an emergency event
- Vehicles are to be able to drive through the building with more than one path
- A welding/fabrication shop is to be provided
- Centrally located and shared among the other departments
- Large area for metal storage
- A designated repair bay for welding/fabrication on vehicles only
- A small parts room is to be provided to support minor maintenance to vehicles
- An equipment wash out position of 150 square feet is to be provided

### **Storage Areas**

- A large parts storage area is to be provided for storing new and used parts and valve assemblies
- A salvage storage area is to be provided for storing outdated parts that may be need in the future
- A secure tool storage area of at least 350 square feet is to be provided

### **Vehicle Storage**

- All enclosed vehicle storage is to be heated

### **Covered Areas**

- An 800 square foot area is to be provided for storing PVC, steel pipe, and lumber
- A 900 square foot area is to be provided for material storage bins such as gravel, asphalt, etc.

### **Exterior Areas**

- At least 8,500 square feet of yard storage is to be provided for general equipment storage
- Seven parking spaces are to be allotted for Solid Waste/Refuse Department employees

## EQUIPMENT MAINTENANCE DEPARTMENT

### Function

The Equipment Maintenance Department is responsible for the operation of service and parts storage for fleet repair and maintenance. This department also acquires new equipment and disposes of old equipment. The Equipment Maintenance Department' administration groups handles fleet equipment inventory, operational costs, invoice processing, monthly billing, and all tax inspections.

### Staffing

It is anticipated that the initial hours of operation will be from 7:00 AM to 5:00 PM, Monday through Friday. A limited number of visitors occupy the facility each week. After-hour access is required by all employees for service calls and on-call response. The following table summarizes the existing conditions and 20-year projection in 5-year increments for the Equipment Maintenance Department.

#### EQUIPMENT MAINTENANCE DEPARTMENT STAFFING

POSITION	2015	2020	2025	2035	SHIFT TIME	STATUS
Superintendent of Equipment Maintenance	1	1	2	2	Day	Full-time
Shop Supervisor	1	1	1	1	Day	Full-time
Parts/Inventory Clerk	1	2	2	2	Day	Full-time
Buyer/Clerical Assistant	1	1	1	1	Day	Full-time
Day Technicians	4	5	5	6	Day	Full-time
Night Technicians	3	3	3	3	Night	Full-time
<b>Total</b>	<b>11</b>	<b>13</b>	<b>14</b>	<b>15</b>		

### Vehicles

The following table summarizes the existing vehicles and 20-year projection in 5-year increments for the Equipment Maintenance Department. The table includes the space size and parking requirements for each type of vehicle used by the Equipment Maintenance Department.

#### EQUIPMENT MAINTENANCE DEPARTMENT VEHICLES

VEHICLE TYPE	2015	2020	2025	2035	SIZE	REQUIREMENTS
Misc. Equip and Trailers	1	1	1	1	10 x 20	Enclosed
Total Enclosed	1	1	1	1		
Heavy Duty Trucks/ Buses	12	12	12	12	12 x 40	Uncovered
Medium Duty Trucks	8	8	8	8	12 x 30	Uncovered

VEHICLE TYPE	2015	2020	2025	2035	SIZE	REQUIREMENTS
Light Duty Trucks	15	15	15	15	10 x 20	Uncovered
Construction Equipment	2	2	2	2	12 x 30	Uncovered
Misc. Equip and Trailers	2	2	2	2	10 x 20	Uncovered
Total Uncovered	39	39	39	39		
<b>Total</b>	<b>40</b>	<b>40</b>	<b>40</b>	<b>40</b>		

### Key Planning Issues

The following key planning issues should be considered in planning and design efforts for the Equipment Maintenance Department.

#### Office Areas

- The Superintendent is to be provided with a 224 square foot office
- The Shop Supervisor is to be provided with a 120 square foot office
- All clerical/administrative assistant(s) are to be provided with a 64 square foot workstation

#### Support Areas

- A lobby/reception area is to provide an entrance into the facility
- A customer waiting room of 250 square feet is to be included and adjacent to the lobby area
- Employee restroom areas are to include showers and individual lockers
- At least 450 square feet is to be provided for men; 250 square feet for women
- A lunch/break room of 600 square feet is to be provided for employee use
- Lunch/break room is to be equipped with a vending/kitchenette area, tables and chairs, counter space, etc.
- An IT/Network room is to provide all data throughout the facility
- A janitor/custodial room/closet is to be provided for storing cleaning supplies
- A mechanics room is to be provided for technician support and should be equipped with computer workstations, manuals, diagnostic tool storage

#### Shop Areas

- Heavy Line repair areas are to be separate from the transit repair positions
- (3) heavy repair positions 20' x 60' are to be provided
- (2) heavy PM/inspection positions 20' x 60' are to be provided
- (1) position 25' x 60' is to be reserved for fire apparatus repair

- A Light Line repair area is to be provided
- (2) light/medium repair positions 15' x 35' are to be provided
- (2) light/medium PM/inspection positions 15' x 35' are to be provided
- A welding/fabrication shop 15' x 60' is to be provided
- Large area for metal storage included
- A designated position 30' x 60' is to be provided for perform welding on vehicles
- A chassis wash, 25' x 60' is to be provided and used for cleaning the undercarriage of vehicles before maintenance
- 1,200 square feet of common workspace is to be provided within the facility
- A hydraulic hose fabrication shop/area is to be provided near the repair bays
- A 300 square foot tire shop is to be provided for minor tire repair
- Bus repair positions are to be provided in the facility
- (3) bus repair positions 20' x 60' are to be provided
- (1) heavy PM/inspection positions 20' x 60' are to be provided

#### **Shop Storage Areas**

- The equipment repair area is to have shop storage areas separate from transit repair
- A secure tool storage area of at least 200 square feet is to be provided
- 168 square feet of toolbox storage is to be provided within the facility
- 1,200 square feet of portable equipment storage is to be provided within the facility
- A 1,200 square foot tire storage area is to be provided for heavy and light duty truck tire storage
- 300 square feet is to be provided for used tire storage
- An 800 square foot lube/compressor room is to be provided with a high-capacity air compressor and bulk tanks for fluids used by the equipment and transit repair sections of the facility
- The transit repair area is to have shop storage areas separate from equipment repair
- A secure tool storage area of at least 100 square feet is to be provided
- 120 square feet of toolbox storage is to be provided within the facility
- 600 square feet of portable equipment storage is to be provided within the facility
- A 200 square foot tire storage area is to be provided for bus and light duty tire storage
- 100 square feet is to be provided for used tire storage
- HESCO secure storage area that houses supplies for emergencies or natural disasters

#### **Parts & Material Storage Areas**

- A 300 square foot office is to be provided for the parts/inventory clerk
- 36 square foot workstations are to be provided for parts retrieval employees
- An issue window is to be provided for distributing parts to technicians
- A 200 square foot secure tool crib is to be provided for specialty tools used by both departments
- 3,500 square feet of large parts storage (high pallet storage) is to be provided
- 2,000 square feet will be utilized by the Equipment Repair Department
- 1,500 square feet will be utilized by the Transit Department
- 1,750 square feet of small parts (fast movers) storage is to be provided
- 1,000 square feet will be utilized by the Equipment Repair Department
- 750 square feet will be utilized by the Transit Department
- A 1,500 square foot mezzanine is to cover the small parts storage area and will be utilized by both departments
- The warranty storage area/room is to be a secure 200 square foot area shared by both departments
- The battery storage area/room is to be a secure 125 square foot area shared by both departments
- A 150 square foot shipping and receiving dock is to be provided and be accessible by both departments

#### **Vehicle Storage**

- All enclosed vehicle storage is to be heated

#### **Exterior Areas**

- At least 2,000 square feet of yard storage is to be provided for general equipment storage
- 18 parking spaces are to be allotted for the Solid Waste/Refuse Department employees
- 7,600 square feet of the yard is to be utilized by incoming/action vehicles



## TRANSIT DEPARTMENT

### Function

The primary function of the Transit Department is to provide safe and reliable transit to the citizens of Iowa City. The current fleet consists of 28 mass transit buses. All paratransit services are currently contracted out, and utilize the Johnson County SEATS Facility. The storage of buses needs to be secure and under 24/7 surveillance. The maintenance side of the Transit Department consists of several departments:

- North Maintenance
- 1 service bay with a drive on, 60,000 lbs lift
- South Maintenance
- 3 flat repair bays
- Room for collecting and counting fairs
- Brake and Rebuild Shop
- Parts washer
- Drill press, workbench, vises, hydraulic press
- Small working and storage space for sign manufacturing
- Two story mezzanine system of small parts
- 1 repair bay with an in-ground, 60,000 lbs lift
- 2 service and inspection bays with only pits
- 1 repair bay with an in-ground, 60,000 lbs lift
- Fare Collection and Fair box repair
- Room for repairing fair boxes and storing testing equipment and parts
- Double spindle STARR lathe
- 1/2-ton jib crane
- Sign Shop
- Parts Storage

### Staffing

It is anticipated that the initial hours of operation will be from 7:00 AM to 5:00 PM, Monday through Friday. All other hours for Transit/Maintenance access and weekend access will be via a secure keycard. The following table summarizes the existing conditions and 20-year projection in 5-year increments for the maintenance portion of the Transit Department.

#### TRANSIT DEPARTMENT ADMINISTRATIVE STAFFING

POSITION	2015	2020	2025	2035	SHIFT TIME	STATUS
Director of Transportation	1	1	1	1	Day	Full-time
Asst. Director of Transportation	1	1	1	1	Day	Full-time
Supervisor	3	4	4	4	Swing	Full-time
Building Maintenance	4	4	5	5		
Mass Transit Operator	44	47	50	50	Day and Swing	Full-time, One shift per day is on-call
<b>Total</b>	<b>53</b>	<b>57</b>	<b>61</b>	<b>61</b>		

#### TRANSIT DEPARTMENT MAINTENANCE STAFFING

POSITION	2015	2020	2025	2035	SHIFT TIME	STATUS
Shop Supervisor	1	1	1	1	Day	Full-time
Parts/Inventory Clerk	1	2	2	2	Day	Full-time
Buyer/Clerical Assistant	1	1	1	1	Day	Full-time
Day Technician	3	3	4	5	Day	Full-time
Night Technician	2	2	2	3	Night	Full-time
Service Workers	4	4	4	6	Night, One Day	Full-time
<b>Total</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>18</b>		

### Vehicles

The following table summarizes the existing vehicles and 20-year projection in 5-year increments for the Transit Department. The table includes the space size and parking requirements for each type of vehicle used by the Transit Department.

#### DEPARTMENT VEHICLES

VEHICLE TYPE	2015	2020	2025	2035	SIZE	REQUIREMENTS
Heavy Duty Trucks/ Buses	27	29	31	36	12 x 40	Uncovered
Medium Duty Trucks	3	15	15	15	12 x 30	Uncovered
Light Duty Trucks	3	3	3	3	10 x 20	Uncovered
Misc. Equip and Trailers	5	5	5	5	10 x 20	Uncovered
Total Enclosed	38	52	54	59		
<b>Total</b>	<b>38</b>	<b>52</b>	<b>54</b>	<b>59</b>		

### Key Planning Issues

The following key planning issues should be considered in planning and design efforts for the Transit Department.

#### Administrative Areas

- The Director of Transportation is to be provided with a 224 square foot office
- The Assistant Director is to be provided with a 168 square foot office
- An open 120 square foot office is to be provided for future expansion
- All clerical/administrative assistant(s) are to be provided with a 64 square foot workstation
- Two conference rooms are to be provided:

- 450 square feet for 10-12 people
- 350 square feet for 8-10 people

**Operations Areas**

- A dispatch area is to be provided for overseeing the sign-out of bus operators and bus routes
- The dispatch area is to have a vestibule for operators entering and exiting the facility
- The operations supervisors are to share a 360 square foot office, with ability to oversee bus storage
- The employee restrooms are to be equipped with showers and individual lockers
- A daily workroom is to be provided for copying, file storage, etc.
- A crew/break room is to be provided and should include tables, workstations, white boards, A/V equipment, and bulletin boards
- A kitchen/break room is to be provided for daily use
- A fitness room is to be provided for employee use between shifts

**Support Areas**

- A reception/lobby area with a vestibule is to be provided as an entrance into the facility
- An IT/Network room is to provide all data communications to the facility
- A janitor/custodial room/closet is to be provided for storing cleaning supplies
- A daily workroom is to be provided for copying, file storage, etc.

**Service Areas**

- Two 20' x 50' positions are need for bus service:
  - Fueling lane
  - Interior cleaning Position
- Fare collection is to happen during the fueling period
- A secure room is to be provided for far collection and counting
- A 400 square foot lube/compressor room is to be provided
- A 20' x 85' wash bay is to be provided for cleaning the exterior of the buses
- A wash equipment room of 700 square feet is to be provided

**Vehicle Storage**

- All enclosed vehicle storage is to be heated
- 35 parking spaces are to be allotted for Solid Waste/Refuse Department employees

**FIRE DEPARTMENT**

Function

The Fire Department functions at the new site will not require fulltime operation. The department will utilize only a portion of the site for training events and for storing training equipment.

Staffing

Staff will not permanently occupy the facility, only during training events. Visitors from other city departments will only be able to utilize the training area if needed.

Vehicles

The following table summarizes the existing vehicles that the Fire Department will store at the facility. The table includes the space size and parking requirements for each type of vehicle used by the Fire Department.

**FIRE DEPARTMENT VEHICLES**

VEHICLE TYPE	2015	2020	2025	2035	SIZE	REQUIREMENTS
Heavy Duty Trucks/ Buses	1	1	1	1	12 x 40	Enclosed
Total Enclosed	1	1	1	1		
Heavy Duty Trucks/ Buses	2	2	2	2	12 x 40	Uncovered
Total Uncovered	2	2	2	2		
<b>Total</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>		

Key Planning Issues

The following key planning issues should be considered in planning and design efforts for the Traffic Department.

**Training Areas**

- A fire training building is to be provided
- A 600 square foot training/meeting room is to be provided for classes and discussions
- A table and storage room is to be adjacent to the training/meeting room
- Men’s and women’s restrooms are to be provided

**Storage Areas**

- 2,000 square feet of secure storage for training equipment is to be provided

### Vehicle Storage

- All enclosed vehicle storage is to be heated

### Exterior Areas

- There is to be a 100' radius of clear pathway surrounding the fire training building for fire apparatus access
- Fifteen parking spaces are to be allotted for trainee parking

## POLICE DEPARTMENT

### Function

The Police functions at the new site will not require fulltime operation. The department will utilize only a portion of the site for storage of evidence and equipment.

### Staffing

Staff will not occupy the facility at all times. Only the Police and Fire Department are to have 24/7 access.

### Vehicles

The following table summarizes the existing vehicles that the Police Department will store at the facility. The table includes the space size and parking requirements for each type of vehicle used by the Police Department.

#### TRAFFIC DEPARTMENT VEHICLES

VEHICLE TYPE	2015	2020	2025	2035	SIZE	REQUIREMENTS
Light Duty Vehicles	3	3	3	3	10 x 20	Enclosed
Total Enclosed	3	3	3	3		
<b>Total</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>		

### Key Planning Issues

The following key planning issues should be considered in planning and design efforts for the Traffic Department.

### Storage Areas

- 2,000 feet of secure storage for evidence and police equipment is to be provided

## LANDFILL DEPARTMENT

### Function

The Landfill Department is responsible for landfill and recycling facility operations. The landfill is currently fenced with an entrance gate that is kept open during operations hours.

### Staffing

It is anticipated that the initial hours of operation will be from 7:00 AM to 5:00 PM, Monday through Saturday. Occasionally, employees will need after hour access for project work and contractors will need accessibility for work that cannot be performed during the open hours. The fire department needs 24-hour access 7 days per week. The building is to be locked at all times during non-operating hours. The following table summarizes the existing conditions and 20-year projection by 5-year increments for the Landfill Department.

#### LANDFILL DEPARTMENT STAFFING

POSITION	2015	2020	2025	2035	SHIFT TIME	STATUS
Landfill Operator	8	9	9	9	Day	Full-time
Scale Operator	2	2	2	2	Day	Part-time
Recycling Operator	1	1	1	1	Day	Full-time
Customer Service Representative	1	1	1	1	Day	Part-time
Engineer	1	1	1	1	Day	Full-time
Assistant Superintendent	1	1	1	1	Day	Full-time
Director	1	1	1	1	Day	Full-time
<b>Total</b>	<b>15</b>	<b>16</b>	<b>16</b>	<b>17</b>		

### Vehicles

The following table summarizes the existing vehicles and 20-year projection in 5-year increments for the Landfill Department. The table includes the space size and parking requirements for each type of vehicle used by Landfill Department.

#### LANDFILL DEPARTMENT VEHICLES

VEHICLE TYPE	2015	2020	2025	2035	SIZE	REQUIREMENTS
Heavy Duty Trucks/ Buses	5	5	5	5	12 x 40	Enclosed
Medium Duty Trucks	5	5	5	5	12 x 30	Enclosed

Construction Equipment	6	6	6	6	12 x 30	Enclosed
Misc. Equip and Trailers	6	6	6	6	12 x 30	Enclosed
<b>Total Enclosed</b>	<b>22</b>	<b>22</b>	<b>22</b>	<b>22</b>		
Light Duty Vehicles	1	1	1	1	10 x 20	Uncovered
Construction Equipment	4	4	4	4	12 x 30	Uncovered
Misc. Equip and Trailers	11	11	11	11	12 x 30	Uncovered
<b>Total Uncovered</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>		
<b>Total</b>	<b>38</b>	<b>38</b>	<b>38</b>	<b>38</b>		

## Key Planning Issues

The following key planning issues should be considered in planning and design efforts for the Landfill Department.

### Office Areas

- (2) 64 square foot workstations are to be provided
- A 600 square foot education room is to be provided for classes and for meetings
- A 120 square foot office space is to be provided for scale operations and storage

### Support Areas

- Individual lockers are to be provided for all staff in a shared locker area to store personal items
- A daily workroom is to be provided for copying, file storage, etc.
- A crew/break room is to be provided and should include:
  - Tables, workstations, white boards, A/V equipment, and bulletin boards
- A kitchen/break room is to be provided for daily use
- Restrooms are to be provided with showers and individual lockers

### Shop Areas

- The Shop Supervisor is to be provided a 168 square foot office
- A unisex bathroom is to be provided for the maintenance workers.
- 5,000 square feet is to be provided for heavy line repair
- (3) 25' x 50' heavy repair bays are to be provided
- (1) 25' x 50' heavy PM/inspection bay is to be provided
- A welding/fabrication shop is to be provided

- Large area for metal storage
- A designated repair bay 30' x 50' for welding/fabrication on vehicles only
- A rough washout position 25' x 50' is to be provided for washing out the back of the trash trucks
- 400 square feet of common work area is to be within the facility
- A 100 square foot hydraulic hose fabrication shop is to be provided

### Storage Areas

- 144 square feet of tool box storage is to be provided
- 350 square feet of portable equipment storage is to be provided

### Shop Support Areas

- A 600 square foot lube/compressor room is to be provided with a high capacity air compressor, and bulk tanks for all fluids used by the equipment and transit repair sections of the facility
- A 250 square foot electrical room is to be provided

### Parts & Materials Storage Areas

- A 120 square foot office is to be provided for the parts office
- An issue counter is to be provided for distributing parts to the maintenance employees
- A 150 square foot secure tool storage area is to be provided
- A 1,500 square foot large parts (high pallet rack) storage area is to be provided
- 500 square feet of small (fast moving) parts storage is to be provided
- A shipping /receiving dock is to be provided

### Vehicle Storage

- All enclosed vehicle storage is to be heated

### Exterior Areas

- 7,500 square feet of yard storage is to be provided
- 30,000 square feet of mulch storage is to be provided

## GENERAL SITE REQUIREMENTS

### Site Requirements

There are specific site requirements necessary to ensure a safe, efficient, and functional facility. These specific requirements include the following:

- Separate vehicle parking areas are needed for each division

- Secured parking areas to be under 24/7 surveillance
- A backup generator to be provided to supply all facilities in case of power outages and emergency events
- The site's developed areas are to be observable to as great an extent as possible

## CURRENT SITE/BUILDING CONDITIONS

### Overview

The following collection of images provides an overview of the facilities currently utilized by the Public Works Department. These images have been selected to identify some of the opportunities that a new, consolidated facility could address.



## Refuse Department



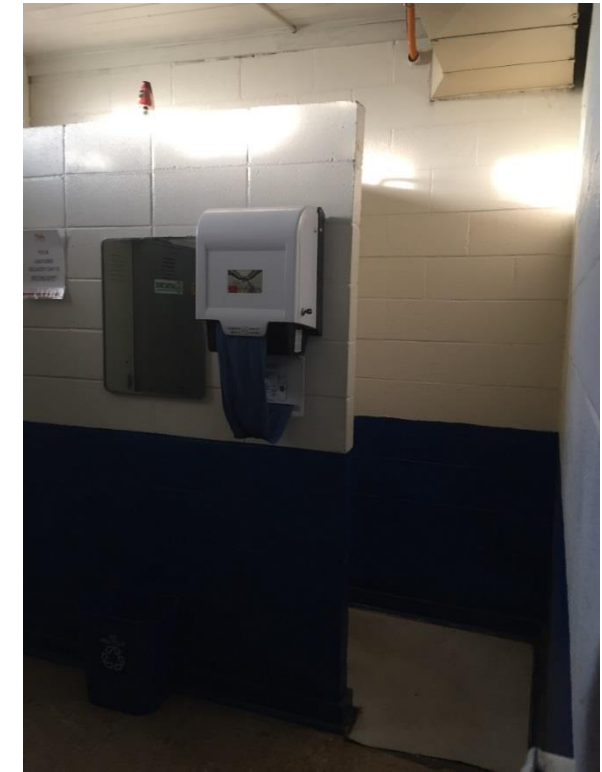
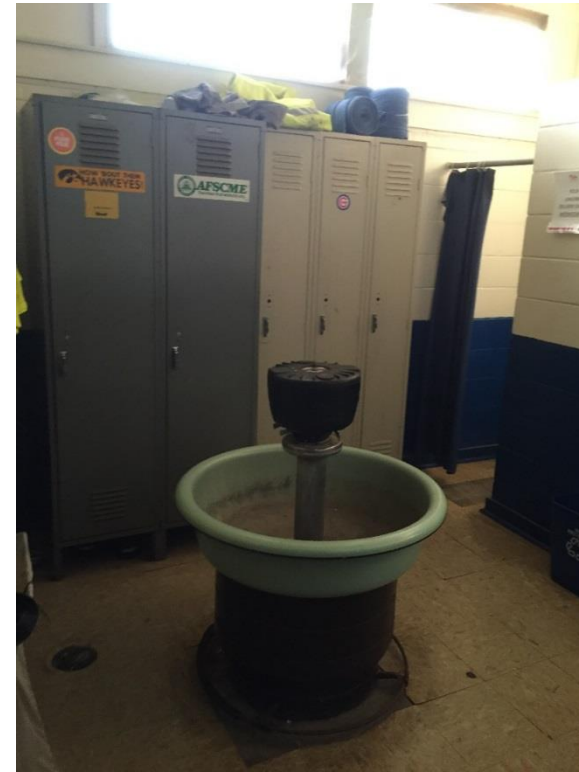
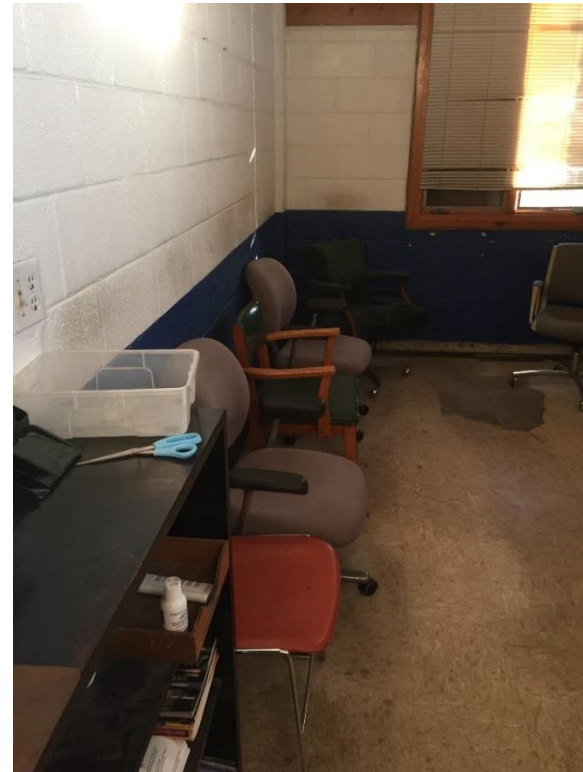
### Cart and Leaf Bay Storage

- Trash bins and lids are currently stored at two separate locations due to the lack of space provided at the Riverside site
- Fire sprinkler systems are not provided at the Riverside site, which prevents the Refuse Department from utilizing efficient, high pallet racks.

### Large Truck Storage

- The vehicle storage building exhibits a general lack of space for large refuse trucks. Adequate clearance around these trucks is necessary for vehicle inspection, and to access vehicle systems
- Space is limited in the front of vehicles when the overhead door is closed
- Vehicles are parked outside, vulnerable to the elements because there is not adequate vehicle storage space

## Refuse Department



### Crew Room

- Locker areas are unsecure
- Lockers are placed throughout in various locations
- Furnishings are assorted and not specific for crew room functions (ex. task chairs, desk chairs, reception chairs, etc.)
- General lack of space per room function

### Crew Room

- Restrooms are outdated and poorly designed
- No privacy: showers and disrobing areas are shared with general locker room and restroom functions

## Refuse Department



### Sign and Pole Storage

- The signals and signs operations, under the Streets department, have parts stored at the Napoleon site and Riverside site due to the lack of dedicated storage spaces
- New and used signs and poles are stored uncovered and on the ground, unprotected from the weather



### Yard Storage

- Vehicle attachments are currently stored adjacent to various material bins and storage areas due to the lack of dedicated storage spaces
- Dedicated storage areas for implements and materials would increase storage efficiency and access



## Refuse Department



### Covered Material Bins

- Bins are not adequately separated, which results in mixed materials
- Covered material storage is currently located in the Quonset huts at the Riverside site. Within these buildings, access to these material is limited due to the available clearances.



### Sign Storage and Truck Storage

- At the Riverside site, the sign truck does not have a designated parking space, so this vehicle is parked wherever room is available
- At the location of these photos, there is barely enough clear height for the vehicles to fit
- Without a designated vehicle storage area, the sign storage area is further pushed to other areas

## Refuse Department



### Plow Storage

- With the current site configuration of the Riverside site, the dedicated plow storage area is confined to a tight location, which creates a challenge for efficiently connecting these implements to a vehicle
- Exterior storage of implements creates excess wear
- “Bundled” implement storage reduces access to this equipment, compared to liner storage



### Shops and Storage

- The shops used by the Streets and Traffic Departments are outdated and lack facilities for organized storage.
- There are no dedicated areas for flammable chemical storage, which may present a fire hazard
- Spaces are shared with material storage
- Lighting and ventilation are inadequate throughout the facilities
- Uneven floor surfaces reduce efficiency and safety



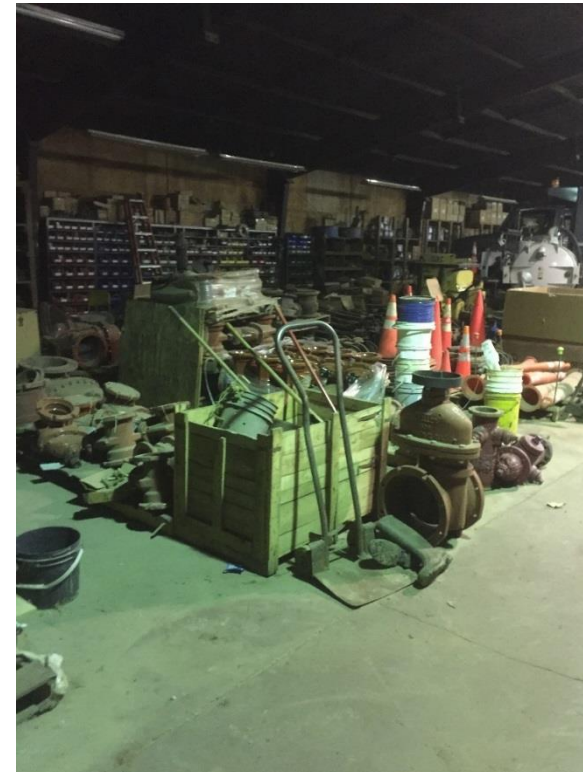
## Refuse Department



### **Winter Vehicle Storage**

- The Streets Department currently leases and heats space at the Fairgrounds site to store refuse vehicles in the winter
- Refuse vehicles must remain heated to protect equipment from freezing

## Water Department



### Equipment and Parts Storage

- The Water Department is currently leasing a building at the Gilbert Court site for their operations.
- The current functional arrangement of the facility is tight and the space lacks proper systems for tools and parts organization
- Workspaces exhibits low clearances and poor lighting, and limited clearance around large equipment stored by the Water Department
- Large and small parts storage areas should have dedicated spaces to improve organization and efficiency
- Paths are inefficient or nonexistent since most large parts are stored on the ground in various locations



### Yard Storage and Material Storage Bins

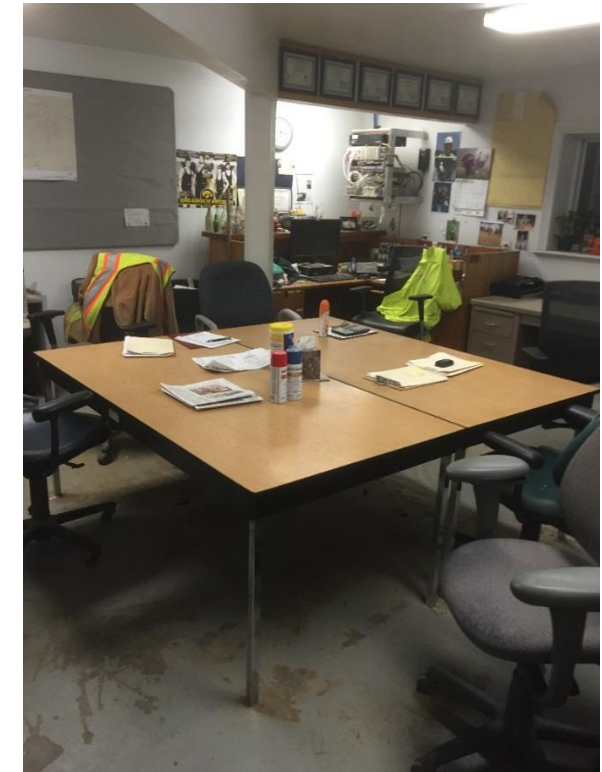
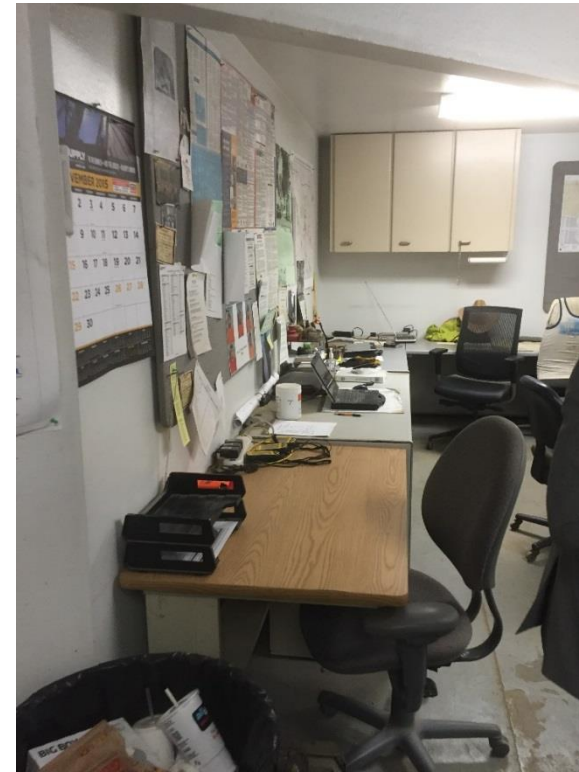
- Interior storage spaces are limited, requiring parts and materials to be stored outside, with no cover from eroding weather conditions
- Material bins are inadequate in size and construction, which limits storage efficiency and capacity

## Water Department



### Pipe and Used Material Storage

- Pipe storage could improve efficiency and organization by utilizing large storage racks instead of at-grade piles
- UV sensitive pipes are currently uncovered and experience direct solar exposure
- Informal piles of used equipment and job waste accumulate in the storage yards due to the lack of dedicated storage spaces



### Crew Room

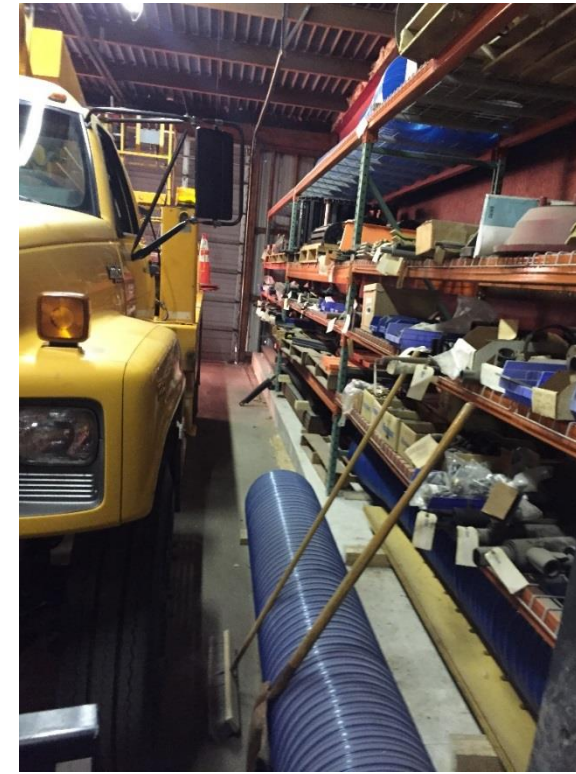
- The crew/break room is an open area in the middle of the workstations used by employees and the supervisor's office

## Equipment Storage



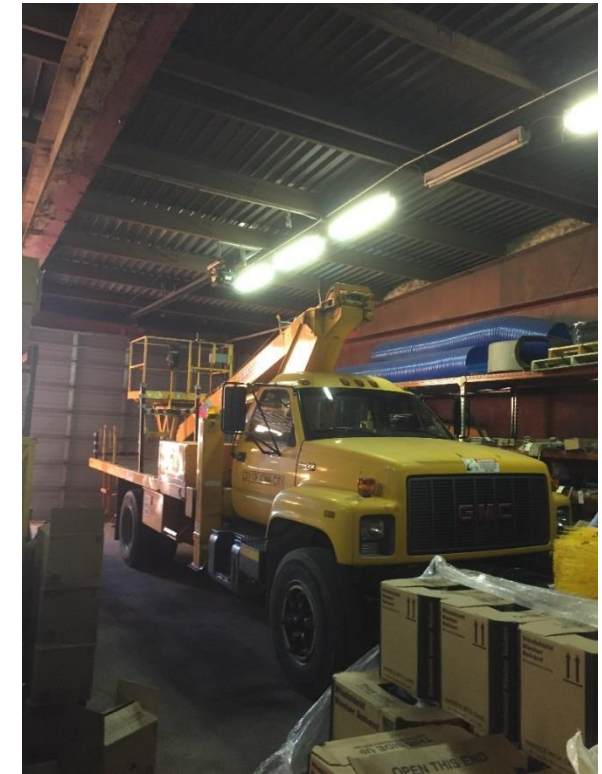
### Equipment Storage

- The Parts and Materials Storage Area at the Riverside site is limited in space which has caused the area to become cluttered
- Storage areas are not secure, providing unverified access to parts and specialty tools. This current set-up limits the ability to maintain adequate inventory and can result in the loss of equipment



### Sign Truck Storage

- The large truck used by the Signals and Signs operation is currently stored in the Equipment Maintenance parts storage area, because there is no room in their designated workspace

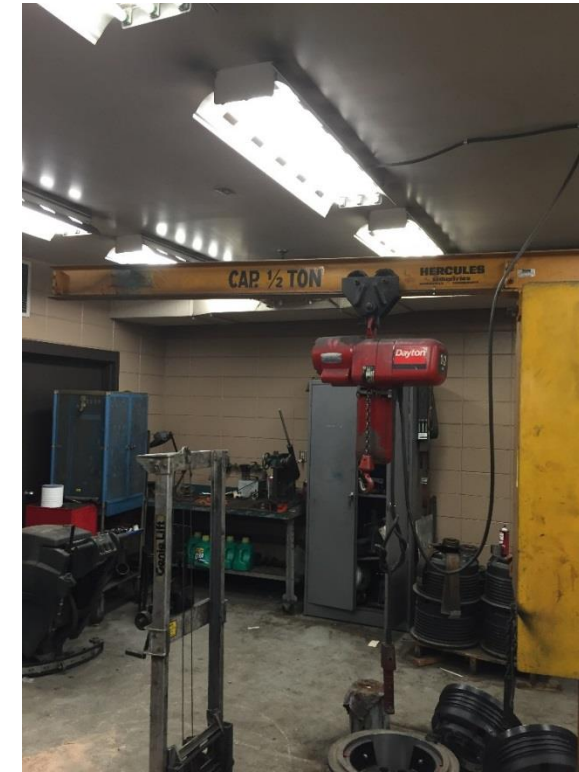


## Transit Department



### Interior Bus Parking

- The bus parking/storage area is not well lit, and does not have any striping to designate egress paths



### Brake Shop

- Functional space within the brake shop is confined due to low clearance ceilings
- Necessary brake shop equipment is too confined, which results in a cluttered shop area.

## Transit Department



### Body Repair Bay

- Working clearances are quite restricted and roof access is nearly inaccessible
- Since the body repair bay is unusable to practically service vehicles, the space has become an overflow for parts storage



### Bus Wash

- The bus wash maintains poor lighting
- The space layout functions poorly
- There is not a designated area for the
- Designated space for wash equipment is not integrated, which forces equipment to protrude into the wash bay

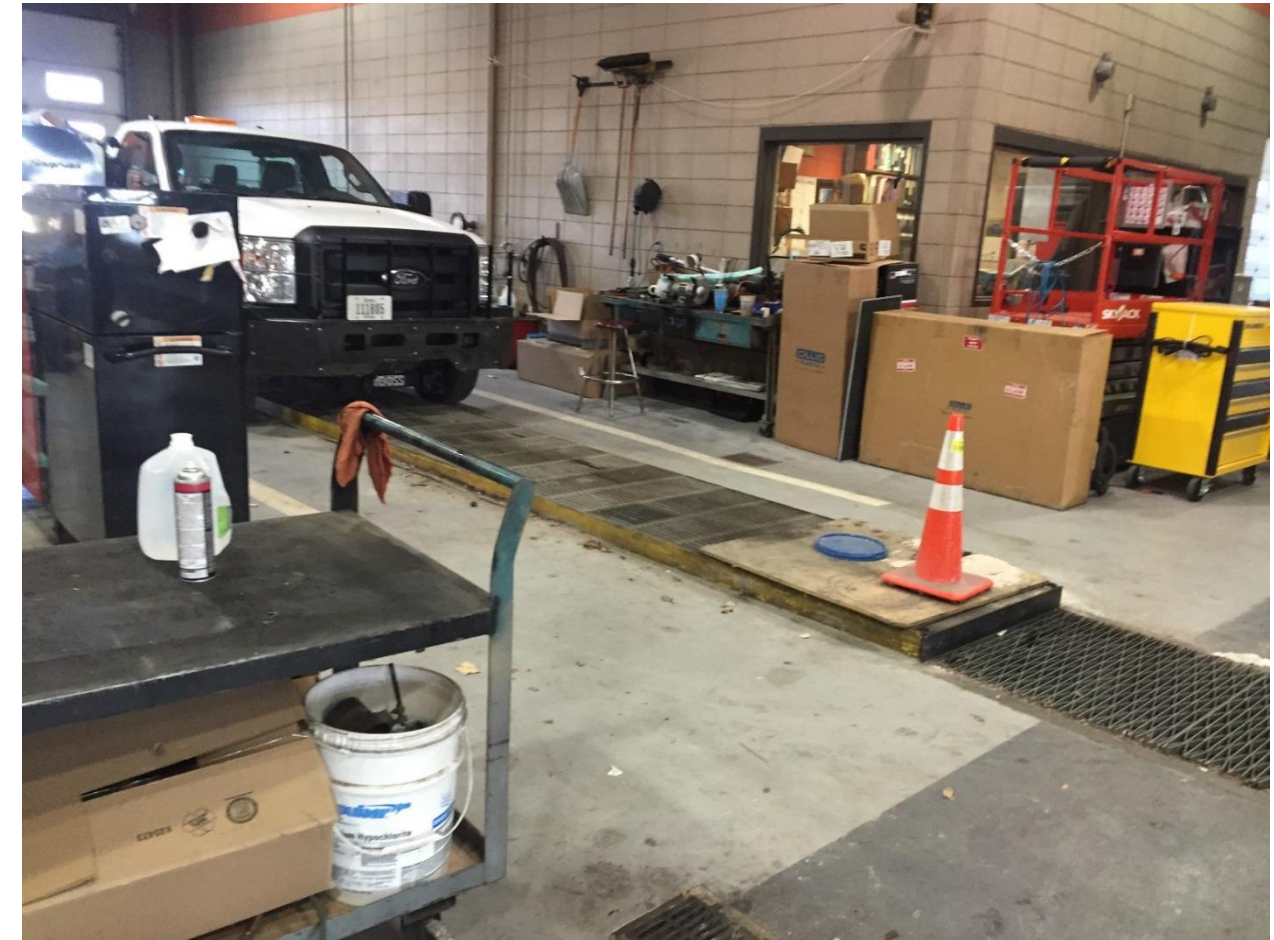


## Transit Department



### Light Duty Repair

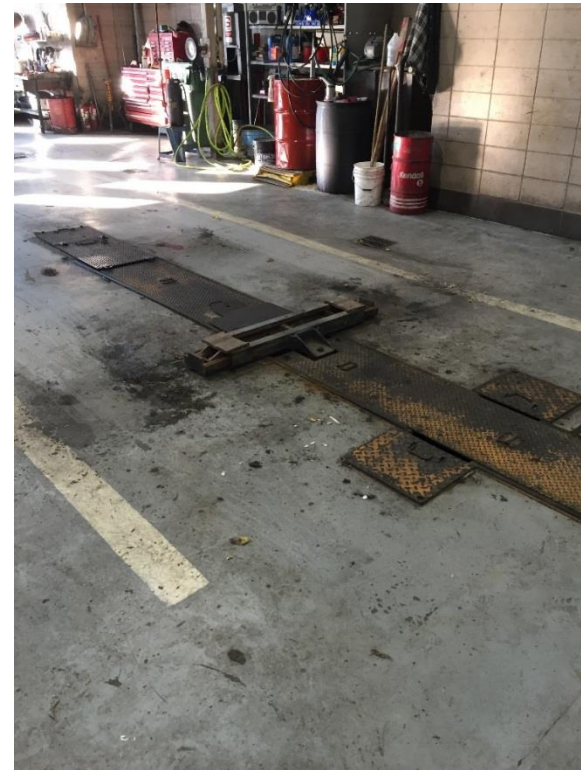
- The light duty repair bay exhibits poor general lighting and inefficient fixtures
- When paratransit vehicles are elevated on a lift, below vehicle lighting is inadequate or nonexistent



### Flat Repair Bay

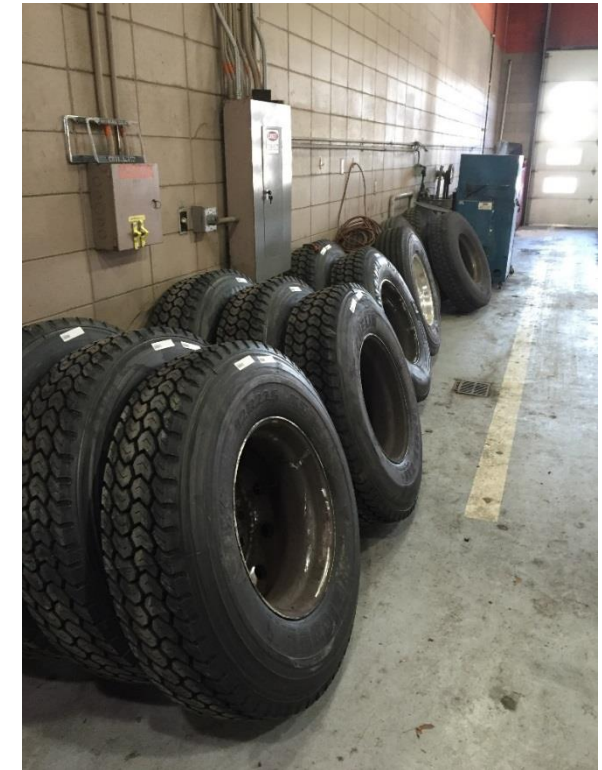
- Since dedicated vehicle storage is not provided for many vehicles, this repair bay is frequently occupied by parked vehicles, which limits the ability to repair vehicles within this space
- The vehicle repair pit that is unusable due to the current storage use within this space

## Transit Department



### Heavy Repair Bay

- In-ground lifts are outdated and not flush with the floor, which may be a safety hazard
- Bay lengths are too short for efficient repair functions - buses run wall to wall, with minimum working clearances



### Excessive Storage

- A lack of adequate office storage within the facility has resulted in parts being stored in the main egress paths
- The department doesn't have a dedicated storage space for bus tires, which has resulted in the storage of tires against a wall in the repair bay

## Transit Department



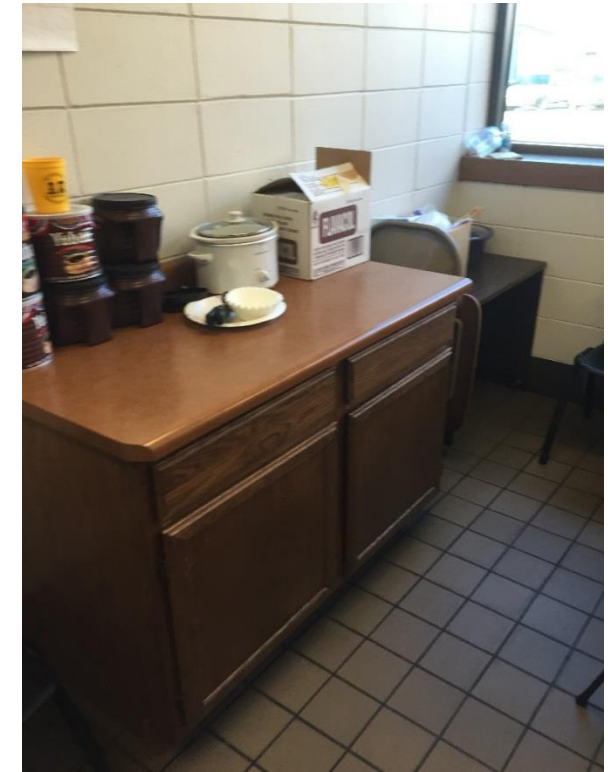
### **Vault/Fare Collection Room**

- The vault collection area is not properly secured



### **Break Room**

- The size of this space is inadequate to accommodate the drivers and operations staff
- The area is poorly designed, with no separation between designated food preparation areas and dining areas
- The installation of the stove does not meet the code requirements

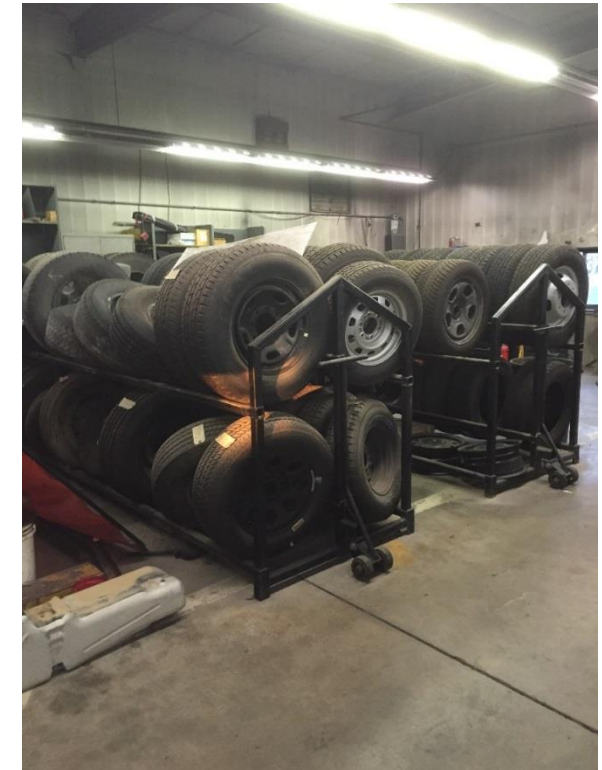


## Equipment Maintenance



### Fire Apparatus Bay

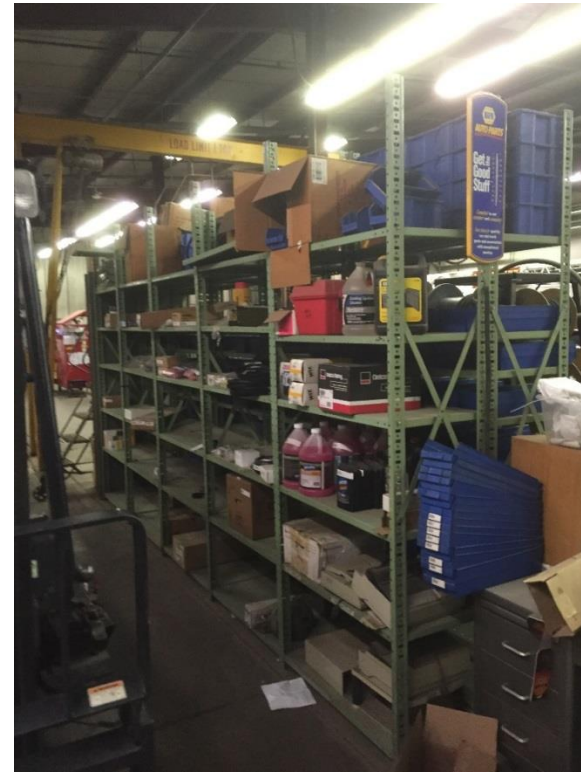
- Limited clearances are prevalent throughout the entire equipment repair building. The large fire apparatus is only able to fit into the facility after manipulating the ladder at an angle
- Poor lighting conditions makes it challenge to thoroughly maintain equipment



### New and Used Tire Storage

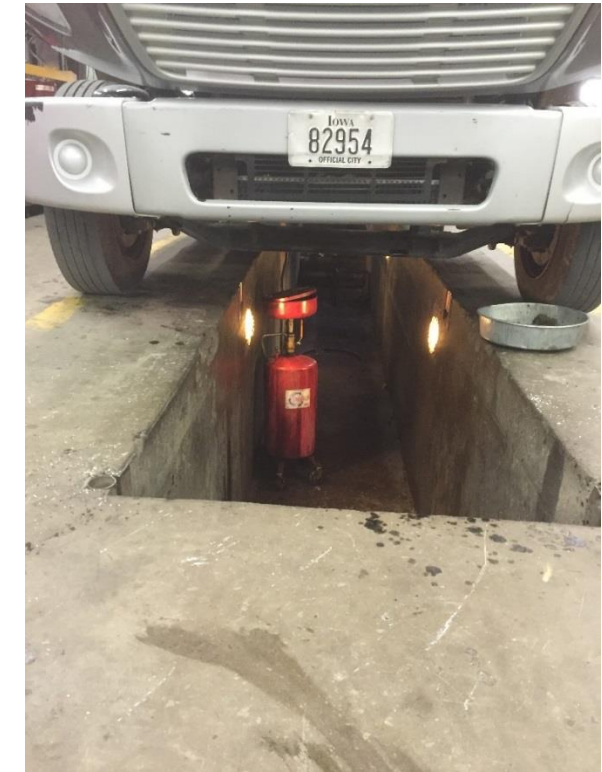
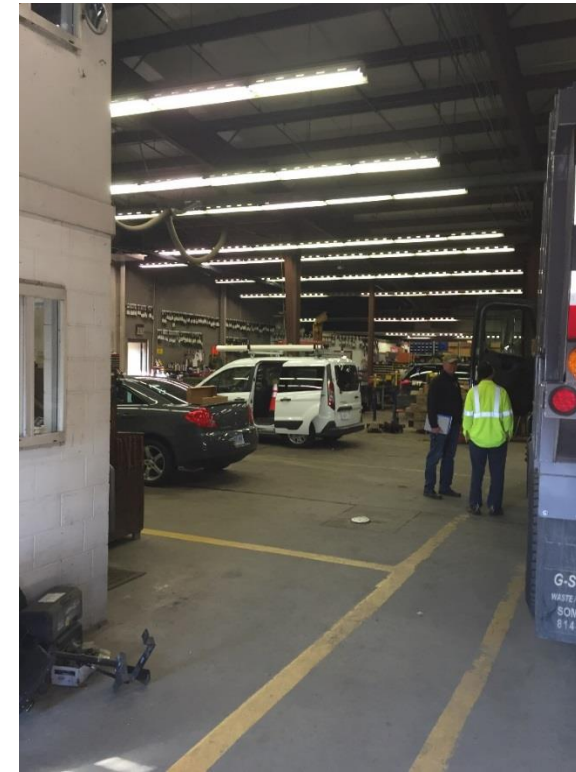
- Currently, tires do not have a dedicated storage space, so they occupy interior floor space

## Equipment Maintenance



### Small Parts Storage

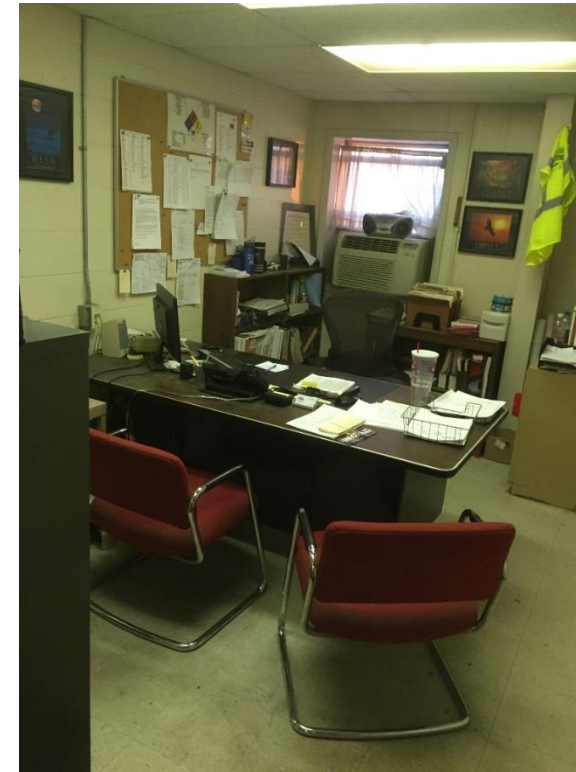
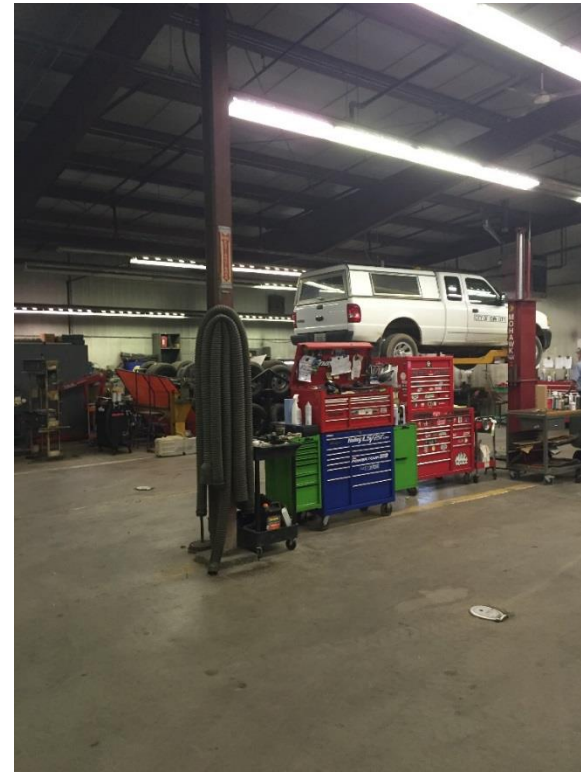
- The storage area is unorganized and not in a secured location. Technicians are able to access parts without maintain an inventory, which can result in the loss of items and equipment



### Repair areas

- The service pit is poorly lit, and lighting is not directed toward the underside of the vehicle space. The work area is very confined space due to the narrowness of the pit
- The headroom clearance within the pit is low, requiring technicians to crouch to avoid colliding with the underside of the vehicle

## Equipment Maintenance



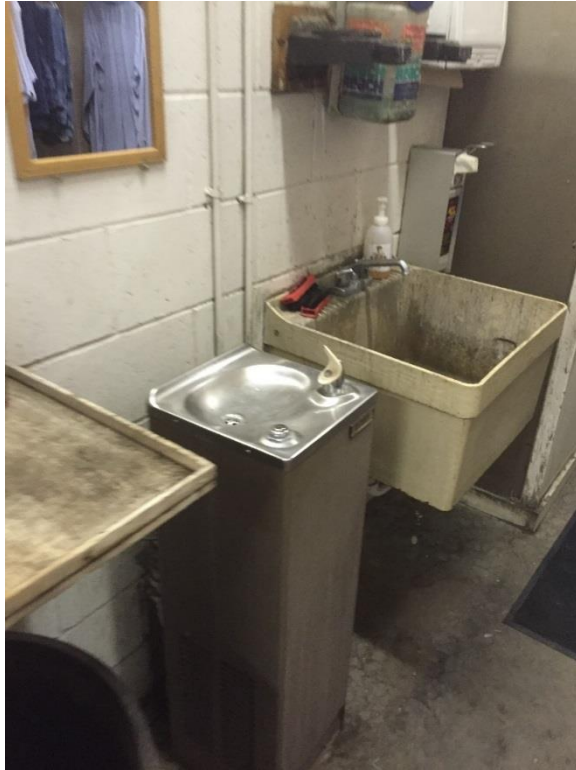
### Central Fluid Storage

- There is no bulk fluid storage room. Instead, 55 gallon drums of fluids are stored between repair bays, which conflicts with required working clearances within the bay

### Superintendent's Office

- Views from the office to the shop areas are obstructed, due to the office location and equipment placement throughout the facility
- The superintendent does not have visual connection to many spaces within the facility
- The office is secluded in the back corner of the equipment repair building

## Equipment Maintenance



### **Superintendent's Office**

- The restroom is very confined space and is difficult to clean and sanitize
- The water fountain is located immediately adjacent to the sink, which could allow for grease and dirt to contaminate the fountain
- The shower does not have a private changing area and is exposed to the rest of the restroom areas

# Section 3 - Space Needs Program

## INTRODUCTION

Of the data that was collected and analyzed, the Space Needs Program provides the foundation of information used to project the future facility needs for the City of Iowa City Public Works and Transit Departments.

## PROGRAMMING FOCUS

Ten different groups within the City of Iowa City were included in the Master Planning and Programming effort for the new Public Works Campus. Not all groups identified by the City to be included in the master plan study will be physically located at the new Public Works Campus at the Napoleon Site. For instance, Landfill functions will remain co-located with the Landfill Site and Operations at their current site. The programming and planning efforts related to Landfill will be directly applied to new and augmented facilities at that location.

## SITES

The current sites and the groups at each site that were included in the programming and master planning sessions are identified in the following tables:

### Napoleon Site

SITE	AREA (SF)	DEPARTMENT	OWNED	RENTED
Admin/Operations Building	6,230	Streets/ Traffic	X	
Salt Storage	8,550	Streets/ Traffic	X	
Warm Storage	7,180	Streets/ Traffic	X	
Quonset 1	4,080	Streets/ Traffic	X	
Quonset 2	4,080	Streets/ Traffic	X	
Quonset 3	4,080	Streets/ Traffic	X	
Shed 1	800	Streets/ Traffic	X	
Shed 2	500	Streets/ Traffic	X	
<b>Site Totals</b>	<b>35,500</b>			

### Riverside Site

SITE	AREA (SF)	DEPARTMENT	OWNED	RENTED
Transit	36,160	Transit	X	
Transit Mezzanine	400	Transit	X	
Wash Bay	1,240	Multiple	X	
Maintenance	12,210	Equipment	X	
Signs and Traffic	6,180	Streets/ Traffic	X	
Sign Storage Covered	310	Streets/ Traffic	X	
Yard Storage, Signs	925	Streets/ Traffic	X	
Refuse Covered Parking	3,325	Solid Waste	X	
Refuse Admin	1,525	Solid Waste	X	
<b>Site Totals</b>	<b>62,275</b>			

### Gilbert Court Site

SITE	AREA (SF)	DEPARTMENT	OWNED	RENTED
Water Building	13,400	Water	X	
Yard Storage	15,415	Water	X	
<b>Site Totals</b>	<b>28,815</b>			

### Fair Grounds Site

SITE	AREA (SF)	DEPARTMENT	OWNED	RENTED
Swine Building	7,600	Solid Waste		X
4H Building	7,400	Streets/Traffic		X
<b>Site Totals</b>	<b>15,000</b>			



## Big Ten Site

SITE	AREA (SF)	DEPARTMENT	OWNED	RENTED
Fire Storage	1,560	Fire		X
Police Storage	1,560	Police		X
<b>Site Totals</b>	<b>3,120</b>			

## Landfill Site

SITE	AREA (SF)	DEPARTMENT	OWNED	RENTED
Administration	3,315	Landfill	X	
Hazardous Storage Container	400	Landfill	X	
Recycling Shed	4,475	Landfill	X	
Old Scale House	500	Landfill	X	
Building A	2,770	Landfill	X	
Building B	4,400	Landfill	X	
Shed @ Dumpsters	600	Landfill	X	
<b>Site Totals</b>	<b>16,460</b>			

**GRAND TOTAL**                      **161,170 SF**

## DEPARTMENTS

### Streets

Streets primary operates from the existing facilities at the Napoleon site. This department is responsible for routine maintenance and cleaning of streets and stormwater sewer systems, and the removal of leaves and snow. Streets utilizes a wide variety of vehicles and equipment to perform daily duties. The current buildings at the Napoleon site do not allow for all vehicles and equipment to be enclosed in heated storage, and does not have dedicated on-site space for employee parking functions. (Employees could park on-site in the open yard areas, but instead, adjacent parking lots at the recreation playing fields are typically utilized by this department.)

Currently, the administration office is generally adequate, but crew support space is inadequate in both size and configuration. Although the current building could potentially be expanded, the building itself has some limitations due to the original building construction methods, materials, and orientation, which could make additions and/or expansion cost prohibitive. The Crew Room is small and cramped due to the atypical configuration of the room; it subdivides poorly. Locker rooms are also inadequate (especially in the spring and summer when seasonal help is utilizing the same support areas). All Streets crews will benefit from better meeting spaces and individual crew shop spaces with equipment storage and adequate workspaces.

Shop space is currently at a premium and is shared between the various department crews. Three Quonset hut buildings are utilized for shop areas, parts and supplies storage areas, interior vehicle/equipment storage areas, and granular material storage areas. Only two of the three huts are heated. The third unheated hut is utilized for equipment storage and material storage. These areas are inadequate in size for current and future Streets functions and projected staff growth.

### Shared Areas

A key interest of the City of Iowa City was to identify potential Shared Areas to include in the programmatic needs study for the new Public Works Campus Master Plan Space Needs Program. These areas include shared, crew support areas and shared staff parking areas.

### Traffic

Traffic currently maintains functions and staff at both the Riverside and Napoleon sites. Traffic is responsible for routine maintenance and repair of traffic signals and signs. Currently, the Traffic Signs and Signals groups operate out of undersized shops at the Riverside Facility. These crowded shops, and the office spaces within those shops, have no room for expansion. Interior storage space is limited, inefficient, and overflows into the shop spaces. Covered Storage is currently minimal or non-existent and was included in the future facilities program to help protect expensive signs and signals. Covered and Enclosed Heated Storage areas will help speed up crew deployment, so items will not need to be uncovered from snow and

accumulated debris. Adequate enclosed and exterior parking for Traffic vehicles was included, along with parking for current employee and the anticipated department growth.

To simplify the program data, Streets and Traffic functions were merged into one programmatic group, to reflect current management and organizational structures of the department.

## Solid Waste/Refuse

Solid Waste/Refuse is responsible for solid waste collection and recycling collection in the City. Solid Waste/Refuse currently has staff and crew support areas and vehicle and material storage at the Riverside site and storage functions at the Napoleon Site. Additionally Solid Waste/Refuse utilizes vehicle storage space at the Fair Grounds site during the winter season.

Solid Waste/Refuse has significant facility inadequacies at the Riverside site. Office and crew support areas are undersized and lack basic modern amenities. Vehicle and material storage areas are too small to properly store and access vehicles and equipment. Solid Waste/Refuse utilizes a building at the Fair Grounds during winter months to store vehicles. This off-site location increases deadhead mileage and wasted time for staff and increases operating cost for the City.

A primary goal of the Master Plan for the new campus is to accommodate all of Solid Waste/Refuse in a single location to improve working conditions and to eliminate wasted, inefficient shuttling of staff and vehicles to off-site deployment locations. Within the new Public Works Campus, Solid Waste/Refuse programmatic needs include staff offices and crew support areas, vehicle/equipment parking areas, vehicle equipment wash down areas, and adequate leaf bag storage. Solid Waste/Refuse will utilize shared areas, including welding areas and staff parking.

## Water Distribution

The Water Distribution (Water) group currently operates out of a separate city-owned facility located on Gilbert Court. Existing space at this facility is generally adequate, but could be better organized and reconfigured to mitigate crowded shops and storage areas. Storage space is adequate, but due to the limited use of efficient storage systems, the current organization of parts and materials is restricted and has created some inefficiencies regarding retrieval.

Within the new Public Works Campus Facility, Water Distribution programmatic needs include staff office and crew support areas, vehicle/equipment parking areas, and a larger drive through pump and hydrant shop area with associated storage areas.

Since Water Distribution currently operates as a standalone facility, this group has been identified as a potential future-phase element of the Master Plan, and the group could continue to operate from their

existing city-owned facility. However, it is preferred to combine shop and vehicle/equipment storage areas with the Streets and Traffic group, due to similar needs and types of work performed by these groups.

## Equipment Maintenance

Equipment Maintenance currently operates out of the Riverside Facility. Equipment Maintenance is responsible for maintaining trucks, dump trucks, bucket trucks, flatbed trucks, pickup trucks, vans, buses, police vehicles and motorcycles, other general-purpose sedans and SUVs, street sweepers, leaf equipment, and Solid Waste Services vehicles. The current facilities at the Riverside site are outdated and inadequately sized for the type and volume of daily work to be performed. Specialty shop spaces do not exist in the current facility, resulting in work being executed in walkways and shop aisles. All of the Equipment Maintenance group will be relocated to the new Public Works Campus in order to vacate the Riverside Site to sell for private development. Currently, not all vehicles are domiciled at the Riverside location, so the new facility will require ample down line and ready line parking spaces for incoming and outgoing equipment and vehicles. Fuel and wash functions are controlled/maintained by Equipment Maintenance and are generally in place at the Napoleon Site. However, in the future, fuel/wash functions will not require direct association with Equipment Maintenance functions.

## Transit

The City of Iowa City's Transit Operation is currently located at the Riverside Site. This operation includes Transit Administration, bus storage and servicing, and bus maintenance (currently separate from Equipment Maintenance functions at the same site). Transit is responsible for providing transit services to the City, areas near the University of Iowa campus, and into the surrounding communities. Transit also currently provides its own bus maintenance. Buses are currently stored (parked) in an enclosed heated parking area. This area is completely utilized, making the current site very tight with no room for expansion. Buses are parked in a stacked configuration to accommodate more vehicles within the building, which leads to some delays in service. The Bus Maintenance shops are outdated and inadequate in size for larger, modern buses. The general approach as outlined by City staff was to collocate Bus Maintenance and Equipment Maintenance functions. Transit Administration and Operations functions would remain separate.

## Police, Fire, and ITS

The Police, Fire, and ITS functions are all currently located in offsite storage facilities, and ITS is non-existent at the current Public Works Site. The programmatic needs for these groups include secure climate controlled storage areas, and for the Fire Department, training areas and training classroom areas.

## Landfill

The functions for Landfill Operations are all currently located at the Landfill site. These functions will remain at that location. The program development effort related to Landfill included identifying Administrative area needs, Crew Support area needs, Equipment Maintenance area needs, and Landfill Vehicle and Equipment Storage needs.

## MASTER PLAN PROGRAMMING

The Master Plan Space Needs Program is an important component of the Master Plan for several reasons:

- It requires the visualization and development of assumptions from each group involved, on how the operations would be accommodated and how shared utilization of facilities could be realized.
- The program validates and defines site size requirements.
- Preliminary construction cost estimates can be developed once the various parameters are quantified. Parameters include the following: the size of the building(s) required, number of vehicles parked on-site at any given time, outdoor storage areas, covered storage areas, service areas and required site features.

## DATA SOURCES

Materials that were referenced during the space programming effort include:

- Organizational charts
- Vehicle and equipment inventory listings
- Existing facility space inventory
- Previous master plan studies
- Sketches and functional floor plans (provided by some groups to convey needs and adjacencies)

## METHODOLOGY

An interactive approach was utilized in the data collection effort. Each group that participated contributed unique requirements related to the function and needs of the City and citizens. Additionally, the groups were asked to project how the growth of the City and region would affect their facility, staffing, work areas, and vehicle/equipment needs. Programming interviews were held with each group to discuss specific needs, and to develop assumptions regarding how operations could be shared and collocated at the new Public Works Campus.

The development of detailed space needs requirements for each of the groups to be located at the new Public Works Campus were based around the following functions and assumptions:

- Current equipment and staff that are currently operating out of remote locations would be relocated to the new central location (except for Landfill)
- Make assumptions about growth in both equipment and staff
- Determine which of the facilities and infrastructure already in place at the Napoleon Site could remain, while still effectively supporting the consolidation of groups at the new Public Works Campus
- Identify the requirements in buildings, vehicle parking, and site areas to satisfy the functional needs of each group at the new Public Works Campus

The Space Needs have been considered to extrapolate the overall campus, and includes all enclosed building spaces, exterior staging areas, and parking and storage areas. Site sizes have been calculated to include all of the previously listed areas and increased proportionally to include areas for site circulation, easements, setbacks, buffers, and stormwater retention.

During the space programming sessions conducted with each of the groups, a determination and comparison was made based on the following parameters:

- Existing Conditions - the amount of area each of the department is presently operating within
- 2015 Program - the area a department should currently have to operate effectively, while meeting general space standards and alleviating overcrowding
- 2035 program - a 20-year projection of area that will be required by each of the departments based on anticipated growth

## SPACE STANDARDS

Various space standards were applied to the Space Needs Program. The standards generally apply to office and vehicle parking areas. Area requirements in shops and storage areas were derived from functional requirements and equipment space needs. The space standards are based on functional needs and requirements established through the design of other facilities, rules of thumb, and specific requirements of each functional group. The space standards listed below were utilized to develop the Master Plan Space Needs Program(s) and overall area requirements.

### OFFICE AREAS

Superintendent	224 square foot office
Support Office	120 square foot office
General Office	144 square foot office
Supervisor	168 square foot office
Administrative Asst.	80 square foot workstation
Workstations	80 square foot workstation
Workstations	48 square foot workstation

### BAY AREAS

Heavy Repair Bay	1,200 square feet (20' x 60')
Heavy PM/Inspection Bay	1,200 square feet (20' x 60')
Fire Apparatus Repair Bay	1,500 square feet (25' x 60')
Light Duty Repair Bay	525 square feet (15' x 35')
Light Duty PM/Inspection Bay	525 square feet (15' x 35')
Bus Running Repair Bay	1,200 square feet (20' x 60')
Bus PM/Inspection Bay	1,200 square feet (20' x 60')

### BAY AREAS

Chassis Wash Bay	1,500 square feet (25' x 60')
Bus Drive-Through Wash Bay	1,700 square feet (20' x 85')
High Volume Wash Out Bay	2,400 square feet (30' x 80')

### VEHICLE PARKING

Heavy Duty Trucks	480 square feet (12' x 40')
Medium Duty Trucks	360 square feet (12' x 30')
Light Duty Trucks	200 square feet (10' x 20')
Construction Equipment	360 square feet (12' x 30')
Misc. Equipment and Trailers	200 square feet (10' x 20')
Employee/Visitor	162 square feet (9' x 18')
Disabled Parking	234 square feet (13' x 18')

## CIRCULATION FACTORS

The space requirements shown for each function are net usable areas. During the design of the facility, the Design Team will work toward minimizing the amount of circulation necessary for an efficient site and the facility. There are three Circulation Factors utilized in the Space Needs Program. These factors are:

- Interior or Building Circulation: This factor is applied to the program as a percentage of the total building square footage. It accounts for miscellaneous building spaces such as hallways, stairwells, janitor closets, mechanical, plumbing, and electrical rooms, wall thickness, structure (CMES Factor or Net to Gross Factor), and access requirements. The following lists the factors (in general) that have been applied to the program but may or may not directly reflect actual design:
  - Office Areas and Support Areas 35%
  - Shop Areas 20%
  - Enclosed Heated Vehicle Storage 57-78% (Varies)
  - Covered Areas 10%
  - Exterior Storage Areas 100%
- Parking Circulation: This factor is included to account for the drive aisles, walkways, islands, and other areas created by site and access requirements. This factor can vary from 15% to 100% of the actual space occupied by a certain functional requirement or vehicle. For this project the following factors were applied:
  - City Vehicle Parking areas 100%
  - Employee Parking areas 100%
  - Interior Vehicle Parking/Storage 57-78% (Varies)
- Site Circulation Factor: This factor is also applied to the program as a percentage of the total program square footage. It accounts for areas around buildings, site drive aisles, and building and site access. For new construction, a 100% factor is normally applied to account for all site inefficiencies. The better the site conditions, access, easement, etc., the more efficient the site layout can become, reducing this factor to as low as 50%. For the new Public Works Campus Master Plan, 50% has been used to account for site requirements. It will be the goal of the Master Planning Team work toward achieving this percentile as the site layout is refined and site constraints are dealt with through efficient design.

## SPACE NEEDS PROGRAM

The Space Needs Program begins with the identification of each space by name and a Space Standard (if applicable). The 2015 Program represents the space currently needed by each group that will be located at the new Public Works Campus on opening day. The 2035 Master Plan Program represents spaces required to accommodate the full build-out of the combined public works and transit operations on the site, and the future growth needs of the groups that have been projected, defined, and assumed by the City staff.

The Space Needs Program was used by the Master Planning Team to develop conceptual site plans, which lead to the selected Site Master Plan Concepts, and conceptual building plans.

## SPACE NEEDS PROGRAM SUMMARY

A summary of the Space Needs Program for the new Public Works Campus is included below. This summary includes all building and site areas of each departmental group, including Shared Areas, Streets/Traffic, Solid Waste/Refuse, Water Distribution, Equipment Maintenance, Transit, Fire Department, Police Department, ITS, and Landfill. Site circulation, setbacks, landscaping requirements, and total acres required are also shown.

	NAOPLEON SITE														ACRES REQ.		Landfill Site					
	Vehicle Storage Building										Repair Building		Transit Building		Existing Building (onsite)				2015	2035	Offsite	
	Shared Areas		Refuse		Streets & Traffic		Water		ITS		Equipment		Transit		Fire		Police				Landfill	
	2015	2035	2015	2035	2015	2035	2015	2035	2015	2035	2015	2035	2015	2035	2015	2035	2015	2035	2015	2035		
Office and Support Areas	8,134	8,134	1,210	1,210	2,913	3,086	1,134	1,134	-	-	3,806	4,143	5,745	7,036	691	691	-	-			3,418	3,418
Shop/Storage and Wash Areas	9,018	9,018	8,010	8,130	8,280	8,280	2,475	2,475	-	-	-	-	-	-	-	-	-	-			-	-
Bay and Repair Areas	-	-	-	-	-	-	-	-	-	-	34,270	39,172	-	-	-	-	-	-			12,785	12,785
Parts and Material Storage (Enclosed Heated)	-	-	-	-	-	-	-	-	990	990	7,250	7,250	-	-	2,338	2,338	2,585	2,475			1,727	1,727
Enclosed Heated Vehicle Storage	-	-	11,681	16,014	46,743	55,251	8,188	8,188	-	-	-	-	30,756	47,887	743	743	1,947	1,947			8,844	8,844
Subtotal	17,152	17,152	20,900	25,354	57,936	66,617	11,797	11,797	990	990	45,325	50,565	36,502	54,922	3,771	3,771	4,532	4,422			26,774	26,774
Covered Areas	-	-	-	-	7,590	7,590	880	880	-	-	-	-	-	-	-	-	-	-			-	-
Exterior Areas	-	-	11,204	13,548	48,812	52,052	14,676	14,676	-	-	37,080	40,072	13,932	15,552	15,510	15,510	-	-			96,124	98,092
Subtotal	-	-	11,204	13,548	56,402	59,642	15,556	15,556	-	-	37,080	40,072	13,932	15,552	15,510	15,510	-	-			96,124	98,092
Subtotal Site Requirements	17,152	17,152	32,104	38,902	114,338	126,259	27,353	27,353	990	990	82,405	90,637	50,434	70,474	19,281	19,281	4,532	4,422			122,898	124,866
Site Circulation, Setbacks, Drives, and Landscaping Factor @50%	8,576	8,576	16,052	19,451	57,169	63,130	13,677	13,677	495	495	41,203	45,318	25,217	35,237	9,641	9,641	2,266	2,211			61,449	62,433
Total Site Requirements	25,728	25,728	48,157	58,352	171,507	189,389	41,030	41,030	1,485	1,485	123,608	135,955	75,650	105,711	28,922	28,922	6,798	6,633			184,347	187,299
<b>Total Acreage</b>	<b>0.59</b>	<b>0.59</b>	<b>1.11</b>	<b>1.34</b>	<b>3.94</b>	<b>4.35</b>	<b>0.94</b>	<b>0.94</b>	<b>0.03</b>	<b>0.03</b>	<b>2.84</b>	<b>3.12</b>	<b>1.74</b>	<b>2.43</b>	<b>0.66</b>	<b>0.66</b>	<b>0.16</b>	<b>0.15</b>	<b>12.00</b>	<b>13.62</b>	<b>4.23</b>	<b>4.30</b>

### Total Acres Required

2015 = 12.00 acres

2035 = 13.62 acres

Reference the diagram "Existing Site Utilization" in Section 1. The total useable site for the Public Works Master Plan is approximately 14 acres. The Napoleon Site is spatially viable when using a Site Circulation Factor near 50%.

## DEPARTMENTAL STAFF SUMMARY

DEPARTMENT	YEAR			
	2015	2020	2025	2035
Shared Areas	0	0	0	0
Refuse/Solid Waste	19	21	23	25
Streets	40	44	45	50
Equipment Maintenance	23	26	28	33
Water Distribution	7	7	7	7
Transit	53	57	61	61
Fire Training/Storage	0	0	0	0
Police Storage	0	0	0	0
ITS	0	0	0	0
Subtotal - Napoleon Site	142	155	164	176
	0	0	0	0
Landfill Operations	15	16	16	17
Subtotal - Landfill Site	15	16	16	17
	0	0	0	0
<b>Total All Staff</b>	<b>157</b>	<b>171</b>	<b>180</b>	<b>193</b>

*These numbers include both full-time workers and shift workers.*

## PARKING REQUIREMENTS

DEPARTMENT	YEAR							
	2015		2020		2025		2035	
	Visitor	Staff	Visitor	Staff	Visitor	Staff	Visitor	Staff
Shared Areas	0	0	0	0	0	0	0	0
Refuse/Solid Waste	2	19	2	21	2	23	2	25
Streets	3	40	3	44	3	45	3	50
Equipment Maintenance	2	18	2	21	2	24	2	26
Water Distribution	2	7	2	7	2	7	2	7
Transit	8	35	8	39	8	40	8	40
Fire Training/Storage	15	0	15	0	15	0	15	0
Police Storage	2	0	2	0	2	0	2	0
ITS	0	0	0	0	0	0	0	0
Subtotal - Napoleon Site	34	119	34	132	34	139	34	148
	0	0	0	0	0	0	0	0
Landfill Operations	6	15	6	16	6	16	6	17
Subtotal - Landfill Site	6	15	6	16	6	16	6	17
	0	0	0	0	0	0	0	0
<b>Total All Staff</b>	<b>40</b>	<b>134</b>	<b>40</b>	<b>148</b>	<b>40</b>	<b>155</b>	<b>40</b>	<b>165</b>

*Transit Staff parking requirements have been adjusted by a ratio to account for shift overlap*

# Section 4 - Site Master Plan and Concept Building Design

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## INTRODUCTION

The purpose of this section is to discuss the planning goals, issues, charrette summary, and master planning concepts that were developed during the charrette presentation and meetings, which occurred from December 1 through December 3, 2015 at the Water Division office in Iowa City, Iowa. The purpose of the workshop was to develop a Site Master Plan for a new Iowa City Public Works Facility based on the Section 3 - Space Needs Program.

The Site Master Plan is presented in this section. All other concept site and building plans developed during the workshop are presented in the Appendix - Design Options.

## Participants

Dave Zahradnik	Neumann Monson Architects
Jesse Bulman	Neumann Monson Architects
Mark Ellis	MDG
Justin Tripp	MDG
Kumi Morris	Iowa City PW
Ron Knoche	Iowa City PW
Mark Rummet	Transportation
Chris O'Brien	Transportation
Dave Exline	Water
Dave Worby	Water
Michael Willis	Water
Kevin Slutts	Water
John Sobaski	Streets
Jon Resler	Streets
Brian Michel	Streets
Steve Jehn	Streets
Bob Henry	Fire
John Grier	Fire
Dan Striegel	Equipment Repair

## Master Plan Goals

The ICPW group requested the Design Team to develop concepts for the Napoleon property located in Iowa City, Iowa at 3800 Napoleon Lane. The Design Team identified several goals that were addressed at the beginning of the Site Master Plan and Conceptual Design Workshop. These goals guided the direction of the Design Team as they developed each concept. The goals established for the Site Master Plan and Conceptual Design include the following:

- Develop a site master plan concept that meets the functional and operational needs of the ICPW
- Provide a positive image to the surrounding neighborhood through building and site design
- Use the site to its full capabilities to fit combined departments at one centralized site

## SITE AND FACILITY PLANNING

During the Preliminary Design and Programming phase that occurred before the Charrette presentation, the Design Team developed a list of issues and constraints of the current site. This also included an analysis of surrounding properties and their function to ensure a new ICPW would be appealing to the community.

## Site Issues and Constraints

- The site located at 3800 Napoleon Lane is constrained by:
  - Napoleon Lane to the north
  - South Gilbert Street to the east
  - McCollister Boulevard to the south
  - Iowa River to the west
- There is a 1.75-acre piece of property at the southeast corner of the site that is not owned by ICPW.
- An animal shelter is located in the northwest corner of the site
- The flood plain from the Iowa River protrudes roughly 400 feet into the western side of the site.
- The Iowa River walking trail runs along the west side of the site.



## Surrounding Property Analysis

- The site to the east of South Gilbert Street is currently not developed. The future planning of the property is for multifamily residential complexes.
- The Napoleon Park softball fields occupy the property to the north of the site.
- Across McCollister Boulevard to the south of the site is the Sand Lake and the Terry Trueblood Recreational Area.

## Proposed Access Points

The ideal concept would be to keep all buses and large vehicles from entering the same access point as personal employee vehicles and visitors. The Design Team decided, and the ICPW confirmed, that employee parking and access to the building would be from Napoleon Lane, and fleet vehicles would enter the site from McCollister Boulevard. A separate parking lot for transit operators and administration staff, more remote to the transit building, would be beneficial to the employees.

## **CHARRETTE PROCESS**

The Design Team conducted a charrette with the employees of ICPW from December 1 to December 3, 2015 at the Iowa City Water Division office. During this time, the Design Team reviewed the current site and site history, developed site concepts, presented their ideas to the staff of the ICPW, and implemented their comments into the site concepts.



## Day One: December 1, 2015

The first day of the charrette began with a brief meeting with the employees to discuss the program and present facility designs, compare similar facilities (Appendix - Design Options), and receive input from the staff on design elements that would benefit them. During the afternoon session, the Design Team worked together to develop three conceptual site layouts that were presented to the ICPW staff on day two of the charrette.

### **Program Review**

- The program is broken down into two staffing counts, the current staff and the projected 20-year staff
- The landfill staffing is not counted in the total amount of area required because the department has its own site location

### **Facility Concepts**

- Double deep drive through
  - Most common vehicle maintenance building
- 100% drive through
  - One-way circulation
  - Drive in/back out design
- Single loaded drive through
  - Most expensive design
  - Interior drive aisle to storage areas
  - One large overhead door for every two bays

### **ICPW Comments**

- The internal circulation of equipment and large vehicles is a major design aspect of the future facility
- An internal wash bay may cause issues
  - Water on the floor after washing
  - Mud track throughout the building after washing
- Separate the Solid Waste/Refuse vehicle storage area from the rest of the facility to control the odor that the vehicles produce
- A mud room is a necessity for employees entering the crew areas
  - Easy access to restrooms, showers, lockers, etc.
- Censor the vehicles so that only approved vehicles may access the facility through the overhead doors

### Project Site Study

- A consolidated site will reduce the travel time between services
- Roughly 14 acres of land can be developed
- The employee vehicle and visitor entrance should be separate from the large vehicle entrance
- The new facility would be built in phases as funds are acquired for departments to relocate their operations to the new site

### Day Two: December 2, 2015

The second day of the charrette consisted of the Design Team presenting three conceptual site layouts to review with the ICPW staff that were created from the comments and feedback gained during Day 1. From the comments that the Design Team received from the ICPW staff, three other concepts were developed in the afternoon working sessions between MDG and Neumann Monson Architects. These concepts were presented on the final day of the charrette process (Appendix - Design Options).

### Day Three: December 3, 2015

The third day of the charrette consisted of the Design Team presenting three conceptual site layouts that were developed after receiving comments on the concepts from Day 2. These three concepts are based off the originals and have been modified to conceive a more efficient site concept.

## SITE MASTER PLAN

During the charrette presentations, it was concluded that "Scheme F" would be the site concept that the Master Planning Team should use as a basis for developing a final master plan concept. At this point, the Design team also reviewed the charrette design schemes with the City of Iowa City Planning and Zoning Commission and received a list of considerations and comments (Appendix - Charrette Design Review Comments). During the following weeks, the Master Planning Team developed three design schemes that were derived from Scheme F (Appendix - Final Master Plan options). After final review, Scheme H was determined as the final, recommended Master Plan option.

## LAND PURCHASE

Functionally, Option H provides the most successful design option to meet the needs of the new Public Works Facility. However, this option does require the purchase of an adjacent private parcel (see Section 1- Adjacent Zones). If the adjacent parcel is unable to be acquired, Option G2 could provide a suitable solution to address many of the requirements for the new Public Works Facility. This option has also been included as an alternative, recommended scheme.

## Scheme F



### Advantages

- The building functions as an architectural screen from the street to minimize views of the operations occurring on the site
- Allows for simple phasing by adding departments to the site as more funding is made available
- Internal wash area
- Separate building for transit storage and administration
- The Streets Department is able to keep operation in their current building and remodel/add-on in the future
- Only yard storage utilizes the area of the site within the flood plain
- Meets all setbacks required by the city
- Adequate amount of parking and yard storage
- Allows for future expansion of all buildings

### Disadvantages

- Utilizes the southeast corner of the property, which is not currently owned by the City

# FINAL SITE MASTER PLAN

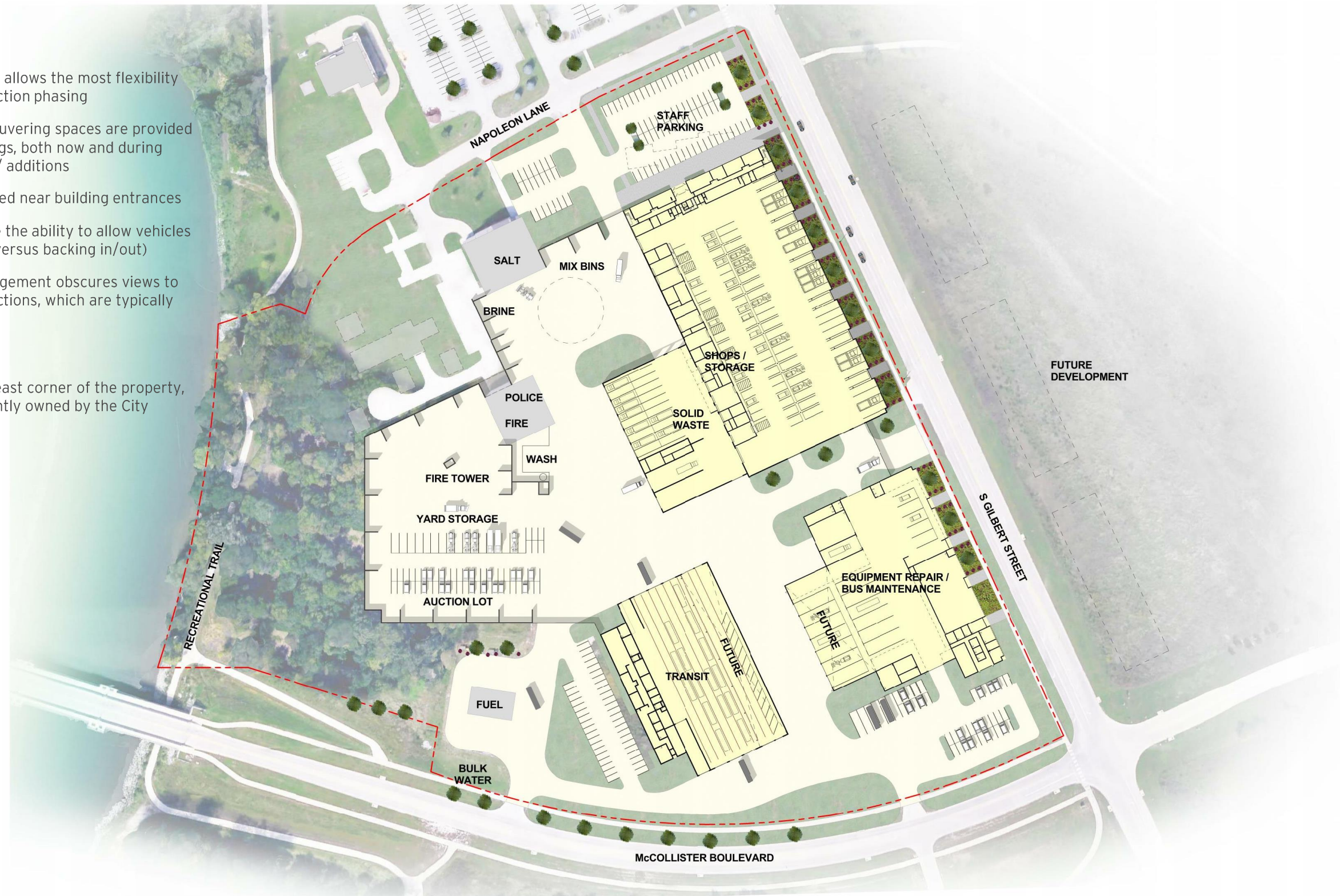
## Scheme H

### Advantages

- 3-building design allows the most flexibility regarding construction phasing
- Appropriate maneuvering spaces are provided around the buildings, both now and during future expansions/ additions
- Parking is provided near building entrances
- Repair bays have the ability to allow vehicles to drive through (versus backing in/out)
- The building arrangement obscures views to back-of-house functions, which are typically utilitarian

### Disadvantages

- Utilizes the southeast corner of the property, which is not currently owned by the City



# FINAL SITE MASTER PLAN

## Scheme G2

### Advantages

- Does not require the purchase of the adjacent corner lot
- Parking is near the offices and front doors
- Less costly than option G1

### Disadvantages

- Tight turning radii - 80 feet outside of buildings, gets down to 60 feet between Transit and wash bays
- Bus turning and wash bays are closer to each other
- Architectural presence along Gilbert Street is aesthetically undesirable due to the configuration of the Repair Building and the relationship between future development of the parcel at the southeast of the site
- Future expansion along Gilbert Street results in a foreign architectural element (Repair bay) relative to the rest of the facility
- More visibility to back-of-house functions. Back of house functions are required to be located nearer to public frontages



## BENEFITS OF THE MASTER PLAN DESIGN SOLUTION

A project of this magnitude has numerous opportunities for implementing cost saving and innovative design and construction solutions. These solutions often result in increased efficiency and effectiveness of staff. Many of these opportunities will become more apparent as the City becomes familiar with the optimal utilization of the site, the planned operations and movement of vehicles and equipment, and the other functional features of the project. Our Team used lessons learned from past projects to help the City establish and embrace modern facility design standards, while extracting best practices to implement as new City facility standards.

There are numerous benefits to the City as a result of consolidating public works, transit operations, and maintenance functions at the Napoleon Site. Some examples of these benefits are:

### Increased Safety:

Safe work environments are key to public works operations and the staff providing these services. Thoughtful planning and functional design of the required work processes will reduce risk and instances of unintended pedestrian and vehicle interactions, while providing safe shop and storage spaces.

### Lease Cost Avoidance:

Through consolidation of the off-site functions that currently utilize leased facilities, the City will no longer need to pay to use these spaces.

### Reduced Utility Costs:

New buildings are required to be more energy efficient and sustainable, resulting in reduced energy use and utility costs compared to facilities constructed decades ago.

### Enhanced Work Environments:

Professional office and shop work environments can be designed specifically per their intended uses. Adaptive reuse of spaces can be inefficient, and in many cases cost prohibitive. It is assumed that staff effectiveness will increase in office and shop environments due to enhanced office ergonomics, more effective meeting and crew support areas, better functional arrangements of shops and shop equipment, better access to parts and materials, and overall better building systems including heating, lighting, and ventilation. All of these features will enhance the staff's ability to do their jobs more effectively.

### Reduction in Deadhead Miles:

Mileage not directly related to the positioning of equipment to serve the public that could otherwise be avoided through strategic placement of assets is considered to be deadhead mileage. By consolidating and domiciling all vehicles and equipment at a central site; the City will see a reduction in deadhead miles. This reduction would be of mileage related to moving vehicles and equipment to and from the Riverside Facility for deployment, cleaning, fueling or maintenance activities.

### Improved response and overall staff utilization:

Hand-in-hand, reducing deadhead mileage improves staff efficiency. This efficiency is primary realized as an increase in available employee work time.

### Increase in Asset Utilization:

Centralization of functions and department leads to better staff communication and more effective utilization of City assets. As a result, the improvements likely to be seen are reduced waiting for shared equipment and reduction in duplicate asset purchase requests.

### Reduced Equipment Down-time:

Reduced down-time related to maintenance issues may be a result of domiciling vehicles and equipment at the maintenance location (opposed to being storage off-site). These vehicles and equipment will be more readily available for preventative maintenance and other seasonal maintenance preparations.

## EFFICIENCY GAINS EXPECTED

For the new Iowa City Public Works Facility, efficiency gains that can be expected as a result of the new functional master plan are:

### Office and crew support areas for administration and operations:

- Reduced unnecessary movement of staff to accomplish everyday administrative tasks through thoughtful process layout of work areas
- Reduced repetitive movement and activities
- Reduced travel distance for field crews to access lockers, restrooms, and other support areas
- Increased efficiency in administrative tasks related to proper ergonomic furnishings, furniture placement, and adequately sized offices, workstation and work areas
- Increased productivity related to more pleasant working environments

### Enclosed heated storage areas for vehicles and equipment:

- Equipment parking that is functionally adjacent to crew support areas for efficient deployment
- Reduced unnecessary vehicle movement related to staging and storage of implements
- Reduced unnecessary vehicle movement related to daily required cleaning of vehicles and equipment
- Reduced unnecessary vehicle and material movement, as material storage and shops are afunctional placed for optimal staff efficiency
- Increased staff effectiveness and efficiency while accomplishing everyday administrative tasks, through thoughtful process and equipment layout of shop offices and shop work areas

### Shop and repair bays for equipment and bus maintenance:

- Increased staff effectiveness and efficiency while accomplishing everyday administrative tasks, through thoughtful process and equipment layout of shop offices and shop work areas
- Technologically advanced equipment that reduces project set up time (i.e. modern computer controlled lifts with automated post adjustments)
- Reduced movement and backtracking by technicians (mechanics) to retrieve materials and parts, through efficient internal arrangement of spaces
- Reduced clutter and unnecessary movement of portable equipment, through defined storage locations in the shop
- Reduced time waiting for shop equipment availability, through strategic placement of common shop equipment in designated shop area

### Bus transit administration and operations office and support areas:

- Reduced unnecessary movement of staff to accomplish everyday administrative tasks through thoughtful process layout of spaces and work areas
- Reduced movement and backtracking of movements by drivers during the dispatch process
- Reduced travel distance for drivers to access lockers, restrooms and other support areas
- Increased efficiency in administrative tasks related to proper ergonomic furnishings, furniture placement, and adequately sized offices, workstation and work areas
- Increased productivity related to more pleasant working environment

### Bus transit service cycle (fuel and wash process):

- Introduction of technologically advanced fluid management/inventory control systems reducing theft and unreported use, while increasing reorder efficiency
- Reduction in staff movements related to service functions (fueling, fluids level check/replenishment, interior cleaning, fare recovery) through proper placement of systems within the service facility
- Reduced bus servicing times and greater bus throughput, realized through the proper placement of major fueling systems/equipment and interior cleaning equipment (vacuum systems), proper layout of supporting systems (i.e. lubrication reels), proper space allocation, proper bay/lane/position access and proper bay/lane/position dimensions

### Bus transit site access, storage (parking), and site movements:

- Reduction in unnecessary bus movements and travel distances through design and arrangement of bus parking areas
- Utilization of stacked, pull-through parking arrangements to reduce bus backing maneuvers, while increasing flow flexibility.
- Counterclockwise circulation allows for a more efficient and direct approach, while allowing a formal left hand circulation pattern to be prevalent
- Bus parking that is functionally adjacent to operator support areas for efficient deployment activities

### Parts and material storage:

- Reduced unnecessary movement of staff related to travel distance, resulting in decreased retrieval time of parts and materials
- Introduction of high density storage systems that reduce the space required for parts storage. Improved ability to retrieve high-use parts, through functional placement within parts storage areas
- Introduction of technologically advanced inventory management systems, reducing loss and increasing reorder efficiency. This will also decrease overstock assets and premium payment for overnight or expedited delivery charges for out of stock items

## GOALS

Our goal as a Master Planning Team is to provide the City with a state-of-the-art public works operations and maintenance facility that improves safety, reduces operational costs, and incorporates innovative design solutions with sustainable energy saving features. Some of these features include energy efficient building systems, light-reflective hardened floors, and natural daylighting techniques throughout the facilities to bring long-term tangible benefits to the City.

Examples of the Design Team's innovative approaches and technologies implemented in the master plan include:

- High-density drawer and mixed density shelving/drawer storage systems.
- Safe and compliant stacking and collapsible tire storage rack systems for effective safe, storage of parts, materials and tires.
- Storage systems that reduce the overall space utilization for parts storage, allowing a reduction in the total building area. These systems can also benefit the shelf life of the parts by controlling the environmental and atmospheric impacts on the parts while reducing retrieval operations. These systems can seamlessly interface with a future inventory control system.
- Touch-less drive-through Vehicle/Equipment Washer uses a combination of both chemical and high pressure systems to effectively wash the variety of vehicles and equipment owned by the City.
- A functional "rough wash" position allows City staff to focus wash requirements based on need and season, while also improving the overall life of the equipment. This designated piece of equipment provides flexibility and a time-effective method for washing.
- A touch-less front and side-brush, drive-through bus washer uses a combination of both high pressure and conventional rotating brushes. This system effectively washes the front, top and rear of the bus with directed high pressure detergent laden water, while fixed side brushes are utilized to wash the sides of the buses.
- Parallelogram lifts are utilized in preventative maintenance/inspection bays to allow easy access to the sides of a vehicle, with no column obstructions, offering a clear flood and clean work area. Parallelogram lifts offer versatility and time savings by keeping the bays productive.
- A flush mounted parallelogram lift in a recessed pit is also provided in the Chassis Wash Bay. This lift configuration provides the City with the ability to lift vehicles for detailed cleaning while providing a safe and ergonomic undercarriage washing configuration.
- To maintain the effectiveness of the operations currently domiciled at the Napoleon Facility during construction, the following best practices of design are to be incorporated:
  - Project construction should be performed in phases to maintain constant operations. Design and site planning utilizes existing low use areas for new construction and temporary parking.
  - No existing site functions will be demolished or vacated until a replacement has been completed.
  - Access to the salt and sand storage buildings is to be maintained throughout all construction to ensure snow response operations are always functional.

## DESIGN IDEAS

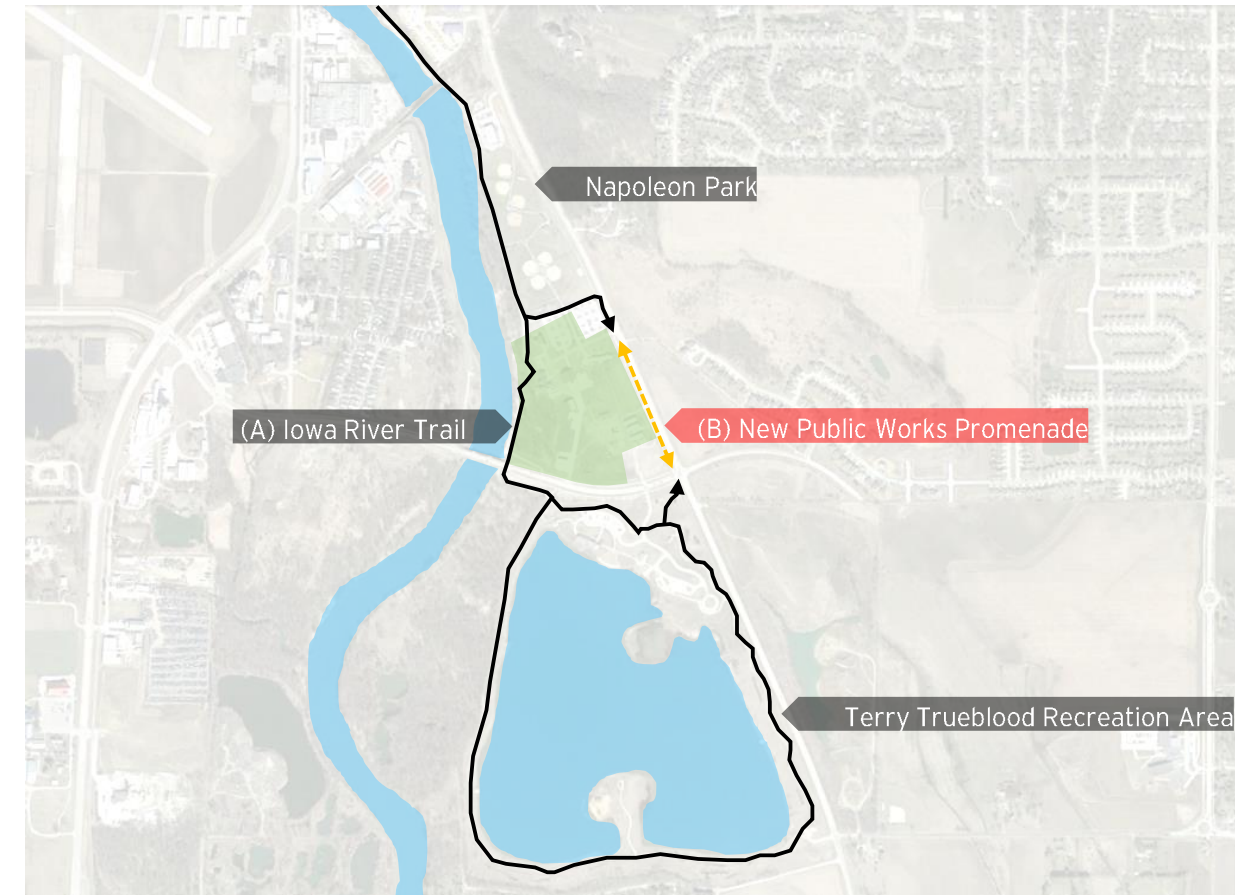
### Responding to the South Comprehensive Plan

The following passage from the City of Iowa City, South Comprehensive Plan has been a driving inspiration for the Public Works Facility concept design:

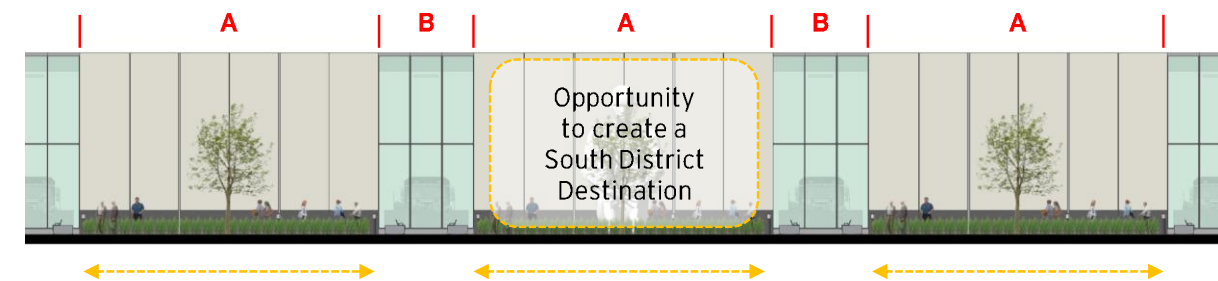
*“Streets as More than Pavement: Streets and adjacent parkways and sidewalks can be enhanced and planned to encourage pedestrian activity. Trees, benches, sidewalks, and attractive lighting along the street help create pleasant and safe public spaces for walking to neighborhood destinations and for socializing with neighbors. Streetscape amenities help establish a sense of distinction, identity, and security for neighborhoods.”<sup>3</sup>*

Public parks and trails are defining elements of the South Iowa City district. The Terry Trueblood Recreation Area, a premier outdoor destination in Iowa City, is directly south of the future Public Works Facility (Napoleon Site). This destination is currently connected by two primary pedestrian routes; the Iowa River trail (A), which runs along the west site of the Napoleon site, and the undeveloped sidewalk and right-of-way along Gilbert Street (B), which runs along the east of the Napoleon Site. The Iowa River trail provides a picturesque route that connects downtown Iowa City to the Terry Trueblood Recreation Area. This route celebrates the strengths of this district and provides a desirable pedestrian experience.

The sidewalk along Gilbert Street is currently less developed, and offers a powerful opportunity to enhance the parks and trails systems in this region of the city. Designing in conjunction with the massing requirements and recommendations indicated in the City Zoning Code, the Public Works buildings are conceptually articulated to enliven Gilbert Street, while providing a building massing that is sympathetic to future multi-family residential developments that may exist across the street. By implementing an ABAB rhythm, the facades of the Public Works Facility can establish a procession along Gilbert Street that encourages pedestrians to use and activate this currently underutilized route. At the architectural hyphen that occurs between each ABAB module, the building itself can establish destinations along this route to provide unique opportunities to experience the South District of Iowa City in a new light.



Conceptual Design Diagram



Conceptual building façade along Gilbert Street

<sup>3</sup> South District Plan, <https://www.icgov.org/districtplans>

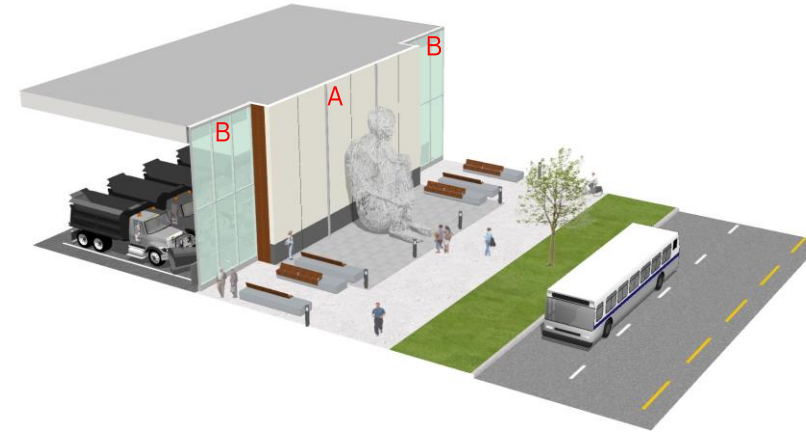


## SOUTH DISTRICT DESTINATIONS

### Public Art

“Reinforce a shared experience of place. Identify areas within the district that can be enhanced with public art, community gardens, improved bus stops, lighting, or other features that encourage social gathering or interaction.”<sup>3</sup>

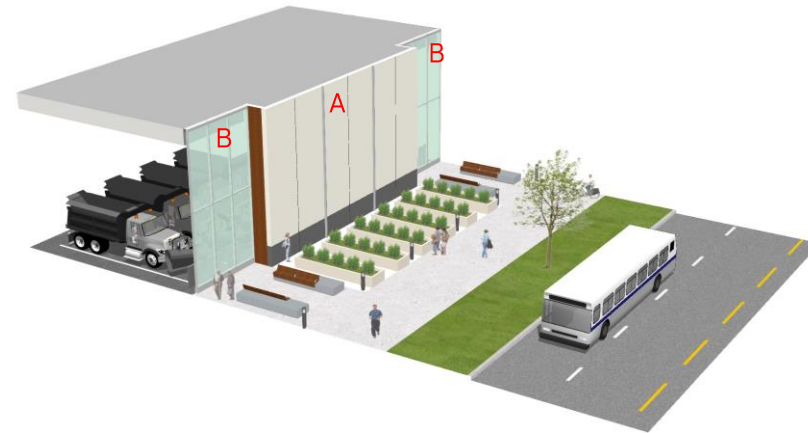
Opportunity: An art walk could feature various sculptural works, including the Herkeys on Parade, or the Book Marks project of painted sculptural books to celebrate the City of Literature.



### Community Gardens

“Incorporate local foods, art, and culture as part of revitalization efforts. Extend the City of Literature and other arts programming to South Iowa City.”<sup>3</sup>

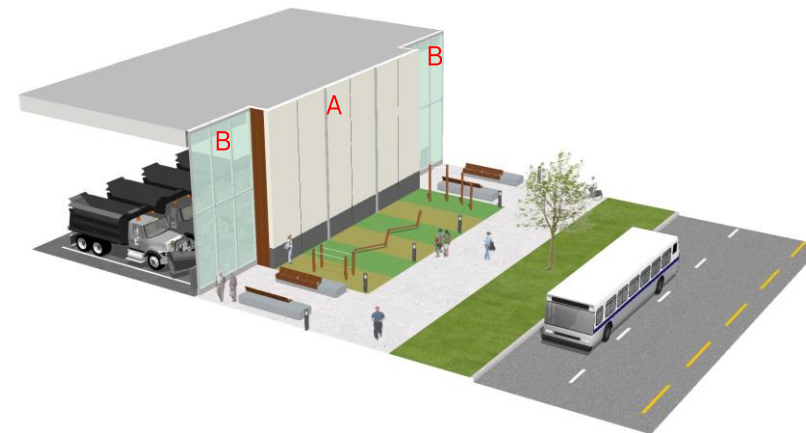
Opportunity: Community garden plots could be featured along this corridor to encourage local food and abundant landscapes. Local groups, such as Backyard Abundance could establish demonstration plots to educate the community about resilient and edible plantings.



### Fitness

“As part of Blue Zones efforts, organize walking clubs at Terry Trueblood Recreation Area for targeted demographics—senior walk days, mommy meet-ups, etc.”<sup>3</sup>

Opportunity: The south district of Iowa City is already frequented by many cyclists, walkers, and runners seeking exercise. Fitness opportunities can be enhanced by providing purposeful exercise equipment along the Gilbert Street corridor, completing a “fitness trail” loop.



Design Opportunities - View toward Napoleon Park



Design Opportunities - View toward Terry Trueblood Recreation Area



# Section 5 - Design Criteria

## INTRODUCTION

This chapter presents the Design Criteria for the proposed Iowa City Public Works facility, by providing both micro and macro level design requirements. Functional relationship information for these spaces can be found in Section 2 - Basis for Design. The Design Criteria format found in this chapter consists of functional area modules, which offer detailed descriptions of specific design issues for each of the areas listed in the Preliminary Space Needs Program. All modules and related equipment are for representational purposes only and do not necessarily depict strict design conformance.

### Sustainable Design

There are several sustainable design opportunities that could be implemented at the new Iowa City Public Works facility. The Sustainable Design section outlines many of the potential sustainable design opportunities appropriate for this type of facility. These options are broken into Building Design and Materials, Mechanical Systems, Plumbing Systems, and Electrical Systems.

### Utilities Design

The utilities for the maintenance facility are numerous and require close attention to detail. The coordination of HVAC, electrical, and plumbing systems are critical to the proper function of the shops and core of the facility. Providing an organized installation and design of these systems will alleviate future maintenance.

### Modules

Each of the building space modules contains information regarding the function of the space, affinities, critical dimension (if any), equipment, furnishings, and finishes related to the specific operation. Technical considerations for architectural, structural, mechanical, plumbing, and electrical systems are also delineated, and the spaces are graphically illustrated. Specific layouts for each area will be further developed during design development of the actual building project. Note that the equipment and furnishings listed are not intended to be all-inclusive. A detailed equipment list is included, and separated into groups based on function. A listing of the abbreviations utilized in the text is listed as follows.

## Abbreviations

A	Ampere	NG	Natural gas
AFF	Above finished floor	SF	Square feet
ATF	Automatic transmission fluid	UC	Used coolant
CA	Compressed air	UO	Used oil
CG	Chassis grease	VAC	Volts AC
CNG	Compressed natural gas	VOC	Volatile organic compound
FC	Foot candles	VCT	Vinyl composite tile
GFI	Ground fault interrupter	W	Water
EC	Engine coolant	WWF	Windshield waster fluid
EO	Engine oil	K	1,000 pounds
GO	Gear oil	LB	Pound
HO	Hydraulic oil	PSI	Pounds per square inch

### The Maintenance Facility Modules are as follows:

- Office Areas
- Office Support
- Shop Areas
- Support Areas
- Vehicle Repair / Service Areas
- Storage Areas
- Wash Areas
- Vehicle Equipment / Storage Areas

## POTENTIAL SUSTAINABLE DESIGN FEATURES

### Creating Sustainable Facilities

Sustainability is an essential and fundamental component of the facility. The key sustainability issues that should be explored in the planning and development of the facility include, but are not limited to, the following key points.

#### **Balance between economic and environmental needs**

To balance both economic and environmental needs that minimize environmental impacts, the facility design should maximize employee health, safety, and operation efficiencies. This priority objective should be considered at all stages of development of the facility.

#### **Efficient use of material resources**

Material resources are valuable and an efficient use should be encouraged in the development and operations of the facility. This can be implemented through the use of reusable, recyclable, and biodegradable materials as well as mandating the use of products that are extracted, harvested, and manufactured locally.

#### **Efficient use of water resources**

The facility plan should encourage efficient use of water resources by sustaining habitats and ecosystems through resourceful planning. Examples could include the implementation of an effective storm water management plan and the use of environmentally compliant wash bays to service all vehicles.

#### **Energy efficiency/renewable energy systems**

Explore and promote opportunities to increase energy savings at the facility through the use of high-performance systems combined with utilizing renewable energy sources such as solar, wind, and geothermal.

#### **Construction Methods**

Methods of construction of the facility play a significant role in sustaining the environment. Utilizing strategies that minimize transportation costs by utilizing local resources and recycling procedures during construction to divert material from landfills will conserve energy and minimize pollution.

#### **Sustainable Criteria**

The following is a list of potential strategies to achieve sustainable building design.

- Operable windows/natural ventilation
- Lighting controls: Occupancy sensors
- Lighting designed to meet targeted LEED points
- Utilize daylighting strategies
- Provide user-adjustable comfort and lighting controls
- In-floor ventilation
- In-floor radiant heat
- Water reclamation systems
- Use of reclaimed water for vehicle washing

#### **LEED Certifications**

LEED, or Leadership in Energy & Environmental Design, is a green building certification program that recognizes best-in-class building strategies and practices. To receive LEED certification, building projects satisfy prerequisites and earn points to achieve different levels of certification. Prerequisites and credits differ for each rating system, and teams choose the best fit for their project.

Each rating system groups requirements that address the unique needs of building and project types on their path towards LEED certification. Once a project team chooses a rating system, they'll use the appropriate credits to guide design and operational decisions.

## SUSTAINABILITY

The scale and location of the proposed, new facility affords many opportunities to implement sustainable design strategies to address site impact and energy use. The current State of Iowa Building Code will require various measures to address energy use and operation of all new buildings that are part of the project. Existing Buildings, if used to meet the needs of this master plan, are not subject to this code. The following list identifies some strategies that could be utilized:

### Architectural Opportunities

- Energy savings beyond code
  - Potential Energy rebates
- Solar sun screens
- Photovoltaic arrays
- Electric vehicle charging stations
- Durable Materials
- Passive solar heating
- Green roof

### LEED Certification Opportunities

#### **Sustainable Sites**

- Public transportation access
- Bicycle storage and changing rooms
- Low-emitting and fuel efficient vehicles
- Parking capacity
- Maximize open space
- Stormwater quality control
- Non roof heat island effect
- Light pollution reduction

#### **Water Efficiency**

- Install low flow or waterless fixtures
- Collect Rainwater from the roof
- Plant native vegetation, no irrigation
- Install a “living machine” to treat waste

#### **Energy and Atmosphere**

- Building orientation
- Natural ventilation
- Geothermal hybrid systems
- Natural daylight to reduce artificial lighting
- On-site renewables
- Ice storage
- Waste oil burning

#### **Materials and Resources**

- Certified wood, recycled/reclaimed materials
- Rapidly renewable materials
- Reuse/recycle construction waste

#### **Indoor Environmental Quality**

- Provide natural daylighting and views
- Provide personal HVAC control
- Use low/no VOC content materials
- Separate pollutants from open areas

#### **Innovation in Design**

- LEED Accredited Professional on design team
- Use green cleaning products
- Incorporate education signage about green strategies

## Site Features



Photo-voltaic shade structure



Parking bioswale

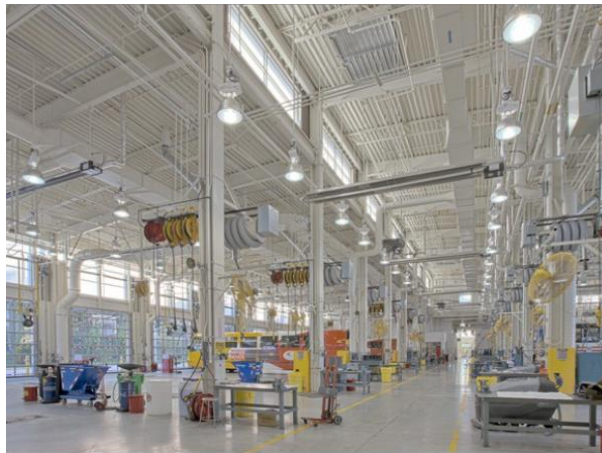


Bicycle rack

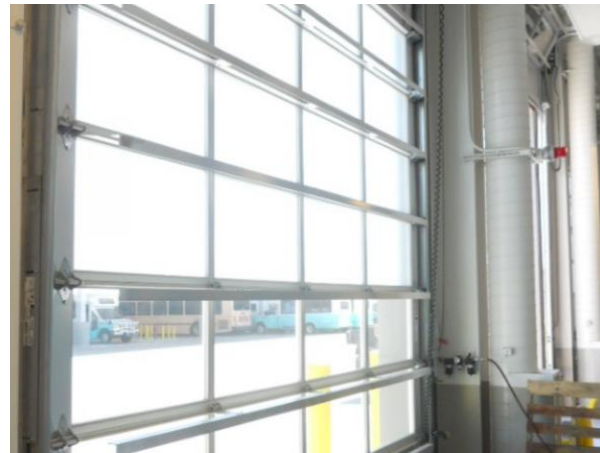


CNG fueling for buses and non-revenue vehicles

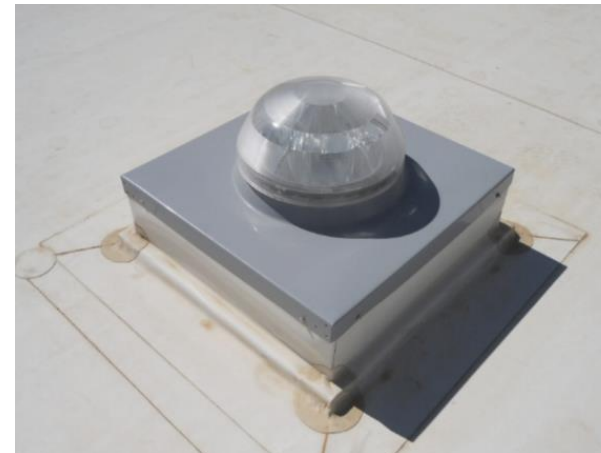
## Building Design and Materials



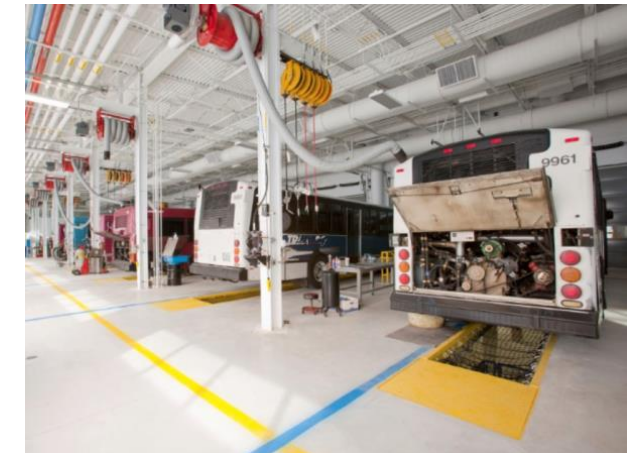
Translucent clerestory windows natural light



Insulated translucent sectional door



Solar tube day lighting strategy



Light reflective floor

## Mechanical Systems



Heat recovery piping



Destratification fan

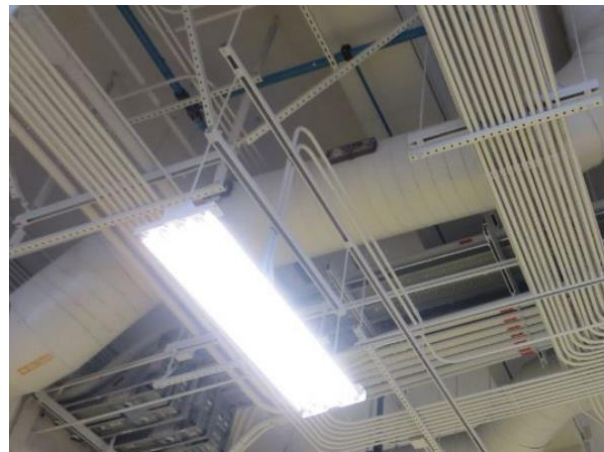


Radiant floor system



Under floor air distribution

## Electrical Systems



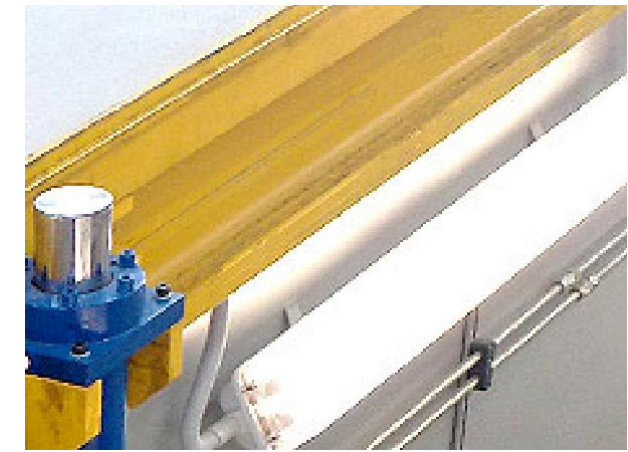
LED lighting



Photovoltaic panels on roof



Photovoltaic panel on parking canopy



Task lighting



## Plumbing Systems



**Dual volume flush toilet**



**Wash water reclaim system**



**Low-flow and automatic fixtures**



**Rainwater harvesting**

## OFFICE AREAS

### Workstation Type A

#### AREA

64 SF

#### FUNCTION

Open office workstation

#### RELATIONSHIP TO OTHER AREAS

Case specific; reference office descriptions

#### CRITICAL DIMENSIONS

9'-0" vertical clearance

#### EQUIPMENT/FURNISHINGS

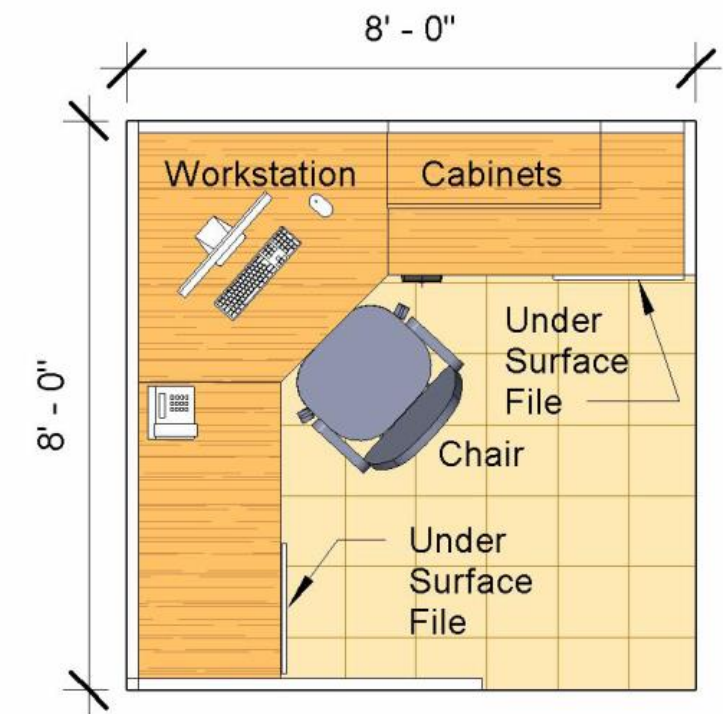
- Task chair
- 24" deep work surfaces
- 42" x 42" corner work surface
- Under surface file cabinets

#### DESIGN FEATURES

- Systems furniture
- Floor: Carpet floor covering (Administration/Operations) or VCT floor covering (Maintenance)
- Walls: Acrylic latex-painted masonry and/or metal stud and gypsum board walls
- Ceiling: Suspended tile ceiling with LED lighting
- Mechanical: Air conditioned
- Electrical:
  - General purpose duplex receptacles, 120 VAC, 20 A as required by code
  - Data and telephone receptacles

#### SUSTAINABLE DESIGN CRITERIA

- Operable windows/natural ventilation
- Lighting controls: Occupancy sensors
- Lighting designed to meet targeted LEED points
- Exterior views



## Workstation Type B

### AREA

100 SF

### FUNCTION

Open office workstation

### RELATIONSHIP TO OTHER AREAS

Case specific; reference office descriptions

### CRITICAL DIMENSIONS

9'-0" vertical clearance

### EQUIPMENT/FURNISHINGS

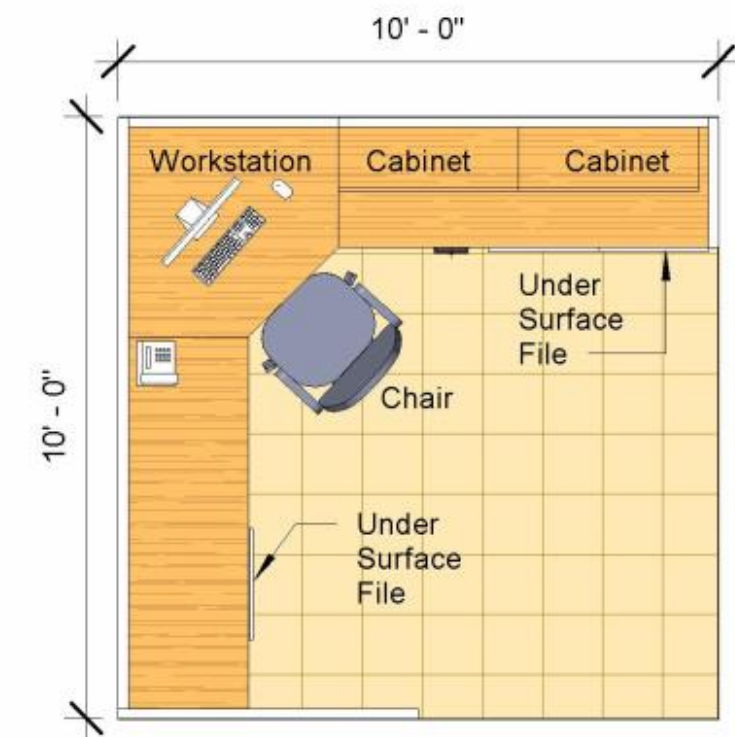
- Task chair
- 24" deep work surfaces
- 42" x 42" corner work surface
- Under surface file cabinets

### DESIGN FEATURES

- Systems furniture
- Floor: Carpet floor covering (Administration/Operations) or VCT floor covering (Maintenance)
- Walls: Acrylic latex-painted masonry and/or metal stud and gypsum board walls
- Ceiling: Suspended tile ceiling with LED lighting
- Mechanical: Air conditioned
- Electrical:
  - General purpose duplex receptacles, 120 VAC, 20 A as required by code
  - Data and telephone receptacles

### SUSTAINABLE DESIGN CRITERIA

- Operable windows/natural ventilation
- Lighting controls: Occupancy sensors
- Lighting designed to meet targeted LEED points
- Exterior views



## Office Type A

### AREA

120 SF

### FUNCTION

Enclosed private office

### RELATIONSHIP TO OTHER AREAS

Case specific; reference office descriptions

### CRITICAL DIMENSIONS

9'-0" vertical clearance

### EQUIPMENT/FURNISHINGS

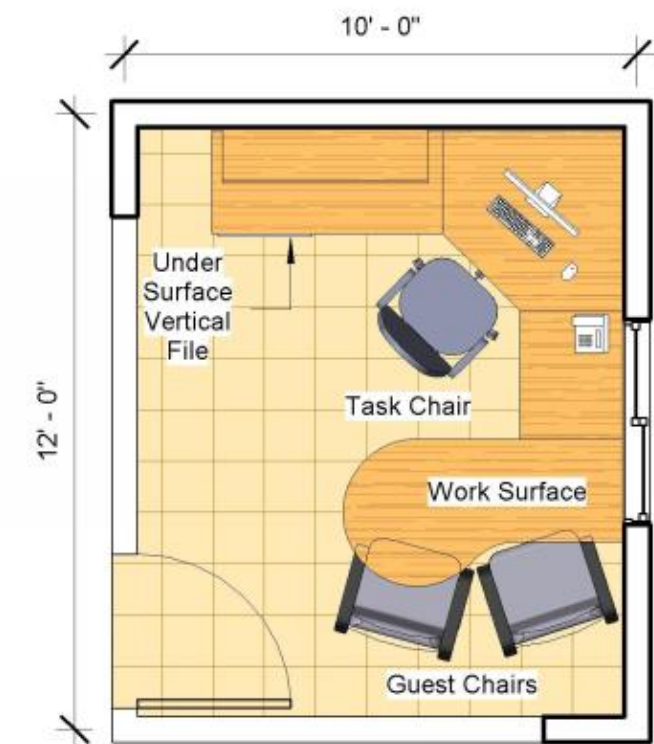
- Task chair
- 2 guest chairs
- 24" deep work surfaces
- 42" x 42" corner work surface
- Under surface file cabinets

### DESIGN FEATURES

- Systems furniture
- Floor: Carpet floor covering (Administration/Operations) OR VCT floor covering or finished concrete (Maintenance)
- Walls: Acrylic latex-painted masonry and/or metal stud and gypsum board walls
- Ceiling: Suspended tile ceiling with LED lighting
- Doors: Secured entry; single 3'-0" door
- Windows: Exterior window required
- Mechanical: Air conditioned
- Electrical:
  - General purpose duplex receptacles, 120 VAC, 20 A, as required by code
  - Data and telephone receptacles

### SUSTAINABLE DESIGN CRITERIA

- Operable windows/natural ventilation
- Lighting controls: Occupancy sensors
- Lighting designed to meet targeted LEED points
- Exterior views



## Office Type B

### AREA

168 SF Private Office

### FUNCTION

Enclosed private office

### RELATIONSHIP TO OTHER AREAS

Case specific; reference office descriptions

### CRITICAL DIMENSIONS

9'-0" vertical clearance

### EQUIPMENT/FURNISHINGS

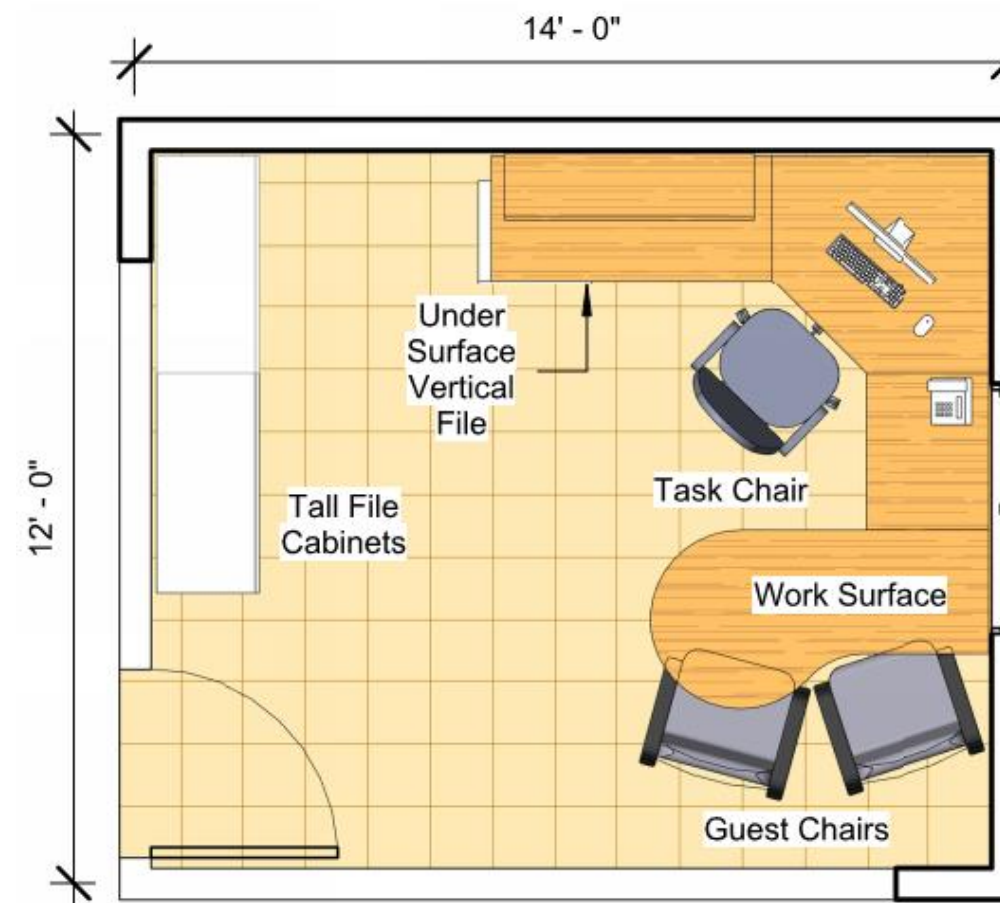
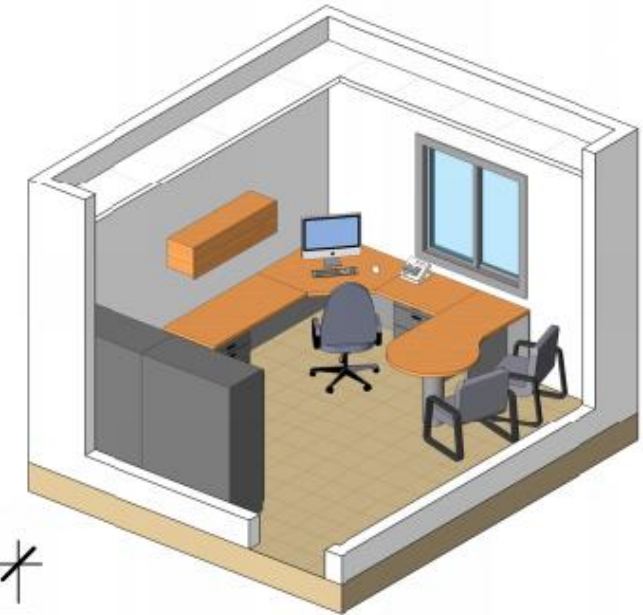
- Systems furniture
- Task chair
- 2 guest chairs
- 24" deep work surfaces
- 42" x 42" corner work surface
- Under surface file cabinets

### DESIGN FEATURES

- Systems furniture
- Floor: Carpet floor covering (Administration/Operations) OR VCT floor covering or finished concrete (Maintenance)
- Walls: Acrylic latex-painted masonry and/or metal stud and gypsum board walls
- Ceiling: Suspended tile ceiling with LED lighting
- Doors: Secured entry; single 3'-0" door
- Windows: Exterior window required
- Mechanical: Air conditioned
- Electrical:
  - General purpose duplex receptacles, 120 VAC, 20 A
  - Data and telephone receptacles

### SUSTAINABLE DESIGN CRITERIA

- Operable windows/natural ventilation
- Lighting controls: Occupancy sensors
- Lighting designed to meet targeted LEED points
- Exterior views



## Office Type C

### AREA

224 SF Private Office

### FUNCTION

Enclosed private office.

### RELATIONSHIP TO OTHER AREAS

Case specific; reference office descriptions

### CRITICAL DIMENSIONS

9' -0" vertical clearance

### EQUIPMENT/FURNISHINGS

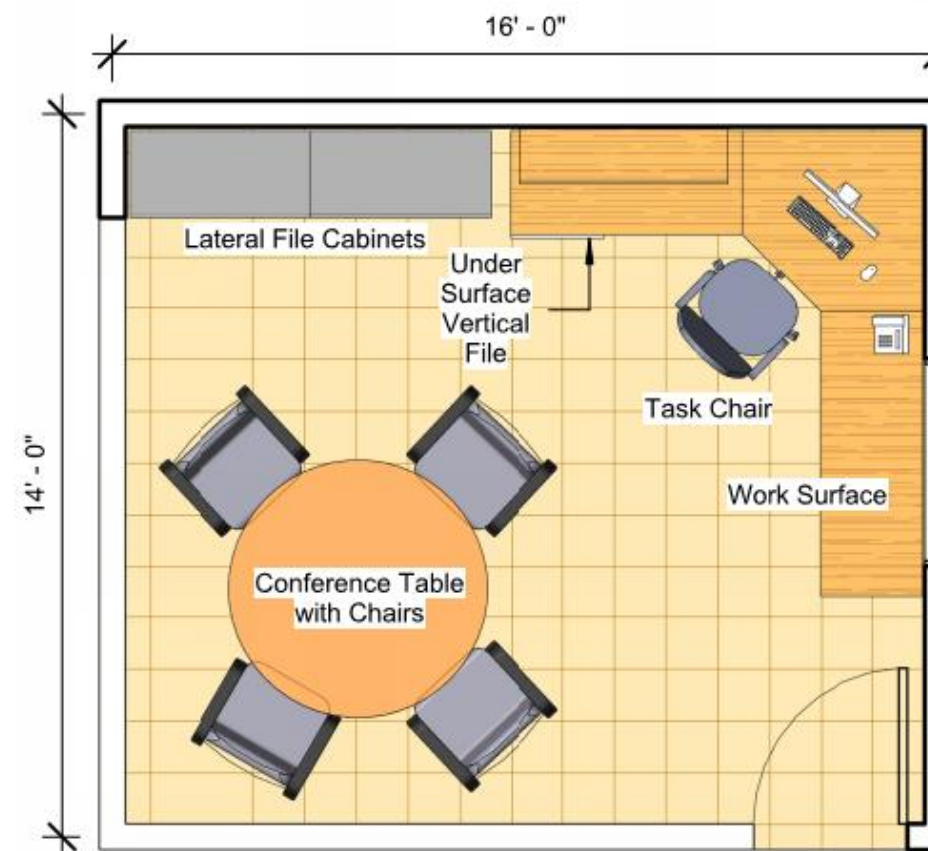
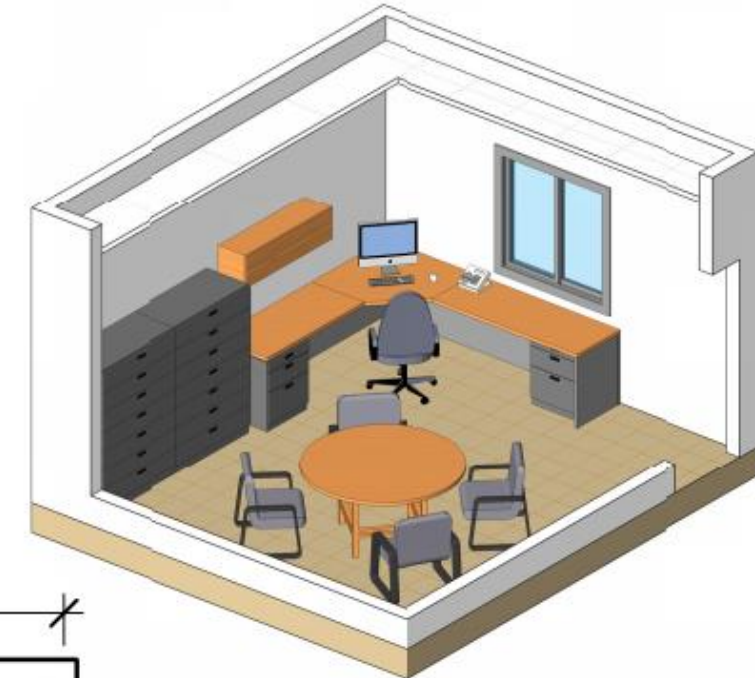
- Task chair
- Desk
- Credenza
- Bookcase
- Lateral file
- Side table with 4-6 guest chairs

### DESIGN FEATURES

- Systems furniture
- Floor: Carpet floor covering (Administration/Operations) OR VCT floor covering or finished concrete (Maintenance)
- Walls: Acrylic latex-painted masonry and/or metal stud and gypsum board walls
- Ceiling: Suspended tile ceiling with LED lighting
- Doors: Secured entry; single 3'-0" door
- Windows: Exterior window required
- Mechanical: Air conditioned
- Electrical:
  - General purpose duplex receptacles, 120 VAC, 20 A
  - Data and telephone receptacles

### SUSTAINABLE DESIGN CRITERIA

- Operable windows/natural ventilation
- Lighting controls: Occupancy sensors
- Lighting designed to meet targeted LEED points
- Exterior views



## Conference Room Type A

### SIZE

8-10 people

### FUNCTION

Separate room for meeting of 8 - 10 people.

### RELATIONSHIP TO OTHER AREAS

Access to all administrative areas

### CRITICAL DIMENSIONS

9' -0" vertical clearance

### EQUIPMENT/FURNISHINGS

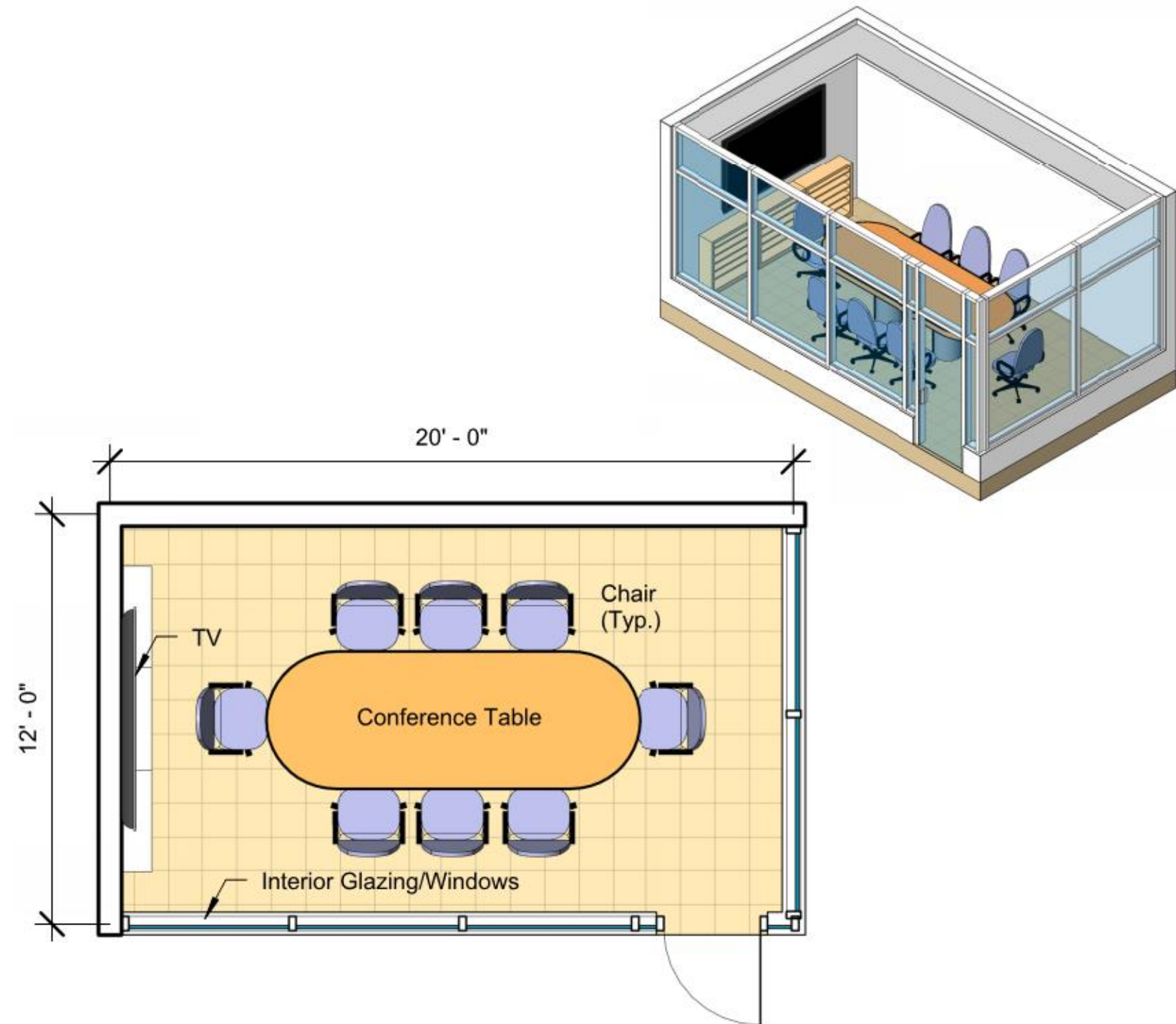
- Conference table
- Conference chairs
- A/V equipment

### DESIGN FEATURES

- Floor: Carpet floor covering (Administration/Operations) OR VCT floor covering (Maintenance)
- Walls: Acrylic latex painted masonry and/or metal stud/gypsum board walls
- Ceiling: Suspended tile ceiling with LED lighting
- Doors: Single 3'-0" door
- Windows: Exterior window required
- Mechanical: Air conditioned
- Electrical:
  - LED lighting
  - General purpose duplex receptacles, 120 VAC, 20 A as required by code
  - Data and telephone receptacles

### SUSTAINABLE DESIGN CRITERIA

- Operable windows/natural ventilation
- Lighting controls: Occupancy sensors
- Lighting designed to meet targeted LEED points
- Interior windows



## Conference Room Type B

### SIZE

10-12 people

### FUNCTION

Separate room for meeting of 10 - 12 people.

### RELATIONSHIP TO OTHER AREAS

Access to all administrative areas

### CRITICAL DIMENSIONS

9' -0" vertical clearance

### EQUIPMENT/FURNISHINGS

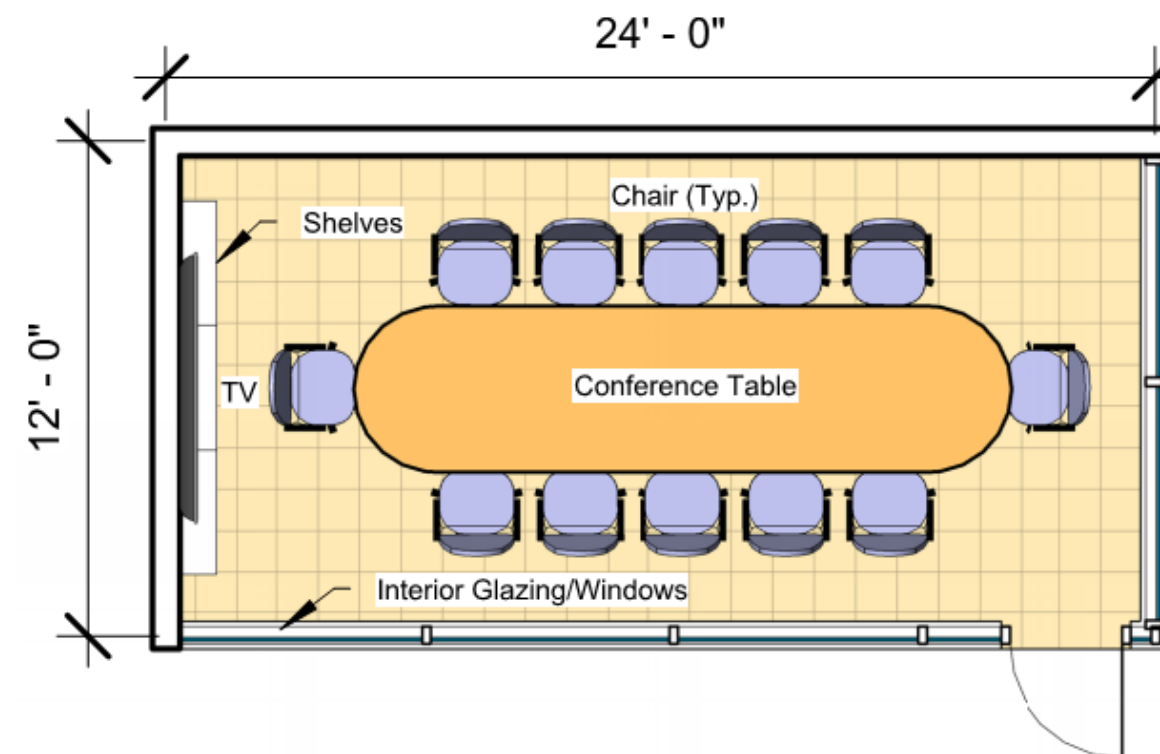
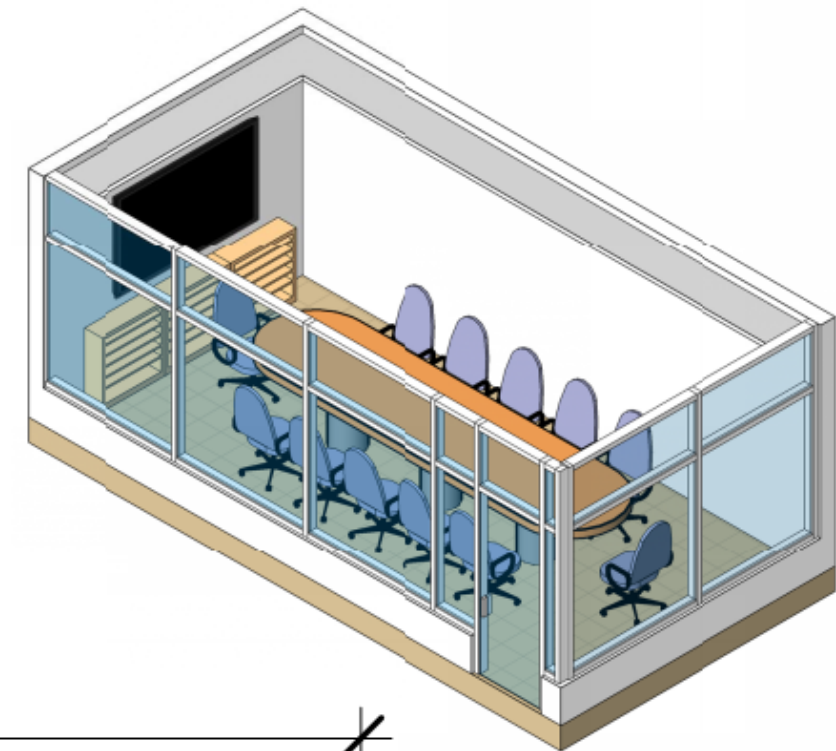
- Conference table
- Conference chairs
- A/V equipment

### DESIGN FEATURES

- Floor: Carpet floor covering (Administration/Operations) OR VCT floor covering (Maintenance)
- Walls: Acrylic latex painted masonry and/or metal stud/gypsum board walls
- Ceiling: Suspended tile ceiling with LED lighting
- Doors: Single 3'-0" door
- Windows: Exterior window required
- Mechanical: Air conditioned
- Electrical:
  - LED lighting
  - General purpose duplex receptacles, 120 VAC, 20 A as required by code
  - Data and telephone receptacles

### SUSTAINABLE DESIGN CRITERIA

- Operable windows/natural ventilation
- Lighting controls: Occupancy sensors
- Lighting designed to meet targeted LEED points
- Interior windows





## Conference Room Type C

### SIZE

15-20 people

### FUNCTION

Separate room for meeting of 15 - 20 people.

### RELATIONSHIP TO OTHER AREAS

Access to all administrative areas

### CRITICAL DIMENSIONS

9' -0" vertical clearance

### EQUIPMENT/FURNISHINGS

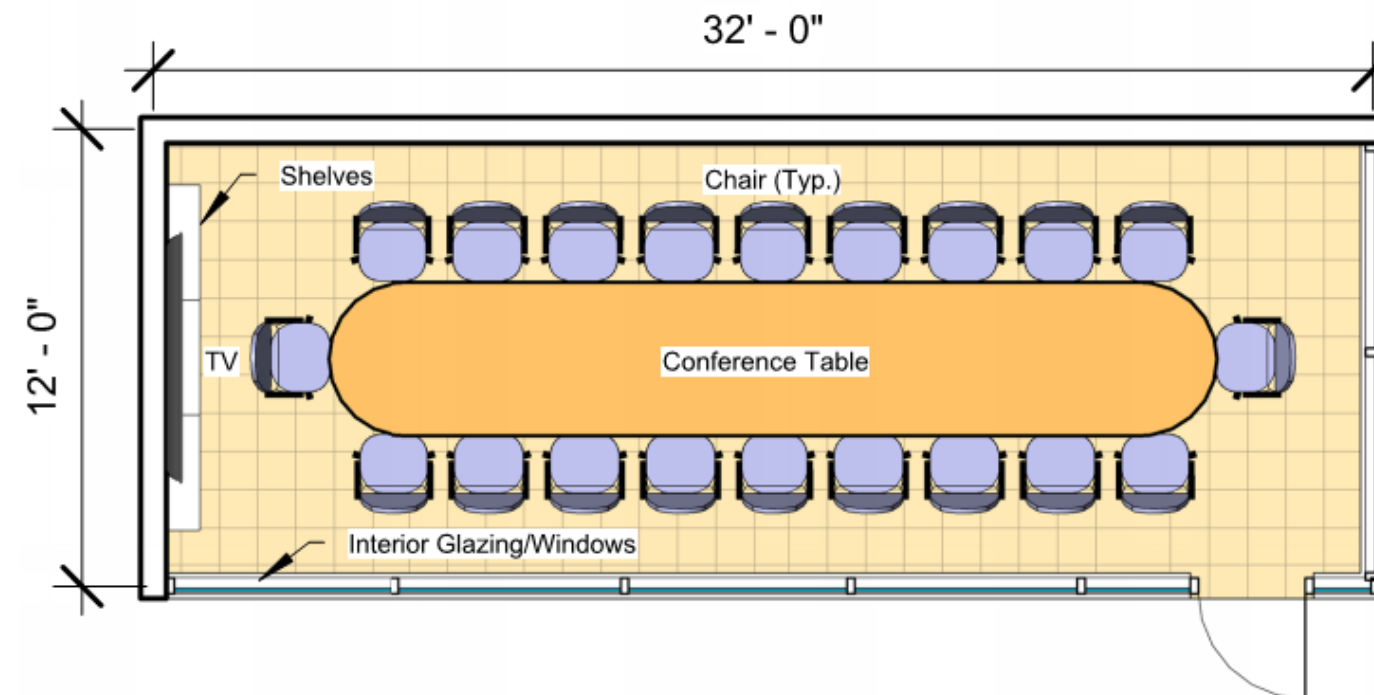
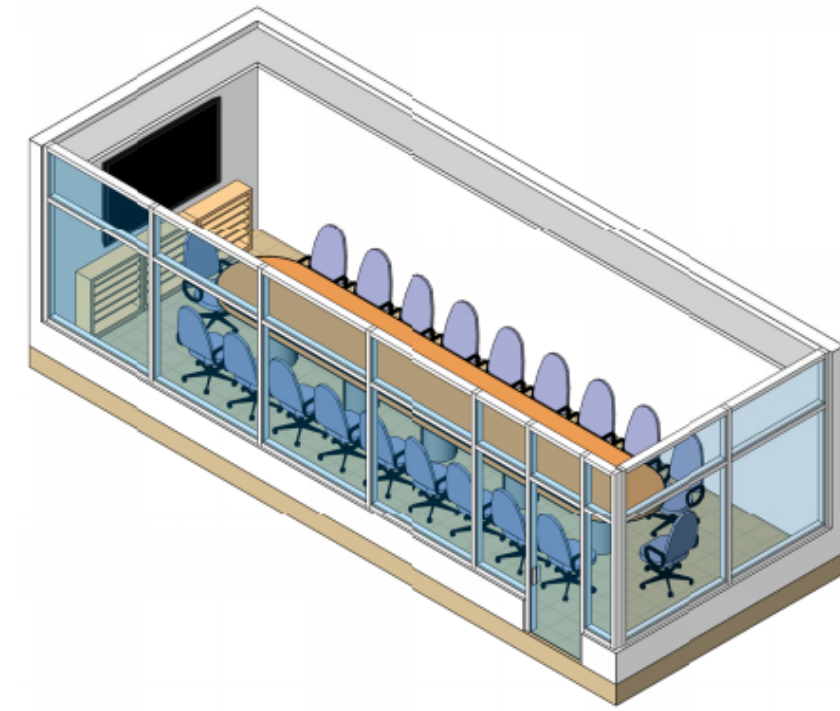
- Conference table
- Conference chairs
- A/V equipment

### DESIGN FEATURES

- Floor: Carpet floor covering (Administration/Operations) OR VCT floor covering (Maintenance)
- Walls: Acrylic latex painted masonry and/or metal stud/gypsum board walls
- Ceiling: Suspended tile ceiling with LED lighting
- Doors: Single 3'-0" door
- Windows: Exterior window required
- Mechanical: Air conditioned
- Electrical:
  - LED lighting
  - General purpose duplex receptacles, 120 VAC, 20 A as required by code
  - Data and telephone receptacles

### SUSTAINABLE DESIGN CRITERIA

- Operable windows/natural ventilation
- Lighting controls: Occupancy sensors
- Lighting designed to meet targeted LEED points
- Interior windows



## OFFICE SUPPORT

### Copy / File Storage Area

#### FUNCTION

Dedicated alcove or room for copier/printer/scanner/fax machine and storage for office supplies

#### RELATIONSHIP TO OTHER AREAS

Access to all office areas

#### CRITICAL DIMENSIONS

9' -0" vertical clearance

#### EQUIPMENT/FURNISHINGS

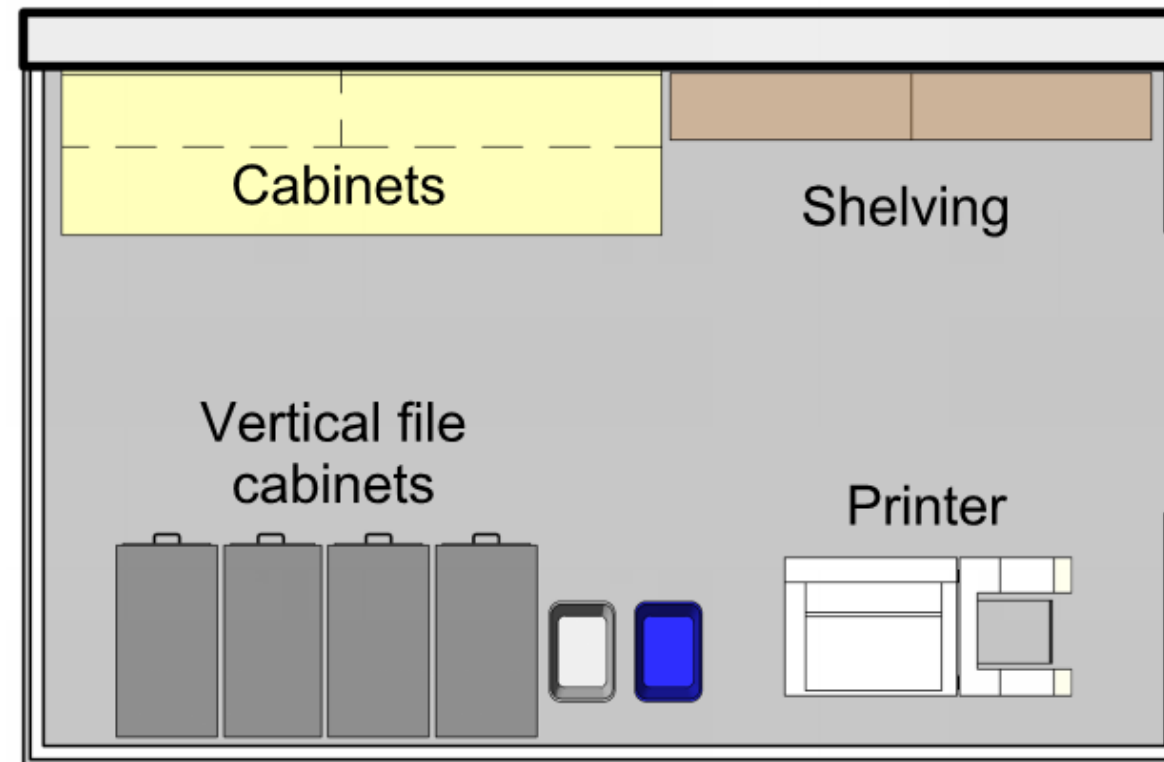
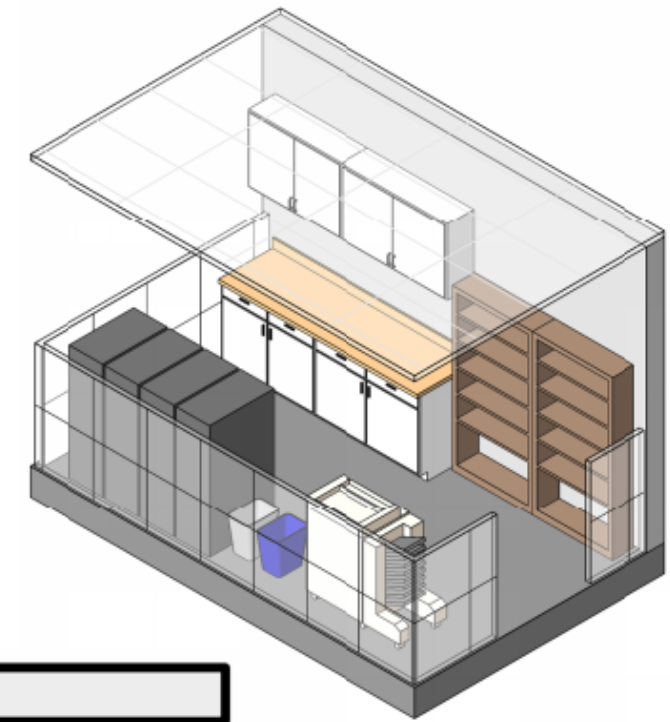
- Copier/printer/scanner machine
- Work surface with cabinets below
- Filing cabinets
- Shelving

#### DESIGN FEATURES

- Floor: Carpet floor covering (Administration/Operations) OR VCT floor covering (Maintenance)
- Walls: Acrylic latex-painted masonry and/or metal stud/gypsum board walls
- Partial height partition walls (Administration/Operations)
- Ceiling: Suspended tile ceiling with LED lighting
- Mechanical: Air conditioned
- Electrical:
  - LED lighting
  - General purpose duplex receptacles, 120 VAC, 20 A as required by code
  - Data and telephone receptacles
  - As required by equipment

#### SUSTAINABLE DESIGN CRITERIA

- Operable windows/natural ventilation
- Lighting controls: Occupancy sensors
- Lighting designed to meet targeted LEED points



## Crew Room

### FUNCTION

Enclosed room used as a break area for staff assigned to the building

### RELATIONSHIP TO OTHER AREAS

- Case specific
- Access to all office areas, repair areas, and Restrooms

### CRITICAL DIMENSIONS

9' -0" vertical clearance

### EQUIPMENT/FURNISHINGS

Counter space, upper and lower cabinets; sink with disposal, microwaves, refrigerators, vending machines, water coolers, tables, and chairs

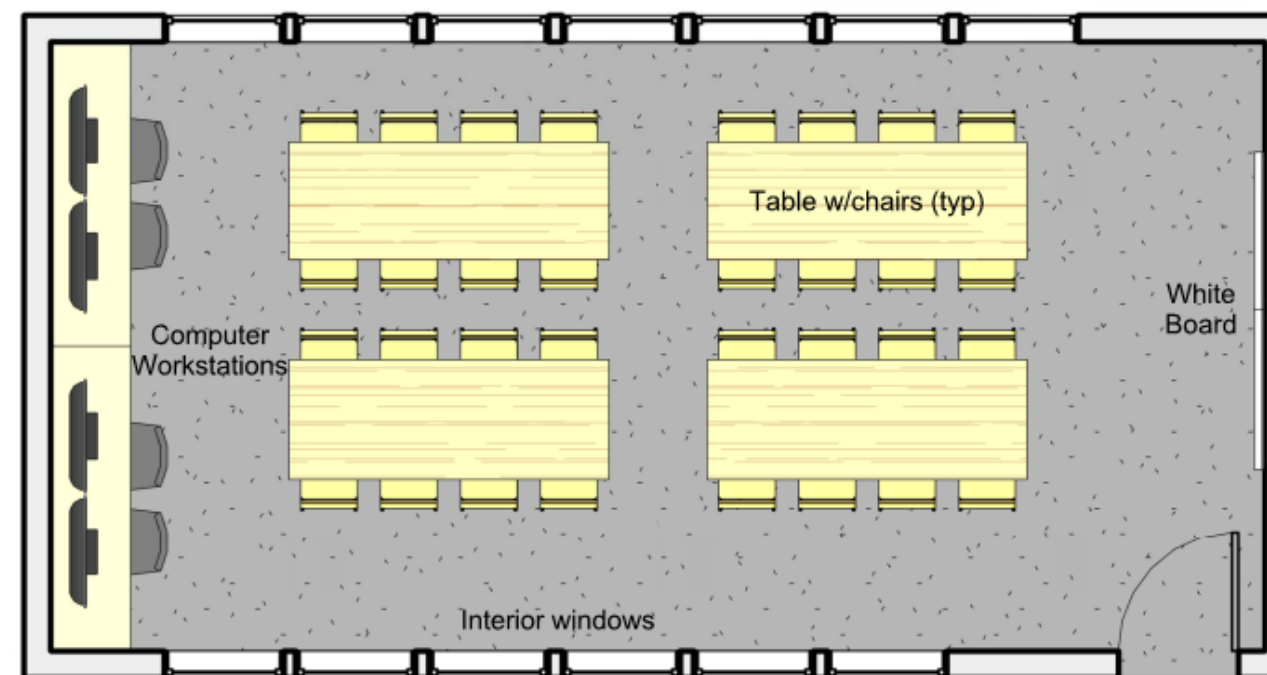
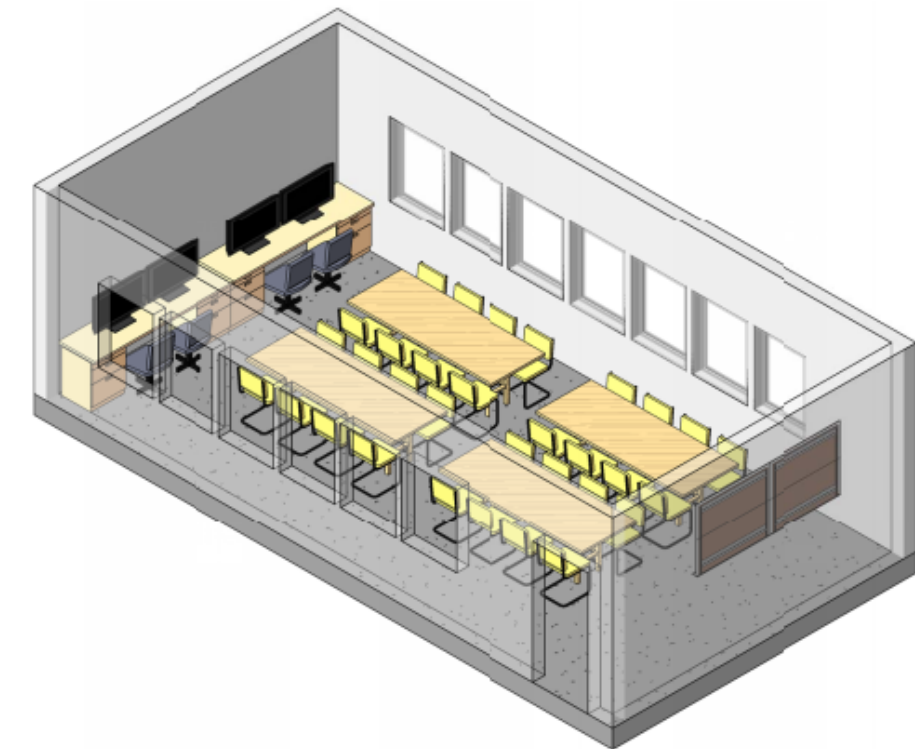
### DESIGN FEATURES

- Floor: VCT floor covering OR finished concrete
- Walls: Acrylic latex-painted masonry and/or metal stud and gypsum board walls
- Ceiling: Suspended tile ceiling with LED lighting
- Mechanical: Air conditioned
- Plumbing: Water for sink and refrigerator
- Electrical:
- LED lighting, bi-level switching

- General purpose duplex receptacles, 120 VAC,
- 20 A, as required by code
- Data and telephone receptacles
- As required for equipment

### SUSTAINABLE DESIGN CRITERIA

- Operable windows/natural ventilation
- Lighting controls: Occupancy sensors
- Lighting designed to meet targeted LEED points



## Custodial Supply Storage

### FUNCTION

Enclosed area for janitorial supplies and mop sink

### RELATIONSHIP TO OTHER AREAS

Adjacent to Restrooms

### CRITICAL DIMENSIONS

9' -0" vertical clearance

### EQUIPMENT/FURNISHINGS

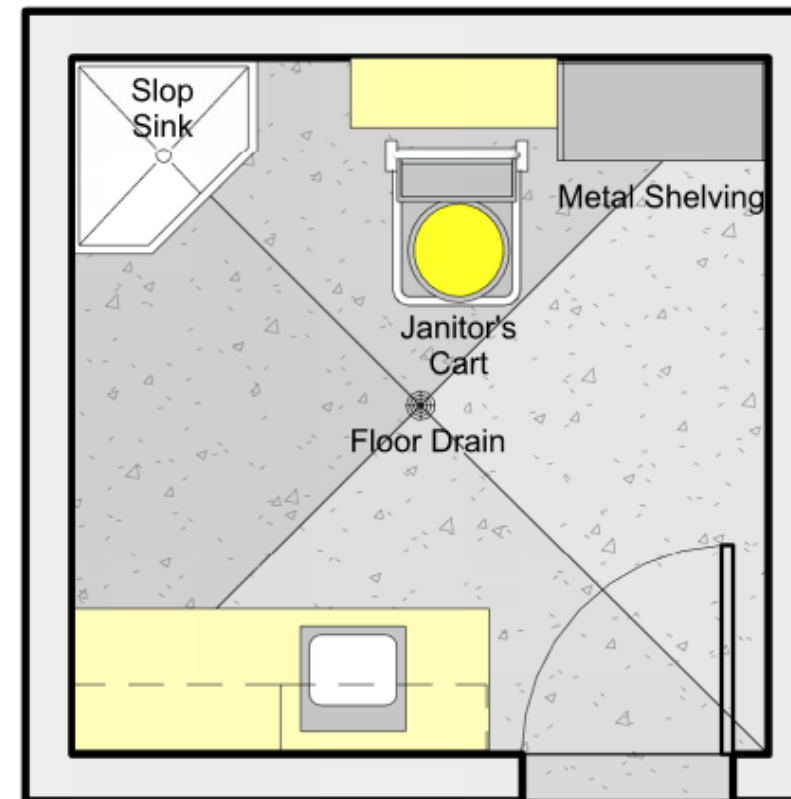
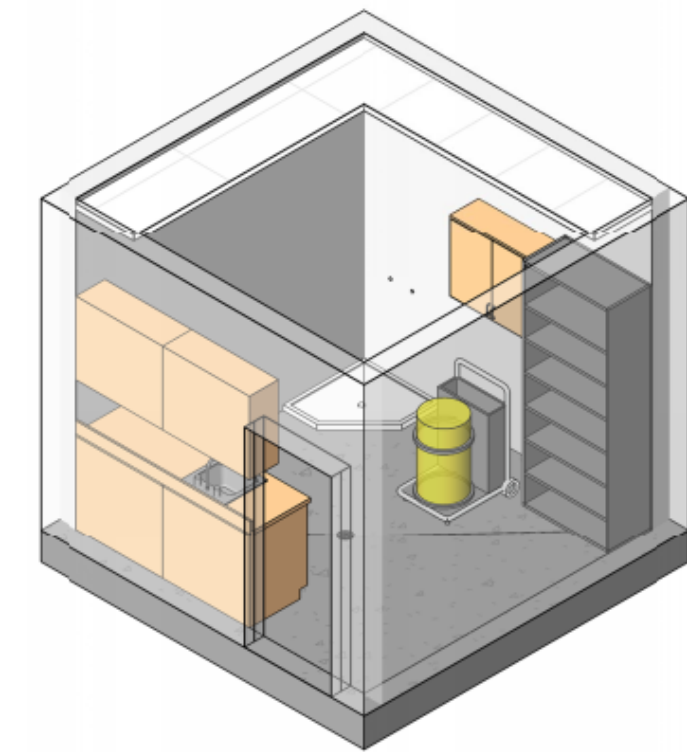
- Mop sink
- Metal shelving
- Mobile cart

### DESIGN FEATURES

- Floor: Exposed concrete slab
- Walls: Soil and grease resistant
- Ceiling: Painted exposed structure
- Secure area
- Plumbing: Water supply to mop sink
- Mechanical: Air conditioned
- Electrical:
  - LED lighting
  - General purpose duplex receptacles, 120 VAC, 20 A, GFI protected as required by code
  - As required by equipment

### SUSTAINABLE DESIGN CRITERIA

Lighting controls: Occupancy sensors



## Drivers Locker Area

### FUNCTION

Alcove area for vendors to drop off clean uniforms and pick up dirty uniforms.

### RELATIONSHIP TO OTHER AREAS

- Accessible from Men's and Women's Lockers/Showers/Restroom
- Adjacent to an exterior door for vendor pickup/drop off

### CRITICAL DIMENSIONS

10'-0" vertical clearance

### EQUIPMENT/FURNISHINGS

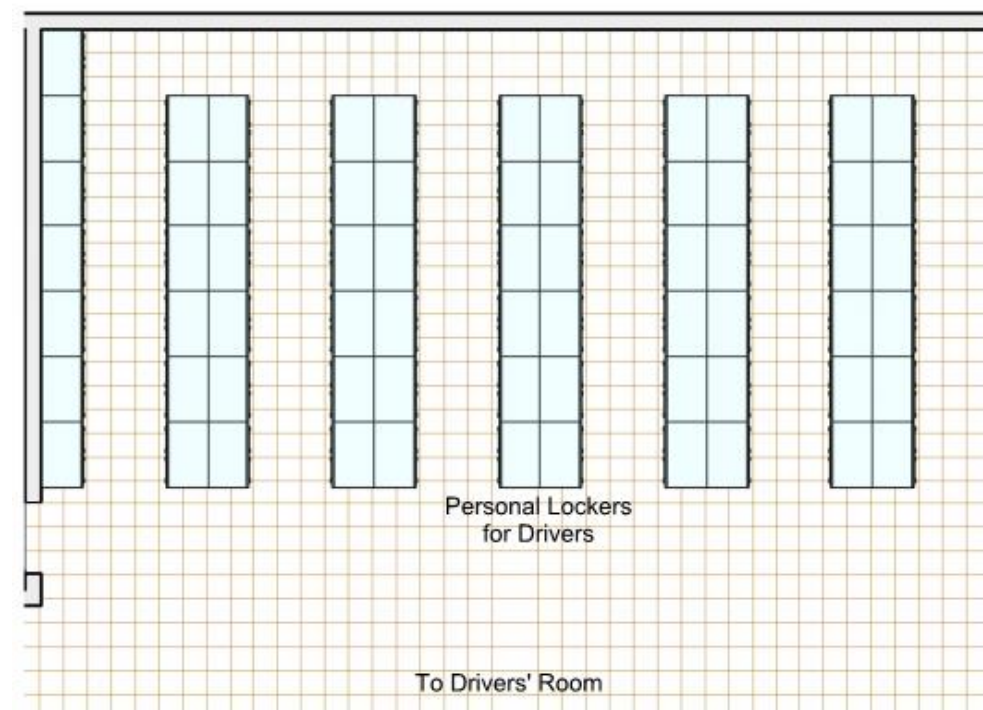
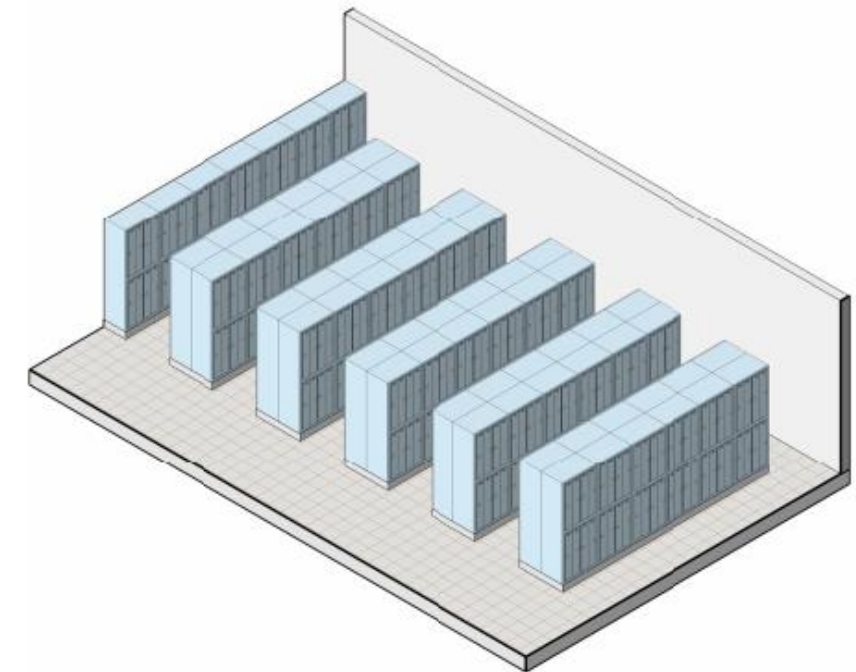
Vendor provided uniform lockers, bin for dirty uniforms

### DESIGN FEATURES

- Housekeeping pad for lockers
- Floor: Exposed concrete floor
- Ceiling: Painted exposed structure with LED lighting
- Mechanical: Air conditioned
- Electrical:
  - LED lighting
  - Data and telephone receptacles
  - General purpose duplex receptacles, 120 VAC, 20 A as required by code

### SUSTAINABLE DESIGN CRITERIA

- Lighting controls: Occupancy sensors
- Lighting designed to meet targeted LEED points



## Drivers Room

### FUNCTION

Enclosed room used as a break area for drivers between shifts

### RELATIONSHIP TO OTHER AREAS

- Case specific
- Access to the dispatch vestibule, quiet room, TV room, restrooms, drivers' locker area, and fitness room

### CRITICAL DIMENSIONS

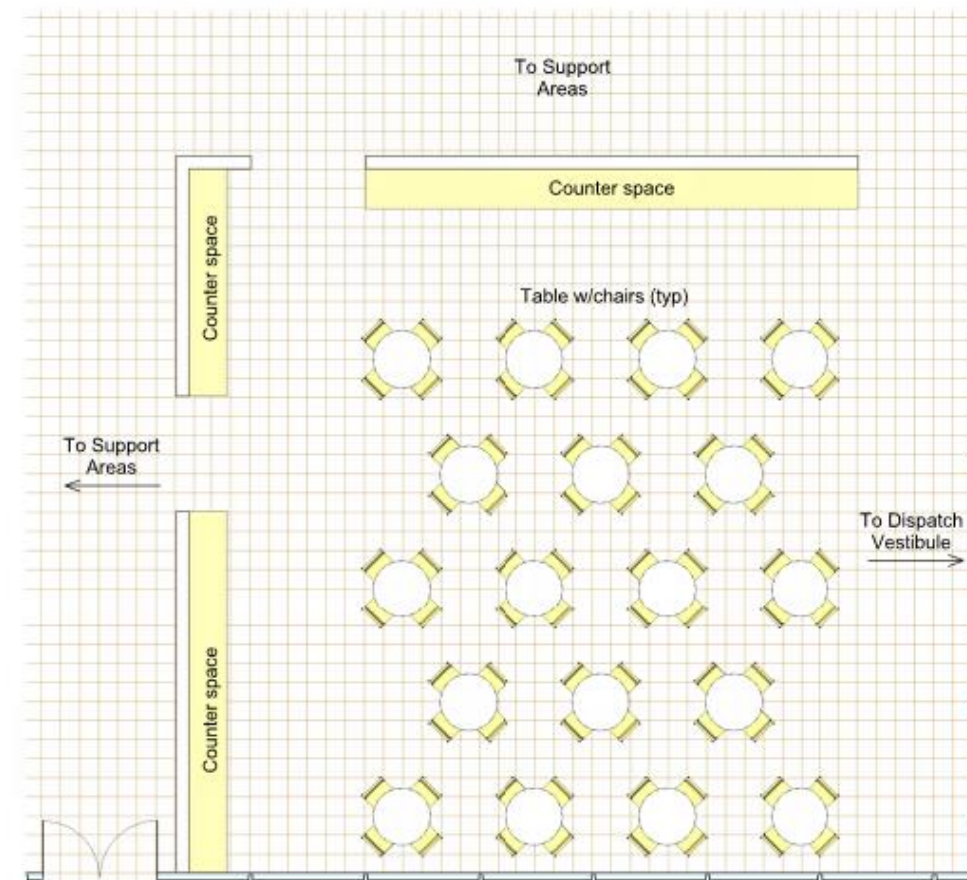
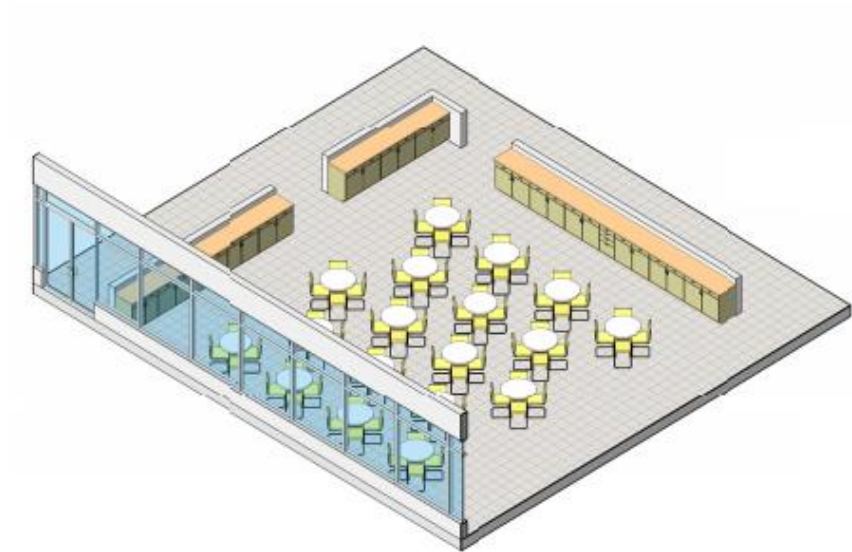
12' -0" vertical clearance

### EQUIPMENT/FURNISHINGS

- Counter space, cabinets, tables, and chairs
- Design Features
- Floor: VCT floor covering OR finished concrete
- Walls: Acrylic latex-painted masonry and/or metal stud and gypsum board walls
- Ceiling: Suspended tile ceiling with LED lighting
- Mechanical: Air conditioned
- Plumbing: Water for sink and refrigerator
- Electrical:
  - LED lighting, bi-level switching
  - General purpose duplex receptacles, 120 VAC,
  - 20 A, as required by code
  - Data and telephone receptacles
  - As required for equipment

### SUSTAINABLE DESIGN CRITERIA

- Windows/natural ventilation
- Lighting controls: Occupancy sensors
- Lighting designed to meet targeted LEED points



## Dispatch Vestibule

### FUNCTION

Dispatch: Secure enclosed area for radio and window dispatchers responsible for communication with bus drivers/train operators.

Vestibule: Space at window for operator check-in, receive work assignments, and communicate with Dispatch

### RELATIONSHIP TO OTHER AREAS

- Adjacent to Drivers' Room
- View of bus parking
- Access to mailboxes and other office areas

### CRITICAL DIMENSIONS

9'-0" vertical clearance

### EQUIPMENT/FURNISHINGS

- Dispatch: Custom millwork counter/systems furniture for workstations with task chairs
- Shelving for radio consoles and lost and found
- Lateral file cabinets and bookcase
- Report/sign out counter
- Monitors for cameras in parking area

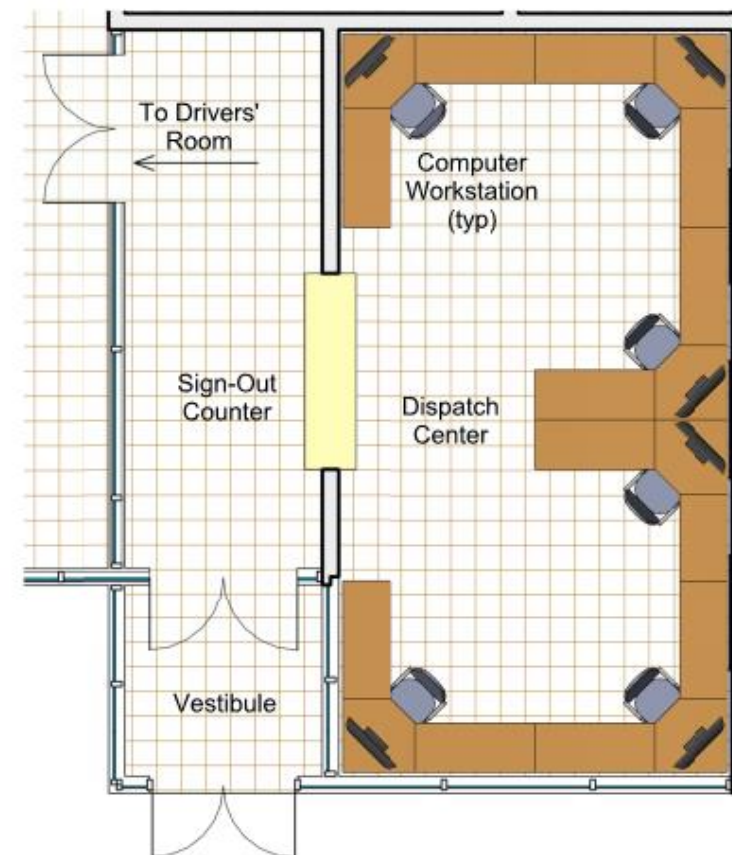
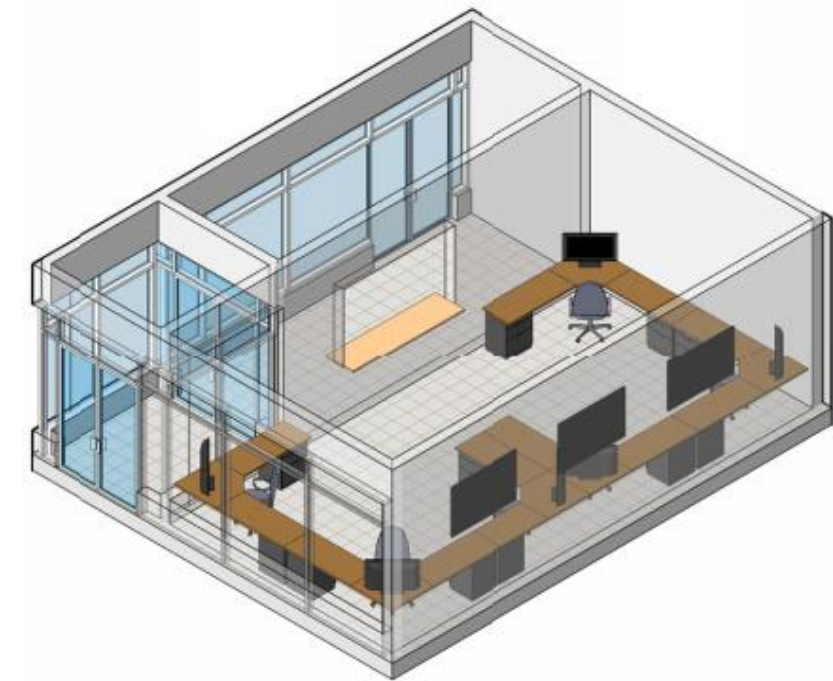
### DESIGN FEATURES

- Vestibule: Enclosed with windows to Drivers' Room, VCT flooring or exposed concrete
- Secure/closable window at counter
- Dispatch: Secured entry, raised floors, VCT floor covering
- Walls; Acrylic latex-painted metal stud/gypsum board walls or enamel painted masonry walls
- Ceiling: Suspended tile ceiling with fluorescent or LED lighting
- Electrical
  - Data and telephone receptacles
  - Fluorescent or LED lighting
  - General purpose duplex receptacles, 120 VAC, 20 A as required by code
- Mechanical: Air conditioned

### SUSTAINABLE DESIGN CRITERIA

- Lighting controls: Occupancy sensors
- Lighting designed to meet targeted LEED points

Dispatch: Windows/natural ventilation



## Fitness Room

### FUNCTION

Enclosed area for employee exercise

### RELATIONSHIP TO OTHER AREAS

Accessible from Drivers' Room/Break Room, Locker Alcove, and Restrooms and Showers

### CRITICAL DIMENSIONS

9'-0" vertical clearance

### EQUIPMENT/FURNISHINGS

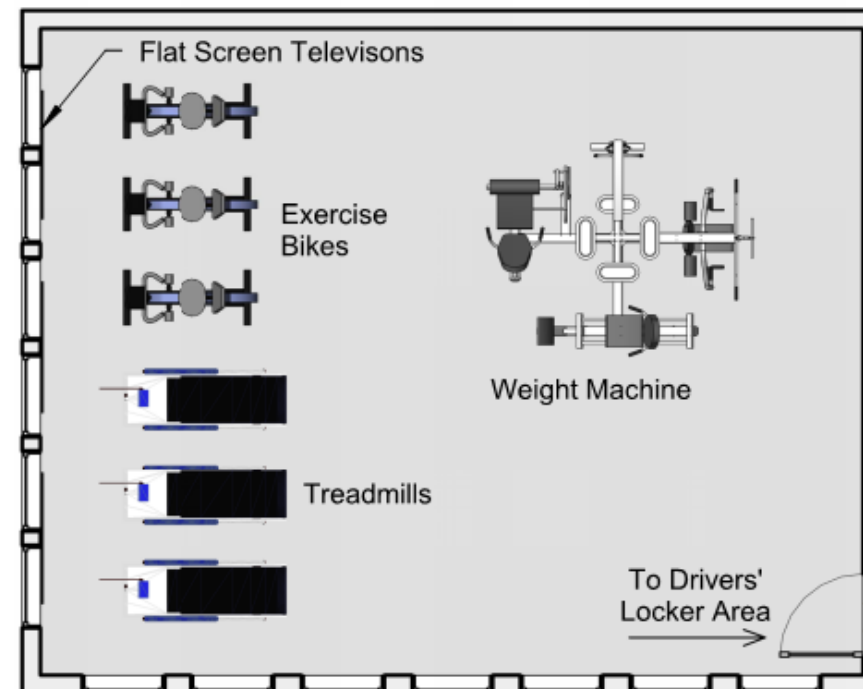
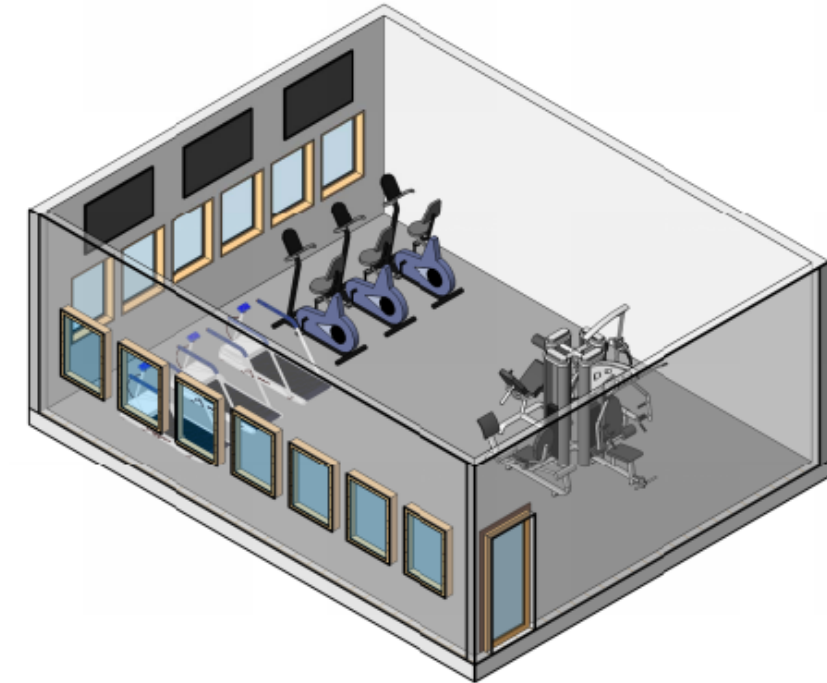
Miscellaneous fitness equipment determined by the Owner Television

### DESIGN FEATURES

- Floor: Athletic rubber floor tiles
- Walls: Acrylic latex painted masonry and/or metal stud/gypsum board walls
- Ceiling: Suspended tile ceiling with LED lighting
- Doors: Single 3'-0" door with view panel
- Mechanical: Air conditioned
- Electrical:
  - LED lighting
  - Data, television and telephone receptacles
  - General purpose duplex receptacles, 120 VAC, 20A

### SUSTAINABLE DESIGN CRITERIA

- Windows/natural ventilation
- Utilize daylighting strategies
- Lighting controls: Occupancy sensors and incorporated daylight harvesting
- Lighting designed to meet targeted LEED points





## Kitchenette / Vending

### FUNCTION

Enclosed room used as a break area for staff assigned to the building

### RELATIONSHIP TO OTHER AREAS

- Case specific
- Access to all office areas, repair areas, and Restrooms

### CRITICAL DIMENSIONS

9' -0" vertical clearance

### EQUIPMENT/FURNISHINGS

Counter space, upper and lower cabinets, sink with disposal, microwaves, refrigerators, vending machines, water coolers, tables, and chairs

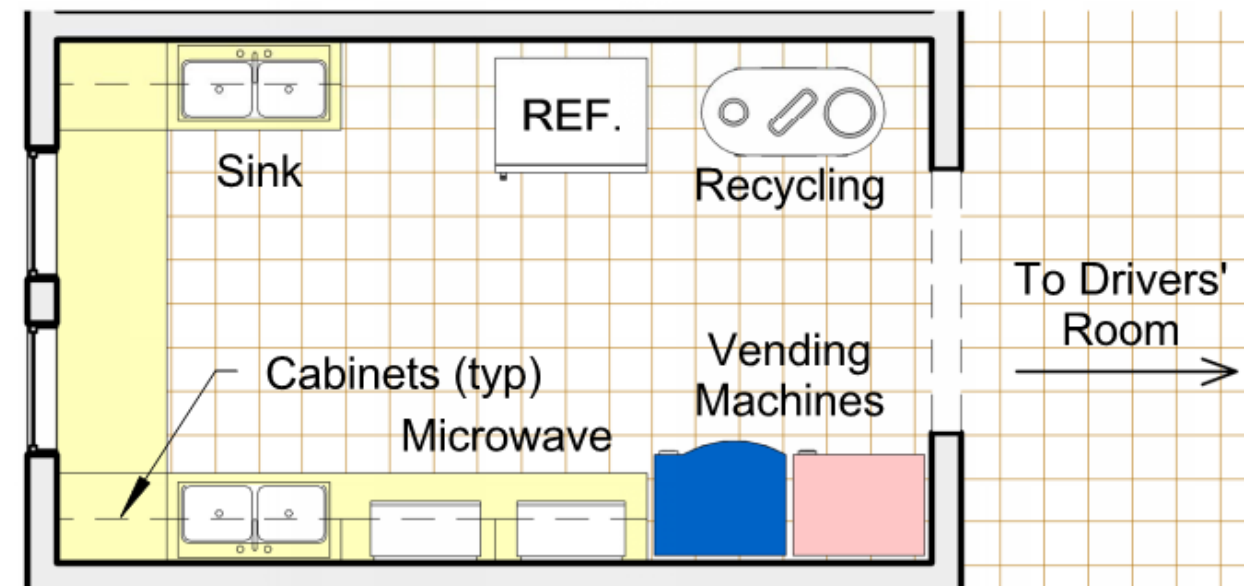
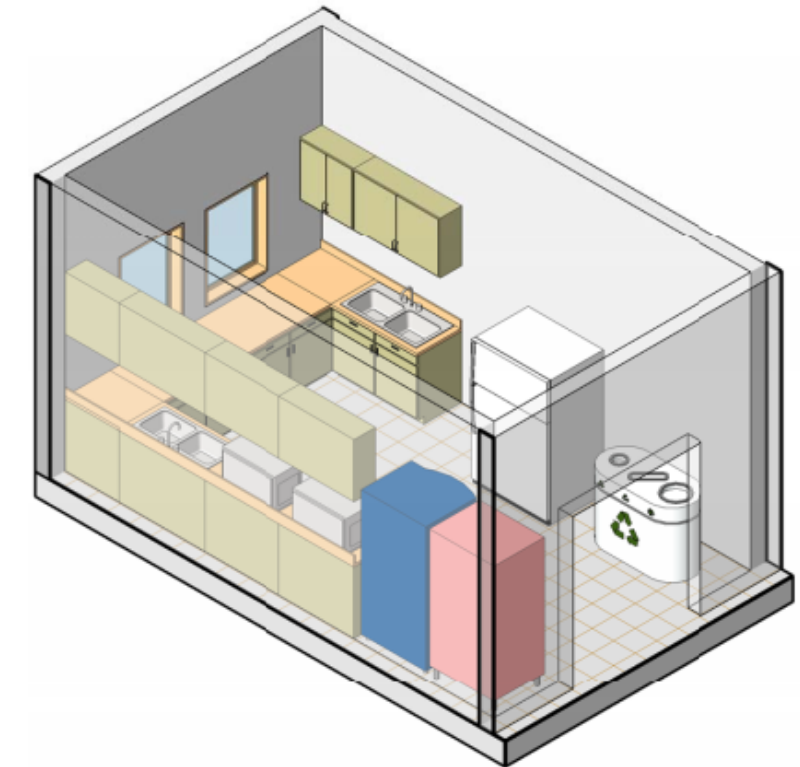
### DESIGN FEATURES

- Floor: VCT floor covering OR finished concrete
- Walls: Acrylic latex-painted masonry and/or metal stud and gypsum board walls
- Ceiling: Suspended tile ceiling with LED lighting
- Mechanical: Air conditioned
- Plumbing: Water for sink and refrigerator
- Electrical:

- LED lighting, bi-level switching
- General purpose duplex receptacles, 120 VAC,
- 20 A, as required by code
- Data and telephone receptacles

### SUSTAINABLE DESIGN CRITERIA

- Windows/natural ventilation
- Lighting controls: Occupancy sensors
- Lighting designed to meet targeted LEED points



## Lobby

### FUNCTION

Central entrance for customers to the facility; including a receptionist desk

### RELATIONSHIP TO OTHER AREAS

- Limited customer access to the facility
- Access to administrative office areas
- Adjacent to Public Restrooms

### CRITICAL DIMENSIONS

9'-0" vertical clearance

### EQUIPMENT/FURNISHINGS

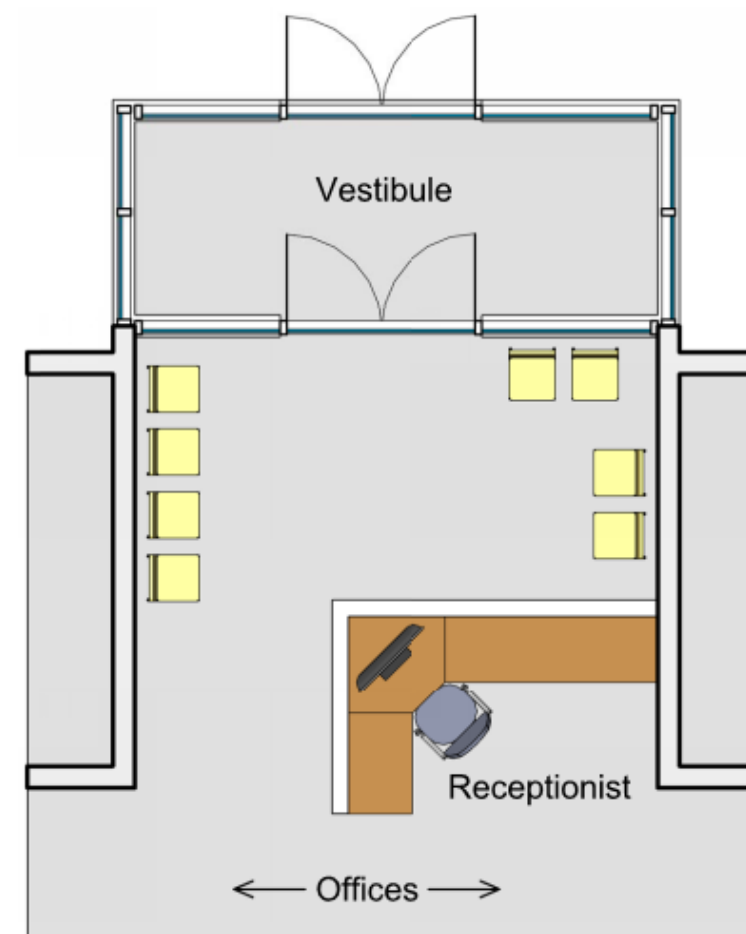
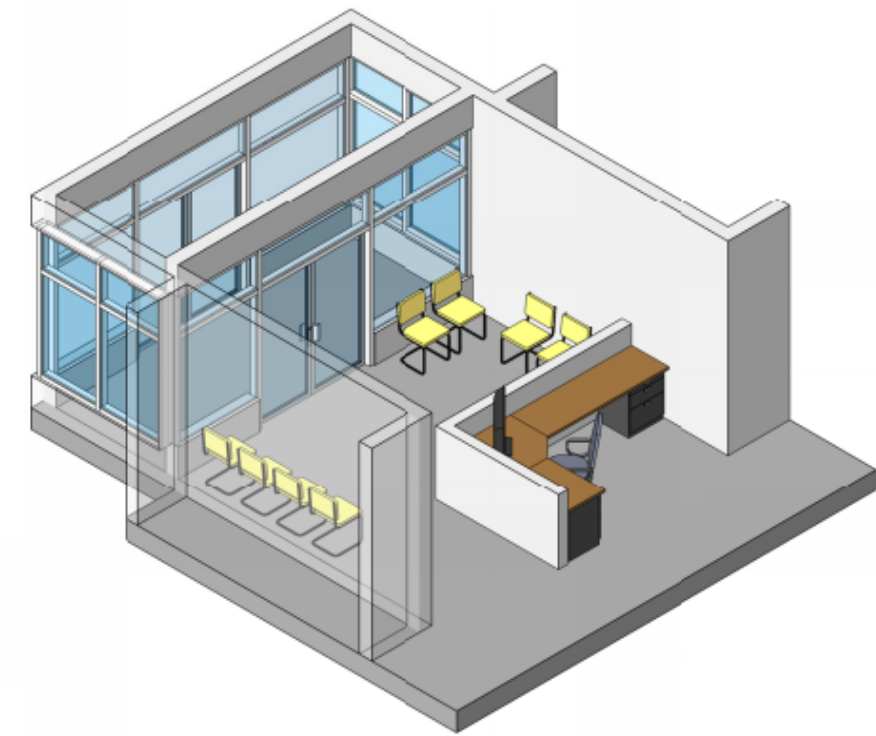
- Custom millwork desk with chair
- Guest chairs

### DESIGN FEATURES

- Comfortable seating space for customers
- Can be a combination of enamel painted masonry walls and systems furniture
- Floor: Carpet OR VCT floor covering
- Walls: Acrylic latex-painted metal stud/gypsum board walls
- Ceiling: Suspended tile ceiling with fluorescent or LED lighting
- Mechanical: Air conditioned
- Electrical:
  - LED lighting
  - Data and telephone receptacles
  - General purpose duplex receptacles, 120 VAC, 20 A as required by code

### SUSTAINABLE DESIGN CRITERIA

- Windows/natural ventilation
- In-floor ventilation
- Lighting controls: Occupancy sensors
- Lighting designed to meet targeted LEED points
- Vestibule



## Restroom / Showers / Lockers - Men

### FUNCTION

Separate restrooms for male and female employees including a separate shower and lockers for changing

### RELATIONSHIP TO OTHER AREAS

Access by Repair and Shop Areas

### CRITICAL DIMENSIONS

9'- 0" vertical clearance

### EQUIPMENT/FURNISHINGS

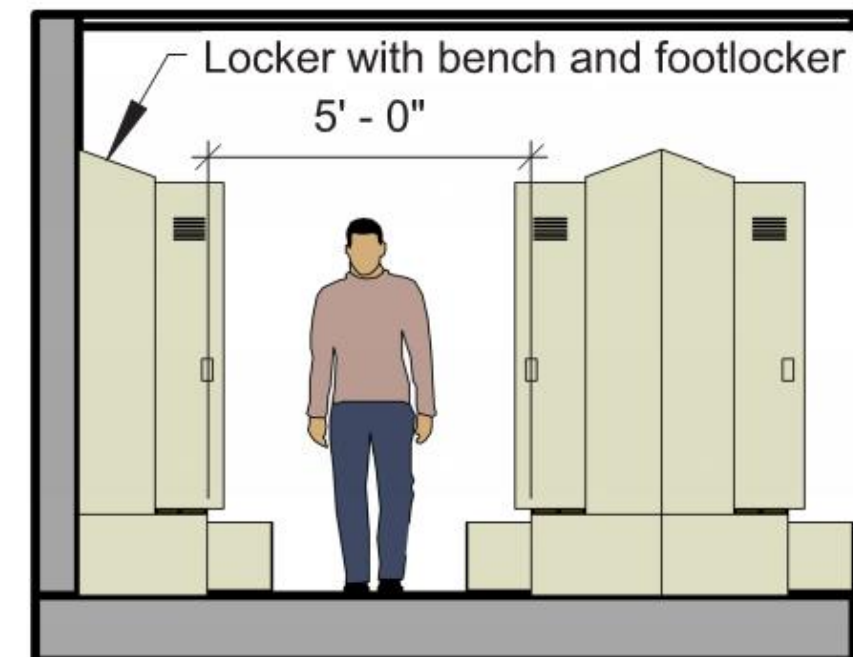
- Toilet, urinal
- Deep hand wash sinks
- Mirror
- Hand dryer
- Shower with bench and wall hooks
- Full height 18" x 18" lockers

### DESIGN FEATURES

- Floor and Walls: Ceramic tile floor covering and wall covering
- Ceiling: Epoxy painted drywall ceiling
- Plumbing: Toilets, urinals, wash sinks, and showers as required by code
- Shower:
  - Fiberglass
  - To be separate room with changing area
- Mechanical:
  - Air conditions
  - Ventilation as required by shower and code
- Electrical:
  - LED lighting, bi-level switching, task lighting over counters
  - General purpose duplex receptacles, 120 VAC, 20 A, GFI protected where required by code
  - As required by equipment

### SUSTAINABLE DESIGN CRITERIA

- Lighting controls: Occupancy sensors
- Lighting designed to meet targeted LEED points



## Restroom / Showers / Lockers - Women

### FUCNCTION

Separate restrooms for male and female employees including a separate shower and lockers for changing

### RELATIONSHIP TO OTHER AREAS

Access by Repair and Shop Areas

### CRITICAL DIMENSIONS

9'- 0" vertical clearance

### EQUIPMENT/FURNISHINGS

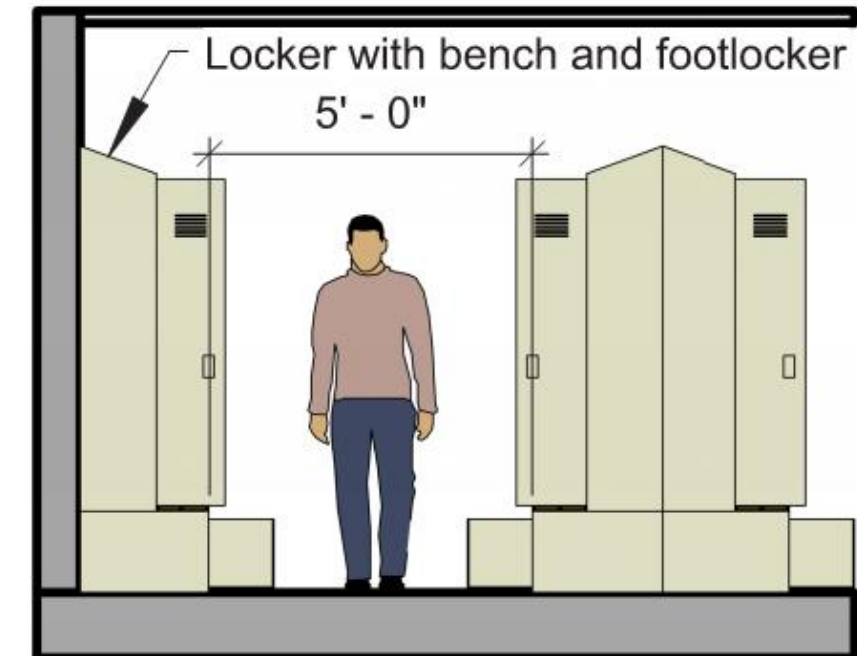
- Toilet
- Deep hand wash sinks
- Mirror
- Hand dryer
- Shower with bench and wall hooks
- Full height 18" x 18" lockers

### DESIGN FEATURES

- Floor and Walls: Ceramic tile floor covering and wall covering
- Ceiling: Epoxy painted drywall ceiling
- Plumbing: Toilets, urinals, wash sinks, and showers as required by code
- Shower:
  - Fiberglass
  - To be separate room with changing area
- Mechanical:
  - Air conditions
  - Ventilation as required by shower and code
- Electrical:
  - LED lighting, bi-level switching, task lighting over counters
  - General purpose duplex receptacles, 120 VAC, 20 A, GFI protected where required by code
  - As required by equipment

### SUSTAINABLE DESIGN CRITERIA

- Lighting controls: Occupancy sensors
- Lighting designed to meet targeted LEED points



## Mud Room / Wet Gear Storage

### FUNCTION

Area for removal, storage, and drying of foul weather clothing and gear

### RELATIONSHIP TO OTHER AREAS

- Adjacent to entry/exit door by Yard or Parking
- Access to Restrooms/Locker/Shower Area

### CRITICAL DIMENSIONS

9'-0" vertical clearance

### EQUIPMENT/FURNISHINGS

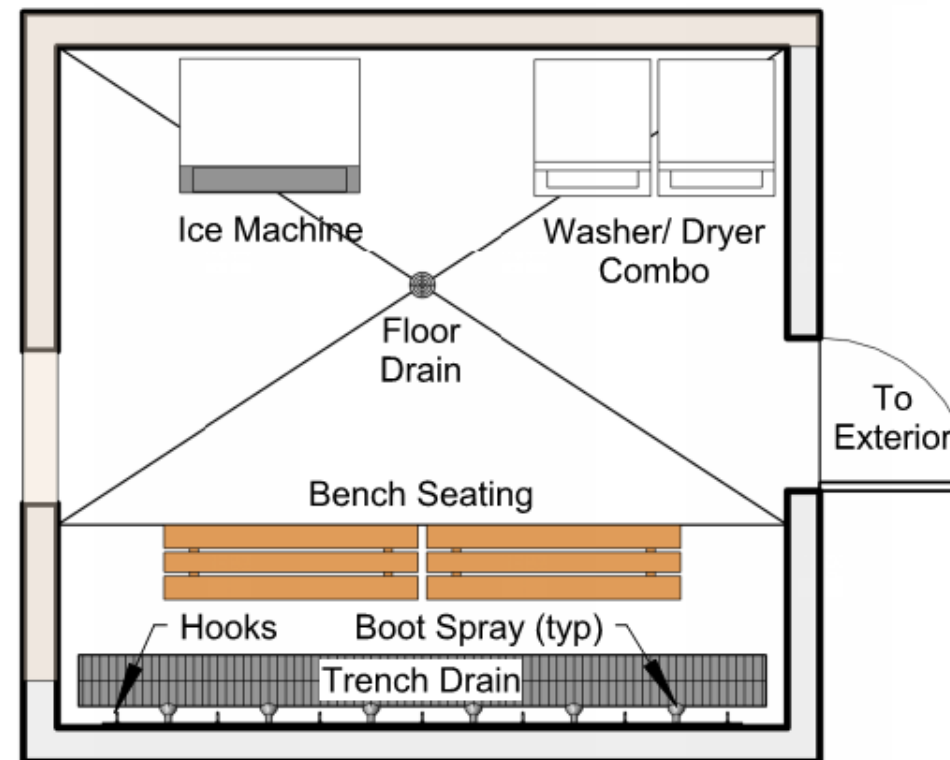
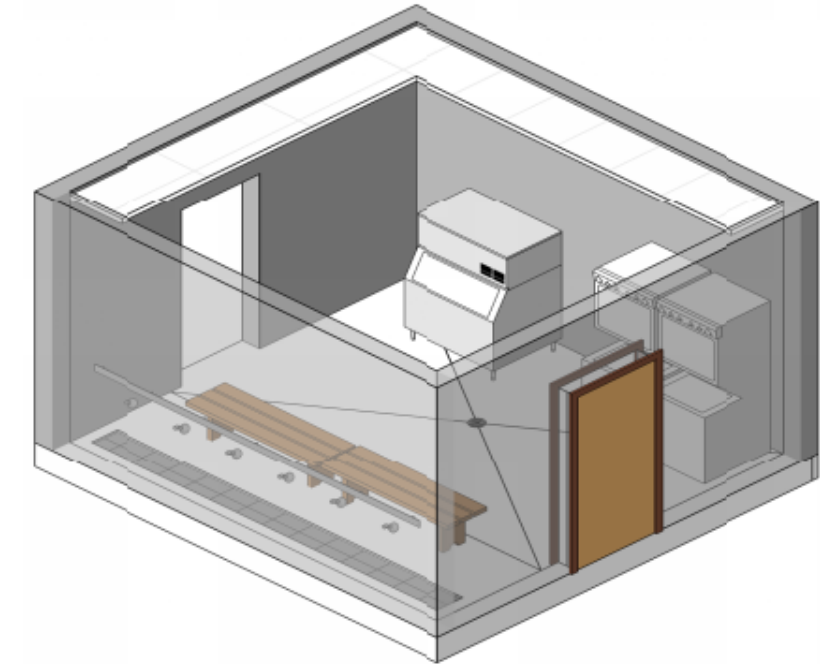
- Benches
- Hooks
- Gear lockers
- Washer & Dryer

### DESIGN FEATURES

- Floors: Tile or solid coating
- Walls: Acrylic latex-painted masonry and/or metal stud/gypsum board walls
- Ceiling: Suspended tile ceiling with fluorescent or LED lighting
- Doors: Secured entry; single 3'-0" door
- Plumbing:
  - Floor drain
  - Standard hose bib with 4'-0" hose
- Mechanical: Air conditioned
- Electrical:
  - Fluorescent or LED lighting
  - General purpose duplex receptacles, 120 VAC, 20 A, GFI protected as required by code

### SUSTAINABLE DESIGN CRITERIA

- Lighting controls: Occupancy sensors
- Lighting designed to meet targeted LEED points



## Training Room

### FUNCTION

Enclosed room used for training employees.

### RELATIONSHIP TO OTHER AREAS

Case specific

### CRITICAL DIMENSIONS

12'-0" vertical clearance

### EQUIPMENT/FURNISHINGS

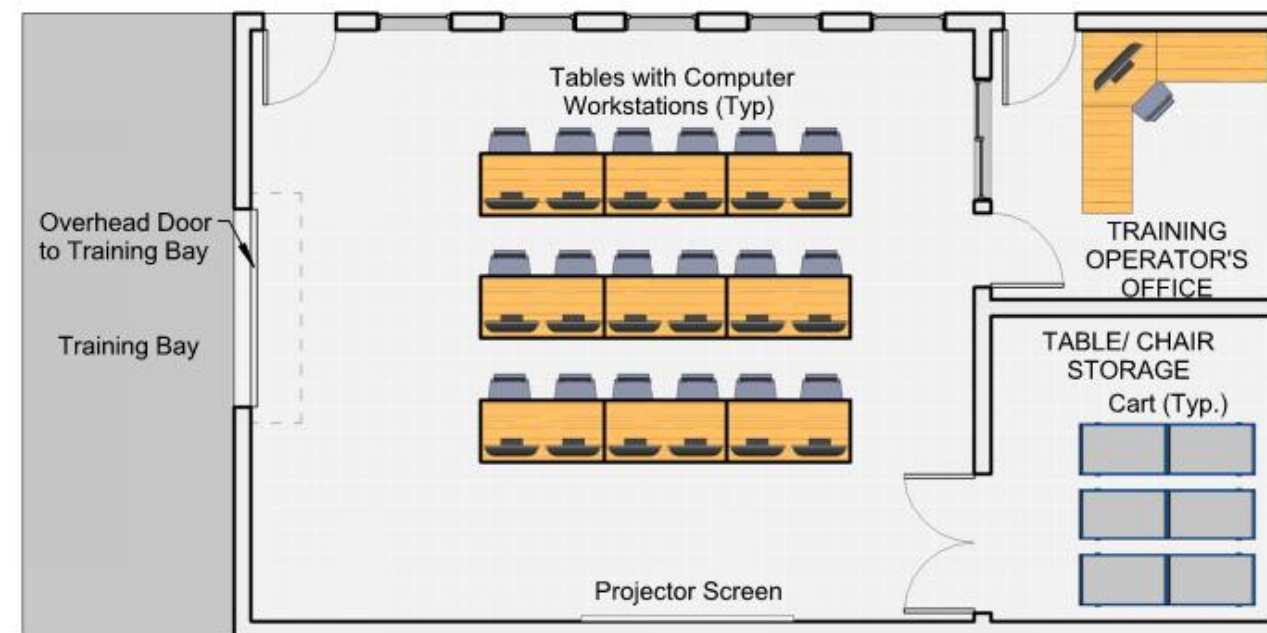
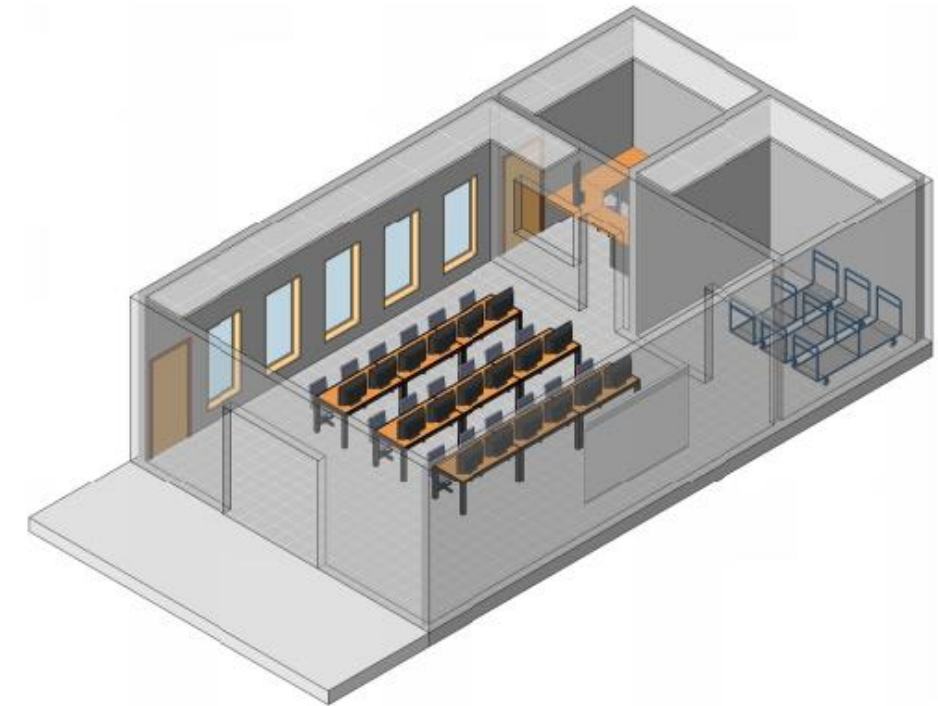
- Chairs, tables, computer workstations
- Including but not limited to: Projector, DVD player, television
- Training supply storage: Metal shelving
- Chair and table storage: Chair storage carts

### DESIGN FEATURES

- Floor: VCT floor covering OR finished concrete OR carpet floor covering
- Walls: Acrylic latex-painted masonry and/or metal stud/gypsum board walls and movable partition wall
- Training supply storage: Secure entry double 3'-0" wide doors, access from inside Training Room
- Chair and table storage: Double 3'-0" wide doors; access from inside Training Room
- Maintenance: 10'-0" x 12'-0" overhead door to maintenance training bay
- Mechanical: Air conditioned
- Electrical:
  - LED lighting
  - Data and telephone receptacles
  - General purpose duplex receptacles, 120 VAC, 20 A as required by code
  - Dividable into smaller rooms.

### SUSTAINABLE DESIGN CRITERIA

- Lighting controls: Occupancy sensors
- Lighting designed to meet targeted LEED points
- In-floor ventilation (administration/operations)
- Interior windows



## SHOP AREAS

### Shop - General

#### FUNCTION

Enclosed secure shop and materials storage

#### RELATIONSHIP TO OTHER AREAS

Access to all Restroom/Showers, Break/Crew Room, Vehicle Storage Areas

#### CRITICAL DIMENSIONS

14'-0" vertical clearance

#### EQUIPMENT/FURNISHINGS

- Severe use workbench with vise
- Storage shelving and racks
- Drill press, hydraulic press, vertical
- Band saw

#### DESIGN FEATURES

- Forklift access
- Secure entry
- Access to exterior for deliveries
- Floor space for a trailer/truck

#### SUSTAINABLE DESIGN CRITERIA

- Utilize day lighting strategies
- Provide user-adjustable comfort and lighting controls
- Lighting designed to meet targeted LEED points
- Radiant heat

#### ARCHITECTURAL CONSIDERTIONS

- Finishes:
  - Floor: Soil, grease, water, slip resistant concrete with integral non-metallic light reflective hardener, and chemical bonded concrete sealer
  - Walls: Soil and grease resistant, light colored finish
  - Ceiling: Painted exposed structure, light colored finish
- Doors:
  - Personnel door with view panel to meet applicable code exit requirements
  - Exterior overhead doors: High-speed roll up, 10'-0" x 10'-0", automatic operator, interior and exterior push button controls with lockout on exterior.

- Bollards on exterior at jambs of overhead door (2 each)

#### STRUCTURAL

- Control joints in floor slab at adequate spacing
- Structure as needed to support equipment

#### MECHANICAL

- As required by equipment
- Radiant heat

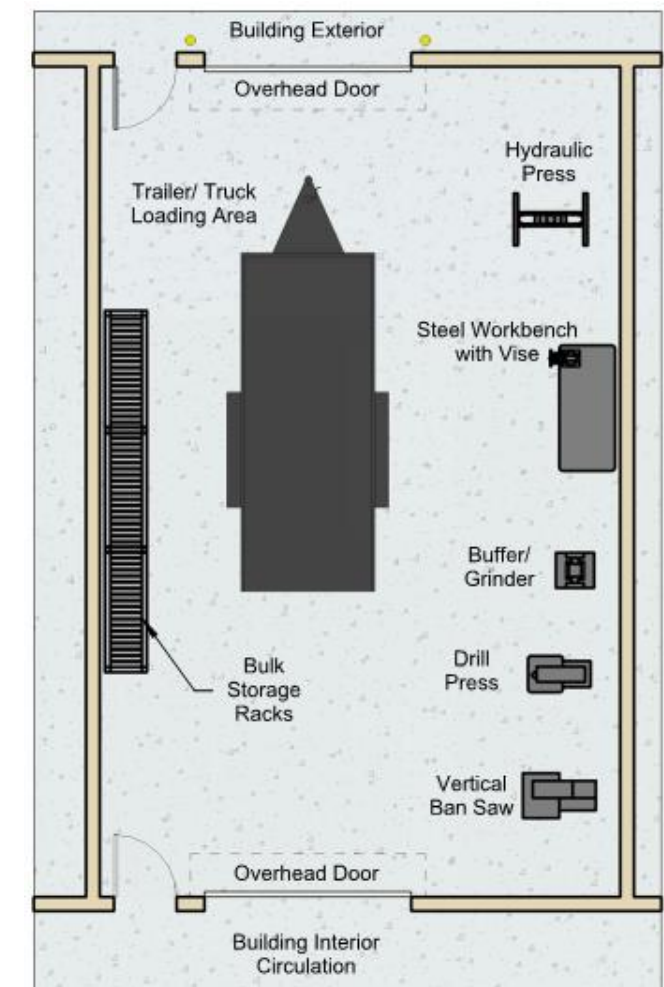
#### PLUMBING

- Water hose bib, 3/4" with standard faucet, 2'-0" AFF
- Compressed air:
  - Main line looped
  - Compressed air drops; cut off valve, union, separator, regulator with gauge, lubricator, and quick disconnect, 4'-0" AFF
  - As required by equipment

- As required by equipment

#### ELECTRICAL

- Lighting: Fluorescent or LED lighting, 30 fc average, fixtures located to illuminate work spaces and storage area
- Power:
  - All receptacles and outlets at 3'-6" AFF
  - General-purpose duplex receptacles, 120 VAC, 20 A, GFI protected on walls, columns, and between OH doors as required by code
  - As required by equipment
- Communications: Paging/intercom system speakers



## Shop - Common Work Areas

### FUNCTION

Designated area for common fixed shop, which supports all, repair bays and associated shop areas

### RELATIONSHIP TO OTHER AREAS

Access from Maintenance office areas

Adjacent to Repair and PM/Inspection Bays, Parts Storeroom, Welding Shop/Storage, and Portable Equipment Storage

### CRITICAL DIMENSIONS

14'-0" to any obstruction

### EQUIPMENT/FURNISHINGS

- Severe use workbench(es) with vise and parts washer
- Buffer grinder with dust collector
- Hydraulic press
- Drill press
- Abrasive blast cabinet
- Horizontal band saw
- Cut-off saw

### DESIGN FEATURES

- Half-height 56" walls on 3 sides for utilities and to prevent blocking vision of shop from office areas
- Forklift access

### SUSTAINABLE DESIGN CRITERIA

- Utilize daylighting strategies
- Provide user-adjustable comfort and lighting controls
- Natural ventilation
- Lighting designed to meet targeted LEED points
- Radiant heat

### ARCHITECTURAL

- Finishes
  - Floor: Soil, grease, water, slip resistant concrete with integral non-metallic, light reflective hardener, and chemical bonded sealer
  - Walls: Soil and grease resistant, light colored finish
  - Ceiling: Painted exposed structure, light colored finish
- Doors: None

### STRUCTURAL

- Control joints in floor slab at adequate spacing
- Structure as needed to support equipment

### MECHANICAL

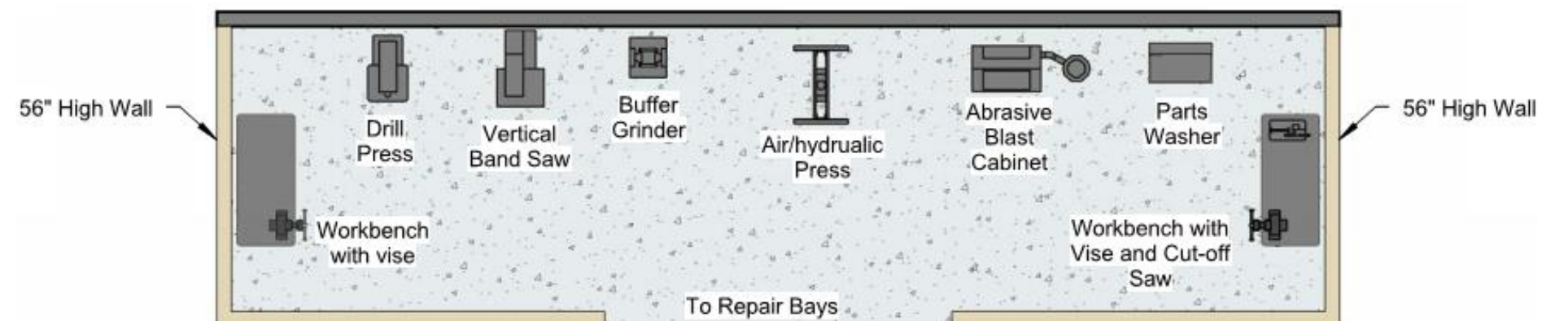
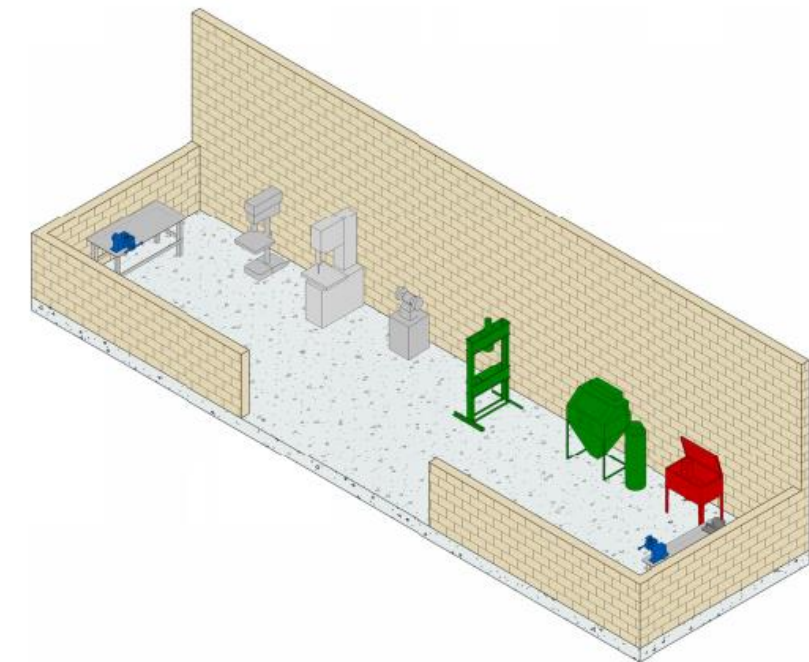
- General ventilation
- Radiant heat
- As required by equipment

### PLUMBING

- Compressed air drop:
  - Cut-off valve, union, filter, regulator with gauge, lubricator, and quick disconnect at 4'-0" AFF
  - Provide disconnects for 1/2" and 1" impact tools
- Water: 3/4" water hose bib with standard hose bib at 24" AFF
- As required by equipment

### ELECTRICAL

- Lighting: Fluorescent or LED lighting, 50 fc average, local switching, fixture located to illuminate work spaces
- Power:
  - General purpose duplex receptacles, 120 VAC, 20 A, GFI protected on walls at 3'-6" AFF as required by code
  - As required by equipment
- Communications:
  - Paging/intercom system speakers
  - Data conduit





## Shop - Hydraulics

### FUNCTION

Enclosed secure shop and materials storage

### RELATIONSHIP TO OTHER AREAS

Access to Vehicle Storage Areas, Shop areas

### CRITICAL DIMENSIONS

9'-0" vertical clearance

### EQUIPMENT/FURNISHINGS

- Severe use workbench with vise
- Storage shelving/bin
- Hose storage rack
- Abrasive saw, fitting crimper

### DESIGN FEATURES

Secure entry

### SUSTAINABLE DESIGN CRITERIA

- Utilize day lighting strategies
- Provide user-adjustable comfort and lighting controls
- Lighting designed to meet targeted LEED points
- Radiant heat

### ARCHITECTURAL

- Finishes:
  - Floor: Soil, grease, water, slip resistant concrete with integral non-metallic light reflective hardener, and chemical bonded concrete sealer
  - Walls: Soil and grease resistant, light colored finish
  - Ceiling: Painted exposed structure, light colored finish
- Doors:
  - Personnel door with view panel to meet applicable code exit requirements

### STRUCTURAL

- Control joints in floor slab at adequate spacing
- Structure as needed to support equipment

### MECHANICAL

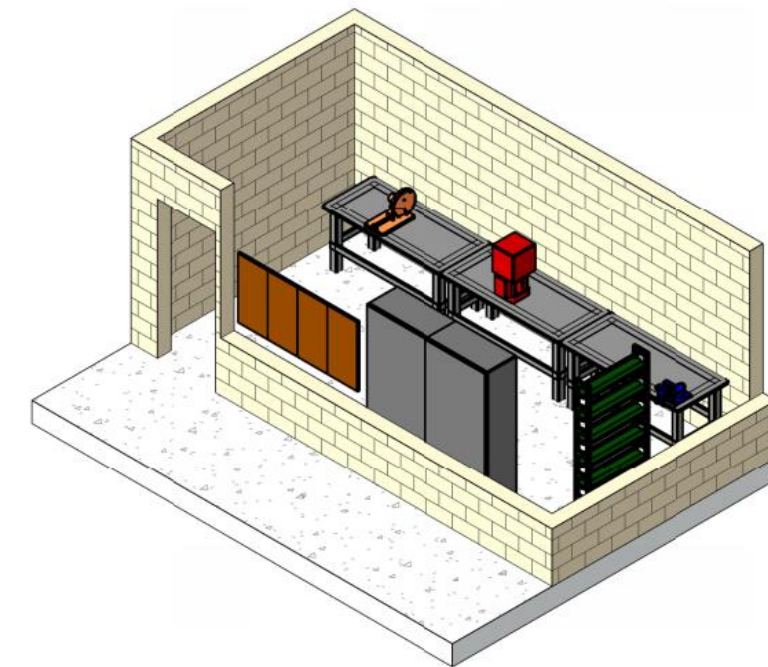
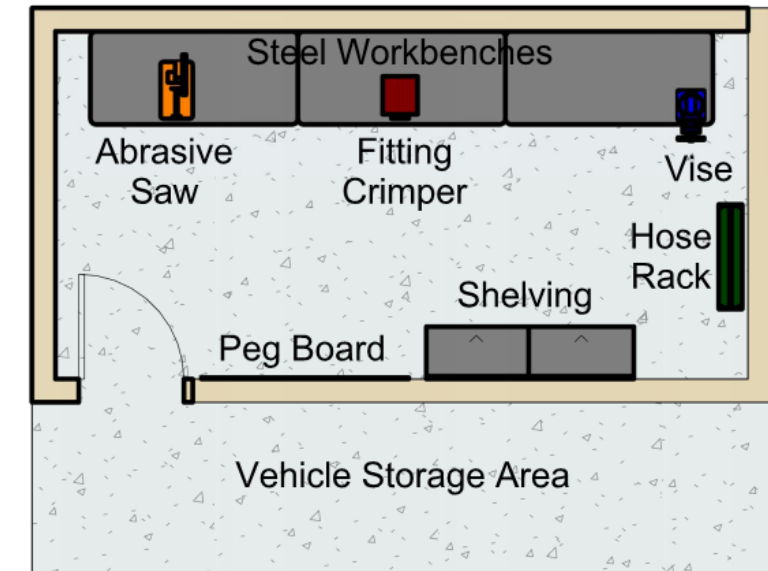
- As required by equipment
- Radiant heat

### PLUMBING

- Water hose bib, 3/4" with standard faucet, 2'-0" AFF
- Compressed air:
  - Main line looped
  - Compressed air drops; cut off valve, union, separator, regulator with gauge, lubricator, and quick disconnect, 4'-0" AFF
  - As required by equipment

### ELECTRICAL

- Lighting: Fluorescent or LED lighting, 30 fc average, fixtures located to illuminate work spaces and storage area
- Power:
  - All receptacles and outlets at 3'-6" AFF
  - General-purpose duplex receptacles, 120 VAC, 20 A, GFI protected on walls, columns, and between OH doors as required by code
  - As required by equipment
- Communications: Paging/intercom system speakers



## Shop - Pumps / Hydrants

### FUNCTION:

Enclosed secure shop and materials storage

### RELATIONSHIP TO OTHER AREAS

Access to all Restroom/Showers, Break/Crew Room, Vehicle Storage Areas

### CRITICAL DIMENSIONS

14'-0" vertical clearance

### EQUIPMENT/FURNISHINGS

- Severe use workbench with vise
- Storage shelving and racks
- Drill press, hydraulic press, vertical
- Band saw

### DESIGN FEATURES

- Forklift access
- Secure entry
- Access to exterior for deliveries
- Floor space for a trailer/truck

### SUSTAINABLE DESIGN CRITERIA

- Utilize day lighting strategies
- Provide user-adjustable comfort and lighting controls
- Lighting designed to meet targeted LEED points
- Radiant heat

### ARCHITECTURAL

- Finishes:
  - Floor: Soil, grease, water, slip resistant concrete with integral non-metallic light reflective hardener, and chemical bonded concrete sealer
  - Walls: Soil and grease resistant, light colored finish
  - Ceiling: Painted exposed structure, light colored finish
- Doors:
  - Personnel door with view panel to meet applicable code exit requirements
  - Exterior overhead doors: High speed roll up, 10'-0" x 10'-0", automatic operator, interior and exterior push button controls with lockout on exterior.
- Bollards on exterior at jambs of overhead door (2 each)

### STRUCTURAL

- Control joints in floor slab at adequate spacing
- Structure as needed to support equipment

### MECHANICAL

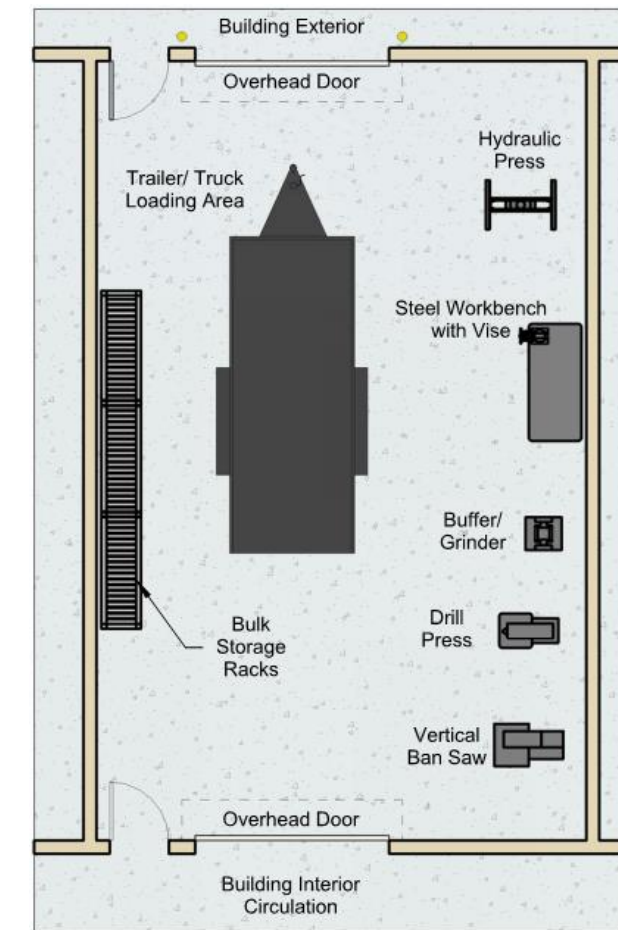
- As required by equipment
- Radiant heat

### PLUMBING

- Water hose bib, 3/4" with standard faucet, 2'-0" AFF
- Compressed air:
  - Main line looped
  - Compressed air drops; cut off valve, union, separator, regulator with gauge, lubricator, and quick disconnect, 4'-0" AFF
- As required by equipment

### ELECTRICAL

- Lighting: Fluorescent or LED lighting, 30 fc average, fixtures located to illuminate work spaces and storage area
- Power:
  - All receptacles and outlets at 3'-6" AFF
  - General-purpose duplex receptacles, 120 VAC, 20 A, GFI protected on walls, columns, and between OH doors as required by code
  - As required by equipment
- Communications: Paging/intercom system speakers



## Shop - Sign Fabrication

### FUNCTION

Enclosed secure shop for fabrication of signs and storage for sign blanks

### RELATIONSHIP TO OTHER AREAS

Access to Restroom/Showers, Break/Crew Room, offices

### CRITICAL DIMENSIONS

- 14'-0" vertical clearance
- Equipment/Furnishings
- Layout tables with sign rollers
- Storage shelving and racks
- Vinyl cutter/plotter workstation

### DESIGN FEATURES

Secure entry

### SUSTAINABLE DESIGN CRITERIA

- Utilize day lighting strategies
- Provide user-adjustable comfort and lighting controls
- Lighting designed to meet targeted LEED points
- Radiant heat

### ARCHITECTURAL

- Floor: Soil, grease, water, slip resistant concrete with chemical bonded concrete sealer
- Walls: Soil and grease resistant, light colored finish
- Ceiling: Painted exposed structure, light colored finish
- Doors:
- Personnel door with view panel to meet applicable code exit requirements
- Exterior overhead doors: high speed roll up, 10'-0" x 10'-0", automatic operator, interior and exterior push button controls with lockout on exterior
- Double 3'-0" wide hollow metal doors; no thresholds
- Bollards on exterior at jambs of overhead door (2 each)

### STRUCTURAL

- Control joints in floor slab at adequate spacing
- Structure as needed to support equipment

### MECHANICAL

- As required by equipment

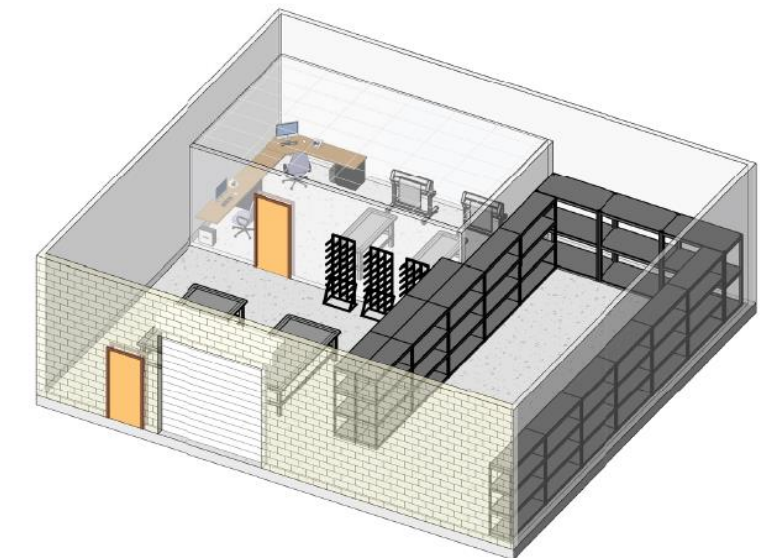
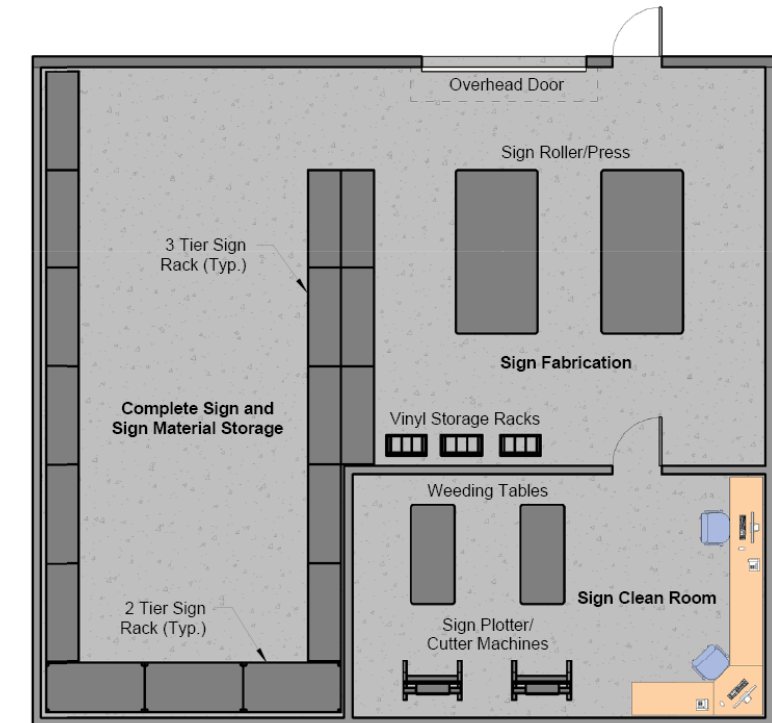
- Radiant heat
- HVAC systems in clean shop areas

### PLUMBING

- Compressed air:
  - Compressed air drops; cut off valve, union, separator, and regulator with gauge, 4'-0" AFF
  - As required by equipment

### ELECTRICAL

- Lighting: Fluorescent or LED lighting, 30 fc average, fixtures located to illuminate work spaces and storage area
- Power:
  - All receptacles and outlets at 3'-6" AFF
  - General-purpose duplex receptacles, 120 VAC, 20 A, GFI protected on walls
  - As required by equipment
- Communications:
  - Paging/intercom system speakers
  - Data for workstation



## Shop - Signals Shop

### FUNCTION

Enclosed secure shop and materials storage

### RELATIONSHIP TO OTHER AREAS

- Access to all Restroom/Showers, Break/Crew Room, Administrative office areas

### CRITICAL DIMENSIONS

14'-0" vertical clearance

### EQUIPMENT/FURNISHINGS

- ESD Electronics workbench
- Storage shelving
- Drawer storage units
- Testing bench

### DESIGN FEATURES

- Forklift access
- Secure entry
- Access to exterior for deliveries

### SUSTAINABLE DESIGN CRITERIA

- Utilize day lighting strategies
- Provide user-adjustable comfort and lighting controls
- Lighting designed to meet targeted LEED points

### ARCHITECTURAL

- Finishes:
  - Floor: Soil, grease, water, slip resistant concrete with integral non-metallic light reflective hardener, and chemical bonded concrete sealer
  - Walls: Soil and grease resistant, light colored finish
  - Ceiling: Painted exposed structure, light colored finish
- Doors:
  - Personnel door with view panel to meet applicable code exit requirements
  - Exterior overhead doors: High speed roll up, 10'-0" x 10'-0", automatic operator, interior and exterior push button controls with lockout on exterior.
- Bollards on exterior at jambs of overhead door (2 each)

### STRUCTURAL

- Control joints in floor slab at adequate spacing
- Structure as needed to support equipment

### MECHANICAL

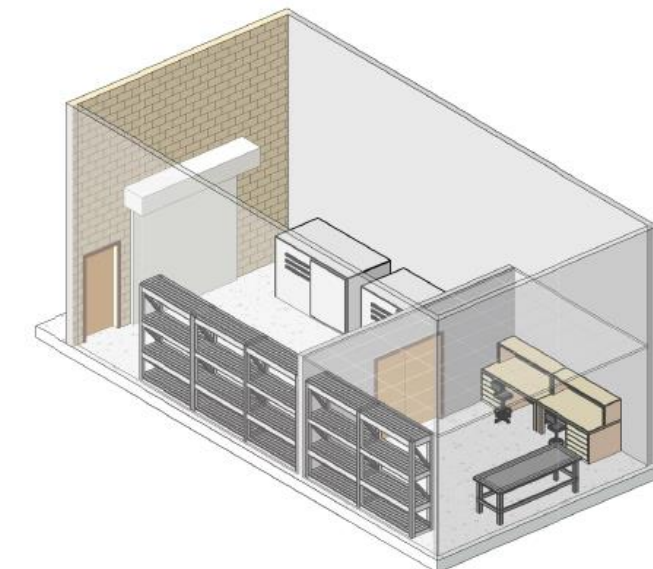
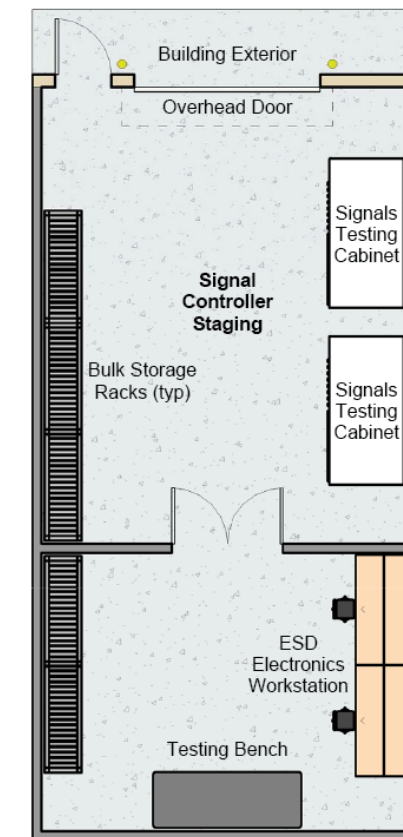
- As required by equipment
- Overhead radiant heat
- HVAC systems in clean shop areas

### PLUMBING

- Compressed air:
  - Compressed air drops; cut off valve, union, separator, regulator with gauge, and quick disconnect, 4'-0" AFF
  - As required by equipment
- As required by equipment

### ELECTRICAL

- Lighting: Fluorescent or LED lighting, 30 fc average, fixtures located to illuminate work spaces and storage area
- Task lighting above specialized bench work areas
- Power:
  - All receptacles and outlets at 3'-6" AFF
  - General-purpose duplex receptacles, 120 VAC, 20 A, GFI protected on walls, columns, and between OH doors as required by code
  - As required by equipment
- Communications: Paging/intercom system speakers



## Striping Stop

### FUNCTION

Enclosed secure shop for Striping equipment and vehicle storage

### RELATIONSHIP TO OTHER AREAS

- Access to Restroom/Showers, Break/Crew Room, offices
- Adjacent to Sign Storage and Sign Workshop

### CRITICAL DIMENSIONS

16'-0" vertical clearance

### EQUIPMENT/FURNISHINGS

Storage shelving and racks

### DESIGN FEATURES

- Secure entry
- Designated area for striping vehicle

### SUSTAINABLE DESIGN CRITERIA

- Utilize day lighting strategies
- Provide user-adjustable comfort and lighting controls
- Lighting designed to meet targeted LEED points
- Radiant heat

### ARCHITECTURAL

- Floor: Soil, grease, water, slip resistant concrete with chemical bonded concrete sealer
- Walls: Soil and grease resistant, light colored finish
- Ceiling: Painted exposed structure, light colored finish
- Doors:
  - Personnel door with view panel to meet applicable code exit requirements
  - Exterior overhead doors: high speed roll up, 12'-0"x 14'-0", automatic operator, interior and exterior push button controls with lockout on exterior
- Bollards on exterior at jambs of overhead door (2 each)

### STRUCTURAL

- Control joints in floor slab at adequate spacing
- Structure as needed to support equipment

### MECHANICAL

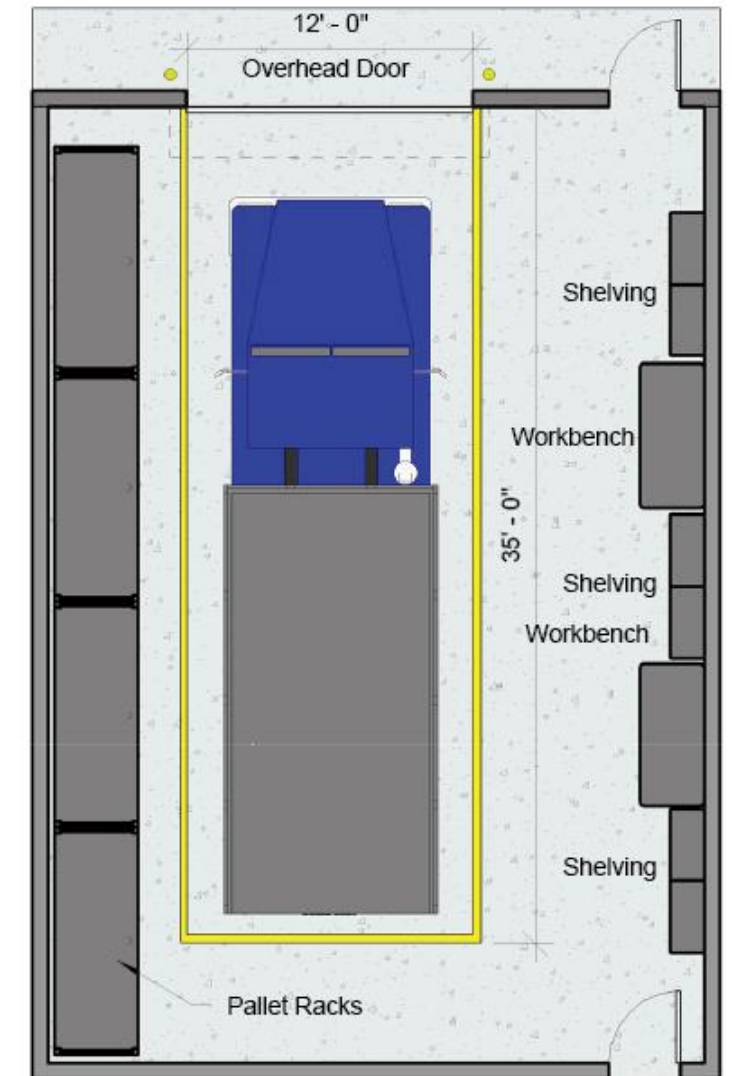
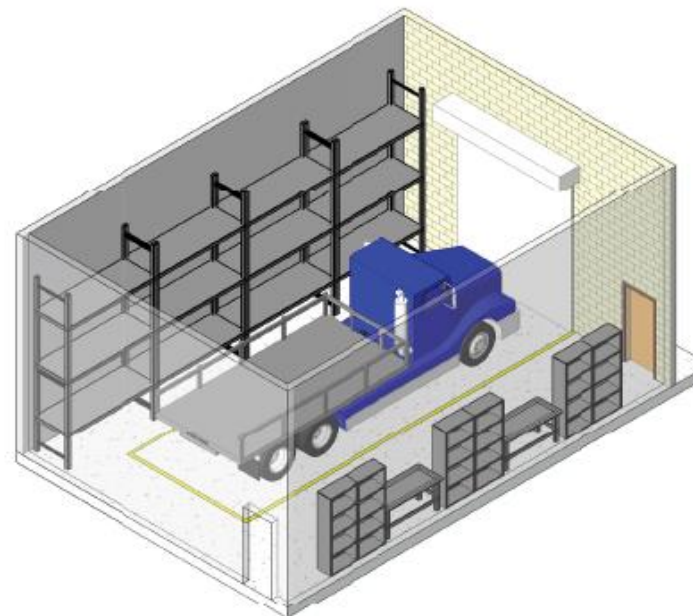
- As required by equipment
- Overhead radiant heat

### PLUMBING

- Compressed air:
  - Compressed air drops; cut off valve, union, separator, and regulator with gauge, 4'-0" AFF
  - As required by equipment

### ELECTRICAL

- Lighting: Fluorescent or LED lighting, 30 fc average, fixtures located to illuminate work spaces and storage area
- Power:
  - General-purpose duplex receptacles, 120 VAC, 20 A, GFI protected on walls, columns, and between OH doors
  - As required by equipment
- Communications:
  - Paging/intercom system speakers
  - Data for workstation



## Tire Shop

### FUNCTION:

Repair, changing, and balancing of tires

### RELATIONSHIP TO OTHER AREAS

Adjacent to Tire Bay or Repair Bays and new and used Tire Storage Areas

### CRITICAL DIMENSIONS

14'-0" vertical clearance

### EQUIPMENT/FURNISHINGS (TYPICAL)

- Severe-use workbench with vise
- Air/hydraulic floor jack
- Inflation cage
- Bus/large truck tire changer
- Auto tire changer
- Tire balancer
- Tire spreader
- Tire groover

### DESIGN FEATURES

Forklift access

### SUSTAINABLE DESIGN CRITERIA

- Utilize day lighting strategies
- Provide user-adjustable comfort and lighting controls
- Lighting designed to meet targeted LEED points
- Radiant heat

### ARCHITECTURAL

- Finishes:
  - Floor: Soil, grease, water, slip resistant concrete with integral non-metallic light reflective hardener, and chemical bonded concrete sealer
  - Walls: Soil and grease resistant
  - Ceiling: Painted exposed structure

• Doors: None

### STRUCTURAL

- Structure as needed to support equipment

### MECHANICAL

- As required by equipment

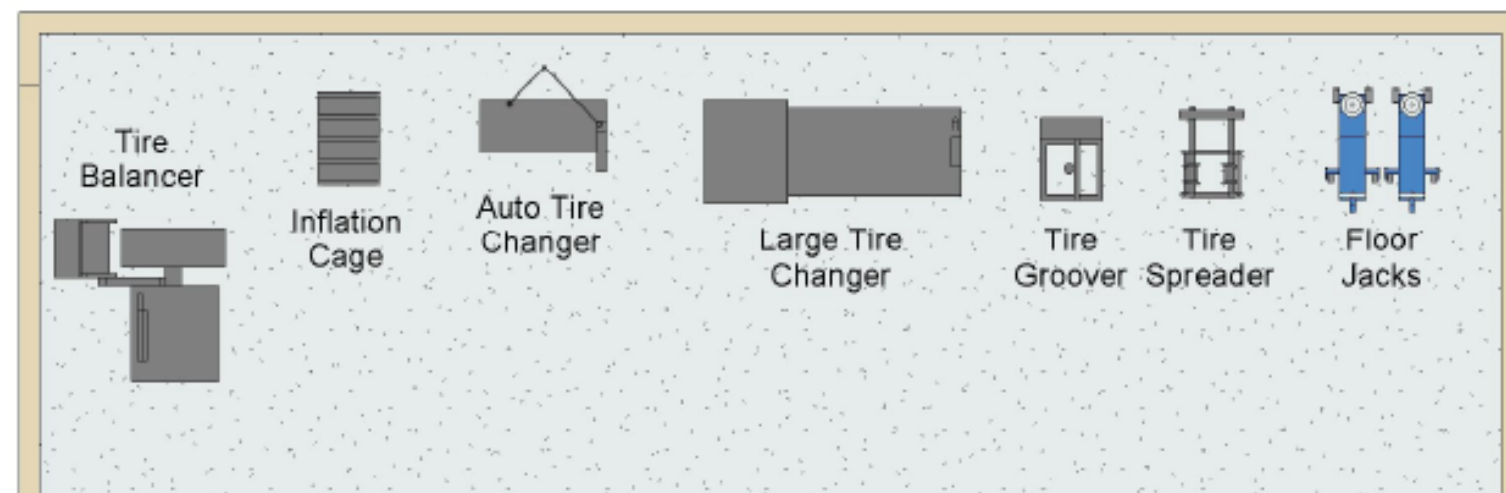
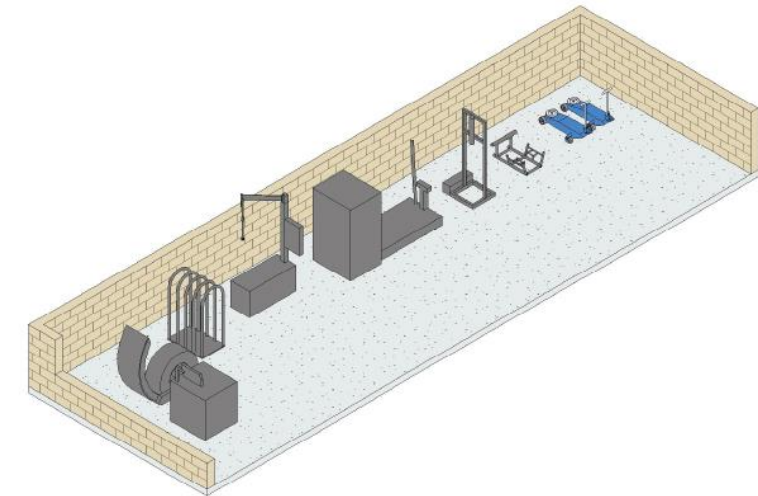
- Overhead radiant heat or forced air heating

### PLUMBING

- Compressed air:
  - Compressed air drops with cut-off valve, union separator, regulator with gauge, lubricator, and quick disconnects on 4'-0" AFF
  - Provide disconnects for 1/2" and 1" impact tools at locations to be determined during detailed design
  - As required by equipment
- As required by equipment

### ELECTRICAL

- Lighting: Fluorescent or LED lighting, 50 fc average, local switching, fixtures to illuminate workspace
- Power:
  - General-purpose duplex receptacles, 120 VAC, 20 A, GFI protected, on walls at 3'-6" AFF
  - Dedicated computer receptacle, 120 VAC, 20 A, adjacent to data conduit
  - As required by equipment
- Communications:
  - Paging/intercom system speakers
  - Data conduit



## Shop - Welding / Fabrication Bay

### FUNCTION

Designated shop area for maintaining and welding components used on vehicles (including storage of welding materials)

### RELATIONSHIP TO OTHER AREAS

- Adjacent to Repair Positions
- Adjacent to Welding/Fabrication Bay
- Access to Common Work Area

### CRITICAL DIMENSIONS

19'-0" vertical clearance

### EQUIPMENT/FURNISHINGS (TYPICAL)

- Severe use workbench with vise
- Layout table
- Steel storage
- Welding table
- Welders
- Welding screens
- Buffer/grinder
- Drill press
- Band saw
- Welding fume extractor
- Overhead crane (Bridge type)

### DESIGN FEATURES

Forklift access

### SUSTAINABLE DESIGN CRITERIA

- Utilize daylighting strategies
- Natural ventilation
- Lighting designed to meet targeted LEED points
- Radiant heat

### ARCHITECTURAL

- Finishes:
  - Floor: Soil, grease, water, slip resistant concrete with integral non-metallic, light reflective hardener, and chemical bonded sealer
  - Walls: Soil and grease resistant, light colored finish
  - Ceiling: Painted exposed structure, light colored finish

- Doors:
  - Personnel door with view panel to meet applicable code exit requirements
  - Double 3'-0" metal door
  - Exterior overhead door: High-lifting sectional, steel, insulated, 12'-0" x 12'-0" with view panels, automatic operator, interior and exterior push button controls, and lockout on exterior

### STRUCTURAL

- Control joints in floor slab at adequate spacing
- Structure as needed to support equipment
- Structure to support welding fume extraction system

### MECHANICAL

- Special ventilation as required by welding equipment, welding fume extraction arm
- As required by equipment
- Radiant heat

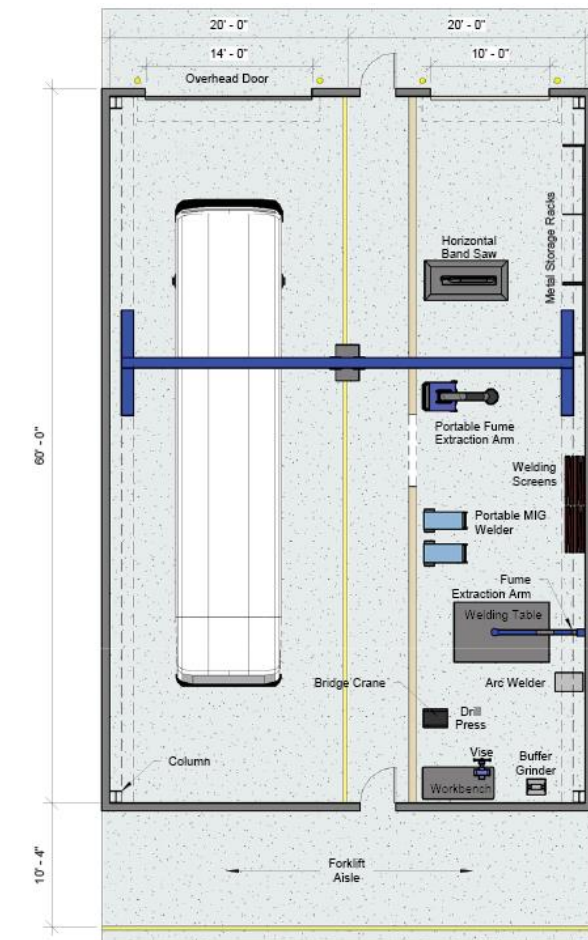
### PLUMBING

- 3/4" water hose bib with standard faucet at rear of bay 2'-0" AFF
- Compressed air line with cut-off valve, separator, regulator with gauge, lubricator, and quick disconnect at 4'-0" AFF
- Provide disconnects for 1/2" and 1" impact tools at locations to be determined during detailed design
- As required by equipment

### ELECTRICAL

- Lighting:
  - Fluorescent or LED lighting, 70 fc average, local switching controlled by natural light
  - Lighting design to meet targeted LEED points to minimize need for task lighting
- Power:
  - Welding outlets, 208 VAC, 1 phase, 50 A and 480 VAC, 3 phase, 30 A at 3'-6" AFF
  - General purpose duplex receptacles, 120 VAC, 20 A, GFI protected, on walls at 3'-6" AFF
  - As required by equipment

– Communications: Paging/intercom system speakers



## SUPPORT AREAS

### Storage - Lube Compressor Room

#### FUNCTION

Enclosed room for storage and central distribution of lubricants, including, automatic transmission fluid (ATF), chassis grease (CG), diesel exhaust fluid (DEF), engine oil (EO), gear oil (GO), hydraulic oil (HO), used coolant (UC), used oil (UO), and Windshield Washer Fluid (WWF); Space shall include a compressor(s) and refrigerated air dryer(s).

#### RELATIONSHIP TO OTHER AREAS

- Access to exterior for deliveries
- Acoustically and physically separated from other areas to prevent migration of noise, dirt, and fumes

#### CRITICAL DIMENSIONS

14'-0" to any obstruction

#### EQUIPMENT/FURNISHINGS

- Above grade fluid storage tanks, air piston and diaphragm pumps; fluids stored in above double wall ground tanks, CG stored in drums, and WWF stored in a poly tank
- Duplex air compressor
- Refrigerated air dryer
- Water deionization station

#### DESIGN FEATURES

Exterior access for deliveries

#### SUSTAINABLE DESIGN CRITERIA

- Provide user-adjustable comfort and lighting controls
- Lighting controls: Occupancy sensors
- Lighting designed to meet targeted LEED points

#### ARCHITECTURAL

- Finishes:
  - Floor: Soil, grease, water, slip resistant concrete with integral non-metallic light reflective hardener, and chemical bonded concrete sealer
  - Walls: Soil and grease resistant, light colored finish
  - Ceiling: Painted exposed structure, light colored finish
- Doors:
  - Personnel door to meet applicable code exit requirements

- Double 3'-0" wide hollow metal door with interior exit device
- No thresholds

#### STRUCTURAL

- Control joints in floor slab at adequate spacing
- Housekeeping pad for both the air compressor and refrigerated air dryer
- Structure as needed to support equipment

#### MECHANICAL

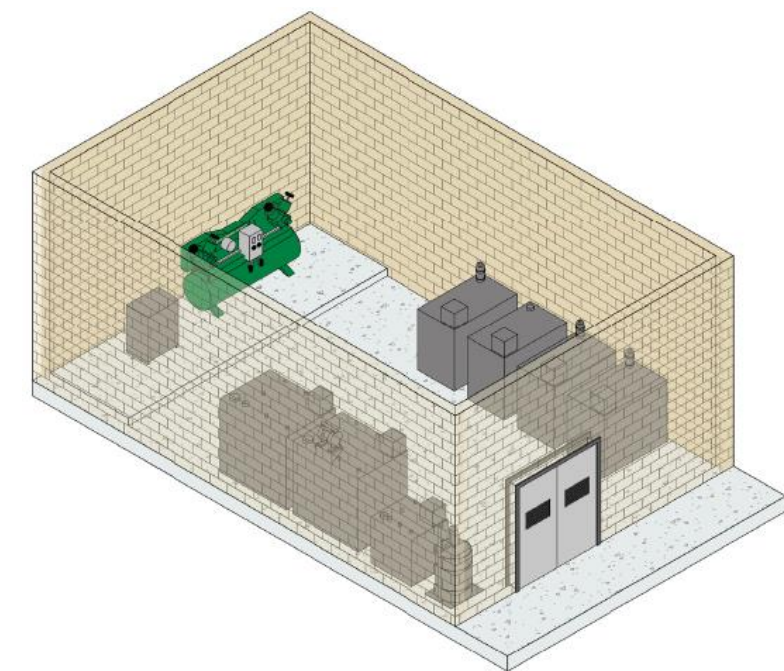
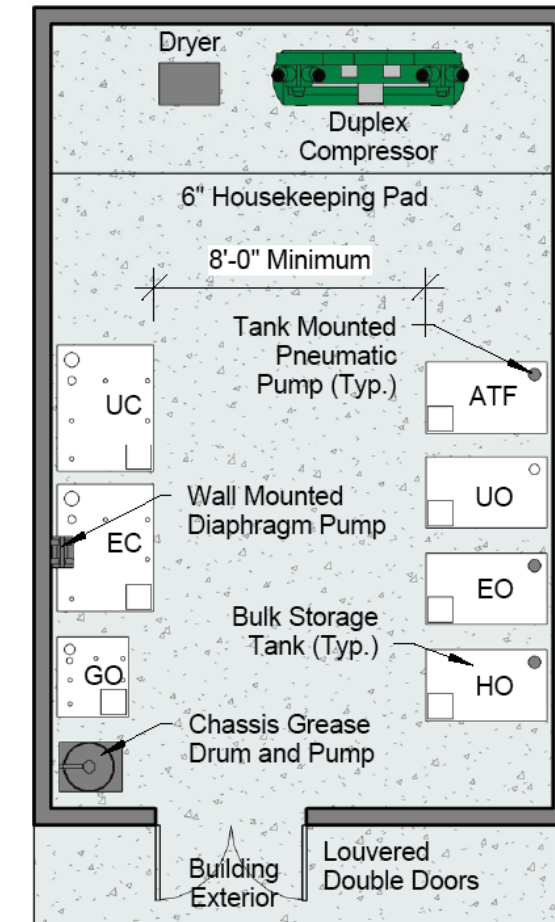
- Maintain temperature range at 60 to 80 degrees F
- As required by equipment

#### PLUMBING

- 3/4" water hose bib with standard faucet 2'-0" AFF
- Compressed air line with cut-off valve, separator, regulator with gauge, lubricator, and quick disconnect on wall at 4'-0" AFF for each lubricant pump
- Tank mount all piston lubricant pump(s)
- Wall mount all diaphragm pump(s)
- CG pump mounted to an air operated hoist
- Water tank with float valve for water to EC diaphragm pump
- Plumb ATF, CG, DEF, EC, EO, GO, HO, and WWF tanks to corresponding lube reel banks located in the Repair Bays; Size for 2 reels to be used at the same time
- Plumb UO and UC tanks to corresponding pumps located in the Repair Bays
- Fill ports on the exterior of the building plumbed to each tank
- Fluid monitoring system for ATF, EO, GO, HO, UC, and UO fluids

#### ELECTRICAL

- Lighting: Fluorescent or LED lighting, 50 fc average, local switching
- Power:
  - General purpose duplex receptacles, 120 VAC, 20 A, GFI protected on walls at 3'-6" AFF as required by code
  - As required by equipment





## Break Room

### FUNCTION:

Enclosed room used as a break area for staff assigned to the building

### RELATIONSHIP TO OTHER AREAS

Access to all crew areas, repair areas, and Restrooms

### CRITICAL DIMENSIONS

None

### EQUIPMENT/FURNISHINGS

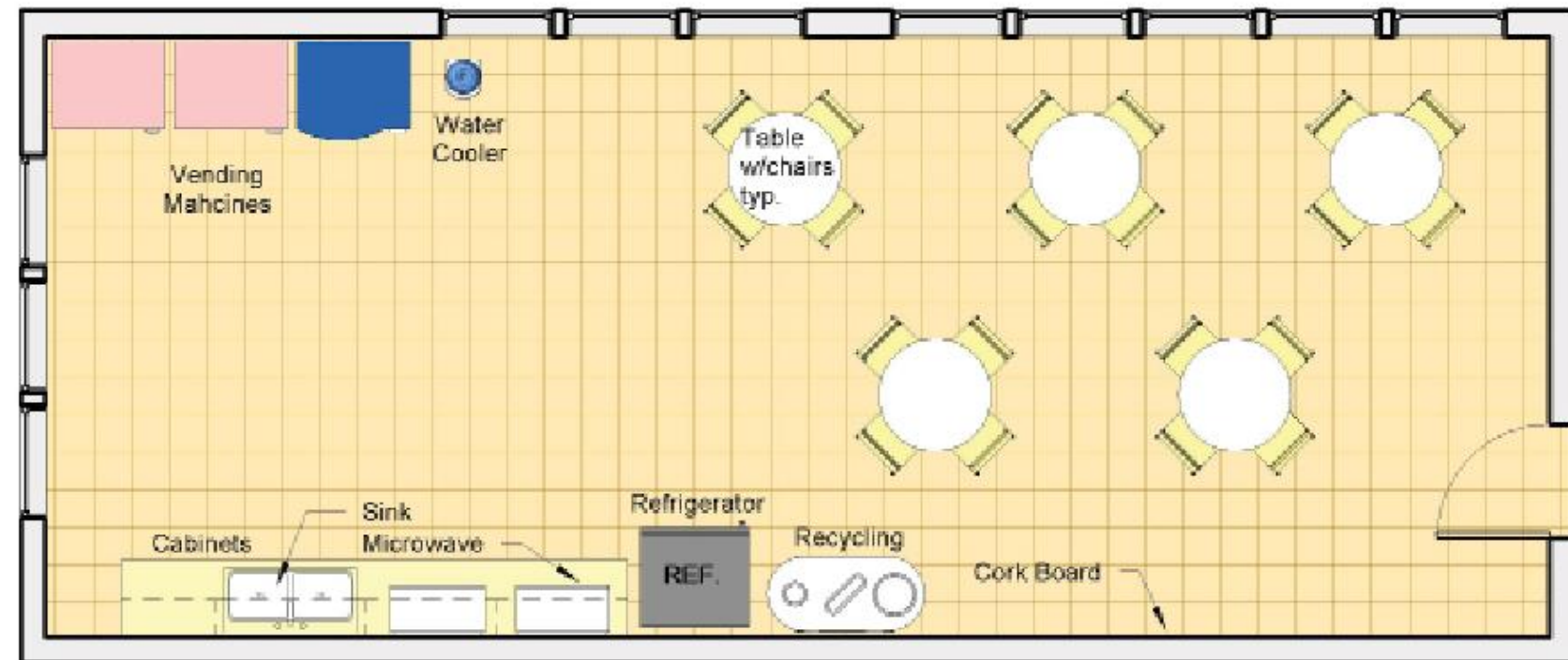
Counter space, upper and lower cabinets, sink with disposal, microwaves, refrigerators, vending machines, water coolers, tables, and chairs

### DESIGN FEATURES

- Floor: VCT floor covering OR finished concrete
- Walls: Acrylic latex-painted masonry and/or metal stud and gypsum board walls
- Ceiling: Suspended tile ceiling an exposed structure with LED lighting
- Mechanical:
  - Air conditioned
  - As required by equipment
- Plumbing: Water for sink and refrigerator
- Electrical:
  - LED lighting, bi-level switching
  - General purpose duplex receptacles, 120 VAC,
  - 20 A, as required by code
  - Data and telephone receptacles
  - As required for equipment

### SUSTAINABLE DESIGN CRITERIA

- Operable windows/natural ventilation
- Lighting controls: Occupancy sensors
- Lighting designed to meet targeted LEED points



## Restroom

### FUNCTION

Separate restrooms for male and female employees including a separate shower and lockers for changing

### RELATIONSHIP TO OTHER AREAS

Access by Repair and Shop Areas

### CRITICAL DIMENSIONS

9'- 0" vertical clearance

### EQUIPMENT/FURNISHINGS

- Toilet, urinal
- Deep hand wash sinks
- Mirror
- Hand dryer
- Shower with bench and wall hooks
- Full height 18" x 18" lockers

### DESIGN FEATURES

- Floor and Walls: Ceramic tile floor covering and wall covering
- Ceiling: Epoxy painted drywall ceiling
- Plumbing: Toilets, urinals, wash sinks, and showers as required by code
- Shower:
  - Fiberglass
  - To be separate room with changing area

### MECHANICAL:

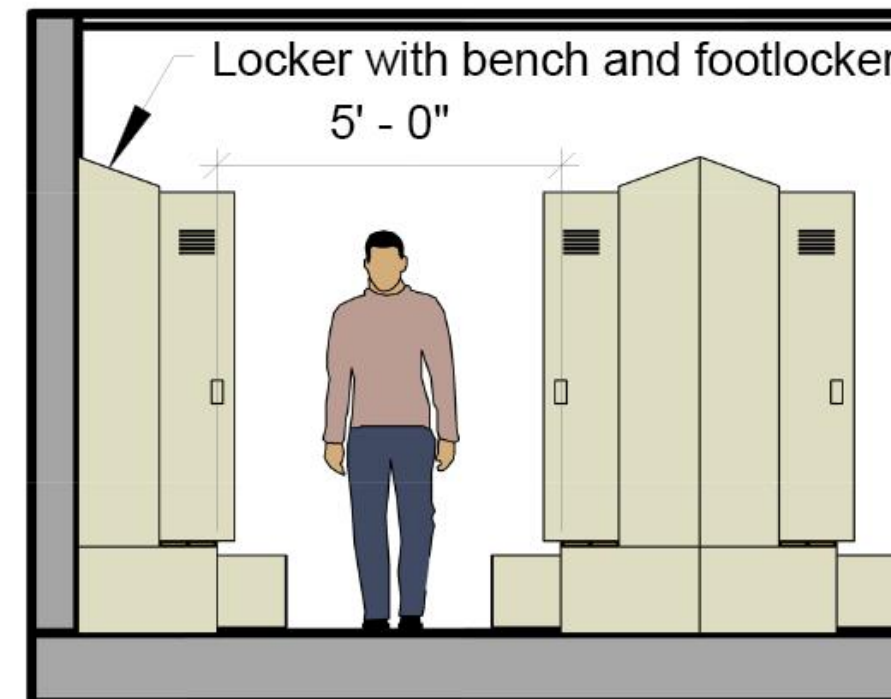
- Air conditions
- Ventilation as required by shower and code

### ELECTRICAL:

- LED lighting, bi-level switching, task lighting over counters
- General purpose duplex receptacles, 120 VAC, 20 A, GFI protected where required by code
- As required by equipment

### SUSTAINABLE DESIGN CRITERIA

- Lighting controls: Occupancy sensors
- Lighting designed to meet targeted LEED points



## VEHICLE REPAIR / SERVICE AREAS

### Repair Bay - Bus

#### FUNCTION

Perform general repair and maintenance on buses and para-transit buses

#### RELATIONSHIP TO OTHER AREAS

Access to Common Work Area, Rebuild Area, Parts Room, Portable Equipment Storage Areas, Bus Staging, Maintenance office areas, and Manuals Library

#### CRITICAL DIMENSIONS

19'-0" vertical clearance

20'-0" wide x 60'-0" long

#### EQUIPMENT/FURNISHINGS

- Severe use workbench with vise (1 per bay)
- Parts cleaning tank (shared)
- Lubrication reel bank with ATF, EC, and EO at end of bay and CG, GO at mid bay (shared, 1 per 2 bays)
- Air/electric trapeze
- Vehicle exhaust (1 per bay)
- Two-post in ground lift (1 per bay)

#### DESIGN FEATURES

Back in/pull out configuration

#### SUSTAINABLE DESIGN CRITERIA

- Utilize day lighting strategies
- Provide user-adjustable comfort and lighting controls
- Lighting designed to meet targeted LEED points
- Radiant heat

#### ARCHITECTURAL

- Finishes:
  - Floor: Soil, grease, water, slip resistant concrete with integral non-metallic light reflective hardener, and chemical bonded concrete sealer
  - Walls: Soil and grease resistant, light colored finish
  - Ceiling: Painted exposed structure, light colored finish
- Doors:
  - Personnel door with view panel to meet applicable code exit requirements

- Exterior overhead doors: High lifting sectional, steel, insulated, 14'-0" x 14'-0" with view panels, automatic operator, interior and exterior push button controls with lockout on exterior

- Bollards on exterior at jambs of overhead door (2 each)

#### STRUCTURAL

- Control joints in floor slab at adequate spacing
- Structure as needed to support equipment
- Structure as needed to support lubrication reels, exhaust reels, and air/electric trapeze

#### MECHANICAL

- Wall mounted or overhead vehicle exhaust system with exhaust hose on a motorized reel with integral exhaust fan and automatic fan switch
- As required by equipment
- Radiant heating system (each bay)

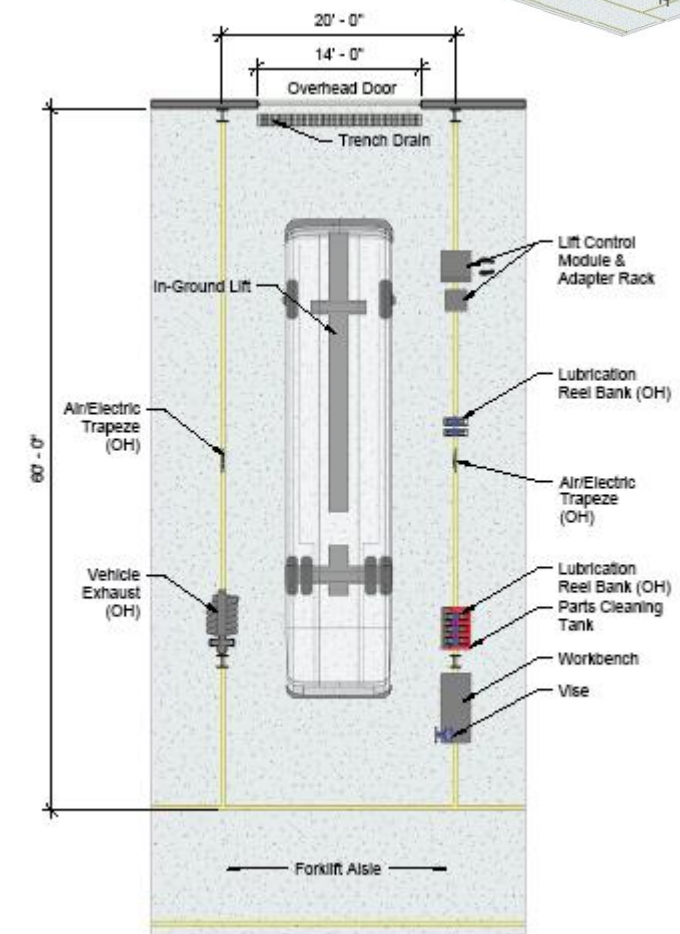
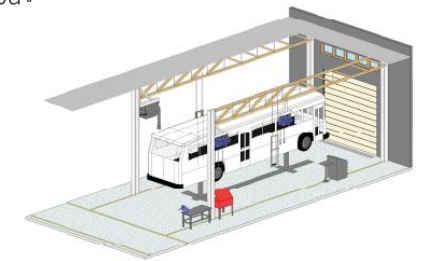
#### PLUMBING

- Trench drain at overhead door with removable cover to sediment and oil interceptor (1 each)
- Lubrication reel bank with ATF, EC, and EO at end of bay and CG, GO at mid bay (shared, 1 per 2 bays)
- 3/4" water hose bib with standard faucet at rear of bay 2'-0" AFF (1 per 3 bays)
- Compressed air:
  - Compressed air drops with cut-off valve, union separator, regulator with gauge, lubricator, and quick disconnects on 4'-0" AFF
  - Provide disconnects for 1/2" and 1" impact tools at locations to be determined during detailed design
  - As required by equipment

#### ELECTRICAL

- Lighting: Fluorescent or LED lighting, 70 fc average fixtures located to illuminate work spaces and around vehicles
- Power:
  - All receptacles and outlets at 3'-6" AFF
  - General-purpose duplex receptacles, 120 VAC, 20 A, GFI protected on walls, columns, and between overhead doors

- Welding outlet centrally located 230 VAC, 1 phase, 50 A (Shared 1 per 3 bays)
- Air/electric drop "trapeze" mounted double duplex receptacles, 120 VAC, 20 A, GFI protected, between bays (at mid bay)
- Dedicated computer receptacle, 120 VAC, 20 A, adjacent to data conduit
- As required by equipment
- Communications:
  - Paging/intercom system speakers
  - Data conduit on columns at each bay



## PM / Inspection Bay - Bus

### FUNCTION

Bay to perform periodic inspections and preventative maintenance on bus and para-transit buses

### RELATIONSHIP TO OTHER AREAS

Access to Common Work Area, Rebuild Area, Parts Room, Portage Equipment Storage Areas, and Bus Staging

### CRITICAL DIMENSIONS

19'-0" vertical clearance

20'-0" wide by 60'-0" long

20'-0" wide by 75'-0" long

### EQUIPMENT/FURNISHINGS

- Severe use workbench with vise (1 per bay)
- Parts cleaning tank (shared), parts cleaning tank - hot (shared)
- Lubrication reel bank with ATF, EC, and EO at end of bay (shared, 1 each per 2 bays); lower level with CG, GO (at each bay)
- Pit safety covers: Cover entire pit opening
- Air/electric trapeze (shared, 3 per 2 bays)
- Vehicle exhaust (1 per bay)
- Tool box lift from main level to lower level
- Lower level: Severe use workbench with vise, rolling drain pans for used oil and used coolant, man-lift, storage shelving, used fluid storage tanks, pneumatic pumps for used fluid, and filter storage rack

### DESIGN FEATURES

- Drive through configuration or pull-in/back-out configuration
- Open area in lower level

### SUSTAINABLE DESIGN CRITERIA

- Utilize daylighting strategies
- Provide user-adjustable comfort and lighting controls
- Lighting designed to meet targeted LEED points
- Radiant heat

### ARCHITECTURAL

- Finishes:
  - Floor: Soil, grease, water, slip resistant concrete with integral non-metallic light reflective hardener, and chemical bonded concrete sealer

- Walls: Soil and grease resistant, light colored finish
- Ceiling: Painted exposed structure, light colored finish
- Doors:
  - Personnel door with view panel to meet applicable code exit requirements
  - Exterior overhead doors: High lifting sectional, steel, insulated, 14'-0" x 14'-0" with view panels, automatic operator, interior and exterior push button controls with lockout on exterior
- Bollards on exterior at jambs of overhead door (2 each)

### STRUCTURAL

- Control joints in floor slab at adequate spacing
- Structure as needed to support equipment
- Structural slab over lower level to support larger vehicles
- Structure as needed to support lubrication reels

### MECHANICAL

- Wall mounted or overhead vehicle exhaust system with exhaust hose on a motorized reel with integral exhaust fan and automatic fan switch
- As required by equipment
- 6 air changes per hour continuous exhausted at ceiling to clear any natural gas accumulation; ten air changes per hour activated by gas detection system or manually for emergency ventilation (used for alternative fuels only)
- No heating devices with open flame or heaters with temperatures greater than 800 degrees F Class 1 Division 2 rated (used for alternative fuels only)
- Radiant heating system (each bay)
- General ventilation with sufficient ventilation in lower level areas and as required by codes to prevent accumulation of explosive mixtures

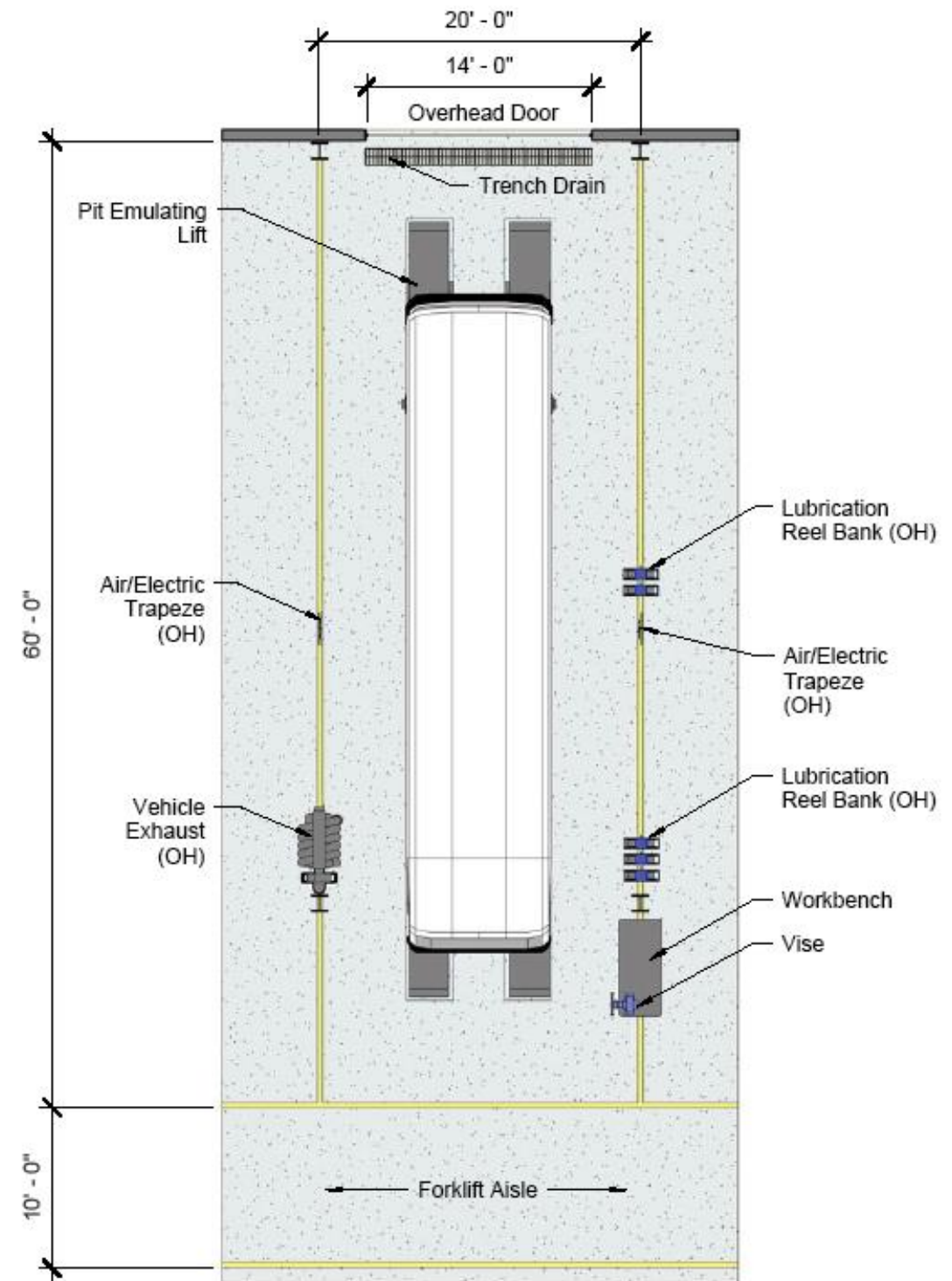
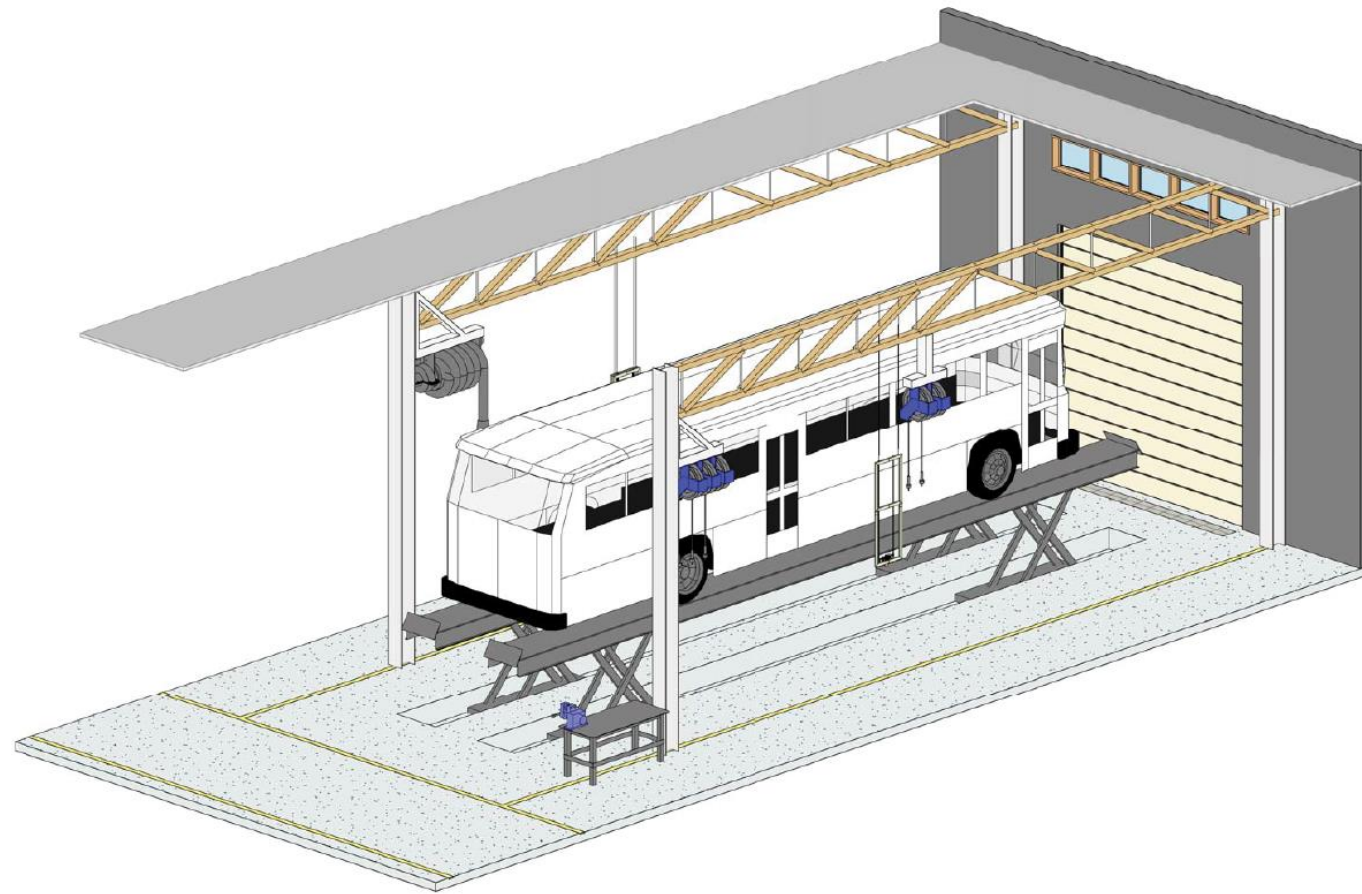
### PLUMBING

- Trench drain with removable cover to sediment and oil interceptor (1 each)
- Trench drain in lower level to sediment and oil inceptor
- Lube reel banks with ATF, EC, and EO at end of bay(shared, 1 each per 2 bays), CG, GO at lower level in pits (2 each per bay)

- 3/4" water hose bib with standard faucet at rear of bay 2'-0" AFF (1 per 3 bays)
- Compressed air:
  - Main line lopped
  - Compressed air drops with cut-off valve, union separator, regulator with gauge, lubricator, and quick disconnects on 4'-0" AFF
  - Provide disconnects for 1/2" and 1" impact tools at locations to be determined during detailed design
- As required by equipment
- As required by equipment

### ELECTRICAL

- Lighting:
  - Fluorescent or LED lighting, 50 fc average fixtures located to illuminate work spaces and around the vehicles.
  - Explosion proof fluorescent, along ceiling in pit area, 70 fc
- Power:
  - All receptacles and outlets at 3'-6" AFF
  - General-purpose duplex receptacles, 120 VAC, 20 A, GFI protected on walls, columns, and between OH doors
  - Air/electric drop "trapeze" mounted double duplex receptacles, 120 VAC, 20 A GFI protected, between bays (at mid bay)
  - Dedicated computer receptacle, 120 VAC, 20 A adjacent to data conduit
  - As required by equipment
- Communications:
  - Paging/intercom system speakers
  - Data conduit on columns at each bay



## Repair Bay - Public Works - Heavy Duty - Fire Apparatus

### FUNCTION

Perform general repair and maintenance on public works vehicles such as 1 ton trucks, plow trucks, vactor trucks, and trailers

### RELATIONSHIP TO OTHER AREAS

Access to Common Work Area, Rebuild Area, Parts Room, Portable Equipment Storage Areas, Vehicle Parking/Storage, Maintenance Office areas, and Manuals Library

### CRITICAL DIMENSIONS

19'-0" vertical clearance to structure and fixtures OR hook of bridge crane above

20'-0" wide x 55'-0" long OR

22'-0" wide x 55'-0" long

### EQUIPMENT/FURNISHINGS

- Severe use workbench with vise (1 per bay)
- Parts cleaning tank (shared)
- Lubrication reel bank with ATF, EC, and EO at end of bay and CG, GO at mid bay (shared, 1 per 2 bays)
- Air/electric trapeze (shared, 3 per 2 bays)
- Vehicle exhaust (1 per bay)
- 2-post in-ground lift, mobile column lift, parallelogram lift (1 per bay)
- Bridge crane

### DESIGN FEATURES

Drive-through configuration or pull-in/back-out configuration

### SUSTAINABLE DESIGN CRITERIA

- Utilize day lighting strategies
- Provide user-adjustable comfort and lighting controls
- Lighting designed to meet targeted LEED points
- Radiant heat

### ARCHITECTURAL

- Finishes:
  - Floor: Soil, grease, water, slip resistant concrete with integral non-metallic light reflective hardener, and chemical bonded concrete sealer
  - Walls: Soil and grease resistant, light colored finish

- Ceiling: Painted exposed structure, light colored finish
- Doors:
  - Personnel door with view panel to meet applicable code exit requirements
  - Exterior overhead doors: High-lifting sectional, steel, insulated, 14'-0" x 14'-0" with view panels, automatic operator, interior and exterior push button controls with lockout on exterior
  - Bollards on exterior at jambs of overhead door (2 each)

### STRUCTURAL

- Control joints in floor slab at adequate spacing
- Structure as needed to support equipment
- Structure as needed to support lubrication reels, exhaust reels, bridge crane, and air/electric trapeze

### MECHANICAL

- Wall mounted or overhead vehicle exhaust system with exhaust hose on a motorized reel with integral exhaust fan and automatic fan switch
- As required by equipment

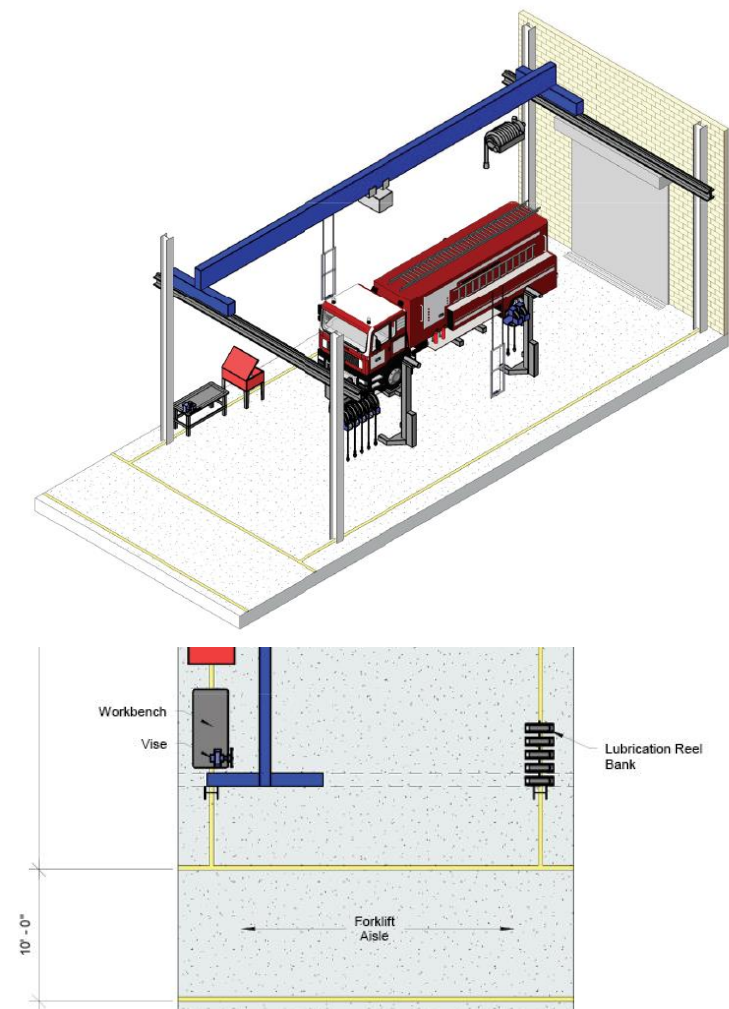
### PLUMBING

- Trench drain at overhead door with removable cover to sediment and oil interceptor (1 each)
- Lubrication reel bank with ATF, EC, and EO at end of bay and CG, GO at mid bay (shared, 1 per 2 bays)
- 3/4" water hose bib with standard faucet at rear of bay 2'-0" AFF (1 per 3 bays)
- Compressed air:
  - Compressed air drops with cut-off valve, union separator, regulator with gauge, lubricator, and quick disconnects on 4'-0" AFF
  - Provide disconnects for 1/2" and 1" impact tools at locations to be determined during detailed design
  - As required by equipment

### ELECTRICAL

- Lighting: Fluorescent or LED lighting, 70 fc average, fixtures located to illuminate work spaces and around the vehicles
- Power:
  - All receptacles and outlets at 3'-6" AFF
  - General-purpose duplex receptacles, 120 VAC, 20 A, GFI protected on walls, columns, and between overhead doors

- Welding outlet centrally located 230 VAC, 1 phase, 50 A (Shared 1 per 3 bays)
- Air/electric drop "trapeze" mounted double duplex receptacles, 120 VAC, 20 A, GFI protected, between bays (at mid bay)
- Dedicated computer receptacle, 120 VAC, 20 A, adjacent to data conduit
- As required by equipment
- Communications:
  - Paging/intercom system speakers
  - Data conduit on columns at each bay



## Repair Bay - Public Works - Heavy Duty - Pull In

### FUNCTION

Perform general repair and maintenance on public works vehicles such as 1 ton trucks, plow trucks, vactor trucks, and trailers

### RELATIONSHIP TO OTHER AREAS

Access to Common Work Area, Rebuild Area, Parts Room, Portable Equipment Storage Areas, Vehicle Parking/Storage, Maintenance Office areas, and Manuals Library

### CRITICAL DIMENSIONS

19'-0" vertical clearance to structure and fixtures OR hook of bridge crane above

20'-0" wide x 55'-0" long

### EQUIPMENT/FURNISHINGS

- Severe use workbench with vise (1 per bay)
- Parts cleaning tank (shared)
- Lubrication reel bank with ATF, EC, and EO at end of bay and CG, GO at mid bay (shared, 1 per 2 bays)
- Air/electric trapeze (shared)
- Vehicle exhaust (1 per bay)
- 2-post in-ground lift, or mobile column lift, parallelogram lift (1 per bay)
- Bridge crane

### DESIGN FEATURES

Drive-through configuration or pull-in/back-out configuration

### SUSTAINABLE DESIGN CRITERIA

- Utilize day lighting strategies
- Provide user-adjustable comfort and lighting controls
- Lighting designed to meet targeted LEED points
- Radiant heat

### ARCHITECTURAL

- Finishes:
  - Floor: Soil, grease, water, slip resistant concrete with integral non-metallic light reflective hardener, and chemical bonded concrete sealer
  - Walls: Soil and grease resistant, light colored finish
  - Ceiling: Painted exposed structure, light colored finish

- Doors:
  - Personnel door with view panel to meet applicable code exit requirements
  - Exterior overhead doors: High-lifting sectional, steel, insulated, 14'-0" x 14'-0" OR 18'-0" x 14'-0" with view panels, automatic operator, interior and exterior push button controls with lockout on exterior
  - Bollards on exterior at jambs of overhead door (2 each)

### STRUCTURAL

- Control joints in floor slab at adequate spacing
- Structure as needed to support equipment
- Structure as needed to support lubrication reels, exhaust reels, bridge crane, and air/electric trapeze

### MECHANICAL

- Wall mounted or overhead vehicle exhaust system with exhaust hose on a motorized reel with integral exhaust fan and automatic fan switch
- As required by equipment
- Radiant heating system (each bay)

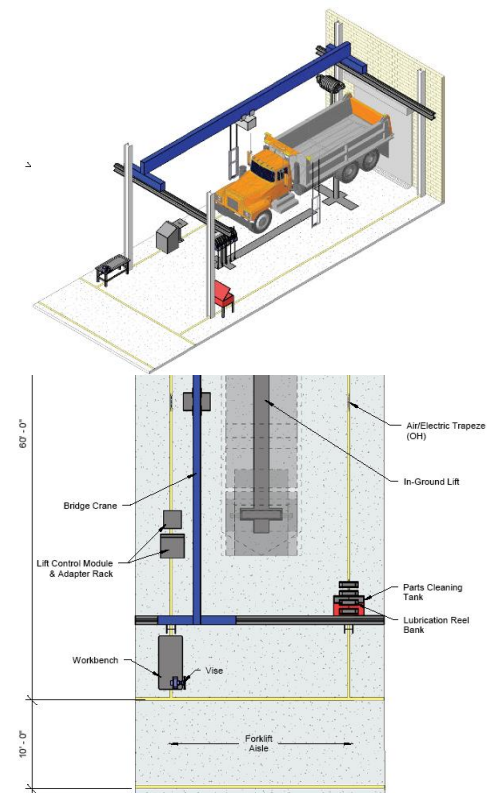
### PLUMBING

- Trench drain at overhead door with removable cover to sediment and oil interceptor (1 each)
- Lubrication reel bank with ATF, EC, and EO at end of bay and CG, GO at mid bay (shared, 1 per 2 bays)
- 3/4" water hose bib with standard faucet at rear of bay 2'-0" AFF (1 per 3 bays)
- Compressed air:
  - Compressed air drops with cut-off valve, union separator, regulator with gauge, lubricator, and quick disconnects on 4'-0" AFF
  - Provide disconnects for 1/2" and 1" impact tools at locations to be determined during detailed design
  - As required by equipment
- As required by equipment

### ELECTRICAL

- Lighting: Fluorescent or LED lighting, 50 fc average, fixtures located to illuminate work spaces and around the vehicles

- Power:
  - All receptacles and outlets at 3'-6" AFF
  - General-purpose duplex receptacles, 120 VAC, 20 A, GFI protected on walls, columns, and between overhead doors
  - Welding outlet centrally located 230 VAC, 1 phase, 50 A (shared 1 per 3 bays)
  - Air/electric drop "trapeze" mounted double duplex receptacles, 120 VAC, 20 A, GFI protected, between bays (at mid bay)
  - Dedicated computer receptacle, 120 VAC, 20 A, adjacent to data conduit
  - As required by equipment
- Communications:
  - Paging/intercom system speakers
  - Data conduit on columns at each bay



## PM / Inspection Bay - Heavy Duty

### FUNCTION

Bay to perform periodic inspections and preventative maintenance on bus and para-transit buses

### RELATIONSHIP TO OTHER AREAS

Access to Common Work Area, Rebuild Area, Parts Room, Portage Equipment Storage Areas, and Bus Staging

### CRITICAL DIMENSIONS

19'-0" vertical clearance

20'-0" wide by 60'-0" long

20'-0" wide by 75'-0" long

### EQUIPMENT/FURNISHINGS

- Severe use workbench with vise (1 per bay)
- Parts cleaning tank (shared), parts cleaning tank - hot (shared)
- Lubrication reel bank with ATF, EC, and EO at end of bay (shared, 1 each per 2 bays); lower level with CG, GO (at each bay)
- Pit safety covers: Cover entire pit opening
- Air/electric trapeze (shared, 3 per 2 bays)
- Vehicle exhaust (1 per bay)
- Tool box lift from main level to lower level
- Lower level: Severe use workbench with vise, rolling drain pans for used oil and used coolant, man-lift, storage shelving, used fluid storage tanks, pneumatic pumps for used fluid, and filter storage rack

### DESIGN FEATURES

- Drive through configuration or pull-in/back-out configuration
- Open area in lower level

### SUSTAINABLE DESIGN CRITERIA

- Utilize daylighting strategies
- Provide user-adjustable comfort and lighting controls
- Lighting designed to meet targeted LEED points
- Radiant heat

### ARCHITECTURAL

Finishes:

- Floor: Soil, grease, water, slip resistant concrete with integral non-metallic light reflective hardener, and chemical bonded concrete sealer

- Walls: Soil and grease resistant, light colored finish
- Ceiling: Painted exposed structure, light colored finish

Doors:

- Personnel door with view panel to meet applicable code exit requirements
- Exterior overhead doors: High lifting sectional, steel, insulated, 14'-0" x 14'-0" with view panels, automatic operator, interior and exterior push button controls with lockout on exterior
- Bollards on exterior at jambs of overhead door (2 each)

### STRUCTURAL

- Control joints in floor slab at adequate spacing
- Structure as needed to support equipment
- Structural slab over lower level to support larger vehicles
- Structure as needed to support lubrication reels

### MECHANICAL

- Wall mounted or overhead vehicle exhaust system with exhaust hose on a motorized reel with integral exhaust fan and automatic fan switch
- As required by equipment
- 6 air changes per hour continuous exhausted at ceiling to clear any natural gas accumulation; ten air changes per hour activated by gas detection system or manually for emergency ventilation (used for alternative fuels only)
- No heating devices with open flame or heaters with temperatures greater than 800 degrees F Class 1 Division 2 rated (used for alternative fuels only)
- Radiant heating system (each bay)
- General ventilation with sufficient ventilation in lower level areas and as required by codes to prevent accumulation of explosive mixtures

### PLUMBING

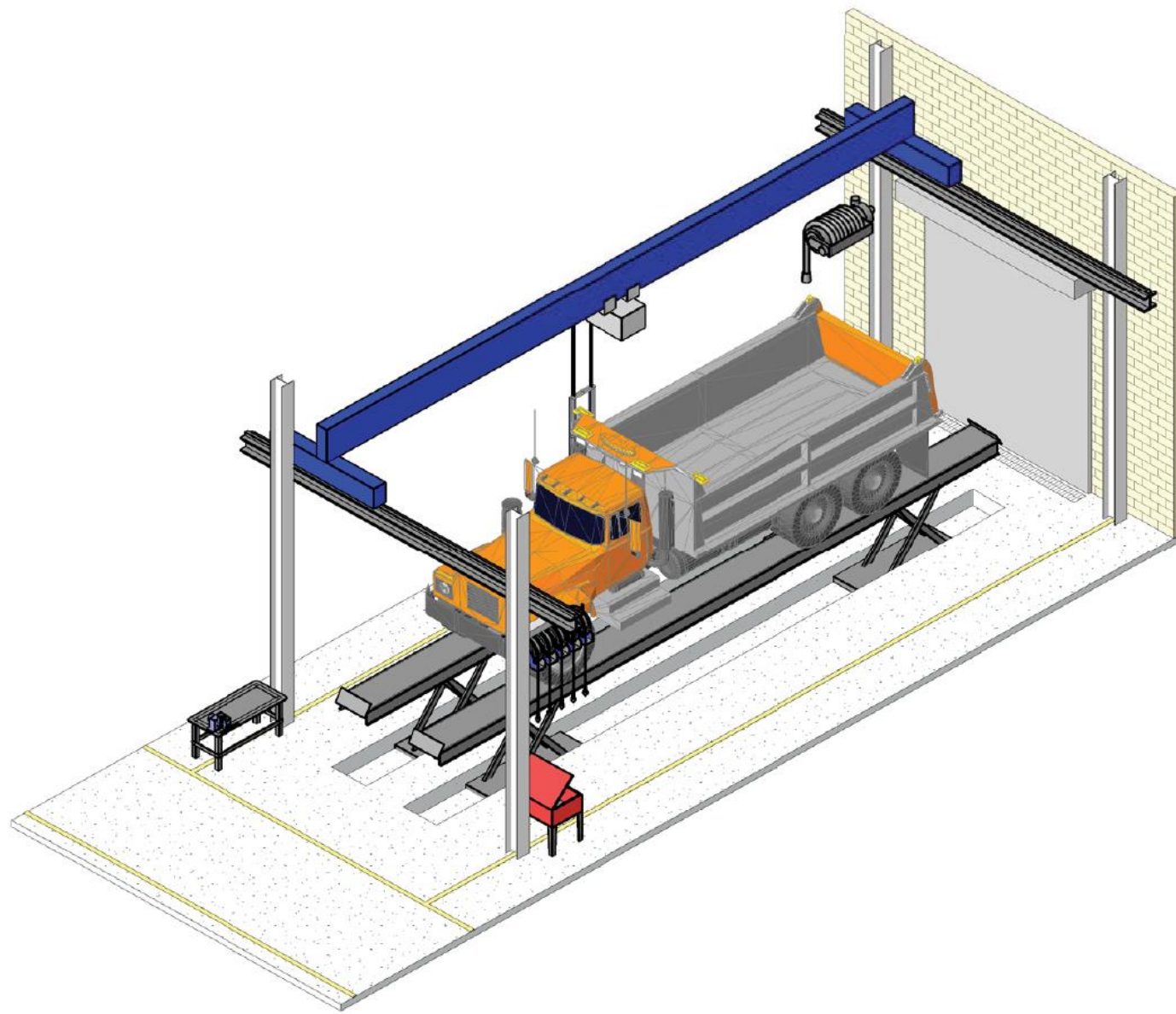
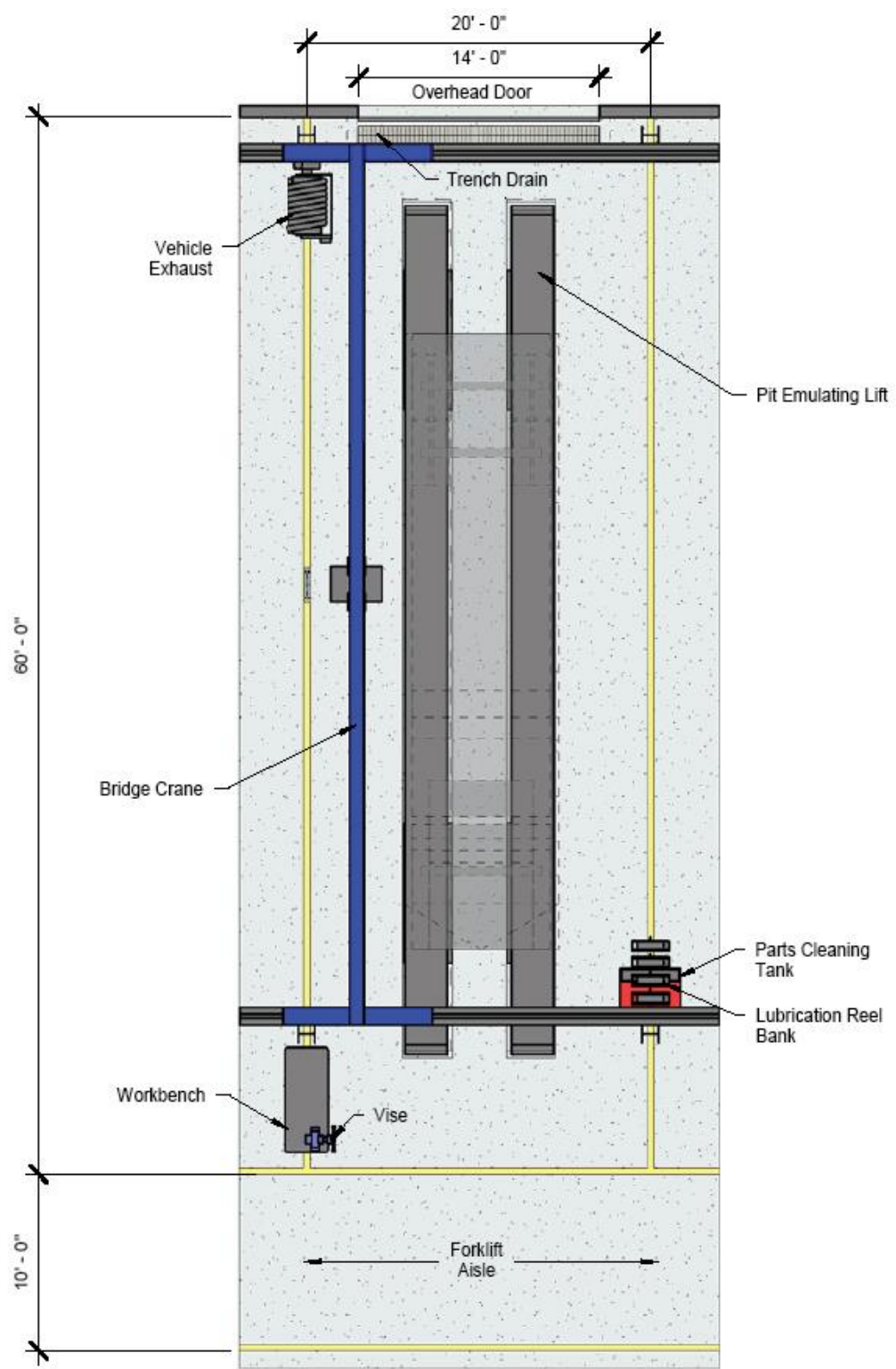
- Trench drain with removable cover to sediment and oil interceptor (1 each)
- Trench drain in lower level to sediment and oil inceptor
- Lube reel banks with ATF, EC, and EO at end of bay (shared, 1 each per 2 bays), CG, GO at lower level in pits (2 each per bay)
- 3/4" water hose bib with standard faucet at rear of bay 2'-0" AFF (1 per 3 bays)
- Compressed air:

- Main line lopped
- Compressed air drops with cut-off valve, union separator, regulator with gauge, lubricator, and quick disconnects on 4'-0" AFF
- Provide disconnects for 1/2" and 1" impact tools at locations to be determined during detailed design
- As required by equipment
- As required by equipment

### ELECTRICAL

- Lighting:
  - Fluorescent or LED lighting, 50 fc average fixtures located to illuminate work spaces and around the vehicles.
  - Explosion proof fluorescent, along ceiling in pit area, 70 fc
- Power:
  - All receptacles and outlets at 3'-6" AFF
  - General-purpose duplex receptacles, 120 VAC, 20 A, GFI protected on walls, columns, and between OH doors
  - Air/electric drop "trapeze" mounted double duplex receptacles, 120 VAC, 20 A GFI protected, between bays (at mid bay)
  - Dedicated computer receptacle, 120 VAC, 20 A adjacent to data conduit
  - As required by equipment
- Communications:
  - Paging/intercom system speakers
  - Data conduit on columns at each bay





## Repair Bay - Public Works - Light Duty

### FUNCTION

Perform general repair and maintenance on vehicles less than 1 ton

### RELATIONSHIP TO OTHER AREAS

Access to Common Work Area, Rebuild Area, Parts Room, Portable Equipment Storage Areas, Vehicle Staging, Maintenance Office areas, and Manuals Library

### CRITICAL DIMENSIONS

18'-0" vertical clearance to structure and light fixtures

15'-0" wide by 35'-0" long

### EQUIPMENT/FURNISHINGS (TYPICAL)

- Severe use workbench with vise (1 per bay)
- Parts cleaning tank (shared)
- Lubrication reel bank with ATF, CG, EC, EO, GO at end of bay (shared 1 per 2 bays)
- Vehicle exhaust (1 per bay)
- Above-ground 2-post or in-ground lift (1 per bay)

### DESIGN FEATURES

Drive-through configuration or pull-in/back-out configuration

### SUSTAINABLE DESIGN CRITERIA

- Utilize day lighting strategies
- Provide user-adjustable comfort and lighting controls
- Lighting designed to meet targeted LEED points
- Radiant heat

### ARCHITECTURAL

- Finishes:
  - Floor: Soil, grease, water, slip resistant concrete with integral non-metallic light reflective hardener, and chemical bonded concrete sealer
  - Walls: Soil and grease resistant, light colored finish
  - Ceiling: Painted exposed structure, light colored finish
- Doors:
  - Personnel door with view panel to meet applicable code exit requirements
  - Exterior overhead doors: High-lifting sectional, steel, insulated, 12'-0" x 12'-0" feet with view panels, automatic

operator, interior and exterior push button controls with lockout on exterior

- Bollards on exterior at jambs of overhead door (2 each)

### STRUCTURAL

- Control joints in floor slab at adequate spacing
- Structure as needed to support equipment
- Structure as needed to support lubrication reels, exhaust reels
- Structure to support in-ground lift OR surface mounted lift

### MECHANICAL

- Wall mounted or overhead vehicle exhaust system with exhaust hose on a motorized reel with integral exhaust fan and automatic fan switch
- As required by equipment
- No heating devices with open flame or heaters with temperatures greater than 800 degrees F Class 1 Division 2 rated (used for alternative fuels only)
- In floor and overhead radiant heating system (each bay)
- General ventilation with sufficient ventilation as required by codes

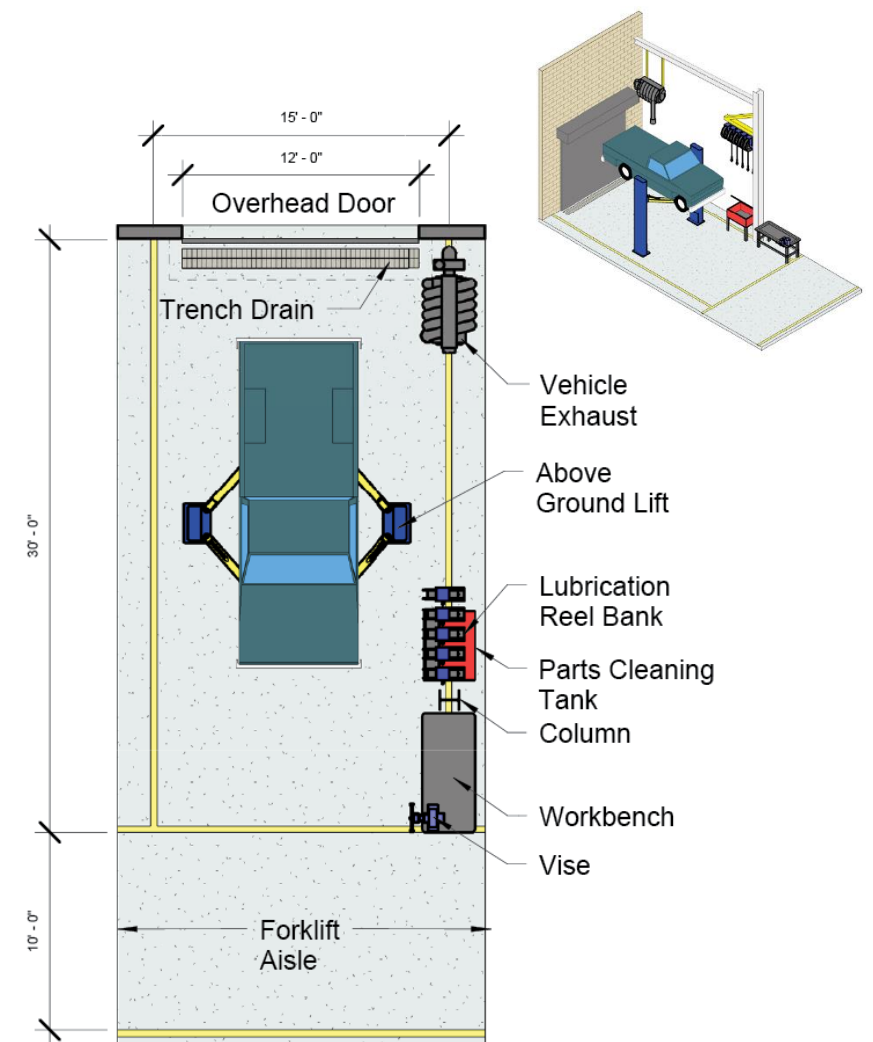
### PLUMBING

- Trench drain at overhead door with removable cover to sediment and oil interceptor (1 each)
- Lubrication reel bank with ATF, CG, EC, EO, and GO at end of bay (shared 1 per two bays bay)
- 3/4" water hose bib with standard faucet at rear of bay 2'-0" AFF (1 per 3 bays)
- Compressed air:
  - Compressed air drops with cut-off valve, union separator, regulator with gauge, lubricator, and quick disconnects on 4'-0" AFF
  - Provide disconnects for 1/2" and 1" impact tools at locations to be determined during detailed design
  - As required by equipment
- As required by equipment

### ELECTRICAL

- Lighting: Fluorescent or LED lighting, 70 fc average, fixtures located to illuminate work spaces and around the vehicles
- Power:
  - All receptacles and outlets at 3'-6" AFF

- General-purpose duplex receptacles, 120 VAC, 20 A, GFI protected, on walls, columns, and between overhead doors
- Welding outlet centrally located 230 VAC, 1 phase, 50 A (shared 1 per 3 bays)
- As required by equipment
- Communications:
  - Paging/intercom system speakers
  - Data conduit on columns at each bay



## PM / Inspection Bay - Light Duty

### FUNCTION

Bay to perform periodic inspections and preventative maintenance on bus and para-transit buses

### RELATIONSHIP TO OTHER AREAS

Access to Common Work Area, Rebuild Area, Parts Room, Portage Equipment Storage Areas, and Bus Staging

### CRITICAL DIMENSIONS

19'-0" vertical clearance

20'-0" wide by 60'-0" long

### EQUIPMENT/FURNISHINGS (TYPICAL)

- Severe use workbench with vise (1 per bay)
- Parts cleaning tank (shared), parts cleaning tank - hot (shared)
- Lubrication reel bank with ATF, EC, and EO at end of bay (shared, 1 each per 2 bays); lower level with CG, GO (at each bay)
- Pit emulating lift
- Air/electric trapeze (shared, 3 per 2 bays)
- Vehicle exhaust (1 per bay)

### DESIGN FEATURES

Drive through configuration or pull-in/back-out configuration

### SUSTAINABLE DESIGN CRITERIA

- Utilize daylighting strategies
- Provide user-adjustable comfort and lighting controls
- Lighting designed to meet targeted LEED points
- Radiant heat

### ARCHITECTURAL

- Finishes:
  - Floor: Soil, grease, water, slip resistant concrete with integral non-metallic light reflective hardener, and chemical bonded concrete sealer
  - Walls: Soil and grease resistant, light colored finish
  - Ceiling: Painted exposed structure, light colored finish
- Doors:
  - Personnel door with view panel to meet applicable code exit requirements

- Exterior overhead doors: High lifting sectional, steel, insulated, 12'-0" x 12'-0" with view panels, automatic operator, interior and exterior push button controls with lockout on exterior

- Bollards on exterior at jambs of overhead door (2 each)

### STRUCTURAL

- Control joints in floor slab at adequate spacing
- Structure as needed to support equipment
- Structure as needed to support lubrication reels

### MECHANICAL

- Wall mounted or overhead vehicle exhaust system with exhaust hose on a motorized reel with integral exhaust fan and automatic fan switch

- As required by equipment
- Radiant heating system (each bay)

### PLUMBING

- Trench drain with removable cover to sediment and oil interceptor (1 each)
- Lube reel banks with ATF, EC, and EO at end of bay (shared, 1 each per 2 bays), CG, GO at lower level in pits (2 each per bay)
- 3/4" water hose bib with standard faucet at rear of bay 2'-0" AFF (1 per 3 bays)

- Compressed air:
  - Compressed air drops with cut-off valve, union separator, regulator with gauge, lubricator, and quick disconnects on 4'-0" AFF
  - Provide disconnects for 1/2" and 1" impact tools at locations to be determined during detailed design
- As required by equipment

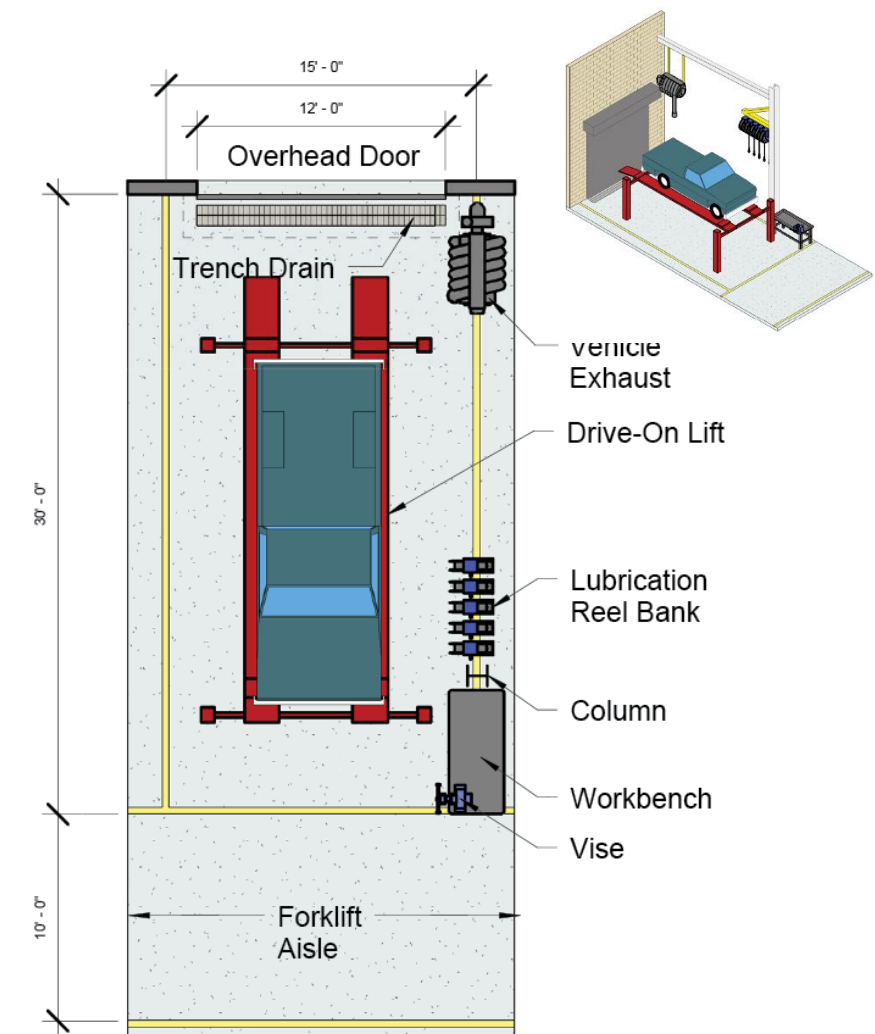
- As required by equipment

### ELECTRICAL

- Lighting:
  - Fluorescent or LED lighting, 70 fc average fixtures located to illuminate workspaces and around the vehicles.

- Power:
  - All receptacles and outlets at 3'-6" AFF

- General-purpose duplex receptacles, 120 VAC, 20 A, GFI protected on walls, columns, and between OH doors
- Air/electric drop "trapeze" mounted double duplex receptacles, 120 VAC, 20 A GFI protected, between bays (at mid bay)
- Dedicated computer receptacle, 120 VAC, 20 A adjacent to data conduit
- As required by equipment
- Communications:
  - Paging/intercom system speakers
  - Data conduit on columns at each bay



## Fueling Position (Transit)

### FUNCTION

Drive-through for fueling, topping off lubrication fluids, probing, money collection, vacuuming, and cleaning the interior of the buses. Fuels will include diesel, and gasoline

### RELATIONSHIP TO OTHER AREAS

Adjacent to the Fare Collection/Counting Room

Access to Men's and Women's Restrooms

Access to cleaning supply storage

### CRITICAL DIMENSIONS

12'-0" wide lanes

8'-0" wide equipment lanes

16'-0" vertical clearance

### EQUIPMENT/FURNISHINGS

- Vacuum station (hose and reel stanchion)
- Lube reel banks
- Emergency safety shower/eyewash
- Vault receiver and probing equipment
- Video monitoring of vault areas
- Dispensers (diesel, gasoline)
- Fuel Tram
- Fuel management system

### DESIGN FEATURES

- Access to other Service Island rooms and offices
- Drive-through configuration
- No curbing

### SUSTAINABLE DESIGN CRITERIA

Lighting designed to meet targeted LEED points

### ARCHITECTURAL

- Finishes:
  - Floor: Soil, grease, water, slip resistant concrete
  - Walls: Soil and grease resistant, light color finish
  - Canopy: Painted exposed structure in lanes, light color finish
- Bollards located at entrance to each lane and in front of fueling, vacuum, and fare collection equipment

### STRUCTURAL

- Sealed concrete joints in floor slab at adequate spacing
- Structure as needed to support equipment

- No curbing

### MECHANICAL

- As required by equipment
- Overhead Radiant Heat System

### PLUMBING

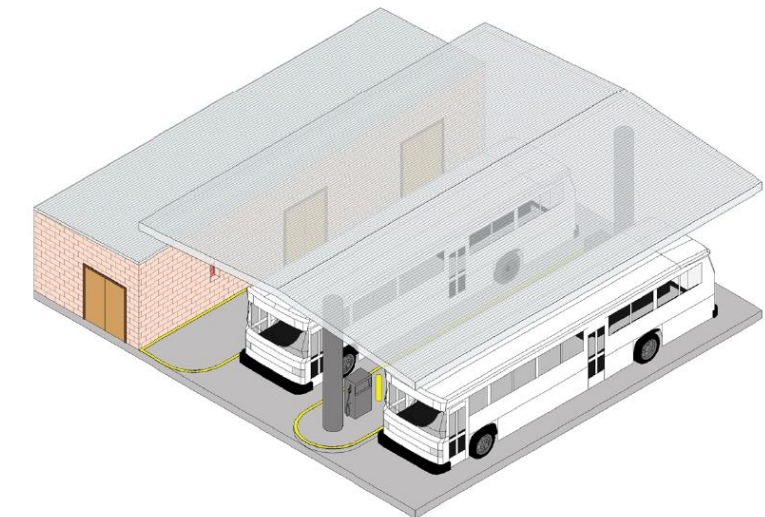
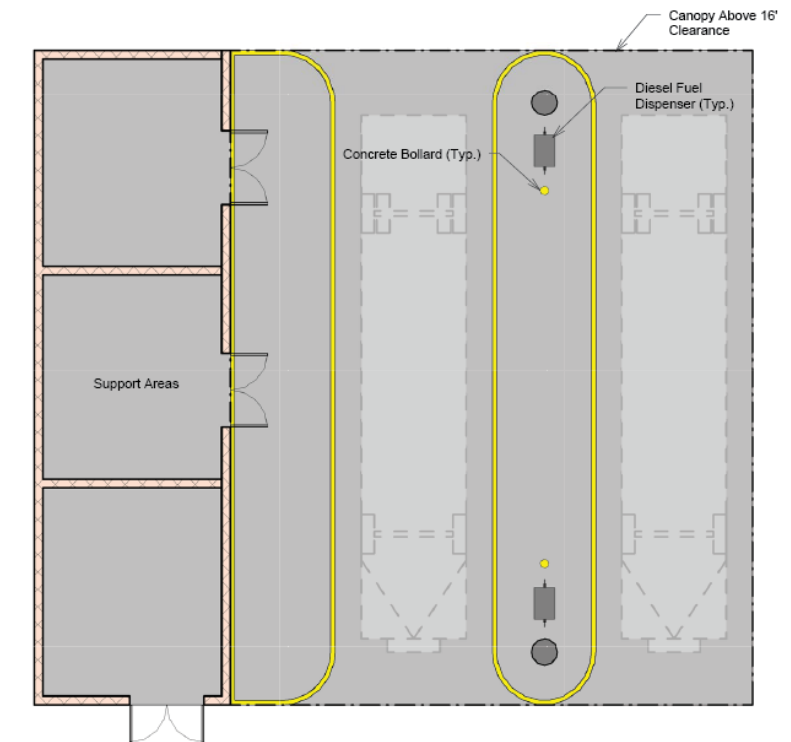
- Two sided mop sink with mop wringer built in to the fuel island
- Water connection to emergency shower/eye wash
- Compressed air:
  - Compressed air drops with cut-off valve, union separator, regulator with gauge, lubricator, and quick disconnects on 4'-0" AFF
  - As required by equipment
- Lube reel banks with ATF, EC, EO at each lane controlled by the Fluid Management System

- Provide product and vapor recovery piping as required to and from fuel tanks and dispensers

- As required by equipment

### ELECTRICAL

- Lighting:
  - LED or fluorescent lighting 50 fc average, time clock/photocell switched
  - All lighting on emergency power circuits
- Power:
  - All receptacles and outlets at 3'-6" AFF
  - Fuel dispensers and submersible pumps on emergency power circuit
  - General purpose duplex receptacles, 120 VAC, 20 A, GFI protected, on walls, columns, and 3'-6" AFF
- Fuel Management System: Provide power and signal conduit from island terminals to the office designated by the owner
- Communications: Paging/intercom system speakers



## Fare Collection / Counting Room (Transit)

### FUNCTION

Secure Room for Counting Bus Revenue

### RELATIONSHIP TO OTHER AREAS

- Adjacent to the Fuel Lanes
- Access to Men's and Women's Restrooms

### CRITICAL DIMENSIONS

12'-0" vertical

### EQUIPMENT/FURNISHINGS

- Vault receiver and fare probing equipment
- Video monitoring of vault areas
- Counting equipment

### DESIGN FEATURES

- Special counter
- Top material in counting area

### SUSTAINABLE DESIGN CRITERIA

Lighting designed to meet targeted LEED points

### ARCHITECTURAL

- Finishes:
  - Floor: Soil, grease, water, slip resistant concrete
  - Walls: Soil and grease resistant, light color finish
  - Canopy: Painted exposed structure in lanes, light color finish
- Bollards located in front of fare collection equipment

### STRUCTURAL

- Sealed concrete joints in floor slab at adequate spacing
- Structure as needed to support equipment
- Design canopy to prevent the accumulation of explosive natural gas mixtures
- No curbing

### MECHANICAL

As required by equipment

HVAC Systems

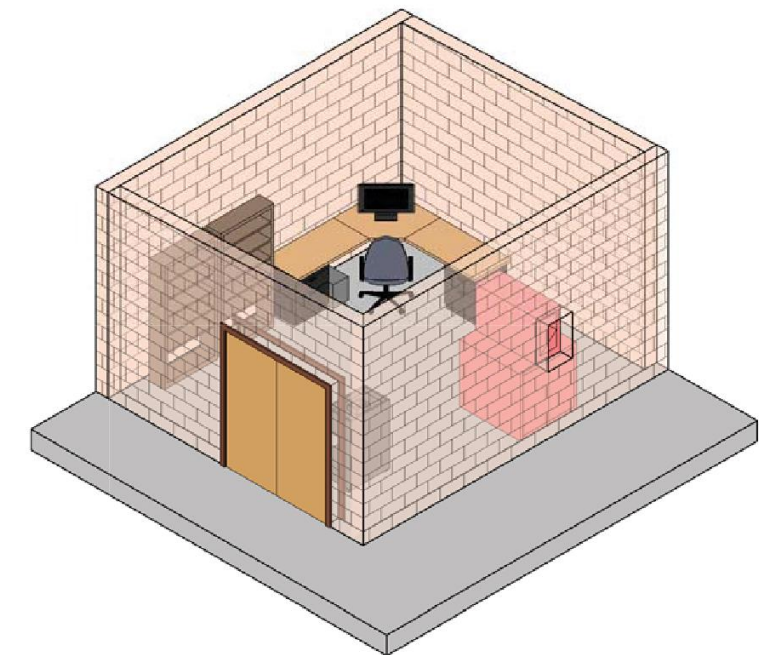
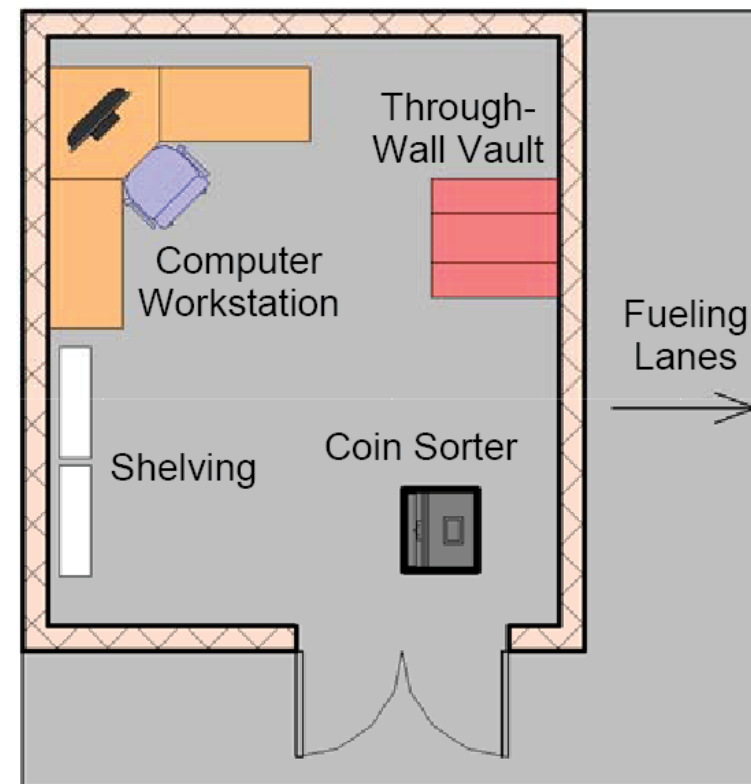
### PLUMBING

As required by equipment

### ELECTRICAL

- Lighting:
  - LED fixtures or fluorescent lighting 50 fc average, time clock/photocell switched
  - All lighting on emergency power circuits
- Power:
  - All receptacles and outlets at 3'-6" AFF
  - General purpose duplex receptacles, 120 VAC, 20 A, GFI protected, on walls, columns, and 3'-6" AFF

Communications: Paging/intercom system speakers



## STORAGE AREAS

### Storage - Battery Room

#### FUNCTION

Enclosed and secure area for storage and charging of vehicle batteries

#### RELATIONSHIP TO OTHER AREAS

- Adjacent to Parts Storage
- Adjacent to Repair Bays

#### CRITICAL DIMENSIONS

12'-0" vertical clearance

#### EQUIPMENT/FURNISHINGS

- Hardwood battery bench
- Battery charger with bar for batteries
- Storage shelving

#### DESIGN FEATURES

- Provide charging and storage area for batteries
- Sustainable Design Criteria
- Utilize day lighting strategies, occupancy sensors
- Provide user-adjustable comfort and lighting controls
- Lighting designed to meet targeted LEED points

#### ARCHITECTURAL

- Finishes:
  - Floor: Smooth finish concrete with acid resistant epoxy paint
  - Walls: Smooth finish masonry with acid resistant epoxy paint
  - Ceiling: Painted exposed structure, light colored finish
- Doors: Sliding wire mesh or 3'-0" door

#### STRUCTURAL

- As required to support equipment

#### MECHANICAL

- Adequate ventilation (15 air changes per hour minimum)
- Ductwork and fans to be stainless steel

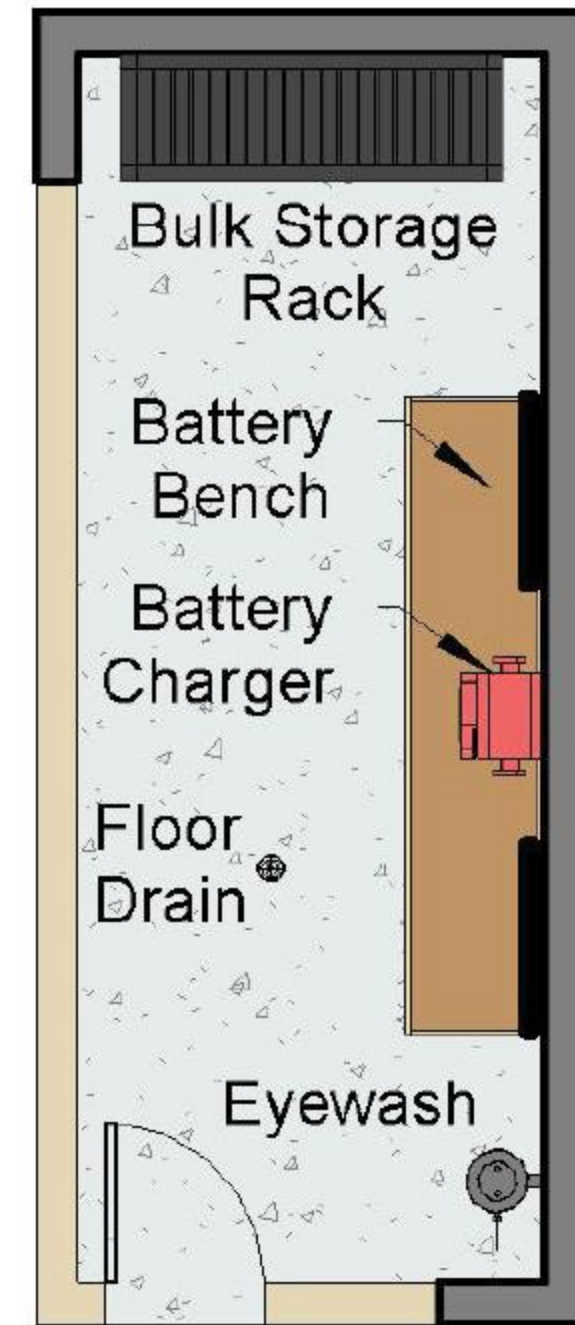
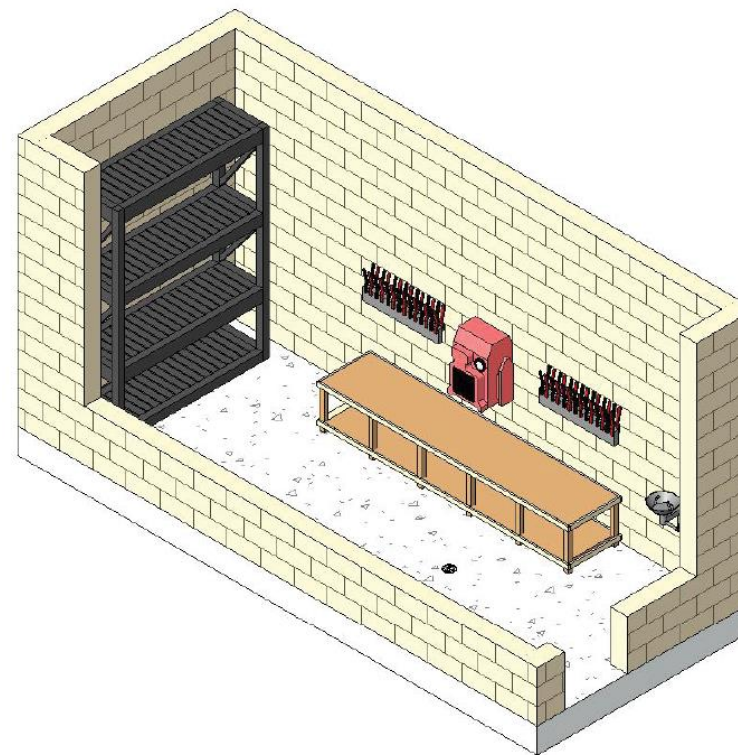
#### PLUMBING

- Water connection to emergency eye wash/shower

- Combination emergency shower/eye wash with flow switch activated audible alarm
- Acid resistant floor drain and piping to acid dilution tank (if required)

#### ELECTRICAL

- Lighting: LED lighting, 50 fc local switching, fixtures to illuminate workspace
- Power:
  - Weatherproof duplex receptacle, 120 VAC, GFI protected at 3'-6" AFF
  - As required by equipment



## Parts Room

### FUNCTION

Dedicated secure area for receiving, storage, and issuing of parts, materials, and specialized tools

### RELATIONSHIP TO OTHER AREAS

- Adjacent to the Repair Bays and Shops
- Access to the exterior for deliveries/distribution

### CRITICAL DIMENSIONS

14'-0" vertical clearance below mezzanine

10'-0" vertical clearance on mezzanine

### EQUIPMENT/FURNISHINGS (TYPICAL)

- Layout table and desk at receiving
- Storage shelving, racks, and cabinets
- Storage cabinets
- Forklift access to mezzanine

### DESIGN FEATURES

- Provide issue counter with stainless steel top and locking security grill
- Provide staging area for shipping/receiving with an overhead door to the exterior of the building
- Forklift access

### SUSTAINABLE DESIGN CRITERIA

- Utilize day lighting strategies
- Provide user-adjustable comfort and lighting controls
- Lighting designed to meet targeted LEED points
- Radiant heat

### ARCHITECTURAL

- Finishes:
  - Floor: Soil, grease, water, slip resistant concrete with integral non-metallic light reflective hardener and chemical bonded concrete sealer
  - Walls: Soil and grease resistant, light colored finish
  - Ceiling: Painted exposed structure, light colored finish
  - Removable gate at mezzanine for forklift access
- Doors:

- Personnel door with view panel to meet applicable code exit requirements
- Interior overhead door, coiling steel, 10'-0" x 12'-0", automatic operator, push button controls

### STRUCTURAL

- Control joints in floor slab at adequate spacing
- Structure as needed to support equipment

### MECHANICAL

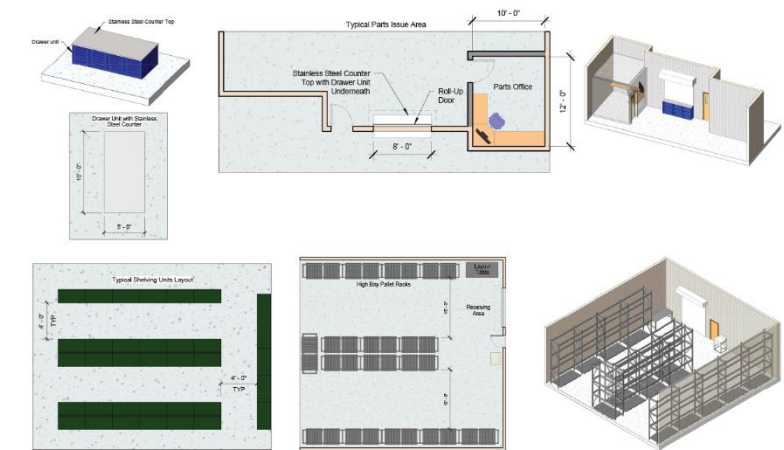
- HVAC systems at office and issue window
- Radiant heating
- As required by equipment and code

### PLUMBING

- As required by equipment owner

### ELECTRICAL

- Lighting: Fluorescent or LED lighting, 50 fc average, local switching, fixture located to illuminate work spaces
- Power:
  - General-purpose duplex receptacles, 120 VAC, 20 A, GFI protected, on walls at 3'-6" AFF as required by code
  - Dedicated computer receptacle, 120 VAC, 20 A, adjacent to data cable conduit at parts window and receiving door
  - As required by equipment
- Communications:
  - Paging/intercom system speakers
  - Data outlet and conduit for computer at parts window and receiving door
  - Buzzer at parts window and shipping/receiving door



## WASH AREAS

### Wash Bay - Bus

#### FUNCTION

Designated bay for automatic washing of sides, top, front, back, and undercarriage of transit buses.

#### RELATIONSHIP TO OTHER AREAS

Adjacent to Wash Equipment Room

#### CRITICAL DIMENSIONS

20'-0" vertical clearance

Wash Bay: 25'-0" x 95'-0" (sized to allow for wash equipment and to allow adequate dwell time for detergent after application by the detergent arch, and prior to arriving at the brush assembly)

#### EQUIPMENT/FURNISHINGS

- Automatic wash equipment
- Equipment should recycle as much water as possible
- High volume air blow off is optional, aids in reducing water spots on windows

#### DESIGN FEATURES

- Includes room for wash equipment controls, pumps, tanks, and reclaim equipment
- Bay should be physically isolated from other maintenance areas to prevent migration of noise, dirt, and fumes

#### SUSTAINABLE DESIGN CRITERIA

- Utilize day lighting strategies
- Provide user-adjustable comfort and lighting controls
- Lighting design to meet targeted LEED points
- In-floor radiant heating
- Water reclamation system
- Use of rain water for vehicle washing

#### ARCHITECTURAL

- Finishes
  - Floor: Soil, grease, water, slip resistant concrete with integral non-metallic light reflective hardener, and chemical bonded concrete sealer
  - Walls: Soil and grease resistant, light colored finish, polyurea coating
  - Ceiling: Painted exposed structure, light colored finish
- Doors:

- Personnel door with view panel to meet applicable code exit requirements
- Wash Bay: Exterior overhead doors: poly carbonate, 14'-0" x 14'-0", automatic operator, interior and exterior push button controls with lockout on exterior. Sensors on exterior and interior for automatic roll up and roll down
- Wash Equipment Room: Exterior high lift overhead door: 10'-0" x 12'-0", automatic operator, interior and exterior push button controls with lockout on exterior

#### STRUCTURAL

- Control joints in floor slab at adequate spacing
- Control joints to have metal water stops
- Structure as needed to support equipment
- Wash bay:
  - Integrated trench drain and sump pit with removable covers
  - Trench drain with removable cover at overhead door(s)
- Wash Equipment Room - sump pits with removable covers

#### MECHANICAL

- Special ventilation to remove moisture
- Low air supply to eliminate mist and steam
- Water resistant equipment
- As required by equipment

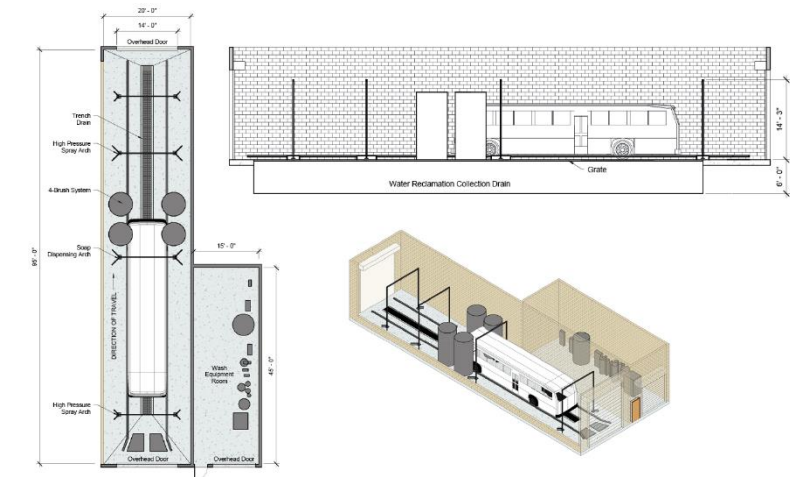
#### PLUMBING

- Trench drains:
  - Integrated trench drain and sump pit with removable covers. Sump pit overflow to sump pits in Wash and Reclaim Equipment Room
  - Trench with removable cover at overhead doors
- Wash equipment room: sump with removable covers and an overflow to sediment and oil interceptor
- Water and compressed air connections to wash and reclamation equipment
- As required by equipment

#### ELECTRICAL

- Lighting:
  - Water tight LED or fluorescent light fixtures, 30 fc average

- Power:
  - All conduit and electrical boxes sealed for a wet environment
  - All receptacles and outlets mounted at 3'-6" AFF
  - As required by equipment
- Communications:
  - Paging/intercom system speaker





## Wash - Chassis

### FUNCTION

Enclosed bay for washing of bus undercarriages, engine compartments, and components

### RELATIONSHIP TO OTHER AREAS

- Access to all other Maintenance areas
- Adjacent to Repair Bays

### CRITICAL DIMENSIONS

- 19'-0" vertical clearance
- 25'-0" wide by 60'-0" long

### EQUIPMENT/FURNISHINGS

- Wash system with hand lances
- Emergency safety shower/eyewash
- Parallelogram lift
- High pressure washer and soap

### DESIGN FEATURES

- Drive-through or back-in pull-out configuration
- Recessed parallelogram lift
- Physically separated from other areas to prevent migration of noise, dirt, and fumes if possible
- Over sized sump pit for collection of sediment

### SUSTAINABLE DESIGN CRITERIA

- Utilize day lighting strategies
- Provide user-adjustable comfort and lighting controls
- Lighting designed to meet targeted LEED points
- Water reclamation system
- Use of rain water for vehicle washing

### ARCHITECTURAL

- Finishes
  - Floor: Soil, grease, water, slip resistant concrete with chemical bonded concrete sealer
  - Walls: Soil and grease resistant, light colored finish
- Ceiling: Painted exposed structure, light colored finish
- Doors
  - Personnel doors with view panels to meet applicable code exit requirements

- Exterior overhead door: Air operated, high lifting sectional, polycarbonate, 14'-0" x 14'-0" with view panels, automatic operator, interior and exterior push button controls and lockout on exterior
- Double 3'-0" wide hollow metal doors with interior exit device
- Bollards on exterior jambs of overhead door (2 each)

### STRUCTURAL

- Control joints in floor slab at adequate spacing
- Recessed slab for parallelogram lift
- Structural grating over sump pit to accommodate H-20 loading
- Large 10'-0" x 12'-0" grated sump with side drain box for overflow
- Slop floor to trench drain and sump pit
- Structure as needed to support equipment

### MECHANICAL

- Special ventilation to remove moisture, low air supply to eliminate steam
- Water resistant heating system
- As required by equipment

### PLUMBING

- Compressed air line with cut-off valve, regulator with gauge and quick disconnect at 4'-0" AFF
- Wash connections to hand lance on both sides of bay
- Water connection to emergency eye wash/shower
- Trench drain area (with removable cover) to sediment and oil inceptor
- Trench drains to overhead doors
- Large 10'-0" x 12'-0" grated sump with side drain overflow to sediment and oil inceptor
- As required by equipment

### ELECTRICAL

- Lighting:

- Sealed fluorescent or LED water tight lighting, 50 fc average, local switching, fixtures to illuminate workspaces around vehicle

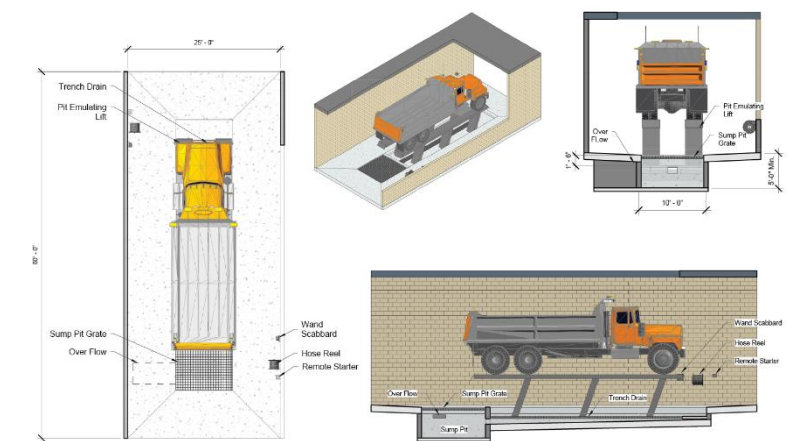
- Task lighting located at low level to illuminate underside of vehicles, local switching

- Power

- Waterproof duplex receptacles, 120 VAC, 20 A, GFI protected, on walls at 3'-6" AFF

- Communications:

- Paging/intercom system speakers
- Data conduit



## Rough Wash Bay

### FUNCTION

Enclosed bay for washing of large equipment.

### RELATIONSHIP TO OTHER AREAS

- Access to all other Maintenance areas
- Adjacent to other Wash areas

### CRITICAL DIMENSIONS

19'-0" vertical clearance

20'-0" wide by 60'-0" long

### EQUIPMENT/FURNISHINGS

- Wash system with hand lances
- Emergency safety shower/eyewash
- Work Platform
- High volume/low pressure washer
- High volume reel, hose, and nozzle

### DESIGN FEATURES

- Drive-through or back-in pull-out configuration
- Physically separated from other areas to prevent migration of noise, dirt, and fumes if possible
- Over sized sump pit for collection of sediment and oil

### SUSTAINABLE DESIGN CRITERIA

- Utilize day lighting strategies
- Provide user-adjustable comfort and lighting controls
- Lighting designed to meet targeted LEED points
- Water reclamation system
- Use of rain water for vehicle washing

### ARCHITECTURAL

- Finishes
  - Floor: Soil, grease, water, slip resistant concrete with chemical bonded concrete sealer
  - Walls: Soil and grease resistant, light colored finish
  - Ceiling: Painted exposed structure, light colored finish
- Doors:
  - Personnel doors with view panels to meet applicable code exit requirements

– Exterior overhead door: Air operated, high lifting sectional, polycarbonate, 14'-0" x 14'-0" with view panels, automatic operator, interior and exterior push button controls and lockout on exterior

– Double 3'-0" wide hollow metal doors with interior exit device

- Bollards on exterior jambs of overhead door (2 each)

### STRUCTURAL

- Control joints in floor slab at adequate spacing
- Recessed slab for parallelogram lift
- Structural grating over sump pit to accommodate H-20 loading
- Large 10'-0" x 12'-0" grated sump with side drain box for overflow
- Slop floor to trench drain and sump pit
- Structure as needed to support equipment

### MECHANICAL

- Special ventilation to remove moisture, low air supply to eliminate steam
- Water resistant heating system
- As required by equipment

### PLUMBING

- Compressed air line with cut-off valve, regulator with gauge and quick disconnect at 4'-0" AFF
- Wash connections to hand lance on both sides of bay
- Water connection to emergency eye wash/shower
- Trench drain area (with removable cover) to sediment and oil inceptor
- Trench drains to overhead doors
- Large 10'-0" x 12'-0" grated sump with side drain overflow to sediment and oil inceptor
- As required by equipment

### ELECTRICAL

- Lighting

– Sealed fluorescent or LED water tight lighting, 50 fc average, local switching, fixtures to illuminate workspaces around vehicle

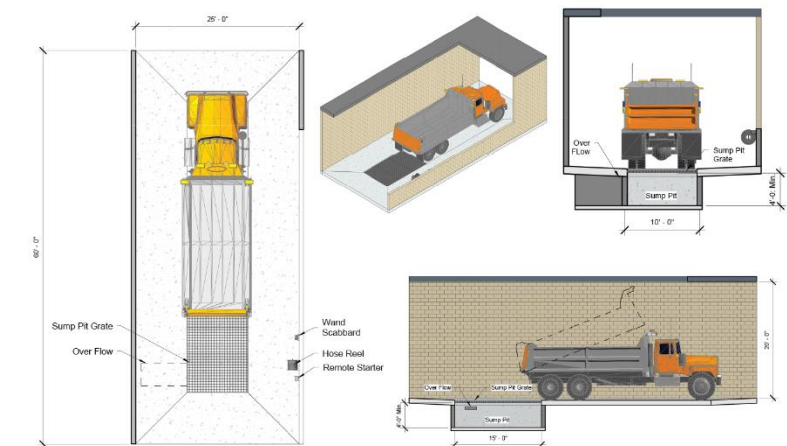
– Task lighting located as low level to illuminate underside of vehicles, 20 fc average, local switching

- Power

– Waterproof duplex receptacles, 120 VAC, 20 A, GFI protected, on walls at 3'-6" AFF

- Communications

– As required



## VEHICLE / EQUIPMENT STORAGE AREAS

### Storage - Heated Vehicle - Transit 30 ft

#### FUNCTION

Enclosed secure vehicle storage area for transit buses

#### RELATIONSHIP TO OTHER AREAS

Access to Break/Crew Room and exterior

#### CRITICAL DIMENSIONS

- 14'-0" vertical clearance (Min.)
- 12'-0" x 30'-0" space size

#### EQUIPMENT/FURNISHINGS

- None

#### DESIGN FEATURES

- Access to exterior

#### SUSTAINABLE DESIGN CRITERIA

- Utilize day lighting strategies
- Provide user-adjustable comfort and lighting controls
- Lighting designed to meet targeted LEED points

#### ARCHITECTURAL

- Finishes:
  - Floor: Soil, grease, water, slip resistant concrete with integral non-metallic light reflective hardener, and chemical bonded concrete sealer
  - Walls: Soil and grease resistant, light colored finish
  - Ceiling: Painted exposed structure, light colored finish
- Doors:
  - Personnel door with view panel to meet applicable code exit requirements
  - Exterior overhead doors: High-speed roll up, 20'-0" x 14'-0", automatic operator, interior and exterior push button controls with lockout on exterior
  - Bollards on exterior and interior at jambs of overhead door (2 each)

#### STRUCTURAL

- Control joints in floor slab at adequate spacing

- Floor sloped to trench drain
- Structure as needed to support equipment

#### MECHANICAL

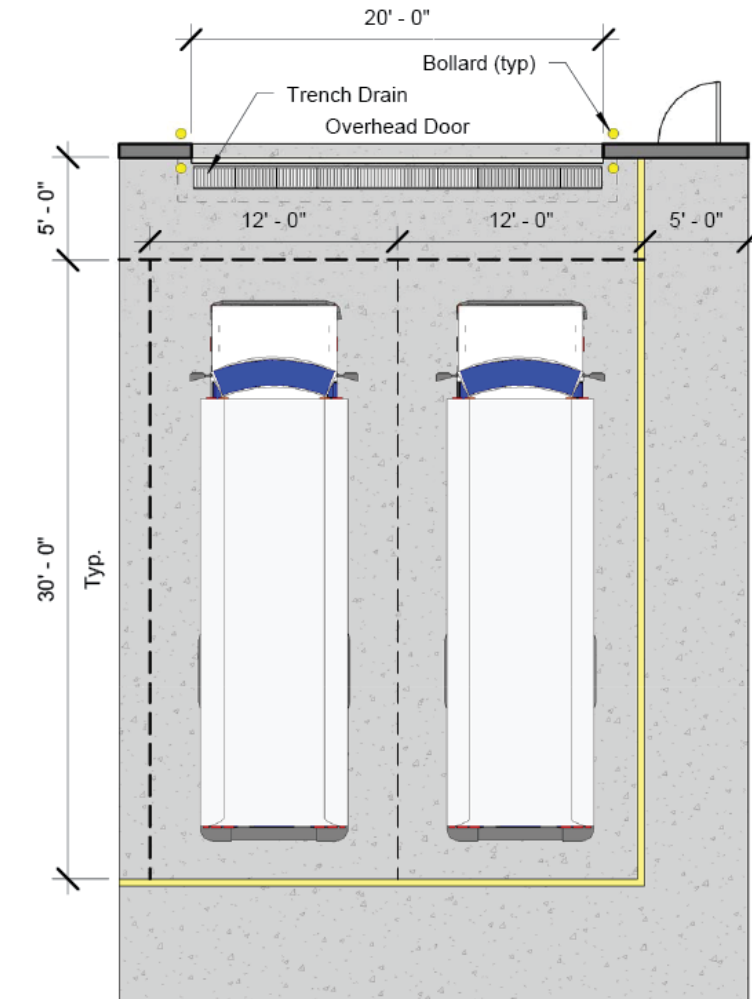
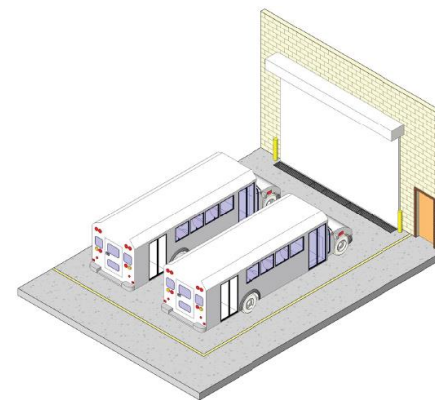
- As required by equipment

#### PLUMBING

- Trench drains:
  - Drain to sediment and oil interceptor
  - Parallel with vehicle parking with removable covers
- Compressed air:
  - Compressed air drops with cut-off valve, union separator, regulator with gauge, lubricator, and quick disconnects on 4'-0" AFF
  - As required by equipment
- As required by equipment

#### ELECTRICAL

- Lighting: Fluorescent or LED lighting, 30 fc average, fixtures located to illuminate storage area
- Power:
  - All receptacles and outlets at 3'-6" AFF
  - General-purpose duplex receptacles, 120 VAC, 20 A, GFI protected, on walls, columns, and between overhead doors as required by code
  - As required by equipment
- Communications:
  - Paging/intercom system speakers



## Storage - Heated Vehicle - Transit 40 ft

### FUNCTION:

Enclosed secure vehicle storage area transit buses

### RELATIONSHIP TO OTHER AREAS

Access to Break/Crew Room and exterior

### CRITICAL DIMENSIONS

- 14'-0" vertical clearance
- 12'-0" x 40'-0" space size

### EQUIPMENT/FURNISHINGS

None

### DESIGN FEATURES

Access to exterior

### SUSTAINABLE DESIGN CRITERIA

- Utilize day lighting strategies
- Provide user-adjustable comfort and lighting controls
- Lighting designed to meet targeted LEED points

### ARCHITECTURAL

- Finishes:
  - Floor: Soil, grease, water, slip resistant concrete with integral non-metallic light reflective hardener, and chemical bonded concrete sealer
  - Walls: Soil and grease resistant, light colored finish
  - Ceiling: Painted exposed structure, light colored finish
- Doors:
  - Personnel door with view panel to meet applicable code exit requirements
  - Exterior overhead doors: High-speed roll up, 20'-0" x 14'-0", automatic operator, interior and exterior push button controls with lockout on exterior
  - Bollards on exterior and interior at jambs of overhead door (2 each)

### STRUCTURAL

- Control joints in floor slab at adequate spacing
- Floor sloped to trench drain
- Structure as needed to support equipment

### MECHANICAL

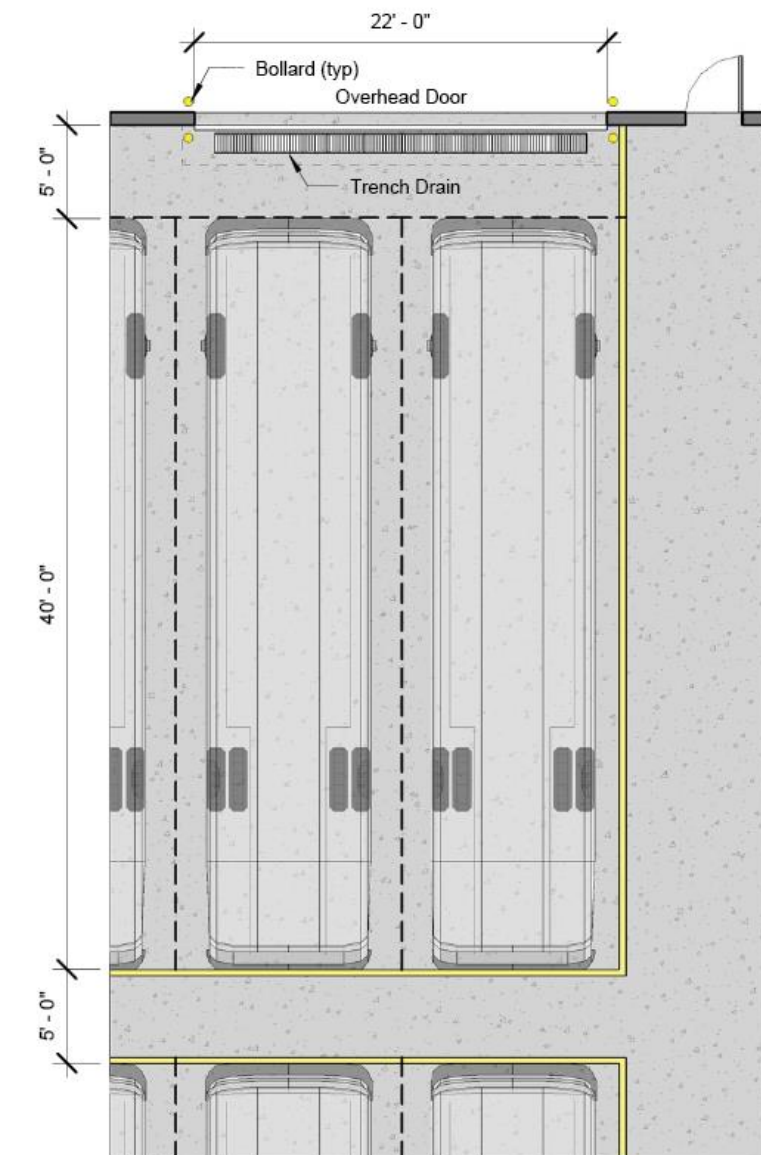
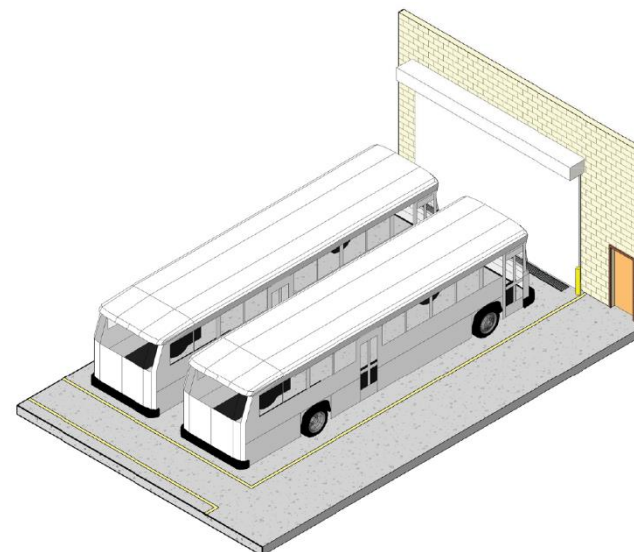
- As required by equipment

### PLUMBING

- Trench drains:
  - Drain to sediment and oil interceptor
  - Parallel with vehicle parking with removable covers
- Compressed air:
  - Compressed air drops with cut-off valve, union separator, regulator with gauge, lubricator, and quick disconnects on 4'-0" AFF
  - As required by equipment
- As required by equipment

### ELECTRICAL

- Lighting: Fluorescent or LED lighting, 30 fc average, fixtures located to illuminate storage area
- Power:
  - All receptacles and outlets at 3'-6" AFF
  - General-purpose duplex receptacles, 120 VAC, 20 A, GFI protected, on walls, columns, and between overhead doors as required by code
  - As required by equipment
- Communications:
  - Paging/intercom system speakers



## Storage - Heated Vehicle Truck - Equipment

### FUNCTION

Enclosed secure vehicle storage area small trucks, and equipment

### RELATIONSHIP TO OTHER AREAS

Access to Break/Crew Room and exterior

### CRITICAL DIMENSIONS

10'-0" x 20'-0" space size

### EQUIPMENT/FURNISHINGS

None

### DESIGN FEATURES

Access to exterior via interior drive aisle

### SUSTAINABLE DESIGN CRITERIA

- Utilize day lighting strategies
- Provide user-adjustable comfort and lighting controls
- Lighting designed to meet targeted LEED points
- Radiant heat

### ARCHITECTURAL

- Finishes:
  - Floor: Soil, grease, water, slip resistant concrete with integral non-metallic light reflective hardener, and chemical bonded concrete sealer
  - Walls: Soil and grease resistant, light colored finish
  - Ceiling: Painted exposed structure, light colored finish
- Doors:
  - Personnel door with view panel to meet applicable code exit requirements

### STRUCTURAL

- Control joints in floor slab at adequate spacing
- Floor sloped to trench drain
- Structure as needed to support equipment

### MECHANICAL

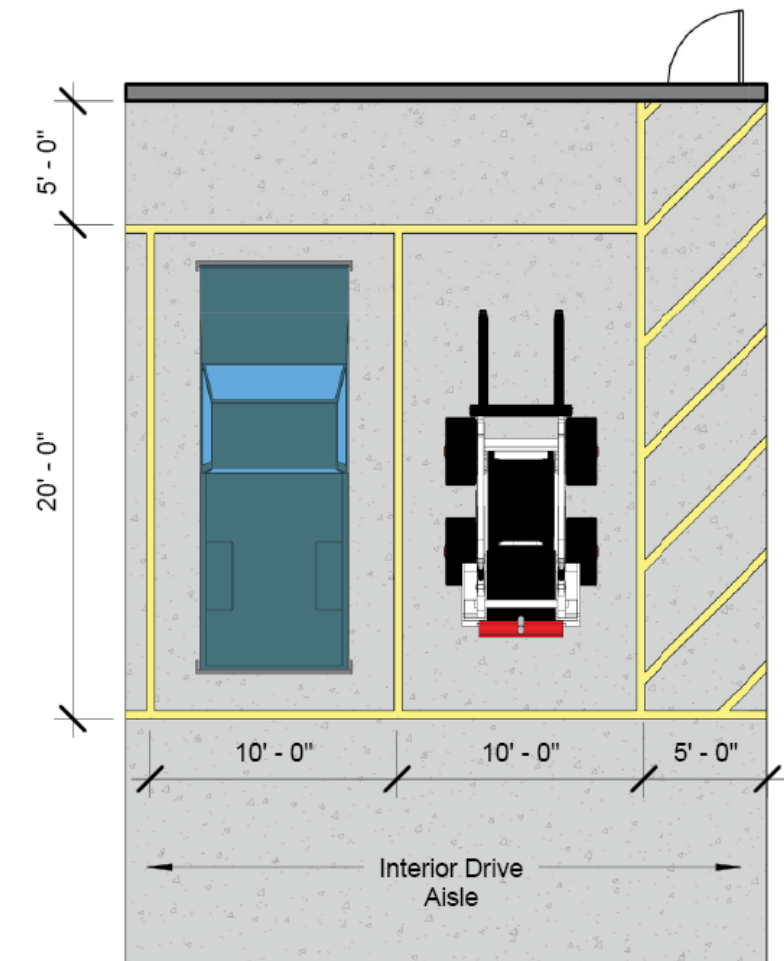
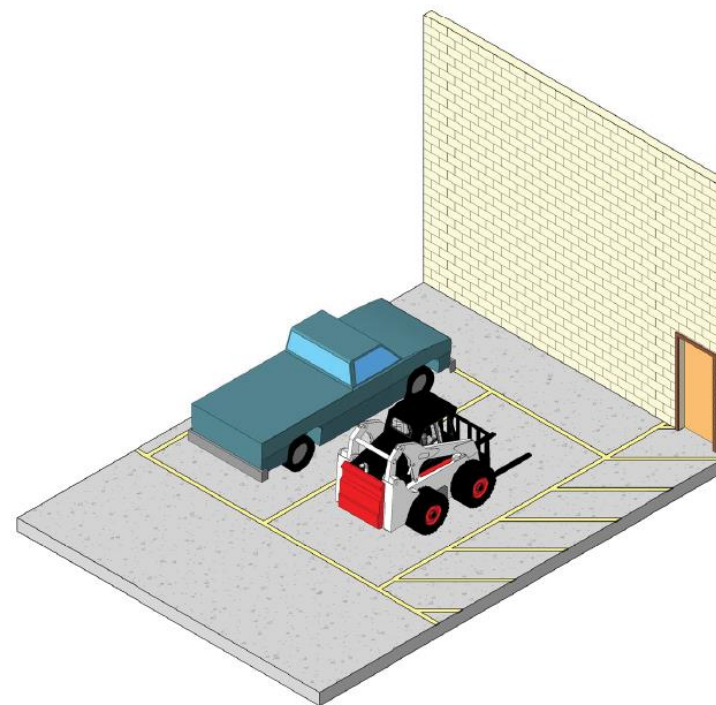
- As required by equipment
- Radiant heat

### PLUMBING

- Water hose bib, 3/4" with standard faucet, 2'-0" AFF
- Compressed air:
  - Compressed air drops with cut-off valve, union separator, regulator with gauge, lubricator, and quick disconnects on 4'-0" AFF
  - As required by equipment
- As required by equipment

### ELECTRICAL

- Lighting: Fluorescent or LED lighting, 30 fc average, fixtures located to illuminate storage area
- Power:
  - All receptacles and outlets at 3'-6" AFF
  - General-purpose duplex receptacles, 120 VAC, 20 A, GFI protected, on walls, columns, and between overhead doors as required by code
  - As required by equipment
- Communications: Paging/intercom system speakers



## Storage - Heated Vehicle Truck - Heavy

### FUNCTION

Enclosed secure vehicle storage area

### RELATIONSHIP TO OTHER AREAS

Access to Break/Crew Room and exterior

### CRITICAL DIMENSIONS

12'-0" x 40'-0" space size

### EQUIPMENT/FURNISHINGS

None

### DESIGN FEATURES

Access to exterior

### SUSTAINABLE DESIGN CRITERIA

- Utilize day lighting strategies
- Provide user-adjustable comfort and lighting controls
- Lighting designed to meet targeted LEED points
- Radiant heat

### ARCHITECTURAL

- Finishes
  - Floor: Soil, grease, water, slip resistant concrete with integral non-metallic light reflective hardener, and chemical bonded concrete sealer
  - Walls: Soil and grease resistant, light colored finish
  - Ceiling: Painted exposed structure, light colored finish
- Doors:
  - Personnel door with view panel to meet applicable code exit requirements

### STRUCTURAL

- Control joints in floor slab at adequate spacing
- Floor sloped to trench drain
- Structure as needed to support equipment

### MECHANICAL

- As required by equipment
- Radiant heat

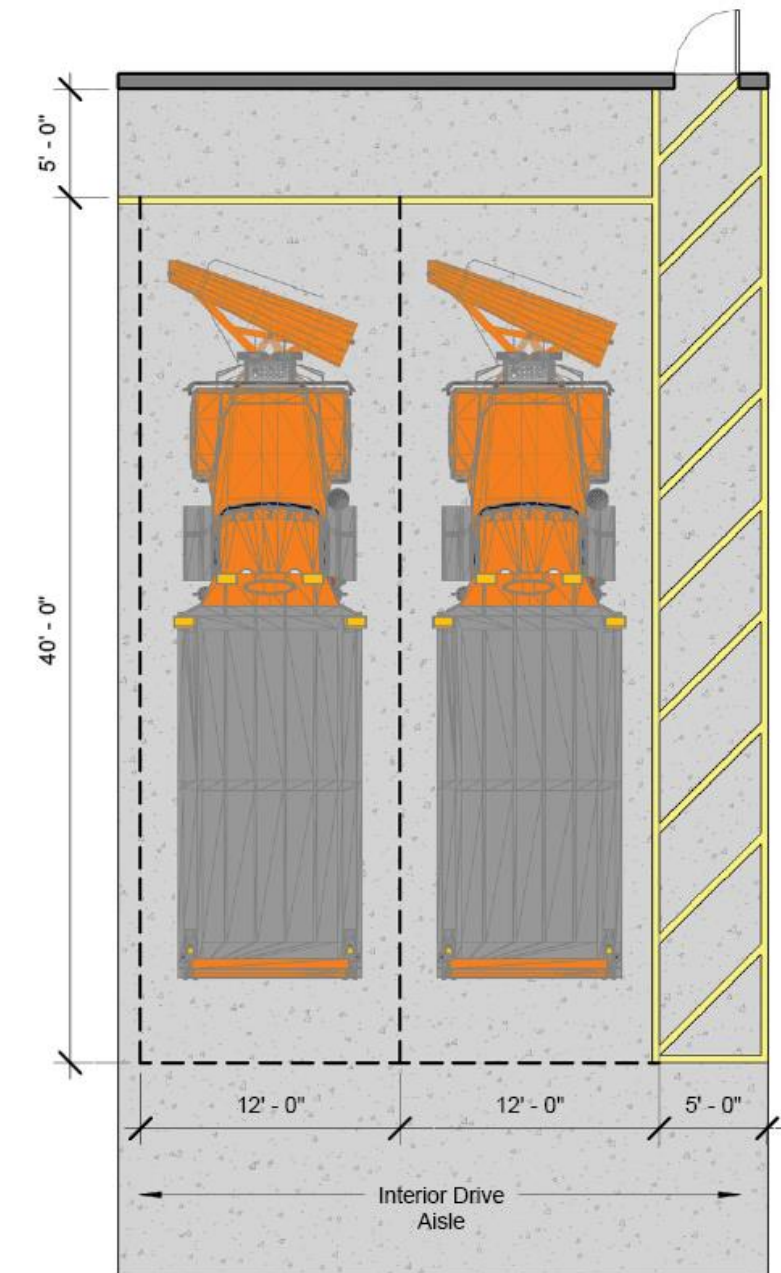
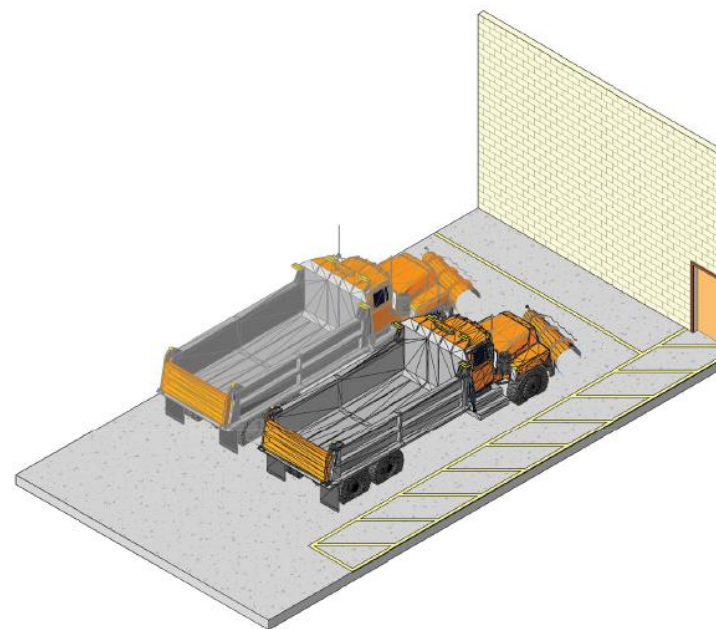
### PLUMBING

- Water hose bib, 3/4" with standard faucet, 2'-0" AFF

- Compressed air:
  - Main line lopped
  - Compressed air drops with cut-off valve, union separator, regulator with gauge, lubricator, and quick disconnects on 4'-0" AFF
  - Provide disconnects for 1/2" and 1" impact tools at locations to be determined during detailed design
  - As required by equipment
- As required by equipment

### ELECTRICAL

- Lighting: Fluorescent or LED lighting, 30 fc average, fixtures located to illuminate storage area
- Power:
  - All receptacles and outlets at 3'-6" AFF
  - General-purpose duplex receptacles, 120 VAC, 20 A, GFI protected, on walls, columns, and between overhead doors as required by code
  - As required by equipment
- Communications:
  - Paging/intercom system speakers



## Storage - Heated Vehicle Truck - Medium

### FUNCTION

Enclosed secure vehicle storage area

### RELATIONSHIP TO OTHER AREAS

Access to Break/Crew Room and exterior

### CRITICAL DIMENSIONS

12'-0" x 40'-0" space size

### EQUIPMENT/FURNISHINGS

None

### DESIGN FEATURES

Access to exterior

### SUSTAINABLE DESIGN CRITERIA

- Utilize day lighting strategies
- Provide user-adjustable comfort and lighting controls
- Lighting designed to meet targeted LEED points
- Radiant heat

### ARCHITECTURAL

- Finishes:
  - Floor: Soil, grease, water, slip resistant concrete with integral non-metallic light reflective hardener, and chemical bonded concrete sealer
  - Walls: Soil and grease resistant, light colored finish
  - Ceiling: Painted exposed structure, light colored finish
- Doors:
  - Personnel door with view panel to meet applicable code exit requirements

### STRUCTURAL

- Control joints in floor slab at adequate spacing
- Floor sloped to trench drain
- Structure as needed to support equipment

### MECHANICAL

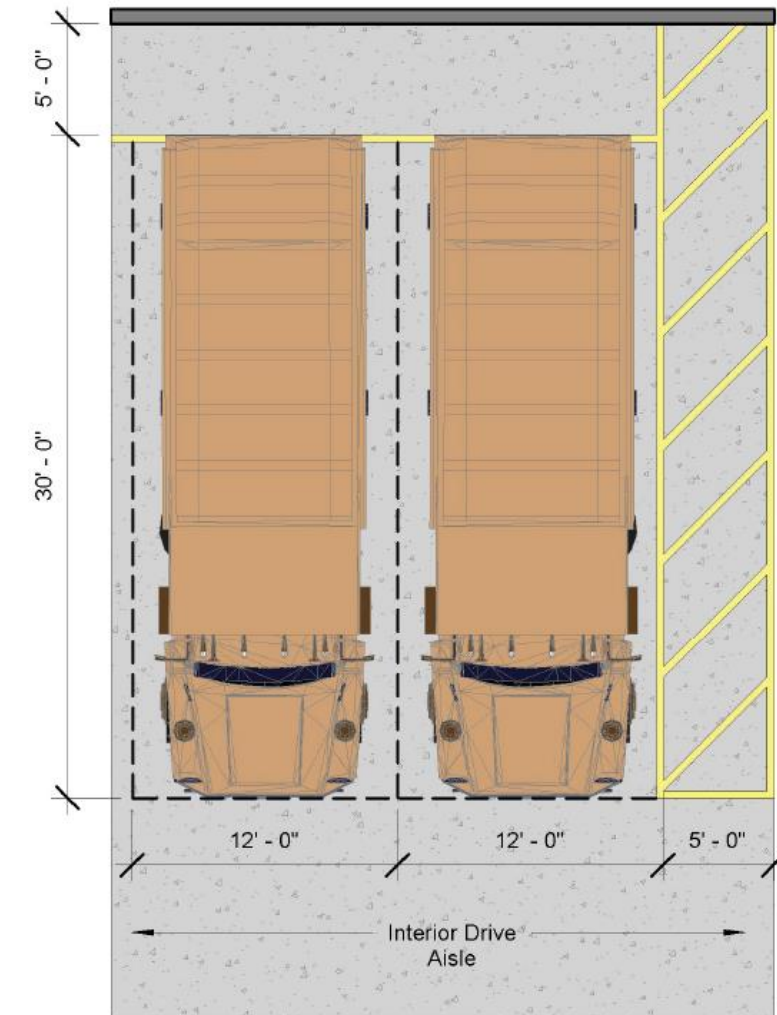
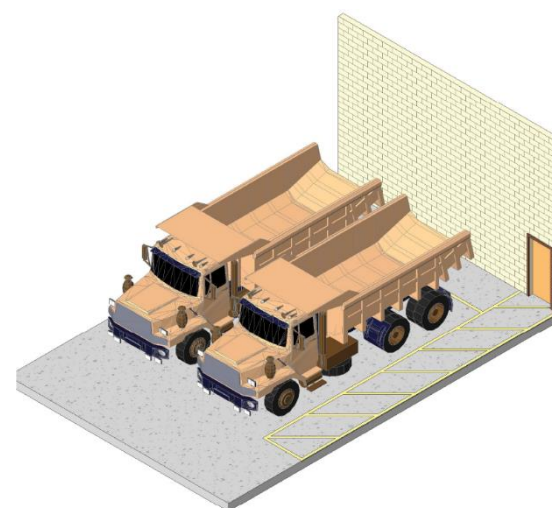
- As required by equipment
- Radiant heat

### PLUMBING

- Water hose bib, 3/4" with standard faucet, 2'-0" AFF
- Compressed air:
  - Main line lopped
  - Compressed air drops with cut-off valve, union separator, regulator with gauge, lubricator, and quick disconnects on 4'-0" AFF
  - Provide disconnects for 1/2" and 1" impact tools at locations to be determined during detailed design
  - As required by equipment
- As required by equipment

### ELECTRICAL

- Lighting: Fluorescent or LED lighting, 30 fc average, fixtures located to illuminate storage area
- Power:
  - All receptacles and outlets at 3'-6" AFF
  - General-purpose duplex receptacles, 120 VAC, 20 A, GFI protected, on walls, columns, and between overhead doors as required by code
  - As required by equipment
- Communications:
  - Paging/intercom system speakers



# Section 6 - Opinion of Probable Cost

## OVERVIEW

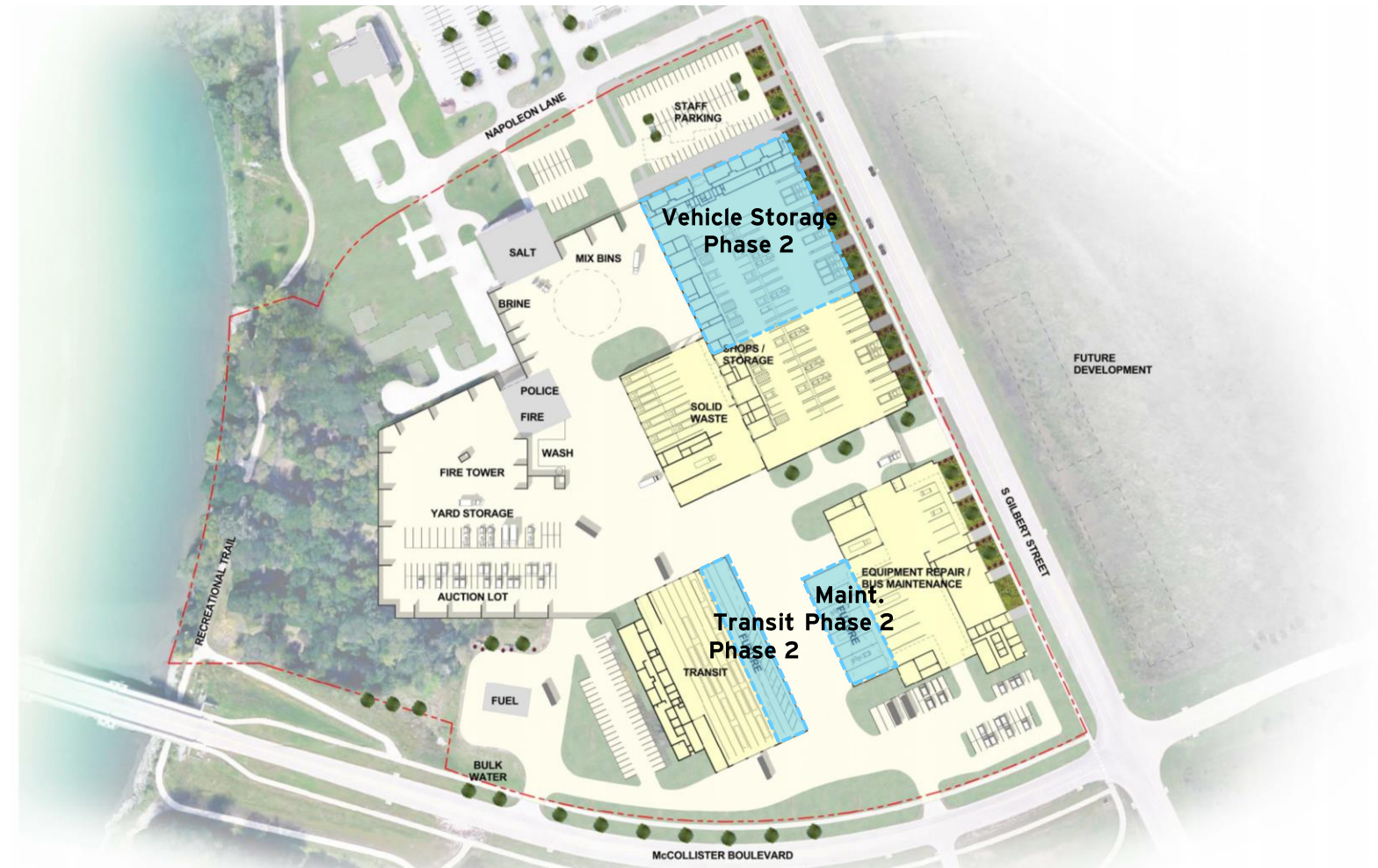
The opinion of probable cost (OPC) provides a high-level analysis of the costs associated with the construction of the Iowa City Public Works project. Solid Waste, Streets and Traffic, and Police and Fire were Identified as top priority for phasing. Equipment and Water were identified as having 2<sup>nd</sup> priority, followed by Transit. Existing building inventory for first-priority structures are in the worst condition or need substantial repairs. Some first-priority departments are housed on rental properties or may be working out of facilities at multiple locations, which leads to productivity loss and makes it difficult to keep tabs on equipment and tools. The first-priority departments are also in facilities that no longer provide conditions that promote worker efficiency and health. This may lead to problems filling future positions and maintaining staff. The current practice of parking equipment outside in the elements accelerates equipment degradation and life expectancy. The team estimates that these factors are costing the city between \$300,000 and \$400,000 annually. If no buildings are constructed the team recommends putting aside \$1,000,000 to replace roofs and upgrade restrooms to code compliancy in the next 5 years for their existing facilities. This deferred maintenance cost will only maintain the current facilities, that are in no way functional or desirable. The team also identified the possible sale of existing property to the total of 4.77 Million dollars. However, this amount will not be realized until all departments identified in the report are relocated.

## BUDGET SUMMARY

BUILDING	PHASE 1	PHASE 2	TOTAL
Vehicle Storage	\$ 10,475,807.73	\$ 11,929,232.64	\$ 22,405,040.36
Maintenance	\$ 8,486,049.77	\$ 1,813,235.70	\$ 10,299,285.47
Transit	\$ 5,794,382.61	\$ 1,813,918.56	\$ 7,608,301.17
			\$ 40,312,627.00

## RECOMMENDED CONSTRUCTION

The team recommends Phase 1 Construction for Vehicle Storage and Maintenance to happen in conjunction with each other. This will allow for the sale of the Solid waste and Maintenance Structures on Riverside Drive to offset the cost of purchasing the corner lot, and to create more positive revenue for the project. The anticipated sale for these properties is 1.3 Million dollars. This will allow for the most flexibility by consolidating functions to provide efficiencies between departments, in lieu of moving each department individually. The existing buildings that house these departments are drastically undersized due to the increased dimensions of modern equipment and implements. These facilities also have the greatest need for repairs, and currently rent spaces for operations. Providing a modern facility for these departments will positively impact their efficiency by allowing for better laydown/work areas around equipment. This phase of the facility will also create flexibility for future needs through a more effective layout, and will help create a healthier environment for the greatest number of employees.





# APPENDICES

## APPENDIX - PROJECT COMPARISON

### Cedar Rapids, Iowa



- All internal circulation of vehicles
- Interior drains are equipped for the wash bay
- Easy access for the operators to safely get to their vehicles
- All shops are adjacent to the vehicle storage area and have exterior access
- Isolated storage area for Solid Waste/Refuse trucks
- Two-story administration area with easy access to the mezzanine level of the repair shop

### Des Moines, Iowa



- Easy access for the operators to safely get to their vehicles
- Two-story administration area with easy access to the mezzanine level of the repair shop

## Naperville, Illinois



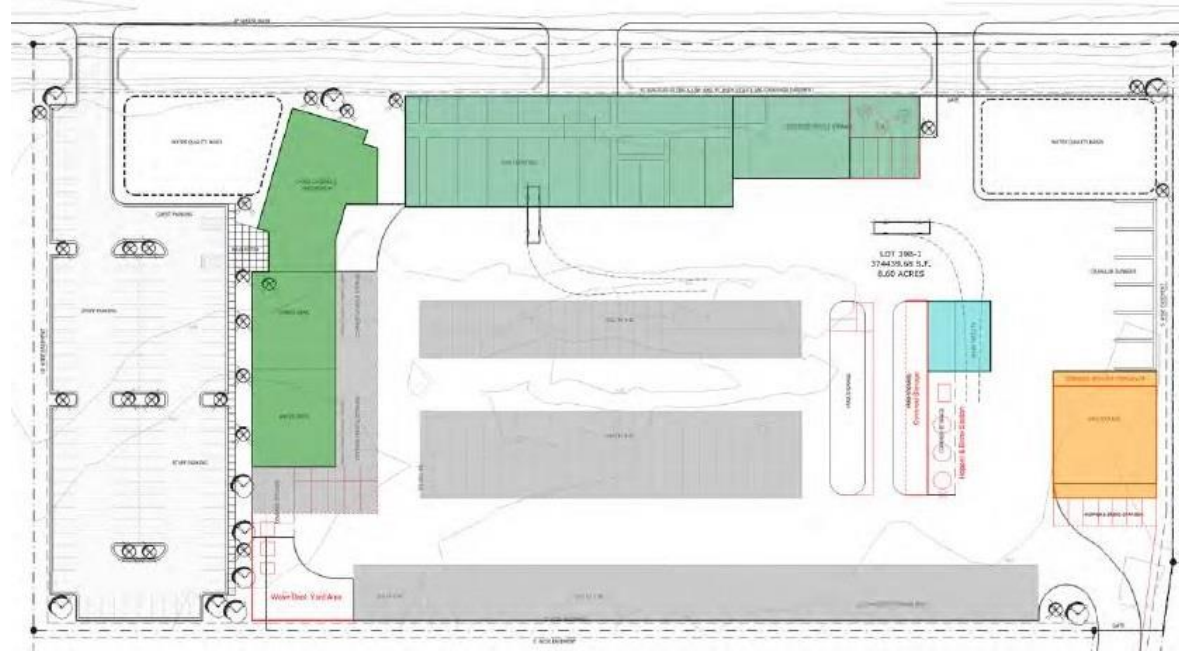
- Large vehicles access the repair position from the exterior
- Small vehicles circulate through the building and have access to the repair bays and vehicle storage area
- No backing up of vehicles is required
- External vehicle storage area for spare vehicles

## Springfield, Missouri



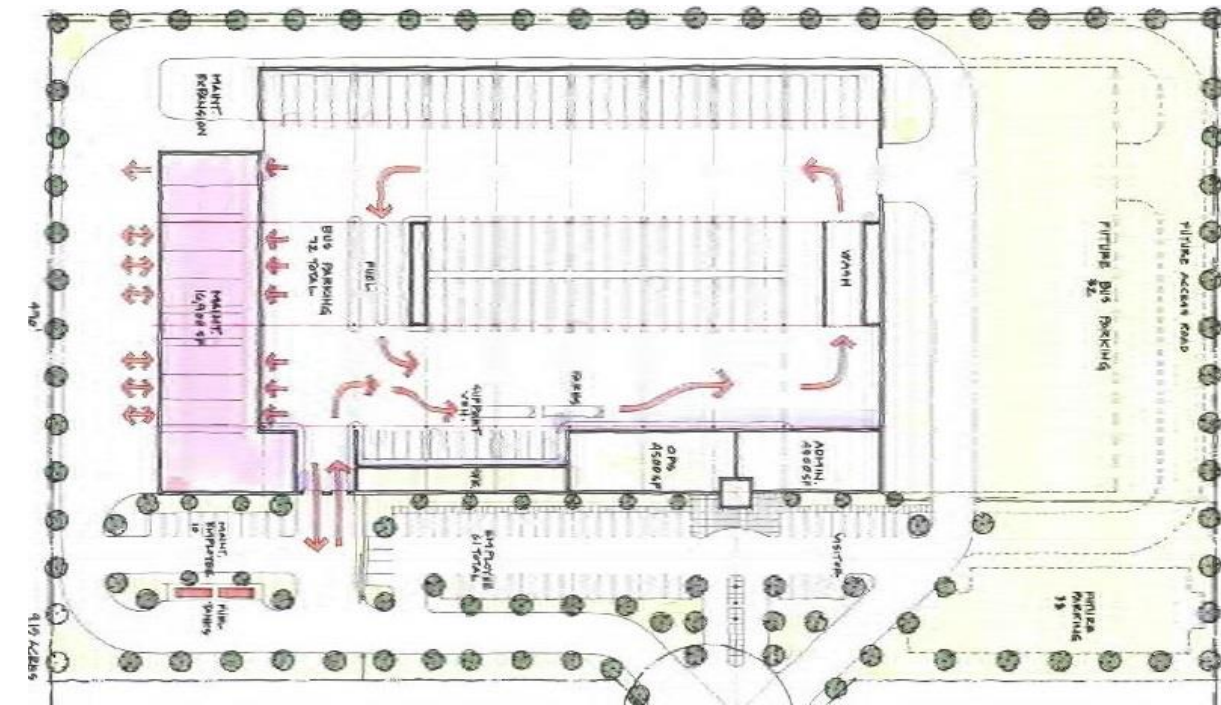
- Separate bus storage building with no interior circulation
- Stacked parking
- Four drive through lanes

## St. Charles, Missouri



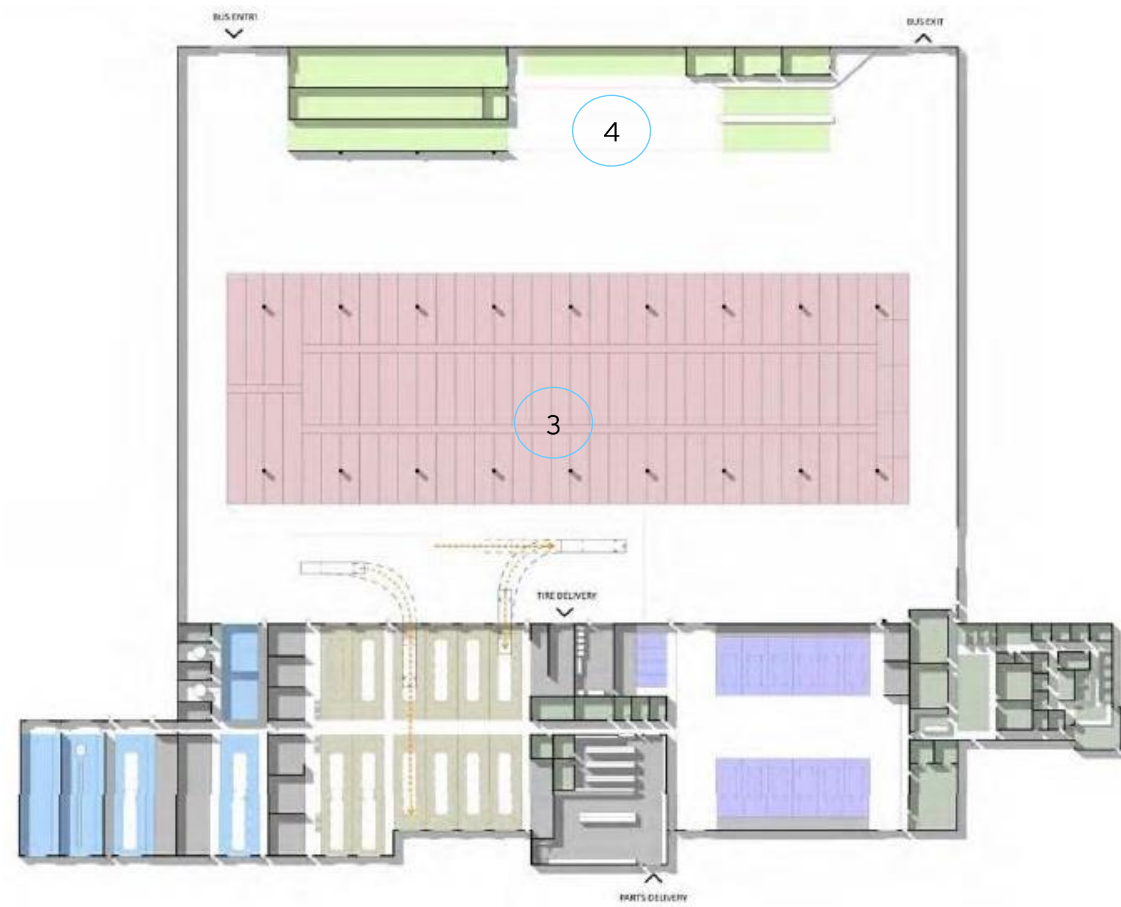
- “Campus Style” facility
- All vehicles that are stored outside have a block heater
- Exterior wash building
- The building gives an architectural screening from the street view of the operations happening on site

## Kenosha, Wisconsin



- Transit only facility with all internal operations
- Internal parking, fueling, and washing of the fleet
- Radiant heated flooring

## Ann Arbor, Michigan



1. Transit only facility
2. The bus storage building is separate from the maintenance building
3. Three vehicle deep storage building
4. Internal fueling and wash

## APPENDIX - DESIGN OPTIONS

### Scheme "A"



#### Advantages

- The building is an architectural screen from the street view of the operations occurring on site
- No elements of the site design layout protrude into the flood plain
- Allows for simple phasing by adding departments to the to the site as more funding is made available
- Internal wash area
- Internal drive aisle with individual overhead doors for each bay
- Separate building for transit storage and administration

#### Disadvantages

- Utilizes the southeast corner of the property that has not been purchased by the city yet
- The large building concept would seem to industrial from the street view and for the future housing east of the site
- Requires the demolishing of the current Streets Department building

1)

### Scheme "B"



#### Advantages

- The building is an architectural screen from the street view of the operations occurring on site
- No elements of the site design layout protrude into the flood plain
- Allows for simple phasing by adding departments to the to the site as more funding is made available
- Internal wash area
- Internal drive aisle with individual overhead doors for each bay
- The Streets Department is able to keep operation in their current building until the new facility is constructed
- Separate building for transit storage and administration

#### Disadvantages

- Utilizes the southeast corner of the property that has not been purchased by the city yet
- Not an efficient vehicle path on site
  - Vehicles must loop around the wash area to go park or receive repair

## Scheme "C"



### Advantages

- The building is an architectural screen from the street view of the operations occurring on site
- No elements of the site design layout protrude into the flood plain
- Allows for simple phasing by adding departments to the to the site as more funding is made available
- Internal wash area
- Separate building for transit storage and administration
- Inexpensive construction cost
  - Pre-engineered metal building is possible
- The Streets Department is able to keep operation in their current building and remodel/add on in the future

### Disadvantages

- Utilizes the southeast corner of the property that has not been purchased by the city yet

## Scheme "D"



### Advantages

- The building is an architectural screen from the street view of the operations occurring on site
- The yard storage and parking areas utilize the area of the site within the flood plain border
- Allows for simple phasing by adding departments to the to the site as more funding is made available
- Internal wash area
- Internal drive aisle with individual overhead doors for each bay
- Separate building for transit storage and administration
- Does not require the city to purchase the southeast corner property
- Compared to Scheme "A" the building size has been reduced

### Disadvantages

- The yard storage and parking areas utilize the area of the site within the flood plain
- Requires the demolishing of the current Streets Department building

## Scheme "E"



### Advantages

- The building is an architectural screen from the street view of the operations occurring on site
- Only the yard storage protrudes into the flood plain
- Allows for simple phasing by adding departments to the site as more funding is made available
- Internal wash area
- Internal drive aisle with individual overhead doors for each bay
- The Streets Department is able to keep operation in their current building until the new facility is constructed
- Separate building for transit storage and administration
- Does not require the city to purchase the southeast corner property
- Separate entrance to the site for transit buses

### Disadvantages

- Not an efficient vehicle path on site
- Small and large vehicles share an entrance/exit

## Scheme "F"



### Advantages

- The building is an architectural screen from the street view of the operations occurring on site
- No elements of the site design layout protrude into the flood plain
- Allows for simple phasing by adding departments to the site as more funding is made available
- Internal wash area
- Separate building for transit storage and administration
- Inexpensive construction cost
  - Pre-engineered metal building is possible
- The Streets Department is able to keep operation in their current building and remodel/add on in the future
- Does not require the city to purchase the southeast corner property
- Only the yard storage protrudes into the flood plain

### Disadvantages

- Least amount of vehicle storage area

## Scheme F.2



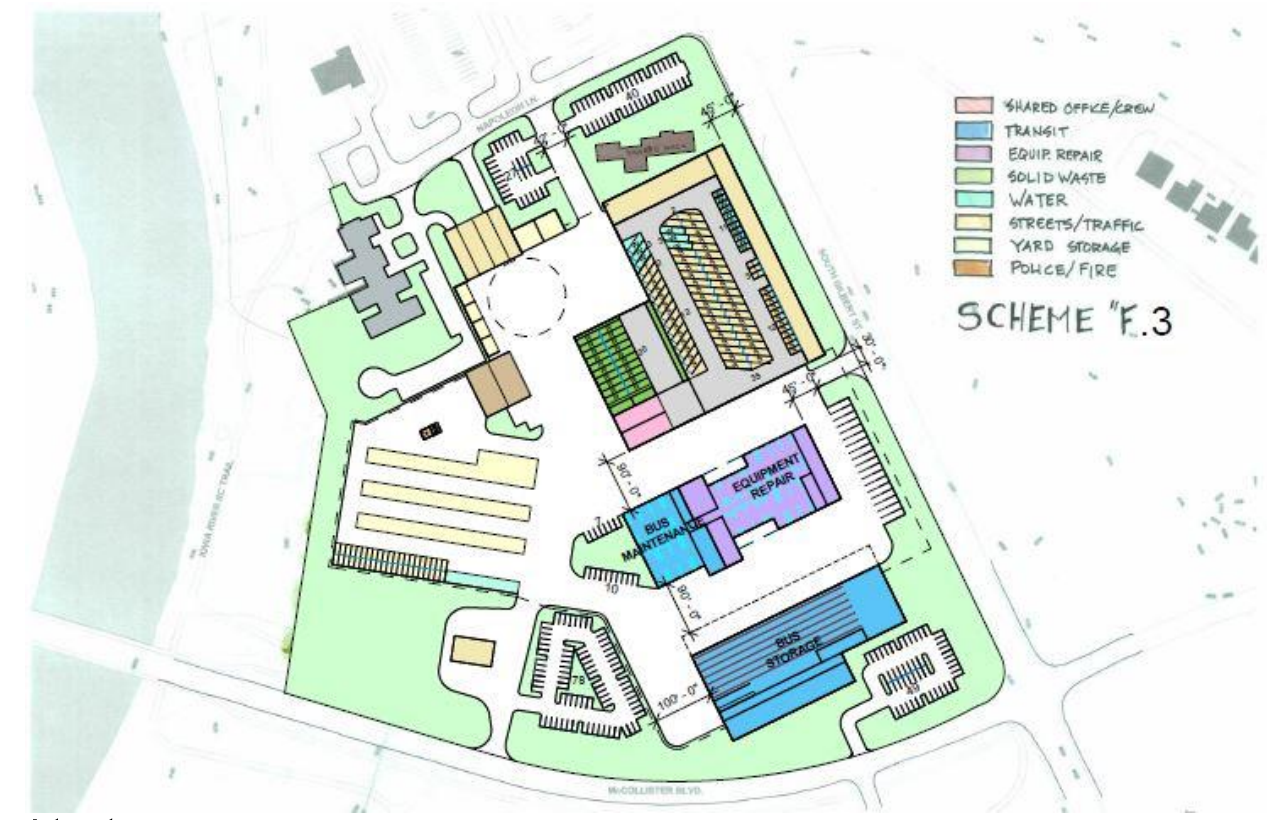
### Advantages

- The building is an architectural screen from the street view of the operations occurring on site
- Allows for simple phasing by adding departments to the site as more funding is made available
- Internal wash area
- Separate building for transit storage and administration
- Inexpensive construction cost
  - Pre-engineered metal building is possible
- The Streets Department is able to keep operation in their current building and remodel/add on in the future
- Does not require the city to purchase the southeast corner property
- Meets all setbacks required by the city
- Adequate amount of parking and yard storage
- Allows for future expansion of all buildings

### Disadvantages

- The yard storage and parking areas utilize the area of the site within the flood plain

## Scheme F.3



### Advantages

- The building is an architectural screen from the street view of the operations occurring on site
- Allows for simple phasing by adding departments to the site as more funding is made available
- Internal wash area
- Separate building for transit storage and administration
- Inexpensive construction cost
  - Pre-engineered metal building is possible
- The Streets Department is able to keep operation in their current building and remodel/add on in the future
- Only yard storage utilizes the area of the site within the flood plain
- Meets all setbacks required by the city
- Adequate amount of parking and yard storage
- Allows for future expansion of all buildings

### Disadvantages

- Utilizes the southeast corner of the property that has not been purchased by the city yet



## APPENDIX - CHARRETTE DESIGN REVIEW COMMENTS

Iowa City Public Works Campus  
18 December 2015  
Preliminary site plan review  
Schemes A, B, C, D, E, F

14-2F-5  
MINOR MOD. #E

### Public Zone 14-2F-4 Site Development Standards

1. Front building setback along South Gilbert is 40 feet because of R zone across the street.
2. Building height is 35 feet maximum because of R zone across the street.
3. Parking must be set back 20 feet adjacent to South Gilbert where parking areas are within 50 feet of the R zone. South Gilbert Street right-of-way is 80 feet wide; so R zone begins 40 feet from the South Gilbert right-of-way.
4. Parking lot coverage trees are required - each parking space must be within 40 feet of a small tree or within 60 feet of a large tree. Trees may not be coniferous.
5. Parking areas must be screened to S3 standard if not located behind buildings.
6. Ground level mechanical and utility equipment must be screened to S2 standard if visible from a public way.
7. Materials and equipment storage areas must be screened behind buildings or set back 20 feet from the right-of-way (including public trails) and screened to S3 standard. Along the side or rear property lines, mechanical and equipment storage areas must be set back 10 feet and screened to S3.

JDRM  
↓  
INTERSECTION STREET

### General Provisions

1. 14-5A-5 (Parking)
  - a. Parking for persons with disabilities: 10-24 spaces => 1; 25-49 spaces => 2; 50-75 spaces => 3.
  - b. Standard parking space size 9x18.
  - c. Minimum aisle width 22 feet; maximum 24 feet.
  - d. Drives must be 18 feet wide for two-way traffic.
  - e. Landscaped medians are required at the ends of parking rows. Medians minimum width 4 feet; 8 feet if trees will be planted; 12 feet - 20 feet if used for walkways. Medians are required to be curbed (5", minimum) and area around trees landscaped with living cover. Mulch is limited to areas around plants.
  - f. Bicycle parking areas must be on concrete, asphalt, or brick. May be on rocked surface if rock is contained within a raised border. Bike racks must support bikes by their frames, not just the front tire.
2. 14-5B-3 (Signs)
  - a. Non-building signs must be set back 5 feet from right-of-way except for signs that are 10 or more feet above grade. Free-standing wide base signs may not be closer than 10 feet to right-of-way or 30 feet to a street curb.
  - b. Signs within 100 feet of R zone (middle of S. Gilbert St.) are subject to sign lighting provisions in 14-5B-8C.
  - c. Electronic changeable copy signs are not allowed within 100 feet of R zone.
  - d. Signs are not permitted within the front building setback within 50 feet of an R zone.

- e. Signs must be constructed to sustain wind pressures not less than 30 pounds per square foot.
  - f. Minimum clearances from grade to bottom of sign: 10 feet for free-standing signs; 8 feet for canopy and storefront projecting signs; 8 feet for entranceway signs across walkways.
3. 14-5C (Access)
    - a. Site is at intersection of 2 arterial streets. There must be 150 feet between the end of the radius at the intersection and the curb cut.
    - b. Maximum dimension of drives: 34 feet at property line and 42 feet at curb unless otherwise approved by public works.
  4. 14-5D (Visibility)
    - a. Vision triangle is measured 30 feet along curb lines, from the point where curbs intersect as extended. This area may not be obstructed by signs, shrubbery, etc.
  5. 14-5E (Trees)
    - a. Right-of-way trees are required at 1 tree for every 60 linear feet of frontage.
  6. 14-5G (Lighting)
    - a. Within 300 feet of an R zone, light mounting height may not exceed 25 feet above grade.
    - b. At 300 feet or more from an R zone, light mounting height may not exceed 35 feet above grade.
    - c. All bulbs 2,000 lumens or more must be fully shielded as installed.
    - d. Maximum of 0.5 footcandles measured horizontally at right-of-way and maximum 2.0 footcandles measured directionally at luminaire.

# APPENDIX - SITE UTILITIES DIAGRAM FROM THE CITY OF IOWA CITY



## APPENDIX - FINAL MASTER PLAN OPTIONS

### Option F.1

#### Advantages

- 3 buildings allow more flexibility in phasing
- It looks like what the users wanted us to look into
- Future buildings in back are possible

#### Disadvantages

- Parking is far away from entrances
- Buildings are tight to one another
- It's the most expensive option
- Lots of Doors to Maintain



## APPENDIX - FINAL MASTER PLAN OPTIONS

### Option G

#### Advantages

- Lowest Costs
- Fewest Doors

#### Disadvantages

- Less opportunities for phasing - large upfront initial cost under one roof
- Repair bays are back-in only.

