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# REPORT

September 20, 2017

TOWN OF  
**UPTON**  
MASSACHUSETTS

## FINAL REPORT

New / Renovated Public Works Facility  
Feasibility Study

(Includes August 2018 Updates in Red)



Town of Upton  
Department of Public Works  
Feasibility Study  
FINAL REPORT

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## I. Introduction

The Town of Upton retained the services of Weston & Sampson to prepare a feasibility study for a new/renovated facility to house the Department of Public Works (DPW). The object of the study was to develop a DPW building program and site features which are capable of cost effectively and efficiently supporting the services offered by the DPW to the community. The study included inspecting the existing facilities, identifying deficiencies, interviewing staff, identifying current and future needs, developing conceptual alternatives, evaluating the preferred conceptual alternative with the DPW, and preparing budget cost estimates for the preferred alternative.

Public works provides a vital service to the community and is responsible for maintaining the infrastructure that the residents rely on every day. Furthermore, public works is a branch of the emergency services offered by the community and is considered a first responder responsible for serving and protecting the community's infrastructure. It is crucial that the facilities which support these vital operations are sized in a manner to allow the public works employees to safely and efficiently respond to the needs of the community. The current facility does not provide the necessary facilities to safely and efficiently support these operations as described in Section II of this report.

## II. Existing Conditions and Space Needs Assessment

The Project Team prepared a space needs assessment to identify the current and future needs of the Department of Public Work. The assessment included analyzing current deficiencies in the facility which need to be corrected with the construction of a new/renovated facility. The assessment also included interviewing key staff to learn first-

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hand the operational issues with the existing facility. The staff interviews were supplemented with support by the project team's knowledge of industry practices and familiarity with solutions which have been implemented on recently constructed public works facilities.

#### Existing Conditions and Operational Analysis

The operational analysis was based on inspection of the existing facilities which are used to support the Department of Public Works, and a determination of the functional inadequacies and space limitations of the existing building and site.

The DPW operations at the Pleasant Street site are composed of Administration, Highway, Forestry/Cemetery/Parks, and Fleet Maintenance. These divisions are responsible for the maintenance and repair of the town's infrastructure. The existing operations are supported out of the existing facility located at 100 Pleasant Street. The facility includes a main pre-engineered metal building and several small support buildings including a temporary trailer for the offices, a fabric structure for storage of overflow equipment, a salt/sand storage area, and miscellaneous storage trailers.

This facility has undergone minimal upgrades to support the growing DPW operations. As a result, there are several operational inefficiencies which impact the level of service the DPW is able to provide to the community. The deficiencies associated with the substandard conditions can be summarized by the following categories:

- Employee Safety
- Operational Inefficiencies
- Environmental / Regulatory Agency Non-Compliance
- Code / ADA Non-Compliance

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The following is a summary of some of the deficiencies/inefficiencies associated with the existing facility:

### **Employee Safety**

- The vehicle / equipment storage area is undersized requiring vehicles to park in very tight quarters resulting in unsafe circulation patterns within the building for staff. This exposes employees to potential fall hazardous or injuries.
- Staff safety is compromised by locating shop operations in undersized / outdated facilities. The facilities lack proper clearances around equipment, properly sized spaces to safely conduct maintenance, and inadequate material storage / loading / unloading spaces to permit safe operations. These conditions have been repeatedly documented in MIIA annual inspection reports which identify clutter and safety concerns associated with the inadequate facilities.
- The storage of vehicles/equipment outside exposes the equipment to inclement weather conditions which can result in potential fall hazards to employees while preparing vehicles/equipment for service.
- The lighting system does not provide safe / efficient lighting levels to properly maintain vehicles and equipment.
- Inadequate separation of vehicle maintenance operations from vehicle storage operations and inadequate ventilation within these spaces exposes employees to unsuitable indoor air quality issues.
- Inadequate separation of the employee breakroom from the adjacent vehicle storage and maintenance area results in unsuitable indoor air quality issues for employees within the breakroom (exhaust fumes, welding fumes, etc.).

### **Operational Inefficiencies**

- The facility is undersized and is unable to efficiently support current operations which results in a portion of the multi-million dollar fleet to be stored outdoors or

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under a fabric structure with minimal protection from the elements. This impacts DPW response times during cold and inclement weather conditions. In addition, this contributes to the rapid deterioration of high value Town owned equipment and increases vehicle maintenance costs. A case study of similar DPW facilities has determined that exterior storage of this high-value fleet can reduce the equipment life expectancy by a minimum of 3-years.

- Undersized facility lacks adequate office space. As a result, the administrative offices are located in a temporary trailer. This temporary facility is inappropriate to serve as a public administrative building and is inadequately sized to support public works administrative operations. In addition, the Town is paying approximately \$6,000 per year to rent this “temporary” office trailer.
- The facility lacks adequate space for the proper storage of vital engineering plans which document the Town’s infrastructure.
- Vehicle / equipment storage area is undersized requiring equipment to be stacked in the bays contributing to inefficient operations associated with moving equipment each day to perform daily activities. Furthermore, the vehicles are forced to park in very tight quarters exposing the equipment to damage by parking in these cramped quarters.
- Lack of proper wash facilities results in limited washing of vehicles/equipment. Due to the corrosive nature of the materials handled by the equipment, the lack of washing decreases vehicle life expectancy and increases vehicle maintenance costs.
- The existing facility lacks properly sized and equipped training facilities for staff to conduct state-mandated employee training.
- Employee facilities (breakroom/training room, locker/shower/toilet, etc.) are undersized to support day-to-day operations. In addition, the facilities are inadequately sized to support the staff during extended emergency response events such as snow/ice operations and windstorm/tropical storm events.

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- The operational inefficiencies associated with the inadequate facilities result in an increase in the cost of the overall operations. In general, the operational inefficiencies result in longer preparation time by staff for daily activities and storm events, longer response times, increased post-event cleanup times, and increased vehicle/equipment maintenance costs. Longer response times associated with these inadequacies can pose a public safety concern if the DPW is unable to quickly and efficiently respond to the needs of the community during emergencies such as snow/ice events, tropical storm events, downed trees, etc.
- The facility lacks proper locker facilities to serve employee basic needs. Due to a lack of space, the lockers are located in the garage area in an undersized space resulting in cramped/dangerous access as well as an insufficient number of lockers to serve the staff.

**Environmental / Regulatory Agency Non-Compliance**

- Outside storage of vehicles and equipment poses a risk to the Zone II watershed protection area due to the potential for spills or leaks from vehicles/equipment. Continuous exposure of hydraulic systems to outside storage conditions can weaken hydraulic hoses resulting in a potential hydraulic fluid leak to the environment.
- Lack of proper wash facilities for vehicles / equipment results in potential environmental impacts associated with untreated wash water runoff entering the environment and potentially impacting the Zone II watershed area. Current Massachusetts Department of Environmental Protection regulations require vehicle washing to be done under cover with the proper collection and discharge of wash water.
- The facility lacks proper storage facilities for vehicle maintenance fluids (oil, grease, hydraulic fluids, antifreeze, windshield washer fluid, waste oil and waste antifreeze). Current fire prevention regulations require these fluids to be stored in a separate / self-contained fire rate storage room.

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### **Code / ADA Non-Compliance**

- Proper OSHA required egress paths do not exist between vehicles and equipment when stored in tightly stacked storage arrangements within the existing building.
- Vehicle maintenance operations are located within the vehicle storage area in a minimally sized space. This arrangement does not meet current building codes which requires the maintenance area to be serviced from separate ventilation systems providing adequate air exchanges for the type of maintenance activities.
- The existing building lacks proper code required carbon monoxide detection systems and minimum outside air ventilation rates for occupied spaces.
- Workshop spaces are confined resulting in non-code compliant work areas adjacent to shop equipment. This results in staff working on equipment with improper work space and exposes staff to hazardous conditions and potential injuries.
- Non-compliant storage mezzanine creates unsafe access conditions and storage conditions.
- The existing DPW operations building does not meet the Americans with Disabilities Act of 1990 (ADA) including access/egress, door hardware, circulation, and toilet facilities.
- The facility does not have shower facilities as required by code for an industrial facility. Furthermore, the lack of shower facilities is problematic when employees are required to work extended (multi-day) storm events or are exposed to unsuitable conditions while conducting their daily work activities while maintaining the Town's infrastructure.
- Toilet facilities do not meet current plumbing code.
- Electrical service does not meet code. Current service entrance and associated panels are exposed in the garage area, do not contain the proper code required clearances in front of the electrical panels, and are located directly adjacent to a sink/water source.

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These deficiencies directly impact operations and the efficiency of service that the DPW is able to provide to the Town. If the Town does not undertake improvements to the existing facility, the following summary of impacts will continue to pose a risk to staff and the operations:

- Continued exposure of staff to unsafe work conditions
- Accelerated deterioration of high-value vehicles and equipment
- Increased vehicle/equipment maintenance costs
- Continued inefficiencies in operations due to substandard and undersized workspace
- Potential environmental impacts
- Potential corrective actions due to non-compliant code issues

A photograph analysis of some of the deficiencies observed in the existing facility has been included in Appendix A of this report.

#### Staff Interviews

The staff interviews conducted by the project team focused on identifying all DPW functions, identifying current deficiencies, and identifying current and future space requirements. The information obtained during these interviews included detailed accounts of space deficiencies in the existing facilities which affect day-to-day operations. A summary of the departmental organization is as follows:

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### DPW Staffing Summary

Position	Full Time	Part Time	Seasonal
Office/Administration	2	-	-
Highway	5	-	-
Forestry/Parks/Cemetery	2	1	4
Fleet Maintenance	1	-	-
<b>Total Staff</b>	<b>10</b>	<b>1</b>	<b>4</b>

August 2018 Update: Add 5 staff for Water & Sewer

#### Space Needs / Room Part Plans

The data obtained from the operations analysis and interviews were compiled and analyzed by Weston & Sampson. The analysis consisted of individually identifying the space needs for the operations of each function by developing sketches of individual rooms. Sketches were prepared for each major space including office and office support areas, employee facilities, shop spaces, vehicle maintenance, wash area, and vehicle/equipment storage areas. These space requirements were then assembled into a comprehensive space allocation matrix. The space needs assessment identified an initial requirement of approximately 26,780 square feet. The results of the initial space needs were then reviewed in detail by the Project Team and the DPW to determine if the spaces could be reduced without negatively impacting operations. Based on input from the DPW, the team was able to reduce, and in some cases, combine spaces in an effort to control the size and cost of the building program. These reductions resulted in a modified space needs projection of 25,794 square feet. This reflected an overall reduction in the space needs of approximately 4%. Refer to Appendix B for a summary of the staff interview notes, room programming sketches (initial and revised), and the space needs matrix.

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It is important to note that an evaluation of the existing facility built in 1995 indicates that a portion of the existing pre-engineered metal building (+/- 8,400 SF) is suitable for reuse. As a result, the total new construction required is approximately 17,400 SF.

**August 2018 Update: Add Water & Sewer for total facility size of 31,950 SF**

### **III. Conceptual Design Alternatives**

Based on the results of the final space needs assessment, the Project Team began the process of developing conceptual alternatives at the existing 100 Pleasant Street site.

Prior to developing the alternatives for the site, Weston & Sampson prepared sensitive receptors maps to confirm that the site was suitable for reuse/expansion to house a new/renovated DPW facility. The sensitive receptors maps identified wetlands to the north-east and south-east of the site. In addition, a vernal pool and intermittent stream are also located to the south-east of the site. However, the upland portion proposed for the DPW facility would not directly impact any of these elements. The proposed improvements may be within the wetland buffer zone which may require permitting through the local Conservation Commission. A copy of the receptor maps as well as general site information is included in Appendix C.

The alternatives for a new DPW Facility were prepared with the following operational considerations in mind:

- Develop alternatives which maximize the use of the existing facility to function as vehicle / equipment storage.
- Arrange interior space to provide efficient circulation patterns.
- Attempt to segregate small/public vehicle traffic from heavy truck traffic.
- Providing adequate parking for public and employees.

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- Provide full access and safe vehicle movement around the perimeter of the facility.
- Maintain the existing salt storage and loading operational areas.
- Plan for the addition of a future salt storage structure.
- Provide bulk material storage area with adequate yard area for large vehicle maneuvering.
- Relocate / reuse the existing fabric structure for material and trailer storage.
- Provide drive-through capabilities for vehicle maintenance bays and wash bay.

The conceptual alternatives were prepared by developing “Block Building Plans”. These Block Building Plans were developed for each of the major space categories for the new facility as follows:

- Administration & Employee Facilities
- Shops
- Vehicle Maintenance
- Vehicle / Equipment Storage
- Wash Bay

The configuration and size of the planning “blocks” for each building component was developed by assembling the individual room sketches identified during the space needs assessment. The Project Team reviewed the initial alternatives with the DPW to identify the advantages and disadvantages of each alternative. Based on input received by the DPW, the design team developed a second round of alternatives. These alternatives were further analyzed and were used to develop a final preferred alternative for the renovation/expansion of the existing building. Copies of the initial conceptual alternatives and the final preferred alternative have been included in Appendix D.

## IV. Conceptual Cost Estimate

A conceptual cost estimate was prepared for the preferred alternative, using square foot costs based on historical data for similar DPW facilities. In general, the cost estimate assumes cost effective building systems, finishes, and equipment as identified in the estimate spreadsheet and as described as follows:

- Renovation of the existing building and construction of new pre-engineered metal building additions with partial masonry wall finish and concrete protection wall for the vehicle storage area, maintenance area, wash bay, and shop areas.
- Factory foam insulated architectural metal panel with improved exterior finish system.
- Primary industrial support equipment for vehicle maintenance operations.
- Site improvements, including storm water management and paving upgrades.
- Contingency allowance for unanticipated design and construction costs, pending final design.

Our estimated costs for renovations, new building construction, and site improvements are based on costs of similar construction for which bid prices are available, supplemented by cost data obtained from published sources. It is assumed that the project will be publicly bid under Chapter 149 requirements, and prices are based on 2017 costs. Our cost projection does account for one (1) year of cost escalation. Additional escalation factors should be included once the project time line has been established by the Town. A summary of the results of this cost estimate are include in Appendix E.

## **Appendix A**

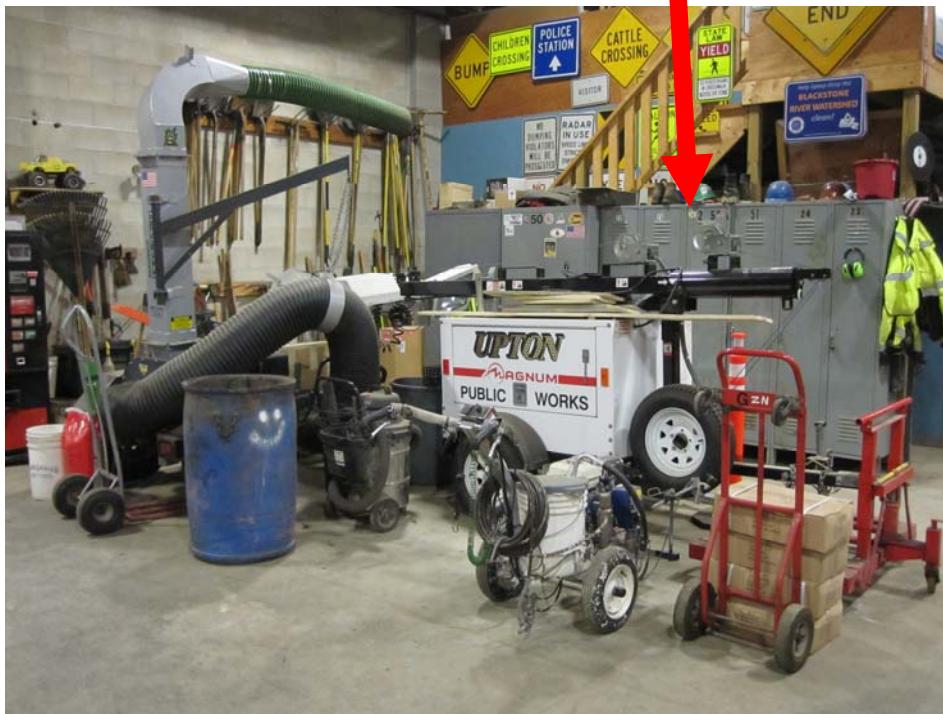
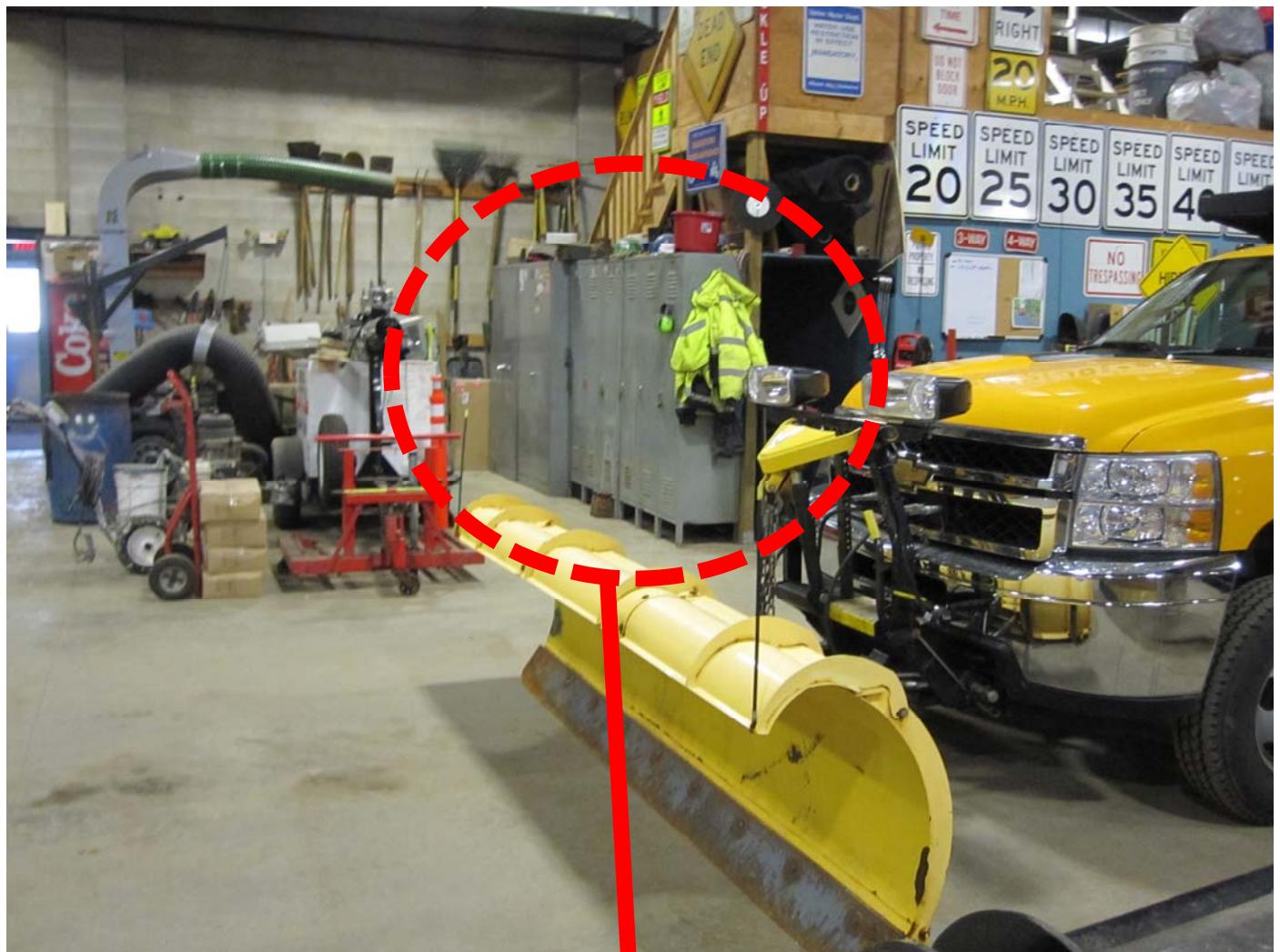
### **Operational Analysis**



Existing facility is undersized resulting in staff operating out of temporary trailers



Existing employee support spaces are undersized to support basic and emergency response services as well as employee training functions



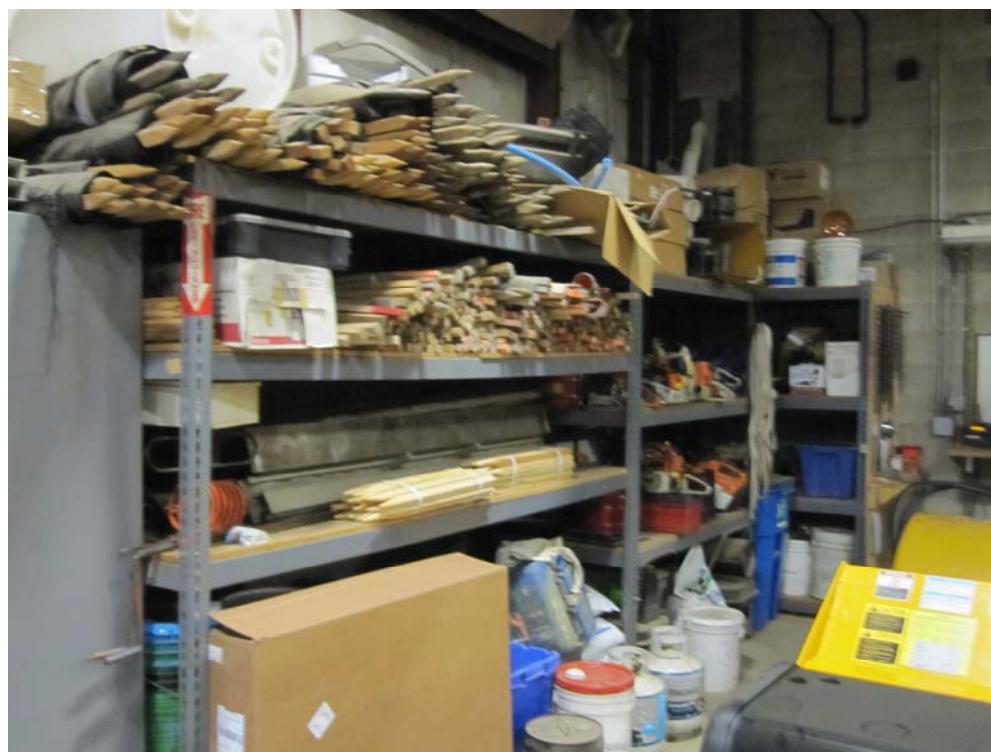
Employee locker room is non-existent requiring lockers to be placed in the garage area



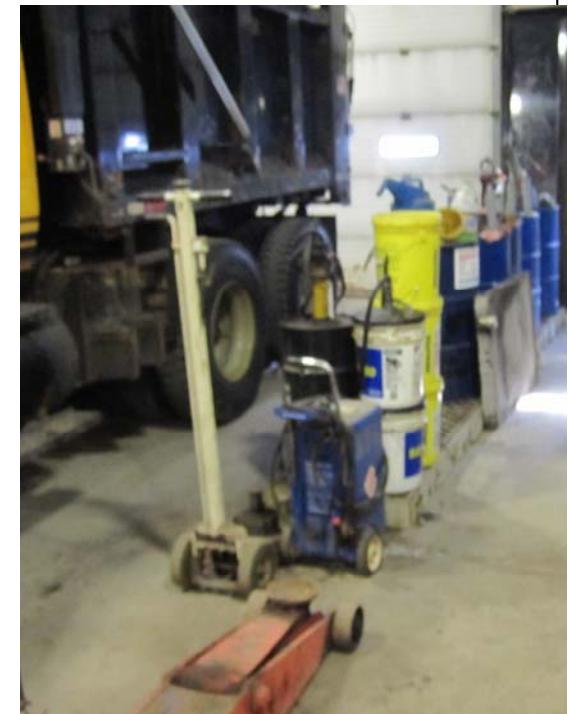
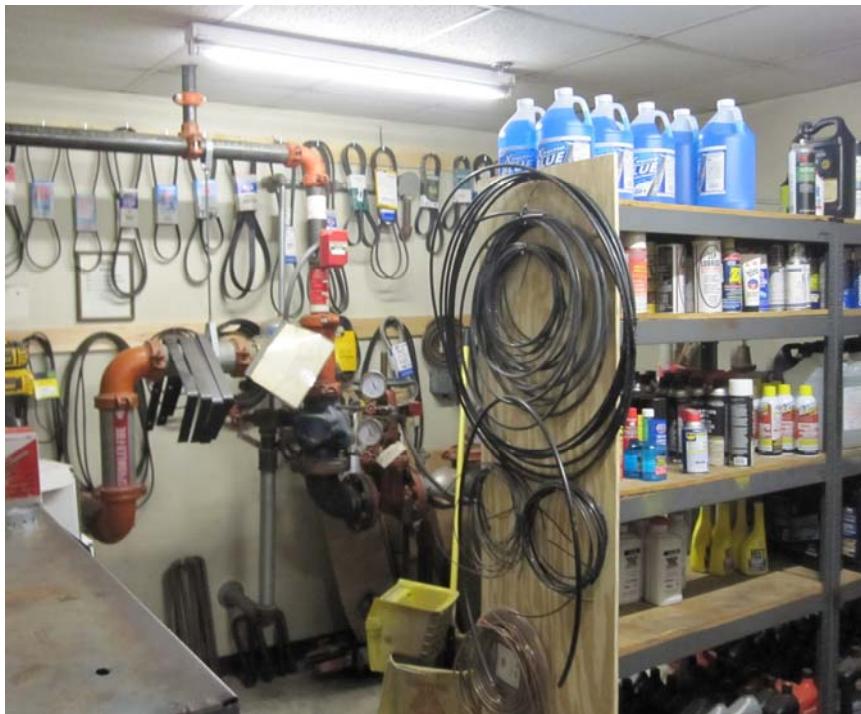
Interior vehicle/equipment storage is inefficient due to the undersized facility – vehicles and equipment are forced to park in stacked/inefficient arrangements



Portions of the multi-million dollar fleet are stored outdoors or under an open fabric structure due to limited space



Inadequate room for shop space requiring a make shift mezzanine to be used



Vehicle Maintenance bays and parts storage are undersized to efficiently and safely support the operations

**Appendix B**

**Space Needs Assessment**

## STAFF INTERVIEW NOTES

**Site Address:** Current: DPW - Pleasant Street Upton, MA

**Attendees:** Weston & Sampson: Jeff Alberti, John Comeau, Jared Wright-Ward  
Town of Upton MA: John Johnson, Scott Hennessey, Vincent Roy, Kelly McElreath

**List of staff to be located in the new Facility:**

DIVISION/DEPARTMENT	Administration Full Time	Workforce Full Time	Part Time	Seasonal	Locker	Parking
Administration	2	-	-	-	-	2
Highway	-	5	-	-	5	5
Forestry, Cemetery, Parks	-	2	1	4	7	7
Fleet Maintenance (Part of Highway)	-	1	-	-	1	1
<b>Total Department of Public Works:</b>	<b>2</b>	<b>8</b>	<b>1</b>	<b>4</b>	<b>13</b>	<b>15</b>

**Schedule:**

- APWA week or week of fireworks for Touch a Truck Day (June 24<sup>th</sup>)
- Hazardous waste day information session on new project
- Target date to complete Feasibility study is August 2017
- Plan is to go to annual Town Meeting May 18, 2008 for full project funding. Would like 25% design for Town Meeting if possible.
- Initial budget discussed (prior to completion of study) was \$2.6 Million

**Additional Scope for Feasibility Study:**

- Fuel Island analysis needed with simple payback period

**Site Selection:**

- Renovation to the existing site, no alternative sites
- Water & Sewer is at separate site and will remain at a separate site

**Administration:** Director of Public Works, Office Assistant

Current Operations:

Offices currently located at DPW site in a mobile trailer 60' x 12' with bathroom facilities

## Space Needs:

- Director's Office - Computer Workstation Desk, Conference Table, Lateral File Cabinets, Guest Chairs, Bookcase
- Open Office for (1) Admin with Public Counter
- Copy/File/Mail area
- Kitchenette "Nook" with coffee pot, microwave, toaster for admin personnel
- Active / Archive File Storage area with a space for maps in tubes, flat files, file cabinets, with layout table and computer. Consider use of high-density storage.
- Small Conference Room (Seating for 12 people)
- Public/Admin Toilet Facilities (2) Uni-Sex Toilets

Highway: Highway Superintendent, (4) Workforce

## Current Operations:

Includes storm management, street sweeping, and road repair. Staff sleep in trucks during storm events. Approximately 80 miles of roadway infrastructure is maintained by DPW.

- Crew lockers are currently located inside the vehicle storage area
- There is an emergency generator located on the side of the building
- Existing garage is a metal building with steel structure and metal roof built in 1995
- There are a couple small offices, storage spaces, and a breakroom located adjacent to vehicle maintenance and vehicle storage that has old furniture and appliances
- There is very little public interaction at the garage. All paperwork is handled at the onsite admin trailer
- Site circulation is adequate – pull-in back out vehicle storage bays

## Space Needs:

- Multi-Purpose Room – seating for 20 with Kitchen, Fridge, No Dishwasher, stove, sink, 2 microwaves, ice maker, pantry, projector, TV/screen
- Locker/Shower/Toilet Facilities for Men and Women With 12 large lockers + 5 18" lockers for future/seasonal use
- Office for Highway Superintendent
- Laundry Facility
- Janitor Closet
- Electric Room
- Tel/Data Room
- Plumbing/Fire Protection Room
- Wire tool crib near vehicle storage

Forestry, Cemetery, Parks: Foreman, (1) Full-Time Workforce, (1) Part-Time, (4) Seasonal

## Current Operations:

- Maintain 4 cemeteries 1 active, 3 historic and all town owned parks.

## Space Needs:

- Shared Shop (no painting, no sandblasting)
- Mowers, etc. to be stored off site

**Vehicle Maintenance:** Mechanic (part of Highway Division), Future Mechanic

## Space Needs:

- (3) Maintenance Bays – (1) Small 20'x40' / (2) Large (2) 20'x55'
- 2-Post Lift
- Recessed Lift (75K)
- Fluid distribution reels
- Exhaust hoses
- Mechanics Office / Reference Room
- Uni-Sex Toilet
- Parts Room
- No tire work
- No hydraulic hose shop
- Fluid Storage
  - Motor Oil 15-40 (55 Gal)
  - Anti-Freeze (55 Gal)
  - Transmission Fluid (55 Gal)
  - Hydraulic Fluid (55 Gal)
  - Waste Oil Tank
  - Flammable Storage Cabinets
  - Diesel engine oil containers
  - Grease containers
  - Gear lube containers
- Material / equipment storage 20' x 20'
- Compressor Room
- Bridge crane

**Site Amenities:**

- Existing diesel fuel tank shed 10' x 20'
- Consider new Manuel wash bay with catwalk
- Consider new knockdown pad
- Consider new rain water harvesting – poly tanks on mezzanine
- Existing oil/water separator and tight tank – Consider connecting site sewer to existing sewer system on the main road
- Existing 20' x 20' concrete block bins
- Existing wood salt storage structure 40' x 80'
- Roll-off trash/recycle bins (2x) 23' x 8'
- Conex boxes (3x) 20' x 8'
- Conex box 28' x 8'-6"

See August 2018  
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**Building Requirements**

Area	Description	Sheet No.	Total Size (SF)	Total Revised Size (SF)	Quant	Room length	width	Area Dimensions size
A. Administration	Entry / Vestibule / Waiting	A1.01	220	220	1			-
	Director's Office	A1.02	224	196	1	14	14	196
	Open Office	A1.03	120	120	1	10	12	120
	Copy / File / Mail	A1.04	225	225	1	15	15	225
	File Storage Area	A1.05	225	(incl. in copy room)				
	Conference Room	A1.06	288	224	1	14	16	224
	Uni-Sex Toilet	A1.07	128	136	1	8	17	136
	Highway Superintendent Office	--	144	144	1	12	12	144
	Subtotal:		1,574	1,265				
	Area Grossing Factor (10%):		157	127				
	Circulation (15%):		260	209				
	<b>TOTAL:</b>		<b>1,991</b>	<b>1,600</b>				
B. Employee Facilities	Multipurpose Room	B1.01	480	480	1	20	24	480
	Male Lockers / Shower / Toilet	B1.02	675	675	1	27	25	675
	Female Locker / Shower / Toilet	B1.03	180	180	1	18	10	180
	Shared Foremen's Office (Parks/Cemetery)	B1.04	168	168	1	12	14	168
	Laundry Room	B1.05	60	36	1	6	6	36
	Janitor Closet	B1.06	36	36	1	6	6	36
	Electric Room	B1.07	140	120	1	10	12	120
	Tele / Data Room	B1.08	120	100	1	10	10	100
	Plumbing / Fire Protection	B1.09	192	120	1	10	12	120
	Subtotal:		2,051	1,915				
	Area Grossing Factor (10%):		205	192				
	Circulation (15%):		338	316				
	<b>TOTAL:</b>		<b>2,595</b>	<b>2,422</b>				
C. Workshops	Shared General Shop	C1.01	1,050	1,050	1	30	35	1,050
	Subtotal:		1,050	1,050				
	Area Grossing Factor (10%):		105	105				
	Circulation (10%):		116	116				
	<b>TOTAL:</b>		<b>1,271</b>	<b>1,271</b>				
D. Maintenance	Large Maintenance Bay	D1.01	1,100	1,100	1	20	55	1,100
	Large Maintenance Bay	D1.01	1,100	1,100	1	20	55	1,100
	Small Maintenance Bay	D1.01	800	800	1	20	40	800
	Maintenance Accessory Storage Area	D1.01	300	300	1	20	15	300
	Mechanics Office / Reference Room	D1.02	120	120	1	10	12	120
	Uni-Sex Toilet	D1.03	64	64	1	8	8	64
	Parts Room	D1.04	750	400	1	20	20	400
	Fluids Room	D1.05	168	168	1	14	12	168
	Subtotal:		4,402	4,052				
	Area Grossing Factor (10%):		440	405				
	Circulation (10%):		484	446				
	<b>TOTAL:</b>		<b>5,326</b>	<b>4,903</b>				

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8/25/2017

**Building Requirements**

Area	Description	Sheet No.	Total Size (SF)	Total Revised Size (SF)	Quant.	Room / Area Dimensions		Dimensions size
						length	width	
E. Wash Area	Wash Bay	E1.01	1,650	1,650	1	30	55	1,650
	Wash Equipment Room	E1.01	100	100	1	10	10	100
	Subtotal:		1,750	1,750				
	Area Grossing Factor (5%):		88	88				
	Circulation:		n/a	n/a				
	<b>TOTAL:</b>		<b>1,838</b>	<b>1,838</b>				
NEW / RENOVATED BUILDING TOTAL:				26,780	25,794	4% Reduction		
EXISTING BUILDING TO BE RENOVATED/REUSED:				9,000	9,000			
NEW BUILDING SPACE REQUIRED:				17,780	16,794			

## August 2018 Update

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8/27/2018

## Building Requirements

# August 2018 Update

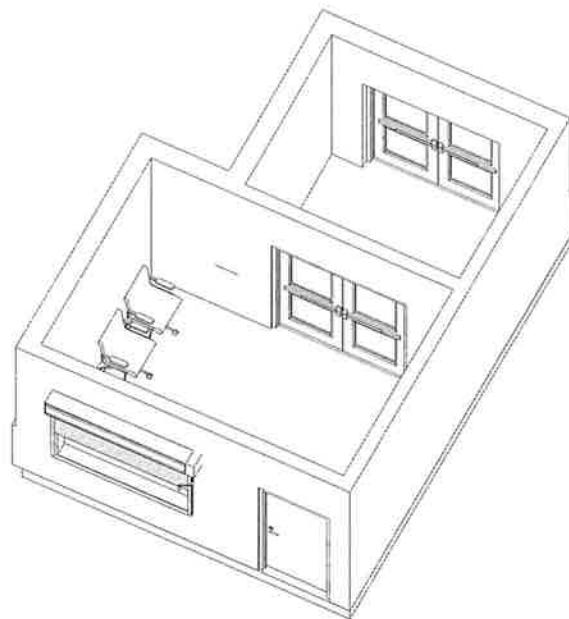
Upton, Massachusetts  
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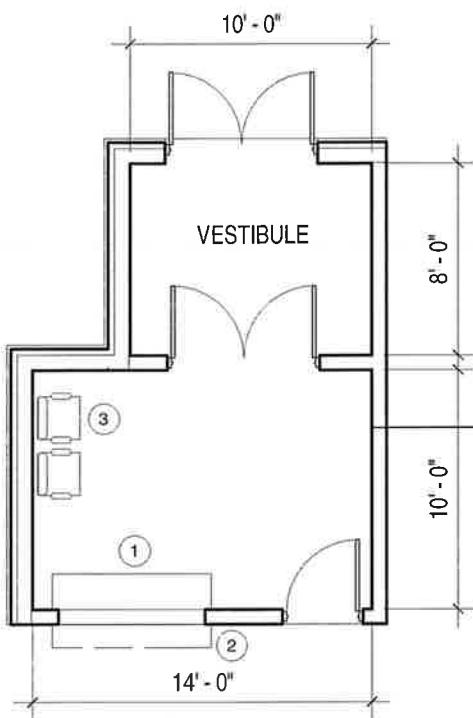
Area	Description	Sheet No.	Total Size (SF)	Total Revised Size (SF)	Total w/ W&S (SF)	Quant	Room length	Area width	Dimensions size
E. Wash Area	Wash Bay	E1.01	1,650	1,650	1,650	1	30	55	1,650
	Wash Equipment Room	E1.01	100	100	100	1	10	10	100
	Subtotal:		1,750	1,750	1,750				
	Area Grossing Factor (5%):		88	88	88				
	Circulation:		n/a	n/a	n/a				
	<b>TOTAL:</b>		<b>1,838</b>	<b>1,838</b>	<b>1,838</b>				
F. Vehicle and Equipment Storage	Vehicle / Equipment Storage	F1.01	13,760	13,760	13,760	1	80	172	13,760
	Water & Sewer Vehicle Storage		-	-	4,400	1	80	55	4,400
	Subtotal:		13,760	13,760	18,160				
	Area Grossing Factor (5%):		n/a	n/a	n/a				
	Circulation:		n/a	n/a	n/a				
	<b>TOTAL:</b>		<b>13,760</b>	<b>13,760</b>	<b>18,160</b>				
<b>NEW / RENOVATED BUILDING TOTAL:</b>				<b>26,780</b>	<b>25,794</b>	<b>31,950</b>			
<b>EXISTING BUILDING TO BE RENOVATED/REUSED:</b>				<b>9,000</b>	<b>9,000</b>	<b>9,000</b>			
<b>NEW BUILDING SPACE REQUIRED:</b>				<b>17,780</b>	<b>16,794</b>	<b>22,950</b>			

Appendix B

Space Needs Assessment  
Initial Room Programming Sketches



2 A1.01 - ENTRY / VESTIBULE / WAITING



ROOM FINISHES

FLOORS: 12X12 VCT TILE

WALLS: GWB PAINTED

CEILING: 2X2 ACT TILE

MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

DATA OUTLET JACKS

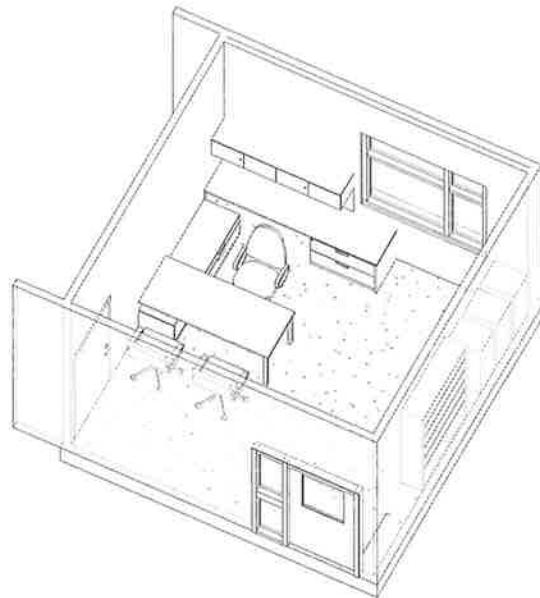
COMPONENTS:

- ① RECEPTION COUNTER
- ② ROLL-UP SECURITY GRILL
- ③ WAITING CHAIR (2)

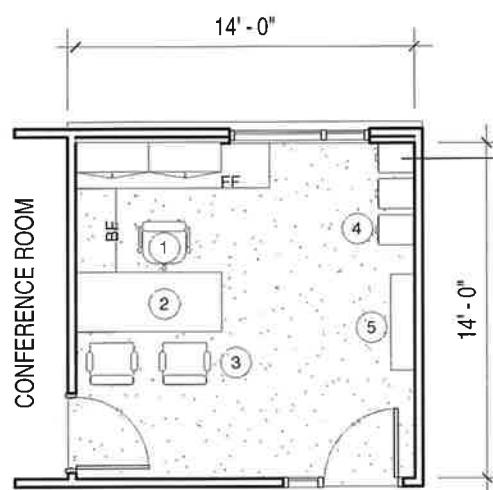
A1.01 - ENTRY / VESTIBULE / WAITING -

220SF

1/8" = 1'-0"



② A1.02 - DIRECTOR'S OFFICE



① A1.02 - DIRECTOR'S OFFICE - 196SF  
1/8" = 1'-0"

#### ROOM FINISHES

FLOORS: CARPET TILE

WALLS: GWB PAINTED

CEILING: 2X2 ACT TILE

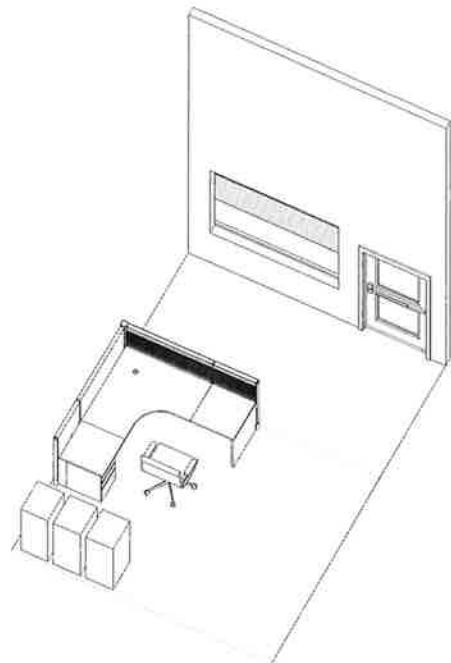
#### MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

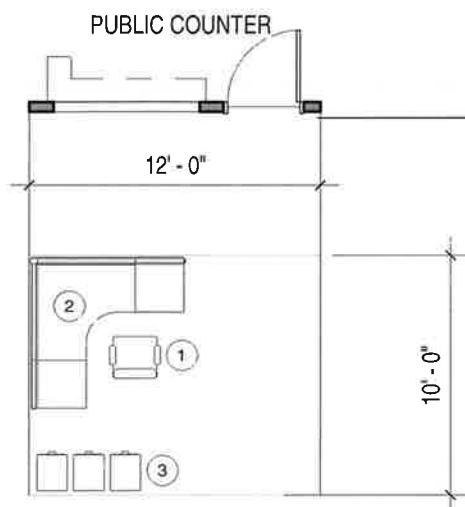
DATA OUTLET JACKS

#### COMPONENTS:

- ① EXECUTIVE CHAIR
- ② DESK WITH SIDE AND BACK STORAGE CABINETS
- ③ GUEST CHAIRS
- ④ FILE CABINETS
- ⑤ BOOKCASE



② A1.03 - OPEN OFFICE



① A1.03 - OPEN OFFICE - 120SF  
1/8" = 1'-0"

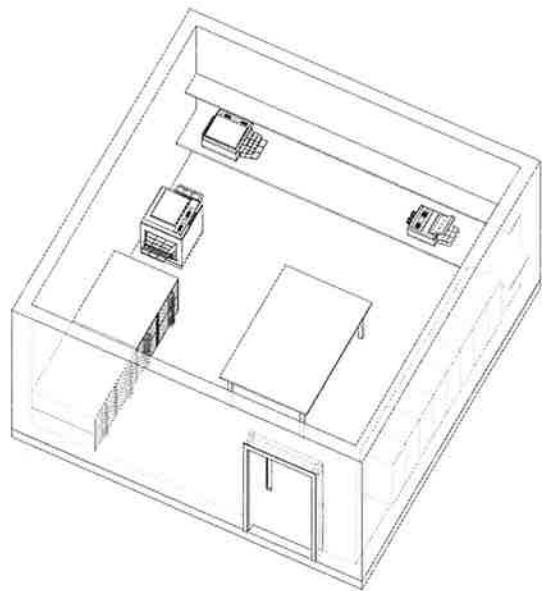
ROOM FINISHES

FLOORS: CARPET TILE

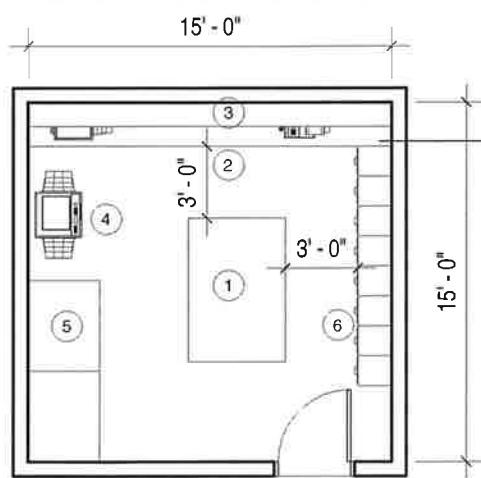
WALLS: GWB PAINTED

CEILING: 2X2 ACT TILE

MEP/DATA REQUIREMENTS



2 A1.04 - COPY / FILE / MAIL



1 A1.04 - COPY / FILE / MAIL - 225SF  
1/8" = 1'-0"

ROOM FINISHES

FLOORS: 12X12 VCT TILE

WALLS: GWB PAINTED

CEILING: 2X2 ACT TILE

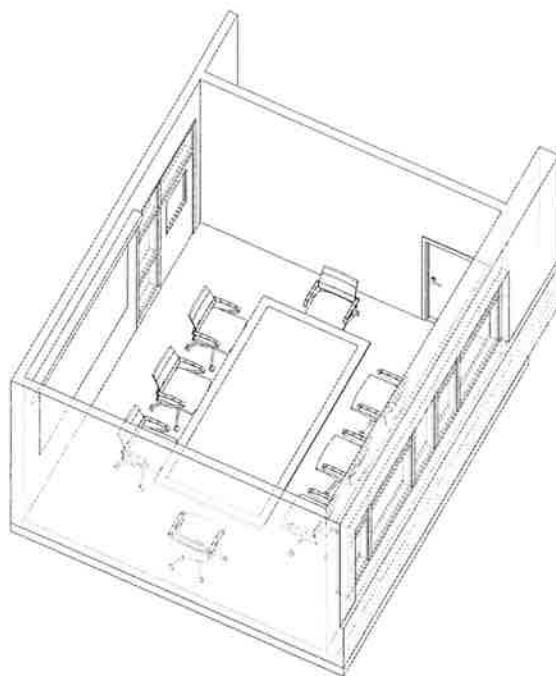
MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

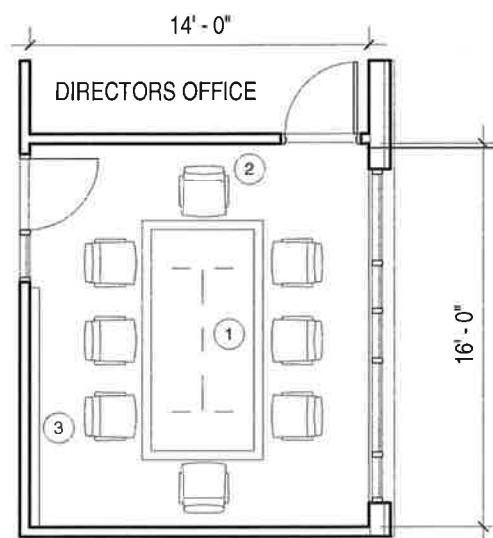
DATA OUTLET JACKS

COMPONENTS:

- ① TABLE
- ② COUNTER
- ③ SHELVING
- ④ PRINTER / COPIER
- ⑤ FLAT FILES
- ⑥ FILE CABINETS



2 A1.05 - CONFERENCE ROOM



1 A1.05 - CONFERENCE ROOM - 244SF  
1/8" = 1'-0"

#### ROOM FINISHES

FLOORS: CARPET TILE

WALLS: GWB PAINTED

CEILING: 2X2 ACT TILE

#### MEP/DATA REQUIREMENTS

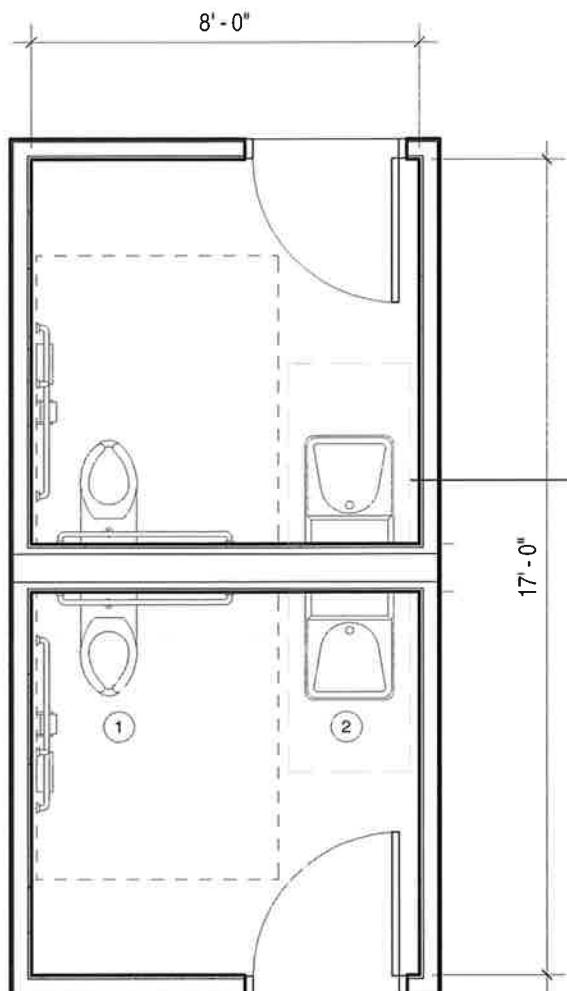
DUPLEX ELECTRICAL OUTLETS

DATA OUTLET JACKS

AV WIRING

#### COMPONENTS:

- ① CONFERENCE TABLE
- ② CONFERENCE CHAIR (8)
- ③ PROJECTOR

**ROOM FINISHES****FLOORS:** CERAMIC TILES**WALLS:** CERAMIC TILE TO 6'-0" /  
GWB PAINTED**CEILING:** 2X2 ACT TILE**MEP/DATA REQUIREMENTS**

FLOOR DRAINS

TRAP PRIMERS

LOW FLOW FIXTURES AND/OR  
WATERLESS URINALS**COMPONENTS:**

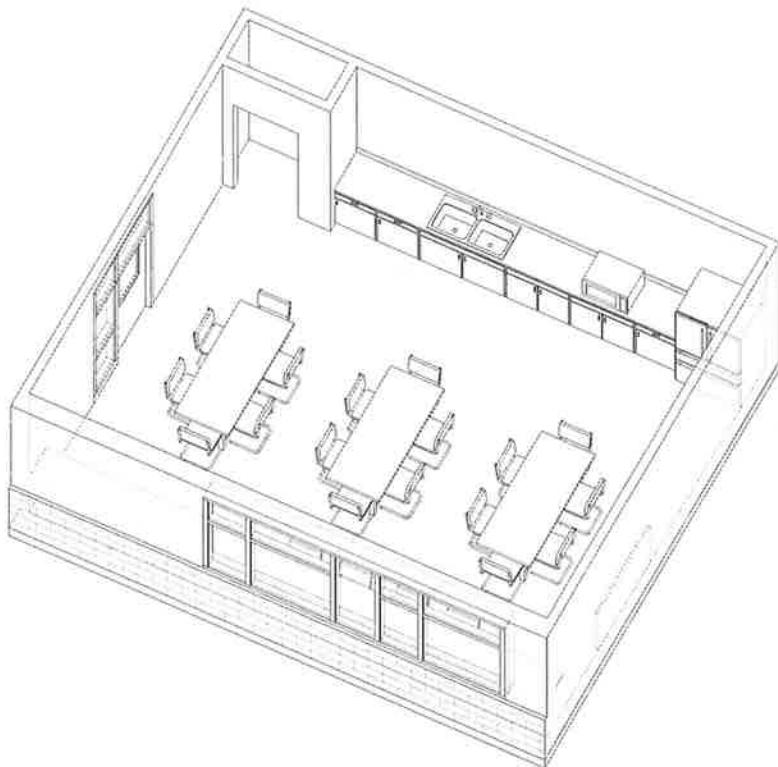
① ADA TOILET

② ADA SINK

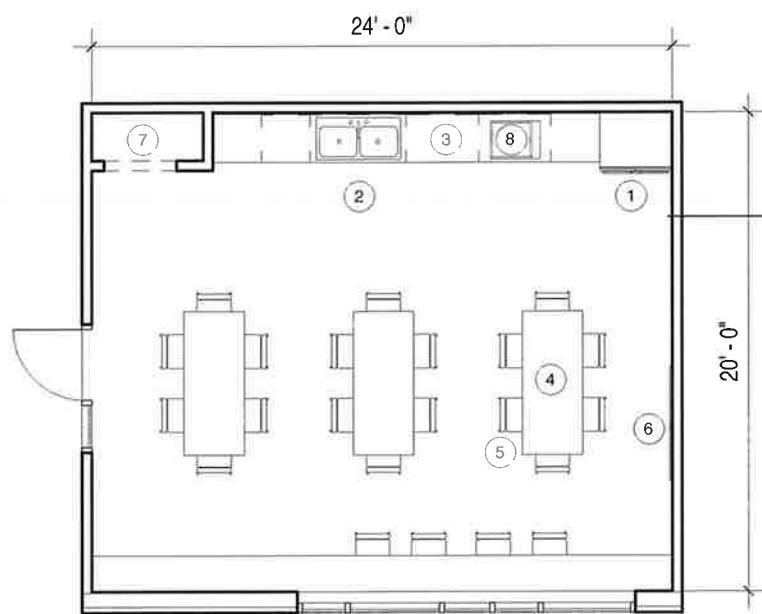
**A1.06 - MEN'S AND WOMEN'S TOILETS -**

136SF

1  
1/4" = 1'-0"



② B1.01 - MULTI-PURPOSE ROOM



① B1.01 - MULTI-PURPOSE ROOM - 480SF  
1/8" = 1'-0"

ROOM FINISHES

FLOORS: 12X12 VCT TILE

WALLS: GWB PAINTED

CEILING: 2X2 ACT TILE

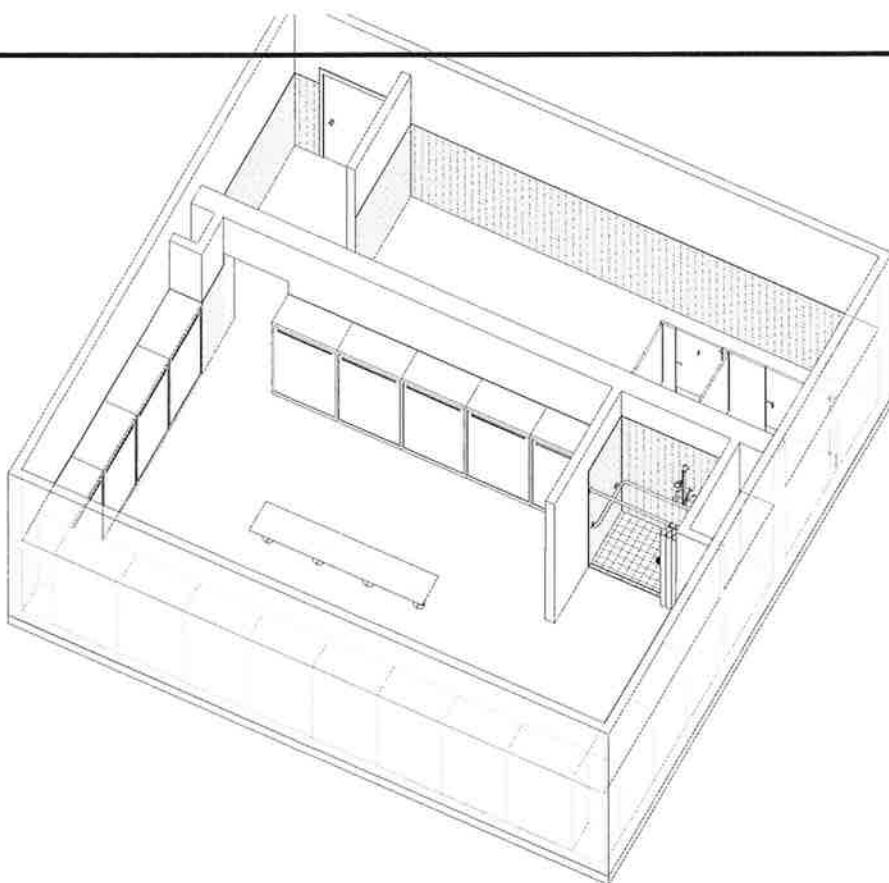
MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

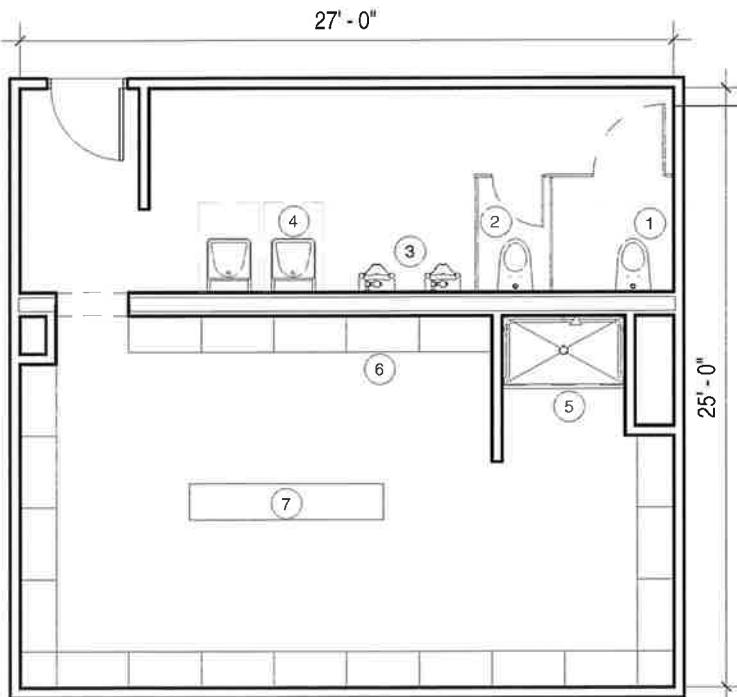
DATA OUTLET JACKS

COMPONENTS:

- ① REFRIGERATOR
- ② DOUBLE SINK
- ③ TOP COUNTER WITH CABINET (UNDER & ABOVE)
- ④ TABLE (3)
- ⑤ CHAIR (22)
- ⑥ FLAT TV SCREEN
- ⑦ PANTRY
- ⑧ MICROWAVE



B1.02 - MALE LOCKER / SHOWER /  
TOILET



B1.02 - MALE LOCKERS / SHOWERS /  
TOILET - 675SF  
1/8" = 1'-0"

#### ROOM FINISHES

**FLOORS:** EPOXY RESINOUS FLOORING

**WALLS:** CERAMIC TILE TO 6'-0" / GWB PAINTED

**CEILING:** 2X2 ACT TILE

#### MEP/DATA REQUIREMENTS

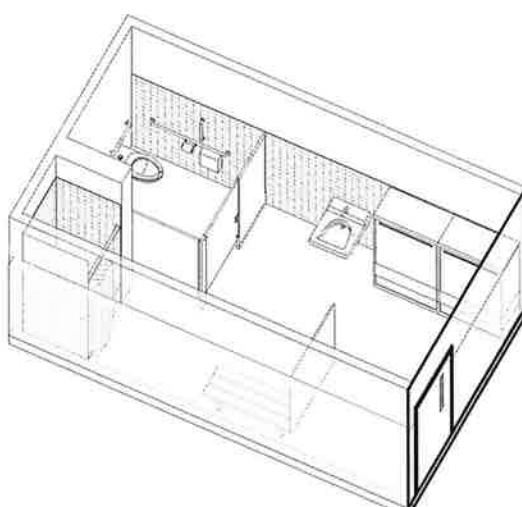
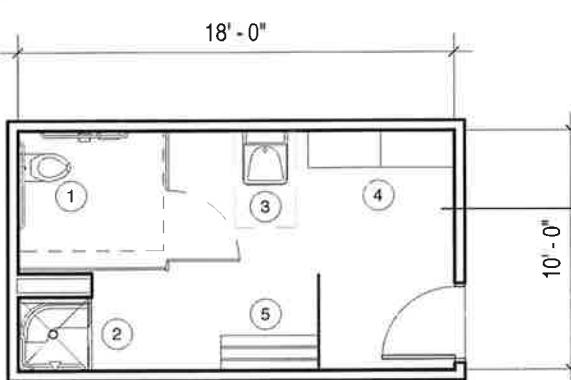
DUPLEX ELECTRICAL OUTLETS

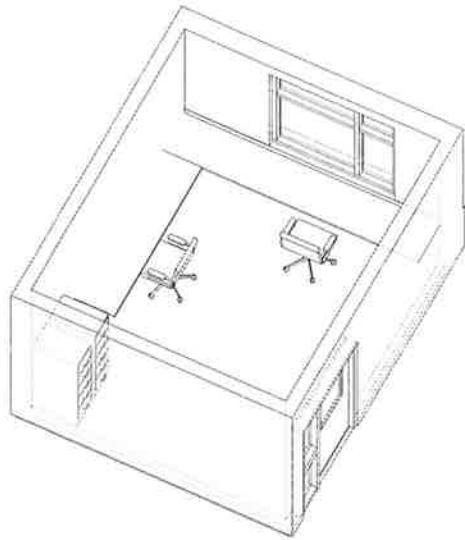
TRAP PRIMERS

FLOOR DRAINS

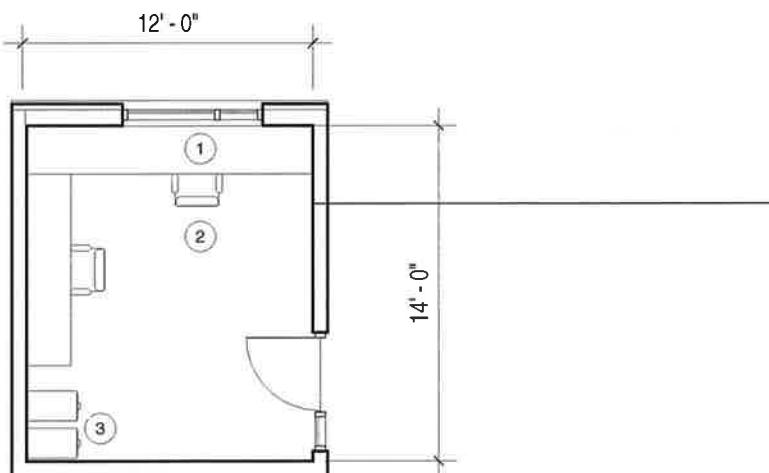
#### COMPONENTS:

- ① ADA TOILET
- ② TOILET
- ③ URINAL (2)
- ④ ADA SINK (2)
- ⑤ ADA SHOWER
- ⑥ LOCKER (20 - 18" X 36")
- ⑦ BENCH

		ROOM FINISHES	
		FLOORS: EPOXY RESINOUS FLOORING	
		WALLS: GWB PAINTED	
		CEILING: 2X2 ACT TILE	
		MEP/DATA REQUIREMENTS	
		DUPLEX ELECTRICAL OUTLETS	
		TRAP PRIMERS	
		FLOOR DRAINS	
		COMPONENTS:	
		<p>① ADA TOILET</p> <p>② ADA SHOWER</p> <p>③ ADA SINK</p> <p>④ LOCKER (2)</p> <p>⑤ BENCH</p>	
		<p>B1.03 - FEMALE LOCKER / SHOWER / TOILET / 180SF</p> <p>1/8" = 1'-0"</p>	
Weston Simpson	Client Name: UPTON DPW	B1.03 - FEMALE LOCKER / SHOWER / TOILET Dept: EMPLOYEE FACILITIES	Sheet: B1.03



2 B1.04 - SHARED FOREMEN OFFICE



1 B1.04 - SHARED FOREMEN OFFICE -  
 168SF  
 1/8" = 1'-0"

ROOM FINISHES

FLOORS: 12X12 VCT TILE

WALLS: GWB PAINTED

CEILING: 2X2 ACT TILE

MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

DATA OUTLET JACKS

COMPONENTS:

- ① WALL MOUNTED COUNTER
- ② TASK CHAIR (2)
- ③ LATERAL FILE CABINETS (2)

**ROOM FINISHES**

**FLOORS:** EPOXY RESINOUS FLOORING

**WALLS:** GWB PAINTED

**CEILING:** 2X2 ACT TILE

**MEP/DATA REQUIREMENTS**

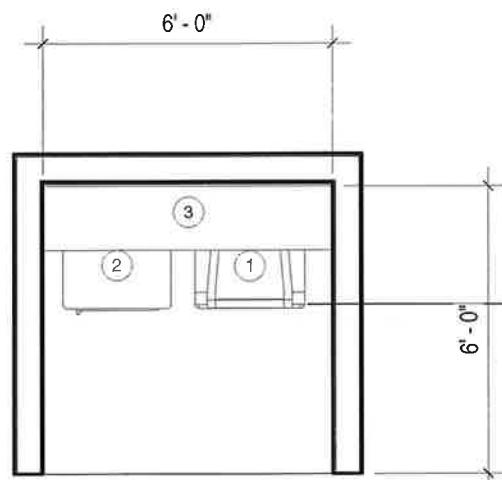
DUPLEX ELECTRICAL OUTLETS

DRYER EXHAUST FAN & DUCT

**COMPONENTS:**

- ① WASHER MACHINE
- ② DRYER MACHINE
- ③ SHELF (ABOVE)

① **B1.05 - LAUNDRY ROOM - 36SF**  
1/4" = 1'-0"



**ROOM FINISHES**

**FLOORS:** SEALED CONCRETE

**WALLS:** GWB PAINTED

**CEILING:** 2X2 ACT TILE

**MEP/DATA REQUIREMENTS**

DUPLEX ELECTRICAL OUTLETS

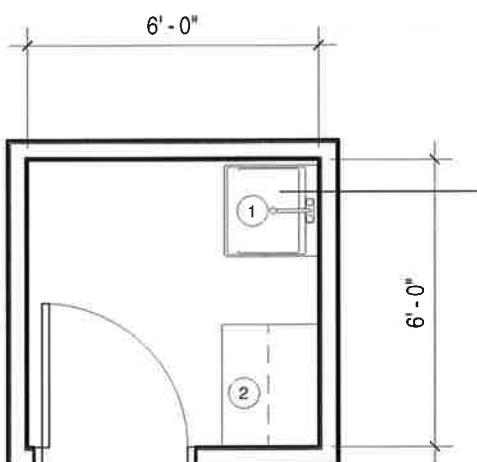
FLOOR DRAINS

TRAP PRIMER

**COMPONENTS:**

① UTILITY SINK

② WALL MOUNTED SHELVING



1 B1.06 - JANITOR - 36SF  
1/4" = 1'-0"

**ROOM FINISHES**

**FLOORS:** SEALED CONCRETE

**WALLS:** CONCRETE BLOCK  
PAINTED

**CEILING:** GWB PAINTED

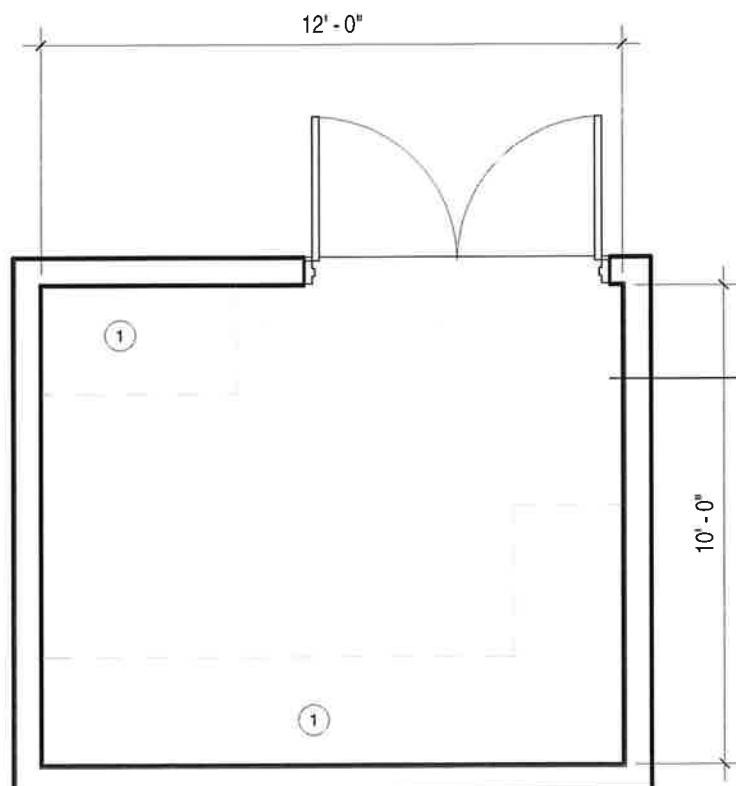
**MEP/DATA REQUIREMENTS**

DUPLEX ELECTRICAL OUTLETS

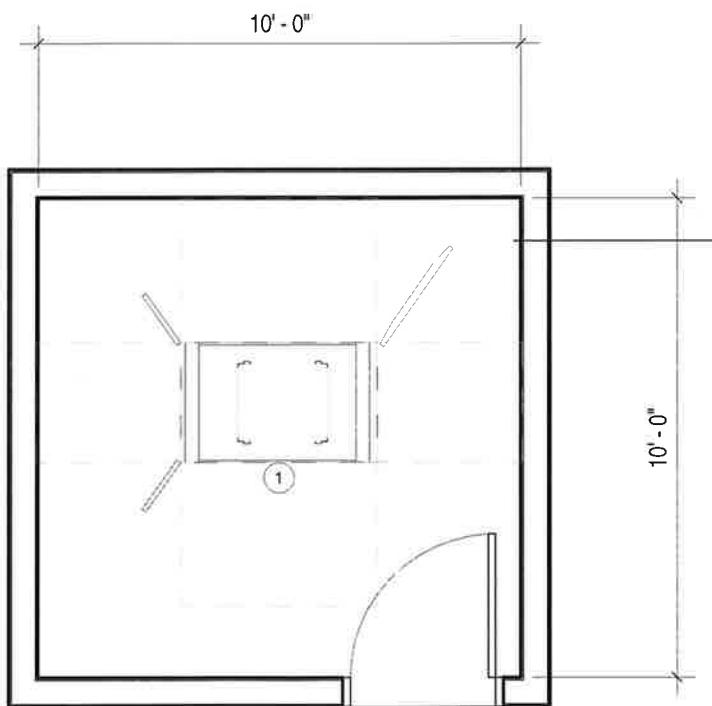
DATA OUTLET JACKS

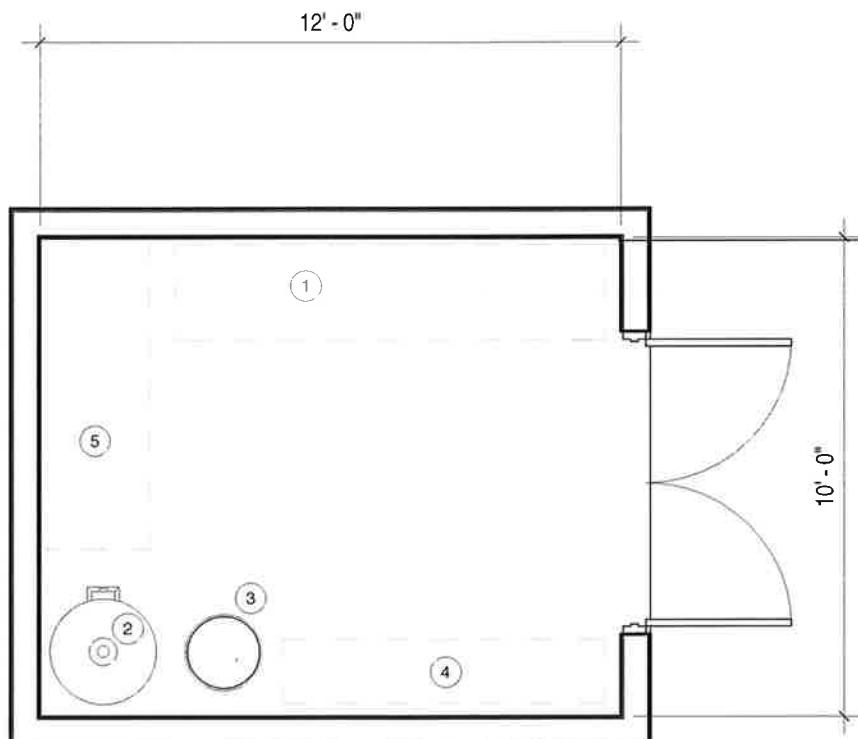
**COMPONENTS:**

① WALL MOUNTED PANELS  
(SERIES)



① **B1.07 - ELECTRIC ROOM - 120SF**  
1/4" = 1'-0"

**ROOM FINISHES****FLOORS:** CARPET TILE**WALLS:** GWB PAINTED**CEILING:** 2X2 ACT TILE**MEP/DATA REQUIREMENTS****COMPONENTS:****①** DATA RACKS**① B1.08 - TELE/DATA ROOM -100SF**  
1/4" = 1'-0"



### B1.09 - PLUMBING / FIRE PROTECTION -

120SF

1/4" = 1'-0"

### ROOM FINISHES

FLOORS: SEALED CONCRETE

WALLS: GWB PAINTED

CEILING: GWB PAINTED

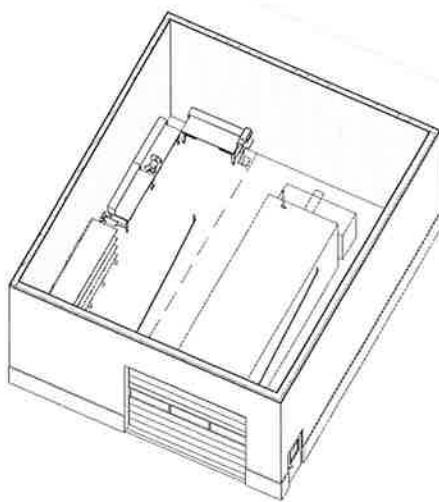
### MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

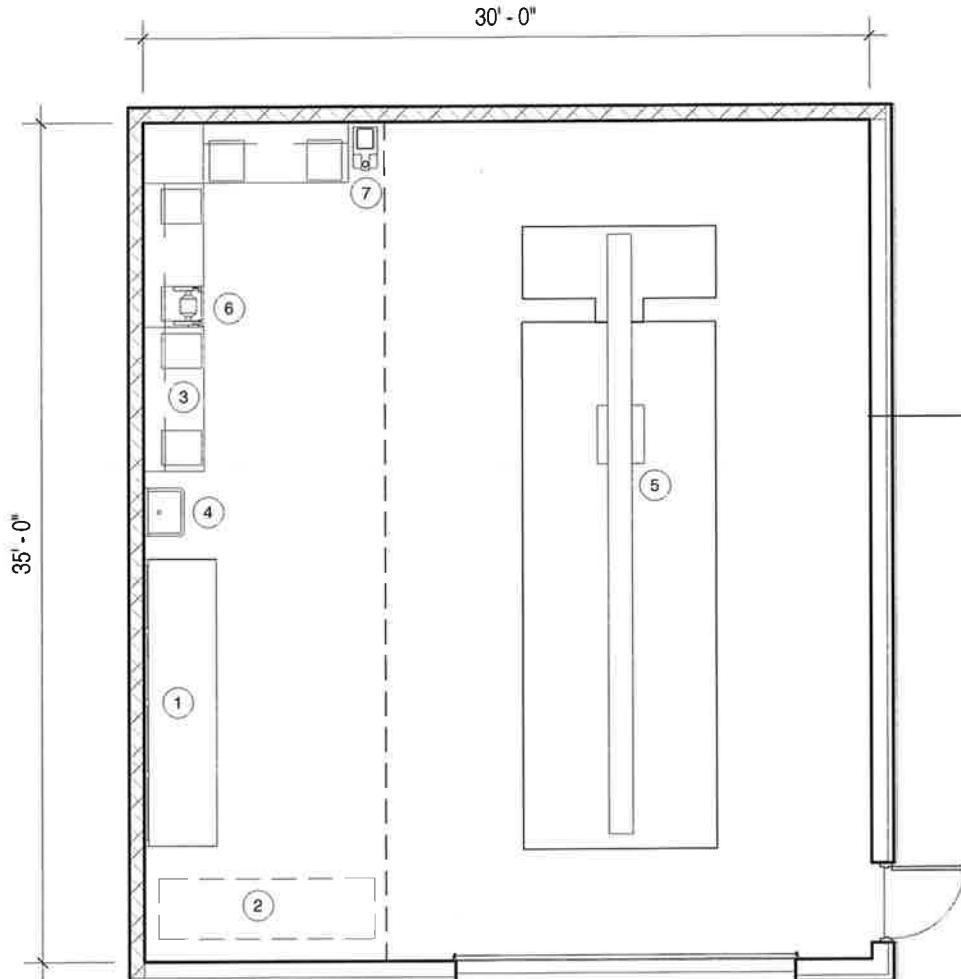
DATA OUTLET JACKS

### COMPONENTS:

- ① DOMESTIC SERVICE METER & REDUCED PRESSURE BACKFLOW PREVENTER
- ② WATER HEATER
- ③ EXPANSION TANK
- ④ TEMPERED WATER CONTROL PANEL & MIXING VALVES
- ⑤ FIRE PROTECTION SERVICE (DRY & WET) CHECK VALVE ASSEMBLY



② C1.01 - SHARED GENERAL SHOP



C1.01 - SHARED GENERAL SHOP -  
1050SF  
1/8" = 1'-0"

#### ROOM FINISHES

FLOORS: SEALED CONCRETE

WALLS: CONCRETE BLOCK  
PAINTED

CEILING: OPEN TO STRUCTURE

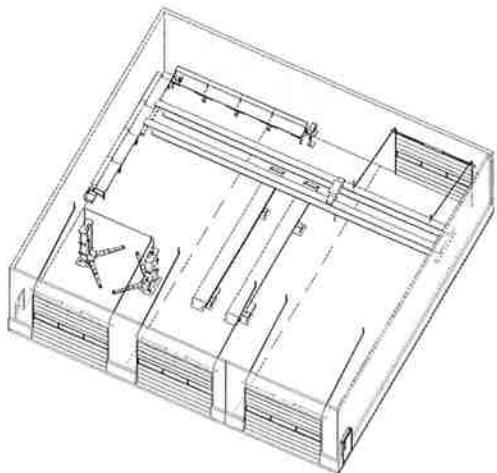
#### MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

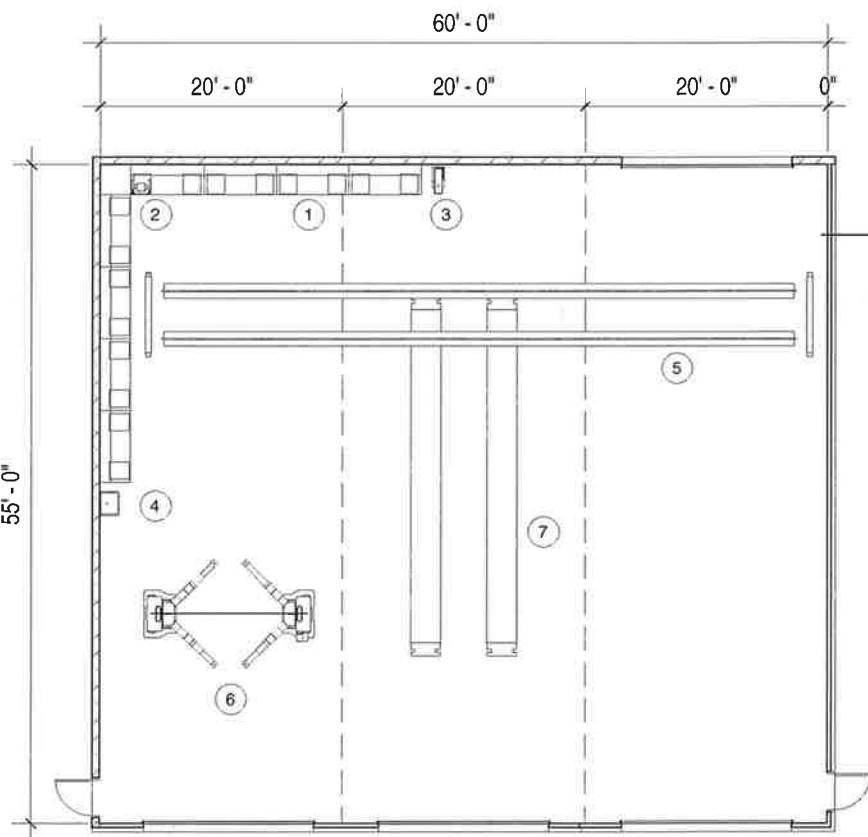
DATA OUTLET JACKS

#### COMPONENTS:

- ① STORAGE RACK FOR SIGN POSTS
- ② WALL SPACE SIGN STORAGE
- ③ WORKBENCH (3)
- ④ SHOP SINK
- ⑤ MONORAIL
- ⑥ BENCH GRINDER
- ⑦ DRILL PRESS



② D1.01 - VEHICLE MAINTENACE



① D1.01 - MAINTENANCE BAYS - 3300SF  
1/16" = 1'-0"

ROOM FINISHES

FLOORS: SEALED CONCRETE

WALLS: CONCRETE BLOCK  
PAINTED

CEILING: OPEN TO STRUCTURE

MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

DESTRATIFICATION FANS

COMPRESSED AIR OUTLETS

LED LIGHTING

DROP HOSES FOR EXHAUST

SOLENOID VALVE FOR COMPRESSED AIR TO FLUID ROOM

COMPONENTS:

- ① WORKBENCH (8)
- ② GRINDER
- ③ DRILL PRESS
- ④ SERVICE SINK
- ⑤ INDUSTRIAL BRIDGE CRANE
- ⑥ TWO POST LIGHT DUTY LIFT
- ⑦ FLUSH MOUNTED SCISSOR LIFT

**ROOM FINISHES**

**FLOORS:** 12X12 VCT TILE

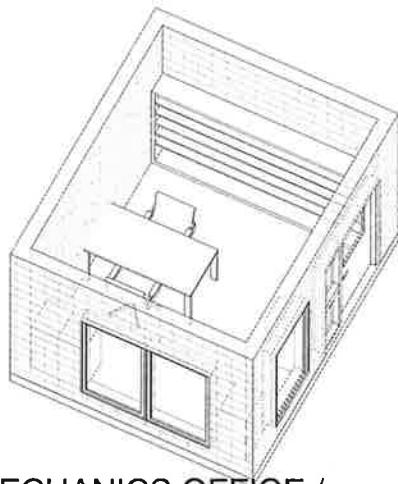
**WALLS:** CMU PAINTED

**CEILING:** 2X2 ACT TILE

**MEP/DATA REQUIREMENTS**

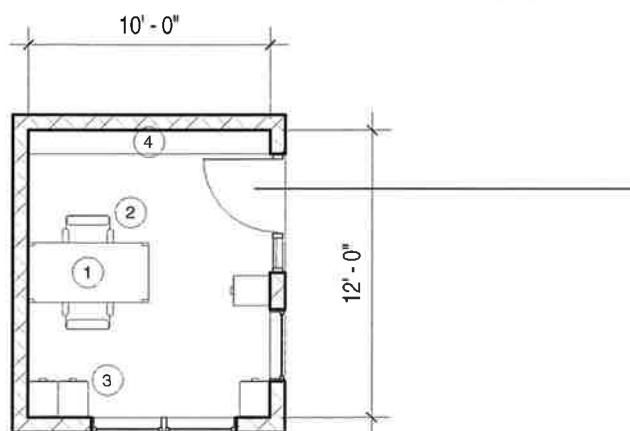
DUPLEX ELECTRICAL OUTLETS

DATA OUTLET JACKS



D1.02 - MECHANICS OFFICE /  
REFERENCE ROOM

2

**COMPONENTS:**

- ① DESK
- ② TASK CHAIR
- ③ LATERAL FILE CABINETS
- ④ BOOKCASE

D1.02 - MECHANICS OFFICE /  
REFERENCE ROOM - 120SF

1

1/8" = 1'-0"

**ROOM FINISHES****FLOORS:** CERAMIC TILES**WALLS:** CERAMIC TILE TO 6'-0" /  
GWB PAINTED**CEILING:** 2X2 ACT TILE**MEP/DATA REQUIREMENTS**

FLOOR DRAINS

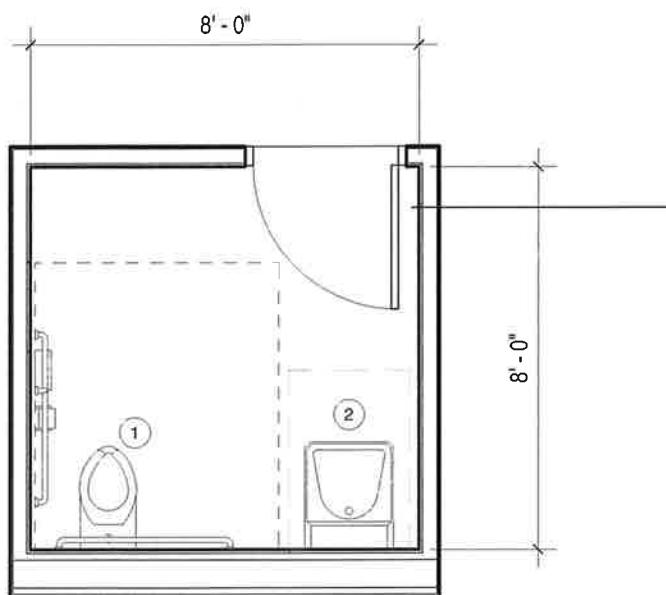
TRAP PRIMERS

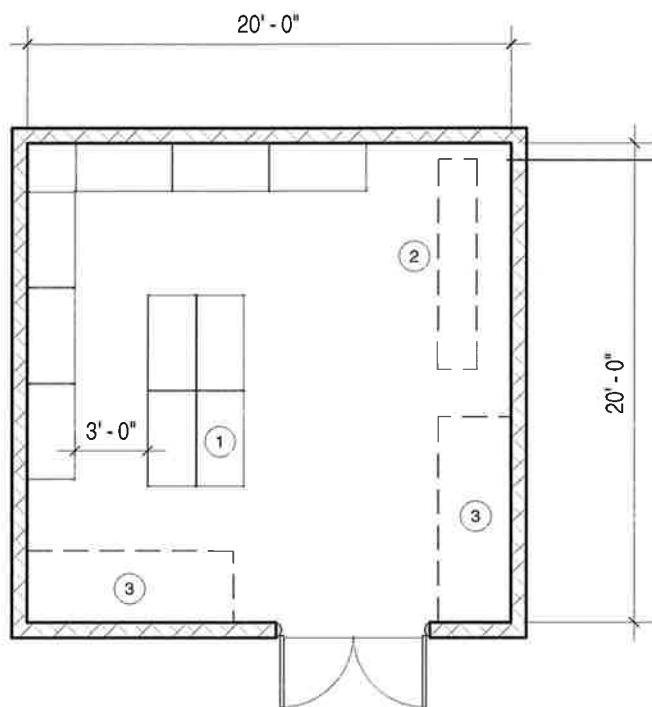
LOW FLOW FIXTURES

**COMPONENTS:**

① ADA TOILET

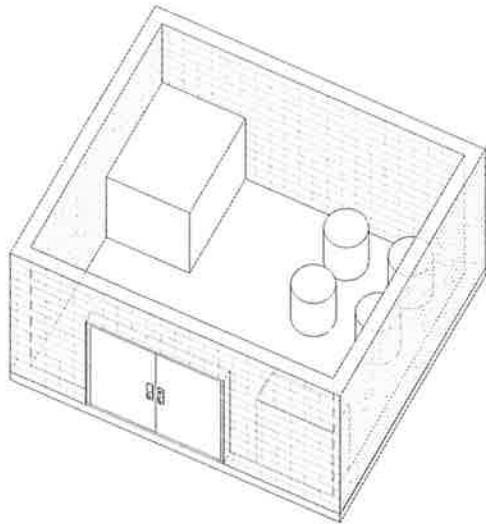
② ADA SINK

**D1.03 - UNI-SEX TOILET - 64SF**  
1/4" = 1'-0"

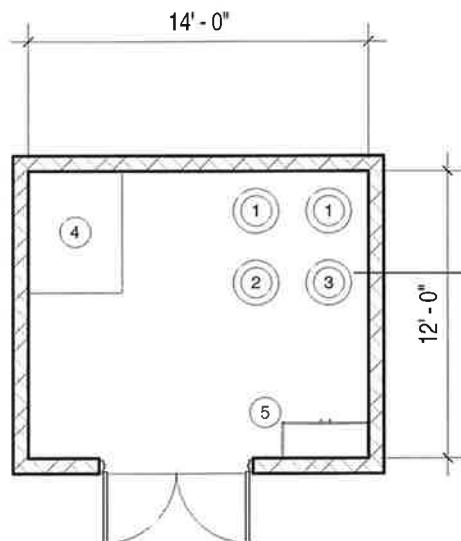
**ROOM FINISHES****FLOORS:** SEALED CONCRETE**WALLS:** CONCRETE BLOCK  
PAINTED**CEILING:** OPEN TO STRUCTURE**MEP/DATA REQUIREMENTS****COMPONENTS:**

- ① (48" W X 24" D X 84" H)  
HEAVY DUTY SHELVING (10)
- ② SMALL PARTS BINS
- ③ WALL STORAGE
- ④ FLAMMABLE CABINETS

1 D1.04 - PARTS ROOM - 400SF  
1/8" = 1'-0"



2 D1.05 - FLUID STORAGE ROOM



1 D1.05 - FLUIDS ROOM - 168SF  
1/8" = 1'-0"

ROOM FINISHES

FLOORS: SEALED CONCRETE

WALLS: CONCRETE BLOCK  
PAINTED

CEILING: GWB PAINTED

MEP/DATA REQUIREMENTS

CA DROPS FOR PNEUMATIC PUMPS

COMPONENTS:

- ① 15w-40 Motor Oil - 55 Gal Drum
- ② Transmission Fluid - 55 Gal Drum
- ③ Hydraulic Fluid - 55 Gal Drum
- ④ Waste Oil Tank
- ⑤ Flammable Storage Cabinet

**ROOM FINISHES**

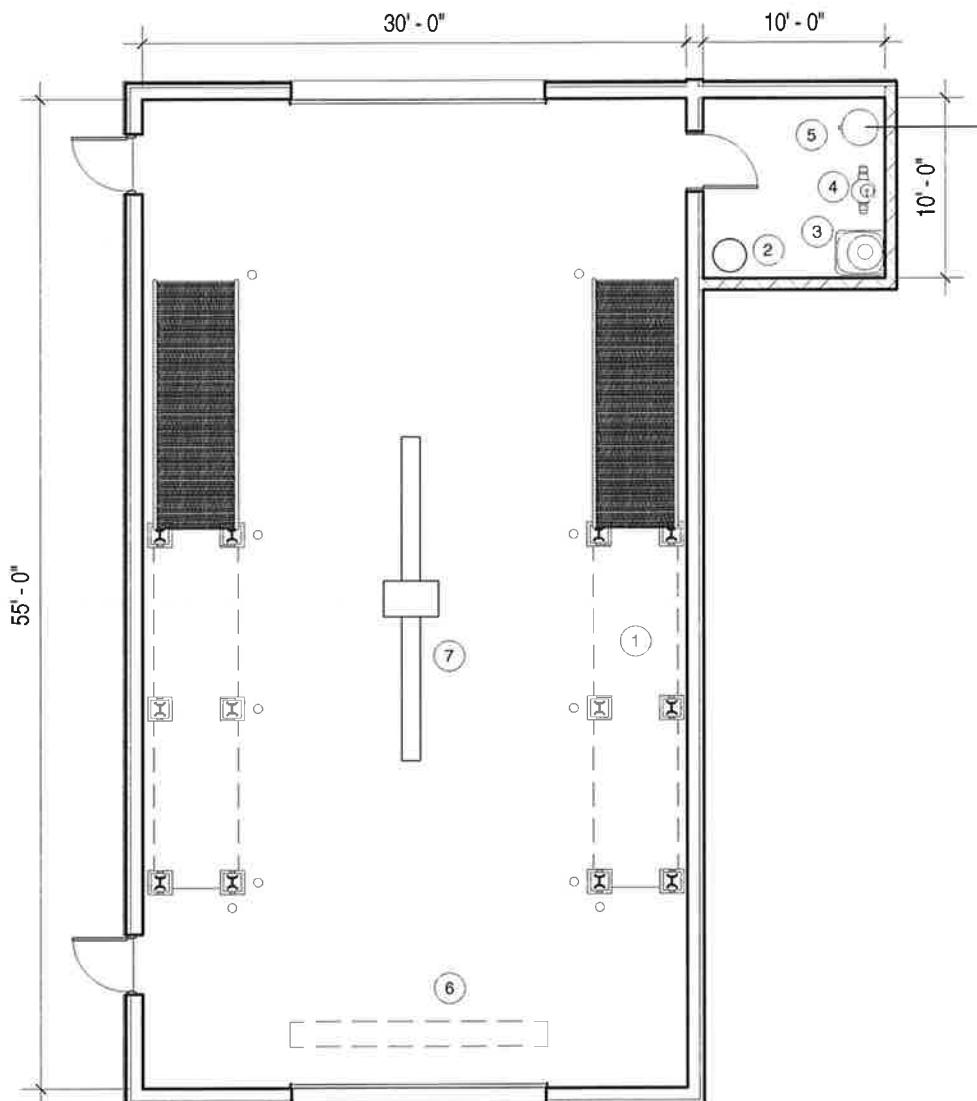
**FLOORS:** EPOXY RESINOUS FLOORING

**WALLS:** PVC PANELS

**CEILING:** PVC PANELS

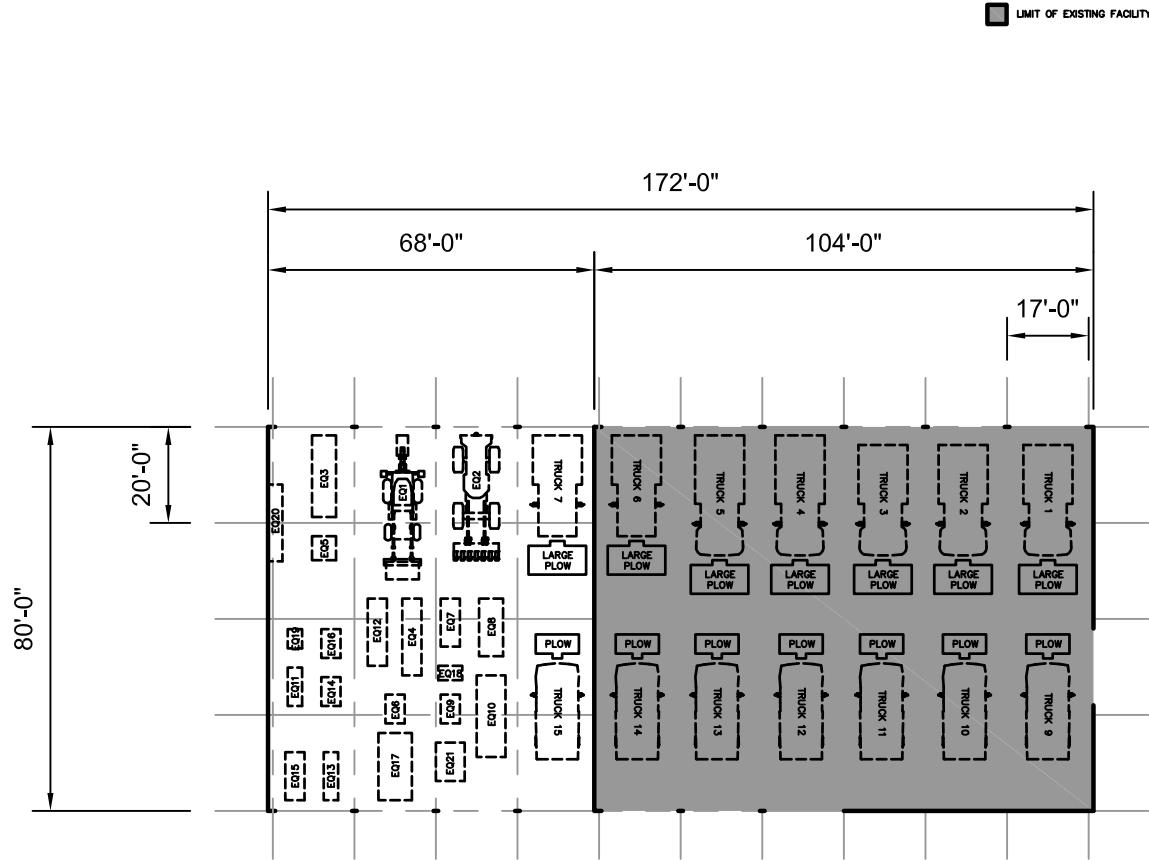
**MEP/DATA REQUIREMENTS**

2" WATER SUPPLY (1-1/2" MIN)

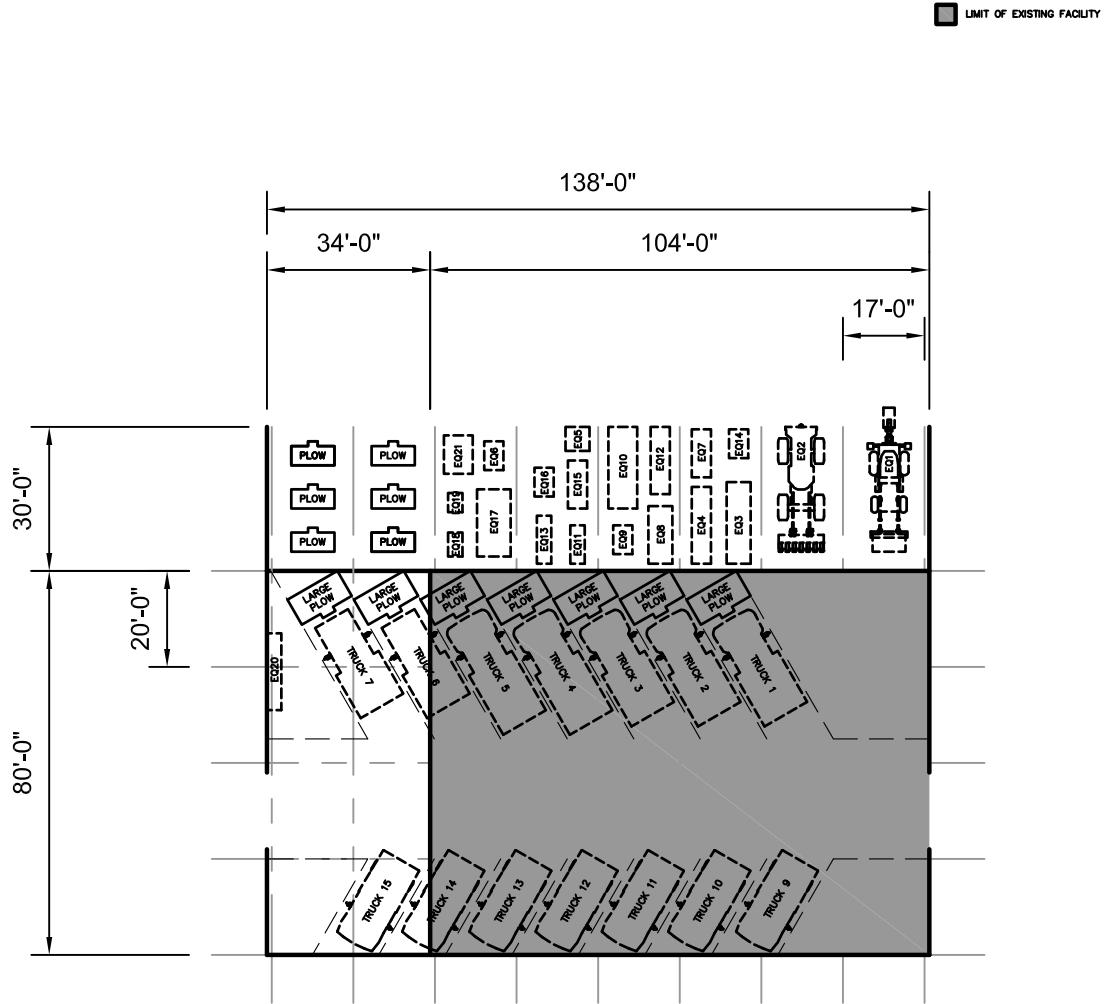
**COMPONENTS:**

- ① CATWALKS
- ② DRUM OF SOAP
- ③ HEAT PUMP
- ④ PRESSUR PUMP
- ⑤ FILTER
- ⑥ UNDERCARRIAGE WASH
- ⑦ FLOOR DRAIN

1 E1.01 - WASH BAY - 1750SF  
3/32" = 1'-0"



VEHICLE STORAGE = 13,760sf

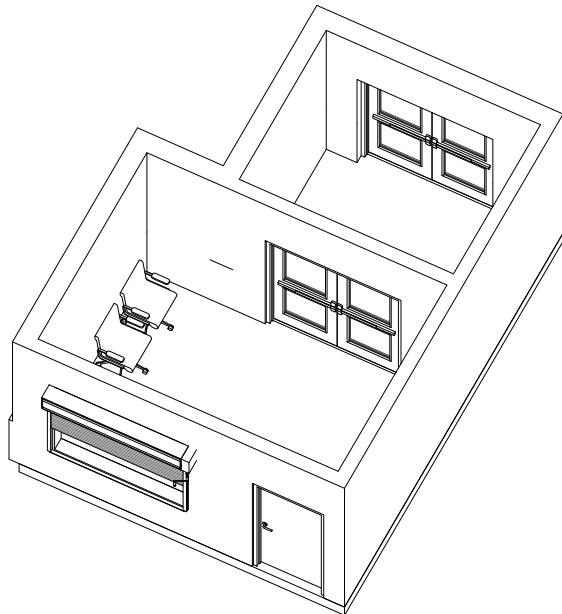


ALTERNATIVE VEHICLE STORAGE = 11,040sf

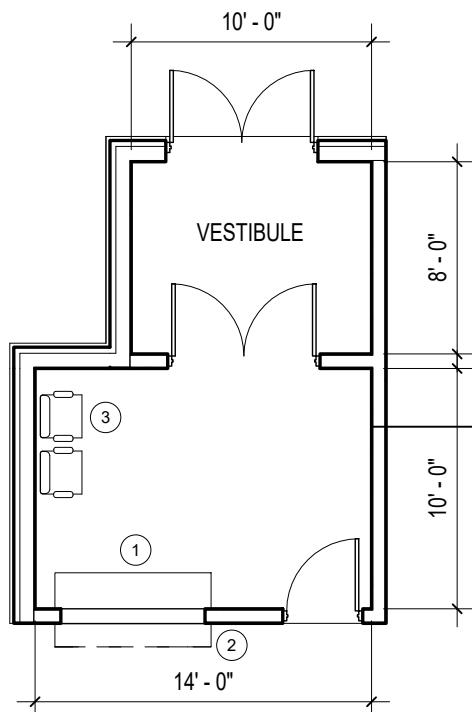
CANOPY = 4,140sf

Appendix B

Space Needs Assessment  
Revised Room Programming Sketches



2 A1.01 - ENTRY / VESTIBULE / WAITING



1 A1.01 - ENTRY / VESTIBULE / WAITING -  
220SF  
1/8" = 1'-0"

ROOM FINISHES

FLOORS: 12X12 VCT TILE

WALLS: GWB PAINTED

CEILING: 2X2 ACT TILE

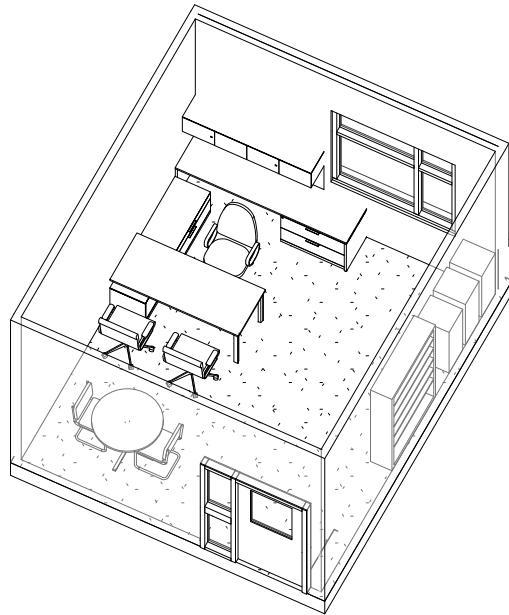
MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

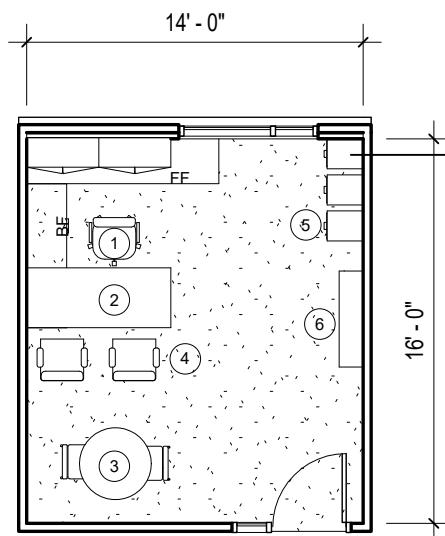
DATA OUTLET JACKS

COMPONENTS:

- ① RECEPTION COUNTER
- ② ROLL-UP SECURITY GRILL
- ③ WAITING CHAIR (2)



2 A1.02 - DIRECTOR'S OFFICE



1 A1.02 - DIRECTOR'S OFFICE - 224SF  
1/8" = 1'-0"

ROOM FINISHES

FLOORS: CARPET TILE

WALLS: GWB PAINTED

CEILING: 2X2 ACT TILE

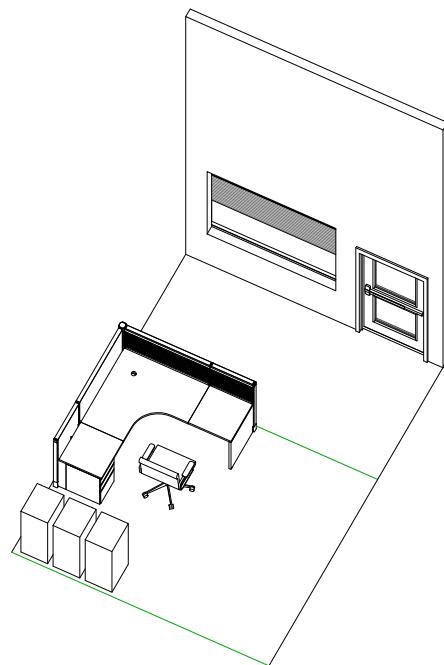
MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

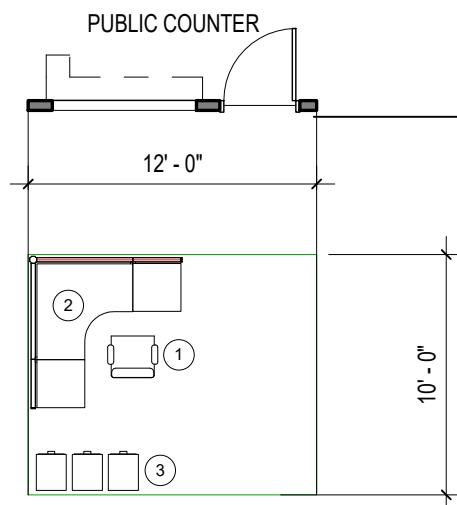
DATA OUTLET JACKS

COMPONENTS:

- ① EXECUTIVE CHAIR
- ② DESK WITH SIDE AND BACK STORAGE CABINETS
- ③ CONFERENCE TABLE AND CHAIRS
- ④ GUEST CHAIRS
- ⑤ FILE CABINETS
- ⑥ BOOKCASE



② A1.03 - OPEN OFFICE



① A1.03 - OPEN OFFICE - 120SF  
1/8" = 1'-0"

ROOM FINISHES

FLOORS: CARPET TILE

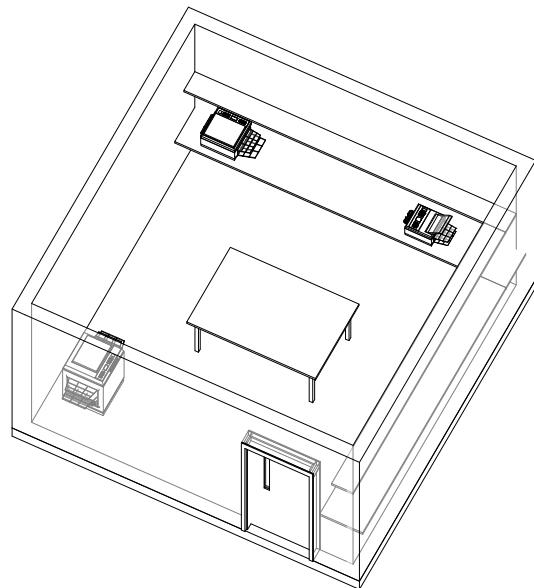
WALLS: GWB PAINTED

CEILING: 2X2 ACT TILE

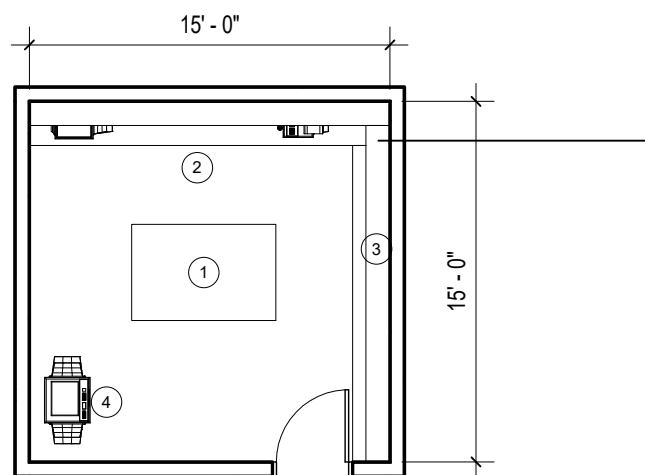
MEP/DATA REQUIREMENTS

COMPONENTS:

- ① TASK CHAIRS (2)
- ② WORKSTATION (2)
- ③ LATERAL FILE CABINETS (6)



② A1.04 - COPY / FILE / MAIL



① A1.04 - COPY / FILE / MAIL - 225SF  
1/8" = 1'-0"

ROOM FINISHES

FLOORS: 12X12 VCT TILE

WALLS: GWB PAINTED

CEILING: 2X2 ACT TILE

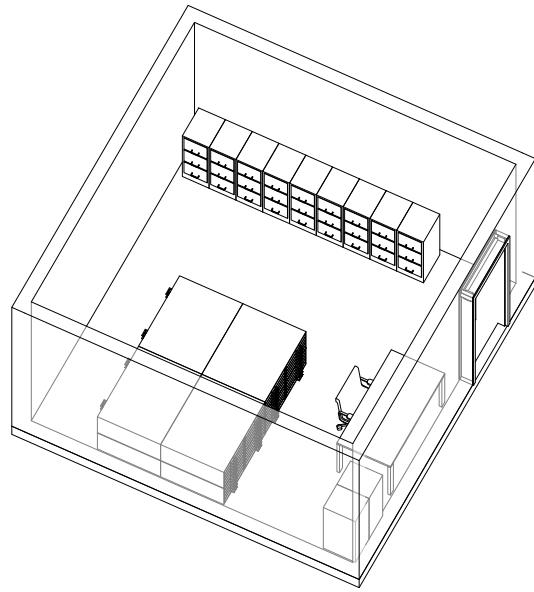
MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

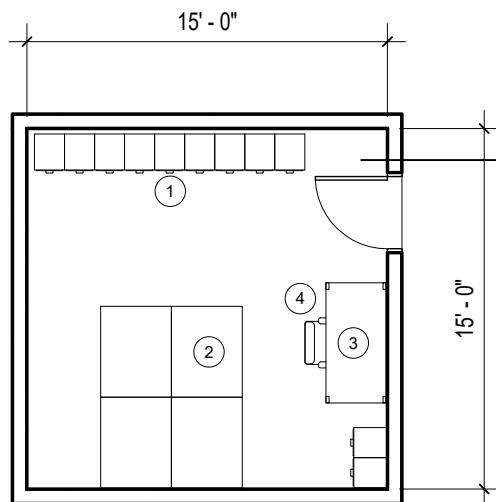
DATA OUTLET JACKS

COMPONENTS:

- ① TABLE
- ② COUNTER (2)
- ③ SHELVING (2)
- ④ PRINTER / COPIER



2 A1.05 - FILE STORAGE AREA



1 A1.05 - FILE STORAGE AREA - 225SF  
1/8" = 1'-0"

ROOM FINISHES

FLOORS: 12X12 VCT TILE

WALLS: GWB PAINTED

CEILING: 2X2 ACT TILE

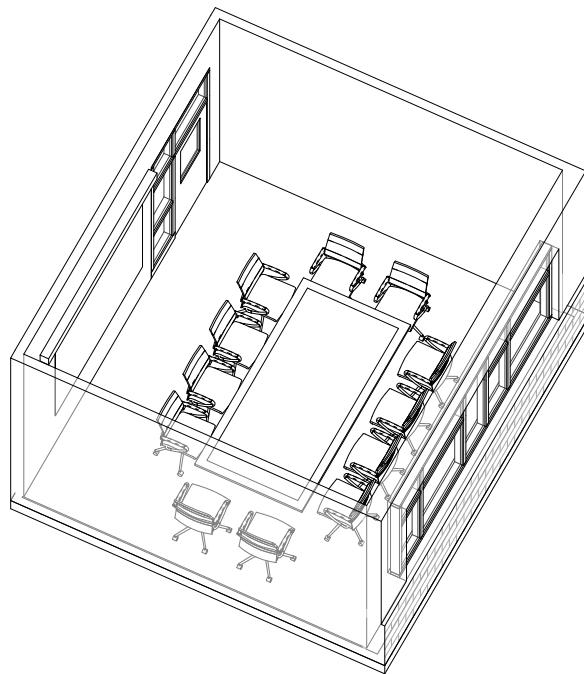
MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

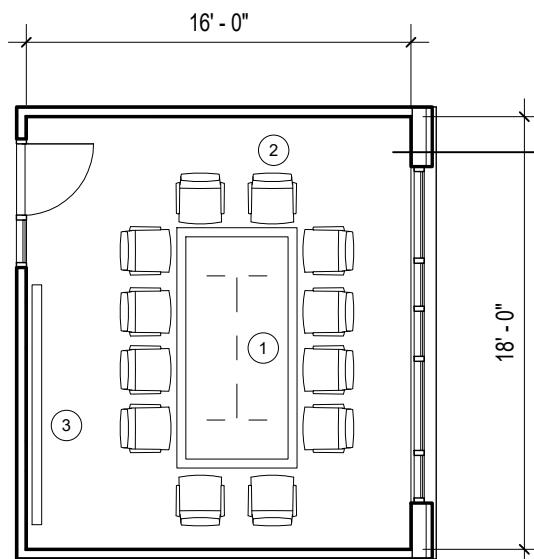
DATA OUTLET JACKS

COMPONENTS:

- 1 FILE CABINET (11)
- 2 FLAT FILE CABINET (4)
- 3 TASK CHAIR
- 4 TABLE



2 A1.06 - CONFERENCE ROOM



1 A1.06 - CONFERENCE ROOM - 288SF  
1/8" = 1'-0"

ROOM FINISHES

FLOORS: CARPET TILE

WALLS: GWB PAINTED

CEILING: 2X2 ACT TILE

MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

DATA OUTLET JACKS

AV WIRING

COMPONENTS:

- ① CONFERENCE TABLE
- ② CONFERENCE CHAIR (12)
- ③ PROJECTOR

**ROOM FINISHES**

**FLOORS:** CERAMIC TILES

**WALLS:** CERAMIC TILE TO 6'-0" /  
GWB PAINTED

**CEILING:** 2X2 ACT TILE

**MEP/DATA REQUIREMENTS**

FLOOR DRAINS

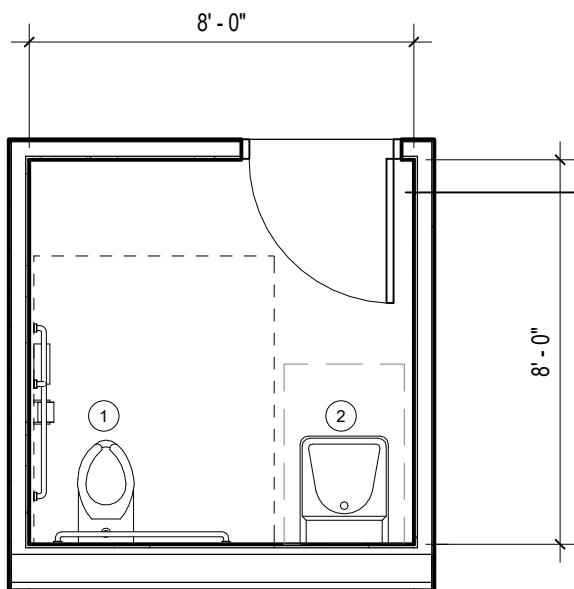
TRAP PRIMERS

LOW FLOW FIXTURES AND/OR WATERLESS  
URINALS

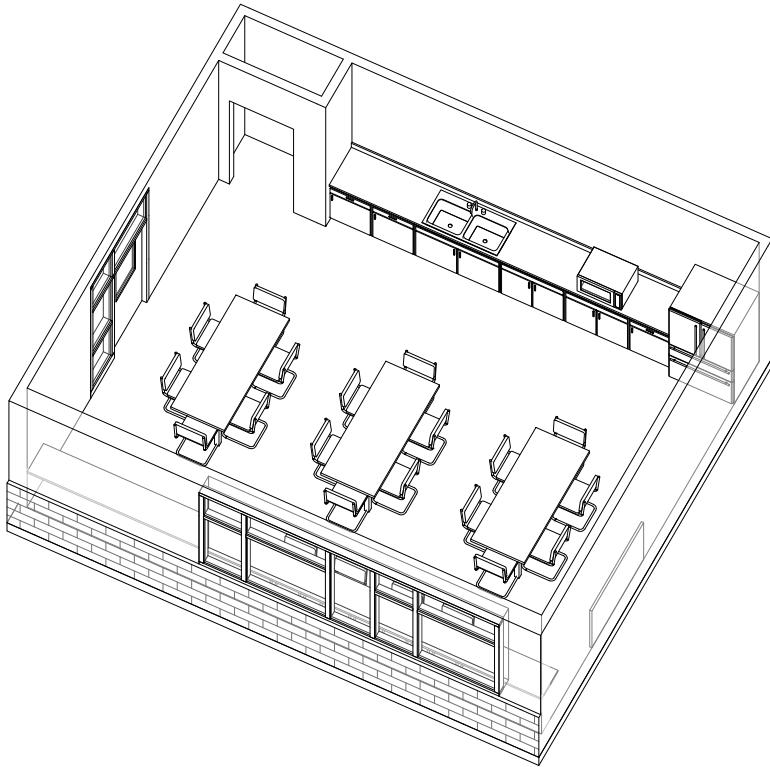
**COMPONENTS:**

① ADA TOILET

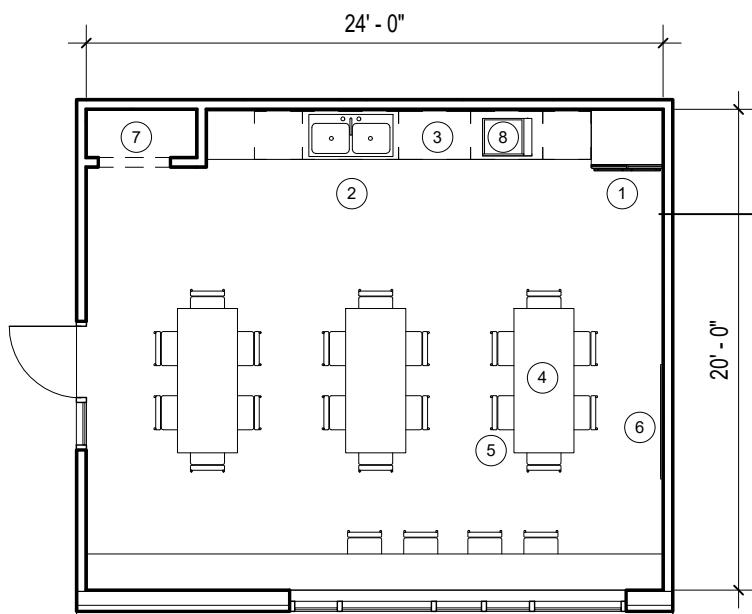
② ADA SINK



① **A1.07 - UNI-SEX TOILETS**  
1/4" = 1'-0"



**② B1.01 - MULTI-PURPOSE ROOM**



**① B1.01 - MULTI-PURPOSE ROOM - 480SF**  
 $1/8" = 1'-0"$

**ROOM FINISHES**

**FLOORS:** 12X12 VCT TILE

**WALLS:** GWB PAINTED

**CEILING:** 2X2 ACT TILE

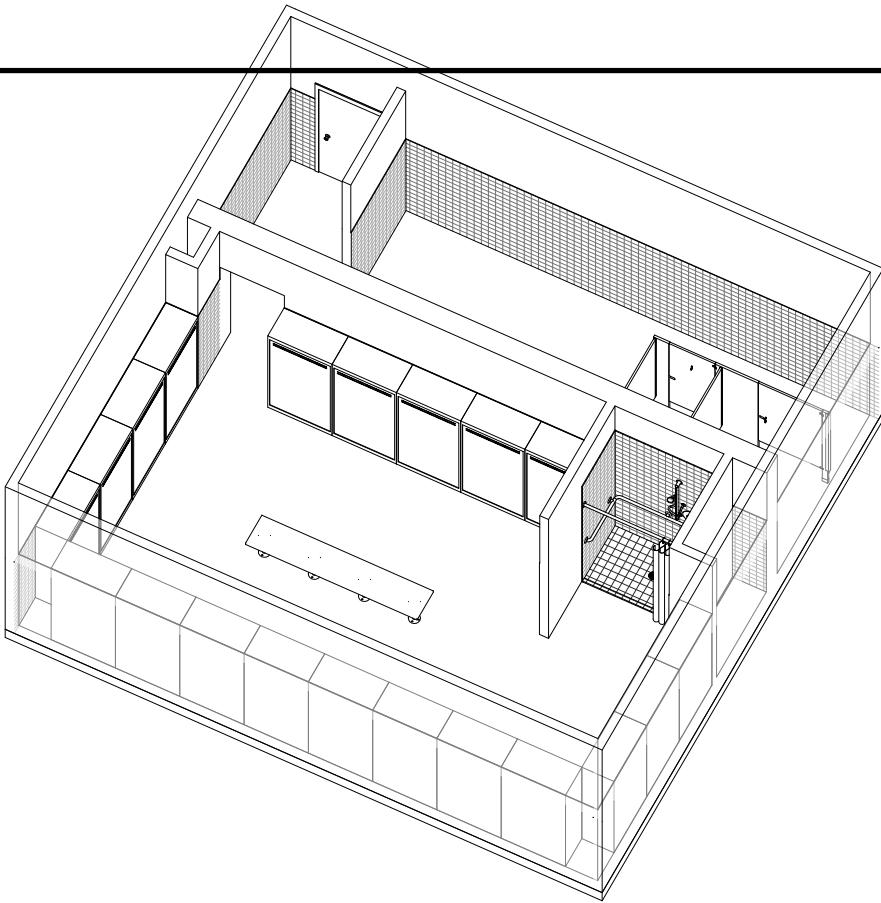
**MEP/DATA REQUIREMENTS**

DUPLEX ELECTRICAL OUTLETS

DATA OUTLET JACKS

**COMPONENTS:**

- ① REFRIGERATOR
- ② DOUBLE SINK
- ③ TOP COUNTER WITH CABINET (UNDER & ABOVE)
- ④ TABLE (3)
- ⑤ CHAIR (22)
- ⑥ FLAT TV SCREEN
- ⑦ PANTRY
- ⑧ MICROWAVE



#### ROOM FINISHES

FLOORS: EPOXY RESINOUS FLOORING

WALLS: CERAMIC TILE TO 6'-0" /  
GWB PAINTED

CEILING: 2X2 ACT TILE

#### MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

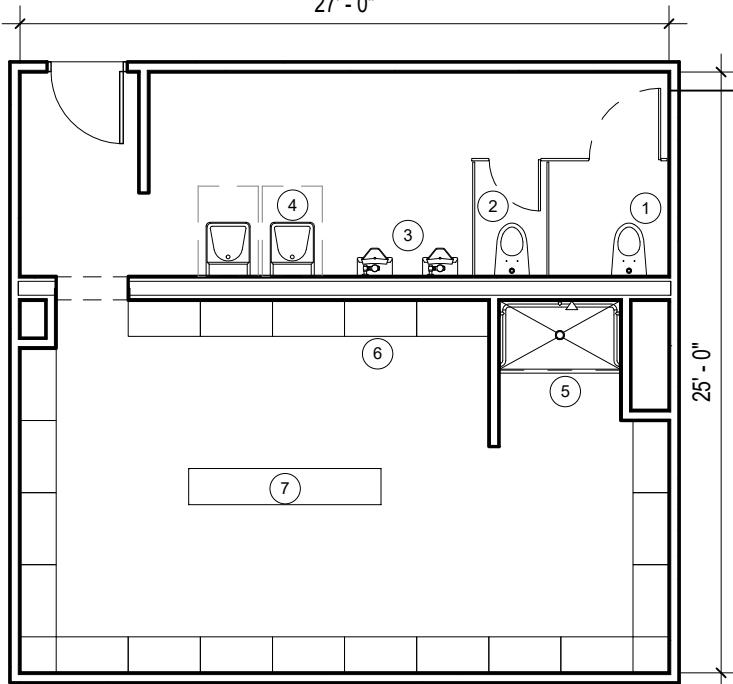
TRAP PRIMERS

FLOOR DRAINS

B1.02 - MALE LOCKER / SHOWER /  
TOILET

②

27' - 0"



#### COMPONENTS:

- ① ADA TOILET
- ② TOILET (2)
- ③ URINAL (2)
- ④ ADA SINK (2)
- ⑤ ADA SHOWER
- ⑥ LOCKER (20 - 18" X 36")
- ⑦ BENCH

B1.02 - MALE LOCKERS / SHOWERS /  
TOILET - 675SF

1

1/8" = 1'-0"

## ROOM FINISHES

FLOORS: EPOXY RESINOUS FLOORING

WALLS: GWB PAINTED

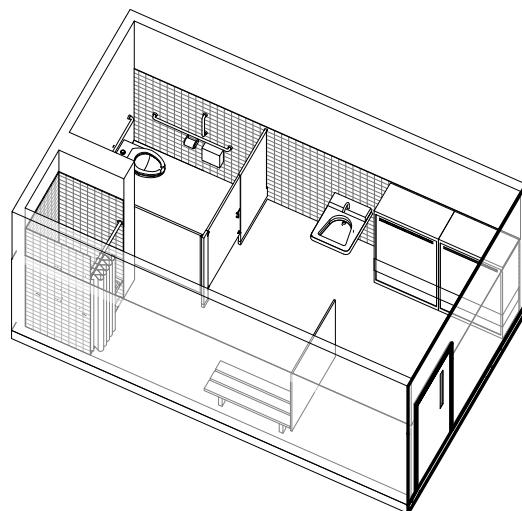
CEILING: 2X2 ACT TILE

## MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

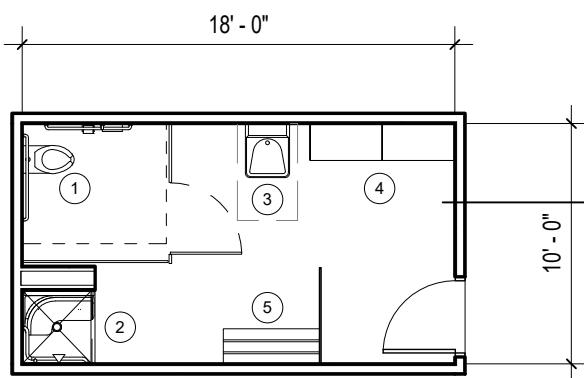
TRAP PRIMERS

FLOOR DRAINS



B1.03 - FEMALE LOCKER / SHOWER / TOILET

②



## COMPONENTS:

ADA TOILET

ADA SHOWER

ADA SINK

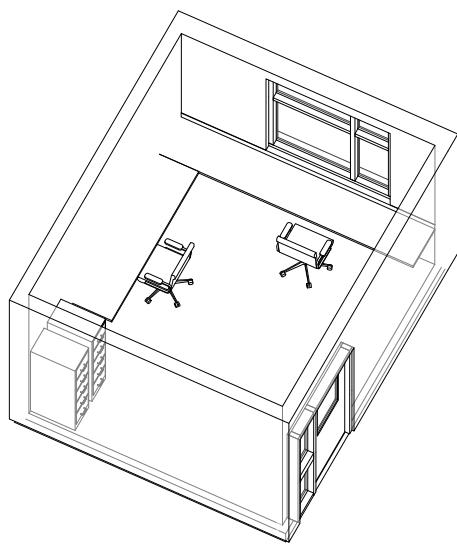
LOCKER (2)

BENCH

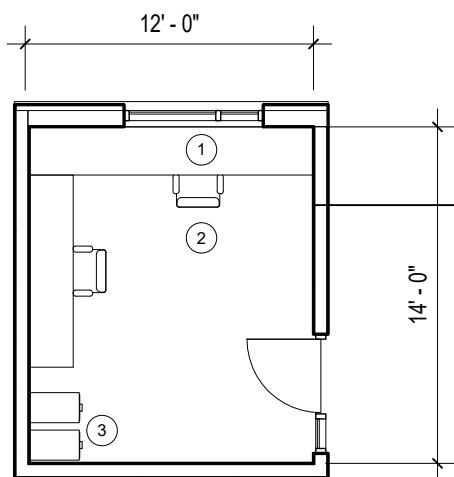
①

B1.03 - FEMALE LOCKER / SHOWER / TOILET - 180SF

1/8" = 1'-0"



② B1.04 - SHARED FOREMEN OFFICE



B1.04 - SHARED FOREMEN OFFICE -

1  
1/8" = 1'-0"

ROOM FINISHES

FLOORS: 12X12 VCT TILE

WALLS: GWB PAINTED

CEILING: 2X2 ACT TILE

MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

DATA OUTLET JACKS

COMPONENTS:

① WALL MOUNTED COUNTER

② TASK CHAIR (5)

③ LATERAL FILE CABINETS (3)

**ROOM FINISHES**

**FLOORS:** EPOXY RESINOUS FLOORING

**WALLS:** GWB PAINTED

**CEILING:** 2X2 ACT TILE

**MEP/DATA REQUIREMENTS**

DUPLEX ELECTRICAL OUTLETS

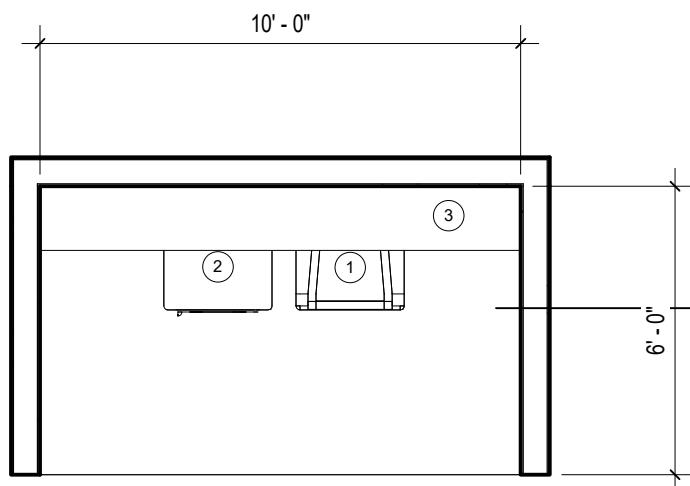
DRYER EXHAUST FAN & DUCT

**COMPONENTS:**

① WASHER MACHINE

② DRYER MACHINE

③ SHELF (ABOVE)



1 B1.05 - LAUNDRY ROOM - 60SF  
1/4" = 1'-0"

**ROOM FINISHES**

**FLOORS:** SEALED CONCRETE

**WALLS:** GWB PAINTED

**CEILING:** 2X2 ACT TILE

**MEP/DATA REQUIREMENTS**

DUPLEX ELECTRICAL OUTLETS

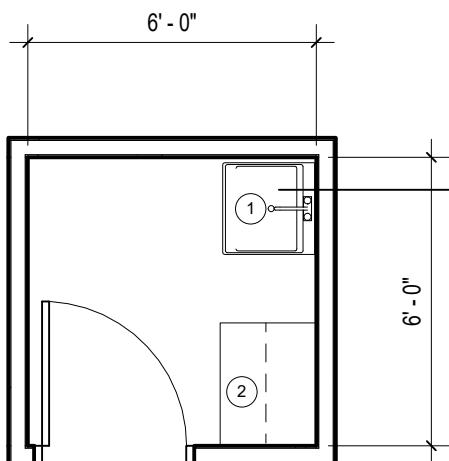
FLOOR DRAINS

TRAP PRIMER

**COMPONENTS:**

① UTILITY SINK

② WALL MOUNTED SHELVING



1 B1.06 - JANITOR - 36SF  
1/4" = 1'-0"

**ROOM FINISHES**

FLOORS: SEALED CONCRETE

WALLS: CONCRETE BLOCK PAINTED

CEILING: GWB PAINTED

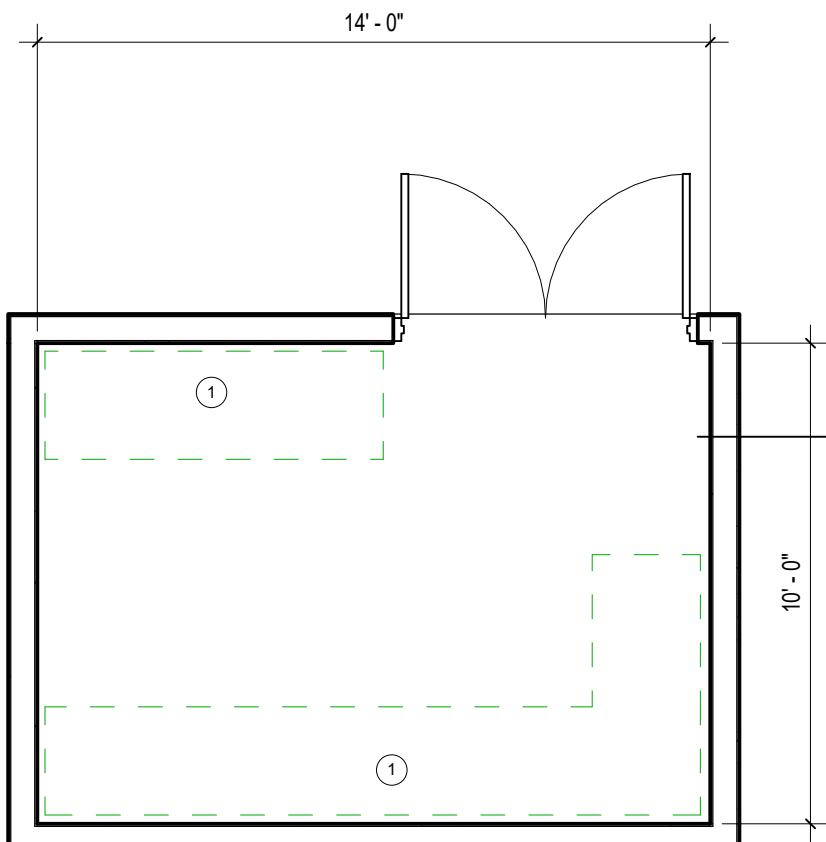
**MEP/DATA REQUIREMENTS**

DUPLEX ELECTRICAL OUTLETS

DATA OUTLET JACKS

**COMPONENTS:**

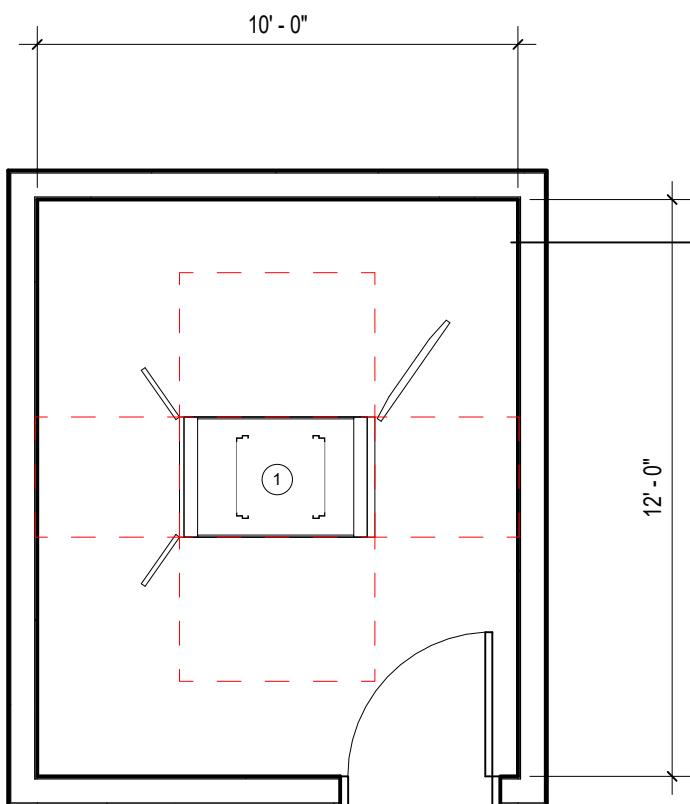
① WALL MOUNTED PANELS (SERIES)



① **B1.07 - ELECTRIC ROOM - 140SF**  
1/4" = 1'-0"

**ROOM FINISHES****FLOORS:** CARPET TILE**WALLS:** GWB PAINTED**CEILING:** 2X2 ACT TILE**MEP/DATA REQUIREMENTS****COMPONENTS:**

① DATA RACKS



① B1.08 - TELE/DATA ROOM -120SF  
1/4" = 1'-0"

**ROOM FINISHES**

**FLOORS:** SEALED CONCRETE

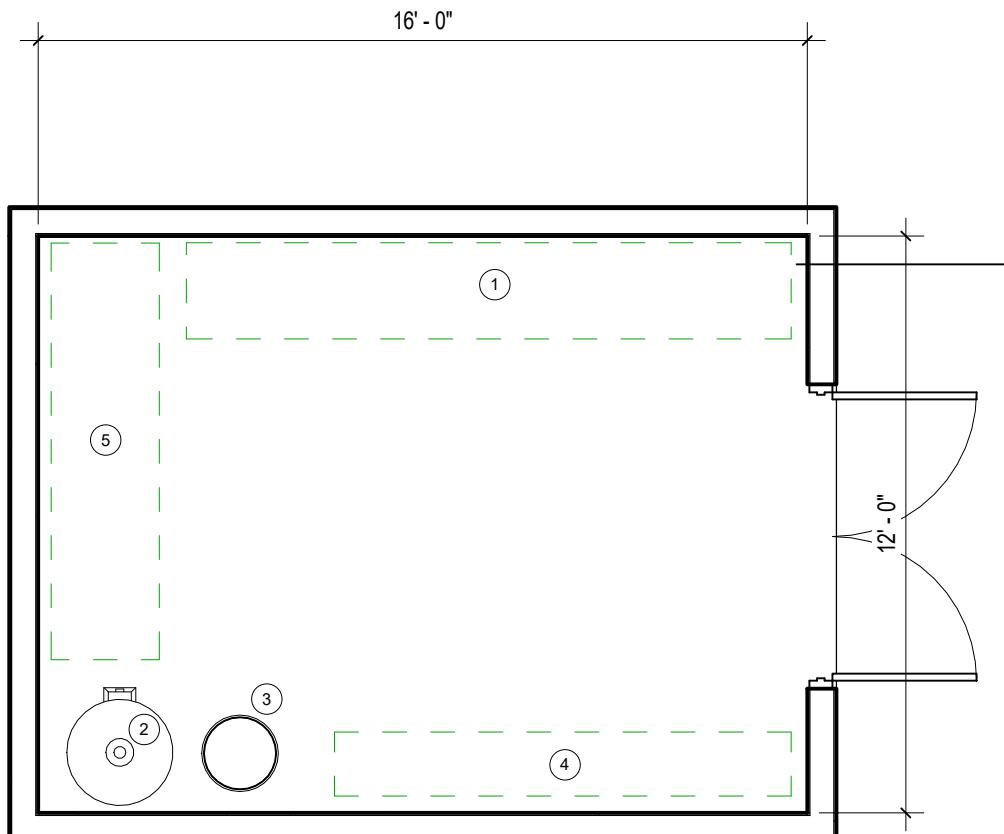
**WALLS:** GWB PAINTED

**CEILING:** GWB PAINTED

**MEP/DATA REQUIREMENTS**

DUPLEX ELECTRICAL OUTLETS

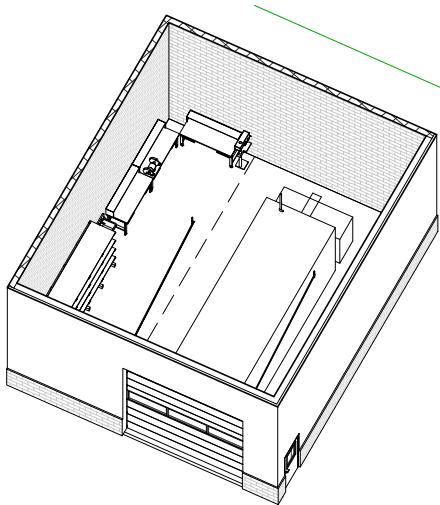
DATA OUTLET JACKS

**COMPONENTS:**

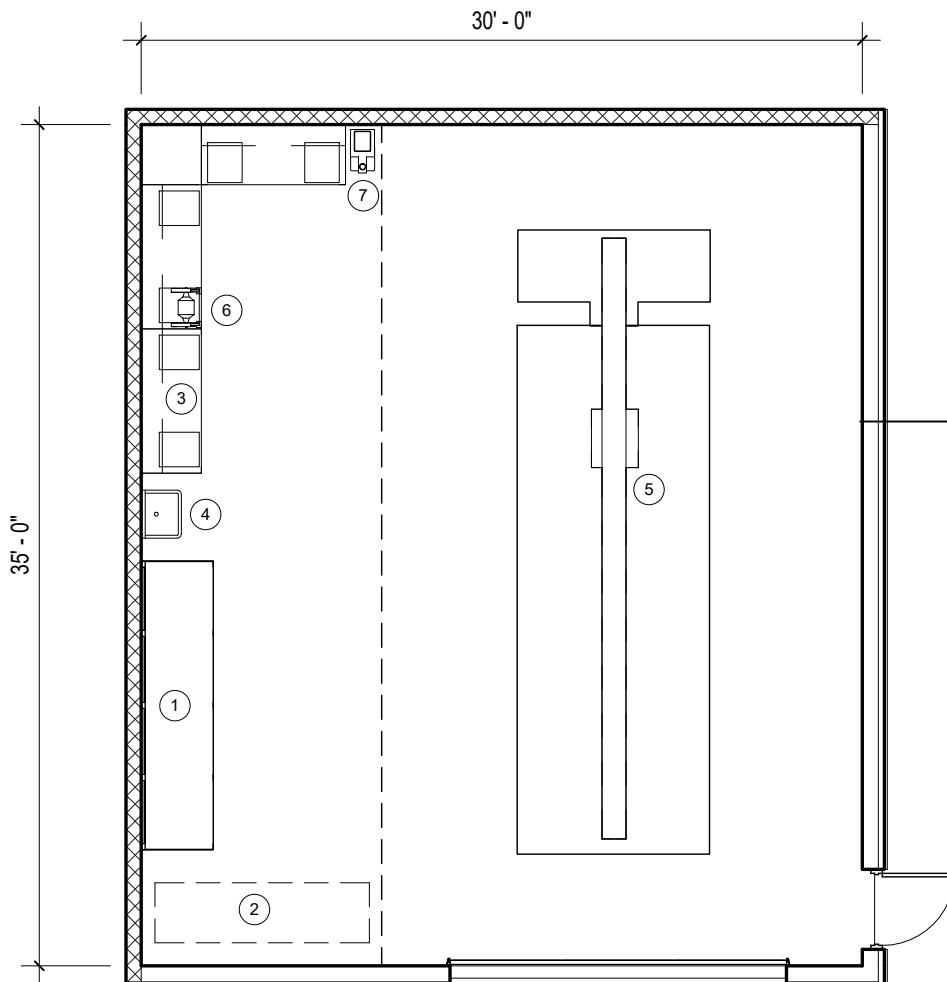
- ① DOMESTIC SERVICE METER & REDUCED PRESSURE BACKFLOW PREVENTER
- ② WATER HEATER
- ③ EXPANSION TANK
- ④ TEMPERED WATER CONTROL PANEL & MIXING VALVES
- ⑤ FIRE PROTECTION SERVICE (DRY & WET) CHECK VALVE ASSEMBLY

**B1.09 - PLUMBING / FIRE PROTECTION -**

1 192SF  
1/4" = 1'-0"



2 C1.01 - SHARED GENERAL SHOP



1 C1.01 - SHARED GENERAL SHOP -  
1050SF  
1/8" = 1'-0"

ROOM FINISHES

FLOORS: SEALED CONCRETE

WALLS: CONCRETE BLOCK PAINTED

CEILING: OPEN TO STRUCTURE

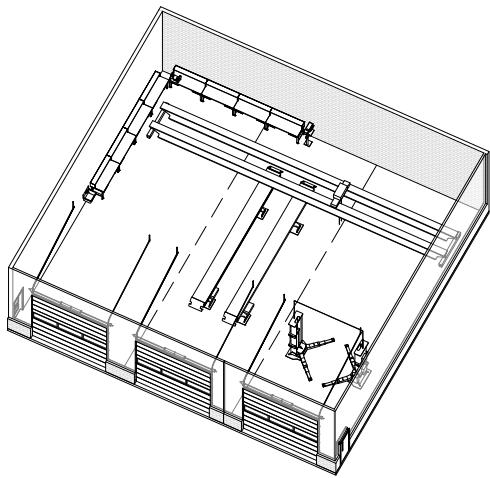
MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

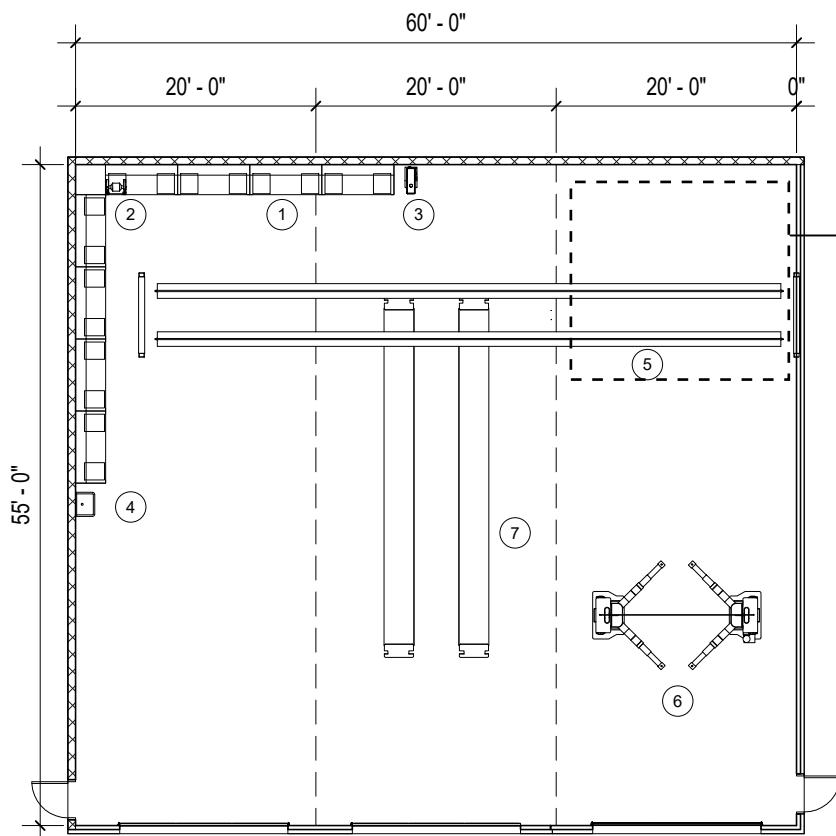
DATA OUTLET JACKS

COMPONENTS:

- 1 STORAGE RACK FOR SIGN POSTS
- 2 WALL SPACE SIGN STORAGE
- 3 WORKBENCH (4)
- 4 SHOP SINK
- 5 MONORAIL
- 6 BENCH GRINDER
- 7 DRILL PRESS



② D1.01 - VEHICLE MAINTENACE



① D1.01 - MAINTENANCE BAYS - 3300SF  
1/16" = 1'-0"

ROOM FINISHES

FLOORS: SEALED CONCRETE

WALLS: CONCRETE BLOCK PAINTED

CEILING: OPEN TO STRUCTURE

MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

DESTRATIFICATION FANS

COMPRESSED AIR OUTLETS

LED LIGHTING

DROP HOSES FOR EXHAUST

SOLENOID VALVE FOR COMPRESSED AIR TO FLUID ROOM

COMPONENTS:

- ① WORKBENCH (8)
- ② GRINDER
- ③ DRILL PRESS
- ④ SERVICE SINK
- ⑤ INDUSTRIAL BRIDGE CRANE
- ⑥ TWO POST LIGHT DUTY LIFT (3)
- ⑦ FLUSH MOUNTED SCISSOR LIFT

**ROOM FINISHES**

**FLOORS:** 12X12 VCT TILE

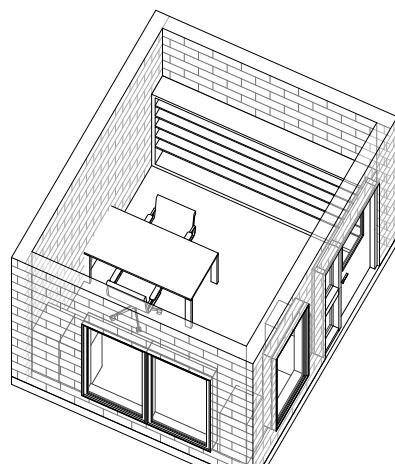
**WALLS:** CMU PAINTED

**CEILING:** 2X2 ACT TILE

**MEP/DATA REQUIREMENTS**

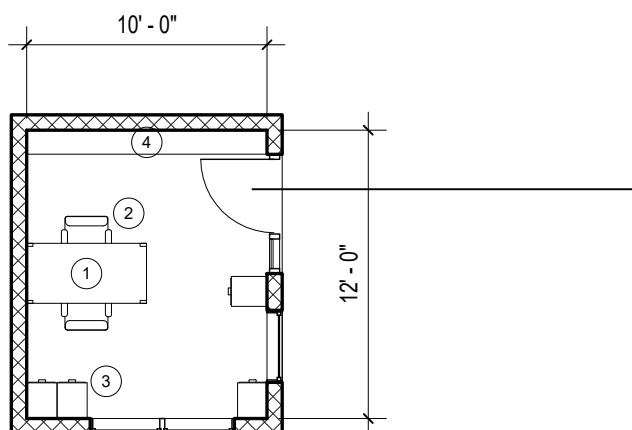
DUPLEX ELECTRICAL OUTLETS

DATA OUTLET JACKS



D1.02 - MECHANICS OFFICE /  
REFERENCE ROOM

2

**COMPONENTS:**

- ① DESK
- ② TASK CHAIR
- ③ LATERAL FILE CABINETS
- ④ BOOKCASE

D1.02 - MECHANICS OFFICE /  
REFERENCE ROOM - 120SF

1

1/8" = 1'-0"

**ROOM FINISHES****FLOORS:** CERAMIC TILES**WALLS:** CERAMIC TILE TO 6'-0" /  
GWB PAINTED**CEILING:** 2X2 ACT TILE**MEP/DATA REQUIREMENTS**

FLOOR DRAINS

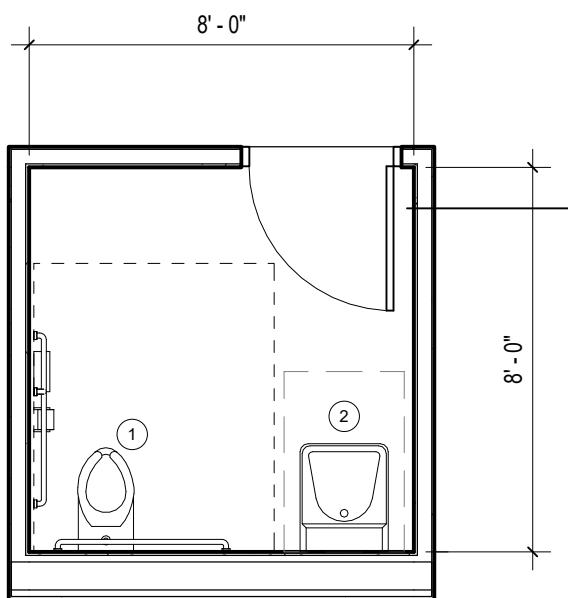
TRAP PRIMERS

LOW FLOW FIXTURES

**COMPONENTS:**

(1) ADA TOILET

(2) ADA SINK



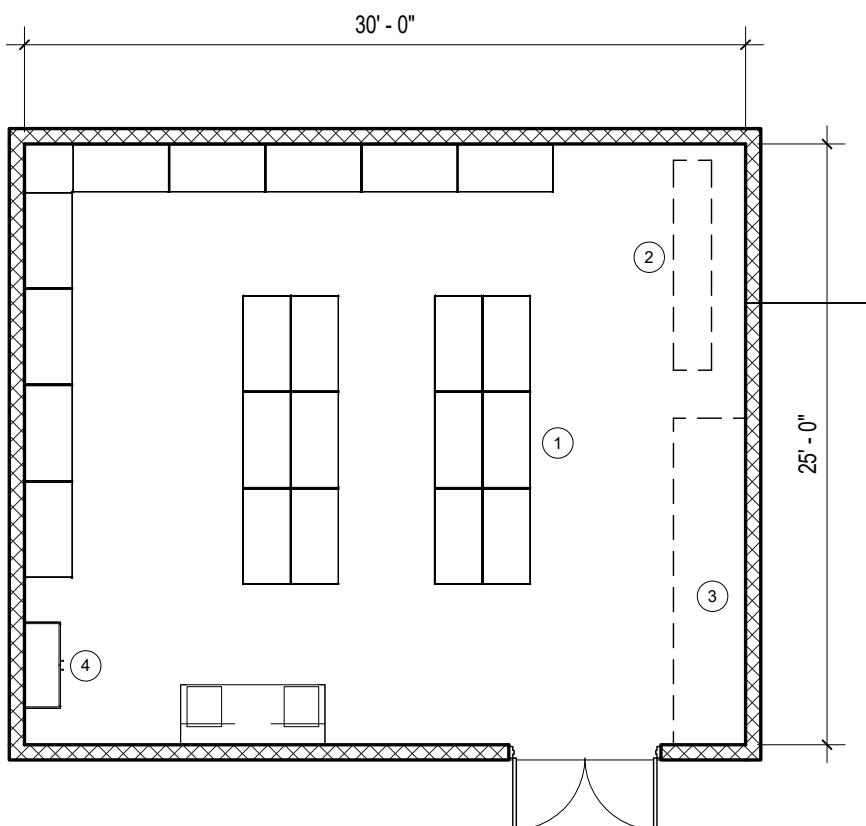
1 D1.03 - UNI-SEX TOILET - 64SF  
1/4" = 1'-0"

**ROOM FINISHES**

**FLOORS:** SEALED CONCRETE

**WALLS:** CONCRETE BLOCK PAINTED

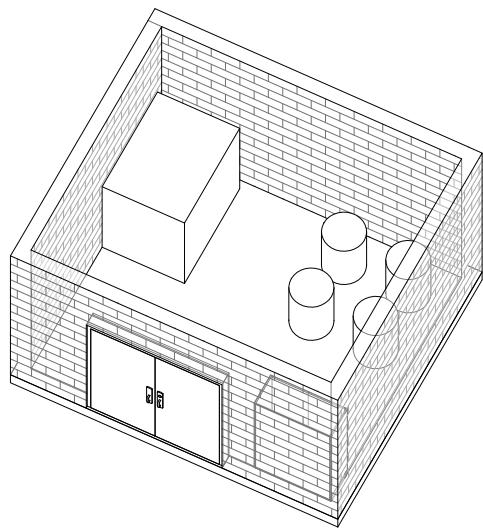
**CEILING:** OPEN TO STRUCTURE

**MEP/DATA REQUIREMENTS**

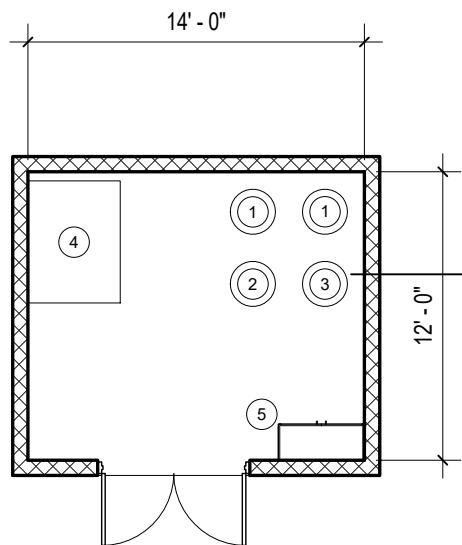
① D1.04 - PARTS ROOM - 750SF  
1/8" = 1'-0"

**COMPONENTS:**

- ① (48" W X 24" D X 84" H)  
HEAVY DUTY SHELVING (26)
- ② SMALL PARTS BINS
- ③ WALL STORAGE
- ④ FLAMMABLE CABINETS



2 D1.05 - FLUID STORAGE ROOM



1 D1.05 - FLUIDS ROOM - 168SF  
1/8" = 1'-0"

ROOM FINISHES

FLOORS: SEALED CONCRETE

WALLS: CONCRETE BLOCK PAINTED

CEILING: GWB PAINTED

MEP/DATA REQUIREMENTS

CA DROPS FOR PNEUMATIC PUMPS

COMPONENTS:

- 1 15w-40 Motor Oil - 55 Gal Drum
- 2 Transmission Fluid - 55 Gal Drum
- 3 Hydraulic Fluid - 55 Gal Drum
- 4 Waste Oil Tank
- 5 Flammable Storage Cabinet

**ROOM FINISHES**

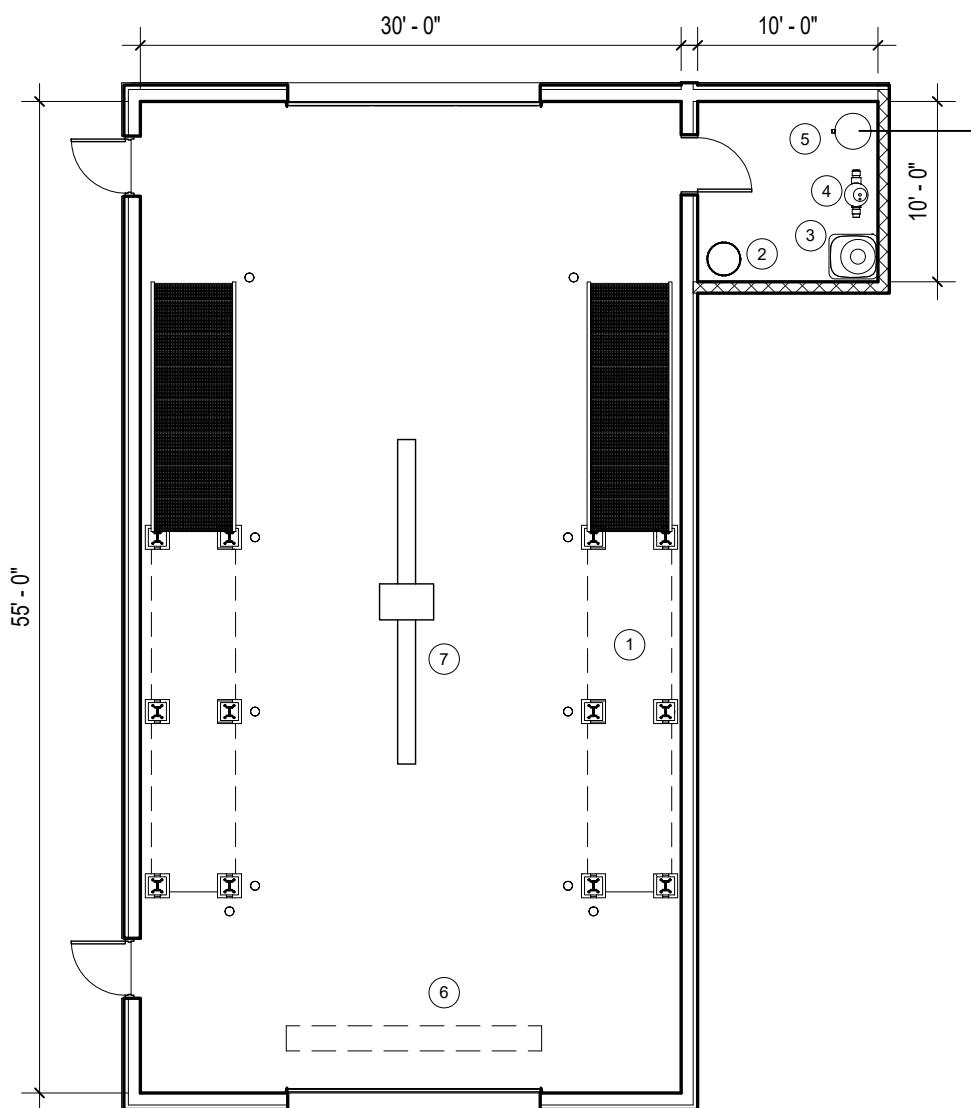
**FLOORS:** EPOXY RESINOUS FLOORING

**WALLS:** PVC PANELS

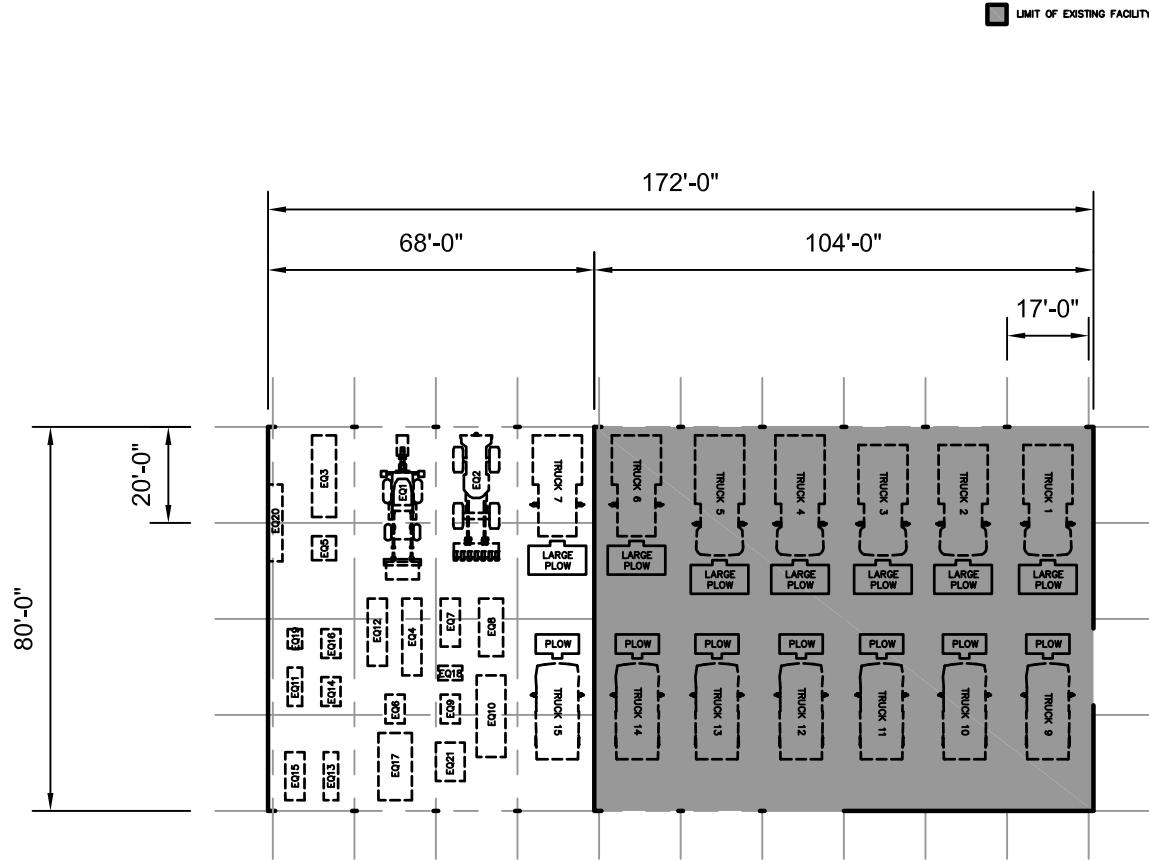
**CEILING:** PVC PANELS

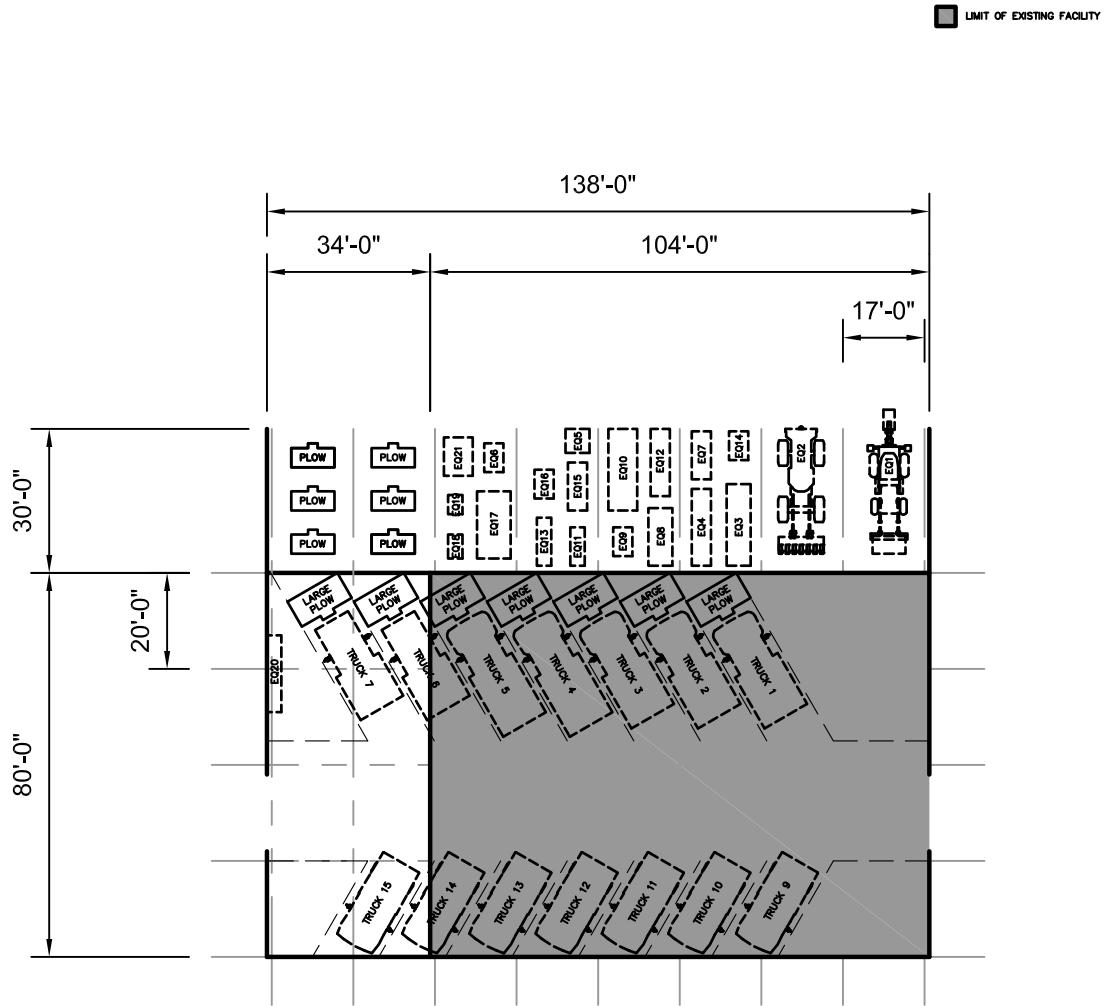
**MEP/DATA REQUIREMENTS**

2" WATER SUPPLY (1-1/2" MIN)



① **E1.01 - WASH BAY - 1750SF**  
3/32" = 1'-0"





ALTERNATIVE VEHICLE STORAGE = 11,040sf

CANOPY = 4,140sf

## **Appendix C**

### **Sensitive Receptors and Site Information**



# MuniMapper: Upton, MA

[Town of Upton Web Site](#)  
[Disclaimer](#)



Search for a location





NO PARCEL 1,7,13,1,20,35,35,1,63,90

THIS MAP IS FOR ASSESSMENT PURPOSES. IT IS NOT VALID FOR LEGAL DESCRIPTION OR CONVEYANCE.

THE HORIZONTAL DATUM IS THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, NAD 83.

ORIGINAL PROPERTY MAPS WERE PREPARED BY STURBRIDGE ABSTRACT COMPANY, JALBERT ENGINEERING, STURBRIDGE, MASSACHUSETTS

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**CAI Technologies**  
Precision Mapping. Geospatial Solutions.  
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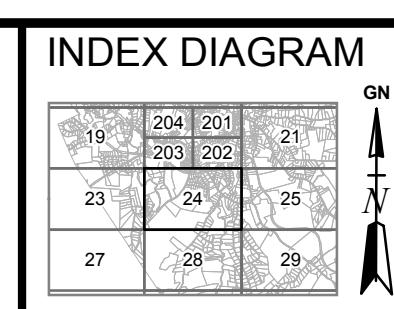
AREA SURVEYED ..... a  
AREA CALCULATED ..... a Cal  
RECORD DIMENSION ..... 100'  
SCALED DIMENSION ..... 100'S  
WATER ..... -W-

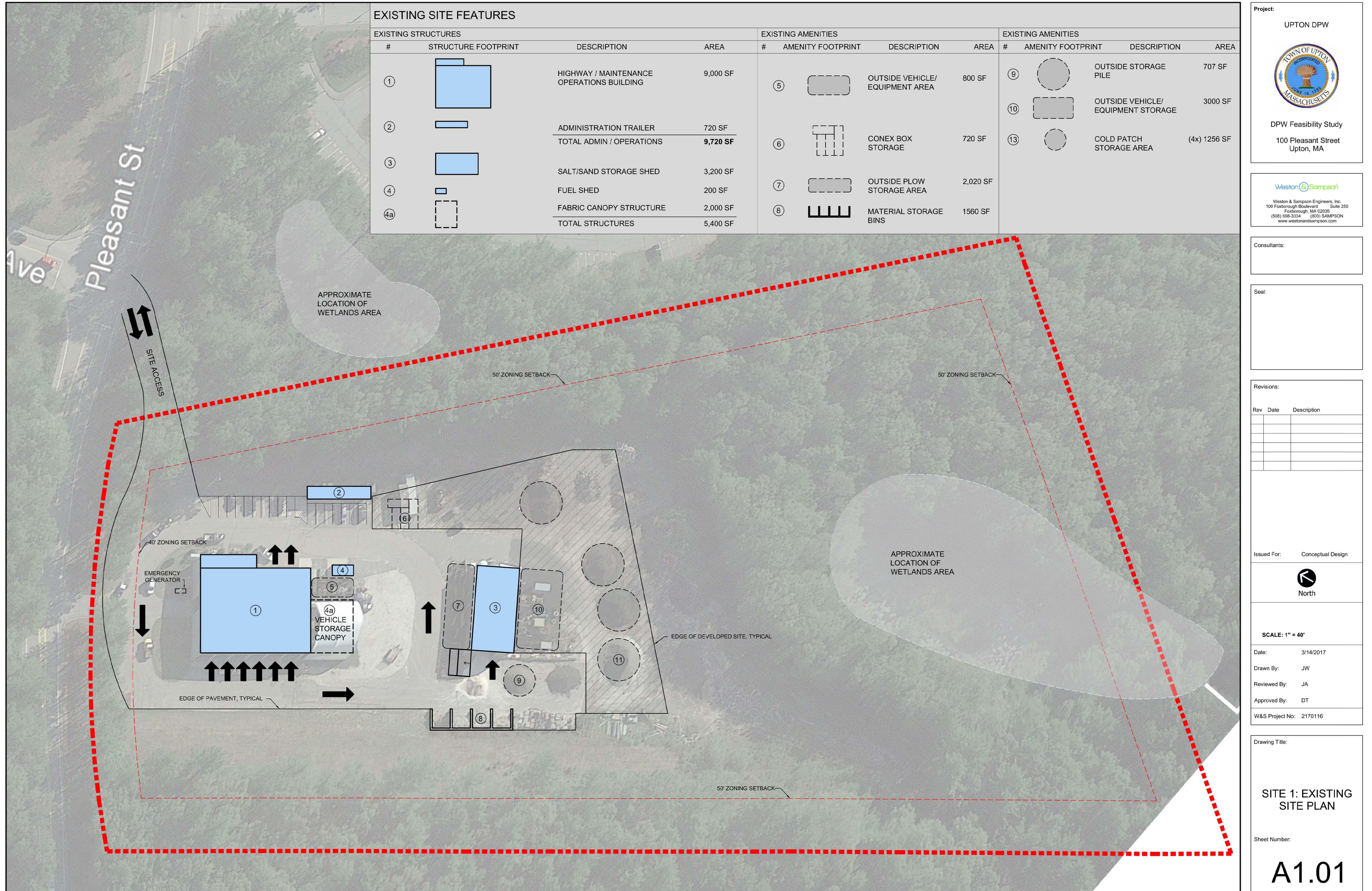
LEGEND

STREET NUMBER ..... (22)  
EXEMPT PROPERTY ..... (E)  
SUBDIVISION LOT NO. ..... (2)  
RIGHT OF WAY/ACCESS ..... RWY  
COMMON OWNERSHIP ..... CO  
WETLANDS ..... W

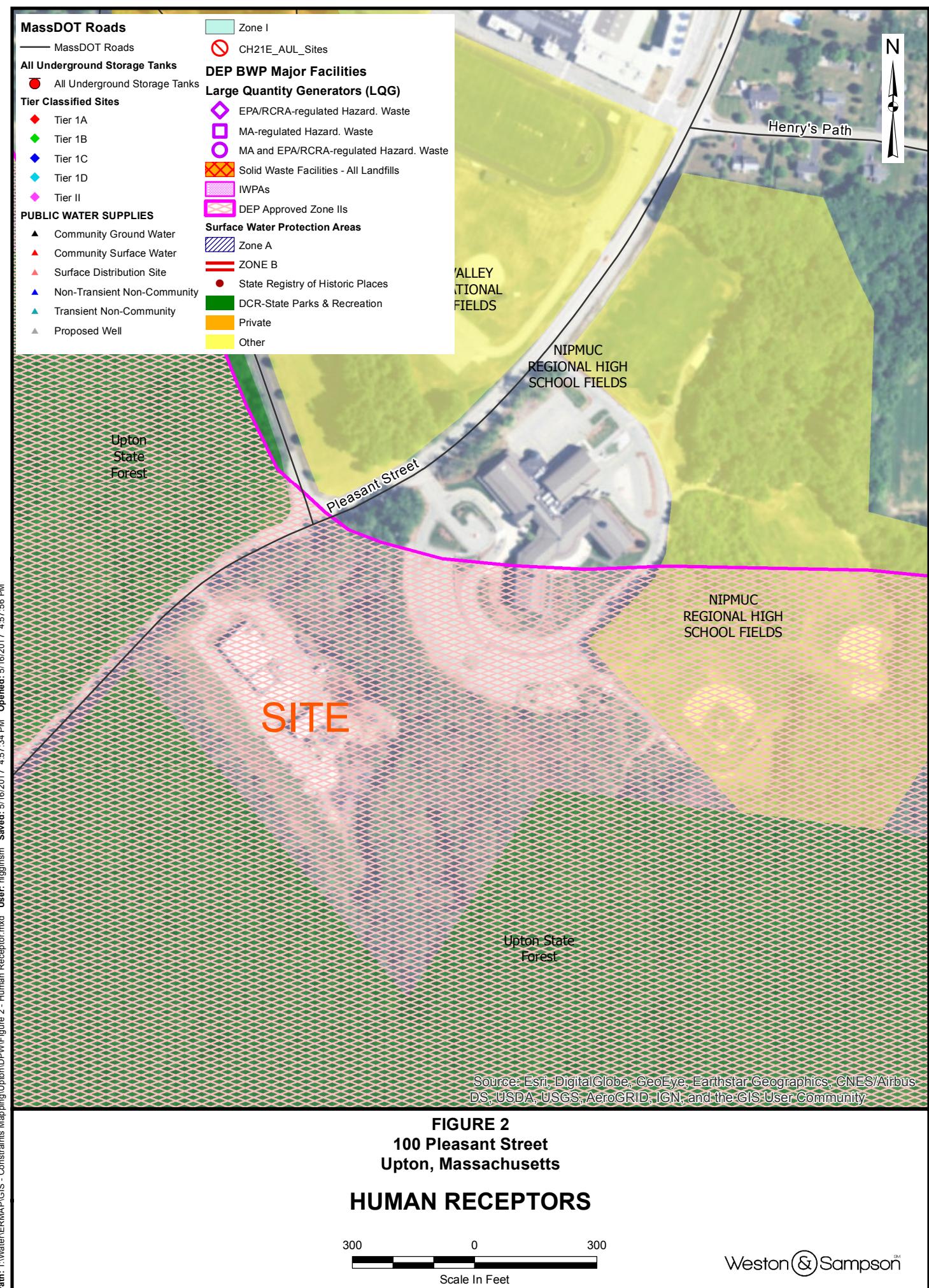
FEET  
200 100 0 200 400 600  
50 25 0 50 100 150  
METERS  
200 100 0 200 400 600  
50 25 0 50 100 150  
SCALE: 1" = 200'  
REVISED TO: JANUARY 1, 2015

PROPERTY MAPS  
**UPTON**  
MASSACHUSETTS









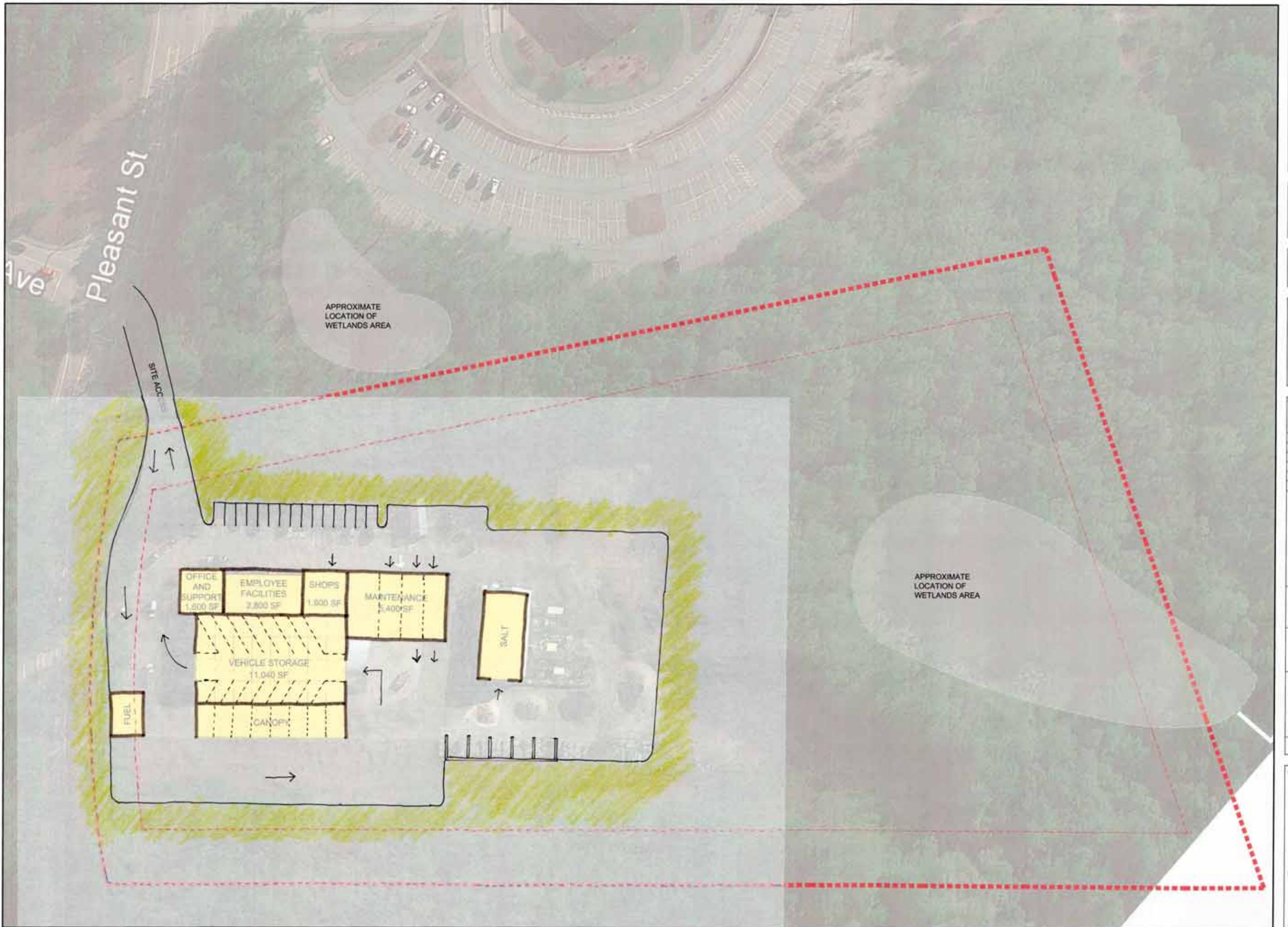
## **Appendix D**

### **Conceptual Alternative Plans**

**Appendix D**

**Conceptual Alternative Plans**

**Initial Alternatives**



Project:  
**UPTON DPW**



DPW Feasibility Study  
100 Pleasant Street  
Upton, MA



**Consultants:**

549

Winnipeg

Issued For: Conceptual Design

卷之六十一

Date: 30/06/2017

### Diagram B

Rowman

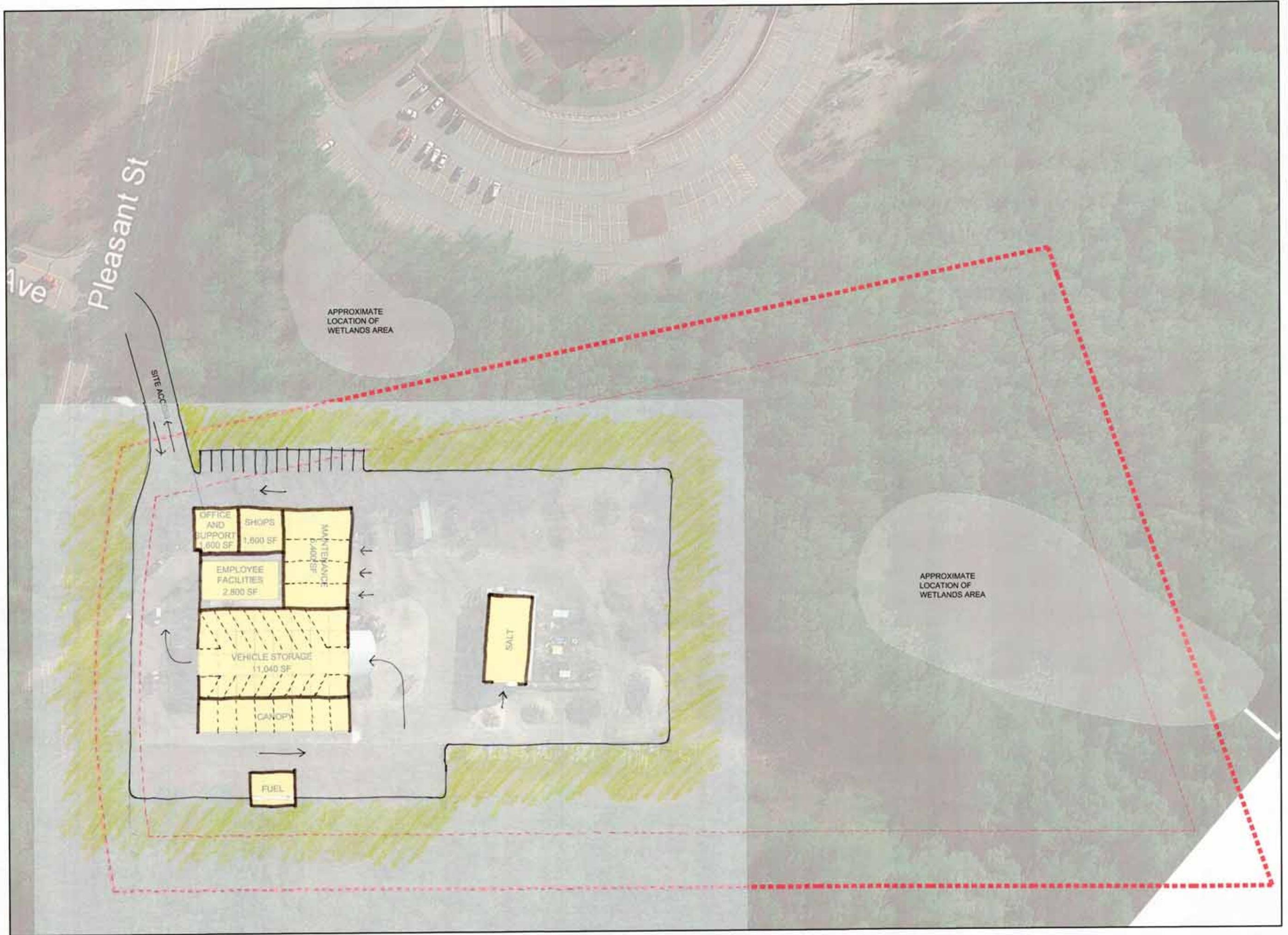
Approved by: [Signature]

**Chaining Title**

**SITE 1: EXISTING SITE PLAN**

### Recent Methods

A1.01



Project:  
UPTON DPW



DPW Feasibility Study  
100 Pleasant Street  
Upton, MA

Weston & Simpson  
Weston & Simpson Engineers, Inc.  
100 Flanders Boulevard, Suite 200  
Flandersburg, MA 02338  
(800) 868-3334  
(800) 868-3334  
[www.westonsimpson.com](http://www.westonsimpson.com)

Consultants:

Seal:

Revisions:		
Rev	Date	Description

Issued For: Conceptual Design  

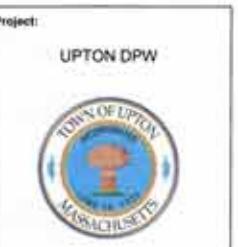
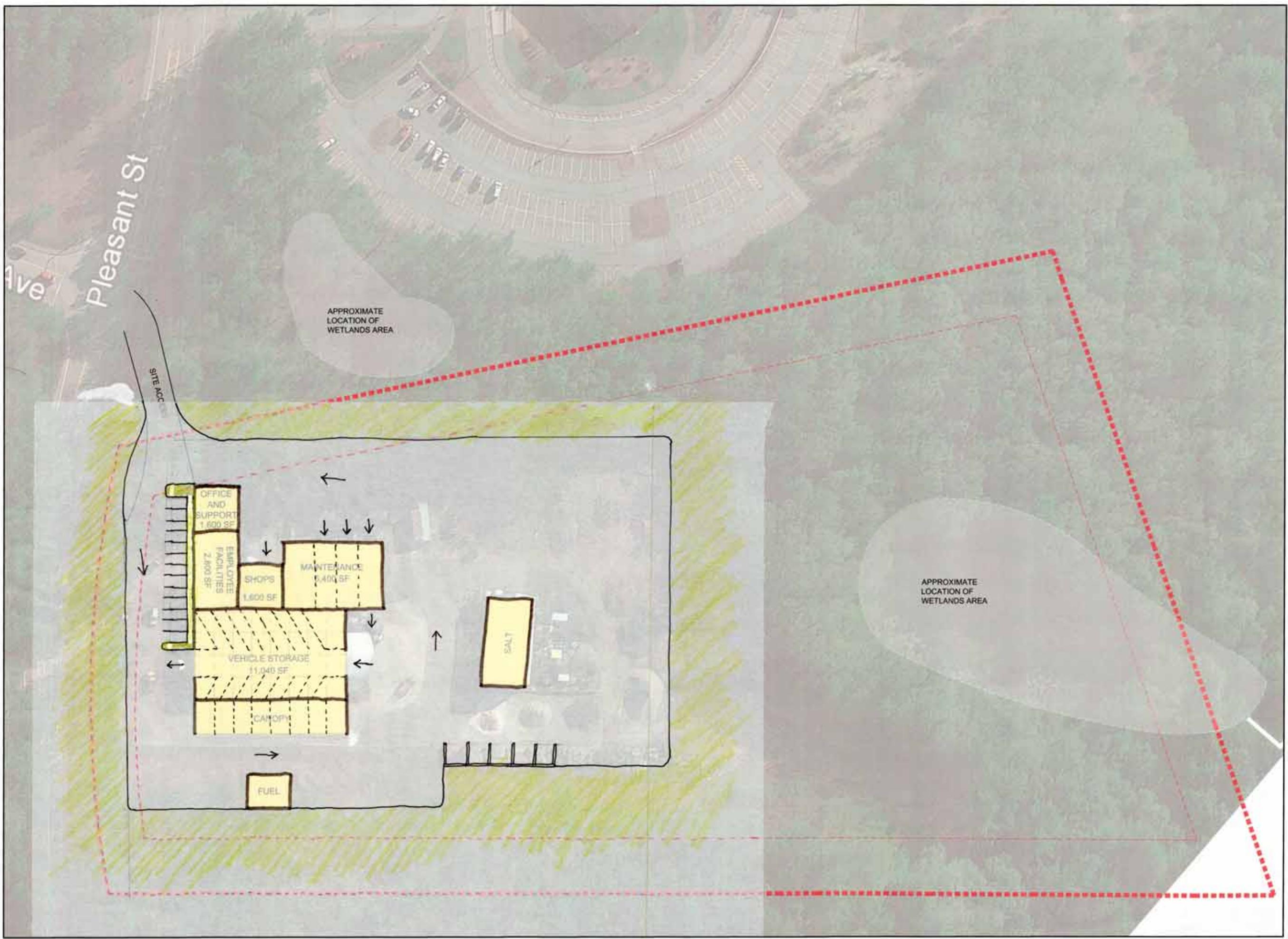

SCALE: 1" = 40'  
Date: 3/14/2017  
Drawn By: JW  
Reviewed By: JA  
Approved By: DT  
W&S Project No.: 2170116

Drawing Title:

**SITE 1: EXISTING SITE PLAN**

Sheet Number:

**A1.01**



Consultants:

Seal:

Revisions:

Rev	Date	Description

Issued For: Conceptual Design



SCALE: 1" = 40'

Date: 3/14/2017  
Drawn By: JW  
Reviewed By: JA  
Approved By: DT  
W&S Project No: 2170116

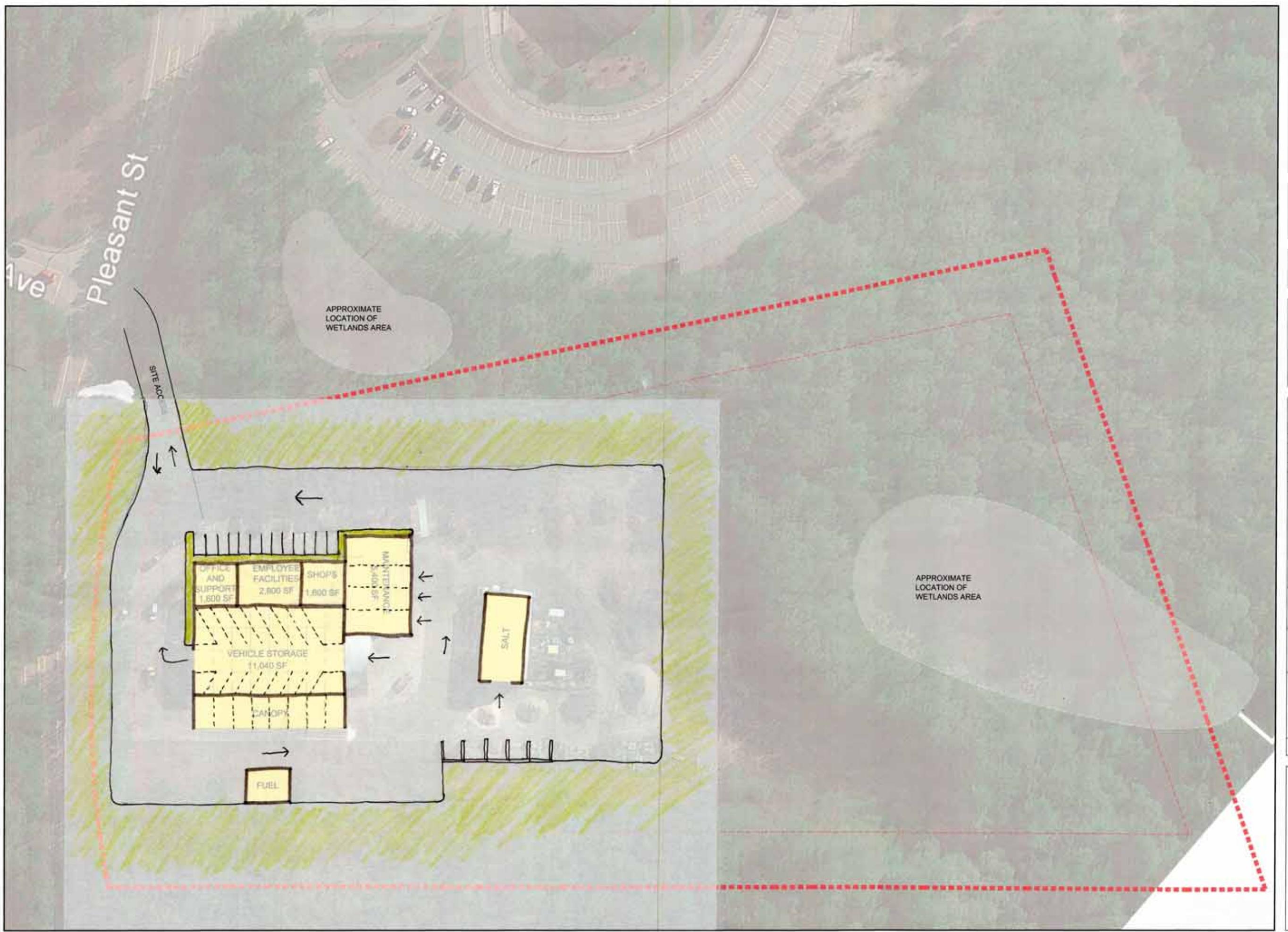
Drawing Title:

**SITE 1: EXISTING SITE PLAN**

Sheet Number:

**A1.01**

Weston & Sampson Engineers, Inc.



Project: UPTON DPW

DPW Feasibility Study  
100 Pleasant Street  
Upton, MA

Weston & Sampson  
Weston & Sampson Engineers, Inc.  
100 Foothills Boulevard, Suite 200  
Foothills, MA 01525  
(508) 658-3234 8000 SAMPSON  
www.westonsampson.com

Consultants:

Seal:

Revisions:

Rev.	Date	Description

Issued For: Conceptual Design

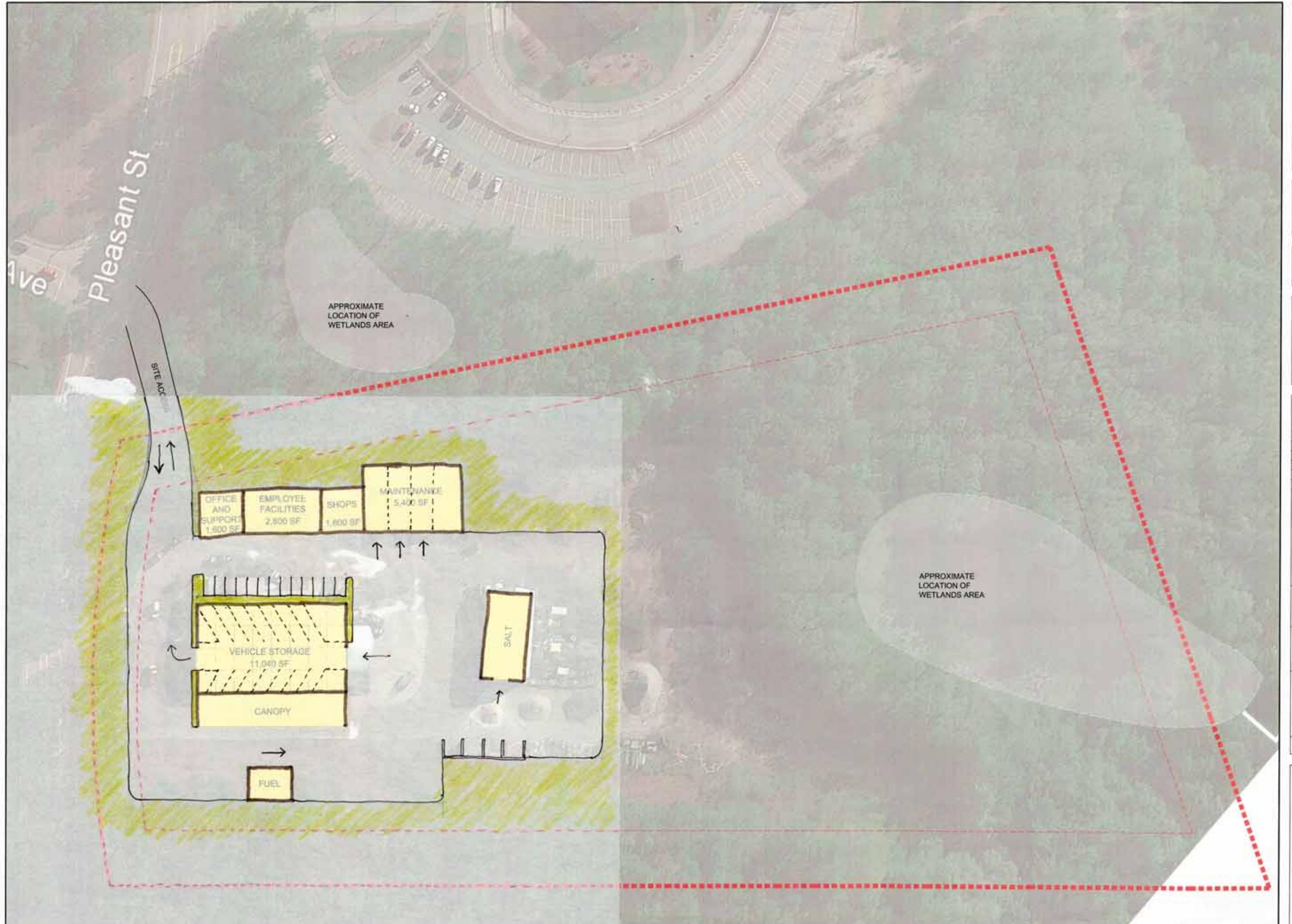
North

SCALE: 1" = 40'

Date: 3/14/2017  
Drawn By: JW  
Reviewed By: JA  
Approved By: DT  
W&S Project No: 2170116

Drawing Title: SITE 1: EXISTING SITE PLAN

Sheet Number: A1.01



Project: UPTON DPW

**TOWN OF UPTON MASSACHUSETTS**

DPW Feasibility Study  
100 Pleasant Street  
Upton, MA

Weston & Sampson  
Weston & Sampson Engineers, Inc.  
100 Flanders Boulevard, Suite 250  
Framingham, MA 01702  
(508) 875-3524 • (800) 343-5446  
www.westonsampson.com

Consultants:

Seal:

Revisions:

Rev	Date	Description

Issued For: Conceptual Design

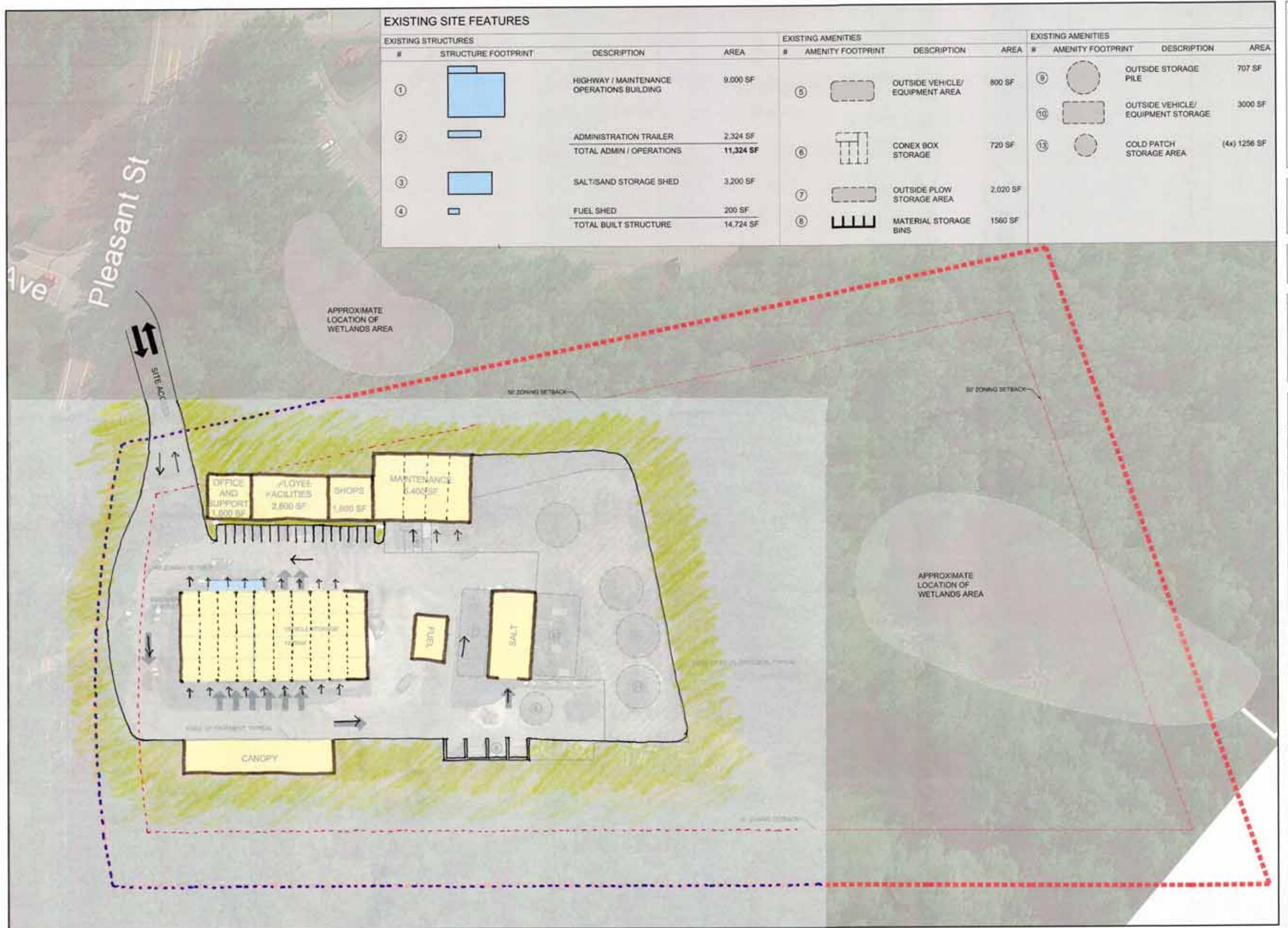
**North**

SCALE: 1" = 40'

Date: 3/14/2017  
Drawn By: JW  
Reviewed By: JA  
Approved By: DT  
W&S Project No: 2170116

Drawing Title:

Sheet Number:



Walter S. Sampson, Inc.  
301 Foxchase Boulevard • Suite 200  
Pittsburgh, PA 15238  
(412) 268-3034 • (800) 544-4520  
[www.wssinc.com](http://www.wssinc.com)

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200

Issued For: Conceptual Design

A small circular icon containing a stylized 'N' with an arrow pointing upwards and to the right, indicating the direction of North.

### Showing Title

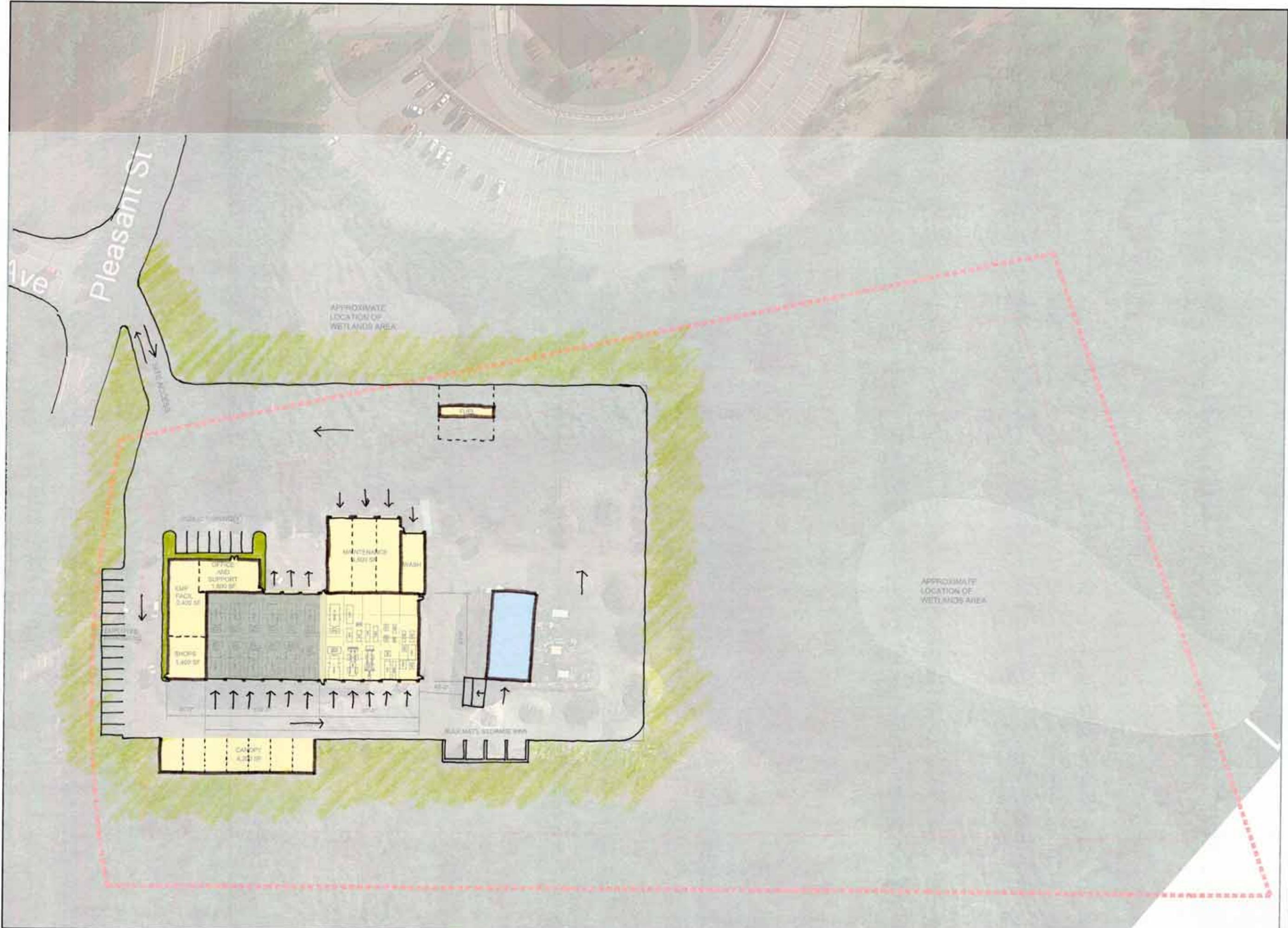
## SITE 1: EXISTING SITE PLAN

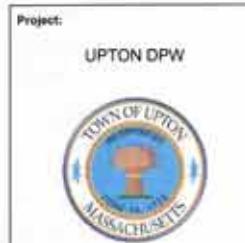
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Project:  
UPTON DPW  
DPW Feasibility Study  
100 Pleasant Street  
Upton, MA

Weston & Sampson  
100 Faxonborough Boulevard, Suite 200  
Faxonborough, MA 02335  
(508) 898-3034 (800) SAMPSON  
www.westonsampson.com

Consultants:

Seal:

Revisions:

Rev	Date	Description

Issued For: Conceptual Design



SCALE: 1" = 40'

Date: 3/14/2017

Drawn By: JW

Reviewed By: JA

Approved By: DT

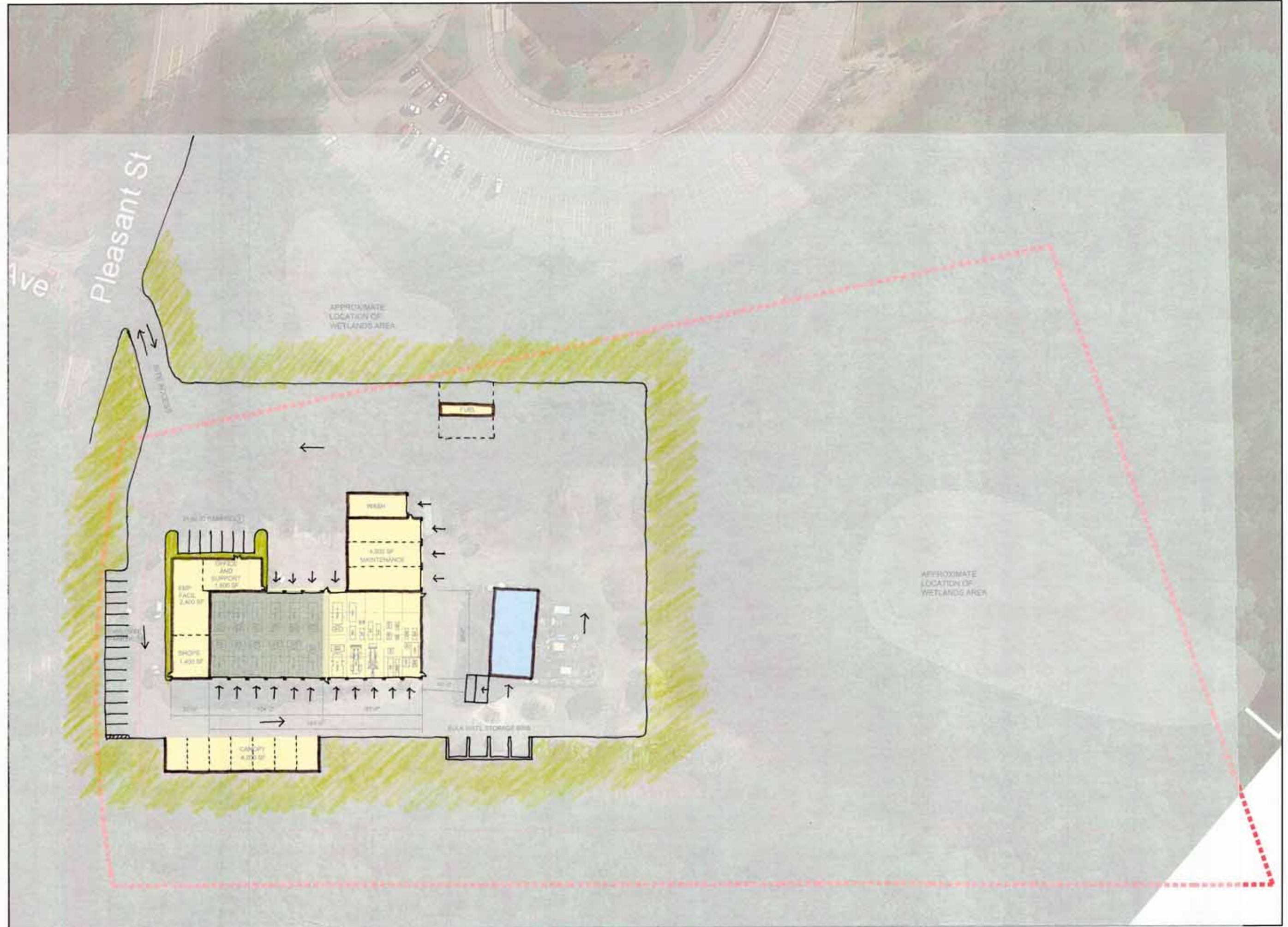
W&S Project No: 2170116

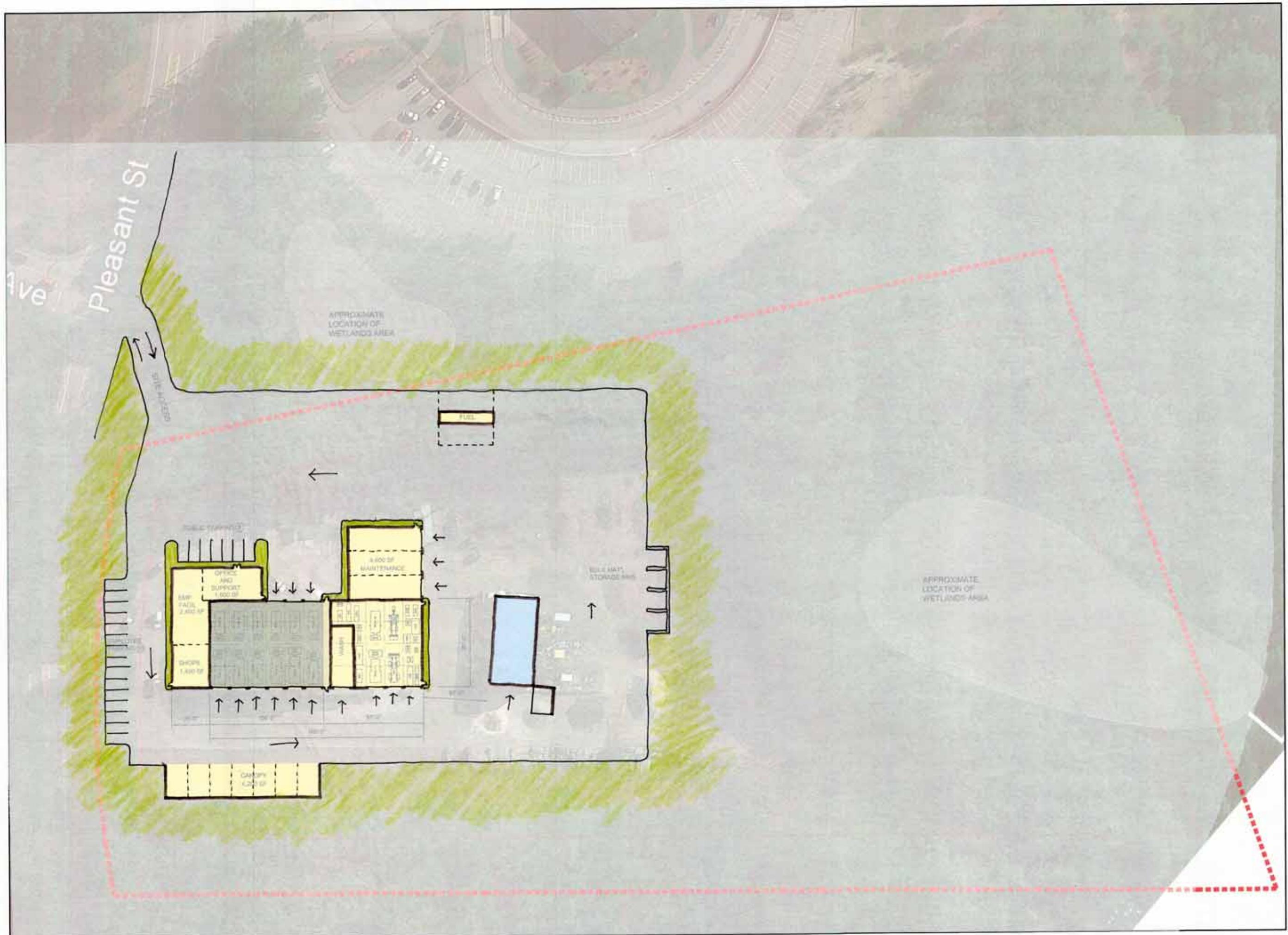
Drawing Title:

PROPOSED SITE PLAN

Sheet Number:

A1.02





Weston & Sampson  
100 Fessenden Boulevard, Suite 250  
Foxborough, MA 02035  
(508) 624-3034 (800) 542-5759  
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ed For: Conceptual Design

SCALE: 1" = 40'

### View Title

## PROPOSED SITE PLAN

Set Number:

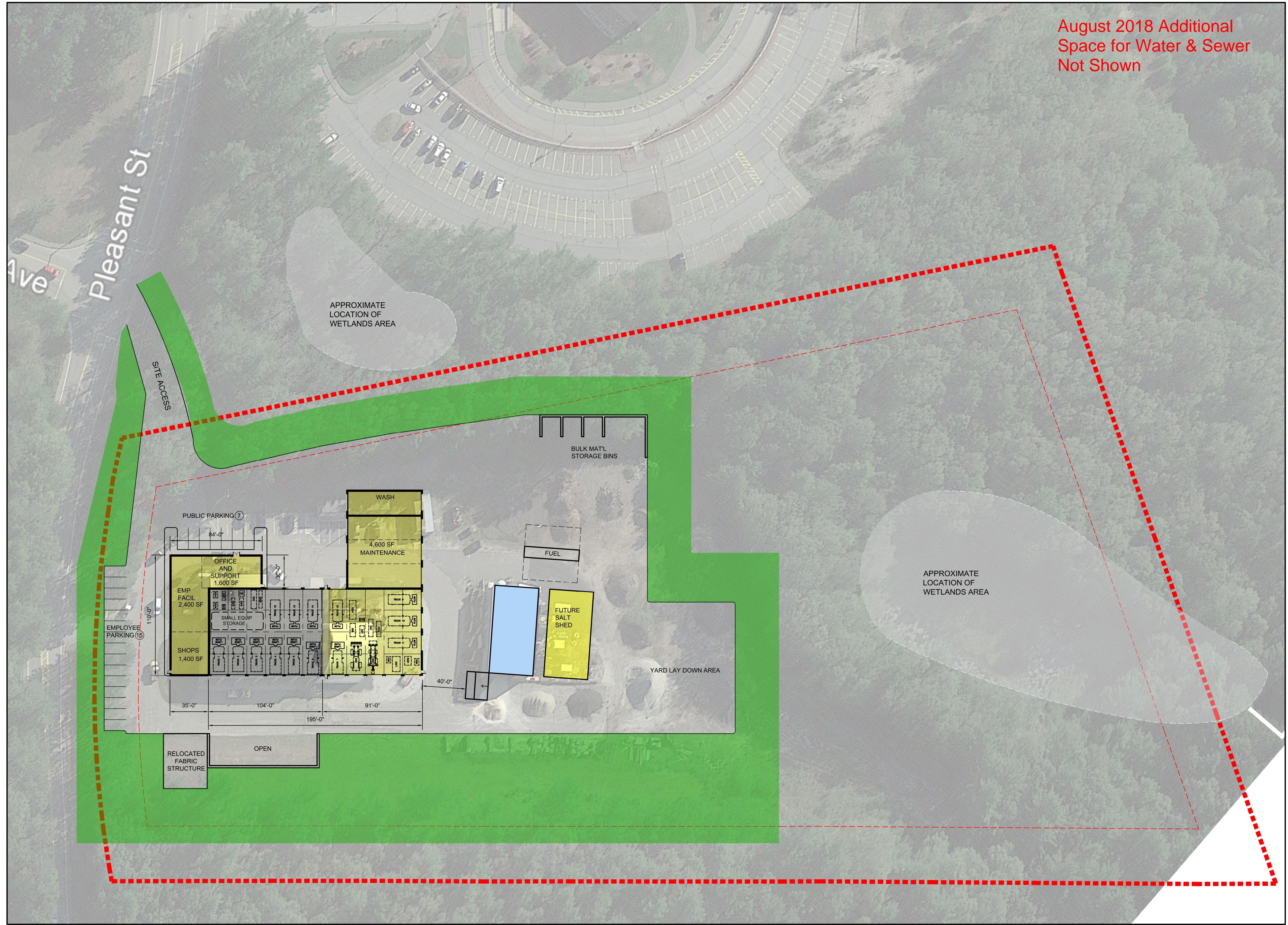
A1.03



Appendix D

Conceptual Alternative Plans

Preferred Alternative



Project: UPTON DPW



DPW Feasibility Study  
100 Pleasant Street  
Upton, MA

Weston & Sampson  
100 Follenough Boulevard, Suite 250  
Follenough, MA 01036  
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Consultants:

Seal:

Revisions:

Rev	Date	Description

Issued For: Conceptual Design



North

SCALE: 1" = 40'

Date: 08/25/2017

Drawn By: MMS

Reviewed By: JA

Approved By: DT

W&S Project No: 2170116

Drawing Title: PROPOSED SITE PLAN PREFERRED

Sheet Number: A1.05

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## **Appendix E**

### **Cost Summary**

Town of Upton  
New Public Works Facility  
Budget Total Project Cost

8/25/2017

		2017 Cost/SF (w/ markups)	Cost
<u>New Construction</u>	Area	Size (SF)	
Administration / Employee Facilities		4,022	\$ 1,287,601
Shops		1,271	\$ 285,928
Vehicle Maintenance (not including equipment)		4,903	\$ 1,102,993
Wash		1,838	\$ 781,905
Vehicle/Equipment Storage		5,440	\$ 964,918
Added Cost for Specialty Foundations (based on 1st floor area)		17,474	\$ 400,714
Decrease for Less Expensive Bldg & Finishes (-5%):			x \$ (221,167)
	<b>New Construction Subtotal:</b>	<b>17,474</b>	<b>\$ 4,602,891</b>
	Building Cost per SF:	\$263	
<u>Renovation</u>			
Garage Renovation (clean/h&v/elec)		8,400	\$ 740,880
	<b>Renovation Subtotal:</b>	<b>8,400</b>	<b>\$ 740,880</b>
	Building Cost per SF:	\$88	
			Place a "x" here if included
Industrial Equipment			
- Wash Equipment		\$ 68,389	x \$ 68,389
- Wash Equipment - Undercarriage Wash		\$ 43,313	x \$ 43,313
- Heavy Duty Vehicle Lift (Fixed)		\$ 99,335	x \$ 99,335
- Light Duty Vehicle Lift (16,000 lb capacity minimum)		\$ 32,673	x \$ 32,673
- Bridge Crane		\$ 59,841	x \$ 59,841
- Overhead Lubrication System		\$ 106,516	x \$ 106,516
- Miscellaneous Shop and Support Equipment		\$ 45,593	x \$ 45,593
- Storage Shelving / Benches / Racks		\$ 36,474	x \$ 36,474
- Exhaust Removal System (2 units)		\$ 35,904	x \$ 35,904
	<b>Industrial Equipment Subtotal:</b>		<b>\$ 528,039</b>
	<b>Building &amp; Equipment Total:</b>		<b>\$ 5,871,810</b>

See August 2018  
Update

Town of Upton New Public Works Facility Budget Total Project Cost			
			8/25/2017
Mezzanines	2,037	\$106	\$ 215,967
Relocate Existing Fabric Structure	2,000	\$40	\$ 80,000
Site Development (acres) - assumes level site with no contamination, existing structures/utilities, etc.	2.5	\$401,310	\$ 1,003,275
Partial Demolition of Existing Structure	700	\$25	\$ 17,500
Salt/Sand Sheds	-	\$105	\$ -
Subtotal Bldg, Equip, & Site:			\$ 7,188,552
Design Contingency (5%):			\$ 359,428
Escalation - 1 Year (4% per year):			\$ 301,919
<b>Total Construction:</b>			<b>\$ 7,849,898</b>
<b>Total Construction Cost/SF:</b>			<b>303</b>
<b>Department of Public Works</b>			
<b>Budget Total Project Cost</b>			
<b>Owner's Soft Costs</b>			
A&E Fees (design, bid, const.)	\$ 784,990	(Assume 10% of Const. Value)	
A&E Special Services	\$ 78,499	(Assume 1% of Const. Value)	
Owner's Project Manager Fees	\$ 274,746	(Avg 3.5% of Const. Value)	
Furnishings (FFE)	\$ 50,000	allowance	
Communic. / Low Voltage System	\$ 50,000	allowance	
Temporary Facilities	\$ 150,000	allowance	
Printing Cost - Advertisement	\$ 5,000	allowance	
Legal Costs	\$ 10,000	allowance	
Commissioning	\$ 20,000	allowance	
Abatement	\$ 35,000	allowance	
Chapter 17 Test & Inspections	\$ 35,000	allowance	
Construction Contingency (6%)	\$ 470,994	allowance	
<b>Total Soft Costs:</b>			<b>\$ 1,964,229</b>
			<b>TOTAL PROJECT COST \$ 9,814,127</b>

See August 2018  
Update

**Town of Upton  
New Public Works Facility  
Budget Total Project Cost**

8/25/2017

**Town Wide Fueling System**

Fuel System - Fuel System Equipment 2 - 10,000 Gallon Tanks + Dispensers etc. (Based on recent bid prices in 2017)	\$ 1,050,000	x	\$ 1,050,000
			Fuel System Subtotal: \$ 1,050,000
			Design Contingency (5%): \$ 52,500
			Escalation - 1 Year (4% per year): \$ 44,100
			A&E Fees (design, bid, const.) (10%): \$ 114,660
			A&E Special Services (1%): \$ 11,466
			Owner's Project Manager Fees (3.5%): \$ 40,131
			Construction Contingency (6%): \$ 68,796
			<b>TOTAL Town Wide Fuel System: \$ 1,381,653</b>

**Town of Upton  
New Public Works Facility  
Budget Total Project Cost**

8/27/2018

		<b>2017 Cost/SF (w/ markups)</b>		
		<b>Size (SF)</b>	<b>Cost</b>	
<b>New Construction</b>				
Administration / Employee Facilities		4,508	\$320	\$ 1,443,189
Shops		2,541	\$225	\$ 571,631
Vehicle Maintenance (not including equipment)		4,903	\$225	\$ 1,102,993
Wash		1,838	\$425	\$ 781,905
Vehicle/Equipment Storage		9,840	\$177	\$ 1,745,366
Added Cost for Specialty Foundations (based on 1st floor area)		23,630	\$16	\$ 378,080
Decrease for Less Expensive Bldg & Finishes (-5%):			x	\$ (282,254)
	<b>New Construction Subtotal:</b>	<b>23,630</b>		<b>\$ 5,740,910</b>
	Building Cost per SF:	\$243		
<b>Renovation</b>				
Garage Renovation (clean/h&v/elec)		8,400	\$ 88	\$ 740,880
	<b>Renovation Subtotal:</b>	<b>8,400</b>		<b>\$ 740,880</b>
	Building Cost per SF:	\$88		
			Place a "x" here if included	
Industrial Equipment				
- Wash Equipment		\$ 68,389	x	\$ 68,389
- Wash Equipment - Undercarriage Wash		\$ 43,313	x	\$ 43,313
- Heavy Duty Vehicle Lift (Fixed)		\$ 99,335	x	\$ 99,335
- Light Duty Vehicle Lift (16,000 lb capacity minimum)		\$ 32,673	x	\$ 32,673
- Bridge Crane		\$ 59,841	x	\$ 59,841
- Overhead Lubrication System		\$ 95,000	x	\$ 95,000
- Miscellaneous Shop and Support Equipment		\$ 45,593	x	\$ 45,593
- Storage Shelving / Benches / Racks		\$ 36,474	x	\$ 36,474
- Exhaust Removal System (2 units)		\$ 35,904	x	\$ 35,904
	<b>Industrial Equipment Subtotal:</b>			<b>\$ 516,522</b>
	<b>Building &amp; Equipment Total:</b>			<b>\$ 6,998,312</b>

**Town of Upton  
New Public Works Facility  
Budget Total Project Cost**

8/27/2018

Mezzanines	2,457	\$106	\$ 260,391
Relocate Existing Fabric Structure	2,000	\$40	\$ 80,000
Site Development (acres) - assumes level site with no contamination, existing structures/utilities, etc.	2.5	\$401,310	\$ 1,003,275
Partial Demolition of Existing Structure	700	\$25	\$ 17,500
Salt/Sand Sheds	-	\$105	\$ -
		Subtotal Bldg, Equip, & Site:	\$ 8,359,478
		Design Contingency (5%):	\$ 417,974
		Escalation to 2018 (4% per year):	\$ 351,098
		Escalation to 2019 (4% per year):	\$ 365,142
		<b>Total Construction:</b>	<b>\$ 9,493,692</b>
		<b>Total Construction Cost/SF:</b>	<b>296</b>
<b>Department of Public Works</b>			
<b>Budget Total Project Cost</b>			
<b>Owner's Soft Costs</b>			
A&E Fees (design, bid, const.)	\$ 949,369	(Assume 10% of Const. Value)	
A&E Special Services	\$ 94,937	(Assume 1% of Const. Value)	
Owner's Project Manager Fees	\$ 332,279	(Avg 3.5% of Const. Value)	
Furnishings (FFE)	\$ 50,000	allowance	
Communic. / Low Voltage System	\$ 100,000	allowance	
Temporary Facilities	\$ 150,000	allowance	
Printing Cost - Advertisement	\$ 5,000	allowance	
Legal Costs	\$ 10,000	allowance	
Commissioning	\$ 20,000	allowance	
Abatement	\$ 35,000	allowance	
Chapter 17 Test & Inspections	\$ 35,000	allowance	
Construction Contingency (6%)	\$ 569,622	allowance	
		<b>Total Soft Costs:</b>	<b>\$ 2,351,207</b>
		<b>TOTAL PROJECT COST</b>	<b>\$ 11,844,899</b>

**Town of Upton  
New Public Works Facility  
Budget Total Project Cost**

8/27/2018

## Town Wide Fueling System

<b>Fuel System</b>			
- Fuel System Equipment 2 - 10,000 Gallon Tanks + Dispensers etc. (Based on recent bid prices in 2017)	\$ 1,050,000	x	\$ 1,050,000
	Fuel System Subtotal:	\$ 1,050,000	
	Design Contingency (5%):	\$ 52,500	
	Escalation to 2018 (4% per year):	\$ 44,100	
	Escalation to 2019 (4% per year):	\$ 45,864	
	A&E Fees (design, bid, const.) (10%):	\$ 119,246	
	A&E Special Services (1%):	\$ 11,925	
	Owner's Project Manager Fees (3.5%):	\$ 41,736	
	Construction Contingency (6%):	\$ 71,548	
	<b>TOTAL Town Wide Fuel System:</b>	<b>\$ 1,436,919</b>	