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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)



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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-

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

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

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.

- 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.

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 services 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.

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:

DPW Staffing Summary

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

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.

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.

- 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.

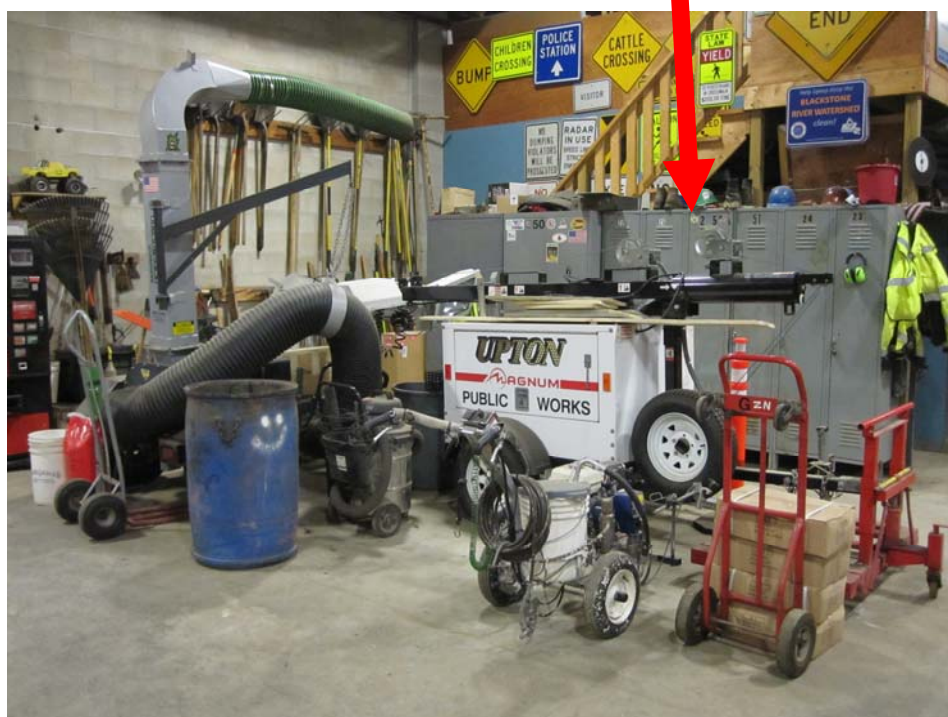
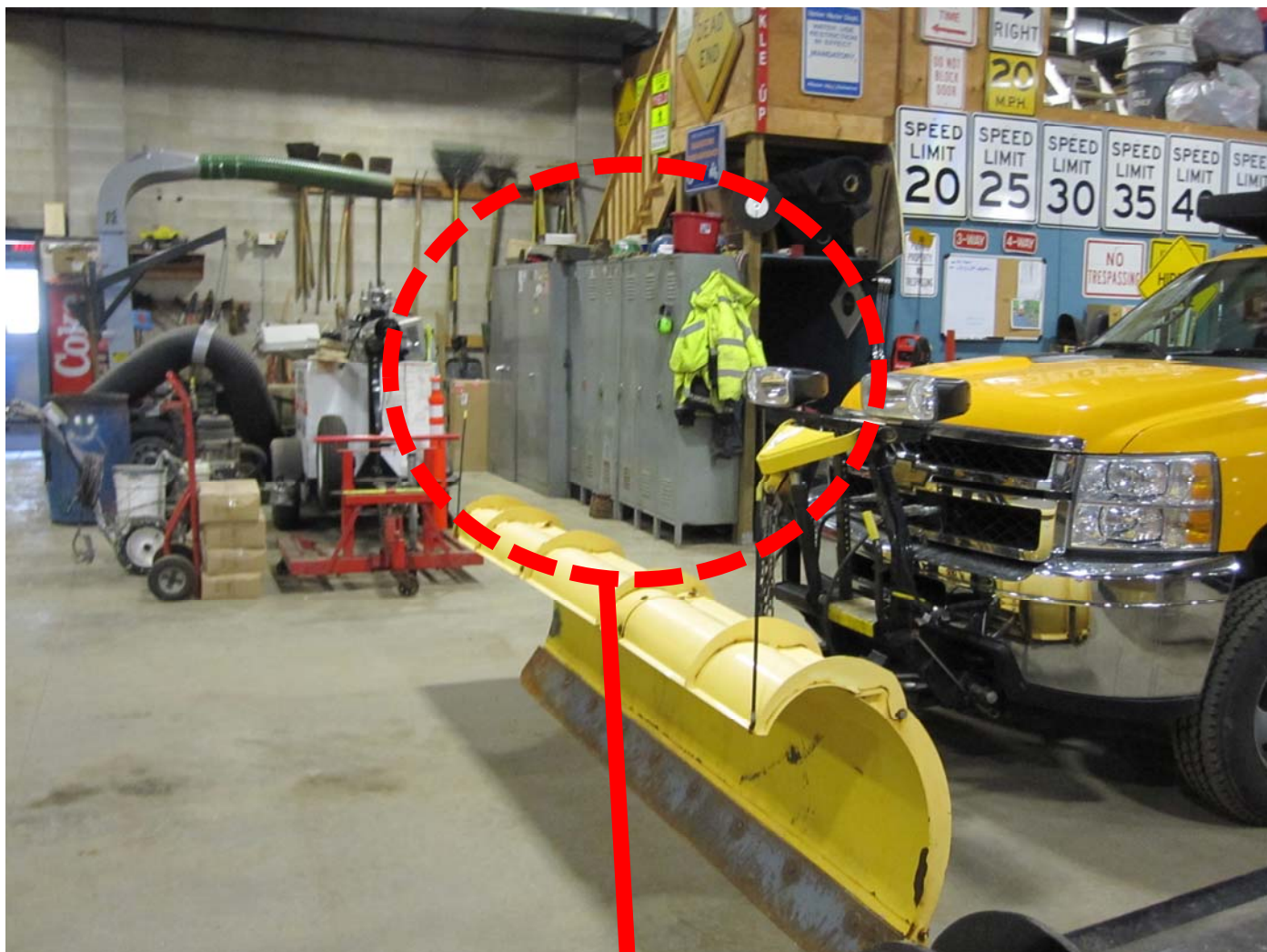
Appendix A
Operational Analysis



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



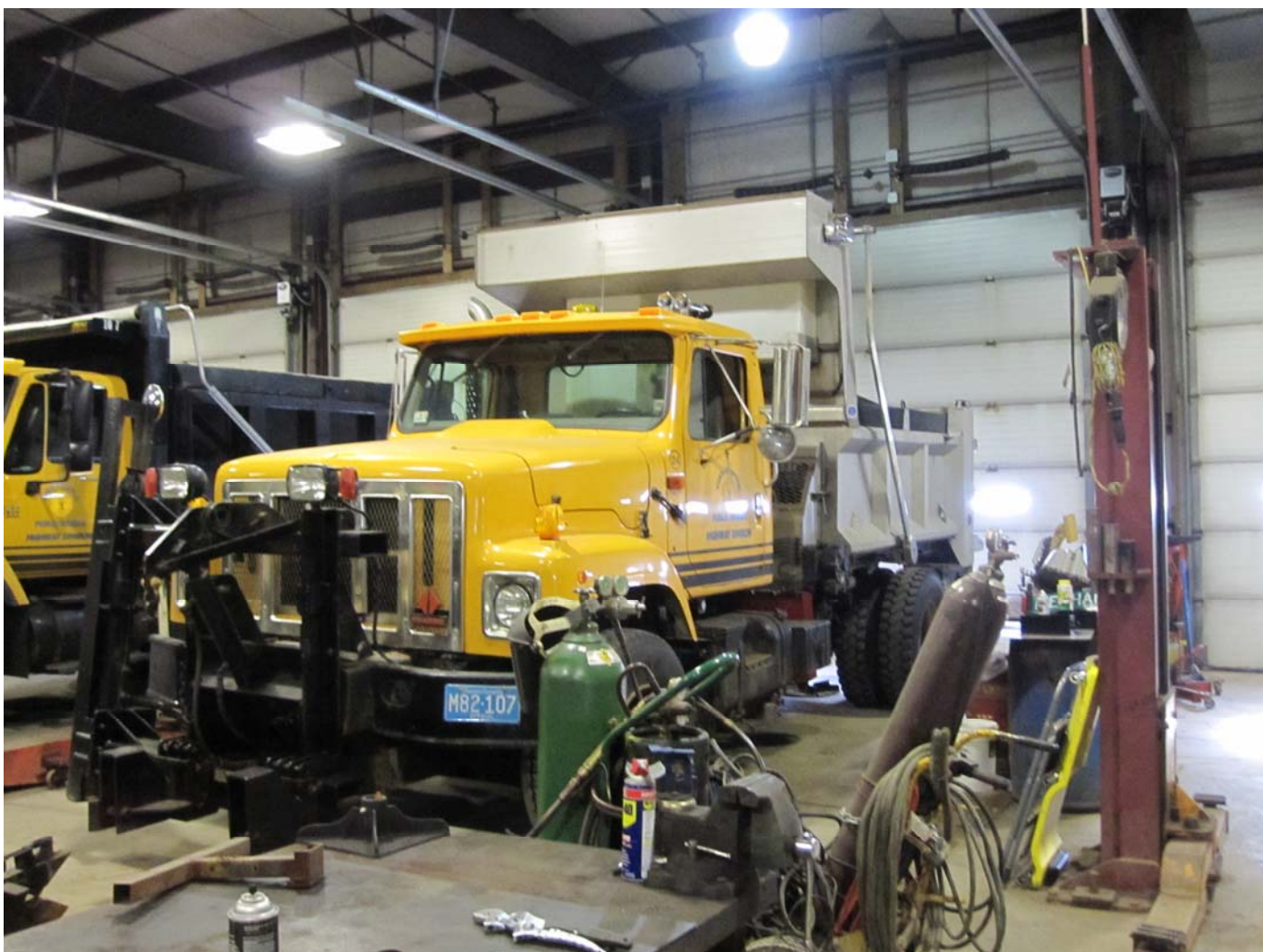
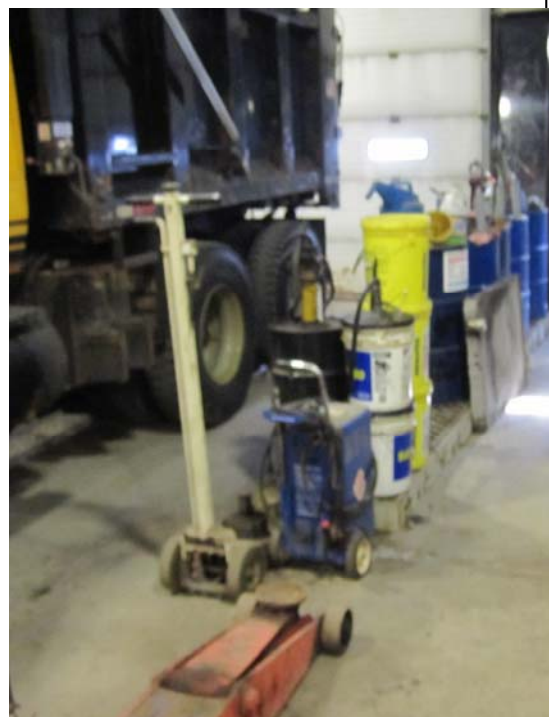
Interior vehicle/equipment storage is inefficient due to the undersized facility – vehicles and equipment are forced to park in stacked/inefficient arrangements



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
Total Department of Public Works:	2	8	1	4	13	15

Schedule:

- APWA week or week of fireworks for Touch a Truck Day (June 24th)
- 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
Update

Upton, Massachusetts
Department of Public Works
Space Needs Summary
8/25/2017

Building Requirements

Area	Description	Sheet No.	Total Size (SF)	Total Revised Size (SF)	Quant	Room length	Area width	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				
	TOTAL:		1,991	1,600				
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				
	TOTAL:		2,595	2,422				
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				
	TOTAL:		1,271	1,271				
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				
	TOTAL:		5,326	4,903				

See August 2018
Update

Upton, Massachusetts
Department of Public Works
Space Needs Summary
8/25/2017

Building Requirements

Area	Description	Sheet No.	Total Size (SF)	Total Revised Size (SF)	Quant	Room / Area Dimensions		
						length	width	size
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				
	TOTAL:		1,838	1,838				
F. Vehicle and Equipment Storage								
	Vehicle / Equipment Storage	F1.01	13,760	13,760	1	80	172	13,760
								-
	Subtotal:		13,760	13,760				
	Area Grossing Factor (5%):		n/a	n/a				
	Circulation:		n/a	n/a				
	TOTAL:		13,760	13,760				
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

Upton, Massachusetts
Department of Public Works
Space Needs Summary
8/27/2018

Building Requirements

Area	Description	Sheet No.	Total Size (SF)	Total Revised Size (SF)	Total w/ W&S (SF)	Quant	Room length	Area width	Dimensions size
A. Administration	Entry / Vestibule / Waiting	A1.01	220	220	220	1			-
	Director's Office	A1.02	224	196	196	1	14	14	196
	Open Office	A1.03	120	120	240	1	10	12	120
	Copy / File / Mail	A1.04	225	225	225	1	15	15	225
	File Storage Area	A1.05	225	(incl. in copy room)	(incl. in copy room)				
	Conference Room	A1.06	288	224	224	1	14	16	224
	Uni-Sex Toilet	A1.07	128	136	136	1	8	17	136
	Supervisor Offices	--	144	144	288	1	12	12	144
	Subtotal:		1,574	1,265	1,529				
	Area Grossing Factor (10%):		157	127	153				
	Circulation (15%):		260	209	252				
	TOTAL:		1,991	1,600	1,934				
B. Employee Facilities									
	Multipurpose Room	B1.01	480	480	480	1	20	24	480
	Male Lockers / Shower / Toilet	B1.02	675	675	675	1	27	25	675
	Female Locker / Shower / Toilet	B1.03	180	180	180	1	18	10	180
	Shared Foremen's Office (Parks/Cemetery)	B1.04	168	168	168	1	12	14	168
	SCADA		-	-	120				
	Laundry Room	B1.05	60	36	36	1	6	6	36
	Janitor Closet	B1.06	36	36	36	1	6	6	36
	Electric Room	B1.07	140	120	120	1	10	12	120
	Tele / Data Room	B1.08	120	100	100	1	10	10	100
	Plumbing / Fire Protection	B1.09	192	120	120	1	10	12	120
	Subtotal:		2,051	1,915	2,035				
	Area Grossing Factor (10%):		205	192	204				
Circulation (15%):		338	316	336					
TOTAL:		2,595	2,422	2,574					
C. Workshops									
	Shared General Shop	C1.01	1,050	1,050	1,050	1	30	35	1,050
	Water & Sewer Shop		-	-	1,050				
	Subtotal:		1,050	1,050	2,100				
	Area Grossing Factor (10%):		105	105	210				
	Circulation (10%):		116	116	231				
TOTAL:		1,271	1,271	2,541					
D. Maintenance									
	Large Maintenance Bay	D1.01	1,100	1,100	1,100	1	20	55	1,100
	Large Maintenance Bay	D1.01	1,100	1,100	1,100	1	20	55	1,100
	Small Maintenance Bay	D1.01	800	800	800	1	20	40	800
	Maintenance Accessory Storage Area	D1.01	300	300	300	1	20	15	300
	Mechanics Office / Reference Room	D1.02	120	120	120	1	10	12	120
	Uni-Sex Toilet	D1.03	64	64	64	1	8	8	64
	Parts Room	D1.04	750	400	400	1	20	20	400
	Fluids Room	D1.05	168	168	168	1	14	12	168
	Subtotal:		4,402	4,052	4,052				
	Area Grossing Factor (10%):		440	405	405				
	Circulation (10%):		484	446	446				
TOTAL:		5,326	4,903	4,903					

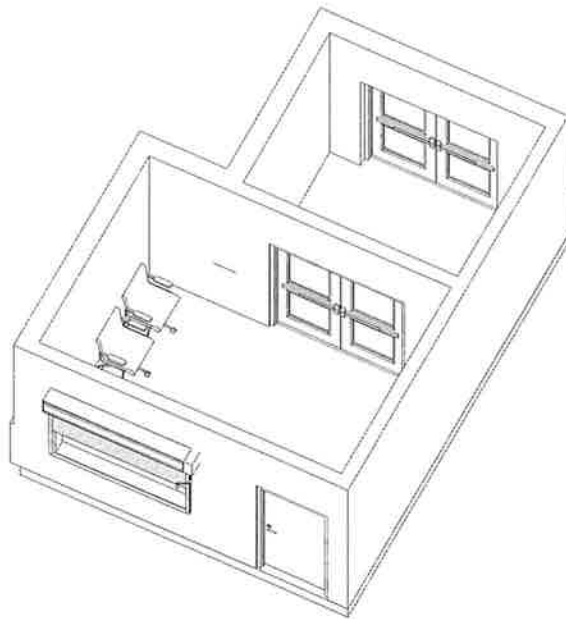
Upton, Massachusetts
Department of Public Works
Space Needs Summary
8/27/2018

Building Requirements

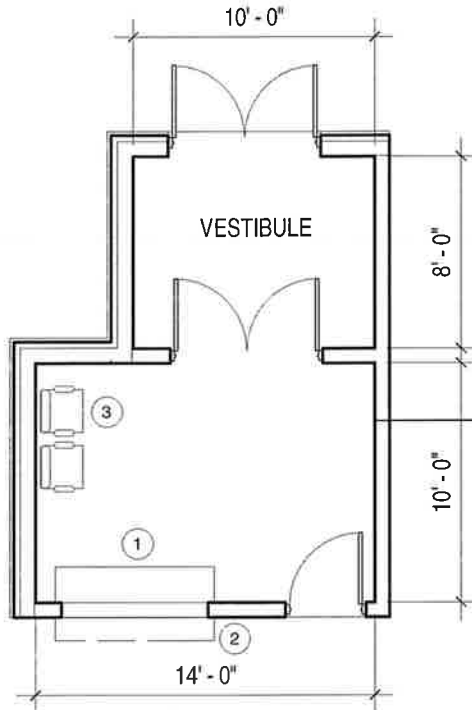
Area	Description	Sheet No.	Total Size (SF)	Total Revised Size (SF)	Total w/ W&S (SF)	Quant	Room / Area Dimensions		
							length	width	size
E. Wash Area	Wash Bay	E1.01	1,650	1,650	1,650	1	30	55	1,650
	Wash Equipment Room	E1.01	100	100	100	1	10	10	100
	Subtotal:		1,750	1,750	1,750				
	Area Grossing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

Appendix B

Space Needs Assessment Initial Room Programming Sketches



2 A1.01 - ENTRY / VESTIBULE / WAITING



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

ROOM FINISHES

FLOORS: 12X12 VCT TILE

WALLS: GWB PAINTED

CEILING: 2X2 ACT TILE

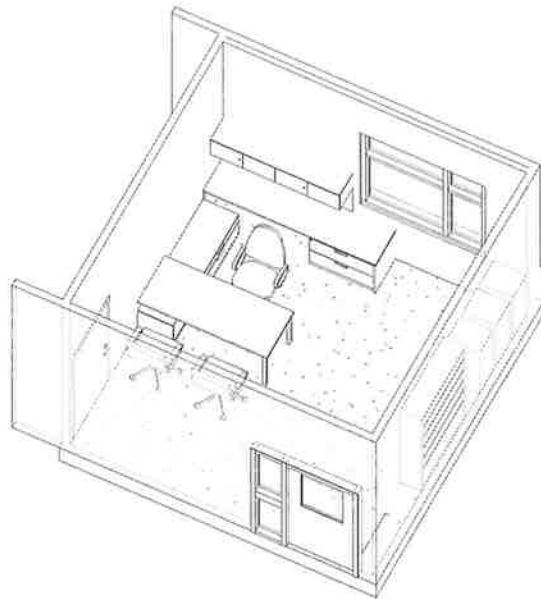
MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

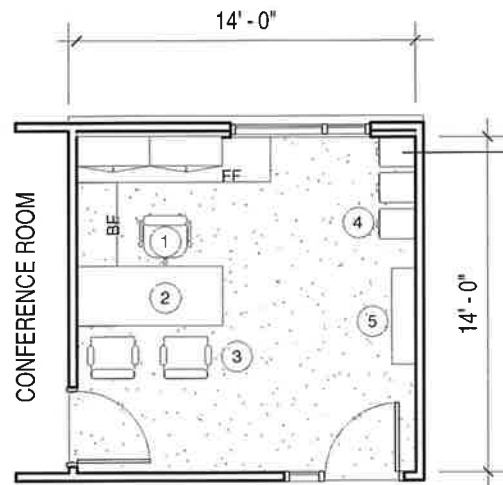
DATA OUTLET JACKS

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 - 196SF 1/8" = 1'-0"

ROOM FINISHES

FLOORS: CARPET TILE

WALLS: GWB PAINTED

CEILING: 2X2 ACT TILE

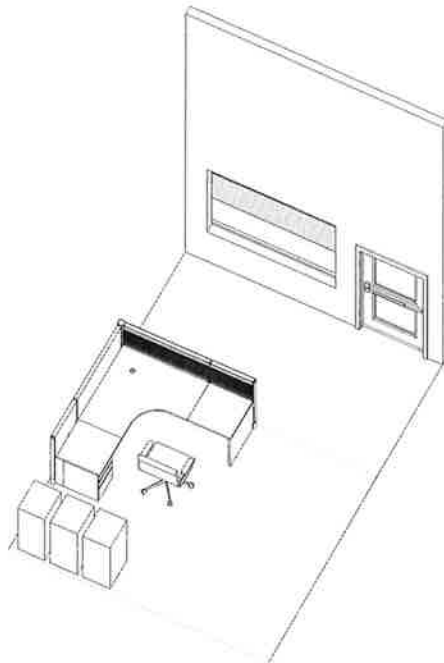
MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

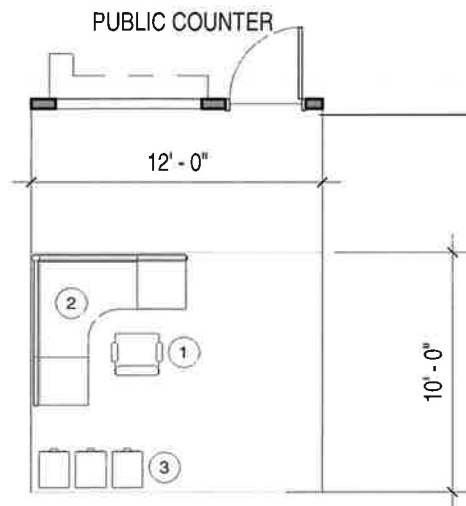
DATA OUTLET JACKS

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

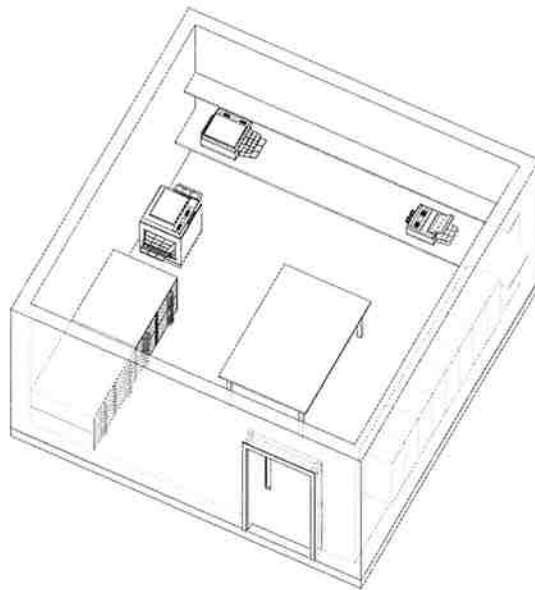
WALLS: GWB PAINTED

CEILING: 2X2 ACT TILE

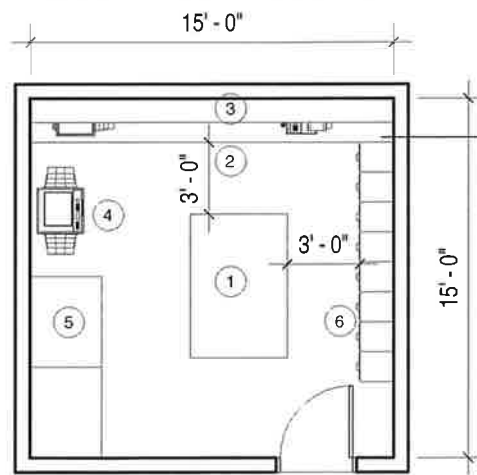
MEP/DATA REQUIREMENTS

COMPONENTS:

- 1 TASK CHAIR
- 2 WORKSTATION
- 3 LATERAL FILE CABINETS (3)



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

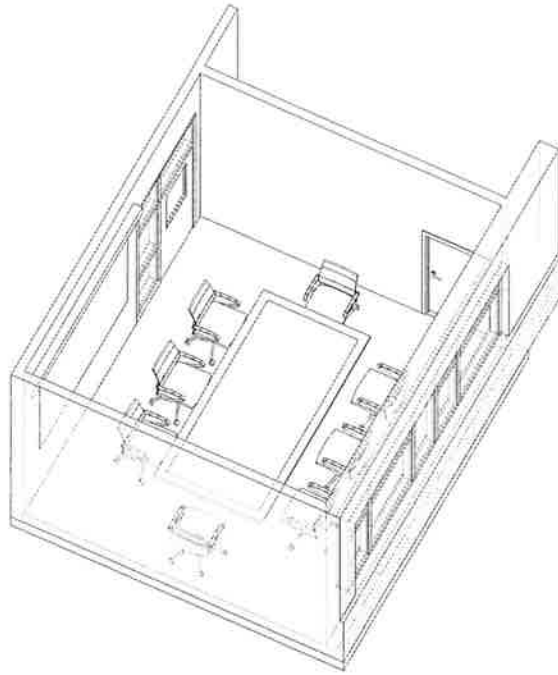
MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

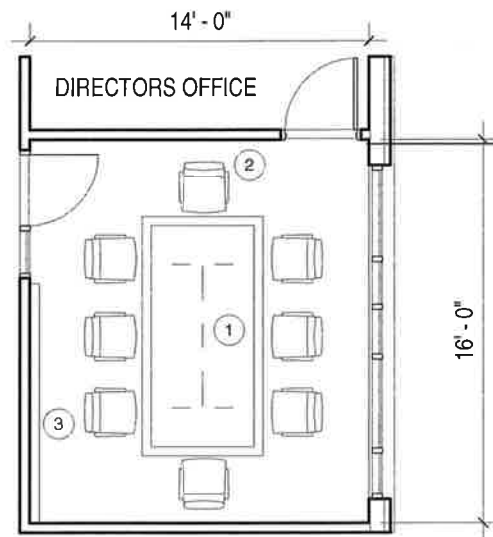
DATA OUTLET JACKS

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

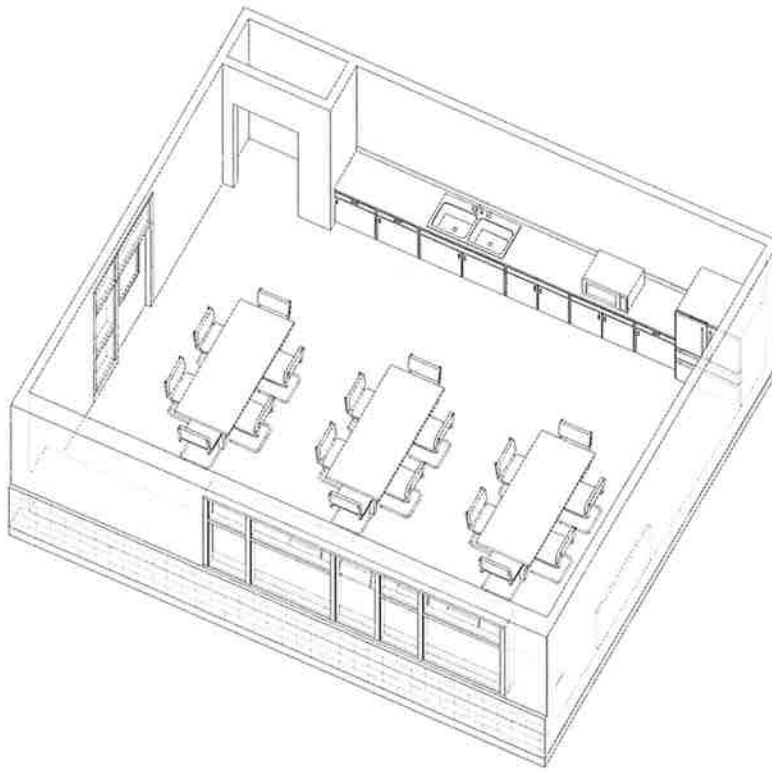
AV WIRING

COMPONENTS:

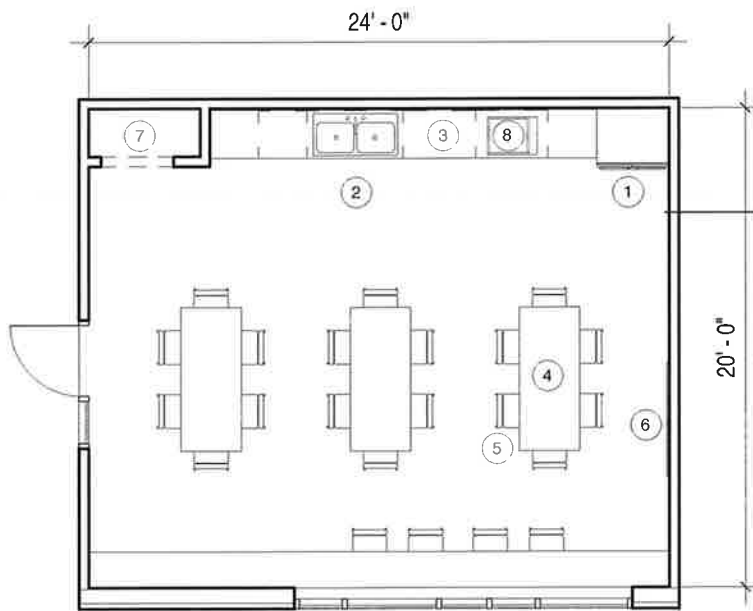
- ① CONFERENCE TABLE
- ② CONFERENCE CHAIR (8)
- ③ PROJECTOR

<div><p>A1.06 - MEN'S AND WOMEN'S TOILETS - 136SF</p><p>1 1/4" = 1'-0"</p></div>	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

Weston & Sampson	Client Name: UPTON DPW	A1.06 - TOILETS Dept: ADMINISTRATION	Sheet: A1.06
------------------	----------------------------------	---	---------------------



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

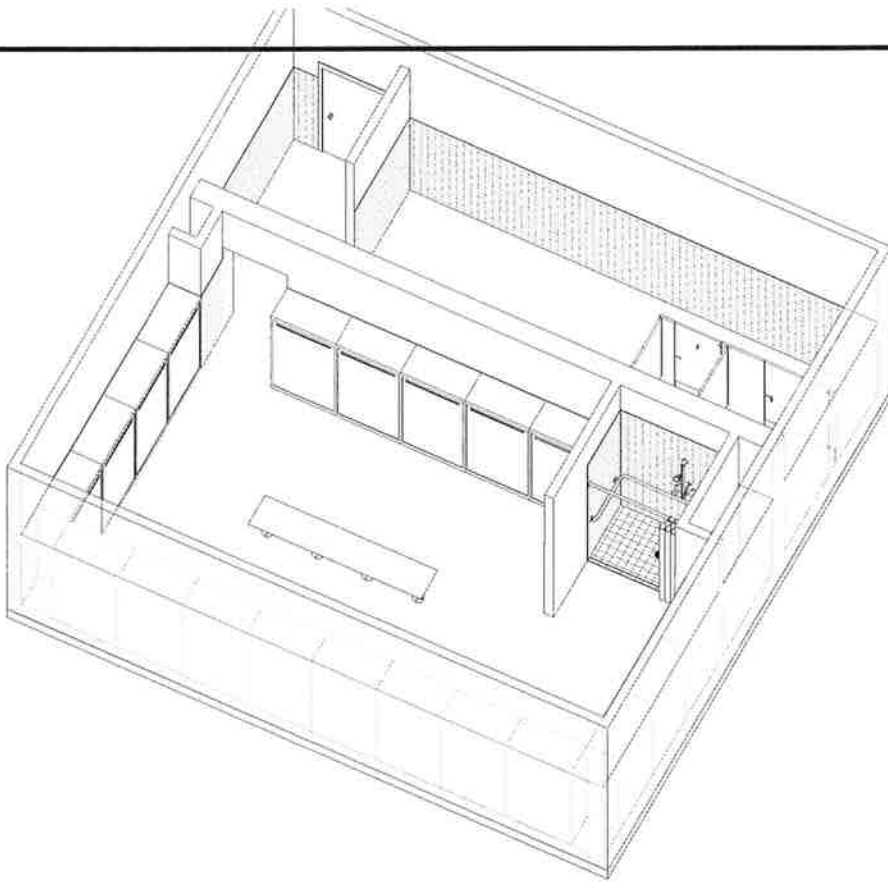
MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

DATA OUTLET JACKS

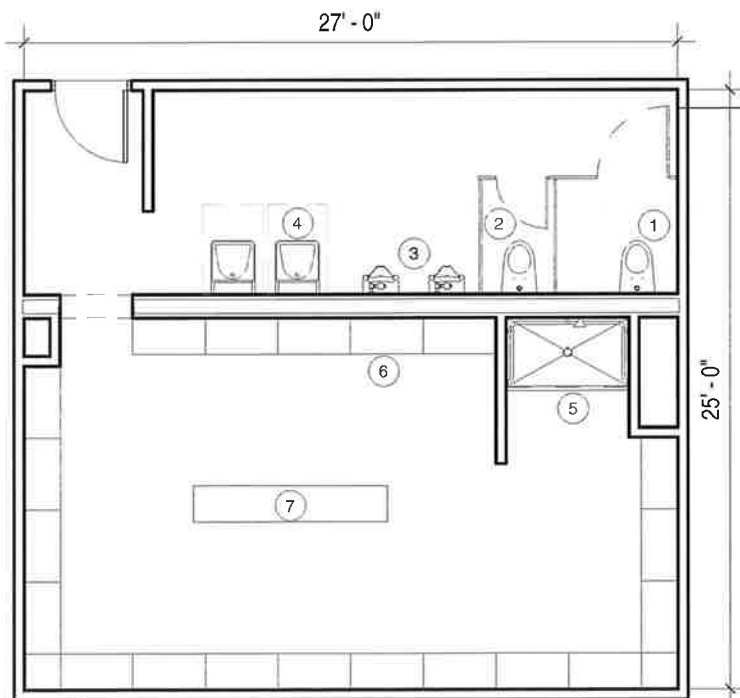
COMPONENTS:

- 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**

2



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

1

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

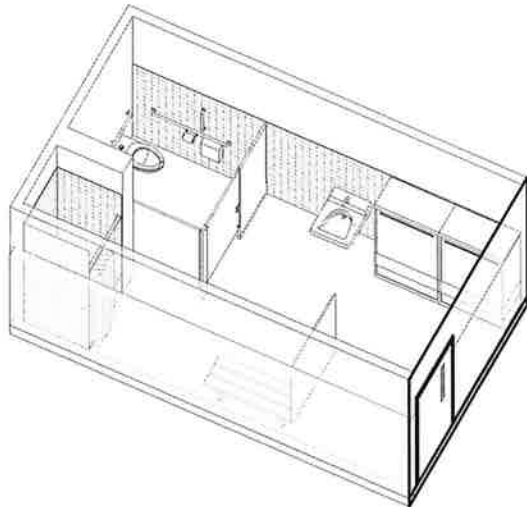
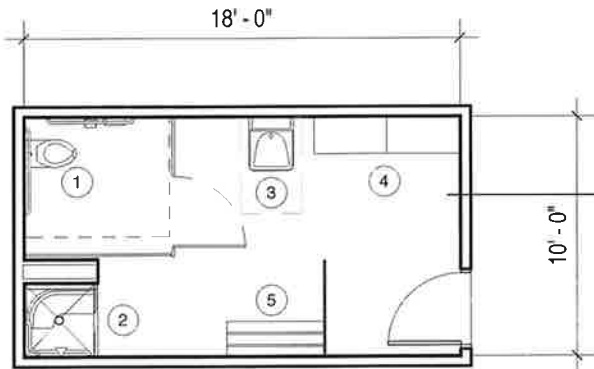

DUPLEX ELECTRICAL OUTLETS

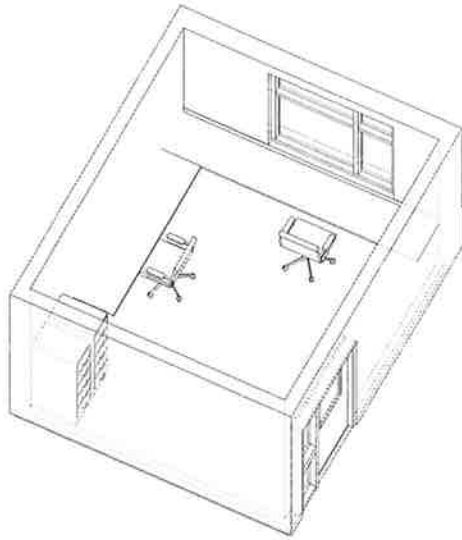
TRAP PRIMERS

FLOOR DRAINS

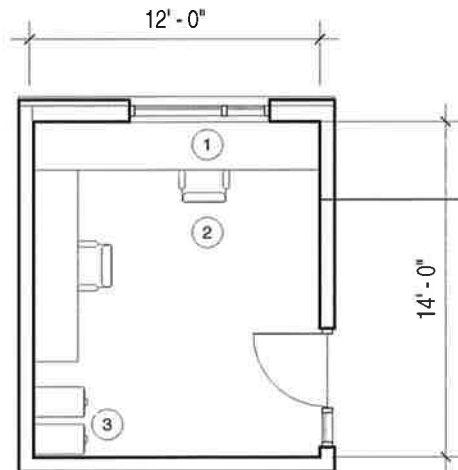
COMPONENTS:

- 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	
B1.03 - FEMALE LOCKER / SHOWER / TOILET		COMPONENTS:	
		① ADA TOILET	
		② ADA SHOWER	
		③ ADA SINK	
		④ LOCKER (2)	
		⑤ BENCH	
B1.03 - FEMALE LOCKER / SHOWER / TOILET - 180SF			
① 1/8" = 1'-0"			
		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

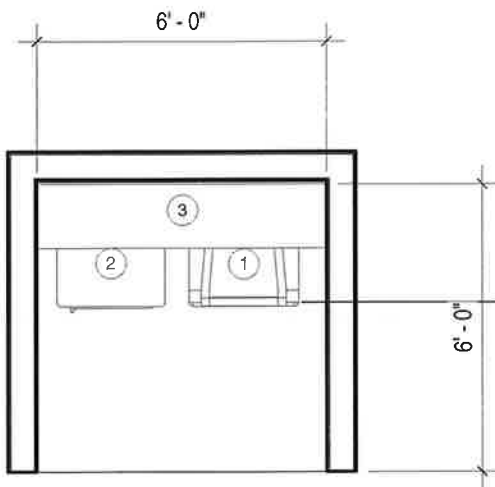
MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

DATA OUTLET JACKS

COMPONENTS:

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



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

ROOM FINISHES

FLOORS: EPOXY RESINOUS FLOORING

WALLS: GWB PAINTED

CEILING: 2X2 ACT TILE

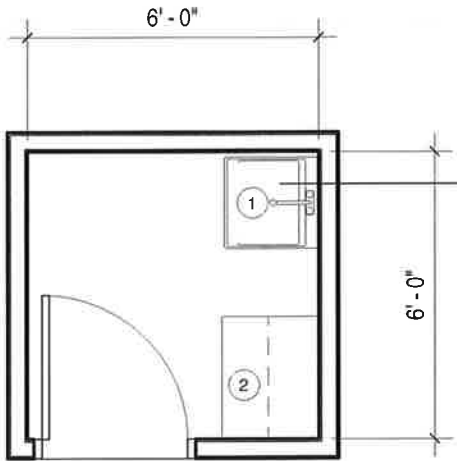
MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

DRYER EXHAUST FAN & DUCT

COMPONENTS:

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



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

ROOM FINISHES

FLOORS: SEALED CONCRETE

WALLS: GWB PAINTED

CEILING: 2X2 ACT TILE

MEP/DATA REQUIREMENTS

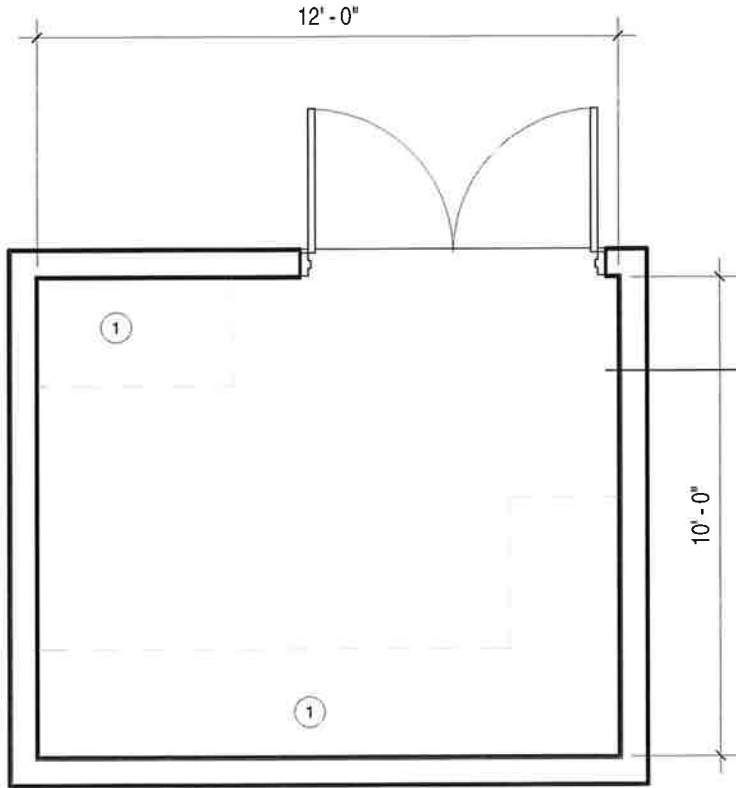
DUPLEX ELECTRICAL OUTLETS

FLOOR DRAINS

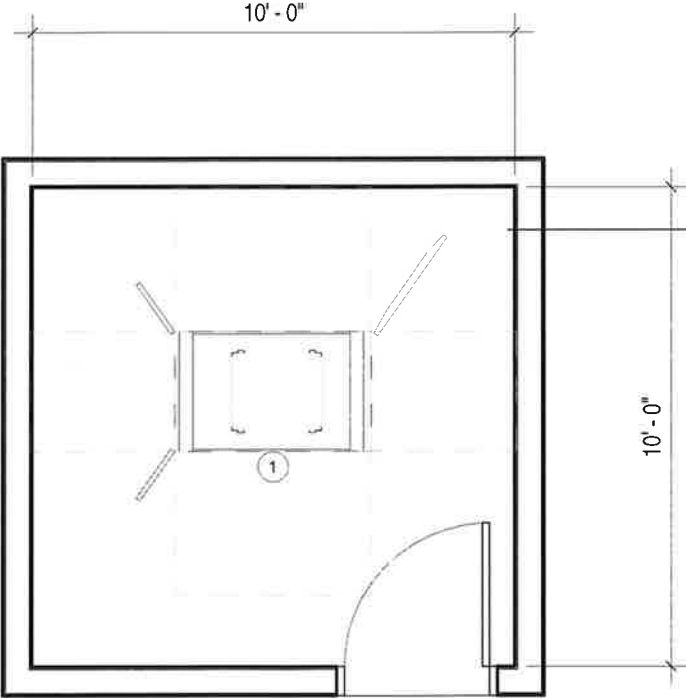
TRAP PRIMER

COMPONENTS:

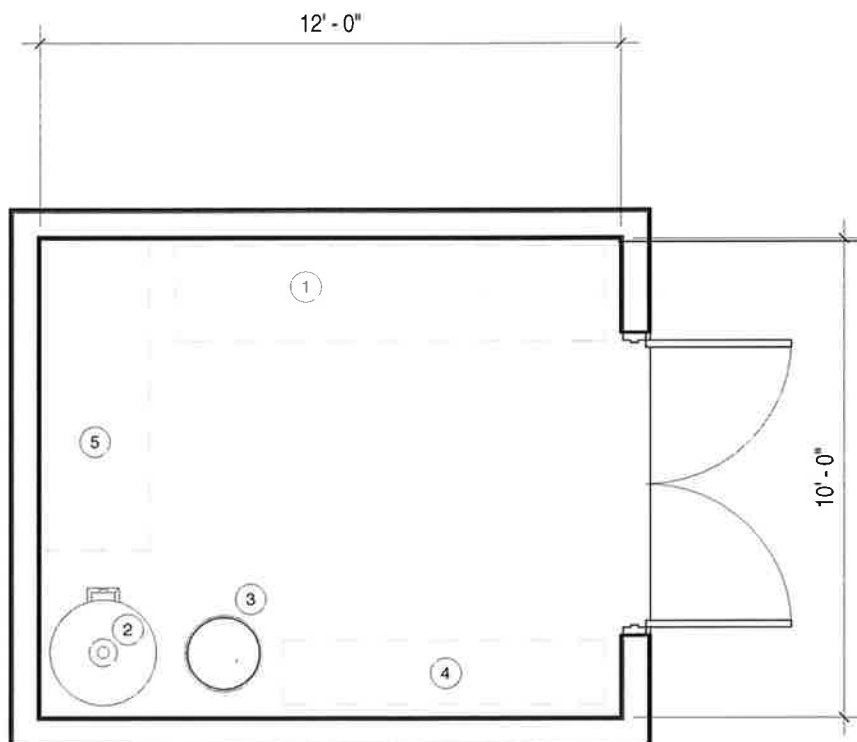
- 1 UTILITY SINK
- 2 WALL MOUNTED SHELVING

 <p data-bbox="401 1799 992 1877">1 B1.07 - ELECTRIC ROOM - 120SF 1/4" = 1'-0"</p>	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)

Weston & Sampson	Client Name: UPTON DPW	B1.07 -ELECTRIC ROOM Dept: EMPLOYEE FACILITIES	Sheet: B1.07
------------------	----------------------------------	---	---------------------

	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

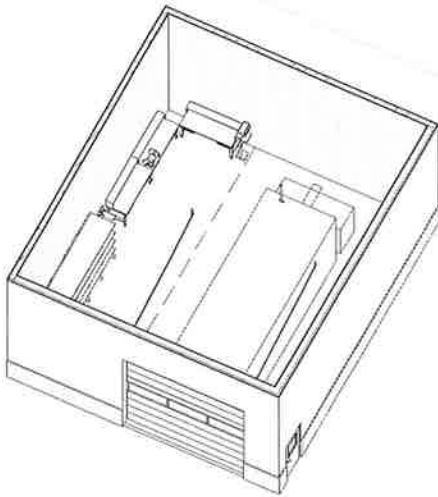
MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

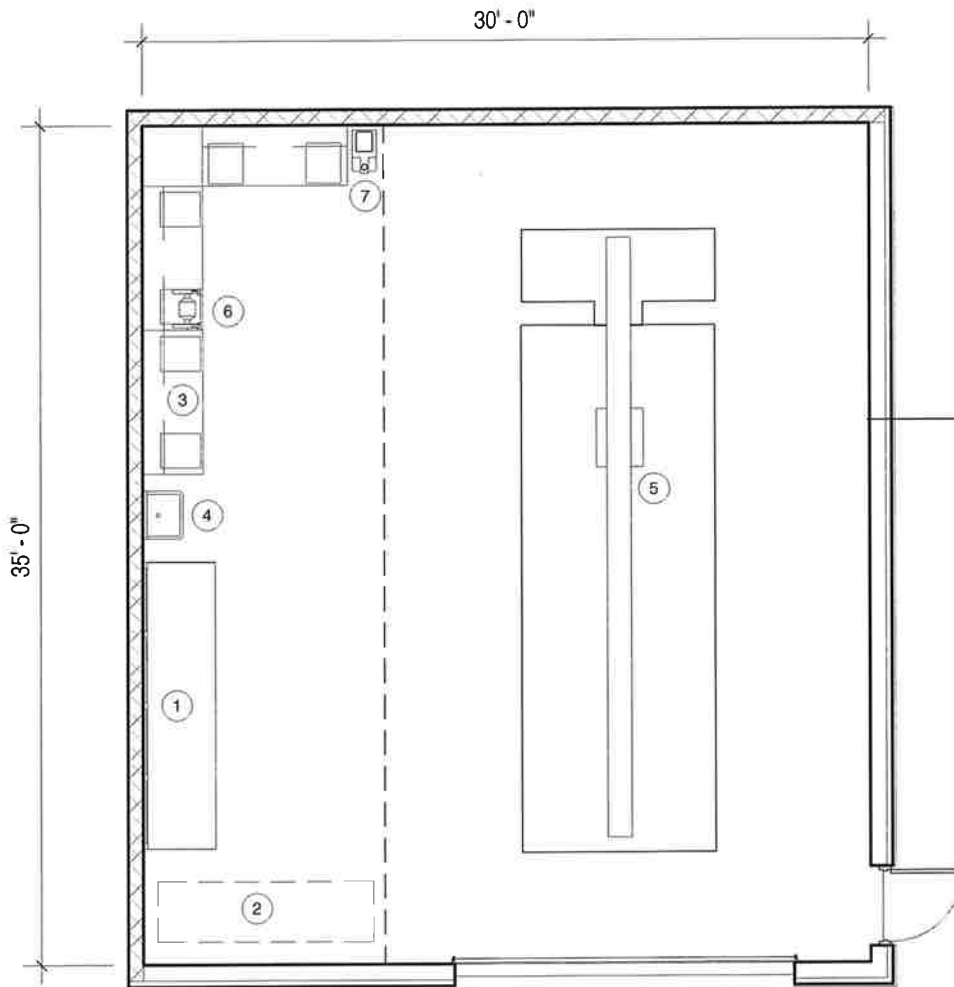
DATA OUTLET JACKS

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 1/8" = 1'-0"

ROOM FINISHES

FLOORS: SEALED CONCRETE

WALLS: CONCRETE BLOCK
PAINTED

CEILING: OPEN TO STRUCTURE

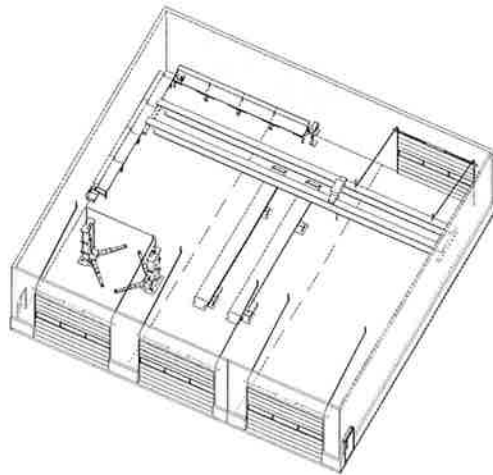
MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

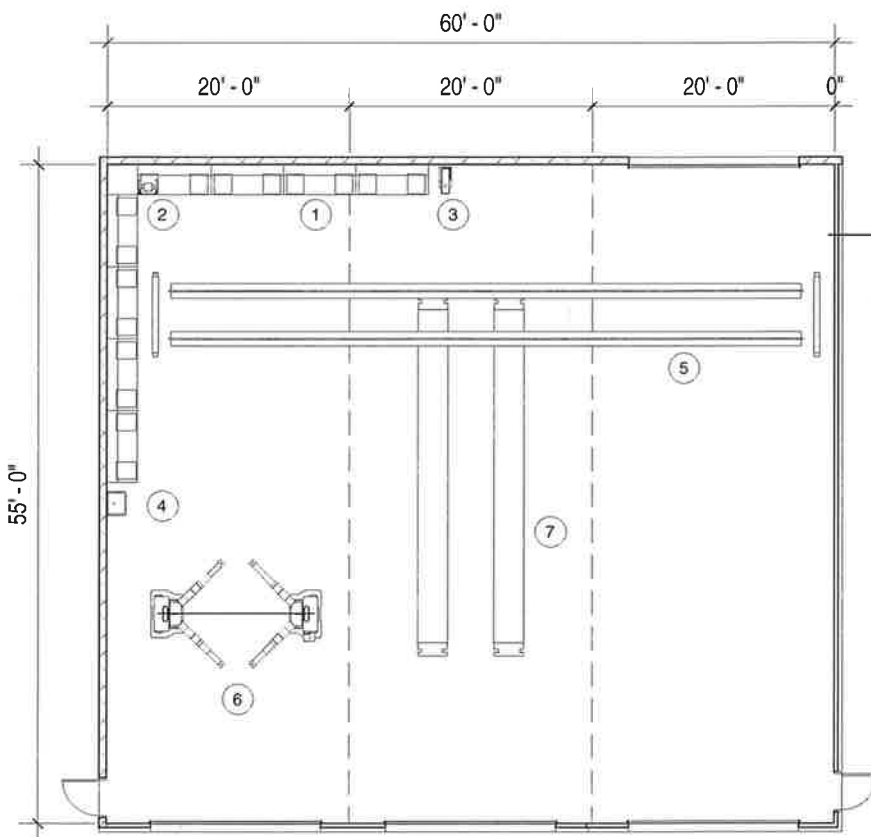
DATA OUTLET JACKS

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 MAINTENANCE



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

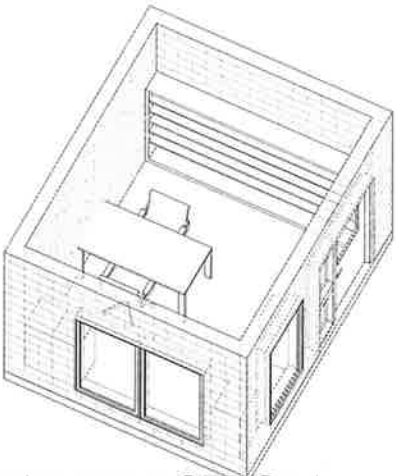
MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

DATA OUTLET JACKS

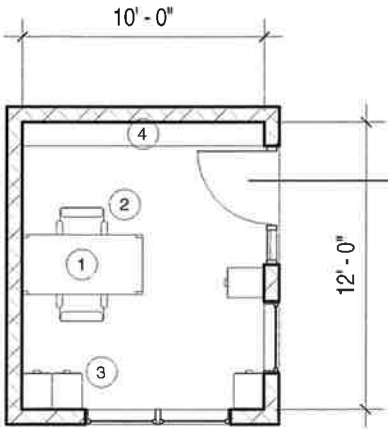
COMPONENTS:

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



D1.02 - MECHANICS OFFICE /
REFERENCE ROOM

2

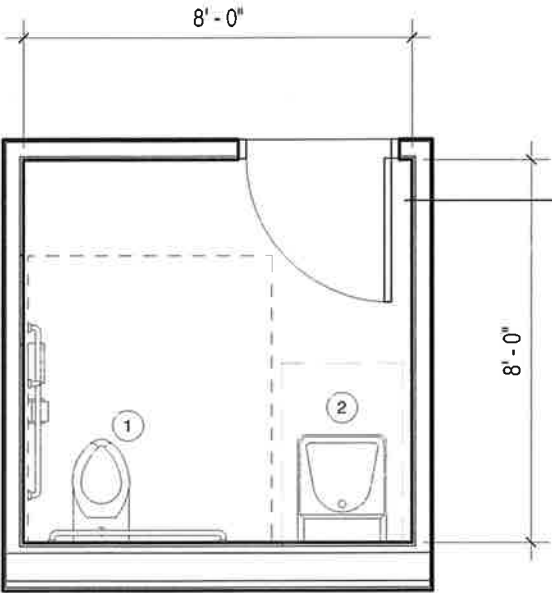


D1.02 - MECHANICS OFFICE /
REFERENCE ROOM - 120SF

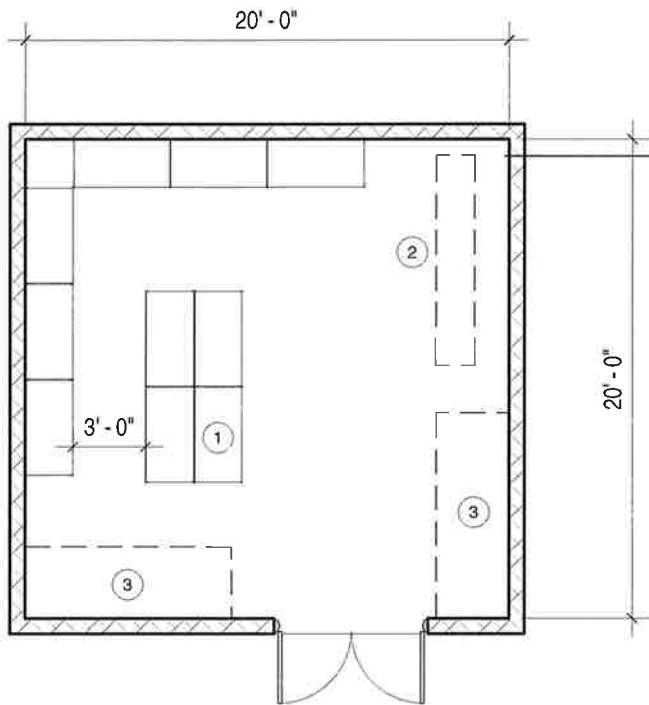
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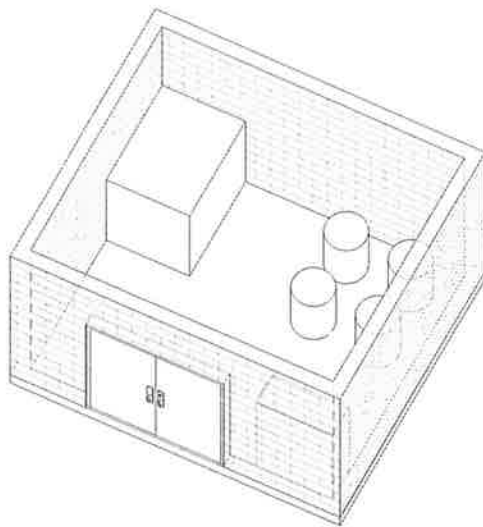
1/8" = 1'-0"

	ROOM FINISHES
	<div>FLOORS: CERAMIC TILES</div> <div>WALLS: CERAMIC TILE TO 6'-0" / GWB PAINTED</div> <div>CEILING: 2X2 ACT TILE</div>
	MEP/DATA REQUIREMENTS
	<div>FLOOR DRAINS</div> <div>TRAP PRIMERS</div> <div>LOW FLOW FIXTURES</div> <div>COMPONENTS:</div> <div> <div>① ADA TOILET</div> <div>② ADA SINK</div> </div>

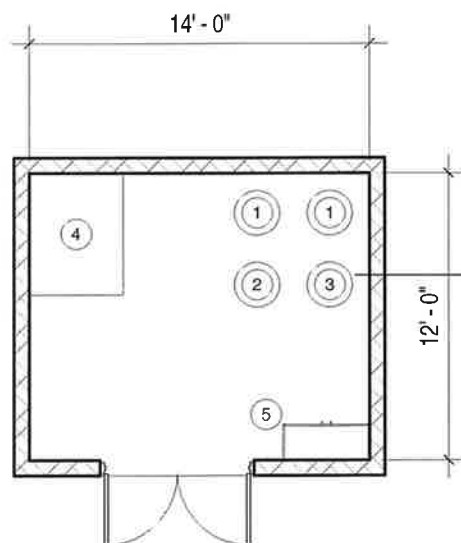


① D1.03 - UNI-SEX TOILET - 64SF
1/4" = 1'-0"

	ROOM FINISHES	
	FLOORS: SEALED CONCRETE	
	WALLS: CONCRETE BLOCK PAINTED	
	CEILING: OPEN TO STRUCTURE	
	MEP/DATA REQUIREMENTS	
	COMPONENTS:	
	<div><div>1</div><div>(48" W X 24" D X 84" H) HEAVY DUTY SHELVING (10)</div></div> <div><div>2</div><div>SMALL PARTS BINS</div></div> <div><div>3</div><div>WALL STORAGE</div></div> <div><div>4</div><div>FLAMMABLE CABINETS</div></div>	
<div><div>1</div><div>D1.04 - PARTS ROOM - 400SF 1/8" = 1'-0"</div></div>		



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

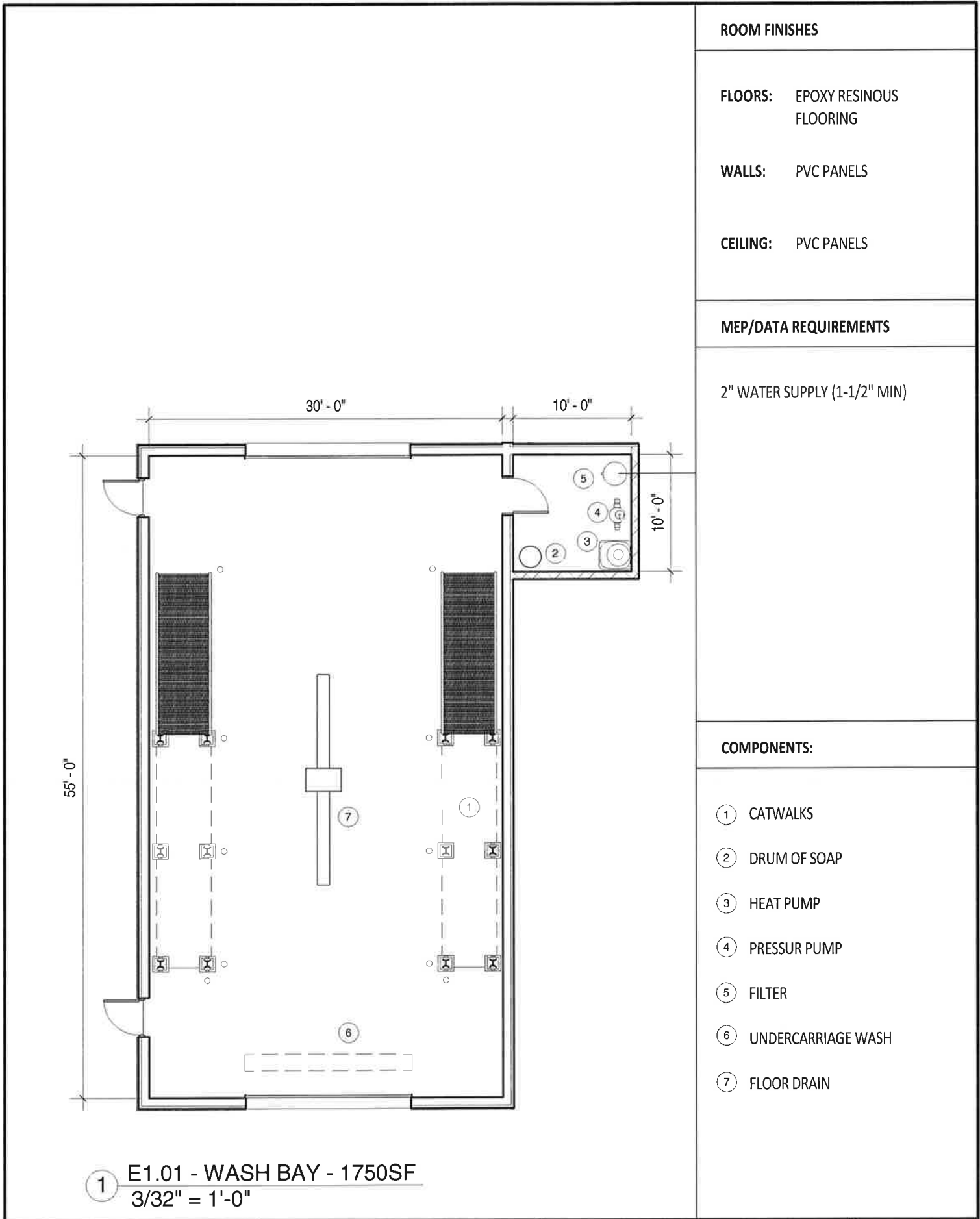
CEILING: GWB PAINTED

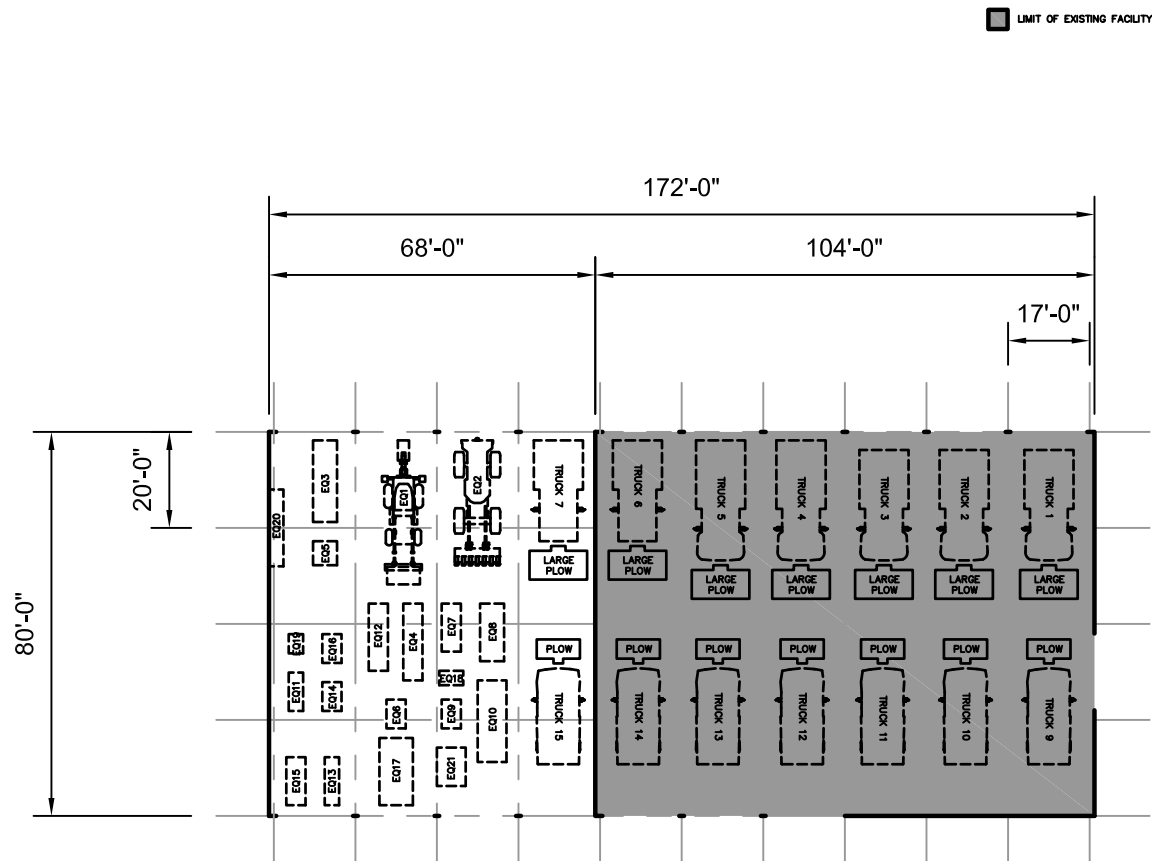
MEP/DATA REQUIREMENTS

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

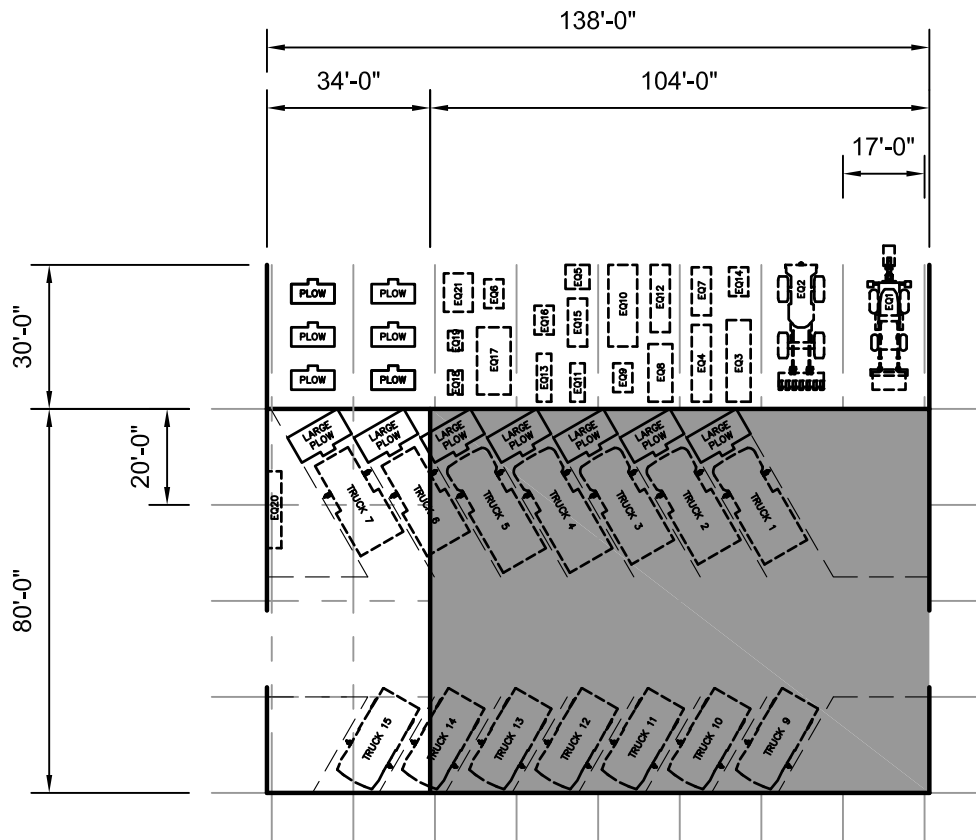




■ LIMIT OF EXISTING FACILITY

VEHICLE STORAGE = 13,760sf

■ LIMIT OF EXISTING FACILITY

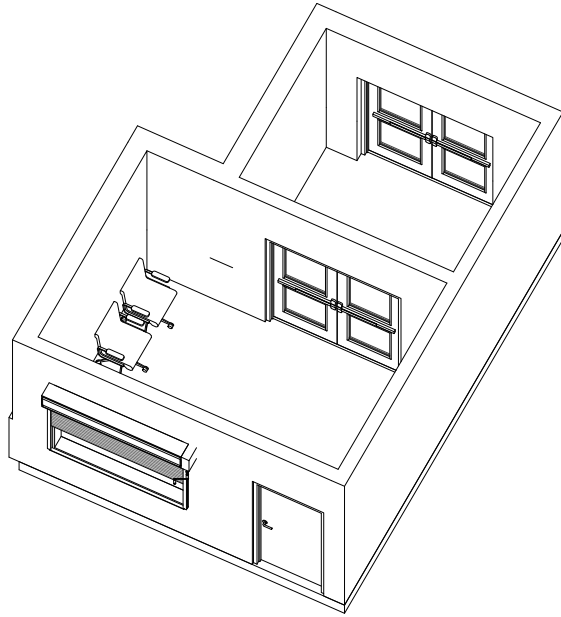


ALTERNATIVE VEHICLE STORAGE = 11,040sf

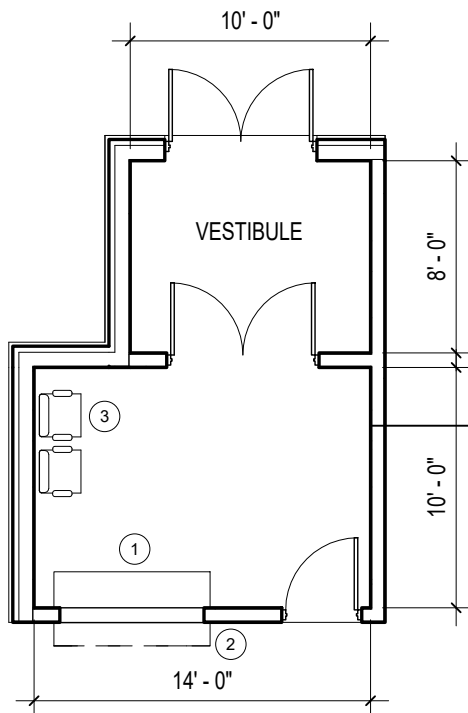
CANOPY = 4,140sf

Appendix B

Space Needs Assessment Revised Room Programming Sketches



2 A1.01 - ENTRY / VESTIBULE / WAITING



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

ROOM FINISHES

FLOORS: 12X12 VCT TILE

WALLS: GWB PAINTED

CEILING: 2X2 ACT TILE

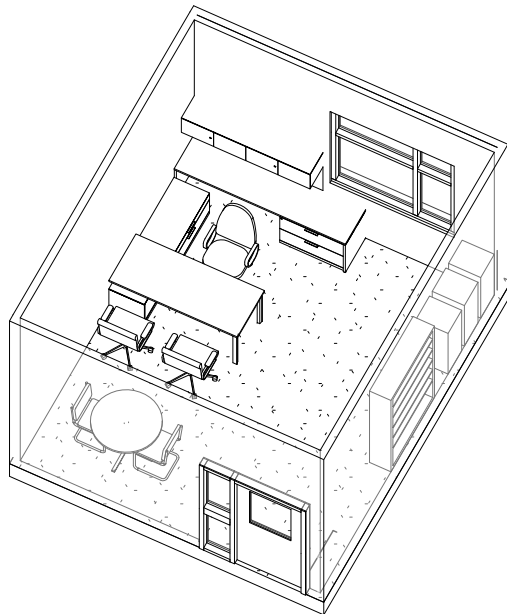
MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

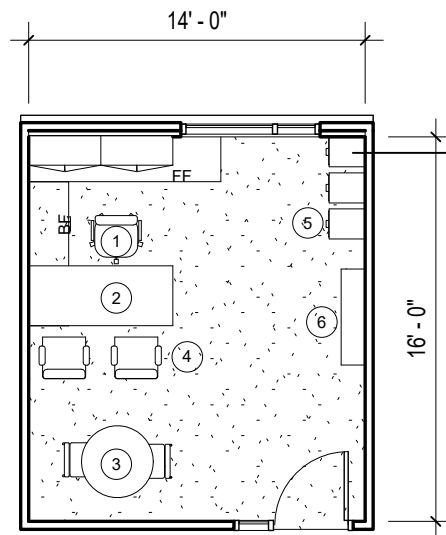
DATA OUTLET JACKS

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

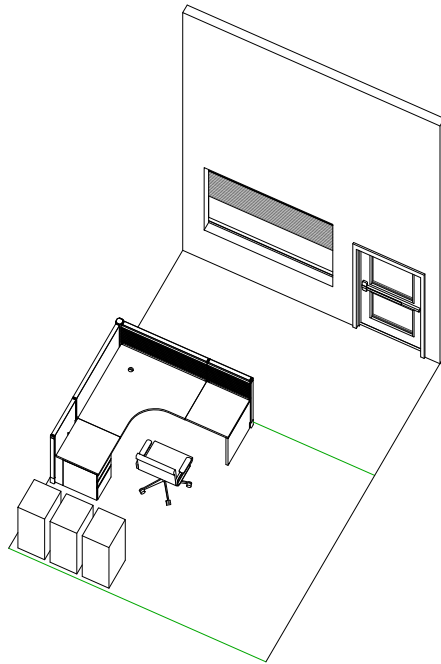
MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

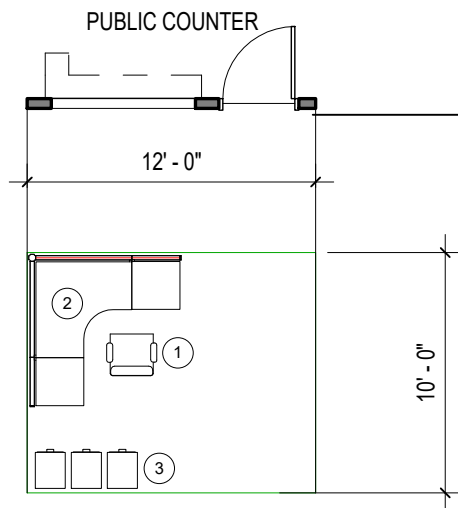
DATA OUTLET JACKS

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

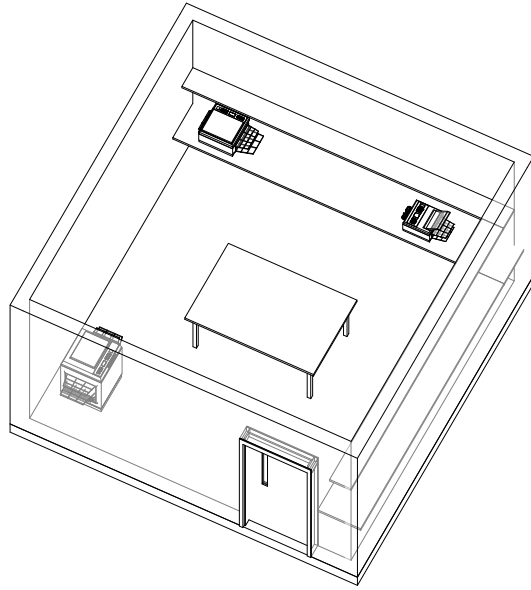
WALLS: GWB PAINTED

CEILING: 2X2 ACT TILE

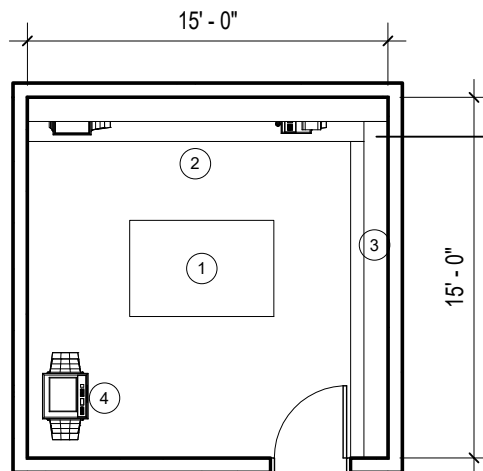
MEP/DATA REQUIREMENTS

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

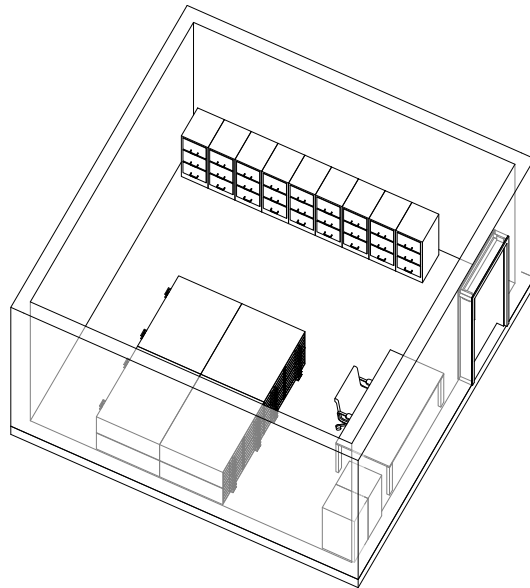
MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

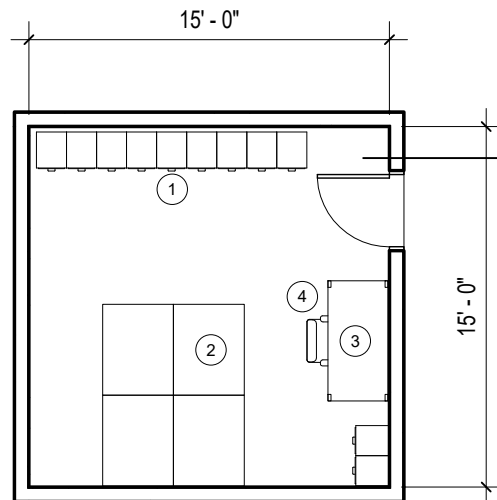
DATA OUTLET JACKS

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

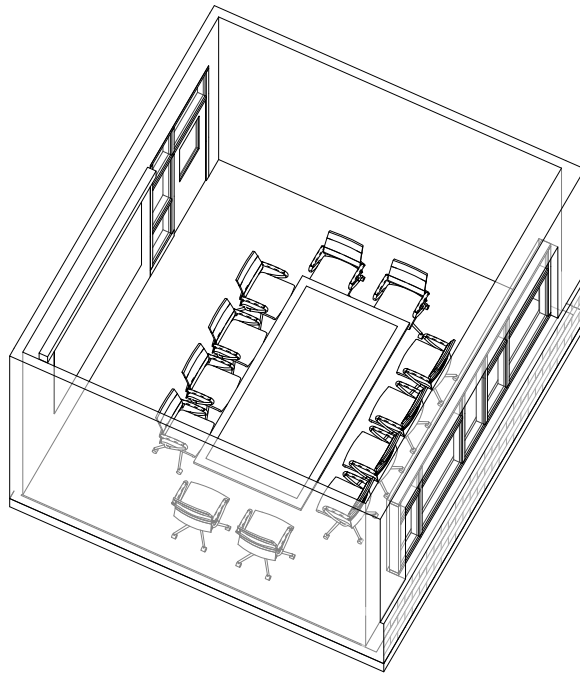
MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

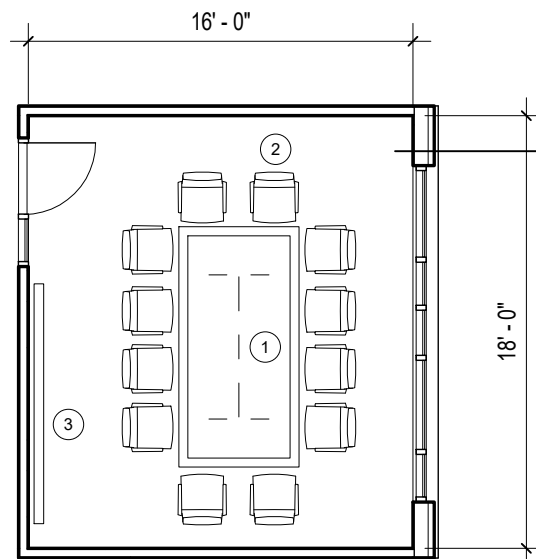
DATA OUTLET JACKS

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

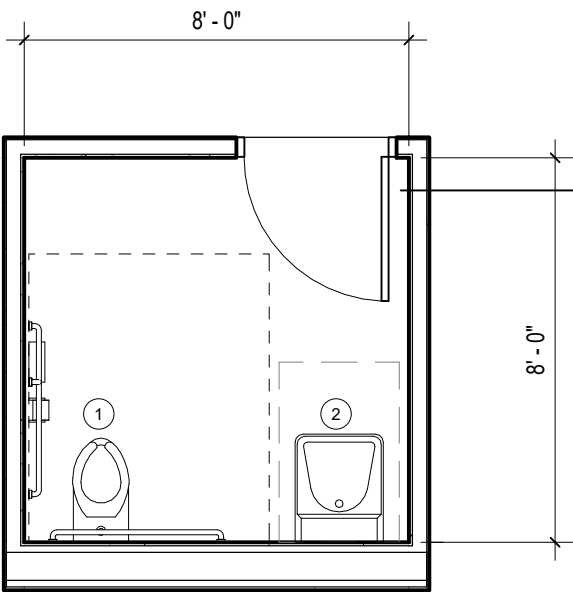
FLOOR DRAINS

TRAP PRIMERS

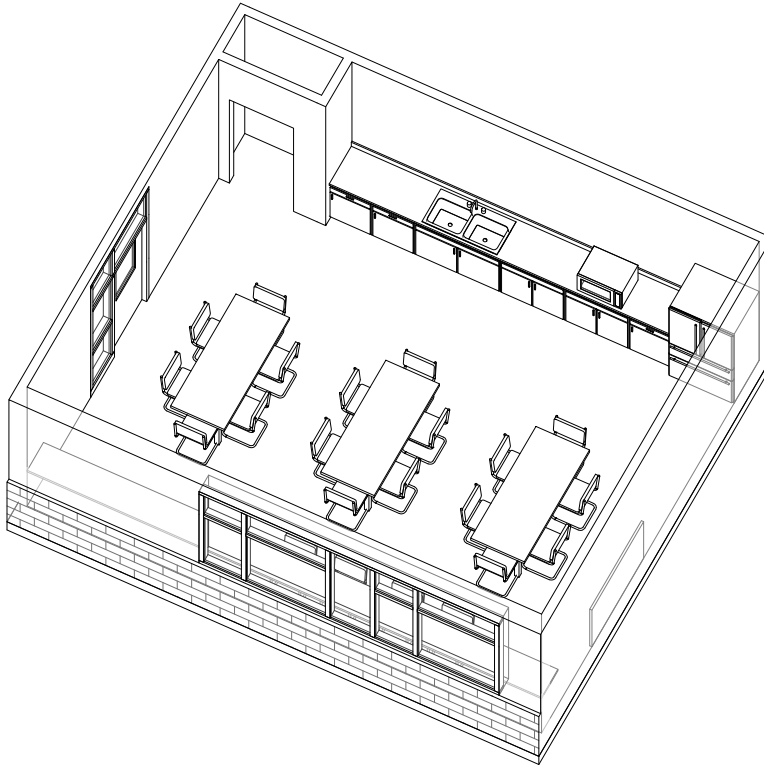
LOW FLOW FIXTURES AND/OR WATERLESS
URINALS

COMPONENTS:

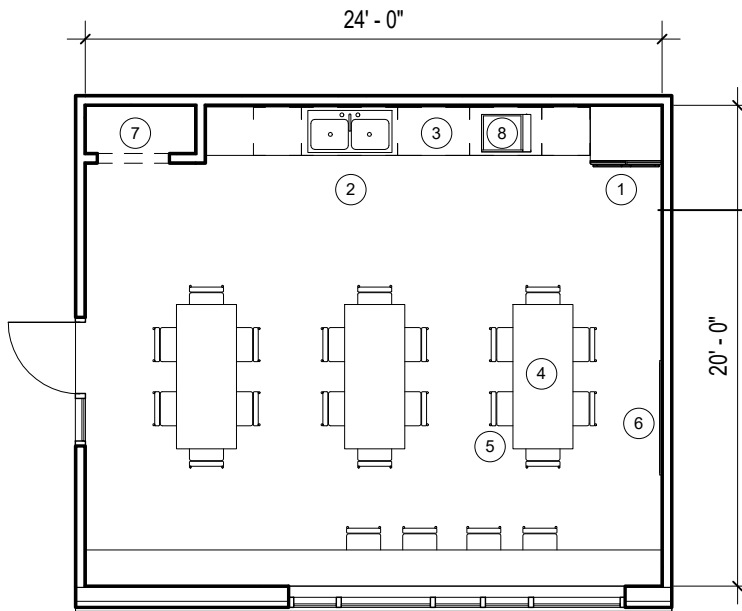
- ① ADA TOILET
- ② ADA SINK



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

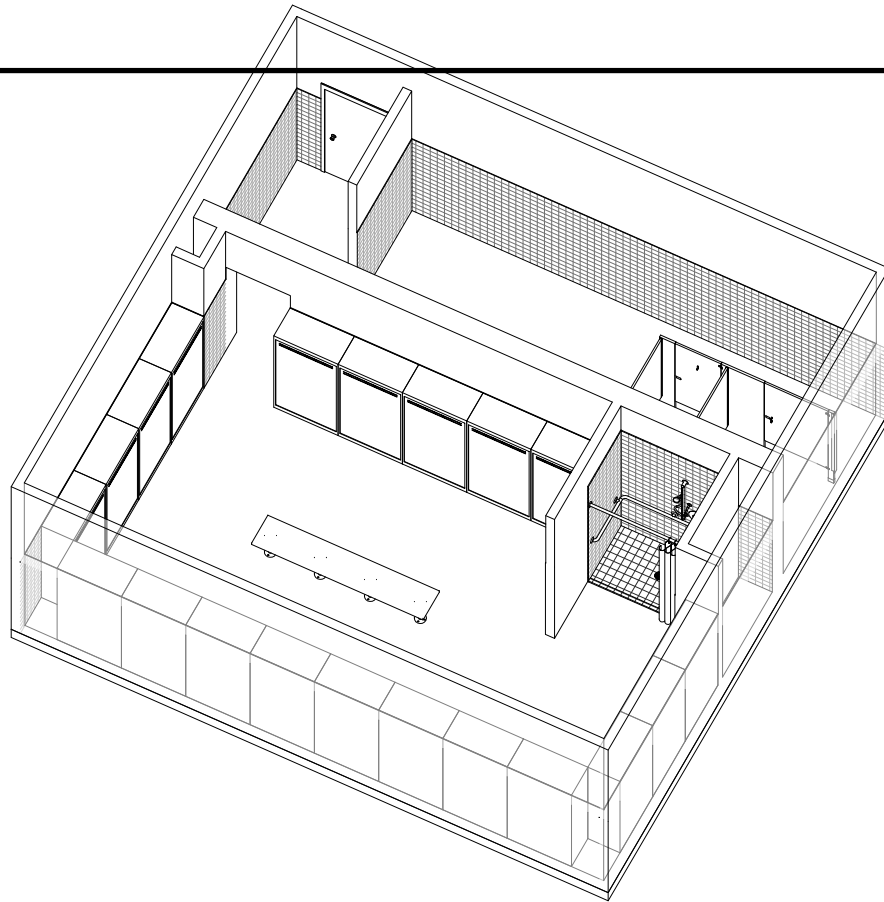
MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

DATA OUTLET JACKS

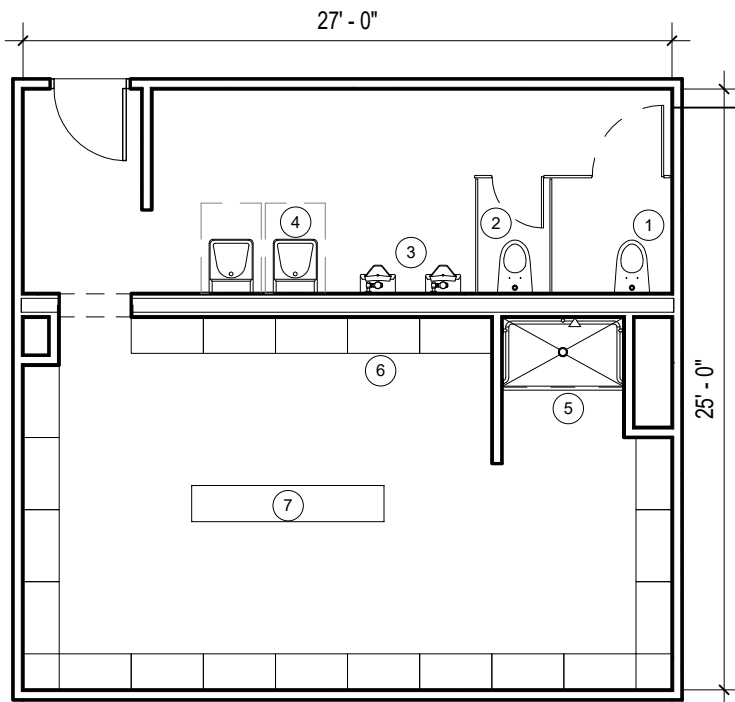
COMPONENTS:

- 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



**B1.02 - MALE LOCKER / SHOWER /
TOILET**

2



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

1

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 (2)
- 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

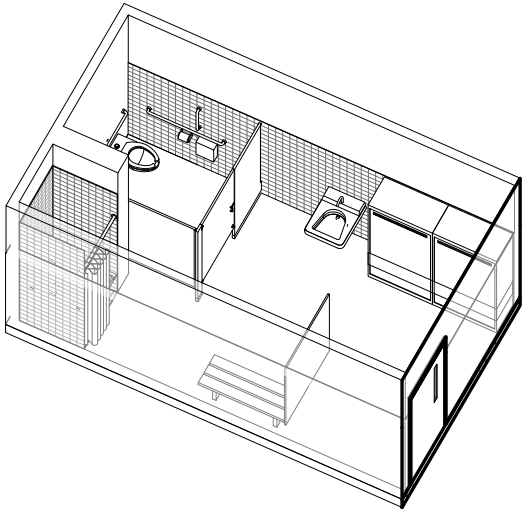
DUPLEX ELECTRICAL OUTLETS

TRAP PRIMERS

FLOOR DRAINS

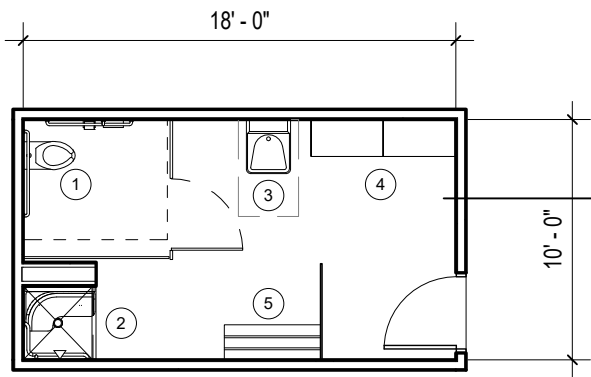
COMPONENTS:

- ADA TOILET
- ADA SHOWER
- ADA SINK
- LOCKER (2)
- BENCH



B1.03 - FEMALE LOCKER / SHOWER / TOILET

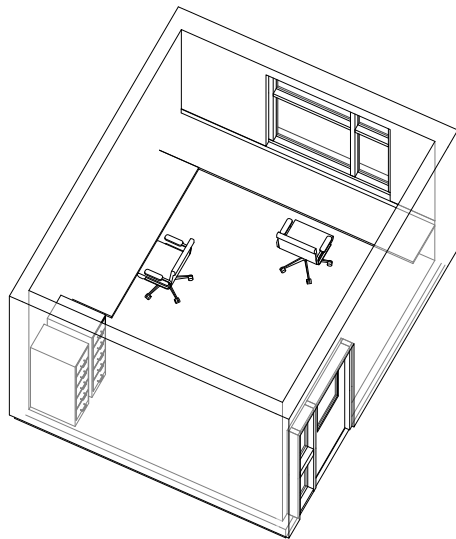
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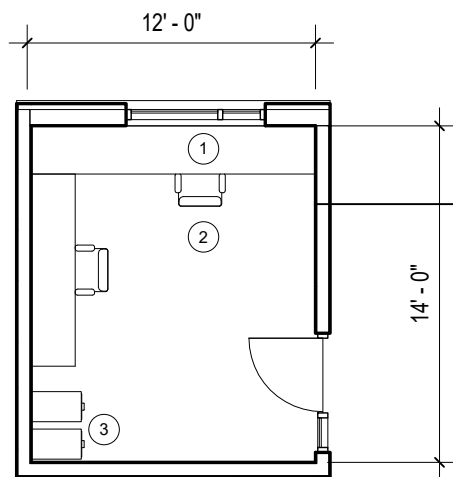
B1.03 - FEMALE LOCKER / SHOWER / TOILET - 180SF

1

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: SEALED CONCRETE

WALLS: GWB PAINTED

CEILING: 2X2 ACT TILE

MEP/DATA REQUIREMENTS

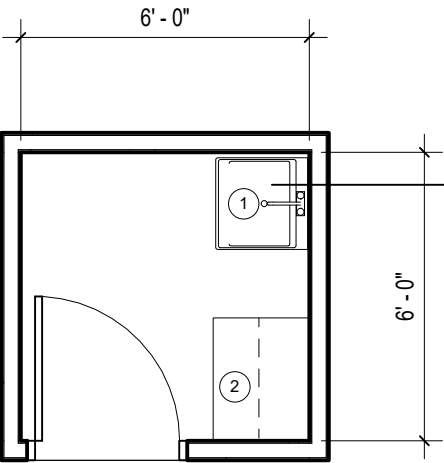
DUPLEX ELECTRICAL OUTLETS

FLOOR DRAINS

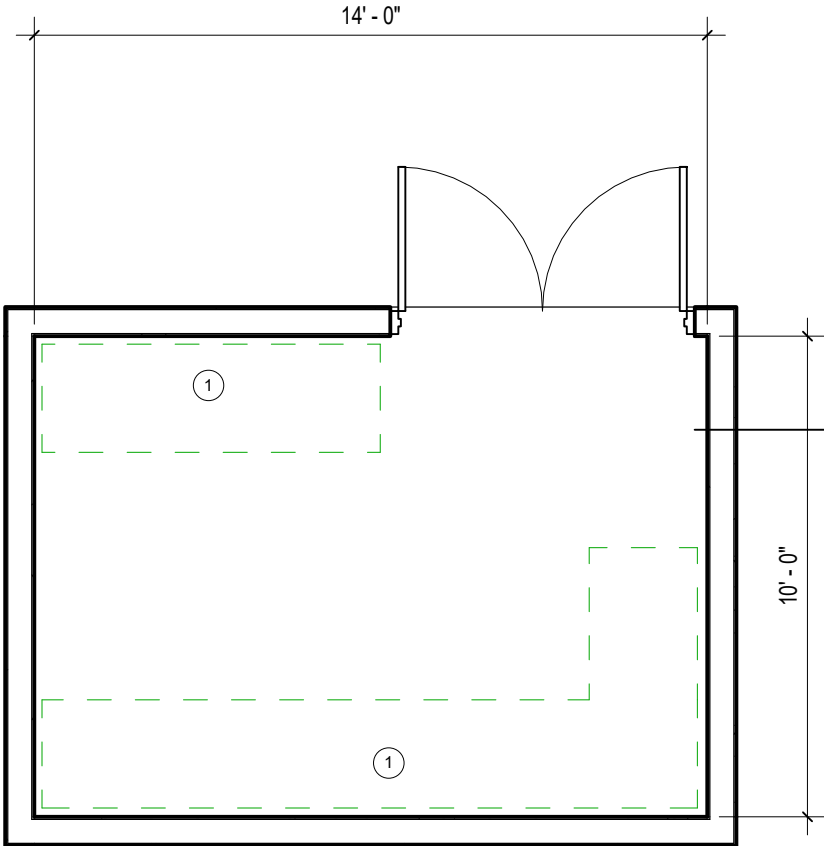
TRAP PRIMER

COMPONENTS:

- 1 UTILITY SINK
- 2 WALL MOUNTED SHELVING



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

 <p data-bbox="402 1780 974 1858"> 1 B1.07 - ELECTRIC ROOM - 140SF 1/4" = 1'-0" </p>	ROOM FINISHES
	<p>FLOORS: SEALED CONCRETE</p> <p>WALLS: CONCRETE BLOCK PAINTED</p> <p>CEILING: GWB PAINTED</p>
	MEP/DATA REQUIREMENTS
	<p>DUPLEX ELECTRICAL OUTLETS</p> <p>DATA OUTLET JACKS</p>
	COMPONENTS:
	<p>1 WALL MOUNTED PANELS (SERIES)</p>

ROOM FINISHES

FLOORS: CARPET TILE

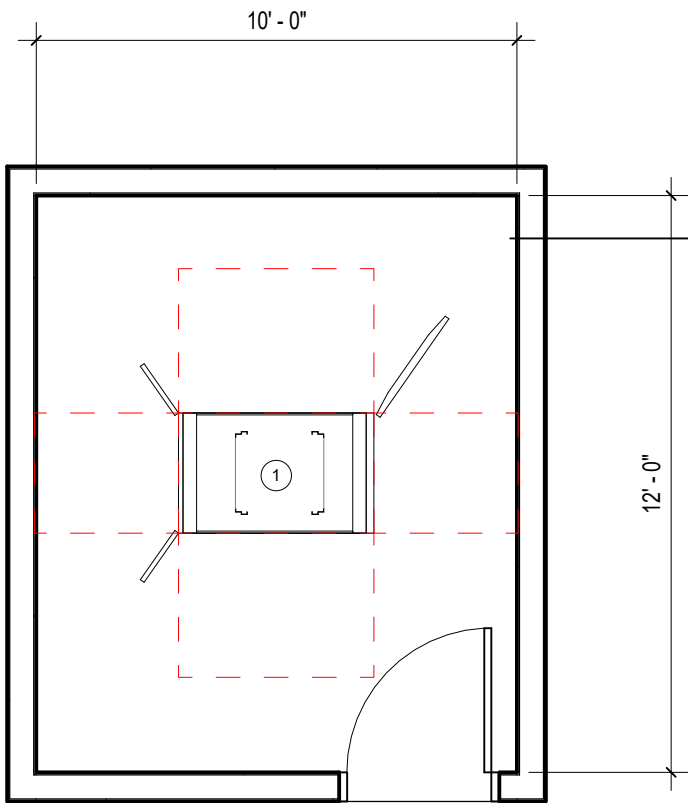
WALLS: GWB PAINTED

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

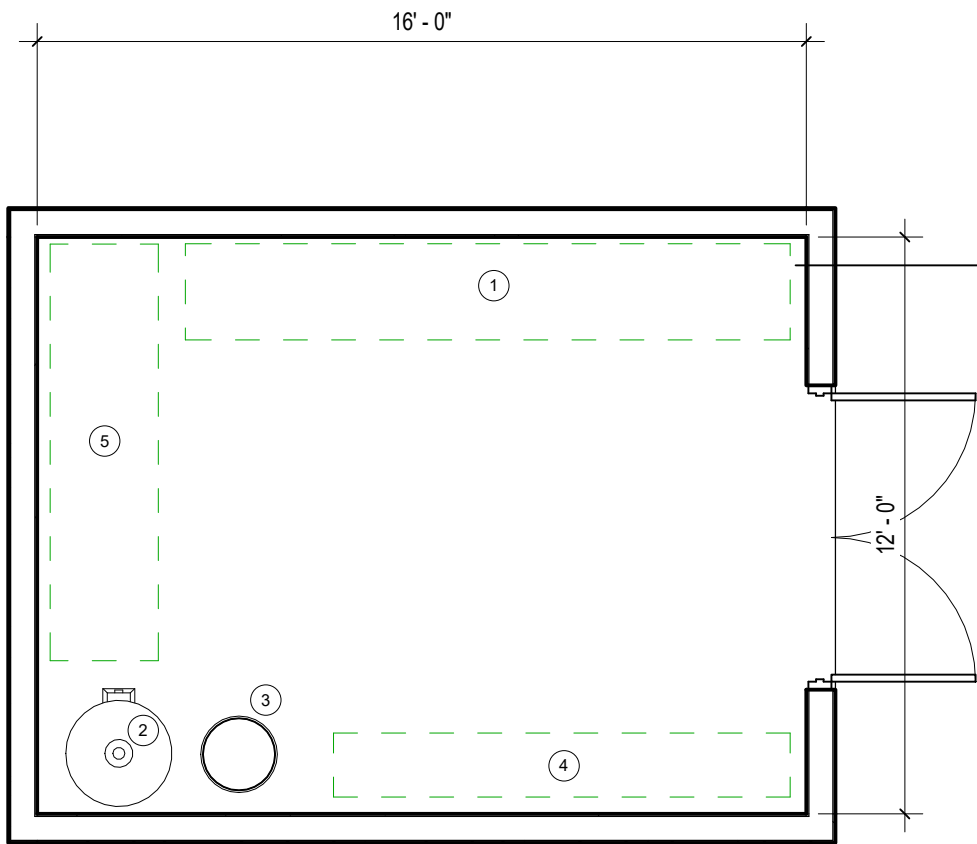
MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

DATA OUTLET JACKS

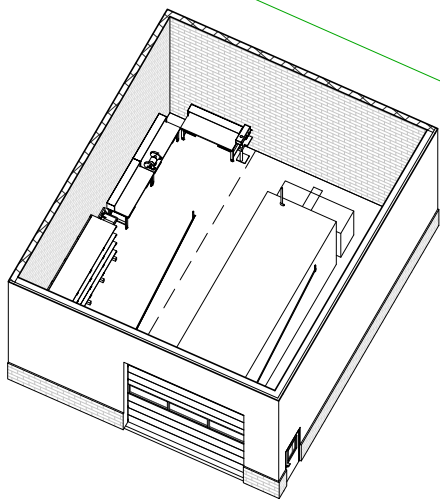
COMPONENTS:

- 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

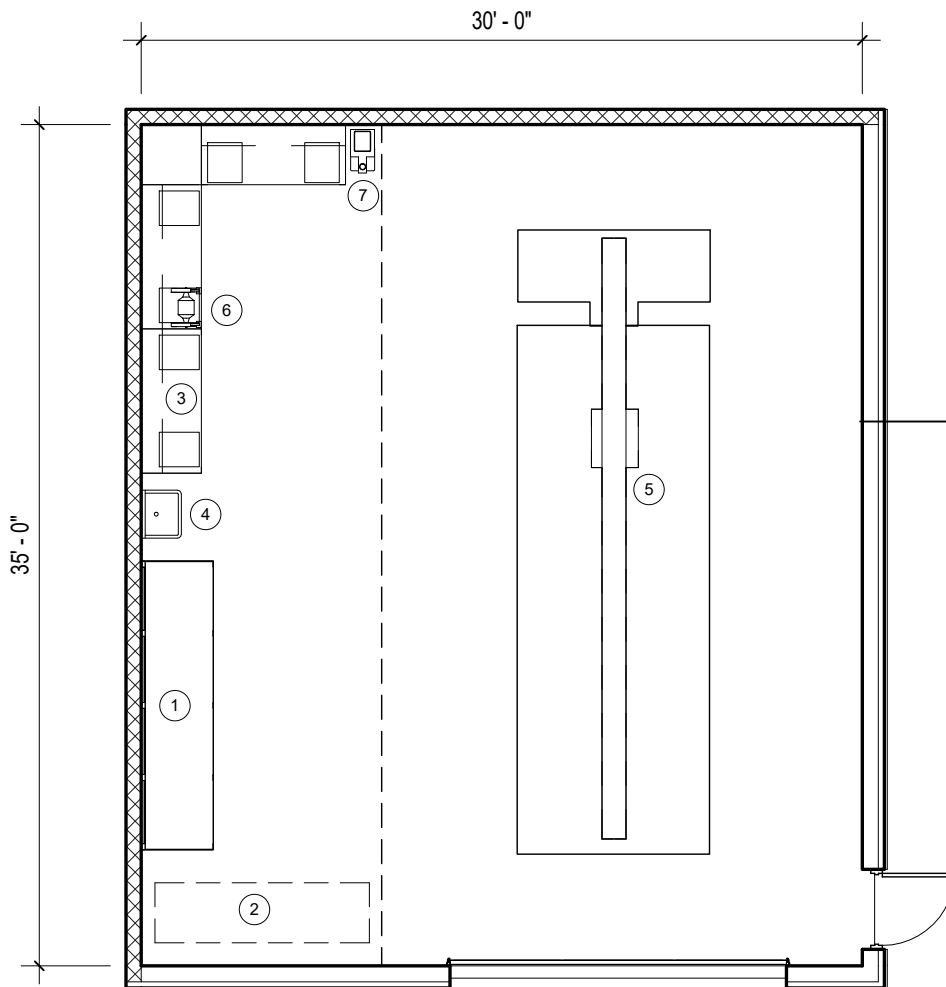


B1.09 - PLUMBING / FIRE PROTECTION -
192SF

①
1/4" = 1'-0"



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

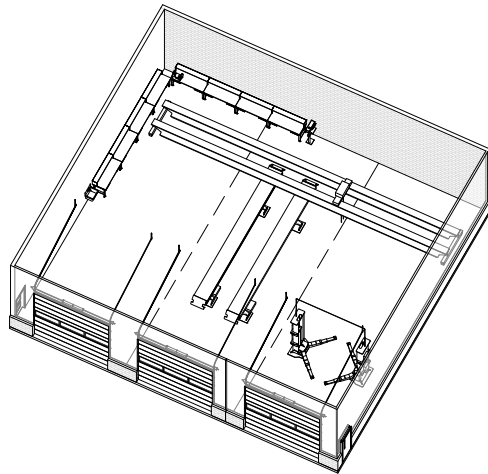
MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

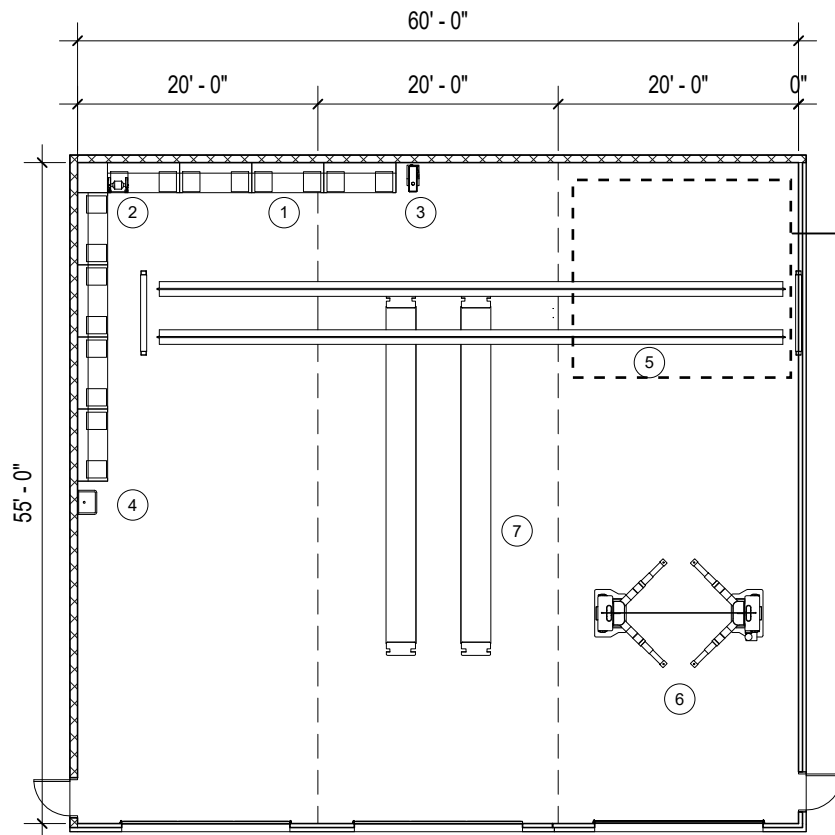
DATA OUTLET JACKS

COMPONENTS:

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



2 D1.01 - VEHICLE MAINTENANCE



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

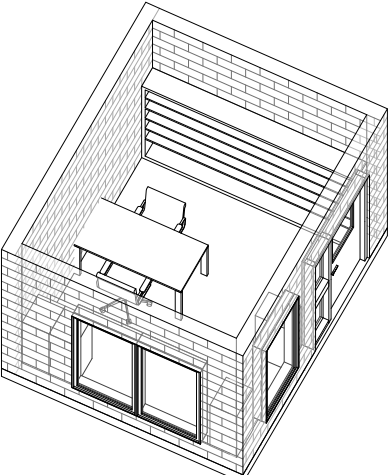
MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

DATA OUTLET JACKS

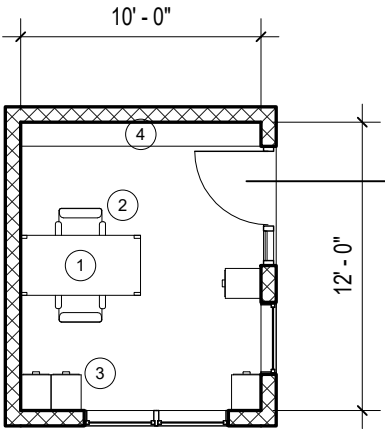
COMPONENTS:

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



D1.02 - MECHANICS OFFICE /
REFERENCE ROOM

2



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

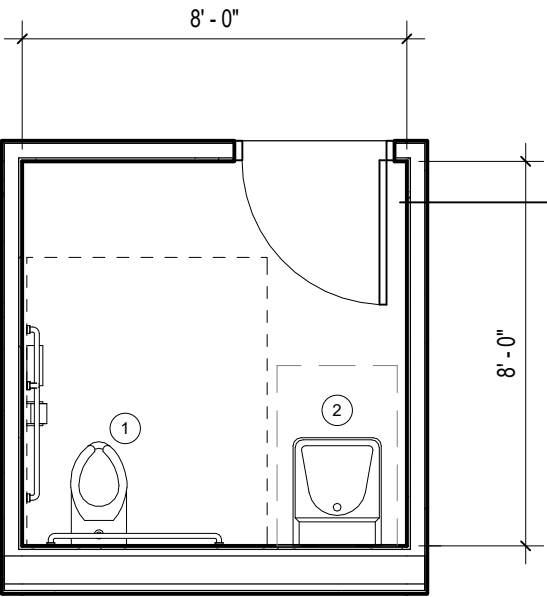
FLOOR DRAINS

TRAP PRIMERS

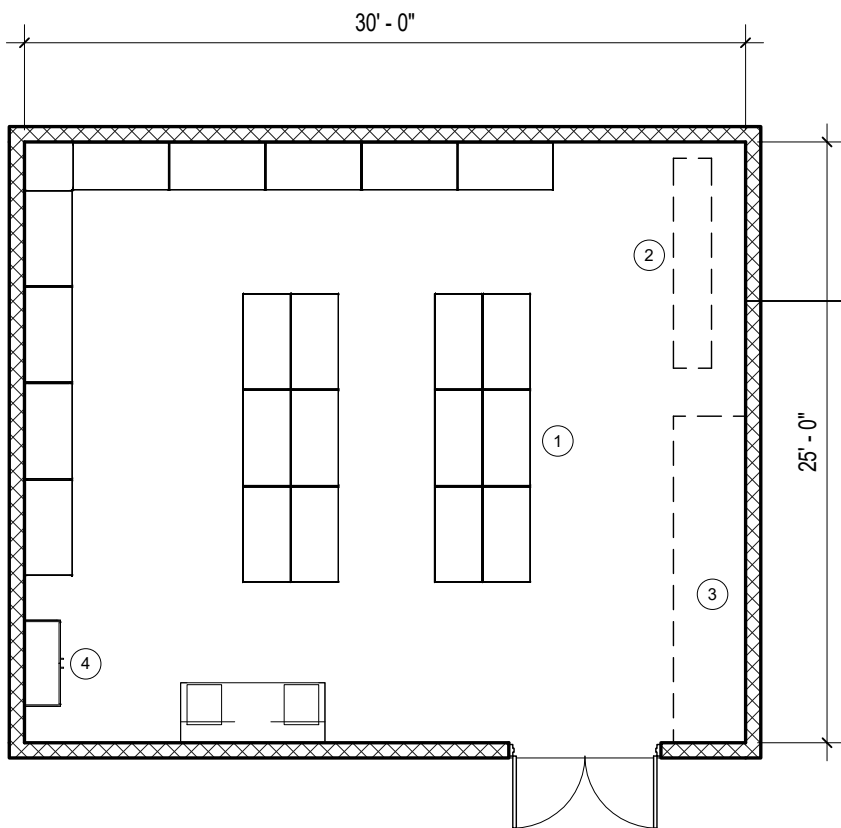
LOW FLOW FIXTURES

COMPONENTS:

- ① ADA TOILET
- ② ADA SINK



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



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

ROOM FINISHES

FLOORS: SEALED CONCRETE

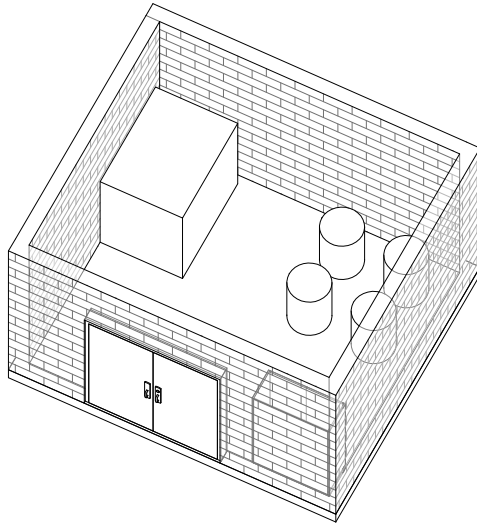
WALLS: CONCRETE BLOCK PAINTED

CEILING: OPEN TO STRUCTURE

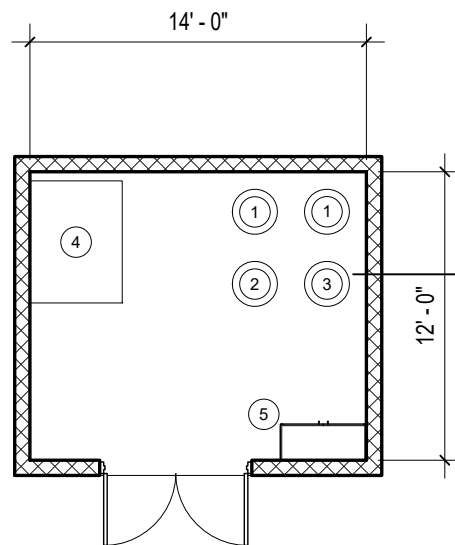
MEP/DATA REQUIREMENTS

COMPONENTS:

- 1 (48" W X 24" D X 84" H)
HEAVY DUTY SHELVING (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

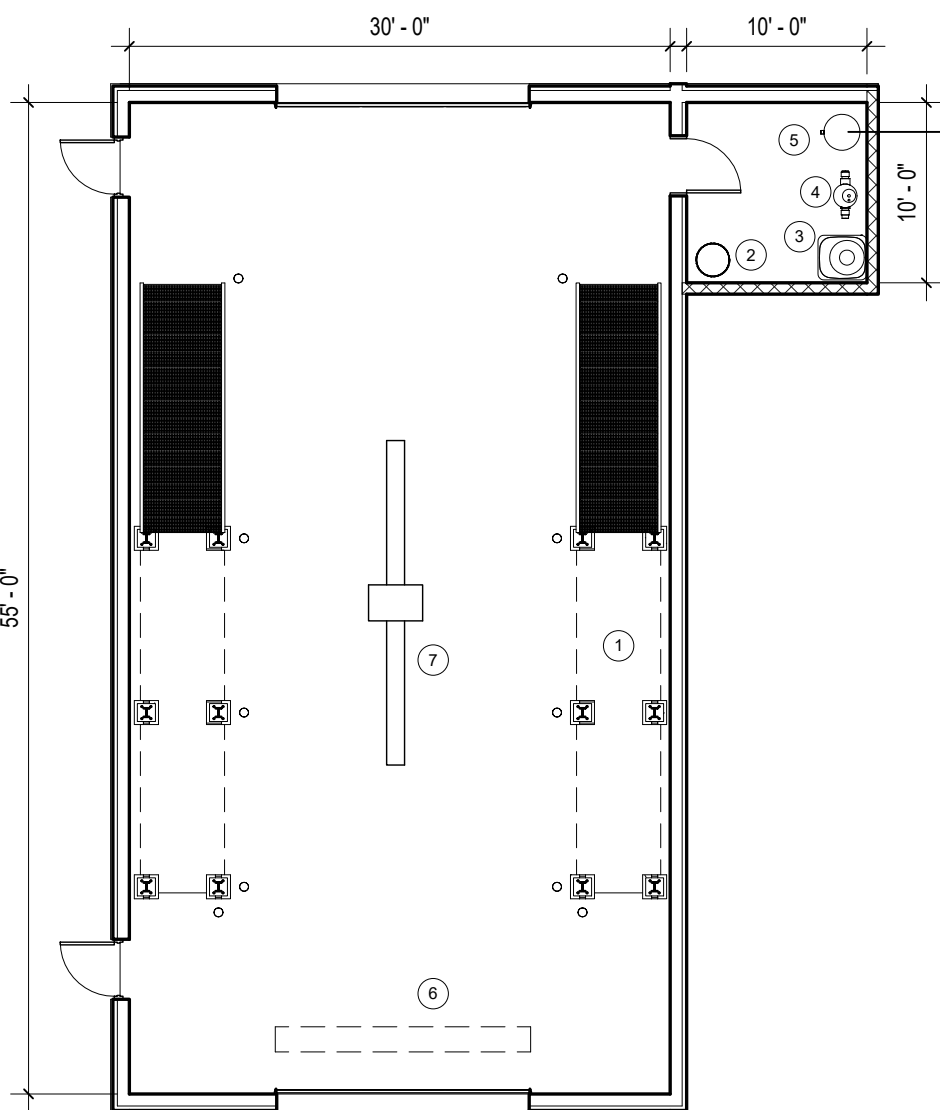
CEILING: GWB PAINTED

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



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

ROOM FINISHES

FLOORS: EPOXY RESINOUS FLOORING

WALLS: PVC PANELS

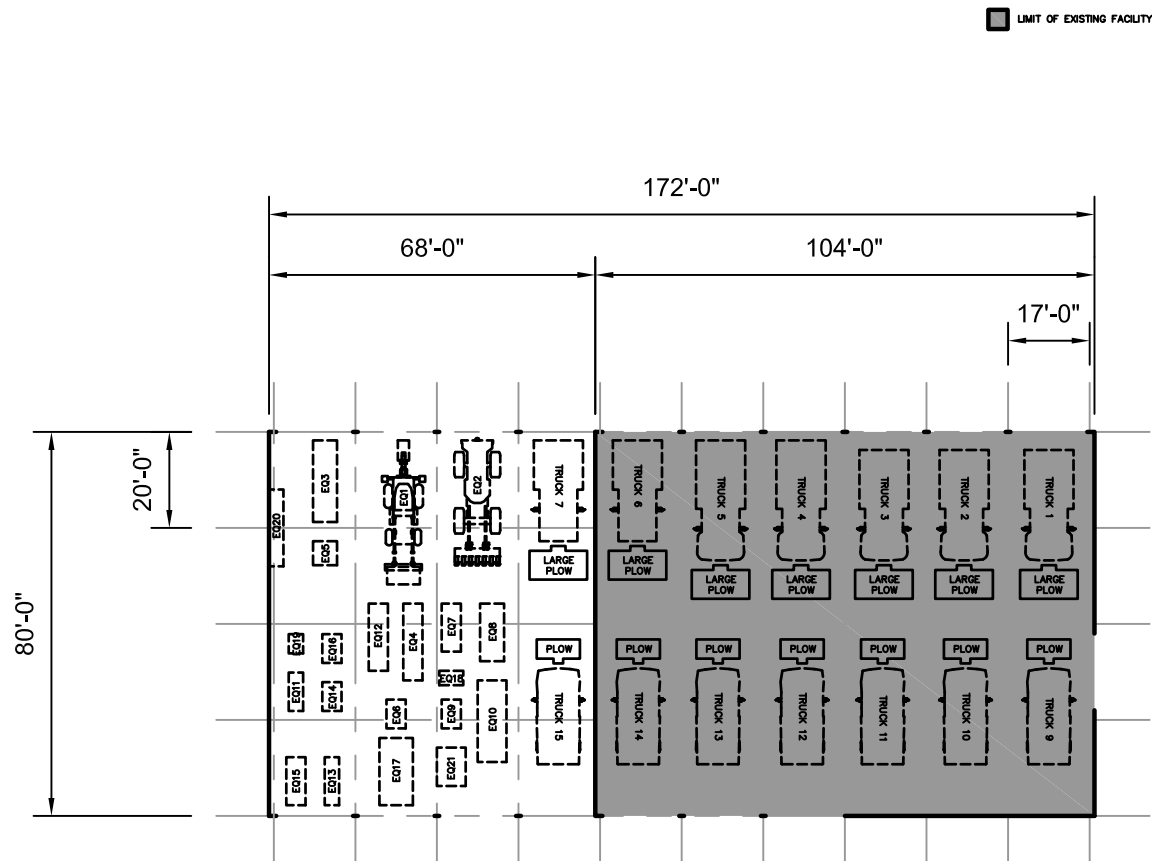
CEILING: PVC PANELS

MEP/DATA REQUIREMENTS

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

COMPONENTS:

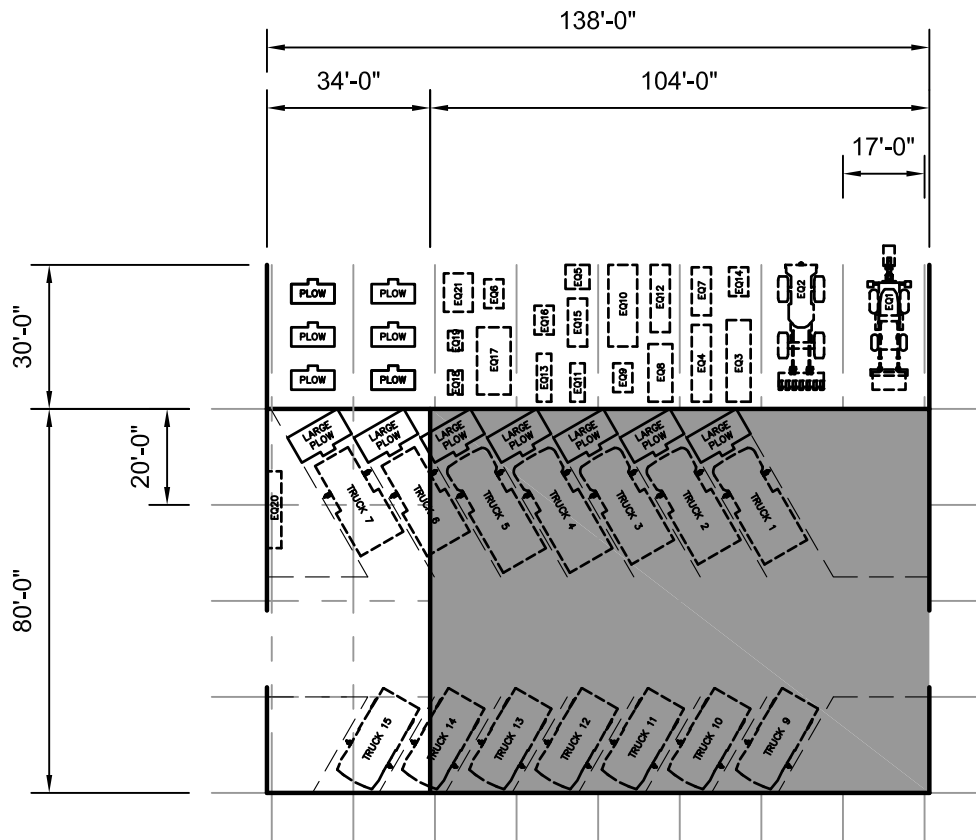
- 1 CATWALKS
- 2 DRUM OF SOAP
- 3 HEAT PUMP
- 4 PRESSUR PUMP
- 5 FILTER
- 6 UNDERCARRIAGE WASH
- 7 FLOOR DRAIN



■ LIMIT OF EXISTING FACILITY

VEHICLE STORAGE = 13,760sf

■ LIMIT OF EXISTING FACILITY



ALTERNATIVE VEHICLE STORAGE = 11,040sf

CANOPY = 4,140sf

Appendix C

Sensitive Receptors and Site Information



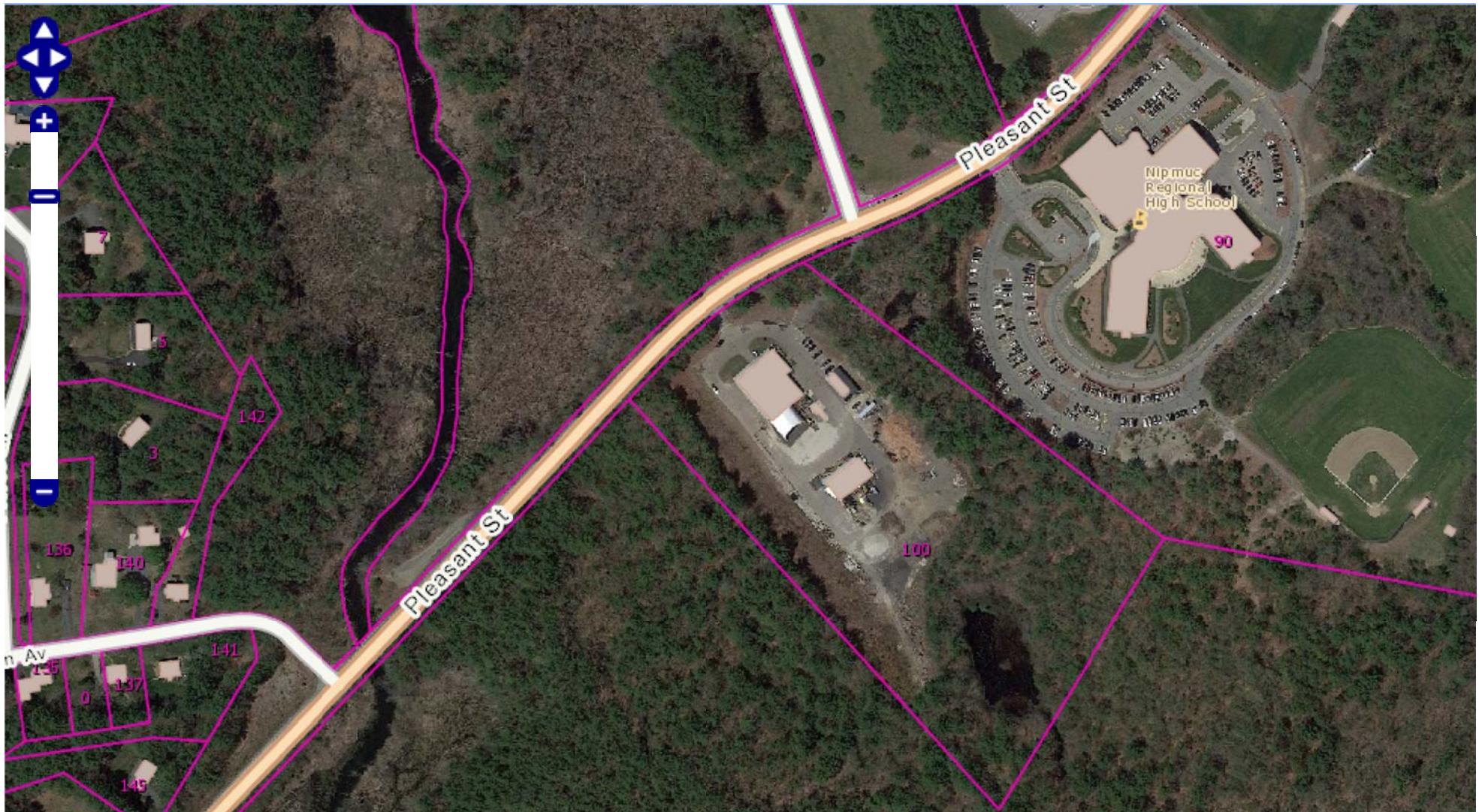
MuniMapper: Upton, MA

[Town of Upton Web Site](#)

[Disclaimer](#)



Search for a location





NO PARCEL 1,7,13,1,20,35,1.63,90

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, MAD 83.

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

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CAI Technologies
Precision Mapping | Geospatial Solutions

11 Pleasant Street, Littleton, NH 03561
800.322.4540 - www.cai-tech.com

LEGEND

AREA SURVEYED a
AREA CALCULATED a Cal
RECORD DIMENSION 100'
SCALED DIMENSION 100'S
WATER -W-

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

FEET 200 100 0 200 400 600

SCALE: 1" = 200'

METERS 60 25 0 50 100 150

REVISED TO: JANUARY 1, 2015

PROPERTY MAPS

UPTON

MASSACHUSETTS

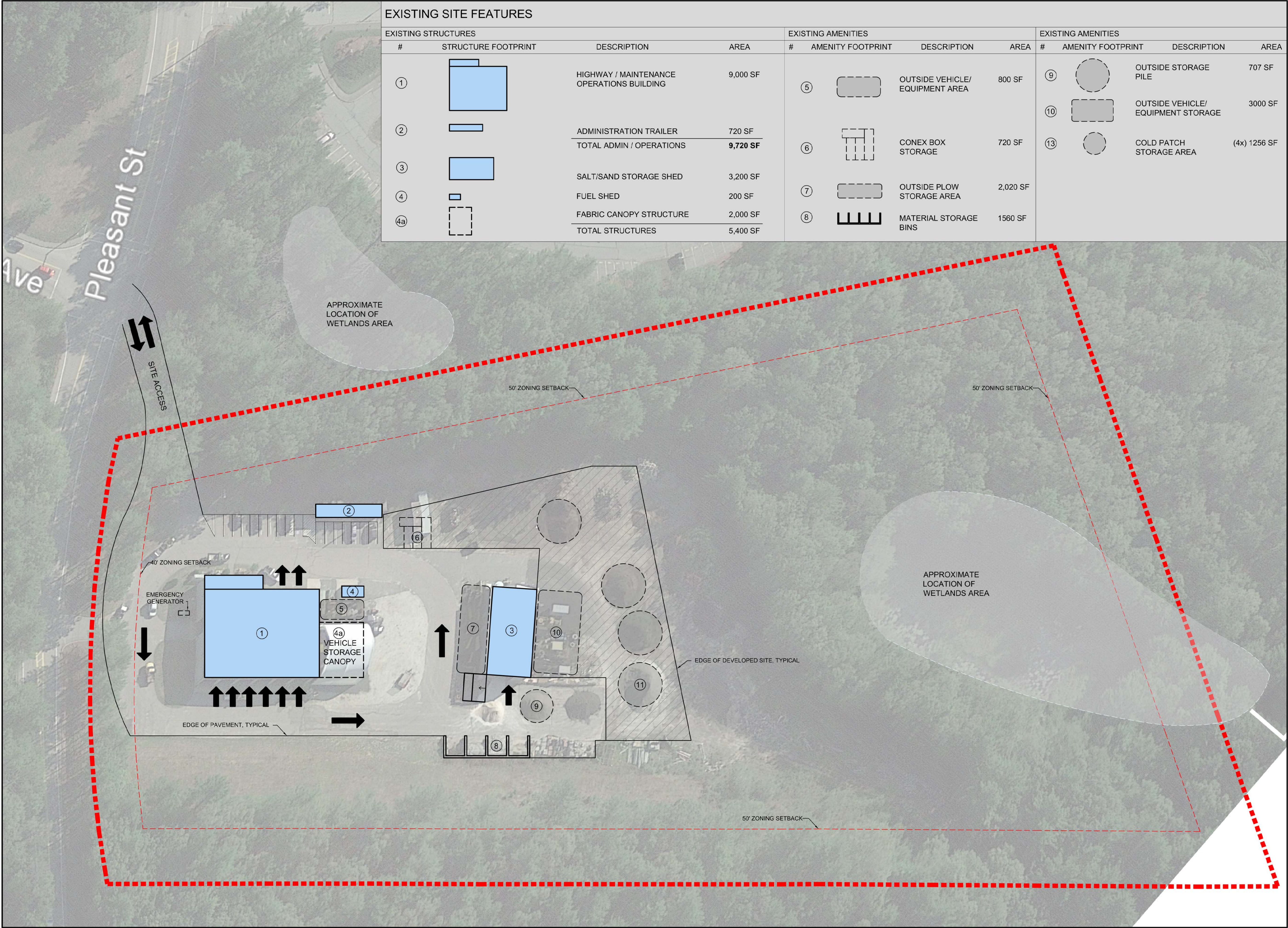
INDEX DIAGRAM



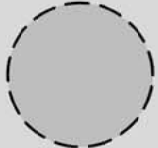
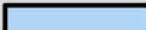
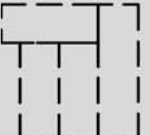







ON

19 204 201 21
23 203 202 22
27 26 25 24

MAP NO.

24



EXISTING SITE FEATURES												
EXISTING STRUCTURES				EXISTING AMENITIES				EXISTING AMENITIES				
#	STRUCTURE FOOTPRINT	DESCRIPTION	AREA	#	AMENITY FOOTPRINT	DESCRIPTION	AREA	#	AMENITY FOOTPRINT	DESCRIPTION	AREA	
①		HIGHWAY / MAINTENANCE OPERATIONS BUILDING	9,000 SF	⑤		OUTSIDE VEHICLE/ EQUIPMENT AREA	800 SF	⑨		OUTSIDE STORAGE PILE	707 SF	
②		ADMINISTRATION TRAILER	720 SF	⑥		CONEX BOX STORAGE	720 SF	⑩		OUTSIDE VEHICLE/ EQUIPMENT STORAGE	3000 SF	
		TOTAL ADMIN / OPERATIONS	9,720 SF					⑬		COLD PATCH STORAGE AREA	(4x) 1256 SF	
③		SALT/SAND STORAGE SHED	3,200 SF	⑦		OUTSIDE PLOW STORAGE AREA	2,020 SF					
④		FUEL SHED	200 SF	⑧		MATERIAL STORAGE BINS	1560 SF					
④a		FABRIC CANOPY STRUCTURE	2,000 SF									
		TOTAL STRUCTURES	5,400 SF									

Project:

UPTON DPW

DPW Feasibility Study

100 Pleasant Street
Upton, MA

Weston & Sampson

Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02335
(508) 668-3034 (800) SAMPSON
www.westonandsampson.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

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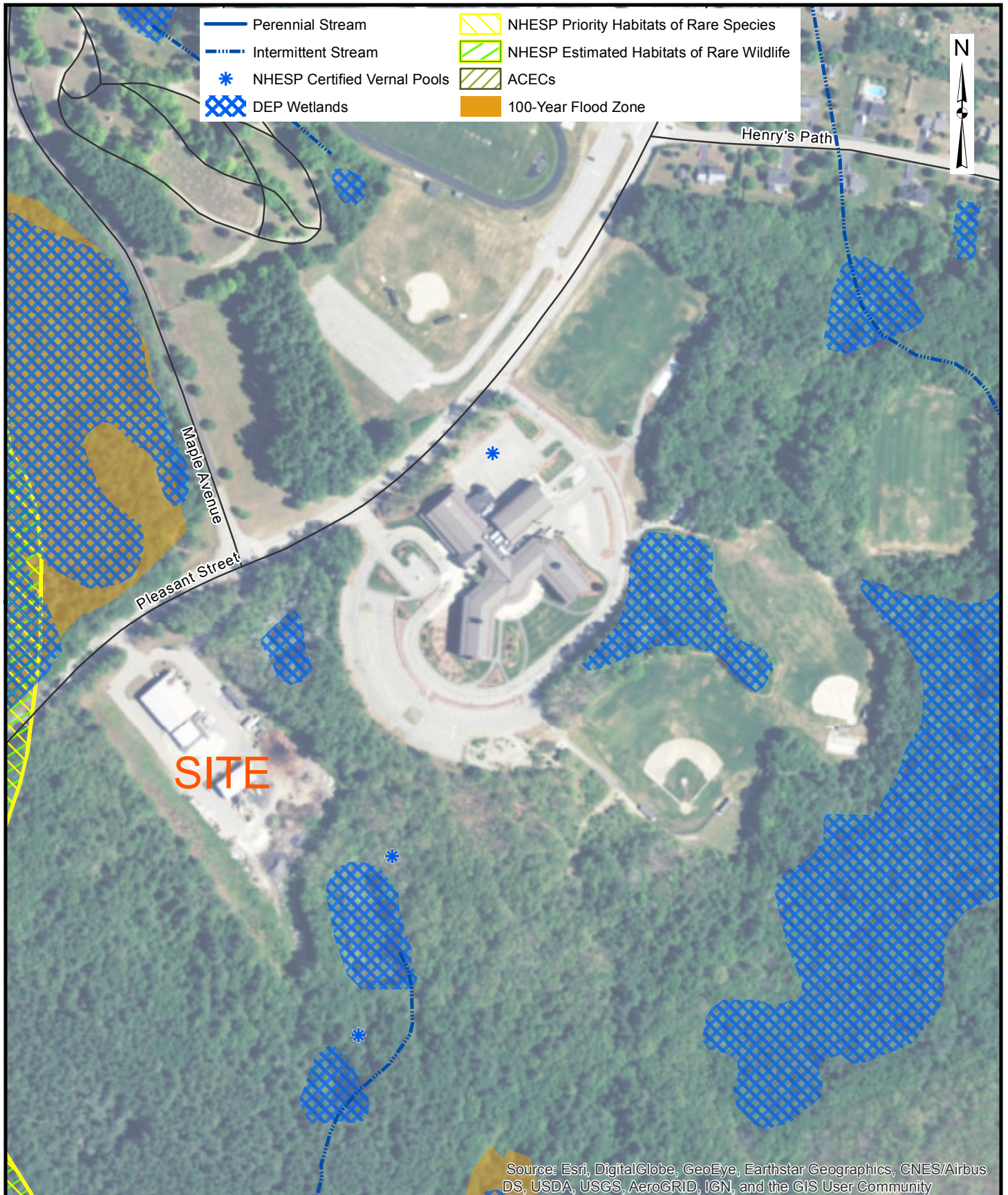
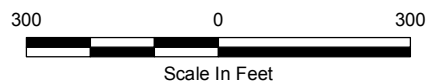


FIGURE 1
100 Pleasant Street
Upton, Massachusetts
ENVIRONMENTAL RECEPTORS



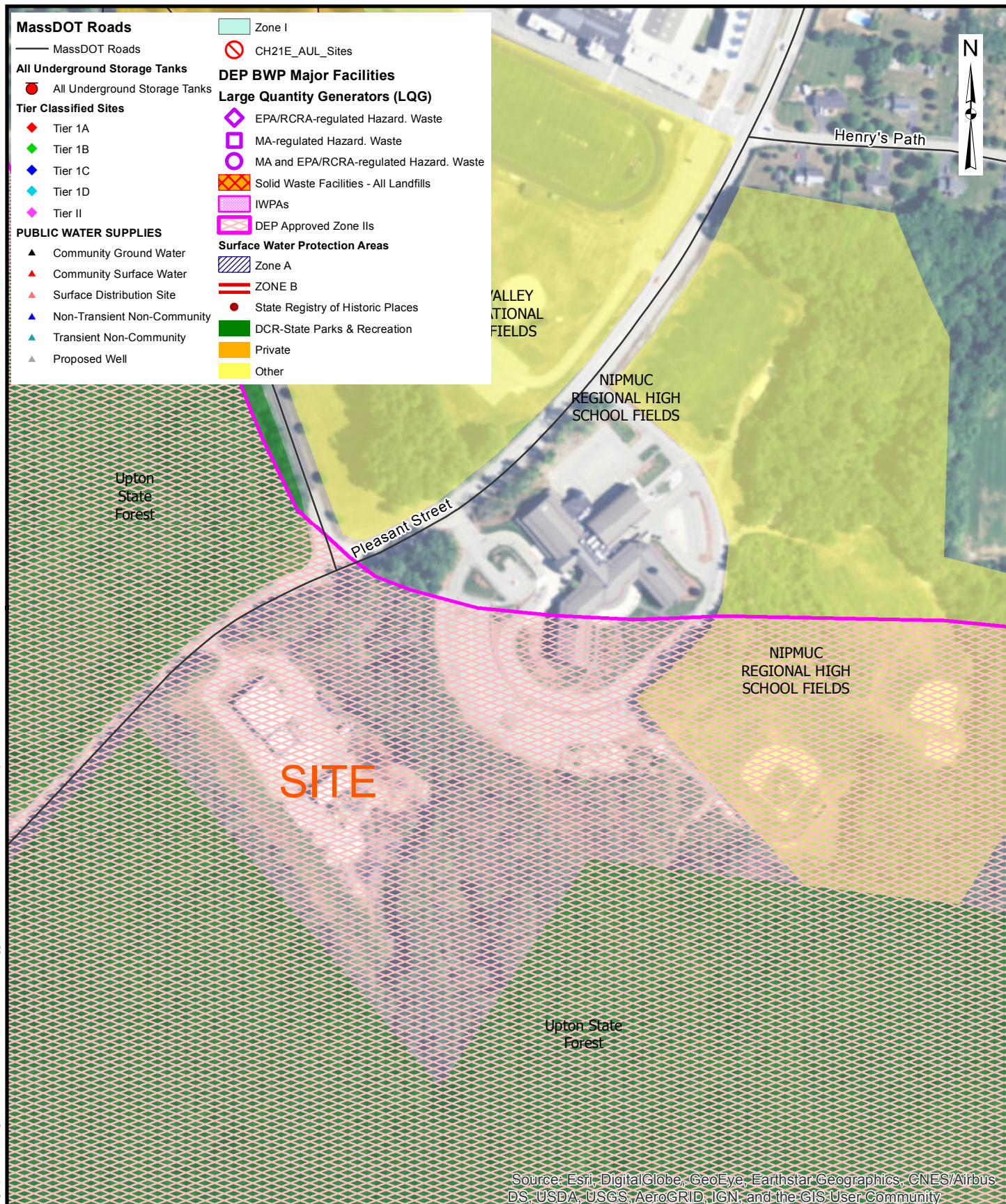
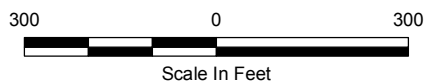


FIGURE 2
100 Pleasant Street
Upton, Massachusetts
HUMAN RECEPTORS

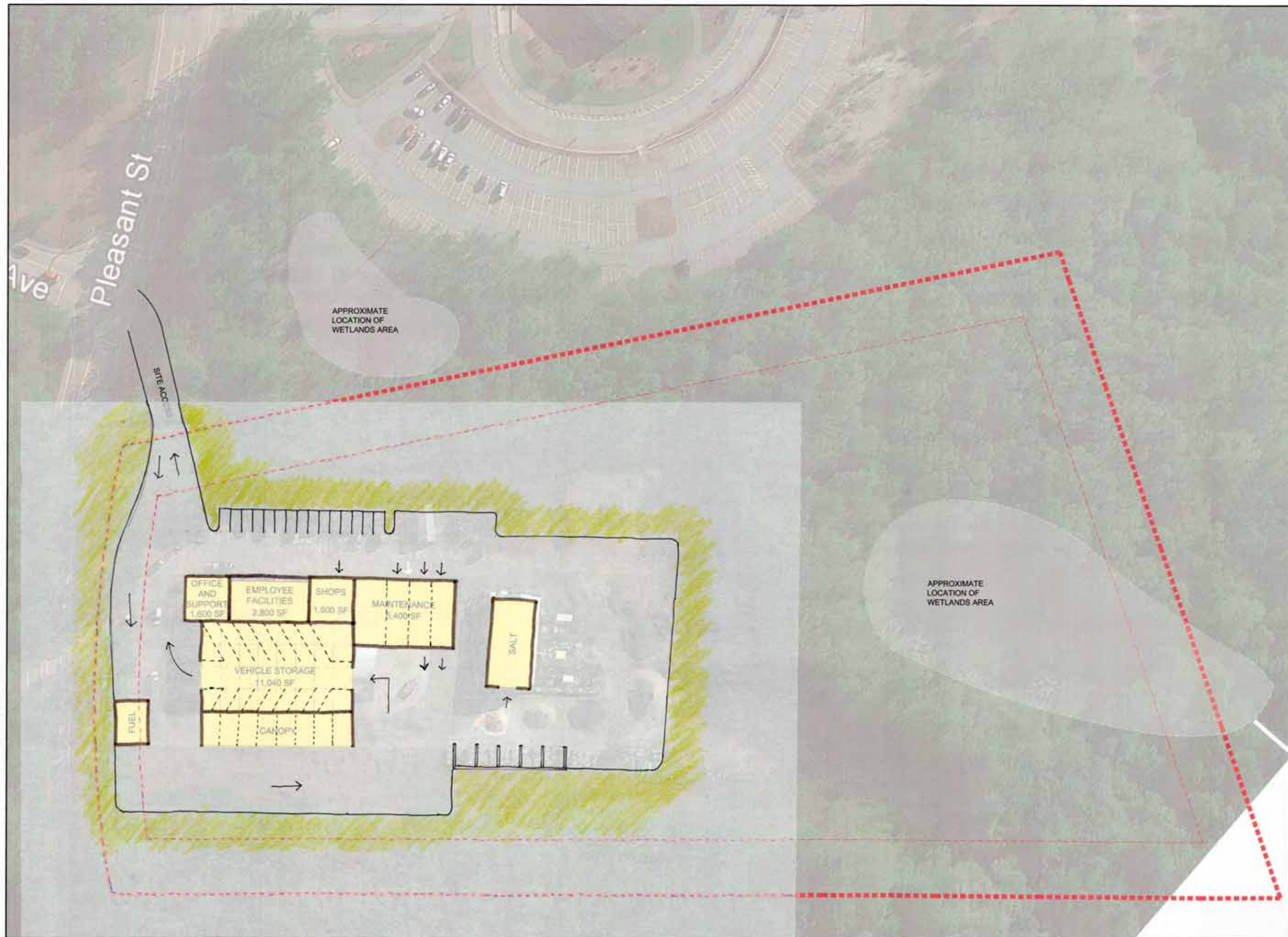


Appendix D

Conceptual Alternative Plans

Appendix D

Conceptual Alternative Plans Initial Alternatives



Project:

UPTON DPW



DPW Feasibility Study

100 Pleasant Street

Upton, MA



Weston & Sampson Engineers, Inc.

100 Fiddlersburg Boulevard Suite 250

Fiddlersburg, MA 01525

(508) 698-3034 FAX: (508) 698-3030

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

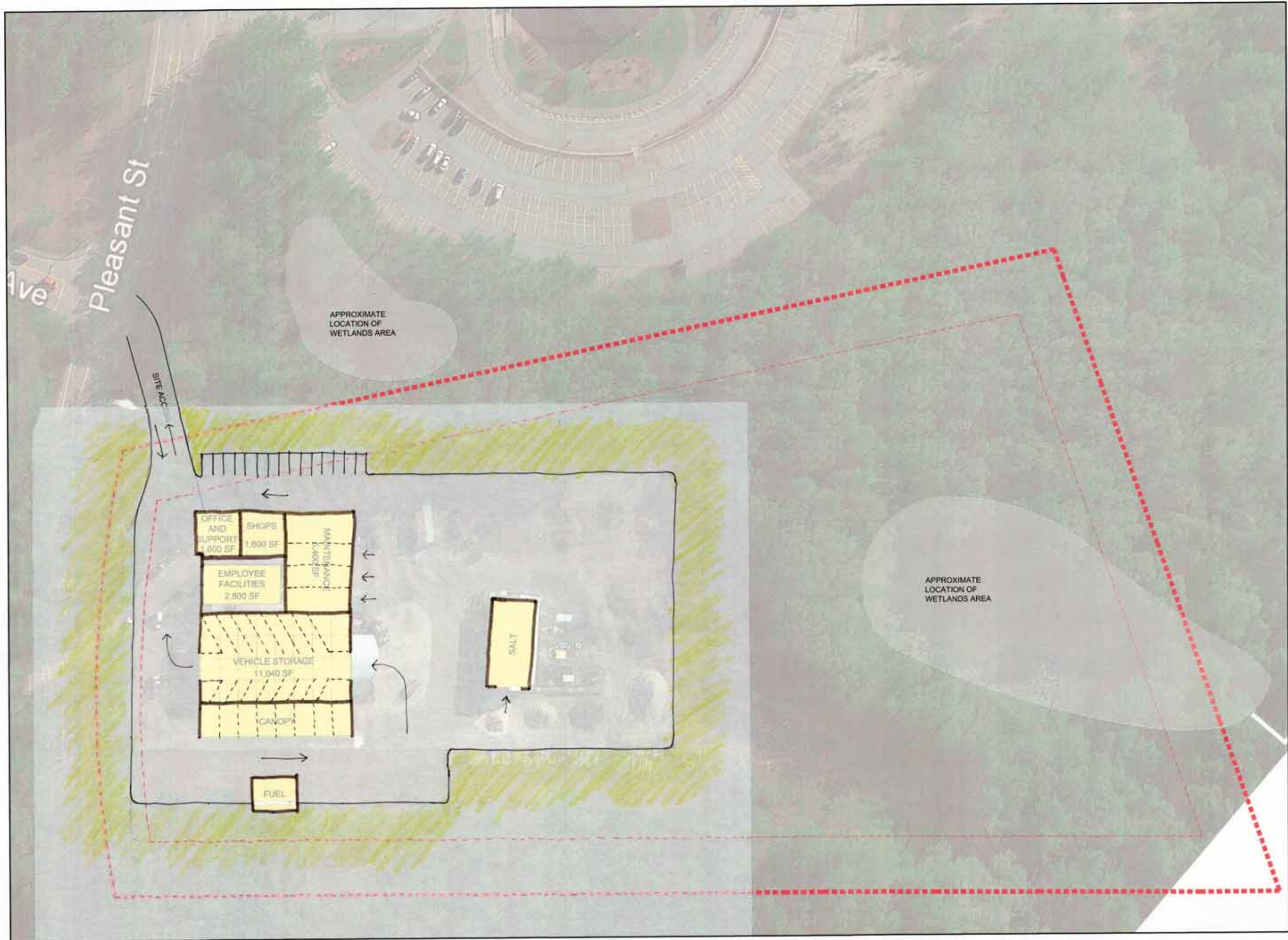
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Sheet Number:

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Project:

UPTON DPW



DPW Feasibility Study

100 Pleasant Street
Upton, MA

Weston & Sampson

Weston & Sampson Engineers, Inc.
100 Fawcett Avenue
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North

SCALE: 1" = 40'

Date: 3/14/2017

Drawn By: JW

Reviewed By: JA

Approved By: DT

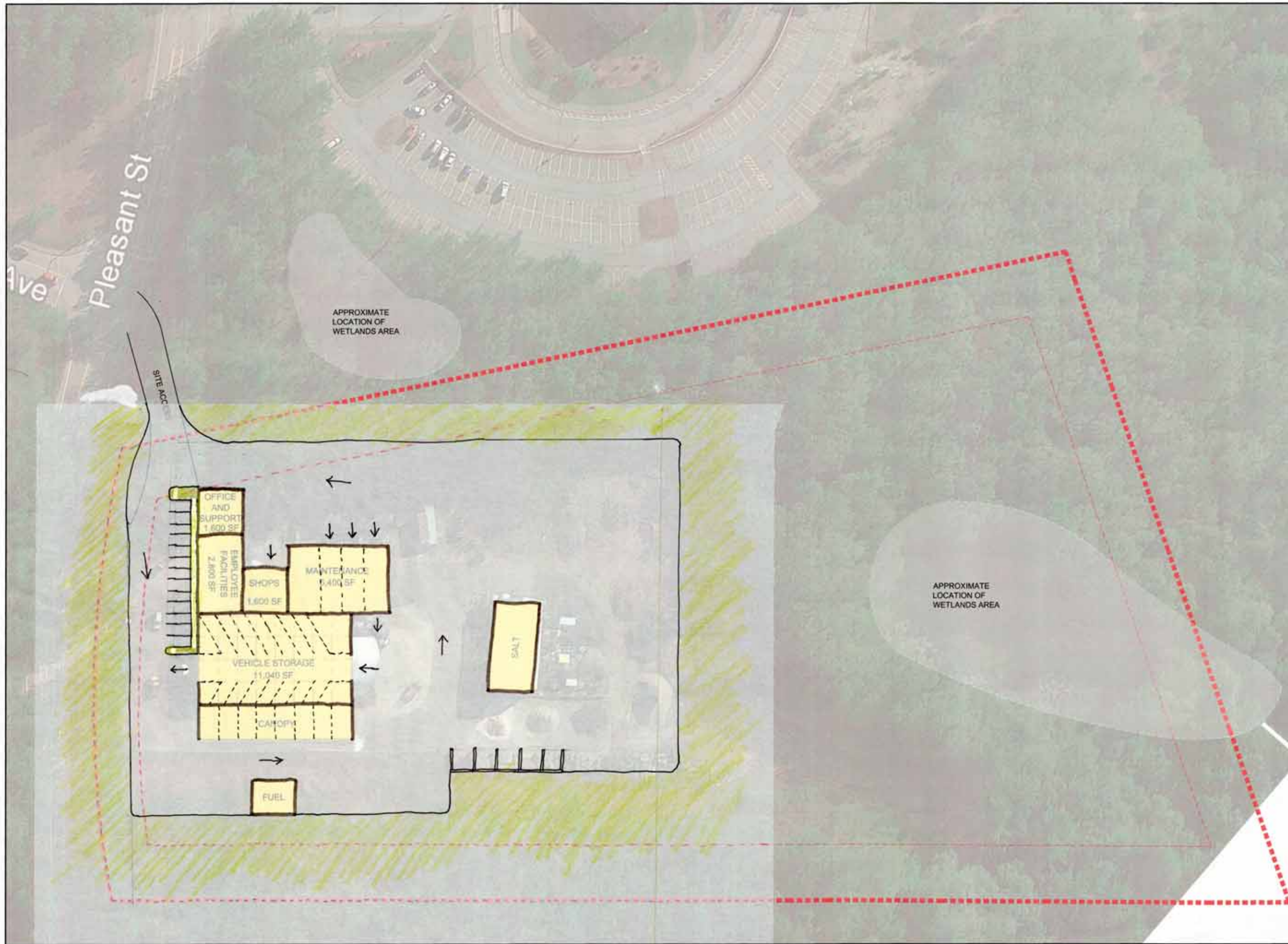
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Project: UPTON DPW



DPW Feasibility Study
100 Pleasant Street
Upton, MA


Weston & Sampson Engineers, Inc.
100 Fairbrough Boulevard Suite 205
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North

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

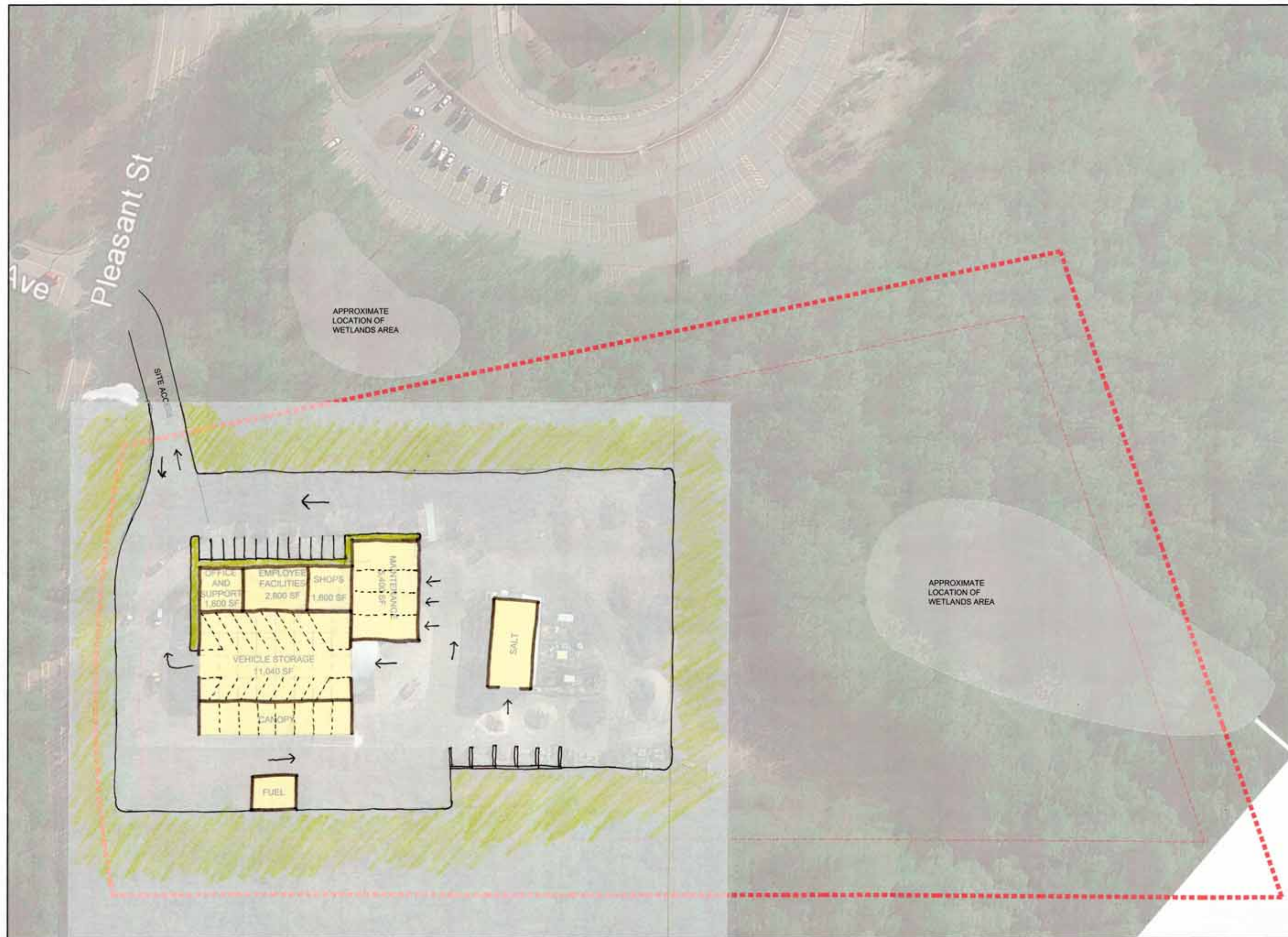
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Project:

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DPW Feasibility Study

100 Pleasant Street
Upton, MA

Weston & Sampson

Weston & Sampson Engineers, Inc.
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SCALE: 1" = 40'

Date: 3/14/2017

Drawn By: JW

Reviewed By: JA

Approved By: DT

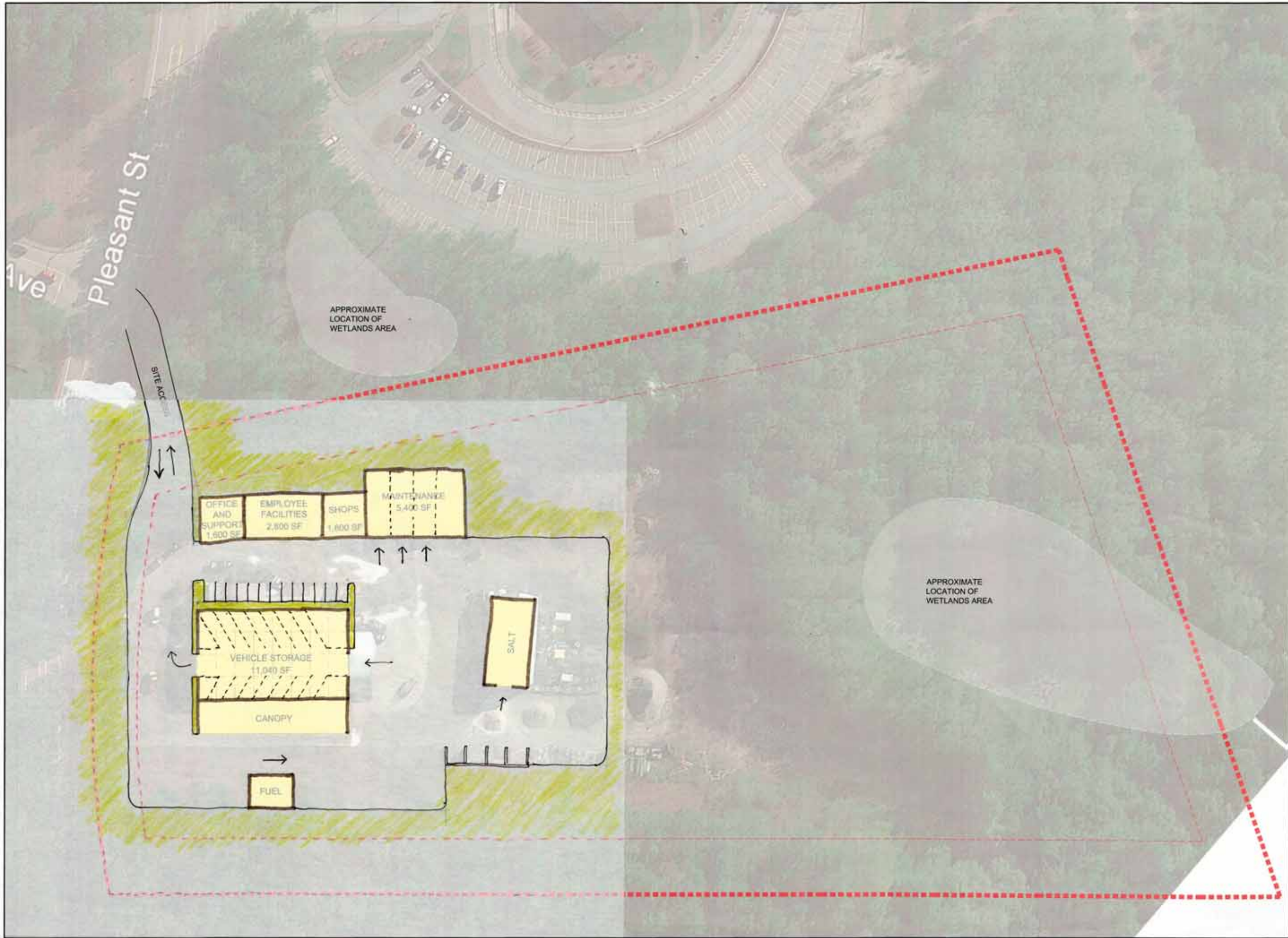
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Project:

UPTON DPW



DPW Feasibility Study
100 Pleasant Street
Upton, MA

Weston & Sampson

Weston & Sampson Engineers, Inc.
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Date: 3/14/2017

Drawn By: JW

Reviewed By: JA

Approved By: DT

W&S Project No: 2170116

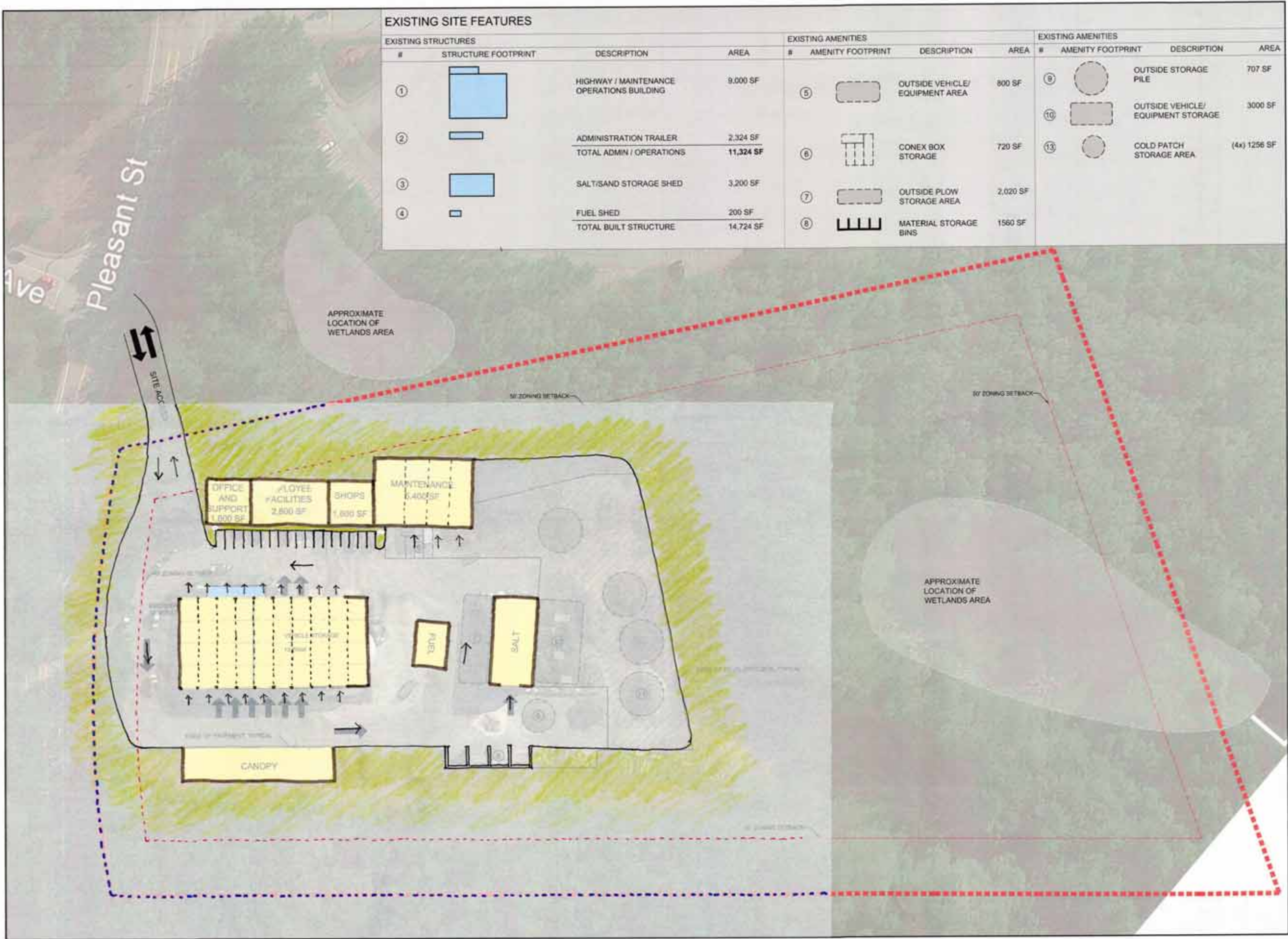
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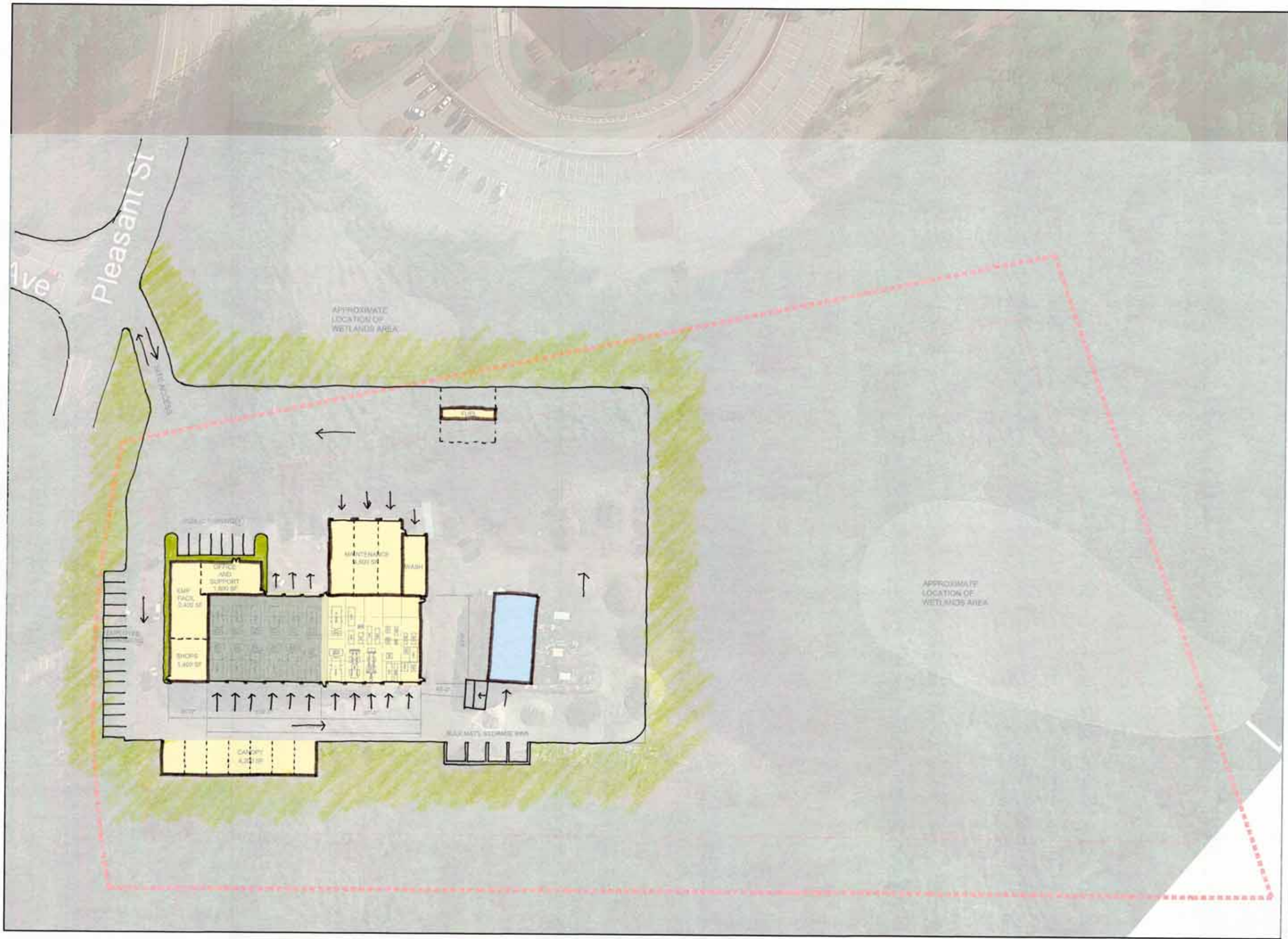
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Project:
UPTON DPW



DPW Feasibility Study
 100 Pleasant Street
 Upton, MA

Weston & Sampson
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 100 Westborough Boulevard, Suite 200
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Revisions:

Rev	Date	Description

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North

SCALE: 1" = 40'

Date: 3/14/2017
 Drawn By: JW
 Reviewed By: JA
 Approved By: DT
 W&S Project No: 2170118

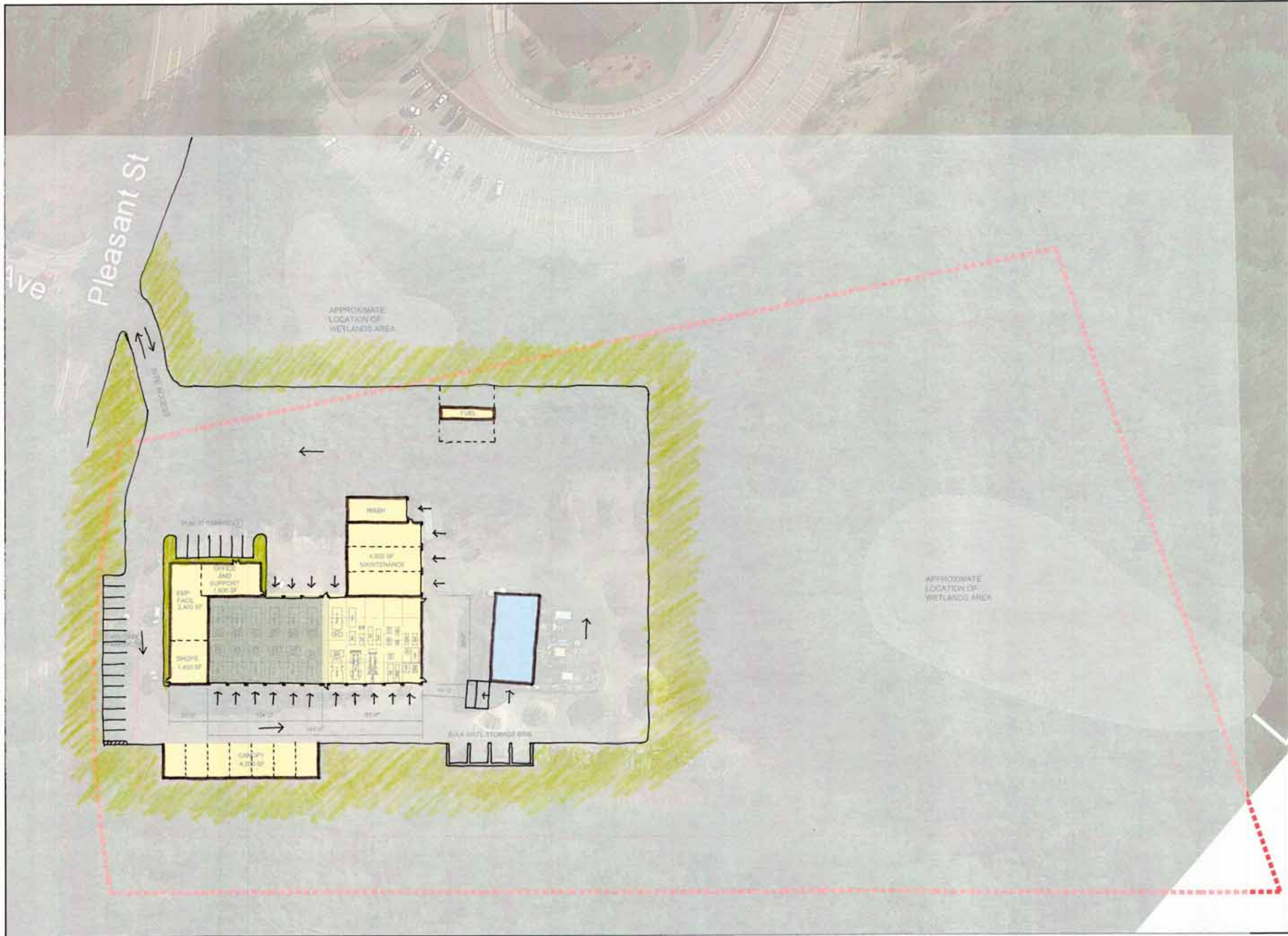
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WESTON & SAMPSON ENGINEERS, INC.



Project:
UPTON DPW


DPW Feasibility Study
100 Pleasant Street
Upton, MA


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Revisions:

Rev	Date	Description

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North

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



Project:

UPTON DPW



DPW Feasibility Study

100 Pleasant Street
Upton, MA



100 Fitchburg Boulevard Suite 250
Fitchburg, MA 01425
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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

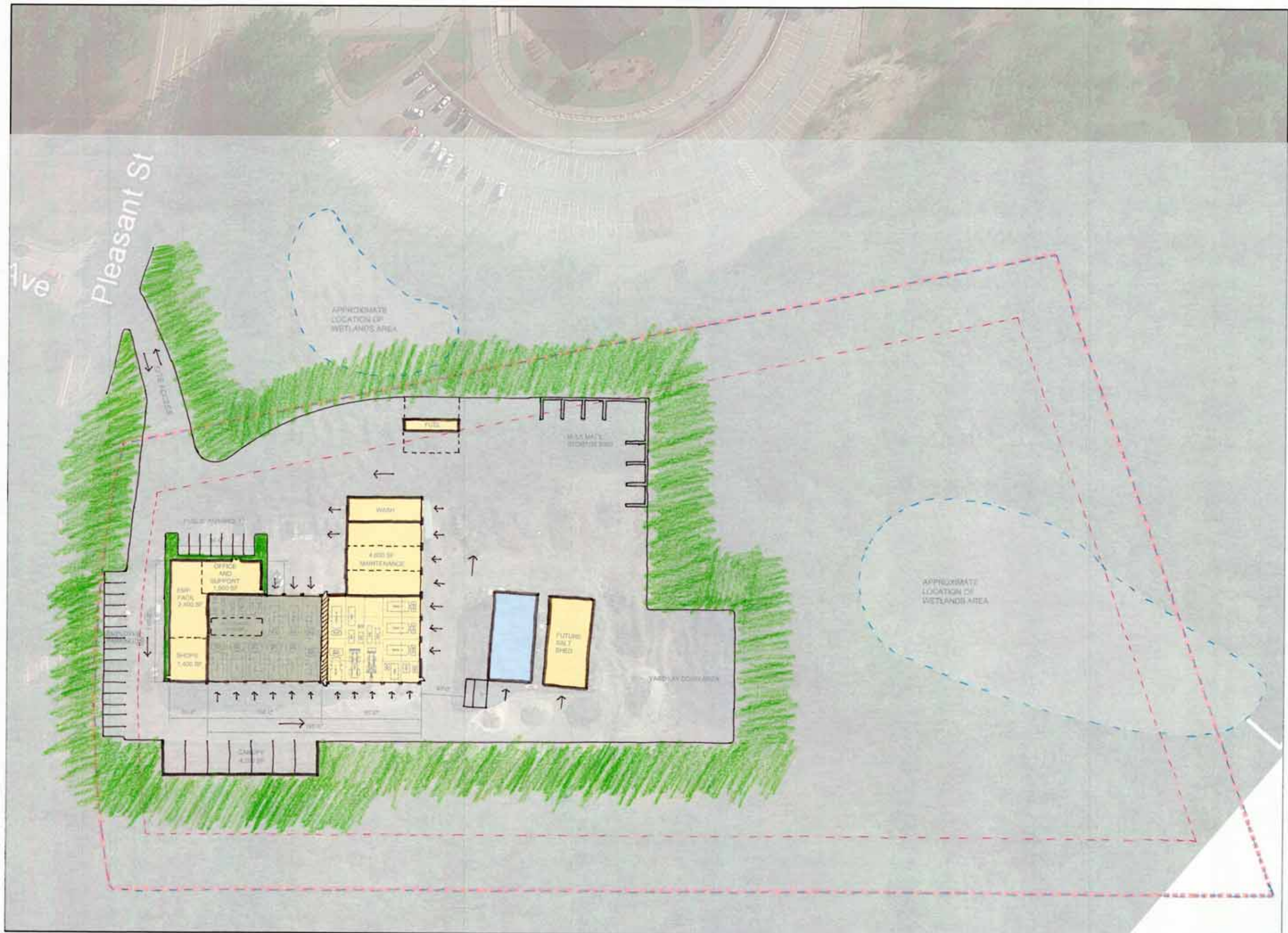
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PROPOSED SITE PLAN


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WESTON & SAMPSON CONSULTING, INC.



Project:
UPTON DPW



DPW Feasibility Study
 100 Pleasant Street
 Upton, MA

Weston & Sampson

100 Falmouth Boulevard Suite 250
 Falmouth, MA 02540
 (508) 688-3224 (800) 544-5454
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Consultants:

Seal:

Revisions:

Rev	Date	Description

Issued For: Conceptual Design



North

SCALE: 1" = 40'

Date: 7/13/2017
 Drawn By: JW
 Reviewed By: JA
 Approved By: DT
 W&S Project No: 2170116

Drawing Title:

**PROPOSED
 SITE PLAN
 ALTERNATIVE 10**

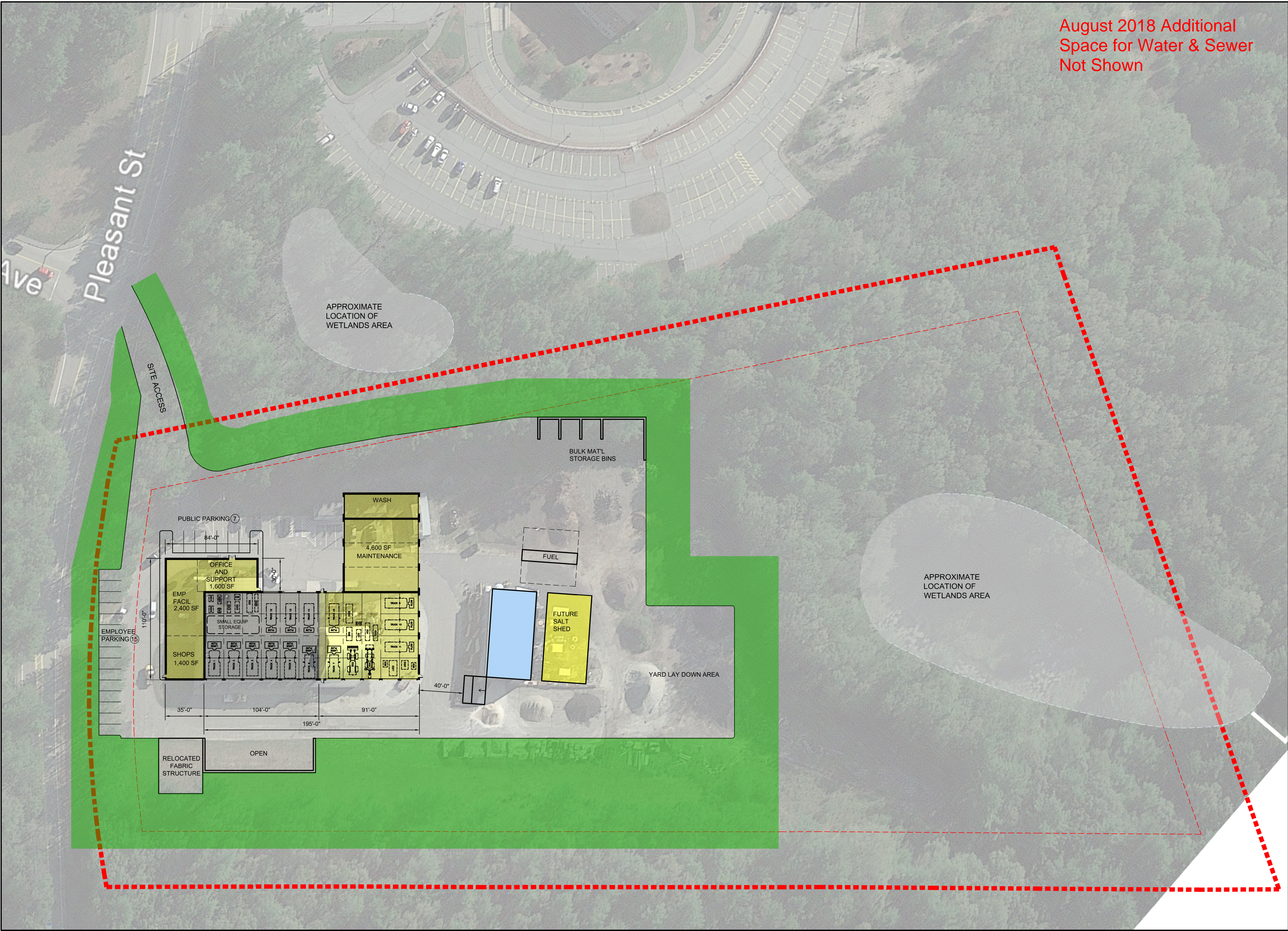
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Appendix D


Conceptual Alternative Plans Preferred Alternative



August 2018 Additional
Space for Water & Sewer
Not Shown

Project:

UPTON DPW



DPW Feasibility Study

100 Pleasant Street
Upton, MA

Weston & Sampson

100 Foxborough Boulevard Suite 250
Foxborough, MA 02035
(508) 698-3034 (800) SAMPSON
www.westonandsampson.com

Consultants:

Seal:

Revisions:

Rev	Date	Description

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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

Appendix E

Cost Summary

See August 2018
Update

Town of Upton
New Public Works Facility
Budget Total Project Cost

8/25/2017

<u>New Construction</u>		2017		
Area	Size (SF)	Cost/SF (w/ markups)	Cost	
Administration / Employee Facilities	4,022	\$320	\$	1,287,601
Shops	1,271	\$225	\$	285,928
Vehicle Maintenance (not including equipment)	4,903	\$225	\$	1,102,993
Wash	1,838	\$425	\$	781,905
Vehicle/Equipment Storage	5,440	\$177	\$	964,918
Added Cost for Specialty Foundations (based on 1st floor area)	17,474	\$23	\$	400,714
Decrease for Less Expensive Bldg & Finishes (-5%):		x	\$	(221,167)
New Construction Subtotal:	17,474		\$	4,602,891
Building Cost per SF:	\$263			
<u>Renovation</u>				
Garage Renovation (clean/h&v/elec)	8,400	\$	88	\$ 740,880
Renovation Subtotal:	8,400		\$	740,880
Building Cost per SF:	\$88			
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
Industrial Equipment Subtotal:			\$	528,039
Building & Equipment Total:			\$	5,871,810

Place a "x"
here if included

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
		Total Construction:	\$	7,849,898
		Total Construction Cost/SF:		303
Department of Public Works Budget Total Project Cost				
Owner's Soft Costs				
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		
		Total Soft Costs:	\$	1,964,229
		TOTAL PROJECT COST	\$	9,814,127

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

8/27/2018

<u>New Construction</u>		2017 Cost/SF (w/ markups)		Cost
Area	Size (SF)			
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)
New Construction Subtotal:	23,630		\$	5,740,910
Building Cost per SF:	\$243			
<u>Renovation</u>				
Garage Renovation (clean/h&v/elec)	8,400	\$	88	\$ 740,880
Renovation Subtotal:	8,400		\$	740,880
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
Industrial Equipment Subtotal:			\$	516,522
Building & Equipment Total:			\$	6,998,312

Town of Upton
New Public Works Facility
Budget Total Project Cost

8/27/2018

Mezzanines Relocate Existing Fabric Structure Site Development (acres) - assumes level site with no contamination, existing structures/utilities, etc. Partial Demolition of Existing Structure Salt/Sand Sheds				
		2,457	\$106	\$ 260,391
		2,000	\$40	\$ 80,000
		2.5	\$401,310	\$ 1,003,275
		700	\$25	\$ 17,500
		-	\$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	
	Total Construction:		\$ 9,493,692	
	Total Construction Cost/SF:			296
Department of Public Works				
Budget Total Project Cost				
Owner's Soft Costs				
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		
	Total Soft Costs:		\$ 2,351,207	
	TOTAL PROJECT COST		\$ 11,844,899	

Town of Upton
New Public Works Facility
Budget Total Project Cost

8/27/2018

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 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
		TOTAL Town Wide Fuel System:	\$ 1,436,919