Truro DPW - Cost-Benefit Analysis

Including Mass Save Incentives & Federal Tax Credit

Option	System	Gross Capital Investment	MassSave Heat Pump Adder Incentive	30% IRA Federal Tax Credit	Net Investment	Annual Elec. Cons. (kWh)	Annual Electric Cost	Combined Utility Cost	Annual Utility $/s.f.	Annual kBTU/s.f. (EUI)	Annual Maint. Cost	Annual Expense	Total Life-Cycle Costs	GHG Emissions (lb CO2)
1	ASHP base	$ 3,000,000			$ 3,000,000	86,730	$ 25,152	$ 25,152	$ 1.07	12.5	$ 15,000	$ 40,152	**$ 7,703,863**	**46,591**
1a	ASHP with incentives	$ 3,000,000	$ 80,000		$ 2,920,000	86,730	$ 25,152	$ 25,152	$ 1.07	12.5	$ 15,000	$ 40,152	**$ 7,573,189**	**46,591**
1b	ASHP with solar	$ 3,850,000	$ 80,000		$ 3,770,000	(113,270)	$ (22,654)	$ (22,654)	$ (0.96)	(16.4)	$ 20,000	$ (2,654)	**$ 6,483,337**	**(60,849)**
1c	ASHPs, Solar, and ASHP incentives & Solar tax credits	$ 3,850,000	$ 80,000	$ 255,000	$ 3,515,000	(113,270)	$ (22,654)	$ (22,654)	$ (0.96)	(16.4)	$ 20,000	$ (2,654)	**$ 6,066,814**	**(60,849)**
2	GSHP base	$ 4,250,000			$ 4,250,000	73,460	$ 21,303	$ 21,303	$ 0.90	10.6	$ 18,000	$ 39,303	**$ 9,182,237**	**39,463**
2a	GSHP with incentives	$ 4,250,000	$ 135,000		$ 4,115,000	73,460	$ 21,303	$ 21,303	$ 0.90	10.6	$ 18,000	$ 39,303	**$ 8,961,725**	**39,463**
2b	GSHP with Solar	$ 5,100,000	$ 135,000		$ 4,965,000	(126,540)	$ (25,308)	$ (25,308)	$ (1.07)	(18.3)	$ 23,000	$ (2,308)	**$ 7,948,012**	**(67,977)**
2c	GSHPs, Solar and GSHP incentives & GSHP & Solar tax credits	$ 5,100,000	$ 135,000	$ 1,530,000	$ 3,435,000	(126,540)	$ (25,308)	$ (25,308)	$ (1.07)	(18.3)	$ 23,000	$ (2,308)	**$ 5,448,876**	**(67,977)**

Notes:

Cost estimates based on similar project costs and Truro's SD cost estimate.

Incentives based on 2024 prescriptive heat pump incentives per Mass Save's New Construction Incentives Program

Solar energy production will vary depending on weather, maintenance quality, etc.

Assume solar net metering benefits of $0.20/kWh.

Bid alt for Solar estimated to cost $850,000.

Federal tax credit based on existing 2022 IRA direct pay tax credit. Not guaranteed in 2026.

https://www.energy.gov/eere/geothermal/tax-credits-incentives-and-technical-assistance-geothermal-heat-pumps

Estimated current utility costs based on $0.29/kWh for electricity.

Assumed 4% escalation rate for utility costs.

Estimated annual maintenance for solar to cost $5,000.

Assumed 4% escalation rate for maintenance and replacement costs.

Values based on energy model performed for HVAC System Life Cycle Cost Analysis purposes. A 30% safety factor should be applied for budgeting purposes to account for potential variances to the actual operation of the building. Per ASHRAE Standard 90.1:

Neither the proposed building performance nor the baseline building performance are predictions of actual energy consumption or costs for the proposed design after construction. Actual experience will differ from these calculations due to variations such as occupancy, building operation and maintenance, weather, energy use not covered by this procedure, changes in energy rates between design of the building and occupancy, and the precision of the calculation tool.

WESTON & SAMPSON ENGINEERS, INC.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
tel: 508.698.3034

westonandsampson.com

Schematic Design Report

May 2025

New Public Works Facility

17 Town Hall Road
Truro, Massachusetts 02666

TOWN OF
Truro
MASSACHUSETTS



Table of Contents

Introduction ..... Page 3

Schematic Design Narratives ..... Section I

- General
- Geotechnical
- Structural
- Fire Protection
- Plumbing
- Septic System
- HVAC
- Electrical
- Technology
- Geothermal

Schematic Design Drawings ..... Section II

- Site/Civil
- Architectural
- Industrial Equipment
- Solar Photovoltaic (PV)

Schematic Cost Estimate ..... Section III

- Estimated Total Project Costs Summary
- Designer Cost Estimate
- Owner's Project Manager Cost Estimate

Zoning & Permitting ..... Section IV
- Zoning & Permitting Analysis Memorandum
- Environmental Receptors Map
- Human Receptor Map
- National Flood Hazard FEMA Map
- Water Resource Protection Map
- Historic District Map

Program Documents ..... Section V
- User Group Program Needs
- Fleet Inventory
- Space Needs Summary
- Room Data Sheets

Sustainable Design Documents ..... Section VI
- Climate Resilience Design Standards Tool Project Report
- Sustainable Design Catalog
- Sustainable Design Workshop Meeting Notes
- Mass Save New Construction Program Overview
- Cost-Benefit Analysis; Building System Comparison

Industrial Equipment Documents ..... Section VII
- Existing Equipment Inventory
- Equipment Meeting Minutes
- New Equipment Cutsheets

Appendix ..... Section VIII
- Geotechnical Engineering Report
- Hazardous Building Materials Investigation
- Specification Table of Contents
- Truck Turning Templates

Introduction

The Town of Truro retained services from Weston & Sampson Engineers, Inc. (W&S), to design their new Department of Public Works (DPW) Facility. The following Schematic Design (SD) Report is to guide the project and show stakeholders the background documentation and key design decisions for their project. The program needs of DPW operations have been developed and refined since the initial feasibility study that began in 2018. The SD Report results from various meetings between the Design Team, Owner's Project Manager (OPM), DPW workforce, and Truro's Ad Hoc Building Committee to discuss design progress and collect input regarding budgetary considerations, building design concepts, and goals for sustainability, asset management, and occupant health and safety. The schematic phase also included planning conversations with Truro's Board of Health as well as coordination meetings with environmental engineers of HRP Associates, Inc. who are contracted with Truro for PFAS remediation services in a portion of the project site.

Programmatic input and project goals are reflected throughout the content of this report, although it is an ongoing effort that will continue into the next phase of design referred to as Design Development (DD). With the completion of SD comes the milestone of a schematic-level cost estimate (refer to Section III). Due to the preliminary nature of schematic design, many budget items are based on general building costs per square foot, with site development costs per acre. Estimates include a design contingency to cover items that are not yet fully defined or designed and a construction contingency to account for potential unforeseen conditions which may be discovered during construction.

The next phase of design (DD) will allow the Town, OPM and Design Team to further discuss the project budget and adjust the design in an effort to manage costs. At the end of DD, there will be another opportunity to collect cost estimates that are typically more accurate than SD cost estimates as the design progresses and becomes more defined.

SECTION I

Schematic Design Narratives

100 Foxborough Blvd., Suite 250, Foxborough, MA 02035
Tel: 508.698.3034

SCHEMATIC DESIGN NARRATIVE

General

PROJECT: Truro, MA – Public Works Facility

FROM: Project Management Team

DATE: May 2, 2025

SUBJECT: Schematic Design Narrative – General

PROJECT INFORMATION

The project is located at 17 Town Hall Road in the Town of Truro, MA and consists of demolishing the existing Department of Public Works (DPW) building structures, providing site improvements, and constructing a new, consolidated DPW facility. The proposed building includes administrative offices, employee facilities (i.e. locker rooms, a training room), a carpentry shop and sign storage, fleet maintenance bays and support spaces like fluid and parts storage, a vehicle wash bay, a fleet storage garage, utility rooms, and mezzanine storage spaces. The project also includes site components like an exterior knock-down pad, material storage bins and a salt shed. The existing fuel station will remain.

During the schematic design phase, several pricing alternatives were identified in an effort to manage construction costs with consideration for the Town/stakeholders and their budget. The following section outlines the project's pricing alternatives, which will be evaluated based on project requirements and cost-effectiveness.

Pricing Alternates:

The following pricing alternates have been prepared to assist the Town with making key decisions for their project. They are listed as separate line items in the cost estimates in Section III, allowing for easy addition or deduction from the project cost:

- Alternate 1: Additional 5,000 square feet of fleet storage
    - An extension of the fleet storage garage totaling 5,000 square feet to provide additional storage space for DPW vehicles and equipment. Refer to the architectural drawings for additional details.

- Alternate 2: Detached Storage Canopy
    - The construction of a standalone canopy structure on the north edge of the project site measuring 30' x 135'. Refer to the architectural and civil drawings for additional details.

- Alternate 3: Wash Bay Finishes & Equipment
    - To finish out the wash bay, Alternate 3 includes the proposed wall finishes and respective industrial vehicle wash equipment. Refer to the architectural drawings and equipment layout plans for additional details.

- Alternate 4: Rooftop Solar Installation
    - Installation of rooftop solar panels as part of the initial construction. Based on the available roof area of approximately 10,345 square feet and typical solar panel efficiencies, the entire system is estimated to produce between 200 MWH and 250 MWH per year, depending on the specific panel type. The east- and west-facing roofs with minimal pitch will optimize solar generation for morning and afternoon production, although overall output will be lower than a south-facing installation. The solar array is designed to offset a portion of the building's energy usage and will comply with local regulations.

- Alternate 5: Ground Source Heat Pumps (GSHP)
    - The geothermal / ground source heat pump system will be provided as an alternate to the ASHP system. It will utilize a closed-loop well design sized for a heating load of 30 tons and measures for redundancy. The tonnage values are assumptions at this stage, and if this option is selected, it is recommended that a test well be drilled to gather more precise information on the actual performance and final spacing requirements. The test well would then become part of the final proposed system. Refer to the Geothermal Well Narrative for additional details.

100 Foxborough Blvd., Suite 250, Foxborough, MA 02035
Tel: 508.698.3034

SCHEMATIC DESIGN NARRATIVE

Geotechnical Engineering

PROJECT: Truro, MA – Public Works Facility

FROM: Stephen Spink

DATE: May 2, 2025

SUBJECT: Schematic Design Narrative – Geotechnical Considerations

---

The following is the Geotechnical Engineering narrative for the referenced project. Project details had not yet been finalized at the time of this narrative. The geotechnical engineering considerations discussed herein have been based on Preliminary Design Plans prepared by Weston & Sampson dated April 15, 2025.

General Subsurface Soil & Groundwater Conditions:

The subsurface conditions encountered in our explorations generally consisted of previously placed non-engineered fill overlying native granular soils to the depths explored.

The fill thickness was generally less than 2 feet within the majority of the site but increased to the north. Adjacent to the existing slope at the northern portion of the currently developed parcel, fill thickness increased to depths up to approximately 13 feet. The fill was generally very loose to loose and contained varying amounts of debris.

The native granular soils generally consisted of loose to medium dense sand with trace non-plastic fines and trace gravel.

Groundwater was not encountered in our explorations which were extended to a maximum depth of approximately 39 feet.

Seismic Design Considerations:

Based on our explorations, the project should be evaluated using parameters associated with Site Class D.

Liquefaction can occur in loose, saturated, granular soils. Strong shaking, such as that experienced during earthquakes, can cause a sudden loss of shear strength, densification, and subsequent settlement of these soils. Based on the anticipated depth to groundwater encountered in our explorations, the risk of structurally damaging ground deformations related to liquefaction is considered low.

Structure Foundations:

The existing non-engineered fill is not suitable (or allowed by the Massachusetts State Building Code, MSBC) for support of foundations, building floor slabs or other rigid structural site improvements that could be adversely affected by differential settlement. Existing fill and subsoil should be completely removed from within the zone-of-influence beneath proposed foundations and other structural elements. The 'zone-of-influence' is defined by a plane extending horizontally away from the bottom outside edges of footings and other structural site improvements a horizontal distance of two feet in all directions, then down and away at 1H:1V (horizontal:vertical) slopes to the intersection with undisturbed native soils.

Main Building and Fleet Storage: Provided non-engineered fill and subsoil is removed from the zone-of-influence beneath footings and lower level floor slabs as described above and structural loads are typical for one- to two-story structures, these proposed structures can be supported using conventional, shallow spread footings bearing on native, undisturbed, inorganic, granular soils or on properly constructed structural fill directly overlying these materials.

Due to the generally loose density of the shallow granular soils, a maximum net allowable bearing capacity of 2,000 psf is recommended for design of spread footings. Resistance to lateral loads can be obtained by a passive equivalent fluid pressure of 225 pounds per cubic foot (pcf), ignoring the top 12 inches of embedment, and by a cast-in-place footing base friction coefficient of 0.45.

Footings should be embedded at least 4 feet below the nearest proposed adjacent ground surface exposed to freezing.

Canopy Bid Alternate: Due to the depth, density and variability of the fill encountered in the area of the proposed canopy, shallow foundations *are not* considered feasible foundation support alternatives. Deep foundations consisting of helical piles or driven piles should be anticipated for foundation support.

Salt Shed: Following the removal of existing fill, shallow foundations are expected to be suitable for support of the proposed structure. To reduce the potential of future settlement below the salt pile in the building interior, preloading or use of this area for material stockpiling during construction is recommended.

100 Foxborough Blvd., Suite 250, Foxborough, MA 02035
Tel: 508.698.3034

SCHEMATIC DESIGN NARRATIVE

STRUCTURAL

PROJECT: Truro, MA – Department of Public Works

FROM: Abigail Cory, PE

DATE: May 29th, 2025

SUBJECT: Schematic Structural Design Narrative

PROJECT UNDERSTANDING

The Truro Department of Public Works Building is proposed to be located at 17 Town Hall Road in Truro, MA. The structure shall be a pre-engineered metal building consisting of four main areas: an employee facilities space, fleet storage space, fleet maintenance space, and a workshop area. Mezzanine spaces are assumed to be in the fleet storage and fleet maintenance areas. A wash bay area will be included adjacent to the fleet maintenance area. Other proposed structures include a fabric membrane structure salt shed with concrete foundation walls.

Proposed bid alternates include a vehicle storage extension, a detached exterior canopy storage area, wash bay finishes and equipment, roof-mounted solar, and a ground source heat pump system.

It is our understanding that the Town is interested in lowering embodied carbon of the proposed structure. Low carbon and cost-effective material options may be explored and included in the project specifications. Potential options include performance criteria for lower carbon concrete and considering locally available materials.

DESIGN CRITERIA

Codes:

- 2021 International Building Code (IBC 2021)
- 780 CMR: Massachusetts Amendments, 10th Edition
- ASCE 7-16 “Minimum Design Loads for Buildings and Other Structures”
- AISC Manual of Steel Construction 14th Edition
- ACI 318-19 “Building Code Requirements for Structural Concrete”
- ACI 503-14 “Building Code Requirements for Masonry Structures”
- MBMA “Metal Building Systems Manual 2012”

Design Loading Criteria:

- Building Risk Category IV for DPW Structure
- Building Risk Category II for Salt Shed
- Dead Loads:
    - Actual Weight of Building Components

  - Collateral Load_____10 psf minimum
  - Solar Allowance_____8 psf
- Live Loads:
  - Office + Partitions_____70 psf
  - Assembly Areas, Corridors, Stairs_____100 psf
  - Mechanical Areas_____250 psf
  - Storage Mezzanines_____250 psf
  - Vehicle Storage/Maintenance Areas_____250 psf or HS-20
  - Roof _____20 psf
- Snow:
  - Ground Snow Load, Pg_____ 25 psf
  - Min. Flat Roof Snow Load, Pf_____25 psf
  - Design Snow Load_____25 psf + Drift
  - Importance Factor, Is_____1.2 (including Salt Shed)
- Wind:
  - Ultimate Design Wind Speed, Vult_____141 mph Risk Cat IV
  - Ultimate Design Wind Speed, Vult_____128 mph Risk Cat II
  - Exposure Category_____C
- Seismic:
  - Spectral Acceleration Ss_____0.168
  - Spectral Acceleration S1_____0.051
  - Site Class_____ Assume D**
  - Fa _____1.60
  - Fv _____ 2.40
  - Sms, Sm1_____0.268, 0.122
  - Sds, Sd1_____0.179, 0.082
  - Seismic Design Category _____C for DPW Structure
- Frost Depth_____4'-0"

Weston & Sampson Geotechnical Engineers will develop a geotechnical report indicating allowable soil bearing pressures. **Geotech Report shall also indicate existing soil site class.

PROPOSED STRUCTURES

The Truro DPW proposed scope of work includes the following:

The proposed facility is approximately 23,605 square feet (SF), not including the detached salt shed or the canopy bid alternate. The fleet storage building will be a one-story structure with 15 vehicle parking spaces totaling approximately 12,910 SF. The fleet maintenance area includes (2) maintenance bays and (1) bay of maintenance support area, totaling approximately 4,730 SF. The workshop area includes (1) bay, approximately 1,400 SF. The administrative space includes employee facilities and offices, totaling approximately 2,915 SF. The detached salt shed structure is located at the northern corner of the site and is approximately 2,400 SF. The wash bay will be located adjacent to fleet maintenance, approximately 1,650 SF. The vehicle storage area extension bid alternate will be approximately 5,000 SF. The detached exterior vehicle canopy bid alternate will be located north of the DPW building, approximately 4,050 SF.

The roofs for the fleet storage, fleet maintenance, wash bay, and workshops areas will be mono-slope with a slope at ½" on 12", typical eave elevations vary for each space. The fleet storage area has a typical eave elevation of

20'-0" feet (low side) above finished floor. The vehicle maintenance, wash bay and workshops areas have a typical eave elevation of 28'-0" feet (low side) above finished floor. The administrative space has a gable roof with a 4" on 12" slope, with a typical eave elevation of 14'-0" (low side) above finished floor. The roofs will be standing seam metal roofing supported on cold formed steel purlins spanning between steel frames. The mezzanine floor elevation will be 12'-0" above finished floor.

The exterior walls of the building will consist of a cast-in-place concrete back up wall with masonry veneer siding to elevation 3'-4" and insulated metal panel siding from the top of concrete back up wall to the top of eave. The insulated metal panel siding will be supported by cold-formed steel horizontal girts spaced as required spanning from face of column to face of column. The exterior wall at the administrative space will consist of fiber cement lap siding with fiber cement shingle siding on the gable ends, cold formed metal stud framing. There will be a continuous concrete strip footing and foundation wall along the perimeter of the building. Exterior columns will be supported by concrete piers cast integrally with the foundation walls and supported on spread footings. An 8-inch reinforced concrete slab-on-grade will be designed to support HS-20 vehicle traffic inside the limits of the structure, except for in the administrative area. The slab-on-grade for the administrative space consists of a 6-inch reinforced concrete with moisture reduction admixture. Slabs will be sloped strategically to provide sufficient drainage.

The framing for this structure, including but not limited to, columns and frames, overhead door supports, wind posts, baseplates, roof purlins, horizontal girts, metal roofing, metal siding, lateral force resisting systems, and all steel connections will be designed and fabricated by the pre-engineered metal building (PEMB) manufacturer. The PEMB manufacturer will submit all calculations of the design loads, as well as column baseplate reactions to the engineer to verify foundation design and general conformance to the design specifications. We are anticipating two mezzanines to be included in this space.

The salt shed is located at the northern corner of the site and will consist of a steel frame and fabric structure with reinforced concrete walls up to 7'-0" tall. The salt shed will have an asphalt floor and be supported by reinforced concrete continuous footing foundations. The steel framing will be pre-engineered by the manufacturer. The manufacturer will submit all calculations of the design loads, as well as column baseplate reactions to the engineer to verify foundation design and general conformance to the design specifications.

The vehicle storage extension bid alternate will be the same construction as the base bid fleet storage area.

The detached vehicle canopy alternate will be similar construction to the fleet storage and maintenance areas of the facility. The roof will be standing seam metal roofing supported on cold formed steel purlins spanning between steel frames. The exterior walls will be cast-in-place concrete back up wall with masonry veneer siding to elevation 3'-4" and insulated metal panel siding from the top of concrete back up wall to the top of eave. The insulated metal panel siding will be supported by cold formed steel horizontal girts spaced as required spanning from face of column to face of column. The framing will be designed by the PEMB, as stated above. The slab-on-grade will be 8-inches thick and designed to support HS-20 vehicle traffic. There will be a continuous concrete foundation wall along the perimeter of the building. Exterior columns will be supported by concrete piers cast integrally with the foundation walls. The canopy structure is anticipated to be supported by deep foundations consisting of helical piles or driven piles, following recommendations from Westin & Sampson Geotechnical Engineers.

FACTORS YET TO BE DETERMINED

There are several factors that could affect the structural design that have not yet been determined. They are including but not limited to below:

- Soil investigations affecting the allowable bearing pressure, site class, and potential addition of ground improvements (e.g. CSC's or rigid inclusions);
- Locations of utility penetrations into and exiting the building;
- Locations of any MEP rooftop equipment, hoof hatches, other hung equipment from roof framing;
- Location of floor drainage and the floor slope;
- Any objects discontinuing the slab on grade including embedded angles, grating, inground lifts, or others.

100 Foxborough Blvd., Suite 250, Foxborough, MA 02035
Tel: 508.698.3034

SCHEMATIC DESIGN NARRATIVE

Fire Protection

PROJECTS: Truro DPW

FROM: Fire Protection Team

DATE: May 2025

SUBJECT: Schematic Fire Protection Design Narrative

PROJECT INFORMATION:

This schematic design narrative, prepared by Weston & Sampson Engineers, Inc., serves as the foundation for the building's design and can be used for the project cost estimate. It outlines the anticipated scope at the schematic design stage. This schematic design narrative, prepared by Weston & Sampson Engineers, Inc., outlines the fire protection scope for the new Truro Department of Public Works (DPW) facility, located at 17 Town Hall Road, Truro, MA 02666

The proposed DPW building will be fully sprinklered in accordance with NFPA 13 and all applicable local codes. The facility will be protected by two wet sprinkler risers and one dry sprinkler riser. Each riser will be equipped with its own dedicated alarm check valve, installed in compliance with NFPA 13 requirements.

For the purposes of this schematic phase, it is assumed that the available water supply, which is expected to come from a proposed new water main project to the north of the DPW site, will not provide sufficient flow and pressure to support the sprinkler system. As a result, a fire pump and a fire water storage tank will be required. Additional details regarding the proposed fire pump and tank design will be provided in the next design phase.

A new fire service line will be extended from the proposed fire pump, which will draw water from the fire protection tank, and enter the building through a dedicated Fire Protection/Plumbing room. The water service will be mechanically restrained and include three

alarm check valve assemblies. The FP/Plumbing room will be heated and conditioned in accordance with NFPA 13 and the Massachusetts Building Code.

CODES:

- Massachusetts State Building Code, 10th Edition (780 CMR)
- Massachusetts Comprehensive Fire Safety Code (527 CMR 1.00)
- 2021 International Building Code (IBC)
- 2021 NFPA 1 – Fire Code
- 2019 NFPA 3 – Standard for Commissioning of Fire Protection and Life Safety Systems
- 2019 NFPA 13 – Standard for the Installation of Sprinkler Systems
- 2019 NFPA 14 – Standard for the Installation of Standpipe and Hose Systems
- 2019 NFPA 20 – Standard for the Installation of Stationary Pumps for Fire Protection
- 2023 NFPA 22 – Standard for Water Tanks for Private Fire Protection
- 2019 NFPA 24 – Standard for the Installation of Private Fire Service Mains and Their Appurtenances

DESIGN BASIS:

a. Hazard Classification:

- Light Hazard: Corridors, bathrooms, office space, locker rooms.
- Ordinary Hazard Group 1: Storage (less than 8'), vehicle storage garage and mechanical rooms.
- Ordinary Hazard Group 2: Storage areas (up to 12 feet in height), workshops, vehicle maintenance bays, and wash bay.
- Extra Hazard Group 1: Fluid room.

b. Minimum Density for Automatic-Sprinkler:

- Light Hazard: 0.1 gpm over 1,500 sq. ft.
- Ordinary Hazard Group 1: 0.15 gpm over 1,500 sq. ft.
- Ordinary Hazard Group 2: 0.20 gpm over 1,500 sq. ft.
- Extra Hazard Group 1: 0.30 gpm over 2,500 sq. ft.
- For dry pipe systems, the hydraulically calculated design area shall be increased by 30% in accordance with NFPA 13. The design density remains unchanged.
- Total Combined Hose Stream Demand Requirement: In accordance with NFPA 13 unless otherwise indicated.

c. Maximum Protection Area per Sprinkler:

- Light Hazard: 225 sq. ft.
- Ordinary Hazard: 130 sq. ft.

- Extra Hazard: 100 sq. ft.

WATER SERVICES:

The new water service shall be AWWA C151 class 52 double cement lined, piping shall be UL listed, and FM approved for fire service. Mechanical joint ductile-iron fittings shall be AWWA C110, ductile-iron standard pattern or AWWA C153, ductile-iron compact pattern. All joints shall be furnished with ductile retainer glans, flanges shall meet ASME 16.1, cast-iron, class to match pipe class rating. A post indicating valve shall be provided or other sort of controlling valves that is required by NFPA-24.

FIRE DEPARTMENT CONNECTION:

A four-inch (4") grooved galvanized pipe header with galvanized fittings shall be installed in the fire protection room. It is assumed that one exterior Storz Fire Department Connection (FDC) will be used during the design stage. The final decision for the (FDC) type shall be made after coordinating with the local fire department. Signage shall be provided in accordance with NFPA signage requirements.

WET PIPE SPRINKLER SYSTEM:

A wet sprinkler system will be installed throughout the maintenance bays and office areas. The owner will be responsible for providing adequate heating to ensure temperatures remain above freezing. The fire protection room will contain a tow wet alarm check valves serving these spaces. All sprinkler heads will be quick-response, intermediate temperature-rated, UL-listed, and FM-approved for their intended applications.

Pipes with a nominal pipe size (NPS) of 2 inches or smaller shall be Schedule 40 with threaded fittings, while pipes from NPS 2.5 to NPS 6 shall be Schedule 10 with grooved fittings. All piping components must have a minimum working pressure rating of 175 psig. Valves shall be UL-listed and FM-approved, with zone valves being indicating-type butterfly valves equipped with electronic supervision. Fittings will consist of ductile-iron or cast-iron flanges, or grooved joints, all rated for a minimum of 175 psig. Grooved-end pipe couplings shall comply with AWWA C606 and UL 213 standards, featuring a rigid pattern, ferrous housing sections, EPDM-rubber gaskets, and bolted connections.

The alarm valve shall be UL 193 compliant and equipped with the necessary trim sets including a bypass, drain, alarm flow switch, and pressure gauges. Inspector's test connections. Sprinklers must meet the UL Fire Protection Equipment Directory or FM Global Approval Guide listings. Water flow indicators shall comply with UL 346, be electronically supervised and paddle-operated, rated for 250 psig, and suitable for both horizontal and vertical installations.

DRY PIPE SPRINKLER SYSTEM:

A dry sprinkler valve with nitrogen generator that come with integrated air compressor, and appurtenances shall be provided in the FP/ Plumb room. Pipe size equal or less than NPS 2, shall be Schedule 40 with threaded fittings; pipe size NPS 2.5 to NPS 6 shall be Schedule 10 with grooved fittings. Valves shall be UL listed and FM approved. Fittings shall be galvanized ductile iron, galvanized cast-iron flanges or grooved joint, with a 175 psig minimum pressure rating. Galvanized Grooved-End-Pipe Couplings for Steel Piping: AWWA C606 and UL 213, rigid pattern, unless otherwise indicated, for steel-pipe dimensions. Include ferrous housing sections, EPDM-rubber gasket, and bolts and nuts. Provide inspectors test connection at each zone. Sprinklers shall meet UL's Fire Protection Equipment Directory listing or Approval Guide published by FM Global listing. Sprinklers shall be quick response. Water flow indicators shall meet UL 346, shall be electronically supervised, paddle operated, with 250 psig pressure rating, and shall be able to be installed in the horizontal and vertical positions.

FIRE PUMP / WATER TANK:

At the time of writing this report, it is assumed that a fire pump will be required to meet the flow, and pressure demands of the sprinkler system. To support this, a dedicated fire water storage tank will also be necessary. Based on preliminary calculations, the fire pump is expected to have a rated flow of approximately 500 (gpm) at a discharge pressure of 70 (psi). The fire water tank will be sized accordingly to ensure an adequate water supply is available for the duration required by applicable codes and standards. A detailed design analysis, including final tank sizing, pump specifications, and the location of the fire pump room and tank, will be performed in the next phase of the design process.

100 Foxborough Blvd., Suite 250, Foxborough, MA 02035
Tel: 508.698.3034

SCHEMATIC DESIGN NARRATIVE

PLUMBING

PROJECT: Truro, MA – New Public Works Facility

FROM: Plumbing Team

DATE: May 2023

SUBJECT: Schematic Design Narrative – Plumbing

DESIGN BASIS:

New Truro Department of Public Works facility including Vehicle Maintenance Bays, Vehicle Storage Vehicle Wash, Tire Storage, Fluids Room, Parts Storage, Administration Office, and Toilet/Locker Rooms.

The DPW will include complete code compliant plumbing systems. The plumbing systems will be designed to support the architectural layout including fixtures and equipment. The plumbing systems will be designed at the DPW to include domestic hot and cold water, non-potable cold water, tempered water, recirculated hot water, storm drainage, sanitary drainage and venting, oil waste drainage and venting, and compressed air systems.

This schematic design narrative is prepared by Weston & Sampson Engineers, Inc. and shall be used in conjunction with the Structural, Architectural, Fire Protection, HVAC, and Electrical schematic design documents. This document includes anticipated scope for the project as understood at the schematic design level. This document addresses sanitary/storm systems to ten (10) feet outside the building and water supply systems after utility meter. It does not address site utilities, surface layout and finishes, grading, planting, and irrigation.

DESIGN CRITERIA:

REFERENCED CODES & STANDARDS:

- The Massachusetts State Building Code, 780 CMR, 10th Edition
  - 2021 International Energy Conservation Code (IECC)
  - 2021 International Mechanical Code
- 248 CMR 10.00 Uniform State Plumbing Code

- 522 CMR 7.00 Air Tanks

DOMESTIC WATER SYSTEM DESCRIPTION:

The new domestic water service shall be extended from the water main on Town Hall Road and enter the facility in the FP/Plumbing room to a water meter, this work shall be done by the general contractor and the utility. Plumbing work shall start after the utility water meter where a new reduced pressure principal backflow preventer, pressure reducing valve (if required) shall be installed. Domestic cold water shall be distributed throughout the new DPW facility as required to support the plumbing fixtures as shown on the Architectural Drawings.

A heat pump style water heater system shall be provided and located in the mechanical room. Hot water distribution and recirculation loops shall be distributed throughout the new DPW facility as required to support the plumbing fixtures shown on the Architectural Drawings. Domestic water equipment, piping and supporting appurtenances shall in installed in accordance with 248 CMR 10.00 Uniform State Plumbing Code. Isolation valves and drain valves shall be provided at each riser.

SANITARY DRAINAGE SYSTEM DESCRIPTION:

The new sanitary drainage system shall be connected to a new septic system.

A new oil water separator (OWS) shall be provided to service the floor drains located in the vehicle storage, shop areas, and vehicle wash bay. The OWS shall be provided and sized in accordance with 248 CMR 10.00 Uniform State Plumbing Code. Discharge from the OWS will be plumbed to a tight tank and will not be plumbed to the new septic system.

STORM WATER DRAINAGE SYSTEM DESCRIPTION:

Storm water drainage is not required as all the roof drainage will be via gutters and downspouts piped to a drywell.

COMPRESSED AIR SYSTEM DESCRIPTION:

Compressed air shall be provided by a rotary scroll air compressor. The compressor shall feature a VFD, refrigerated air dryer, inline filtration down to 0.1 micron and oil water separator. A 120-gallon storage tank shall be provided. The compressed air intake shall be ducted to the outside for increased compression efficiency. Heat rejected by the air compressor shall be directed either into the space or outside controlled by a thermostat.

Compressed air drops shall be provided in vehicle maintenance, the workshops, and vehicle storage. Each drop shall include a filter, regulator, and lubricator with a drip leg.

DOMESTIC COLD WATER PIPING DISTRIBUTION:

Domestic cold-water connections shall be provided to all fixtures and equipment in accordance with applicable codes, as required based on the Architectural drawings. Domestic water piping shall be hard copper tube, Type L, ASTM B88 with pressure fittings. Cold water make-up will be provided to HVAC

equipment as required with backflow preventers as outlined in 310 CMR 22: The Massachusetts Drinking Water Regulations.

DOMESTIC HOT WATER PIPING DISTRIBUTION:

Domestic hot-water connections shall be provided to all fixtures and equipment in accordance with applicable codes, as required based on the Architectural drawings. Domestic water piping shall be hard copper tube, Type L, ASTM B88 with pressure fittings. Hot water shall be generated via water-to-water heat pump water heaters. The hot water system shall be sized to accommodate the plumbing fixture load and safety shower eyewash stations.

The water shall be stored in the hot water storage tank at 140°F. Check valves, vacuum breakers, heat trap, circulator pumps and an expansion tank shall be provided at the water heaters. Mixing valves serving handwash sinks shall be tempered to provide maximum 105°F water in accordance with CMR 248 10.00 Uniform State Plumbing Code.

SANITARY DRAINAGE PIPING DISTRIBUTION:

A single 6" sanitary main will collect all sanitary waste stacks, exit the facility at the lowest level and discharge into a septic system. Sanitary waste and vent branch connections will be provided for all plumbing fixtures including toilets, lavatories, urinals, showers, floor drains in mechanical rooms and toilet rooms and drinking fountains. All toilet room waste/vent stacks shall be coordinated to avoid exposed waste piping at the finished ceiling. Vent stacks shall start at the lowest level and exit the facility at the highest point of elevation.

Floor drains/trench drains located in the vehicle storage area, workshops, and wash bay shall drain to an outdoor oil water separator piped to a tight tank.

All floor drains shall be provided with automatic trap priming devices.

EMERGENCY STATIONS/EYEWASH:

Emergency stations/eyewash stations shall be provided in the workshops, fluids rooms, and vehicle maintenance. The water supply shall be 65°F tempered water with re-circulation. A local tepid water mixing valve shall be provided at each safety station, eyewash and handwash sink throughout the facility. Audio and visual alarms shall be provided at each station that will be tied into the building management system in case of activation.

FACTORS YET TO BE DETERMINED:

There are several factors that could affect the plumbing design that have not yet been determined. They are including but not limited to below:

- Locations of utility penetrations into and exiting the building.
- Location of floor drainage and septic system.

55 Walkers Brook Drive, Suite 100, Reading, MA 01867
Tel: 978.532.1900

TRURO, MA – NEW DPW FACILITY SEPTIC SYSTEM

As part of the schematic design for the new Truro, MA Department of Public Works (DPW) facility, proposed wastewater flows will be conveyed to a new on-site sewage disposal system (septic system). Typically, the projected wastewater flow for new DPW facilities is calculated by using the "Commercial-Office Building" criteria for design flow from Title 5 (310 CMR 15.000, the MassDEP State Environmental Code for septic systems).

Based on initial discussions between the project team and the Truro Board of Health staff, the project wastewater flow for the new Truro DPW facility will also be calculated by using the "Commercial-Factory, Industrial Plant, Warehouse or Dry Storage Space" criteria for design flow from Title 5 (which is calculated per person, rather than per square foot of building space). The two methods will be compared and a conservative design flow for the facility will be selected. It was also recommended that the new Truro DPW facility septic system be sized to include both the new DPW facility and the existing Town Hall facility (which is located directly adjacent to the DPW facility, on Town Hall Road).

Per the "Office Building" criteria, the design flow is 75 gallons per day (gpd) per 1,000 square feet (s.f.) of office/building space (minimum 200 gpd design flow). The area used for the design flow calculation only includes the office/administrative area of the proposed building (not including the workshop, vehicle maintenance, wash bay, etc. areas of the building).

Per the "Factory, Industrial Plant, Warehouse or Dry Storage" criteria (without cafeteria), the design flow is 15 gpd per person, based on estimated staff/employees.

Based on the draft schematic design prepared by the project team, the approximate size of the administration/office and employee facilities areas for the proposed DPW facility is 2,900 s.f. and the approximate size of the existing Town Hall is 4,315 s.f. (for a total square footage of 7,215 s.f.). The anticipated DPW staff is approximately twelve (12) people, and the existing Town Hall staff is approximately twenty-six (26) people (for a total of thirty-eight (38) people).

The proposed design flow is calculated as follows for each method:

Projected Wastewater Flow from the new DPW Facility and existing Town Hall (Office Building)

- 7,215 s.f./1,000 s.f. = 7.22
- 7.22 x 75 gpd = 542 gpd

Projected Wastewater Flow from the new DPW Facility and existing Town Hall (Factory)

- 38 people (staff/employees) x 15 gpd = 570 gpd

Both the "Office Building" method (542 gpd) and the "Factory" method (570 gpd) result in comparable estimated proposed design flow calculations for the new DPW facility and existing Town Hall facility, therefore the more conservative 570 gpd design flow calculation will be utilized for the schematic design.

Preliminary Septic System Design

Based on the available soil data, test pit and boring findings show native granular soils generally consisting of loose to medium dense sand. Groundwater was not encountered in explorations, which were extended to a maximum depth of approximately 39 feet below grade. Official test pits with the approving authority will be required to confirm the Title 5 Soil Textural Class, but for the purposes of this analysis it is assumed that the soils fall into Class I (Sands, Loamy Sands). The official testing will also confirm the percolation rate of the soils, however for the purposes of this analysis it is also assumed that the percolation rate is less than 5 minutes per inch.

Based on a Class I soil and a percolation rate of less than 5 minutes per inch, the effluent loading rate is 0.74 gpd/s.f. Using this rate and the design flow of 570 gpd for the proposed Truro DPW and Town Hall septic system, the effective leaching area required would be as follows:

- 570 gpd/0.74 gpd/s.f. = 770 s.f. (required)

Assuming a conventional leaching trench configuration, with the reserve area trenches located between the primary area trenches – there are many different configurations that can be considered, depending on number of trenches, length and width. Assuming three (3) trenches, a sample leaching trench design would be the following:

- 43' L x 2' W x 2' D x 2 sides (sidewalls) = 172 s.f.
- 43' L x 2' W (bottom) = 86 s.f.
- Total (per trench) = 258 s.f. effective leaching area x 3 trenches = 774 s.f. total (provided)

Per Title 5, when designed to serve facilities other than a single-family dwelling unit, a two-compartment septic tank (or two tanks in series) are required, with a minimum liquid capacity of 1,500 gallons. For a two-compartment tank, the first compartment shall be sized for a minimum hydraulic detention time of 48 hours, and the second compartment sized for 24 hours (based on design flow). The compartments shall be interconnected by a vented, inverted U-shaped pipe (minimum 4-inch) that extends below the bottom of the scum layer of the tank, and the outlet tee of each compartment shall be equipped with a corrosion resistant gas baffle or effluent tee filter.

- First tank compartment (48-hour detention time): 2 days x 570 gpd = 1,140 gallons
- Second tank compartment (24-hour detention time): 1 day x 570 gpd = 570 gallons
- Required Tank Volume = 1,710 gallons
    - Go with a 2,000 gallon 2-compartment septic tank

Most of Cape Cod is in a nitrogen sensitive area, which based on recent Title 5 regulation updates, now requires an advanced Innovative/Alternative (I/A) septic system design to further reduce nitrogen. Based on recent experience, the Town of Truro specifically prefers the Advantex treatment system for nitrogen

removal I/A system in Town. The Advantex system would consist of an additional recirculation/treatment system tank to be installed downstream of the septic tank, along with a control panel and associated wiring/piping (assuming Advantex AX25RT gravity discharge treatment system or equal for the schematic/conceptual design, final design details to be determined later).

100 Foxborough Blvd., Suite 250, Foxborough, MA 02035
Tel: 508.698.3034

SCHEMATIC DESIGN NARRATIVE

HVAC

PROJECT: Truro, MA – New Public Works Facility

FROM: HVAC Team

DATE: May 2025

SUBJECT: Schematic Design Narrative – HVAC

INTRODUCTION

This schematic design narrative is prepared by Weston & Sampson Engineers, Inc. and shall be used in conjunction with the Structural, Architectural, Fire Protection, Plumbing, and Electrical schematic design documents. This document includes anticipated scope for the project as understood at the schematic design level. This document addresses systems to ten (10) feet outside the building. It does not address site utilities, surface layout and finishes, grading, planting, and irrigation.

PROJECT PROGRAM:

The new Public Works Facility will be located at 17 Town Hall Road in the town of Truro, MA and consists of a non-separated "mixed use" building program. The primary "mixed use" operational components are an Administration Suite, Vehicle Storage Garage, various Workshops, Fluids and Parts Storage rooms, a Vehicle Maintenance area, a vehicle wash and miscellaneous Utility rooms.

- The Administration Suite consists of private and open offices, conference rooms, a multipurpose room, and employee support spaces such as male and female locker rooms, a laundry room, kitchenette, file storage, and a copy and mail room, public service counter.
- The Vehicle Storage will provide semi-heated indoor storage of the Town's various vehicle types
- The Workshops include a combined carpentry and sign workshop.
- The Parts and Fluid Storage will provide storage areas for various lubrication and non-fluid vehicle parts.
- The Vehicle Maintenance area is a comprehensive vehicle maintenance workspace.
- Miscellaneous Utility rooms

APPLICABLE CODES:

The Massachusetts State Building Code, 780 CMR 10th Edition

- 2021 IMC International Mechanical Code
- 225 CMR 23 Massachusetts Commercial Stretch Energy Code and Municipal Opt-In Specialized Code 2023
    - 2021 IECC International Energy Conservation Code with Massachusetts 225 CMR 23 Amendments

- ASHRAE Standard 62.1-2022 – Ventilation for Acceptable Indoor Air Quality
- ASHRAE Standard 90.1-2019 – Energy Standard for Building Except Low-Rise Residential Buildings
- ASHRAE 2021 Fundamental Handbook
- 2023 National Electric Code (NFPA 70)

Energy Code Compliance Pathway

The Town of Truro has adopted the Municipal Opt-In Specialized Code 2023. The building will be designed under 225 CMR 23 CC101.3.2 All-Electric Pathway. 225 CMR 23 CC104.1.1 has been chosen as the optional compliance path.

Furthermore:

- Per 225 CMR 23 C401.2.4 Mixed Use Buildings, the building's energy code compliance path will be 225 CMR 23 C.401.2.1.1 Prescriptive Compliance. The Administration Suite, Vehicle Maintenance, Vehicle Storage, the Workshop, and the Fluids and Parts Storage rooms are each less than 20, 000 SF and will comply with 225 CMR 23 C.401.2.1.1 Prescriptive Compliance.

DESIGN CRITERIA:

Outdoor Design Conditions:

Provincetown, MA, USA

- Summer: 83.6°F DB / 72.8°F WB
- Winter: 12.8°F DB

Source: Based on ASHRAE 2021 Fundamentals Handbook Summer/Cooling 0.4% DB/WB and Winter/Heating 99.6% DB. Weather Station – Provincetown Airport, MA, USA.

Indoor Design Conditions:

- Administration Area (Office space, conference rooms, locker rooms)

    - Occupied Temperature/Humidity Set Points
        - Cooling Season: 75°F DB (+/- 3°F) and 40%-60% Relative Humidity.
        - Heating Season: 70°F DB (+/- 3°F) and no humidity control.
    - Unoccupied Temperature/Humidity Set Points
        - Cooling Season: 85°F DB (+/- 3°F) and 40%-60% Relative Humidity.
        - Heating Season: 55°F DB (+/- 3°F) and no humidity control.
- Vehicle Maintenance, Workshops, Parts Storage, and Fluid Storage
    - Occupied Temperature/Humidity Set Points
        - Cooling Season: 78°F DB (+/- 3°F) and no Humidity Control.
        - Heating Season: 70°F DB (+/- 3°F) and no humidity control.
    - Unoccupied Temperature/Humidity Set Points
        - Cooling Season: 85°F DB (+/- 3°F) and 40%-60% Relative Humidity.
        - Heating Season: 55°F DB (+/- 3°F) and no humidity control.
- Vehicle Wash Bay
    - Occupied Temperature/Humidity Set Points
        - Cooling Season: No temperature or humidity control.
        - Heating Season: 60°F DB (+/- 5°F) and no humidity control.
    - Unoccupied Temperature/Humidity Set Points
        - Cooling Season: No temperature or humidity control.
        - Heating Season: 55°F DB (+/- 5°F) and no humidity control.
- Vehicle Storage
    - Occupied Temperature/Humidity Set Points
        - Cooling Season: N/A – normally unoccupied
        - Heating Season: 60°F DB (+/- 5°F) and no humidity control.
    - Unoccupied Temperature/Humidity Set Points
        - Cooling Season: No temperature or humidity control.
        - Heating Season: 55°F DB (+/- 5°F) and no humidity control.

- Mechanical Room, Plumbing/FP Room, Electrical Room
    - Occupied Temperature/Humidity Set Points
        - Cooling Season: N/A – normally unoccupied
        - Heating Season: 65°F DB (+/- 5°F) and no humidity control.
    - Unoccupied Temperature/Humidity Set Points
        - Cooling Season: 85°F DB (+/- 5°F) and no humidity control.
        - Heating Season: 55°F DB (+/- 5°F) and no humidity control.
- Tel/Data Room
    - Occupied Temperature/Humidity Set Points
        - Cooling Season: 72°F DB (+/-3°F) and 40%-60% relative humidity.
        - Heating Season: 72°F DB (+/- 3°F) and no humidity control.
    - Unoccupied Temperature/Humidity Set Points
        - Cooling Season: 72°F DB (+/-3°F) and 40%-60% relative humidity.
        - Heating Season: 72°F DB (+/- 3°F) and no humidity control.

Outdoor Air Ventilation:

The minimum outside air will be introduced as required by the greater of ASHRAE Standard 62.1-2022, International Mechanical Code 2021, or the requirement to make up exhaust air.

- Administration Area
  - Office spaces, Conference rooms
    - 5 CFM/Person
    - 0.06 CFM/SF
  - Corridors, Storage
    - 0.06 CFM/SF
  - Training Rooms
    - 7.5 CFM/Person
    - 0.06 CFM/SF
  - Locker Room
    - 0.25 CFM/SF (Exhaust)
- Vehicle Maintenance
  - 1 CFM/SF (Exhaust)
- Shops
  - 0.5 CFM/SF (Exhaust)
  - 0.75 CFM/SF (Exhaust Purge Mode)
- Vehicle Wash Bay
  - 1 ACH (Exhaust)
  - 0.75 CFM/SF (Exhaust Purge Mode)
- Parts Storage, Fluid Storage
  - 1CFM/SF (Exhaust)
- Vehicle Storage
  - 0.05 CFM/SF (Exhaust)
  - 0.75 CFM/SF (Exhaust Purge Mode)
- Mechanical Room, Plumbing/FP Room, Electrical Room
  - 0.12 CFM/SF (note: this value exceeds the required ventilation)
- Tel/Data Room
  - 0.06 CFM/SF

HVAC SYSTEMS:

Central Systems

Air-to-Water Heat Pumps

The primary source of heating and cooling will be modular air-to-water heat pumps (ATWHP). It is anticipated that there will be two (2) banks of 50 nominal tons each sized for heating with each

bank being 2/3 of the peak heating load. The water side of the heat pumps will be 30% propylene glycol.

The hydronic distribution system will be a 2-pipe, 30% propylene glycol system. It will provide all the heating and cooling needs of the entire building with the exception of the building's electric room and tel-data rooms. Each heat pump will have a dedicated variable speed pump. The hydronic plant will operate in a primary secondary variable pumping configuration with two (2) variable speed base-mounted end suction system pumps. Spaces that are heating only will have normally closed hydronic isolation valves to prevent chilled water from entering heating only equipment when the system is in heating mode. Additional hydronic specialties will include a low flow system bypass with modulating 3-way control valve, expansion tank, air separator, flow meter, coupon rack, glycol feeder, and chemical shot feeder.

The heating hot water loop will be designed with a supply water temperature of 130°F and a return water temperature of 100°F. The chilled water will be designed with a chilled water supply temperature of 44F and a return temperature of 56F. Both chilled water and hot water plant control will reset supply water temperature based on the outside air temperature. In addition, the controller will optimize the operation of the heat pump plant by staging and rotating the operation of each heat pump.

Building Management Systems

The HVAC systems serving the building will be controlled by direct digital control (DDC) building management system (BMS). The BMS will provide monitoring and control of the system from a remote access web-based interface.

A gas monitoring system will be installed to monitor, alarm, and control purge ventilation equipment located in the necessary building locations. The gas monitoring system will include carbon monoxide (CO) and nitrogen dioxide (NO_2) sensors installed as required in each space to provide complete coverage of the area. Each sensor will include a visual and audible indication if gas is detected above the programmed high limit. The sensors will be tied to the main gas monitoring system control panel which will interface with the BMS to control the HVAC equipment setup with a purge mode sequence of operation. Manual wind down times will be provided to allow for a manual temporary purge by operators for all spaces that have a purge cycle.

Administrative Suite

The administration area will be served by 2-pipe ducted fan coils and an indoor, semi-custom, energy recovery unit (ERU) to provide heating, cooling, and ventilation to the spaces. The ERU will be comprised of the following main components: variable speed supply fan, variable speed exhaust fan, a 2-pipe hot water/ chilled water coil, and a rotary energy recovery wheel. The energy recovery exhaust fan will be provided with the ERU to relieve the minimum ventilation air introduced during normal operation and during economizer operation. The ERU will be capable of 100% economizer operation and will be controlled based on the outdoor air enthalpy.

The ERU exhaust fan will serve the locker rooms, janitor closet, breakrooms, etc.

Additional systems will include exhaust fans and an electric unit heater serving the electrical room. The tel/data room will be served by a dedicated ductless split-system with a wall mounted indoor unit and a remote outdoor condensing unit (CU).

VEHICLE MAINTENANCE:

The vehicle maintenance area will be served by an energy recovery unit (ERU) and a radiant floor heating system. The ERU will provide neutral supply air temperature (space temp setpoint -2F) in the heating mode and will provide for the cooling of the space during the cooling season.

The ERU will serve the maintenance area, fluid storage room, and parts storage. The ERU will be comprised of the following main components: variable speed supply fan, variable speed exhaust fan, non-cross contaminating air-to-air heat exchanger, and a 2-pipe heating/cooling coil. The ERU will be sized to maintain the ventilation requirements of the space and will only operate during occupied hours. Supply ductwork will be installed exposed to the space with duct mounted supply grilles. Exhaust ductwork will be installed exposed to the space with duct drops along the perimeter walls to 12" above the finished floor. The exhaust fan in the ERU will operate in purge mode when triggered by the gas monitoring system. In addition, the vehicle maintenance area will be installed with source capture vehicle exhaust and hose reels.

The vehicle maintenance area will be heated by an in-floor radiant heating system. The radiant floor system will utilize hot water from the air-to-water heat pumps. It will be installed in multiple circuits along with control valves and/or pump to control water supply temperatures to the floor loop and maintain the space temperature during occupied and unoccupied hours. The radiant heating system will be hydraulically isolated in the cooling months.

The fluid storage, tool storage, and parts storage rooms will be served by dedicated exhaust fans and utilize ventilation air from the ERU as the source of make-up air. Hot water unit heaters will provide heat to these spaces. The vehicle maintenance office will be heated and cooled by a 2-pipe ducted fan coil and ventilated by a dedicated energy recovery ventilator (ERV).

VEHICLE STORAGE:

The vehicle storage area will be heated by ceiling or wall mounted hot water unit heaters.

The vehicle storage area will be served by two exhaust fans. The first exhaust fan will be installed for normal operation to provide ventilation air to the space. The second exhaust fan will be installed to operate during a purge mode initiated by the gas monitoring system.

High volume low speed fans will be installed above the vehicle storage area to provide thermal comfort in the summer and shoulder seasons.

SHOPS:

The shop area will be served by an Energy Recovery Unit (ERU) to provide heating, cooling, and ventilation to the spaces. The ERU will be comprised of the following main components: variable speed supply fan, variable speed exhaust fan, non-cross contaminating air-to-air heat exchanger, and a 2-pipe heating/cooling coil. Supply duct work will be installed exposed to the space with high-throw, duct mounted, supply grilles to deliver air. Exhaust ductwork will be installed exposed to the space with duct drops along the perimeter walls to 12" above the finished floor. The exhaust fan in the ERU will operate normally to relieve outdoor air introduced to the space. The exhaust fan will operate in purge mode when triggered by the gas monitoring system.

MECHANICAL ROOM AND PLUMBING/FIRE PROTECTION ROOM:

The building utility rooms will be installed with hot water unit heaters to provide heat to the space. Ventilation will be provided with exhaust fans and an outdoor air intake roof hood or wall louver.

VEHICLE WASH BAY

The vehicle wash bay will be served by a roof mounted heating and ventilating unit (HV). This unit will provide heat and ventilation to the space. The HV unit will be comprised of a variable speed supply fan and a hot water heating coil. Supply ductwork from the HV unit will be aluminum construction and be installed exposed to the space. The return ductwork will be aluminum construction and installed with duct drops along the perimeter of the space to 12" above the finished floor.

The wash bay will also be served by 2 roof mounted exhaust fans. The first exhaust fan will operate during normal operation to relieve outdoor air introduced to the space by the HV unit. The second exhaust fan will be installed to operate in purge mode triggered from the gas monitoring system. Ductwork from both exhaust fans will be aluminum construction and duct drops along the perimeter of the space to 12" above the finished floor.

CLOSED LOOP GEOTHERMAL SYSTEM Alternate 5:

The primary source of heating and cooling will be provided by a closed-loop geothermal bore field located on site. The geothermal field will provide the source of both heating and cooling in each of the respective seasons.

The geothermal system will consist of multiple wells headered to a common supply and return pipe that will be pumped to the building mechanical room. The condenser water will circulate through the closed-

loop piping, this loop will exchange or reject heat to the bore field, depending on seasonal demand. See the Geothermal section of the Schematic Design for further details on the geothermal system.

Water-to-Water Heat Pumps

The water-to-water heat pumps will be sized at 50% of the building heating or cooling loads whichever is greater. The heat pumps will have N+1 redundancy and as such there will be three (3) heat pumps at approximately 15 tons a piece to provide for the heating and cooling needs of the building in the form of hot water for heating and chilled water for cooling. The heat pumps will take condenser water from the closed loop bore field.

Hot Water Systems/Chilled Water Systems

The hydronic distribution system will be a 2-pipe, 30% propylene glycol system. It will provide all the heating and cooling needs of the entire building with the exception of the building's electric room and tel-data rooms. Each heat pump will have a dedicated variable speed pump. The hydronic plant will operate in a primary secondary variable pumping configuration with two (2) variable speed base-mounted end suction system pumps. Spaces that are heating only will have normally closed hydronic isolation valves to prevent chilled water from entering heating only equipment when the system is in heating mode. Additional hydronic specialties will include a low flow system bypass with modulating 3-way control valve, expansion tank, air separator, flow meter, coupon rack, glycol feeder, and chemical shot feeder.

The heating hot water loop will be designed with a supply water temperature of 130°F and a return water temperature of 100°F. The chilled water will be designed with a chilled water supply temperature of 44F and a return temperature of 56F. Both chilled water and hot water plant control will reset supply water temperature based on the outside air temperature. In addition, the controller will optimize the operation of the heat pump plant by staging and rotating the operation of each heat pump.

GGD Consulting Engineers, Inc.

Weston & Sampson

100 Foxborough Blvd., Suite 250, Foxborough, MA 02035
Tel: 508.698.3034

SCHEMATIC DESIGN NARRATIVE

Electrical

PROJECT: Truro, MA – Public Works Facility

FROM: Electrical Team (GGD Consulting Engineers, Inc.)

DATE: May 2, 2025

SUBJECT: Schematic Design Narrative – Electrical

The following is the Electrical Systems narrative, which defines the scope of work and capacities of the Power and Lighting systems, as well as the Basis of Design.

CODES

All work installed under Section 26 00 00 shall comply with the Massachusetts State Building Code and all state, county, and federal codes, laws, statutes, and authorities having jurisdiction.

DESIGN INTENT

All work is new and consists of furnishing all materials, equipment, labor, transportation, facilities, and all operations and adjustments required for the complete and operating installation of the Electrical work and all items incidental thereto, including commissioning and testing.

Energy Efficiency: Lighting system shall be designed and installed in accordance with IECC 2021 requirements.

A. Power Distribution:

1. Electrical power will be brought into the site via underground medium voltage cables from the utility company network. A pad mounted step-down transformer will be located at grade adjacent to the building. Service entrance and distribution switchgear will be located in the electrical room along with lighting and power distribution panels. The service capacity will be sized at 800 amperes at 277/480V, 3 phase, 4 wire:

2. A 400kW, 500.5kVA, 277/480V, 3Ø, 4W diesel fired emergency generator will be provided and include automatic starting and safety controls. The unit will be housed outdoors on a concrete pad. The generator will include three (3) service breakers: one (1) for life safety equipment, one (1) for optional standby equipment, and one (1) for the load bank.

3. The generator will be sized to support the entire facility with exception to the wash bay and EV car charging.

4. The emergency power distribution system will consist of two automatic transfer switches, one 100 ampere with bypass isolation for life safety equipment and one 800 ampere for optional-standby systems. A separate system of distribution panels and conduit systems will be provided for each level of emergency power. A kirk key interlock system will be provided for a roll up full building back-up generator, as well as a manual transfer switch with kirk key interlock for a temporary roll up generator on the life safety system for maintenance of the permanent generator.

B. Interior Lighting System:

Offices

- Lighting fixtures will consist of recessed 2" linear slot type LED luminaries with dimming drivers where ceilings are 9'-6" or less. In any ceiling condition greater than 9'-6" 2" LED linear pendant fixtures with direct and indirect sources shall be used. The fixtures will be wired for automatic dimming where natural day light is available and required by applicable energy codes. Vacancy sensors shall also be provided for automatic control of the lighting within the space as required. All fixtures will be provided with 0-10v dimming capability.

Corridors

- Corridor lighting shall consist of linear recessed slot type lighting and recessed down light fixtures. All fixtures will be provided with 0-10v dimming drivers. Occupancy sensors will also be provided for automatic control of the lighting in these passage areas.

Conference Room

- Lighting fixtures will consist of recessed 2" linear slot type LED luminaries with dimming drivers where ceilings are 9'-6" or less. In any ceiling condition greater than 9'-6" 2" LED linear pendant fixtures with direct and indirect sources shall be used. Recessed 2" down lighting fixtures may also be used for supplemental lighting if the space. The fixtures will be wired for automatic dimming where natural day light is available and required by applicable energy codes. Vacancy sensors shall also be provided for automatic control of the lighting within the space as required. All fixtures will be provided with 0-10v dimming capability.

Storage & Utility Rooms

- Storage and utility rooms will be provided with surface mounted LED utility strip type fixtures with wrap around lensing. Fixtures will be provided with 0-10v dimming capable driver. Occupancy sensors will be provided in all spaces for automatic control of the lighting with the exception of any electrical rooms.

Exit Signs

The following exit signs types shall be provided:

- Standard – single or double faced edge-lit mirrored exit sign with 6" tall green lettering.
- Handicap – Single faced mirrored edge-lit sign with 6" tall green lettering and international symbol of accessibility.
- Rough Service – Single faced sign with die cast aluminum housing. Fixture to have 6" tall green lettering.

Toilet Rooms

- Toilet rooms will be provided with a 4" regressed wall to wall slot type fixture along the wet wall. Supplemental 2" recessed down lighting fixtures may be added when needed to appropriately light the space. . All fixtures will be provided with 0-10v dimming drivers. Occupancy sensors will also be provided for automatic control of the lighting in these passage areas.

Fleet Storage

- Apparatus bay lighting will consist of linear LED pendant mounted fixtures with vapor tight polycarbonate lensing. All fixtures shall be provided with 0-10v dimming capable driver. High bay occupancy sensors shall be provided for automatic control of the lighting with in the space. Photo sensors may be provided if required.

Locker Rooms

- Locker rooms will be provided with surface or recessed mounted impact and water resistant LED fixtures. All fixtures shall be provided with 0-10v dimming capability. Vacancy sensors shall be provided for automatic control of the lighting within the space.
- Each space shall be provided with simple local control stations with engraved descriptive keys. The control stations will allow the occupant of the space to control all room zones and to raise and lower the lighting levels in the space.
- The entire facility will be provide with an addressable networked automatic lighting control system for programming of any desired schedules, control of all exterior lighting, emergency override conditions, and energy usage information.

C. Site Lighting System:

1. Fixtures for area lighting will be pole mounted LED luminaries in the parking area. The exterior lighting will be connected to the automatic lighting control system for photocell on and timed off operation.

2. Building perimeter fixtures will be wall mounted LED sconces over exterior doors.

3. All fixtures will be of the cut-off type.

D. Wiring Devices:

1. Offices will generally have one (1) duplex outlet per wall. At each workstation a double duplex receptacle will be provided.

2. Corridors will have a cleaning receptacle at approximately 30-40 foot intervals.

3. Exterior weatherproof receptacles will be installed at exterior doors.

4. Receptacles in garage/shop spaces will be GFI type with weatherproof covers mounted at 48 inches above floor.

5. Emergency power off (EPO) stations shall be provided at each entry/exit door to kitchen. Device shall serve to shut down all kitchen equipment quickly in the event of an alarm.

E. Fire Alarm System:

1. A fire alarm and detection system will be provided with 24 hour battery back-up. The system will be of the addressable type, where each device will be identified at the control panel and remote annunciator by device type and location to facilitate search for origin of alarms.

2. Smoke detectors will be provided in open areas, corridors, and other egress ways.

3. The sprinkler system will be supervised for water flow and tampering with valves.

4. Horn/strobes will be provided in egress ways, assembly spaces, open areas and other large spaces. Strobe only units will be provided in single toilets and conference rooms.

5. Manual pull stations will be provided at exit discharge personnel doors.

6. The system will be connected to automatically report alarms to the fire department.

F. Distributed Antennae System (DAS):

1. A public safety radio distributed antenna system (DAS) which consists of bi-directional amplifiers (BDA), donor antennas, coverage antennas, coax cable, coax connectors, splitters, combiners and couplers. These devices will be used as part of a system for in-building public safety 2-way radio system communication.

G. Lightning Protection System:

1. A system of lightning protection devices will be provided.

2. The lightning protection equipment will include air terminals, conductors, conduits, fasteners, connectors and ground rods.

3. The lightning protection system will be provided with a UL master label certificate.

H. Renewable Energy System Provisions:

1. The base project will include Electrical provisions for a roof mounted renewable energy system for a grid connected photovoltaic PV system intended to reduce the facilities demand for power.

I. Metering:

1. Measurement devices shall be installed to monitor the electrical energy use for each of the following separately:

   a. Total electrical energy

   b. Sub-metering in accordance with ASHRAE 90.1 paragraph 8.4.3

2. Recording and Reporting:

   a. The electrical energy usage for all loads listed above shall be recorded a minimum of every 15 minutes and reported at least hourly, daily, monthly, and annually. The system shall be capable of maintaining all data collected for a minimum of 36 months.

J. Level 2 AC Dual Electric Vehicle Charging Equipment. (EVSE)

1. Provide provisions for dual port EVSE stations fed with 40 ampere feeders back to a EVSE panel for at least 10% of parking spaces per Massachusetts stretch energy code. Two protective bollards will be installed at each charging station.

K. Security System:

- An addressable security system will be provided. The system will be integrated with the card access and closed circuit TV (CCTV) system.

- Position switches will be provided at all exterior doors.

- A UL Listed closed circuit TV system will be provided. The system consists of computer servers with image software, computer monitors, and IP based closed circuit TV cameras. The head end server shall be located in the server room and will be rack mounted. The system can be accessed from any PC within the facility or externally via an IP address. Each camera can be viewed independently. The Stored Appliance Network (SAN) will store this information for 45 days at 30 images per second.

- The location of the cameras is generally in corridors, secure areas, and exterior building perimeter. The exterior cameras are pan-tilt-zoom type. The site shall be 100% covered. Cameras will not be provided in Fire department living quarters.

- The system will fully integrate with the access control system to allow viewing of events from a single alarm viewer. Camera images and recorded video shall be linked to the access system to allow retrieval of video that is associated with the event.

- The system includes a card access controller, door controllers, and proximity readers/keypads. The electrical hardware for each door will be provided by the door Hardware Contractor. Proximity readers will be located at various locations as shown on the security drawings. The purpose is to only allow access to authorized personnel at all times. Each proximity reader will have a distinctive code to identify the user and a log will be kept in memory. The log within the panel can be accessed through a computer.

- The alarm condition will also initiate real time recording on the integral CCTV system that is included as part of this submission. The system is programmed with graphic maps allowing the end-user to quickly identify alarm conditions and lock/unlock doors.

- The system shall be tested and complete documentation shall be provided to the Owner on the operational and programming functions available. The system may be easily expanded to accommodate any additional devices that may be added in the future.

TESTING REQUIREMENTS

The Electrical Contractor shall provide testing of the following systems with the Owner and Owner's Representative present:

- Lighting and power panels for correct phase balance.
- Emergency generator.
- Lighting control system (interior and exterior).
- Distributed Antennae System.
- Fire alarm system.
- Lightning Protection System

Testing reports shall be submitted to the Engineer for review and approval before providing to the Owner.

OPERATION MANUALS AND MAINTENANCE MANUALS:

When the project is complete, the Electrical Contractor shall provide operation and maintenance manuals to the Owner. Final affidavits will not be issued until Operation and Maintenance Manuals are issued.

RECORD DRAWINGS AND CONTROL DOCUMENTS:

When the project is completed, an as-built set of drawings, showing all lighting and power requirements from contract and addendum items will be provided to the Owner.

GGD Consulting Engineers, Inc.

Weston & Sampson

100 Foxborough Blvd., Suite 250, Foxborough, MA 02035
Tel: 508.698.3034

SCHEMATIC DESIGN NARRATIVE

Technology Systems

PROJECT: Truro, MA – Public Works Facility

FROM: Electrical Team (GGD Consulting Engineers, Inc.)

DATE: May 2, 2025

SUBJECT: Schematic Design Narrative – Technology Systems

The following is the Technology system narrative which defines scope of work, as well as, basis of design:

The Technology system design at the Truro DPW Building is designed with Category 6A cable and intended for 10G bps to the workstation. The voice wiring will be capable of VOIP.

Technology Components:

Installation and integration of multiple technology components are as follows:

A. Cabling for Voice, Data, and Video Technologies

B. Data Electronics for LAN/WAN Data Infrastructure (not included as part of scope)

C. Data Electronics for Internet Access (not included as part of scope)

D. Data Network Computer Hardware (not included as part of scope)

E. Data Network Software (not included as part of scope)

F. Computer Peripherals (not included as part of scope)

Data System:

The data system is designed for a 10 Gig Ethernet (Category 6A cable) with 10G Base-T connection to the workstation. The high-speed data transmission will allow users to retrieve data from the internet and local area network almost instantly. The data system has been designed for users to accomplish:

A. Internet access through a wireless lan and hard-wired data drops.

B. Applications for word processing, spreadsheet, and alike through a central applications server.

C. Printing of documents from any user computer connected to network printers.

D. Wireless access for employees at the facility.

Telephone System:

The telephone system will utilize Category 6A cable similar to the data system. The infrastructure will be designed to accommodate Voice-Over-IP.

Cable-TV System:

The Cable-TV system will comprise of a coaxial cable drops at each location. The system will be bi-directional type, which allows for both receiving and transmitting broadband signals.

Sound System:

The facility will have a paging/sound system. The system will have inputs from the phone system and paging module.

The paging system will be provided with eight (8) zones.

Volume controls will be provided in private office areas.

100 Foxborough Blvd., Suite 250, Foxborough, MA 02035
Tel: 508.698.3034

SCHEMATIC DESIGN NARRATIVE

Geothermal Wells

PROJECT: Truro, MA – Public Works Facility

FROM: Geothermal Team

DATE: May 2, 2025; updated May 23, 2025

SUBJECT: Schematic Design Narrative – Geothermal Wells

PROJECT INFORMATION

The hydrogeologic conditions of the outer Cape dictate the ability to use the most effective of the ground source heat pump systems – open loop. This area is underlain by a significant thickness of unconsolidated sand and gravel units of high groundwater yield potential, interbedded with discontinuous clay layers. These materials in-mass possess, under groundwater saturated conditions, a high thermal conductivity value on par with some of the massive bedrock units that underlie the mainland of the state. This sequence of unconsolidated deposits is typically several hundred feet thick below the Cape, making the option of bedrock drilling costly and impractical. Thus, the use of a common closed loop system completed in the bedrock underlying the Cape is not common.

Of significance to the siting and use of an open-loop system in the Outer Cape, is the occurrence of freshwater lenses in the corresponding unconsolidated sand and gravel deposits that support both public and private water systems. Static water level elevations typically range between 10-12 feet above sea level (inland) and approach approximately sea level near the coast. Beneath the freshwater, brackish groundwater generally can naturally be found at 30-40 times the height of the freshwater elevation above sea level. For example, a static groundwater level elevation of 10 feet above sea level can be associated with a corresponding underlying brackish groundwater contact elevation of approximately 400 feet below sea level. Because of the typically corrosive nature of brackish water, the use of a closed loop system that would typically need to extend into this deeper subsurface environment (i.e., unconsolidated deposits and underlying bedrock both occurring below the freshwater) would require specialty materials for construction, the use of extreme drilling protections, and are generally not cost effective. At the proposed DPW facility groundwater levels are greater than 100 feet below grade adding complexity and cost to drilling and eliminating effective heat transfer in this upper “dry” zone.

Selected Alternatives

OPEN LOOP

Because of the conditions described above, the selected and most efficient ground source heat pump (GSHP) system adopted in this region is an open-loop style system consisting of well pairs. The first well is an extraction well fitted with a submersible pump. The extracted water is pumped through a plate & frame heat exchanger and reinjected into an injection well (the second well of the pair). The extraction well pumping rates and drilling depths are generally selected to avoid the upconing of the brackish zone below. At this site we would assume permeable sand could be encountered within the upper 60 feet of the saturated sand and gravel deposits making anticipated well depths between 120' and 180' below grade. The corresponding reinjection wells can be shallower, screened almost their entire depth, and are anticipated to be completed at depths ranging from 100-140' for this side.

The installation of a well pair, pump, controls and connecting piping should range in cost from $70,000 to $90,000, dependent on conditions and well separation distances. Injection wells will have wire wound PVC screens while extraction wells require up to 30 feet of wire wound stainless steel screens (Johnson or equal). Based on the need for redundancy and estimated heating/cooling load for the building of up to 30 tons, it is recommended that a maximum of 3 well pairs should readily provide sufficient ground heat exchange.

Cartridge filters, plate & frame heat exchangers and controls (i.e. VFD's) would be additional system components but are considered part of the mechanical HVAC components and should be costed separately.

CLOSED LOOP

Due to the documented presence of PFAS in the subsurface and the upper portions of the freshwater sand and gravel aquifer, Mass DEP and Truro's LSP, HRP Associates, Inc., have indicated that any proposal to develop an open loop geothermal systems at the DPW site will be denied. At this time, based on these preliminary discussions, the proposed designed is a closed loop geothermal system despite its higher costs and well quantities. A closed loop system will require a ground loop coupled through multiple wells each with a completion depth of less than 300 feet. This depth limit is anticipated to avoid penetrating the contact with the underlying brackish groundwater and take advantage of the bulk thermal conductivity afforded by 150 feet of saturated sand and gravel. Anticipated heating and cooling loads can come from approximately 20 to 22 wells depending on the "u"-loop design. We recommend direct connection to a ground source heat pump or pumps with a water to air exchange. This will allow the elimination of plate and frame heat exchanger and a separate internal circulation system. However, a larger 90 to 100 gpm circulation pump will be needed (with redundancy) to move water through the entire ground loop and building components. The entire system should benefit from a reduced maintenance schedule by using materials of construction for the subsystem components having a 50-year life cycle expectancy.

Preliminary Site Design Considerations for Closed Loop

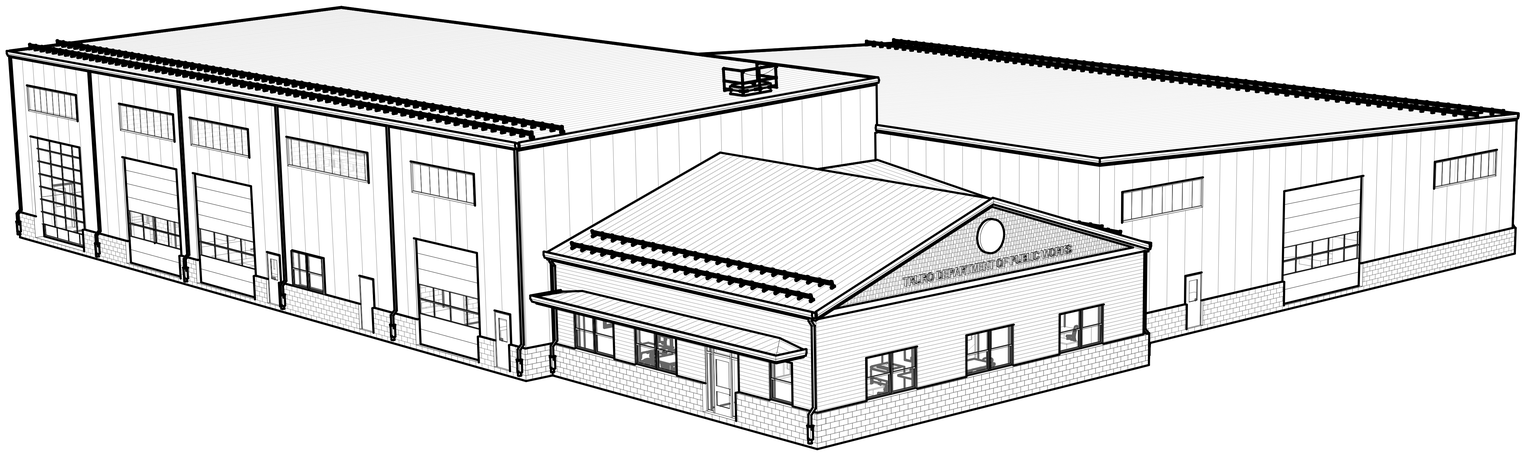
Based on the need for redundancy and estimated heating/cooling load for the building of up to 30 tons, it is recommended that a maximum of 22 wells should readily provide sufficient ground heat exchange. System components for pricing and bidding purposes are provided below.

Drill and install wells (anticipate 6,600 feet of borehole)	_____ per foot
Furnish and install u-loop and connections to building (assume 6,600 feet of polyethylene u-loops) (assume 2" polyethylene pipe return and two, 4 inch diameter headers buried a minimum of 4' below grade) estimate 800 linear feet	_____ per foot
Provided startup and training services including pump and UFD manuals and specifications (assume 8 hours)	_____ hour

SECTION II

Schematic Design Drawings

TOWN of TRURO, MA
NEW DEPARTMENT of PUBLIC WORKS FACILITY
17 TOWN HALL
TRURO, MA 02666



Client Logo:

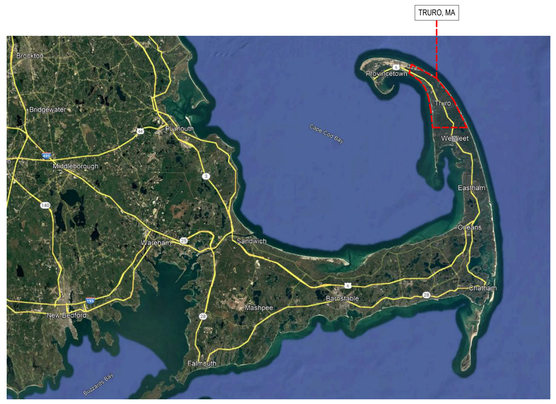
Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
978.532.1900 800.SAMPSON

www.westonandsampson.com

Consultants:

DRAWING LIST

GENERAL	
G000	TITLE SHEET
G101	CODE SUMMARY & PLANS
CIVIL	
C100	EXISTING CONDITION PLAN I
C101	EXISTING CONDITIONS PLAN II
C201	SITE PREPARATION AND EROSION CONTROL PLAN & DEMOLITION PLAN
C301	SITE LAYOUT & MATERIALS PLAN
C401	GRADING & DRAINAGE PLAN
C501	UTILITY PLAN
ARCHITECTURAL	
A011	ABBREVIATIONS, SYMBOLS, LEGEND & GENERAL NOTES
A021	GENERAL NOTES & MOUNTING HEIGHTS
A031	PARTITION TYPES & EXTERIOR WALL ASSEMBLIES
A101	OVERALL FLOOR PLAN
A102	OVERALL MEZZANINE PLAN
A103	REFLECTED CEILING PLAN - BELOW MEZZANINE
A105	ROOF PLAN
A106	STORAGE CANOPY PLANS & ELEVATIONS (BID ALT 2)
A111	LARGE SCALE FLOOR PLAN - ADMIN & EMPLOYEE FACILITIES
A201	OVERALL EXTERIOR ELEVATIONS
A231	3D VIEWS I
A301	BUILDING SECTIONS I
A302	BUILDING SECTIONS II
A401	WALL SECTIONS I
EQUIPMENT	
EQ101	EQUIPMENT LAYOUT PLAN I
EQ102	EQUIPMENT LAYOUT PLAN II
EQ103	TIGHT TANK DETAILS



Location Map



Vicinity Map

Issue Date: MAY 30, 2025

Issued For: SCHEMATIC DESIGN

5/28/2025 3:26:40 PM C:\+Revit\Projects\2024\24-1562_Truro DPW_Arch_v24_Marchand.Avery.rvt

USE GROUP LEGEND

USE GROUP: S-1 STORAGE

USE GROUP: S-2 STORAGE

USE GROUP: B BUSINESS

MEZZANINE

CODE PLAN LEGEND

EXIT CAPACITY
XX / XX — ACTUAL EGRESS OF DOOR OR STAIR / MAXIMUM ALLOWABLE EGRESS CAPACITY OF DOOR OR STAIR

ROOM NAME
101 — ROOM NUMBER

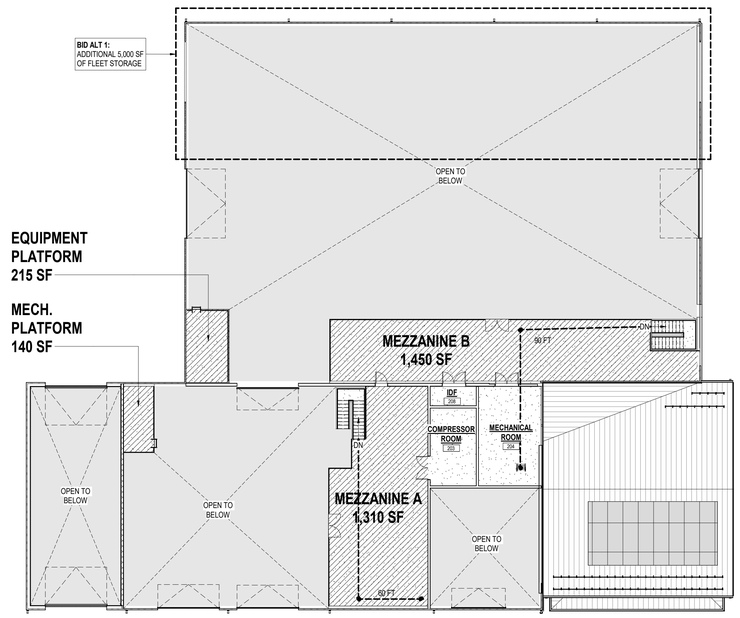
150 / 50SF/P / 3P — MAXIMUM NUMBER OF ALLOWABLE OCCUPANTS / AREA IN NET SQUARE FEET (GROSS SQUARE FEET) / OCCUPANCY LOAD FACTOR

115' — PATH OF MAXIMUM TRAVEL DISTANCE TO EXIT

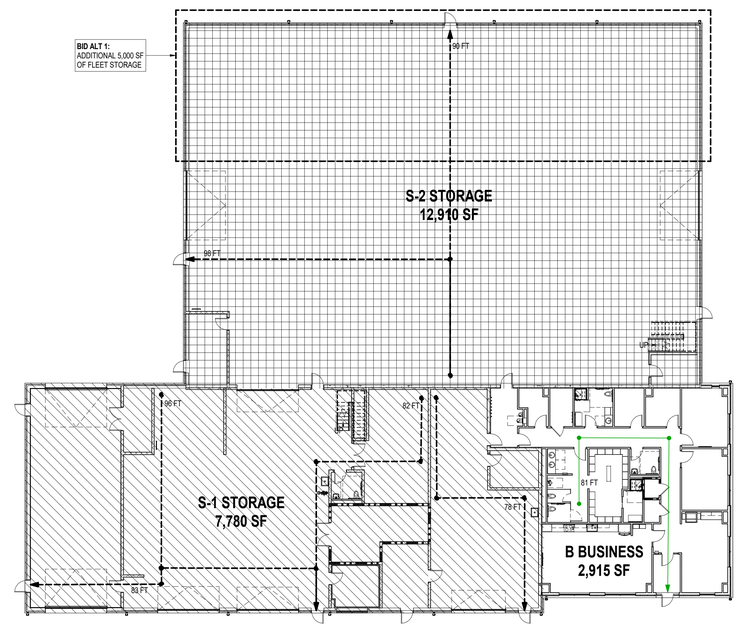
15 — DIRECTION OF TRAVEL TO EXIT

FIRE EXTINGUISHERS:
FE = FIRE EXTINGUISHER, BRACKET MOUNTED
FEC = FIRE EXTINGUISHER, CABINET MOUNTED (SEMI-RECESSED)

SEPARATIONS ARE DESIGNATED AS FOLLOWS:
2 HOUR FIRE-RESISTANCE RATED FIRE BARRIER
1 HOUR FIRE-RESISTANCE RATED FIRE BARRIER
SMOKE RESISTANT SEPARATION



5 MEZZANINE - CODE PLAN
1/16" = 1'-0" 1/ A201



4 FIRST FLOOR - CODE PLAN
1/16" = 1'-0" 4/ A106

INTERNATIONAL ENERGY CONSERVATION CODE 2021 (IECC) 225 CMR 23 WITH APPRENDIX CC - ZONE 5A - BARNSTABLE COUNTY (TABLE C301.1)

ENERGY CODE: ROOF TYPE VALUES
TABLE C402.1.4 - IECC 2021

STANDING SEAM METAL ROOF W/ THERMAL BLOCKS & LINER SYSTEM

MATERIAL	DEPTH	U-VALUE
STANDING SEAM METAL ROOF PANEL	N / A	0.00
THERMAL BLOCKS (UPPER INSULATION LAYER)	4"	0.76
BATT INSULATION (STRUCTURE LAYER)	8"	0.040
FABRIC LINER SYSTEM	N / A	0.00
TOTAL U-VALUE	12"	0.026

REQUIRED U-VALUE = 0.035 FOR METAL BUILDINGS
COMPLIANT

ENERGY CODE: WALL ABOVE GRADE VALUES
TABLE C402.1.4 - IECC 2021

INSULATED METAL WALL PANEL ON GIRTS

MATERIAL	DEPTH	U-VALUE
INSULATED METAL WALL PANEL	4.00"	0.029
TOTAL OF VALUES	4.00"	0.030

REQUIRED U-VALUE = 0.050 FOR METAL BUILDING WALL
C402.7.2.1.3 CLADDING SYSTEMS W/ QUALIFYING THERMAL BREAKS WITH A DERATING FACTOR OF 0.80.
COMPLIANT

FIBER CEMENT SIDING ON METAL STUD

MATERIAL	DEPTH	U-VALUE
FIBER CEMENT SHAKE SIDING	0.25"	N/A
WEATHER BARRIER	N/A	8.33
EXTERIOR SHEATHING	0.625"	1.78
CONT. RIGID INSULATION	3.00"	0.066
TOTAL OF VALUES	3.875"	0.0637
VAPOR RETARDER	N / A	8.33
EXTERIOR SHEATHING	0.625"	1.78
MTL FRAMING	6.00"	0.13
Table C402.1.4.2. states an effective R-Value of 7.35 based on 16" o.c. framing		
VAPOR RETARDER	N / A	8.33
GYPSUM BOARD, PAINTED	0.625"	1.78
TOTAL OF VALUES	7.25"	0.103
TOTAL OF VALUES	11.125"	0.041

REQUIRED U-VALUE = 0.050 FOR METAL BUILDING WALL
C402.7.2.1.3 CLADDING SYSTEMS W/ QUALIFYING THERMAL BREAKS WITH A DERATING FACTOR OF 0.80.
COMPLIANT

CMU VENEER ON CONC BACK-UP WALL

MATERIAL	DEPTH	U-VALUE
CMU VENEER	4.00"	2.27
CAVITY **	1.75"	0.833
CONT. RIGID INSULATION	3.00"	0.066
VAPOR RETARDER	N / A	8.33
CONC BACK-UP WALL *	8.00"	0.74
TOTAL OF VALUES	16.75"	0.694

REQUIRED U-VALUE = 0.090 FOR MASS WALL
C402.7.2.1.3 CLADDING SYSTEMS W/ QUALIFYING THERMAL BREAKS WITH A DERATING FACTOR OF 0.80.
* BASED ON 150 LB/FT3 DENSITY CONCRETE
** UTILIZING 0.50 EFFECTIVE EMITTANCE AS BASIS FOR VALUE.
COMPLIANT

CMU VENEER ON METAL STUD

MATERIAL	DEPTH	U-VALUE
CMU VENEER	4.00"	2.27
CAVITY / AIR SPACE **	1.75"	0.833
CONT. RIGID INSULATION	3.00"	0.66
TOTAL OF VALUES	8.75"	0.060
VAPOR RETARDER	N / A	8.33
EXTERIOR SHEATHING	0.625"	1.78
MTL FRAMING	8.00"	0.13
Table C402.1.4.2. states an effective R-Value of 7.35 based on 16" o.c. framing		
VAPOR RETARDER	N / A	8.33
GYPSUM BOARD, PAINTED	0.625"	1.78
TOTAL OF VALUES	7.25"	0.103
TOTAL OF VALUES	8.75" + 7.25" = 16.00"	0.038

REQUIRED U-VALUE = 0.055 FOR A METAL FRAMED
C402.7.2.1.3 CLADDING SYSTEMS W/ QUALIFYING THERMAL BREAKS WITH A DERATING FACTOR OF 0.80.
** UTILIZING 0.50 EFFECTIVE EMITTANCE AS BASIS FOR VALUE.
COMPLIANT

ENERGY CODE: FLOOR TYPE VALUES
TABLE C402.1.4 - IECC 2021

SLAB ON GRADE - UNHEATED

MATERIAL	DEPTH	U-VALUE
CONCRETE SLAB (MIN DEPTH USED)	6.00"	N / A
20 MIL VAPOR RETARDER	N / A	N / A
CONT. RIGID INSULATION	1.00"	5.00
F-FACTOR		0.46

REQUIRED F-FACTOR = 0.52 FOR UNHEATED SLABS
COMPLIANT

SLAB ON GRADE - HEATED

MATERIAL	DEPTH	U-VALUE
CONCRETE SLAB (MIN DEPTH USED)	8.00"	N / A
20 MIL VAPOR RETARDER	N / A	N / A
CONT. RIGID INSULATION	10.00"	10.00
F-FACTOR		0.55

REQUIRED F-FACTOR = 0.62 FOR UNHEATED SLABS
COMPLIANT

ENERGY CODE: WALL BELOW GRADE VALUES
TABLE C402.1.4 - IECC 2021

WALL BELOW GRADE

MATERIAL	DEPTH	U-VALUE
CONT. RIGID INSULATION	3.00"	15.00
C-FACTOR		0.063

REQUIRED C-FACTOR = 0.119 FOR BELOW GRADE WALLS
COMPLIANT

ENERGY CODE: FENESTRATION VALUES
TABLE C402.4 - IECC 2021

BUILDING ENVELOPE FENESTRATION - U-FACTORS

MATERIAL	SPECIFIED U-VALUE	MAX ALLOWED U-VALUE
FIXED FENESTRATION ***COMPLIANT***	0.16	0.30
OPERABLE FENESTRATION ***COMPLIANT***	0.18	0.32
ENTRANCE DOORS (PERSONNEL) ***COMPLIANT***	0.25	0.63

ENERGY COMPLIANCE & SUSTAINABILITY

THE BUILDING WILL ALSO BE DESIGNED TO ACCOMMODATE THE FOLLOWING FEATURES:

- SUB-METERING OF ELECTRIC SERVICE FOR MONITORING ENERGY USE.
-
- ELECTRIC VEHICLE PARKING SPACES (20% OF ON-SITE PARKING).
- BUILDING ROOF TO BE DESIGNED TO SUPPORT FUTURE PV SOLAR PANEL ARRAY.

FURTHERMORE: PER 225 CMR 23 C401.2.4 MIXED USE BUILDINGS, THE BUILDING'S ENERGY CODE COMPLIANCE PATH WILL BE C401.2.1 PRESCRIPTIVE AND PERFORMANCE COMPLIANCE PATH WITH EACH USE TYPE EVALUATED SEPARATELY IF NEEDED. AS SUCH THE FOLLOWING SPACES WILL COMPLY WITH THE FOLLOWING CODE SECTIONS:

- 225 CMR 23 C.401.2.1.1 PRESCRIPTIVE COMPLIANCE. THE ADMINISTRATION SUITE, WORKSHOP, FLEET MAINTENANCE, AND FLEET STORAGE PORTIONS OF THE BUILDING ARE EACH LESS THAN 20,000 SF AND WILL COMPLY WITH 225 CMR 23 C.401.2.1.1 PRESCRIPTIVE COMPLIANCE.

C402.1.5.1 LOW GLAZED WALL SYSTEM BUILDINGS

BUILDINGS IN WHICH LESS THAN OR EQUAL TO 50% OF THE TOTAL, ABOVE GRADE WALL AREA OF THE BUILDING THERMAL ENVELOPE IS A GLAZED WALL SYSTEM SHALL COMPLY WITH EQUATION 4-2A AND VISION GLASS USED IN THE GLAZED WALL SYSTEM SHALL HAVE A MAXIMUM WHOLE ASSEMBLY U FACTOR OF U-0.25 .
AREA-WEIGHTED U PROPOSED <= 0.1285(EQUATION 4-2A)

- THE BUILDING IS CONSIDERED A LOW GLAZED WALL SYSTEM BUILDINGS AS INDICATED IN C402.1.5.1.

DEFINITIONS:

- **CI** = CONTINUOUS INSULATION
- **LS** = LINER SYSTEM
- **C-FACTOR** = THE COEFFICIENT OF HEAT TRANSMISSION (SURFACE TO SURFACE) THROUGH A BUILDING COMPONENT OR ASSEMBLY, EQUAL TO THE TIME RATE OF HEAT FLOW PER UNIT AREA AND THE UNIT TEMPERATURE DIFFERENCE BETWEEN THE WARM SIDE AND COLD SIDE SURFACES (BTU/H × FT² × °F) [W/(M² × K)].
- **F-FACTOR** = THE PERIMETER HEAT LOSS FACTOR FOR SLAB-ON-GRADE FLOORS (BTU/H × FT × °F) [W/(M × K)].
- **R-VALUE** = THE INVERSE OF THE TIME RATE OF HEAT FLOW THROUGH A BODY FROM ONE OF ITS BOUNDING SURFACES TO THE OTHER SURFACE FOR A UNIT TEMPERATURE DIFFERENCE BETWEEN THE TWO SURFACES, UNDER STEADY STATE CONDITIONS, PER UNIT AREA (H × FT² × °F/BTU) [M² × K/W].
- **U-VALUE** = THE COEFFICIENT OF HEAT TRANSMISSION (AIR TO AIR) THROUGH A BUILDING COMPONENT OR ASSEMBLY, EQUAL TO THE TIME RATE OF HEAT FLOW PER UNIT AREA AND UNIT TEMPERATURE DIFFERENCE BETWEEN THE WARM SIDE AND COLD SIDE AIR FILMS (BTU/H × FT² × °F) [W/(M² × K)].

REFER TO TABLE C402.1.4, MA STRETCH ENERGY CODE, IECC 2021, WITH MA AMENDMENTS FOR ADDITIONAL INFORMATION.

CODE PLAN NOTES

NEW CONSTRUCTION

A. ALL SPACES, FACILITIES AND PROGRAMS REQUIRED BY CODE TO BE ACCESSIBLE TO PHYSICALLY DISABLED PERSONS SHALL BE ACCESSIBLE.

- WHERE A WORKSTATION IS PROVIDED, AN ACCESSIBLE WORKSTATION IS REQUIRED.

- WHERE A SINK IS PROVIDED, AN ACCESSIBLE SINK WITH PIPE PROTECTION IS REQUIRED.

- ALL LABS AND SHOPS SHALL HAVE AN ACCESSIBLE EYE AND BODY WASH.

- ALL ACCESSORIES SHALL MEET REACH RANGES FOR FRONT OR SIDE APPROACH.

- ALL ACCESSIBLE ROUTES THROUGH BUILDING SHALL PROVIDE A MINIMUM 32 INCHES CLEARANCE (DOORWAYS IN PARTICULAR).

- ALL ACCESSIBLE SPACES, FURNISHING FIXTURES AND EQUIPMENT, AND ALL OPERATIONAL AND ACCESSIBLE ROUTE CLEARANCES SHALL MEET REQUIREMENTS OF SECTION 504. REHABILITATION ACT 1973 INCLUDING UNIFORM FEDERAL ACCESSIBILITY STANDARDS (UFAS) AND 504 REGULATIONS, ICC/ANSI 521 CMR, AND THE AMERICANS WITH DISABILITIES ACT, TITLE II, INCLUDING THE AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG) AND ADA REGULATIONS.

- REFER TO A012 FOR MOUNTING HEIGHTS FOR ACCESSIBLE FIXTURES.

B. NEW AND EXISTING SMOKE PARTITIONS, INCLUDING STORAGE ROOMS OVER 100 SQUARE FEET, SHALL HAVE PENETRATIONS AND VOIDS FIRESTOPPED IN ACCORDANCE WITH DIVISION 07 SPECIFICATION SECTION "PENETRATION FIRESTOPPING". ALL HEAD-OF-WALL JOINTS AND FLOOR-TO-WALL JOINTS AT NEW AND EXISTING SMOKE RESISTANT PARTITIONS SHALL BE SEALED IN ACCORDANCE WITH DIVISION 07 SPECIFICATION SECTION "FIRESTOPPING".

C. NEW AND EXISTING FIRE-RESISTANCE RATED WALLS SHALL HAVE PENETRATIONS AND VOIDS FIRESTOPPED IN ACCORDANCE WITH DIVISION 07 SPECIFICATION SECTION "FIRESTOPPING". ALL HEAD-OF-WALL JOINTS AND FLOOR-TO-WALL JOINTS AT NEW AND EXISTING FIRE-RATED WALLS SHALL BE SEALED IN ACCORDANCE WITH DIVISION 07 SPECIFICATION SECTION "FIRESTOPPING".

D. ALL PENETRATIONS THROUGH FLOORS, INCLUDING FLOOR OF DUCTWORK ENCLOSURES, SHALL BE FIRESTOPPED IN ACCORDANCE WITH DIVISION 07 SECTION "FIRESTOPPING". PENETRATIONS THROUGH FLOORS OF RATED ROOMS OR FLOOR SYSTEMS SHALL BE FIRESTOPPED TO MEET RATING OF ROOM OR FLOOR SYSTEM.

FOR INTERIOR FINISHES

INTERIOR FINISHES SHALL BE PROVIDED AND CONFIRMED TO HAVE THE FOLLOWING CLASSIFICATION RATINGS :

WALLS AND CEILINGS (OTHER THAN TEXTILE)
BUSINESS AND EDUCATIONAL OCCUPANCIES:
- VERTICAL EXITS AND EXIT PASSAGEWAYS - CLASS A
- EXIT ACCESS CORRIDORS AND OTHER EXIT WAYS - CLASS B
- ROOMS AND ENCLOSED SPACES - CLASS C

WALLS - TEXTILE
IBC 803.6.1.1 OR 803.6.1.2

CEILINGS - TEXTILE
CLASS A

FLOOR FINISH
OCCUPANCIES A, B, E, H, I-4, M, R-1, R-2, S
- VERTICAL EXITS, EXIT PASSAGEWAYS, AND EXIT ACCESS CORRIDORS - CLASS II
- OTHER AREAS - DOC FF-1 (CPSC 16 CFR, PART 1630)

CODE SUMMARY:

THE PROPOSED TRURO DEPARTMENT OF PUBLICS WORKS FACILITY CONSISTS OF A NON-SEPARATED "MIXED-USE" BUILDING PROGRAM, INCLUDING THREE (3) MAIN OPERATIONAL COMPONENTS, AS FOLLOWS:

1. **USE GROUP "B", BUSINESS**: A ONE-STORY ADMINISTRATION WING, CONSISTING OF EMPLOYEE SUPPORT SPACES (E.I. LUNCH/TRAINING ROOM, MEN'S & WOMEN'S LOCKER ROOM ETC.), DIRECTORS' OFFICES, SHARED ADMINISTRATIVE OFFICE, AND OFFICE SUPPORT SPACES.

2. **USE GROUP "S-1" MODERATE HAZARD USE**: SINGLE-STORY, DOUBLE-HEIGHT VEHICLE MAINTENANCE AND CARPENTRY SHOP AREAS AND ADJACENT VEHICLE WASH-BAY. MAINTENANCE AREA HAS AN ASSOCIATED OPEN MEZZANINE SPACE.

3. **USE GROUP "S-2" LOW HAZARD USE**: SINGLE-STORY, MINIMALLY HEATED VEHICLE & EQUIPMENT STORAGE GARAGE AREA WITH AN ASSOCIATED OPEN MEZZANINE SPACE.

THE PROPOSED BUILDING IS STEEL-FRAMED WITH CONCRETE SLAB FLOORS AND MEZZANINE LEVEL STEEL DECK AND CONCRETE SLAB. THE BUILDING ENCLOSURE CONSISTS OF A INSULATED STANDING SEAM METAL ROOF SYSTEM, FACTORY FOAMED IN PLACE INDUSTRIAL METAL PANEL WALL SYSTEM ON A METAL STUD OR GIRT BACKUP WALL WITH AN INSULATED CMU BASE WALL. TRIPLE-GLAZED STOREFRONT AND WINDOWS ARE PROVIDED AT THE ADMINISTRATION WING AND TRANSLUCENT PANEL DAYLIGHT SYSTEMS ARE INCORPORATED INTO THE WALL PANEL SYSTEM AT THE INDUSTRIAL SHOP AREAS.

SPECIFIC ASPECTS OF THIS BUILDING TO NOTE ARE AS FOLLOWS:

1. A 2-HOUR FIRE-RESISTANCE RATED FLUID STORAGE ROOM IS PROVIDED TO STORE FLAMMABLE / HAZARDOUS FLUIDS USED FOR THE MAINTENANCE & REPAIR OF VEHICLES.
2. A STANDBY GENERATOR, WHICH IS HOUSED WITHIN A SOUND-ATTENUATED ENCLOSURE IS LOCATED ON THE WEST SIDE OF THE EXTERIOR OF THE BUILDING AND IS SIZED TO PROVIDE FULL OPERATIONAL POWER TO THE FACILITY.
3. THE BUILDING IS FULLY SPRINKLED PER NFPA 13 REQUIREMENTS, AND WILL HAVE AN EMERGENCY VOICE / ALARM COMMUNICATION SYSTEM.
4. WITH EXCEPTIONS OF MEZZANINES, THE BUILDING AND FACILITY ARE FULLY ACCESSIBLE AND MEET ADA AND CMR 521 MASSACHUSETTS ARCHITECTURAL ACCESS BOARD REGULATIONS.

GENERAL BUILDING INFORMATION:
ALL AREAS ARE SHOWN IN GROSS SQUARE FEET (GSF).

BUILDING FOOTPRINT AREA (NOT INCLUDING VEHICLE CANOPY):	**23,605 GSF**
TOTAL BUILDING SQUARE FOOT AREA (NOT INCLUDING MEZZANINES):	**23,605 GSF**
1. USE GROUP "B" …BUSINESS (ADMINISTRATION / STAFF WING)	**2,915 GSF**
2. USE GROUP "S-1", MODERATE HAZARD STORAGE (VEHICLE MAINTENANCE / WASH / WORKSHOPS):	**7,780SF**
3. USE GROUP "S-2", LOW HAZARD STORAGE (VEHICLE & EQUIPMENT STORAGE GARAGE)	**12,910 GSF**
BUILDING HEIGHT (TO ROOF RIDGE AT VEHICLE STORAGE AREA):	**31' -4"**

APPLICABLE CODES AND STANDARDS:

- MASSACHUSETTS STATE BUILDING CODE & APPROPRIATE AMENDMENTS:
  - 780 CMR TENTH EDITION
  - IBC 2021
- 2021 INTERNATIONAL MECHANICAL CODE (IMC)
- 248 CMR 10.00 UNIFORM STATE PLUMBING CODE (USPC)
- 2023 NATIONAL ELECTRICAL CODE
- 2023 MASSACHUSETTS ENERGY CODE
  - 2021 IECC W/ MA AMENDMENTS
  - 225 CMR 23.00 - MA COMMERCIAL STRETCH ENERGY CODE
  - APPENDIX CC - MA MUNICIPAL OPT-IN SPECIALIZED ENERGY CODE
- 2019 MASSACHUSETTS COMPREHENSIVE FIRE CODE
  - 527 CMR, BOARD OF FIRE PREVENTION REGULATIONS
  - NFPA 1 FIRE CODE, 2015 EDITION
- 271 CMR: BOARD OF EXAMINERS OF SHEET METAL WORKERS
- 521 CMR ARCHITECTURAL ACCESS BOARD REGULATIONS

BUILDING CODE ANALYSIS:

CHAPTER 3 - USE AND OCCUPANCY CLASSIFICATION

(SECT. 304) USE GROUP B (BUSINESS):	**2,915 GSF**
(SECT. 311.2) USE GROUP S-1 (MODERATE-HAZARD STORAGE):	**7,780 GSF**
(SECT. 311.3) USE GROUP S-2 (LOW-HAZARD STORAGE):	**12,910 GSF**
TOTAL BUILDING:	**23,605 GSF**

CHAPTER 5- GENERAL BUILDING HEIGHTS AND AREAS

(SECT. 504.3) ALLOWABLE BUILDING HEIGHT
TYPE IIB CONSTRUCTION
"B" AND "S" OCCUPANCY, SPRINKLED
ALLOWABLE HEIGHT: **75' - 0"**
PROPOSED HEIGHT (COMPLIANT): **31' - 5"**

(SECT. 504.4) ALLOWABLE NUMBER OF STORIES
"S-1" OCCUPANCY (MOST RESTRICTIVE)
ALLOWABLE STORIES: **3 STORIES**
PROPOSED STORIES (COMPLIANT): **1 STORY**

(SECT. 506.2) ALLOWABLE BUILDING AREA
GROUP "S-1" (MOST RESTRICTIVE): **70,000 SF**
(FOR 1-STORY STRUCTURE OF TYPE IIB CONSTRUCTION, W/ SPRINKLER SYSTEM)
PROPOSED AREA FOR TOTAL BUILDING: **45,234 GSF**
PROPOSED HEIGHT FOR TOTAL BUILDING: **1 STORY**

(SECT. 505.2.1) MEZZANINE AREA LIMITATIONS

MEZZANINE B + EQUIPMENT PLATFORM: (FLEET STORAGE)
VEHICLE STORAGE OPEN AREA: = 12,180 SF
ALLOWABLE MEZZANINE AREA: = 12,180 x 1/2 = 6,090 SF
ACTUAL AGGREAGATE MEZZANINE AREA: = 1,665 SF (*COMPLIANT*)

MEZZANINE A + MECHANICAL PLATFORM: (FLEET MAINTENANCE)
FLEET MAINTENANCE OPEN AREA: = 3,075 SF
ALLOWABLE MEZZANINE AREA: = 3,075 x 1/2 = 1,538 SF
ACTUAL AGGREGATE MEZZANINE AREA: = 1,450 SF (*COMPLIANT*)

(SECT. 508.3.2) MIXED USE AND OCCUPANCY, NON-SEPARATED OCCUPANCIES
GROUP "S-1" (MOST RESTRICTIVE OCCUPANCY)
ALLOWABLE AREA FOR USE GROUP S: **70,000 SF**
ALLOWABLE HEIGHT FOR USE GROUP S: **1 STORY, SPRINKLED**

(SECT. 509) INCIDENTAL USES
AUTOMATIC SPRINKLER SYSTEM PROVIDED
INCIDENTAL USES - 1 OR 2 HOUR SEPARATION PROVIDED AT ELECTRICAL ROOM > KVA - AUTOMATIC SPRINKLER SYSTEM AND 1-HOUR SEPARATION PROVIDED AT FLUID STORAGE ROOM.

CHAPTER 6 - TYPES OF CONSTRUCTION

(TABLE 601) FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS

CONSTRUCTION TYPE IIB - BUILDING ELEMENTS

STRUCTURAL FRAME (INC. COLUMNS, GIRDERS AND TRUSSES):	0 HRS
BEARING WALLS - EXTERIOR:	0 HRS
BEARING WALLS - INTERIOR:	0 HRS
NON BEARING WALLS AND PARTITIONS - EXTERIOR:	0 HRS
NON BEARING WALLS AND PARTITIONS - INTERIOR:	0 HRS
FLOOR CONSTRUCTION:	0 HRS
ROOF CONSTRUCTION:	0 HRS

(TABLE 602) FIRE RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS BASED ON FIRE SEPARATION DISTANCE

CONSTRUCTION TYPE IIB
FIRE SEPARATION DISTANCE = X
SEPARATION DISTANCE TO FUELING FACILITY: X > 30
OCCUPANCY USE GROUP S-1: 0 HRS
OCCUPANCY USE GROUP S-2: 0 HRS

(SECT. 602.2) CONSTRUCTION TYPE IIB, NONCOMBUSTIBLE, FULLY SPRINKLED

CHAPTER 9 - FIRE PROTECTION SYSTEMS

(SECT. 903.2.9) USE GROUP S-1
REQUIRE AUTOMATIC SPRINKLER SYSTEMS WHERE FIRE AREAS EXCEED 12,000 SF, OR WHERE FIRE AREAS USED FOR THE STORAGE OR REPAIR OF COMMERCIAL MOTOR VEHICLES EXCEED 5,000 SF.

(SECT. 903.3.1.1) ALTERNATIVE PROTECTION
AN NFPA-13 COMPLIANT AUTOMATIC SPRINKLER SYSTEM WILL BE PROVIDED AT ALL INTERIOR BUILDING AREAS. SHOP AND VEHICLE STORAGE AREA WILL HAVE DRY-PIPE ZONES.

(SECT. 907.5.2.2) EMERGENCY VOICE / ALARM COMMUNICATION SYSTEM
AS REQUIRED UNDER SECTION 505.2.1, EXCEPTION #2, AN NFPA-72 COMPLIANT EMERGENCY VOICE / ALARM COMMUNICATION SYSTEM WILL BE PROVIDED.

CHAPTER 10 - MEANS OF EGRESS

(TABLE 1004.1.2) MAXIMUM FLOOR AREA ALLOWANCE PER OCCUPANT

STORAGE AREA S-1		=	300 GSF / OCC
STORAGE AREA S-2		=	300 GSF / OCC
BUSINESS / OFFICE AREA B		=	150 GSF / OCC
ASSEMBLY (MUSTER ROOM)		=	15 NSF / OCC
LOCKER ROOM		=	50 GSF / OCC
MEZZANINES (S-1, S-2)		=	300 GSF / OCC
MECHANICAL ROOM		=	300 GSF / OCC

(SECT. 1004) OCCUPANT LOAD

FLEET STORAGE S-2 :	12,910 SF (+ 300 SF/OCC)	=	43 OCCUPANTS
MEZZANINE B	1,450 SF (+ 300 SF/OCC)	=	5 OCCUPANTS
EQUIP PLATFORM	215 SF (+ 300 SF/OCC)	=	1 OCCUPANT
FLEET MAINTENANCE S-1:	6,280 SF (+ 300 SF/OCC)	=	21 OCCUPANTS
MEZZANINE B	1,310 SF (+ 300 SF/OCC)	=	4 OCCUPANTS
EQUIP PLATFORM	140 SF (+ 300 SF/OCC)	=	1 OCCUPANT
WORKSHOP S-1:	1,520 SF (+ 300 SF/OCC)	=	5 OCCUPANTS
BUSINESS / OFFICE AREA B:	2,915 SF (+ 150 SF/OCC)	=	19 OCCUPANTS
MUSTER ROOM:	(UNDER 750 SF, CONSIDERED PART OF BUSINESS)		
LOCKER ROOMS:	(UNDER 750 SF, CONSIDERED PART OF BUSINESS)		
MECHANICAL ROOMS:	644 SF (+ 300 SF/OCC)	=	2 OCCUPANTS
TOTAL:		=	**101 OCCUPANTS**

(SECT. 1005) MEANS OF EGRESS SIZING

FLEET STORAGE S-2 (INCLUDING MEZZANINES AND MECHANICAL ROOM):			
DOORWAY WIDTH REQUIRED MIN.	50 OCC @ 0.2 IN. PER OCC	=	10 IN
DOORWAY WIDTH PROVIDED	36" CLEAR (x 3 DOORS)	=	108 IN
FLEET MAINTENANCE S-1 (INCLUDING MEZZANINE):			
DOORWAY WIDTH REQUIRED MIN.	26 OCC @ 0.2 IN. PER OCC	=	5 IN
DOORWAY WIDTH PROVIDED	36" CLEAR (x 3 DOORS)	=	108 IN
WORKSHOP S-1:			
DOORWAY WIDTH REQUIRED MIN.	5 OCC @ 0.2 IN. PER OCC	=	10 IN
DOORWAY WIDTH PROVIDED	36" CLEAR (x 1 DOORS)	=	36 IN
BUSINESS / OFFICE AREA B:			
DOORWAY WIDTH REQUIRED MIN.	19 OCC @ 0.2 IN PER OCC	=	4 IN
DOORWAY WIDTH PROVIDED	36" CLEAR (x 1 DOOR)	=	36 IN

(SECT. 1006) NUMBER OF EXISTS AND EXIT ACCESS DOORWAYS

(TABLE 1006.2.1) MAXIMUM COMMON PATH OF EGRESS TRAVEL DISTANCE (FT)

B AND **S** OCCUPANCIES, WITH SPRINKLER SYSTEM	=	100 FT
MAXIMUM PROVIDED	=	99FT

(TABLE 1006.2.1) SPACE WITH ONE EXIT

S OCCUPANCY (MOST RESTRICTIVE) MAXIMUM OCCUPANCY	=	29
MAXIMUM PROVIDED	=	8

(TABLE 1006.3.1) MINIMUM NUMBER OF EXITS PER STORY

REQUIRED FOR 1-500 OCCUPANTS	=	2
PROVIDED	=	8

(SECT. 1007) EXIT AND EXIT ACCESS DOORWAY CONFIGURATION
1007.1.1 EXCEPTION #2: WHERE A BUILDING IS EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM, THE SEPARATION DISTANCE OF THE EXIT DOORS OR EXIT ACCESS DOORWAYS SHALL NOT BE LESS THAN ONE-THIRD OF THE LENGTH OF THE MAXIMUM OVERALL DIAGONAL DIMENSIONS OF THE AREA SERVED.

(SECT. 1016.2) EGRESS THROUGH INTERVENING SPACES
1016.2.2 EXCEPTION - MEANS OF EGRESS ARE PERMITTED THROUGH ADJOINING OR INTERVENING ROOMS OR SPACES WHEN THE ADJOINING OR INTERVENING ROOMS OR SPACES ARE THE SAME OR LESSER HAZARD OCCUPANCY GROUP.

(SECT. 1017) EXIT ACCESS TRAVEL DISTANCE
EXITS SHALL BE SO LOCATED ON EACH STORY THAT THE MAXIMUM LENGTH OF EXIT ACCESS TRAVEL, MEASURED FROM THE MOST REMOTE POINT WITHIN A STORY ALONG THE NATURAL AND UNOBSTRUCTED PATH OF EGRESS TRAVEL TO THE EXTERIOR EXIT DOOR AT THE LEVEL OF EXIT DISCHARGE SHALL NOT EXCEED THE DISTANCE GIVEN IN TABLE 1017.2:

(TABLE 1017.2) EXIT ACCESS TRAVEL DISTANCE (WITH SPRINKLER SYSTEM)

USE GROUP S-1 ALLOWABLE (MOST RESTRICTIVE):	=	250 FT MAX
MAXIMUM PROVIDED:	=	138 FT

(TABLE 1020.1) CORRIDORS FIRE-RESISTANCE RATING
OCCUPANCY B AND S, OCCUPANT LOAD > 30 WITH SPRINKLER SYSTEM = 0 HR

WARNING: THROUGH-PENETRATION FIRESTOP SYSTEM - DO NOT DISTURB

NOTIFY FACILITY MANAGER / OWNER OF ANY DAMAGE

- *CONTRACTOR'S NAME, ADDRESS, PHONE NUMBER*
- *THROUGH-PENETRATION FIRESTOP SYSTEMS DESIGNATION OF APPLICABLE TESTING AND INSPECTION AGENCY*
- *DATE OF INSTALLATION*
- *THROUGH-PENETRATION FIRESTOP SYSTEMS MANUFACTURER'S NAME*
- *INSTALLER'S NAME*

PRESSURE-SENSITIVE, SELF ADHESIVE PRE-PRINTED VINYL LABELS
FOR ALL RATED WALL ASSEMBLIES, BOTH SIDES
- REFER TO "FIRESTOPPING" SPECIFICATION FOR ADDITIONAL INFORMATION

3 RATED WALL LABEL
1 1/2" = 1'-0"

ADDRESS IDENTIFICATION SIGNAGE:

17 — 6"

APPLICABILITY:
- VERIFY SPECIFIC REQUIREMENTS WITH LOCAL FIRE CODE OFFICIAL
- CHARACTER HEIGHT - 6" MINIMUM W/ 1/2" STROKE MINIMUM
- COLOR - EASILY IDENTIFIABLE COLOR, CONTRASTING WITH BACKGROUND

2 EXTERIOR SIGNAGE - ADDRESS
1 1/2" = 1'-0"

PARTITION LETTERING: IBC 2015 - 703.7 MARKING AND IDENTIFICATION

2 HOUR FIRE WALL - PROTECT ALL OPENINGS — 3"

1 HOUR FIRE WALL - PROTECT ALL OPENINGS — 3"

APPLICABILITY:
- APPLY TO OUTSIDE OF FIRE RATED SHAFTS AND TO BOTH SIDES OF PARTITIONS AT INTERVALS NOT TO EXCEED 30'-0" FOR ENTIRE LENGTH OF PARTITION OR WALL OR TWICE ANY PARTITION 30'-0" IN LENGTH OR LESS. MINIMUM 15'-0" FROM EACH END OF PARTITION ALSO.
- LOCATE IDENTIFICATION IN ALL ACCESSIBLE FLOOR, FLOOR-CEILING AND ATTIC SPACES. LOCATE IDENTIFICATION WITHIN 12 - 18 INCHES ABOVE FINISHED CEILINGS
- APPLY STENCILED LETTERING BY SPRAY OR BRUSH OR PROVIDE PERMANENT SIGNAGE. IDENTIFICATION SHALL BE WATERPROOF, FADE-PROOF, AND NON-COMBUSTIBLE. SIGNAGE SHALL BE MECHANICALLY FASTENED OR PERMANENTLY ADHERED TO PARTITION OR SHAFT.
- STENCIL CHARACTER HEIGHT - 3" MINIMUM
- COLOR - EASILY IDENTIFIABLE COLOR, CONTRASTING WITH BACKGROUND ACCEPTABLE TO OWNER

1 CHAPTER 7 CODE RATED WALL LABELS
1 1/2"

N

NOTES:

1) THE INFORMATION SHOWN HEREON IS BASED ON AN ON-THE-GROUND SURVEY PERFORMED BETWEEN BETWEEN SEPTEMBER 26 & DECEMBER 4, 2024, BY ALPHA SURVEY GROUP, LLC.

2) THE HORIZONTAL DATUM FOR THIS PROJECT IS THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), CORS ADJUSTMENT (NAD83 [2011/GEOID18) AS DETERMINED BY REDUNDANT GPS OBSERVATIONS MADE BETWEEN SEPTEMBER 26 & OCTOBER 4, 2024. UTILIZING MACORS REAL TIME NETWORK.

3) THE VERTICAL DATUM FOR THIS PROJECT IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), CORS ADJUSTMENT (NAD83 (2011/GEOID18) AS DETERMINED BY REDUNDANT GPS OBSERVATIONS MADE BETWEEN SEPTEMBER 26 & OCTOBER 4, 2024. UTILIZING MACORS REAL TIME NETWORK. DIFFERENTIAL LEVELING WAS PERFORMED BETWEEN THE BENCHMARKS SHOWN HERON AND SELECT ALPHA SURVEY CONTROL POINTS UTILIZING A SOKKIA DIGITAL LEVEL & BAR-CODED ROD.

5) THE SUBJECT PREMISES DOES NOT LIE WITHIN A FEMA FLOOD ZONE BASED UPON FLOOD INSURANCE RATE MAP NUMBERS 25001C0231J WITH AN EFFECTIVE DATE OF 7/16/2014.

6) THE PROPERTY LINES SHOWN HEREON ARE BASED ON CITED PLANS AND DEEDS AND AN ON-THE-GROUND SURVEY. THE BOUNDARIES WERE ESTABLISHED UTILIZING PRIMACODE'S TRANSFORM PROGRAM TO OBTAIN A "BEST FIT" TO MONUMENTS LOCATED IN THE FIELD.

7) THIS PLAN AND THE ACCOMPANYING CERTIFICATIONS DO NOT CONSTITUTE A CERTIFICATION OF TITLE TO THE PROPERTY DISPLAYED HEREON. THE OWNER OF LOCUS AND ABUTTING PROPERTIES ARE SHOWN ACCORDING TO THE CURRENT TOWN ASSESSOR'S RECORDS. THIS PLAN WAS PREPARED WITHOUT THE BENEFIT OF A TITLE ABSTRACT AND IS SUBJECT TO THE RESTRICTIONS, COVENANTS AND/OR EASEMENTS THAT MAY BE CONTAINED THEREIN.

8) TOPOGRAPHICAL CONTOURS SHOWN ON 22 & 24 MEETING HOUSE RD. TAKEN FROM 2021 USGS LIDAR: CENTRAL EASTERN MASSACHUSETTS.

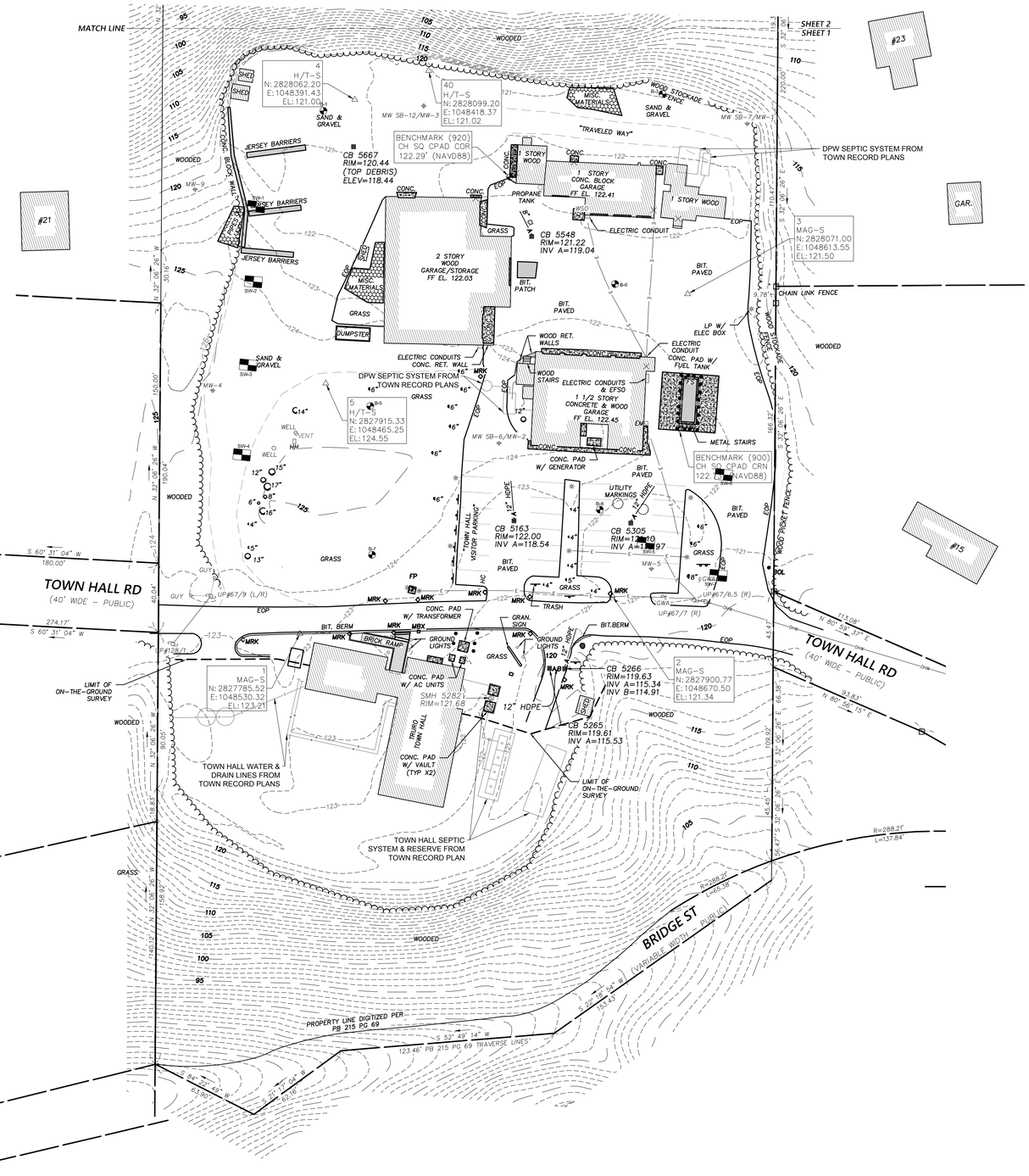
9) ALL UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE ONLY AND WERE COMPILED ACCORDING TO AVAILABLE RECORD PLANS FROM THE VARIOUS UTILITY COMPANIES AND PUBLIC AGENCIES. ACTUAL LOCATIONS MUST BE DETERMINED IN THE FIELD.

PLAN REFERENCES:

PB 174 PG 83
PB 174 PG 85
PB 213 PG 45
PB 215 PG 69
PB 316 PG 60
PB 368 PG 100
PB 378 PG 19
PB 551 PG 12

DRAWING LEGEND

WATER SHUT OFF	WSO
ELECTRIC METER	E
UTILITY POLE	
GUY WIRE ANCHOR	GUY
SEWER MANHOLE	S
CATCH BASIN	
HAND HOLE	HH
HYDRANT	
BOLLARD	
LIGHT POLE	
FLOODLIGHT	
TREE (SIZE INCHES)	
MONITORING WELL	MW#
GAS LINE	G
TELEPHONE LINE	T
DRAIN LINE	D
SEWER LINE	S
ELECTRIC LINE	E
WATER LINE	W
OVERHEAD ELECTRIC	OHW
CHAIN LINK FENCE	X X
TREELINE	
RETAINING	RET.
CONCRETE	CONC.
BITUMINOUS	BIT.
SPOT GRADE	X 100.00
FOUND	~F
RECORD	(R)
STONE BOUND	SB
CONCRETE BOUND	CB
DRILL HOLE	DH
IRON PIPE	IP
IRON ROD	IR
PARKER-KALON NAIL	PK
MAG NAIL	MAG
BENCHMARK	
TRAVERSE (CONTROL) POINT	
SIGN	
REFLECTIVE ROAD MARKER	MRK
SPLICE BOX	SBOX
EMERGENCY FUEL SHUT OFF	EFSO
FUEL SERVICE PUMP	FS
FLAG POLE	FP



0 30 60 100

SCALE: 1" = 30'

Project:
TRURO NEW DEPARTMENT OF PUBLIC WORKS

17 TOWN HALL ROAD,
TRURO, MA 02666

Weston & Sampson

Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
978.532.1900 800.SAMPSON

www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

COA:

Seal:

Issued For:
SCHEMATIC DESIGN NOT RELEASED FOR CONSTRUCTION

Scale: AS NOTED

Date: 05 /30/ 2025
Drawn By:
Reviewed By:
Aporoved By:

W&S Project No.: ENG24 - 1552
W&S File No.:

Drawing Title:
EXISTING CONDITIONS PLAN I

Sheet Number:
C100

COPYRIGHT © 2025 WESTON & SAMPSON, INC.


N
48
H/T-S
N: 2828341.28
E: 1047843.68
EL: 124.87
47
H/T-S
N: 2828299.22
E: 1047948.99
EL: 122.05
46
H/T-S
N: 2828221.06
E: 1048050.04
EL: 93.09
45
H/T-S
N: 2828144.03
E: 1048100.55
EL: 97.11
44
MAG-S
N: 2828047.73
E: 1048156.00
EL: 65.04
12
MAG-S
N: 2828235.57
E: 1048450.60
EL: 81.42
210.05'
N 71° 38' 09" E
120.00'
N 71° 38' 09" E
GRASS SPORTS FIELD
WOODED
WOODED
WOODED

SITE NOTES

1. ALL EXISTING PIPES TO BE ABANDONED SHALL BE DONE IN ACCORDANCE WITH SPECIFICATION SECTION 02 41 13.29 "ABANDONMENT OF SEWER AND DRAINS."
2. ALL EXISTING UTILITIES, PIPES, STRUCTURES, OBSERVATION WELLS, ETC. SHALL BE ABANDONED AS REQUIRED TO COMPLETE THE WORK AS SHOWN ON THE PLANS UNLESS OTHERWISE NOTED.
3. CONTRACTOR SHALL COORDINATE REMOVAL OF MATERIAL STOCKPILES WITH THE ABINGTON DPW. TOWN SHALL REMOVE MATERIAL STOCKPILES IN ADVANCE OF THE WORK.
4. ALL UTILITIES AND DRAINAGE STRUCTURES BELOW PROPOSED FOOTPRINT OF BUILDINGS MUST BE REMOVED IN THEIR ENTIRETY.
5. REMOVAL OF CONCRETE WALLS SHALL INCLUDE ALL ASSOCIATED FOUNDATIONS.
6. UTILITIES FOR SITE AMENITIES INCLUDING LIGHT POLES AND BUILDINGS SCHEDULED TO BE DEMOLISHED SHALL BE DISCONNECTED AND MADE SAFE AT THE POWER SOURCE BY THE ELECTRICAL FILED SUB-BIDDER. SITE CONTRACTOR TO REMOVE AMENITIES INCLUDING THE DISCONNECTED UTILITIES FEEDING THE AMENITIES.
7. ALL VOIDS CREATED BY REMOVAL OF EXISTING ELEMENTS SHALL BE BACKFILLED WITH GRAVEL BORROW IN ACCORDANCE WITH 31 00 00 EARTHWORK.
8. CONTRACTOR SHALL BE AWARE THAT THE EXISTING LIMIT OF BITUMINOUS CONCRETE IS APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LIMITS PRIOR TO BIDDING. ALL EXISTING BITUMINOUS CONCRETE SHALL BE REMOVED TO COMPLETE THE PROPOSED WORK WITHOUT ADJUSTMENT TO COMPENSATION.
9. SEDIMENTATION CONTROL DEVICES WITHIN THE TOWN'S RIGHT OF WAY, MUST BE MAINTAINED, INSPECTED, CLEANED AND REPLACED AS NECESSARY TO PREVENT POSSIBLE FLOODING ISSUES DURING RAIN EVENTS. ONCE ALL WORK IS DONE, ANY SEDIMENTATION CONTROL DEVICES MUST BE REMOVED BY THE CONTRACTOR AS SOON AS POSSIBLE.
10. CONTRACTOR SHALL CORDON OFF THE WATER QUALITY BIORETENTION SWALE AREA TO PREVENT CONSTRUCTION EQUIPMENT AND STOCKPILES MATERIALS FROM COMPACTING THE SUBGRADE SOILS. SEE PLAN C401 GRADING & DRAINAGE PLAN FOR MORE NOTES ON PROTECTING THE STORMWATER SWALE DURING CONSTRUCTION.
11. CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS TO ENSURE CONTINUOUS OPERATION OF THE EXISTING FUEL ISLAND AND COORDINATE ANY CONSTRUCTION ACTIVITIES THAT MIGHT TEMPORARILY INTERFERE WITH OPERATION WITH THE TOWN.

SITE PREPARATION LEGEND

- STABILIZED CONST ENTRANCE
- STRUCTURES TO BE DEMOLISHED AND REMOVED FROM SITE
- GRAVEL SURFACE TO BE REMOVED
- PAVEMENT TO BE REMOVED
- LIMITS OF TREE CLEARING
- EXISTING BUILDING/STRUCTURE TO REMAIN
- TEMPORARY CONSTRUCTION FENCE
- SILT FENCE
- COMPOST FILTER TUBING
- LIMIT OF WORK
- TREE REMOVAL
- INLET PROTECTION



Project:
TRURO NEW DEPARTMENT OF PUBLIC WORKS

17 TOWN HALL ROAD,
TRURO, MA 02666

Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
978.532.1900 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

COA:

Seal:

Issued For:
SCHEMATIC DESIGN NOT RELEASED FOR CONSTRUCTION

Scale: AS NOTED

Date: 05 /30/ 2025
Drawn By:
Reviewed By:
Approved By:

W&S Project No.: ENG24 - 1552
W&S File No.:

Drawing Title:
SITE PREPARATION AND EROSION CONTROL PLAN & DEMOLITION PLAN

Sheet Number:
C201

COPYRIGHT © 2025 WESTON & SAMPSON, INC.

NOTE:
1. THE CONTRACTOR SHALL GIVE TWENTY-FOUR (24) HOUR NOTICE TO PERTINENT TOWN DEPARTMENTS BEFORE COMMENCING ANY WORK IN THE FIELD.
2. DIRECTIONAL ARROWS ARE SHOWN FOR INFORMATION ONLY TO SHOW THE DIRECTION OF TRAFFIC ON SITE. THEY DO NOT INDICATE PAVEMENT MARKINGS.
3. GRANITE CURB SHALL BE TYPE VA-4 UNLESS OTHERWISE IDENTIFIED.
4. PROVIDE NEW HOT MIX ASPHALT PAVEMENT BETWEEN ALL PROPOSED CURB LINES & BUILDINGS, (INCLUDING UP TO SAWCUT LIMITS) AND BETWEEN PROPOSED RETAINING WALLS, CURB LINES & BUILDING.
5. CONTRACTOR SHALL PROVIDE TEMPORARY CONSTRUCTION SIGNAGE AS REQUIRED FOR CONTROL OF TRAFFIC AND PEDESTRIANS.
6. CONTRACTOR SHALL PATCH EXISTING PAVED AREAS WITH HMA FOLLOWING UTILITY INSTALLATION.
7. ALL BACKFILL MATERIAL BELOW PROPOSED BUILDINGS SHALL CONSIST OF STRUCTURAL AGGREGATE BACKFILL OR PROCESSED GRAVEL PER SPECIFICATION SECTION 31 00 00-EARTHWORK.

LEGEND

- BITUMINOUS PAVEMENT
- CONCRETE
- LOAM & SEED/PLANTINGS (SEE LANDSCAPE PLAN)
- MODIFIED ROCKFILL
- LOW — LIMIT OF WORK

N/F
CHRISTOPHER TIMOTHY F & MATTHEW
21 TOWN HALL RD
ASSESS. MAP 46
PARCEL ID 46_267_0
DEED BOOK 1762
PAGE 211

MEETINGHOUSE ROAD
MEETINGHOUSE RD (VARIABLE WIDTH – PUBLIC)
TOWN HALL ROAD
TOWN HALL RD (40' WIDE – PUBLIC)
BIT. BERM
WOODED
CB/DH–F
CB 5837 RIM=72.63 HONEYCOMB SUMP ELEV=64.70
CB 5667 RIM=120.44 (TOP DEBRIS ELEV=118.
CB 5548 RIM=121.22 INV. A=119.04
CB 5265 RIM=119.61 INV A=115.53
SMH 5282 RIM=121.68
MW–8
MW–7
MW–6
MW–9
MW–12/MW–3
MW–SB–12/MW–3
MW–SB–6/MW–2
UP#162/5
UP#26/5
UP#67/9 (R)
UP#67/7 (R)
UP#128/1
#21
#23
#15
GAR.
MATERIAL STORAGE BINS (20'x15' TYP OF 3)
40 YD DUMPSTER TRAILER (8'x22')
CONCRETE RETAINING WALL
HEAVY DUTY PAVEMENT UNDER CANOPY
MODIFIED ROCK OUTLET PROTECTION
BID ALT #2: CANOPY
END 6' WOODEN STOCKADE FENCE (TYP.)
HMA BERM END
JERSEY BARRIERS
KNOCKDOWN PAD
SALT SHED
APPROXIMATE LIMIT OF PFAS CONCENTRATION
CONCRETE RETAINING WALL
HEAVY DUTY PAVEMENT INSIDE SALT SHED
PARALLEL PARKING STALL 9'x22' (TYP OF 3)
WASH BAY
BID ALT #3: WASH BAY EQUIPMENT & FINISHES
HEAVY DUTY BITUMINOUS PAVEMENT (TYP.)
CONCRETE RETAINING WALL
MATERIAL STORAGE BINS (16'x12' TYP OF 4)
LIMIT OF GRADING (TYP)
VEHICLE MAINTENANCE
FLEET STORAGE
CHAIN LINK FENCE
HMA BERM END
CB/DH–F SEE DETAIL A
CB/DH–F SEE DETAIL B
CB/DH–F SEE DETAIL C
8" MONITOR WELL MANHOLE WITH BOLT DOWN LID
CANTILEVER SLIDING GATE POSTS 28' O.C. AT GATE OPENING
GATE OPERATOR
WORKSHOPS
BID ALT#4: ROOF SOLAR
BID ALT #5: GROUND-SOURCE HEAT PUMPING (GSHP) IN PLACE OF AIR-SOURCE HEAT PUMPING (ASHP)
BID ALT#1
5,000 SF STORAGE GARAGE EXTENSION
EXISTING FUEL ISLAND TO REMAIN
EV CHARGING PARKING SPACE AND SIGN (TYP OF 4)
EV CHARGER (TYP OF 2)
5' CONCRETE SIDEWALK (TYP.)
PARKING STALL 9' x 18' (TYP.)
OFFICE & SUPPORT
WCR
R7 AND R7-8A SIGN ON SIDE OF BUILDING
4" PAVEMENT STRIPING (TYP.)
LOAM & SEED (TYP.)
NEW UP
STOP SIGN
START 6' WOODEN STOCKADE FENCE (TYP.)
HMA BERM START
LIMIT OF SAWCUT (TYP.)
END OF HMA BERM START OF VGC
END OF VGC
INFILTRATION BASIN
CURB INLET FOR EXISTING PAVED DRAINAGE CHANNEL
INV A=116.34
INV B=114.91
NEW HMA BERM
LIMIT OF SAWCUT (TYP.)
EOP
MODIFIED ROCK PLUNGE POOL
TRURO TOWN HALL
WELL
SEPTIC
GRASS
BRICK RAMP
SHED
GENERATOR
SOLAR PANELS
SW-1
SW-2
SW-3
SW-4
SW-5
SW-6
HMA BERM
VGC
LOW
R=15

0 20 50 100
SCALE: 1" = 20'

Project:
TRURO NEW DEPARTMENT OF PUBLIC WORKS

17 TOWN HALL ROAD,
TRURO, MA 02666

Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
978.532.1900 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

COA:

Seal:

Issued For:
SCHEMATIC DESIGN NOT RELEASED FOR CONSTRUCTION

Scale: AS NOTED

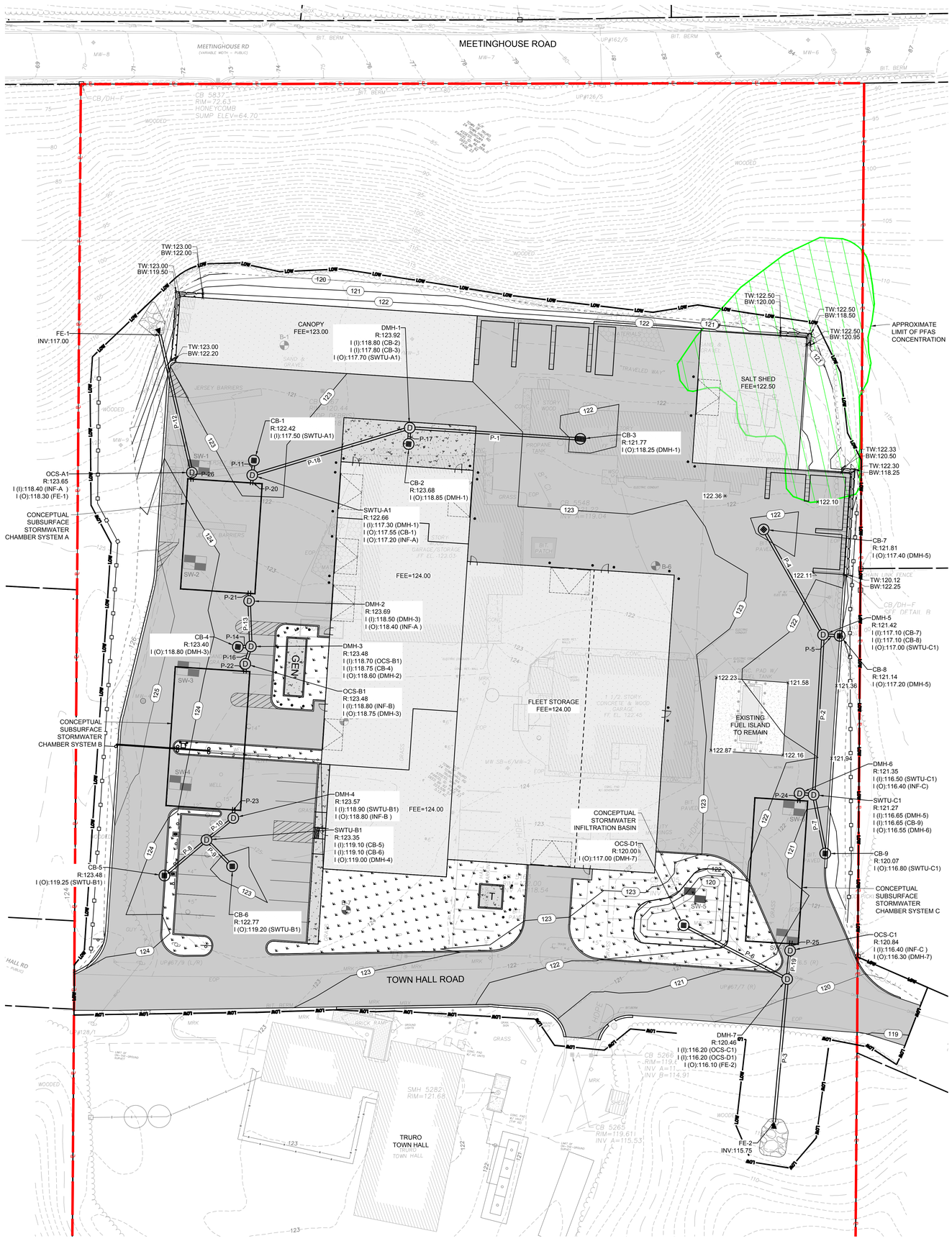
Date: 05 /30/ 2025
Drawn By:
Reviewed By:
Aporoved By:

W&S Project No.: ENG24 - 1552
W&S File No.:

Drawing Title:
SITE LAYOUT & MATERIALS PLAN

Sheet Number:
C301

COPYRIGHT © 2025 WESTON & SAMPSON, INC.



NOTES:

1. ALL EXISTING EARTHWORK MATERIALS, (EXCEPT FOR STOCKPILED FILL MATERIALS SHOWN ON C101) MAY BE INCORPORATED IN THE WORK AND USED FOR BACKFILL IF MATERIALS MEET 31 00 00 EARTHWORK SPECIFICATION REQUIREMENTS. THE CONTRACTOR IS RESPONSIBLE FOR TESTING OF EXISTING MATERIAL FOR POTENTIAL REUSE ON SITE. IF MATERIAL DOES NOT MEET MATERIAL REQUIREMENTS LISTED IN 31 00 00 FOR REUSE ON SITE, THEN THE CONTRACTOR SHALL REMOVE AND DISPOSE OF MATERIAL AND IMPORT NEW MATERIAL AS NEEDED TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE TOWN. THE CONTRACTOR SHALL PROVIDE ADDITIONAL BACKFILL MATERIALS AS NEEDED AND AS SPECIFIED IN SECTION 31 00 00 EARTHWORK. NO ON-SITE BACKFILL MATERIAL MAY BE USED AS PIPE TRENCH BACKFILL OR BELOW THE BUILDING SLAB AND FOUNDATION, UNLESS IT MEETS THE REQUIREMENTS OF THE SPECIFICATIONS.
2. UNLESS OTHERWISE NOTED, ALL DRAIN MANHOLES SHALL BE 4' DIAMETER.
3. ALL RIM ELEVATIONS SHALL BE FLUSH WITH FINISH GRADE.
4. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.
5. DUMPSTER PADS SHALL SLOPE AT A MINIMUM 2% INTO THE PAVED AREA.
6. ALL CATCH BASINS SHALL BE SET FLUSH AGAINST THE GRANITE CURBING.
7. EROSION CONTROL FABRIC SHALL BE USED FOR ALL SLOPES 3:1 OR STEEPER PER 32 91 19 SEEDING.
8. REFER TO EXISTING CONDITIONS PLAN FOR BENCHMARK LOCATIONS.
9. REFER TO UTILITY PLAN FOR PROPOSED UTILITY LOCATIONS AND COORDINATE ACCORDINGLY WITH ALL GRADING AND DRAINAGE WORK.
10. UNLESS NOTED AS TOP OF CURB (TOC), ALL SPOT ELEVATIONS ARE SHOWN AS THE BOTTOM OF CURB OR BOTTOM OF WALL ELEVATION. TOP OF CURB ELEVATIONS ARE 6" HIGHER THAN BOTTOM OF CURB.
11. GRASSED AREAS ADJOINING THE BUILDING SHALL SLOPE AWAY FROM THE BUILDING AT A 1% MINIMUM SLOPE.

Project:
TRURO NEW DEPARTMENT OF PUBLIC WORKS

17 TOWN HALL ROAD,
TRURO, MA 02666

Weston & Sampson

Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
978.532.1900 800.SAMPSON

www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

COA:

Seal:

Issued For:
SCHEMATIC DESIGN
NOT RELEASED FOR
CONSTRUCTION

Scale: AS NOTED

Date: 05 /30/ 2025
Drawn By:
Reviewed By:
Aporoved By:

W&S Project No.: ENG24 - 1552
W&S File No.:

Drawing Title:
GRADING &
DRAINAGE PLAN

Sheet Number:
C401

COPYRIGHT © 2025 WESTON & SAMPSON, INC.



NOTES:

1. THE G.C. IS RESPONSIBLE FOR EXCAVATION AND BACKFILL FOR ALL UNDERGROUND UTILITIES WITHIN THE BUILDING. COORDINATE LOCATIONS, ROUTING, DEPTH, ETC. WITH EACH SUBCONTRACTOR.
2. THE G.C. SHALL COORDINATE BOLLARD LOCATIONS FOR ELECTRICAL TRANSFORMER WITH UTILITY COMPANY PRIOR TO INSTALLATION.
3. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE G.C. SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE G.C. FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE G.C. AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.
4. THE G.C. SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY OWNER.
5. THE G.C. IS RESPONSIBLE FOR ADJUSTING HORIZONTAL AND VERTICAL ALIGNMENT OF PROPOSED UTILITIES AS REQUIRED TO COMPLETE THE PROPOSED DRAINAGE AND SEWER WORK.
6. THE G.C. SHALL PROVIDE ALL NECESSARY FITTINGS TO ACHIEVE WATER SERVICE LAYOUT AS SHOWN ON THE DRAWINGS.
7. THE G.C. IS RESPONSIBLE FOR PROVIDING PROPER TRANSITION MATERIAL AND FITTINGS TO PROVIDE A TIGHT TRANSITION FROM DISSIMILAR PIPE MATERIALS FROM PLUMBING & FIRE PROTECTION WORK TO G.C. WORK.
8. THE G.C. SHALL BE RESPONSIBLE FOR THE EXCAVATION, SAND PIPE BEDDING, AND BACKFILL OF THE GAS LINE. THE PIPE INSTALLATION WILL BE THE RESPONSIBILITY OF THE GAS COMPANY FROM THE MAIN TO THE METER. THE GAS COMPANY WILL DETERMINE IN THE FIELD THE EXACT LOCATION FOR PROPER CONNECTION TO THE EXISTING GAS MAIN.
9. THE G.C. IS RESPONSIBLE FOR EXCAVATION, BACKFILL, CONCRETE ENCASEMENT, AND REINFORCEMENT FOR ALL UNDERGROUND CONDUITS/DUCTBANKS, HANDHOLES, PLUMBING, AND FIRE PROTECTION WORK. COORDINATE LIMITS OF WORK WITH FP, P, E, AND TC DRAWINGS FOR WORK NOT SHOWN ON THIS DRAWING.

Project:
TRURO NEW DEPARTMENT OF PUBLIC WORKS

17 TOWN HALL ROAD,
TRURO, MA 02666

Weston & Sampson

Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
978.532.1900 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

COA:

Seal:

Issued For:
SCHEMATIC DESIGN NOT RELEASED FOR CONSTRUCTION

Scale: AS NOTED

Date: 05 /30/ 2025
Drawn By:
Reviewed By:
Aporoved By:

W&S Project No.: ENG24 - 1552
W&S File No.:

Drawing Title:
UTILITY PLAN

Sheet Number:
C501

COPYRIGHT © 2025 WESTON & SAMPSON, INC.

GENERAL NOTES:

1. COORDINATE THE ARCHITECTURAL DRAWINGS WITH STRUCTURAL, PLUMBING, FIRE PROTECTION, MECHANICAL, AND ELECTRICAL / FIRE ALARM DRAWINGS FOR THE VERIFICATION OF ALL PROJECT REQUIREMENTS.
2. FINISH FIRST FLOOR SLAB ELEVATION HIGH POINT IS 124'-0" FOR THIS PROJECT.
3. ALL INTERIOR DIMENSIONS ARE TAKEN FROM FACE OF STUD / FACE OF MASONRY / CENTERLINE OF COLUMN TO FACE OF STUD / FACE OF MASONRY / CENTERLINED OF COLUMN UNLESS SPECIFICALLY NOTED OTHERWISE. DO NOT SCALE DRAWINGS, REFER TO ENLARGED PLANS AND DETAILS FOR FURTHER DIMENSIONING INFORMATION. ALL WORK LINES AND LEVELS SHALL BE LAID OUT BY WRITTEN DIMENSIONS. ANY DEVIATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE DESIGNER. ALL DEVIATIONS AND DISCREPANCIES SHALL BE CORRECTED BY THE CONTRACTOR BEFORE HE BEGINS HIS PORTION OF THE WORK.
4. FIRE EXTINGUISHER AND CABINET QUANTITIES AND LOCATIONS TO BE COORDINATED WITH THE TOWN FIRE DEPARTMENT PRIOR TO ORDERING AND INSTALLATION. CONFORM TO THE STATE FIRE REGS AND NFPA.
5. COORDINATE MASTER BOX, KNOX BOX, AND BEACON LOCATIONS WITH THE ELECTRICAL / FIRE ALARM DRAWINGS AND THE TOWN FIRE DEPARTMENT REQUIREMENTS. ELECTRICAL CONTRACTOR TO PROVIDE KNOX BOX THAT MEET THE TOWN FIRE DEPARTMENT REQUIREMENTS.
6. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS & CONDITIONS PRIOR TO THE WORK AND SHALL NOTIFY THE DESIGNER REGARDING ANY DISCREPANCIES.
7. THE CONTRACTOR SHALL SUBMIT ALL SHOP DRAWINGS, SAMPLES, CATALOG CUTS ETC., INCLUDING COLOR CHARTS FOR PAINTS, FOR ALL INTERIOR FINISHES, TO THE DESIGNER FOR SELECTION, REVIEW AND APPROVAL WITH THE OWNER PRIOR TO FABRICATION OR INSTALLATION. THE COLORS MUST BE SUBMITTED IN A TIMELY MANNER AND TOGETHER FOR REVIEW AND COLOR BOARDS. FAILURE TO DO SO IN A TIMELY MANNER WILL FALL ON THE CONTRACTOR'S RESPONSIBILITY AND NOT ON THE OWNER. REFER TO EACH INDIVIDUAL SPECIFICATIONS FOR SIZE, QUANTITY AND TYPE OF COLOR SELECTION.
8. PERFORM ALL WORK IN ACCORDANCE WITH THE STATE BUILDING CODE, AS WELL AS LOCAL CODES AND ORDINANCES.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PERMITS, BACKCHARGES AND FEES AS REQUIRED BY THE TOWN.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAILY REMOVAL AND LEGAL DISPOSAL OF ALL DEBRIS OFF SITE.
11. THE CONTRACTOR SHALL SEAL ALL THROUGH-WALL & FLOOR PENETRATIONS WITH 3M BARRIER CAULK (O.A.E.) AND SEALANT ON USG SAFING 2600 PSI GROUT U.N.O. INSTALL ANY REQUIRED FIRE RATED PARTITIONS TO UNDERSIDE OF FLOOR AND ROOF DECK, INCLUDING DEFLECTION HEAD FIRE SAFING.
12. INSTALL A CONTINUOUS SEALANT BEAD ON BACKER ROD AT ALL JUNCTURES OF DISSIMILAR MATERIALS (E.G.: METAL TO CMU, STEEL TO ALUMINUM) AND ALL MATERIAL JOINTS AS REQUIRED BY THE MANUFACTURER'S SPECIFICATION AND RECOMMENDATIONS, INDUSTRY STANDARDS AND GOOD PRACTICE.
13. PROVIDE CONTINUOUS GALVANIZED METAL EDGE TRIM AT ALL GWB WORK.
14. THE CONTRACTOR SHALL INSTALL ALL INTERIOR FINISHES AT ALL SURFACES INDICATED ON THE DRAWINGS IN CONFORMANCE TO STATE BUILDING CODE. ALL DOORS SHALL HAVE LEVER HARDWARE TO CONFORM TO 521 CMR.
15. INSTALL USG .093 (OR APPROVED EQUAL) CONTROL JOINTS AT 30'-0" O.C. MAX. OR AS PER MANUFACTURER'S SUGGESTED DETAILS AND SPECIFICATIONS.
16. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING A GAP FILLING SYSTEM OR OTHER SYSTEM WHICH SPANS ANY GAP IN THE EXTERIOR WALL SYSTEM WHICH DOES NOT MEET THE MAXIMUM SPAN OF THE APPROVED AIR BARRIER MEMBRANE SYSTEM. THIS SYSTEM SHALL BE PROVIDED TO ALLOW FOR A COMPLETE AIR BARRIER MEMBRANE INSTALLATION. THE SYSTEM SHALL BE COMPATIBLE WITH THE APPROVED AIR BARRIER PRODUCT AND SHALL BE APPROVED BY THE DESIGNER PRIOR TO INSTALLATION.
17. THE ELECTRICAL CONTRACTOR SHALL PROVIDE DISCONNECT SWITCHES, STARTERS AND ALL LINE VOLTAGE WIRING AND CONDUIT TO OH DOOR OPERATORS. THE HAND-OFF-AUTO SWITCH, PUSH BUTTON CONTROL STATION (MOMENTARY UP-STOP-DOWN) AND CONTROLLER IS FURNISHED BY THE OVERHEAD DOOR MANUFACTURER AND INSTALLED BY THE ELECTRICAL CONTRACTOR. THE ELECTRICAL CONTRACTOR IS TO PROVIDE CONDUIT AND WIRING BETWEEN THE HAND-OFF-AUTO SWITCH, THE PUSH BUTTON CONTROL STATION AND CONTROLLER PER OVERHEAD DOOR MANUFACTURER REQUIREMENTS. FURNISHING AND INSTALLATION OF THE MOTOR UNIT, OPTICAL SENSORS, PNEUMATIC DOOR SAFETY BOTTOM, LOW VOLTAGE WIRING AND ALL OTHER ACCESSORIES ASSOCIATED WITH THE OVERHEAD DOORS SHALL BE THE RESPONSIBILITY OF THE OVERHEAD DOOR CONTRACTOR.
18. ALL STRUCTURAL ELEMENTS WHICH PASS IN FRONT OF WINDOWS / CLERESTORIES SHALL BE BACK PAINTED.
19. ALL STRUCTURAL ELEMENTS SHOWN ON THE ARCHITECTURAL DRAWINGS ARE FOR INFORMATION ONLY. REFER TO STRUCTURAL DRAWINGS FOR EXACT SIZES AND LOCATION OF STRUCTURAL ELEMENTS.
20. THE CONTRACTOR SHALL PROVIDE SUPPLEMENTAL FRAMING AND OR BLOCKING AS NECESSARY TO SUPPORT ALL EXTERIOR WALL MOUNTED ELEMENTS.
21. ALL OPENINGS IN EXTERIOR WALLS FOR PLUMBING, FIRE PROTECTION, MECHANICAL, AND ELECTRICAL / FIRE ALARM SYSTEMS SHALL BE SEALED WEATHER-TIGHT BY THE CONTRACTOR. CONTRACTOR TO PROVIDE FIRE RATED SEALANTS AS REQUIRED AT FIRE RATED WALL, FLOOR, CEILING, AND ROOF ASSEMBLIES.
22. THE CONTRACTOR IS TO FIELD MEASURE OH DOOR OPENINGS TO ENSURE PROPER FIT OF OH DOORS.
23. ALL EXPOSED SURFACES (INCLUDING, BUT NOT LIMITED TO: WALLS, UNDERSIDE OF EXPOSED ROOF AND FLOOR DECK, STRUCTURAL STEEL, MISCELLANEOUS METALS, DOORS/FRAMES, DUCTWORK, CONDUIT, AND PIPING) SHALL BE PRIMED AND PAINTED.
24. BLOCKING SHALL BE PROVIDED FOR ALL WALL MOUNTED EQUIPMENT (INCLUDING, BUT NOT LIMITED TO: PLUMBING FIXTURES, TOILET ACCESSORIES, UTILITY SINKS, FIRE EXTINGUISHER CABINETS, SHELVING, COUNTERS, CASEWORK, CABINETS, MEDIA EQUIPMENT, AND WINDOW TREATMENTS). PROVIDE ADDITIONAL METAL STUD FRAMING AS REQUIRED TO SUPPORT BLOCKING.
26. THE AIR BARRIER MEMBRANE (ABM) SHALL BE CONTINUOUS THROUGH THE BUILDING ENVELOPE AND BETWEEN THE WALL AND ROOF SYSTEMS INSTALLED ON THE WINTER WARM SIDE OF THE INSULATION. OPENINGS AND PENETRATIONS IN THE BUILDING ENVELOPE SHALL BE SEALED WITH SEALANT MATERIALS OR CLOSED WITH GASKETING SYSTEMS WHICH IS COMPATIBLE WITH THE ABM SYSTEM AND MEETS THE PERFORMANCE REQUIREMENTS IN THE SPEC. SYSTEM SHALL BE COMPATIBLE WITH THE CONSTRUCTION MATERIALS AND LOCATION. JOINTS AND SEAMS SHALL BE SEALED IN THE SAME MANNER OR TAPED OR COVERED WITH A MOISTURE VAPOR-PERMEABLE WRAPPING MATERIAL. SEALING MATERIALS SPANNING JOINTS BETWEEN CONSTRUCTION MATERIALS SHALL ALLOW FOR EXPANSION AND CONTRACTION OF THE CONSTRUCTION MATERIALS. AT ALL OH DOOR JAMBS AND HEADERS, THE ABM SHALL TERMINATE AT THE STEEL FACE WHERE THE INSULATION ABUTS STEEL FRAMED OPENINGS. TERMINATE ABM ON THE INSIDE FACE OF EXTERIOR WALL SYSTEM AT DOORS, WINDOWS, LOUVERS, AND CLERESTORIES. THE TERMS VAPOR RETARDER, AND AIR MOISTURE BARRIER ARE SYNONYMOUS WITH ABM.
27. METAL BUILDING SYSTEM SHALL BE A SINGLE SOURCE MANUFACTURED SYSTEM. ALL ACCESSORIES, NOT LIMITED TO, PRIMARY FRAMING, WALLS, ROOF INSULATION, EXTRUSIONS, TRIMS, FASTENERS, GASKETS, SUBGIRT FRAMING, ETC SHALL BE PROVIDED BY THE METAL BUILDING SYSTEM MANUFACTURER. METAL WALL PANEL COLOR TO BE SELECTED BY THE DESIGNER FROM THE MANUFACTURES STANDARD COLOR SELECTION WITH FINISH PROTECTIONS AS SPECIFIED.
28. ALL WALL/PARAPET FLASHING SHALL TERMINATE WITH A MINIMUM 8" VERTICAL LEG TO ALLOW FOR PROPER INTERFACE WITH THE ABM. ABM SHALL BE INSTALLED BEHIND FLASHING AND THE FLASHING SHALL BE INTEGRATED INTO THE ABM SYSTEM USING A SELF-ADHERED MEMBRANE FLASHING WITH MINIMUM OVERLAP REQUIREMENTS PER MANUFACTURER.
29. ALL EXTERIOR AND INTERIOR MATERIAL SURFACE COLOR AND TEXTURES SHALL BE SELECTED BY THE DESIGNER FROM THE MANUFACTURES STANDARD & PREMIUM FINISH / COLOR SELECTIONS. ONCE ALL COLORS HAVE BEEN SUBMITTED, THE OWNER WILL REVIEW AND PROVIDE GUIDANCE ON COLORS FOR INCLUSION IN THE MOCK-UP REFERENCED IN DIVISION 1 OF THE SPECIFICATIONS.
30. DETAILS AND NOTES SHOWN ON THE ARCHITECTURAL DRAWINGS SHALL BE APPLICABLE TO ALL PARTS OF THE ARCHITECTURAL WORK EXCEPT WHERE SPECIFICALLY REQUIRED OTHERWISE BY THE CONTRACT DOCUMENTS. CONDITIONS NOT SPECIFICALLY SHOWN SHALL BE SIMILAR TO THOSE SHOWN FOR LIKE CONDITIONS AS DETERMINED BY THE DESIGNER.
31. PROVIDE ALL ACCESSIBLE FIXTURES, CONTROLS & ACCESSORIES, AND APPROPRIATE CLEARANCES, AS REQUIRED FOR COMPLIANCE W/ STATE BUILDING CODE W/ ALL AMENDMENTS, TYP.
32. SEALANT DEPTH AT ALL EXTERIOR OPENINGS SHALL BE EQUAL TO THE WIDTH OF THE JOINT.
33. THE CONTRACTOR TO PROVIDE CANE PROTECTION AT ALL PANELS IN EGRESS PATHS (AS DETERMINED BY THE DESIGNER) WHICH EXTEND 4" OR MORE FROM FACE OF WALL AND ARE GREATER THAN 27" ABOVE FINISHED FLOOR.
34. FOR SITE LEGEND REFER TO DRAWING SERIES C100.
35. FOR STRUCTURAL LEGEND REFER TO DRAWING SERIES SX00.
36. FOR WALL TYPES REFER TO DRAWING SERIES A000.
37. FOR CEILING LEGEND AND SOFFIT DETAILS REFER TO DRAWING SERIES A100.
38. FOR LARGE SCALE STAIR PLANS REFER TO DRAWING SERIES A500.
39. FOR ROOF DETAILS REFER TO DRAWING SERIES A600.
40. FOR LARGE SCALE TOILET PLANS REFER TO DRAWING SERIES A700.
41. FOR INTERIOR ELEVATIONS, REFER TO DRAWING SERIES A700.
42. FOR DOOR NUMBERS AND DETAILS REFER TO DRAWING SERIES A800.
43. FOR FINISH SCHEDULE REFER TO DRAWING SERIES A900.
44. FOR CASEWORK ELEVATIONS REFER TO DRAWING SERIES A900.
45. FOR FIRE PROTECTION LEGEND REFER TO DRAWING SERIES FPX00.
46. FOR PLUMBING LEGEND REFER TO DRAWING SERIES PX00.
47. FOR MECHANICAL LEGEND REFER TO DRAWING SERIES MX00.
48. FOR ELECTRICAL LEGEND REFER TO DRAWING SERIES EX00.
49. ALL NOTES AND DIMENSIONS DESIGNATED "TYPICAL" APPLY TO ALL LIKE OR SIMILAR CONDITIONS THROUGHOUT THE PROJECT.
50. SIGNAGE TO BE MOUNTED ON THE WALL, ADJACENT TO THE LEVER SIDE OF THE DOOR, AT A HEIGHT OF FIVE (5) FEET A.F.F. REFER TO THE FLOOR PLANS FOR LOCATIONS OF DIRECTIONAL SIGNAGE.
51. CONTRACTOR(S) TO TAKE AND VERIFY ALL DIMENSIONS AND CONDITIONS OF THE WORK AND BE RESPONSIBLE FOR COORDINATION OF THE SAME. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO START OF WORK.
52. GENERAL CONTRACTOR TO PROVIDE EXCAVATION & TRENCHING AT ALL UNDERGROUND UTILITIES IN EXISTING AND NEW BUILDINGS AS REQUIRED FOR MEP/FP UTILITIES AND COORDINATION. REFER TO MEP / FP DRAWINGS FOR OVERALL REQUIREMENTS. GENERAL CONTRACTOR TO COORDINATE INVERTS AND COMPACT ALL MATERIALS FOR PLACEMENT OF CONCRETE SLAB INFILL IN ACCORDANCE WITH ASTM D1557. GC TO PROVIDE SOIL COMPACTION, DOWELS, WWF MESH, VAPOR RETARDER AND TIE-INS. CONCRETE PLACEMENT AND ALL REQUIREMENTS TO CLOSE UP TRENCH ONCE MEP/FP SUB-TRADE WORK IS COMPLETE.
53. PROVIDE AN ACCENT WALL AT ALL ROOMS. ARCHITECT / ENGINEER TO PROVIDE LOCATION DURING CONSTRUCTION FOR ACCENT WALL IF NOT IDENTIFIED ON PROJECT PLANS.

ABBREVIATIONS:

A	
A/C	AIR CONDITION
AC	ACOUSTICAL
ACT	ACOUSTICAL CEILING TILE
ADJ	ADJACENT
AFF	ABOVE FINISH FLOOR
ALT	ALTERNATE
ALUM	ALUMINUM
ANC BLT	ANCHOR BOLT
ANOD	ANODIZED
APPROX.	APPROXIMATE
ARCH	ARCHITECT
ARGB	ABUSE RESISTANT GYPSUM BOARD
ASPH	ASPHALT
AVB	AIR VAPOR BARRIER
B	
BC	BASE CABINET
BD	BOARD
BF	BRACE FRAME
BITUM	BITUMINOUS
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BENCH MARK
BOF	BOTTOM OF FOOTING
BOS	BOTTOM OF STEEL
BOTT	BOTTOM
BPL	BEARING PLATE
BRG	BEARING
BRK	BRICK
BS	BRICK SHELF
BSMT	BASEMENT
BVL	BEVELED
C	
CAB	CABINET
CB	CEMENT BOARD / CATCH BASIN
CDM	CAVITY DRAINAGE MATERIAL
CF	CUBIC FEET
CH	CEILING HEIGHT
CIP	CAST IN PLACE
CJ	CONTROL JOINT
CL	CENTER LINE / COLUMN LINE
CL	CLOSET / CHAIN LINK
CLG	CEILING
CLOS	CLOSET
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CNTR	COUNTER
CO	CASED OPENING
COL	COLUMN
COMP	COMPOSITION
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONTC	CONTRACTOR
CONV	CONVECTOR
COORD	COORDINATE
CORR	CORRIDOR
CPET	COMMON PATH OF EGRESS TRAVEL
CPT	CARPET
CT	CERAMIC TILE
CTR	CENTER
CW	COLD WATER
CWT	CERAMIC WALL TILE
CY	CUBIC YARD
D	
D	DRYER
D-PART	DEMOUNTABLE PARTITION
DBL	DOUBLE
DEMO	DEMOLITION
DF	DRINKING FOUNTAIN
DH	DOUBLE HUNG
DI	DRAIN INLET
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DIST	DISTANCE
DL	DRAIN LEADER
DN	DOWN
DR	DOOR
DS	DOWNSPOUT
DTL	DETAIL
DW	DISHWASHER
DWG	DRAWING
E	
EA	EACH
EF	EACH FACE
EIFS	EXTERIOR INSULATED FINISH SYSTEM
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRIC
ELEV	ELEVATOR
EMER	EMERGENCY
ENCL	ENCLOSURE
EOC	EDGE OF CONCRETE
EP	ELECTRICAL PANEL
EQ	EQUAL
EQUIP	EQUIPMENT
ER	EXISTING TO REMAIN
ES	EXPOSED STRUCTURE
EW	EACH WAY
EXH	EXHAUST
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
F	
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FAK	FIRST AID KIT
FB	FIRE BLANKET
FC	FILE CABINET
FD	FLOOR DRAIN
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FF	FINISH FLOOR
FFE	FINISH FLOOR ELEVATION
FG	FIBERGLASS
FIN	FINISH
FLASH	FLASHING
FLR	FLOOR
FLUOR	FLUORESCENT
FOC	FACE OF CONCRETE
FOF	FACE OF FINISH
FOM	FACE OF MASONRY
FOS	FACE OF STUD
FOUND	FOUNDATION
FP	FIREPROOF(ING)
FR	FIRE RETARDANT
FRP	FIBERGLASS REINFORCED WALL PANEL
FRTW	FIRE RETARDANT TREATED WOOD
FSB	FILED SUB BID
FT	FEET
FTG	FOOTING
FUR	FURRING
G	
GA	GAUGE
GALV	GALVANIZED
GB	GRAB BAR
GC	GENERAL CONTRACTOR
GDRL	GUARD RAIL
GL	GLASS
GLAZ	GLAZED BLOCK
GLB	GLASS BLOCK
GN	GOOSENECK
GRT	GROUT
GWB	GYPSUM WALL BOARD
H	
HB	HOSE BIB
HC	HANDICAP
HD	HEAVY DUTY
HDWR	HARDWARE
HM	HOLLOW METAL
HOR	HORIZONTAL
HP	HIGH POINT
HT	HEIGHT
HTR	HEATER
HVAC	HEATING, VENTILATING, & AIR CONDITIONING
HW	HOT WATER
I	
ID	INSIDE DIAMETER
IN	INCH
INCL	INCLUDED
INFO	INFORMATION
INSUL	INSULATION
INT	INTERIOR
INV	INVERT
IRGWB	IMPACT-RESISTANT GWB
J	
JAN	JANITOR
JST	JOIST
JT	JOINT
K	
KD	KNOCK-DOWN
KIP	1,000 LBS
KO	KNOCKOUT
KPLT	KICKPLATE
L	
L	LENGTH
LAM	LAMINATE
LAV	LAVATORY
LBL	LABEL
LC	LEAD COATED
LCC	LEAD COATED COPPER
LGMF	LIGHT-GAUGE METAL FRAMING
LIN	LINOLEUM
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LP	LOW POINT
LSC	LIFE SAFETY CODE
LT	LIGHT
M	
M	METER
MANUF	MANUFACTURER
MAS	MASONRY
MAT	MATERIAL
MAX	MAXIMUM
MB	MOISTURE BARRIER
MBL	MARBLE
MBM	METAL BUILDING MANUFACTURER
MBR	MEMBER
MC	MEDICINE CABINET
MDF	MEDIUM DENSITY FIBERBOARD
MDO	MEDIUM DENSITY OVERLAY
MECH	MECHANICAL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MIR	MIRROR
MISC	MISCELLANEOUS
ML	MATCH LINE
MLDG	MOULDING
MO	MASONRY OPENING
MOD	MODULAR
MR	MOISTURE RESISTANT
MRGB	MOISTURE RESISTANT GYPSUM BOARD
MS	METAL STUD
MTD	MOUNTED
MTL	METAL
MTP	METAL TOILET PARTITION
N	
N/A	NOT APPLICABLE
NAT	NATURAL
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
NUM	NUMBER
NW	NEW
O	
OA	OVERALL
OC	ON CENTER
OD	OUTSIDE DIAMETER
OH	OVERHEAD DOOR
OPNG	OPENING
OPP	OPPOSITE
OPPHAND	OPPOSITE HAND
OSB	ORIENTED STRAND BOARD
OTS	OPEN TO STRUCTURE
OW	OPERABLE WALL
OZ	OUNCE
P	
PART BD	PARTICLE BOARD
PAV	PAVING
PCP	PRECAST CONCRETE PLANK
PERIM	PERIMETER
PL	PROPERTY LINE / PLATE
PLAM	PLASTIC LAMINATE
PLAS	PLASTIC
PLY	PLYWOOD
PMLF	PRE-MOLDED JOINT FILLER
PNT	PAINT
PR	PAIR
PREFIN	PREFINISHED
PRFB	POURED RESIN FLOOR BASE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	PRESSURE TREATED
PTD	PAPER TOWEL DISPENSER
PTN	PARTITION
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
Q	
QT	QUARRY TILE
R	
R	RISER
R & D	REMOVE & DISPOSE
R & R	REMOVE AND REPLACE
R & S	REMOVE AND SALVAGE
RAD	RADIUS
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
REF	REFRIGERATOR
REFURB	REFURBISH
REINF	REINFORCEMENT
RELOC	RELOCATED
REM	REMOTE
REQD	REQUIRED
RES	RESILIENT
REV	REVISION
RFG	ROOFING
RFI	RIGID FOAM INSULATION
RFS	RESINOUS FLOOR SYSTEM
RH	RIGHT HAND
RL	ROOF LADDER
RM	RUBBER MAT
RM	ROOM
RO	ROUGH OPENING
RT	RUBBER TILE
RTU	ROOF TOP UNIT
RUB	RUBBER
S	
S	SEALANT
S.L.	STRUCTURAL LINE
SACI	SPRAY-APPLIED CELLULOSE INSULATION
SACP	SECURITY ALARM CONTROL PANEL
SAFI	SPRAY-APPLIED FOAM INSULATION
SCHED	SCHEDULE
SCR	SHOWER CURTAIN ROD
SCW	SOLID CORE WOOD
SD	SOAP DISPENSER
SECT	SECTION
SF	SQUARE FEET
SH	SINGLE HUNG
SHR	SHOWER
SIM	SIMILAR
SND	SANITARY NAPKIN DISPENSER
SNV	SANITARY NAPKIN VENDOR
SOLSUR	SOLID SURFACE (COUNTER)
SPC	SPECIAL
SPEC	SPECIFICATION
SQ	SQUARE
SR	SHEET RUBBER
SS	STAINLESS STEEL
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRUCT	STRUCTURE or STRUCTURAL
SUSP	SUSPENDED or SUSPENSION
SV	SHEET VINYL
SYS	SYSTEM(S)
T	
T & B	TOP AND BOTTOM
T & G	TONGUE AND GROOVE
TB	TRASH BARREL
TBA	TO BE ABANDONED
TBB	TILE BACKER BOARD
TBD	TO BE DETERMINED
TBOC	TOP BACK OF CURB
TEL	TELEPHONE
TEMP	TEMPORARY
THK	THICK(NESS)
THRESH	THRESHOLD
TOC	TOP OF CONCRETE
TOF	TOP OF FOOTING
TOL	TOP OF LANDING
TOP	TOP OF PLATE
TOS	TOP OF STEEL
TOW	TOP OF WALL
TP	TRANSLUCENT PANEL
TR	TREAD
TS	TUBULAR STEEL
TTD	TOILET TISSUE DISPENSER
TW	TO WEATHER
TYP	TYPICAL
U	
UC	UNDERCUT
UG	UNDERGROUND
UND	UNDERSIDE (OF DECK)
UNFIN	UNFINISHED
UNO	UNLESS NOTED OTHERWISE
UV	UNIT VENTILATOR
V	
VB	VINYL BASE / VAPOR BARRIER
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VEST	VESTIBULE
VIF	VERIFY IN FIELD
VPD	VENEER PLASTER BASE
VS	VENT STACK
VT	VINYL TREAD
VTS	VINYL TRANSITION STRIP
VWB	VINYL WALL BASE
VWC	VINYL WALL COVERING
W	
W	WASHER
W/	WITH
W/O	WITHOUT
WB	WOOD BASE
WC	WALL CABINET
WD	WOOD
WDC	WATERPROOFING, DAMPPROOFING, & CAULKING CONTRACTOR
WF	WIRE FABRIC
WG	WIRE GLASS
WH	WALL HUNG
WIN	WINDOW
WP	WATER PROTECTION
WPG	WATERPROOF(ING)
WR	WATER RESISTANT
WS	WATER STOP
WT	WEIGHT
WWF	WELDED WIRE FABRIC

SYMBOLS:

- EXTERIOR ELEVATION — X / A.XX
- INTERIOR ELEVATION — 1 / A1.01 / 1
- BUILDING SECTION — X / A.XX
- WALL SECTION — X / A.XX
- DETAIL — X / A.XX
- PARTITION TYPE — X
- EXTERIOR WALL ASSEMBLY — XX
- DOOR TYPE or VISION PANEL (VP) — X
- WINDOW TYPE — X
- ROOF TYPE — X
- SPECIFIC DEMOLITION NOTE — X
- SPECIFIC CONSTRUCTION NOTE — X
- CHANGE IN PLANE — X
- LEADER
- DIMENSION — 3' - 0"
- CHANGE IN ELEVATION
- CONTROL JOINT — C | J
- ELEVATION or WORK POINT (WP)
- COLUMN GRID — A / 1
- EXISTING COLUMN GRID — A / 1
- ALIGN SURFACES — ALIGN
- REVISION MARKER — X
- ROOM TAG — ADMINISTRATION / 100
- DRAWING TITLE — 1 View Name, 1/8" = 1'-0", 1/A201 (ORIGINAL TAG REFERENCE LOCATED NEXT TO SCALE)

LEGEND:

- RIGID/SEMI-RIGID INSULATION
- CONCRETE
- SAND / P.C. CONCRETE
- PARTICLE BOARD / MDF
- PLYWOOD/MDO
- FINISH WOOD
- ALUMINUM
- STEEL
- PVC
- FIBER CEMENT
- CONCRETE MASONRY UNIT
- BRICK
- MORTAR
- GROUT
- TERRA COTTA
- EARTH
- GRAVEL
- SPRAY FOAM
- INSULATED METAL PANEL
- WOOD STUDS/FRAMING (DIMENSIONAL LUMBER)
- WOOD BLOCKING
- BATT INSULATION / SOUND ATTENUATION BLANKET
- MATCHLINE

Project:
TOWN of TRURO, MA
NEW DEPARTMENT of PUBLIC WORKS FACILITY

17 TOWN HALL
TRURO, MA 02666

Weston & Sampson
Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
978.532.1900 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

COA:

Seal:

Issued For:
SCHEMATIC DESIGN

Scale: NTS

Key Plan:

Date: MAY 30, 2025
Drawn By: MMS
Reviewed By: DRD
Approved By: -

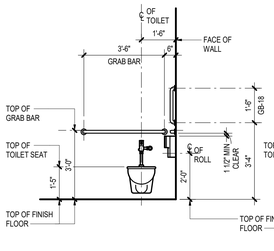
W&S Project No.: ENG24-1552
W&S File No.: XXX

Drawing Title:
ABBREVIATIONS, SYMBOLS, LEGEND & GENERAL NOTES

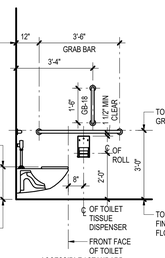
Sheet Number:
A011

C:\~Revit\Projects\2024\24-1562_Truro DPW_Arch_v24_Marchand Avery.rvt
5/28/2025 3:26:43 PM

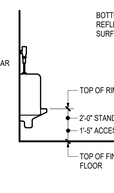
PLUMBING FIXTURE SCHEDULE / MOUNTING HEIGHTS: 3/8" = 1'-0"



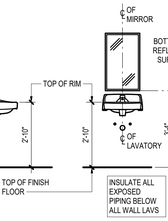
ACCESSIBLE / STANDARD
WALL MOUNTED WATER CLOSET



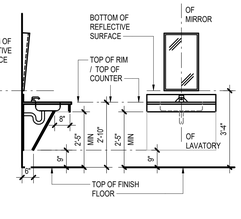
ACCESSIBLE / STANDARD
WALL MOUNTED WATER CLOSET



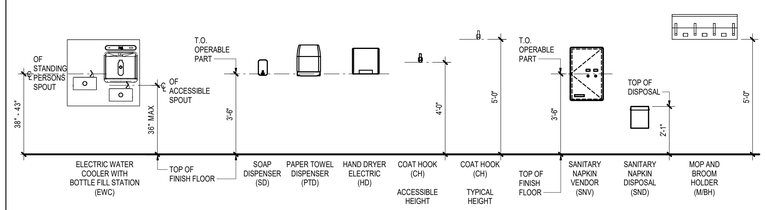
ACCESSIBLE / STANDARD
URINAL

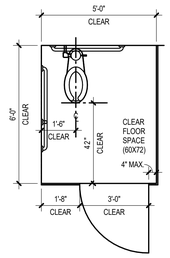


ACCESSIBLE / STANDARD
WALL HUNG LAVATORY

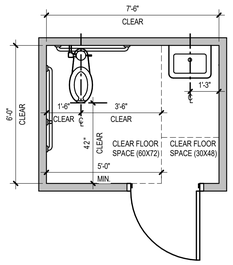


ACCESSIBLE / STANDARD SINK IN
COUNTERTOP

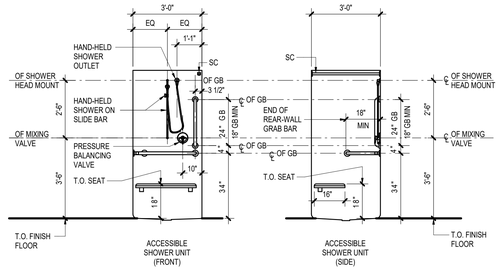




WALL MOUNTED WATER CLOSET
IN STALL

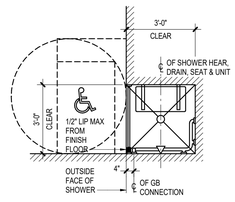


WALL MOUNTED WATER CLOSET
AND LAVATORY IN ROOM

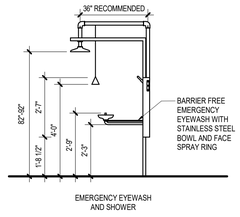


SECTION / ELEVATION

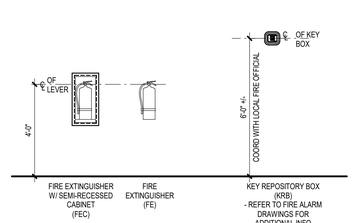
SECTION / ELEVATION



PLAN



EMERGENCY EYEWASH
AND SHOWER



FIRE EXTINGUISHER W/ SEMI-RECESSED CABINET (FEC)

FIRE EXTINGUISHER (FE)

KEY REPOSITORY BOX (KRB)
- REFER TO FIRE ALARM DRAWINGS FOR ADDITIONAL INFO

MEZZANINE GENERAL NOTES:

1. AT EACH MEZZANINE SWING GATE LOCATION, PROVIDE 4" H (RED) LETTER SIGNAGE AT MEZZANINE FASCIA TO READ: 200LBS/SF MAXIMUM MEZZANINE LOADING
2. PROVIDE SAFETY CHAIN PER OSHA STANDARDS AT EACH SWING GATE.
3. PROVIDE SAFETY YELLOW PAINT AT MEZZANINE FLOOR AT EACH SWING GATE, AS INDICATED.
4. COORDINATE EXACT LOCATION WITH MECHANICAL, STRUCTURAL AND EQUIPMENT REQUIREMENTS.
5. DO NOT RUN ANY UTILITIES BELOW GATES EXPOSED AND MOUNTED TO WALLS.
6. PROVIDE TIE-OFF POINT FOR OSHA FALL ARREST SYSTEM NEAR MEZZANINE SWING-GATE ON PRIMARY STRUCTURAL ELEMENT.

TYPICAL DEVICE MOUNTING HEIGHTS:

ELECTRICAL EQUIPMENT MOUNTING HEIGHT DIMENSIONS ARE TO CENTER OF DEVICE UNLESS OTHERWISE NOTED:

- RECEPTACLES: 18" A.F.F. AT LOCATIONS ABOVE CASEWORK, MOUNT BOTTOM OF RECEPTACLE AT 2" ABOVE BACKSPLASH. AT LOCATIONS BELOW CASEWORK, MOUNT AT 24" A.F.F.
- EXTERIOR RECEPTACLES: 24" A.F.F.
- SWITCHES: 48" A.F.F.
- BOILER EMERGENCY SWITCH: 60" A.F.F.
- DATA/PHONE OUTLETS: 18" A.F.F.
- WALL MOUNTED CLOCKS AND SPEAKERS: COORDINATE LOCATION ABOVE DOOR WITH CEILING HEIGHT. IF THE CLOCK AND SPEAKER DO NOT FIT, PLACE AT 7'-6" A.F.F. NEXT TO DOOR. COORDINATE WITH BLOCK COURSING AS OCCURS. CONSULT DESIGNER IF CONDITIONS DIFFER.
- FIRE ALARM PULL STATIONS: 48" A.F.F.
- AREA OF REFUGE CALL STATION: 48" A.F.F.
- EMERGENCY SHUT-OFF SWITCH/PUSH BUTTON: 48" A.F.F.
- EMERGENCY CALL SWITCH: 36" A.F.F.
- EMERGENCY CALL BELL/LIGHT: 7'-6" A.F.F.
- FIRE ALARM VISUAL/AUDIO INDICATING UNITS: 6'-8" TO BOTTOM OF DEVICE.
- WALL MOUNTED EXIT SIGNS: 8" ABOVE DOOR OR 7'-6" A.F.F.

DOOR HARDWARE MOUNTING HEIGHT DIMENSIONS ARE TO CENTER OF HARDWARE:

- PULL: 42"
- PUSH PLATE: 45"

TOILET ACCESSORY SCHEDULE - DIV 10

FURNISHED BY OWNER - INSTALLED BY CONTRACTOR:

MARK	DESCRIPTION	MFR	QTY
SD	SOAP DISPENSER	OWNER REQ'S	PER PLANS
PTD	PAPER TOWEL DISPENSER	OWNER REQ'S	PER PLANS
TTD	TOILET TISSUE DISPENSER	OWNER REQ'S	PER PLANS
TB	TRASH BARREL	OWNER REQ'S	PER PLANS

FURNISHED AND INSTALLED BY CONTRACTOR:

MARK	DESCRIPTION	MFR	QTY
SRWR	SEMI-RECESSED WASTE RECEPTICLE	PER SPEC	PER PLANS
SNV	SANITARY NAPKIN VENDOR	PER SPEC	PER PLANS
SND	SANITARY NAPKIN DISPOSAL	PER SPEC	PER PLANS
CH	COAT / ROBE HOOK	PER SPEC	PER PLANS
GB	GRAB BAR (DIMENSION PER PLANS)	PER SPEC	PER PLANS
MIRR	MIRROR	PER SPEC	PER PLANS
MBH	MOP/BROOM HOLDER	PER SPEC	PER PLANS
JS	JANITOR'S SHELVING	PER SPEC	PER PLANS
SC	SHOWER CURTAIN	PER SPEC	PER PLANS
CR	CURTAIN ROD FOR SHOWER	PER SPEC	PER PLANS

GENERAL NOTES:

1. PROVIDE BULLNOSE TOP COURSE / MTL EDGE TRIM AND CEMENTITIOUS TILE BACK BOARD / CEMENT BOARD AT ALL CERAMIC TILE LOCATIONS, TYPICAL. INSTALLATION OF CERAMIC TILE OVER GYPSUM BOARD EXCEPT FOR A KITCHENETTE BACKSPLASH IS NOT ACCEPTABLE.
2. PROVIDE CONT. BLOCKING AT SHELVING, ACCESS PANELS, DISPLAY MONITORS, MARKER BOARDS ETC. COORDINATE LOCATION IN FIELD.
3. MOISTURE RESISTANT (MR) GYPSUM BOARD TO BE USED IN ALL TOILET ROOM / RESTROOM FACILITIES.
4. PROVIDE PVC SHIMS AS NECESSARY TO MAKE TOILET ROOM ACCESSORIES SUCH AS PTD'S, MIRRORS, SD'S, TOILET PARTITIONS, ETC.., FLUSH ON WALL OVER CERAMIC TILE WAINSCOT. SHIMS TO BE PAINTED BY PAINTING FSB. THICKNESS TO MATCH CERAMIC WALL TILE.

FINISH NOTES:

1. FINISH PLANS ARE TO BE READ IN CONJUNCTION WITH THE FINISH SCHEDULE. SHOULD THERE BE ANY DISCREPANCY BETWEEN INFORMATION GIVEN ON THE FINISH/COLOR SCHEDULE AND ANY OTHER DRAWINGS OR SPECIFICATIONS, PROVIDE THE HIGHER QUALITY FINISH.
2. REFER TO REFLECTED CEILING PLANS FOR CEILING TYPES AND HEIGHTS.
3. REFER TO THE FINISH LEGEND AND FINISH FLOOR PLANS FOR DEFINITION, PATTERNS AND EXTENT OF COLORS USED.
4. IN AREAS DESIGNATED WITH NEW CONCRETE FLOORS, PAINT MASONRY WALLS DOWN TO THE FLOOR WHERE NO RUBBER BASE IS PROVIDED. WHERE NO SUSPENDED CEILING IS INSTALLED, WALLS ARE TO BE PAINTED UP TO DECK.
5. PROVIDE THE INTERIOR OF ALL SPACES DESIGNATED "CLOSET" WITH ROD AND SHELF, UNLESS OTHERWISE DESIGNATED TO RECEIVE ADJUSTABLE SHELVES ON STANDARDS SPANNING THE WIDTH OF THE CLOSET.
6. ALL NEW GYPSUM BOARD SOFFITS AND CEILING SHOWN ON REFLECTED CEILING PLANS TO BE PAINTED. REFER TO FINISH NOTES FOR COLOR DESIGNATIONS.
7. ALL NEW HOLLOW METAL FRAMES TO BE PAINTED. REFER TO FINISH NOTES FOR COLOR DESIGNATIONS.
8. ALL NEW STAIR STRINGERS AND RAILINGS TO BE PAINTED. REFER TO FINISH NOTES FOR COLOR DESIGNATIONS.
9. AT ALL WALLS DESIGNATED TO RECEIVE TILED FINISH, TILE BACKING PANELS SHALL BE INSTALLED BEHIND ALL TILED AREAS.
10. ALL EXPOSED TO VIEW CONCRETE ON VERTICAL SURFACES TO RECEIVE SMOOTH FORMED FINISH, CLASS "A".

MINIMUM CLEARANCE ENVELOPE:

DESCRIPTION	LOCATION	MIN CLEARANCE FROM FF TO ANY STRUCTURE OR SYSTEM
WASH BAY	DEPT of PUBLIC WORKS	23' - 0"
VEHICLE MAINTENANCE	DEPT of PUBLIC WORKS	23' - 0"
VEHICLE STORAGE	DEPT of PUBLIC WORKS	19' - 8"
VEHICLE MAINT. AT MEZZ.	DEPT of PUBLIC WORKS	7' - 0"
VEHICLE STOR. AT MEZZ.	DEPT of PUBLIC WORKS	7' - 0"
SHOP AREAS	DEPT of PUBLIC WORKS	19' - 0"
CANOPY	DETACHED CANOPY	21' - 8"

NOTES:
1. THIS IS A LIST OF MINIMUM CLEARANCE ENVELOPES FOR THE MAINTENANCE, MATERIAL STORAGE, WORKSHOPS, VEHICLE STORAGE AND WASH BAY AREAS. ALL STRUCTURE AND SYSTEMS LOCATED IN THESE AREAS MUST BE INSTALLED ABOVE THESE LIMITS UNLESS NOTED OTHERWISE OR APPROVED BY ENGINEER.
2. MECHANICAL DUCTWORK DROPS (VERTICAL LEG) TO FLOOR FOR EXHAUST ARE NOT SUBJECT TO THIS TABLE.

0' 1' 2' 4'
SCALE: 3/8" = 1'-0"

Project:
TOWN of TRURO, MA
NEW DEPARTMENT of PUBLIC WORKS FACILITY
17 TOWN HALL
TRURO, MA 02666

Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
978.532.1900 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

COA:

Seal:

Issued For:
SCHEMATIC DESIGN

Scale: NTS

Key Plan:

Date: MAY 30, 2025
Drawn By: MMS
Reviewed By: DRD
Approved By: -
W&S Project No.: ENG24-1552
W&S File No.: XXX

Drawing Title:
GENERAL NOTES & MOUNTING HEIGHTS

Sheet Number:
A021

5/28/2025 3:26:45 PM C:\~Revit Projects\2024\24-1552_Town DPW_Arch_v24_Marchand Avery.rvt

EXTERIOR WALL ASSEMBLIES:

NOTE: SEE DETAILS ON A6 & A7 SERIES FOR ADDITIONAL INFORMATION. "F" USED FOR FUME SEPERATION WALLS.

TYPE A

LOWER WALL ASSEMBLY
(UP TO 3'-4" HT)
(1'-4" TOTAL THICKNESS)

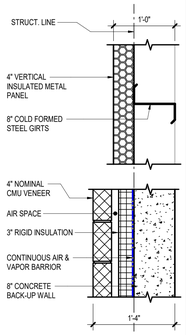
EXTERIOR
- 4" NOMINAL CMU VENEER
- AIR SPACE
- 3" RIGID INSULATION
- CONTINUOUS AIR & VAPOR BARRIER
- 8" CONCRETE BACK-UP WALL

INTERIOR

UPPER WALL ASSEMBLY
(1'-0" TOTAL THICKNESS)

EXTERIOR
- 4" VERTICAL INSULATED METAL PANEL, BREAK METAL TRIM, BY MBM
- 8" COLD FORMED STEEL GIRTS, BY MBM
- STEEL BUILDING FRAME, BY MBM

INTERIOR



TYPE B

LOWER WALL ASSEMBLY
(UP TO 3'-4" HT)
(1'-3 1/2" TOTAL THICKNESS)

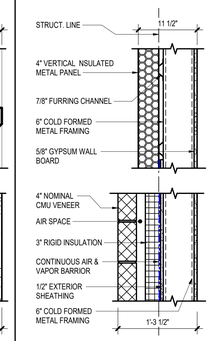
EXTERIOR
- 4" NOMINAL CMU VENEER
- AIR SPACE
- 3" RIGID INSULATION
- CONTINUOUS AIR & VAPOR BARRIER
- 6" COLD FORMED METAL FRAMING, AT 16" O.C. MAX.
- 5/8" GYPSUM WALL BOARD

INTERIOR

UPPER WALL ASSEMBLY
(0'-11 1/2" TOTAL THICKNESS)

EXTERIOR
- 4" VERTICAL INSULATED METAL PANEL, BREAK METAL TRIM, BY MBM
- 7/8" FURRING CHANNEL AT 16" O.C., COORDINATE WITH METAL PANEL FASTENER REQUIREMENTS, BY MBM
- 6" COLD FORMED METAL FRAMING, AT 16" O.C. MAX.
- 5/8" GYPSUM WALL BOARD

INTERIOR



TYPE C

LOWER WALL ASSEMBLY
(UP TO 3'-4" HT)
(1'-4" TOTAL THICKNESS)

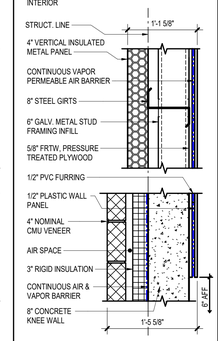
EXTERIOR
- 4" NOMINAL CMU VENEER
- AIR SPACE
- 3" RIGID INSULATION
- CONTINUOUS AIR & VAPOR BARRIER
- 8" CONCRETE BACK-UP WALL (2' - 4" HT)
- CONTINUOUS AIR & VAPOR BARRIER
- 1/2" PVC FURRING SLOPED TO DRAIN, SHIM AS NEEDED
- 1/2" PLASTIC WALL PANEL

INTERIOR

UPPER WALL ASSEMBLY
(1'-1 5/8" TOTAL THICKNESS)

EXTERIOR
- 4" VERTICAL INSULATED METAL PANEL, BREAK METAL TRIM, BY MBM
- 8" COLD FORMED STEEL GIRTS, BY MBM
- 6" GALVANIZED STEEL STUD FRAMING, SPAN BETWEEN HORIZONTAL GIRT FRAMING, TYP
- 5/8" FIRE RETARDENT TREATED, PRESSURE TREATED A-C PLYWOOD SHEATHING AT ALL WASH BAY WALLS, TYP.
- CONTINUOUS VAPOR PERMEABLE AIR BARRIER
- 1/2" PVC FURRING SLOPED TO DRAIN, SHIM AS NEEDED
- 1/2" PLASTIC WALL PANEL

INTERIOR



TYPE G

LOWER WALL ASSEMBLY
(1'-4" TOTAL THICKNESS)

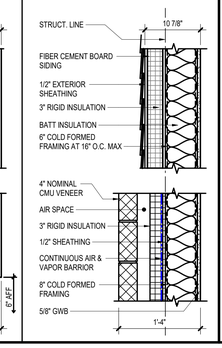
EXTERIOR
- 4" NOMINAL CMU VENEER
- AIR SPACE
- 3" RIGID INSULATION
- CONTINUOUS AIR & VAPOR BARRIER
- 1/2" EXTERIOR SHEATHING
- 6" COLD-FORMED FRAMING W/ BATT INSULATION (R-30 +/-)
- 5/8" GWB

INTERIOR

UPPER WALL ASSEMBLY
(9 3/8" TO OUTSIDE FACE OF SHEATHING)

EXTERIOR
- FIBER CEMENT SIDING
- WEATHER BARRIER
- 1/2" EXTERIOR PLYWOOD SHEATHING
- 3" RIGID INSULATION
- 1/2" EXTERIOR PLYWOOD SHEATHING
- 6" COLD-FORMED FRAMING W/ BATT INSULATION (R-30 +/-)
- 5/8" GWB

INTERIOR



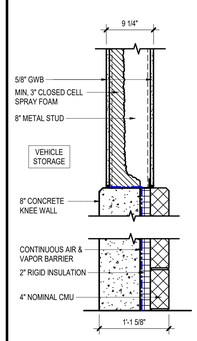
FUME SEPARATION WALL ASSEMBLIES:

TYPE F1

LOWER WALL ASSEMBLY
(UP TO 5'-4" HT)
(1' - 1 5/8" TOTAL THICKNESS)

- 8" CONC. KNEE WALL
- CONTINUOUS AIR & VAPOR BARRIER
- 2" RIGID INSULATION
- AIR SPACE
- 8" NOMINAL CMU VENEER

UPPER WALL ASSEMBLY
(0' - 9 1/4" TOTAL THICKNESS)
- 5/8" GYPSUM WALL BOARD
- 8" COLD FORMED METAL FRAMING, AT 16" O.C. MAX.
- MIN. 3" CLOSED CELL SPRAY FOAM BETWEEN STUDS
- 5/8" GYPSUM WALL BOARD

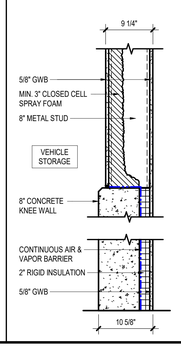


TYPE F2

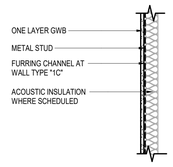
LOWER WALL ASSEMBLY
(UP TO 5'-4" HT)
(0'-10 5/8" TOTAL THICKNESS)

- 8" CONC. KNEE WALL
- CONTINUOUS AIR & VAPOR BARRIER
- 2" RIGID INSULATION & Z-FURRING CHANNEL
- 6" COLD FORMED METAL FRAMING, AT 16" O.C. MAX.
- 5/8" GYPSUM WALL BOARD

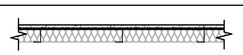
UPPER WALL ASSEMBLY
(0'-9 1/4" TOTAL THICKNESS)
- 5/8" GYPSUM WALL BOARD
- 8" COLD FORMED METAL FRAMING, AT 16" O.C. MAX.
- MIN. 3" CLOSED CELL SPRAY FOAM BETWEEN STUDS
- 5/8" GYPSUM WALL BOARD



SECTION



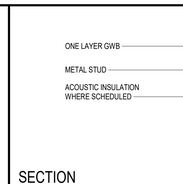
PLAN



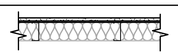
MARK	CORE SIZE	GWB THICK	GWB HEIGHT	TOTAL PARTITION THICK	ACOUSTIC INSUL	FIRE RATING / UL DESIGN NO.
1	2 1/2"	5/8"	FULL HEIGHT	3 1/8"	NO	-
1A	2 1/2"	5/8"	FULL HEIGHT	3 1/8"	YES	-
1B	2 1/2"	5/8"	6" ABOVE FINISHED CLG	3 1/8"	NO	-
1C	7/8"	5/8"	6" ABOVE FINISHED CLG	1 1/2"	NO	-

1 2 1/2" METAL STUD

SECTION



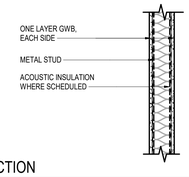
PLAN



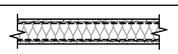
MARK	CORE SIZE	GWB THICK	GWB HEIGHT	TOTAL PARTITION THICK	ACOUSTIC INSUL	FIRE RATING / UL DESIGN NO.
2	3 5/8"	5/8"	FULL HEIGHT	4 1/4"	NO	-
2A	3 5/8"	5/8"	FULL HEIGHT	4 1/4"	YES	-
2B	3 5/8"	5/8"	6" ABOVE FINISHED CLG	4 1/4"	NO	-

2 3 5/8" METAL STUD - 1 LAYER GWB - 1 SIDE

SECTION



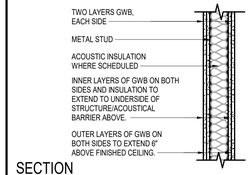
PLAN



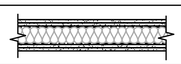
MARK	CORE SIZE	GWB THICK	GWB HEIGHT	TOTAL PARTITION THICK	ACOUSTIC INSUL	FIRE RATING / UL DESIGN NO.
3	3 5/8"	5/8"	FULL HEIGHT	4 7/8"	NO	-
3A	3 5/8"	5/8"	FULL HEIGHT	4 7/8"	YES	-
3B	3 5/8"	5/8"	6" ABOVE FINISHED CLG	4 7/8"	NO	-

3 3 5/8" METAL STUD - 1 LAYER GWB - BOTH SIDES

SECTION



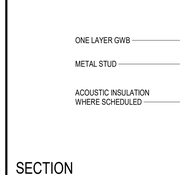
PLAN



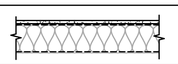
MARK	CORE SIZE	GWB THICK	GWB HEIGHT	TOTAL PARTITION THICK	ACOUSTIC INSUL	FIRE RATING / UL DESIGN NO.
4	3 5/8"	(2) 5/8"	FULL HEIGHT	6 1/8"	NO	-
4A	3 5/8"	(2) 5/8"	6" ABOVE FINISHED CLG	6 1/8"	NO	-
4B - 2H	3 5/8"	(2) 5/8"	FULL HEIGHT	6 1/8"	YES	2 HR PARTITION - U419
5B	6"	5/8"	6" ABOVE FINISHED CLG	6 5/8"	NO	-

4 3 5/8" METAL STUD - 2 LAYER GWB - BOTH SIDES

SECTION



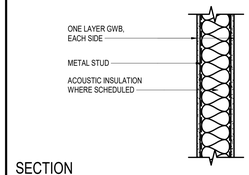
PLAN



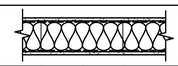
MARK	CORE SIZE	GWB THICK	GWB HEIGHT	TOTAL PARTITION THICK	ACOUSTIC INSUL	FIRE RATING / UL DESIGN NO.
5	6"	5/8"	FULL HEIGHT	6 5/8"	NO	-
5A	6"	5/8"	FULL HEIGHT	6 5/8"	YES	-

5 6" METAL STUD - 1 LAYER GWB - 1 SIDE

SECTION



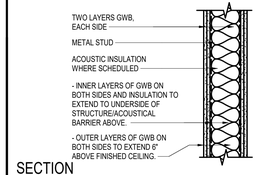
PLAN



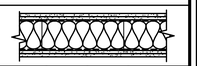
MARK	CORE SIZE	GWB THICK	GWB HEIGHT	TOTAL PARTITION THICK	ACOUSTIC INSUL	FIRE RATING / UL DESIGN NO.
6	6"	5/8"	FULL HEIGHT	7 1/4"	NO	-
6A	6"	5/8"	FULL HEIGHT	7 1/4"	YES	-
6B	6"	5/8"	6" ABOVE FINISHED CLG	7 1/4"	NO	-
6C	8"	5/8"	FULL HEIGHT	9 1/4"	NO	-

6 6" METAL STUD - 1 LAYER GWB - BOTH SIDES

SECTION



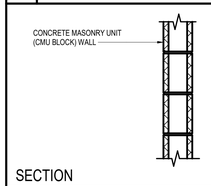
PLAN



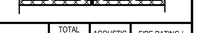
MARK	CORE SIZE	GWB THICK	GWB HEIGHT	TOTAL PARTITION THICK	ACOUSTIC INSUL	FIRE RATING / UL DESIGN NO.
7 - 2h	6"	5/8"	FULL HEIGHT	8 1/2"	YES	2 HR PARTITION - U411

7 6" METAL STUD - 2 LAYERS GWB - BOTH SIDES

SECTION



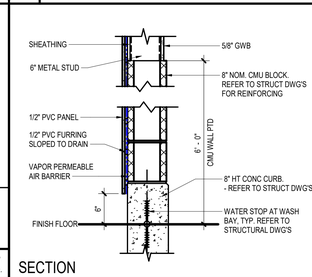
PLAN



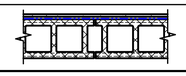
MARK	CORE SIZE	GWB THICK	GWB HEIGHT	TOTAL THICK	ACOUSTIC INSUL	FIRE RATING / UL DESIGN NO.
8A	8" NOM	-	-	7 5/8"	NO	-
8A - 1H	8" NOM	-	-	7 5/8"	NO	1 HR PARTITION - U905
8A - 2H	8" NOM	-	-	7 5/8"	NO	2 HR PARTITION - U905

8 CMU WALLS

SECTION



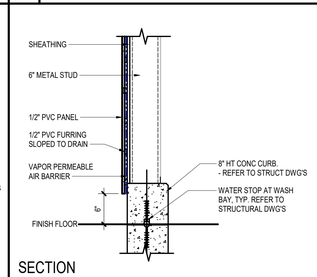
PLAN



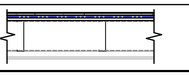
MARK	ASSEMBLY DESCRIPTION
16	PARTITION CMU WALL

16 VEHICLE WASH BAY WALL ASSEMBLIES

SECTION



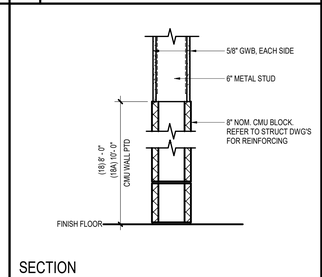
PLAN



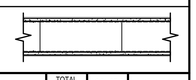
MARK	ASSEMBLY DESCRIPTION
16A	PARTITION CMU WALL

16 VEHICLE WASH BAY WALL ASSEMBLIES

SECTION



PLAN



MARK	CORE SIZE	GWB THICK	GWB HEIGHT	TOTAL PARTITION THICK	ACOUSTIC INSUL	FIRE RATING / UL DESIGN NO.
18	VARIES	5/8"	FULL HEIGHT	VARIES	NO	-
18A	VARIES	5/8"	FULL HEIGHT	VARIES	NO	-

18 STACKED PARTITION: 8" CMU / 6" METAL STUD - 1 LAYER GWB - BOTH SIDES

0" 6" 1' 2"
SCALE: 1" = 1'-0"

Project:
TOWN of TRURO, MA
NEW DEPARTMENT of PUBLIC WORKS FACILITY

17 TOWN HALL
TRURO, MA 02666

Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
978.532.1900 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

COA:

Seal:

Issued For:
SCHEMATIC DESIGN

Scale: 1" = 1'-0"

Key Plan:

Date: MAY 30, 2025
Drawn By: MMS
Reviewed By: DRD
Approved By: -

W&S Project No.: ENG24-1552
W&S File No.: XXX

Drawing Title:
PARTITION TYPES & EXTERIOR WALL ASSEMBLIES

Sheet Number:
A031

5/28/2025 3:26:46 P.M. C:\+RevitProjects\2024\24-1552_Truro DPW_Arch_v24_MarchandAvery.rvt

FLOOR PLAN GENERAL NOTES:

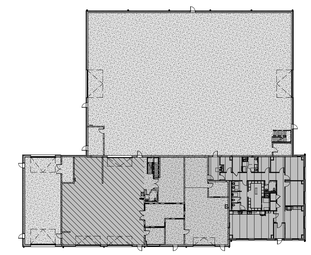
1. EQUIPMENT SHOWN FOR REFERENCE ONLY. SEE EQ DRAWINGS FOR MORE INFO.
2. FURNITURE SHOWN FOR INFORMATION ONLY (N.I.C.). SEE FURNITURE PLAN A921 FOR MORE INFO.
3. F.E. = FIRE EXTINGUISHER.
   F.E.C = FIRE EXTINGUISHER CABINET
   - BRACKET MOUNTED
   - CABINET MOUNTED (SEMI-RECESSED)
4. ALL INTERIOR DIMENSIONS ARE TAKEN FROM FACE OF GYPSUM WALL BOARD TO FACE OF GYPSUM WALL BOARD OR FACE OF CMU UNLESS SPECIFICALLY NOTED OTHERWISE.
5. SEE SHEET A012 FOR PLUMBING FIXTURE SCHEDULE / MOUNTING HEIGHTS.
6. BOLLARDS:
   - EB: EXTERIOR BOLLARD, 6" DIAMETER (SEE CIVIL DWGS)
   - IB: INTERIOR BOLLARD, 6" DIAMETER (SEE DETAIL X / AXXX)
7. FUME SEPARATION PARTITION, SEE A031 - FUME SEPARATION ASSEMBLY, TYPE F1 AND F2.
8. BOX-OUT DIMENSIONS AT STRUCTURAL COLUMNS ARE APPROXIMATE. GENERAL CONTRACTOR TO INSTALL TIGHT TO STRUCTURE, TYPICAL.
9. NOT ALL TV / MONITOR LOCATIONS ARE SHOWN. COORDINATE PROPOSED LOCATIONS WITH ELECTRICAL &TELECOMMUNICATIONS DRAWINGS. PROVIDE BLOCKING AT EACH LOCATION ACCORDINGLY.
10. CG — CORNER GUARD, SEE A901 FOR LOCATIONS.

UNDERSLAB RIGID INSULATION LEGEND:

a) R-15 RIGID INSULATION (AT ALL VERTICAL INSTALLATIONS)
R-5 RIGID INSULATION (HORIZONTAL AT ADMINISTRATION AREA)
- STANDARD COMPRESSIVE STRENGTH (25 PSI)
- COMPLETELY UNDER ENTIRE SLAB
- 2'-0" MIN. VERTICAL DOWN ON EXTERIOR AND INTERIOR SIDES OF FOUNDATION WALL

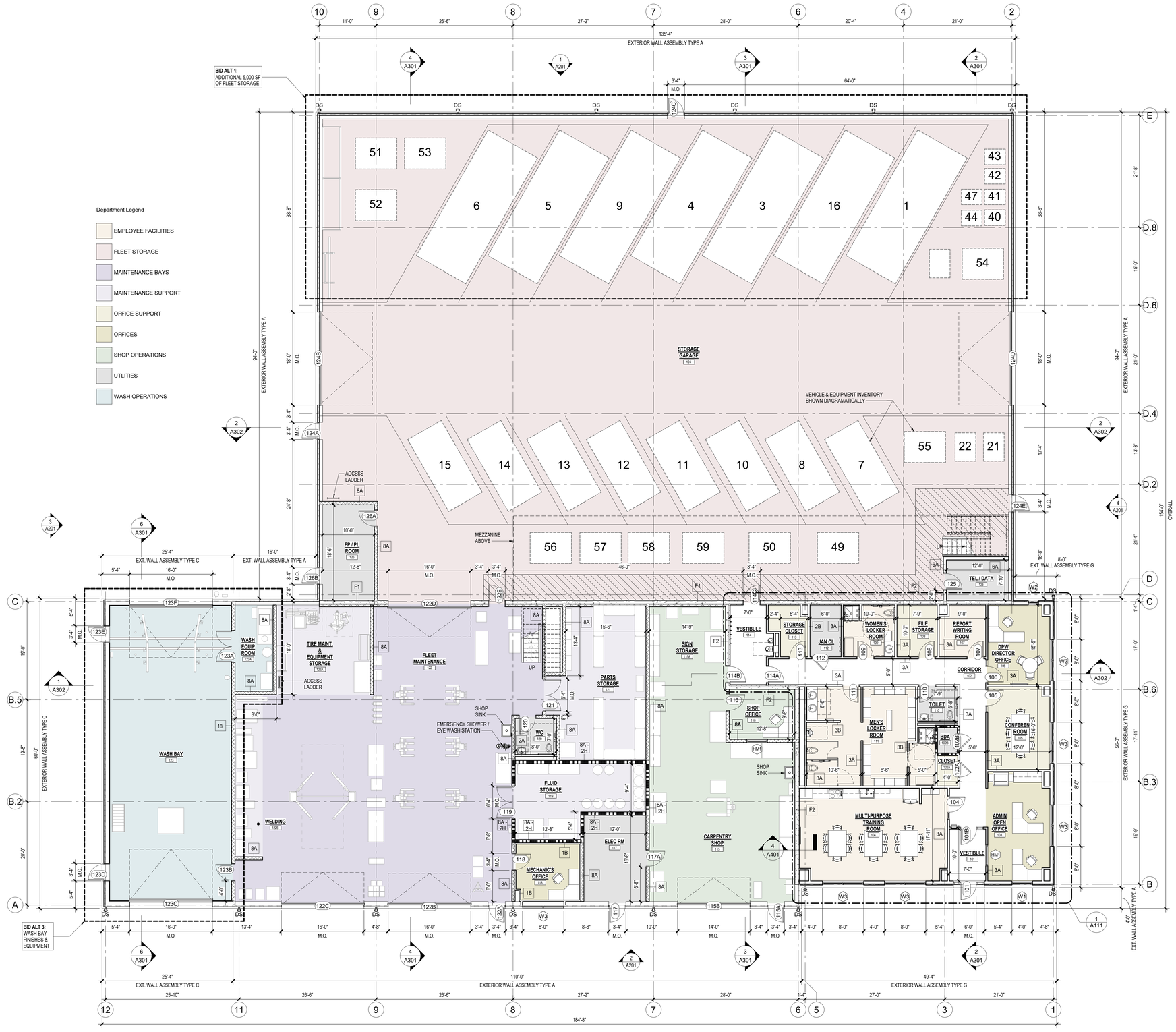
b) R-15 RIGID INSULATION (VEH. MAINTENANCE)
- HIGH COMPRESSIVE STRENGTH (60 PSI)
- COMPLETELY UNDER ENTIRE SLAB
- VERTICAL ON EXTERIOR SIDE OF FOUNDATION WALL (25 PSI)

c) R-15 RIGID INSULATION (AT ALL VERTICAL INSTALLATIONS)
R-5 RIGID INSULATION (HORIZONTAL AT VEH. STORAGE, WASHBAY, SHOPS)
- HIGH COMPRESSIVE STRENGTH (60 PSI)
- COMPLETELY UNDER ENTIRE SLAB
- 2'-0" MIN. VERTICAL DOWN ON EXTERIOR AND INTERIOR SIDES OF FOUNDATION WALL



2 UNDERSLAB RIGID INSULATION LOCATIONS
1" = 40'-0"

Department Legend
- EMPLOYEE FACILITIES
- FLEET STORAGE
- MAINTENANCE BAYS
- MAINTENANCE SUPPORT
- OFFICE SUPPORT
- OFFICES
- SHOP OPERATIONS
- UTLITIES
- WASH OPERATIONS



1 FIRST FLOOR PLAN
1/8" = 1'-0"

SCALE: 1/8" = 1'-0"

Project:
TOWN of TRURO, MA
NEW DEPARTMENT of PUBLIC WORKS FACILITY

17 TOWN HALL
TRURO, MA 02666

Weston & Sampson

Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
978.532.1900 800.SAMPSON

www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

COA:

Seal:

Issued For:

SCHEMATIC DESIGN

Scale: As indicated

Key Plan:

NORTH

Date:	MAY 30, 2025
Drawn By:	MMS
Reviewed By:	DRD
Approved By:	-
W&S Project No.:	ENG24-1552
W&S File No.:	XXX

Drawing Title:

OVERALL FLOOR PLAN

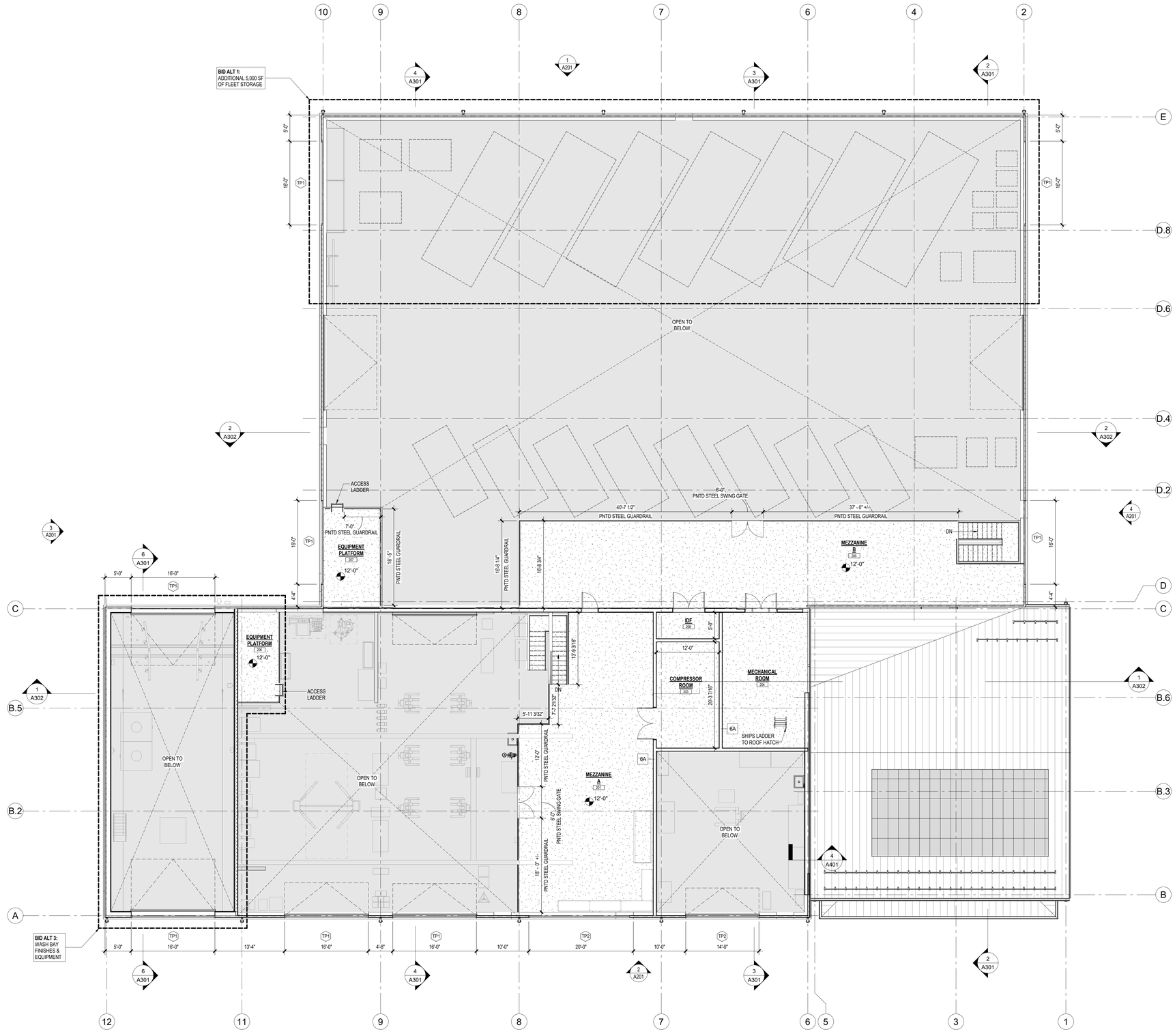
Sheet Number:

A101

5/28/2025 3:26:57 PM C:\~Revit Projects\2024\24-1552_Truro DPW_Archi_v24_Marchand.Avery.rvt

MEZZANINE GENERAL NOTES:

1. AT EACH MEZZANINE SWING GATE LOCATION, PROVIDE 4" H (RED) LETTER SIGNAGE AT MEZZANINE FASCIA TO READ: 200LBS/SF MAXIMUM MEZZANINE LOADING
2. PROVIDE SAFETY CHAIN PER OSHA STANDARDS AT EACH SWING GATE.
3. PROVIDE SAFETY YELLOW PAINT AT MEZZANINE FLOOR AT EACH SWING GATE, AS INDICATED.
4. COORDINATE EXACT LOCATION WITH MECHANICAL, STRUCTURAL AND EQUIPMENT REQUIREMENTS.
5. DO NOT RUN ANY UTILITIES BELOW GATES EXPOSED AND MOUNTED TO WALLS.
6. PROVIDE TIE-OFF POINT FOR OSHA FALL ARREST SYSTEM NEAR MEZZANINE SWING-GATE ON PRIMARY STRUCTURAL ELEMENT.



1 MEZZANINE PLAN
1/8" = 1'-0"

0' 4' 8' 16'
SCALE: 1/8" = 1'-0"

Project:
TOWN of TRURO, MA
NEW DEPARTMENT of PUBLIC WORKS FACILITY

17 TOWN HALL
TRURO, MA 02666

Weston & Sampson

Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
978.532.1900 800.SAMPSON

www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

COA:

Seal:

Issued For:

SCHEMATIC DESIGN

Scale: 1/8" = 1'-0"

Key Plan:

NORTH

Date:	MAY 30, 2025
Drawn By:	MMS
Reviewed By:	DRD
Approved By:	-
W&S Project No.:	ENG24-1552
W&S File No.:	XXX

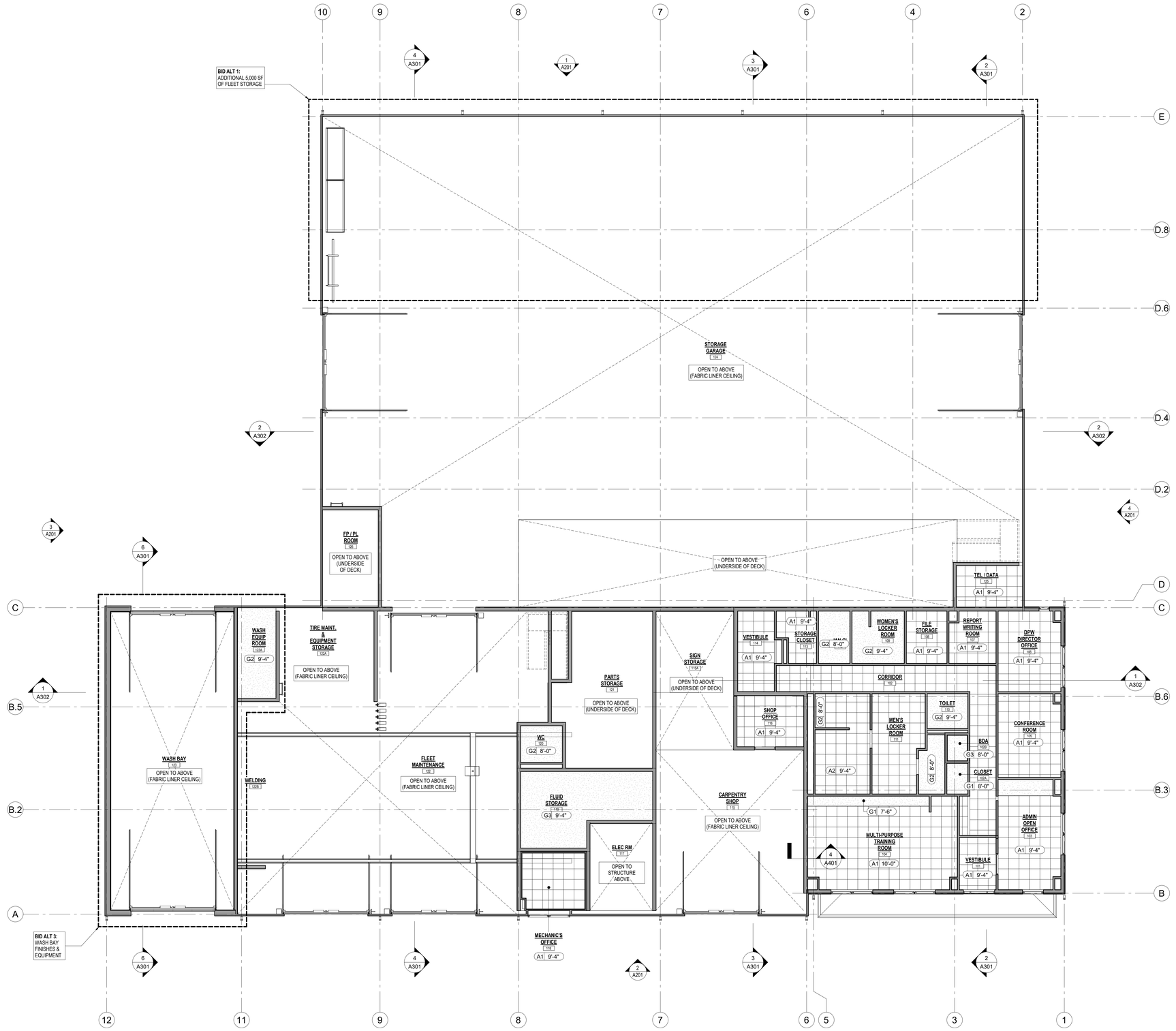
Drawing Title:

OVERALL MEZZANINE PLAN

Sheet Number:

A102

C:\+Revit\Projects\2024\24-1552_Truro DPW_Arch_v24_Marchand Avery.rvt
5/28/2025 3:27:02 PM



1 FIRST FLOOR RCP
1/8" = 1'-0"

REFLECTED CEILING PLAN NOTES:

1. REFER TO M.E.P / F.P. DRAWINGS FOR LOCATION OF LIGHT FIXTURES, SPRINKLER HEADS, SUPPLIES, RETURNS AND ADDITIONAL CEILING INFORMATION.
2. ALL DIFFUSERS, SPRINKLER HEADS, ETC. AT ACT AREAS TO BE CENTERED ON TILE.
3. SUSPENDED ACT AT 9'-4" AFF UNLESS NOTED OTHERWISE (U.N.O.)
4. ALL GWB CEILINGS AND SOFFITS AT 9'-4" AFF (U.N.O.)
5. COORDINATE QUANTITY AND LOCATION OF LIGHT FIXTURES WITH ELECTRICAL DRAWINGS.
6. LIGHT FIXTURE SYMBOLS ON REFLECTED CEILING PLANS ARE DIAGRAMMATIC FOR REFERENCE ONLY. REFER TO ELECTRICAL DRAWINGS FOR TYPE OF LIGHT FIXTURES. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR QUANTITY OF LIGHT FIXTURES AS INDICATED ON THE ELECTRICAL DRAWINGS.
7. FOR CEILING HEIGHTS AND TYPES, REFER TO REFLECTED CEILING PLAN DRAWINGS.
8. NO SUSPENDED LOADS SHALL BE SUPPORTED BY THE ROOF DECK. THIS INCLUDES PIPING, DUCTWORK, MECHANICAL EQUIPMENT, STAGE RIGGING, CEILING, ETC. ALL STEEL FRAMING MEMBERS PREFERABLY UTILIZING A SYSTEM OF UNISTRUTS, BEAM CLAMPS, AND THREADED RODS. ALL ATTACHMENT DEVICES SHALL BE SUBMITTED FOR REVIEW AND ARE SUBJECT TO APPROVAL OF THE DESIGNER.
9. COORDINATE QUANTITY AND LOCATION FOR EXIT SIGNS WITH ELECTRICAL DRAWINGS.
10. COORDINATE QUANTITY AND LOCATION OF SPRINKLERS WITH FIRE PROTECTION DRAWINGS.

REFLECTED CEILING PLAN LEGEND:

CEILING TYPES:

- **TYPE A1**: 2' x 2' SUSPENDED ACOUSTICAL PANEL
- **TYPE A2**: 2' x 2' SUSPENDED ACOUSTICAL PANEL - MOISTURE RESISTANT
- **TYPE G1**: GYPSUM BOARD CEILING
- **TYPE G2**: GYPSUM BOARD CEILING - MOISTURE RESISTANT
- **TYPE G3**: 2-HR FIRE RATED CEILING UL DESIGN NO. U415
- XX — SOFFIT DETAIL - REFER TO CEILING SERIES
- TYPE / A | X'-X" / HEIGHT — CEILING TAG
- LIGHT FIXTURES
- SURFACE MTD. LIGHT FIXTURE
- TRACK LIGHTING
- SUPPLY DIFFUSER - REF: MECH DWGS
- RETURN VENT - REF: MECH DWGS
- EXHAUST VENT - REF: MECH DWGS
- CLG. MTD. / EXTERIOR SECURITY CAMERA
- R.H. — RADIANT HEATER
- C.U.H. — CABINET UNIT HEATER
- U.H. — UNIT HEATER
- EXIT SIGN
- MOTION DETECTOR
- SD — SMOKE DETECTOR
- OS — OCCUPANCY SENSOR
- PS — CEILING PHOTO SENSOR
- S — CEILING FLUSH MOUNTED SPEAKER
- F — FIRE ALARM SPEAKER / VISUAL SIGNAL
- F/CLG — CEILING MOUNTED FIRE ALARM SPEAKER / VISUAL SIGNAL
- F — FIRE ALARM VISUAL SIGNAL
- CEILING MOUNTED SPRINKLER
- WALL MOUNTED SPRINKLER

0' 4' 8' 16'
SCALE: 1/8" = 1'-0"

Project:
TOWN of TRURO, MA
NEW DEPARTMENT of PUBLIC WORKS FACILITY

17 TOWN HALL
TRURO, MA 02666

Weston & Sampson

Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
978.532.1900 800.SAMPSON

www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

COA:

Seal:

Issued For:

SCHEMATIC DESIGN

Scale: 1/8" = 1'-0"

Key Plan:



Date:	MAY 30, 2025
Drawn By:	MMS
Reviewed By:	DRD
Approved By:	-
W&S Project No.:	ENG24-1552
W&S File No.:	XXX

Drawing Title:

REFLECTED CEILING PLAN - BELOW MEZZANINE

Sheet Number:

A103

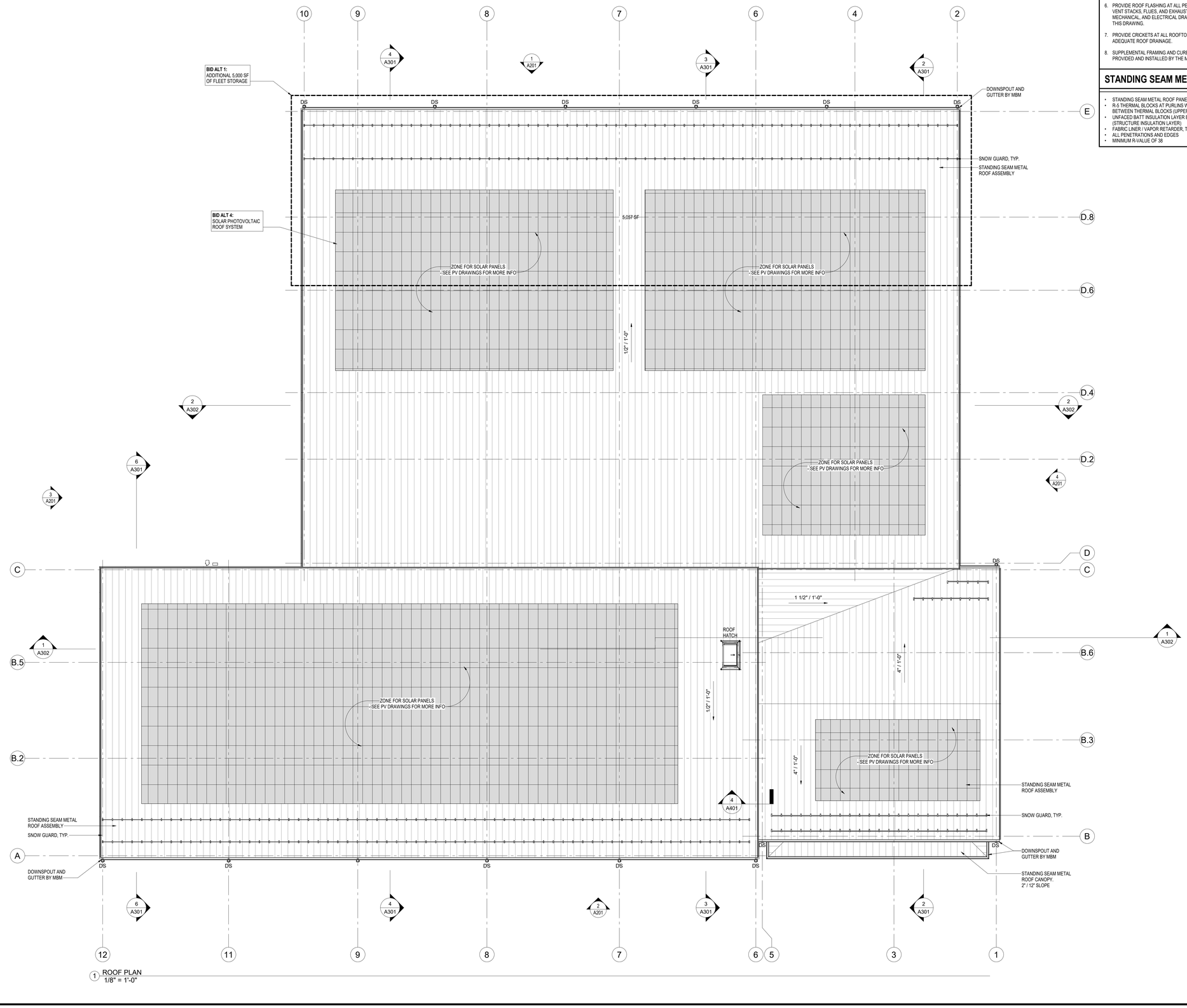
C:\~Revit\Projects\2024\24-1552_Truro DPW_Arch_v24_Marchand.Avery.rvt
5/28/2025 3:27:05 PM

GENERAL ROOF NOTES - METAL BUILDINGS

1. REFER TO EQUIPMENT, MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR ADDITIONAL ROOF PENETRATIONS AND EQUIPMENT NOT SHOWN. ANY DISCREPANCIES REGARDING LOCATION OF EQUIPMENT SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT FOR RESOLUTION IN FIELD.
2. ROOF SLOPE VARIES
3. SEE GENERAL NOTES ON A012
4. ALL GUTTERS TO PITCH TOWARDS DOWNSPOUTS AT A MINIMUM 1/16" PER FOOT AND SUPPORTED AS PER METAL BUILDING MANUFACTURER.
5. ROOF PENETRATIONS TO BE CUT AND FLASHED BY METAL BUILDING MANUFACTURER.
6. PROVIDE ROOF FLASHING AT ALL PENETRATIONS INCLUDING BUT NOT LIMITED TO VENT STACKS, FLUES, AND EXHAUST FANS. REVIEW PLUMBING, EQUIPMENT, MECHANICAL, AND ELECTRICAL DRAWINGS FOR CONSTRUCTION NOT INDICATED ON THIS DRAWING.
7. PROVIDE CRICKETS AT ALL ROOFTOP EQUIPMENT AND PENETRATIONS TO CREATE ADEQUATE ROOF DRAINAGE.
8. SUPPLEMENTAL FRAMING AND CURBS FOR ALL ROOFTOP EQUIPMENT SHALL BE PROVIDED AND INSTALLED BY THE METAL BUILDING MANUFACTURER.

STANDING SEAM METAL ROOF ASSEMBLY (BY MBM)

- STANDING SEAM METAL ROOF PANEL
- R-5 THERMAL BLOCKS AT PURLINS W/ UNFACED BATT INSULATION BETWEEN THERMAL BLOCKS (UPPER INSULATION LAYER)
- UNFACED BATT INSULATION LAYER BETWEEN PURLINS (STRUCTURE INSULATION LAYER)
- FABRIC LINER / VAPOR RETARDER, TAPE AND SEAL
- ALL PENETRATIONS AND EDGES
- MINIMUM R-VALUE OF 38



1 ROOF PLAN
1/8" = 1'-0"

SCALE: 1/8" = 1'-0"

Project:
TOWN of TRURO, MA
NEW DEPARTMENT of PUBLIC WORKS FACILITY

17 TOWN HALL
TRURO, MA 02666

Weston & Sampson

Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
978.532.1900 800.SAMPSON

www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

COA:

Seal:

Issued For:

SCHEMATIC DESIGN

Scale: 1/8" = 1'-0"

Key Plan:

NORTH

Date:	MAY 30, 2025
Drawn By:	MMS
Reviewed By:	DRD
Approved By:	-
W&S Project No.:	ENG24-1552
W&S File No.:	XXX

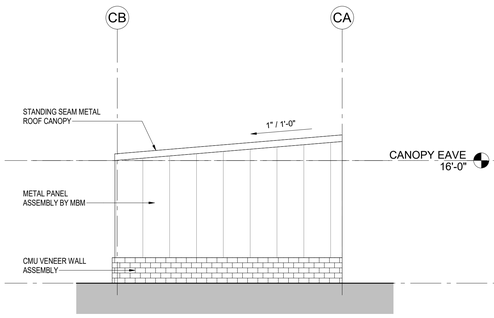
Drawing Title:

ROOF PLAN

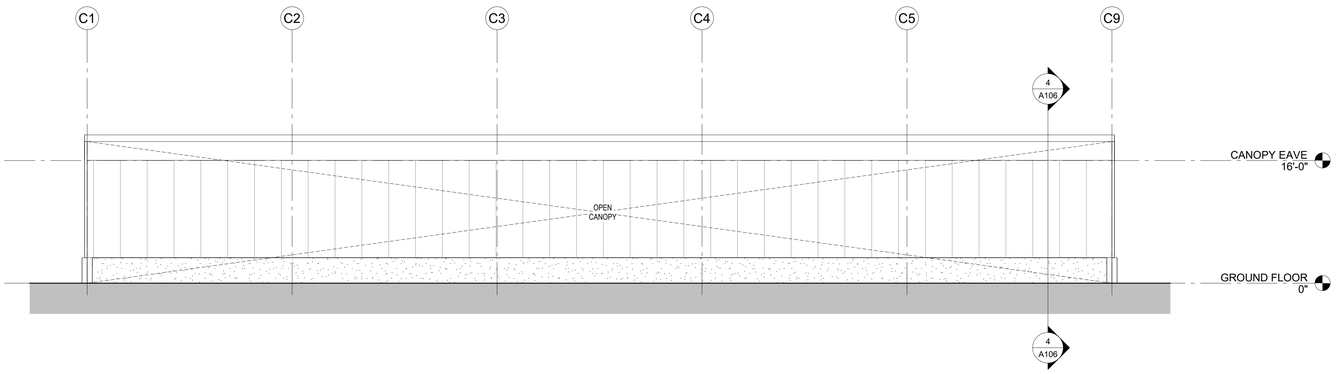
Sheet Number:

A105

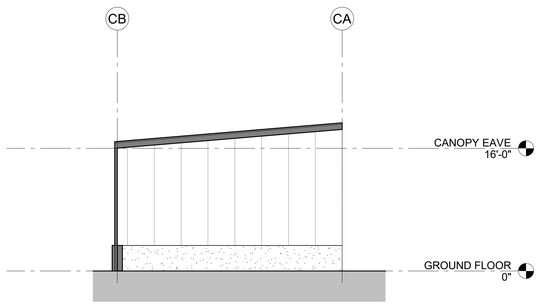
5/28/2025 3:27:07 PM C:\~RevitProjects\2024\24-1552_Truro,DPW_Arch_v24_Marchand.Avery.rvt



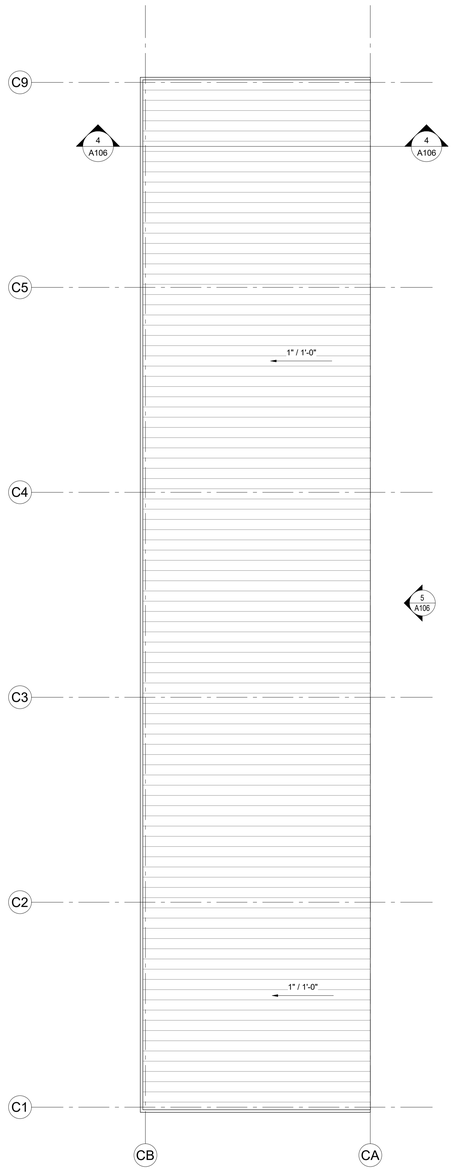
6 WEST ELEVATION - STORAGE CANOPY
1/8" = 1'-0" 1/ A106



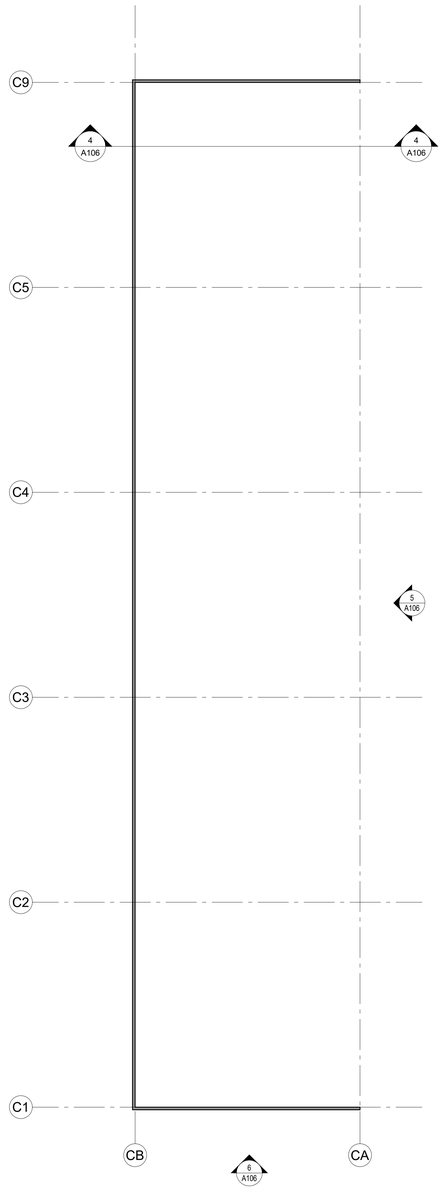
5 SOUTH ELEVATION - STORAGE CANOPY
1/8" = 1'-0" 1/ A106



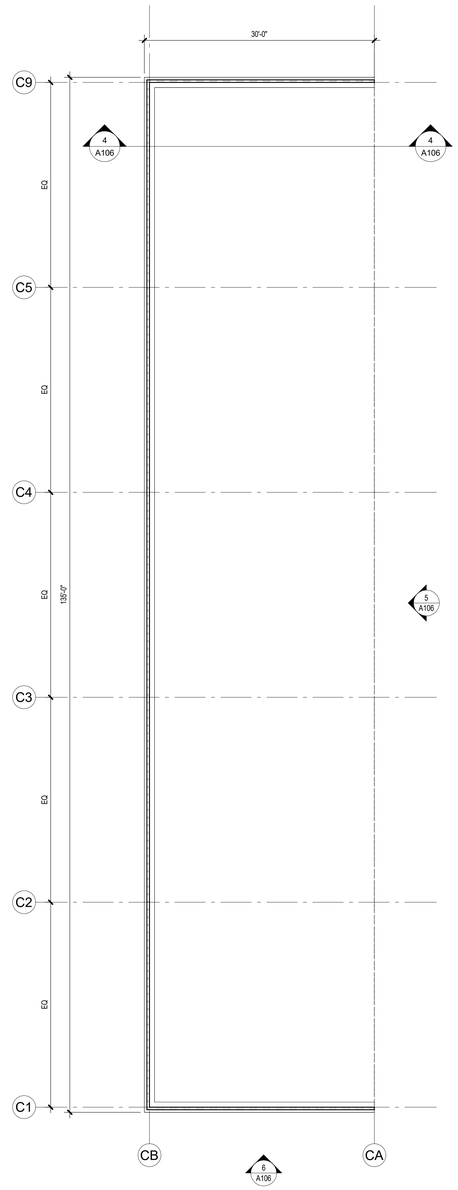
4 BUILDING SECTION - STORAGE CANOPY
1/8" = 1'-0"



2 ROOF PLAN - STORAGE CANOPY
1/8" = 1'-0"



3 RCP - STORAGE CANOPY
1/8" = 1'-0"



1 FLOOR PLAN - STORAGE CANOPY
1/8" = 1'-0"

0' 4' 8' 16'
SCALE: 1/8" = 1'-0"

Project:
TOWN of TRURO, MA
NEW DEPARTMENT of PUBLIC WORKS FACILITY

17 TOWN HALL
TRURO, MA 02666

Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
978.532.1900 800.SAMPSON

www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

COA:

Seal:

Issued For:

SCHEMATIC DESIGN

Scale: 1/8" = 1'-0"

Key Plan:

NORTH

Date:	MAY 30, 2025
Drawn By:	MMS
Reviewed By:	DRD
Approved By:	
W&S Project No.:	ENG24-1552
W&S File No.:	XXX

Drawing Title:

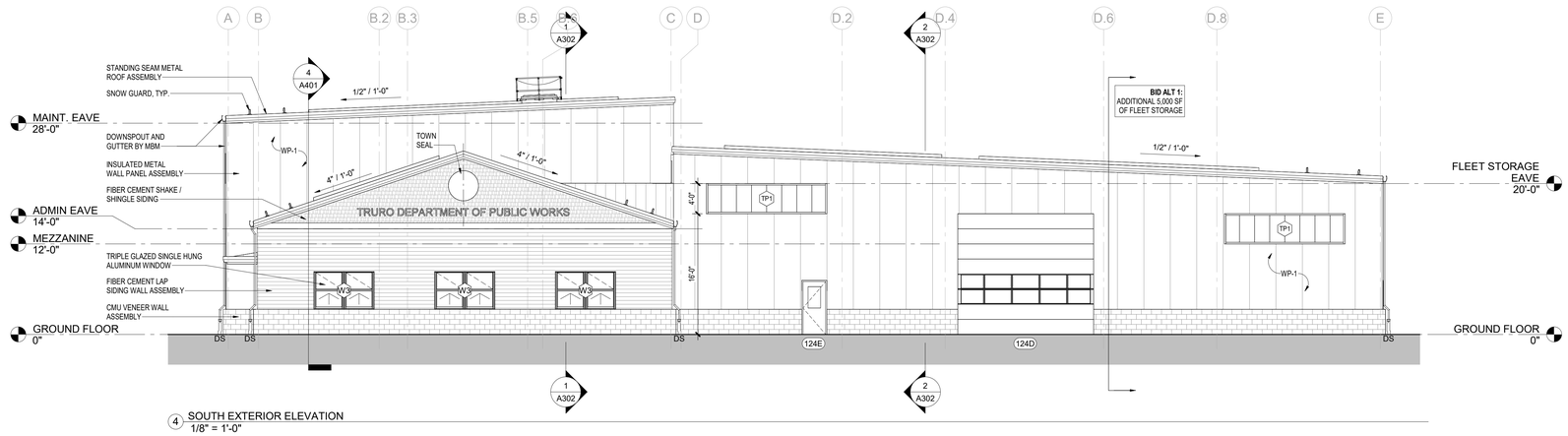
STORAGE CANOPY PLANS & ELEVATIONS (BID ALT 2)

Sheet Number:

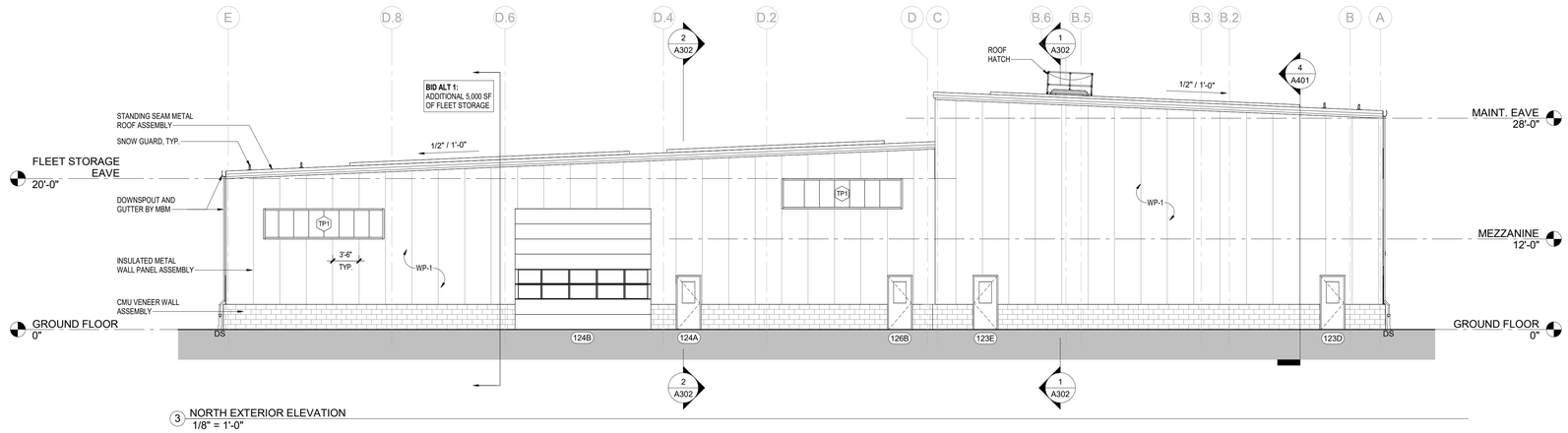
A106

C:\~Revit\Projects\2024\24-1552_Town DPW_Arch_v24_Marchand.Avery.rvt

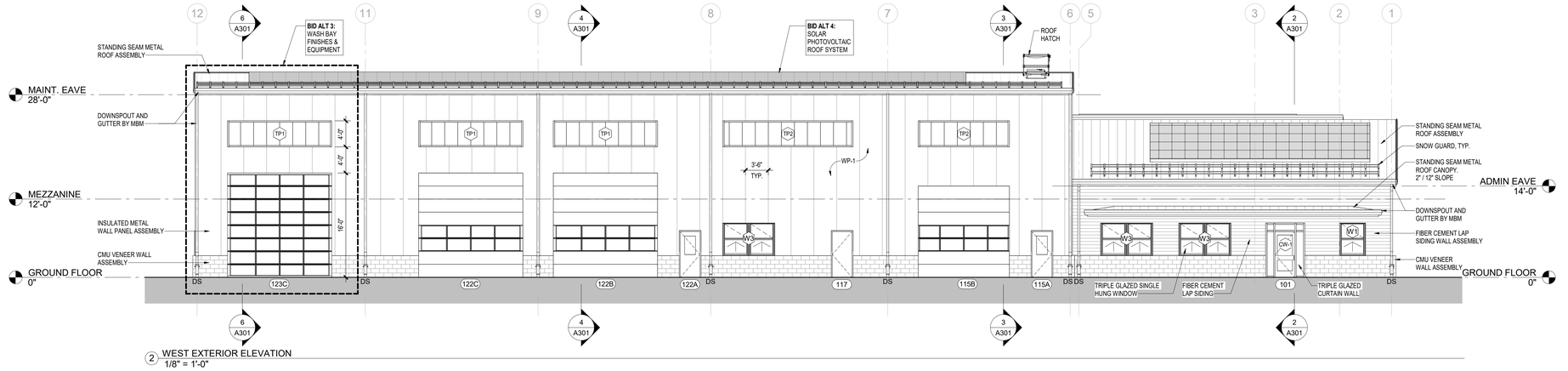
5/28/2025 3:27:08 PM



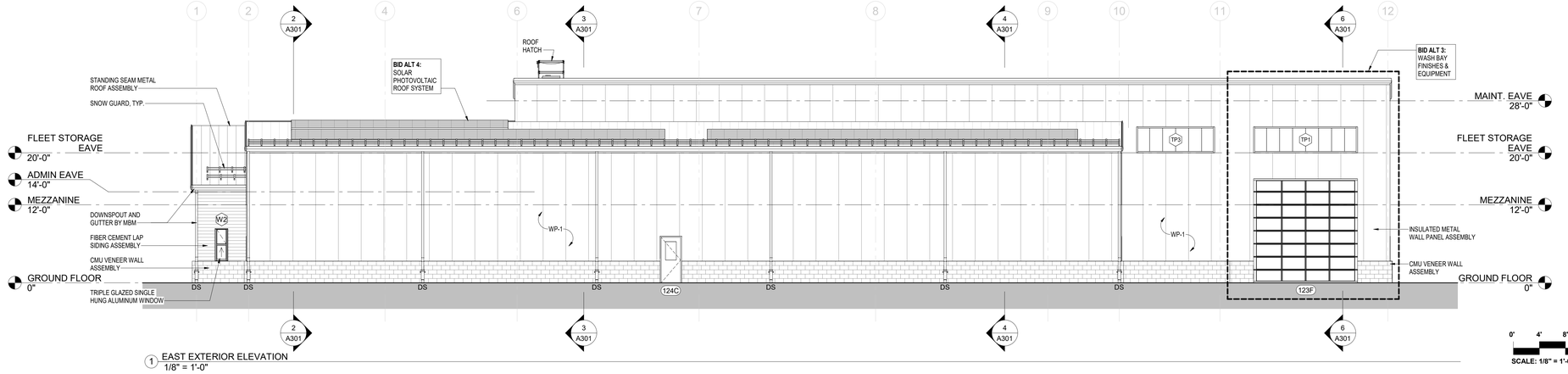
4 SOUTH EXTERIOR ELEVATION
1/8" = 1'-0"



3 NORTH EXTERIOR ELEVATION
1/8" = 1'-0"



2 WEST EXTERIOR ELEVATION
1/8" = 1'-0"



1 EAST EXTERIOR ELEVATION
1/8" = 1'-0"

0' 4' 8' 16'
SCALE: 1/8" = 1'-0"

WALL PANEL TYPES LEGEND:

EXTENTS OF WALL PANEL - WP-1, INSULATED METAL WALL PANELS

CMU VENEER LEGEND:

CONTROL JOINT LOCATION - REFER TO X / AXXX FOR ADDITIONAL INFO

TYPE 1 - STANDARD GROUND FACE MASONRY BLOCK; 8" X 16"

MINERAL FIBER CEMENT SIDING LEGEND:

FIBER CEMENT SHINGLE / SHAKE WALL PANEL SIDING

FIBER CEMENT LAP SIDING

NOTES:
1. COORDINATE OPENINGS NOT SHOWN WITH EQUIPMENT AND MEP/FP DRAWINGS.
2. FOR MOCK-UP REQUIREMENTS, SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

Project:
TOWN of TRURO, MA
NEW DEPARTMENT of PUBLIC WORKS FACILITY

17 TOWN HALL
TRURO, MA 02666

Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
978.532.1900 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

COA:

Seal:

Issued For:

SCHEMATIC DESIGN

Scale: 1/8" = 1'-0"

Key Plan:

Date:	MAY 30, 2025
Drawn By:	MMS
Reviewed By:	DRD
Approved By:	-
W&S Project No.:	ENG24-1552
W&S File No.:	XXX

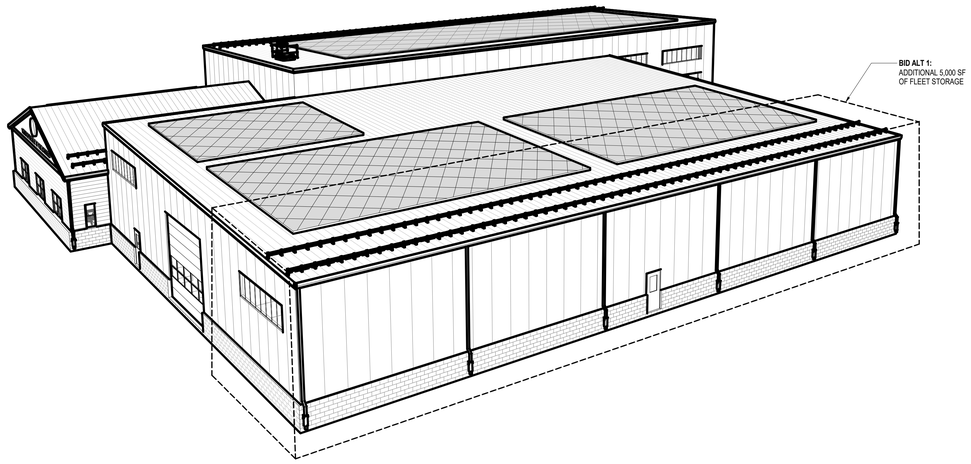
Drawing Title:

OVERALL EXTERIOR ELEVATIONS

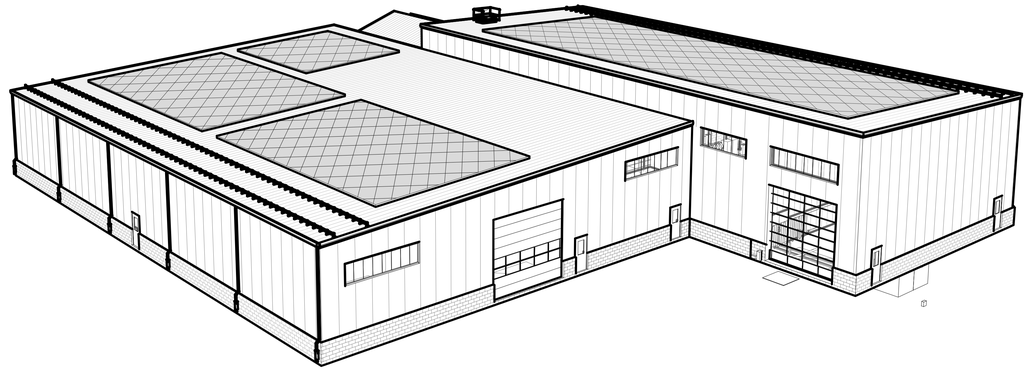
Sheet Number:

A201

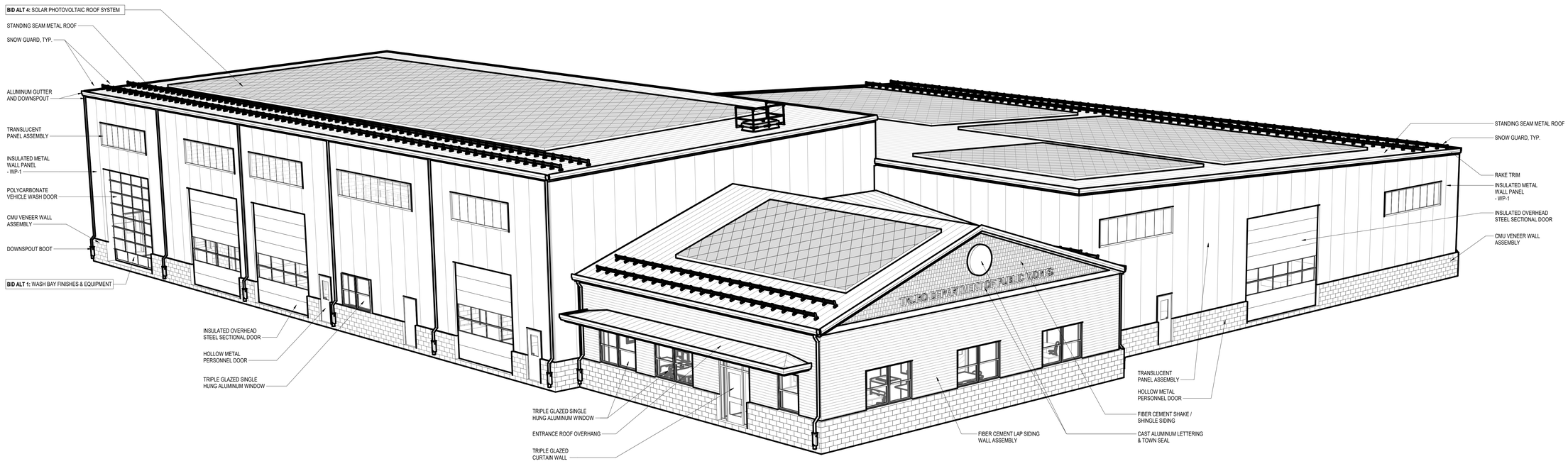
C:\~Revit\Projects\2024\24-1552_Truro DPW_Arch_v24_Marchand.Avery.rvt
5/28/2025 3:27:13 PM



3 3D VIEW C



2 3D VIEW B



1 3D VIEW A

NOTE: 3D VIEWS ARE PROVIDED FOR REFERENCE ONLY. REFER TO PLANS, ELEVATIONS, SECTIONS, DETAILS AND SCHEDULES FOR BUILDING REQUIREMENTS.

Project:
TOWN of TRURO, MA
NEW DEPARTMENT of PUBLIC WORKS FACILITY

17 TOWN HALL
TRURO, MA 02666

Weston & Sampson

Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
978.532.1900 800.SAMPSON

www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

CDA:

Seal:

Issued For:

SCHEMATIC DESIGN

Scale: NTS

Key Plan:

Date:	MAY 30, 2025
Drawn By:	MMS
Reviewed By:	DRD
Approved By:	-
W&S Project No.:	ENG24-1552
W&S File No.:	XXX

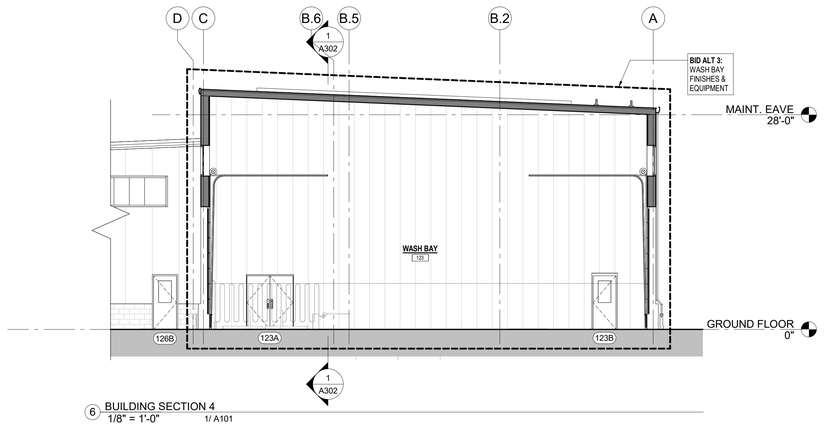
Drawing Title:

3D VIEWS I

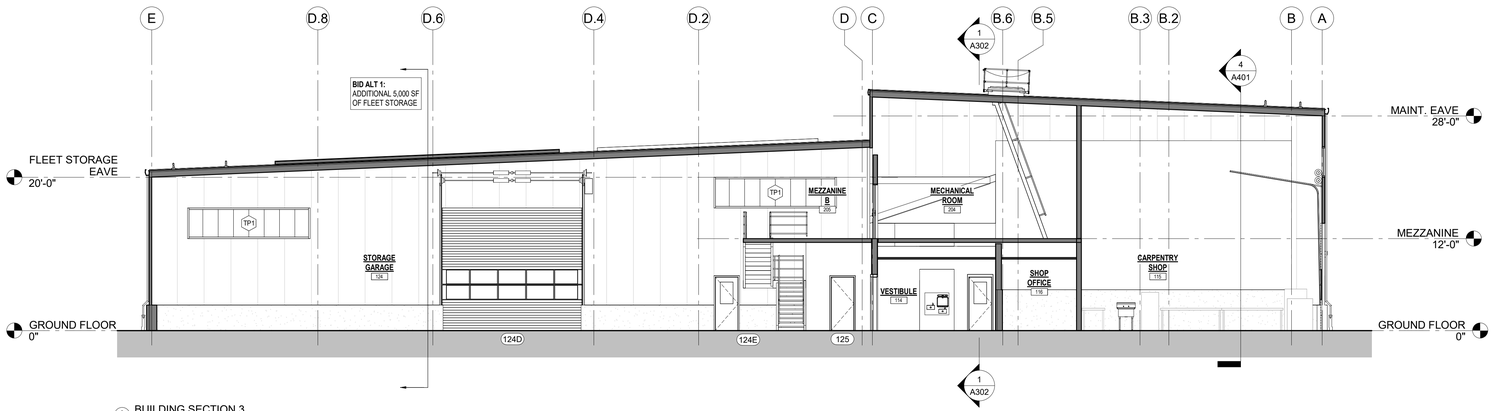
Sheet Number:

A231

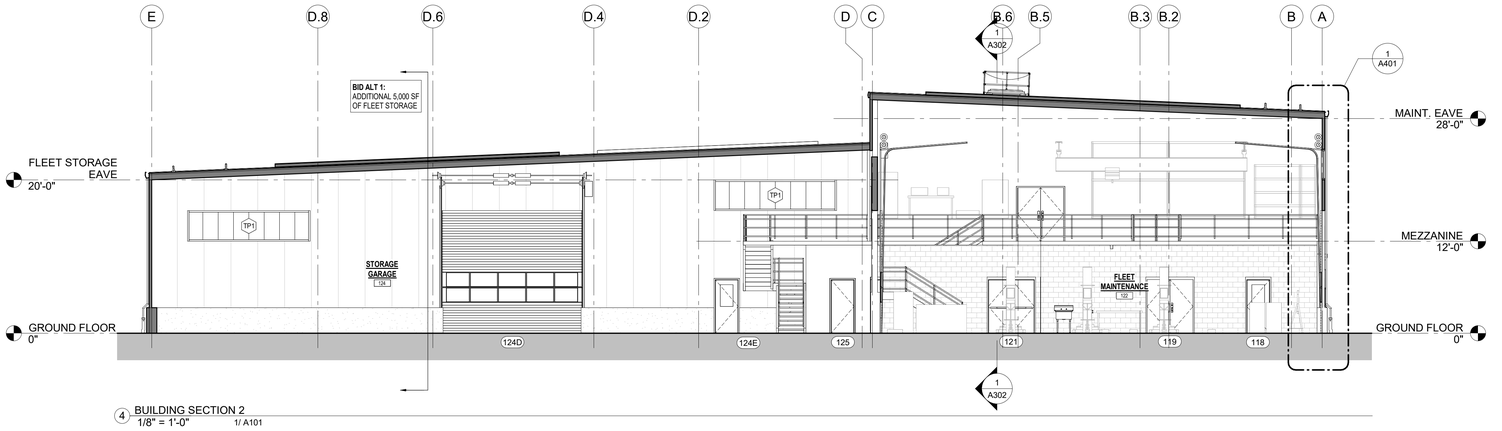
C:\~Revit\Projects\2024\24-1552_Truro DPW_Arch_v24_Marchand.Avery.rvt
5/28/2025 3:27:22 PM



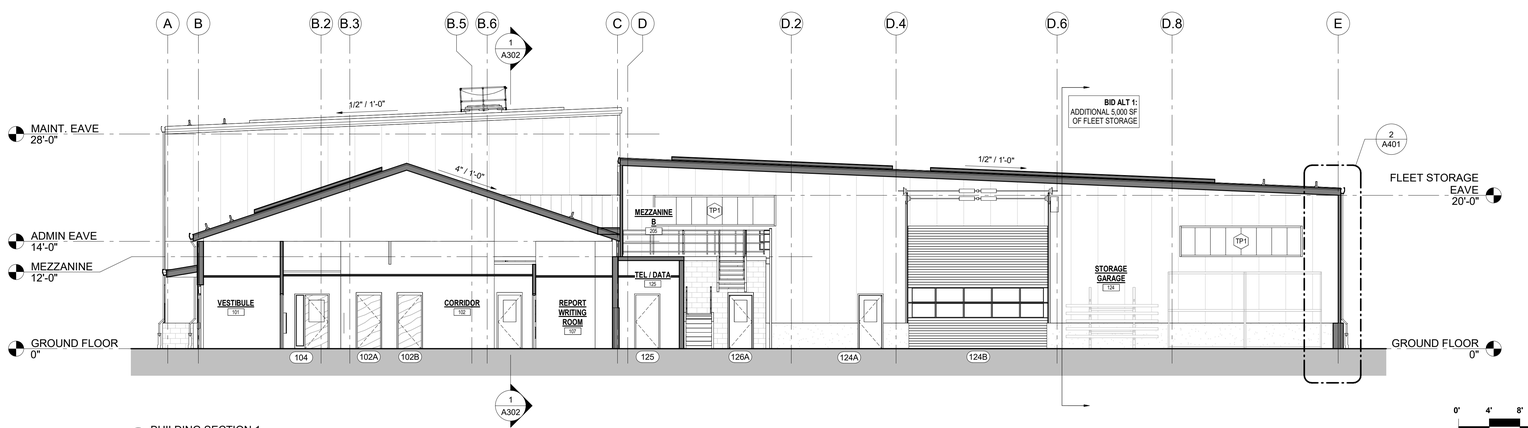
6 BUILDING SECTION 4
1/8" = 1'-0" 1/ A101



3 BUILDING SECTION 3
1/8" = 1'-0" 1/ A101



4 BUILDING SECTION 2
1/8" = 1'-0" 1/ A101



2 BUILDING SECTION 1
1/8" = 1'-0" 1/ A101

0' 4' 8' 16'
SCALE: 1/8" = 1'-0"

Project:
TOWN of TRURO, MA
NEW DEPARTMENT of PUBLIC WORKS FACILITY

17 TOWN HALL
TRURO, MA 02666

Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
978.532.1900 800.SAMPSON

www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

CDA:

Seal:

Issued For:

SCHEMATIC DESIGN

Scale: 1/8" = 1'-0"

Key Plan:

Date:	MAY 30, 2025
Drawn By:	MMS
Reviewed By:	DRD
Approved By:	-
W&S Project No.:	ENG24-1552
W&S File No.:	XXX

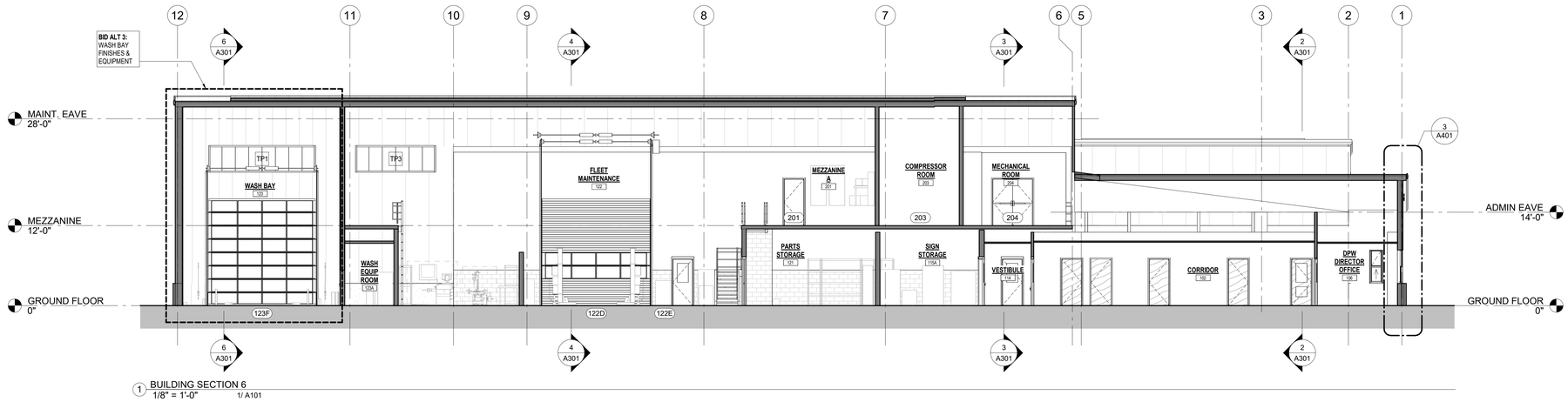
Drawing Title:

BUILDING SECTIONS I

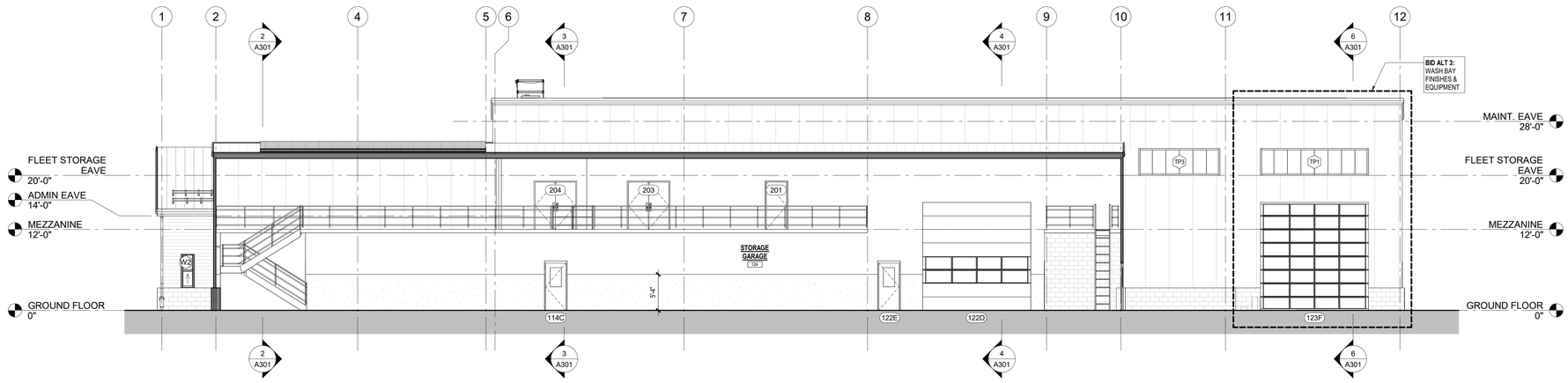
Sheet Number:

A301

C:\+Revit\Projects\2024\24-1562_Truro DPW_Arch_v24_Marchand.Avery.rvt
5/28/2025 3:27:25 PM



1 BUILDING SECTION 6
1/8" = 1'-0" 1/ A101



2 BUILDING SECTION 5
1/8" = 1'-0" 1/ A101

0' 4' 8' 16'
SCALE: 1/8" = 1'-0"

Project:
TOWN of TRURO, MA
NEW DEPARTMENT of PUBLIC WORKS FACILITY

17 TOWN HALL
TRURO, MA 02666

Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
978.532.1900 800.SAMPSON

www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

COA:

Seal:

Issued For:

SCHEMATIC DESIGN

Scale: 1/8" = 1'-0"

Key Plan:

Date:	MAY 30, 2025
Drawn By:	MMS
Reviewed By:	DRD
Approved By:	-
W&S Project No.:	ENG24-1552
W&S File No.:	XXX

Drawing Title:

BUILDING SECTIONS II

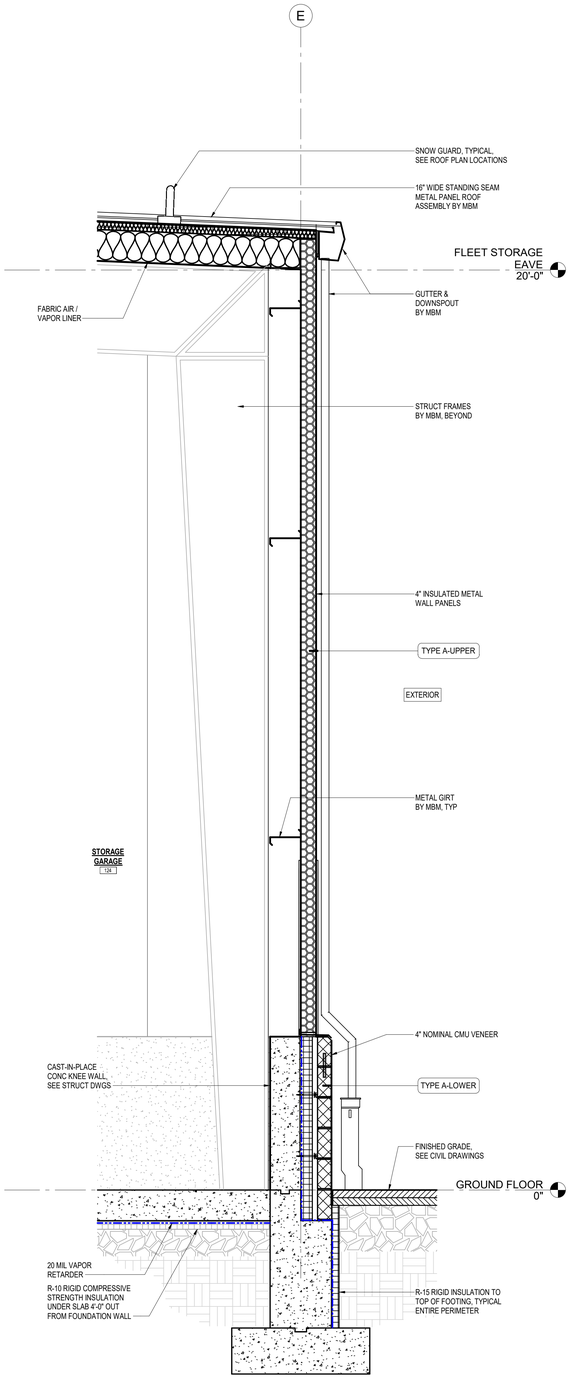
Sheet Number:

A302

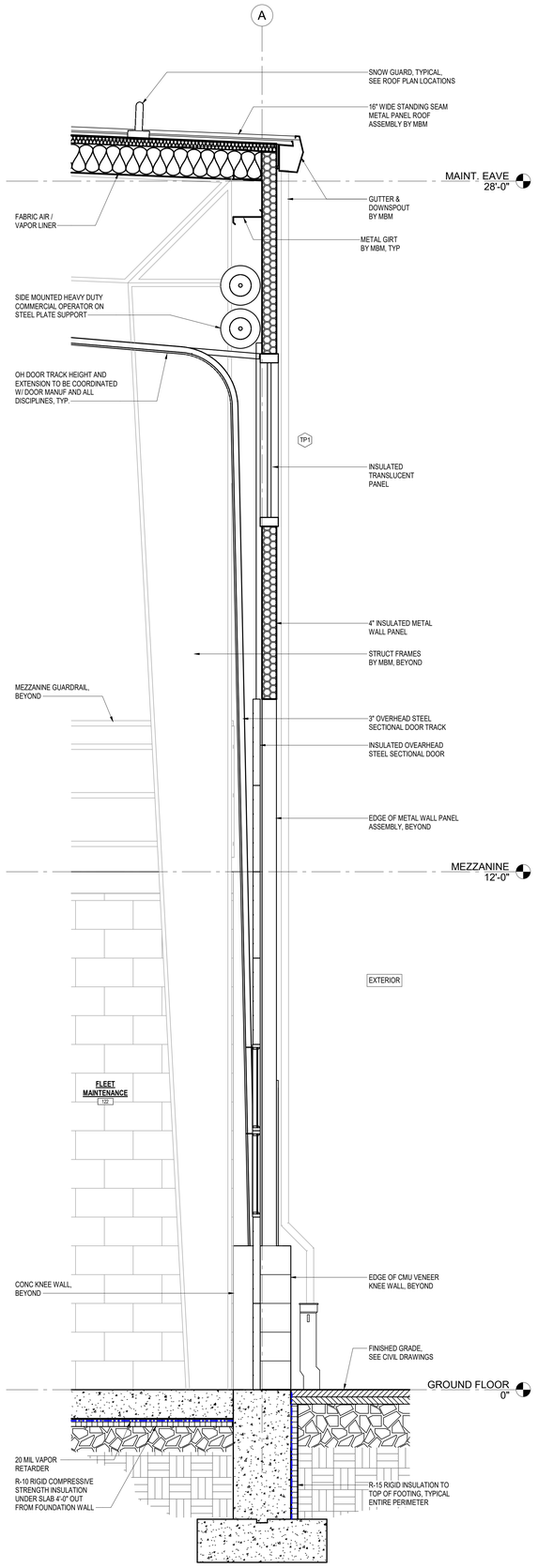
5/28/2025 3:27:28 PM C:\+Revit Projects\2024\24-1552_Truro DPW_Arch_v24_Marchand Avery.rvt

TYPICAL WALL SECTION NOTES

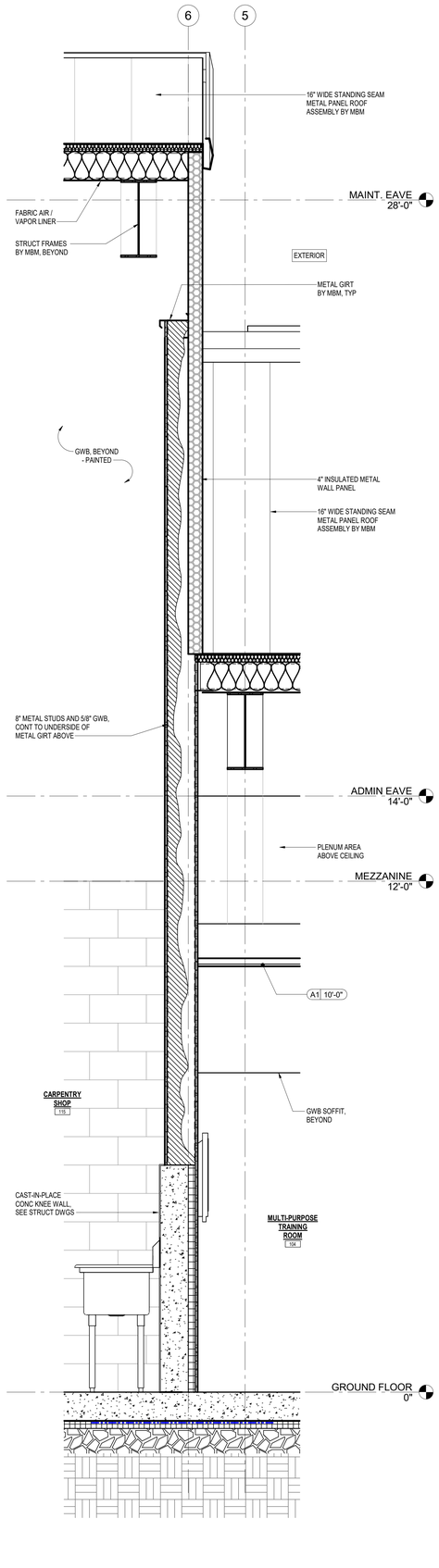
- GIRT SPACING IS SHOWN DIAGRAMATICALLY ONLY, ACTUAL SPACING WILL BE BY MBM.
- AVB SHALL BE SEALED TO ALL ROOF FABRIC AND ANY STRUCTURE OR SYSTEMS WHICH PASSES THRU THE PLANE OF THE AVB TO FORM A CONTINUOUS AIR VAPOR BARRIER BETWEEN SPACES, TYP.
- SEE A031 FOR WALL AND ROOF ASSEMBLY TYPES



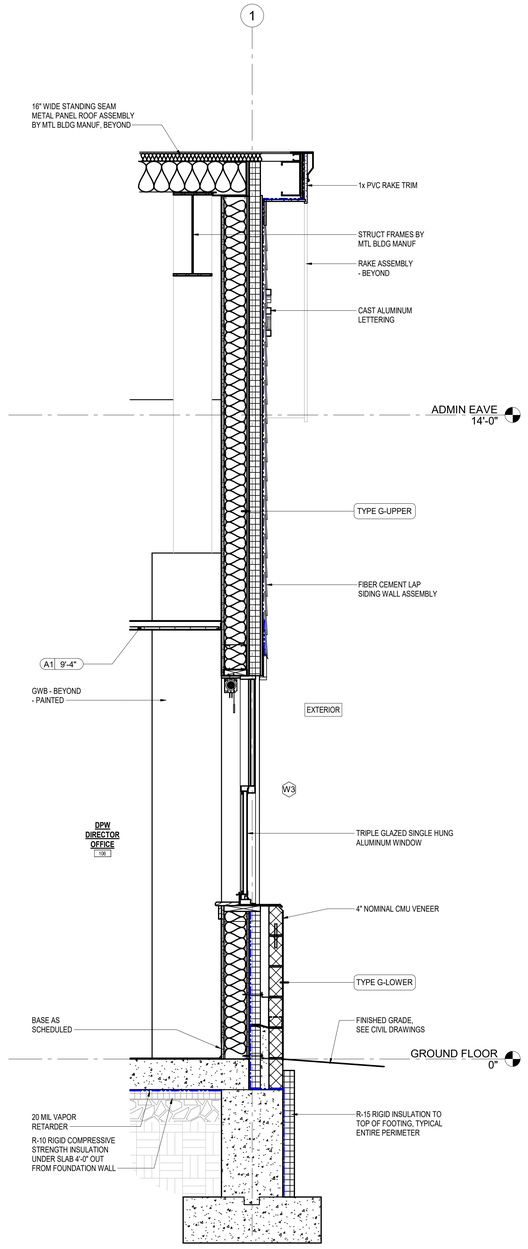
2 BUILDING SECTION 1 - Callout 1
3/4" = 1'-0" 2/ A301



1 BUILDING SECTION 2 - Callout 1
3/4" = 1'-0" 4/ A301



4 WALL SECTION - ADMIN TO SHOPS ROOF TRANSITION
3/4" = 1'-0" 1/ A101



3 BUILDING SECTION 6 - Callout 1
3/4" = 1'-0" 1/ A302

0' 1' 2' 3'
SCALE: 3/4" = 1'-0"

Project:
TOWN of TRURO, MA
NEW DEPARTMENT of PUBLIC WORKS FACILITY

17 TOWN HALL
TRURO, MA 02666

Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
978.532.1900 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

COA:

Seal:

Issued For:
SCHEMATIC DESIGN

Scale: As Indicated

Key Plan:

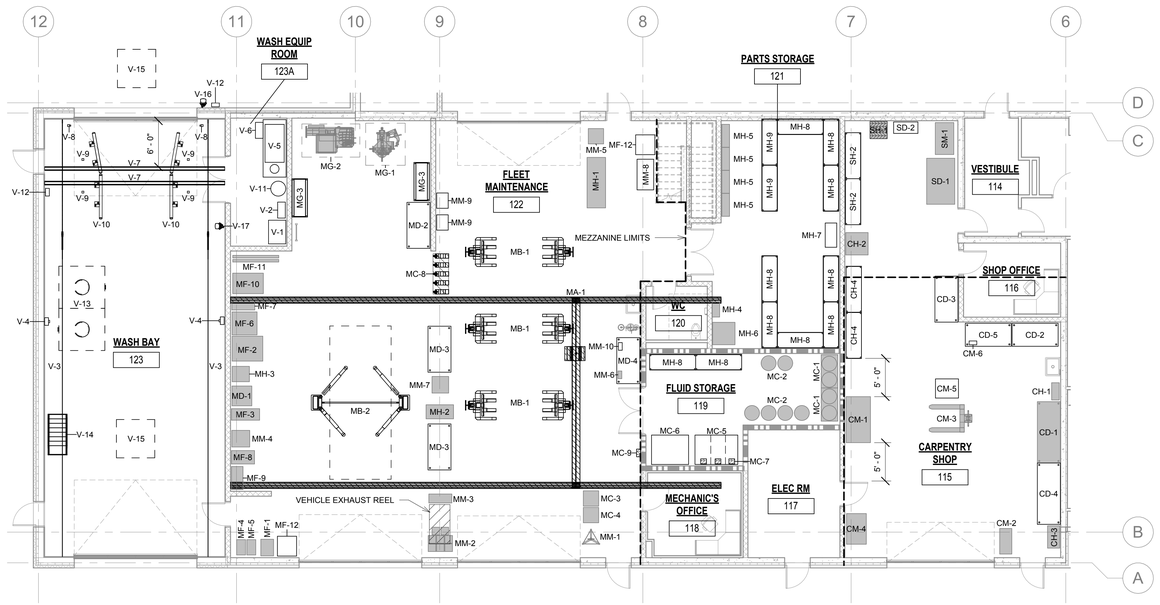
NORTH

Date:	MAY 30, 2025
Drawn By:	MMS
Reviewed By:	DRD
Approved By:	-
W&S Project No.:	ENG24-1552
W&S File No.:	XXX

Drawing Title:
WALL SECTIONS I

Sheet Number:
A401

5/28/2025 3:27:30 PM C:\+RevitProjects\202424-1552_Truro_DPW_Archi_v24_MarchandAvery.rvt



1 MAINTENANCE & CARPENTRY SHOP EQUIPMENT
1/8" = 1'-0"

GENERAL NOTES:

1. EQUIPMENT LAYOUTS ARE SCHEMATIC. GENERAL CONTRACTOR IS RESPONSIBLE FOR COORDINATING EXACT LOCATIONS WITH OWNER AND MANUFACTURER REQUIREMENTS. COORDINATE ALL UTILITY REQUIREMENTS WITH SUB-CONTRACTORS. FINAL EQUIPMENT LOCATIONS SHALL BE CONFIRMED BY THE OWNER PRIOR TO RUNNING UTILITIES AND INSTALLATION EQUIPMENT.
2. GENERAL CONTRACTOR SHALL COORDINATE UTILITY REQUIREMENTS OF EXISTING EQUIPMENT PRIOR TO INSTALLATION OF SERVICES.
3. PRIOR TO RUNNING UTILITIES, GENERAL CONTRACTOR SHALL MARK OUT ALL EQUIPMENT LOCATIONS ON THE FLOOR USING CHALK OR ANOTHER ACCEPTABLE MEANS, AND SHALL REVIEW/REVISE FINAL EQUIPMENT LOCATIONS AS DIRECTED BY THE OWNER AND THE ENGINEER.
4. FIXED LIFTS SHALL BE CENTERED IN THE MAINTENANCE BAYS AS DEFINED BY THE OVERHEAD DOOR OPENING. CONFIRM INSTALLATION LAYOUT DIMENSIONS WITH THE MANUFACTURER. ALSO SEE OWNERS MANUALS.
5. ELECTRICAL, MECHANICAL, AND PLUMBING FSBs SHALL PROVIDE AND CONNECT UTILITIES TO ALL EQUIPMENT AS SHOWN ON THE ELECTRICAL, MECHANICAL AND PLUMBING DRAWINGS AND SPECIFICATIONS, AND IN ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS IN ORDER TO PROVIDED A COMPLETE AND OPERABLE SYSTEM.
6. THE ELECTRICAL CONTRACTOR SHALL HAVE A MASSACHUSETTS LICENSED ELECTRICIAN CONFIRM THE VOLTS, PHASE, AMPS, AND NEMA PLUG CONFIGURATION FOR EACH PIECE OF EQUIPMENT (INCLUDING EXISTING EQUIPMENT TO BE RELOCATED) IN ADVANCE OF ORDERING MATERIALS AND INSTALLATION.
7. SEE SPECIFICATION SECTION 11 11 29 - FLUID DISTRIBUTION SYSTEM ALONG WITH DETAILS ON EQ103 FOR ADDITIONAL INFORMATION AND SCOPE DELINEATION FOR THE FLUID AND WASTE FLUID DISTRIBUTION SYSTEMS.

ABBREVIATIONS:

N	NEW EQUIPMENT TO BE SUPPLIED AND INSTALLED BY THE CONTRACTOR.
ERO	EXISTING EQUIPMENT TO BE RELOCATED AND INSTALLED BY THE OWNER. UTILITIES FOR ERO EQUIPMENT TO BE PROVIDED BY THE FILED SUB-BID CONTRACTORS.
ERC	EXISTING EQUIPMENT TO BE RELOCATED AND INSTALLED BY THE CONTRACTOR. UTILITIES FOR ERC EQUIPMENT TO BE PROVIDED BY THE FILED SUB-BID CONTRACTORS
NIC	NEW EQUIPMENT PROVIDED AND INSTALLED BY THE OWNER (NOT IN CONTRACT), HOWEVER UTILITIES FOR THIS EQUIPMENT SHALL BE PROVIDED BY THE FILED SUB-BID CONTRACTORS.

LINE TYPES
- MEZZANINE LIMITS
- NIC/ERO EQUIPMENT
- NEW EQUIPMENT

HATCHES
- CEILING MOUNTED
- WALL MOUNTED

Maintenance Equipment Schedule

EQ Number	Description	Count	Equipment Type	Spec Number	Notes
CD-1	Wood Workbench with Casters	1	ERO	N/A	
CD-2	Steel Work Bench (72inx36in) (14,000 Lbs Capacity)	1	N	12 40 00	
CD-3	Electric Charging Workbench	1	N	12 40 00	
CD-4	Long Wood Workbench	1	N	12 40 00	
CD-5	Heavy Duty Thick Top Workbench	1	N	12 40 00	
CH-1	Carpentry Tool Drawer	1	ERO	N/A	
CH-2	Flammable Cabinet (Green)(60-Gallons)	1	ERO	N/A	
CH-3	Flammable Cabinet (45-Gallons)	1	ERO	N/A	
CH-4	Parts Shelving (6' x 2')	2	N	12 40 00	
CM-1	Miter Saw with Stand	1	ERO	N/A	
CM-2	Saw Horse	1	ERO	N/A	
CM-3	Pallet Jack	1	ERO	N/A	
CM-4	Portable Table Saw	1	ERO	N/A	
CM-5	Portable Dust Collector	1	N	12 40 00	
CM-6	Bench Vise	1	N	12 40 00	
MA-1	5 Ton Bridge Crane	1	N	14 22 13	
MB-1	18k Mobile Column	6	N	14 45 00	
MB-2	20K 2 Post Lift	1	N	14 45 00	
MC-1	2-Drum Spill Pallet	2	ERO	N/A	
MC-2	55-Gallon Drum	10	NIC	N/A	
MC-3	Waste Oil Caddy	1	ERO	N/A	
MC-4	Grease Cart	1	ERO	N/A	
MC-5	600-Gallon Bulk Fluids Tank (300G 15W-40/180G 0W-30/120G 0W-20)	1	N	11 11 29	
MC-6	400-Gallon Waste Oil Tank	1	N	11 11 29	
MC-7	Wall Mounted Lube Pumps	3	N	11 11 29	
MC-8	Lube Reel Bank (0W-20, 0W-30, 15W-40, Electric Reel, 1/2" Air)	1	N	11 11 29	
MC-9	Fluid Storage Room Sump Alarm	1	N	11 11 29	
MD-1	Metal Worktop	1	ERO	N/A	
MD-2	Electric Charging Workbench	1	N	12 40 00	
MD-3	Steel Work Bench on Casters	2	N	12 40 00	
MD-4	Heavy Duty Thick Top Workbench	1	N	12 40 00	
MF-1	Torch Cart	1	ERO	N/A	
MF-2	Lincoln AC225 Arc Welder	1	ERO	N/A	
MF-3	Miller Millermatic 252	1	ERO	N/A	
MF-4	Metabo HPT Hammer Cart	1	ERO	N/A	
MF-5	Thermal Dynamics Welder	1	ERO	N/A	
MF-6	Lincoln Welden Power	1	ERO	N/A	
MF-7	Lincoln SP-170T Arc Welder	1	ERO	N/A	
MF-8	Drill Press	1	ERO	N/A	
MF-9	Shop Press	1	ERO	N/A	
MF-10	Portable Weld Fume Extractor	1	NIC	N/A	
MF-11	Welding Screen	2	NIC	N/A	
MF-12	Oxygen/Acetylene Tank Storage Cage	2	N	12 40 00	
MG-1	Tire Changer	1	ERO	N/A	
MG-2	Tire Balancer	1	ERO	N/A	
MG-3	Tire Storage Rack	2	N	12 40 00	
MH-1	Snap-on Tool Box	1	ERO	N/A	
MH-2	MAC Tools Blue Cart	1	ERO	N/A	
MH-3	Wooden Cabinet (Glass Window)	1	ERO	N/A	
MH-4	Windshield Wiper Blade Rack	1	ERO	N/A	
MH-5	Nuts and Bolts Storage	4	ERO	N/A	
MH-6	Flammable Cabinet (60-Gallons)	1	ERO	N/A	
MH-7	Metal Cabinet	1	N	12 40 00	
MH-8	Parts Shelving (6' x 2')	10	N	12 40 00	
MH-9	Parts Shelving (6' x 2')	2	N	12 40 00	Reserved for existing sliding drawers
MM-1	Tall Jack Stand	1	ERO	N/A	
MM-2	Small Jack Stands	8	ERO	N/A	
MM-3	Floor Jack	1	ERO	N/A	
MM-4	Chop Saw on Cart	1	ERO	N/A	
MM-5	Snap-on Battery Charger	1	ERO	N/A	
MM-6	Chain Sharpener	1	ERO	N/A	
MM-7	Heated Carpet Extractor	1	ERO	N/A	
MM-8	Parts Washer	1	N	12 40 00	
MM-9	Pedestal Grinder	2	N	12 40 00	
MM-10	Bench Vise	1	N	12 40 00	
SD-1	Drafting Table	1	ERO	N/A	
SD-2	Computer Desk	1	N	12 40 00	
SH-1	Hanging Vinyl Storage	1	ERO	N/A	
SH-2	Parts Shelving (6' x 2')	2	N	12 40 00	
SM-1	Vinyl Express Printer	1	ERO	N/A	
V-1	Manual Wash Pressure Plant	1	N	11 11 26	BID ALTERNATE
V-2	Manual Wash Control Panel	1	N	11 11 26	BID ALTERNATE
V-3	Festoons	2	N	11 11 26	BID ALTERNATE
V-4	Manual Wash On/Off Switch	2	N	11 11 26	BID ALTERNATE
V-5	Undercarriage Wash Pressure Plant	1	N	11 11 26	BID ALTERNATE
V-6	Undercarriage Wash Control Panel	1	N	11 11 26	BID ALTERNATE
V-7	Automatic Undercarriage Pre-Fab Trenches	2	N	11 11 26	
V-8	Automatic Undercarriage photo Eye	2	N	11 11 26	BID ALTERNATE
V-9	Automatic Wheel Washers	1	N	11 11 26	BID ALTERNATE
V-10	Vehicle Wash Guide Rails	1	N	11 11 26	BID ALTERNATE
V-11	Vehicle Wash Soap drum	1	N	11 11 26	BID ALTERNATE
V-12	Undercarriage Wash Control Station	2	N	11 11 26	
V-13	Vehicle Wash Pre-Treatment Tank (1500gal)	1	N	11 11 26	BID ALTERNATE
V-14	Mobile Platform	1	N	11 11 26	BID ALTERNATE
V-15	Loop Detector	2	N	11 11 26	BID ALTERNATE
V-16	Vehicle Wash Entry Traffic Light	1	N	11 11 26	BID ALTERNATE
V-17	Undercarriage Wash Status Light	1	N	11 11 26	BID ALTERNATE

Project:
TRURO, MA DEPARTMENT OF PUBLIC WORKS FACILITY

Weston & Sampson Engineers, Inc.
55 Walkers Brook Drive, Suite 100
Reading, MA 01867
978.532.1900 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:
SCHEMATIC DESIGN
NOT FOR CONSTRUCTION

Scale: As indicated

Key Plan:
NORTH

Date:
Draw By: NCH
Reviewed By: ZDW
Approved By:

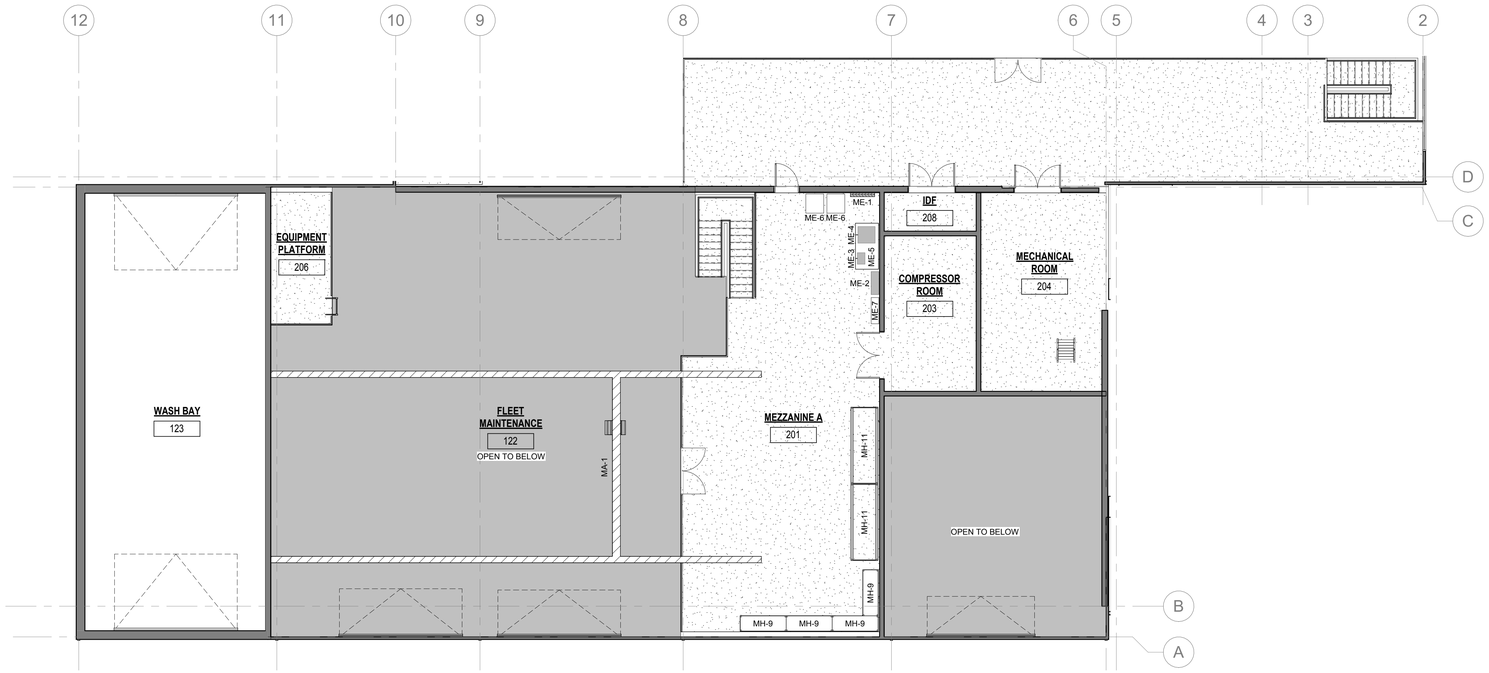
W&S Project No.: ENG24-1552
W&S File No.: XXX

Drawing Title:
EQUIPMENT LAYOUT PLAN I

Sheet Number:
EQ101

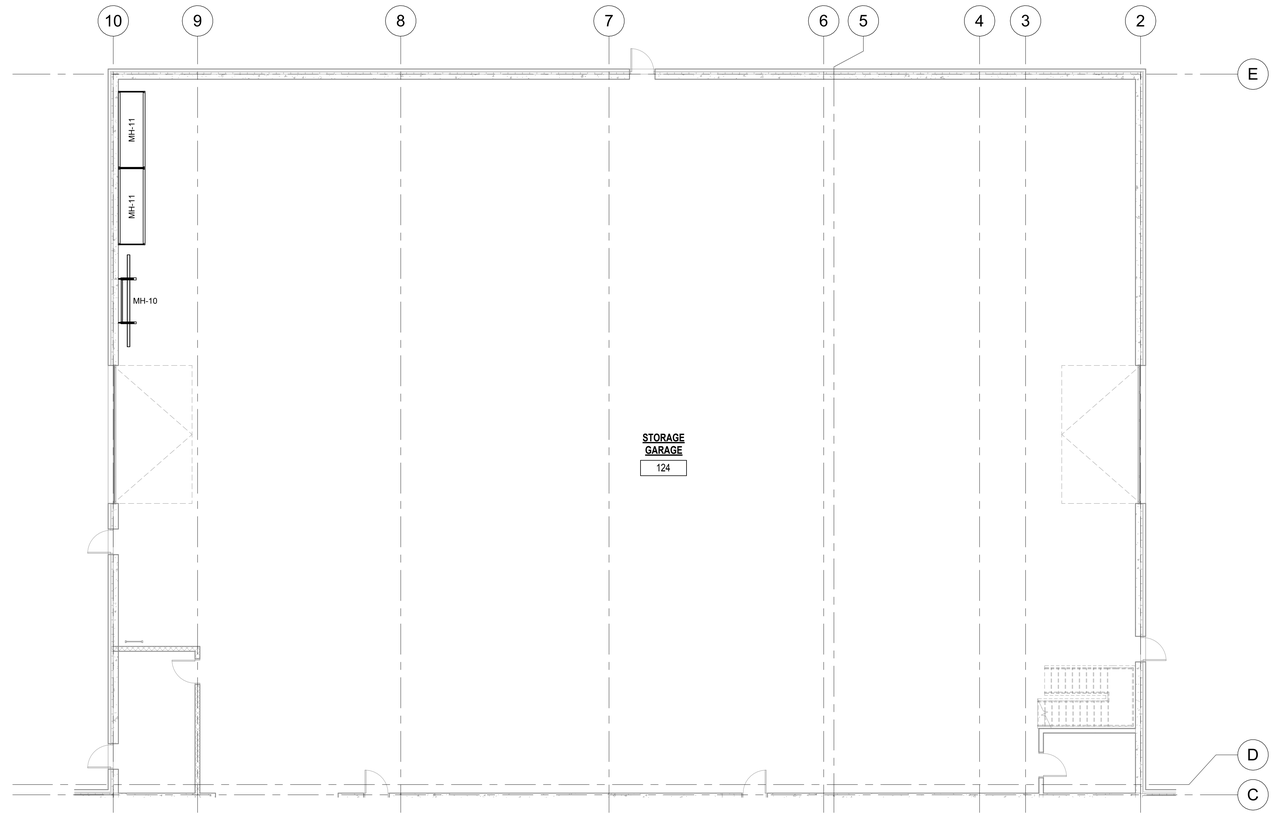
COPYRIGHT © 2020 WESTON & SAMPSON, INC.

6/29/2025 2:30:11 PM C:\~Revit\Projects\2024\24-1552 Truro DPW Industrial_v24_HungNCT5EP.rvt



2 MEZZANINE EQUIPMENT
1/8" = 1'-0"

Mezzanine Industrial Equipment Schedule					
EQ Number	Description	Count	Equipment Type	Spec Number	Notes
ME-1	Hose Clamp Rack	2	ERO	N/A	
ME-2	Hydraulic Hose Bins	1	ERO	N/A	
ME-3	Hydraulic Hose Chop Saw	1	ERO	N/A	
ME-4	Hydraulic Hose Crimper	1	ERO	N/A	
ME-5	Steel Work Bench on Casters	1	N	12 40 00	
ME-6	Hydraulic Hose Reel Rack	2	N	12 40 00	
ME-7	Hydraulic Vertical Storage Cabinet	1	N	12 40 00	
MH-9	Parts Shelving (6' x 2')	4	N	12 40 00	
MH-11	Pallet Rack Hanging Tool Storage	2	N	12 40 00	



3 FLEET STORAGE EQUIPMENT
1/8" = 1'-0"

Fleet Storage Industrial Equipment Schedule					
EQ Number	Description	Count	Equipment Type	Spec Number	Notes
MH-10	Cantilever Rack (Flat)	1	N	12 40 00	
MH-11	Pallet Rack Hanging Tool Storage	2	N	12 40 00	

Project:
TRURO, MA DEPARTMENT OF PUBLIC WORKS FACILITY

Weston & Sampson
Weston & Sampson Engineers, Inc.
55 Walkers Brook Drive, Suite 100
Reading, MA 01867
978.532.1900 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:
SCHEMATIC DESIGN
NOT FOR CONSTRUCTION

Scale: NTS = 1'-0"

Key Plan:
NORTH

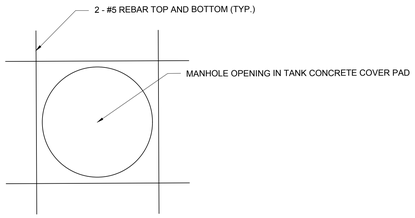
Date:
Draw By: SMD
Reviewed By: ZDW
Aprroved By: Approver
W&S Project No.: ENG24-1552
W&S File No.: XXX

Drawing Title:
EQUIPMENT LAYOUT PLAN II

Sheet Number:
EQ102

C:\~Revit\Projects\2024\24-1552 Truro DPW Industrial_v24_HungNC7SEP.rvt
5/29/2025 2:30:13 PM

COPYRIGHT © 2020 WESTON & SAMPSON, INC.

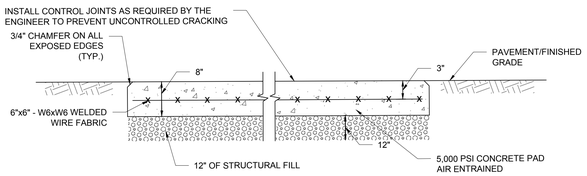


NOTE: REBAR SHALL HAVE 2"-3" OF CONCRETE COVER PER INDUSTRY STANDARDS

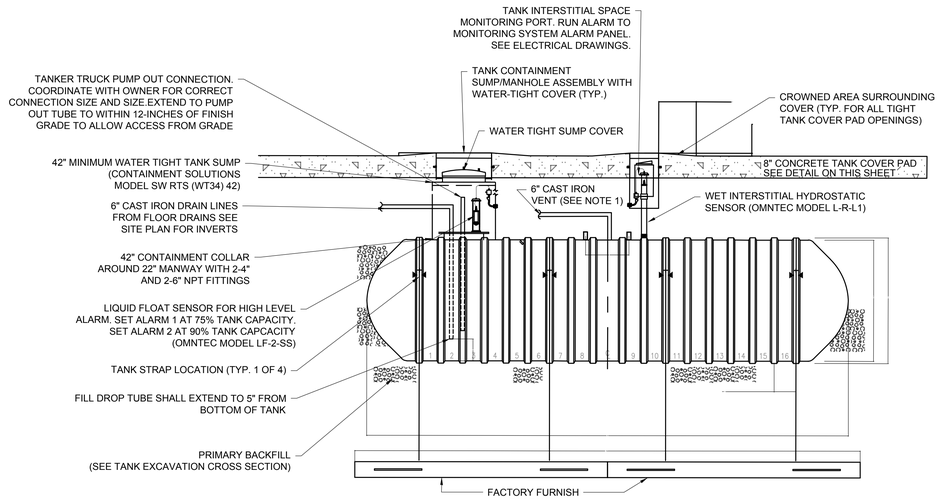
1 TIGHT TANK COVER PAD MANHOLE OPENING DETAIL
SCALE: N.T.S.

PLAN VIEW

2 TIGHT TANK COVER PAD PLAN
SCALE: N.T.S.



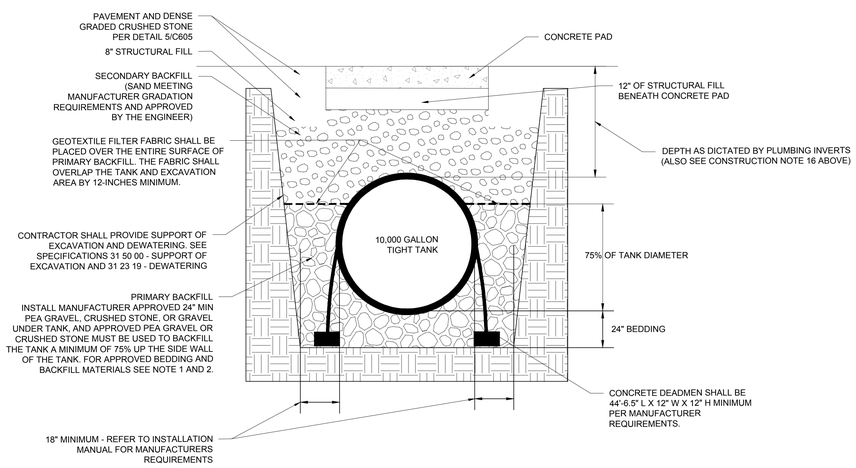
3 5,000 PSI CONCRETE TANK COVER PAD DETAIL
SCALE: N.T.S.



4 PROPOSED 10,000 GALLON DOUBLE WALL FIBERGLASS TIGHT TANK DETAIL
SCALE: N.T.S.

CONSTRUCTION NOTES:

1. TANK VENT SHALL EXTEND TO THE ADJACENT BUILDING AND BE RUN/SECURE TO INSIDE OF BUILDING UP THROUGH ROOF. VENT SHALL BE EQUIPPED WITH A VENT CAP AND INSECT SCREEN PER MANUFACTURER RECOMMENDATIONS. VENT PIPING/SYSTEM SHALL BE PROVIDED AND INSTALLED BY PLUMBING FSB.
2. STRIKE PLATES TO BE INSTALLED UNDER ALL TANK FITTINGS.
3. CONCRETE COVER PAD SHALL BE 3'-0" WIDER AND 3'-0" LONGER OVERALL THAN TANK SIZE AS SHOWN.
4. HOLD-DOWN STRAPS' QUALITY, SIZE AND LOCATION OF ANCHORS AND STRAPS AS REQUIRED BY TANK MANUFACTURER. CONCRETE HOLD-DOWN DEADMEN SHALL BE PROVIDED PER MANUFACTURER'S RECOMMENDATIONS.
5. ALL PIPING TO PITCH TOWARD THE TANK PER SPECIFICATIONS.
6. AREA TO BE RESTORED TO MATCH PROPOSED CONDITIONS.
7. ALL MANHOLE COVERS/FRAMES SHALL BE HS-20 WHEEL LOAD RATED. FRAMES SHALL BE CAST INTO CONCRETE TANK COVER PAD IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
8. OUTLINE DESCRIPTION AND DIAGRAMMATIC REPRESENTATION OF SYSTEM OPERATION AND EQUIPMENT DOES NOT LIMIT CONTRACTOR LIABILITY FOR THE INSTALLATION OF A COMPLETE AND OPERABLE SYSTEM. CONTRACTOR SHALL BE RESPONSIBLE TO FURNISH ANY MISCELLANEOUS PARTS AND APPURTENANCES NOT SPECIFICALLY IDENTIFIED, TO MAKE A COMPLETE AND OPERABLE SYSTEM.
9. PLACE LABEL ON MANWAY COVER WITH THE WORDS "INDUSTRIAL WASTEWATER".
10. ALL SUMP OPENING COVER ASSEMBLIES IN CONCRETE COVER PAD SHALL BE WATER-TIGHT.
11. INSTALLATION OF THE TIGHT TANK SHALL FOLLOW MANUFACTURER RECOMMENDATIONS.
12. UST SHALL BE CONSTRUCTED AS DOUBLE WALLED FRP TANK DESIGNED IN ACCORDANCE ASTM D1248, D1785, AND D3299 STANDARDS.
13. LIQUID TIGHT SUMP ENTRY BOOTS SHALL BE PROVIDED FOR ALL SUMP PENETRATIONS.
14. TIGHT TANK SHALL BE MANUFACTURED BY CONTAINMENT SOLUTIONS, OR APPROVED EQUAL.
15. SEE PLUMBING DRAWINGS FOR THE DRAIN LINE CONNECTION TO BUILDING.
16. TIGHT TANK SHALL BE RATED FOR BURIAL DEPTHS GREATER THAN 7 FEET.
17. CONTRACTOR SHALL PROVIDE THE UNDERGROUND STORAGE TANK IN A WORKMAN LIKE MANNER AND SHALL PROVIDE A COMPLETE AND OPERABLE SYSTEM.
18. LISTED MAKE/MODEL NUMBERS ARE THE BASIS OF DESIGN FOR PUBLIC BID. ALTERNATIVE EQUIPMENT MAY BE SUBMITTED AS AN "OR EQUAL".



5 TANK EXCAVATION CROSS SECTION
SCALE: N.T.S.

NOTES:

1. PEA GRAVEL: CLEAN NATURALLY-ROUNDED AGGREGATE WITH PARTICLE SIZES NO LARGER THAN $\frac{3}{4}$ IN. WITH NO MORE THAN 5% PASSING A #8 SIEVE. DRY BULK DENSITY, PER ASTM C29, MUST BE A MINIMUM OF 95 POUNDS PER CUBIC FOOT. THE BACKFILL MUST MEET THE FINE AGGREGATE REQUIREMENTS FOR DELETERIOUS SUBSTANCES AND SOUNDNESS OF ASTM C33.
2. CRUSHED STONE OR GRAVEL: WASHED, WITH ANGULAR PARTICLE SIZES NO LARGER THAN $\frac{1}{2}$ IN. WITH NO MORE THAN 5% PASSING A #8 SIEVE. DRY BULK DENSITY, PER ASTM C29, MUST BE A MINIMUM OF 95 POUNDS PER CUBIC FOOT. THE BACKFILL MUST MEET THE FINE AGGREGATE REQUIREMENTS FOR DELETERIOUS SUBSTANCES AND SOUNDNESS OF ASTM C33.
3. INSTALL GEOTEXTILE FABRIC UNDERNEATH BEDDING MATERIAL AND ALONG SIDE WALLS OF ENTIRE EXCAVATION. INSTALL THE GEOTEXTILE FABRIC IN ACCORDANCE WITH MANUFACTURERS REQUIREMENTS.

Project:
TRURO, MA DEPARTMENT OF PUBLIC WORKS FACILITY

Weston & Sampson Engineers, Inc.
55 Walkers Brook Drive, Suite 100
Reading, MA 01867
978.532.1900 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:
SCHEMATIC DESIGN
NOT FOR CONSTRUCTION

Scale: NTS

Key Plan:

NORTH

Date:

Draw By:	NCH
Reviewed By:	ZDW
Approved By:	Approver
W&S Project No.:	ENG24-1552
W&S File No.:	XXX

Drawing Title:
TIGHT TANK DETAILS

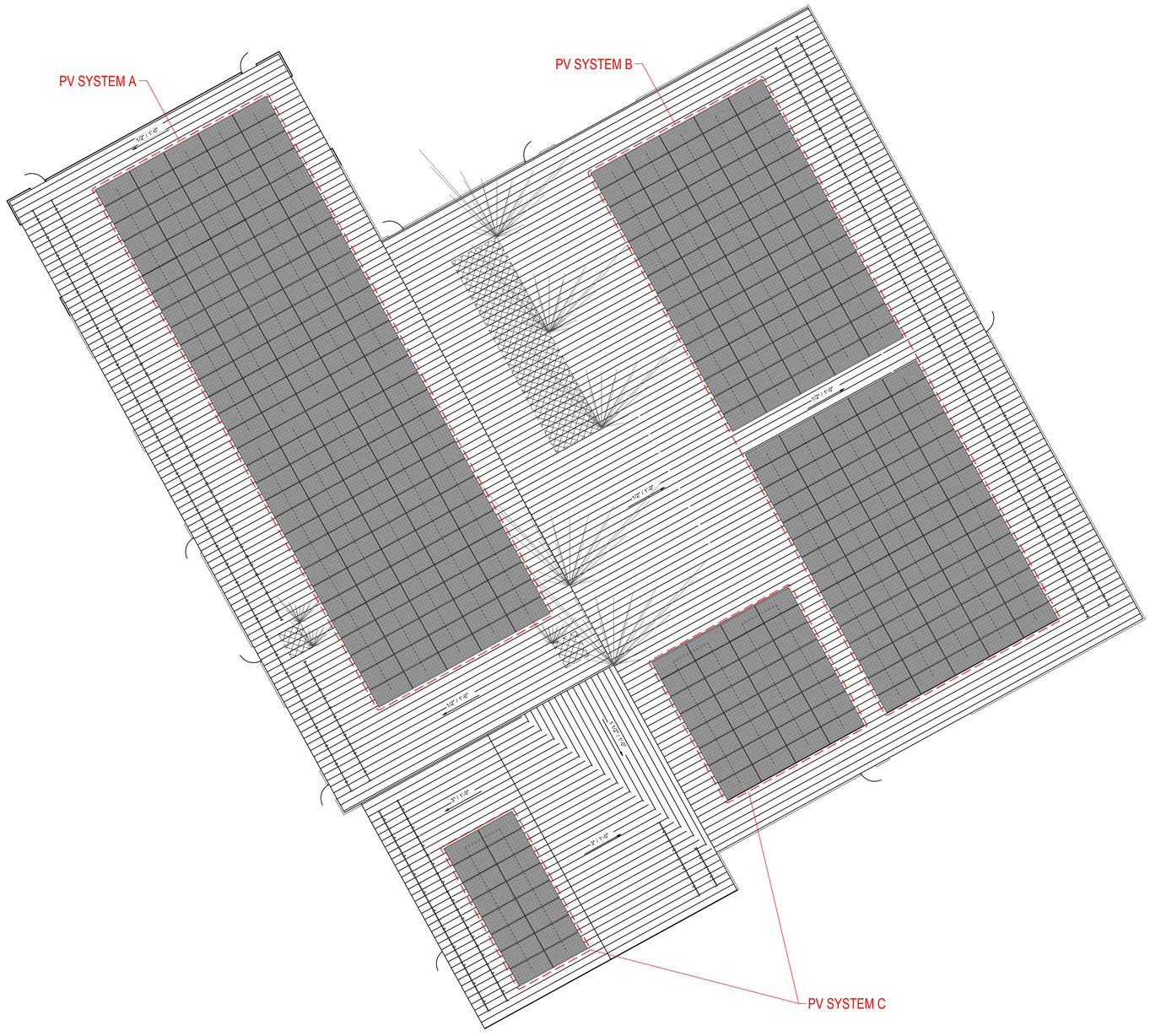
Sheet Number:
EQ103

COPYRIGHT © 2020 WESTON & SAMPSON, INC.

C:\~RevitProjects\2024\24-1552 Truro DPW Industrial_v24_HungNC7SEP.rvt
5/29/2025 2:30:13 PM

SOLAR PHOTOVOLTAIC (PV) SYSTEM SUMMARY

	SYSTEM A	SYSTEM B	SYSTEM C	NOTES
MODULE QTY	150±	150±	48±	348±
MODULE POWER	550 WATT	550 WATT	550 WATT	---
DC NAMEPLATE	82.5± KW DC	82.5± KW DC	26.4± KW DC	191.4± KW DC (TOTAL)
INVERTER QTY	2	2	1	---
INVERTER RATING	25 KW & 36 KW	25 KW & 36 KW	20 KW	---
AC NAMEPLATE	61± KW AC	61± KW AC	20± KW AC	142± KW AC (TOTAL)
SYSTEM AZIMUTH	241°±	61°±	61°± / 241°±	BLDG. ORIENTATION
SYSTEM TILT	1/2" / 1'-0"	1/2" / 1'-0"	3" / 1'-0" & 1/2" / 1'-0"	FLUSH (ROOF PITCH)
RACKING	RAIL/CLAMPED	RAIL/CLAMPED	RAIL/CLAMPED	---
ENERGY PRODUCTION	±90 - ±110 MWH/YR	±85 - ±105 MWH/YR	±25 - ±35 MWH/YR	±200 - ±250 MWH/YR



Project:
TRURO NEW DEPARTMENT OF PUBLIC WORKS

17 TOWN HALL ROAD,
TRURO, MA 02666

Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
978.532.1900 800.SAMPSON

www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

N
W E
S

GRAPHIC SCALE

10 5 2 5 10

(IN FEET)
1 inch = 10 ft.

Seal:

Issued For:
SCHEMATIC DESIGN
NOT RELEASED FOR CONSTRUCTION

Scale: AS NOTED

Date:	05 / 02 / 2025
Drawn By:	RWG
Reviewed By:	DD
Approved By:	---
W&S Project No.:	ENG24 - 1552
W&S File No.:	

Drawing Title:
CONCEPTUAL SOLAR PV LAYOUT BID ALT. 4

Sheet Number:
PV101

COPYRIGHT © 2025 WESTON & SAMPSON, INC.

\\wsfs1.local\WSFolders\data\Truro-MM\ENG24 - 1552 - Truro Public Works Facility\08 BIM\CAD\15 Solar\Sheet\PV101.dwg

SECTION III

Schematic Cost Estimate

100 Foxborough Blvd., Suite 250, Foxborough, MA 02035
Tel: 508.698.3034

Estimated Total Project Costs Summary

	Base Pricing	Base Price + Pricing Alternates
Construction Costs	± $ 22,500,000	± $ 27,750,000
Soft Costs & Contingencies	± $ 6,562,500	± $ 7,638,750
Opinion of Probable Total Project Costs	**± $ 29,062,500**	**± $ 35,388,750**
2024 Appropriation	($ 2,800,000)	($ 2,800,000)
Total Remaining Appropriation	**± $ 26,262,500**	**± $ 32,588,750**

Construction Cost:

- The Designer's independent cost estimator (TCi Construction Cost Estimating) resulted in an estimated total construction cost of $22,300,000 for the Base Pricing.
- The OPM's independent cost estimator (CostPro, Inc.) resulted in an estimated total construction cost of $22,490,000 for Base Pricing.
- The Pricing Alternatives resulted in an estimated total construction cost of $5,250,000.
- TCi and CostPro's full cost estimate breakdowns are provided on the following pages, including Pricing Alternates as separate line items.

Soft Costs & Contingencies:

- To account for potential, unforeseen conditions which may be discovered during construction, a 5% Construction Contingency is included.
- Additionally, to provide an allowance for potential scope modifications made by the Town, an Owner's Contingency is also included.
- Remaining soft costs and contingencies equate to 28% - 29% of construction costs.

Owner's Soft Costs for Base Pricing		
A&E Fees (Design, Bidding, Construction Administration)	(Assume 10% of Const. Value)	$ 2,250,000
A&E Special Services (Energy Modeling, Solar, 3D Model, etc.)	(Assume 1.5% of Const. Value)	$ 337,500
Owner's Project Manager Fees	(Assume 4% of Const. Value)	$ 900,000
Fixtures, Furnishings & Equipment	Allowance	$ 200,000
Communication / Low Voltage System	Allowance	$ 400,000
Temporary Facilities	Allowance	$ 480,000
Engineering & Permitting New Water Service from Snow's Field	Allowance	$ 130,000
Phase 2 Environmental Survey	by Town's LSP	-
Printing Cost - Advertisement	Allowance	$ 10,000
Legal Costs	Allowance	$ 35,000
Utility Backcharges	Allowance	$ 75,000
Commissioning	Allowance	$ 100,000
Moving Costs	Allowance	$ 40,000
Construction Tests & Inspections	Allowance	$ 80,000
Owner's Contingency	Allowance	$ 400,000
Construction Contingency	(Assume 5% of Const. Value)	$ 1,125,000
	Total Soft Costs	**$6,562,500**

Schematic Design Cost Estimate

New Department of Public Works Facility

17 Town Hall

Truro, Ma

Prepared by:

TCi Construction Cost Estimating

Post Office Box 1988

North Falmouth, Ma 02556

www.tortoraconsulting.com

p 781-275-5511

Prepared for:

Weston and Sampson

May 29, 2025

New Department of Public Works Facility
Truro, Ma

Schematic Design Cost Estimate

29-May-25

MAIN CONSTRUCTION COST SUMMARY

	Building GSF	$/sf	Estimated Construction Cost
BASE ESTIMATE	22,140	$1,007.59	$22,308,047
TOTAL SD BASE CONSTRUCTION COSTS	**22,140**	**$1,007.59**	**$22,308,047**

Alternates

1. Add Vehicle Wash Bay Finish & Equipment	add	**$937,091**
2. Add Detached Canopy	add	**$1,104,680**
3. Add Rooftop Solar	add	**$645,213**
4. Add Ground Source Heat Pump (GSHP) in lieu of ASHP	add	**$1,192,833**
5. Add 5,000 SF Fleet storage	add	**$1,368,670**

QUALIFICATIONS

This Schematic Design cost estimate was produced from drawings prepared by Weston and Sampson and their design team dated May 2, 2025.

This estimate includes all direct construction costs, general contractor's overhead and profit and design contingency. Cost escalation assumes bid received 1st quarter 2026.

Bidding conditions are expected to be chapter 149 public bidding to pre-qualified general contractors, and pre-qualified sub-contractors, open specifications for materials and manufactures. The project is expected to be bid and construction start there after with one continuous phase.

The estimate is based on prevailing wage rates for construction in this market and represents a reasonable opinion of cost. It is not a prediction of the successful bid from a contractor as bids will vary due to fluctuating market conditions, errors and omissions, proprietary specifications, lack or surplus of bidders, perception of risk, etc. Consequently the estimate is expected to fall within the range of bids from a number of competitive contractors or subcontractors, however we do not warrant that bids or negotiated prices will not vary from the final construction cost estimate.

ITEMS NOT CONSIDERED IN THIS ESTIMATE

All professional fees and insurance
All Furnishings, Fixtures and Equipment not identified
Items identified in the design as Not In Contract (NIC)
Items identified in the design as by others
Special foundations (unless indicated by design engineers)
Utility company back charges, including work required off-site
Work to City streets and sidewalks, (except as noted in this estimate)
Construction or occupancy phasing or off hours' work, (except as noted in this estimate)
Off hours
Ledge & contaminated soils
Building Permit
Temporary trailer rentals
Phasing
Permit costs

New Department of Public Works Facility
Truro, Ma

TCi Construction Cost Estimating

Schematic Design Cost Estimate 29-May-25

CONSTRUCTION COST SUMMARY IN CSI FORMAT	*BASE ESTIMATE*	*22,140 $/sf*
DIV. 2 DEMOLITION		
020500 Demolition	$144,000	*$6.50*
024500 Hazardous Material Abatement	$50,000	*$2.26*
DIV. 3 CONCRETE		
033000 Cast-in-Place Concrete	$1,050,762	*$47.46*
DIV. 4 MASONRY		
042000 Unit Masonry	$304,860	*$13.77*
DIV. 5 METALS		
055000 Metal Fabrications	$207,950	*$9.39*
DIV. 6 WOODS & PLASTICS		
061000 Rough Carpentry	$23,310	*$1.05*
064020 Interior Architectural Woodwork	$26,210	*$1.18*
DIV. 7 THERMAL & MOISTURE PROTECTION		
072100 Thermal Insulation	$133,420	*$6.03*
072700 Air Barriers & Waterproofing	$62,100	*$2.80*
074600 Cement Board Siding and Trim	$58,350	*$2.64*
075400 Membrane Roofing	$0	*$0.00*
075450 Through-wall flashing	$0	*$0.00*
077200 Roof Accessories	$8,400	*$0.38*
078410 Penetration Firestopping	$4,553	*$0.21*
079200 Joint Sealants	$77,557	*$3.50*
DIV. 8 DOORS & WINDOWS		
081110 Doors and Frames	$69,500	*$3.14*
083110 Access Doors and Frames	$0	*$0.00*
083310 Overhead Coiling Doors	$205,200	*$9.27*
084110 Aluminum Windows	$54,600	*$2.47*
084500 Aluminum Storefront and Curtainwall	$14,050	*$0.63*
084550 Skylights	$0	*$0.00*
084555 Sunshades	$0	*$0.00*
084600 Translucent Windows	$67,500	*$3.05*
087100 Door Hardware	$36,600	*$1.65*
088000 Glazing	$8,000	*$0.36*
089000 Louvers and Vents	$15,000	*$0.68*
DIV. 9 FINISHES		
092110 Gypsum Board Assemblies	$388,282	*$17.54*
093000 Tiling	$29,700	*$1.34*
095100 Acoustical Ceilings	$33,020	*$1.49*
096510 Resilient Flooring and Accessories	$21,360	*$0.96*
096550 Carpet	$11,800	*$0.53*
097300 Resinous flooring and base	$9,360	*$0.42*
099000 Painting and Coating	$170,137	*$7.68*
DIV 10 SPECIALTIES		
101400 Signage	$17,000	*$0.77*
102800 Toilet Accessories	$8,288	*$0.37*
104400 Fire Protection Specialties	$2,000	*$0.09*
106500 Toilet Partitions	$2,900	*$0.13*
108500 Lockers	$19,250	*$0.87*
109400 Screen Partitions	$0	*$0.00*
109500 Fall Arrest	$20,000	*$0.90*
DIV. 11 EQUIPMENT		
113100 Appliances	$0	*$0.00*
118100 Industrial Equipment	$785,924	*$35.50*
DIV. 12 FURNISHINGS		
122110 Horizontal Louver Blinds	$5,100	*$0.23*
DIV. 13 SPECIAL CONSTRUCTION		
13100 Pre-fabricated Metal Building, Mezzanine Steel and Decking	$2,375,815	*$107.31*
13200 Pre-fabricated Building (salt shed)	$216,000	*$9.76*
13300 Fuel Island Equipment and Canopy	$0	*$0.00*

New Department of Public Works Facility
Truro, Ma

TCi Construction Cost Estimating

Schematic Design Cost Estimate 29-May-25

CONSTRUCTION COST SUMMARY IN CSI FORMAT	***BASE ESTIMATE***	***22,140 $/sf***
DIV. 21 FIRE SUPPRESSION		
210000 Fire Suppression - FSB	$663,515	*$29.97*
DIV. 22 PLUMBING		
220000 Plumbing - FSB	$882,167	*$39.84*
DIV. 23 HVAC		
220000 HVAC - FSB	$1,774,245	*$80.14*
DIV. 26 ELECTRICAL		
260000 Electrical - FSB	$1,445,822	*$65.30*
DIV. 31 EARTHWORK		
311000 Site Clearing	$190,995	*$8.63*
312000 Earthwork	$565,725	*$25.55*
312500 Erosion and Sedimentation Controls	$27,500	*$1.24*
315000 Ground Improvements	$72,000	*$3.25*
DIV. 32 EXTERIOR IMPROVEMENTS		
321216 Asphalt Paving	$475,208	*$21.46*
321213 Portland Cement Concrete Paving	$24,480	*$1.11*
321613 Curbs and Gutters	$59,940	*$2.71*
323100 Site Improvements	$149,525	*$6.75*
329000 Landscaping	$75,000	*$3.39*
DIV. 33 UTILITIES		
331000 Site Water Distribution	$525,850	*$23.75*
333000 Sanitary Sewerage Utilities	$200,000	*$9.03*
334000 Storm Drainage	$521,250	*$23.54*
335000 Gas	$0	*$0.00*
SUBTOTAL DIRECT (TRADE) COST	*$14,391,080*	*$650.00*
GENERAL CONDITIONS & REQUIREMENTS 14%	$2,014,751	
GL INSURANCE 1.3%	$187,084	
BONDS 1.8%	$259,039	
GC - OVERHEAD & PROFIT 5%	$842,598	
DESIGN AND PRICING CONTINGENCY 10%	$1,769,455	
ESCALATION TO 1ST QUARTER 2026 5%	$973,200	
OUTER CAPE PREMIUM 10%	$1,439,108	
TARIFFS PREMIUM ALLOWANCE 3%	$431,732	
TOTAL SD BASE CONSTRUCTION COSTS	**$22,308,047**	*$1,007.59*

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	NEW BUILDING						
	GROSS FLOOR AREA CALCULATION						
	Admin/Support areas			**2,900**			
	Workshops			**1,450**			
	Fleet Storage			**7,700**			
	Fleet Maintenance			**4,680**			
	Wash Bay Shell			**1,480**			
	Mezzanines			**3,930**			
	TOTAL GROSS FLOOR AREA (including mezzanine)				**22,140**	***gsf***	
	A10 FOUNDATIONS						
	A1010 STANDARD FOUNDATIONS						
	Strip footings to walls						
03300	Formwork	**1,500**	sf	18.00	27,000		
03300	Re-bar	**5,280**	lbs	2.50	13,200		
03300	Concrete material	**88**	cy	190.00	16,720		
03300	Placing concrete	**88**	cy	40.00	3,520		
	Foundation walls						
03300	Formwork	**9,000**	sf	18.00	162,000		
03300	Re-bar	**15,780**	lbs	2.50	39,450		
03300	Concrete material	**263**	cy	190.00	49,970		
03300	Placing concrete	**263**	cy	40.00	10,520		
	Back up knee walls						
03300	Formwork	**5,400**	sf	18.00	97,200		
03300	Re-bar	**4,440**	lbs	2.50	11,100		
03300	Concrete material	**74**	cy	190.00	14,060		
03300	Placing concrete	**74**	cy	40.00	2,960		
	Column footings						
03300	Formwork	**800**	sf	18.00	14,400		
03300	Re-bar	**7,440**	lbs	2.50	18,600		
03300	Concrete material	**124**	cy	190.00	23,560		
03300	Placing concrete	**124**	cy	40.00	4,960		
	Piers						
03300	Formwork	**520**	sf	18.00	9,360		
03300	Re-bar	**2,400**	lbs	2.50	6,000		
03300	Concrete material	**40**	cy	190.00	7,600		
03300	Placing concrete	**40**	cy	40.00	1,600		
	SUBTOTAL					533,780	
	A1030 LOWEST FLOOR CONSTRUCTION						
	8" Slab on grade						
03300	Vapor barrier	**15,310**	sf	2.00	30,620		
03300	Reinforcing	**15,310**	sf	2.50	38,275		
03300	Concrete - 8" thick	**424**	cy	190.00	80,560		
03300	Placing concrete	**424**	cy	45.00	19,080		
03300	Finishing and curing concrete	**15,310**	sf	1.65	25,262		
03300	Control joints - saw cut	**15,310**	sf	0.50	7,655		
	6" Slab on grade						
03300	Vapor barrier	**2,900**	sf	2.00	5,800		
03300	Reinforcing	**2,900**	sf	1.50	4,350		
03300	Concrete - 6" thick	**59**	cy	190.00	11,210		
03300	Placing concrete	**59**	cy	45.00	2,655		
03300	Finishing and curing concrete	**2,900**	sf	1.65	4,785		
03300	Control joints - saw cut	**2,900**	sf	0.50	1,450		
	Miscellaneous						
07210	R10 - 25 PSI Rigid insulation at 4' horizontal and 2' vertical	**4,500**	sf	5.00	22,500		
07210	R10 - 60 PSI Rigid insulation at 4' horizontal and 2' vertical	**4,000**	sf	5.50	22,000		
07210	R115 - 60 PSI rigid insulation under slab	**4,680**	sf	6.00	28,080		
07270	Damp proofing of foundation walls	**3,600**	sf	4.00	14,400		
03300	4' haunch under CM walls	**60**	cy	350.00	21,000		
03300	Pits, curbs, equipment Pads and supports	**1**	ls	15,000.00	15,000		
	SUBTOTAL					354,682	
	TOTAL - FOUNDATIONS						***$888,462***

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	NEW BUILDING						
	B10 SUPERSTRUCTURE						
	B1010 FLOOR CONSTRUCTION						
	Mezzanine Floor Structure - Steel:						
13100	W columns, beam, bracing, HSS tubes, L angles and Channels	**24**	tons	6,000.00	144,000		
	Mezzanine Floor Structure						
13100	Floor deck - 1 1/2'' deck	**3,930**	sf	5.50	21,615		
03300	WWF reinforcement	**3,930**	sf	2.00	7,860		
03300	2" Concrete Fill to metal deck	**48**	cy	195.00	9,360		
03300	Place and finish concrete	**3,930**	sf	2.00	7,860		
	Miscellaneous						
05500	Misc metals - overall added cost for FSB pricing	**18,210**	sf	4.00	72,840		
07841	Firestopping	**18,210**	sf	0.25	4,553		
	SUBTOTAL					268,088	
	B1020 ROOF CONSTRUCTION						
	Pre-fabricated Structure (includes steel, insulated metal panels walls and roof) :						
13100	Main Building - Prefabricated metal building package (galv steel, metal panels, metal roof, gutters, downspouts and snow guards)	**18,210**	sf	120.00	2,185,200		
13100	Entry canopy structure and roof, gutters and downspouts	**200**	sf	125.00	25,000		
	Miscellaneous						
05500	Overhead door openings	**8**	ea	1,500.00	12,000		
05500	Window openings	**260**	sf	12.00	3,120		
05500	Translucent window openings	**500**	sf	12.00	6,000		
	SUBTOTAL					2,231,320	
	TOTAL - SUPERSTRUCTURE						***$2,499,408***
	B20 EXTERIOR CLOSURE						
	B2010 EXTERIOR WALLS						
	Admin exterior wall back-up						
09211	6" Metal stud, sheathing	**1,600**	sf	22.00	35,200		
09211	5/8" int gwb	**1,600**	sf	8.00	12,800		
09900	Paint	**1,600**	sf	2.00	3,200		
	CMU & Fiber cement						
07460	Fiber cement board lap siding	**1,200**	sf	40.00	48,000		
07460	Fiber cement board shakes	**230**	sf	45.00	10,350		
04200	CMU veneer	**2,200**	sf	55.00	121,000		
07270	Air barrier	**3,630**	sf	10.00	36,300		
07210	Rigid insulation	**2,200**	sf	6.00	13,200		
	SUBTOTAL					280,050	
	B2020 WINDOWS						
	Storefront and windows						
84600	Translucent windows	**500**	sf	135.00	67,500		
84110	W - Aluminum windows (triple glazed)	**260**	sf	210.00	54,600		
08900	Louvers	**1**	ls	15,000.00	15,000		
07920	Backer rod & double sealant	**511**	lf	12.00	6,132		
06100	Wood blocking at openings	**511**	lf	10.00	5,110		
07920	Waterproofing - overall added cost for FSB pricing	**18,210**	sf	3.50	63,735		
	SUBTOTAL					212,077	

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	NEW BUILDING						
	B2030 EXTERIOR DOORS						
	Overhead doors						
08331	18x16 OHD	**2**	ea	28,800.00	57,600		
08331	16x16 OHD	**5**	ea	25,600.00	128,000		
08331	14x14 OHD	**1**	ea	19,600.00	19,600		
	Man Doors						
08111	HM doors with half light/HM frame 3x7 HM	**7**	ea	2,500.00	17,500		
08111	HM flush doors/frame 3x7 HM	**1**	ea	2,200.00	2,200		
84500	AS-1/Al 3x7 - Alum entry and side/tran	**1**	ea	750.00	750		
08710	Hardware	**9**	lvs	950.00	8,550		
	Misc						
09900	Paint	**8**	ea	200.00	1,600		
07920	Backer rod & double sealant	**320**	lf	12.00	3,840		
06100	Wood blocking at openings	**320**	lf	10.00	3,200		
	SUBTOTAL					242,840	
	TOTAL - EXTERIOR CLOSURE						***$734,967***
	B30 ROOFING						
	B3010 ROOF COVERINGS						
	All roofing, gutters, downspouts and snow guards included with Prefabricated metal building						
	SUBTOTAL					-	
	B3020 ROOF OPENINGS						
07720	Roof hatch and ladder	**1**	ea	6,750.00	6,750		
07720	Roof ladders	**1**	ea	1,650.00	1,650		
10950	Fall arrest system allowance	**1**	ls	20,000.00	20,000		
	SUBTOTAL					28,400	
	TOTAL - ROOFING						**$28,400**
	C10 INTERIOR CONSTRUCTION						
	C1010 PARTITIONS						
09211	Type 1B GWB partition	**1,080**	sf	13.00	14,040		
09211	Type 2A/B GWB partition	**1,056**	sf	15.00	15,840		
09211	Type 3A GWB partition	**3,150**	sf	20.00	63,000		
09211	Type 3B GWB partition	**1,680**	sf	21.00	35,280		
09211	Type 6A GWB partition	**2,282**	sf	26.00	59,332		
04200	Type 8A - 8" CMU walls	**4,396**	sf	35.00	153,860		
	18 - Wash bay separation walls						
04200	8" CMU wall to 8'	**480**	sf	35.00	16,800		
09211	6" metal stud and gwb each side	**1,200**	sf	22.00	26,400		
	F1 - Fire separation walls						
09211	8" lgmf with gwb each side to deck above knee wall 5'-4"	**1,600**	sf	25.00	40,000		
03300	Concrete knee wall	**17**	cy	950.00	16,150		
07210	3" closed cell spray foam	**1,600**	sf	10.00	16,000		
04200	4" CMU behind knee wall	**440**	sf	30.00	13,200		
07210	2" rigid behind knee wall	**440**	sf	6.00	2,640		
07270	AVB	**440**	sf	10.00	4,400		
	F2 - Fire separation walls						
09211	8" lgmf with gwb each side to deck above knee wall 5'-4"	**2,480**	sf	25.00	62,000		
03300	GWB to knee wall	**700**	sf	8.00	5,600		
03300	Concrete knee wall	**28**	cy	950.00	26,600		
07210	3" closed cell spray foam	**2,480**	sf	10.00	24,800		
07210	2" rigid behind knee wall	**700**	sf	6.00	4,200		
07270	AVB	**700**	sf	10.00	7,000		
	Misc						
06100	Rough blocking	**800**	lf	10.00	8,000		
	SUBTOTAL					615,142	

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	NEW BUILDING						
	C1020 INTERIOR DOORS						
	Doors and Frames						
08111	Single doors and frames	**23**	lvs	1,600.00	36,800		
08111	Double doors and frames	**5**	pr	2,600.00	13,000		
	Hardware						
08710	Hardware	**33**	lvs	850.00	28,050		
	Misc						
08800	Glazing to doors and frames	**160**	sf	50.00	8,000		
84500	HM1 window frames	**2**	ea	1,650.00	3,300		
09900	Paint HM frames	**35**	ea	200.00	7,000		
07920	Sealants & caulking	**35**	ea	110.00	3,850		
12211	Interior blinds	**6**	ea	200.00	1,200		
	SUBTOTAL					101,200	
	C1030 SPECIALTIES / MILLWORK						
06402	Restroom vanities	**10**	lf	450.00	4,500		
06402	Window sills	**54**	lf	65.00	3,510		
06402	Multi-purpose back walls cabinets, counter and shelving	**16**	lf	650.00	10,400		
06402	Admin office counters	**12**	lf	650.00	7,800		
84500	Misc millwork and finish carpentry	**1**	ls	10,000.00	10,000		
10140	Tack/white boards	**2**	ea	500.00	1,000		
	Lockers						
10850	Large Lockers	**16**	ea	950.00	15,200		
10850	Lockers benches	**1**	ea	750.00	750		
10850	ADA benches	**2**	ea	1,650.00	3,300		
	Restrooms						
10650	Toilet partitions HC	**1**	ea	1,600.00	1,600		
10650	Toilet partitions Reg	**1**	ea	1,300.00	1,300		
10280	Soap disp	**5**	ea	30.00	150		
10280	Mirror	**5**	ea	285.00	1,425		
10280	Robe hook	**10**	ea	30.00	300		
10280	Grab bar	**6**	ea	150.00	900		
10280	Shower seat and bars	**2**	ea	285.00	570		
10280	Wet gear hooks	**10**	ea	65.00	650		
10280	SRWR	**2**	ea	250.00	500		
10280	TTD	**5**	ea	110.00	550		
10280	SND	**2**	ea	165.00	330		
10280	PTD	**4**	ea	330.00	1,320		
10280	Hooks	**12**	ea	40.00	480		
10280	Shower curtain and rods	**3**	ea	276.00	828		
10280	Jan closet MB	**1**	ea	285.00	285		
	Miscellaneous						
06100	Plywood backers, locker bases and misc	**800**	sf	5.00	4,000		
10440	Fire extinguisher cabinets	**8**	ea	250.00	2,000		
10140	Town seal/ exterior signage	**1**	ls	8,500.00	8,500		
10140	Interior signage	**1**	ls	7,500.00	7,500		
	SUBTOTAL					89,648	
	TOTAL - INTERIOR CONSTRUCTION						***$805,990***
	C20 STAIRCASES						
	C2010 STAIR CONSTRUCTION						
05500	Mezzanine Stairs	**2**	ea	17,500.00	35,000		
05500	Mezzanine railings	**214**	lf	185.00	39,590		
05500	Gates	**2**	ea	1,250.00	2,500		
05500	Ladders	**2**	ea	1,250.00	2,500		
03300	Concrete material in pan infill	**2**	ea	1,200.00	2,400		
	SUBTOTAL					81,990	
	C2020 STAIR FINISHES						
09900	Paint to mezzanine stairs	**2**	ea	3,850.00	7,700		
09900	Paint to mezzanine rails/gates	**240**	lf	35.00	8,400		
	SUBTOTAL					16,100	
	TOTAL - STAIRCASES						***$98,090***

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	NEW BUILDING						
	C30 INTERIOR FINISHES						
	C3010 WALL FINISHES						
09900	Paint to GWB	**28,156**	sf	1.50	42,234		
09900	Paint to interior CMU	**9,712**	sf	2.50	24,280		
09300	Wall tile	**800**	sf	33.00	26,400		
06100	FRP to janitor closet	**200**	sf	15.00	3,000		
	SUBTOTAL					95,914	
	C3020 FLOOR FINISHES						
09651	LVT	**1,200**	sf	14.00	16,800		
09665	Carpet tile	**800**	sf	6.00	4,800		
09730	RF - Resinous Flooring	**520**	sf	18.00	9,360		
09900	SC - Sealed Concrete	**18,040**	sf	1.50	27,060		
09665	Walk off mats	**2**	ea	3,500.00	7,000		
09300	Tile	**100**	sf	33.00	3,300		
09651	Rubber base	**760**	lf	6.00	4,560		
09900	Line stripping	**600**	sf	5.00	3,000		
	SUBTOTAL					75,880	
	C3030 CEILING FINISHES						
09510	A1 - ACT ceilings; 2' x 2'	**2,500**	sf	11.00	27,500		
09510	A2 - ACT ceilings; 2' x 2'	**460**	sf	12.00	5,520		
09211	G2 - GWB ceilings	**380**	sf	18.00	6,840		
09211	G3 - GWB ceilings	**575**	sf	22.00	12,650		
09211	G1 - L gwb soffits	**20**	lf	125.00	2,500		
09211	Drop gwb soffits	**40**	lf	60.00	2,400		
09900	Paint to GWB ceilings and soffits	**1,195**	sf	2.00	3,800		
09900	Exposed prefab metal columns and beams	**16,745**	sf	2.50	41,863		
	SUBTOTAL					103,073	
	TOTAL - INTERIOR FINISHES						***274,867***
	D20 PLUMBING						
	D20 PLUMBING, GENERALLY						
	Equipment						
220000	Water Meter	**1**	ea	2,950.00	2,950		
220000	Backflow Preventor Assembly	**1**	ea	6,045.00	6,045		
220000	Water Pressure Regulator	**1**	ea	1,170.00	1,170		
220000	Heat Pump Water Heaters	**2**	ea	15,112.50	30,225		
220000	Hot Water Storage Tank	**1**	ea	7,020.00	7,020		
220000	Recirc Pump	**2**	ea	1,235.00	2,470		
220000	Expansion Tank	**2**	ea	455.00	910		
220000	Thermostatic Mixing Valve	**2**	ea	2,710.50	5,421		
220000	Oil/Water Seperator	**1**	ea	11,830.00	11,830		
220000	Air Compressor w/ Dryer	**1**	ea	31,083.00	31,083		
220000	Trap Primers	**9**	ea	425.00	3,825		
220000	Make Up Water Station	**1**	ea	1,140.00	1,140		
220000	Plumbing Specialties	**1**	ls	11,398.70	11,399		
220000	Equipment Connections	**24**	ea	845.00	20,280		
	Fixtures						
220000	Water Closets	**5**	ea	1,413.50	7,068		
220000	Urinal	**1**	ea	1,216.54	1,217		
220000	Lavatory	**5**	ea	1,292.50	6,463		
220000	Showers	**2**	ea	2,035.00	4,070		
220000	Sink - Mop	**1**	ea	1,292.50	1,293		
220000	Kitchen Sink	**1**	ea	1,527.54	1,528		
220000	Kitchen Sink Garbage Disposal	**1**	ea	780.00	780		
220000	Laundry Sink	**1**	ea	1,560.00	1,560		
220000	Shop Sink	**1**	ea	4,810.00	4,810		
220000	Emergency Shower / Eyewash	**6**	ea	3,918.75	23,513		
220000	Drinking Fountian	**1**	ea	2,887.50	2,888		
220000	Wall Hydrant	**6**	ea	357.50	2,145		
220000	Hose Bibbs	**2**	ea	258.50	517		
220000	Hose Stations	**3**	ea	884.00	2,652		
220000	Ice Machine Box	**1**	ea	181.50	182		
220000	Outlet Box	**1**	ea	287.64	288		
220000	Compressed Air Outlets	**10**	ea	294.87	2,949		

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	NEW BUILDING						
220000	Floor Drains	**12**	ea	654.50	7,854		
220000	Floor Sinks	**2**	ea	808.50	1,617		
220000	(8) Trench Drains	**150**	lf	158.50	23,775		
220000	Trench Drain Catch Basin	**4**	ea	1,365.00	5,460		
220000	Clean Outs	**12**	ea	262.00	3,144		
220000	Vent Thru Roof	**12**	ea	290.00	3,480		
220000	Hose Connection	**5**	ea	475.00	2,375		
220000	Compressed Air Equipment Connections	**5**	ea	475.00	2,375		
220000	Fixture Rough Ins	**34**	ea	624.00	21,216		
	Piping						
220000	Water Service	**25**	lf	168.32	4,208		
220000	Water - 1/2"	**672**	lf	39.00	26,208		
220000	Water - 3/4"	**588**	lf	42.25	24,843		
220000	Water - 1"	**294**	lf	48.75	14,333		
220000	Water - 1 1/4"	**42**	lf	53.95	2,266		
220000	Water - 1 1/2"	**151**	lf	59.80	9,030		
220000	Water - 2"	**151**	lf	68.25	10,306		
220000	Water - 3"	**210**	lf	97.50	20,475		
220000	UGSan - 2"	**8**	lf	94.25	754		
220000	UGSan - 3"	**84**	lf	123.50	10,374		
220000	UGSan - 4"	**316**	lf	130.00	41,080		
220000	San - 2"	**44**	lf	94.25	4,147		
220000	San - 3"	**45**	lf	123.50	5,558		
220000	San - 4"	**92**	lf	130.00	11,960		
220000	UGVent- 2"	**15**	lf	94.25	1,414		
220000	UGVent - 3"	**30**	lf	123.50	3,705		
220000	UGVent - 4"	**8**	lf	130.00	1,040		
220000	UGOil Vent - 2 1/2"	**210**	lf	117.65	24,707		
220000	UGOil Vent - 3"	**91**	lf	133.90	12,185		
220000	UGOil Vent - 4"	**225**	lf	140.40	31,590		
220000	Oil Vent - 2 1/2"	**71**	lf	117.65	8,353		
220000	Oil Vent - 3"	**67**	lf	133.90	8,971		
220000	Oil Vent - 4"	**63**	lf	140.40	8,845		
220000	Oil Vent - 6"	**34**	lf	166.40	5,658		
220000	UG Oil Waste - 3"	**8**	lf	133.90	1,071		
220000	UG Oil Waste - 4"	**606**	lf	140.40	85,082		
220000	UG Oil Waste - 6"	**336**	lf	166.40	55,910		
220000	Compressed Air- 1/2"	**29**	lf	41.60	1,206		
220000	Compressed Air - 3/4"	**672**	lf	45.50	30,576		
220000	Compressed Air - 1"	**156**	lf	51.35	8,011		
220000	Compressed Air - 1 1/2"	**150**	lf	58.50	8,775		
220000	Compressed Air - 2"	**80**	lf	71.50	5,720		
220000	Insulation	**2,133**	lf	13.98	29,819		
	Trade Requirements						
220000	Project Supervision	**400**	hrs	130.00	52,000		
220000	Coordination	**200**	hrs	130.00	26,000		
	SUBTOTAL					867,167	
	TOTAL - PLUMBING						***$867,167***

New Department of Public Works Facility
Truro, Ma

TCi Construction Cost Estimating

29-May-25

Schematic Design Cost Estimate

GSF 22,140

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	NEW BUILDING						
	D30 HVAC						
	D30 HVAC						
	Base ASHP						
230000	Equipment	**22,140**	sf	24.68	546,415		
230000	Sheet Metal	**22,140**	sf	23.72	525,161		
230000	Piping	**22,140**	sf	8.79	194,611		
230000	Insulation	**22,140**	sf	4.93	109,150		
230000	Controls	**22,140**	sf	11.52	255,053		
230000	Commissioning	**22,140**	sf	2.44	54,022		
230000	Trade Requirements	**22,140**	sf	3.38	74,833		
	SUBTOTAL					1,759,245	
	TOTAL - HVAC						***$1,759,245***
	D40 FIRE PROTECTION						
	D40 FIRE PROTECTION						
210000	FP service equipment, valves, compressors and misc	**1**	ls	20,000.00	20,000		
210000	Sprinkler heads	**277**	ea	125.00	34,625		
210000	Branch sprinkler piping with fittings & hangers	**4,155**	lf	38.00	157,890		
210000	Main sprinkler piping with fittings & hangers	**600**	lf	60.00	36,000		
210000	Hydraulic calculations, coordination and testing	**1**	ls	15,000.00	15,000		
210000	Fire pump and 50,000 gal cistern allowance	**1**	ls	400,000.00	400,000		
	SUBTOTAL					663,515	
	TOTAL - FIRE PROTECTION						***$663,515***
	D50 ELECTRICAL						
	D50 ELECTRICAL						
	Light Fixtures						
260000	Light Fixtures	**22,140**	sf	7.00	154,980		
	Branch Circuitry						
260000	Branch Circuitry	**22,140**	sf	5.00	110,700		
260000	Lighting Control Devices	**22,140**	sf	1.00	22,140		
260000	Power Wiring Devices	**22,140**	sf	1.50	33,210		
	Power Circuitry						
260000	Power Circuitry and Motor Feeders	**22,140**	sf	3.00	66,420		
	Power Distribution						
260000	3/4" Emt, 4#10	**50**	lf	14.00	700		
260000	1 1/4" Emt, 4#3	**10**	lf	30.00	300		
260000	1 1/2" Emt, 4#1	**140**	lf	40.00	5,600		
260000	2" Emt, 4 3/0	**30**	lf	55.00	1,650		
260000	2 1/2" Emt, 4 250Mcm	**10**	lf	75.00	750		
260000	4" Emt, 4 500 Mcm	**10**	lf	125.00	1,250		
260000	4" Emt, 4 600 Mcm	**100**	lf	150.00	15,000		
260000	4" Rigid, 4 600 Mcm	**40**	lf	185.00	7,400		
260000	1 1/2" Emt, future PV	**200**	lf	18.00	3,600		
260000	3" Emt, future PV	**200**	lf	25.00	5,000		
260000	4" Emt, future PV	**100**	lf	30.00	3,000		
260000	PV Power Pullbox, WP	**2**	ea	500.00	1,000		
260000	PV Comm Pullbox, WP	**2**	ea	300.00	600		
	Lightning Protection & Grounding						
260000	Lightning Protection Allowance	**1**	ls	15,000.00	15,000		
260000	Service Grounding	**1**	ls	4,500.00	4,500		
260000	MDF Grounding	**1**	ls	1,500.00	1,500		

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	NEW BUILDING						
	Power Equipment						
260000	100 Amp Panel Board	**1**	ea	4,500.00	4,500		
260000	225 Amp Panel Board, 60P	**1**	ea	8,800.00	8,800		
260000	400 Amp Panel Board, 2-Section	**1**	ea	16,500.00	16,500		
260000	800 Amp Main Switchboard	**1**	ls	35,000.00	35,000		
260000	Current Monitor	**3**	ea	2,200.00	6,600		
260000	Lighting Control Panel - Allow	**1**	ea	5,000.00	5,000		
260000	SPD @ MDB	**1**	ea	2,600.00	2,600		
260000	30 Kva Transformer	**1**	ea	7,000.00	7,000		
260000	75 Kva Transformer	**1**	ea	10,000.00	10,000		
260000	112 Kva Transformer	**1**	ea	12,000.00	12,000		
260000	800 Amp CT Cabinet	**1**	ea	7,500.00	7,500		
260000	800 Amp Service Disconnect	**2**	ea	12,000.00	24,000		
260000	800 Amp Service Disconnect EG	**1**	ea	12,000.00	12,000		
260000	Meter Pan	**1**	ea	650.00	650		
260000	400 Kw Emerg Generator, WP Encl	**1**	ea	150,000.00	150,000		
260000	Autotransfer Sw 800A	**1**	ea	20,000.00	20,000		
260000	Autotransfer Sw 100A	**1**	ea	6,500.00	6,500		
260000	EG Ennunciator	**1**	ea	1,500.00	1,500		
260000	EG Junc Box	**3**	ea	125.00	375		
260000	EPO Pushbutton	**2**	ea	200.00	400		
260000	800 Amp Encl Ckt Brkr	**2**	ea	9,500.00	19,000		
260000	100 Amp Encl Ckt Brkr	**1**	ea	1,500.00	1,500		
260000	200KW Load Bank	**1**	ea	18,500.00	18,500		
260000	100A Storm Switch	**1**	ea	5,500.00	5,500		
260000	Motor Disconnects	**22,140**	sf	1.50	33,210		
	Misc systems						
260000	Fire Alarm System	**22,140**	sf	4.00	88,560		
260000	BDA Allowance	**1**	ls	45,000.00	45,000		
260000	Telecommunications System	**18,210**	sf	3.00	54,630		
260000	Security Access Control System	**18,210**	sf	2.00	36,420		
260000	CCTV Security System	**18,210**	sf	1.50	27,315		
260000	Sound/PA/Intercom System	**18,210**	sf	1.50	27,315		
260000	A/V System Roughin Allowance	**18,210**	sf	0.20	3,642		
	Site Lighting						
260000	Type SL1 Light Pole w/ 1-Fixt	**8**	ea	3,600.00	28,800		
260000	Type SL6 Flagpole Light	**3**	ea	525.00	1,575		
260000	1" PVC, 3#8, #10 UG	**890**	lf	12.00	10,680		
260000	#10 Wire in Poles	**720**	lf	1.25	900		
260000	Site Lighting Controls	**1**	ls	3,600.00	3,600		
	EV Charging Stations						
260000	EV Charging Station	**2**	ea	5,500.00	11,000		
260000	1" PVC, 3#8, #10 UG	**500**	lf	12.00	6,000		
	Site Utilities						
260000	Utility Pole Riser	**1**	ls	3,600.00	3,600		
260000	4" PVC CDT UG (Pri)	**400**	lf	18.00	7,200		
260000	Utility Transformer Pad	**1**	ls	3,600.00	3,600		
260000	4" PVC, 4 600 Mcm UG (Sec)	**570**	lf	135.00	76,950		
260000	4" PVC CDT UG (Spare)	**50**	lf	18.00	900		
260000	3" PVC, 4 600MCM UG	**120**	lf	135.00	16,200		
260000	1" PVC, EG Controls, 120v, UG	**150**	lf	10.00	1,500		
	Telecommunications						
260000	Telecomm Utility Riser	**1**	ls	3,600.00	3,600		
260000	4" PVC (Tel,empty)	**800**	lf	18.00	14,400		
260000	1 1/4" Innderduct	**600**	lf	3.50	2,100		
	Misc						
260000	Temp Power and Lighting	**1**	ls	15,000.00	15,000		
260000	Coordination and project management	**200**	hrs	135.00	27,000		
260000	Startup, Testing, Commissioning	**160**	hrs	135.00	21,600		
	SUBTOTAL					1,402,022	
	TOTAL - ELECTRICAL						***$1,402,022***

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	NEW BUILDING						
	E20 FURNISHINGS						
	E2010 FIXED FURNISHINGS						
12211	Horizontal Louver Blinds/Blackout	**260**	sf	15.00	3,900		
11310	Kitchen appliances				by owner		
	SUBTOTAL					$3,900	
	E2020 MOVABLE FURNISHINGS						
	All movable furnishings to be provided and installed by owner					NIC	
	SUBTOTAL						
	TOTAL - FURNISHINGS						***$3,900***
	F10 INDUSTRIAL EQUIPMENT						
	Maintenance Equipment Schedule						
11810	CD-1 Wood Workbench with Casters 1 ERO N/A	**ERO**					
11810	CD-2 Steel Work Bench (72inx36in) (14,000 Lbs Capacity) 1 N 12 40 00	**1**	ea	1,037.30	1,037		
11810	CD-3 Electric Charging Workbench 1 N 12 40 00	**1**	ea	937.60	938		
11810	CD-4 Long Wood Workbench 1 N 12 40 00	**1**	ea	600.00	600		
11810	CD-5 Heavy Duty Thick Top Workbench 1 N 12 40 00	**1**	ea	850.00	850		
11810	CH-1 Carpentry Tool Drawer 1 ERO N/A	**ERO**					
11810	CH-2 Flammable Cabinet (Green)(60-Gallons) 1 ERO N/A	**ERO**					
11810	CH-3 Flammable Cabinet (45-Gallons) 1 ERO N/A	**ERO**					
11810	CH-4 Parts Shelving (6' x 2') 3 N 12 40 00	**3**	ea	1,005.40	3,016		
11810	CM-1 Miter Saw with Stand 1 ERO N/A	**ERO**					
11810	CM-2 Saw Horse 1 ERO N/A	**ERO**					
11810	CM-3 Pallet Jack 1 ERO N/A	**ERO**					
11810	CM-4 Portable Table Saw 1 ERO N/A	**ERO**					
11810	CM-5 Portable Dust Collector 1 N 12 40 00	**1**	ea	1,280.00	1,280		
11810	CM-6 Bench Vise 1 N 12 40 00	**1**	ea	691.90	692		
11810	MA-1 5 Ton Bridge Crane 1 N 14 22 13	**1**	ea	185,000.00	185,000		
11810	MB-1 18k Mobile Column 6 N 14 45 00	**6**	ea	65,000.00	390,000		
11810	MB-2 20K 2 Post Lift 1 N 14 45 00	**1**	ea	38,000.00	38,000		
11810	MC-1 2-Drum Spill Pallet 2 ERO 11 11 29	**ERO**					
11810	MC-2 55-Gallon Drum 10 NIC N/A	**NIC**					
11810	MC-3 Waste Oil Caddy 1 ERO N/A	**ERO**					
11810	MC-4 Grease Cart 1 ERO N/A	**ERO**					
11810	MC-5-9 Fluid storage	**1**	ls	95,000.00	95,000		
11810	MC-5 600-Gallon Bulk Fluids Tank (300G 15W-40/180G 0W-30/120G 0W-20) 1 N	**1**	ea		inc above		
11810	MC-6 400-Gallon Waste Oil Tank 1 N 11 11 29	**1**	ea		inc above		
11810	MC-7 Wall Mounted Lube Pumps 3 N 11 11 29	**3**	ea		inc above		
11810	MC-8 Lube Reel Bank (0W-20, 0W-30, 15W-40, Electric Reel, 1/2" Air) 1 N 11 11	**1**	ea		inc above		
11810	MC-9 Fluid Storage Room Sump Alarm 1 N 11 11 29	**1**	ea		inc above		
11810	MD-1 Metal Worktop 1 ERO N/A	**ERO**					
11810	MD-2 Electric Charging Workbench 1 N 12 40 00	**1**	ea	937.60	938		
11810	MD-3 Steel Work Bench on Casters 2 N 12 40 00	**2**	ea	2,800.00	5,600		
11810	MD-4 Heavy Duty Thick Top Workbench 1 N 12 40 00	**1**	ea	950.00	950		
11810	MF-1 Torch Cart 1 ERO N/A	**ERO**					
11810	MF-2 Lincoln AC225 Arc Welder 1 ERO N/A	**ERO**					
11810	MF-3 Miller Millermatic 252 1 ERO N/A	**ERO**					
11810	MF-4 Metabo HPT Hammer Cart 1 ERO N/A	**ERO**					
11810	MF-5 Thermal Dynamics Welder 1 ERO N/A	**ERO**					
11810	MF-6 Lincoln Welden Power 1 ERO N/A	**ERO**					
11810	MF-7 Lincoln SP-170T Arc Welder 1 ERO N/A	**ERO**					
11810	MF-8 Drill Press 1 ERO N/A	**ERO**					
11810	MF-9 Shop Press 1 ERO N/A	**ERO**					
11810	MF-10 Portable Weld Fume Extractor 1 NIC N/A	**NIC**					
11810	MF-11 Welding Screen 2 NIC N/A	**NIC**					
11810	MF-12 Oxygen/Acetylene Tank Storage Cage 2 N 12 40 00	**2**	ea	1,303.50	2,607		

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	NEW BUILDING						
11810	MG-1 Tire Changer 1 ERO N/A	**ERO**					
11810	MG-2 Tire Balancer 1 ERO N/A	**ERO**					
11810	MG-3 Tire Storage Rack 2 N 12 40 00	**2**		220.00	440		
11810	MH-1 Snap-on Tool Box 1 ERO N/A	**ERO**					
11810	MH-2 MAC Tools Blue Cart 1 ERO N/A	**ERO**					
11810	MH-3 Wooden Cabinet (Glass Window) 1 ERO N/A	**ERO**					
11810	MH-4 Windshield Wiper Blade Rack 1 ERO N/A	**ERO**					
11810	MH-5 Nuts and Bolts Storage 4 ERO N/A	**ERO**					
11810	MH-6 Flammable Cabinet (60-Gallons) 1 ERO N/A	**ERO**					
11810	MH-7 Metal Cabinet 1 N 12 40 00	**1**	ea	1,450.00	1,450		
11810	MH-8 Parts Shelving (6' x 2') 10 N 12 40 00	**10**	ea	1,005.40	10,054		
11810	MH-9 Parts Shelving (6' x 2') 2 N 12 40 00 Reserved for existing sliding drawers	**2**	ea	1,005.40	2,011		
11810	MM-1 Tall Jack Stand 1 ERO N/A	**ERO**					
11810	MM-2 Small Jack Stands 8 ERO N/A	**ERO**					
11810	MM-3 Floor Jack 1 ERO N/A	**ERO**					
11810	MM-4 Chop Saw on Cart 1 ERO N/A	**ERO**					
11810	MM-5 Snap-on Battery Charger 1 ERO N/A	**ERO**					
11810	MM-6 Chain Sharpener 1 ERO N/A	**ERO**					
11810	MM-7 Heated Carpet Extractor 1 ERO N/A	**ERO**					
11810	MM-8 Parts Washer 1 N 12 40 00	**1**	ea	2,500.00	2,500		
11810	MM-9 Pedestal Grinder 2 N 12 40 00	**2**	ea	559.90	1,120		
11810	MM-10 Bench Vise 1 N 12 40 00	**1**	ea	691.90	692		
11810	SD-1 Drafting Table 1 ERO N/A	**ERO**					
11810	SD-2 Computer Desk 1 N 12 40 00	**1**		506.00	506		
11810	SH-1 Hanging Vinyl Storage 1 ERO N/A	**ERO**					
11810	SH-2 Parts Shelving (6' x 2') 2 N 12 40 00	**2**		800.00	1,600		
11810	SM-1 Vinyl Express Printer 1 ERO N/A	**ERO**					
	Mezzanine Industrial Equipment Schedule						
11810	ME-1 Hose Clamp Rack 2 ERO N/A	**ERO**					
11810	ME-2 Hydraulic Hose Bins 1 ERO N/A	**ERO**					
11810	ME-3 Hydraulic Hose Chop Saw 1 ERO N/A	**ERO**					
11810	ME-4 Hydraulic Hose Crimper 1 ERO N/A	**ERO**					
11810	ME-5 Steel Work Bench on Casters 1 N 12 40 00	**1**	ea	2,800.00	2,800		
11810	ME-6 Hydraulic Hose Reel Rack 2 N 12 40 00	**2**	ea	836.00	1,672		
11810	ME-7 Hydraulic Vertical Storage Cabinet 1 N 12 40 00	**1**	ea	1,556.50	1,557		
11810	MH-9 Parts Shelving (6' x 2') 5 N 12 40 00	**5**	ea	0.00	-		
11810	MH-11 Pallet Rack Hanging Tool Storage 4 N 12 40 00	**4**	ea	176.00	704		
	Fleet Storage Industrial Equipment Schedule						
11810	MH-10 Cantilever Rack (Flat) 1 N 12 40 00	**1**	ea	2,310.00	2,310		
	Misc						
11810	Connect and or install ERO equipment	**200**	hrs	150.00	30,000		
	SUBTOTAL					785,924	
	TOTAL - INDUSTRIAL EQUIPMENT						***$785,924***
	B SITEWORK						
	Building Demolition						
02050	Demolish and remove buildings	**12,000**	sf	12.00	144,000		
02450	Haz-mat allowance	**1**	ls	50,000.00	50,000		
220000	Demo, cut and cap plumbing	**3**	ea	5,000.00	15,000		
230000	Demo, cut, cap and decommission HVAC	**3**	ea	5,000.00	15,000		
260000	Demo/make safe electrical	**3**	ea	5,000.00	15,000		
	SUBTOTAL					239,000	

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	NEW BUILDING						
	Site Demo & Prep						
312000	Mobilization	**1**	ea	7,500.00	7,500		
311000	Site fencing, protection, barricades	**1**	ls	25,000.00	25,000		
311000	Stabilized Construction Entrance	**1**	ea	7,500.00	7,500		
312500	Compost filter tubes and silt fence	**1,500**	lf	18.00	27,000		
312500	Inlet protection	**2**	ea	250.00	500		
311000	Tree/stump removals	**27**	ea	500.00	13,500		
311000	Clear and grub	**23,500**	sf	0.90	21,150		
311000	Sawcut and remove paving & curbing	**36,200**	sf	0.85	30,770		
311000	Remove sand and gravel	**1,163**	cy	25.00	29,075		
311000	Remove sheds	**3**	ea	1,500.00	4,500		
311000	Remove flag pole and bollards	**1**	ls	2,500.00	2,500		
311000	Remove concrete walks, ramps, pads and misc items at building perimeter	**1**	ls	20,000.00	20,000		
311000	Remove drainage structures & piping	**2**	ea	3,500.00	7,000		
311000	Remove wells	**1**	ls	10,000.00	10,000		
311000	Remove septic systems	**2**	ea	10,000.00	20,000		
	SUBTOTAL					225,995	
	Earthwork						
312000	Strip topsoil	**600**	cy	15.00	9,000		
312000	Screen & Respread	**600**	cy	25.00	15,000		
312000	Site Cuts to Fills	**4,195**	cy	15.00	62,925		
312000	Remove unsuitable material under building	**3,704**	cy	30.00	111,120		
312000	Import structural fill under building	**3,704**	cy	60.00	222,240		
	Structural excavation and backfill						
312000	Import 12" subbase for under slabs	**674**	cy	60.00	40,440		
312000	E&E foundation footing and walls	**1,200**	cy	25.00	30,000		
312000	E&B foundation column footings	**400**	cy	25.00	10,000		
	SUBTOTAL					500,725	
	Paving and curbing						
321216	12" Dense Grade at paving and walks	**2,126**	cy	58.00	123,308		
321216	Asphalt pavement	**57,400**	sf	6.00	344,400		
321216	Patch roads and connections	**1**	ls	7,500.00	7,500		
321613	Granite curbs	**870**	lf	58.00	50,460		
321613	Bitum berm	**474**	lf	20.00	9,480		
	SUBTOTAL					535,148	
	Storm						
334000	CB	**9**	ea	6,500.00	58,500		
334000	DMH	**7**	ea	8,500.00	59,500		
334000	OCS	**4**	ea	12,500.00	50,000		
334000	SWTU	**3**	ea	15,000.00	45,000		
334000	FE	**2**	ea	3,500.00	7,000		
334000	HDPE piping	**650**	lf	100.00	65,000		
334000	Perimeter building roof drainage piping/boots	**450**	lf	45.00	20,250		
334000	Storm water infiltration system (E,B, prep and manifolds)	**5,400**	sf	40.00	216,000		
	SUBTOTAL					521,250	
	Water						
331000	8" FP DI water main	**600**	lf	125.00	75,000		
331000	4" Dom DI water	**10**	lf	85.00	850		
331000	Gates & valves	**8**	ea	1,500.00	12,000		
331000	Hydrants	**2**	ea	6,500.00	13,000		
331000	Water CTE	**1**	ea	5,000.00	5,000		
331000	Offsite water well & water main Allowance	**1**	ls	420,000.00	420,000		
	SUBTOTAL					525,850	
	Sanitary Septic						
333000	Septic system - two compartment 2,000 gal tanks, piping, 3 trenches and Nitogen removal	**1**	ls	200,000.00	200,000		
	SUBTOTAL					200,000	

New Department of Public Works Facility
Truro, Ma

29-May-25

Schematic Design Cost Estimate

GSF 22,140

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	NEW BUILDING						
	Site Improvements						
323100	28' Sliding entry gate and access key pad	**1**	ea	25,000.00	25,000		
323100	Parking signs	**8**	ea	250.00	2,000		
321213	Concrete walks	**400**	sf	14.00	5,600		
321213	Knockdown pad	**1,180**	sf	16.00	18,880		
03300	Concrete retaining walls	**50**	cy	950.00	47,500		
323100	20x20 blocks walls at storage bins	**1,425**	sf	65.00	92,625		
323100	Parking space lines, symbols and hatching	**17**	ea	250.00	4,250		
323100	6' wood stockade fence	**270**	lf	95.00	25,650		
05500	Site bollards	**43**	ea	800.00	34,400		
03300	Transformer Pad	**1**	ea	5,000.00	5,000		
03300	Generator Pad	**1**	ea	8,500.00	8,500		
312000	E&B Elec/communication duct banks	**260**	lf	55.00	14,300		
03300	Encase duct banks in concrete	**39**	cy	350.00	13,650		
	SUBTOTAL					297,355	
	Salt Shed						
312000	Earthwork, HMA interior paving	**2,880**	sf	15.00	43,200		
315000	Ground improvements	**2,880**	sf	25.00	72,000		
03300	Foundation and 7' perimeter walls	**104**	cy	950.00	98,800		
13200	Structure - fabric roof structure	**2,880**	sf	75.00	216,000		
260000	Electrical - lighting and power	**2,880**	sf	10.00	28,800		
	SUBTOTAL					458,800	
	Landscaping						
329000	Landscaping allowance	**1**	ls	75,000.00	75,000		
	SUBTOTAL					75,000	
	TOTAL - SITEWORK						***3,579,123***

DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
1. Add Vehicle Wash Bay Finish & Equipment						
C30 INTERIOR FINISHES						
C3010 WALL FINISHES						
Wash bay - 1/2" PVC panels	**3,500**	sf	23.00	80,500		
Wash bay - AVB	**3,500**	sf	9.00	31,500		
Exterior wall framing and column wraps	**2,850**	sf	20.00	57,000		
SUBTOTAL					169,000	
C3020 FLOOR FINISHES						
SC - Sealed Concrete	**1,480**	sf	1.50	2,220		
SUBTOTAL					2,220	
C3030 CEILING FINISHES						
Exposed prefab decking and beams	**1,480**	sf	2.50	3,700		
SUBTOTAL					3,700	
TOTAL - INTERIOR FINISHES						***174,920***
D20 PLUMBING						
D20 PLUMBING, GENERALLY						
Plumbing	**1,480**	sf	30.00	44,400		
SUBTOTAL					44,400	
TOTAL - PLUMBING						***$44,400***
D30 HVAC						
D30 HVAC						
HVAC	**1,480**	sf	50.00	74,000		
SUBTOTAL					74,000	
TOTAL - HVAC						***$74,000***
D40 FIRE PROTECTION						
D40 FIRE PROTECTION						
Sprinkler heads	**18**	ea	125.00	2,250		
Branch sprinkler piping with fittings & hangers	**216**	lf	38.00	8,208		
Main sprinkler piping with fittings & hangers	**20**	lf	60.00	1,200		
Hydraulic calculations, coordination and testing	**1**	ls	2,500.00	2,500		
SUBTOTAL					14,158	
TOTAL - FIRE PROTECTION						***$14,158***
D50 ELECTRICAL						
D50 ELECTRICAL						
Light Fixtures	**1,480**	sf	8.00	11,840		
Branch Circuitry	**1,480**	sf	5.00	7,400		
Lighting Control Devices	**1,480**	sf	1.50	2,220		
Power Wiring Devices	**1,480**	sf	3.00	4,440		
3/4" Emt, 4#12	**120**	lf	14.79	1,775		
1" Emt, 4#8	**100**	lf	22.64	2,264		
Manual Snap Switch Starter WP EF	**2**	ea	1,064.80	2,130		
60 Amp Disconnect HV	**1**	ea	1,833.15	1,833		
Fire Alarm System	**1,480**	sf	4.00	5,920		
Telecommunications System	**1,480**	sf	3.00	4,440		
Security Access Control System	**1,480**	sf	2.00	2,960		
CCTV Security System	**1,480**	sf	1.50	2,220		
Temp Power and Lighting	**1,480**	sf	1.00	1,480		
SUBTOTAL					50,922	
TOTAL - ELECTRICAL						***$50,922***

DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
1. Add Vehicle Wash Bay Finish & Equipment						
F10 INDUSTRIAL EQUIPMENT						
Manual high pressure wash and undercarriage wash	**1**	ls	250,000.00	250,000		
V-1 Manual Wash Pressure Plant 1 N 11 11 26	**1**	ea		*inc above*		
V-2 Manual Wash Control Panel 1 N 11 11 26	**1**	ea		*inc above*		
V-3 Festoons 2 N 11 11 26	**2**	ea		*inc above*		
V-4 Manual Wash On/Off Switch 2 N 11 11 26	**2**	ea		*inc above*		
V-5 Undercarriage Wash Pressure Plant 1 N 11 11 26	**1**	ea		*inc above*		
V-6 Undercarriage Wash Control Panel 1 N 11 11 26	**1**	ea		*inc above*		
V-7 Automatic Undercarriage Pre-Fab Trenches 2 N 11 11 26	**2**	ea		*inc above*		
V-8 Automatic Undercarriage photo Eye 2 N 11 11 26	**2**	ea		*inc above*		
V-9 Automatic Wheel Washers 1 N 11 11 26	**1**	ea		*inc above*		
V-10 Vehicle Wash Guide Rails 1 N 11 11 26	**1**	ea		*inc above*		
V-11 Vehicle Wash Soap drum 1 N 11 11 26	**1**	ea		*inc above*		
V-12 Undercarriage Wash Control Station 2 N 11 11 26	**2**	ea		*inc above*		
V-13 Vehicle Wash Pre-Treatment Tank (1500gal) 1 N 11 11 26	**1**	ea		*inc above*		
V-14 Mobile Platform 1 N 11 11 26	**1**	ea		*inc above*		
V-15 Loop Detector 2 N 11 11 26	**2**	ea		*inc above*		
V-16 Vehicle Wash Entry Traffic Light 1 N 11 11 26	**1**	ea		*inc above*		
V-17 Undercarriage Wash Status Light 1 N 11 11 26	**1**	ea		*inc above*		
SUBTOTAL					250,000	
TOTAL - INDUSTRIAL EQUIPMENT						***$250,000***
SUBTOTAL						***$608,400***
GENERAL CONDITIONS & REQUIREMENTS				14%		$85,176
GL INSURANCE				1.3%		$7,909
BONDS				1.8%		$10,951
GC - OVERHEAD & PROFIT				5%		$30,420
DESIGN AND PRICING CONTINGENCY				10%		$74,286
ESCALATION TO 1ST QUARTER 2026				5%		$40,857
OUTER CAPE PREMIUM				10%		$60,840
TARIFFS PREMIUM ALLOWANCE				3%		$18,252
TOTAL - ALTERNATE 1						***$937,091***

DESCRIPTION	QTY	*UNIT*	*UNIT COST*	*EST'D COST*	*SUB TOTAL*	*TOTAL COST*
2. Add Detached Canopy						
30' x 135' Storage Canopy						
Ground improvements	**4,050**	sf	25.00	101,250		
E&B foundation	**741**	cy	35.00	25,935		
Import underslab subbase	**150**	cy	60.00	9,000		
Foundation - footings and walls	**86**	cy	950.00	81,700		
8" slab on grade	**4,050**	sf	15.00	60,750		
PEMB frame, non insulated metal panels	**4,050**	sf	85.00	344,250		
4" CMU veneer	**780**	sf	60.00	46,800		
AVB	**780**	sf	9.00	7,020		
Lighting and power	4,050	sf	10.00	40,500		
Plumbing				NIC		
HVAC				NIC		
FP				NIC		
SUBTOTAL				717,205		
SUBTOTAL						***717,205***
GENERAL CONDITIONS & REQUIREMENTS			14%			$100,409
GL INSURANCE			1.3%			$9,324
BONDS			1.8%			$12,910
GC - OVERHEAD & PROFIT			5%			$35,860
DESIGN AND PRICING CONTINGENCY			10%			$87,571
ESCALATION TO 1ST QUARTER 2026			5%			$48,164
OUTER CAPE PREMIUM			10%			$71,721
TARIFF PREMIUM			3%			$21,516
TOTAL - ALTERNATE 2						***1,104,680***

New Department of Public Works Facility
Truro, Ma

TCi Construction Cost Estimating

Schematic Design Cost Estimate 29-May-25

DESCRIPTION	*QTY*	*UNIT*	*UNIT COST*	*EST'D COST*	*SUB TOTAL*	*TOTAL COST*
3. Add Rooftop Solar						
Solar Photovoltaic System	**142**	kw	2,950.00	418,900		
SUBTOTAL					418,900	
TOTAL						***$418,900***
SUBTOTAL						***$418,900***

GENERAL CONDITIONS & REQUIREMENTS	14%	$58,646
GL INSURANCE	1.3%	$5,446
BONDS	1.8%	$7,540
GC - OVERHEAD & PROFIT	5%	$20,945
DESIGN AND PRICING CONTINGENCY	10%	$51,148
ESCALATION TO 1ST QUARTER 2026	5%	$28,131
OUTER CAPE PREMIUM	10%	$41,890
TARIFF PREMIUM	3%	$12,567

TOTAL - ALTERNATE 3	***$645,213***

DESCRIPTION	QTY	*UNIT*	*UNIT COST*	*EST'D COST*	*SUB TOTAL*	*TOTAL COST*
4. Add Ground Source Heat Pump (GSHP) in lieu of ASHP						
Deduct base ASHP HVAC	**1**	ls	(1,759,245.00)	(1,759,245)		
Add closed loop GSHP HVAC						
Equipment	**22,140**	sf	32.00	708,480		
Geothermal Well Field	**22,140**	sf	22.00	487,080		
Sheet Metal	**22,140**	sf	23.72	525,161		
Piping	**22,140**	sf	9.02	199,703		
Insulation	**22,140**	sf	4.93	109,150		
Controls	**22,140**	sf	11.52	255,053		
Commissioning	**22,140**	sf	2.44	54,022		
Trade Requirements	**22,140**	sf	3.38	74,833		
Electrical						
1" Emt, 4#6	**750**	lf	25.37	19,028		
1 1/4" Emt, 4#2	**300**	lf	41.00	12,300		
2" Emt, 4 2/0	**(300)**	lf	61.79	(18,537)		
60 Amp Disconnect	**5**	ea	1,833.15	9,166		
100 Amp Disconnect	**2**	ea	1,936.00	3,872		
200 Amp Disconnect	**(2)**	ea	2,813.25	(5,627)		
Sitework						
Earthwork to support wells	**1**	ls	100,000.00	100,000		
SUBTOTAL					774,439	
SUBTOTAL						***774,439***
GENERAL CONDITIONS & REQUIREMENTS			14%			$108,421
GL INSURANCE			1.3%			$10,068
BONDS			1.8%			$13,940
GC - OVERHEAD & PROFIT			5%			$38,722
DESIGN AND PRICING CONTINGENCY			10%			$94,559
ESCALATION TO 1ST QUARTER 2026			5%			$52,007
OUTER CAPE PREMIUM			10%			$77,444
TARIFF PREMIUM			3%			$23,233
TOTAL - ALTERNATE 4						***1,192,833***

DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
5. Add 5,000 SF Fleet storage						
GROSS FLOOR AREA CALCULATION						
Add 5,000 sf			**5,000**			
TOTAL GROSS FLOOR AREA					**5,000** ***gsf***	
A10 FOUNDATIONS						
A1010 STANDARD FOUNDATIONS						
Strip footings to walls						
Formwork	**152**	sf	18.00	2,736		
Re-bar	**540**	lbs	2.50	1,350		
Concrete material	**9**	cy	190.00	1,710		
Placing concrete	**9**	cy	40.00	360		
Foundation walls						
Formwork	**912**	sf	18.00	16,416		
Re-bar	**1,755**	lbs	2.50	4,388		
Concrete material	**27**	cy	190.00	5,130		
Placing concrete	**27**	cy	40.00	1,080		
Back up knee walls						
Formwork	**912**	sf	18.00	16,416		
Re-bar	**780**	lbs	2.50	1,950		
Concrete material	**12**	cy	190.00	2,280		
Placing concrete	**12**	cy	40.00	480		
Column footings						
Formwork	**48**	sf	18.00	864		
Re-bar	**225**	lbs	2.50	563		
Concrete material	**3**	cy	190.00	570		
Placing concrete	**3**	cy	40.00	120		
Piers						
Formwork	**32**	sf	18.00	576		
Re-bar	**75**	lbs	2.50	188		
Concrete material	**1**	cy	190.00	190		
Placing concrete	**1**	cy	40.00	40		
SUBTOTAL					57,407	
A1030 LOWEST FLOOR CONSTRUCTION						
8" Slab on grade						
Vapor barrier	**5,000**	sf	2.00	10,000		
Reinforcing	**5,500**	sf	2.50	13,750		
Concrete - 8" thick	**132**	cy	190.00	25,080		
Placing concrete	**132**	cy	45.00	5,940		
Finishing and curing concrete	**5,000**	sf	1.65	8,250		
Control joints - saw cut	**5,000**	sf	0.50	2,500		
SUBTOTAL					65,520	
TOTAL - FOUNDATIONS						***$122,927***

DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
5. Add 5,000 SF Fleet storage						
B10 SUPERSTRUCTURE						
B1020 ROOF CONSTRUCTION						
Pre-fabricated Structure (includes steel, insulated metal panels walls and roof) :						
Main Building - Prefabricated metal building package (galv steel, metal panels, metal roof, gutters, downspouts and snow guards)	**5,000**	sf	80.00	400,000		
SUBTOTAL					400,000	
TOTAL - SUPERSTRUCTURE						***$400,000***
B30 ROOFING						
B3010 ROOF COVERINGS						
All roofing, gutters, downspouts and snow guards included with Prefabricated metal building						
SUBTOTAL					-	
B3020 ROOF OPENINGS						
Fall arrest system allowance	**1**	ls	2,500.00	2,500		
SUBTOTAL					2,500	
TOTAL - ROOFING						**$2,500**
D20 PLUMBING						
D20 PLUMBING, GENERALLY						
Plumbing - floor drains	**1**	ls	20,000.00	20,000		
SUBTOTAL					20,000	
TOTAL - PLUMBING						***$20,000***
D30 HVAC						
D30 HVAC						
HVAC	**5,000**	sf	30.00	150,000		
SUBTOTAL					150,000	
TOTAL - HVAC						***$150,000***
D40 FIRE PROTECTION						
D40 FIRE PROTECTION						
Sprinkler heads	**56**	ea	125.00	7,000		
Branch sprinkler piping with fittings & hangers	**672**	lf	38.00	25,536		
Main sprinkler piping with fittings & hangers	**100**	lf	60.00	6,000		
Hydraulic calculations, coordination and testing	**1**	ls	5,000.00	5,000		
SUBTOTAL					43,536	
TOTAL - FIRE PROTECTION						***$43,536***

DESCRIPTION	*QTY*	*UNIT*	*UNIT COST*	*EST'D COST*	*SUB TOTAL*	*TOTAL COST*
5. Add 5,000 SF Fleet storage						
D50 ELECTRICAL						
D50 ELECTRICAL						
Light Fixtures	**5,000**	sf	7.00	35,000		
Branch Circuitry	**5,000**	sf	5.00	25,000		
Lighting Control Devices	**5,000**	sf	1.00	5,000		
Power Wiring Devices	**5,000**	sf	2.00	10,000		
Motor Feeders	**5,000**	sf	2.00	10,000		
Motor Disconnects	**5,000**	sf	1.00	5,000		
Fire Alarm System	**5,000**	sf	4.00	20,000		
Security Access Control System	**5,000**	sf	2.00	10,000		
CCTV Security System	**5,000**	sf	1.50	7,500		
Temp Power and Lighting	**5,000**	sf	1.00	5,000		
SUBTOTAL					132,500	
TOTAL - ELECTRICAL						***$132,500***
B SITEWORK						
Structural excavation and backfill						
Over excavate foundation footprint and export	**741**	cy	30.00	22,230		
Import structural fill	**185**	cy	60.00	11,100		
Import 12" subbase for under slabs	**185**	cy	60.00	11,100		
Backfill foundation footing and walls	**74**	cy	25.00	1,850		
Backfill foundation column footings	**15**	cy	25.00	375		
SUBTOTAL					46,655	
TOTAL - SITEWORK						***46,655***
SUBTOTAL						***$918,118***

GENERAL CONDITIONS & REQUIREMENTS	12%	$110,174
GL INSURANCE	1.3%	$11,936
BONDS	1.8%	$16,526
GC - OVERHEAD & PROFIT	5%	$45,906
DESIGN AND PRICING CONTINGENCY	10%	$110,266
ESCALATION TO 1ST QUARTER 2026	3%	$36,388
OUTER CAPE PREMIUM	10%	$91,812
TARIFF PREMIUM	3%	$27,544

TOTAL - ALTERNATE 5	***$1,368,670***

PROJECT: NEW DEPARTMENT OF PUBLIC WORKS FACILITY
17 TOWN HALL
TRURO, MA 02666

GAA 22,205 SF

COSTPRO, INC.

Code	Item Description			Quantity	Unit Price	Total
	GENERAL SUMMARY					$
1.000000	GENERAL REQUIREMENTS (SEE BELOW)		0.0%	$0.00	/SF	0
2.000000	SITE CONSTRUCTION		27.2%	$170.60	/SF	3,788,224
3.000000	CONCRETE		8.0%	$50.17	/SF	1,114,105
4.000000	MASONRY		6.1%	$38.15	/SF	847,151
5.000000	METALS		4.2%	$26.19	/SF	581,446
6.000000	WOOD & PLASTIC		0.7%	$4.15	/SF	92,158
7.000000	THERMAL & MOISTURE PROTECTION		2.3%	$14.48	/SF	321,479
8.000000	DOORS & WINDOWS		2.9%	$17.97	/SF	399,085
9.000000	FINISHES		3.3%	$20.70	/SF	459,694
10.000000	SPECIALTIES		0.5%	$3.03	/SF	67,324
11.000000	EQUIPMENT		2.1%	$13.02	/SF	289,177
12.000000	FURNISHINGS		0.3%	$1.67	/SF	37,168
13.000000	SPECIAL CONSTRUCTION		14.7%	$92.40	/SF	2,051,641
14.000000	CONVEYING SYSTEMS		1.9%	$12.16	/SF	270,000
15.000000	MECHANICAL		16.4%	$102.61	/SF	2,278,458
16.000000	ELECTRICAL		9.5%	$59.32	/SF	1,317,130
		Subtotal		$626.63	/SF	$13,914,240
1.100000	GENERAL REQUIREMENTS				12.00%	1,669,709
		Subtotal		$701.82	/SF	15,583,949
1.200000	OVERHEAD & PROFIT				10.00%	1,558,395
		Subtotal		$772.00	/SF	17,142,344
1.300000	ESCALATION TO BID DATE	3/1/2026			8.86%	1,518,812
				$840.40	/SF	18,661,156
1.400000	ESCALATION TO MID POINT	3/1/2027			3.50%	653,140
		Subtotal		$869.82	/SF	19,314,296
1.600000	BOND				1.25%	241,429
		Subtotal		$880.69	/SF	19,555,725
1.700000	DESIGN & PRICE RESERVE				15.00%	2,933,359
		TOTAL COST		$1,012.79	/SF	$22,489,084

PROJECT: NEW DEPARTMENT OF PUBLIC WORKS FACILITY
17 TOWN HALL
TRURO, MA 02666

GAA 22,205 SF

COSTPRO, INC.

Code	Item Description		Quantity	Unit Price	Total
Alternate 1	Wash Bay Finishes & Equipment				$
1.100000	6" lightgage stud walls 16 ga. 16" cc		2,365 sf	6.45	15,254
1.100001	wall sheathing 5/8"cdx fire retardant, pressure treated		3,656 sf	6.05	22,119
1.100002	1/2" plastic washbay panels	ceiling	1,354 sf	6.76	9,153
1.100003	suspension system		1,354 sf	12.09	16,370
1.100004	1/2" plastic washbay panels		4,304 sf	6.40	27,546
1.100005	pvc furring strips		4,304 sf	4.53	19,497
1.100006	Manual Wash Equipment	allowance	1 ea	105,000.00	105,000
1.100007	Automatic Undercarriage Wash	allowance	1 ea	80,000.00	80,000
		Subtotal	$13.28 /SF		$294,939
	Markups		61.63%		181,760
Alternate 1	Wash Bay Finishes & Equipment	TOTAL COST	$21.47 /SF		$476,699
Alternate 2	Detached Storage Canopy				$
2.100000	demolish monitoring well		1 ea	492.35	492
2.100001	deep pile foundationss	allow	4,080 sf	54.16	220,973
2.100002	slab on grade	complete system	4,080 sf	18.61	75,929
2.100003	cmu & concrete knee wall	complete system	653 sf	122.27	79,842
2.100004	pre-engineered steel building	storage canopy	4,080 sf	81.13	331,010
		Subtotal	$173.59 /SF		$708,246
	Markups		61.63%		436,466
Alternate 2	Detached Storage Canopy	TOTAL COST	$280.57 /SF		$1,144,712
Alternate 3	Rooftop Solar Installation				$
3.100000	Rooftop Solar Installation	system	142 KW	3,538.17	502,420
		Subtotal	$22.63 /SF		$502,420
	Markups		61.63%		309,623
Alternate 3	Rooftop Solar Installation	TOTAL COST	$36.57 /SF		$812,043
Alternate 4	Ground Source Heat Pumps (GHSP)				$
4.100000	boreholes	system	30 tons	7,548.10	226,443
4.100001	heat exchangers	system	30 tons	8,523.57	255,707
		Subtotal	$21.71 /SF		$482,150
	Markups		61.63%		297,132
Alternate 4	Ground Source Heat Pumps (GHSP)	TOTAL COST	$35.09 /SF		$779,282

PROJECT: NEW DEPARTMENT OF PUBLIC WORKS FACILITY
17 TOWN HALL
TRURO, MA 02666

GAA 22,205 SF

COSTPRO, INC.

Code	Item Description		Quantity	Unit Price	Total
Alternate 5	Additional 5,000 SF of Fleet Storage				$
5.100000	Alternate Base Estimate		1 ls		24,553,352
	credits				
5.100001	Base Estimate		1 ls		22,489,084
Alternate 5	Additional 5,000 SF of Fleet Storage	TOTAL COST	$344.04 /SF		$2,064,269

Code	Item Description		Quantity	Unit	Unit Price	Total
2.000000	SITE CONSTRUCTION					$
2.020000	EROSION & SEDIMENT CONTROL					
2.020001	6" crushed stone	constn entrance	1,381	sf	1.05	1,450
2.020002	filter fabric	constn entrance	1,381	sf	1.56	2,154
2.020004	silt fence/orange construction fence		1,428	lf	4.81	6,869
2.020005	filter sock	allow	1,428	lf	4.07	5,812
2.020006	catch basin infiltration filters		12	ea	639.27	7,671
2.020014	erosion control maintenance	constn season	2	ea	10,000.00	20,000
2.060000	SITE CLEARING					
2.060001	clear and grub site	general	0.54	acre	9,748.83	5,264
2.060008	tree removal	unsized	27	ea	868.34	23,445
2.060013	grub stump	unsized	27	ea	388.89	10,500
2.060014	strip & stockpile topsoil	8"	561	cy	10.65	5,975
2.100000	SITE PREPARATION					
	selective site demolition & relocation					
2.101007	sawcut asphalt paving		37	lf	4.56	169
2.101020	remove asphalt paving		38,127	sf	2.99	114,000
2.101021	remove sand & gravel surfacing		31,489	sf	2.01	63,293
2.101022	demolish concrete walks/pads/ramps		856	sf	3.17	2,714
2.101024	demolish wood stockade fence		124	lf	5.89	730
2.101025	demolish wood retaining walls		30	lf	17.89	537
2.101026	demolish wood steps		20	lfr	7.64	153
2.101028	demolish flagpole & bollards		1	ea	308.21	308
2.101030	remove and dispose of existing dumpster		1	ea	1,033.94	1,034
2.101031	demolish misc. minor items		80	hrs	85.59	6,847
2.101035	demolish DPW septic systems (2 ea)		1	ls	12,144.11	12,144
2.101038	demolish catch basin		4	ea	1,768.74	7,075
2.101039	demolish drain pipe	allow	200	lf	33.37	6,674
2.101043	demolish groundwater supply well		2	ea	984.70	1,969
2.101044	demolish monitoring well		1	ea	738.53	739
2.101045	protect monitoring well		5	ea	492.35	2,462
2.101046	electrical demolitions & disconnections		144	hrs	113.35	16,322
	building demolition					
2.101048	building demolition	sheds	202	sf	9.85	1,990
2.101049	building demolition	wood 1 story	1,141	sf	11.82	13,487
2.101050	building demolition	wood 2 story	5,433	sf	13.09	71,118
2.101051	building demolition	wood/conc. 1 story	3,472	sf	20.20	70,134
2.101052	building demolition	cmu 1 story	1,694	sf	17.89	30,306
2.101053	foundation removal		11,942	sf	10.73	128,138
2.101054	gravel fill		2,654	cy	27.70	73,516
	disposal of demolished materials					
2.101269	dumpster rental		26	weeks	727.58	18,917
2.101270	load & truck	10 mile round trip	520	cy	73.47	38,204
2.101271	dump charges		208	ton	94.29	19,612

Code	Item Description		Quantity	Unit Price	Total
2.200000	EARTHWORK				
2.200003	excavate unsuitable soils below new structures		1,737 cy	8.89	15,442
2.200006	imported structural fill material	slab on grade	1,737 cy	61.71	107,190
2.200007	rough grade site	site	115,284 sf	0.19	21,904
2.200008	rough grade	building	18,437 sf	0.24	4,425
2.200011	fine grade	building	18,437 sf	0.35	6,453
2.200014	fine grade	roads & walks	66,183 sf	0.31	20,517
2.200017	fine grade	pads	1,550 sf	0.35	543
2.200018	fine grade	bioretention	1,148 sf	0.53	608
2.200027	excavation for bioretention basins		122 cy	9.62	1,174
2.200044	trenching, bedding & backfill for 6" sewers		80 lf	23.65	1,892
2.200048	trenching, bedding & backfill for 12" drains		552 lf	23.65	13,055
2.200055	trenching, bedding & backfill for 6"water service		100 lf	23.65	2,365
2.200056	trenching, bedding & backfill for 8"water service		610 lf	23.65	14,427
2.200065	trenching for duct banks		263 lf	16.06	4,224
2.200066	trenching for grounding		120 lf	8.52	1,022
2.200071	excavate fire hydrant		1 cy	31.52	32
2.200074	compacted backfill around fire hydrant		1 cy	63.77	64
2.200080	excavation for structures	manholes	245 cy	29.93	7,333
2.200081	compacted backfill around structures	manholes	128 cy	63.77	8,163
2.200091	excavation for structures	storm chambers	1,222 cy	34.10	41,670
2.200096	excavation for footings	bollards	16 cy	40.54	649
2.200097	excavation for foundations	building	403 cy	40.54	16,338
2.200098	excavation for foundations	salt shed	144 cy	40.54	5,838
2.200100	compacted backfill around foundations	building	224 cy	75.52	16,916
2.200101	compacted backfill around foundations	salt shed	80 cy	75.52	6,042
2.200106	compacted granular fill under structures	building	683 cy	34.09	23,283
2.200116	hauling & disposal		3,340 cy	37.22	124,315
2.444000	CHAIN LINK FENCE				
2.444002	6'0" fence, chain link industrial	security	71 lf	57.53	4,085
2.444014	28'0" automatic sliding gate, chain link	security	1 ea	3,436.06	3,436
2.444015	gate operator		1 ea	6,232.86	6,233
2.513000	BITUMINOUS CONCRETE PAVING				
2.513007	12" compacted gravel base course		65,743 sf	0.94	61,798
2.513008	6" stone aggregate base course		65,743 sf	1.31	86,123
2.513015	2 1/2"asphaltic concrete binder course		65,743 sf	1.75	115,050
2.513017	1 3/4"asphaltic concrete wearing course		65,743 sf	1.39	91,383
2.513018	prime coat		65,743 sf	0.45	29,584
2.513019	tack coat		65,743 sf	0.23	15,121
2.513020	sealcoating		65,743 sf	0.30	19,723
2.513022	bituminous berm		664 lf	23.03	15,292
2.513024	vertical granite curbs		927 lf	54.60	50,614
2.513025	traffic control detail	N.I.C.	0 days	843.83	0
2.513026	temporary signage/barricades	N.I.C.	0 ls	799.08	0

Code	Item Description		Quantity	Unit Price	Total
2.570000	SANITARY SEWERS				
	sanitary waste				
2.570014	6" PVC gravity sewer pipe & fittings	allow	80 lf	20.36	1,629
2.570015	oil/sand trap	allow	1 ea	9,183.73	9,184
2.570016	septic system	allow	1 ea	184,594.86	184,595
2.570017	septic tight tank system u/g	allow	1 ea	47,081.67	47,082
2.570022	3" sch 80 PVC vent pipe	septic tank	4 lf	13.42	54
2.600000	WATER UTILITIES				
2.600254	8" tap into well water line		2 ea	1,383.02	2,766
2.600255	8" DI pipe		610 lf	229.52	140,007
2.600256	8" gate valve & box		2 ea	3,501.70	7,003
2.600260	8" DI bend	45 degree	5 ea	1,076.99	5,385
2.600261	8" DI tee		2 ea	2,383.51	4,767
2.600263	6" DI pipe		100 lf	205.98	20,598
2.600265	6" gate valve & box		1 ea	2,354.08	2,354
2.600268	6" DI bend	90 degree	1 ea	788.62	789
2.600271	fire hydrant assembly		1 ea	6,002.91	6,003
2.600272	indicator post		1 ea	2,972.03	2,972
2.600289	thrust blocks	see division 3.3	14 ea	0.00	0
	offsite work				
2.600565	offsite water well & water main.	allow	1 ls	420,000.00	420,000
2.721000	STORM DRAINS				
2.721001	manhole	DM	7 ea	7,417.76	51,924
2.721002	outlet control structure	OCS	3 ea	14,068.17	42,205
2.721003	manhole	SWTU	3 ea	13,428.71	40,286
2.721004	catch basins	CB	9 ea	6,138.83	55,249
2.721005	infiltration basin drain	OCSD	1 ea	6,138.83	6,139
2.721007	stormwater chamber system	A	1,719 sf	19.18	32,970
2.721008	stormwater chamber system	B	2,182 sf	19.18	41,851
2.721009	stormwater chamber system	C	1,600 sf	19.18	30,688
2.721027	12" drain pipe		552 lf	57.56	31,773
2.721028	12" flared end & rip rap level spresder		2 ea	4,859.91	9,720
2.721036	30 mils HDPE liner		1,148 sf	2.53	2,904
2.721037	6" loamy sand filter bed topping		446 sf	1.48	660
2.721038	18" sand filter bed		446 sf	2.96	1,320
2.721039	6" gravel bed	basin slopes	702 sf	0.58	407
2.721040	6" rip rap aprons	allow	336 sf	25.16	8,454
2.721042	rip rap check dam/storm weir	allow	80 sf	100.63	8,050
2.800000	SITE IMPROVEMENTS				
2.800023	paint parking stall	small job	13 ea	33.56	436
2.800024	paint parking stall	h/capped	1 ea	115.60	116
2.800025	pavement marking	gore lines	160 sf	2.58	413
2.800026	signs	h/capped	1 ea	404.87	405
2.800027	detectable warning pad	curb cut	10 sf	40.77	408
2.800028	traffic signs		10 ea	241.32	2,413
2.800040	ground set flagpoles		1 ea	6,574.93	6,575

Code	Item Description		Quantity	Unit Price	Total
	site structures				
2.800042	material storage bins (7 ea)		304 lf	456.62	138,812
2.800043	pre-engineered fabric membrane structure	salt shed	2,886 sf	145.11	418,787
2.900000	LANDSCAPING				
2.900005	amend & spread topsoil from stockpile		561 cy	12.71	7,130
2.900025	landscaping	allowance	1 ls	75,000.00	75,000
2.990000	MOBILIZATION				
2.900001	mobilization/demobilization		1 ls	161,883.00	161,883
2.000000	SITE WORK	TOTAL COST	$170.60 /SF		$3,788,224

Code	Item Description		Quantity	Unit Price	Total
3.000000	CONCRETE				$
3.200000	CONCRETE REINFORCEMENT				
3.200005	W4x4 W2.9xW2.9 welded wire mesh in slabs	mezzanine	3,768 sf	1.57	5,916
3.200006	W6x6 W6.0xW6.0 welded wire mesh in slabs	SOG	18,437 sf	1.63	30,052
3.300000	CAST-IN-PLACE CONCRETE				
3.300019	3" mezzanine slab concrete	lightweight	35 cy	364.15	12,745
3.300020	2" stair tread concrete	lightweight	1 cy	364.15	364
3.300021	2" landing concrete	lightweight	1 cy	364.15	364
3.300023	cure & finish		3,768 sf	1.93	7,272
	including forms, rebar & concrete	*4500 psi*			
3.300029	36" continuous footings, forms & rebar		67 cy	1,090.36	73,054
3.300030	form 6" footing shelf		604 lf	12.92	7,804
3.300031	isolated footings, forms & rebar		44 cy	722.65	31,797
3.300037	6" concrete slab on grade, forms & rebar		2,957 sf	10.41	30,782
3.300038	8" concrete slab on grade, forms & rebar		15,480 sf	13.18	204,026
3.300051	cure & finish		18,437 sf	1.93	35,583
3.300085	12" concrete walls, forms & rebar	foundations	3,020 sf	44.68	134,934
3.300092	8" concrete walls, forms & rebar	back-up wall	1,641 sf	42.42	69,611
3.300093	8" concrete walls, forms & rebar	fume knee wall	991 sf	42.42	42,038
3.300107	attached piers concrete, forms & rebar		7 cy	2,573.18	18,012
3.300113	6" concrete pads, forms & rebar	equipment	200 sf	23.78	4,756
3.300134	8x15" concrete locker base, forms & rebar		32 lf	59.09	1,891
3.300137	concrete floor sealer		15,480 sf	0.61	9,443
3.300163	concrete testing	allow (1 per 30 cy)	36 ea	335.63	12,083
	site concrete				
3.300165	36" continuous footings, forms & rebar	salt shed	24 cy	1,090.36	26,169
3.300166	12" concrete foundation walls, forms & rebar	salt shed	1,081 sf	44.68	48,299
3.300167	12" concrete exterior walls, forms & rebar	salt shed	1,402 sf	44.68	62,641
3.300168	concrete retaining walls		117 lf	792.58	92,732
3.300169	concrete walks		430 sf	16.60	7,138
3.300170	handicap curb cut		1 ea	960.16	960
3.300174	12" equipment pads	transformer	100 sf	51.84	5,184
3.300175	18" equipment pads	knockdown pad	1,201 sf	77.74	93,366
3.300179	18" equipment pads	generator	249 sf	77.74	19,357
3.300182	bollard footing	18" diam x 6'0"	41 ea	221.15	9,067
3.300184	fence post footing		9 ea	28.44	256
3.300185	light pole footing	allow	8 ea	851.11	6,809
2.800040	new flagpole footing		2 cy	1,090.36	2,181
3.300186	traffic sign footings		10 ea	313.37	3,134
3.300188	concrete thrust block	15"x15"x15"	14 ea	306.07	4,285
3.000000	CONCRETE	TOTAL COST	$50.17 /SF		$1,114,105

Code	Item Description		Quantity	Unit Price	Total
4.000000	MASONRY				$
4.200000	UNIT MASONRY				
4.220000	CONCRETE UNIT MASONRY				
4.221602	4" ground face masonry block veneer	exterior wall	2,023 sf	79.85	161,537
4.221603	4" bullnose		493 lf	16.85	8,307
4.221604	8" ground face masonry block veneer	fume knee wall	716 sf	85.35	61,111
4.221605	8" bullnose		134 lf	16.85	2,258
4.221608	8" cmu partition, #4@48" cc, grouted solid		8,811 sf	61.04	537,823
4.221622	scaffolding		11,550 sf	6.59	76,115
4.000000	MASONRY	TOTAL COST	$38.15 /SF		$847,151

Code	Item Description		Quantity	Unit Price	Total
5.000000	METAL MATERIALS, FINISHES AND FASTENINGS				$
5.410000	STRUCTURAL METAL STUD FRAMING				
5.410002	6" lightgage stud walls 16 ga. 16" cc		2,710 sf	7.42	20,108
5.410003	8" lightgage stud walls 16 ga. 16" cc	fume walls	3,124 sf	8.49	26,523
5.500000	METAL FABRICATIONS				
5.500033	*misc. metals*				
5.500034	misc. minor metals		22,205 sf	13.19	292,884
5.500035	welding crew	allow	40 hrs	225.71	9,028
5.500038	ladder, wall mounted w/safety post	aluminum	14 vlf	202.05	2,829
	site metals				
5.500054	bollards 6"x10'0 galv conc. filled	exterior	41 ea	1,278.97	52,438
5.520000	METALRAILINGS				
5.520001	guard rails	mezzanine	190 lf	180.73	34,339
5.520002	guard rails	stairs	129 lf	180.73	23,314
5.520003	6'0" swing gates		2 pair	1,648.97	3,298
5.520004	swing gate safety chains		12 lf	32.98	396
	short term special market conditions				
5.810401	shortages and tariffs			25%	116,289
5.000000	METAL MATERIALS	TOTAL COST	$26.19 /SF		$581,446

Code	Item Description		Quantity	Unit Price	Total
6.000000	WOOD & PLASTICS				$
6.105000	ROUGH CARPENTRY				
6.110000	WOOD FRAMING				
6.110001	pressure treated blocking	allowance	5.10 mbf	7,386.82	37,673
6.110023	1/2" pressure treated plywood sheathing	exterior walls	2,710 sf	6.65	18,022
	short term special market conditions				
6.110039	shortages and tariffs		40%		22,278
6.220000	MILLWORK MOLDINGS				
6.220806	moldings, window and door	trim set & stool	7 windows	315.43	2,208
6.220807	closet rod and shelf		12 lf	54.32	652
6.220811	misc finish carpentry		22,205 sf	0.51	11,325
6.000000	WOOD & PLASTICS	TOTAL COST	$4.15 /SF		$92,158
7.000000	MOISTURE-THERMAL CONTROL				$

Code	Item Description		Quantity	Unit Price	Total
7.115000	WATERPROOFING AND DAMPPROOFING				
7.110000	DAMPRPROOFING				
7.110001	liquid asphalt waterproofing, sprayed	foundation walls	4,101 sf	2.33	9,555
7.210000	BUILDING INSULATION				
7.210003	insulate hollow metal frames	exterior doors	163 lf	8.94	1,460
7.210006	2" polystyrene wall insulation, rigid	fume walls	991 sf	4.80	4,757
7.210007	2" polystyrene wall insulation, rigid	siding	1,301 sf	4.80	6,245
7.210008	3" polystyrene wall insulation, rigid	exterior walls	2,023 sf	6.27	12,684
7.210010	3" sprayed foam insulation	walls	3,124 sf	6.08	18,994
7.213000	FOUNDATION INSULATION				
7.213002	2" polystyrene insulation, rigid	slab on grade	18,437 sf	3.05	56,233
7.213005	3" R-15 rigid closed cell polystyrene insulation		3,020 sf	6.09	18,392
7.273000	AIR AND VAPOR BARRIERS				
7.273001	standard slab on grade - vapor barrier	15 mils	18,437 sf	0.37	6,822
7.273002	liquid asphalt waterproofing, sprayed	cmu/concrete	2,632 sf	2.33	6,133
7.273003	self-adhered	exterior walls	5,527 sf	5.74	31,726
7.273006	air barrier compliance testing	allow	1 ls	20,000.00	20,000
7.400000	PREFORMED ROOFING AND SIDING				
7.400004	cement fiber lap siding	6" exposure	942 sf	13.49	12,708
7.400006	cement fiber shingle siding	standard	321 sf	11.62	3,730
7.400010	8" cement fiber water table	stock	112 lf	17.74	1,987
7.400011	3" cement fiber trim		40 lf	14.19	568
7.400012	8" cement fiber trim		56 lf	17.74	993
7.620000	SHEET METAL FLASH & TRIM				
7.620004	through wall flashings		1,045 lf	14.55	15,205
7.700000	ROOF SPECIALTIES AND ACCESSORIES				
7.700012	snow guards	double rail pipe	650 lf	65.06	42,289
7.841000	PENETRATION FIRESTOPPING				
7.841001	firestopping		22,205 sf	0.47	10,436
7.920000	JOINT SEALERS				
7.920002	1/2" backer rod & sealant		2,090 lf	8.64	18,058
7.920003	joint fillers, sealants & caulking	sog/misc	22,205 sf	0.59	13,101
7.000000	MOISTURE-THERMAL CONTROL	TOTAL COST	$14.48 /SF		$321,479

Code	Item Description		Quantity	Unit Price	Total
8.000000	DOORS, WINDOWS AND GLASS				$
8.100000	METAL DOORS AND FRAMES				
8.120000	HOLLOW METAL FRAMES	*powder coat finish*			
8.120004	HM door frame exterior	3'4x7'2"	9 ea	578.32	5,205
8.120008	HM door frame	3'4x7'2	25 ea	635.44	15,886
8.120009	HM door frame	6'4x7'2	5 ea	771.10	3,856
8.130000	HM FLUSH DOORS	*powder coat finish*			
8.130002	HM door, insulated flush	3'0x7'2"	9 ea	946.02	8,514
8.130009	HM door, interior flush	3'0x7'2"	21 ea	779.43	16,368
8.130013	extra for half-glass	22"x32"	9 ea	386.74	3,481
8.416000	WOOD AND PLASTIC DOORS				
8.205402	1 3/4"interior solid core wood door	3x7	14 ea	541.43	7,580
8.205403	extra for half lite		4 ea	565.23	2,261
8.205404	extra for vision lite		1 ea	565.23	565
8.205405	extra for louver cutout		1 ea	583.08	583
8.361000	OVERHEAD SECTIONAL DOORS				
8.361011	overhead insulated steel door & frame	14'x14'	1 ea	8,967.80	8,968
8.361012	overhead insulated steel door & frame	16'x16'	2 ea	11,713.05	23,426
8.361013	overhead insulated steel door & frame	18'x16'	2 ea	13,177.18	26,354
8.361015	extra for double row of vision panels	14'	1 ea	2,016.49	2,016
8.361016	extra for double row of vision panels	16'	2 ea	2,304.56	4,609
8.361017	extra for double row of vision panels	18'	2 ea	2,592.63	5,185
8.361018	overhead full vision polycarbonate door, s,s. frame	16'x16'	2 ea	22,270.16	44,540
8.361019	extra for electric operators	1/2 hp	7 ea	2,736.92	19,158
8.400000	ENTRANCES AND STOREFRONTS				
8.410002	aluminum storefront entrance frame	6'0"x7'2 1/2"	1 ea	1,814.69	1,815
8.410003	storefront doors, preglazed		1 leaf	4,402.86	4,403
8.500000	METAL WINDOWS	*powder coat finish*			
8.510401	aluminum windows, single hung W1	4'0x5'0	11 ea	2,141.93	23,561
8.510402	aluminum windows, single hung W2	2'0x5'0	1 ea	1,070.97	1,071
8.710000	DOOR HARDWARE				
8.710001	finish hardware exterior door w/panic device		9 leaf	3,450.89	31,058
8.710002	finish hardware interior door		35 leaf	1,427.96	49,979
8.710003	aluminum threshold		27 lf	39.07	1,055

Code	Item Description		Quantity	Unit Price	Total
8.800000	GLAZING				
8.710001	1" tempered insulating glass in doors and sidelites		64 sf	77.35	4,950
8.950000	FIBERGLASS SANDWICH PANELS				
8.950001	Kalwall with fiberglass sandwich panels TP1	14'0x4'0	4 ea	6,508.53	26,034
8.950001	Kalwall with fiberglass sandwich panels TP2	16'0x4'0	4 ea	7,438.32	29,753
8.950001	Kalwall with fiberglass sandwich panels TP3	12'0x4'0	1 ea	5,578.74	5,579
8.950003	extra for operable hopper window	4'0x4'0	0 ea	594.98	0
8.000000	DOORS, WINDOWS AND GLASS	TOTAL COST	$17.97 /SF		$399,085

Code	Item Description		Quantity	Unit Price	Total
9.000000	FINISHES				$
9.110000	NON-LOAD BEARING STEEL FRAMING				
9.110004	2 1/2" metal studs 16 ga 16"cc	furring	505 sf	4.65	2,348
9.110005	3 5/8" metal studs 16 ga 16"cc	furring	454 sf	5.29	2,402
9.110006	3 5/8" metal studs 16 ga 16"cc	office partitions	4,460 sf	5.29	23,593
9.110007	6" metal studs 16 ga 16"cc	partitions	4,069 sf	6.45	26,245
9.250000	GYPSUM B0ARD SYSTEMS				
9.250002	suspended drywall soffit	G1	42 sf	13.05	548
9.250003	suspended drywall soffit furrdown	G1	21 lf	13.05	274
9.250004	suspended drywall ceiling, moisture resistant	G2	677 sf	13.30	9,004
9.250005	suspended drywall ceiling, 2hr fire rated	G3	212 sf	18.85	3,996
9.250009	5/8"" drywall on metal furring		959 sf	5.60	5,370
9.250011	5/8"" drywall on metal studs	exterior wall	2,389 sf	5.60	13,378
9.250012	5/8"" drywall on metal studs	fume walls	3,400 sf	5.60	19,040
9.250013	5/8"" drywall on metal studs	partitions	17,058 sf	5.60	95,525
9.300000	TILE				
9.300002	ceramic tile full height	wet walls	474 sf	28.00	13,272
9.300003	ceramic tile wainscot	toilets/lockers	841 sf	28.00	23,548
9.300004	ceramic tile base	toilets/lockers	173 lf	30.19	5,223
9.300005	ceramic tile bullnose trim	toilets/lockers	126 lf	30.19	3,804
9.510000	ACOUSTICAL CEILINGS				
9.510201	2x2 suspended ceilings	A1	2,317 sf	15.03	34,825
9.510202	2x2 suspended ceilings, moisture resistant	A2	433 sf	16.12	6,980
9.653000	RESILIENT BASE				
9.653001	rubber base	6"	996 lf	7.65	7,619
9.600000	FLOORING AND CARPET				
9.615106	resilient tile flooring corridor	LVT	542 sf	13.79	7,474
9.615107	resilient tile flooring	linoleum tile	2,279 sf	11.72	26,710
9.670000	FLUID APPLIED FLOORING				
9.672300	epoxy resin floor	toilets/lockers	648 sf	24.55	15,908
9.770000	SPECIAL WALL SURFACING				
9.773000	sanitary wall panels	jan. closet	88 sf	9.52	838

Code	Item Description		Quantity	Unit Price	Total
9.810000	ACOUSTICAL INSULATION				
9.811601	4" batt insulation in partition wall	accoustical	3,874 sf	2.84	11,002
9.811602	6" batt insulation in partition wall	accoustical	2,778 sf	3.11	8,640
9.900000	PAINTING AND COATINGS				
9.910000	EXTERIOR PAINTING				
9.910602	prep. & paint hydrant		1 ea	199.14	199
9.920000	INTERIOR PAINTING				
9.921000	paint all exposed surfaces		22,205 sf	4.14	91,929
9.000000	FINISHES	TOTAL COST	$20.70 /SF		$459,694

Code	Item Description		Quantity	Unit Price	Total
10.000000	SPECIALTIES				$
10.100000	VISUAL DISPLAY UNITS				
10.110401	bulletin board/peg board	allow	1 ea	392.08	392
10.210000	COMPARTMENTS AND CUBICLES				
10.210001	ADA partitions, phenolic		1 ea	2,804.90	2,805
10.210002	standard partitions, phenolic		2 ea	2,623.94	5,248
10.300000	FIREPLACES, EXT. SPECIALTIES AND FLAGPOLES				
10.305402	ground set flagpoles		1 ea	7,240.66	7,241
10.140000	SIGNAGE				
10.140003	town seal	48" diam	1 ea	1,516.63	1,517
10.140004	wall mounted aluminum exterior letters	12"	27 ea	153.82	4,153
10.140005	signs	allow	44 ea	102.54	4,512
10.140006	bronze dedication plaque	20"x30"	1 ea	4,493.87	4,494
10.280000	TOILET AND BATH ACCESSORIES				
10.280013	napkin disposal bin, recessed		3 ea	446.37	1,339
10.280014	feminine hygene dispenser		2 ea	741.94	1,484
10.280015	grab bars 42"		8 ea	107.97	864
10.280016	mop strip		1 ea	126.67	127
10.280017	janitor shelving		1 ea	150.80	151
10.280018	paper towel dispenser, surface mtd	install only (OFCI)	5 ea	45.24	226
10.280019	waste receptacle, semi-recessed		5 ea	542.88	2,714
10.280020	robe hooks		5 ea	54.29	271
10.280021	soap dispenser, surface mtd	install only (OFCI)	5 ea	36.19	181
10.280022	toilet roll holder; single roll	install only (OFCI)	5 ea	24.13	121
10.280024	vanity mirror tilting	18"x30"	5 ea	271.44	1,357
10.280025	shower curtain		2 ea	54.29	109
10.280026	shower curtain rod		2 ea	137.53	275
10.440000	FIRE PROTECTION SPECIALTIES				
10.440001	fire extinguishers, 30lb dry chemical	allow	8 ea	1,417.53	11,340
10.500000	LOCKERS, PROTECTIVE COVERS AND POSTAL SPECIALTIES				
10.500003	lockers	18"x24" sloped top	16 ea	972.67	15,563
10.500006	48" locker bench		1 ea	608.03	608
10.500009	locker room bench pedestals		2 ea	115.82	232
10.000000	SPECIALTIES	TOTAL COST	$3.03 /SF		$67,324

Code	Item Description		Quantity	Unit Price	Total
11.000000	EQUIPMENT				$
11.110000	VEHICLE SERVICE EQUIPMENT				
11.104000	Overhead Fluid Distribution and Waste Fluid Colle	allowance	1 ea	135,000.00	135,000
11.104001	exhaust equipment	allowance	1 ea	19,954.61	19,955
11.104002	Storage Shelving/Benches/Racks - Defer Partial	allowance	1 ea	55,000.00	55,000
11.104003	Miscellaneous Shop and Support Equipment	allowance	1 ea	75,000.00	75,000
11.221600	TELLER & SERVICE EQUIPMENT				
11.104000	48" transaction window	vestibule	1 ea	4,222.43	4,222
11.400000	FOOD SERVICE, RESIDENTIAL, DARKROOM, ATHLETIC EQUIPMENT				
11.400001	food service equipment/appliances	OFOI	0 ea	0.00	0
11.000000	EQUIPMENT	TOTAL COST	$13.02 /SF		$289,177

Code	Item Description		Quantity	Unit Price	Total
12.000000	FURNISHINGS				$
12.210000	WINDOW TREATMENT				
12.210003	aluminum blinds	windows	230 sf	11.46	2,636
12.210004	aluminum blinds	entrance storefront	21 sf	11.46	241
12.350000	MANUFACTURED WOOD CASEWORK				
12.350006	kitchen base unit	p/lam	10 lf	470.50	4,705
12.350007	ADA sink unit		3 lf	470.50	1,412
12.350008	ADA cooktop unit		3 lf	470.50	1,412
12.350009	18" high wall unit	p/lam	3 lf	416.21	1,249
12.350010	36" high wall unit	p/lam	13 lf	428.28	5,568
12.350014	ADA vanity unit		10 lf	470.50	4,705
12.350016	12" solid surface transaction counter		4 lf	109.18	437
12.350018	25" solid surface countertops w/splash		26 lf	218.36	5,677
12.350019	cutout for sink	solid surface	4 ea	179.75	719
12.350020	cutout for cooktop	solid surface	4 ea	361.92	1,448
12.480000	FLOOR MATS AND FRAMES				
12.480001	recessed aluminum entry grille		56 sf	124.26	6,959
12.510000	OFFICE FURNITURE				
12.510006	office furnishings	OFOI	0 ls	0.00	0
12.000000	FURNISHINGS	TOTAL COST	$1.67 /SF		$37,168

PROJECT: NEW DEPARTMENT OF PUBLIC WORKS FACILITY
17 TOWN HALL
TRURO, MA 02666

GAA 22,205 SF

COSTPRO, INC.

Code	Item Description		Quantity	Unit Price	Total
13.000000	SPECIAL CONSTRUCTION				$
13.340000	FABRICATED ENGINEERED STRUCTURES				
13.340001	pre-engineered steel building	building & canopy	17,787 sf	97.36	1,731,742
13.340002	pre-engineered steel building	mezzanines	3,768 sf	73.02	275,139
13.340003	pre-engineered steel building	stairs	118 sf	146.03	17,232
13.340004	pre-engineered steel building	landing	53 sf	146.03	7,740
13.340007	premium for custom colors		1 ls	19,787.69	19,788
13.000000	SPECIAL CONSTRUCTION	TOTAL COST	$92.40 /SF		$2,051,641

Code	Item Description		Quantity	Unit Price	Total
14.000000	CONVEYING SYSTEMS				$
14.450000	VEHICLE LIFTS				
14.400001	Heavy Duty Mobile Column Lifts		1 ea	95,000.00	95,000
14.400002	Two Post Vehicle Lift (16,000 lb)		1 ea	65,000.00	65,000
14.600000	HOISTS AND CRANES				
14.600001	Bridge Crane	allowance	1 ea	110,000.00	110,000
14.000000	CONVEYING SYSTEMS	TOTAL COST	$12.16 /SF		$270,000

PROJECT: NEW DEPARTMENT OF PUBLIC WORKS FACILITY
17 TOWN HALL
TRURO, MA 02666

GAA 22,205 SF

COSTPRO, INC.

Code	Item Description		Quantity	Unit Price	Total
15.000000	MECHANICAL SUMMARY				$
15.100000	PLUMBING		$25.26	/SF	$560,911
15.400000	FIRE PROTECTION		$34.88	/SF	$774,500
15.500000	HVAC		$42.47	/SF	$943,047
15.000000	MECHANICAL SUMMARY	TOTAL COST	$102.61	/SF	$2,278,458

PROJECT: NEW DEPARTMENT OF PUBLIC WORKS FACILITY
17 TOWN HALL
TRURO, MA 02666

GAA 22,205 SF

COSTPRO, INC.

Code	Item Description		Quantity	Unit Price	Total
15.100000	PLUMBING				$
	systems				
15.100001	indentification for plumbing piping and equipment		22,205 sf	0.35	7,772
15.100002	plumbing insulation		22,205 sf	3.54	78,606
15.100003	facility natural gas piping		22,205 sf	1.05	23,315
15.100004	domestic water piping		22,205 sf	4.57	101,477
15.100005	domestic and non-domestic water piping specialties		22,205 sf	0.37	8,216
15.100006	domestic water pumps		22,205 sf	0.19	4,219
15.100007	sanitary waste and vent piping		22,205 sf	1.92	42,634
15.100008	sanitary waste piping specialties		22,205 sf	3.74	83,047
15.100009	general service compressed air systems		22,205 sf	0.75	16,654
15.100010	fuel-fired domestic water heaters		22,205 sf	1.26	27,978
	fixures including rough-in				
15.100199	water cooler		1 ea	2,730.74	2,731
15.100210	wall hydrant; frostproof vaccuum breaker	3/4"	4 ea	419.26	1,677
15.100216	lavatory, wall hung ADA vitreous china	wall hung	2 ea	3,030.88	6,062
15.100217	lavatory, countertop ADA vitreous china	countertop	3 ea	2,006.86	6,021
15.100218	24x24" service sink	floor	1 ea	5,355.54	5,356
15.100219	single bowl sink, s.s.		1 ea	2,854.33	2,854
15.100223	shower		2 ea	3,648.83	7,298
15.100225	urinal		1 ea	2,271.69	2,272
15.100227	water closet	wall mount	5 ea	3,001.46	15,007
15.100228	shower stall, fiberglass	36"x36"	2 ea	2,766.05	5,532
15.400000	PLUMBING	TOTAL COST	$25.26 /SF		$560,911

Code	Item Description		Quantity	Unit Price	Total
15.400000	FIRE PROTECTION				$
	systems				
15.400001	water-based fire-suppression systems		22,205 sf	12.89	286,222
15.400002	fire pump & vault		1 ea	88,278.12	88,278
15.400003	storage cistern	50,000 gal.	1 ea	400,000.00	400,000
15.400000	FIRE PROTECTION	TOTAL COST	$34.88 /SF		$774,500

Code	Item Description		Quantity	Unit Price	Total
15.500000	HVAC				$
	systems				
15.500001	general provisions for heating, ventilating and air conditioning		22,205 sf	0.66	14,655
15.500002	identification for hvac piping and equipment		22,205 sf	0.35	7,772
15.500003	testing, adjusting, and balancing for hvac		22,205 sf	1.27	28,200
15.500004	hvac instrumentation and controls		22,205 sf	3.83	85,045
15.500005	hydronic piping		22,205 sf	5.27	117,020
15.500006	hydronic pumps		22,205 sf	1.81	40,191
15.500007	hvac water treatment		22,205 sf	0.06	1,332
15.500008	metal ducts		22,205 sf	11.59	257,356
15.500009	hvac fans		22,205 sf	4.65	103,253
15.500010	air terminal units		22,205 sf	1.33	29,533
15.500011	special exhaust systems		22,205 sf	0.50	11,103
15.500012	diffusers, registers and grilles		22,205 sf	2.15	47,741
15.500013	air outlets and inlets		22,205 sf	0.34	7,550
15.500014	heating boilers		22,205 sf	1.31	29,089
15.500015	heat exchangers		22,205 sf	0.17	3,775
15.500016	packaged compressor and condensing units		22,205 sf	0.96	21,317
15.500017	air to air energy recovery equipment		22,205 sf	0.88	19,540
15.500018	indoor central station air handling units		22,205 sf	5.02	111,469
15.500019	unit heaters		22,205 sf	0.32	7,106
15.500000	HVAC	TOTAL COST	$42.47 /SF		$943,047

Code	Item Description		Quantity	Unit Price	Total
16.000000	ELECTRICAL				$
	systems				
15.500001	low voltage electrical power conductors and cables		22,205 sf	6.43	142,778
15.500002	raceway and boxes for electrical systems		20,305 sf	4.16	84,469
15.500002	motor connections		20,305 sf	0.42	8,528
15.500002	lighting control devices (includes wire & comduit)		20,305 sf	0.62	12,589
15.500002	medium voltage switchgear		20,305 sf	1.40	28,427
15.500002	panelboards		20,305 sf	2.05	41,625
15.500002	wiring devices		20,305 sf	8.47	171,983
15.500002	interior lighting		20,305 sf	6.06	123,048
15.500002	exterior lighting		20,305 sf	2.15	43,656
15.500002	communications		20,305 sf	0.74	15,026
15.500002	electronic safety & security	N.I.C.	20,305 sf	0.00	0
15.500002	fire alarm		20,305 sf	5.42	110,053
16.000000	ELECTRICAL	TOTAL COST	$59.32 /SF		$1,317,130

SECTION IV

Zoning & Permitting

55 Walkers Brook Drive, Suite 100, Reading, MA 01867
Tel: 978.532.1900

MEMORANDUM

TO: Truro Department of Public Works

FROM: Weston & Sampson, Inc.

DATE: April 22, 2025

SUBJECT: Schematic Design: 24 Town Hall Road, Zoning and Permitting Analysis Memo

---

SITE INFORMATION:

Parameter	Information	Notes:
Site Address:	24 Town Hall Road	
Map/Lot:	46-269-0	
Size (acres):	223,898 SF	
Zoning District	Residential	
Book/Page:	92/23	

ZONING INFORMATION:

Zoning District: Residential

Zoning Map Date: 2009 Open Space & Recreation Plan

Zoning By-Law Date: April 2014

Overlay Districts:

District	Applicable	Notes:
Water Resources Protection District	Yes	Water Supply Well, IWPA
Flood Plain District	No	
Affordable Rental Housing Overlay District	No	
Solar Farm Overlay District	No	

DIMENSIONAL REGULATIONS:

DIMENSION	Required	Notes:
Minimum lot size (square feet)	33,750 sf	
Minimum lot frontage	150 ft	
Minimum Front setback	25 ft	
Minimum Side setback	25 ft	
Maximum Building Height	2 stories, 30	*5a
Building Height	3	

Note 5a. Except buildings which do not have gable, hip, or gambrel roofs; for these buildings, a ridge or hip maximum height shall not exceed twenty-three (23) ft as measured to the highest point of the roof structure.

PERMITTING SUMMARY:

1) Site Plan Review (Commercial Development), Truro Planning Board

- Required for building permits, for site clearing, filling, grading, material delivery or construction. *Per Zoning Section 70.1.D.1.*
- Need waiver for smaller Parking Stall Dimensions (9'x18') per *Zoning Section 30.9.G.4.*

2) Truro Historical Commission and/or Historic Review Board

- Project is located within the historic "Hill of Churches" area.
- Project should be confirmed with Truro Historical Commission under the "Preserving Historic Properties Bylaw." The Historical Commission can determine a building "significant" if it is over 75 years old. Per the property record card for 24 Town Hall Road, we have one building on site (Building 5) that is exactly 75 years old. See below:
  Building 1 Year Built: 2004 (style: gov building)
  Buidling 2 Year Built: 1970 (style: storage garage)
  Building 3 Year Built: 1980 (style: storage garage)
  Building 4 Year Built: 1966 (style: office building)
  Building 5 Year Built: 1950 (style: storage garage)

GENERAL NOTES:

1) This zoning and permitting analysis review does not include construction permits such as Building, Electrical, Demo permits, etc.

2) See Environmental Receptor Map, the entire site falls within the coastal zone, but not in any coastal resource area (such as marshes, dunes, beaches, barrier beaches, and banks), FEMA Flood Zone or an Outstanding Resource Water (ORW). This project may need to be reviewed with the Mass Office of Coastal Management Zone (CZM) if federal permits are filed.

3) See Human Receptor Map, the shading that covers the whole map represents the historic Hill of Churches area. The town hall building itself is a historic structure, represented by a faint red dot. The pink circle represents an IWPA, the blue circle represents a DEP Approved Zone I, and the red dot represents an existing Public Water Supply.

4) This parcel is **not** located within the FEMA Flood Hazard Zone.

5) See Water Resource Protection Map, the site is located within the Water Resources Protection District.

DESIGN AND PERMITTING CONSIDERATIONS:

TRURO ZONING BYLAWS:

SECTION 30 Use Regulations	
30.2 Use Table	
Institutional, Municipal Use: Permitted	Permitted
30.4 Water Resource Protection District	
C. Site Design Requirements 1. Runoff shall be directed toward vegetated swales or basins for surface infiltration. Catch basins and piped storm sewers shall be used only where other methods are infeasible. 2. Where the premises are partially outside the Water Resource Protection District, site design shall maximize protection of groundwater through siting potential pollution sources such as on-site disposal systems outside of the District, to the extent feasible.	Stormwater design requirements
30.9 Parking	
C. Off Street Parking Schedule**:** 5. No parking shall be delineated within any Town or State Road. 6. Where the calculation of required parking spaces results in a fractional number, the number shall be rounded up to the next whole number.	
Institutional, Municipal Use: • 1 space per employee maximum shift, plus • 1 space per each 3 seats in area of public assembly	Parking requirements
F. Location Requirements 2. No parking area shall be located within ten (10) feet of a street line and ten (10) feet from a side or rear property line	
G. Design Requirements 2. In a given storm event the first inch of rainfall, known as the "first flush," contains approximately ninety percent (90%) of all contaminants; therefore this portion of runoff shall be contained on the lot. Stormwater runoff shall be directed in such a way as to recharge the groundwater beneath the lot and in such a manner as to not increase the flow of runoff into wetlands.	Stormwater design requirements
4. Design Criteria 45^{o}: 9' x 17.5' 60^{o}: 9' x 19' 90^{o}: **9' x 20'**	Parking Stall requirements – Need waiver for 9'x18' stalls

SECTION 50 Area and Height Regulations	
50.1 Regulations Table	
50.1.B B. Exceptions to height limitations may be authorized by Board of Appeals by special permit.	
SECTION 70 Site Plan Review	
D. Site Alteration - Violation of the Bylaw	
1. No building permit, site clearing, filling, grading, material deliveries or construction shall be initiated on any site to which this section applies until the required Commercial or Residential Site Plan approval is obtained from the Planning Board. 2. Nothing herein shall be construed to prohibit such site clearing or altering as may be necessary to conduct such pre-development studies as geotechnical tests, soil borings, wetlands determination, percolation tests for septic systems as required by the Board of Health, or other similar tests required by any Town Bylaw or regulation of the Commonwealth.	Site Plan Review Requirement
70.3 Commercial Development	
A. Commercial Site Plan Review is required for: 1. Any construction, alteration, expansion, or modification of any properties, structures, and uses other than that of single or two family residences and their accessory uses and structures. 2. All other projects specifically requiring site plan approval or review as stated in other sections of this Zoning Bylaw.	Site Plan Review Commercial Requirement
SECTION 90 Bounds of Zoning Districts	
90.5. Overlay Districts	
A. Water Resource Protection District. The Water Resource Protection Districts for the Town of Truro shall be determined from the following atlas which is on file with the Truro Town Clerk: “Zones of Contribution to public supply wells and water table contours, December 1990.” Land in a Water Resource Protection District may be used for any purpose otherwise permitted in the underlying district, subject to the restrictions in § 30.4 of this bylaw.	Yes the site falls within the Water Resource Protection District

Path: \\wse03.local\WSE\Depts\Water\Water Resources Group\GIS - Constraints Mapping\Truro\DPW\GIS\GIS.aprx **User:** GasparA **Saved:** 4/9/2025 10:06 AM **Opened:** 4/9/2025 10:20 AM



Data Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs

Legend

- Work Area
- Hydrologic Connection

Streams
- Perennial Stream
- Intermittent Stream

DEP Wetland Areas
- Marsh/Bog
- Wooded marsh
- Cranberry Bog
- Salt Marsh
- Open Water
- Reservoir (with PWSID)
- Tidal Flats
- Beach/Dune
- Article 97 Land
- ACECs

NHESP Estimated Habitats of Rare Wildlife
- NHESP Estimated Habitats of Rare Wildlife
- NHESP Priority Habitats of Rare Species

NHESP Certified Vernal Pools
- NHESP Certified Vernal Pools
- NHESP Potential Vernal Pools
- Cold Water Fisheries

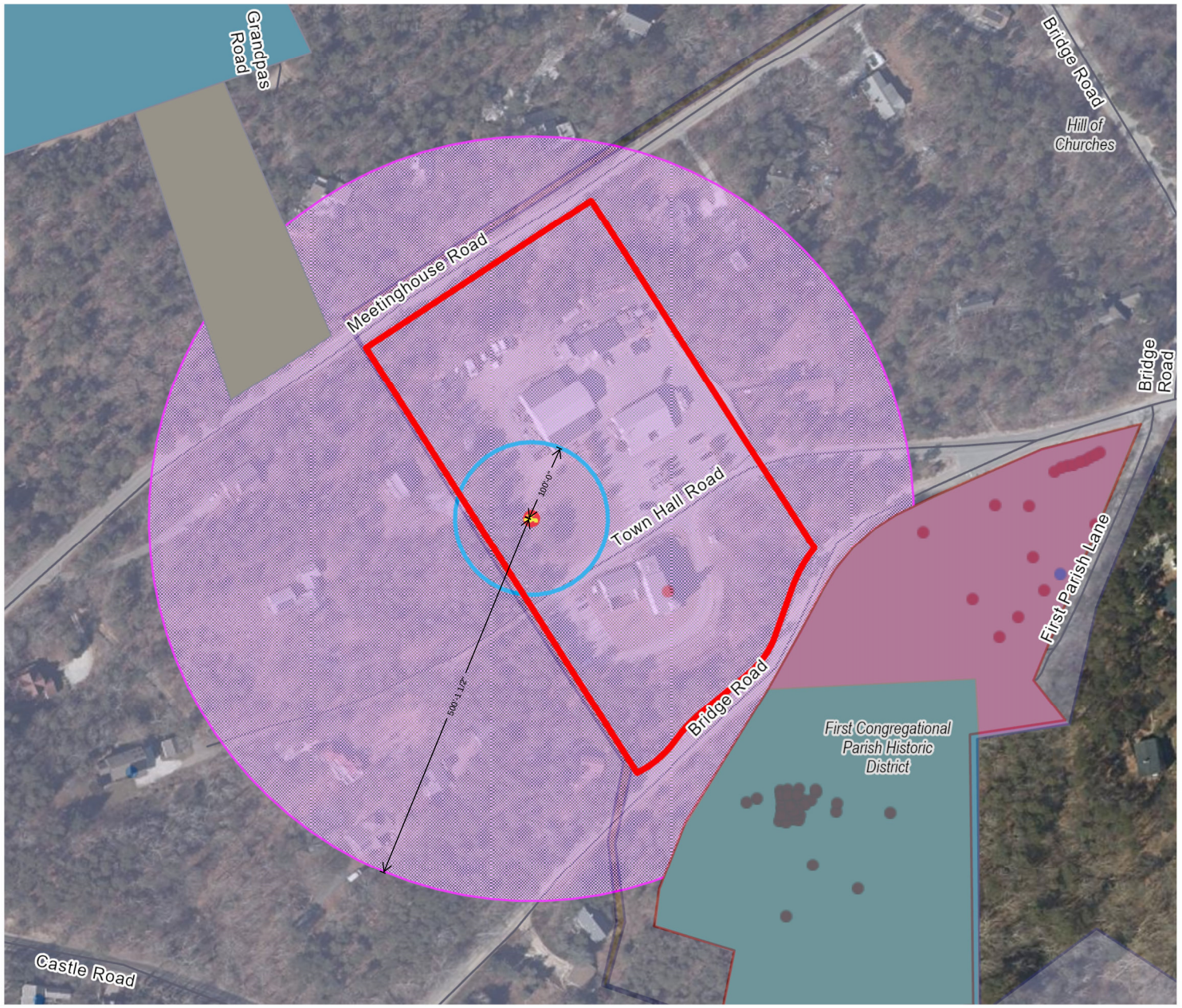
Outstanding Resource Waters
- Public Water Supply Contributor
- ORW for ACEC
- ORW for both Water Supply and Other

FEMA National Flood Hazard Layer
- 1% Annual Chance Flood Hazard
- Regulatory Floodway
- Area of Undetermined Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Area with Reduced Risk Due to Levee
- Area Not Included

FIGURE 1

24 Town Hall Road
Truro, MA
Environmental
Receptors Map

Weston & Sampson



Castle Hill Snow Village Area

N
W E
S

200 100 0 200
Feet

Data Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs

Legend

- Work Area
- MassHistoric Commission Inventory (Points)
  - National Register of Historic Places ✓
  - Preservation Restriction
  - Massachusetts Historic Landmark
  - Local Historic District
  - NRHP and LHD
  - Inventoried Property
- MassHistoric Commission Inventory (Areas)
  - National Register of Historic Places
  - Preservation Restriction
  - Massachusetts Historic Landmark
  - Local Historic District
  - NRHP and LHD
  - Inventoried Property
- MassHistoric Commission Towns
  - Survey Pending
  - No Survey Pending
- Type II Surfacewater Discharge Permit
- AUL Sites
- Tier Classified Sites
  - TIERI
  - TIERII
  - TIER1D
- Protected and Recreation Open Space
  - State-State Dispute
  - State-Non-Profit Dispute
  - State-Municipal Dispute
  - State-Private Dispute
  - Private-Private Dispute
  - Public Non-Profit
- County
- Federal
- Conservation Organization
- Land Trust
- Municipal
- Private Non-Profit
- Other
- Private
- State
- Unknown
- <all other values>
- Public Water Supplies
  - Community Groundwater Source
  - Surface Water Intake
  - Non-Community Groundwater Source ✓
  - Emergency Surface Water
  - DEP Approved Zone I ✓
  - DEP Approved Zone II
  - IWPA ✓
- Surface Water Protection Areas
  - Surface Water Protection Areas - Zone A
  - Surface Water Protection Areas - Zone B
  - Surface Water Protection Areas - Zone C
  - DEP Approved Zone I
- BWP Landfills by Status
  - Inactive
  - Closed
  - Active

FIGURE 2

24 Town Hall Road
Truro, MA

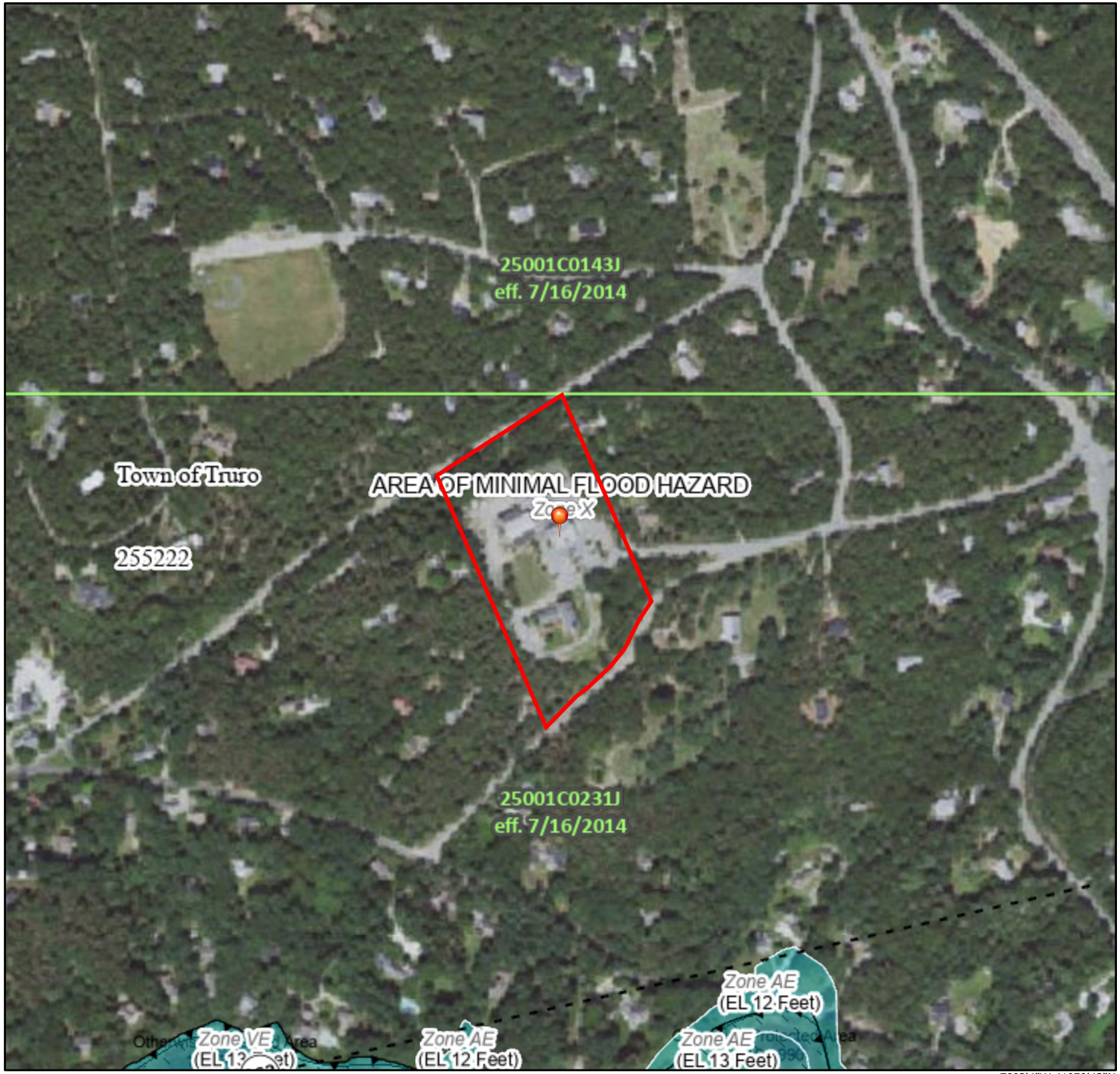
Human Receptor Map

Weston & Sampson

National Flood Hazard Layer FIRMette

FEMA

70°3'41"W 42°0'10"N



70°3'4"W 41°59'43"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/11/2025 at 8:59 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

0 1 2 Miles

ATLANTIC OCEAN

PAMET GROUNDWATER LENS

CAPE COD BAY

CHEQUESSETT GROUNDWATER LENS

PROVINCETOWN

East Harbor

Moon Pond

Pilgrim Pond

Great Swamp

Site Location:
24 Town Hall Road

Little Pamet River

Pamet Harbor

Pamet River

Pamet River

Great Pond
Round Pond
Snow Pond
Ryder Pond

Round Pond
Sough Pond
Horseleech Pond

WELLFLEET

6

6A

4

6

4

6

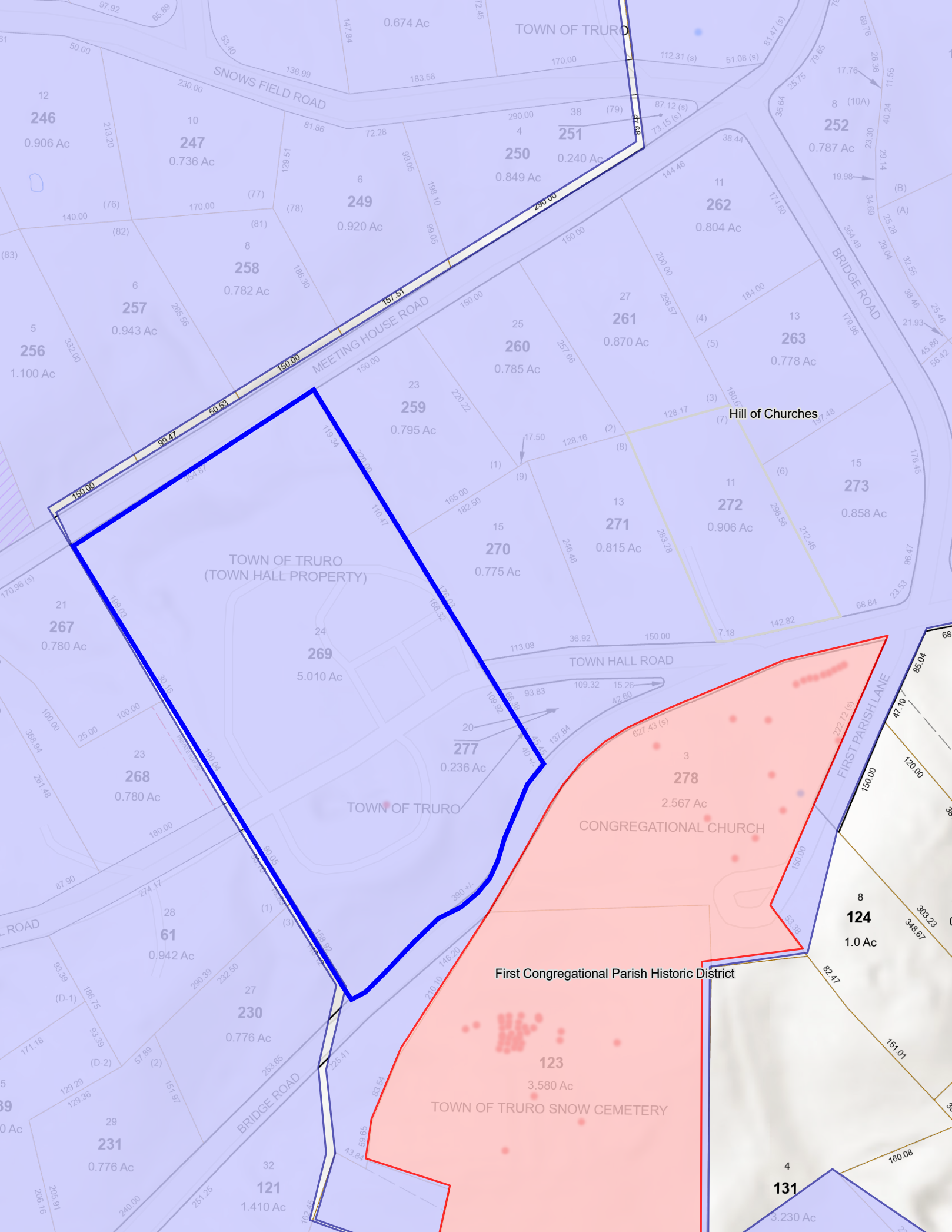
8

January 19, 2009
Map Compilation and Design: MapWorks
MAPSatWORK@aol.com
Environmetal Data Source: MassGIS
Groundwater Contours Source: Cape Cod Commission

- Water Supply Well
- Zone 2 - Area of Contribution to Public Water Supply Well
- Interim Well Head Protection Area
- Approximate Depth to Groundwater (1 foot contour interval)
- Wetlands
- FEMA Flood Hazard Area V Zone
- FEMA Flood Hazard Area A Zone
- FEMA Q3 Flood Hazard Zone
- 200 Foot River Protection Act Buffer
- Open Water
- Outstanding Resource Waters (Watershed areas afforded protection under Massachusetts Surface Water Quality Standards of 1995)

MAP 5 - WATER RESOURCES

Town of Truro - 2009 Open Space and Recreation Plan


Hill of Churches
First Congregational Parish Historic District
MEETING HOUSE ROAD
SNOWS FIELD ROAD
BRIDGE ROAD
TOWN HALL ROAD
FIRST PARISH LANE
TOWN OF TRURO
(TOWN HALL PROPERTY)
TOWN OF TRURO
CONGREGATIONAL CHURCH
TOWN OF TRURO SNOW CEMETERY
246
0.906 Ac
247
0.736 Ac
250
0.849 Ac
251
0.240 Ac
252
0.787 Ac
249
0.920 Ac
258
0.782 Ac
257
0.943 Ac
256
1.100 Ac
262
0.804 Ac
261
0.870 Ac
263
0.778 Ac
260
0.785 Ac
259
0.795 Ac
270
0.775 Ac
271
0.815 Ac
272
0.906 Ac
273
0.858 Ac
267
0.780 Ac
269
5.010 Ac
277
0.236 Ac
268
0.780 Ac
278
2.567 Ac
124
1.0 Ac
61
0.942 Ac
230
0.776 Ac
231
0.776 Ac
123
3.580 Ac
121
1.410 Ac
131
3.230 Ac

SECTION V

Program Documents

USER GROUP PROGRAM NEEDS

Truro, MA; Public Works Facility

1/10/2025

DIVISION	TITLE / NAME	TYPE	PRIVATE OFFICE	WORKSTATIONS IN SHARED OFFICE	LOCKERS	MUSTER	PARKING
DPW Administration	DPW Director (Jarrod Cabral)	Admin	✓		Full	1	1
3 FT	Office Manager (Mike Kaelberer)	Admin		✓	Full	1	1
	Project Manager (future)	Admin		✓	Full	1	1
DPW Workforce	Tim King	Workforce			Full		1
9 FT	Chris Lucy	Workforce			Full	1	1
	Peter Morris	Workforce			Full	1	1
	Lee Russel	Workforce			Full	1	1
	Jeff Holway	Workforce			Full	1	1
	Mike Locke	Workforce			Full	1	1
	Kyle Halvorson	Workforce			Full	1	1
	Jeff Falk	Workforce			Full	1	1
	Alex Riese	Workforce			Full	1	1
Transfer Station	Matt Peterson	Workforce				1	
3 FT	Joe Martello	Workforce				1	
	Paul Iannuzzo	Workforce				1	
Additional Personnel	Contractor	Contractor					
during Emergency Events	Contractor	Contractor					
12 as needed	Contractor	Contractor					
	Contractor	Contractor					
	Contractor	Contractor					
	Contractor	Contractor					
	Contractor	Contractor					
	Contractor	Contractor					
	Contractor	Contractor					
	Contractor	Contractor					
	Contractor	Contractor					
	Contractor	Contractor					
	Contractor	Contractor					

TOTALS:

ADMIN	OFFICE	WORKSTATIONS	FULL	MUSTER	STAFF
3	1	2	12	14	12

WORKFORCE
12

HALF
0

CONTRACTOR
12

TRURO DPW
VEHICLE AND EQUIPMENT INVENTORY

updated: 5/21/2025

WSE ID #	TOWN ID #	DIVISION	MODEL TYPE	MAKE / MODEL	SIZE	FLEET TYPE	DIMENSIONS			STORAGE NEEDS			
							LENGTH	WIDTH	SF	STALL	FLOOR	CANOPY	OUTSIDE
1	T-29	DPW	TRUCK	PETERBILT 389	LARGE	VEHICLE	28	10	280	●			
2		DPW	TRACTOR	PETERBILT	LARGE	VEHICLE	28	10	280	●			
3		DPW	TRUCK	INTERNATIONAL 7400	LARGE	VEHICLE	28	10	280	●			
4		DPW	DUMP TRUCK	INTERNATIONAL 7400	LARGE	VEHICLE	24	9	216	●			
5	T-3	DPW	PICK UP TRUCK	FORD F450	MEDIUM	VEHICLE	21	8	168	●			
6		DPW	DUMP TRUCK	FORD F450	MEDIUM	VEHICLE	21	8		●			
7	T-6	DPW	PICK UP	FORD F350	SMALL	VEHICLE	18	8	144	●			
8	S-1	DPW	PICK UP	FORD F350	SMALL	VEHICLE	18	8	144	●			
9		DPW	DUMP TRUCK		LARGE	VEHICLE	24	9	216	●			
10	T-8	DPW	PICK UP	FORD F-350	SMALL	VEHICLE	18	8	144	●			
11	T-4	DPW	PICK UP	FORD F350	SMALL	VEHICLE	18	8	144	●			
12	T-2	DPW	PICK UP	FORD F350	SMALL	VEHICLE	18	8	144	●			
13	T-9	DPW	PICK UP	FORD F350	SMALL	VEHICLE	18	8	144	●			
14		DPW	PICK UP	FORD F350	SMALL	VEHICLE	18	8	144	●			
15		DPW	VAN	E150 ECONOLINE	SMALL	VEHICLE	18	8	144	●			
16		DPW	SWEEPER	ELGIN	LARGE	VEHICLE	26	9	234	●			
17		DPW	EXCAVATOR	JOHN DEERE 130G	LARGE	EQUIPMENT	21	9	189			●	
18		DPW	LOADER	JOHN DEERE	LARGE	EQUIPMENT	25	9	225			●	
19		DPW	LIFT	JLG 600S	LARGE	EQUIPMENT	30	9	270			●	

TRURO DPW
VEHICLE AND EQUIPMENT INVENTORY

WSE ID #	TOWN ID #	DIVISION	MODEL TYPE	MAKE / MODEL	SIZE	FLEET TYPE	DIMENSIONS			STORAGE NEEDS			
							LENGTH	WIDTH	SF	STALL	FLOOR	CANOPY	OUTSIDE
20		DPW	GENERATOR BOX TRAILER		MEDIUM	ATTACHMENT	15	6	90		●		
21		DPW	GENERATOR TRAILER		MEDIUM	ATTACHMENT	12	4	48		●		
22		DPW	WOOD CHIPPER	BANDIT	OBLONG	ATTACHMENT	12	5	60		●		
23		DPW	TRAILER	TIMPTE	MEDIUM	ATTACHMENT	24	8	192			●	
24		DPW	TRAILER	CAM	MEDIUM	ATTACHMENT	21	8	168			●	
25		DPW	TRAILER	KAUFMAN	MEDIUM	ATTACHMENT	24	8	192			●	
26		DPW	TRAILER	INTERSTATE	LARGE	ATTACHMENT	30	9	270			●	
27		DPW	TRAILER	BENCE	MEDIUM	ATTACHMENT	18	8	144			●	
28		DPW	TRAILER		SMALL	ATTACHMENT	14	6	84			●	
29		DPW/TS	TRASH TRACTOR	SPECTOR	X-LARGE	off site	36	10	360				
30		DPW/TS	TRASH TRACTOR	SPECTOR	X-LARGE	off site	36	10	360				
31		DPW/TS	TRASH TRACTOR	SPECTOR	X-LARGE	off site	36	10	360				
32		DPW/TS	TRASH TRACTOR	SPECTOR	X-LARGE	off site	36	10	360				
33		DPW/TS	TRASH TRACTOR	WARREN	X-LARGE	off site	36	10	360				
34		DPW	RIDE MOWER	JOHN DEERE	SMALL	EQUIPMENT	4	6	24		●		
35		DPW		HYSTER	SMALL	EQUIPMENT	7	5	35		●		
36		DPW	SKID STEER	JOHN DEERE 323E	SMALL	EQUIPMENT	7	5	35		●		
37		DPW	RIDE MOWER	TORO	SMALL	EQUIPMENT	7	5	35		●		
38		DPW	RIDE MOWER	TORO	SMALL	EQUIPMENT	7	5	35		●		
39		DPW	RIDE MOWER	BOB CAT	SMALL	EQUIPMENT	7	5	35		●		
40		DPW	??		X-SMALL	EQUIPMENT	4	3	12		●		
41		DPW	PUSH MOWER		X-SMALL	EQUIPMENT	4	3	12		●		
42		DPW	PAINT MACHINE		X-SMALL	EQUIPMENT	4	3	12		●		
43		DPW	POWER WASHER		X-SMALL	EQUIPMENT	3	3	9		●		
44		DPW	WALK BEHIND SAW	EDCO	X-SMALL	EQUIPMENT	3	4	12		●		
45		DPW	LIFT	JLG	SMALL	EQUIPMENT	6	4	24		●		
46		DPW	FORKLIFT	YALE	SMALL	EQUIPMENT	6	3	18		●		
47		DPW	MOWER	TIGER	X-SMALL	EQUIPMENT	3	4	12		●		

WSE ID #	TOWN ID #	DIVISION	MODEL TYPE	MAKE / MODEL	SIZE	FLEET TYPE	DIMENSIONS			STORAGE NEEDS			
							LENGTH	WIDTH	SF	STALL	FLOOR	CANOPY	OUTSIDE
48		DPW	WING PLOW			ATTACHMENT	9	12	108		●		
49		DPW	WING PLOW			ATTACHMENT	9	12	108		●		
50		DPW	WING PLOW			ATTACHMENT	9	12	108		●		
51		DPW	STANDARD PLOW			ATTACHMENT	5	9	45		●		
52		DPW	STANDARD PLOW			ATTACHMENT	5	9	45		●		
53		DPW	STANDARD PLOW			ATTACHMENT	5	9	45		●		
54		DPW	STANDARD PLOW			ATTACHMENT	5	9	45		●		
55		DPW	STANDARD PLOW			ATTACHMENT	5	9	45		●		
56		DPW	STANDARD PLOW			ATTACHMENT	5	9	45		●		
57		DPW	STANDARD PLOW			ATTACHMENT	5	9	45		●		
58		DPW	STANDARD PLOW			ATTACHMENT	5	9	45		●		
59		DPW	PLOW (ORANGE)			ATTACHMENT	8	11	88		●		
60		DPW	LOADER PLOW			ATTACHMENT	4	9	36			●	
61		DPW	LOADER PLOW			ATTACHMENT	3	4	12			●	
62		DPW	SANDER BODY			ATTACHMENT	5	3	15			●	
63		DPW	SANDER BODY			ATTACHMENT	5	3	15			●	
64		DPW	SANDER BODY			ATTACHMENT	5	3	15			●	
65		DPW	FORKLIFT		SMALL	EQUIPMENT	12	5	60			●	
		TRANSFER STATION	TRACTOR	WHGM-ACLACL									
		TRANSFER STATION	TRACTOR	INTERNATIONAL									
		TRANSFER STATION	LOADER	JOHN DEERE 544H									

Town of Truro
Department of Public Works
Space Needs Summary

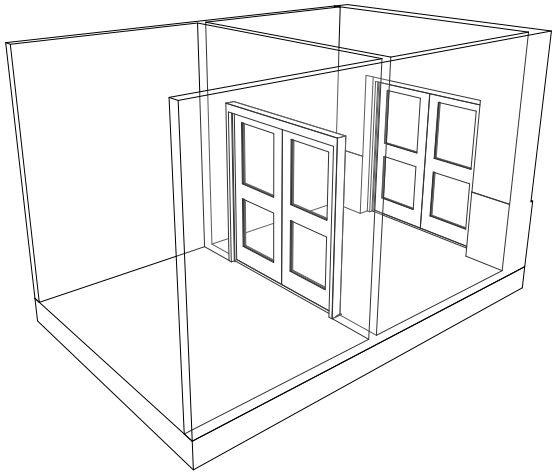
Building Requirements 1/10/2025

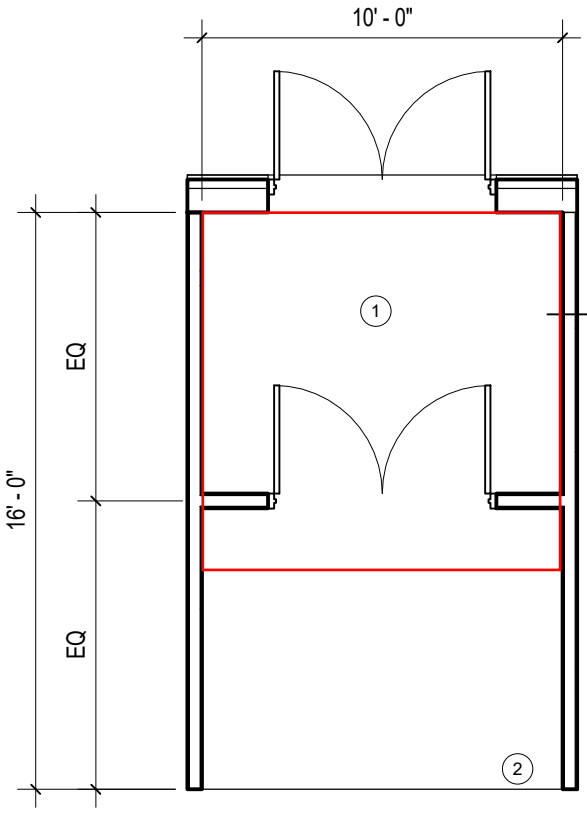
Area	Description	Original Size (SF)	Rev 1 Size (SF)	Rev 2 Size (SF)	Rev 3 Size (SF)	R & C Size (SF)	Notes
Office & Office Support Areas	Vestibule/Waiting/Reception	220	160	100	100	100	
	Admin Open Office (2 Admin Staff)	120	100	100	100	**200**	10 x 10 workstations
	DPW Director	224	196	180	180	180	
	Copy/File/Mail Area	225	120	96	96	96	
	File Storage	225	180	120	120	120	
	Conference Room	320	224	224	224	224	
	Small Supply Closet	24	24	24	24	24	
	Large Supply Closet	168	120	100	100	100	
	Telephone / Data Room	120	100	100	100	100	
	Janitor Closet	36	36	36	36	36	
	Subtotal:	1,682	1,260	1,080	1,080	1,180	
	Area Grossing Factor (10%):	168	126	102	102	102	
	Circulation (10%):	185	139	118	118	118	
	TOTAL:	**2,035**	**1,525**	**1,300**	**1,300**	**1,400**	
Employee Facilities	Male Locker/Shower/Toilet	540	540	460	460	460	
	Female Locker/Shower/Toilet	180	180	160	160	160	
	Muster Room	480	440	440	440	440	
	Break/Training/Muster Room Storage Closet	120	100	80	80	80	
	Report Writing Room	120	100	80	80	80	
	Main Electric Room	140	120	100	100	100	will need mechanical utility space
	Plumbing/Fire Protection Room	192	120	100	100	100	TBD what type of energy system
	Subtotal:	1,772	1,600	1,420	1,420	1,420	
	Area Grossing Factor (10%):	177	160	130	130	130	
	Circulation (10%):	195	176	150	150	150	
	TOTAL:	**2,144**	**1,936**	**1,700**	**1,700**	**1,700**	
Work Shops & Material Storage	Sign Shop	500	320	320	290	290	
	Carpentry Shop	1,400	1,155	1,050	1,160	1,160	
	Shop Support Office	144	120	100	100	100	
	~~Material / Supply Storage (Custodial)~~	400	320	320	-	-	
	~~Equipment Storage Bay (Custodial)~~	1,120	980	850	-	-	
	Subtotal:	3,564	2,895	2,640	1,550	1,550	
	Area Grossing Factor (5%):	178	145	128	78	78	
	Circulation (5%):	187	152	132	72	72	
	TOTAL:	**3,929**	**3,192**	**2,900**	**1,700**	**1,700**	

Town of Truro
Department of Public Works
Space Needs Summary

Building Requirements 1/10/2025

Area	Description	Original Size (SF)	Rev 1 Size (SF)	Rev 2 Size (SF)	Rev 3 Size (SF)	R & C Size (SF)	Notes
Vehicle Maintenance	Welding Area	600	480	360	360	360	
	Maintenance Equipment/Material Storage	500	320	320	250	250	
	~~Maintenance Bay~~	1,100	1,000	1,000	-	-	
	Maintenance Bay	1,100	1,000	1,000	1,000	1,000	
	Maintenance Bay	1,600	1,200	1,200	1,200	1,200	
	Fluid Storage Room	256	196	196	196	196	
	Maintenance Office / Reference Room	120	120	120	120	120	
	Maintenance Workshop	180	144	144	144	144	
	Maintenance Tire Storage & Shop	396	108	108	108	108	
	Parts Storage Room	750	450	450	440	440	
	Subtotal:	6,602	5,018	4,898	3,818	3,818	
	Area Grossing Factor (5%):	330	251	245	191	191	
	Circulation (5%):	347	263	257	191	191	
	TOTAL:	**7,279**	**5,532**	**5,400**	**4,200**	**4,200**	
Wash Area	Wash Bay	1,650	1,250	1,250	1,250	1,250	
	Wash Equipment Room	100	100	100	100	100	
	Subtotal:	1,750	1,350	1,350	1,350	1,350	
	Circulation:	n/a	n/a	n/a	n/a	n/a	
	TOTAL:	**1,750**	**1,350**	**1,350**	**1,350**	**1,350**	
Vehicle and Equipment Storage	Vehicle / Equipment Storage	18,620	18,050	16,150	9,430		
	Subtotal:	18,620	18,050	16,150	9,430		
	Area Grossing Factor (5%):	931	903	808	470		
	Circulation:	n/a	n/a	n/a	n/a		
** double as assembly space for Town Meetings. Sized to fit +/- 900 ppl. Assembly Group A-3	**TOTAL:**	**19,551**	**18,953**	**16,958**	**9,900**		
	Option 1: Drive-in/back-out (separate)						
	Large Fleet Storage Garage (9 diesel trucks)					6,480	48 x 135
	Small Fleet Storage Garage (7 gas trucks)					3,850	35 x 110
	Canopy					*3,600*	
Concentrated chairs only - not fixed	Subtotal:					10,330	
	Area Grossing Factor (5%):					517	
	Option 1 Total					**10,847**	
7 net sf/occ 900 occ x 7 sf/occ= 6,300 sf minimum							
	Option 2: Drive-in/back-out (combined)						
	Fleet Storage Garage					11,070	82 x 135
	Canopy					*2,460*	
stage: 12 x 24 +/-	Subtotal:					11,070	
	Area Grossing Factor (5%):					554	
	Option 2 Total					**11,624**	
	Option 3: Drive-Thru						open corner for mech. Room?
	Fleet Storage Garage					12,825	95 x 135
	Canopy					*4,050*	
	Subtotal:					12,825	
	Area Grossing Factor (5%):					641	
	Option 3 Total					**13,466**	
	TOTAL:	**36,689**	**32,487**	**29,608**	**20,150**	**21,196**	Option 1
						21,973	Option 2
						23,816	Option 3





1 Vestibule - 160sf
3/16" = 1'-0"

ROOM FINISHES

FLOORS: CERAMIC

WALLS: GWB PAINTED

CEILING: 2' X 2' ACT TILE

MEP/DATA REQUIREMENTS

HEATING

COOLING

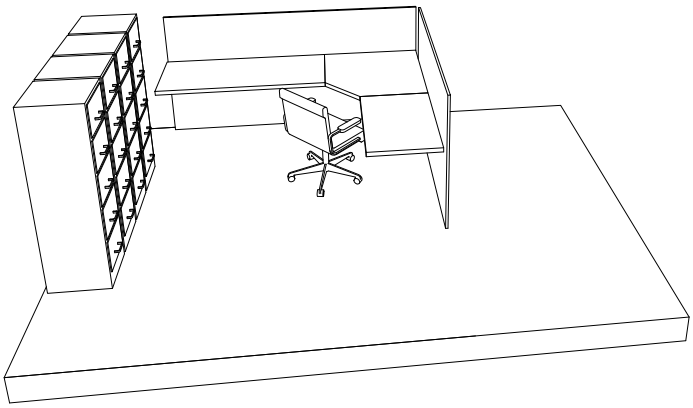
DUPLEX ELECTRICAL OUTLETS

DATA OUTLET JACKS

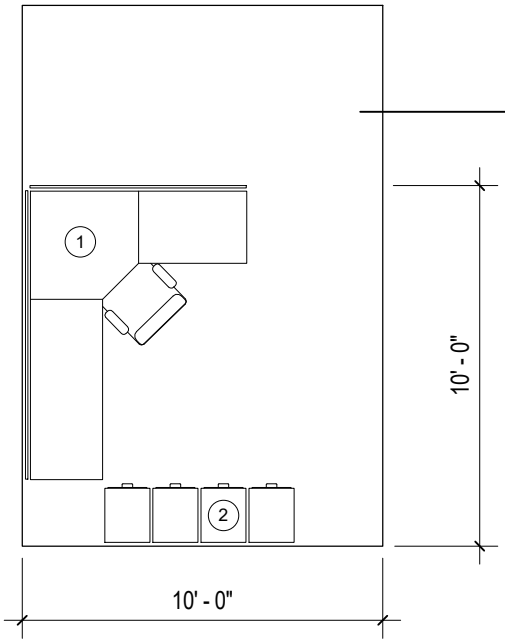
COMPONENTS:

1. VESTIBULE
2. OPEN TO ADMIN

DRAFT



Add one (1) additional staff space



1 Admin Open Office - 100sf
3/16" = 1'-0"

ROOM FINISHES

FLOORS: CARPET TILE

WALLS: GWB PAINTED

CEILING: 2' X 2' ACT TILE

MEP/DATA REQUIREMENTS

HEATING

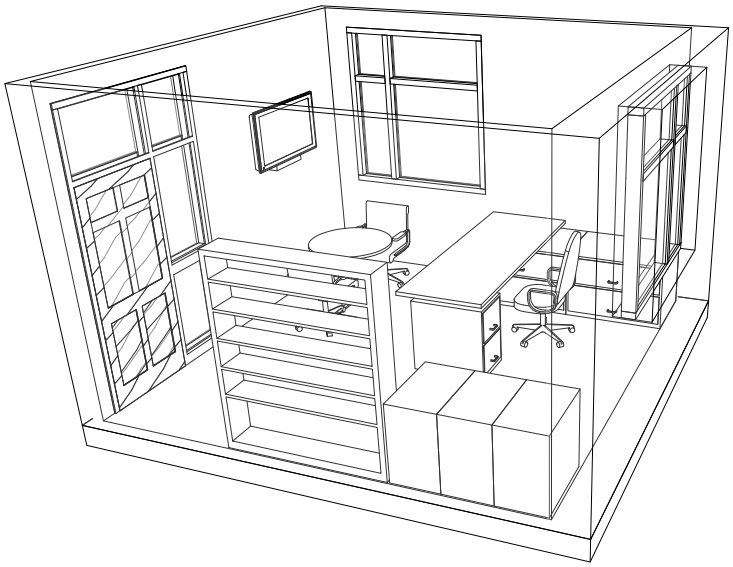
COOLING

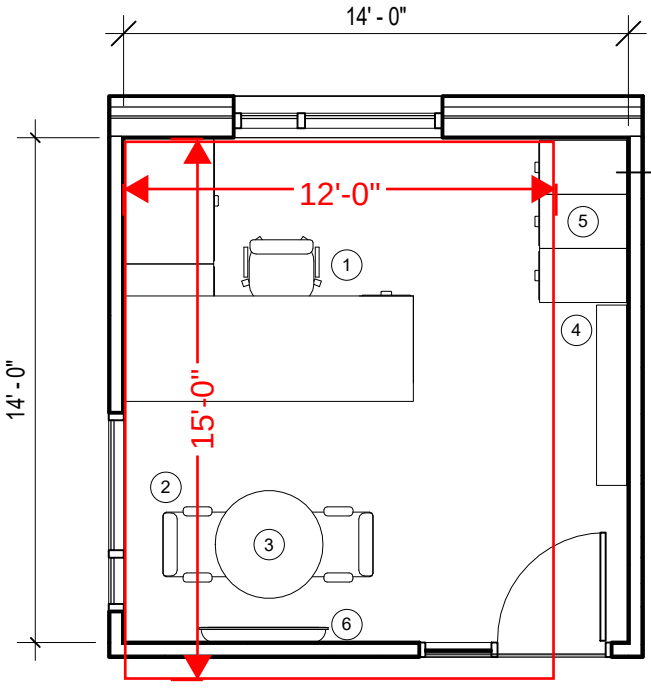
DUPLEX ELECTRICAL OUTLETS

COMPONENTS:

1. CHAIR & DESK
2. FILE CABINETS

DRAFT





1 DPW Director Office - 196sf
3/16" = 1'-0"

ROOM FINISHES

FLOORS: CARPET TILE

WALLS: GWB PAINTED

CEILING: 2X2 ACT TILE

MEP/DATA REQUIREMENTS

HEATING

COOLING

DUPLEX ELECTRICAL OUTLETS

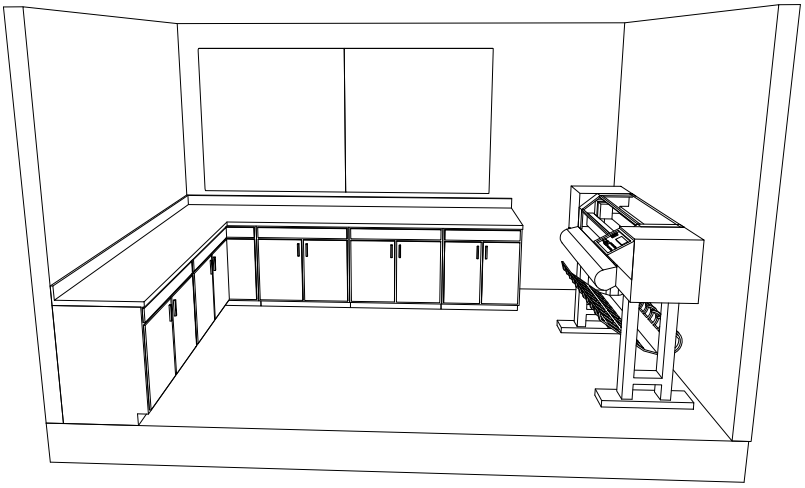
DATA OUTLET JACKS

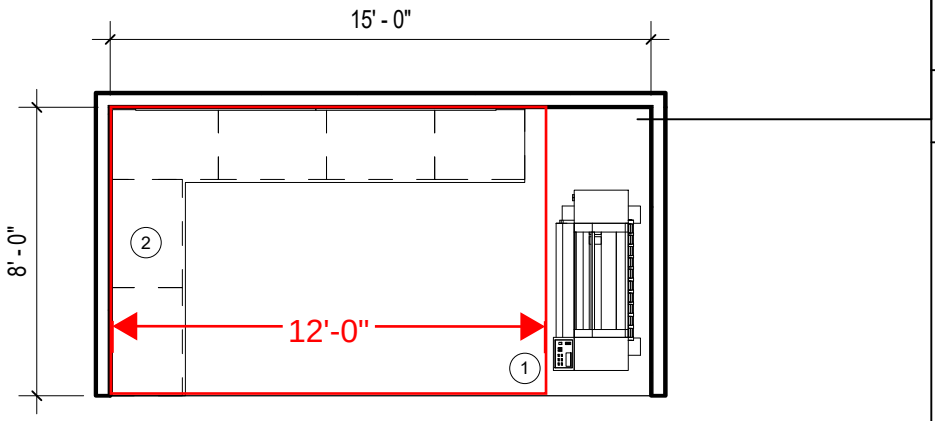
COAX/HDMI CABLING

COMPONENTS:

1. EXECUTIVE CHAIR & DESK
2. GUEST CHAIRS
3. CONFERENCE TABLE & CHAIRS
4. BOOKCASE
5. FILE CABINETS
6. FLAT SCREEN TV

DRAFT





1 Copy/File Room - 120sf
3/16" = 1'-0"

ROOM FINISHES

FLOORS: CARPET TILE

WALLS: GWB PAINTED

CEILING: 2X2 ACT TILE

MEP/DATA REQUIREMENTS

HEATING

COOLING

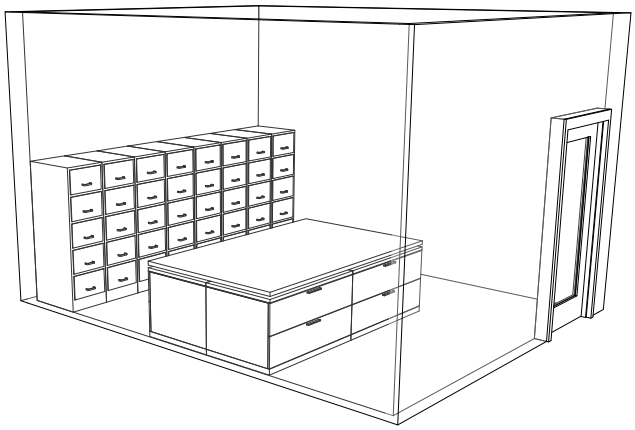
DUPLEX ELECTRICAL OUTLETS

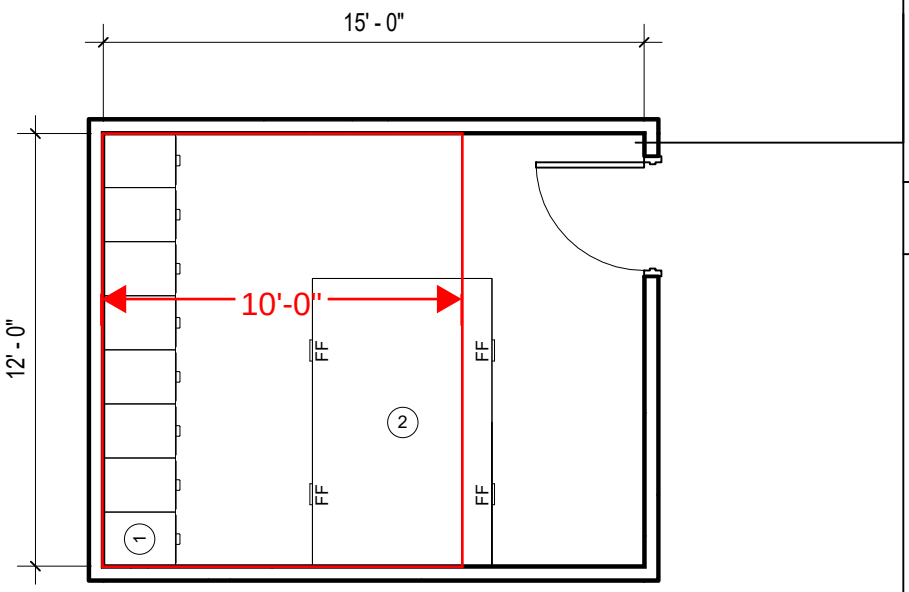
DATA OUTLET JACKS

COMPONENTS:

1. COPY MACHINE/PRINTER
2. WORK COUNTER & BASE CABINETS (BELOW)
3. BULLETIN BOARD

DRAFT





1 File Storage Area - 180sf
3/16" = 1'-0"

ROOM FINISHES

FLOORS: RESILIENT FLOORING

WALLS: GWB PAINTED

CEILING: ACT TILES

MEP/DATA REQUIREMENTS

HEATING

COOLING

DUPLEX ELECTRICAL OUTLETS

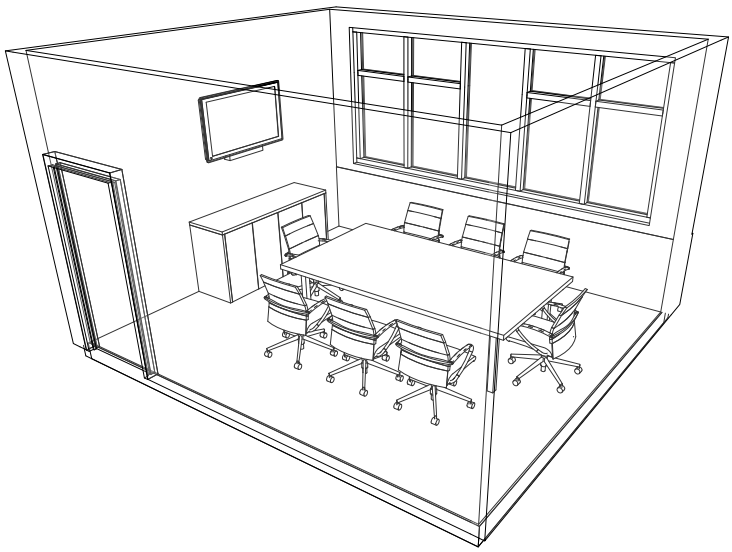
DATA OUTLET JACKS

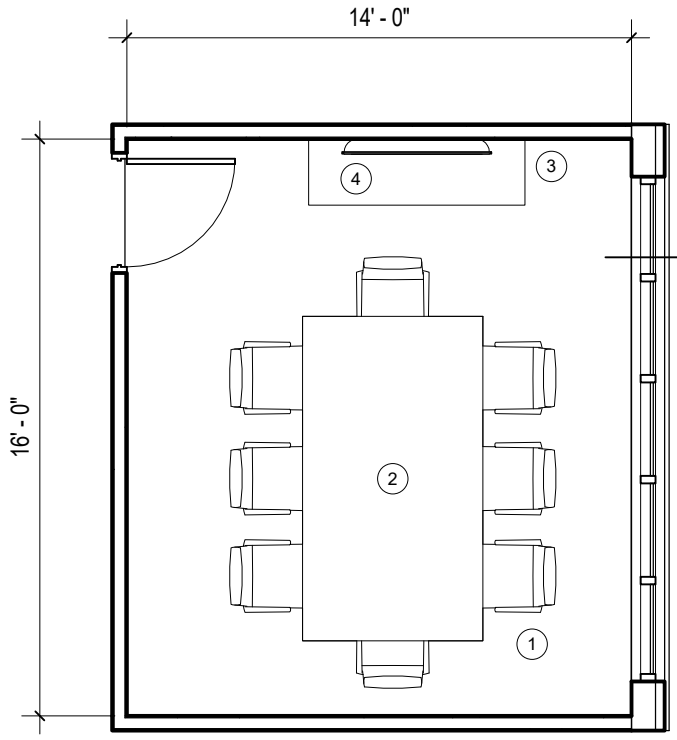
COMPONENTS:

1. FILE CABINETS
2. (4) FLAT FILES (BELOW)
   WITH TABLE TOP (ABOVE)

DRAFT

Weston & Sampson	TRURO JAN 2019	**File Storage - 180sf** 120sf	A5





1 Conference Room - 224sf
3/16" = 1'-0"

ROOM FINISHES

FLOORS: CARPET TILE

WALLS: GWB PAINTED

CEILING: 2' x 2' AC T Tiles

MEP/DATA REQUIREMENTS

HEATING

COOLING

DUPLEX ELECTRICAL OUTLETS

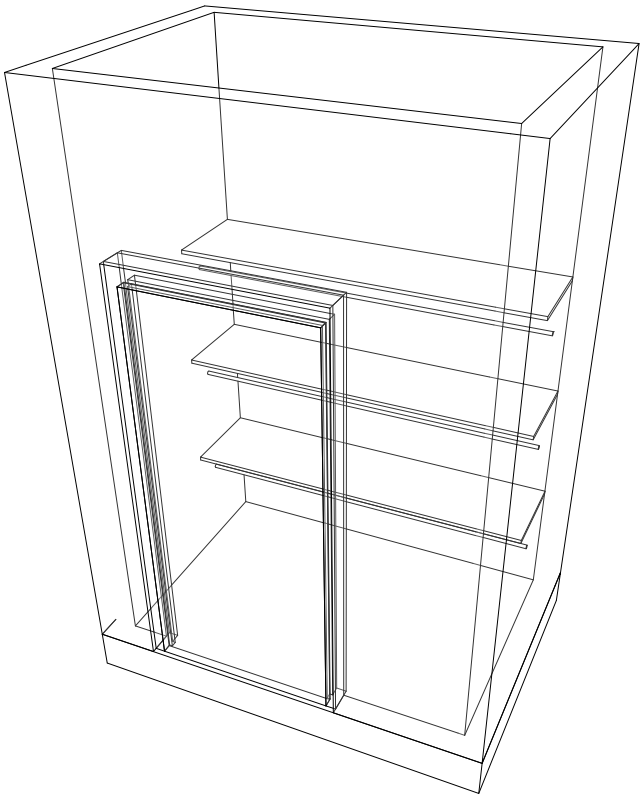
DATA OUTLET JACKS

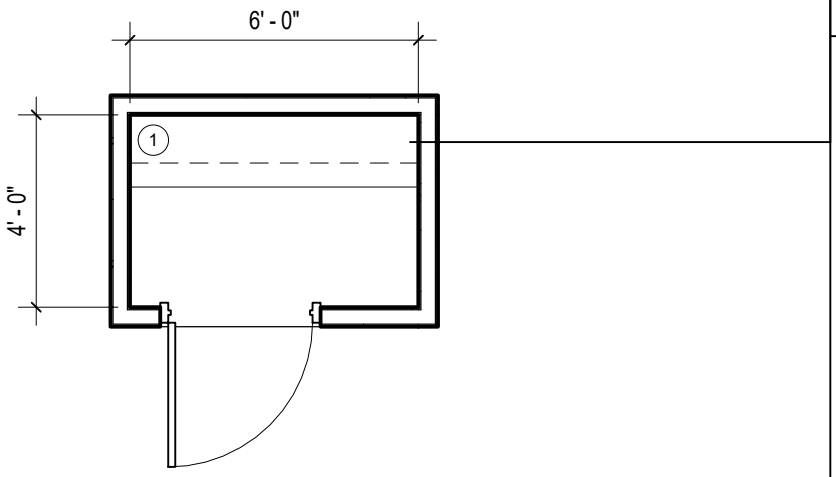
COAX/HDMI CABLING

COMPONENTS:

1. (8) EXECUTIVE CHAIR
2. CONFERENCE TABLE
3. CREDENZA
4. FLAT SCREEN TV

DRAFT





1 Small Supply Closet - 24sf
1/4" = 1'-0"

ROOM FINISHES

FLOORS: CARPET TILE

WALLS: GWB PAINTED

CEILING: 2' X 2' ACT TILE

MEP/DATA REQUIREMENTS

HEATING

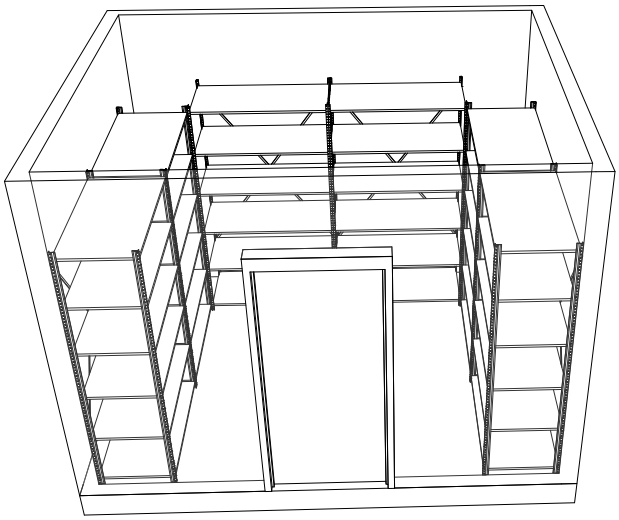
COOLING

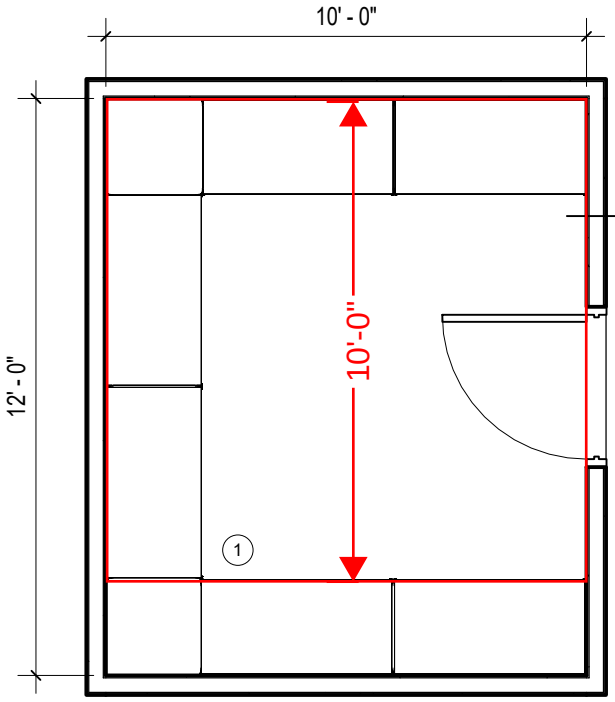
DUPLEX ELECTRICAL OUTLETS

COMPONENTS:

1. WALL MOUNTED SHELVING

DRAFT





1 Large Supply Closet 120sf
1/4" = 1'-0"

ROOM FINISHES

FLOORS: CARPET TILE

WALLS: GWB PAINTED

CEILING: 2' X 2' ACT TILE

MEP/DATA REQUIREMENTS

HEATING

COOLING

DUPLEX ELECTRICAL OUTLETS

DATA OUTLET JACKS

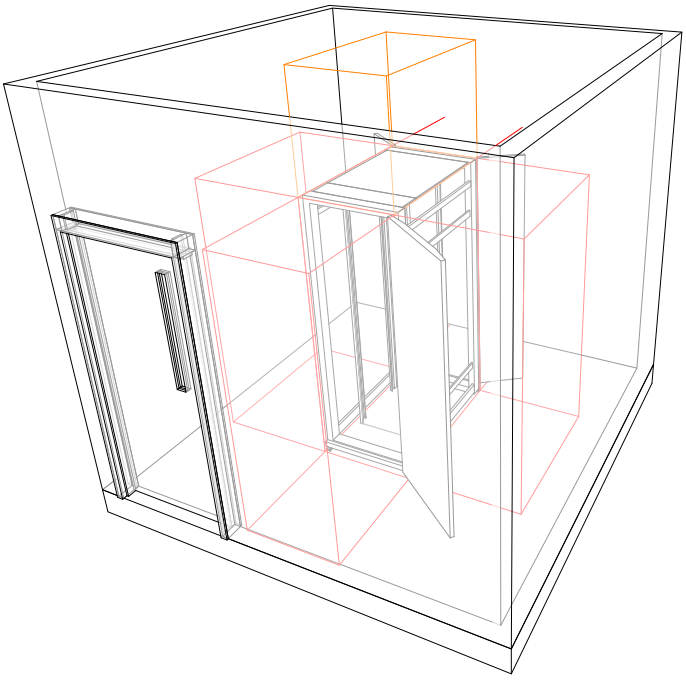
COMPONENTS:

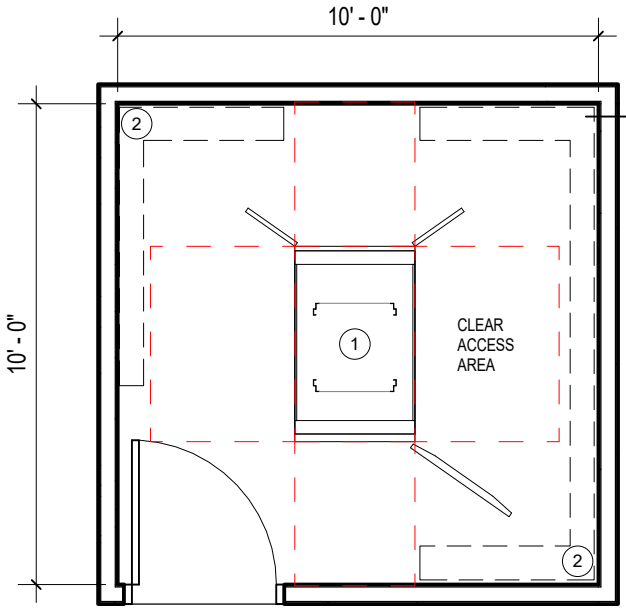
1. UTILITY SHELVING

NOTE:
SIZED TO BE CONVERTED INTO A FUTURE OFFICE IF NEEDED

DRAFT

Weston & Sampson	TRURO JAN 2019	**Large Supply Closet 120sf** 100sf	A8





1 Telephone/Data Room - 100 sf
1/4" = 1'-0"

ROOM FINISHES

FLOORS: RESILIENT FLOORING

WALLS: GWB PAINTED

CEILING: OPEN TO ABOVE

MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

DATA OUTLET JACKS

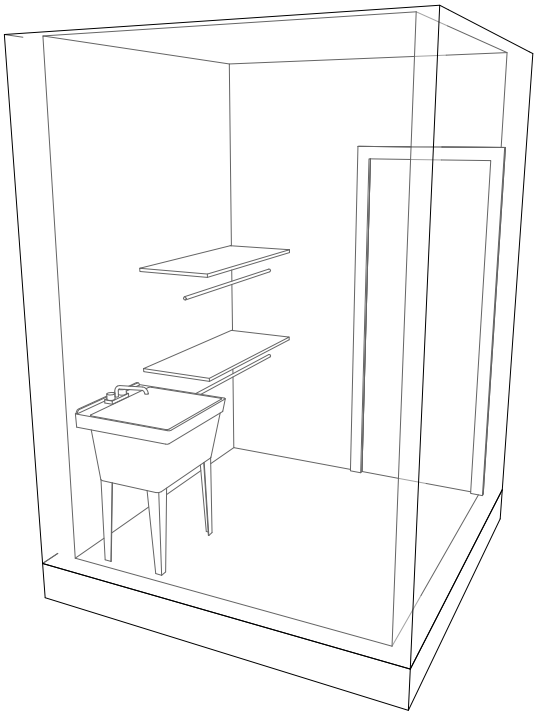
RACKMOUNTED POWER

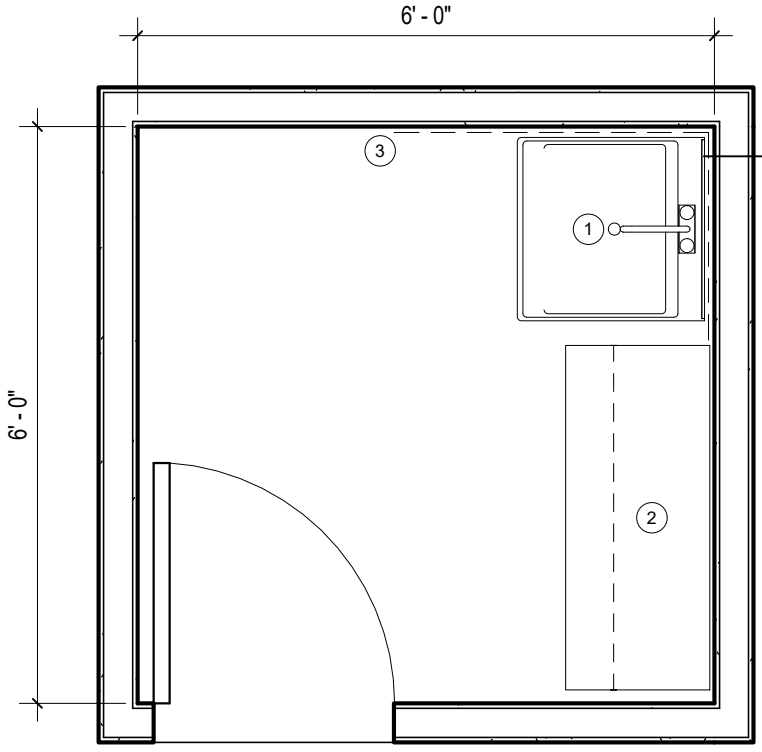
COMPONENTS:

1. DATA RACK
2. PLYWOOD BACKER BOARD FOR BUILDING SYSTEM COMPONENTS (SECURITY, CABLE, ETC.)

DRAFT

Weston & Sampson	TRURO JAN 2019	**Telephone/Data Room - 100sf**	A9





1 Janitor Closet - 36sf
1/2" = 1'-0"

ROOM FINISHES

FLOORS: RESILIENT FLOORING

WALLS: GWB PAINTED

CEILING: 2X2 ACT TILE

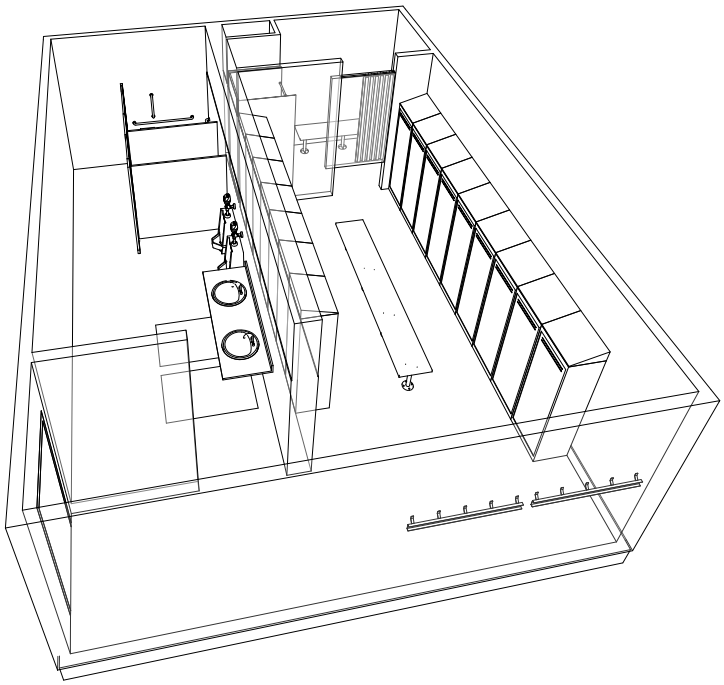
MEP/DATA REQUIREMENTS

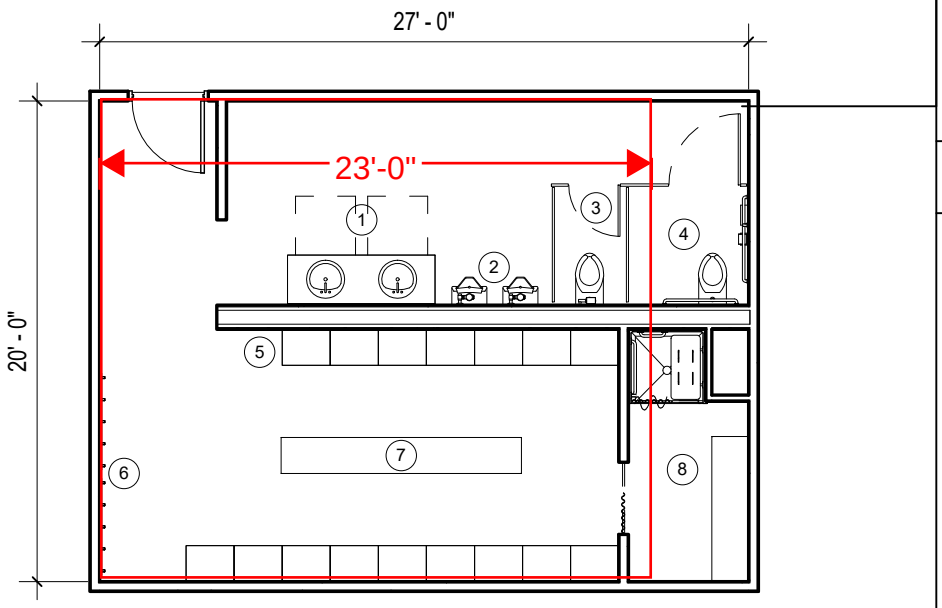
GFI DUPLEX ELECTRICAL OUTLETS

COMPONENTS:

1. UTILITY SINK
2. SHELF WITH POLE
3. FRP PANELING AT SINK

DRAFT





1 Male Locker/Shower/Toilet 540sf
1/8" = 1'-0"

460sf

ROOM FINISHES

FLOORS: RESINOUS FLOORING

WALLS: CERAMIC TILE / GWB PAINTED

CEILING: ACT TILE

MEP/DATA REQUIREMENTS

HEATING

COOLING

SEPARATE TOILET ROOM EXHAUST

GFI DUPLEX ELECTRICAL OUTLETS

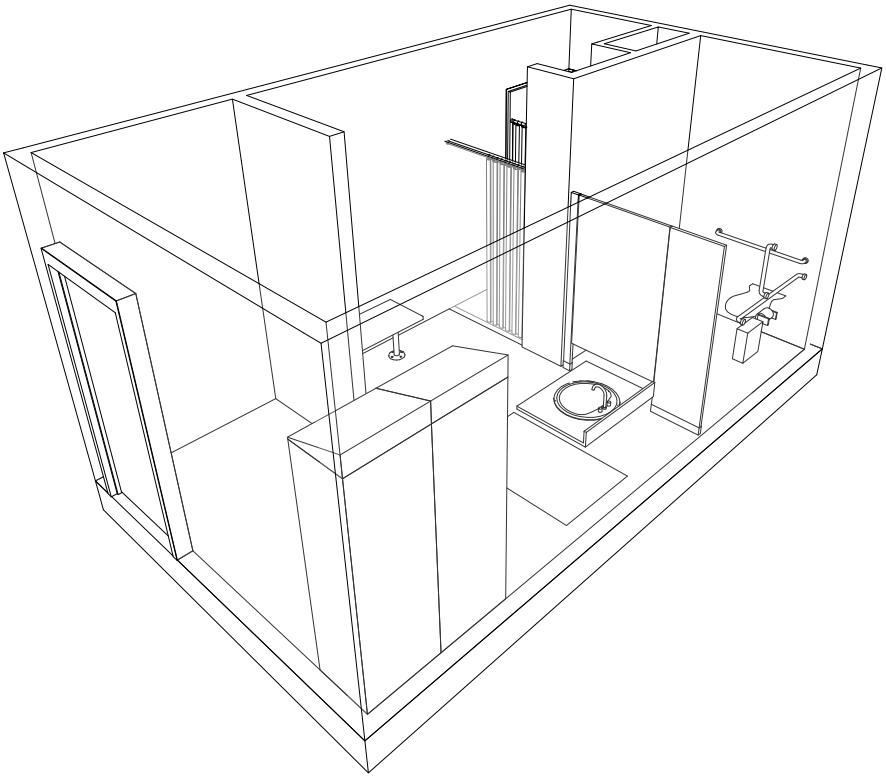
TRAP PRIMERS

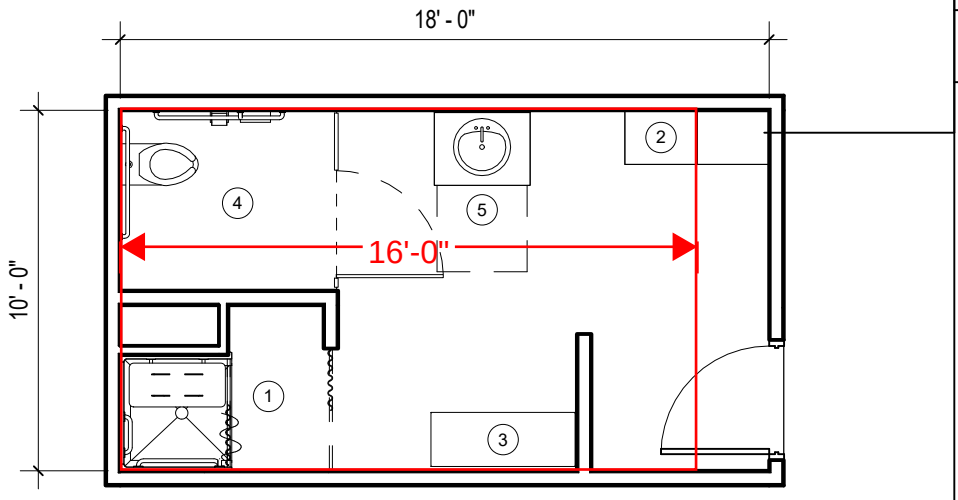
FLOOR DRAINS

COMPONENTS:

1. COUNTER & SINKS
2. URINAL (2)
3. STANDARD TOILET
4. ADA TOILET
5. (16) 18" X 24" LOCKERS
6. WET GEAR AREA
7. BENCH
8. ADA SHOWER

DRAFT





1 Female Locker/Shower/Toilet 180sf
3/16" = 1'-0"

160sf

ROOM FINISHES

FLOORS: RESINOUS EPOXY FLOOR

WALLS: CERAMIC TILES & GWB PAINTED

CEILING: MOISTURE RESISTANT ACT TILES

MEP/DATA REQUIREMENTS

HEATING

COOLING

SEPARATE TOILET ROOM EXHAUST

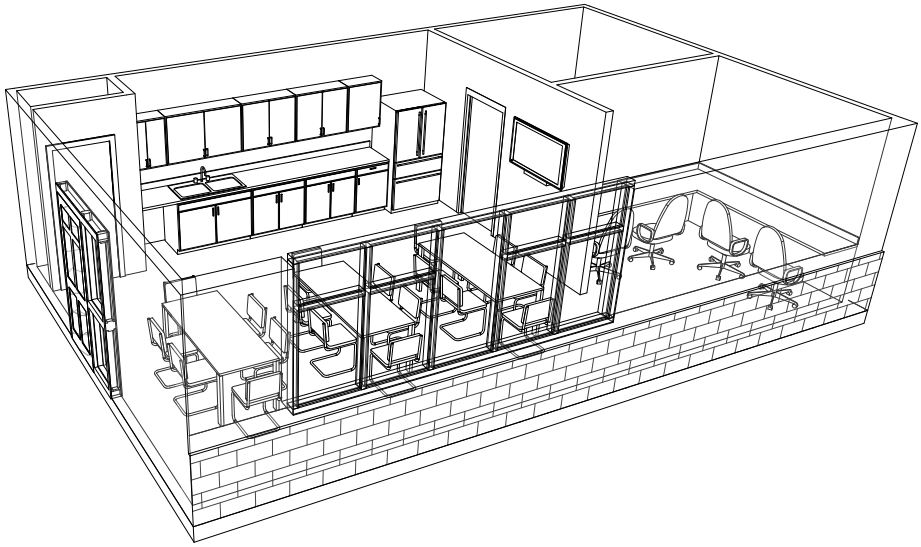
GFI ELECTRICAL OUTLETS

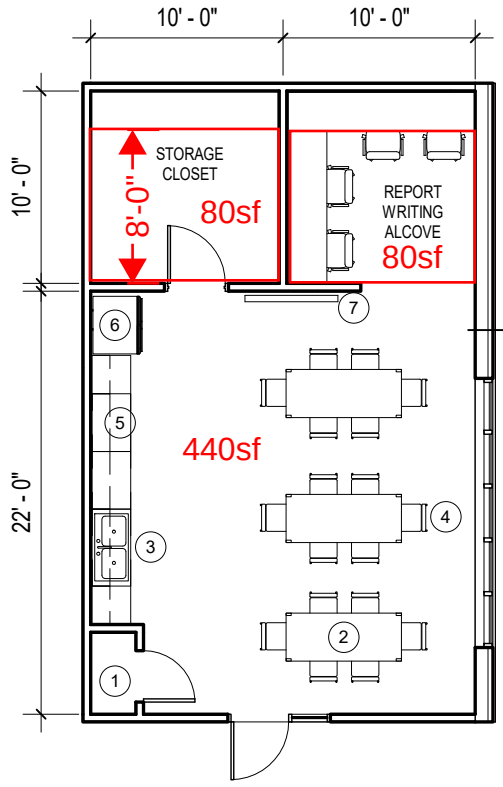
COMPONENTS:

1. ADA SHOWER STALL
2. (2) 18" X 24" LOCKERS
3. BENCH
4. ADA TOILET
5. COUNTER & SINK

DRAFT

Weston & Sampson	TRURO JAN 2019	**Female Locker/Shower/Toilet - 180sf**	B2





1 Muster Room/Storage/Report Writing - 640sf
1" = 10'-0"

600sf

ROOM FINISHES

FLOORS: RESILIENT FLOORING

WALLS: GWB PAINTED

CEILING: 2X2 ACT TILE

MEP/DATA REQUIREMENTS

HEATING

COOLING

DUPLEX ELECTRICAL OUTLETS

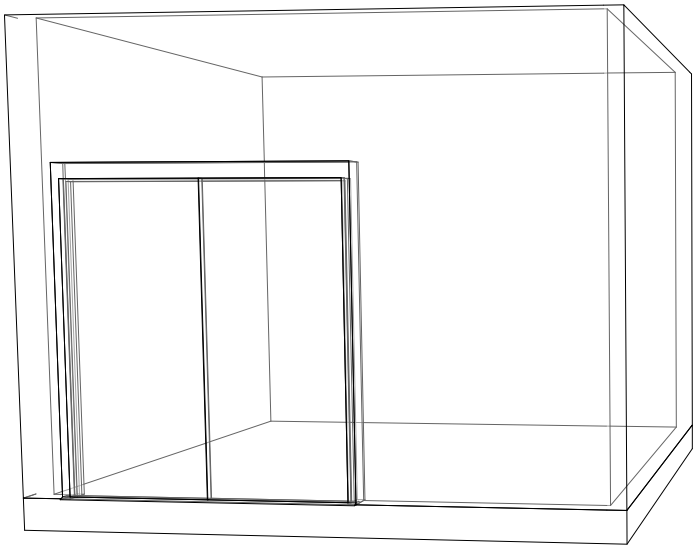
DATA OUTLET JACKS

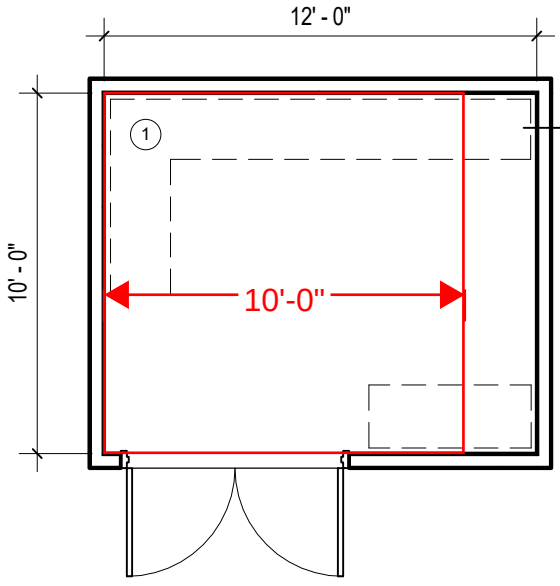
COAX/HDMI CABLING

COMPONENTS:

1. PANTRY
2. (3) 6' LONG TABLES
3. DOUBLE SINK
4. (18) CHAIRS
5. COUNTER & CABINETS
6. REFRIGERATOR
7. FLAT SCREEN TV

DRAFT





1 Main Electric Room - 120sf
3/16" = 1'-0"

100sf

ROOM FINISHES

FLOORS: CONCRETE

WALLS: GWB PAINTED

CEILING: OPEN TO STRUCTURE

MEP/DATA REQUIREMENTS

HEATING

COOLING

DUPLEX ELECTRICAL OUTLETS

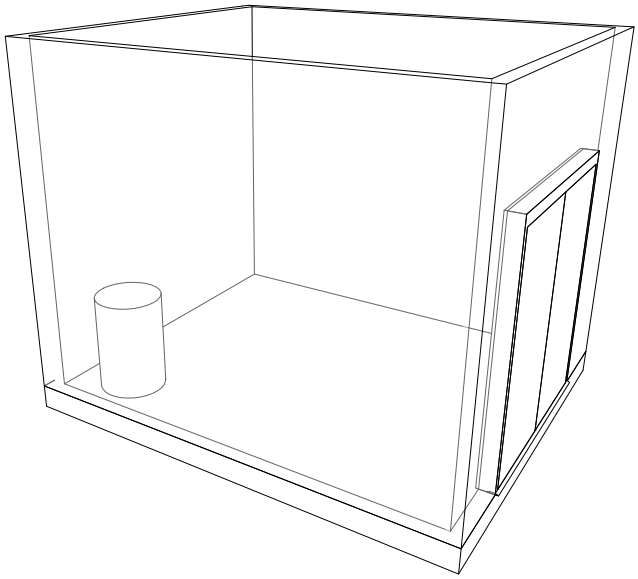
DATA OUTLET JACKS

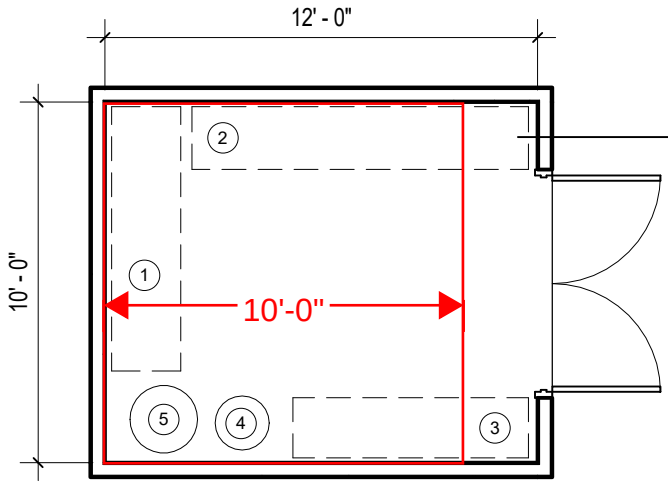
SEPARATE EXHAUST

COMPONENTS:

1. WALL MOUNTED PANELS

DRAFT





1 Plumbing/Fire Protection Room - 120sf
3/16" = 1'-0"

100sf

ROOM FINISHES

FLOORS: SEALED CONCRETE

WALLS: CMU PAINTED

CEILING: OVEN TO STRUCTURE

MEP/DATA REQUIREMENTS

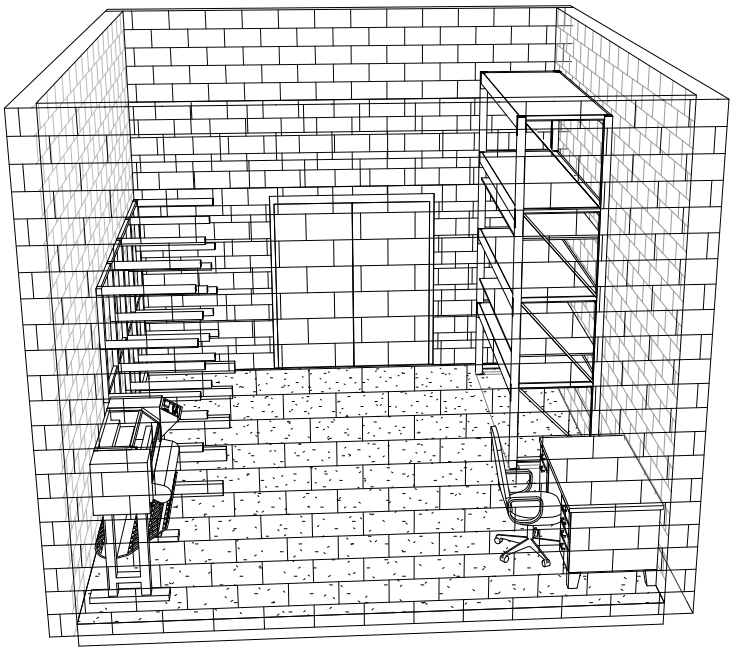
DUPLEX ELECTRICAL OUTLETS

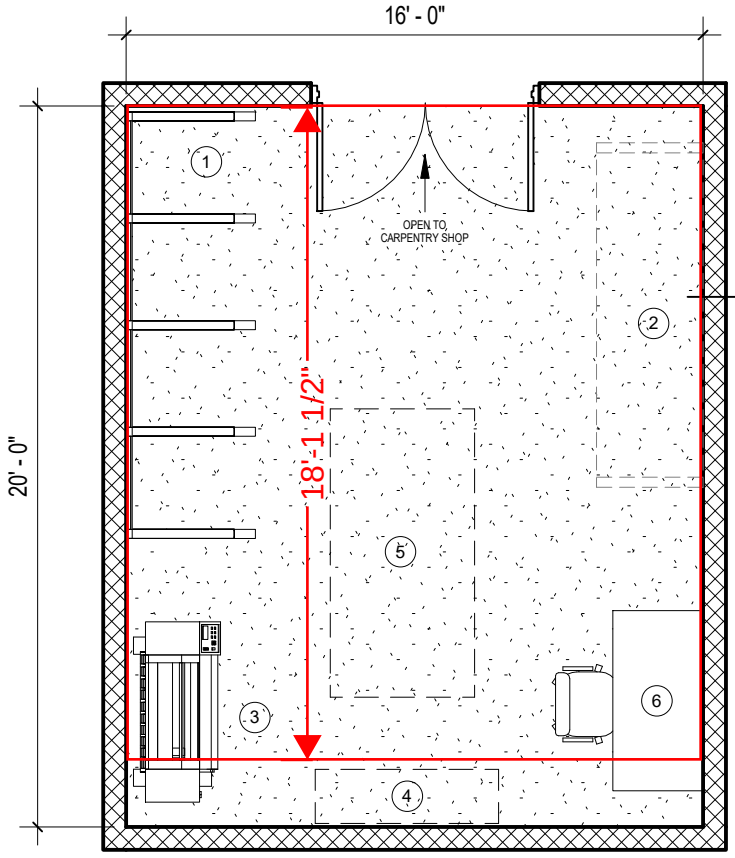
FLOOR DRAIN

COMPONENTS:

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

DRAFT





1 Sign Shop - 320sf 290sf
3/16" = 1'-0"

ROOM FINISHES

FLOORS: RESILIENT FLOORING

WALLS: CMU PAINTED

CEILING: OPEN

MEP/DATA REQUIREMENTS

HEATING

COOLING

DUPLEX ELECTRICAL OUTLETS

DATA OUTLET JACKS

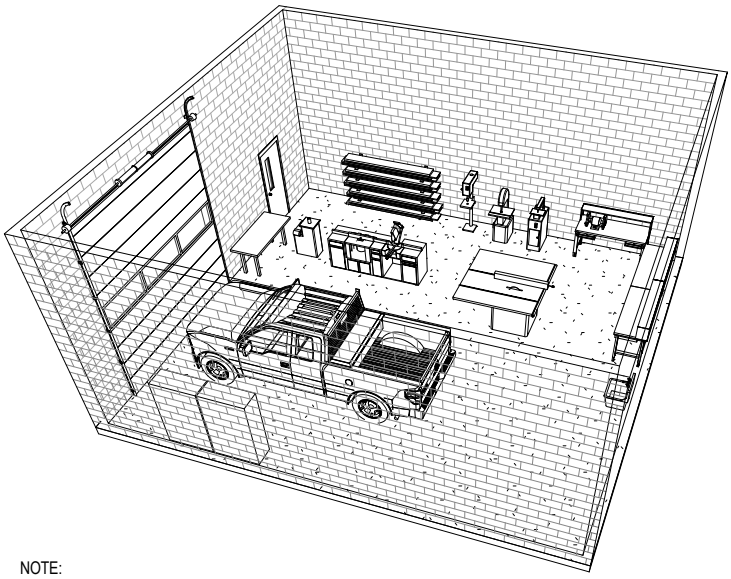
COMPRESSED AIR PROVISIONS

COMPONENTS:

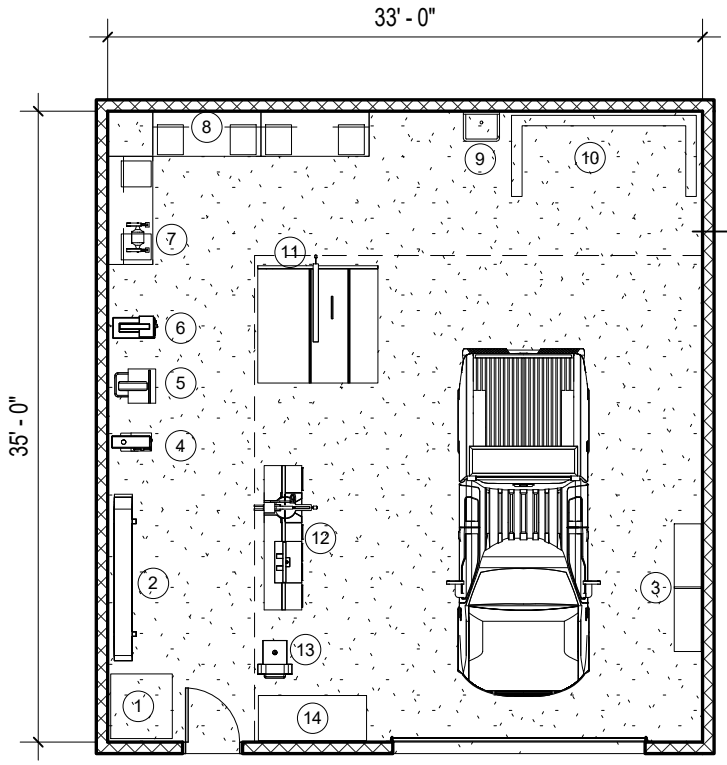
1. 42" DEEP STORAGE RACK FOR BLANKS,
   SHEET VINYL & ROLL VINYL
2. HEAVY DUTY SHELVING
3. PLOTTER
4. HANGING VINYL ROLLS
5. ROLL PRESS TABLE
6. DESK & CHAIR

DRAFT

Weston & Sampson	TRURO JAN 2019	**Sign Shop - 320sf**	C1



NOTE:
EQUIP. LIST IS FOR PLANNING PURPOSED ONLY. FINAL CARPENTRY EQUIP. TO BE COORDINATED WITH TOWN



1 Carpentry Shop - 1155sf
3/32" = 1'-0"

ROOM FINISHES

FLOORS: SEALED CONCRETE

WALLS: CMU PAINTED

CEILING: OPEN

MEP/DATA REQUIREMENTS

HEATING

VENTILATION

DUPLEX ELECTRICAL OUTLETS

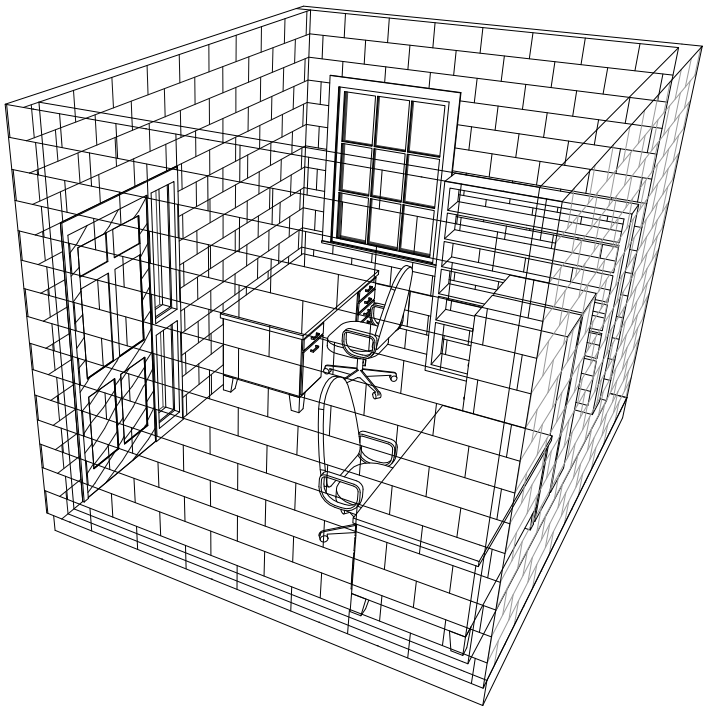
DATA OUTLET JACKS

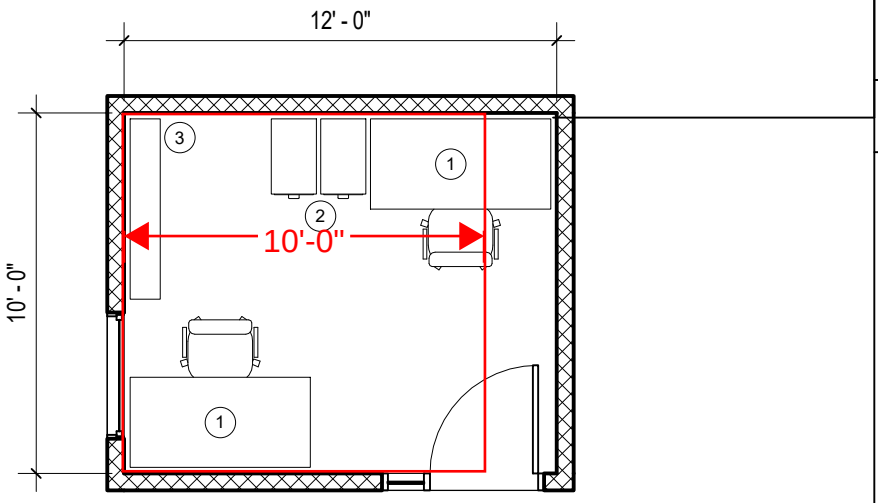
DUST COLLECTION SYSTEM

COMPONENTS:

1. DUST COLLECTION SYSTEM
2. LUMBER SORAGE
3. FLAMMABLE CABINETS
4. DRILL PRESS
5. BAND SAW
6. JIG SAW
7. BENCH MOUNTED GRINDER
8. WORK BENCH
9. SHOP SINK
10. SMALL PARTS PAINT BOOTH
11. TABLE SAW
12. MITER SAW
13. DRUM SANDER
14. ASSEMBLY TABLE

DRAFT





1 Shop Support Office - 120sf
3/16" = 1'-0"

100sf

ROOM FINISHES

FLOORS: RESILIENT FLOORING

WALLS: CMU PAINTED

CEILING: 2' x 2' ACT TILES

MEP/DATA REQUIREMENTS

HEATING

COOLING (MINI-SPLIT)

DUPLEX ELECTRICAL OUTLETS

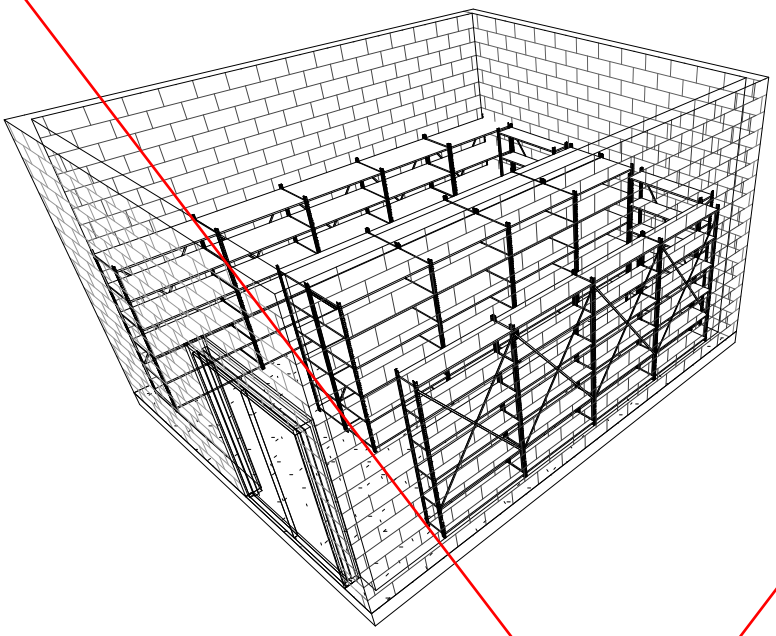
DATA OUTLET JACKS

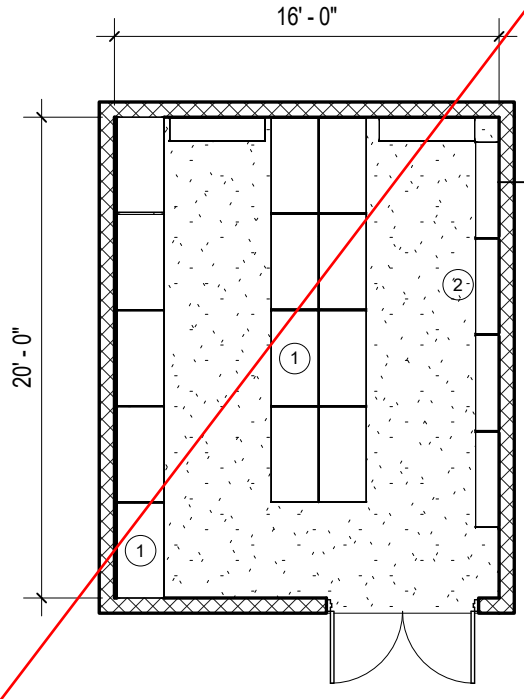
COMPONENTS:

1. DESK & CHAIR
2. FILE CABINETS
3. BOOKCASE

DRAFT

deleted





1 Material/Supply Storage (Custodial) - 320sf
1/8" = 1'-0"

ROOM FINISHES

FLOORS: SEALED CONCRETE

WALLS: CMU PAINTED

CEILING: OPEN TO STRUCTURE

MEP/DATA REQUIREMENTS

HEATING

VENTILATION

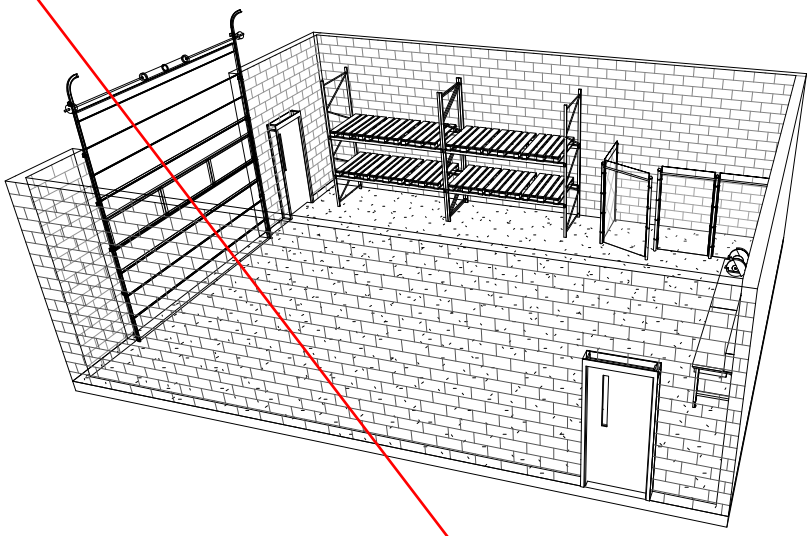
DUPLEX ELECTRICAL OUTLETS

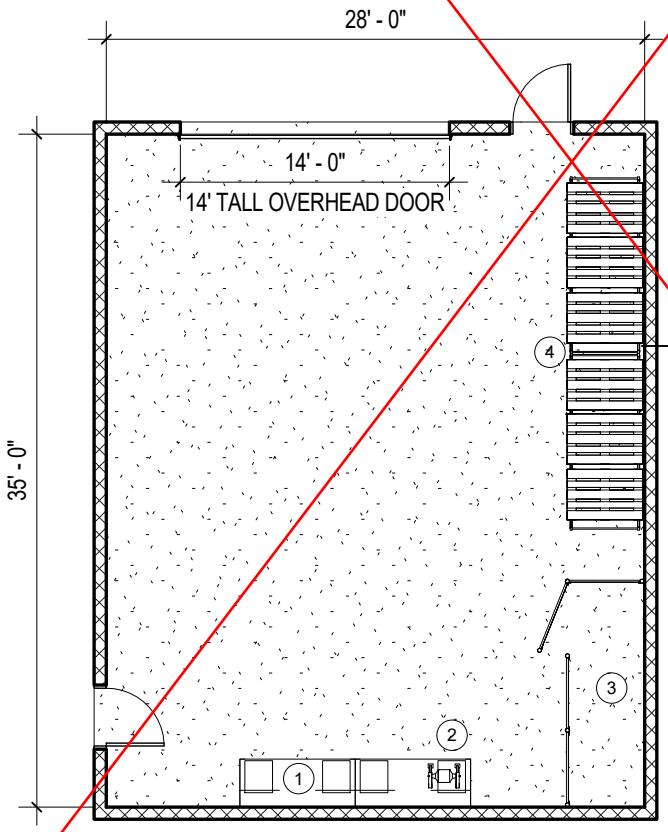
COMPONENTS:

1. 24" DEEP UTILITY SHELVING
2. 12" DEEP UTILITY SHELVING

DRAFT

deleted





1 Material/Supply Storage Shop (Carpentry Maint.) - 980sf
1" = 10'-0"

ROOM FINISHES

FLOORS: SEALED CONCRETE

WALLS: CMU PAINTED

CEILING: OPEN TO STRUCTURE

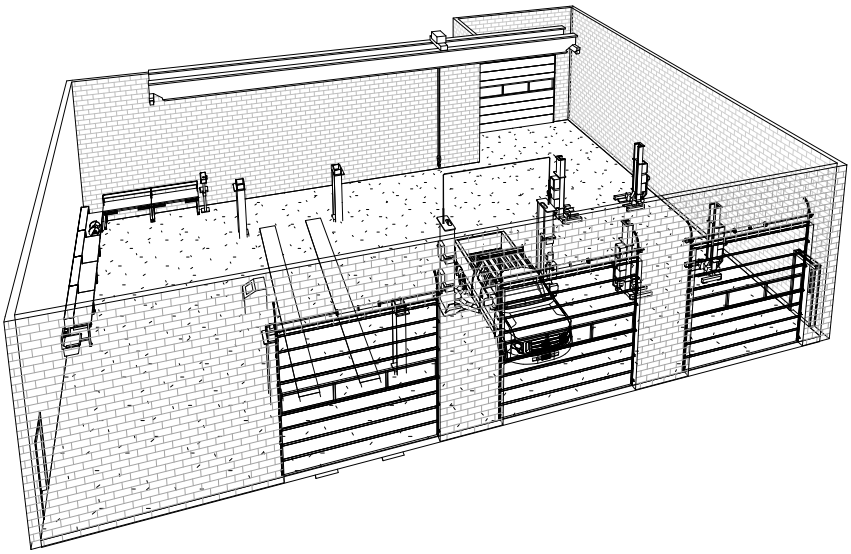
MEP/DATA REQUIREMENTS

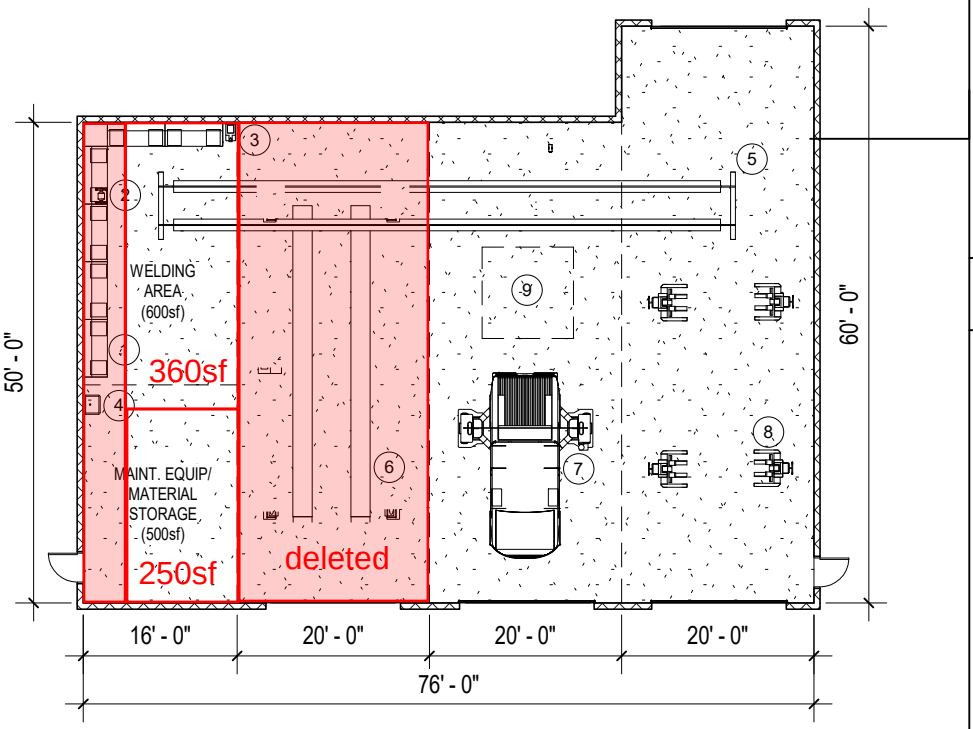
DUPLEX ELECTRICAL OUTLETS

COMPONENTS:

1. WORK BENCH
2. TABLE GRINDER
3. SECURED STORAGE CAGE
4. PALLET RACKS (2)

DRAFT





Vehicle/Equipment Maintenance Bays - 4000sf

1 1" = 20'-0"

2,810sf

ROOM FINISHES

FLOORS: SEALED CONCRETE

WALLS: CONCRETE BLOCK (PAINTED)

CEILING: OPEN

MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

DATA OUTLET JACKS

SPECIALTY EQUIP ELEC. OUTLETS

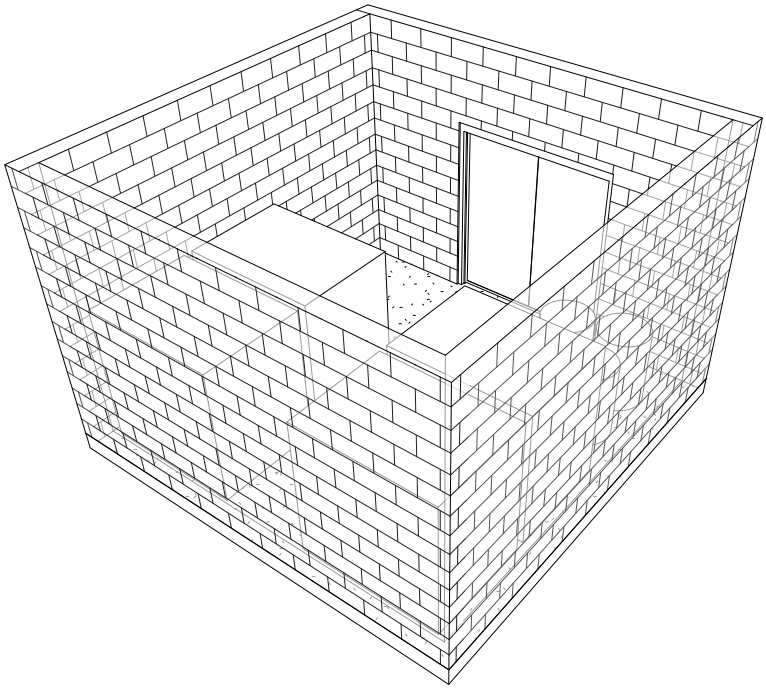
HEATING (RADIANT FLOOR HEATING)

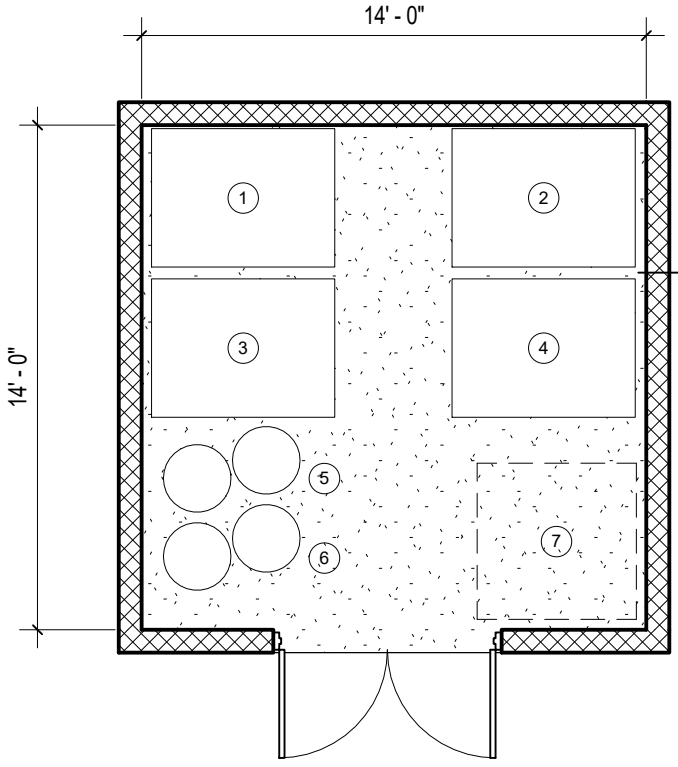
VENTILATION

COMPONENTS:

1. WORK BENCH
2. GRINDER
3. DRILL PRESS
4. SERVICE SINK
5. INDUSTRIAL BRIDGE CRANE
6. RECESSED PLATFORM LIFT
7. 2-POST LIGHT DUTY LIFT
8. PORTABLE POST LIFT
9. SMALL EQUIPMENT PLATFORM LIFT

DRAFT





1 Fluids Room - 196sf
3/16" = 1'-0"

ROOM FINISHES

FLOORS: SEALED CONCRETE

WALLS: CMU PAINTED

CEILING: GWB PAINTED

MEP/DATA REQUIREMENTS

HEATING

DEDICATED EXHAUST SYSTEM

GFI ELECTRICAL OUTLETS

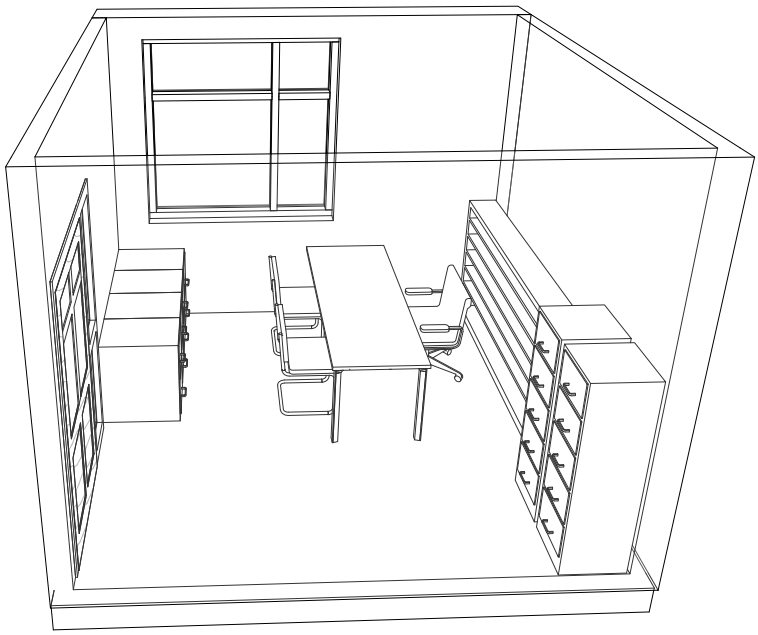
COMPRESSED AIR FOR PNEUMATIC PUMPS

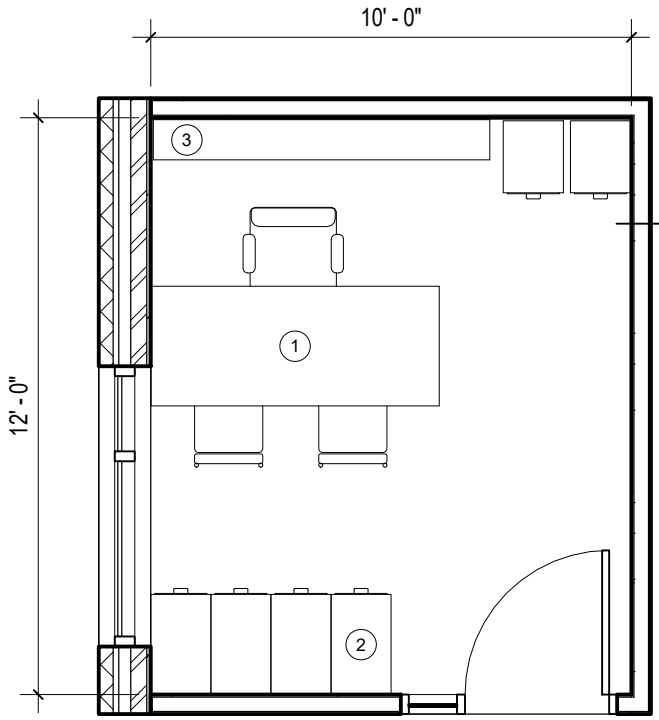
CONTAINMENT SUMP

COMPONENTS:

1. WASTE OIL (BULK)
2. WASTE ANFR (BULK)
3. MOTOR OIL (BULK)
4. MOTOR OIL (BULK)
5. HYDRAULIC OIL (55 GAL)
6. ANFR (55 GAL)
7. SPARE STORAGE

DRAFT





Maintenance Office/Reference Room - 120sf

1 1/4" = 1'-0"

ROOM FINISHES

FLOORS: RESILIENT FLOORING

WALLS: GWB PAINTED

CEILING: 2x2 act tile

MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

DATA OUTLET JACKS

HEATING

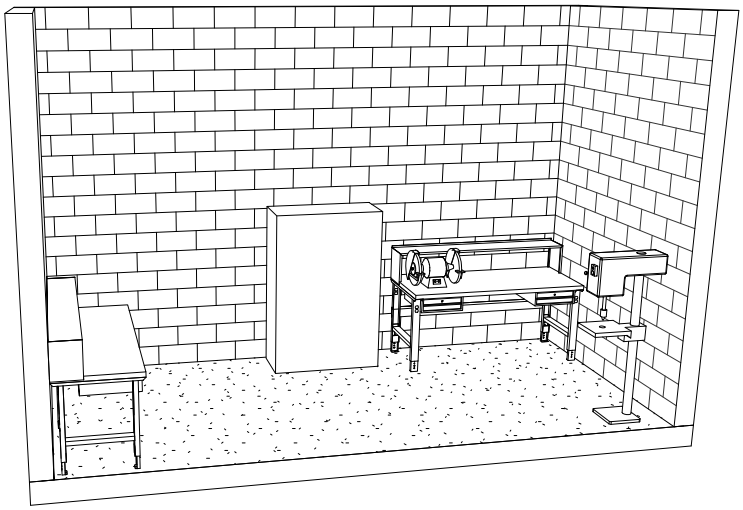
COOLING (MINI-SPLIT)

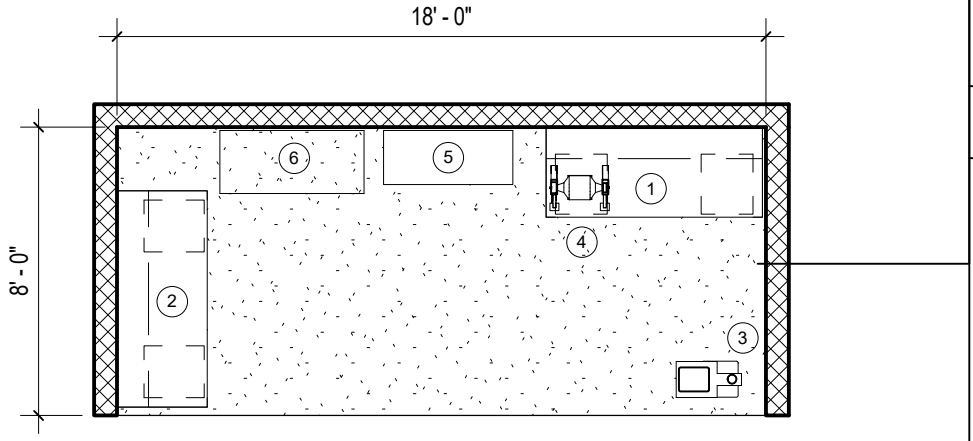
COMPONENTS:

1. DESK & TASK CHAIRS
2. FILE CABINETS
3. BOOKCASE

DRAFT

Weston & Sampson	TRURO JAN 2019	**Maintenance Office / Reference Room - 120sf**	D3





1 Maintenance Workshop - 144sf
3/16" = 1'-0"

ROOM FINISHES

FLOORS: SEALED CONCRETE

WALLS: CMU PAINTED

CEILING: OPEN TO ABOVE

MEP/DATA REQUIREMENTS

HEATING

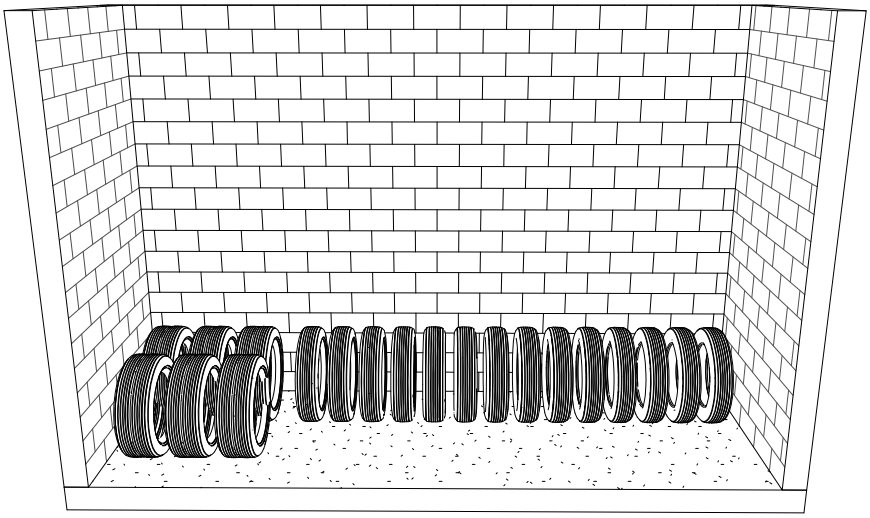
VENTILATION

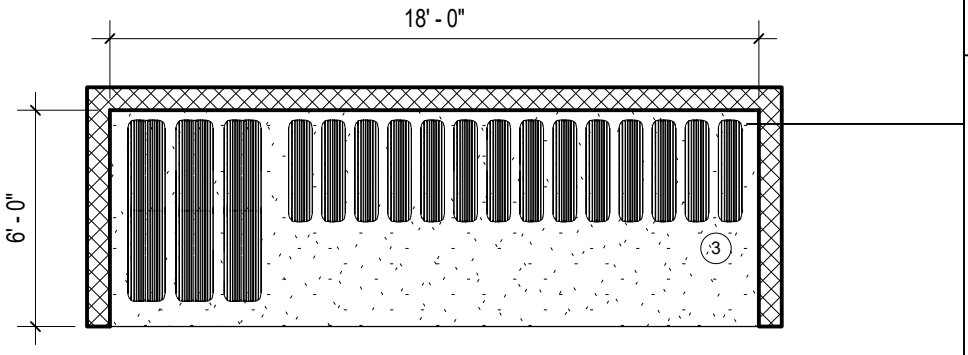
SPECIALTY EQUIP. ELEC. OUTLETS

COMPONENTS:

1. WORK BENCH
2. CHOP SAW WORK BENCH
3. DRILL PRESS
4. TABLE GRINDER
5. PARTS CLEANER
6. HYDRAULIC PRESS

DRAFT





1 Maintenance Tire Storage & Shop - 108sf
3/16" = 1'-0"

ROOM FINISHES

FLOORS: SEALED CONCRETE

WALLS: CMU PAINTED

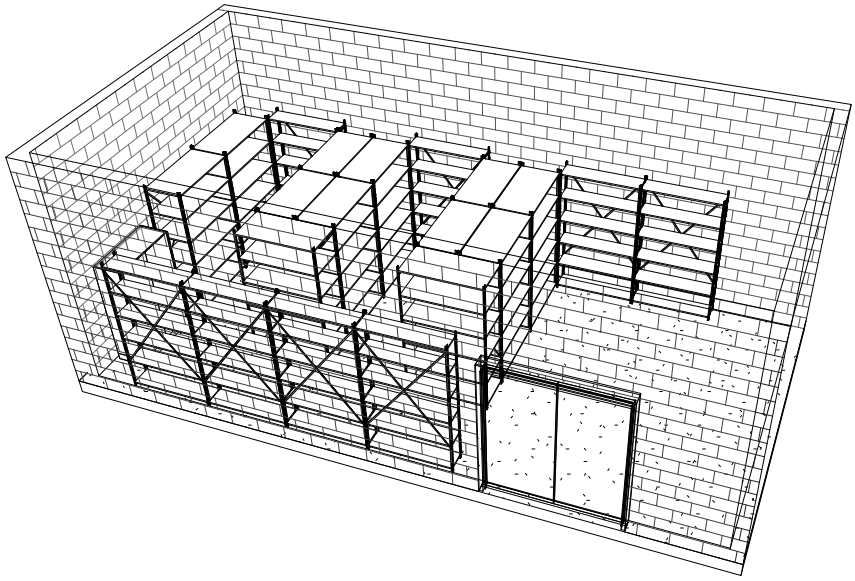
CEILING: OPEN TO STRUCTURE

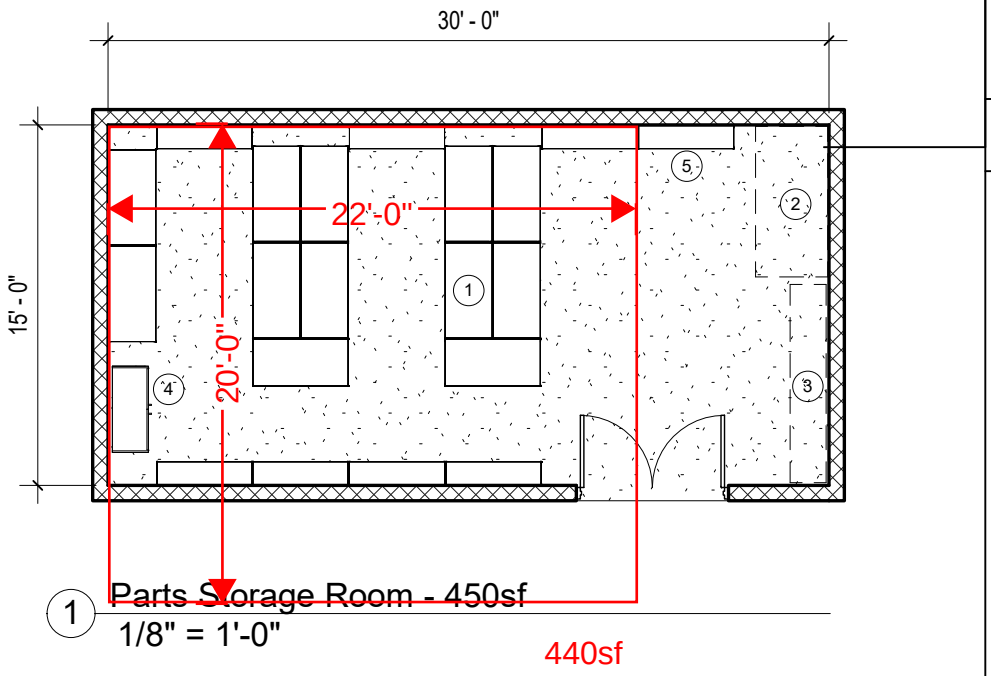
MEP/DATA REQUIREMENTS

COMPONENTS:

1. TIRE STORAGE

DRAFT





ROOM FINISHES

FLOORS: SEALED CONCRETE

WALLS: CMU PAINTED

CEILING: OPEN TO STRUCTURE

MEP/DATA REQUIREMENTS

DUPLEX ELECTRICAL OUTLETS

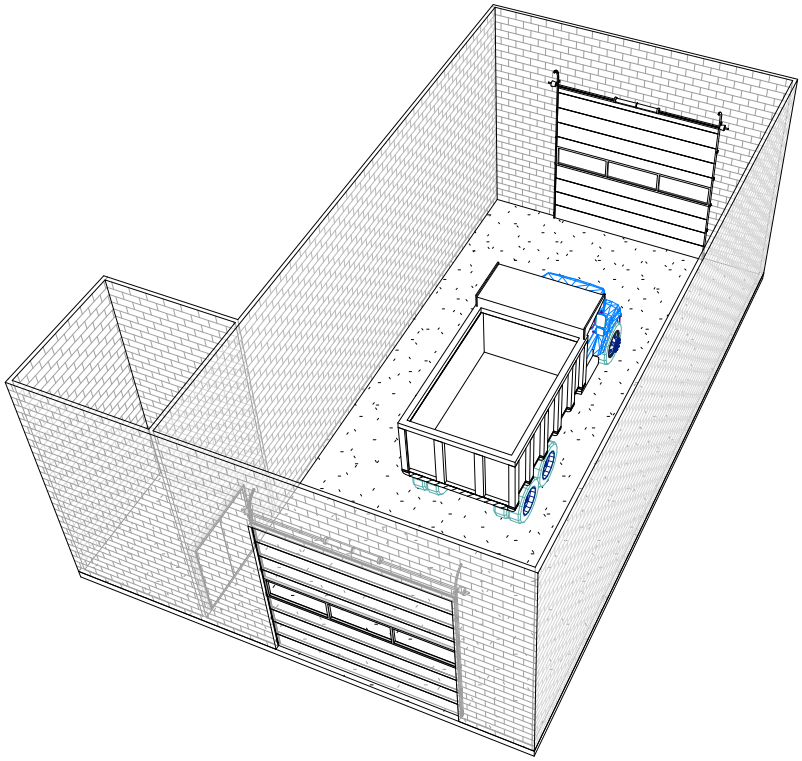
HEATING

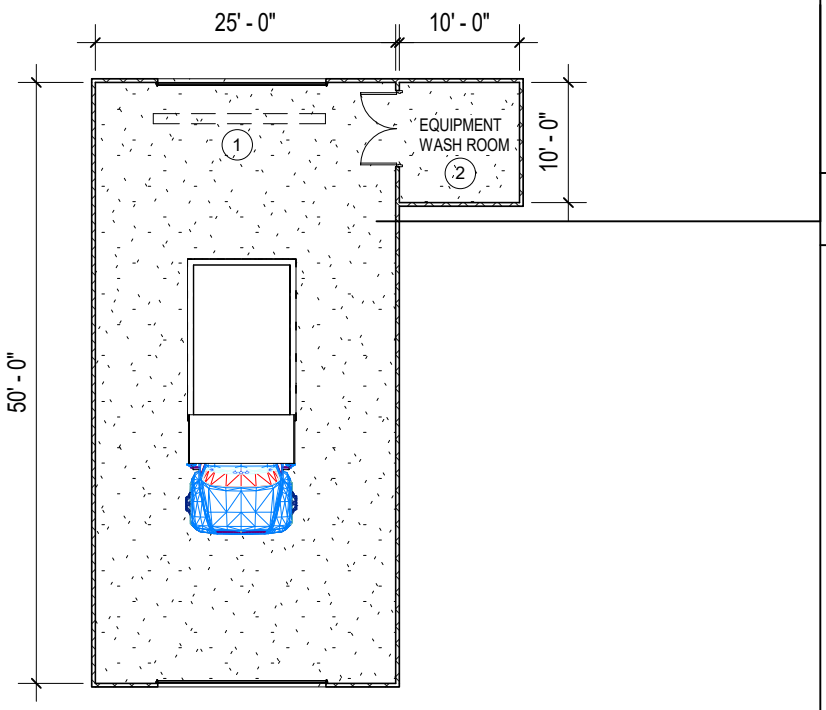
VENTILATION

COMPONENTS:

1. HEAVY DUTY SHELVING (48" W X 24" D X 84" H)
2. SMALL PARTS BIN
3. WALL STORAGE
4. FLAMMABLE CABINET
5. HEAVY DUTY SHELVING (48" W X 12" D X 84" H)

DRAFT





1 Vehicle & Equipment Wash Bay - 1350sf
1/16" = 1'-0"

ROOM FINISHES

FLOORS: SEALED CONCRETE

WALLS: PVC PANELS

CEILING: PVC PANELS

MEP/DATA REQUIREMENTS

2" WATER SUPPLY

HEATING

VENTILATION

WATERPROOF DEVICES

GFI ELECTRICAL OUTLETS

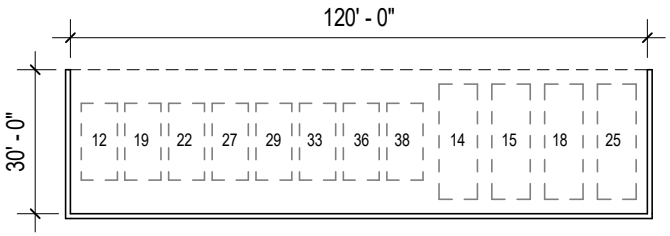
COMPONENTS:

1. UNDERCARRIAGE WASH
2. MANUAL WASH EQUIP. PACKAGE

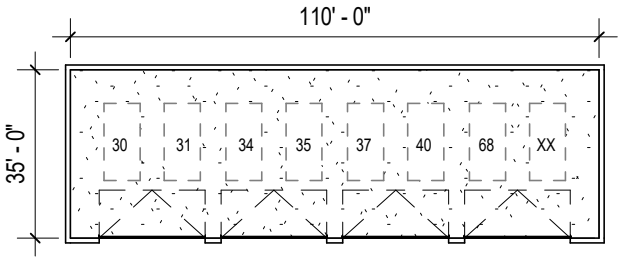
DRAFT

Weston & Sampson	TRURO JAN 2019	**Vehicle & Equipment Wash Bay - 1350sf**	E1

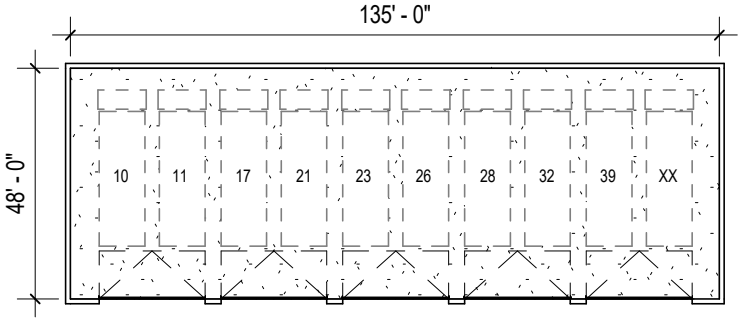
OPEN CANOPY - 3,600 SF



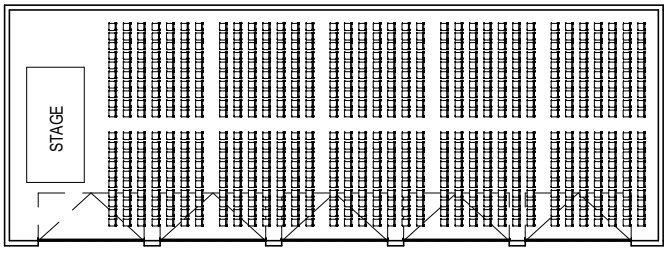
SMALL FLEET STORAGE GARAGE - 3,850 SF



LARGE FLEET STORAGE GARAGE - 6,480 SF



LARGE FLEET STORAGE GARAGE; ASSEMBLY SPACE FOR TOWN MEETINGS



1 Vehicle Storage Garages & Canopy - 10,330sf + 3,600sf
1" = 40'-0"

ROOM FINISHES

FLOORS: SEALED CONCRETE

WALLS: CMU TO 3'-4", METAL PANEL (ABOVE)

CEILING: FABRIC LINER

MEP/DATA REQUIREMENTS

SMALL FLEET STORAGE GARAGE:
TEL/DATA
VENTILATION

LARGE FLEET STORAGE GARAGE:
TEL/DATA
MINIMALLY CONDITIONED
VENTILATION

Assembly use could trigger requirements for:
- Egress
- Occupancy Loads
- Fire Protection
- Accessibility
- Ventilation
- Toilet Facilities

COMPONENTS:

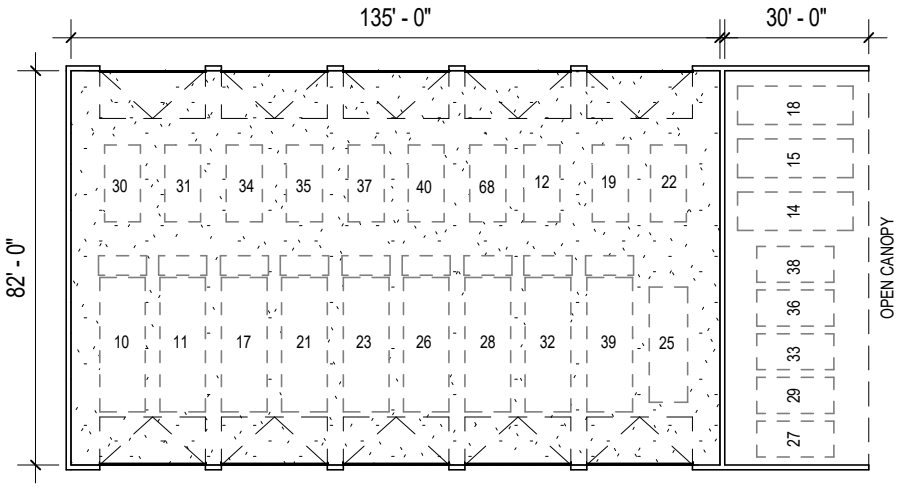
CANOPY:
(4) EQUIPMENT
(8) TRAILERS

SMALL FLEET STORAGE GARAGE:
(8) SMALL TRUCKS (GAS)

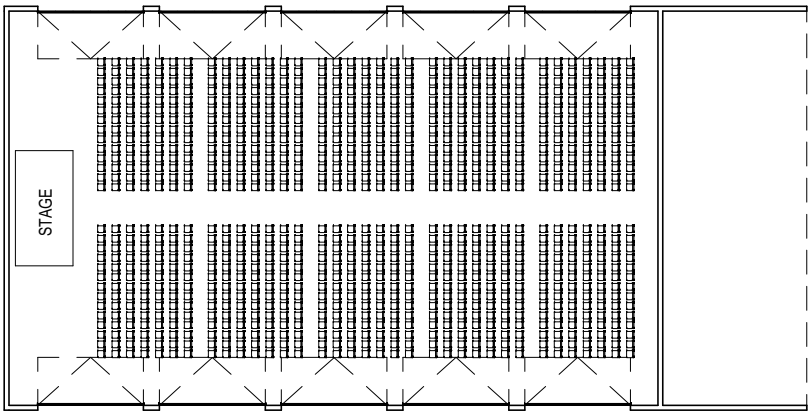
LARGE FLEET STORAGE GARAGE:
(10) LARGE TRUCKS (DIESEL)

ASSEMBLY SPACE FOR TOWN MEETINGS
STAGE
(700) CHAIRS FOR RESIDENTS

DRAFT



FLEET STORAGE GARAGE; ASSEMBLY SPACE FOR TOWN MEETINGS



1 Vehicle Storage Garage & Canopy - 11,070sf + 2,460sf
1" = 40'-0"

ROOM FINISHES

FLOORS: SEALED CONCRETE

WALLS: CMU TO 3'-4", METAL PANEL (ABOVE)

CEILING: FABRIC LINER

MEP/DATA REQUIREMENTS

TEL/DATA
MINIMALLY CONDITIONED
VENTILATION

Assembly use could trigger requirements for:
- Egress
- Occupancy Loads
- Fire Protection
- Accessibility
- Ventilation

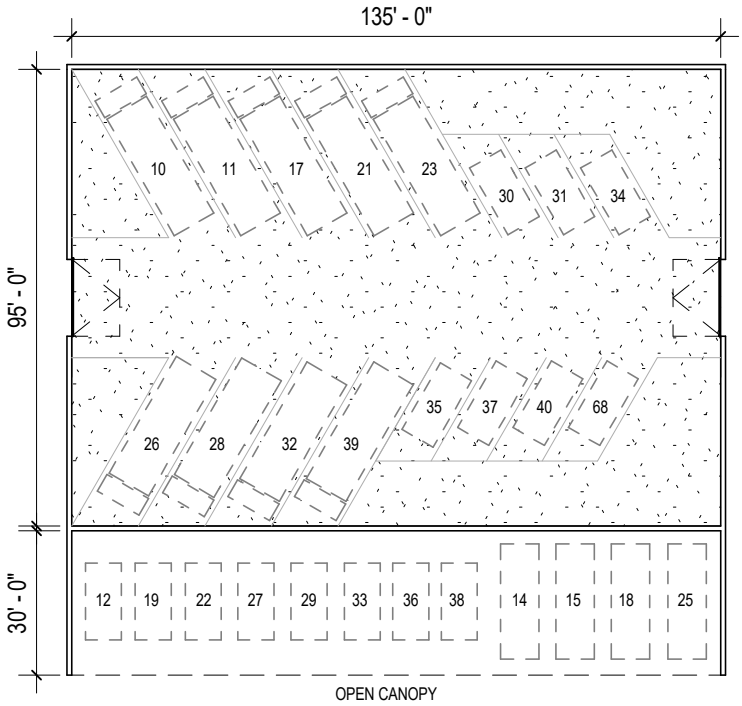
COMPONENTS:

FLEET STORAGE GARAGE:
(9) LARGE TRUCKS (DIESEL)
(7) SMALL TRUCKS (GAS)

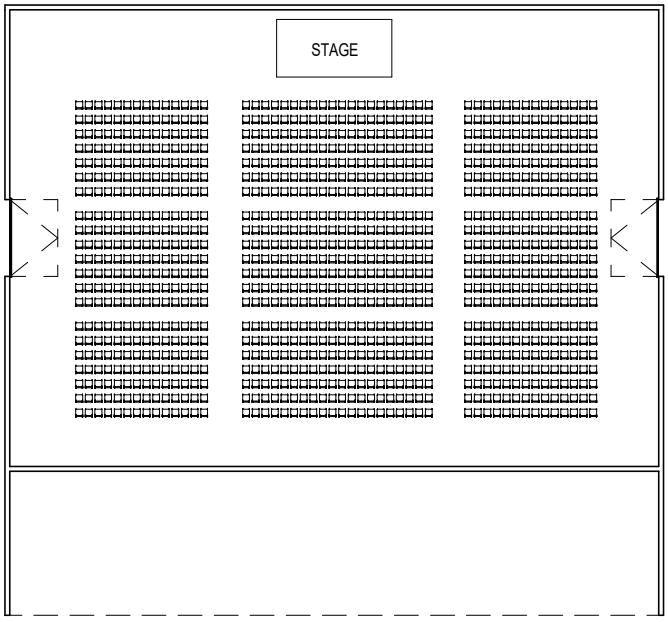
CANOPY:
(4) EQUIPMENT
(8) TRAILERS

ASSEMBLY SPACE FOR TOWN MEETINGS
STAGE
(980) CHAIRS FOR RESIDENTS

DRAFT



FLEET STORAGE GARAGE; ASSEMBLY SPACE FOR TOWN MEETINGS



Vehicle Storage Garage & Canopy - 12,825sf + 4,050sf

1 1" = 40'-0"

ROOM FINISHES

FLOORS: SEALED CONCRETE

WALLS: CMU TO 3'-4", METAL PANEL (ABOVE)

CEILING: FABRIC LINER

MEP/DATA REQUIREMENTS

TEL/DATA
MINIMALLY CONDITIONED VENTILATION

Assembly use could trigger requirements for:
- Egress
- Occupancy Loads
- Fire Protection
- Accessibility
- Ventilation

COMPONENTS:

FLEET STORAGE GARAGE:
(9) LARGE TRUCKS (DIESEL)
(7) SMALL TRUCKS (GAS)
OPEN FLOOR SPACE FOR SMALL EQUIP.

CANOPY:
(4) EQUIPMENT
(8) TRAILERS

ASSEMBLY SPACE FOR TOWN MEETINGS
STAGE
(1,008) CHAIRS FOR RESIDENTS

DRAFT

SECTION VI

Sustainable Design Documents

Climate Resilience Design Standards Tool Project Report

Truro DPW
Date Created: 2/25/2025 10:26:11 AM
Created By: DONAHUED@WSEINC.COM
Date Report Generated: 2/25/2025 8:54:58 PM
Tool Version: Version 1.4
Project Contact Information: Della Donahue (donahue.della@wseinc.com)

Project Summary

Link to Project

Estimated Capital Cost: TBD
End of Useful Life Year: 2086
Project within mapped Environmental Justice neighborhood: No

Ecosystem Service Benefits	Scores
Project Score	Moderate
Exposure	**Scores**
Sea Level Rise/Storm Surge	Not Exposed
Extreme Precipitation - Stormwater Flooding	High Exposure
Extreme Precipitation - Riverine Flooding	Not Exposed
Extreme Heat	High Exposure



Asset Preliminary Climate Risk Rating Summary

Number of Assets: 1

Asset Risk	Sea Level Rise/Storm Surge	Extreme Precipitation - Stormwater Flooding	Extreme Precipitation - Riverine Flooding	Extreme Heat
Public Works Facility, Storage Canopy, Salt Shed & Material Bins, and Fuel Island	Low Risk	High Risk	Low Risk	High Risk

Climate Resilience Design Standards Summary

	Target Planning Horizon	Intermediate Planning Horizon	Percentile	Return Period	Tier
Sea Level Rise/Storm Surge					
Public Works Facility, Storage Canopy, Salt Shed & Material Bins, and Fuel Island					
Extreme Precipitation					
Public Works Facility, Storage Canopy, Salt Shed & Material Bins, and Fuel Island	2070			100-yr (1%)	Tier 3
Extreme Heat					
Public Works Facility, Storage Canopy, Salt Shed & Material Bins, and Fuel Island	2070		90th		Tier 3

Scoring Rationale - Project Exposure Score

The purpose of the Exposure Score output is to provide a preliminary assessment of whether the overall project site and subsequent assets are exposed to impacts of natural hazard events and/or future impacts of climate change. For each climate parameter, the Tool will calculate one of the following exposure ratings: Not Exposed, Low Exposure, Moderate Exposure, or High Exposure. The rationale behind the exposure rating is provided below.

Sea Level Rise/Storm Surge

This project received a "Not Exposed" because of the following:

- Not located within the predicted mean high water shoreline by 2030
- No historic coastal flooding at project site
- Not located within the Massachusetts Coast Flood Risk Model (MC-FRM)

Extreme Precipitation - Stormwater Flooding

This project received a "High Exposure" because of the following:

- Increased impervious area
- Maximum annual daily rainfall exceeds 10 inches within the overall project's useful life
- Existing impervious area of the project site is greater than 50%
- No historic flooding at project site

Extreme Precipitation - Riverine Flooding

This project received a "Not Exposed" because of the following:

- No historic riverine flooding at project site
- The project is not within a mapped FEMA floodplain [outside of the Massachusetts Coast Flood Risk Model (MC-FRM)]
- Project is more than 500ft from a waterbody
- Project is not likely susceptible to riverine erosion

Extreme Heat

This project received a "High Exposure" because of the following:

- Not located within 100 ft of existing water body
- Increased impervious area
- Existing trees are being removed as part of the proposed project
- Existing impervious area of the project site is greater than 50%
- 10 to 30 day increase in days over 90 deg. F within project's useful life

Scoring Rationale - Asset Preliminary Climate Risk Rating

A Preliminary Climate Risk Rating is determined for each infrastructure and building asset by considering the overall project Exposure Score and responses to Step 4 questions provided by the user in the Tool. Natural Resource assets do not receive a risk rating. The following factors are what influenced the risk ratings for each asset.

Asset - Public Works Facility, Storage Canopy, Salt Shed & Material Bins, and Fuel Island
Primary asset criticality factors influencing risk ratings for this asset:

- Asset must be operable at all times, even during natural hazard event
- Loss/inoperability of the asset would have regional impacts
- The building/facility provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.
- Inoperability of the asset would be expected to result in possible loss of life
- Inoperability will result in debilitating cascading impacts that will render other facilities, assets, or buildings inoperable and/or prevent the functionality of major regional or statewide facilities and/or delivery of critical services
- Spills and/or releases of hazardous materials would be moderately difficult to clean up

Project Climate Resilience Design Standards Output

Climate Resilience Design Standards and Guidance are recommended for each asset and climate parameter. The Design Standards for each climate parameter include the following: recommended planning horizon (target and/or intermediate), recommended return period (Sea Level Rise/Storm Surge and Precipitation) or percentile (Heat), and a list of applicable design criteria that are likely to be affected by climate change. Some design criteria have numerical values associated with the recommended return period and planning horizon, while others have tiered methodologies with step-by-step instructions on how to estimate design values given the other recommended design standards.

Asset: Public Works Facility, Storage Canopy, Salt Shed & Material Bins, and Fuel Island — Building/Facility

Sea Level Rise/Storm Surge — Low Risk

Applicable Design Criteria

Projected Tidal Datums: NOT APPLICABLE

Projected Water Surface Elevation: NOT APPLICABLE

Projected Wave Action Water Elevation: NOT APPLICABLE

Projected Wave Heights: NOT APPLICABLE

Projected Duration of Flooding: NOT APPLICABLE

Projected Design Flood Velocity: NOT APPLICABLE

Projected Scour & Erosion: NOT APPLICABLE

Extreme Precipitation — High Risk

Target Planning Horizon: 2070
Return Period: 100-yr (1%)

LIMITATIONS: The recommended Standards for Total Precipitation Depth & Peak Intensity are determined by the user drawn polygon and relationships as defined in the Supporting Documents. The projected Total Precipitation Depth values provided through the Tool are based on the climate projections developed by Cornell University as part of EEA's Massachusetts Climate and Hydrologic Risk Project, GIS-based data as of 10/15/21. For additional information on the methodology of these precipitation outputs, see Supporting Documents.

While Total Precipitation Depth & Peak Intensity for 24-hour Design Storms are useful to inform planning and design, it is recommended to also consider additional longer- and shorter-duration precipitation events and intensities in accordance with best practices. Longer-duration, lower-intensity storms allow time for infiltration and reduce the load on infrastructure over the duration of the storm. Shorter-duration, higher-intensity storms often have higher runoff volumes because the water does not have enough time to infiltrate infrastructure systems (e.g., catch basins) and may overflow or back up during such storms, resulting in flooding. In the Northeast, short-duration high intensity rain events are becoming more frequent, and there is often little early warning for these events, making it difficult to plan operationally. While the Tool does not provide recommended design standards for these scenarios, users should still consider both short- and long-duration precipitation events and how they may impact the asset.

The projected values, standards, and guidance provided within this Tool may be used to inform plans and designs, but they do not provide guarantees for future conditions or resilience. The projected values are not to be considered final or appropriate for construction documents without supporting engineering analyses. The guidance provided within this Tool is intended to be general and users are encouraged to do their own due diligence.

Applicable Design Criteria

Tiered Methodology: Tier 3

Projected Total Precipitation Depth & Peak Intensity for 24-hr Design Storms: APPLICABLE

Asset Name	Recommended Planning Horizon	Recommended Return Period (Design Storm)	Projected 24-hr Total Precipitation Depth (inches)	Step-by-Step Methodology for Peak Intensity
Public Works Facility, Storage Canopy, Salt Shed & Material Bins, and Fuel Island	2070	100-Year (1%)	9.1	Downloadable Methodology PDF

Projected Riverine Peak Discharge & Peak Flood Elevation: NOT APPLICABLE

Extreme Heat High Risk

Target Planning Horizon: 2070
Percentile: 90th Percentile

LIMITATIONS: The recommended standards are determined by the user-drawn polygon and relationships as defined in the supporting Section Documents. The guidance provided within this Tool may be used to inform plans and designs, but does not provide guarantees for resilience. The guidance provided within this Tool is intended to be general and users are encouraged to do their own due diligence. One avenue to seek more information would be to access the comprehensive temperature and precipitation projections including additional return periods, time horizons, and seasons at the Climate Projections Dashboard.

Applicable Design Criteria

Projected Annual/Summer/Winter Average Temperatures: APPLICABLE

Asset Name	Recommended Planning Horizon	Recommended Percentile	Projected Annual Average Temperature [°F]	Projected Summer Average Temperature [°F]	Projected Winter Average Temperature [°F]
Public Works Facility, Storage Canopy, Salt Shed & Material Bins, and Fuel Island	2070	90th	60.65	78.47	42.71

LIMITATIONS: The recommended Standards for Projected Average Annual/Summer/Winter Temperature are determined by the user-drawn polygon and relationships as defined in the supporting Section Documents. The guidance provided within this Tool may be used to inform plans and designs, but is not comprehensive and does not provide guarantees for resilience. The guidance provided within this Tool is intended to be general and users are encouraged to do their own due diligence. One avenue to seek more information would be to access the comprehensive temperature and precipitation projections including additional return periods, time horizons, and seasons at the Climate Projections Dashboard.

Projected Growing Degree Days: NOT APPLICABLE

Projected Days Per Year With Max Temp > 95°F, >90°F, <32°F: APPLICABLE

Asset Name	Recommended Planning Horizon	Recommended Percentile	Projected Days with Max Temp >95°F (days)	Projected Days with Max Temp >90°F (days)	Projected Days with Max Temp <32°F (days)
Public Works Facility, Storage Canopy, Salt Shed & Material Bins, and Fuel Island	2070	90th	9	35	42

LIMITATIONS: The recommended Standards for ProjectedÂ Days per Year with Max Temp >95Â°F, >90Â°F, <32Â°F are determined by the user-drawn polygon and relationships as defined in the supporting Section Documents. The guidance provided within this Tool may be used to inform plans and designs, but is not comprehensive and does not provide guarantees for resilience. The guidance provided within this Tool is intended to be general and users are encouraged to do their own due diligence. One avenue to seek more information would be to access the comprehensive temperature and precipitation projections including additional return periods, time horizons, and seasons at the Climate Projections Dashboard.

Projected Number of Heat Waves Per Year & Average Heat Wave Duration: APPLICABLE

Asset Name	Recommended Planning Horizon	Recommended Percentile	Projected Number of Heat Waves Per Year (events)	Projected Average Heat Wave Duration (days)
Public Works Facility, Storage Canopy, Salt Shed & Material Bins, and Fuel Island	2070	90th	0	4

LIMITATIONS: The recommended Standards for ProjectedÂ Number of Heat Waves Per Year and Average Heat Wave DurationÂ are determined by the user-drawn polygon and relationships as defined in the supporting Section Documents. The guidance provided within this Tool may be used to inform plans and designs, but is not comprehensive and does not provide guarantees for resilience. The guidance provided within this Tool is intended to be general and users are encouraged to do their own due diligence. One avenue to seek more information would be to access the comprehensive temperature and precipitation projections including additional return periods, time horizons, and seasons at the Climate Projections Dashboard.

Projected Cooling Degree Days & Heating Degree Days (base = 65°F): APPLICABLE

Asset Name	Recommended Planning Horizon	Recommended Percentile	Projected Cooling Degree Days (base = 65°) (degree days)	Projected Heating Degree Days (base = 65°) (degree days)
Public Works Facility, Storage Canopy, Salt Shed & Material Bins, and Fuel Island	2070	90th	1749	3338

LIMITATIONS: The recommended Standards for ProjectedÂ Cooling Degree Days and Heating Degree DaysÂ are determined by the user-drawn polygon and relationships as defined in the supporting Section Documents. The guidance provided within this Tool may be used to inform plans and designs, but is not comprehensive and does not provide guarantees for resilience. The guidance provided within this Tool is intended to be general and users are encouraged to do their own due diligence. One avenue to seek more information would be to access the comprehensive temperature and precipitation projections including additional return periods, time horizons, and seasons at the Climate Projections Dashboard.

Projected Heat Index: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Project Inputs

Core Project Information

Name:	Truro DPW
Given the expected useful life of the project, through what year do you estimate the project to last (i.e. before a major reconstruction/renovation)?	2086
Location of Project:	Truro
Estimated Capital Cost:	TBD
Who is the Submitting Entity?	Private Other Weston & Sampson Della Donahue (donahue.della@wseinc.com)
Is this project being submitted as part of a state grant application?	No
Which grant program?	
What stage are you in your project lifecycle?	Planning
Is climate resiliency a core objective of this project?	No
Is this project being submitted as part of the state capital planning process?	No
Is this project being submitted as part of a regulatory review process or permitting?	No
Brief Project Description:	New Public Works Facility for the town of Truro.

Project Ecosystem Service Benefits

Factors Influencing Output

- ✓ Project reduces storm damage
- ✓ Project protects public water supply
- ✓ Project promotes decarbonization
- ✓ Project improves water quality
- ✓ Project remediates existing sources of pollution
- ✓ Project improves air quality
- ✓ Project prevents pollution

Factors to Improve Output

- ✓ Incorporate nature-based solutions that may provide flood protection
- ✓ Incorporate green infrastructure or nature-based solutions that recharge groundwater
- ✓ Incorporate green infrastructure to filter stormwater
- ✓ Incorporate nature-based solutions that sequester carbon carbon
- ✓ Increase biodiversity, protect critical habitat for species, manage invasive populations, and/or provide connectivity to other habitats
- ✓ Preserve, enhance, and/or restore coastal shellfish habitats
- ✓ Incorporate vegetation that provides pollinator habitat
- ✓ Increase plants, trees, and/or other vegetation to provide oxygen production
- ✓ Incorporate education and/or protect cultural resources as part of your project

Is the primary purpose of this project ecological restoration?

No

Project Benefits

Provides flood protection through nature-based solutions	Maybe
Reduces storm damage	Yes
Recharges groundwater	Maybe
Protects public water supply	Yes
Filters stormwater using green infrastructure	Maybe
Improves water quality	Yes
Promotes decarbonization	Yes
Enables carbon sequestration	Maybe
Provides oxygen production	Maybe
Improves air quality	Yes
Prevents pollution	Yes
Remediates existing sources of pollution	Yes
Protects fisheries, wildlife, and plant habitat	Maybe
Protects land containing shellfish	Maybe
Provides pollinator habitat	Maybe
Provides recreation	No
Provides cultural resources/education	Maybe

Project Climate Hazard Exposure

Is the primary purpose of this project ecological restoration?	No
Does the project site have a history of coastal flooding?	No
Does the project site have a history of flooding during extreme precipitation events (unrelated to water/sewer damages)?	No
Does the project site have a history of riverine flooding?	No
Does the project result in a net increase in impervious area of the site?	Yes

Are existing trees being removed as part of the proposed project?	Yes

Project Assets

Asset: Public Works Facility, Storage Canopy, Salt Shed & Material Bins, and Fuel Island
Asset Type: Typically Occupied
Asset Sub-Type: Emergency operations/response building (fire, police, etc.)
Construction Type: New Construction
Construction Year: 2026
Useful Life: 60

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.
Building must be accessible/operable at all times, even during natural hazard event

Identify the geographic area directly affected by permanent loss or significant inoperability of the building/facility.
Impacts would be regional (more than one municipality and/or surrounding region)

Identify the population directly served that would be affected by the permanent loss of use or inoperability of the building/facility.
Less than 10,000 people

Identify if the building/facility provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.
The building/facility provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.

If the building/facility became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?
Inoperability of the building/facility would be expected to result in possible loss of life

If there are hazardous materials in your building/facility, what are the extent of impacts related to spills/releases of these materials?
Spills and/or releases of hazardous materials would be moderately difficult to clean up

If the building/facility became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?
Debilitating – Inoperability will result in cascading impacts that will render other facilities, assets, or buildings inoperable and/or prevent the functionality of major regional or statewide facilities and/or delivery of critical services

If this building/facility was damaged beyond repair, how much would it approximately cost to replace?
Between $10 million and $30 million

Is this a recreational facility which can be vacated during a natural hazard event?
No

If the building/facility became inoperable for longer than acceptable in Question 1, what are the public and/or social services impacts?
Few alternative programs and/or services are available to support the community

If the building/facility became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?
No impact on surrounding natural resources is expected

If the building/facility became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the building is not able to serve or operate its intended users or function)?
Loss of building may reduce the ability to maintain some government services, while a majority of services will still exist.

If the building/facility became inoperable for longer than acceptable in Question 1, what are the impacts to loss of confidence in government (i.e. the building is not able to serve or operate its intended users or function)?
Loss of confidence in government agency

Report Comments

N/A

Date: March 13, 2025
Project: Truro DPW Facility Design

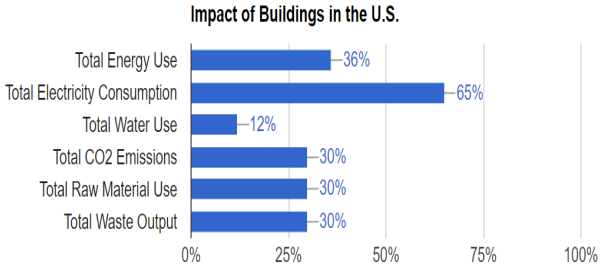
Purpose

The Sustainable Design Catalog is a guiding document to discuss goals that will establish the framework for design, construction and operational standards during all phases of the project. The initiatives discussed will then be formatted into a Sustainable Design Goals Memorandum to drive project decisions going forward.

Background

Who focus on buildings? Because they:

- use resources (energy, water, raw materials, etc.)
- generate waste (construction, occupancy, demolition)
- emit harmful atmospheric emissions
- change the function of land (i.e. the ability of that land to absorb/capture water into the ground)



Source: www.wbdg.org/design-objectives/sustainable

The pillars of sustainable design are to conserve critical resources; prevent environmental degradation caused by facilities and infrastructure throughout their life cycle; and create environments that are healthy, comfortable, and productive.

Optimize Site Potential

Optimize Energy Use

Protect & Conserve Water

Optimize Material Use and Spatial Design

Enhance Indoor Environmental Quality

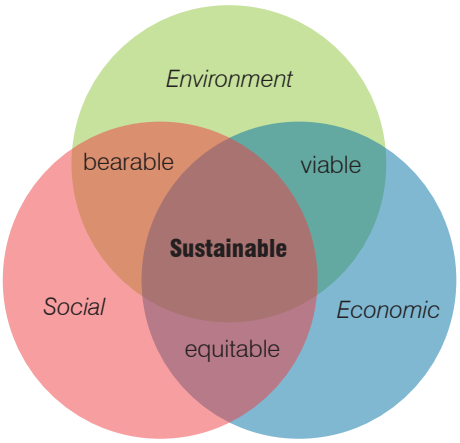
Optimize Operational & Maintenance Practices

Introduction

The sustainable considerations are organized into four categories:

1. Site Scale Design
2. Building Scale Design
3. Occupant Scale Design
4. Construction & Operational

Three Pillars of Sustainability:



Each concept varies in regards to:
- benefits & co-benefits; who / what
- cost savings; immediate and long-term
- cost implications; no-cost vs. expensive

The various concepts are explained in further detail on the following pages.
Please review and consider these initiatives and provide feedback in regards to this project.

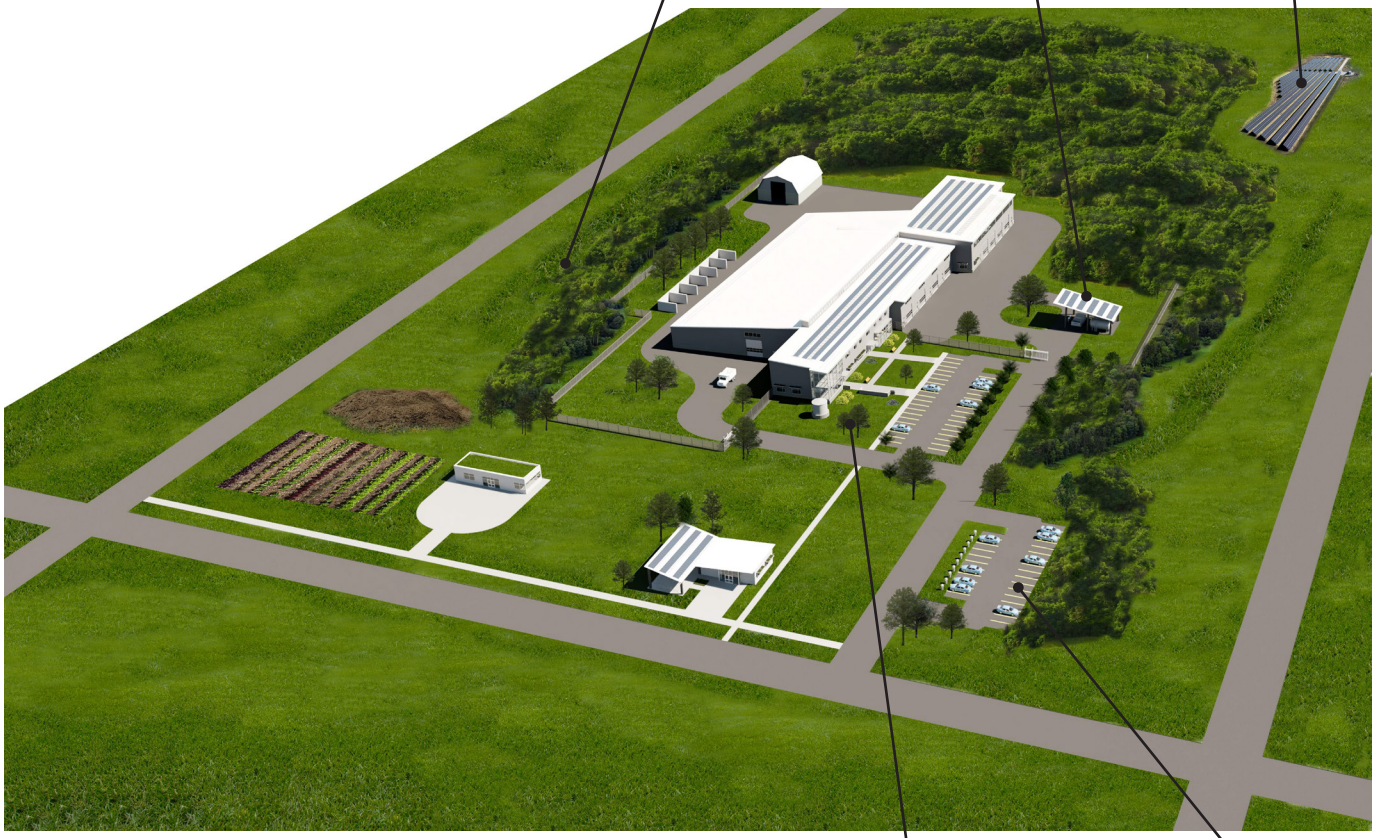
Background Town Information / Context:

- Truro Municipal Decarbonization Roadmap (December 2024)
- Decarbonization Reports (November 2024)
  - » Beach Office
  - » Community Center
  - » Public Library
  - » Public Safety
  - » Recreation Field House
  - » Town Hall
  - » Transfer Station
  - » Central School
- FAQs Municipal Opt In Specialized Energy Code
- Climate Action Committee Charge (2019)
- Energy Reduction Plan (2011)
-
-

SITE DESIGN

* The graphic does not represent the proposed facility design.
It is a conceptual building to help provide a visual and diagram concepts.

Public Amenities:
- Compost
- Community Garden
- Plaza
- Bike Storage
- Information Kiosk



Location:
- Proximity to commuter stations
- Proximity to other municipal buildings

1. SITE SCALE DESIGN CONSIDERATIONS

a. **Green Infrastructure:** systems and practices that use or mimic natural processes that result in the infiltration, evapotranspiration or use of stormwater.

Goal	Description	Capital Cost	Design Fee
✓		$ - $$$	$ - $$$

Benefits:

- Manage stormwater
- Protect drinking water
- Mitigate heat island effect
- Protect ecosystems/habitats
- Provide interior cooling

Implementation:

- Bioswales
- Rain garden
- Rainwater collection
- Green roof



b. **Vegetative Shading:** the use of landscaping / plants to provide shade.

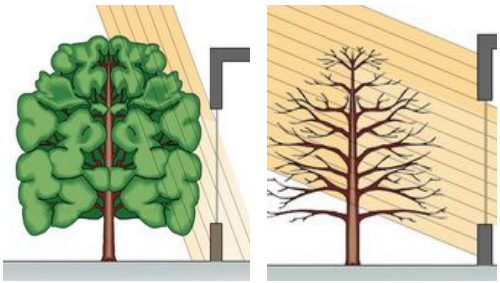
Goal	Description	Capital Cost	Design Fee
✓		$	$

Benefits:

- Provide site & interior cooling
- Manage stormwater
- Mitigate heat island effect
- Support biodiversity

Implementation:

- Tree selection
- Site landscape design
- Coordination with glazing



c. **Electric Vehicle (EV) Charging Stations:** for public access & employee use.

Goal	Description	Capital Cost	Design Fee
✓	Specialized Energy Code requirements.	$ - $$	$ - $$

Benefits:

- Contribute to infrastructure
- Reduce emissions

Implementation:

- Quantify # of stations
- Rebate opportunities
- Combine with solar canopy



d. **Public Amenities:** on-site infrastructure / services for community benefit.

Goal	Description	Capital Cost	Design Fee
✔	Doesn't have to fall on DPW; opportunity to engage with stakeholders / community.	$ - $$	$ - $$

Benefits:

- Community connectedness
- Increased public support
- Educational value
- Promote healthy lifestyle
- Reduce emissions

Implementation:

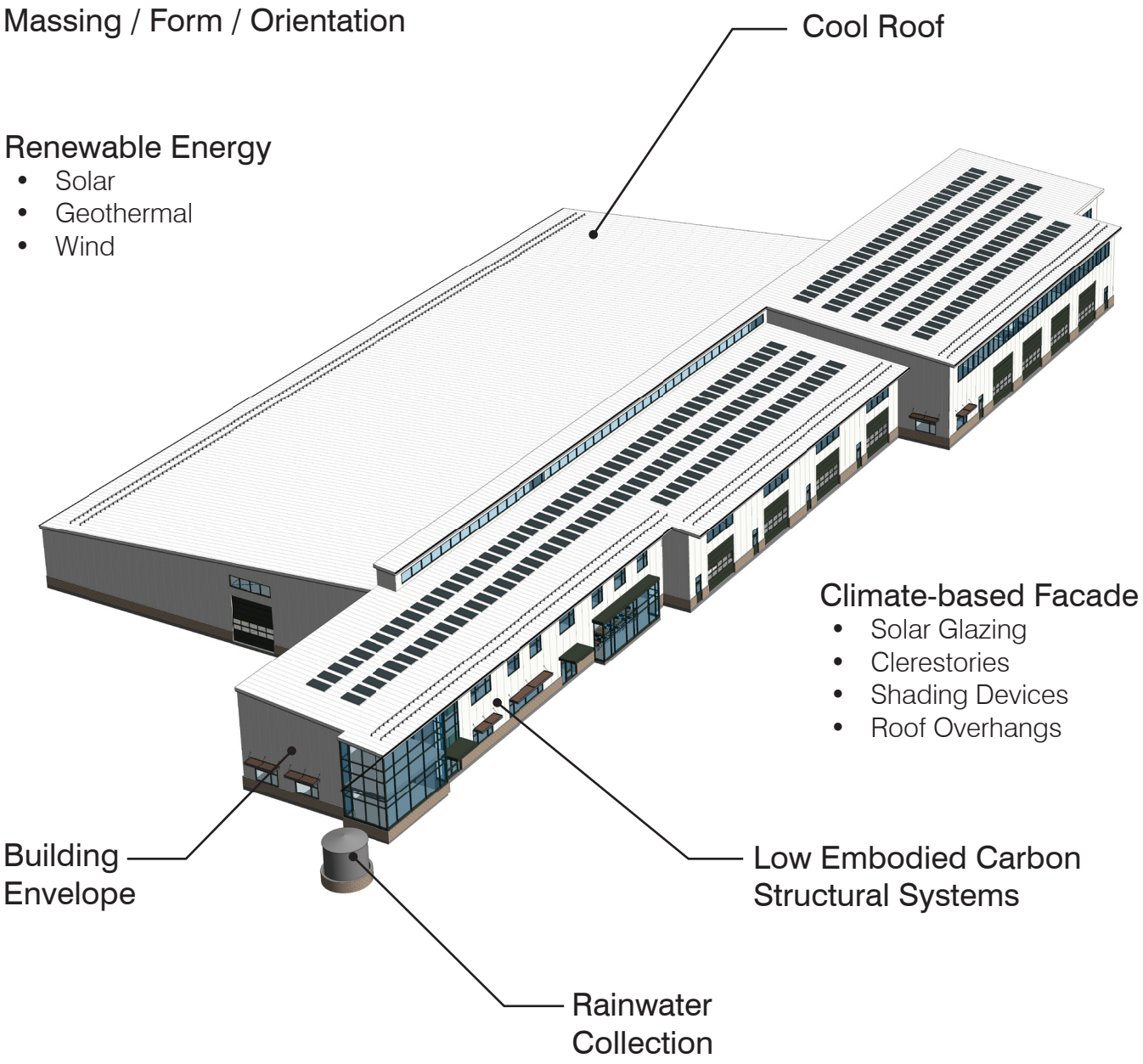
- Salt / sand pick-up
- Compost drop-off / pick-up
- Community garden
- Walking trails
- Informational kiosk
- Bike storage





BUILDING DESIGN

* The graphic does not represent the proposed facility design.
It is a conceptual building to help provide a visual and diagram concepts.



2. BUILDING SCALE DESIGN CONSIDERATIONS

a. **Massing, Form & Orientation:** the practice of facing, shaping, and sizing a building to maximize aspects of its surroundings.

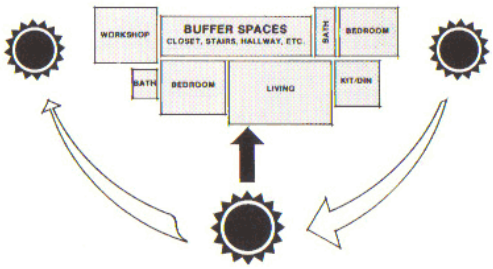
Goal	Description	Capital Cost	Design Fee
✓		N/A	N/A

Benefits:

- Solar energy production
- Heating & cooling
- Ventilation
- Daylighting

Implementation:

- Combine with glazing
- Consider spatial programming
- Cross / stack ventilation
- Position louvers accordingly
- Consider solar roof design



b. **Building Envelope Design & Climate-based Facade:** roof, wall and slab assembly; acts in response to external factors to support desired indoor environmental conditions.

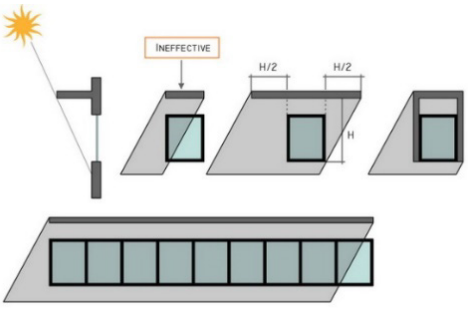
Goal	Description	Capital Cost	Design Fee
✓	Specialized Energy Code requirements.	$ - $$$	N/A

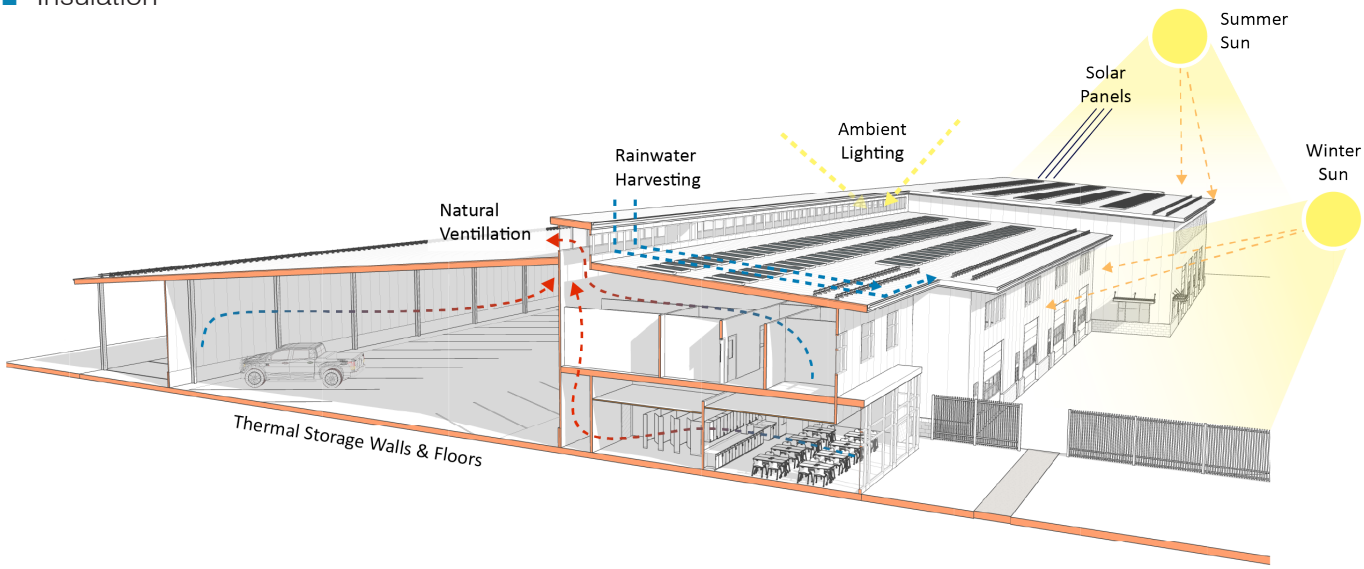
Benefits:

- Energy efficiency
- Cost savings
- Heating & Cooling
- Ventilation
- Daylighting
- Insulation

Implementation:

- Superinsulation
- Air tightness
- Shading devices
- Glazing design





c. **Cool Roof:** combines solar reflectance and thermal emittance to maintain cool building interiors.

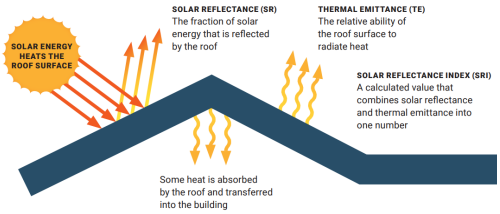
Goal	Description	Capital Cost	Design Fee
✓		N/A	N/A

Benefits:

- Reduced cooling loads
- Mitigates Heat Island Effect
- Cost savings

Implementation:

- Reflective material selection



d. **Water Catchment & Storage System:** Collecting & reutilizing rainwater.

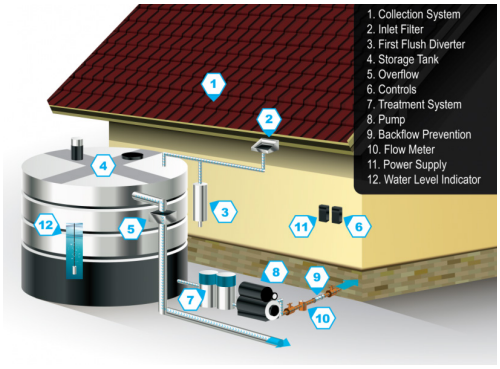
Goal	Description	Capital Cost	Design Fee
✓		$ - $$$	$ - $$$

Benefits:

- Conserve potable water
- Relieve stress on stormwater
- Support site irrigation
- Support fleet wash off

Implementation:

- Gutters / drainage design
- Storage tanks / cisterns
- System integration



e. **On-Site Renewable Energy:** the production of clean, renewable energy from natural sources like...

Goal	Description	Capital Cost	Design Fee
✓		$$ - $$$	$ - $$

Benefits:

- Energy efficiency
- Reduce energy costs
- Reduce carbon footprint
- Incentives

Implementation:

- Photovoltaic system
- Geothermal
- Wind turbines
- Battery energy storage



f. **Low Carbon Structural Systems:** the integration of lower carbon structural systems and materials.

Goal	Description	Capital Cost	Design Fee
✔		$ - $$$	$ - $$$

Benefits:

- Reduce embodied carbon content
- Potential for enhanced material performance
- Potential for lower labor costs

Implementation:

- Cement reduction
- Integrate wood framing
- Design optimization and efficiency at conventionally framed areas
- Specifications
- Review Environmental Product Declarations (EPDs)
- Reduce building footprint



OCCUPANT DESIGN

* The graphic does not represent the proposed facility design.
It is a conceptual building to help provide a visual and diagram concepts.

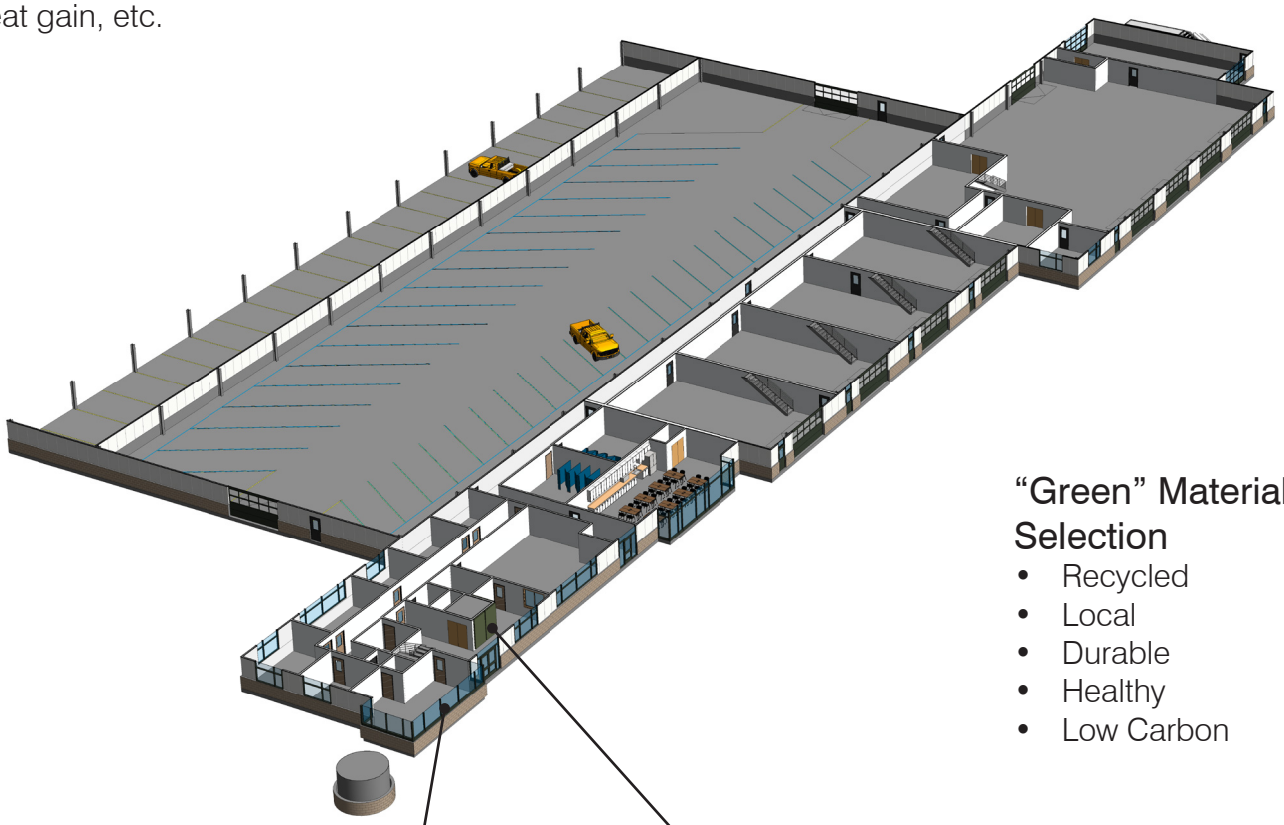
Building Systems Design

- HVAC
- Electric
- Plumbing

* Passive design strategies for daylighting, ventilation, solar heat gain, etc.

Building Fixtures / Product Selection

- Energy Efficiency
- Water Conservation



“Green” Material Selection

- Recycled
- Local
- Durable
- Healthy
- Low Carbon

3. OCCUPANT SCALE DESIGN CONSIDERATIONS

a. **"Green" Material Selection:** sourcing non-toxic, natural, low carbon, and sustainable materials that support a healthy relationship between buildings, occupants and surroundings.

Goal	Description	Capital Cost	Design Fee
✔		$ - $$	$ - $$

Benefits:

- Conserves resources
- Support local businesses & circular economic thinking
- Minimize maintenance and replacement needs
- Improve employee retention / performance
- Reduce carbon footprint
- Indoor environmental quality

Implementation:

- Source recycled
- Source local
- Select durability
- Select healthy
- Review EPDs
- Life Cycle Assessment

Life Cycle Stages		
PRODUCT	A1	Extraction, Production
	A2	Transport
	A3	Manufacturing
CONSTRUCTION	A4	Transport
	A5	Construction, Installation
USE	B1	Use
	B2	Maintenance
	B3	Repair
	B4	Replacement
	B5	Refurbishment
	B6	Energy Use
	B7	Water Use
END OF LIFE	C1	Demolition
	C2	Transport
	C3	Processing
	C4	Disposal

b. **Product / Fixture Selection:** optimizing energy and water use.

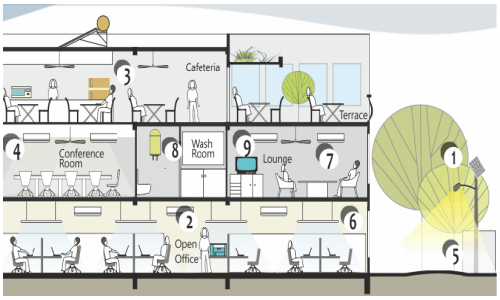
Goal	Description	Capital Cost	Design Fee
✔		N/A	N/A

Benefits:

- Reduce energy loads
- Reduce energy costs
- Reduce water consumption
- Reduce water costs

Implementation:

- Energy efficient appliances
- Low-flow/dual flush fixtures



c. **Building System Design:** optimizing operational loads.

Goal	Description	Capital Cost	Design Fee
✔	Specialized Energy Code requirements.	$ - $$	$ - $$

Benefits:

- Reduce operational loads
- Reduce operational costs
- Reduce carbon footprint
- Incentives

Implementation:

- Electrical system design
- Mechanical system design
- Plumbing system design



OVERVIEW

1. Site Scale Design Consideration
    a. Green Infrastructure
        Image Source: Stormwater Elements, National Association of City Transportation Officials, accessed 27 June 2022, https://nacto.org/publication/urban-street-stormwater-guide/stormwater-elements/
        Resource: https://www.epa.gov/green-infrastructure/what-green-infrastructure
        Resource: https://www.massaudubon.org/content/download/19237/272597/file/LID-fact-sheet-3-lid-techniques_revised.pdf
    b. Vegetative Shading
        Image Source: Val Aiken, Shading, Carbon Neutral Design Project, AIA, Society of Building Science Educators, accessed 27 June 2022, https://www.tboake.com/carbon-aia/strategies1b.html
        Resource: http://www.2030palette.org/vegetative-cooling/
    c. Electric Vehicle (EV) Charging Stations
        Image Source: Weston & Sampson
    d. Public Amenities
        Image Source: Sand and Salt Available Free to Residents February 2018, Photo of Residential Salt/Sand Bin, Norwell DPW, accessed 1 August 2022, https://norwelldpw.com/sand-salt-for-residents
        Image Source: Handi-Hut, Photo of Bike Shelter, accessed 28 June 2022, https://www.handi-hut.com/products/bike-shelters/
2. Building Scale Design Considerations
    a. Orientation & Form
        Image Source: Passive Solar Heating & Cooling Manual, Floor Plan Diagram, Arizona Solar Center, access 27 June 2022, https://azsolarcenter.org/passive-solar-heating-cooling-manual-part-2-of-4
    b. Building Envelope Design & Climate-based Facade
        Image Source: Della Donahue June 2022, Perspective Section Diagram, Weston & Sampson
        Image Source: Val Aiken, Shading, Carbon Neutral Design Project, AIA, Society of Building Science Educators, accessed 27 June 2022, https://www.tboake.com/carbon-aia/strategies1b.html
        Resource: http://www.2030palette.org/building-facades/
        Resource: https://www.wbdg.org/guides-specifications/building-envelope-design-guide
    c. Cool Roof
        Image Source: Understanding the Solar Reflectance Index July 2022, Cool Roof Rating Council, accessed 1 August 2022, https://coolroofs.org/documents/CRRC-SRI-Document_2022-07-12.pdf?
        Resource: http://www.2030palette.org/cool-roof/
    d. Water Catchment & Storage System
        Image Source: Water-Efficient Technology Opportunity: Rainwater Harvesting Systems, The Office of Energy Efficiency & Renewable Energy, accessed 27 June 2022 https://www.energy.gov/eere/femp/water-efficient-technology-opportunity-rainwater-harvesting-systems
        Resource: http://www.2030palette.org/water-catchment-and-storage/
    e. On-site Renewable Energy
        Image Source: Weston & Sampson
    f. Low Carbon Structural Systems
        Image Source: https://newenergyworks.com/glulams

3. Occupant Scale Design Considerations

a. "Green" Material Selection

Image Source: Life Cycle Assessment and Buildings, Building Life Cycle Stages (adapted from ISO 21931 and EN 15978), https://sftool.gov/plan/403/life-cycle-assessment-buildings

Resource: living-future.org/lbc/red-list/

b. Product / Fixture Selection

Image Source: Efficient Appliances, Knowledge Centre, Net Zero Energy Buildings, accessed 12 July 2022, https://nzebnew.pivotaldesign.biz/knowledge-centre/efficient-appliances/

Resource: www.energystar.gov/products/products_list

c. Building System Design

Image Source: Weston & Sampson

100 Foxborough Blvd., Suite 250, Foxborough, MA 02035
Tel: 508.698.3034

MEMORANDUM

TO:	Jarrod Cabral; Ad Hoc Building Committee; Town of Truro
FROM:	Della Donahue
MEETING DATE:	March 13, 2025
DATE ISSUED:	March 24, 2025
SUBJECT:	Truro Public Works Facility; Sustainable Design Goals

The following document includes project background and information gathered at the March 13th Sustainable Design Workshop for the Truro Public Works Facility project, held in-person and virtually via the Ad Hoc Building Committee zoom link. The meeting was conducted to review sustainable design principles and identify potential project goals.

General Project Background Information:

- The project is in the early stages of schematic design. A draft pricing package is currently scheduled to be submitted to an independent cost estimator by May 2nd and a final schematic design package is anticipated to be submitted to Truro by May 30th.
- The project will work in conjunction with PFAS capping efforts in the northeast corner of the parcel as well as a new water main connection to a new potable water source on a remote site adjacent to Snow's Field. The PFAS capping, water main and well projects are all required regardless of the new Public Works Facility project.
- The approved conceptual site plan features a single, consolidated facility with a supplementary storage canopy and salt shed.
- At this time, the new facility will be about 23,800 square feet, consisting of administrative office space, Public Works employee facilities (i.e. locker rooms), workshop space, fleet maintenance, a wash bay, and fleet storage garage.
- The current facility has reported issues/concerns with ventilation in the vehicle service areas, heating/cooling inefficiencies, insufficient storage provisions for fleet assets, and inadequate sleeping arrangements for extreme events (some staff are on-call 24/7 during snowstorms).
- The design is currently targeting a pre-engineered metal building (PEMB) with insulated metal panels and a masonry knee-wall for durability.
- Truro is a Specialized Opt-In Code community regarding the Project's energy code requirements
- The project will be put to Town vote for construction funding approval next Spring 2026

Workshop Discussion Items:

1. Meeting Purpose:
    a. Discuss potential sustainable design goals for Truro's new Public Works Facility.
    b. Align the various values/visions for this project and agree upon a set of goals to implement into design going forward.
        i. Solving specific issues was not the focus for the meeting, but rather clarifying the various stakeholders' values and interests.
    c. Introduce third-party incentives, potential tax credits, and grant funding opportunities
    d. Introduce potential certification program opportunities to gauge interest
        i. International Living Future Institute:
            1. Zero Carbon Certification: focused on carbon emissions (embodied and operational)
            2. Zero Energy Certification: providing 100% of the building's energy needs with on-site renewable energy
    e. Address how the strategies vary in terms of cost-benefit analysis
        i. Who / what experiences the benefits / co-benefits
        ii. Immediate vs. long-term cost savings
        iii. Within scope vs. additional design fee requirements
        iv. Negligible vs. high up-front cost implications

2. What will make this project successful regarding sustainability?
    a. Balancing the various visions/values of taxpayers
        i. Being mindful of goals for both capital cost reductions and long-term cost savings through operational efficiencies. These goals occasionally compete with each other, but a balance must be struck for the project to be supported and approved at town meeting
        ii. Given budget constraints, implementing "low-hanging fruit" sustainable design strategies (little-to-negligible capital cost increases)
    b. Referencing recent Decarbonization Roadmap Reports prepared by RISE Engineering and Cape Light Compact, completed November 2024 (document links included on page "iii" of the Sustainable Design Catalog; Section 04 of the Pre-Meeting Package).
    c. Referencing the Truro Municipal Decarbonization Roadmap prepared by the Town, the Department of Energy Resources (DOER), RISE Engineering, and ICF (document link included on page "iii" of the Sustainable Design Catalog; Section 04 of the Pre-Meeting Package).
    d. Implementing design strategies that reflect and support the risk areas as identified in the RMAT Climate Assessment (Section 01 in the Pre-Meeting Package) and maximizing the longevity of building/site materials and systems to reduce repair and replacement costs.
        i. The project site is at high risk for extreme precipitation/stormwater flooding and extreme heat

e. Ensuring employees have safe and comfortable working conditions
f. Achieving energy efficiency through building envelope thermal performance, passive design strategies, and mechanical systems selection.
g. Leveraging various sources of funding whether it be from utility incentives, IRA tax credits, grants, etc.

3. Sustainable design considerations at Site Scale:
    a. Nature-based solutions for stormwater management and heat island mitigation desirable
        i. Rain gardens and green space to manage stormwater
        ii. Vegetative shading
            1. May be more effective than roof overhangs/shading devices for managing solar heat gain during sunrise/sunset given the building's orientation during; coordinate with glazing design
            2. Tree selection important with consideration for maintenance needs
                a. Native species; USDA Hardiness Zone 6b
    b. It is worth noting that new stormwater drainage, a contained vehicle wash area, and fleet storage provisions will also improve stormwater management and water quality
    c. Rainwater collection is not a priority
        i. Use for fire suppression unrealistic; wouldn't be commissioned
        ii. Maintenance issues (microbial)
        iii. Could be used to support some vehicle wash operations, but given project budget constraints, the initiative is not desirable due to associated capital cost and design fee increases
    d. Light-colored pavement options to be explored and applied where appropriate
    e. Parking Provisions; EV-ready parking for 20% of spaces provided per energy code
    f. Potential interest in standalone solar canopy depending on energy goals, feasibility on site, and costs
    g. Potential interest in designing and installing an educational kiosk at the Town Hall site to describe sustainable design efforts as an educational initiative
        i. Could be an effort pursued at a later date, not necessarily as part of this project
        ii. Could be spearheaded by municipal committees, students, etc.

4. Sustainable design considerations at Building Scale:
    a. Roof solar for renewable energy production
        i. Prioritize the main building for potential extents of PV; the standalone canopy in the north may not be a great candidate
        ii. TBD to what extent on-site renewable energy is desired; offset a percentage of the facility's energy use? Net-zero?
            1. Preliminary PV Analysis of roof solar will be conducted as part of the schematic design phase to help inform the Town's decision
        iii. If pursued, the Town would have to decide whether they'd like to own or lease the system

iv. Interest in a roof PV system's ability to be retrofitted if battery storage was added later; yes, this is possible

b. Cool roof; application suggested where spaces receive air conditioning
    i. The offices & employee facilities block is a good candidate
    ii. The cost is encumbered within the base design already estimated; just a color selection initiative to meet a Solar Reflectance Index (SRI) metric
c. Building orientation, massing and façade design to strike a balance between operational efficiencies, project costs, and passive design strategies
    i. Optimizing daylighting and solar heat gain
d. Building envelope thermal performance for energy efficiency
    i. Exterior wall assemblies to meet maximum code-required U-Values or better
    ii. Triple-glazed windows and curtain walls to meet maximum code-required U-Values or better
    iii. If radiant floor heating is requested, slab insulation to meet maximum code-required F-factors or better

5. Sustainable design considerations at Occupant/Interior Scale:
    a. Daylighting a priority; design implementation through clerestories, translucent panels, and windows
    b. Occupant health, safety & comfort; achievable through material selection and application as well as adequate employee facilities (i.e. both male and female locker rooms for social equity).
        i. Can help to attract and retain employment
        ii. Good for productivity and morale
    c. Low embodied carbon framing systems and building materials
        i. Specifying materials must follow Massachusetts' public project bidding & procurement requirements (specify performance criteria and provide three examples that meet the criteria > General Contractor to choose from one of the three or equal)
            1. There is an option for the town to request a proprietary product by holding an open meeting and taking a Select Board and/or committee vote
        ii. Timber framing is of interest where large clear spans are not a priority (i.e. the administrative office space and employee facilities block)
            1. Clarification needed to better understand if the Town envisions this design approach in terms of conventional wood framing (instead of metal studs) or a more intensive framing system like Cross-Laminated Timber (CLT) or Glulam
                a. Depending on the direction, it may come with increased design fee and capital costs compared to a PEMB
        iii. Life cycle assessment may be of interest
            1. Clarification needed to better understand to what extent this is desired

a. Weston & Sampson to provide a scope and fee write-up for what that process looks like and associated fees

d. Building mechanical systems to optimize energy efficiency
    i. Natural gas is not available in this area of Cape Cod.
    ii. Geothermal Wells are of interest, but also met with cost concerns
        1. Subsurface environmental investigations / a test well would be recommended to best understand the feasibility of a geothermal system, informing well quantity (i.e. soil quality and conductivity)
            a. The sizing of this system is based on the proposed building's energy usage portfolio from energy modeling efforts
        2. If pursued, the Town would like to see this system coupled with radiant floor heating as they tend to operate efficiently together
    iii. A Life Cycle Cost Analysis (LCCA) is of interest to help inform the Town what energy source and building systems they may like to implement in the project. The LCCA looks at first (capital) costs, operating costs, maintenance costs, and replacement costs of building system options. It can also include analysis for associated on-site carbon emissions
        1. The project team will need current utility rate information, confirmation if they're stable rates or not, and any interest rates on borrowed money associated with the project. Information to be requested from Finance Committee.
        2. The Town and Weston & Sampson will work together to identify 2-3 building systems to analyze.
        3. Based on the resulting LCCA, the Town must decide on their preferred mechanical system by mid-April so the Engineers can correctly capture the basis of design in their Narratives for cost estimating and to stay on schedule.

e. Building Management System to manage intensive plug loads associated with industrial equipment use for fleet maintenance
    i. Question: Can equipment use/maintenance tasks be staggered/scheduled to balance the peak load?
    ii. Answer: Perhaps a portion of typical operations, though some operations may be beyond DPW's control as an emergency responder
        1. Routine maintenance optimization would be a workforce/administrative initiative to tackle operationally

6. Additional notes relating to third-party funding:
    a. Take into consideration the potential utility incentives discussed at the Energy Incentives Introduction Meeting with Cape Light on Wednesday, 3/13
        i. Energy modeling will be a requirement of utility incentives; already captured within the contract

b. Take into consideration the potential IRA tax credits that renewable energy and energy efficiency projects are eligible to receive.
c. Take into consideration the potential grant funding opportunities that renewable energy and energy efficiency projects are eligible to receive.
    i. This project may also be eligible for Environmental Justice (EJ) grant programs due to the identified EJ community within the Town

7. Additional considerations relating to Construction & Facility Operations
    a. Commissioning per energy code
    b. Commissioning requirements for the Mass Save incentive program, as well.
    c. Energy metering requirements per energy code and Mass Save incentives, too

Next Steps?

1. Truro: Confirm if and to what extent an embodied carbon LCA is desired
2. Truro / WSE: confirm to what extent the Town would like to offset the building's energy use through photovoltaic systems at the roof level. Also, confirm how this initiative will be integrated into the project – if added scope & fee during the Design Development phase, or if pursued later and delegated post-construction
3. Truro / WSE: confirm what building systems to compare in the LCCA
4. Truro: confirm preferred building system to capture in basis of design narratives (by mid-April)

END OF DOCUMENT

The meeting notes from the Sustainable Design Workshop are recorded as understood by Della Donahue, WSE, who should be notified of any omissions or corrections. Unless notified otherwise, this document is presumed correct.

Commercial New Construction or Major Renovation Program Overview



Choose Your Path to Generate Energy Savings and Reduce Carbon

The Sponsors of Mass Save can help make your new construction or major renovation project a high performing, energy efficient and low carbon building. We have technical experts and financial incentives to help bring your project to the next level of energy efficiency. Whether your goal is to design an all-electric Net Zero building, or, to simply incorporate more efficient systems into the design of your building, we have a pathway for you.

The earlier you engage, the deeper the energy savings potential

Connect with the Sponsors of Mass Save early in your project's design timeline to unlock opportunities for cost savings, technical support and optimal energy efficiency. Building owner incentives are available to help cover the incremental construction and design service costs associated with including energy efficient equipment and systems in your project.

By starting with us in your project's feasibility or conceptual design phase, your project team can achieve deep energy savings, and even net zero status, minimizing future energy use and carbon. We can also help you set an energy use intensity (EUI) target – which is much like a "miles per gallon" metric. It helps keep the project on an energy budget and can be used to evaluate your building's actual or predicted performance over time or compared to other, similar buildings.

There is a pathway for every project

Mass Save Sponsors offer the highest incentives for projects with the lowest EUIs and greatest levels of decarbonization.

Path 1. Net Zero and Low EUI Buildings (10,000 sf or greater)

Receive expert net zero building technical assistance and the highest new construction/major renovation project incentives available. Set an ultra-low EUI and save. We provide support through a post occupancy period to help you make sure the building performs at the level you expect.

Path 2. Whole Building Energy Use Intensity (EUI) Reduction Approach (50,000 sf or greater)

In this path for larger, complex building projects, your incentives will be greater with the lowest design EUIs. We offer technical support and energy modeling services to help you succeed.

Path 3: High Performance Buildings

For whole building projects of any size where customers do not wish to set and pursue an EUI target, projects that are not whole buildings (e.g., tenant fit outs, open air parking garages), projects that are process-load heavy buildings (e.g., cannabis, industrial), and projects where customers are only interested in one-off measures.

Receive technical assistance and financial incentives for implementing energy efficient technology and equipment.

About Mass Save:

Mass Save® is a collaborative of Massachusetts' natural gas and electric utilities and energy efficiency service providers including Berkshire Gas, Blackstone Gas, Cape Light Compact, Columbia Gas, Eversource, Liberty Utilities, National Grid, and Unitil. We empower residents, businesses, and communities to make energy efficient upgrades by offering a wide range of services, rebates, incentives, trainings, and information.

WE ARE MASS SAVE®:

BERKSHIRE GAS An AVANGRID Company

Cape Light Compact

EVERSOURCE

Liberty

nationalgrid

Unitil

SUMMARY OF PATH INCENTIVES

PATH 1: NET ZERO/LOW EUI BUILDINGS

Customer Incentives	
Construction Incentive	up to $2.00/sf
Post Occupancy Incentive	$1.50/sf
Space Heating Heat Pump Adder*	
• Air Source Heat Pumps:	$800/ton
• Variable Refrigerant Flow (VRF):	$1,200/ton
• Ground Source Heat Pumps:	$4,500/ton
ZNE Or PH Certification Incentive	$3,000
Technical Assistance For Net Zero Expert Consultant Services	50% of fee up to $10,000
Verification Incentive	50% of fee up to $10,000

PATH 2: WHOLE BUILDING EUI REDUCTION APPROACH

Customer Incentives	
Incentive rate range (based on EUI % reduction)	$0.35/sf - $1.25/sf
Space Heating Heat Pump Adder*	
• Air Source Heat Pumps:	$800/ton
• Variable Refrigerant Flow (VRF):	$1,200/ton
• Ground Source Heat Pumps:	$4,500/ton
Technical Assistance	up to 75% cost share (capped at $20,000 per Sponsor)
Verification Incentive	50% of fee up to $10,000

PATH 3: HIGH PERFORMANCE BUILDINGS

Customer Incentives	
Custom: Envelope, lighting controls, unitary HVAC (RTU, AC), high efficiency chillers, energy recovery, demand control ventilation, variable flow kitchen hoods, DHW heaters, low flow water fixtures and other custom measures	$0.35/kWh $2.00/therm
Prescriptive: variable frequency drives	Current program rate
Space Heating Heat Pump*	
• Air Source Heat Pumps:	$800/ton
• Variable Refrigerant Flow (VRF):	$1,200/ton
• Ground Source Heat Pumps:	$4,500/ton

*Refers to nominal heating capacity (btu/h) at AHRI conditions divided by 12,000. The heat pump adder is available for equipment that transfers heat from a source outside of the building (i.e., outside air or a ground loop) for space heating purposes. For ground source heat pump projects, the capacity of the ground loop is used instead of the capacity of the heat pump. Equipment must be used as a primary heating source to qualify.

Go to masssave.com/en/business/programs-and-services/new-construction-and-major-renovations to learn more about the pathways.

Click on the Our Sponsors link at the top of the page to enter your zip code and identify your Mass Save Sponsors.

About Mass Save:

Mass Save® is a collaborative of Massachusetts' natural gas and electric utilities and energy efficiency service providers including Berkshire Gas, Blackstone Gas, Cape Light Compact, Columbia Gas, Eversource, Liberty Utilities, National Grid, and Unitil. We empower residents, businesses, and communities to make energy efficient upgrades by offering a wide range of services, rebates, incentives, trainings, and information.

WE ARE MASS SAVE®:

BERKSHIRE GAS An AVANGRID Company

Cape Light Compact

EVERSOURCE

Liberty

nationalgrid

Unitil

Truro DPW - Cost-Benefit Analysis

Including Mass Save Incentives & Federal Tax Credit

Option	System	Gross Capital Investment	MassSave Heat Pump Adder Incentive	30% IRA Federal Tax Credit	Net Investment	Annual Elec. Cons. (kWh)	Annual Electric Cost	Combined Utility Cost	Annual Utility $/s.f.	Annual kBTU/s.f. (EUI)	Annual Maint. Cost	Annual Expense	Total Life-Cycle Costs	GHG Emissions (lb CO2)
1	ASHP base	$ 3,000,000			$ 3,000,000	86,730	$ 25,152	$ 25,152	$ 1.07	12.5	$ 15,000	$ 40,152	**$ 7,703,863**	**46,591**
1a	ASHP with incentives	$ 3,000,000	$ 80,000		$ 2,920,000	86,730	$ 25,152	$ 25,152	$ 1.07	12.5	$ 15,000	$ 40,152	**$ 7,573,189**	**46,591**
1b	ASHP with solar	$ 3,850,000	$ 80,000		$ 3,770,000	(113,270)	$ (22,654)	$ (22,654)	$ (0.96)	(16.4)	$ 20,000	$ (2,654)	**$ 6,483,337**	**(60,849)**
1c	ASHPs, Solar, and ASHP incentives & Solar tax credits	$ 3,850,000	$ 80,000	$ 255,000	$ 3,515,000	(113,270)	$ (22,654)	$ (22,654)	$ (0.96)	(16.4)	$ 20,000	$ (2,654)	**$ 6,066,814**	**(60,849)**
2	GSHP base	$ 4,250,000			$ 4,250,000	73,460	$ 21,303	$ 21,303	$ 0.90	10.6	$ 18,000	$ 39,303	**$ 9,182,237**	**39,463**
2a	GSHP with incentives	$ 4,250,000	$ 135,000		$ 4,115,000	73,460	$ 21,303	$ 21,303	$ 0.90	10.6	$ 18,000	$ 39,303	**$ 8,961,725**	**39,463**
2b	GSHP with Solar	$ 5,100,000	$ 135,000		$ 4,965,000	(126,540)	$ (25,308)	$ (25,308)	$ (1.07)	(18.3)	$ 23,000	$ (2,308)	**$ 7,948,012**	**(67,977)**
2c	GSHPs, Solar and GSHP incentives & GSHP & Solar tax credits	$ 5,100,000	$ 135,000	$ 1,530,000	$ 3,435,000	(126,540)	$ (25,308)	$ (25,308)	$ (1.07)	(18.3)	$ 23,000	$ (2,308)	**$ 5,448,876**	**(67,977)**

Notes:

Cost estimates based on similar project costs and Truro's SD cost estimate.

Incentives based on 2024 prescriptive heat pump incentives per Mass Save's New Construction Incentives Program

Solar energy production will vary depending on weather, maintenance quality, etc.

Assume solar net metering benefits of $0.20/kWh.

Bid alt for Solar estimated to cost $850,000.

Federal tax credit based on existing 2022 IRA direct pay tax credit. Not guaranteed in 2026.

https://www.energy.gov/eere/geothermal/tax-credits-incentives-and-technical-assistance-geothermal-heat-pumps

Estimated current utility costs based on $0.29/kWh for electricity.

Assumed 4% escalation rate for utility costs.

Estimated annual maintenance for solar to cost $5,000.

Assumed 4% escalation rate for maintenance and replacement costs.

Values based on energy model performed for HVAC System Life Cycle Cost Analysis purposes. A 30% safety factor should be applied for budgeting purposes to account for potential variances to the actual operation of the building. Per ASHRAE Standard 90.1:

Neither the proposed building performance nor the baseline building performance are predictions of actual energy consumption or costs for the proposed design after construction. Actual experience will differ from these calculations due to variations such as occupancy, building operation and maintenance, weather, energy use not covered by this procedure, changes in energy rates between design of the building and occupancy, and the precision of the calculation tool.

SECTION VII

Industrial Equipment Documents

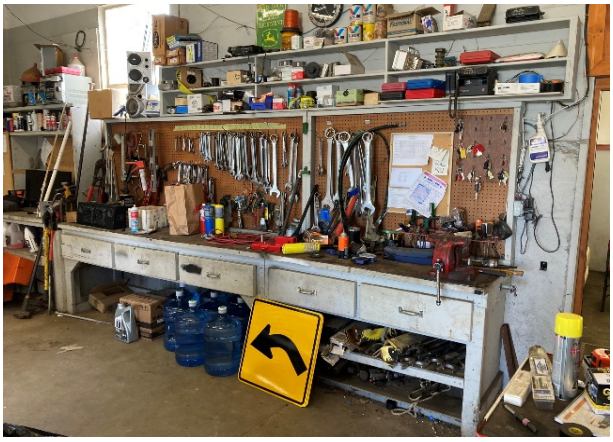
EXISTING EQUIPMENT INVENTORY

MB-1	2-Post Inground Lift		Replace

MH-8	Fluids Shelving		Replace (same model as parts storage)
MC-1	Spill Pallet		Reuse

MC-3	Oil Trolley		Reuse
MC-4	Grease Cart		Reuse

MC-5	120-Gallon 0W-20 Bulk Tank		Replace w/ Compartment Tank
MC-5	15W-40 Bulk Tank		Replace w/ Compartment Tank

MD-1	Metal Worktop		Reuse
MD-3	Workbench		Replace

MD-3	Workbench		Replace

ME-1	Hose Clamp Rack (Wall-Mounted)		Reuse
ME-1	Hose Clamp Rack (Wall-Mounted)		Reuse

ME-2	Hydraulic Hose Bins		Reuse
ME-3	Mikita Chop Saw		Reuse

ME-4	Coll-O-Crimp		Reuse
ME-5	Hydraulic Hose Workbench		Replace

ME-6	Hose Reels		Store on Hose Reel Rack

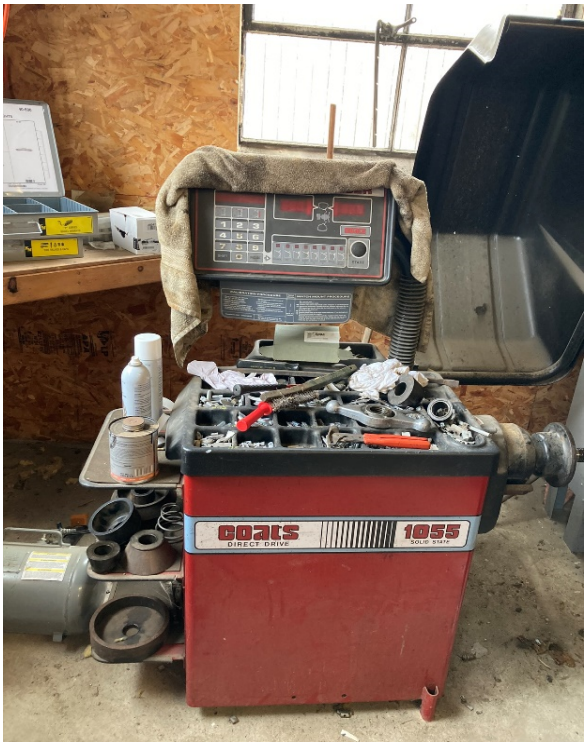
MF-1	Torch Cart		Reuse
MF-2	Lincoln AC225 Arc Welder		Reuse

MF-3	Millermatic 252		Reuse
MF-4	Metabo HPT Hammer Cart		Reuse

MF-5	Thermal Dyncamics Welder		Reuse
MF-6	Lincoln Welden Power		Reuse

MF-7	Lincoln SP-170T Arc Welder		Reuse
MF-8	Drill Press		Reuse

MF-9	Manual Shop Press		Reuse

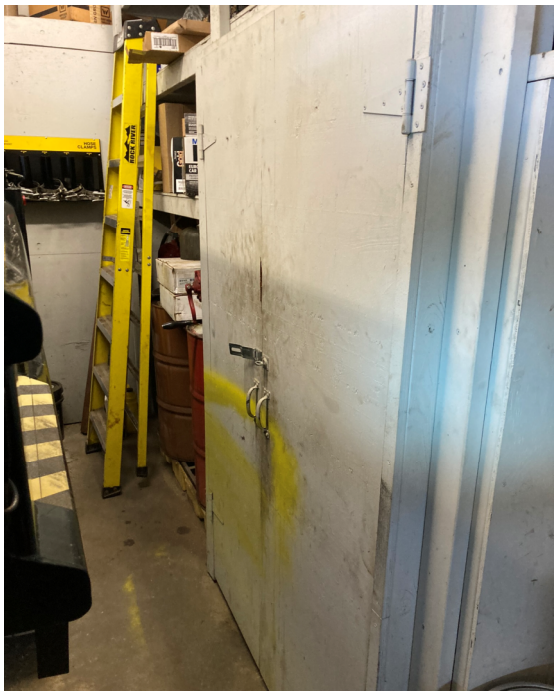
MG-1	Tire Changer		Reuse
MG-2	Wheel Balancer		Reuse

MG-3	Tire Storage		Replace

MH-1	Snap-on Classic 96 Red Tool Box		Reuse
MH-2	MAC Tools Blue Cart		Reuse

MH-3	Wooden Cabinet (Glass Window)		Reuse
MH-4	Windshield Wiper Blade Rack		Reuse

MH-5	Nuts and Bolts Storage		Reuse
MH-6	Flammable Cabinet 60-Gallons		Reuse

MH-7	Wooden Cabinet (Automobile Parts)		Replace w/ Metal Cabinet
MH-8	Shelving		Replace

MH-8	Shelving		Replace
MH-9	Small Sliding Drawers		Place on new parts shelving

MH-10	Plow Blade Storage		Place on new cantilever rack
MH-11	Hanging Storage		Replace

MH-11	Hanging Storage		Replace

MM-1	Tall Jack Stand		Reuse
MM-2	Small Jack Stands		Reuse

MM-3	Floor Jack		Reuse
MM-4	Chop Saw on Cart		Reuse

MM-5	Snap-on Battery Charger		Reuse
MM-6	Stihl Chain Sharpener		Reuse

MM-7	Mytee Lite II Heated Carpet Extractor		Reuse
MM-8	Parts Washer		Replace

MM-9	Pedestal Grinder		Replace
MM-9	Pedestal Grinder		Replace

SM-1	Vinyl Express Printer		Reuse
SD-1	Drafting Table		Reuse

SH-1	Hanging Tube Storage		Reuse
SH-2	Wood Shelving Closet		Replace w/ parts shelving

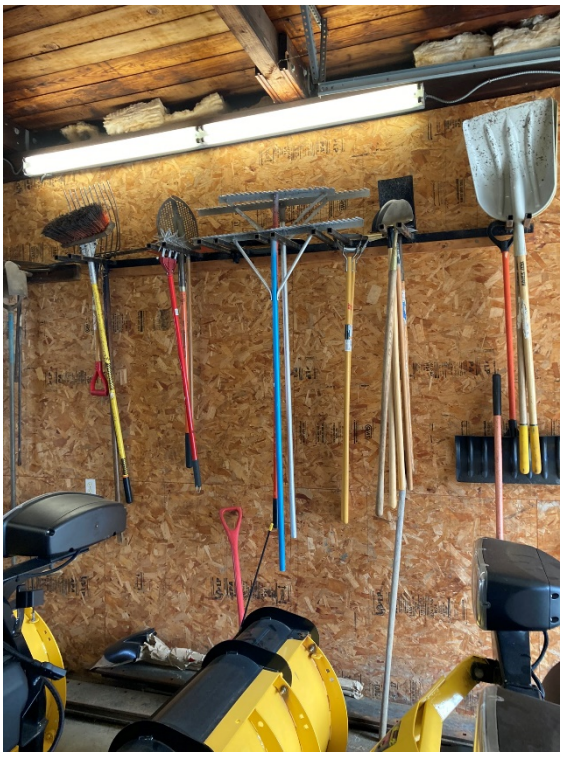
CD-1	Wood Workbench with Casters		Reuse
CD-2	Wood Workbench		Replace

CD-3	Charging Table		Replace

CH-1	Carpentry Tool Drawer		Reuse
CH-2	Flammable Cabinet 60-Gallons		Reuse

CH-3	Flammable Cabinet 45-Gallons		Reuse

CH-4	Shelving		Replace
MH-11	Hanging Storage		Replace

MH-11	Hanging Storage		Replace

CM-1	Miter Saw		Reuse
CM-2	Sawhorse		Reuse

CM-3	Pallet Jack		Reuse
CM-4	Portable Table Saw		Reuse

55 Walkers Brook Drive, Suite 100
Reading, MA 01867
tel: 978-532-1900
www.westonandsampson.com

Record of Meeting

Project:	***Truro, MA DPW***
Date:	***April 24, 2025 (1:00pm to 3:00pm)***
Meeting Location:	***Virtual via Microsoft Teams***
Prepared By:	***Nicholas Hung***

Participants:

1. Zachary Wallin (Weston & Sampson)
2. Nicholas Hung (Weston & Sampson)
3. Margaret Schmaling (Weston & Sampson)
4. Della Donahue (Weston & Sampson)
5. Jarrod Cabral (Truro DPW)
6. Tim King (Highway Foreman)
7. Kyle Halverson (Carpentry Shop)

General Discussion

- Jarrod Cabral was present for the beginning of the call to introduce Tim King as the representive for the Town in matters related to industrial equipment and overall workspace planning.
- Tim expressed the Town's need for sufficient storage of mechanical parts, fluids, and equipment.
- The group discussed the general need and spatial layout of the shop office adjacent to the Carpentry shop; it was agreed that further coordination will be required.

(A) Cranes

- Tim expressed satisfaction with the proposed 5-ton capacity of the bridge crane.
- Tim also stated that increasing the crane's width to 25 feet (from 20 feet) would be beneficial and is preferred.

(B) Vehicle Lifts

MB-1 (Heavy Duty Maintenance Bay)

- Tim expressed a preference for mobile column lifts rather than drive-on lifts due to flexibility and reduced tripping hazards, especially when unloading sanders from trucks.
- It was discussed that six mobile column lifts would be sufficient for current needs.
- Tim indicated that keeping the bay open between fleet maintenance and the fleet storage garage would be ideal, thus the preference for mobile lifts.
- It was noted that while drive-on lifts may be considered in the future, mobile column lifts should be included in the layout for pricing at this stage.

MB-2 (Light Duty Bay)

- Tim expressed approval for the 2-post lift currently shown on plans and recommended a 20,000 lb capacity.
- It was discussed that although they currently use an in-ground lift, the new facility's space will allow for better use of aboveground lifts.
- Tim confirmed that Rotary is the preferred brand for both lift types.

(C) Fluid Storage

- Tim shared that the shop currently keeps around ten 55-gallon drums and a large number of 5-gallon buckets for various vehicle-specific fluids.
- It was discussed that reels and bulk storage are needed for 0W-20, 0W-30, and 15W-40; plans to show an additional 120-gallon tank compartment for 0W-30.
- Tim confirmed that the location of the fluid storage room is acceptable for waste oil removal by their contractor. The service truck can also reverse into the bay if needed.
- It was discussed that expanding fluid storage may involve repurposing/moving the existing adjacent shop office space.
- Tim agreed that 400 gallons of waste oil storage is adequate and that waste antifreeze storage is unnecessary. He emphasized the preference for waste oil to be pumped directly from caddies, as is current practice. Existing caddies and grease carts (MC-5,6) can be reused. An air outlet will need to be provided by the waste oil tank for this purpose. Pumpout system components can be removed from plan.
- Tim highlighted that space for drum and jug storage remains a top priority.
- Fluid reel bank to include 0W-20, 15W-40, 0W-30, air, and duplex electric outlet.

(D) Workbenches

- Tim stressed the importance of having at least one mobile workbench between the two lifts, as currently shown. An additional workbench will be provided along the same column line.
- Tim requested that the workbench shown against the wall along column line 8 be upgraded to a heavier-duty version with a thicker top, and equipped with both a vise and chainsaw sharpener.
- It was noted that the existing MD-3 metal worktop can be reused as a dedicated welding bench.

(E) Hydraulic Hose Station

- It was agreed that the existing wooden hydraulic hose bench should be replaced with a standard-duty workbench with similar dimensions.
- Tim agreed that the entire hydraulic hose operation could be relocated to the mezzanine.
- It was discussed that two hose reel racks and one reel storage cabinet should be added to support this setup. Other equipment in this area can be reused as-is.

(F) Welding Fabrication

- It was discussed that dedicated space will be needed for the storage of oxygen, acetylene, and argon cylinders.
- Tim pointed out that the MF-1 torch cart, currently shown as to be replaced, can be reused.
- It was confirmed that equipment items MF-2 through MF-9 can also be reused.
- Tim stated that he does not anticipate needing a portable weld fume extractor or welding screens at this time. These can be labeled "Not in Contract" (NIC) for future consideration.

(G) Tires

- Tim confirmed that the existing tire changer and balancer will be reused.
- It was noted that the inflation cage is not needed.
- Tim explained that obsolete large tires will be removed from the site, though the department still stores tires for the police department.
- Tim approved of the TENNSCO wall-mounted tire rack shown and requested an additional unit for a total of 2 in the tire shop.

(H) Storage

- It was agreed that:
    - MH-1 wood cabinet and MH-4 tool drawer can be replaced with shelving.
    - MH-5 tool cart can be removed entirely.
- Tim requested that MH-6 wood cabinet be moved to the area near the welding equipment.
- It was discussed that MH-8 small drawers can be reused but should be placed on shelving (minimum two shelves) for better organization, which the Town will manage upon moving to the new facility.
- Tim emphasized the need for separate storage for chainsaws, weed wackers, and gas-powered tools, including their mixed gasoline containers. The fleet storage garage could serve as a possible solution for these tools.
- An additional two MH-10 nuts and bolts cabinets to be shown on the next equipment layout iteration and retained in the parts storage room.
- It was agreed that MH-12 metal drawers should be replaced with a generic metal cabinet.
- Tim requested a total of four pallet racks for hanging tool storage: two on the mezzanine and two on the ground floor dedicated to gas-powered tools.
- Tim approved relocating the MH-14 cantilever rack to the fleet storage garage, with one unit being sufficient.

(M) Miscellaneous Equipment

- It was discussed that the MM-2 chop saw cart should be moved closer to other fabrication tools.
- Tim expressed the need to replace the MM-4 parts washer with a mobile version on casters, such as the Safety-Kleen 16/30 with the underside drum, and approved of its current location.
- Tim stated that the MM-5 pedestal grinders should also be replaced, and emphasized a preference for pedestal mounts over bench versions.

(V) Vehicle Wash Bay

- The standard system design for the wash bay was reviewed and found to be sufficient for the Town's needs, according to Tim.
- Tim mentioned the water heater for the pressure wash system would not be necessary.

Carpentry/Sign Shop

- Kyle Halverson took over the call from Tim from this point forward to discuss Carpentry and Sign Shop needs.
- Kyle confirmed that the CD-1 long workbench can be reused, and an additional new unit should be added. He noted that casters are not required.
- It was discussed that one of the CD-2 steel workbenches should be a heavy-duty version with a ¼" steel top and a mounted vise.
- Only two workbenches are needed in total; space saved can be repurposed for shelving.

- It was agreed that CH-1 tool drawer can be removed and potentially replaced with a generic metal cabinet, if space allows.
- Kyle requested one additional CH-4 shelving unit. It was suggested that CH-5 hanging storage be removed from the mezzanine; tools can be simply placed on shelving.
- Kyle requires placing the CM-1 miter saw against a wall with 5 feet of clearance on either side, though these units can be pulled slightly out from the wall as needed to accomplish extra space. CM-4 table saw should also be placed against a wall.
- Kyle approved of the Grizzly 1HP portable dust collector model shown.
- It was discussed that the SM-1 vinyl cutter should be placed next to a desktop setup, ideally on a small standing desk with a computer and keyboard.

TRURO, MA DPW

NEW EQUIPMENT CUTSHEETS

Weston & Sampson
transform your environment

Bookmark Summary

CD-2 Steel Workbench
CD-3,MD-2 Electric Charging Workbench
CD-4 Long Wood Workbench
CD-5,MD-4 Heavy Duty Thick Top Workbench
CH-4,MH-8,MH-9,SH-2 Parts Shelving 6'
CM-5 Portable Cyclone Dust Collector
CM-6,MM-10 Bench Vise
MA-1 5-Ton Bridge Crane
MB-1 18K Mobile Column Lift (Rotary)
MB-2 20k Two Post Lift (Rotary)
MC-5,6 Compartment Tanks
MC-7 Fluid Pump
MC-8 Fluid Reel Bank
MC-9 Sump Alarm
MD-3,ME-5 Steel Workbench on Casters
ME-6 Hydraulic Hose Reel Rack
ME-7 Hose Reel and Fittings Storage
MF-12 Oxygen Acetylene Cage
MG-3 Tire Storage Rack
MH-7 Metal Storage Cabinet
MH-10 Cantilever Rack
MH-11 Pallet Rack Hanging Tool Storage
MM-8 Parts Washer
MM-9 Pedestal Grinder
SD-2 Computer Desk
V-1,2 Manual Wash System
V-3 Festoon System
V-4 Manual WashOnOff Controls
V-4 Undercarriage Wash Status Light
V-5,6 Automated Undercarriage Wash System
V-7to11 Undercarriage Wash (Wheel Blasters, Guide Rails, Photo Eyes, & Trenches)
V-12 Undercarriage OnOff Controls
V-13 Pre-Treatment Tank - 1,500 Gallon
V-14 Mobile Patform
V-16 Undercarriage Wash Traffic Light

Weston & Sampson
transform your environment

CD-2

HEAVY DUTY WORKBENCH
NEW

Model #: T9FB170016 MPN #: HWB-3672-95

BESTSELLER

Durham Mfg. Standard Workbench W/ Shelf & Steel Square Edge, 72"W x 36"D, 14000 Lb Capacity, Gray

PRICE
$909.00

GLOBAL INDUSTRIAL
We can supply that.

AS OF APRIL 2024



The top is 1/4" thick steel plate welded to 3" channel frame while legs are 3" x 3" x 3/16" solid steel angle iron. All units are 36" deep and work surface is 34" above the floor. All models include a 29-1/4" deep shelf which sits 10" above the floor. Unit ships fully assembled ready for use. Optional roller bearing drawer (sold separately) attaches easily to underside of work surface using pre-drilled holes and drawer includes recessed handle, a lock and 2 keys. This unit has durable gray powder coat finish, and a 34" height overall.

Weights & Dimensions

Width	72 in	Top Thickness	3/16 in
Depth	36 in	Nominal Height	34 in
Height	34 in	Weight Capacity	14000 lbs

Product Details

Assembly Required	No	Number of Shelves	1
Power	No	Construction Type	All-Welded
Type	Extra Heavy Duty Workbench	Leg Type	Fixed
Color	Gray	Manufacturers Part Number	HWB-3672-95
Number of Drawers	--	Primary Use	Manufacturing Facilities
Edge Type	Square	Brand	Durham Mfg.
Leg Style	Square Tubular Leg	Top Material	Steel
Mobile or Stationary	Stationary		

Weston & Sampson
transform your environment

ELECTRIC CHARGING WORKBENCH
NEW

CD-3
MD-2

TENNSCO Workbench: Fixed Ht, Steel, 72 in x 30 in, 1,800 lb Overall Load Capacity, Gray

Item **39FL39** Mfr. Model **EB-2-3072S**

GRAINGER

Web Price
$716.03 / each **AS OF** MARCH 2024



Product Details

Catalog Page 1276

Brand **TENNSCO**

Portability **Stationary**

Height Adjustability **Fixed Height**

Top Surface Material **Steel**

Overall Load Capacity **1,800 lb**

Overall Width **72 in**

Overall Depth **30 in**

Overall Height **33-1/2 in**

Height to Surface Top **33-7/8 in**

Included Components
Stringer
Riser
Power Strip

Top Gauge **12 ga**

Frame Material **Steel**

Frame Gauge **13 ga**

Frame Material Finish **Powder Coated**

Color **Gray**

Assembly **Unassembled**

Edge Shape **Square**

Brake Type **None**

Features
Tops Supported by Complete Steel Framework; Wiring Kit not Included.

Foot Type **Plain**

Leg Type **Panel Leg**

Number of Cabinets **0**

Number of Drawers **0**

Number of Knockouts **8**

Number of Legs & Bases **2**

Number of Outlets **16**

Number of Shelves **1**

Display Qty **1**

Display Sell UOM **EA**

Manufacturer Part Number **EB-2-3072S**

UNSPSC **24102006**

Country of Origin **USA (subject to change)**

Weston & Sampson
transform your environment

WORKBENCH ELECTRIC SHELF
NEW

BD-2

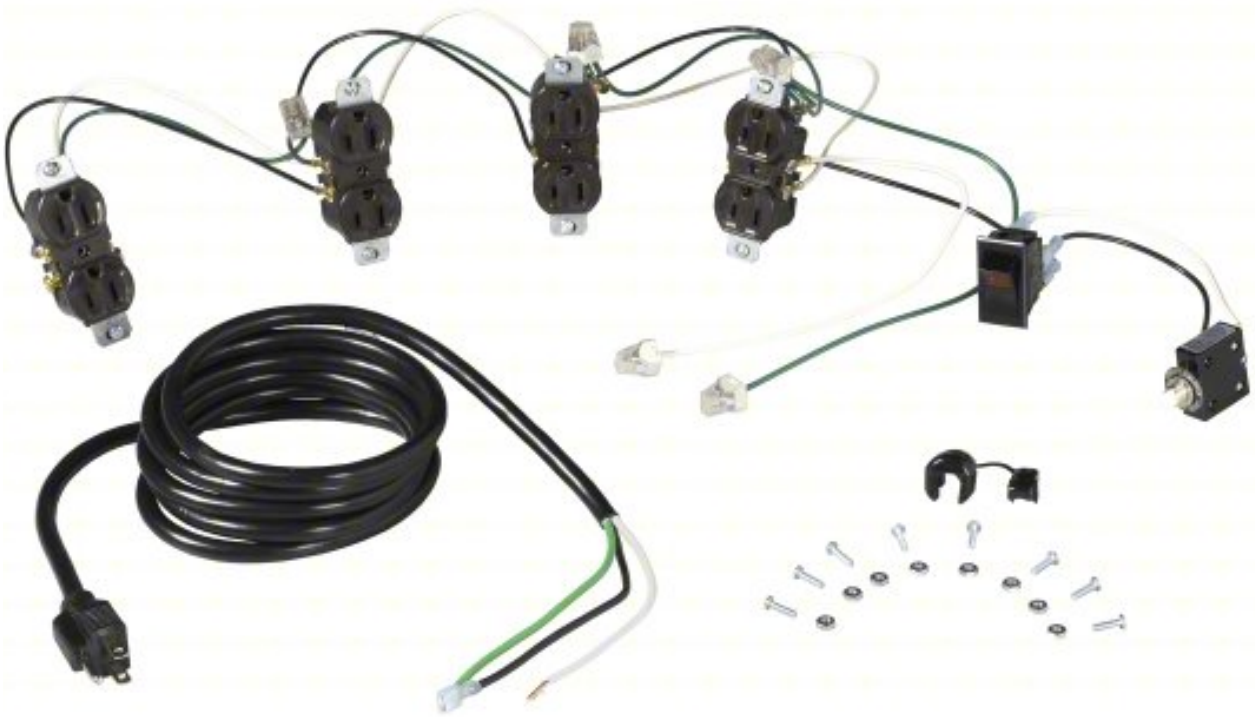
TENNSCO Wiring Kit

Item **1PB78** Mfr. Model **WK-1**

GRAINGER

Web Price $129.84 / each

AS OF MARCH 2024



Product Details

Catalog Page 1278

Brand **TENNSCO**	Features **On/Off Switch With Pilot Light; Prewired**
Product Type **Wiring Kit**	For Use With **Electronic Riser; Electronic Workbench; Outlet Panels**
Includes Mounting Hardware **Yes**	Assembly **Unassembled**
Includes **(4) Duplex Receptacles and On/Off Switch, Prewired; On/Off Switch, Prewired**	Power Cord Length **8 ft**
Number of Outlets **0**	Standards **SCS Certified**
Includes Wiring Kit **Yes**	Manufacturer Part Number **WK-1**
Operating Voltage **115 V**	UNSPSC **24102006**
	Country of Origin **USA (subject to change)**

Product Description

Power strip wiring kits fit into outlet knockouts on workbenches to provide electrical connections to power tools and equipment. They supply power within reach of the work surface, eliminating the need for extension cords. Channels install on upright mounting frames and are used to organize, route, and protect the wiring.

Weston & Sampson℠
transform your environment

LONG WOOD WORKBENCH
NEW

CD-4

Industrial Packing Table - 96 x 30", Composite Wood Top

PRICE SEE BELOW

ULINE

AS OF APRIL 2025



Customize your work area with these packing tables.

- 1 1/2" thick composite wood top with rounded edges.
- Holds up to 500 lbs.
- 14" bottom shelf for additional storage.
- Adjustable steel legs 30 to 37" in 1 1/2" increments.
- Packing Table Accessories and pre-drilled Replacement Top available.

MODEL NO.	DIMENSIONS L x W	ADJUSTABLE HEIGHT	CAPACITY (LBS.)	WT. (LBS.)	PRICE EACH 1	PRICE EACH 2+	TOP STYLE	IN STOCK SHIPS TODAY
H-2484-WOOD	96 x 30"	30-37"	500	233	$540	$510	Composite Wood	1 ADD

SHIPS UNASSEMBLED VIA MOTOR FREIGHT

Weston & Sampson
transform your environment

HEAVY DUTY WORKBENCH
NEW

CD-5
MD-4

ITEM NAME/NUMBER

Durham HWBMT-367234-95 72"W X 36"D X 34"H Extra Heavy Duty Machine Table

Item #: T9FB891808

PRICE

Price: $756.00

WEBSITE

www.globalindustrial.com/

AS OF 5-18-2020

IMAGES



DESCRIPTION

Top is 1/4" thick steel plate welded to 3" channel frame. Legs are 3" x 3" x 3/16" solid steel angle iron. Foot pads with pre-drilled holes for lagging to the floor.

SPECIFICATIONS

Product Specifications	
WIDTH INCHES	72
DEPTH INCHES	36
HEIGHT INCHES	34
CAPACITY LBS (Evenly Distributed)	14,000
COLOR FINISH	Gray
ASSEMBLY	All-Welded
BRAND	Durham Mfg.®
CONSTRUCTION	Steel
LEG STYLE	Angle Leg
LEG TYPE	Fixed
MANUFACTURERS PART NUMBER	HWBMT-367234-95
SHELF QUANTITY	1
TOP CONSTRUCTION	Steel Square Edge
WEIGHT LBS	465

Weston & Sampson
transform your environment

CH-4
MH-8
MH-9
SH-2

PARTS SHELVING (6')
NEW

ITEM NAME/NUMBER

TENNSCO Boltless Shelving: Standalone, Extra-Heavy-Duty, 72 in x 24 in, 84 in Overall Ht, 5 Shelves

Item 8ZA32 Mfr. Model RXHS-722484MED GR

Web Price
$914.09 / each

GRAINGER

AS OF MARCH 2024



Product Details

Catalog Page 1187

Brand **TENNSCO**	Load Capacity per Shelf **2,750 lb**
Duty Rating **Extra-Heavy-Duty**	Finish **Powder Coated**
Shelving Configuration **Standalone**	Number of Shelves **5**
Decking Material **Steel**	Color **Medium Gray**
Overall Height **84 in**	Side Panel Style **Open**
Overall Width **72 in**	Beam Profile **Channel**
Overall Depth **24 in**	Frame Material **Steel**
Maximum Post Load Capacity **13,000 lb with Beam Evenly Spaced at 24 in**	Manufacturer Part Number **RXHS-722484MED GR**
Decking Gauge **16 ga**	UNSPSC **24102004**
Post Gauge **14 ga**	Country of Origin **USA (subject to change)**

Product Description

Extra-heavy-duty boltless metal shelving units generally are sturdier and can hold heavier items than shelving units with lower duty levels. Also known as die shelving, they are used for storing dies, fixtures, jigs, and other heavy equipment. These shelving units have solid steel decking that provides a smooth, solid surface that items cannot fall through. It is more resistant to damage than particleboard decking and will not splinter. The decking installs over the shelving units' beams to distribute the weight of items placed on the decking across the beams.

Weston & Sampson
transform your environment

PORTABLE CYCLONE DUST COLLECTOR

CM-5

ITEM NAME/NUMBER

Grizzly Industrial 38 YEARS

Grizzly G0860 1-1/2 HP Portable Cyclone Dust Collector

$1,095^{00}$ +199^{00} Freight

AS OF MARCH 2024



FEATURES

- Collection drum with quick-release handle for easy disposal
- Two-stage operation for ultimate dust collection
- Swivel casters
- Lift handle and roll drum for easy sawdust disposal
- Pleated filter with paddle brushes and crank handle for max air flow efficiency
- Vacuum equalizer built into collection drum for use with disposable plastic bags
- Wireless remote control

SPECIFICATIONS

SPECIFICATIONS

- Motor: 1-1/2 HP, 110V, single-phase, 15A
- Intake hole size: 6"
- Impeller: 12-3/4" aluminum
- Airflow capacity: 868 CFM @ 1.8" SP
- Max static pressure: 9.7"
- Filtration: 1 micron
- Filter surface area: 28.1 sq. ft.
- Collection size: 20-gallon drum
- Sound rating: 78dB
- Overall dimensions: 27-1/2" W x 44" L x 70" H
- Approximate shipping weight: 278 lbs.

Electrical:

Power Requirement	110V, Single-Phase, 60 Hz
Full-Load Current Rating	15A
Minimum Circuit Size	20A
Connection Type	Cord & Plug
Power Cord Included	Yes
Power Cord Length	72 in.
Power Cord Gauge	14 AWG
Plug Included	Yes
Included Plug Type	5-15
Switch Type	Remote Control Magnetic Switch w/Overload Protection

Motors:

Main

Horsepower	1.5 HP
Phase	Single-Phase
Amps	15A
Speed	3450 RPM
Type	TEFC Capacitor-Start Induction
Power Transfer	Direct
Bearings	Shielded & Permanently Lubricated
Centrifugal Switch/Contacts Type	External

W1055 Woodstock Dust Collection Kit #2

Woodstock Dust Collection Kit #2 takes the dust collection kit concept a step further by providing the necessary hoses, clamps, hoods and fittings to connect two woodworking machines to a dust collector.

Air flow to each machine is controlled by a blast gate. Kit comes complete with comprehensive instructions and can be expanded even further using our other dust collection accessories (list enclosed in each box).



$56.95

Accessories Included:

- (2) W1007 4" Blast Gates
- (2) D4206 4" x 10' Clear Hose
- (1) W1004 Table Saw Dust Hood 4" OD
- (1) W1010 Universal Dust Hood 4" OD
- (1) W1015 Y-Fitting 4" x 4" x 4" OD
- (10) W1317 Wire Hose Clamps

Weston & Sampson℠
transform your environment

PORTABLE CYCLONE DUST COLLECTOR

CW-8

INCLUDE MAGFITT DUST COLLECTION KIT

New



4" Magnetic Machine Coupling

$9.99

New



4" Magnetic Hose Connector

$19.99

New



2-1/2" Magnetic Machine Coupling

$8.99

New



2-1/2" Magnetic Hose Connector

$16.99

New



4" x 2-1/2" Magnetic Machine Coupling

$9.99

New



4" x 2-1/2" Magnetic Hose Connector

$19.99

MagFitt™: Effortless Dust Collection for Your Workshop

Establishing a clutter-free and healthy woodworking workshop environment is crucial. The lack of an efficient dust collection system can greatly impact your health. From the debris from wood chips to fine dust particles that can hang in the air for hours, a dust collection system is needed not only for cleanliness of your shop but also for the long-term health of your eyes and lungs.

Introducing the MagFitt™ Magnetic Dust Collection System, a series of revolutionary magnetic couplings and connectors developed by Woodcraft. MagFitt is flexible and efficient—and fast—making setting up dust collection in your shop quick and easy, as easy as 1-2-3! Install MagFitt Connectors and Couplings as illustrated below, and your workshop will remain dust-free, clean and safe.

Ideal for Workshops of All Sizes and Layouts

For larger workshops a central dust collection system is the go-to solution. However, for smaller spaces or garage workshops with limited room for expansion, the implementation of a traditional dust collection system can be challenging and costly. The MagFitt System steps in as the ideal alternative, eliminating the need to run dedicated duct work, blast gates and hoses from a central collector to all of your tools.

Once the MagFitt components are installed, setting up dust collection for a power tool is incredibly easy. When your work takes you to another tool, simply move the MagFitt Connector, attached to your dust collector, to the MagFitt Coupling attached to that tool, and so on. Ensuring that your shop has an efficient dust collection system has never been easier.

Weston & Sampson
transform your environment

BENCH VISE
NEW

CM-6
MM-10

ITEM NAME/NUMBER

Model #: T9FB241932 MPN #: 63304

Wilton 63304 Model WS8 8" Jaw Width 4" Throat Depth Shop Vise W/ Swivel Base

PRICE $629.00

WEBSITE GLOBAL INDUSTRIAL We can supply that.

AS OF FEB 2024

IMAGES



SPECIFICATIONS

Weights & Dimensions

Pipe Jaw Capacity	3/4 - 3 in
Throat Depth	4 in
Jaw Width	8 in

Size	8 in
Max Opening Capacity	8 in

DESCRIPTION

Wilton Shop Vises have heavy-duty castings with a 30,000 PSI iron body built for rugged use and extended life. Each has the capability of handling pipe as well as mounting to the bench with 3 mounting posts providing more stability and secure hold.

Features:

Replaceable serrated top jaws
360° swivel base with double lockdown for quick and easy positioning
Designed for general duty applications
Built in pipe jaws handle various pipe sizes
Rubber pinch point safety guards
Large anvil work surface
30,000 PSI iron castings

5-TON OVERHEAD BRIDGE CRANE
NEW

IMAGES





PRICES FROM 1/20/20 - prices don't include runway beams

Scenario #2 - All New Cranes		
Location	Description	Total
Vehicle Maint. Bay	New 20/5-Ton Crane, ASCE Rails, and Conductor Bars	$ 184,900
PM Bay	New 7.5-Ton Crane, ASCE Rails, and Conductor Bars	$ 56,600
Wash Bay	New 5-Ton Crane, ASCE Rails, and Conductor Bars	$ 65,600
Welding Bay - Crane #1	New 15-Ton Crane, ASCE Rails, and Conductor Bars	$ 105,700
Welding Bay - Crane #2	New 10-Ton Crane (rails and bars with 15-ton crane)	$ 62,300
	Budget Total - Scenario #2 Total:	**$ 475,100**

SPECIFICATIONS

(1) - 10 ton x 20'-6"span R&M underrunning single girder crane x (1) 100'-0"+/- long runway

- Overhead building steel designed by others to support (1) 10 ton underrunning bridge crane.
- Structural runway beam steel and support hardware included– (1) runway x 100'-0" long.
- Runways designed for (1) 10 ton crane per 24'-8" maximum support center.
- Insulated conductor bar electrification & hardware included - (1) runway x 100'-0" long.
- Hoist = R&M SX Series electric wire rope hoist – H4 rated.
- Hoist includes an electric motor brake an electromechanical load limit up to 110% capacity, thermal motor protection and a 4 position limit switch. This is non-mechanical load brake hoist which allows it to run cooler and more efficient.
- Hoist lift = 29'-8" available on unit. Maximum hook height TBD upon final layout
- Hoist speed = 19/3.2 FPM with 4 part "true lift" single reeving.
- Trolley speed = 65 FPM with Variable Frequency Drive (VFD) Control.
- Bridge speed = 100 FPM with Variable Frequency Drive (VFD) Control.
- Push button control festooned across the bridge on a separate track thus allowing the operator to be safely away from the lifted load.
- Radio remote control package with harning horn and beacon included.
- Crane voltage = 460V-3ph-60hz
- Crane to be painted safety yellow.
- Crane and runway structure transportation to site included.
- Crane and runway structure installation included.
- Rentals for installation included.
- System will be leveled & braced per CMAA code.
- Disconnect and power to crane runway elevation by others with electrical hook-up by us.
- Crane start-up operational testing included.
- Certified load testing included.
- PE stamp included.
- Engineering drawings and product data sheets and submittals included.

(price from Tewksbury - 12/14/20)

•Total BUDGETARY cost for MA Prevailing Wage Rates.....…**$91,000.00**

POWER (480 V / 3 PHASE)

460V, 3-phase is assumed for all cranes
15 Ton: 30 A (main fuse size at bridge panel)
10 Ton: 30 A (main fuse size at bridge panel)
5 Ton: 15 A (main fuse size at bridge panel)

POWER (208 V/ 3 PHASE)

2 TON CRANE

2 Electrical

Main voltage	208 V /60 Hz
Control voltage	115 V
Nominal power of crane	4.3 hp
Main fuse size at bridge panel	15 A
Maximum current of crane*)	45.1 A
Nominal current of crane*)	13.5 A
Power factor at starting current	0.76
Power factor at nominal current	0.83
Voltage drop of crane (conductor) power supply	% <= 4.0 %

5 TON CRANE

Electrical

Main voltage	208 V /60 Hz
Control voltage	115 V
Nominal power of crane	8.8 hp
Main fuse size at bridge panel	30 A
Maximum current of crane*)	112.3 A
Nominal current of crane*)	26.0 A
Power factor at starting current	0.78
Power factor at nominal current	0.93
Voltage drop of crane (conductor) power supply	% <= 4.0 %

Note! The maximum current of crane includes the starting current of hoisting motor(s) and nominal current of trolley and bridge traveling motors. The nominal current of crane includes the nominal current of hoisting, trolley and bridge motors. Maximum or nominal currents of crane do not include the currents of additional accessories, such as lamps, magnets etc.
Note! Do not use estimated main fuse size to define other electrical components.

ROTARY MOBILE COLLUMN LIFTS
NEW



FLEX**MAX419**
18,800 lbs. capacity column

Shown: MCHM419U100



FLEX / FLEXMAX 18,800 lb. COLUMN CAPACITIES

MODEL	MCHF419	MCHF619
Column configuration*	4	6
Capacity per set	75,200 lbs.	112,800 lbs.
Rise	70" (1778 mm)	
Column width	45.5" (1156 mm)	
Wheel Rim Size	9"to 24" (228 to 610 mm)	
Clearance / fork to column	10" (254 mm)	
Speed of rise	78 seconds	
Charging voltage	110v charger** (2.5 amps max.)	



FLEX / FLEX MAX 14,000 lb. COLUMN CAPACITIES

MODEL	MCHF414	MCHF614
Column configuration*	4	6
Capacity per set	56,000 lbs.	84,000 lbs.
Rise	69" (1760 mm)	
Column width	43" (1092 mm)	
Wheel Rim Size	9"to 24" (228 to 610 mm)	
Clearance / fork to column	10" (254 mm)	
Speed of rise	68 seconds	
Charging voltage	110v charger** (2.5 amps max.)	

* Two, four, six and eight column configurations are available.
** Call factory for alternate voltage

ACCESSORIES

FRAME-ENGAGING 18,000 LBS. CAPACITIES

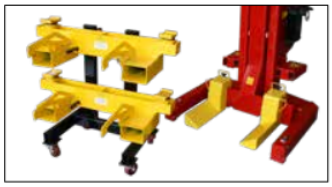
LIFTING KITS

FORE and AFT END LIFT KITS

Frame-engaging end lift kits enable lifting by the front and rear of the vehicle using stacking adapters.



M140168YL
THE WIDEST REACH IN THE INDUSTRY
For use with two MCH18 or MCH19Flex series columns or for use with two MCH13 or MCH14 Flex series columns
Maximum capacity: 18,000 lbs.
Rise height: 70"



OPTIONAL
M110108BK
Storage cart for lifting kits



M140168YL
18,000 lbs. capacity lift

Shown: MCH418U100 with M14005YL frame lift kit

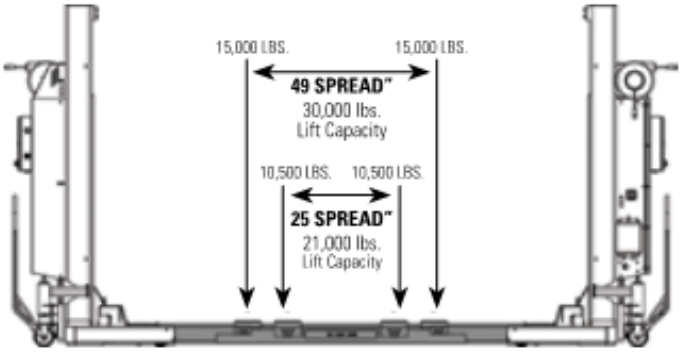
FRAME-ENGAGING

CROSS BEAM KITS

21,000 TO 32,000 LBS. CAPACITIES

Pick up buses, RVs and more with wheels-free, frame-engaging cross beam kits. Beam vehicle spotting allows technicians to service wheels and tires with ease.

All kits are designed for use with the MACH418 or MCHFlex419 Series lifts





CAPACITIES

30,000 lbs. at 49" adapter spread / 15,000 LBS. per adapter
21,000 lbs. at 25" adapter spread / 10,500 LBS. per adapter

ALI THIRD-PARTY GOLD CERTIFIED

APPROXIMATE PRICE: ~$70,000
(Based on Burlington DPW Quote 4/5/2019)

(Get updated quote Specific to each project)

Weston & Sampson
transform your environment

ROTARY TWO POST LIFT
NEW

MB-2

SPO20-SW 20,000 LBS. CAPACITY
VERSATILE SUPER LIFT
The industry's standard 20,000 lbs. heavy-duty two post lift is now the world's fastest!



Model shown: SPO20U0T0RD
20,000 lbs. capacity SHOCKWAVE-equipped lift

LOW CEILING MODEL AVAILABLE

SPO16
16,000 LBS. CAPACITY
SERVICE FLEET LINES and MORE
Setting the mark for reliability and quality in heavy duty lifts.

SHOCKWAVE EQUIPPED
Available with SHOCKWAVE™

Model shown: SPO160T0BL
16,000 lbs. capacity 2-post lift

LOW CEILING MODEL AVAILABLE



Extended Height Kits
Raise the overhead clearance on 10,000 and 12,000 lbs. capacity two-post lifts to service more vehicles at a comfortable working height. Kit includes column extensions and hardware.
CONSULT FACTORY FOR OPTIONS



Jack Stands / 4,000 lbs. CAPACITY
The lift certified RS4 jack stand provides added assurance of vehicle lift safety.
Maximum height: 84" (2133mm)
Minimum height: 55 1/2" (1410mm)
Fine thread-up height:
1 5/8" to 7 1/8" (41mm to 181mm)



MW-200 Tire Lift
200 lbs. capacity air operated tire and wheel lift. Provides maneuverability and adjustable lifting and lowering speeds.
- Quick transfers to tire balancers
- Easy positioning of the tire / wheel
- Includes air hose and auxiliary air tool connection

#MW-500
500 lbs. capacity model available



Air / Utility Box
Mounts easily on any column and provides quick access to utilities
- Two 110v electric outlets and air connection
- The filter/regulator/lubricator helps extend the life of your air tools

#FA5911BK



Tool Holder
To keep tools handy for the technician, this patented tool holder keeps air guns, torque sticks, and other tools within easy reach. This accessory mounts easily in holes already drilled and tapped in the two-post column.
#FA5191EBK



Power and Air Requirements from Installation Manual

IMPORTANT: Use separate circuit for each power unit. Protect each circuit with time delay fuse or circuit breaker. For single phase 208-230V, use 30 amp fuse. For wiring see Figs. 19 and 20. All wiring must comply with NEC and all local electrical codes.

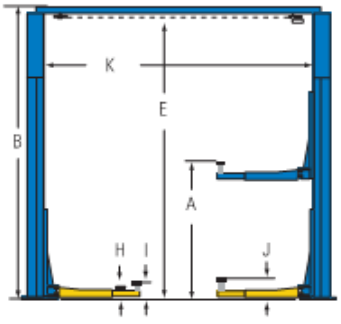
Note: Absence of air filter/regulator/lubricator will void the warranty on all pneumatic components.

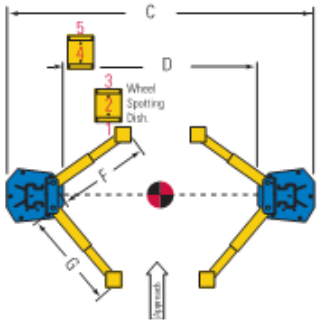
To Main Air Supply
Note: Use an Operational
Air Pressure of 90-100 psi

Available with SHOCKWAVE™

	Model:	SP016 **TRIO 3-STAGE Arms** Truck Adapters	SP020 **TRIO 3-STAGE Arms** Truck Adapters
	SHOCKWAVE Models	**SP016 -SW**	**SP020 -SW**
	Lifting Capacity	16,000 lbs. (7257kg)	20,000 lbs. (9072kg)
	Max. Load (per arm)	4,000 lbs. (1814kg)	5,000 lbs. (2268kg)
A.	Rise* Min.Truck Adapter Height Max.Truck Adapter Height	 77 31/32" (1979mm) 80 1/32" (2035mm)	 77 31/32" (1979mm) 80 1/32" (2035mm)
B.	Height Overall: Standard Adjustments Low Ceiling (LC)	 15' to 16' 6" (4572-5029mm) 13' 6"to 14' 6" (4115-4420mm)	 15' to 16' 6" (4572-5029mm) 13' 6"to 14' 6" (4115-4420mm)
C.	Width Overall (outside to outside of base plates) Narrow Standard Wide	 12' 11" (3937mm) 13' 5" (4089mm) 13' 11" (4242mm)	 12' 11" (3937mm) 13' 5" (4089mm) 13' 11" (4242mm)
	Wide width setting provides greatest tire clearance for shorter wheelbases		
D.	Narrow Drive-Thru Clearance Standard Drive-Thru Clearance Wide Drive-Thru Clearance	105 11/32" (2677mm) 111 11/32" (2829mm) 117 11/32" (2981mm)	105 11/32" (2677mm) 111 11/32" (2829mm) 117 11/32" (2981mm)
E.	Floor To Overhead Switch	15' 10 13/16" (4851mm)	15' 10 13/16" (4851mm)
F.	Reach / Front Arm Min./Max.	34 11/16" (881mm) / 64" (1626mm)	34 11/16" (881mm) / 64" (1626mm)
G.	Reach / Rear Arm Min./Max.	34 11/16" (881mm) / 64" (1626mm)	34 11/16" (881mm) / 64" (1626mm)
H.	Min./Max. Truck Adapter Height	5 31/32" to 8 1/32" (152-203mm)	5 31/32" to 8 1/32" (152-203mm)
I.	Min./Max. Low Step Height	10 31/32"to 13 1/32" (278-344mm)	10 31/32"to 13 1/32" (278-344mm)
J.	Min./Max. High Step Height	15 31/32"to 18 1/32 (406-470mm)	15 31/32"to 18 1/32 (406-470mm)
K.	Inside Columns Narrow Standard Wide	 120 15/32" (3061mm) 126 15/32" (3213mm) 132 15/32" (3366mm)	 120 15/32" (3061mm) 126 15/32" (3213mm) 132 15/32" (3366mm)
	Motor / Voltage** **With SHOCKWAVE**	4 HP / 208v-230v **5 HP / 110v**	4 HP / 208v-230v **5 HP / 110v**
	Time of Full Rise **With SHOCKWAVE***	81 seconds at full capacity **60 seconds at full capacity** **36 seconds at half capacity**	81 seconds at full capacity **60 seconds at full capacity** **36 seconds at half capacity**
	Time of Descent	**20 seconds for all vehicle weights**	
	Ceiling Height Required: Standard Low Ceiling (LC)	 15' 2" to 16' 8" (4576-5080mm) 13' 8" to 14' 8" (4166-4470mm)	 15' 2" to 16' 8" (4576-5080mm) 13' 8" to 14' 8" (4166-4470mm)
	Min. Bay Size	15' x 30' (4572 x 9144mm)	15' x 30' (4572 x 9144mm)
	Total Product Weight	3,500 lbs.	3,500 lbs.

Models: SP016 / SP020





* Rise is measured from floor to adapter in lowest and highest position

** Optional DC SHOCKWAVE battery power available

*** Actual rise times may vary depending on weight of the vehicle

Standard color of lifts are blue and red unless otherwise noted. Gray and black are available at no additional charge. Additional colors are available, consult your Rotary® representative for details.

RAL5005 RAL3002 RAL7040 RAL9005

COMPARTMENT TANKS
NEW & WASTE FLUIDS
NEW

SEE FOLLOWING PAGES

CONTAINMENT SOLUTIONS®

LUBE CUBE®
MULTI-PURPOSE TANKS



Lube Cube® lube oil tanks are the best solution for storage of new and used lubrication oils. Lube Cubes provide lower installed costs than underground tanks, better space utilization than cylindrical aboveground tanks and lower operation costs than 55-gallon drums.

Lube Cube Tanks are designed for easy and convenient installation either indoors, in service bays or basements, or outdoors, next to the building. Lube Cube's rectangular shape allows for the storage of up to 20% more volume in a given space than comparable cylindrical tank capacities.

Lube Cubes are available as either single or double-wall tanks. Double-wall tanks are UL listed as integral secondary containment and therefore do not require dikes for leak containment.

Desert sand primer finish is standard. Special colors, coatings and interior linings, custom dimensions and equipment packages are available upon request.

STANDARD FEATURES:

- UL-142 listed
- Meets NFPA 30 Standard
- Skid mounted for easy installation
- Shop primed exterior
- Moveable by forklift
- NPT fittings with PVC plugs
  Single-Wall: 5 (plus emergency vent opening)
  Double-Wall: above fittings (plus emergency vent and inspection opening)
- Lifting lugs

OPTIONS:

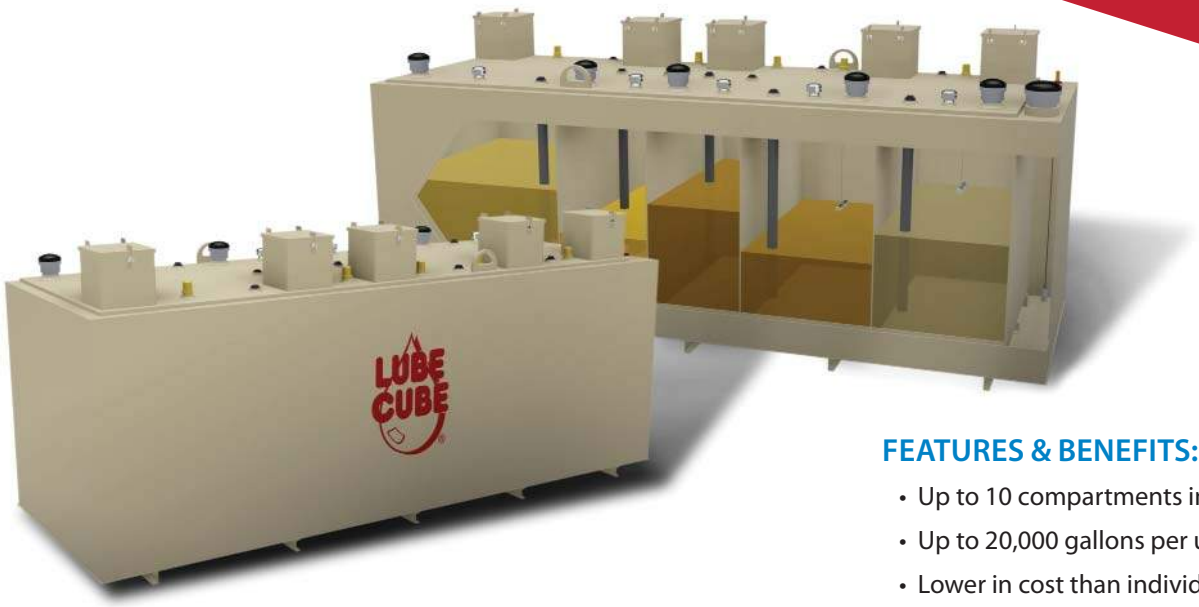
- Corrosion resistant exterior coating
- 7 gallon spill box
- Custom sizes
- Compartments available
- Stainless-steel construction
- Interior coatings
- Equipment packages



Lube Cube tanks are available in standard sizes from 60 to 20,000 gallons.

CONTAINMENT SOLUTIONS®

LUBE CUBE®
MULTI-COMPARTMENT TANKS



MULTI-COMPARTMENT TANKS

Containment Solutions offers multi-compartment tanks for the storage of new and used lubrication products. Multi-compartment Lube Cube® tanks from CSI provide lower installation costs and better space utilization than multiple aboveground tanks.

CSI compartment tanks provide a minimum floor space savings of 15% and cost savings of 20%-30% when compared to multiple tanks.

Multi-compartment tanks can be manufactured with up to 10 compartments and may store up to 20,000 gallons. Leak detection for these tanks will also require fewer electronic sensors compared to individual tanks. CSI compartment tanks are UL-142 listed and meet NFPA 30 standards and can be custom designed to suit limited space requirements.

A complete selection of Containment Solutions tank configurations are available nationwide. Our experienced sales staff is ready to assist you in selecting the tank best suited to fit your needs.

FEATURES & BENEFITS:

- Up to 10 compartments in a single tank
- Up to 20,000 gallons per unit
- Lower in cost than individual units
- Lower insurance costs*
- UL-142 listed
- Meets NFPA 30 Standard
- Skid mounted for easy installation
- Moveable by forklift
- Lifting lugs
- Shop primed exterior standard
  - (Epoxy exterior coating available)

OPTIONS:

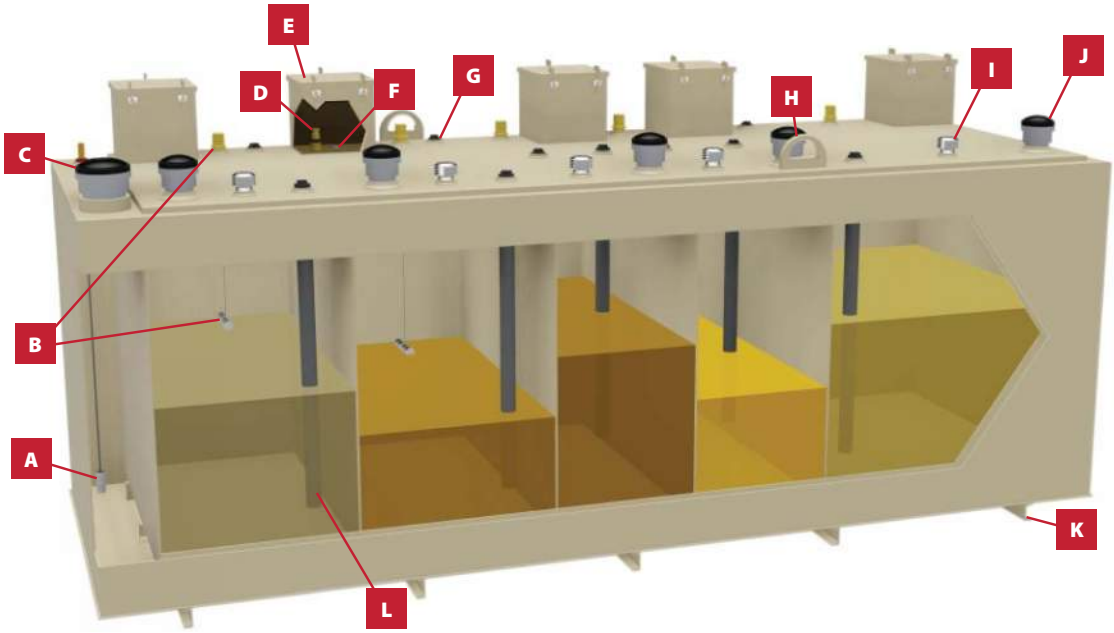
- Stainless-steel construction
- Interior coatings
- 7 gallon spill box
- Equipment packages

* *Savings will vary by area, and are dependant on insurance carrier.*



1,250 gallon, 4 compartment tank.

LUBE CUBE® MULTI-COMPARTMENT TANK



A. Secondary Containment Leak Gauge
B. Product Level Gauge
C. Secondary Containment Emergency Vent - 4", 6", 8" or 10"
D. Primary Tank Fill opening - 2", 4", or 6"
E. Optional Spill Box
F. 1/2" NPT Drain
G. 2" Spare
H. Lifting Lugs
I. 2" Primary Working Vent
J. Primary Tank Emergency Vent - 4", 6", 8", or 10"
K. Support Feet
L. Product Suction Tube

▼ TYPICAL CLUTTERED LAYOUT



▼ FLOOR SPACE SAVINGS OF CSI TANKS

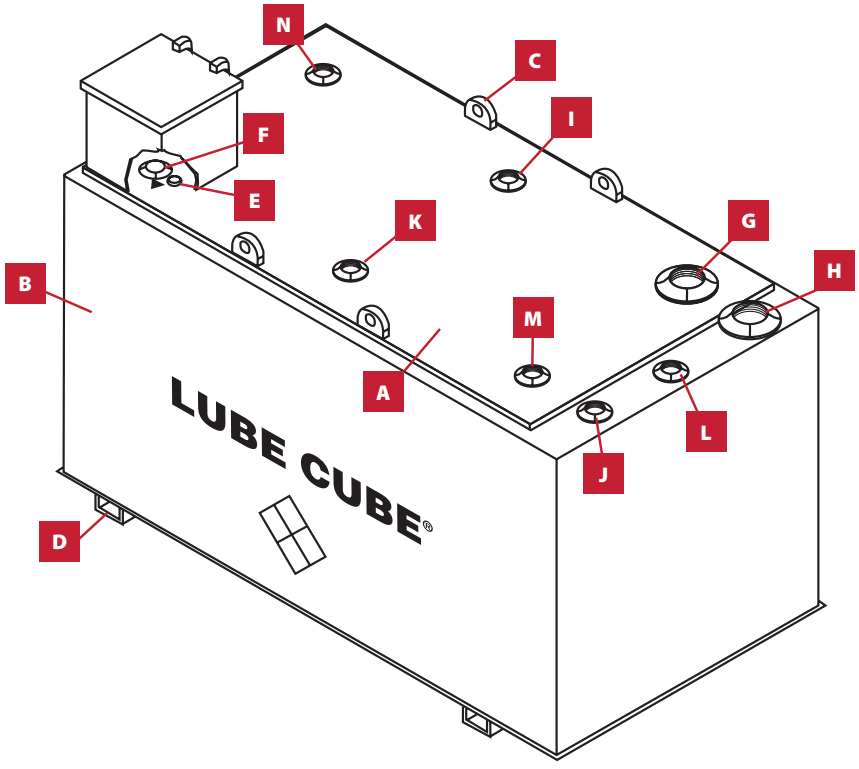


CONTAINMENT SOLUTIONS®

333 North Rivershire Drive, Suite 190 Chemical Road • Conroe, TX 77304 • Phone: (936) 756-7731 • containmentsolutions.com
Copyright © • Containment Solutions, Inc. • All Rights Reserved • October 2015 • Pub. No. LC 3509B

STANDARD TANK SIZES:

CAPACITY (GALLONS)	DIMENSIONS (L x W x H)	WEIGHT (LBS)	CAPACITY (GALLONS)	DIMENSIONS (L x W x H)	WEIGHT (LBS)
60	1' 11" x 2' 10" x 3' 1"	385	480	5' 8" x 3' 10" x 4' 1"	1,350
90	2' 6" X 2' 10" X 3' 1"	460	500	4' 10" x 3' 10" x 5' 1"	1,425
120	3' 2" x 2' 10" x 3' 1"	485	550	5' 2" X 3' 10" X 5'1"	1,450
150	3' 9" X 2' 10" X 3' 1"	675	600	5' 7" X 3' 10" X 5' 1"	1,475
150	2' 10" X 2' 10" X 4' 1"	650	650	6' 3" x 3' 10" x 5' 1"	1,525
180	3' 4" X 2' 10" X 4' 1"	700	750	6' 9" x 4' 0" x 5' 1"	1,625
200	3' 7" X 2' 10" X 4' 1"	740	1,000	9' 4" x 4' 0" x 5' 1"	2,400
210	3' 9" X 2' 10" X 4' 1"	765	1,500	13' 4" x 4' 0" x 5' 1"	3,250
225	3' 11" X 2' 10" X 4' 1"	790	2,000	13' 9" x 5' 0" x 5' 1"	3,800
240	4' 2" X 2' 10" X 4' 1"	830	2,500	17' 0" x 5' 0" x 5' 1"	4,500
250	4' 4" X 2' 10" X 4' 1"	860	3,000	20' 5" x 5' 0" x 5' 1"	6,650
275	4' 8" X 2' 10" X 4' 1"	900	4,000	22' 3" x 5' 0" x 6' 1"	8,150
280	4' 10" x 2' 10" x 4' 1"	850	5,000	17' 1" x 8' 0" x 6' 1"	10,150
300	3' 10" X 3' 10" X 4' 1"	925	6,000	20' 3" x 8' 0" x 6' 1"	11,400
325	4' 1" X 3' 10" X 4' 1"	975	8,000	19' 11" x 8' 0" x 8' 1"	14,000
350	4' 4" X 3' 10" X 4' 1"	1,000	10,000	24' 7" x 8' 0" x 8' 1"	16,125
375	4' 7" X 3' 10" X 4' 1"	1,050	12,000	29' 3" x 8' 0" x 8' 1"	18,550
400	4' 10" X 3' 10" X 4' 1"	1,100	15,000	36' 3" x 8' 0" x 8' 1"	22,100
450	5' 5" X 3' 10" X 4' 1"	1,200	20,000	48'2" x 8'0" x 8'1"	28,900



Standard Equipment

A. Primary Tank

B. Secondary Tank
with Corrosion Resistant Desert Sand Primer Exterior Coating

C. Lifting Lugs
(2) 60 - 650 Gallon
(4) 1,000 - 20,000 Gallon

D. Support Feet

E. 1/2" NPT Drain with Optional Spill Box

F. Fill - 2", 4" or 6"

G. Primary Tank Emergency Vent
4", 6", 8", or 10"

H. Secondary Containment
Emergency Vent 4", 6", 8" or 10"

I. 2" Primary Working Vent

J. 2" Secondary Containment
Working Vent

K. 2" Gauge

L. 2" Monitoring Point

M. 2" Spare

N. 2" or 4" Spare

CONTAINMENT SOLUTIONS®

333 North Rivershire Drive, Suite 190 • Conroe, TX 77304 • Phone: (936) 756-7731 • www.containmentsolutions.com
Copyright © • Containment Solutions, Inc. • All Rights Reserved • July 2017 • Pub. No. LC 3500G

FLUID DISTRIBUTION PUMPS
NEW

LINCOLN Lincoln Industrial SKF

POWER MASTER III

IMAGES



DESCRIPTION

Ball pumps

- Material outlet: 3/4 in. NPTF
- Output per cycle: 11.9 cu. in. (195 cc)
- Approximate cycles per gal./L: 20 gallons/ 5 liters
- Gallons/Liters per minute:
- Air motors and pump tubes shipped separately. Assembly required.
- State of the art, fully pneumatic Air Motors, 3–4–6–8 inches (76–101–152–203 mm) diameter
- Full 6" stroke for greater output per cycle
- Modular design for easy repair
- Only 5 moving parts, no metal to metal contact
- Newly designed pump tubes offer ratios and outputs to fit any application
- Available to fit any drum or pail size
- Offered in carbon steel, stainless steel or hard chrome plated
- Complete selection of packing materials available
- Full line of priming equipment and mounting devices
- Ball style for fluid materials, shovel foot style for high viscosity non-fluid materials

SPECIFICATIONS

Model std. Air Motor only	Ratio	Pump tube style	Pump tube model	Air motor model	Diameter in.	Diameter mm	Min. ID air supply hose in.	Min. ID air supply hose mm	Air consumption per cycle SCFM @ 70 psig	Air consumption per cycle M3/Min. @ 4.8 bar	Air consumption per cycle SCFM @ 100 psig	Air consumption per cycle M3/Min. @ 6.8 bar
2021(1)	24:1	55 gal	**84985**	Std. 84806 w/ AirBrake 94906*	6	152	1/2	12	1.1	0.031	1.6	0.045
2001	12:1	55 gal	**84985**	Std. 84804 w/ AirBrake 94904*	4-1/4	108	1/2	12	.08	0.023	1.1	0.031
2014	12:1	stub	**84986**	Std. 84804 w/ AirBrake 94904*	4-1/4	108	1/2	12	.08	0.023	1.1	0.031
2052	6:1	55 gal	**84985**	Std. 84803	3	76	3/8	10	0.5	0.014	0.7	0.02
2051	6:1	stub	**84986**	Std. 84803	3	76	3/8	10	0.5	0.014	0.7	0.02

*Order pump tube and air motor separately for these models or when ordering AirBrake™ equipped models.

REELS
NEW

ITEM NAME/NUMBER



SEE FOLLOWING PAGES

HEAVY DUTY REELS

Alemite Heavy Duty Reels set the industry standard for reliable, rugged performance in tough work environments. Engineered for optimum performance and safety, these reels are suitable for a wide range of demanding applications.

FEATURES:

- Superior Performance – Swivel and reel ball bearings reduce torque load on power spring for smooth retraction every time
- Anti-Lockout Design – Ratchet prevents lockup when hose is fully extended, eliminating the need to manually release the pawl at the reel
- Corrosion Resistant – Sealed bearings prevent contamination and minimize maintenance, a critical performance factor in dirty environments
- Easy Installation and Maintenance – Factory lubricated one piece power spring cassette makes installation and maintenance safe and easy
- Durable – Heavy metal arbor design withstands extreme stress and eliminates breakage associated with non-metal and light weight metal arbors
- Adjustable and Versatile – 5 position guide arm allows hose to release at an optimum position. Narrow design allows for efficient use of available space
- Compatibility – Oil, grease, air, water



8078 Series

INCLUDED ITEMS:

- Hose Reel
- Hose
- Hose Stop
- Union
- 24" *(61 cm)* Connecting Hose

Colors not available in every size or length.



Oil

Product #	Color	Max Pressure	Delivery Hose			Connecting Hose[1]		Weight
			Specification	Part #	Outlet	Inlet	Part #	
8078-C	Maroon	1,500 psi *(103 bar)*	1/2" ID x 30 ft	317813-30	1/2" NPTF(m)	1/2" NPTF(m)	317813-2	58 lb *(26 kg)*
8078-D	Maroon	1,500 psi *(103 bar)*	1/2" ID x 50 ft	317813-50	1/2" NPTF(m)	1/2" NPTF(m)	317813-2	58 lb *(26 kg)*
8078-DBL	Blue	1,500 psi *(103 bar)*	1/2" ID x 50 ft	317813-50	1/2" NPTF(m)	1/2" NPTF(m)	317813-2	58 lb *(26 kg)*
8078-DBK	Black	1,500 psi *(103 bar)*	1/2" ID x 50 ft	317813-50	1/2" NPTF(m)	1/2" NPTF(m)	317813-2	58 lb *(26 kg)*
8078-DW	White	1,500 psi *(103 bar)*	1/2" ID x 50 ft	317813-50	1/2" NPTF(m)	1/2" NPTF(m)	317813-2	58 lb *(26 kg)*

[1]Connecting Hose length is 24" *(61 cm)*

Grease

Product #	Color	Max Pressure	Delivery Hose			Connecting Hose[1]		Weight
			Specification	Part #	Outlet	Inlet	Part #	
8078-A	Maroon	6,400 psi *(440 bar)*	1/4" ID x 30 ft	317874-30	1/4" NPTF(f)	3/8" NPTF(m)	317876-2	56 lb *(25 kg)*
8078-B	Maroon	6,000 psi *(413 bar)*	1/4" ID x 50 ft	317874-50	1/4" NPTF(f)	3/8" NPTF(m)	317876-2	59 lb *(27 kg)*
8078-T	Maroon	6,400 psi *(440 bar)*	3/8" ID x 50 ft	317870-50	1/4" NPTF(f)	3/8" NPTF(m)	317882-2	63 lb *(29 kg)*
8078-BBL	Blue	6,000 psi *(413 bar)*	1/4" ID x 50 ft	317874-50	1/4" NPTF(f)	3/8" NPTF(m)	317876-2	59 lb *(27 kg)*
8078-BBK	Black	6,000 psi *(413 bar)*	1/4" ID x 50 ft	317874-50	1/4" NPTF(f)	3/8" NPTF(m)	317876-2	59 lb *(27 kg)*
8078-BW	White	6,000 psi *(413 bar)*	1/4" ID x 50 ft	317874-50	1/4" NPTF(f)	3/8" NPTF(m)	317876-2	59 lb *(27 kg)*

[1]Connecting Hose length is 24" *(61 cm)*

HEAVY DUTY REELS

Air/Water

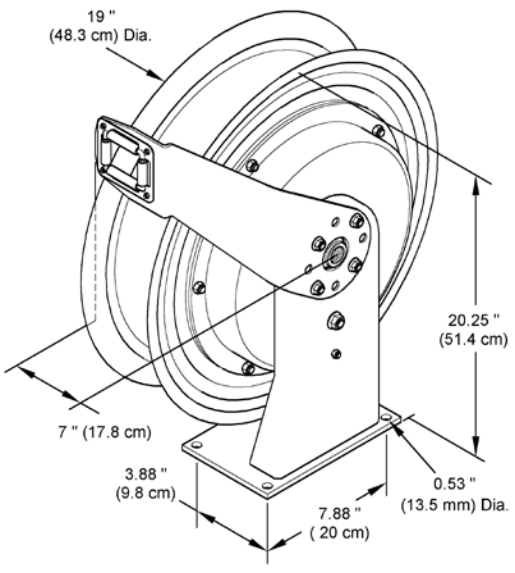
Product #	Color	Max Pressure	Delivery Hose			Connecting Hose[1]		Weight
			Specification	Part #	Outlet	Inlet	Part #	
8078-E*	Maroon	300 psi *(20 bar)*	3/8" ID x 30 ft	317803-30	1/4" NPTF(m)	1/2" NPTF(m)	317811-2	51 lb *(23 kg)*
8078-F*	Maroon	300 psi *(20 bar)*	3/8" ID x 50 ft	317803-50	1/4" NPTF(m)	1/2" NPTF(m)	317811-2	53 lb *(24 kg)*
8078-M*	Maroon	300 psi *(20 bar)*	1/2" ID x 50 ft	317811-50	1/2" NPTF(m)	1/2" NPTF(m)	317811-2	61 lb *(28 kg)*
8078-FBL*	Blue	300 psi *(20 bar)*	3/8" ID x 50 ft	317803-50	1/4" NPTF(m)	1/2" NPTF(m)	317811-2	53 lb *(24 kg)*
8078-FBK*	Black	300 psi *(20 bar)*	3/8" ID x 50 ft	317803-50	1/4" NPTF(m)	1/2" NPTF(m)	317811-2	53 lb *(24 kg)*
8078-FW*	White	300 psi *(20 bar)*	3/8" ID x 50 ft	317803-50	1/4" NPTF(m)	1/2" NPTF(m)	317811-2	53 lb *(24 kg)*

[1]Connecting Hose length is 24" *(61 cm)*

* ⚠ **WARNING** California Proposition 65: Cancer and reproductive harm. www.P65Warnings.ca.gov

Bare Reels

Product #	Color	Usage	Max Pressure	Reel Inlet	Reel Outlet	Weight
7135-A	Blue	Oil	1,500 psi *(103 bar)*	1/2" NPTF(f)	1/2" NPTF(f) Swivel	50 lb *(23 kg)*
7135-B	Black	Oil	1,500 psi *(103 bar)*	1/2" NPTF(f)	1/2" NPTF(f) Swivel	50 lb *(23 kg)*
7135-C	White	Oil	1,500 psi *(103 bar)*	1/2" NPTF(f)	1/2" NPTF(f) Swivel	50 lb *(23 kg)*
7335-B	Maroon	Oil	1,500 psi *(103 bar)*	1/2" NPTF(f)	1/2" NPTF(f) Swivel	50 lb *(23 kg)*
7134-A	Blue	Grease	6,000 psi *(413 bar)*	1/2" NPTF(f)	3/8" NPTF(f) Swivel	50 lb *(23 kg)*
7134-B	Black	Grease	6,000 psi *(413 bar)*	1/2" NPTF(f)	3/8" NPTF(f) Swivel	50 lb *(23 kg)*
7134-C	White	Grease	6,000 psi *(413 bar)*	1/2" NPTF(f)	3/8" NPTF(f) Swivel	50 lb *(23 kg)*
7334-B	Maroon	Grease	6,400 psi *(440 bar)*	1/2" NPTF(f)	3/8" NPTF(f) Swivel	50 lb *(23 kg)*
7136-A	Blue	Air/Water	300 psi *(20 bar)*	1/2" NPTF(f)	3/8" NPTF(f)	50 lb *(23 kg)*
7136-B	Black	Air/Water	300 psi *(20 bar)*	1/2" NPTF(f)	3/8" NPTF(f)	50 lb *(23 kg)*
7136-C	White	Air/Water	300 psi *(20 bar)*	1/2" NPTF(f)	3/8" NPTF(f)	50 lb *(23 kg)*
7336-B	Maroon	Air/Water	300 psi *(20 bar)*	1/2" NPTF(f)	3/8" NPTF(f)	50 lb *(23 kg)*



POWER & LIGHT REELS

COB LED Light Reel

Alemite COB LED Light Reels for automotive workspaces combine next-generation COB (Chip on Board) technology with several robust design features. These reels are built to illuminate the tightest automotive workspaces and withstand the toughest shop conditions.



8082-A

Product #	Cord Size	Connection Cord Length	Reel Length	Input Volts	Output Light	Weight
8082-A	18 gauge	4 ft *(1.2 m)*	50 ft *(15 m)*	125 V	600 Lumens	33 lb *(15 kg)*

Power Cord Reels

Alemite Light and Electric Cord reels keep your cords within reach, but safely out of the way, to improve safety, convenience and productivity. NOTE: Power cord reels are not weatherproof.



7261

Product #	Cord Size	Connection Cord Length	Reel Cord Length	Volts	Amperes	Outlet	Weight
7260	12 gauge	5 ft *(1.5 m)*	45 ft *(13.7 m)*	115 V	20 amp	Duplex with GFCI	30 lb *(14 kg)*
7261	10 gauge	5 ft *(1.5 m)*	50 ft *(15 m)*	115 V	35 amp	RV Plug	47 lb *(21 kg)*
7262-A	12 gauge	5 ft *(1.5 m)*	40 ft *(12 m)*	115 V	15 amp	Triple	15 lb *(7 kg)*

METERS

Alemite Electronic and Mechanical Meters provide consistent, reliable performance for dispensing applications.

Electronic



3670-B

The versatile Alemite Electronic Meter is designed for accurate, high volume dispensing of a wide range of fluids.

FEATURES:

- Electronic digital readout (±1% accuracy)
- Ergonomic trigger design for easy dispensing
- Rubber guard to protect meter from damage
- Programmable to measure in pints, quarts, gallons or liters
- Displays current fluid delivery, and registers total amount of fluid used
- Easy to calibrate – no disassembly required
- Uses 2 standard AAA batteries, replaceable with a coin screw on back of meter
- Low battery indicator
- ½" NPT(f) Inlet
- Fluid compatibility: oil, gear oil, transmission fluid, antifreeze - antifreeze concentrate only, not compatible with water/antifreeze mixture

Product #	Description	Measures	Totalizes	Extension	Non-drip tip	Weight
3670	Electronic meter	Quart	Gallon	Rigid	Automatic	3 lb *(1.4 kg)*
3670-B	Electronic meter	Quart	Gallon	Rigid	Manual	3 lb *(1.4 kg)*
3671	Electronic meter	Quart	Gallon	Flexible	Automatic	3 lb *(1.4 kg)*
3671-B	Electronic meter	Quart	Gallon	Flexible	Manual	3 lb *(1.4 kg)*
3673	Electronic meter	Pint	Gallon	Rigid	Automatic	3 lb *(1.4 kg)*
3674-C	Electronic meter	Gallon	Gallon	Rigid	High-volume manual	3 lb *(1.4 kg)*
3679	In-line electronic meter	Quart	Gallon	–	–	0.83 lb *(0.4 kg)*

MISCELLANEOUS

Non-Drip Nozzles

Alemite Non-Drip Nozzles help prevent drips and spills, for a cleaner, safer work space. The nozzles are available with an automatic shut off, or manual twist lock mechanism.

Product #	Description	Used with	Thread Sizes
B339800	Automatic assembly (blister pack)	3620 Series, 3621, 3621-A, 3622, 3622-A, 3640 Series, 3641-1, 3686-1, 3686-B, 3670, 3671, 3671-A, 3672, 3673, 7948	1/4" NPTF(f)
339084	Manual	3620-B, 3621-B, 3641-B1, 3670-B, 3671-B, 3685-J, 3685-F, 3685-G	1/4" NPTF(f)
340084	Manual high-volume	3624-C, 3644-C1, 3674-C, 3691-C, 3690 Series, 7498-C	1/2" NPTF(f)

Water Bib (BSWA321)

Alemite's Water Bib manual dispensing valve is suitable for dispensing water, antifreeze, or windshield washer fluid. Inlet size is ¼" *(6 mm)*.



BSWA321

Weston & Sampson
transform your environment

MC-9

SUMP HIGH LEVEL ALARM
NEW

ITEM NAME/NUMBER

WARRICK CONDUCTIVITY CONTROLS

WARRICK TA-730 ALARM PANEL

Part Number: TA731A0

PRICE

$784.00

AS OF 5-20-2020

IMAGES



DESCRIPTION

Features

- Intrinsically Safe Approved
- Auxiliary Contact for Remote Annunciation or Cutoff
- One or Two Channels
- Two Conduit Connection Hubs

SPECIFICATIONS

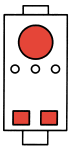
Model	TA73
Protection	Intrinsically Safe
Enclosure	NEMA 4
Sku	TA731A0
Supply Voltage	120 VAC
Secondary Voltage	12 VAC
Audible Alarm	Adjustable from 77 to 97 dB at 2 feet
Interface Contacts	Normally Open Dry
AuxillaryContacts	1
Contact Design	N/A
Contact Rating	N/A
Indicators	Red, Green, Yellow Solid State LED's
Maximum Temperature	150°F
Approvals	UL 913 Intrinsically Safe

WARRICK CONTROLS

TA-730 SERIES

Intrinsically Safe MONITORING PANEL

APPLICATIONS

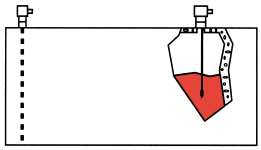


Non-Hazardous Area

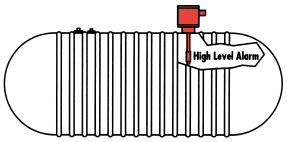
Seal Off Fitting

Hazardous Area

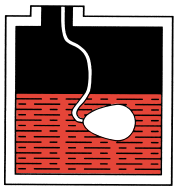
Aboveground Fuel Storage Tanks
Leak Detection, Overfill



Underground Fuel Storage Tanks
High Level Alarm, Leak Detection, Piping Sumps



Liquid Level Alarms
High/Low Floats





- **A** *Power and auxiliary contact wiring*
- **B** *Adjustable sound level from 77-97 dB via moveable horn shutter*
- **C** *Red LED indicates current fault condition*
- **D** *Green LED indicates panel has power*
- **E** *For TA-731, yellow LED indicates fault condition has occurred, even if fault has cleared itself (TA-732 "Alarm 2" red LED)*
- **F** *Test button allows alarm activation and system testing*
- **G** *Acknowledge button allows direct alarm silencing*
- **H** *Intrinsically safe sensor wiring*

Warrick TA-730 Series intrinsically safe monitoring panels solve simple tank monitoring needs. Packaged in secure 3R rated electrical enclosures, they are designed to interface with a variety of leak detection or overfill sensors. Applications include refill alarm, overfill alarm, high level alarm and leak detection.

These cost-effective, solid state TA-730 monitoring panels offer many features not commonly found in controls of this type:

- Intrinsically safe sensor circuit(s)
- Auxiliary contact for remote alarm or cutoff
- Field selectable operation of auxiliary relay for cutoff mode or alarm mode
- Caution LED to warn when a fault condition has occurred and cleared itself (TA-731 only)
- Available in 1-channel model (TA-731) and 2-channel model (TA-732)
- Indoor or outdoor installation
- Low cost, long life
- High impact polycarbonate plastic housing
- Compact design, small footprint
- Easy-to-reach screw-in wiring terminals for easy installation and secure connections
- Options for either normally open or normally closed contacts

TA-730 SERIES

I.S. MONITORING PANEL

SPECIFICATIONS

- **Supply Voltage:** 120 VAC +10%, -15%, 6.6 VA maximum
- **Indicators:** Red, green and yellow (TA-731) solid state LEDs
- **Audible Alarm:** Field adjustable from 77-97 dB at 2 ft.
- **Enclosure:** NEMA 3R polycarbonate (6 1/4"H x 3 1/4"W x 3 1/2"D)
- **Sensor Circuit(s):** 12 VDC, .238 milli-amp
- **Terminals:** Size 6 pan head screws with captivated wire clamping plate
- **Temperature:** -22^0 to 150^0 F ambient
- **Sensitivity:** 0-26K ohm maximum specific resistance
- **U.L. 913 Listing:** Process control equipment associated apparatus, intrinsically safe
- **Conduit Connections:** sensor 3/4" NPT, PVC material; power 1/2" NPT, metal
- **Auxiliary Contact:** SPDT, 10A @ 120/240 VAC, resistive

TA-731 Operation:

The green LED will light when power is applied to the unit. When the remote contact changes state (fault condition), the audible alarm will activate and the red and yellow LEDs will light. When the acknowledge pushbutton is pressed, the audible alarm will stop and the yellow LED will clear. The red LED will remain lit as long as the fault condition exists. When the fault condition is corrected, the red LED will clear.

When a fault condition occurs and corrects itself prior to depressing the acknowledge button, the audible alarm and red LED will automatically activate and clear, matching the fault condition. However, the yellow LED will remain lit to indicate that the fault condition had previously occurred. Pressing the acknowledge button will clear the yellow LED.

TA-732 Operation:

The green LED will light when power is applied to the unit. When the appropriate sensor contact changes state (fault condition), the audible alarm will activate and the appropriate red LED will light. When the acknowledge pushbutton is pressed, the audible alarm will stop.The alarm LED will remain lit as long as the fault condition exists. When the fault condition is corrected, the alarm LED will clear.

TA-73XXO models include an onboard selector switch to change the operating mode of the auxiliary relay. In cut-off mode, the relay mimics the red LED. The relay activates on fault condition and remains activated until the fault condition has been cleared. Pressing the acknowledge button will not reset the auxiliary relay. On the model TA-732XO, the auxiliary contact will only operate off of channel 1 (Sensor 1).

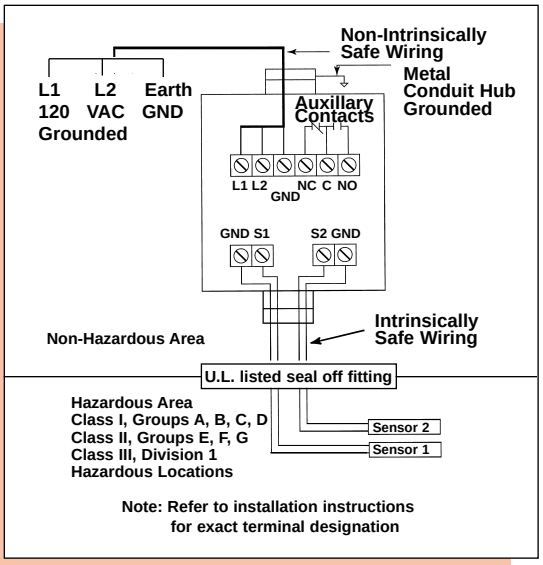
In the alarm mode, the relay mimics the horn. The relay will activate on fault condition and will reset on pressing the acknowledge button or clearing the fault condition.

Ordering Information:

TA 73X X X

- **Optional Character**
  - 0 -No option
- **Interface Contact**
  - A - N.O. dry contact (Closes on fault)
  - B - N.C. dry contact (Open on fault)
- **Number of Channels**
  - 1 - One channel
  - 2 - Two channel
- **Monitoring Panel**

Maximum Sensor Wire Run:
5000 feet based on 12 through 22 gauge wire



Caution: ***The TA-730 must be located in a non-hazardous area.***

Authorized Distributor:

Warrick Controls Inc. • *One Cowles Rd.* • *Plainville, CT 06062-1198* • *Telephone: (860) 793-4579* • *Fax: (860) 793-4580*

© 1999 Warrick Controls Inc. All rights reserved.

Weston & Sampson
transform your environment

STEEL WORK BENCH W/ CASTERS
NEW

MD-3
ME-5

BADASS WORKBENCH

Heavy Welding Tables

Price Ea.: $2,600.00

WEBSITE

MATERIAL HANDLING SOLUTIONS

AS OF MARCH 2024



H4X12WELD-12WC



H5X8WELD-1



H4X8WELD-12



H3X6WELD-38WC



H4X8WELD-12WC





Rigid Caster (WC)



Swivel Caster (WC)

Product No.	H3X6WELD-14-WC
Size W x D x H	72 x 36 x 36"
Top	1/4"
Optional Casters	Yes
Wt. (lbs.)	350

- **Solid Heavy Duty, long lasting shop tables for any welding application.**

If you are looking for a solid heavy duty shop table, look no further. These Welding Tables offer 1/4", 3/8", 1/2", 3/4", and 1" plate steel tops. Each table offers all-welded construction and is built to 36" overall working height. The unpainted top is ideal for welding applications. Each table is built using 4 x 4" 11 ga. legs and features a bottom shelf with wire decking. All tables are powder coated black. Additional powder coated colors available -- call for pricing. FOB Shipping Point.

Heavy Welding Tables with optional casters (-WC) come standard with 2 rigid and 2 locking swivel casters. H5X8WELD-1-WC includes 2 rigid, 2 swivel and 2 locking swivel casters.

Steel surcharge may apply.

WHAT'S MORE HARDCORE THAN METAL AND FIRE? NOTHING. EXCEPT OUR BADASS WELDING TABLES.

Our welding tables are made by hand in the USA with heavy gauges of steel for superior strength and durability. You can weld, cut, grind, pound, or do whatever badass things you do for the rest of your life on this welding table Our lifetime warranty proves it.

Weston & Sampson
transform your environment

HYDRAULIC HOSE REEL RACK

ME-6

ITEM NAME/NUMBER

Gates Hose Reel Rack

Gates #78186

$758.11

AS OF APRIL 2024

IMAGES





SPECIFICATIONS

PRODUCT DETAILS

Part #	HOSE REEL RACK	**Product #**	74840019
Description	78186 HYDRAULIC HOSE RACK	**UPC**	072053630176
Specifications	Dimensions: 28" wide by 30" deep by 72" high.		

SKU	7484-0019
Weight	165.0000
Part Number 1	78186
Part Number 2	HOSE REEL RACK
Brand	Gates
Manufacturer	Gates
Upc	72053630176

Weston & Sampson
transform your environment

HYDRAULIC HOSE REELS AND FITTINGS STORAGE
NEW

ME-7

ITEM NAME/NUMBER

GATES CORPORATION 78190 - Storage Cabinet - Hydraulic Coupling Cabinet and Parts - 4 Sliding Shelves

PRICE

$307.72

WEBSITE

FindItParts

AS OF FEB 2022

IMAGES



SPECIFICATIONS/DESCRIPTION

Product Description

Storage Cabinet - Hydraulic Coupling Cabinet and Parts - 4 Sliding Shelves

Product Attributes

Description	Coupling Cabinet with 4 SliDINg Shelves
Industrial Description	Cabinet with 4 Shelves
Product Type	Hydraulic Coupling Cabinet and Parts

Additional Information

Country of Origin (Primary)	US
Harmonized Tariff Code (Schedule B)	9403200080
UPC	00072053113280
UNSPSC	56131600
VMRS Code	059032012

Weston & Sampson
transform your environment

OXYGEN/ACETYLENE CAGE
NEW

MF-12

ITEM NAME/NUMBER

4 Cylinders - Large Tanks - Outdoor - Vertical Storage - Green - Gas Cylinder Cabinet

Model # **CBESTS4SC**

PRICE

$1,185.00

WEBSITE

www.USAsafety.com/

AS OF 2-2023

IMAGES



SPECIFICATIONS/DESCRIPTION

Cabinet capacity: 4 cylinders of 9.5" diameter or equivalent combination
Cabinet dimensions: 24"w x 24"d x 71"h

Gas Cylinder Storage Cabinet Features:

- OSHA compliant
- Fully-welded steel framing
- Laser-cut steel door and sides
- Tamper-resistant stainless steel hinges
- Powder coated with an outdoor-grade coating
- Lockable door (lock not included)
- E-track strapping system inside
- E-Hook Ratchet strap included (4ft)
- Made in the USA
- Product weight: 220 lbs

Weston & Sampson
transform your environment

TIRE STORAGE RACK
NEW

MG-3

ITEM NAME/NUMBER

TENNSCO
Steel Single Sided Boltless Tire Rack, Shelf Capacity 2000 lb. 60" H x 60" W x 21" D

Item # 45UW73 Mfr. Model # ZST-6060S Catalog Page # N/A UNSPSC # 24102004

Web Price
$198.61 / each

GRAINGER

AS OF APRIL 2024

IMAGES



SPECIFICATIONS

Technical Specs

Item	Single Sided Boltless Tire Rack	Material	Steel
Tire Capacity	16	Color	Medium Gray
Width	60"	Finish	Powder Coated
Depth	21"	Includes	(4) Uprights, (6) Angle Beams, (4) Shelf Supports, (2) Wall Ties
Height	60"	Shelf Depth	12"
Number of Shelves	2		
Shelf Capacity	2000 lb.		

Weston & Sampson
transform your environment

METAL CABINET
NEW

MH-7

ULINE

PRICE
SEE BELOW

WEBSITE

AS OF JAN 2024

Welded Storage Cabinet - 36 x 24 x 74"



More Images

Strength and security for storing your heavy tools and equipment.

- 14-gauge steel with durable powder-coat finish.
- Padlockable handle with three-point locking system.
- Reinforced doors open on full-height hinges.
- Shelves adjust in 2 1/2" increments.

MODEL NO.	DESCRIPTION	DIMENSIONS W x D x H	NO. OF SHELVES	SHELF CAPACITY (LBS.)	WT. (LBS.)	PRICE EACH		IN STOCK SHIPS TODAY
						1	2+	
H-4459	Welded Industrial	36 x 24 x 74"	5	1,200	370	$1,415	$1,355	1 ADD

SHIPS ASSEMBLED VIA MOTOR FREIGHT

Weston & Sampson
transform your environment

CANTILEVER RACK
24" ARMS
NEW

MH-10

ITEM NAME/NUMBER

Starter Straight Cantilever Rack, No. of Sides: 1, 8 Arms, Arm Length: 24"
Jarke

Product # 3W588 Manufacturer # SC-8J

Web Price
$2,089.19 / each

WEBSITE
GRAINGER

AS OF MARCH 2024

IMAGES



Product Description

Heavy-duty pin-lock cantilever racks hold heavier materials than medium-duty and light-duty cantilever racks, such as heavy bar stock, tube stock, and sheet material. Items can be placed onto or taken off of the racks with a lift truck or forklift. The racks consist of vertical uprights and arms, and they do not require special tools or bolts to assemble. The arms attach to the uprights with a locking pin that holds them securely in place, and the height of the arms can be adjusted on the uprights.

SPECIFICATIONS

Technical Specs

Item	Cantilever Rack	Overall Width	37"
Number of Sides	1	Overall Depth	32"
Cantilever Arm Style	Straight	Arm Steel Gauge	11
Shelving Type	Starter	Column Steel Gauge	11
Arm Length	24"	Finish	Gray Enamel
Capacity per Arm	2000 lb.	Lip	Removable
Center Brace Length	72"	Lip Height	1-1/2"
Load Capacity	12,530 lb.	Material	Steel
Number of Arms	8	Includes	Arms Adjustable on 3" Centers
Overall Height	8 ft.		

Weston & Sampson
transform your environment

PALLET RACK
HANGING TOOL STORAGE
NEW

MH-11

Double Arm Tool Holder

SHELVING.com
we RACK your world

1-800-637-9508

Our Price: $155.68
AS OF APRIL 2024

IMAGES







Place double arm tool holders at the top or bottom of a pallet rack bay to organize goods that are harder to store such as brooms, rakes, shovels, and tools. With two arms, the divider is equipped to support both short and long-handled items.

- 31"l and 33"l x 1.5"w x 1.5"h arms
- Stores short or long-handled items vertically on pallet racking
- Arms welded at upward angle to stop items from shifting forward
- 2"w clearance between tubing
- Front flat plate for labeling
- Mounts to beam at desired level
- Installs and repositions without tools

Product Details

- Overall Dimensions: 36"d x 5"w x 7"h
- Color: Gray
- Finish: Powder Coat
- Material: Steel
- ***Pallet racking not included**

Product Code: DIVIDERARM-DBL

Weston & Sampson
transform your environment

PALLET SIGN RACK
3'D X 8'W X 8'H
NEW

HH-4

ITEM NAME/NUMBER

Model #: WB796562N

EXCLUSIVE BRANDS

Global Industrial™ Teardrop Pallet Rack Starter, 96"W X 36"D X 96"H

PRICE
$559.00

GLOBAL INDUSTRIAL
We can supply that.

AS OF MARCH 2024

IMAGES



Global Industrial™ TEAR DROP PALLET RACKS Starter Unit
Premium quality pallet racks at a low price. Global Industrial™ pallet racks offer quick and easy, tool free assembly for all your pallet storage needs. These pre-configured starter and add-on industrial storage rack systems are made of durable heavy gauge steel for years of service. Starter Unit includes 2 upright frames and 2 pairs of shelf beams. Heavy duty, one-piece 14 gauge steel uprights allow height adjustments at 2" increments for easy beam adjustment. High strength 15 gauge steel beams have a 1-5/8"H step beam design that accommodates cross bars and decking. Beams provide secure connection to upright frame using a positive 6-way locking action; right to left, front to back and up and down. Lock automatically snaps into place and secures beam. Welded braces provide maximum rigidity and stability. 3-1/4" x 4-1/4" x 12 gauge welded base plate anchors upright to floor and distributes weight evenly. Uprights feature a long lasting epoxy finish. The pallet should overhang the frame by 3" front and back. Interchangeable with Teardrop styles of the following manufacturers: Interlake, Kingway, Steel King, USP, Wireway/Husky, Unarco and Speed Rack. Easy assembly.

27600 lb rated capacity, higher than other pallet racking in the market. Capacity based on 36" beam shelf spacing.

Weights & Dimensions

Width	96 in	Beam Height	4-1/2 in
Depth	36 in	Weight Capacity	27600 lbs
Height	96 in	Column Size	3 x 3 in

Product Details

Assembly Required	Yes	Material	Steel
Beam Ledge Type	Unslotted	Construction Type	Welded Frame
Type	Starter	Description	Global Tear Drop Pallet Rack Add-on
Shelf Capacity	5030 lbs	Manufacturers Part Number	796562N
Color	Orange	Brand	Global Industrial
Number of Levels	2		

Weston & Sampson
transform your environment

MM-8

PARTS WASHER
NEW

ITEM NAME/NUMBER

safety-kleen
A Clean Harbors Company

MODEL 16/30

PRICE

WILL NEED TO CONTACT REP

WEBSITE

www.safety-kleen.com/

AS OF 5-14-2020

IMAGES



DESCRIPTION

Time tested.
Our legacy sink-on-a-drum has been around more than 50 years. A sink on a 16- or 30-gallon drum parts washer with solvent, featuring a fusible link cover, plastic spigot, hose and brush, and lamp. Soiled parts are manually washed in the sink, with the solvent draining into the reservoir below.

SPECIFICATIONS

	Model 16*	Model 30**
Chemistry	Premium Solvent, QSOL 220/300, PD 680 Type II, PRF 680 Type II, Odorless Solvent	Premium Solvent, QSOL 220/300, PD 680 Type II, PRF 680 Type III, Odorless Solvent
Operation Type	Manual	Manual
Floor Space		
Height	53" (134.7 cm)	60" (152.4 cm)
Width	16" (40.7 cm)	19.5" (49.6 cm)
Sink Size		
Height	7.5" (19.1 cm)	8" (20.4 cm)
Width	27.5" (69.9 cm)	33.25" (84.5 cm)
Depth (front to back)	16.25" (41.3 cm)	22.25" (56.6 cm)
Electric Power	115 VAC, 60 Hz, 1.4 A	115 VAC, 60 Hz, 1.4 A
Standard Fill	8 gal. (30.2 L)	Max Fill: 15 gal. (56.8 L)
Operating Temp	Ambient	Ambient
Material	Steel	Steel
Machine Color	Red	Red
Max Workload	25 lbs. (11.3 kg)	25 lbs. (11.3 kg)
Shipping Weight	57 lbs. (25.9 kg)	62 lbs. (28.1 kg)
Max Filled Weight	111 lbs. (50.3 kg)	162 lbs. (73.5 kg)
Listing	cETLus	cETLus

*Certified reconditioned equipment. Local regulations may cause variations in requirements. Drum and chemistry sold separately.

Weston & Sampson
transform your environment

MM-9

PEDESTAL GRINDER
NEW

ITEM NAME/NUMBER

JET Benchtop Shop Grinder with Stand 8in. Dia. Wheel

Model# JBG-8A/JPS-2A
Item# 70607

PRICE

$509.99

WEBSITE

NORTHERN TOOL + EQUIPMENT

AS OF FEB 2024

IMAGES



SPECIFICATIONS

Item#	70607	**Volts**	120
Brand	Jet	**Spindle Size**	5/8
Manufacturer's Warranty	24 months parts / 24 months labor	**Cord Length (ft.)**	6
Ship Weight	140.0 lbs	**Wheel Included**	Yes
Wheel Diameter	8	**Dimensions L x W x H (in.)**	31 x 21 x 19
Speed (RPM)	3,450	**Tool Weight**	60
Horsepower	1		

Weston & Sampson
transform your environment

COMPUTER CART
NEW

SD-2

ITEM NAME/NUMBER

Model #: WB694561BKA

Global Industrial™ Mobile Computer Workstation, Black, Assembled

PRICE

$459.95

WEBSITE

globalindustrial.com

AS OF 12-19-2024

IMAGES





DESCRIPTION

Mobile Computer Workstation from Global Industrial™ is constructed of 20 gauge steel and provides secure storage in the lockable 24-5/8"W x 22-7/8"D x 22-5/8"H lower compartment. CPU shelf adjusts to accommodate either tower or desktop styles. Rear cabinet access holes are provided. Middle 11-1/2"H fixed shelf provides room for printer. The slide out keyboard tray has a comfortable wrist rest area to reduce fatigue, 23"W x 21"D. Rolls easily on 5" polyolefin casters (2 swivel w/brakes, 2 rigid). The top surface is 47-3/4"H for convenient monitor viewing and has 1-1/2"H back and end stops to keep items from rolling off. Wire ties and mounting holes provided for tidy cable management. Durable baked black enamel finish. Cabinet and shelves ship fully assembled.

MANUAL WASH SYSTEM

IMAGES







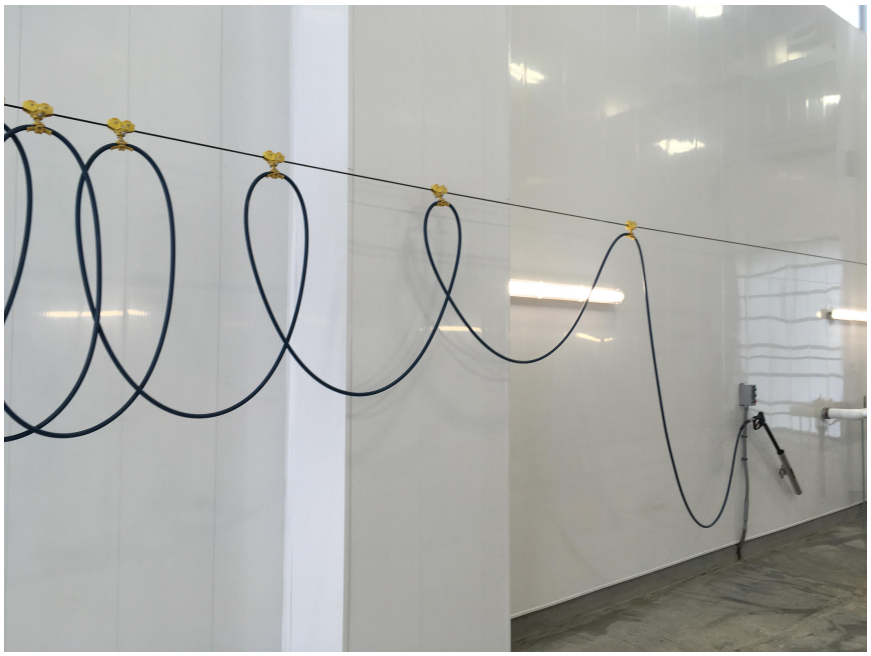
Dimensions:
37" L x 27" D x 73"H

Control Panel Dimensions:
25" L x 12" D x 31" H

FESTOON SYSTEM

IMAGES











MANUAL WASH ON/OFF CONTROLS

IMAGES

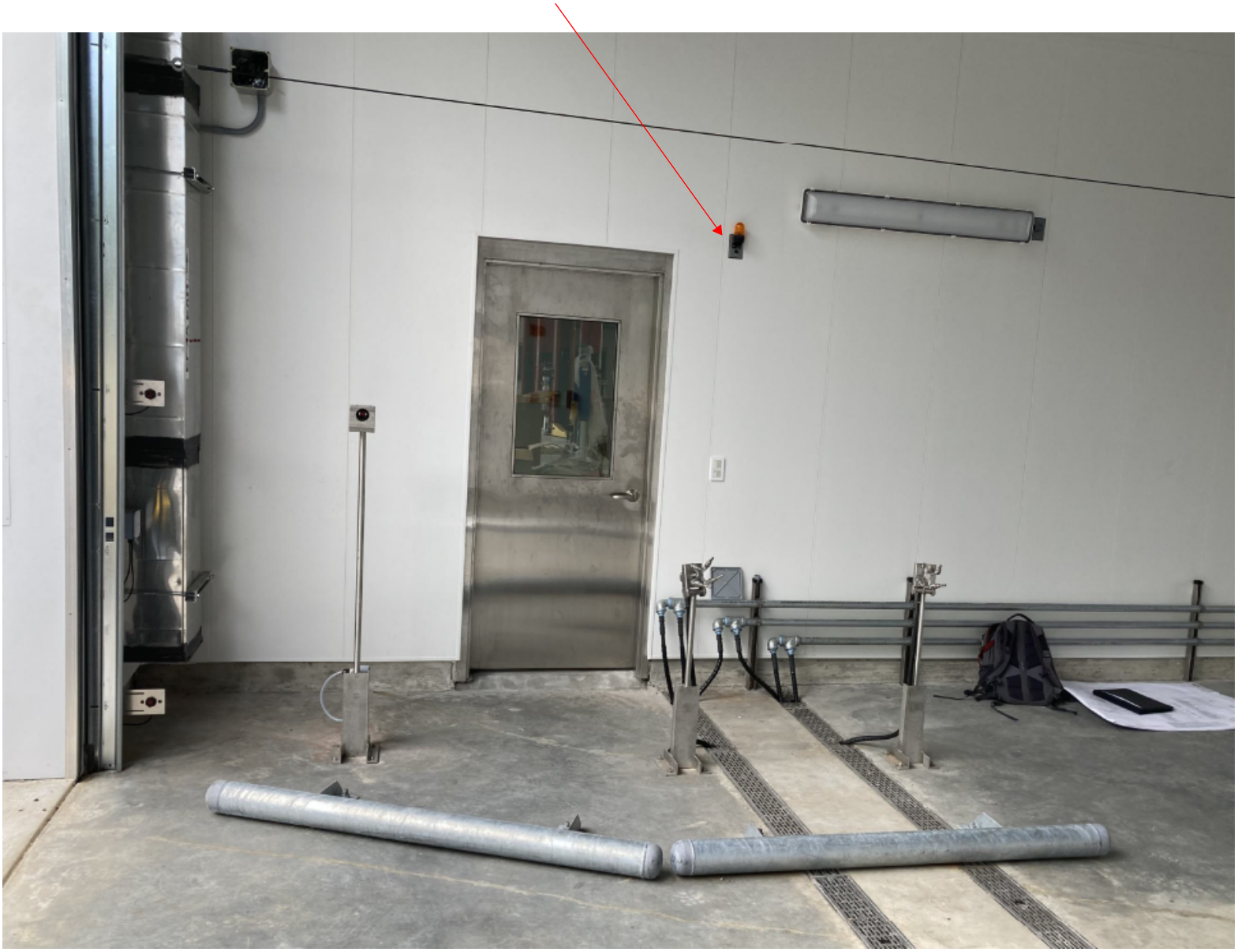




UNDERCARRIAGE WASH STATUS LIGHT

V-4

IMAGES



AUTOMATIC UNDERCARRIAGE WASH SYSTEM

IMAGES



Dimensions:
90" L x 32" D x 73" H

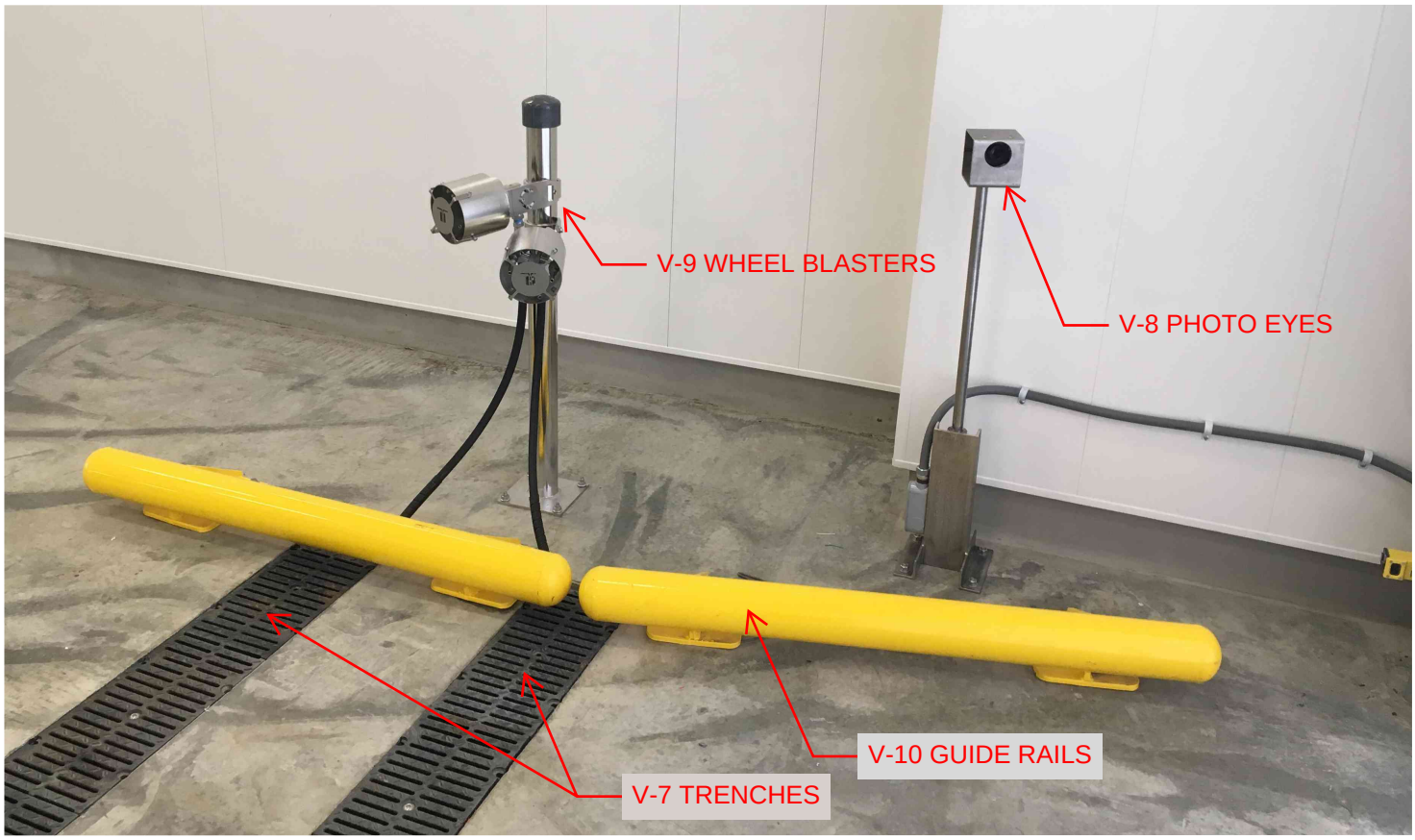
Control Panel Dimensions:
25" L x 12" D x 31" H



UNDERCARRIAGE WASH ASSEMBLY (WHEEL BLASTERS, GUIDE RAILS, PHOTO EYES, & TRENCHES)

V-7,8,9,10

IMAGES





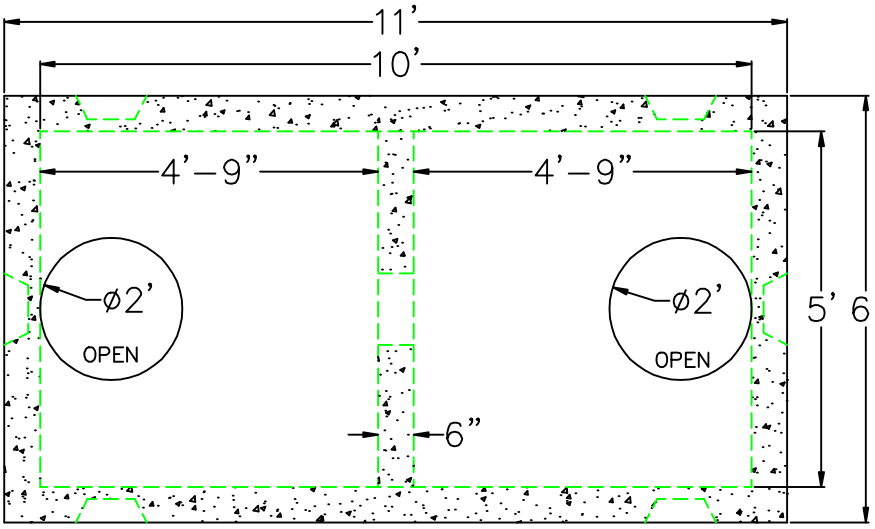
UNDERCARRIAGE WASH CONTROL STATION

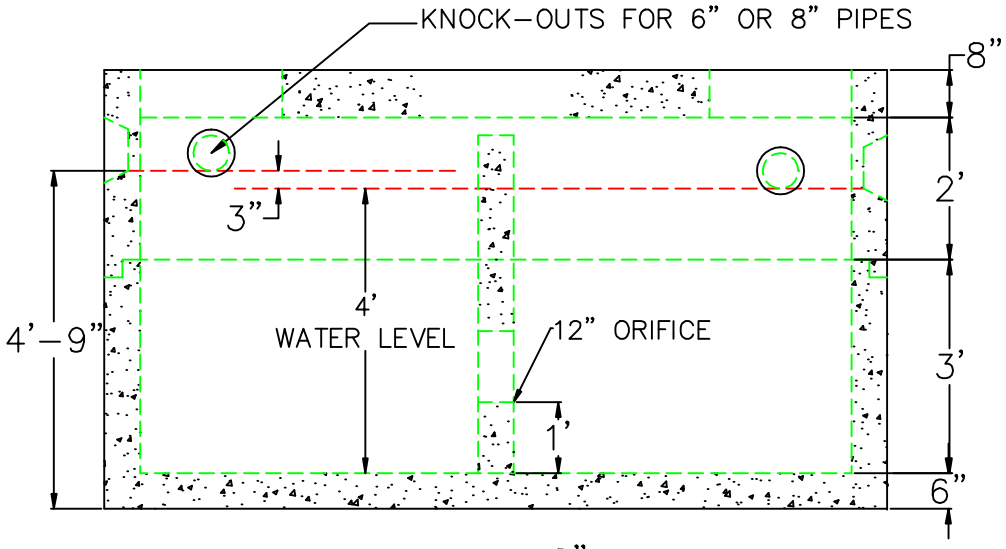
IMAGES

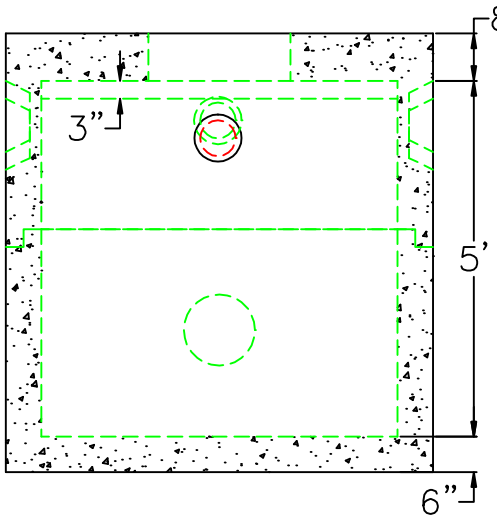


UNDERCARRIAGE WASH
TRAFFIC LIGHT

1,500 GALLON TANK WITH BAFFLE







DESIGN NOTES:
1. CONRETE 5,000 PSI. @ 28 DAYS
2. HS–20–44 LOADING WITH 12" TO 60" OF COVER
3. REINFORCING ASTM A–615 GRADE 60
4. CONST. JOINT TO HAVE MIN. 1" BUTYL SEALANT

	FLOOR	VERT. FT	FLAT TOP
WEIGHT	4,850 lbs.	2,470 lbs.	6,400 lbs.
VOLUME		375gal.	

NPCA
Precast ... The Concrete Solution.

SCITUATE COMPANIES

SCITUATE RAY PRECAST
120 CLAY PIT ROAD
MARSHFIELD, MA 02050
PHONE # 1–800–440–0009
FAX # 781–837–4320

CONTRACTOR:	JOB NAME:	
WESTON & SAMPSON	HOPKINTON DPW	
DATE: 6/30/2016	APPROVED BY:	DRAWING BY: JOHN KASPER

SEE ATTACHED PAGE

Cotterman®

COTTERMAN ALUMINUM SERIES "A" SAFETY LADDERS are one-piece set-up assemblies of high strength aluminum alloy. The solid ribbed aluminum steps and platform provide sure footing in areas where dress shoes or high heels are worn. In addition to being light-weight, aluminum ladders are corrosion resistant and easy to clean. They are also non-magnetic.

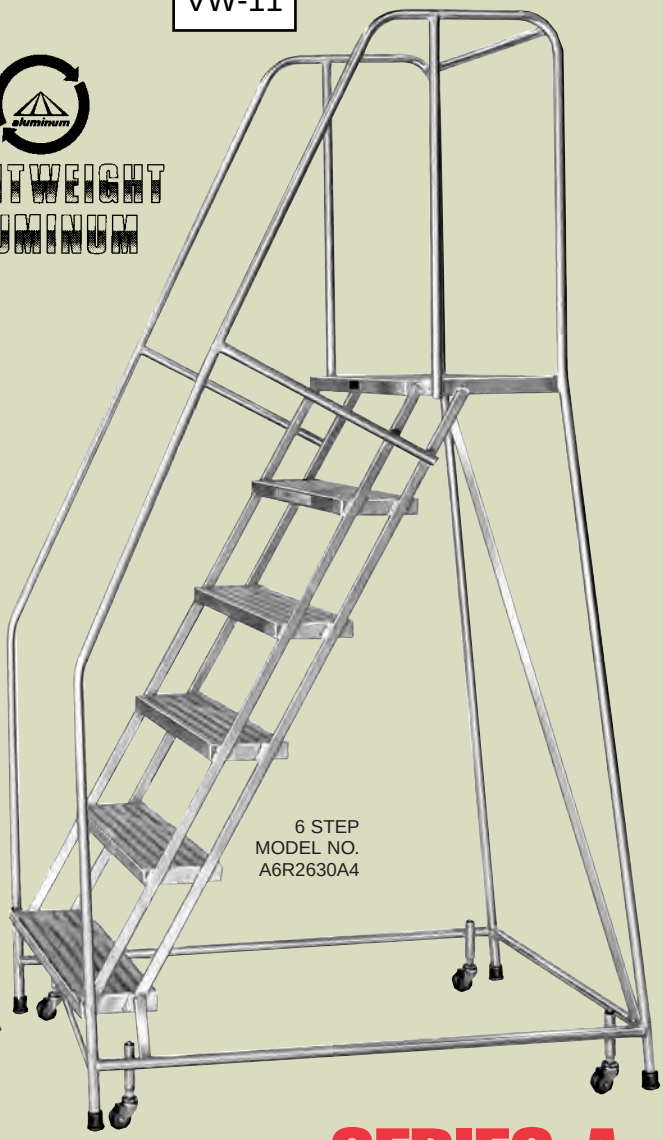
LIGHTWEIGHT ALUMINUM

FEATURES:

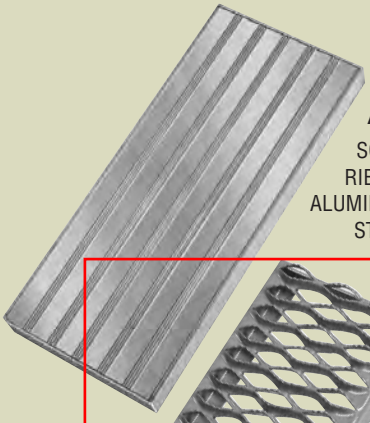
- **The structural framework is of 1" O.D. 6061-T6 high strength aluminum alloy tube.**
- **Both the steps and the top step are 16" or 24" wide and available in solid ribbed extruded aluminum alloy or aluminum grip strut. The steps are 7" deep. The top step is 14" deep.**
- **All ladders are provided with spring loaded 2" ball bearing swivel brake casters and reinforced rubber tipped legs.**
- **Ladders are normally furnished with unpainted aluminum mill finish.**
- **Series A aluminum ladders comply with OSHA 1910.29 and ANSI A14.7 standards with a 350 lb. load rating. Cal-OSHA models also available.**



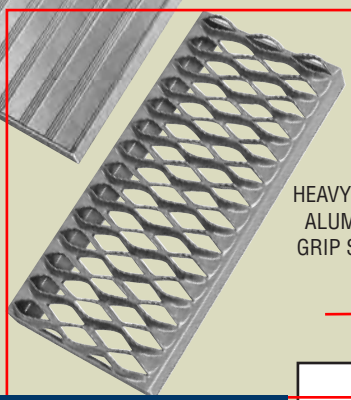
3 STEP
MODEL NO.
A3R2630A3



6 STEP
MODEL NO.
A6R2630A4



A4
SOLID RIBBED ALUMINUM STEPS



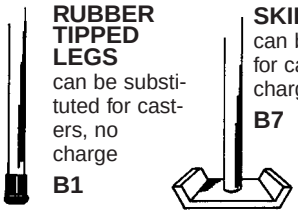
A3
HEAVY DUTY ALUMINUM GRIP STRUT

WELDED ALUMINUM SAFETY LADDERS SERIES A

NO. STEPS INCL. TOP STEP	TYPE OF RAILS	TOP STEP HT.	OVER-ALL HT.	18" WIDE AT TOP					26" WIDE AT TOP				
				MODEL NO.	BASE W"xL"	SHPG. WT.	A4 TREAD	A3 TREAD	MODEL NO.	BASE W"xL"	SHPG. WT.	A4 TREAD	A3 TREAD
1	NONE	12"	12"	*A1N1818	18x20	13			*A1N2626	26x20	14		
2	NONE	20"	20"	*A2N1818	20x23	16			*A2N2626	26x23	20		
2	HAND	20"	50"	A2R1818	20x23	19			A2R2626	26x23	21		
3	NONE	30"	30"	A3N1822	22x29	21			A3N2630	30x29	25		
3	HAND	30"	60"	A3R1822	22x29	24			A3R2630	30x29	27		
4	NONE	40"	40"	A4N1822	22x36	26			A4N2630	30x36	30		
4	HAND	40"	70"	A4R1822	22x36	28			A4R2630	30x36	32		
5	HAND	50"	80"	A5R1822	22x43	35			A5R2630	30x43	39		
6	HAND	60"	90"	A6R1824	24x50	39			A6R2630	30x50	44		
7	HAND	70"	100"	-	-	-			A7R2630	30x57	54		
8	HAND	80"	110"	-	-	-			A8R2630	30x63	61		

***Shippable via UPS at additional boxing cost**

OPTIONS



RUBBER TIPPED LEGS
can be substituted for casters, no charge
B1

SKID PLATES
can be substituted for casters, no charge
B7

COTTERMAN COMPANY IS PROUD TO BE A MEMBER OF THE FOLLOWING ASSOCIATIONS:

MEMBER ANSI

MHIA® The Material Handling Industry of America MEMBER COMPANY

MEMBER SCAFFOLD INDUSTRY ASSOCIATION SIA

National Safety Council

MTI MAINTENANCE TECHNOLOGY

PRICES SUBJECT TO CHANGE WITHOUT NOTICE • TAX NOT INCLUDED • TERMS: NET 30 DAYS • F.O.B. FACTORY

AMERICAN EXPRESS VISA MasterCard "CHARGE IT"

TOLL FREE 800-5- LADDER • 810-679-4400 • FAX 810-679-4510

UNDERCARRIAGE WASH TRAFFIC LIGHT

IMAGES



SECTION VIII

Appendix

Weston & Sampson

westonandsampson.com

55 Walkers Brook Drive, Suite 100
Reading, MA 01867
tel: 978.532.1900

REPORT

May 30, 2025

PREPARED FOR:

Town of Truro

Geotechnical Engineering Report
Department of Public Works Facility
Truro, Massachusetts

55 Walkers Brook Drive, Reading, MA 01867 (HQ)
Tel: 978.532.1900

WSE Project No. ENG24-1552

May 30, 2025

Town of Truro
c/o Della Rae Donahue
Weston & Sampson Engineers, Inc.
100 Foxborough Blvd, Suite 250
Foxborough, MA 02035

Re: Geotechnical Engineering Report
Proposed Department of Public Works
Truro, Massachusetts

Dear Ms. Donahue:

Weston & Sampson Engineers, Inc. (Weston & Sampson) is pleased to submit our Geotechnical Engineering Report for the referenced project. This report presents descriptions and summaries of our services, encountered subsurface conditions, and geotechnical considerations and recommendations for design and construction of the proposed project.

We appreciate the opportunity to be of service to you. If you have questions concerning this report or require additional information, please contact us at 978-532-1900.

Very truly yours,

WESTON & SAMPSON ENGINEERS, INC.

Stephen T. Spink, PE
Geotechnical Engineering Team Leader

TABLE OF CONTENTS

Page

1.0 INTRODUCTION 1-1
1.1 Purpose and Scope 1-1
1.2 Existing Site Conditions 1-1
1.2.1 General 1-1
1.2.2 Site Topography 1-2
1.2.3 Environmental Site History 1-2
1.3 Proposed Conditions 1-2

2.0 SUBSURFACE CONDITIONS 2-1
2.1 Geologic Setting 2-1
2.2 Borings 2-1
2.3 Subsurface Conditions 2-1
2.3.1 General 2-2
2.3.2 Groundwater 2-2
2.4 Geotechnical Laboratory Testing 2-2

3.0 GEOTECHNICAL RECOMMENDATIONS 3-3
3.1 General 3-3
3.2 Existing Non-Engineered Fill 3-3
3.3 Environmental Considerations 3-3
3.4 Shallow Foundations – Main DPW Structure & Salt Shed 3-3
3.5 Slabs On-Grade 3-4
3.6 Canopy Structure Foundations 3-5
3.7 Seismic Design Considerations 3-5
3.8 Retaining Walls 3-6

4.0 CONSTRUCTION CONSIDERATIONS 4-1
4.1 Site Preparation 4-1
4.2 Excavation Considerations 4-1
4.3 Subgrade Preparation and Protection 4-1
4.4 Fill Materials 4-2
4.5 Slopes 4-3

5.0 LIMITATIONS 5-1
5.1 Observation of Construction 5-1
5.2 Variations of Subsurface Conditions and Use of Report 5-1

FIGURES

Figure 1 Locus Map
Figure 2 Site Plan

APPENDICES

Appendix A Selected Schematic Design Plans
Appendix B Boring Logs
Appendix C Geotechnical Laboratory Test Results
Appendix D GBA Important Information about this Geotechnical Report

AJC:STS

\\wse03.local\WSE\Projects\MA\Truro MA\ENG24-1552_Truro Public Works Facility\07-DesignMaterials\02-Geotechnical\Report\Truro DPW Facility_Geotechnical Engineering Report_05-30-025.docx

1.0 INTRODUCTION

Weston & Sampson Engineers, Inc. (Weston & Sampson) has prepared this geotechnical engineering report for the proposed Truro Department of Public Works (DPW) facility at 17 Town Hall Road in Truro, Massachusetts (hereinafter the "Site"). The Site's location relative to surrounding physical features is shown in *Figure 1 – Locus Map*.

Our understanding of the existing conditions and the proposed project are based on our recent discussions with the design team and our review of the following information:

- A set of schematic design plans titled "Town of Truro, MA, New Department of Public Works Facility," prepared by Weston & Sampson and dated May 2, 2025. Selected schematic design plans are included in *Appendix A*.
- A report titled "Immediate Response Action Plan," prepared by HRP Associates, Inc. (HRP) dated November 4, 2024.
- A presentation titled "Update on DPW and Landfill PFAS Environmental Assessment Activities," prepared by HRP dated February 26, 2025.

1.1 Purpose and Scope

The purpose of our geotechnical engineering evaluation was to explore subsurface conditions, identify geotechnical considerations, and provide geotechnical engineering recommendations for design and construction of the proposed DPW facility and related site improvements.

Our scope included field reconnaissance, observations of subsurface explorations, geotechnical laboratory testing, geotechnical engineering analyses, and preparation of this report summarizing our geotechnical engineering recommendations.

1.2 Existing Site Conditions

1.2.1 General

The Site is located within a parcel that is owned and operated by the Town of Truro and is generally bordered by Meetinghouse Road to the north, Town Hall Road to the south, and residential properties to the east and west. The existing facility includes three one- to two-story maintenance buildings, a one-story office building, a fuel island with an above-ground fuel tank, material storage areas and sheds, asphalt concrete (AC) paved parking areas and driveways, and associated landscaped areas as shown on *Figure 2 – Site Plan*. Existing subsurface utilities at the Site include water, stormwater drainage, and electric. An existing on-site septic system is also located in the northeastern portion of the Site. Existing site features are shown on the "Existing Conditions Plan" of the above-referenced schematic design plans, which are included in *Appendix A*.

1.2.2 Site Topography

Based on the aforementioned existing conditions plan, grades slope significantly downward from the existing developed portion of the Site to the north, east, and south. Grades in existing developed areas of the Site range from approximately El. 125 to the east to El. 120 to the west. In the undeveloped wooded areas grades decrease from approximately El. 120 to the south to approximately El. 70 to the northeast where the Site is bordered by Meetinghouse Road. Adjacent to the developed portions of the Site, fairly steep slopes of up to about 1H:1V (Horizontal:Vertical) extend to the north and east before transitioning to more gradual slopes of about 4H:1V. Vertical elevations in this report are in feet and reference the North American Vertical Datum of 1988 (NAVD88).

1.2.3 Environmental Site History

Based on the above-referenced report and presentation prepared by HRP regarding environmental assessments completed at the Site, per- and polyfluoroalkyl substances (PFAS) that were above applicable MassDEP standards were detected in groundwater samples collected at the site during a limited site investigation between July and August 2024. Based on the information provided, we understand the PFAS impacts appear to be limited to the northeast corner of the site behind the existing office building. Remedial strategy in conjunction with proposed development at the site is currently planned to include a combination of capping and groundwater treatment.

1.3 Proposed Conditions

Based on the schematic design plans included in *Appendix A*, the existing office and garage buildings are planned to be demolished and replaced with an approximately 23,600 square foot (SF) DPW building, a salt shed, and a canopy. The new DPW building will include offices and employee facilities, vehicle storage and maintenance areas, workshops, and a vehicle wash bay. The finished floor elevation (FFE) of the new DPW building is planned to be El. 124. The existing fuel island is to remain.

Related site improvements are planned to include new underground utilities, a concrete generator pad, AC paved parking areas and driveways, and retaining walls with exposed heights of up to approximately four (4) feet. Cuts and fills on the order of about four (4) feet are anticipated to achieve proposed site grading.

We understand that the new DPW building is planned to be supported using conventional shallow foundations. Structural loads for the new building were not available at the time of this report, but based on our experience with similar structures, we anticipate that loads will be less than 300 kips for columns and 6 kips per lineal foot (klf) for walls. First floor slab-on-grade loads are anticipated to be less than 250 pounds per square foot (psf). We assume that the new building will not include basement and/or below grade areas except for possible below grade vaults in isolated areas.

The recommendations in this report are based on the above stated assumptions. We should be provided with actual project information as it becomes available and have the opportunity to review

and revise our recommendations as necessary if proposed conditions differ from those described above.

2.0 SUBSURFACE CONDITIONS

2.1 Geologic Setting

Surficial geology information available from the Massachusetts Office of Geographic Information (Mass GIS) indicates the site is located in an area of glacial stratified coarse deposits composed predominantly of sand and gravel.

The "Bedrock Geologic Map of Massachusetts" (United States Geological Survey, Zen et. al., 1983) indicates the Site is located within an area of undivided granite, gneiss, and shist of the Proterozoic Z age. Shallow bedrock and outcrops are not mapped in the immediate site vicinity.

2.2 Borings

A total of six test borings (B-1 through B-6) were completed between April 15 and 16, 2025 within the limits of the proposed site improvements as described in Section 1.3. Approximate boring locations are shown in *Figure 2*.

Desmond Well Drilling, Inc. of Orleans, Massachusetts completed the borings using a truck-mounted drill rig to depths of up to approximately 39 feet below the existing ground surface. Standard penetration tests (SPTs) were conducted in each boring by driving a split spoon sampler with an automatic hammer in general accordance with ASTM D1586. Sampling intervals ranged from continuous (every 2 feet) to standard (every 5 feet). Upon completion, each boring was backfilled with drill cuttings. B-3 and B-6 were completed in existing pavement areas and patched at the ground surface with asphalt cold patch.

Weston & Sampson geotechnical engineering representatives observed drilling activities, measured boring locations using a handheld GPS, and prepared logs for each boring. The boring logs are included in *Appendix B*. Select soil samples obtained from the explorations were submitted for geotechnical laboratory testing as described in Section 2.4.

2.3 Subsurface Conditions

Subsurface conditions encountered in the explorations were generally consistent with the mapped surficial geology. Descriptions of the major soil groups encountered in the borings are provided below in order of their general occurrence with depth from ground surface. The general Unified Soil Classification System (USCS) designation for each stratum is included in the descriptions below in parentheses.

Subsurface conditions described below have been interpreted based on a limited number of explorations that were observed by Weston & Sampson. Variations may occur and should be expected between locations. The strata boundaries shown in our boring logs are based on our interpretations and the actual transitions may be gradual. Refer to the boring logs for detailed descriptions of the soil samples collected.

2.3.1 General

Surface Materials – B-3 and B-6 were completed within existing pavement areas and encountered approximately 3 inches of asphalt concrete (AC) pavement. B-4 and B-5 were located in existing landscape areas and encountered approximately 4 inches of topsoil. B-1 and B-2 were advanced in unvegetated areas.

Fill – Existing fill was encountered at the ground surface in B-1 and B-2, and below the surface materials in B-3 through B-6. The fill generally consisted of very loose to medium dense, brown SAND with trace to little non-plastic fines and trace to little gravel (SP, SP-SM, SM). Trace amounts of debris consisting of asphalt, wood, ceramic, glass, and roots were observed within the fill at various locations. The majority of the fill extended to relatively shallow depths of approximately 0.5 to 4 feet except for B-1 where the fill extended to a depth of approximately 13 feet.

Subsoil – Subsoil was encountered below the fill in B-3 through B-5. The subsoil generally consisted of loose, orange SAND with little non-plastic fines, and trace roots (SM). The subsoil extended to depths of approximately 2 to 5 feet.

Native Sand – Native soils encountered below the fill and subsoil in each of the borings generally consisted of loose to medium dense, light brown SAND with trace gravel and trace non-plastic fines (SP). Each boring was terminated within the native soils at depths ranging between approximately 29 and 39 feet.

2.3.2 Groundwater

Groundwater was not encountered in any of the borings completed as part of this geotechnical investigation. Based on the referenced HRP environmental report, groundwater levels at the site were measured at depths between approximately 117 and 122 feet in 2024.

Groundwater levels should be expected to fluctuate with season, variations in precipitation, construction in the area, and other factors. Perched groundwater conditions could exist close to the ground surface or along the top of bedrock surface, especially during and after extended periods of wet weather.

2.4 Geotechnical Laboratory Testing

Selected soil samples obtained during drilling were submitted for particle size analysis (ASTM D6913/D7928) to confirm field classifications. Geotechnical laboratory testing was performed by Thielsch Engineering of Cranston, Rhode Island. The geotechnical laboratory test results are incorporated into our boring logs and included in *Appendix C*.

3.0 GEOTECHNICAL RECOMMENDATIONS

3.1 General

Based on the subsurface conditions encountered in our explorations and our engineering analyses, the primary geotechnical engineering considerations for the proposed project include the presence of existing undocumented (non-engineered) fill and coordination with environmental requirements within portions of the areas of planned development. Geotechnical design and construction recommendations are provided below and in the following sections.

3.2 Existing Non-Engineered Fill

Subsurface conditions encountered in our explorations generally consisted of relatively shallow (i.e., depths of 4 feet or less) non-engineered fill except for B-1 where the fill extended to a depth of up to approximately 13 feet. B-1 was located within the currently developed portion of the Site in relatively close proximity to an existing slope along the northern portion of the Site.

Topsoil, subsoil, and existing non-engineered fill is not suitable (or allowed by the Massachusetts State Building Code, MSBC) for support of foundations or other rigid structural site improvements that could be adversely affected by differential settlement. Topsoil, subsoil, and existing fill should be completely removed from within the zone-of-influence beneath proposed foundations and other structural elements. The 'zone-of-influence' is defined by a plane extending away from the bottom outside edges of footings and other structural site improvements a horizontal distance of two feet in all directions, then down and away at 1H:1V (horizontal:vertical) slopes to the intersection with undisturbed native soils.

The in-place existing fill may provide adequate support of flexible site improvements such as flexible AC pavements provided subgrades are prepared and evaluated as recommended herein.

3.3 Environmental Considerations

As described in the environmental report prepared by HRP, PFAS compounds were detected in the groundwater in some monitoring wells installed at the Site as part of a separate study. Based on the current information, we understand the areas of environmental concern are generally located in the northern/northeastern portions of the Site.

At the time of this report, capping of a portion of the Site in the northeast corner was planned in the general area of the proposed salt shed structure. The design of the cap had not yet been finalized but was anticipated to include a High-Density Polyethylene (HDPE) liner and a layer of soil cover.

As design progresses in this area of the Site, alterations or changes in planned foundation type for the salt shed may be required depending on the impacts of the proposed capping system.

3.4 Shallow Foundations – Main DPW Structure & Salt Shed

Based on the subsurface conditions encountered in our explorations, the proposed DPW facility can be supported using conventional shallow foundations bearing in the native, undisturbed, inorganic,

native sand soils or properly constructed Structural Fill placed directly over such soils following removal of the topsoil, subsoil and existing fill.

A maximum net allowable bearing capacity of 2,000 psf is recommended to be used for design of spread footings. Resistance to lateral loads can be obtained by a passive equivalent fluid pressure of 225 pounds per cubic foot (pcf), ignoring the top 12 inches of embedment, and by a footing base friction coefficient of 0.45. Shallow foundations constructed as recommended herein are anticipated to undergo total and differential settlements of less than 1 inch and ½ inch, respectively.

As noted above, topsoil, subsoil and existing fill are not suitable (or allowed by the Massachusetts Building Code) for support of foundations or other rigid structural site improvements that could be adversely affected by differential settlement. Topsoil, subsoil, existing fill and other unsuitable soils, as determined by the Engineer, should be completely removed from within the zone-of-influence (ZOI) beneath proposed structures and slabs, and the resulting excavation backfilled with compacted Structural Fill.

Foundations for proposed structures should be designed in accordance with the provisions of the current edition of the Massachusetts State Building Code (MSBC). Footings should be embedded at least 4 feet below the nearest proposed adjacent ground surface exposed to freezing.

Existing below grade structures and the existing septic system that may be located within the ZOI of proposed structures should be removed in their entirety and replaced with compacted Structural Fill as described herein.

If footing construction is to occur in wet conditions, the subgrade may be overcut by a few inches, observed by the Engineer for suitability, and then backfilled to the footing subgrade elevation with crushed stone to reduce subgrade disturbance and softening during construction.

If footing construction occurs during freezing conditions, insulating blankets, heaters, or other suitable measures should be employed to prevent foundation subgrades from freezing until the foundations are backfilled sufficiently to prevent frost from reaching the footing subgrades. The Contractor should be responsible for subgrade protection.

3.5 Slabs On-Grade

Slabs on-grade supporting loads up to 250 psf and bearing on properly constructed Structural Fill overlying recompacted, native undisturbed soils are expected to induce less than one inch of total settlement. A minimum of six inches of clean, angular crushed stone with no more than 6 percent passing a #200 sieve is recommended for underslab stone. Any areas contaminated with fines should be removed and replaced with clean stone. If the underslab stone is saturated or trapping water, the water should be removed prior to slab placement.

Based on the subgrade preparation procedures recommended herein and the existing soil conditions, concrete slabs (including mat slab foundations) and pads may be designed using a modulus of subgrade reaction (k_{s1}) of 60 psi/inch. This value for k_{s1} is for a 1 x 1 square foot area, and should be adjusted for larger areas using the following expression:

$$Modulus\ of\ Subgrade\ Reacion\ (k_s) = k_{s1} * \left(\frac{B+1}{2B}\right)^2$$

Where:

k_s = Coefficient of vertical subgrade reaction for loaded area,
k_{s1} = Coefficient of vertical subgrade reaction for a 1 x 1 square foot area, and
B = width of loaded area in feet.

The ground floor slab should be insulated and dampproofed in accordance with the Building Code. Some flooring manufacturers require specific slab moisture levels and/or vapor barriers to validate the warranties on their products. A properly installed and protected vapor flow retardant can reduce slab moisture. If a vapor flow retardant is used, care should be taken not to trap moisture within the overlying granular fill and floor slab concrete.

3.6 Canopy Structure Foundations

As previously described, non-engineered fill was encountered in B-1 to a depth of approximately 13 feet within the northern portion of the Site in the general area of the proposed canopy structure. Due to the depth and density of the existing fill, canopy structures in this area are recommended to be supported using deep foundations consisting of driven piles or helical piers. Due to the size, relatively lightly loaded nature of the proposed structure, cost considerations and potential need to reduce the amount of excavated soils from the Site due to environmental considerations, helical piers are currently anticipated to be the most economical foundation support alternative for the referenced structures.

Helical piers, or other deep foundation alternatives, should fully penetrate the existing fill and loose sand layers to develop their resistance in the underlying soils. The pier design should be stamped by a Professional Engineer licensed in the Commonwealth of Massachusetts and include calculations that demonstrate adequate vertical geotechnical and structural capacities (including resistance to buckling).

Estimated deep foundations depths and capacities will need to be further evaluated as design progresses based on final site layout and structural load requirements.

3.7 Seismic Design Considerations

Seismic site class was determined in accordance with the International Building Code (IBC) as adapted by the Massachusetts State Building Code using a weighted average of SPT blow counts and shear wave velocity data in the upper 100 feet of soil. Based on our explorations within the proposed main building footprint, analyses, and our previous experience with similar geologic conditions, we recommend the project be evaluated using parameters associated with Site Class D.

Liquefaction can occur in loose, saturated, granular soils. Strong shaking, such as that experienced during earthquakes, can cause a sudden loss of shear strength, densification, and subsequent settlement of these soils. Based on the anticipated depth to groundwater in excess of about 100 feet based on measurements at the Site, the soil types and density encountered in our explorations, the risk of structurally damaging ground deformations related to liquefaction is low.

3.8 Retaining Walls

Based on the preliminary design plans, two primary retaining walls are currently planned in the northeast and northwest portions of the site. Both walls are expected to have an exposed wall height of up to about 4 feet or less. Based on the proposed wall heights and subsurface conditions, we recommend the walls be constructed as segmental block retaining walls (SRWs) due to their relatively low construction cost and ability to tolerate differential settlement in areas where undocumented fill is encountered. SRWs generally consist of pre-manufactured stacked masonry blocks placed on a leveling pad of crushed stone.

SRWs should be designed by a Civil Engineer, registered in the Commonwealth of Massachusetts, and hired by the contractor. Design of the retaining wall should include an assessment of sliding, overturning, and internal stability. Based on the maximum proposed wall height of approximately 4 feet, we anticipate that geogrid reinforcement will not be required for the proposed walls, however this should be confirmed by the wall designer. Reinforcement lengths vary but are typically about 70 to 80 percent of the wall height where required.

Retaining Wall Foundations

SRWs can be supported on a minimum 12-inch-thick leveling pad of compacted angular crushed stone overlying either native undisturbed sand or Structural Fill. The crushed stone leveling pad should extend at least 12 inches horizontally past the edges of the bottom blocks, or as recommended by the block manufacturer.

Where encountered at retaining wall foundation subgrade, existing fill should be removed to a minimum depth of 2 feet from within the zone-of-influence (ZOI) below proposed retaining wall leveling pad foundations.

Lateral Pressures

All retaining walls should be designed to resist lateral pressures exerted by soil, water, seismic, temporary construction loads, and any additional surcharge loads including sloped backfill as appropriate.

Lateral earth pressures on retaining walls unrestrained from rotation with level backfill and drainage provided behind the wall should be calculated using an equivalent fluid unit weight of 40 pounds per cubic foot (pcf). This unit weight should be increased to 60 pcf for walls that are restrained from rotation such as embedded building walls or walls connected to structures such as backfilled stem walls supporting floor slabs. For sloping backfill up to 3H:1V, the equivalent fluid unit weights should be increased to 65 pcf for walls unrestrained from rotation and to 95 pcf for walls restrained from rotation.

A minimum uniform lateral pressure of 125 pounds per square foot (psf) should be added to the above pressures and applied over the full backfill height of all walls. The 125 psf lateral pressure is intended to account for vertical surcharge pressures at the tops of walls up to 250 psf. Additional

lateral pressures equal to 0.5 times the additional surcharge pressure should be added to walls where surcharge pressures exceed 250 psf.

We recommend that passive pressures acting on the base of the wall be ignored due to the possibility of future removal of toe material. Driving forces acting on the wall can be resisted by friction along the base of the wall footing using a friction coefficient of 0.45 for SRW blocks bearing on crushed stone and compacted Structural Fill overlying either native undisturbed sand or recompacted existing granular fill at the site.

Backfill and Drainage

All retaining walls should include drainage behind the wall unless designed to resist hydrostatic pressures. A retaining wall drain should consist of a minimum 12-inch wide (horizontal measure) zone of crushed, free-drainage gravel with less than five-percent fines (such as washed crushed stone) with the stone fully encased with a non-woven filter fabric. Weep holes are recommended to assist with drainage of water from behind the wall. We recommend that weep holes be spaced approximately 10 feet on center, or a drainage pipe connected into a surface water drainage system should be installed behind the wall.

Behind the drainage zone, retaining walls should be backfilled with Structural Fill. The SRW designer should provide specific backfill placement and compaction requirements as part of their submitted wall design. Retaining structures typically rotate and displace up to 1 percent of the wall height during development of active pressures behind the wall. We therefore recommend that construction of improvements adjacent to the top of walls be delayed until approximately two weeks after wall construction and backfill.

Stormwater runoff should be collected and diverted away from the retaining wall areas to prevent erosion and to reduce the potential of elevated water pressures developing behind the wall.

4.0 CONSTRUCTION CONSIDERATIONS

4.1 Site Preparation

Prior to earthwork and foundation construction, the areas of proposed development should be prepared by removing any existing structures, foundation elements, and abandoned utilities. Associated pavement, topsoil, subsoil and existing fill materials should also be removed. Excavations resulting from site preparation should be brought back to grade using Structural Fill. Utilities should be removed or properly abandoned using Structural Fill, controlled density fill (CDF), or grouting in such a manner to prevent voids.

4.2 Excavation Considerations

Excavation will be required for site preparation, grading, and construction of foundations and utilities. Surface water should be controlled during construction and prevented from eroding temporary slopes and disturbing excavation and subgrade materials. If excavations encounter perched groundwater, moderate to severe caving should be expected where seepage is present.

All excavations should be made in accordance with applicable OSHA safety regulations. Temporary excavation support may be required depending on depths of excavations and if excavations need to approach the zone-of-influence beneath existing structures, utilities, or other site features. Excavation support systems, if necessary, should be the responsibility of the Contractor and designed by a Professional Engineer licensed in the Commonwealth of Massachusetts. Foundations and utilities should be designed and constructed so that excavations into zones-of-influences below and adjacent to footings are not required.

Based on the groundwater conditions observed during drilling, extensive dewatering is not anticipated to be required during construction. However, depending on excavation depth and the amount of potentially perched groundwater, dewatering may be necessary. Flow rates for dewatering are likely to vary depending on location, soil type, and the season during which the excavation occurs. The dewatering system should be capable of lowering the groundwater table at least 2 feet below the anticipated excavation depths and be kept operational until fill placement and compaction and concrete installation have been completed to at least 2 feet above the groundwater table elevation. The dewatering system should be capable of handling variable flow rates and should be the responsibility of the Contractor.

4.3 Subgrade Preparation and Protection

Based on the subsurface conditions encountered in our explorations, stripping and subgrade preparation will likely expose existing fill, subsoil, and native sand. After stripping (i.e., removal of unsuitable materials), subgrades consisting of native granular soils should be recompacted until dense and stable with several passes of a minimum 12-ton vibratory roller. Weston & Sampson should be contacted to evaluate the exposed subgrade. Subgrades will be evaluated based on probing or observation of a proof roll using a fully loaded 10-wheeled dump truck or suitable alternative.

The native sand is susceptible to disturbance from vehicle and foot traffic. We therefore recommend placement of a minimum of 6 inches of compacted ¾ inch crushed stone above the prepared subgrade.

Soft and/or disturbed areas will require over-excavation and backfilling with compacted angular crushed stone or compacted Structural Fill. A geosynthetic separation layer between the excavation subgrade and crushed stone backfill may also be required. We recommend that the project budget and schedule include contingencies for over-excavation and stabilization of soft and variable subgrade conditions.

Soils with more than trace amounts of fines (i.e., silt and clay) are highly susceptible to softening and disturbance by construction activity during wet or freezing weather. Subgrade protection is the responsibility of the contractor, and special precautions and protective measures appropriate for the weather and traffic conditions during construction should be used during earthwork and foundation construction to preserve the integrity of subgrades.

If footing construction occurs during freezing conditions, insulating blankets, heaters, or other suitable measures should be employed to prevent foundation subgrades from freezing until the foundations are backfilled sufficiently to prevent frost from reaching the footing subgrades. The Contractor should be responsible for subgrade protection.

Construction traffic should not operate directly on subgrades. Existing pavement areas can be used as staging areas, but the existing AC pavement section should not be expected to protect subgrades from concentrated heavy construction traffic.

4.4 Fill Materials

Well graded sand and gravel fill with less than approximately 10 percent fines (such as MassDOT M1.03.0-type B Gravel Borrow or M2.01.7 Dense-graded Crushed Stone) is recommended for use as imported Structural Fill in foundation, slab on-grade, and other structural areas. On-site materials meeting the gradation requirements for the aforementioned MassDOT materials may be acceptable for use as Structural Fill if approved by the Geotechnical Engineer. Structural Fill should have a maximum particle size of 3 inches and be placed in maximum 10-inch-thick lifts (measured prior to compaction) with each lift compacted to at least 95 percent of maximum dry density as determined by ASTM D1557 (Modified Proctor) for the specific fill material.

On-site granular soils containing less than approximately 25 percent fines and free of organics, contamination (including metals, VOCs, SVOCs, etc.), and other deleterious materials may be suitable for use as fill in areas outside proposed structures (i.e., Common Fill) if properly moisture conditioned. The native sand encountered in the borings generally appear suitable for re-use as Common Fill provided additional laboratory testing is completed to confirm gradation results prior to the start of fill placement.

In confined areas and where only hand-operated compaction equipment can be used, lift thicknesses should be reduced to not more than 6 inches. In addition to density testing, we

recommend that the fill lifts pass a proof roll using a fully loaded dump 10-wheel truck or equipment of similar size and weight and observed by a geotechnical engineer.

4.5 Slopes

All slopes and excavations should be constructed in accordance with applicable OSHA and local safety standards. Temporary slopes up to 10 feet high can be inclined up to 1.5H:1V provided no seepage or sloughing is present. Equipment should not be allowed to induce vibration or infiltrate water above the slopes and no surcharges should be located within 20 feet of slope crests. Temporary slopes should be expected to ravel somewhat, depending on weather conditions, soil conditions, seepage, and duration of exposure. Soft or loose fill soils and the presence of seepage may require flatter slopes, erosion control measures, drainage elements, and/or temporary excavation support.

Permanent cut and fill slopes up to 10 feet high should be formed at 2H:1V or flatter, however shallower (3H:1V) slopes are recommended for ease of maintenance and mowing. The faces of fill slopes should be overbuilt and cut back into compacted materials with a smooth excavator bucket. If steeper fill slopes are desired, we should be consulted to evaluate the use of grid reinforcement, rock blankets, or rock fill buttresses.

5.0 LIMITATIONS

5.1 Observation of Construction

Satisfactory earthwork and foundation performance depends to a large degree on the quality of construction. Subsurface conditions observed during construction should be compared with those encountered during the subsurface explorations. Recognition of changed conditions often requires experience; therefore, qualified personnel should visit the site with sufficient frequency to detect whether subsurface conditions change significantly from those anticipated. In addition, sufficient monitoring of the contractor's activities is a key part of determining that the work is completed in accordance with the construction drawings and specifications.

5.2 Variations of Subsurface Conditions and Use of Report

We have prepared this report for use by members of the design and construction team for the subject project and this site only. The data and report can be used for estimating purposes, but our report, conclusions, and interpretations should not be construed as a warranty of the subsurface conditions and are not applicable to other sites.

Subsurface explorations indicate soil conditions only at specific locations and only to the depths penetrated. They do not necessarily reflect subsurface conditions that may exist between exploration locations. If subsurface conditions differing from those described are noted during excavation and construction, reevaluation will be necessary.

Site development plans and design details were not finalized at the time this report was prepared. If changes are made in site grades, configuration, design loads, or type of construction for the proposed structures, the conclusions and recommendations may not be applicable. We should be consulted to review final design drawings and specifications to see that our recommendations are suitably followed. If design changes are made, we should be retained to review our conclusions and recommendations and provide a written evaluation or modification. Additional geotechnical engineering analyses and explorations may be necessary.

The recommendations in this report are preliminary as actual subsurface conditions may differ from those interpreted based on our subsurface explorations. In order for our recommendations to be considered final, we must be retained to observe the actual subsurface conditions encountered during construction. Our observations will allow us to interpret the actual conditions present during construction and adapt our recommendations if needed.

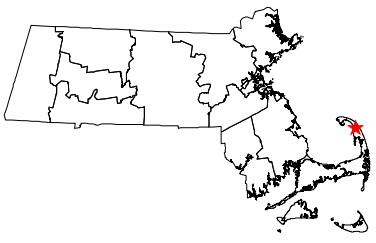
Within the limitations of scope, schedule, and budget, our services have been executed in accordance with generally accepted practices in this area at the time this report was prepared. No warranty or other conditions, expressed or implied, is given. For additional information about use of this report, see the Geoprofessional Business Association, Inc (GBA) documents included in *Appendix D*.

FIGURES



Weston & Sampson

FIGURE 1
LOCUS MAP
TRURO DPW
17 TOWN HALL ROAD
TRURO, MA
BARNSTABLE COUNTY



SCALE IN FEET

0 1000 2000

\\wse03.local\WSE\Projects\MA\Truro MA\ENG24-1552_Truro Public Works Facility\07-DesignMaterials\02-Geotechnical\CAD\Truro DPW - Figure 1 - Locus Map.dwg



\\wse03.local\WSE\Projects\MA\Truro MA\ENG24-1552_Truro Public Works Facility\07-DesignMaterials\02-Geotechnical\CAD\Truro DPW - Figure 2 - Site Plan.dwg

Weston & Sampson

Weston & Sampson Engineers, Inc.
55 Walkers Brook Drive, Suite 100
Reading, MA 01867
978.532.1900 800.SAMPSON
www.westonandsampson.com

NOTES

1. THIS PLAN IS BASED ON A GRADING AND DRAINAGE PLAN PREPARED BY WESTON & SAMPSON ENGINEERS, INC. DATED APRIL 15, 2025.
2. APPROXIMATE LIMIT OF PFAS CONTAMINATION AS DETERMINED DURING A LIMITED SITE INVESTIGATION PERFORMED BY HRP ASSOCIATES, INC. BETWEEN JULY AND AUGUST 2024.
3. BORINGS WERE COMPLETED BY DESMOND WELL DRILLING, INC. OF ORLEANS, MA BETWEEN APRIL 15 AND 16, 2025.
4. STORMWATER DESIGN TEST PITS WERE COMPLETED BY TOWN OF TRURO DEPARTMENT OF PUBLIC WORKS PERSONNEL OF TRURO, MA ON APRIL 15, 2025.
5. ALL BORINGS WERE OBSERVED BY A WESTON & SAMPSON ENGINEER.
6. BORING LOCATIONS SHOWN ARE APPROXIMATE AND BASED ON FIELD MEASUREMENTS USING A HANDHELD GPS.

LEGEND

B-X — DESIGNATION AND APPROXIMATE LOCATION OF BORING

GRAPHIC SCALE

60 30 0 60 120

SCALE: 1"=60'

ORIENTATION	TITLE
	SITE PLAN
	PROJECT: TRURO DPW 17 TOWN HALL ROAD TRURO, MA 02666

DATE	04/2025
DRWN BY	AJC
CHKD BY	STS
PRJ. NO.	ENG24-1552
REV. NO.	-

FIGURE

FIGURE 2

APPENDIX A

Selected Schematic Design Plans

(Refer to Section II for Schematic Design Drawings)

APPENDIX B

Boring Logs

GUIDE TO SUBSURFACE EXPLORATION LOGS

Weston & Sampson℠

INDEX SHEET 1 GENERAL INFORMATION

GENERAL NOTES AND USE OF LOGS

1.) Explorations were made by ordinary and conventional methods and with care adequate for Weston & Sampson's study and/or design purposes. The exploration logs are part of a specific report prepared by Weston & Sampson for the referenced project and client, and are an integral part of that report. Information and interpretations are subject to the explanations and limitations stated in the report. Weston & Sampson is not responsible for any interpretations, assumptions, projections, or interpolations made by others.

2.) Exploration logs represent general conditions observed at the point of exploration on the date(s) stated. Boundary lines separating soil and rock layers (strata) represent approximate boundaries only and are shown as solid lines where observed and dashed lines where inferred based on drilling action. Actual transitions may be gradual and changes may occur over time.

3.) Soil and rock descriptions are based on visual-manual examination of recovered samples, direct observation in test pits (when permissible), and laboratory testing (when conducted).

4.) Water level observations were made at the times and under the conditions stated. Fluctuations should be be expected to vary with seasons and other factors. Use of fluids during drilling may affect water level observations. The absence of water level observations does not necessarily mean the exploration was dry or that subsurface water will not be encountered during construction.

5.) Standard split spoon samplers may not recover particles with any dimension larger than 1-3/8 inches. Reported gravel conditions or poor sample recovery may not reflect actual in-situ conditions.

6.) Sections of this guide provide a general overview of Weston & Sampson's practices and procedures for *identifying* and *describing* soil and rock. These procedures are predominantly based on ASTM D2488, *Standard Practice for Description and Identification of Soils (Visual-Manual Procedures)*, the International Society of Rock Mechanics (ISRM) standards, and the *Engineering Geology Field Manual* published by the Bureau of Reclamation. Not all aspects of this guide relating to description and identification procedures of soil and rock may be applicable in all circumstances.

SAMPLER GRAPHICS

- Split Spoon (Standard) 2" OD, 1-3/8" ID
- Split Spoon (Oversize) 3" OD, 2-3/8" ID
- Shelby or Piston Tube 3" OD, 2-7/8" ID
- Double-Tube Rock Core Barrel 2" Core Diameter
- Direct Push with Acetate Liner Various Liner Sizes
- A — Auger Sample *(from cuttings or hand auger)*
- G — Grab Sample *(manual, from discrete point)*
- C — Composite Sample *(multiple grab samples)*

WELL GRAPHICS

- Cement concrete seal around casing or riser pipe
- Bentonite seal around casing or riser pipe
- Cement grout seal around casing or riser pipe
- Soil backfill around riser pipe or beneath screen
- Gravel backfill around screen or riser pipe
- Sand backfill around screen or riser pipe (filter sand)
- Solid-wall riser; Sch. 40 PVC, 1" ID unless noted otherwise
- Slotted screen; Sch. 40 PVC, 1" ID with machined slots

CAVING / SEEPAGE TERMS

The following caving and/or seepage terms may appear on a test pit log.

Caving Term	Criteria
Minor	less than 1 cubic ft.
Moderate	1 to 3 cubic ft.
Severe	greater than 3 cubic ft.

Seepage Term	Criteria
Slow	less than 1 gpm
Moderate	1 to 3 gpm
Fast	greater than 3 gpm

KEY TO WATER LEVELS

- Observed in exploration during advancement.
- Measured in exploration at completion, prior to backfilling or well installation.
- Measured in exploration after the stated stabilization period, prior to backfilling, or in well installation if noted.

DEFINITIONS OF COMMON TERMS

Sample Recovery Ratio - The length of material recovered in a drive or push type sampler over the length of sampler penetration, in inches (e.g. 18/24).

Standard Penetration Test (*SPT*) - An in-situ test where a standard split-spoon sampler is driven a distance of 12 or 18 inches (after an initial 6-inch seating interval) using a 140-lb. hammer falling 30 inches for each blow.

SPT Blows - The number of hammer blows required to drive a split-spoon sampler each consecutive 6-inch interval during a *Standard Penetration Test*. If no discernable advancement of a split spoon sampler is made after 50 consecutive hammer blows, 50/X indicates *sampler refusal* and is the number of blows required to drive the sampler X inches.

SPT N-Value (*N*) - The uncorrected blow count representation of a soil's penetration resistance over a 12-inch interval after an initial 6-in. seating interval, reported in blows per foot (bpf). The N-value is correlated to soil engineering properties.

Auger Refusal - No discernable advancement of the auger over a period of 5 minutes with full rig down pressure applied.

Casing Refusal (Driven) - Casing penetration of less than 6 inches after a minimum 50 blows of a drop hammer weighing 300 lbs. or a minimum 100 blows of a drop hammer weighing 140 lbs.

PID Measurement - A measurement (electronic reading) taken in the field using a photoionization detector (PID) to detect the presence of volatile organic compounds in a soil sample. Values are reported as benzene equivalent units in parts per million (ppm) unless noted otherwise.

Rock Quality Designation (RQD) - A qualitative index measure of the degree of jointing and fracture of a rock core taken from a borehole. The RQD is defined as the sum length of solid core pieces 4 inches or longer divided by the run (cored) length, expressed as a percentage. Higher RQD values may indicate fewer joints and fractures in the rock mass.

Fill (Made Ground) - A deposit of soil and/or artificial waste materials that has been placed or altered by human processes.

LABORATORY TESTS AND FIELD MEASUREMENTS

MC	Moisture Content	IC	1D Incremental Consolidation
OC	Organic Content	VS	Laboratory Vane Shear
PL	Plastic Limit	US	Unconfined Compression
LL	Liquid Limit	TC	Triaxial Compression
GC	Gravel Content	PP	Pocket (Hand) Penetrometer
SC	Sand Content	TV	Torvane (Hand Vane)
FC	Fines Content	PID	Photoionization Detector
DS	Direct Shear	FID	Flame Ionization Detector

BORING ADVANCEMENT METHODS

Hollow-Stem Auger Drilling - Utilizes continuous flight auger sections with hollow stems to advance the borehole. Drill rods and a plug are inserted into the auger stem to prevent the entrance of soil cuttings into the augers.

Rotary Wash Drilling - Utilizes downward pressure and rotary action applied to a non-coring bit while washing the cuttings to the surface using a circulating fluid injected down the drill rods. The borehole is supported with either steel casing or the drilling fluid. Where a casing is used, the borehole is advanced sequentially by driving the casing to the desired depth and then cleaning out the casing. The process of driving and cleaning the casing is commonly referred to as the 'drive-and-wash' technique.

Continuous Sampling - Includes a variety of methods and procedures during which the borehole is advanced via continuous recovery of soil samples. *Direct Push* sampling is a common method that uses static downward pressure combined with percussive energy to drive a steel mandrel into the ground at continuous intervals while recovering soil samples in disposable acetate liners.

Rock Coring - Utilizes downward pressure and rotary action applied to a core barrel equipped with a diamond-set or tungsten carbide coring bit. During conventional coring, the entire barrel is retrieved from the hole upon completion of a core run. Wireline coring allows for removal of the inner barrel assembly containing the actual core while the the drill rods and outer barrel remain in the hole. Various types and sizes of core barrels and bits are used.

GUIDE TO SUBSURFACE EXPLORATION LOGS

Weston & Sampson℠

INDEX SHEET 2
SOIL DESCRIPTION

SOIL CONSTITUENTS

Naturally occurring soils consist of one or more of the following matrix constituents defined in terms of particle size.

Constituent		U.S. Sieve Size			Observed Size (in.)		
Gravel	(Coarse)	3/4 in.	-	3 in.	3/4	-	3
Gravel	(Fine)	No. 4	-	3/4 in.	1/5	-	3/4
Sand	(Coarse)	No. 10	-	No. 40	1/16	-	1/5
Sand	(Medium)	No. 40	-	No. 10	1/64	-	1/16
Sand	(Fine)	No. 200	-	No. 40	1/300	-	1/64
Fines	(Silt or Clay)	Smaller than		No. 200	Less than		1/300

SOIL IDENTIFICATION

Soil identification refers to the grouping of soils with similar physical characteristics into a category defined by a **group name** and corresponding **group symbol** based on estimation of the matrix soil constituents to the nearest 5% and simple manual tests. Proportions of cobbles, boulders, and other non-matrix soil materials are not considered during this procedure but are included in the overall soil description if observed or thought to be present. Refer to the following descriptions and tables adapted from ASTM D2488.

Coarse-Grained Soil - Coarse-grained soils contain fewer than 50% fines and are identified based on the following table.

Primary Constituent	Fines Percent	Type of Fines and Gradation		Group Symbol	Group Name [1]
GRAVEL *% gravel > % sand*	≤ 5%	well graded		GW	Well graded gravel
		poorly graded		GP	Poorly graded gravel
	10%	clayey fines	well graded	GW-GC	Well graded gravel with clay
			poorly graded	GP-GC	Poorly graded gravel with clay
		silty fines	well graded	GW-GM	Well graded gravel wth silt
			poorly graded	GP-GM	Poorly graded gravel with silt
	15% to 45%	clay fines		GC	Clayey gravel
		silt fines		GM	Silty gravel
SAND *% sand ≥ % gravel*	≤ 5%	well graded		SW	Well graded sand
		poorly graded		SP	Poorly graded sand
	10%	clayey fines	well graded	SW-SC	Well graded sand with clay
			poorly graded	SP-SC	Poorly graded sand with clay
		silty fines	well graded	SW-SM	Well graded sand with silt
			poorly graded	SP-SM	Poorly graded sand with silt
	15% to 45%	clay fines		SC	Clayey sand
		silt fines		SM	Silty sand

[1] If soil is a gravel and contains 15% or more sand, add "with sand" to the group name. If soil is a sand and contains 15% of more gravel, add "with gravel" to the group name.

Inorganic Fine-Grained Soil - Fine-grained soils contain 50% or more fines and are identified based on the following table.

Plasticity Criteria	Dry Strength	Coarse Fraction S = Sand, G = Gravel		Group Symbol	Group Name [1]
Medium	Medium to high	< 15% S + G		CL	Lean clay
		≥ 30%	% S ≥ % G	CL	Sandy lean clay
		S + G	% S < % G	CL	Gravelly lean clay
Non-plastic	None to low	< 15% S + G		ML	Silt
		≥ 30%	% S ≥ % G	ML	Sandy silt
		S + G	% S < % G	ML	Gravelly silt
High	High to very high	< 15% S + G		CH	Fat clay
		≥ 30%	% S ≥ % G	CH	Sandy fat clay
		S + G	% S < % G	CH	Gravelly fat clay
Low to Medium	Low to medium	< 15% S + G		MH	Elastic silt
		≥ 30%	% S ≥ % G	MH	Sandy elastic silt
		S + G	% S < % G	MH	Gravelly elastic silt

[1] If soil contains 15% to 25% sand or gravel, add "with sand" or "with gravel" to the group name.

Organic Fine-Grained Soil - Fine-grained soils that contain enough organic particles to influence the soil properties are identified as Organic Soil and assigned the group symbol **OL** or **OH**.

Highly Organic Soil (Peat) - Soils composed primarily of plant remains in various stages of decomposition are identified as Peat and given the group symbol **PT**. Peat usually has an organic odor, a dark brown to black color, and a texture ranging from fibrous (original plant structure intact or mostly intact) to amorphous (plant structure decomposed to fine particles).

SOIL DESCRIPTION

Soils are *described* in the following general sequence. Deviations may occur in some instances.

Identification Components

(1) Group Name and Group Symbol

Description Components

(2) Consistency (Fine-Grained) or Apparent Density (Coarse-Grained)
(3) Color (*note, the term "to" may be used to indicate a gradational change*)
(4) Soil Moisture
(5) Matrix Soil Constituents (Gravel, Sand, Fines)
  └► Proportion (*by weight*), particle size, plasticity of fines, angularity, etc.
(6) Non-Matrix Soil Materials and Proportions (*by volume*)
(7) Other Descriptive Information (Unusual Odor, Structure, Texture, etc.)
(8) [Geologic Formation Name or Soil Survey Unit]

SPT N-VALUE CORRELATIONS

Consistency	SPT N-Value	Apparent Density	SPT N-Value
Very soft	0 - 2	Very loose	0 - 5
Soft	2 - 4	Loose	5 - 10
Medium stiff	4 - 8	Medium dense	10 - 30
Stiff	8 - 15	Dense	30 - 50
Very stiff	15 - 30	Very dense	> 50
Hard	> 30		

SOIL MOISTURE

Dry..... Apparent absence of moisture; dry to the touch.
Moist..... Damp but no visible water.
Wet..... Visible free water; saturated.

PROPORTIONS / PERCENTAGES

Proportions of gravel, sand, and fines (excluding cobbles, boulders, and other constituents) are stated in the following terms indicating a range of percentages by weight (to nearest 5%) of the minus 3-in. soil fraction and add up to 100%.

Mostly ..... 50% - 100%
Some ..... 30% - 45%
Little ..... 15% - 25%
Few ..... 5% - 10%
Trace..... Less than 5%

Proportions of cobbles, boulders, and other non-matrix soil materials including artificial debris, roots, plant fibers, etc. are stated in the following terms indicating a range of percentages by volume (to the nearest 5%) of the total soil.

Numerous ..... 40% - 50%
Common ..... 25% - 35%
Occasional ..... 10% - 20%
Trace..... Less than 5%

PLASTICITY (FINES ONLY)

Non-plastic.....Dry specimen ball falls apart easily. Cannot be rolled into thread at any moisture content.
Low.....Dry specimen ball easily crushed with fingers. Can be rolled into 1/8-in. thread with some difficulty.
Medium.....Difficult to crush dry specimen ball with fingers. Easily rolled into 1/8-in. thread.
High.....Cannot crush dry specimen ball with fingers. Easily rolled and re-rolled into 1/8-in. thread.

COBBLES AND BOULDERS

Cobbles - Particles of rock that will pass a 12-in. square opening and be retained on a 3-in. sieve.

Boulders - Particles of rock that will not pass a 12-in. square opening.

Note: Where the percentage (by volume) of cobbles and/or boulders cannot be accurately or reliably estimated, the terms "with cobbles", "with boulders", or "with cobbles and boulders" may be used to indicate observed or inferred presence.

Weston & Sampson

WSE Project: ENG24-1552

Department of Public Works
17 Town Hall Road, Truro, MA

BORING ID: B-1

CONTRACTOR:	**Desmond Well Drilling, Inc.**	BORING LOCATION:	**See Attached Figure**	DATE START:	**April 16, 2025**
FOREMAN:	**Pat Desmond**	ADVANCE METHOD:	**Hollow-Stem Auger Drilling**	DATE FINISH:	**April 16, 2025**
LOGGED BY:	**Aaron Chabot**	AUGER DIAMETER:	**4-1/4" ID (Stem), 7-5/8" OD (Flights)**	GROUND EL:	**121.0 ± (NAVD88)**
CHECKED BY:	**Stephen Spink**	SUPPORT CASING:	**N/A**	FINAL DEPTH:	**39.0 ft.**
EQUIPMENT:	**CME 45, Truck Mounted**	CORING METHOD:	**N/A**	GRID COORDS:	**N:2828052.0 ± / E:1048383.8 ±**
SPT HAMMER:	**Automatic (140-lb.)**	BACKFILL MATERIAL:	**Drill Cuttings**	GRID SYSTEM:	**NAD83 State Plane (MA)**

DEPTH BELOW GROUND SURFACE [VERTICAL FT.]	SAMPLE TYPE GRAPHIC	SAMPLE ID NUMBER AND RECOVERY RATIO [IN./IN.]	SPT BLOWS / 6 IN. (OR) CORE RATE / 12 IN. [MIN.]	GEOTECHNICAL TEST DATA (● N-Value, Raw (bpf); ⊠ Organic Content (%); ⊕ Moisture Content (%); ▶ Plastic Limit, PL (%); ◀ Liquid Limit, LL (%))	STRATIGRAPHY LOG	STRATUM IDENTIFICATION AND DESCRIPTION	ELEVATION SCALE SHOWN TO NEAREST FT.	REMARKS, OTHER TESTS, AND INSTALLATIONS
						Surface: Bare soil, no vegetation.		Note: Values in brackets preceeding a remark indicate depth below ground surface (in feet) corresponding to the remark.
		S-1 21/24	2 3 3 3	● 6		**Poorly graded sand with silt (SP-SM)** - Very loose to loose; brown; moist; mostly fine to medium SAND, few fine gravel, few non plastic fines; trace asphalt. **[FILL]**		
		S-2 12/24	2 2 2 1	● 4				[3.0] GC: 9%, SC: 83%, FC: 8%
5		S-3 14/24	1 1 1 2	● 2			116	
		S-4 19/24	2 2 1 2	● 3				
		S-5 16/24	1 1 1 1	● 2		**Silty sand (SM)** - Very loose; brown; moist; mostly fine to medium SAND, little non plastic fines, few fine gravel; trace wood. **[FILL]**		
10		S-6 18/24	1 2 1 1	● 3		**Poorly graded sand with silt (SP-SM)** - Very loose to loose; brown; moist; mostly fine to medium SAND, few fine gravel, few non plastic fines; trace debris (ceramic, glass). **[FILL]**	111	
		S-7 18/24	1 2 3 4	● 5				
		S-8 12/24	3 4 5 7	● 9		**Poorly graded sand with gravel (SP)** - Loose; tan with orange; moist; mostly fine to medium SAND, little fine to coarse gravel, trace non plastic fines.		
15							106	
		S-9 18/24	3 3 2 3	● 5		**Poorly graded sand (SP)** - Loose to medium dense; tan; moist; mostly fine to medium SAND, trace non plastic fines, trace fine gravel.		[17.0] GC: 0%, SC: 98%, FC: 2%
20							101	
		S-10 15/24	5 7 8 9	● 15				

Refer to the attached index sheets for important information about this log including general notes, legends, and guidance on description methods and procedures.

Weston & Sampson

WSE Project: ENG24-1552

Department of Public Works
17 Town Hall Road, Truro, MA

BORING ID: B-1

DEPTH BELOW GROUND SURFACE [VERTICAL FT.]	SAMPLE TYPE GRAPHIC	SAMPLE ID NUMBER AND RECOVERY RATIO [IN./IN.]	SPT BLOWS / 6 IN. (OR) CORE RATE / 12 IN. [MIN.]	GEOTECHNICAL TEST DATA	STRATIGRAPHY LOG	STRATUM IDENTIFICATION AND DESCRIPTION	ELEVATION SCALE SHOWN TO NEAREST FT.	REMARKS, OTHER TESTS, AND INSTALLATIONS
				● N-Value, Raw (bpf) ⊠ Organic Content (%) 10 20 30 40 ⊕ Moisture Content (%) ▶ Plastic Limit, PL (%) ◀ Liquid Limit, LL (%) 25 50 75 100				Note: Values in brackets preceeding a remark indicate depth below ground surface (in feet) corresponding to the remark.
		S-11 19/24	4 4 5 8	9		**Poorly graded sand (SP)** - Loose; tan; moist; mostly fine to medium SAND, trace non plastic fines, trace fine gravel.		
30							91	
		S-12 19/24	5 7 7 11	14		**Poorly graded sand (SP)** - Medium dense; tan; moist; mostly fine to medium SAND, trace non plastic fines, trace fine gravel.		
35							86	
		S-13 15/24	4 7 9 11	16				
40							81	**Exploration ended at 39.0 ft.**
45							76	
50							71	

Refer to the attached index sheets for important information about this log including general notes, legends, and guidance on description methods and procedures.

Weston & Sampson

Department of Public Works
17 Town Hall Road, Truro, MA

BORING ID: B-2

WSE Project: ENG24-1552

CONTRACTOR:	Desmond Well Drilling, Inc.	BORING LOCATION:	See Attached Figure	DATE START:	April 16, 2025
FOREMAN:	Pat Desmond	ADVANCE METHOD:	Hollow-Stem Auger Drilling	DATE FINISH:	April 16, 2025
LOGGED BY:	Aaron Chabot	AUGER DIAMETER:	4-1/4" ID (Stem), 7-5/8" OD (Flights)	GROUND EL:	121.0 ± (NAVD88)
CHECKED BY:	Stephen Spink	SUPPORT CASING:	N/A	FINAL DEPTH:	39.0 ft.
EQUIPMENT:	CME 45, Truck Mounted	CORING METHOD:	N/A	GRID COORDS:	N:2828167.6 ± / E:1048540.8 ±
SPT HAMMER:	Automatic (140-lb.)	BACKFILL MATERIAL:	Drill Cuttings	GRID SYSTEM:	NAD83 State Plane (MA)

DEPTH BELOW GROUND SURFACE [VERTICAL FT.]	SAMPLE TYPE GRAPHIC	SAMPLE ID NUMBER AND RECOVERY RATIO [IN./IN.]	SPT BLOWS / 6 IN. (OR) CORE RATE / 12 IN. [MIN.]	GEOTECHNICAL TEST DATA (● N-Value, Raw (bpf); ⊠ Organic Content (%); ⊕ Moisture Content (%); ▶ Plastic Limit, PL (%); ◀ Liquid Limit, LL (%))	STRATIGRAPHY LOG	STRATUM IDENTIFICATION AND DESCRIPTION	ELEVATION SCALE SHOWN TO NEAREST FT.	REMARKS, OTHER TESTS, AND INSTALLATIONS
						Surface: Bare soil, no vegetation.		Note: Values in brackets preceeding a remark indicate depth below ground surface (in feet) corresponding to the remark.
		S-1 19/24	2 2 1 2	● 3		**Poorly graded sand with silt (SP-SM)** - Very loose; brown; moist; mostly fine to medium SAND, few fine gravel, few non plastic fines; trace asphalt. **[FILL]**		
		S-2 13/24	2 1 2 2	● 3		**Silty sand (SM)** - Very loose; brown; moist; mostly fine to medium SAND, little non plastic fines; trace roots. **[FILL]**		
		S-3 14/24	2 2 4 4	● 6		**Silty sand (SM)** - Loose; orange; moist; mostly fine to medium SAND, little non plastic fines; trace roots. **[SUBSOIL]**		
5		S-4 19/24	2 3 2 4	● 5		**Poorly graded sand (SP)** - Loose; tan; moist; mostly fine to medium SAND, trace non plastic fines, trace fine gravel.	116	[7.0] GC: 1%, SC: 98%, FC: 2%
10							111	
		S-5 12/24	2 2 3 3	● 5				
15							106	
		S-6 19/24	2 2 2 2	● 4				
20							101	
		S-7 17/24	2 4 3 3	● 7		*Coarse gravel*		

Refer to the attached index sheets for important information about this log including general notes, legends, and guidance on description methods and procedures.

Weston & Sampson

WSE Project: ENG24-1552

Department of Public Works
17 Town Hall Road, Truro, MA

BORING ID: B-2

DEPTH BELOW GROUND SURFACE [VERTICAL FT.]	SAMPLE TYPE GRAPHIC	SAMPLE ID NUMBER AND RECOVERY RATIO [IN./IN.]	SPT BLOWS / 6 IN. (OR) CORE RATE / 12 IN. [MIN.]	GEOTECHNICAL TEST DATA	STRATIGRAPHY LOG	STRATUM IDENTIFICATION AND DESCRIPTION	ELEVATION SCALE SHOWN TO NEAREST FT.	REMARKS, OTHER TESTS, AND INSTALLATIONS
				● N-Value, Raw (bpf) ⊠ Organic Content (%) 10 20 30 40 ⊕ Moisture Content (%) ▶ Plastic Limit, PL (%) ◀ Liquid Limit, LL (%) 25 50 75 100				Note: Values in brackets preceeding a remark indicate depth below ground surface (in feet) corresponding to the remark.
		S-8 20/24	4 5 5 6	● 10		**Poorly graded sand (SP)** - Loose to medium dense; tan; moist; mostly fine to medium SAND, trace non plastic fines, trace fine gravel.		
30							91	
		S-9 20/24	2 4 4 4	● 8				
35							86	
		S-10 13/24	5 7 10 12	● 17				
40							81	**Exploration ended at 39.0 ft.**
45							76	
50							71	

Refer to the attached index sheets for important information about this log including general notes, legends, and guidance on description methods and procedures.

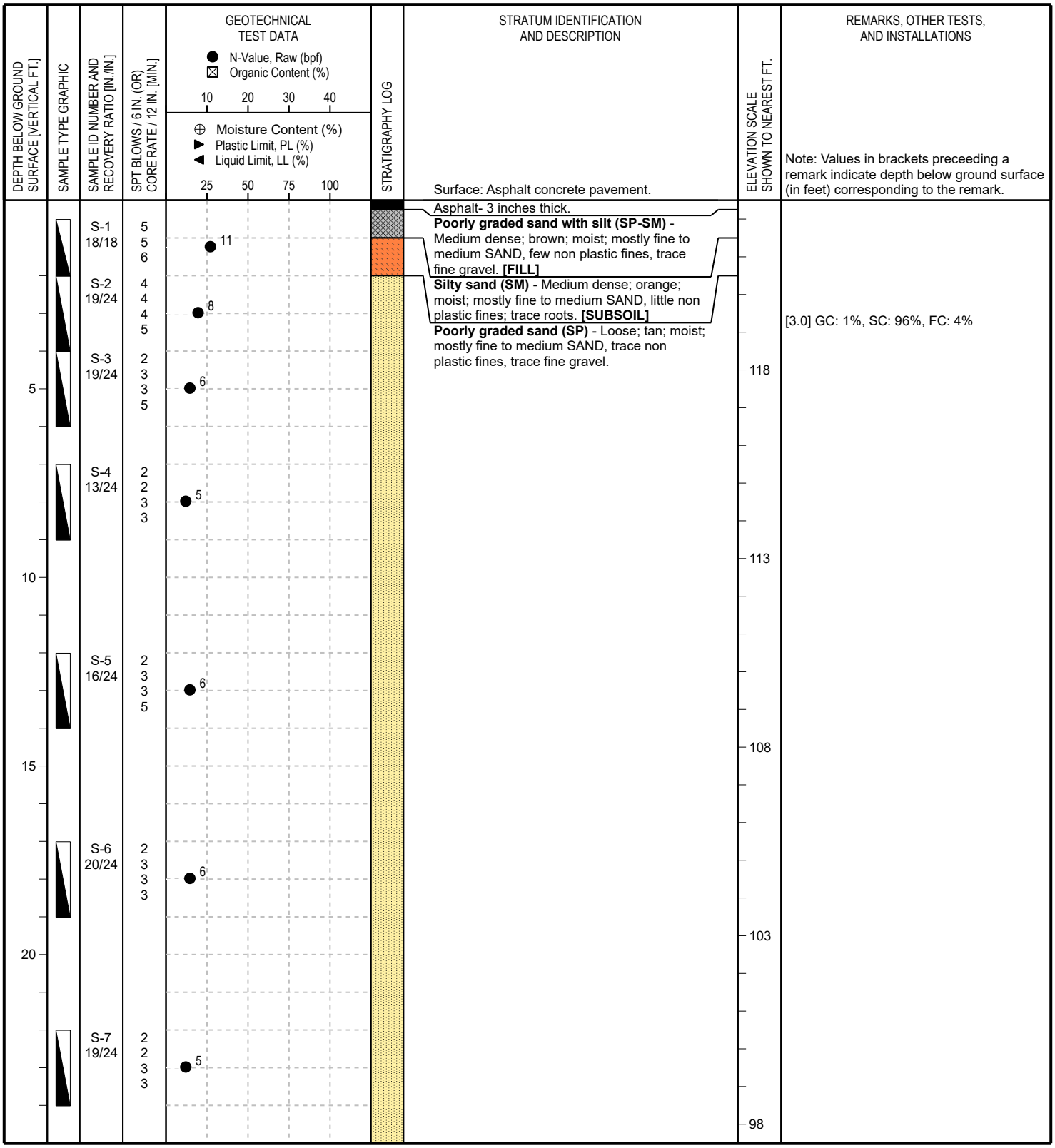
Weston & Sampson

Department of Public Works
17 Town Hall Road, Truro, MA

BORING ID: B-3

WSE Project: ENG24-1552

CONTRACTOR:	Desmond Well Drilling, Inc.	BORING LOCATION:	See Attached Figure	DATE START:	April 15, 2025
FOREMAN:	Pat Desmond	ADVANCE METHOD:	Hollow-Stem Auger Drilling	DATE FINISH:	April 15, 2025
LOGGED BY:	Aaron Chabot	AUGER DIAMETER:	4-1/4" ID (Stem), 7-5/8" OD (Flights)	GROUND EL:	122.5 ± (NAVD88)
CHECKED BY:	Stephen Spink	SUPPORT CASING:	N/A	FINAL DEPTH:	39.0 ft.
EQUIPMENT:	CME 45, Truck Mounted	CORING METHOD:	N/A	GRID COORDS:	N:2828056.7 ± / E:1048574.5 ±
SPT HAMMER:	Automatic (140-lb.)	BACKFILL MATERIAL:	Drill Cuttings and Asphalt Patch	GRID SYSTEM:	NAD83 State Plane (MA)



Refer to the attached index sheets for important information about this log including general notes, legends, and guidance on description methods and procedures.

Weston & Sampson

WSE Project: ENG24-1552

Department of Public Works
17 Town Hall Road, Truro, MA

BORING ID: B-3

DEPTH BELOW GROUND SURFACE [VERTICAL FT.]	SAMPLE TYPE GRAPHIC	SAMPLE ID NUMBER AND RECOVERY RATIO [IN./IN.]	SPT BLOWS / 6 IN. (OR) CORE RATE / 12 IN. [MIN.]	GEOTECHNICAL TEST DATA	STRATIGRAPHY LOG	STRATUM IDENTIFICATION AND DESCRIPTION	ELEVATION SCALE SHOWN TO NEAREST FT.	REMARKS, OTHER TESTS, AND INSTALLATIONS
				● N-Value, Raw (bpf) ⊠ Organic Content (%) 10 20 30 40 ⊕ Moisture Content (%) ▶ Plastic Limit, PL (%) ◀ Liquid Limit, LL (%) 25 50 75 100				Note: Values in brackets preceeding a remark indicate depth below ground surface (in feet) corresponding to the remark.
		S-8 19/24	4 5 5 4	● 10		**Poorly graded sand (SP)** - Medium dense; tan; moist; mostly fine to medium SAND, trace non plastic fines, trace fine gravel.		
30		S-9 20/24	3 5 6 6	● 11			93 88	
35		S-10 18/24	5 8 8 12	● 16			83	**Exploration ended at 39.0 ft.**
40							78	
45							73	
50								

Refer to the attached index sheets for important information about this log including general notes, legends, and guidance on description methods and procedures.

Weston & Sampson

Department of Public Works
17 Town Hall Road, Truro, MA

BORING ID: B-4

WSE Project: ENG24-1552

CONTRACTOR:	Desmond Well Drilling, Inc.	BORING LOCATION:	See Attached Figure	DATE START:	April 15, 2025
FOREMAN:	Pat Desmond	ADVANCE METHOD:	Hollow-Stem Auger Drilling	DATE FINISH:	April 15, 2025
LOGGED BY:	Aaron Chabot	AUGER DIAMETER:	4-1/4" ID (Stem), 7-5/8" OD (Flights)	GROUND EL:	124.0 ± (NAVD88)
CHECKED BY:	Stephen Spink	SUPPORT CASING:	N/A	FINAL DEPTH:	34.0 ft.
EQUIPMENT:	CME 45, Truck Mounted	CORING METHOD:	N/A	GRID COORDS:	N:2827922.3 ± / E:1048496.1 ±
SPT HAMMER:	Automatic (140-lb.)	BACKFILL MATERIAL:	Drill Cuttings	GRID SYSTEM:	NAD83 State Plane (MA)

DEPTH BELOW GROUND SURFACE [VERTICAL FT.]	SAMPLE TYPE GRAPHIC	SAMPLE ID NUMBER AND RECOVERY RATIO [IN./IN.]	SPT BLOWS / 6 IN. (OR) CORE RATE / 12 IN. [MIN.]	GEOTECHNICAL TEST DATA (N-Value, Raw (bpf); Organic Content (%); Moisture Content (%); Plastic Limit, PL (%); Liquid Limit, LL (%))	STRATIGRAPHY LOG	STRATUM IDENTIFICATION AND DESCRIPTION	ELEVATION SCALE SHOWN TO NEAREST FT.	REMARKS, OTHER TESTS, AND INSTALLATIONS
						Surface: Grass area.		
		S-1 22/24	4 2 3 2	5		Topsoil- 4 inches thick.		
						Poorly graded sand with silt and gravel (SP-SM) - Loose; brown; moist; mostly fine to medium SAND, little fine to coarse gravel, few non plastic fines. **[FILL]**		
		S-2 17/24	3 2 2 3	4		**Silty sand (SM)** - Loose; orange; moist; mostly fine to medium SAND, little non plastic fines; trace roots. **[SUBSOIL]**		
		S-3 16/24	2 3 4 4	7		**Poorly graded sand (SP)** - Loose to medium dense; tan; moist; mostly fine to medium SAND, trace non plastic fines, trace fine gravel.		
5							119	
		S-4 18/24	2 4 4 5	8				
10							114	
		S-5 15/24	3 4 7 9	11				
15							109	
		S-6 18/24	2 4 4 5	8		**Poorly graded sand (SP)** - Loose; tan; moist; mostly fine to medium SAND, trace non plastic fines, trace fine gravel.		
20							104	
		S-7 18/24	2 4 3 4	7				
		S-8 19/24	3 3					

Note: Values in brackets preceeding a remark indicate depth below ground surface (in feet) corresponding to the remark.

Weston & Sampson

WSE Project: ENG24-1552

Department of Public Works
17 Town Hall Road, Truro, MA

BORING ID: B-4

DEPTH BELOW GROUND SURFACE [VERTICAL FT.]	SAMPLE TYPE GRAPHIC	SAMPLE ID NUMBER AND RECOVERY RATIO [IN./IN.]	SPT BLOWS / 6 IN. (OR) CORE RATE / 12 IN. [MIN.]	GEOTECHNICAL TEST DATA	STRATIGRAPHY LOG	STRATUM IDENTIFICATION AND DESCRIPTION	ELEVATION SCALE SHOWN TO NEAREST FT.	REMARKS, OTHER TESTS, AND INSTALLATIONS
			2 3			**Poorly graded sand (SP)** - Loose; tan; moist; mostly fine to medium SAND, trace non plastic fines, trace fine gravel.		
		S-9 18/24	6 11 13 14	24		**Poorly graded sand (SP)** - Medium dense; tan; moist; mostly fine to medium SAND, trace non plastic fines, trace fine gravel.		
30							94	
		S-10 18/24	7 9 11 10	20				**Exploration ended at 34.0 ft.**
35							89	
40							84	
45							79	
50							74	

GEOTECHNICAL TEST DATA
- ● N-Value, Raw (bpf)
- ⊠ Organic Content (%)
- 10 20 30 40
- ⊕ Moisture Content (%)
- ▶ Plastic Limit, PL (%)
- ◀ Liquid Limit, LL (%)
- 5 25 50 75 100

Note: Values in brackets preceeding a remark indicate depth below ground surface (in feet) corresponding to the remark.

Refer to the attached index sheets for important information about this log including general notes, legends, and guidance on description methods and procedures.

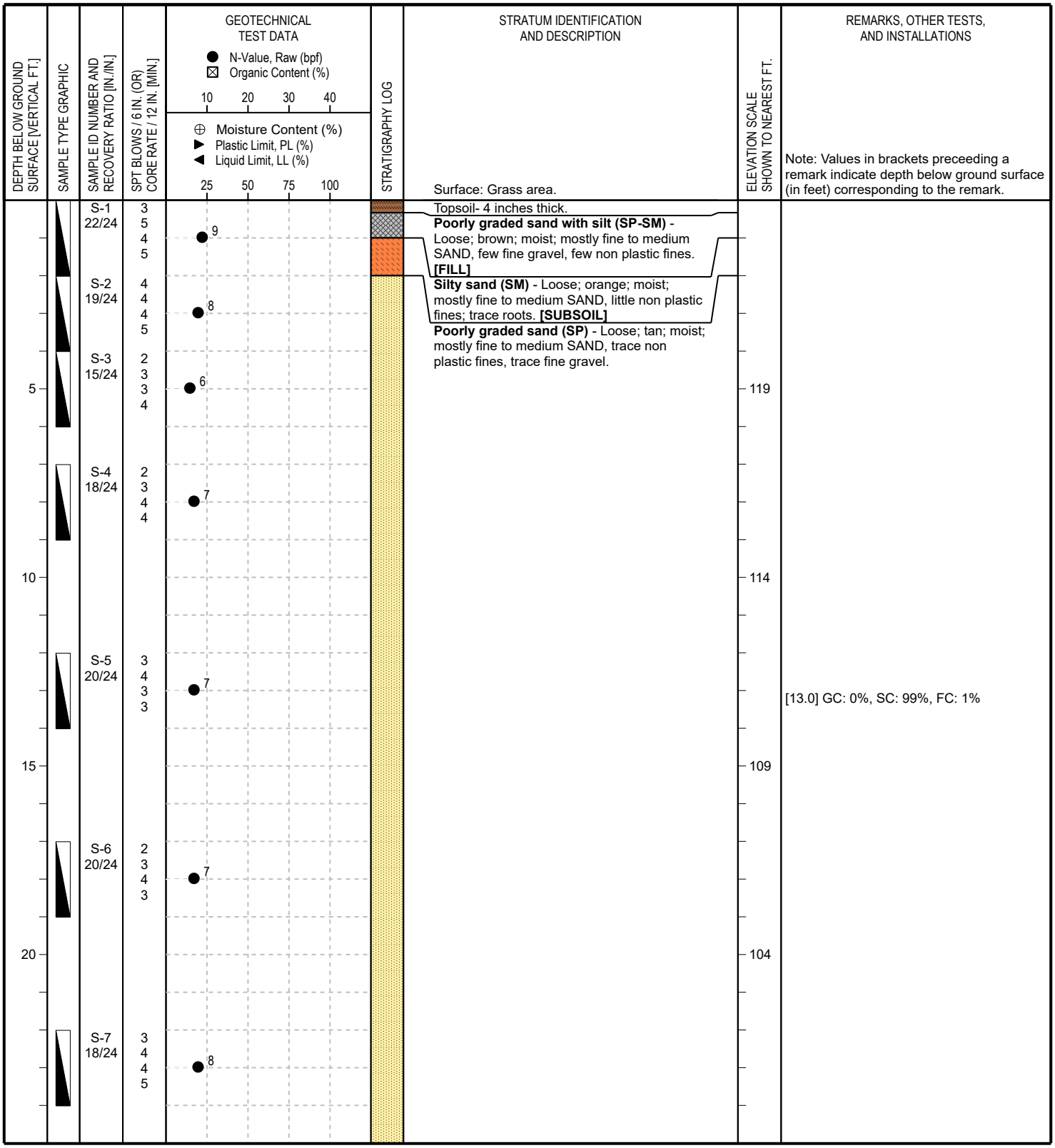
Weston & Sampson

Department of Public Works
17 Town Hall Road, Truro, MA

BORING ID: B-5

WSE Project: ENG24-1552

CONTRACTOR:	Desmond Well Drilling, Inc.	BORING LOCATION:	See Attached Figure	DATE START:	April 15, 2025
FOREMAN:	Pat Desmond	ADVANCE METHOD:	Hollow-Stem Auger Drilling	DATE FINISH:	April 15, 2025
LOGGED BY:	Aaron Chabot	AUGER DIAMETER:	4-1/4" ID (Stem), 7-5/8" OD (Flights)	GROUND EL:	124.0 ± (NAVD88)
CHECKED BY:	Stephen Spink	SUPPORT CASING:	N/A	FINAL DEPTH:	39.0 ft.
EQUIPMENT:	CME 45, Truck Mounted	CORING METHOD:	N/A	GRID COORDS:	N:2827852.4 ± / E:1048544.3 ±
SPT HAMMER:	Automatic (140-lb.)	BACKFILL MATERIAL:	Drill Cuttings	GRID SYSTEM:	NAD83 State Plane (MA)



Refer to the attached index sheets for important information about this log including general notes, legends, and guidance on description methods and procedures.

Weston & Sampson

WSE Project: ENG24-1552

Department of Public Works
17 Town Hall Road, Truro, MA

BORING ID: B-5

DEPTH BELOW GROUND SURFACE [VERTICAL FT.]	SAMPLE TYPE GRAPHIC	SAMPLE ID NUMBER AND RECOVERY RATIO [IN./IN.]	SPT BLOWS / 6 IN. (OR) CORE RATE / 12 IN. [MIN.]	GEOTECHNICAL TEST DATA	STRATIGRAPHY LOG	STRATUM IDENTIFICATION AND DESCRIPTION	ELEVATION SCALE SHOWN TO NEAREST FT.	REMARKS, OTHER TESTS, AND INSTALLATIONS
				● N-Value, Raw (bpf) ⊠ Organic Content (%) 10 20 30 40 ⊕ Moisture Content (%) ▶ Plastic Limit, PL (%) ◀ Liquid Limit, LL (%) 25 50 75 100				Note: Values in brackets preceeding a remark indicate depth below ground surface (in feet) corresponding to the remark.
		S-8 19/24	5 6 5 7	11		**Poorly graded sand (SP)** - Loose to medium dense; tan; moist; mostly fine to medium SAND, trace non plastic fines, trace fine gravel.		
30		S-9 20/24	4 5 5 7	10			94	
		S-10 16/24	5 5 5 5	10				
35		S-11 18/24	3 4 5 7	9			89	
								Exploration ended at 39.0 ft.
40							84	
45							79	
50							74	

Refer to the attached index sheets for important information about this log including general notes, legends, and guidance on description methods and procedures.

Weston & Sampson

Department of Public Works
17 Town Hall Road, Truro, MA

BORING ID: B-6

WSE Project: ENG24-1552

CONTRACTOR:	Desmond Well Drilling, Inc.	BORING LOCATION:	See Attached Figure	DATE START:	April 16, 2025
FOREMAN:	Pat Desmond	ADVANCE METHOD:	Hollow-Stem Auger Drilling	DATE FINISH:	April 16, 2025
LOGGED BY:	Aaron Chabot	AUGER DIAMETER:	4-1/4" ID (Stem), 7-5/8" OD (Flights)	GROUND EL:	122.0 ± (NAVD88)
CHECKED BY:	Stephen Spink	SUPPORT CASING:	N/A	FINAL DEPTH:	29.0 ft.
EQUIPMENT:	CME 45, Truck Mounted	CORING METHOD:	N/A	GRID COORDS:	N:2827945.1 ± / E:1048637.9 ±
SPT HAMMER:	Automatic (140-lb.)	BACKFILL MATERIAL:	Drill Cuttings and Asphalt Patch	GRID SYSTEM:	NAD83 State Plane (MA)

DEPTH BELOW GROUND SURFACE [VERTICAL FT.]	SAMPLE TYPE GRAPHIC	SAMPLE ID NUMBER AND RECOVERY RATIO [IN./IN.]	SPT BLOWS / 6 IN. (OR) CORE RATE / 12 IN. [MIN.]	GEOTECHNICAL TEST DATA (N-Value, Raw (bpf); Organic Content (%); Moisture Content (%); Plastic Limit, PL (%); Liquid Limit, LL (%))	STRATIGRAPHY LOG	STRATUM IDENTIFICATION AND DESCRIPTION	ELEVATION SCALE SHOWN TO NEAREST FT.	REMARKS, OTHER TESTS, AND INSTALLATIONS
						Surface: Asphalt concrete pavement.		Note: Values in brackets preceeding a remark indicate depth below ground surface (in feet) corresponding to the remark.
						Asphalt- 3 inches thick.		
		S-1 17/18	5 6 6	12		**Poorly graded sand with silt and gravel (SP-SM)** - Medium dense; brown; moist; mostly fine to medium SAND, little fine gravel, few non plastic fines. **[FILL]**		
		S-2 19/24	4 5 5 5	10		**Poorly graded sand (SP)** - Loose to medium dense; tan; moist; mostly fine to medium SAND, trace non plastic fines, trace fine gravel.		
5		S-3 17/24	2 3 4 5	7			117	
		S-4 19/24	2 4 6 7	10		**Poorly graded sand (SP)** - Medium dense; tan; moist; mostly fine to medium SAND, trace non plastic fines, trace fine gravel.		[8.0] GC: 1%, SC: 98%, FC: 1%
10							112	
		S-5 19/24	5 7 8 9	15				
15							107	
		S-6 15/24	3 5 5 8	10				
20							102	
		S-7 20/24	4 5 5 6	10				

Refer to the attached index sheets for important information about this log including general notes, legends, and guidance on description methods and procedures.

Weston & Sampson

WSE Project: ENG24-1552

Department of Public Works
17 Town Hall Road, Truro, MA

BORING ID: B-6

DEPTH BELOW GROUND SURFACE [VERTICAL FT.]	SAMPLE TYPE GRAPHIC	SAMPLE ID NUMBER AND RECOVERY RATIO [IN./IN.]	SPT BLOWS / 6 IN. (OR) CORE RATE / 12 IN. [MIN.]	GEOTECHNICAL TEST DATA	STRATIGRAPHY LOG	STRATUM IDENTIFICATION AND DESCRIPTION	ELEVATION SCALE SHOWN TO NEAREST FT.	REMARKS, OTHER TESTS, AND INSTALLATIONS
				● N-Value, Raw (bpf) ⊠ Organic Content (%) 10 20 30 40 ⊕ Moisture Content (%) ▶ Plastic Limit, PL (%) ◀ Liquid Limit, LL (%) 25 50 75 100				Note: Values in brackets preceeding a remark indicate depth below ground surface (in feet) corresponding to the remark.
		S-8 16/24	5 11 14 12	25		**Poorly graded sand (SP)** - Medium dense; tan; moist; mostly fine to medium SAND, trace non plastic fines, trace fine gravel.		
30							92	**Exploration ended at 29.0 ft.**
35							87	
40							82	
45							77	
50							72	

Refer to the attached index sheets for important information about this log including general notes, legends, and guidance on description methods and procedures.

APPENDIX C

Geotechnical Laboratory Test Results

Thielsch
DIVISION OF THE RISE GROUP

195 Frances Avenue
Cranston RI, 02910
Phone: (401)-467-6454
Fax: (401)-467-2398
cts.thielsch.com
Let's Build a Solid Foundation

Client Information:		Project Information:	
Weston & Sampson		**Truro DPW**	
Foxborough, MA		**17 Town Hall Road, Truro MA**	
(508) 698-3034		Project Number:	ENG24-1552
Project Contact:	Stephen Spink	Summary Page:	1 of 1
Collected By:	AJC	Report Date:	5/28/2025

LABORATORY TESTING DATA SHEET, Report No.: 7425-E-163

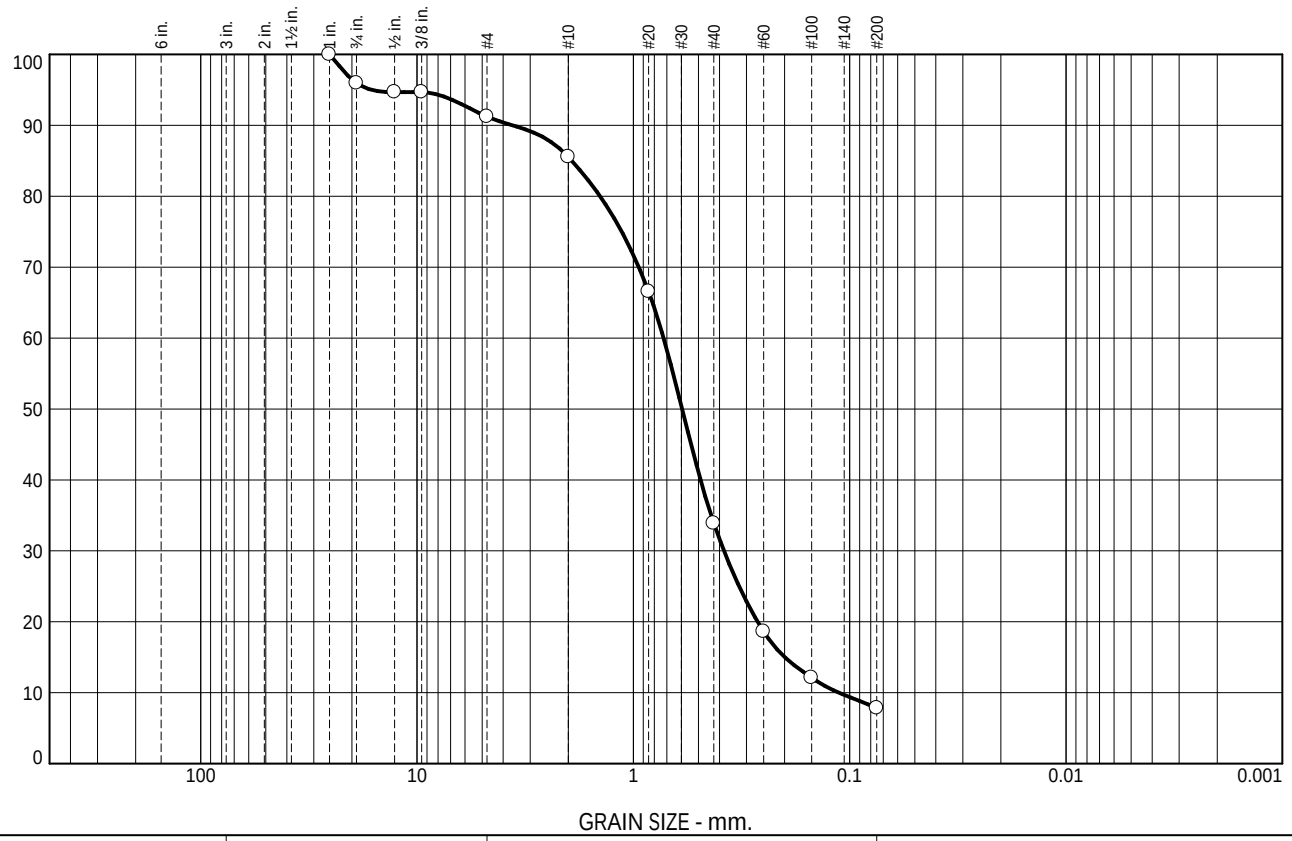
Boring No.	Sample ID	Depth (ft)	Laboratory No.	Identification Tests									Proctor / CBR / Permeability Tests								Laboratory Log and Soil Description
				As Rcvd Moisture Content %	LL %	PL %	OD LL	Gravel %	Sand %	Fines %	Org. %	pH	g_d MAX (pcf) W_{opt} (%)	g_d MAX (pcf) W_{opt} (%) (Corr.)	Dry unit wt. (pcf)	Test Moisture Content %	Target Test Setup as % of Proctor	CBR @ 0.1"	CBR @ 0.2"	Permeability cm/sec	
				D2216	D4318			D6913			D2974	D4792	D1557								
B-1	S-2	2-4	25-S-1782					8.8	83.4	7.8											Brown f-m SAND, trace f-c Gravel, trace Silt
B-1	S-9	16-18	25-S-1783					0.2	98.3	1.5											Light Brown f-m SAND, trace Silt
B-2	S-4	6-8	25-S-1784					0.7	97.7	1.6											Light Brown f-m SAND, trace Silt
B-3	S-2	2-4	25-S-1785					1.0	95.5	3.5											Light Brown f-m SAND, trace Silt, trace fine Gravel
B-5	S-5	12-14	25-S-1786					0.3	98.6	1.1											Light Brown f-m SAND, trace Silt
B-6	S-4	7-9	25-S-1787					0.7	98.2	1.1											Light Brown f-m SAND, trace Silt

Date Received: **5/20/2025** Reviewed By: Date Reviewed: **5/28/2025**

This report only relates to items inspect and/or tested. No warranty, expressed or implied, is made.
This report shall not be reproduced, except in full, without prior written approval from the Agency, as defined in ASTM E329.

These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspect and/or tested. No warranty, expressed or implied, is made.

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	4.1	4.7	5.7	51.6	26.1	7.8	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
3/4"	95.9		
1/2"	94.7		
3/8"	94.7		
#4	91.2		
#10	85.5		
#20	66.6		
#40	33.9		
#60	18.6		
#100	12.1		
#200	7.8		

* (no specification provided)

Soil Description

Brown f-m SAND, trace f-c Gravel, trace Silt

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 3.6105 D_{85}= 1.9265 D_{60}= 0.7252
D_{50}= 0.5952 D_{30}= 0.3813 D_{15}= 0.1995
D_{10}= 0.1123 C_u= 6.45 C_c= 1.78

Classification

USCS= SW-SM AASHTO= A-1-b

Remarks

Source of Sample: Boring Depth: 2-4'
Sample Number: B-1 / S-2

Date: 5.27.25

Thielsch Engineering Inc.

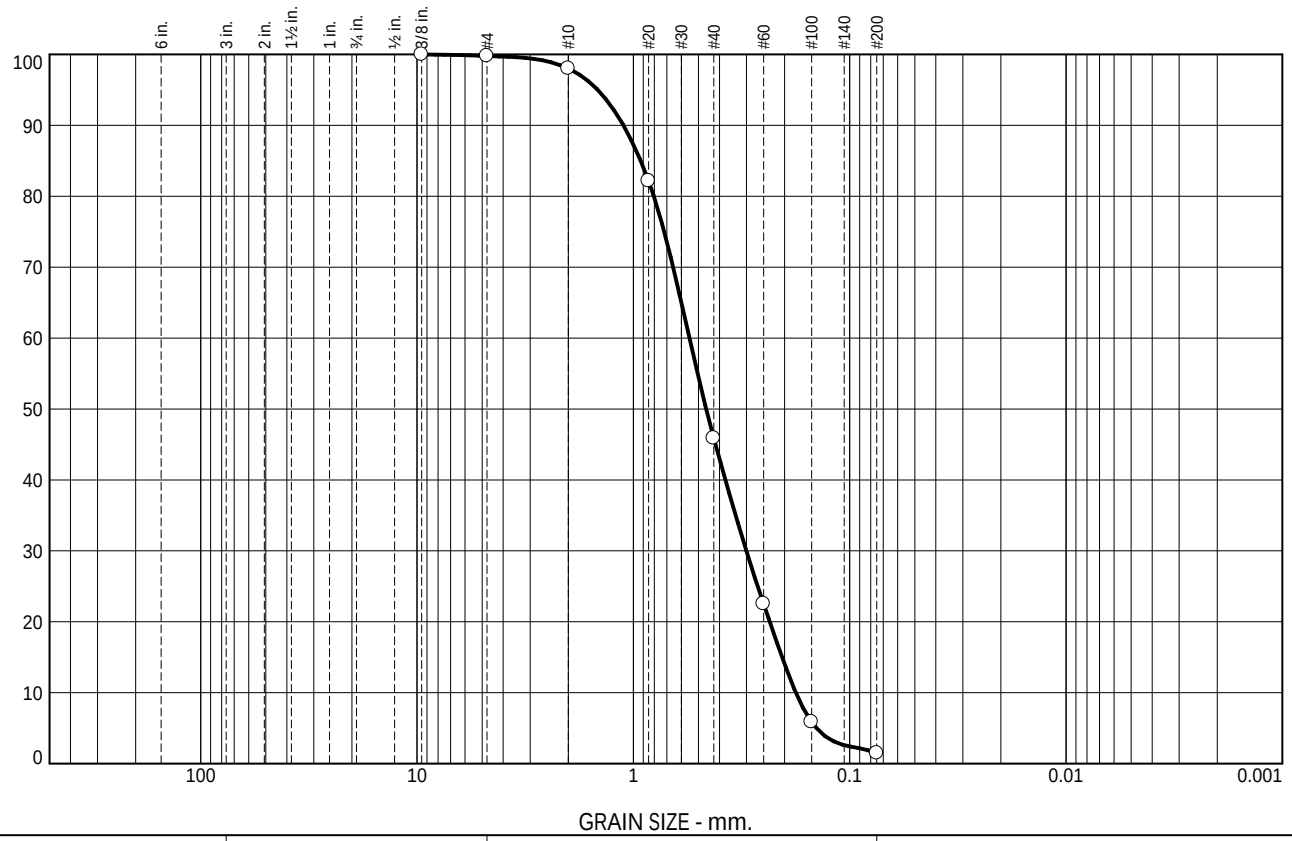
Cranston, RI

Client: Weston & Sampson
Project: Truro DPW
17 Town Hall Rd, Truro MA
Project No: ENG24-1552 Fig. 25-S-1782

Tested By: TG Checked By: Kris Roland

These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspect and/or tested. No warranty, expressed or implied, is made.

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.2	1.8	52.1	44.4	1.5	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8"	100.0		
#4	99.8		
#10	98.0		
#20	82.2		
#40	45.9		
#60	22.5		
#100	5.8		
#200	1.5		

* (no specification provided)

Source of Sample: Boring Depth: 16-18'
Sample Number: B-1 / S-9

Soil Description
Light Brown f-m SAND, trace Silt

Atterberg Limits
PL= NP LL= NV PI= NP

Coefficients
D_{90}= 1.1121 D_{85}= 0.9255 D_{60}= 0.5502
D_{50}= 0.4608 D_{30}= 0.3005 D_{15}= 0.2054
D_{10}= 0.1773 C_u= 3.10 C_c= 0.93

Classification
USCS= SP AASHTO= A-1-b

Remarks

Date: 5.27.25

Thielsch Engineering Inc.
Cranston, RI

Client: Weston & Sampson
Project: Truro DPW
17 Town Hall Rd, Truro MA
Project No: ENG24-1552 Fig. 25-S-1783

Tested By: TG Checked By: Kris Roland

These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspect and/or tested. No warranty, expressed or implied, is made.

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.7	3.1	54.4	40.2	1.6	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1/2"	100.0		
3/8"	99.7		
#4	99.3		
#10	96.2		
#20	77.9		
#40	41.8		
#60	15.5		
#100	6.7		
#200	1.6		

* (no specification provided)

Soil Description

Light Brown f-m SAND, trace Silt

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 1.3126 D_{85}= 1.0612 D_{60}= 0.5899
D_{50}= 0.4951 D_{30}= 0.3416 D_{15}= 0.2461
D_{10}= 0.1969 C_u= 3.00 C_c= 1.00

Classification

USCS= SP AASHTO= A-1-b

Remarks

Source of Sample: Boring Depth: 6-8'
Sample Number: B-2 / S-4

Date: 5.27.25

Thielsch Engineering Inc.

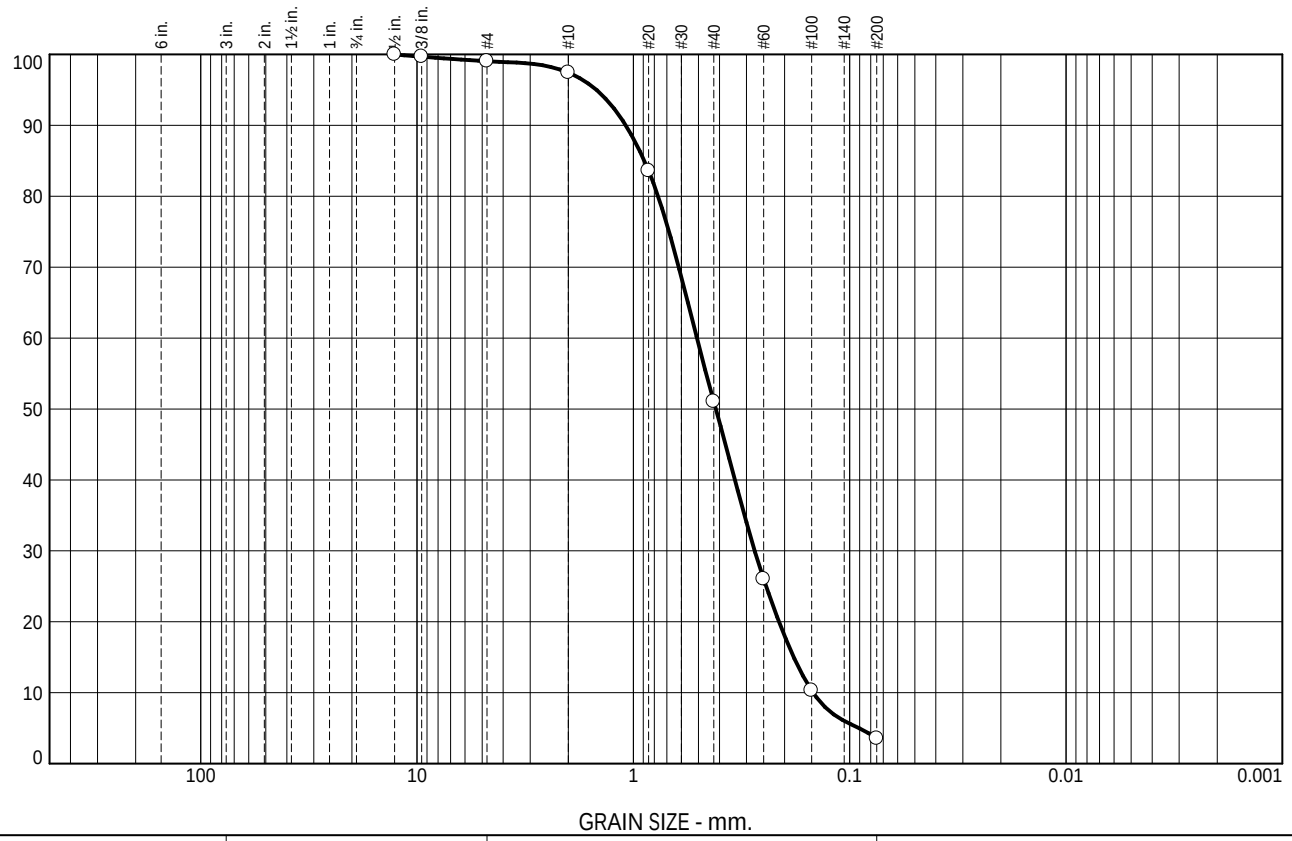
Cranston, RI

Client: Weston & Sampson
Project: Truro DPW
17 Town Hall Rd, Truro MA
Project No: ENG24-1552 Fig. 25-S-1784

Tested By: TG Checked By: Kris Roland

These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspect and/or tested. No warranty, expressed or implied, is made.

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.0	1.5	46.5	47.5	3.5	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1/2"	100.0		
3/8"	99.7		
#4	99.0		
#10	97.5		
#20	83.6		
#40	51.0		
#60	26.0		
#100	10.3		
#200	3.5		

* (no specification provided)

Soil Description

Light Brown f-m SAND, trace Silt, trace fine Gravel

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 1.0846 D_{85}= 0.8898 D_{60}= 0.5084
D_{50}= 0.4157 D_{30}= 0.2750 D_{15}= 0.1814
D_{10}= 0.1477 C_u= 3.44 C_c= 1.01

Classification

USCS= SP AASHTO= A-3

Remarks

Source of Sample: Boring Depth: 2-4'
Sample Number: B-3 / S-2

Date: 5.27.25

Thielsch Engineering Inc.

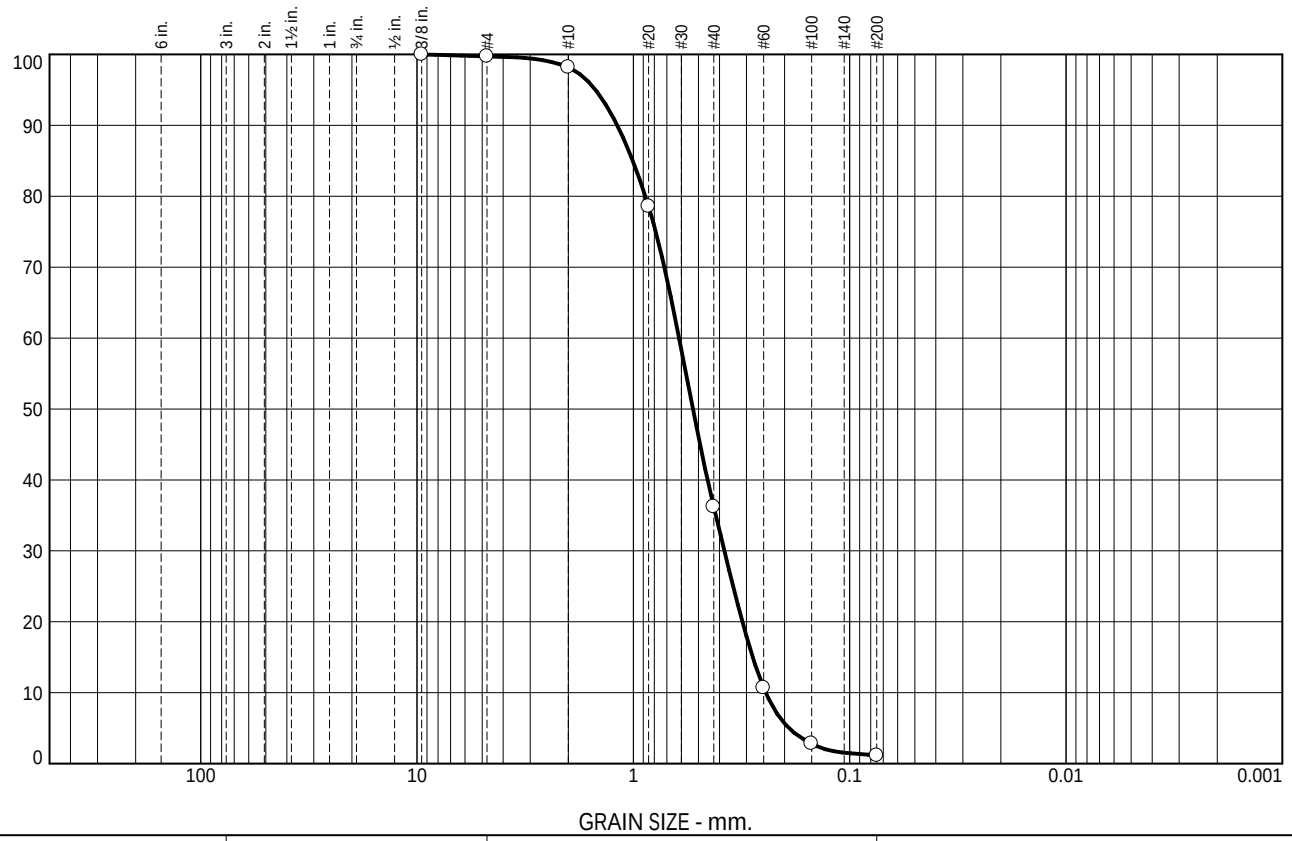
Cranston, RI

Client: Weston & Sampson
Project: Truro DPW
17 Town Hall Rd, Truro MA
Project No: ENG24-1552 Fig. 25-S-1785

Tested By: TG Checked By: Kris Roland

These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspect and/or tested. No warranty, expressed or implied, is made.

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.3	1.5	62.0	35.1	1.1	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8"	100.0		
#4	99.7		
#10	98.2		
#20	78.6		
#40	36.2		
#60	10.7		
#100	2.8		
#200	1.1		

* (no specification provided)

Soil Description

Light Brown f-m SAND, trace Silt

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 1.1871 D_{85}= 1.0066 D_{60}= 0.6148
D_{50}= 0.5304 D_{30}= 0.3796 D_{15}= 0.2809
D_{10}= 0.2445 C_u= 2.51 C_c= 0.96

Classification

USCS= SP AASHTO= A-1-b

Remarks

Source of Sample: Boring Depth: 12-14'
Sample Number: B-5 / S-5

Date: 5.27.25

Thielsch Engineering Inc.

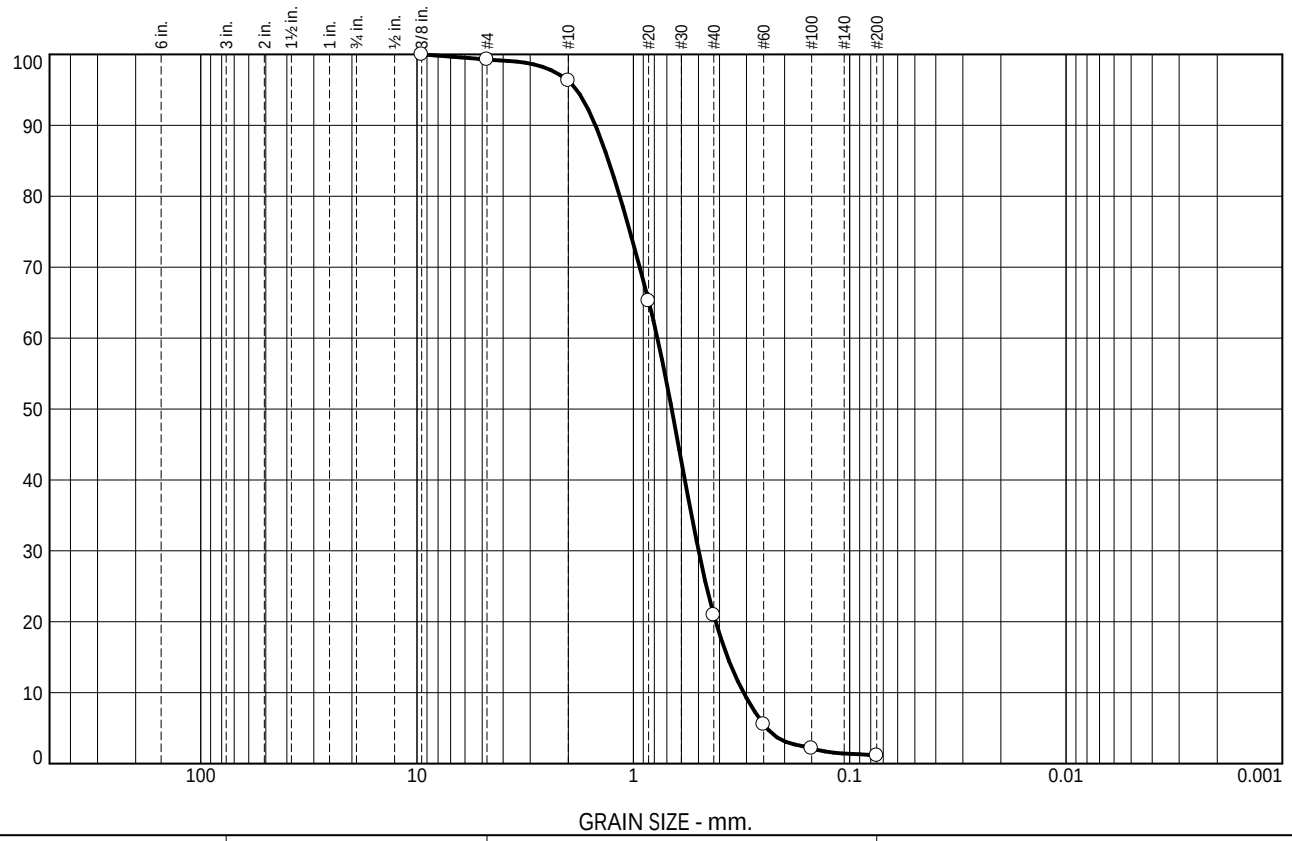
Cranston, RI

Client: Weston & Sampson
Project: Truro DPW
17 Town Hall Rd, Truro MA
Project No: ENG24-1552 Fig. 25-S-1786

Tested By: TG Checked By: Kris Roland

These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspect and/or tested. No warranty, expressed or implied, is made.

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.7	3.0	75.4	19.8	1.1	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8"	100.0		
#4	99.3		
#10	96.3		
#20	65.2		
#40	20.9		
#60	5.5		
#100	2.1		
#200	1.1		

* (no specification provided)

Soil Description

Light Brown f-m SAND, trace Silt

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 1.4980 D_{85}= 1.3029 D_{60}= 0.7736
D_{50}= 0.6652 D_{30}= 0.4995 D_{15}= 0.3669
D_{10}= 0.3097 C_u= 2.50 C_c= 1.04

Classification

USCS= SP AASHTO= A-1-b

Remarks

Source of Sample: Boring Depth: 7-9'
Sample Number: B-6 / S-4

Date: 05.27.25

Thielsch Engineering Inc.

Cranston, RI

Client: Weston & Sampson
Project: Truro DPW
17 Town Hall Rd, Truro MA
Project No: ENG24-1552 Fig. 25-S-1787

Tested By: TG Checked By: Kris Roland

APPENDIX D

"Important Information about This Geotechnical-Engineering Report," by GBA, Inc.

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept*

responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are not final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals' plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for information purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer's services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration. Confront the risk of moisture infiltration*** by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

GEOPROFESSIONAL BUSINESS ASSOCIATION

Telephone: 301/565-2733
e-mail: info@geoprofessional.org www.geoprofessional.org

Copyright 2019 by Geoprofessional Business Association (GBA). Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with GBA's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of GBA, and only for purposes of scholarly research or book review. Only members of GBA may use this document or its wording as a complement to or as an element of a report of any kind. Any other firm, individual, or other entity that so uses this document without being a GBA member could be committing negligent

Weston & Sampson
55 Walkers Brook Drive, Reading, MA 01867 (HQ)
Tel: 978.532.1900

May 29, 2025

Jarrod Cabral
DPW Director
17 Town Hall Road
Truro, MA 02666

RE: Report of Hazardous Building Materials Investigation
17 Town Hall Road
Truro, MA 02666

Dear Mr. Cabral,

INTRODUCTION

Weston & Sampson Engineers, Inc. (Weston & Sampson) is pleased to present this report of our Hazardous Building Materials Investigation (HBMI) services associated with the Truro Department of Public Works (DPW) building located at 17 Town Hall Road in Truro, Massachusetts (the Site). Our services were completed in accordance with our agreement. In response to the proposed renovation activities at the Site, Weston & Sampson performed a survey to identify asbestos-containing materials (ACMs), lead based paints/coatings, and other hazardous materials (OHMs) within the renovation area.

SITE DESCRIPTION

The Truro DPW is composed of three main structures each with distinct separate areas. The southernmost structure is a four-bay garage with an office and storage addition on the rear and two storage sheds on the West. The four-bay garage and additions share a roof with seemingly three types of shingles, only one of which being accessible to sample. The approximate footprint of the 4-bay garage with additions is 3,500 SF. In the center of site is a salt shed with a footprint of approximately 3,000 SF with two garages on either side, each with an approximate footprint of 1750 SF and shingled roofing on both the salt shed and garages. The Northernmost structure has an approximate footprint of 3,000 and is composed of six different buildings. Starting from West to East the buildings are as follows: Shop office, Shop, Two-bay garage, Shed, Office, and Office addition. The Two-bay garage has an EPDM roof while the others are shingled.

SURVEY RESULTS

Asbestos Survey

The asbestos survey was performed by Massachusetts-licensed asbestos inspector Mr. Caleb Pettigrew (license No.: AI901112) on May 9th, 2025. A total of 101 samples of suspect asbestos-containing materials were collected from 50 homogenous materials. We performed the bulk sampling in the subject area according to methods outlined in the U.S. Environmental Protection Agency (EPA) guidance document titled, "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Document No. 560/5-85/024). Samples were analyzed by EMSL Analytical, Inc. in Woburn, Massachusetts. The results of the sampling are summarized below.

Asbestos Sample Results

Client ID	Description	Location	Analytical Result (% Asbestos)
01A-B	Tan carpet mastic	Office Closet	NAD
02A-C	White leveling compound	Office Closet	NAD
03A-B	Wall sheetrock	Office Bathroom	NAD
04A-B	Joint compound	Office Bathroom	NAD
05A-B	Grey sink caulk	Office Bathroom	NAD
06A-B	Building paper	Office Exterior	NAD
07A-B	Tan caulk on door wood to concrete	2-Bay Garage Exterior	NAD
08A-B	White window glazing	2-Bay Garage Exterior	NAD
09A-B	White caulk on door wood to wood	2-Bay Garage Exterior	NAD
10A-B	White window glazing	2-Bay Garage Interior	NAD
11A-B	White window caulk	Shop Exterior	NAD
12A-B	White door caulk	Shop Office Exterior	NAD
13A-B	Building paper	Shop Office Exterior	NAD
14A-B	Red shingle	Shed Exterior	NAD
15A-B	Black foundation damp proofing	Salt Shed Garage Exterior	NAD
16A-B	Black rafter sealant	Salt Shed Garage Interior	NAD
17A-B	Roof shingle	Shed Exterior	NAD
18A-B	Grey caulk	Concrete Shed Exterior	NAD
19A-B	White window glazing	Concrete Shed Exterior	NAD
20A-B	White caulk	Concrete Shed Interior	NAD
21A-B	White window glazing	4-Bay Garage Exterior	NAD
22A-B	Corner white caulk	4-Bay Garage Exterior	NAD
23A-B	White window caulk	4-Bay Garage Exterior	NAD
24A-B	Roof shingle	Shed	NAD
25A-B	Expansion Joint	4-Bay Garage Interior	NAD
26A-B	Sink undercoat	4-Bay Garage Office	NAD
27A-B	Black mastic on wall	4-Bay Garage Office	NAD
28A-B	Sheetrock	4-Bay Garage Office	NAD
29A-B	Joint compound	4-Bay Garage Office	NAD
30A-B	Grey window caulk	4-Bay Garage Bathroom	NAD
31A-B	Sheetrock	4-Bay Garage Boiler Room	NAD
32A-B	Joint compound	4-Bay Garage Boiler Room	NAD

Client ID	Description	Location	Analytical Result (% Asbestos)
33A-B	Ceiling panel	4-Bay Garage Interior	NAD
34A-B	Black building paper	4-Bay Garage Attic	NAD
35A-B	Roof shingle	4-Bay Garage Exterior	NAD
36A-B	Roof paper	4-Bay Garage Exterior	NAD
37A-B	Roof shingle	Shop Office Shed	NAD
38A-B	White roof trim caulk	Shop/Shop Office Exterior	NAD
39A-B	Black caulk	Shop Exterior	NAD
40A-B	Roof shingle	Shop Office Exterior	NAD
41A-B	White caulk	Shop Office Exterior	NAD
42A-B	Roof shingle	Shop Exterior	NAD
43A-B	Tan seam sealant	Shop/2-Bay Garage Exterior	NAD
44A-B	Ceiling sheetrock	2-Bay Garage Interior	NAD
45A-B	Roof shingle	Office Exterior	NAD
46A-B	Roof paper	Office Exterior	NAD
47A-B	Roof shingle	Office Addition Exterior	NAD
48A-B	Roof paper	Office Addition Exterior	NAD
49A-B	Foundation damp proofing	TP-7 (4-Bay Garage Exterior)	NAD
50A-B	Addition foundation damp proofing	TP-7 (4-Bay Garage Exterior)	NAD

NAD=no asbestos detected

The EPA and Massachusetts Department of Environmental Protection (MassDEP), consider materials identified to contain greater than or equal to 1% asbestos to be ACMs. As shown in the tables above, none of the building materials sampled by Weston & Sampson contained asbestos exceeding 1%. According to MassDEP regulations, ACMs must be removed by a licensed contractor prior to any activity that would disturb the material.

Asbestos Limitations

Our survey was limited to the building area scheduled to be renovated. Our survey did not include an evaluation of materials of soils or underground materials that may be present at the Site. Limited exploratory demolition was performed to access potentially hidden materials. Other suspect ACMs may be present at the Site outside the survey area or within other building areas that may not have been accessible by Weston & Sampson during our survey. ACMs must be removed by a licensed contractor prior to any activity that would disturb the material. Weston & Sampson recommends that if any suspect materials are uncovered during demolition or renovation activities that were not identified during the survey, that the materials be sampled and analyzed for asbestos content prior to disturbance. This document is not intended to be nor will it suffice to serve as a bid document or specification.

Per MassDEP regulations, the owner/operator must maintain a copy of this written asbestos survey report at the subject facility for at least two years. If the facility is unstaffed or if it is demolished, the owner/operator must maintain a copy at their regular place of business.

Lead Paint Screening

As part of the HBMI, Weston & Sampson performed a lead paint screening of the site buildings. During the screening, we collected eight (8) paint chip samples from representative painted/coated building components for analysis via Atomic Absorption Spectrometry using method SW846-3050B. Samples were analyzed by EMSL Analytical, Inc. of Orlando, Florida.

The paint screening revealed that one of the paint chip samples collected from the renovation area contained levels of lead paint greater than the EPA residential standard of 0.50% lead by weight. However, the Occupational Health and Safety Administration (OSHA) Lead in Construction Standard 29 CFR 1926.62 considers *any* detectable level of lead to be a potential for exposure if dust is generated from disturbances of surfaces coated with paint containing lead.

Lead Paint Sample Results

Sample ID	Sample Description	Analytical Results (% lead by weight)
L1	Office Bathroom-Light blue wall paint	<0.0081 % wt
L2	**Office Exterior-White trim paint**	**11.9 % wt**
L3	2-Bay Garage Exterior-Grey/green paint	0.147 % wt
L4	Shop Office Exterior-Green paint	<0.0064 % wt
L5	Sale Shed Garage Exterior-Grey paint	<0.0064 % wt
L6	4-Bay Garage Exterior-Grey paint	0.0105 % wt
L7	4-Bay Garage Interior-Office white wall	<0.0064 % wt
L8	4-Bay Garage Interior-White paint	<0.0064 % wt

Regulatory Implications and Regulations

OSHA defines any detectable concentration of lead in paint as a potential lead exposure hazard to workers doing construction/demolition-type work on these surfaces as even small concentrations of lead can result in unacceptable employee exposures depending upon the method of removal and other workplace conditions. Since these conditions can vary greatly, the lead-in-construction standard was written to require exposure monitoring or the use of historical or objective data to ensure that employee exposures do not exceed the Action Level of 30 micrograms per cubic meter of air ($\mu g/m^3$). Historical data may be applied to some construction tasks involving lead.

OSHA requires that if coated surfaces with paint containing lead are impacted during demolition, then lead exposure monitoring must be performed by the contractor. Contractors and employers of staff who may disturb these materials are obligated to perform a 'negative exposure assessment' in accordance with OSHA regulations in order to document that, although minimal levels of lead are present in these materials, exposure to lead does not exceed the aforementioned OSHA Action Level.
OSHA states that until the employer performs an exposure assessment (or can supply prior data regarding the same type of work which may exempt them from the standard) and documents that employees are not exposed

above the permissible exposure limit (PEL) of greater than 50 µg/m3 of air, the employer must treat employees as if they were exposed above the PEL for the following operations:

- manual demolition of structures, manual scraping, manual sanding, and use of heat gun where lead-containing coatings or paints are present;
- abrasive blasting enclosure movement and removal;
- power tool cleaning;
- lead burning;
- using lead-containing mortar or spray painting with lead-containing paint;
- abrasive blasting, rivet busting, or welding, cutting, or burning on any structure where lead-containing coatings or paint are present;
- cleanup activities where dry expendable abrasive are used; and
- any other task the employer believes may cause exposure in excess of the PEL.

The contractor must provide respiratory protection, protective work clothing and equipment, change areas, hand washing facilities, biological monitoring, and training until an exposure assessment has determined that the work activity will result in an exposure below the PEL. Additional requirements under this standard include a written compliance program as well as record keeping.

Other Hazardous Materials

As part of the survey, Weston & Sampson performed a survey/inventory of potentially hazardous chemicals and mechanical equipment located within the survey areas that will require special handling and disposal prior to building renovation / demolition activities. The following hazardous materials were observed in the site buildings:

Material	Quantity
Fire extinguisher	10
6' Fluorescent bulb	30
4' Fluorescent bulb	120
Paint (5 Gallon)	10
Hydrophast paint (5 Gallon)	35
Adhesive (5 Gallon)	10
Varnish (2 Quarts)	10
Joint compound (2 Quarts)	10
Waste oil drum (55 Gallon)	1
Waste coolant drum (55 Gallon)	1

We appreciate the opportunity to assist you with this project. If you have any questions or require any additional information, please do not hesitate to contact us at (978) 532-1900.

Very truly yours,

WESTON & SAMPSON ENGINEERS, INC.





Craig Miner, LEED AP
Team Leader

Caleb Pettigrew
Environmental Scientist III

Attachments:

Laboratory Analytical results

EMSL Analytical, Inc.

5 Constitution Way, Unit A Woburn, MA 01801

Tel/Fax: (781) 933-8411 / (781) 933-8412

http://www.EMSL.com / bostonlab@emsl.com

EMSL Order:	132502701
Customer ID:	WESA62
Customer PO:	
Project ID:	

Attention:	Craig Miner	**Phone:**	(978) 532-1900
	Weston & Sampson Engineers, Inc.	**Fax:**	(978) 977-0100
	55 Walkers Brook Drive	**Received Date:**	05/13/2025 10:15 AM
	Suite 100v	**Analysis Date:**	05/17/2025
	Reading, MA 01867	**Collected Date:**	05/09/2025
Project:	Truro DPW		

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
01A *132502701-0001*	Office Closet - Tan Carpet Mastic	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
01B *132502701-0002*	Office Closet - Tan Carpet Mastic	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
02A *132502701-0003*	Office Closet - White Leveling Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
02B *132502701-0004*	Office Closet - White Leveling Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
02C *132502701-0005*	Office Closet - White Leveling Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
03A *132502701-0006*	Office Bathroom - Wall Sheetrock	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
03B *132502701-0007*	Office Bathroom - Wall Sheetrock	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
04A *132502701-0008*	Office Bathroom - Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
04B *132502701-0009*	Office Bathroom - Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
05A *132502701-0010*	Office Bathroom - Gray Sink Caulk	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
05B *132502701-0011*	Office Bathroom - Gray Sink Caulk	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
06A *132502701-0012*	Office Exterior - Building Paper	White Fibrous Homogeneous	95% Cellulose	5% Non-fibrous (Other)	None Detected
06B *132502701-0013*	Office Exterior - Building Paper	White Fibrous Homogeneous	95% Cellulose	5% Non-fibrous (Other)	None Detected
07A *132502701-0014*	2-Bay Garage Exterior - Tan Caulk on Door, Wood to Concrete	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
07B *132502701-0015*	2-Bay Garage Exterior - Tan Caulk on Door, Wood to Concrete	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
08A *132502701-0016*	2-Bay Garage Exterior - White Window Glazing	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 05/17/2025 15:15:49

EMSL Analytical, Inc.
5 Constitution Way, Unit A Woburn, MA 01801
Tel/Fax: (781) 933-8411 / (781) 933-8412
http://www.EMSL.com / bostonlab@emsl.com

EMSL Order: 132502701
Customer ID: WESA62
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
08B *132502701-0017*	2-Bay Garage Exterior - White Window Glazing	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
09A *132502701-0018*	2-Bay Garage Exterior - White Caulk on Door, Wood to Wood	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
09B *132502701-0019*	2-Bay Garage Exterior - White Caulk on Door, Wood to Wood	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
10A *132502701-0020*	2-Bay Garage Interior - White Window Glazing	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
10B *132502701-0021*	2-Bay Garage Interior - White Window Glazing	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
11A *132502701-0022*	Shop Exterior - White Window Caulk	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
11B *132502701-0023*	Shop Exterior - White Window Caulk	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
12A *132502701-0024*	Shop Office Exterior - White Door Caulk	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
12B *132502701-0025*	Shop Office Exterior - White Door Caulk	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
13A *132502701-0026*	Shop Office Exterior - Building Paper	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
13B *132502701-0027*	Shop Office Exterior - Building Paper	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
14A *132502701-0028*	Shed Exterior - Red Shingle	Red/Black Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
14B *132502701-0029*	Shed Exterior - Red Shingle	Red/Black Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
15A *132502701-0030*	Salt Shed Garage Exterior - Black Foundation Damproofing	Black Non-Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
15B *132502701-0031*	Salt Shed Garage Exterior - Black Foundation Damproofing	Black Non-Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
16A *132502701-0032*	Salt Shed Garage Interior - Black Rafter Sealant	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
16B *132502701-0033*	Salt Shed Garage Interior - Black Rafter Sealant	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
17A *132502701-0034*	Shed Exterior - Roof Shingle	Black Fibrous Homogeneous	5% Synthetic 5% Glass	90% Non-fibrous (Other)	None Detected

Initial report from: 05/17/2025 15:15:49

EMSL Analytical, Inc.
5 Constitution Way, Unit A Woburn, MA 01801
Tel/Fax: (781) 933-8411 / (781) 933-8412
http://www.EMSL.com / bostonlab@emsl.com

EMSL Order: 132502701
Customer ID: WESA62
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
17B *132502701-0035*	Shed Exterior - Roof Shingle	Black Fibrous Homogeneous	5% Synthetic 5% Glass	90% Non-fibrous (Other)	None Detected
18A *132502701-0036*	Concrete Shed Exterior - Gray Caulk	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
18B *132502701-0037*	Concrete Shed Exterior - Gray Caulk	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
19A *132502701-0038*	Concrete Shed Exterior - White Window Glazing	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
19B *132502701-0039*	Concrete Shed Exterior - White Window Glazing	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
20A *132502701-0040*	Concrete Shed Interior - White Caulk	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
20B *132502701-0041*	Concrete Shed Interior - White Caulk	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
21A *132502701-0042*	4-Bay Garage Exterior - White Window Glazing	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
21B *132502701-0043*	4-Bay Garage Exterior - White Window Glazing	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22A *132502701-0044*	4-Bay Garage Exterior - Corner White Caulk	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22B *132502701-0045*	4-Bay Garage Exterior - Corner White Caulk	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
23A *132502701-0046*	4-Bay Garage Exterior - White Window Caulk	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
23B *132502701-0047*	4-Bay Garage Exterior - White Window Caulk	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
24A *132502701-0048*	Shed - Roof Shingle	Black Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
24B *132502701-0049*	Shed - Roof Shingle	Black Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
25A *132502701-0050*	4-Bay Garage Interior - Expansion Joint	Black Non-Fibrous Homogeneous	15% Cellulose	85% Non-fibrous (Other)	None Detected
25B *132502701-0051*	4-Bay Garage Interior - Expansion Joint	Black Non-Fibrous Homogeneous	15% Cellulose	85% Non-fibrous (Other)	None Detected
26A *132502701-0052*	4-Bay Garage Office - Sink Undercoat	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
26B *132502701-0053*	4-Bay Garage Office - Sink Undercoat	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 05/17/2025 15:15:49

EMSL Analytical, Inc.
5 Constitution Way, Unit A Woburn, MA 01801
Tel/Fax: (781) 933-8411 / (781) 933-8412
http://www.EMSL.com / bostonlab@emsl.com

EMSL Order: 132502701
Customer ID: WESA62
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
27A *132502701-0054*	4-Bay Garage Office - Black Mastic on Wall	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
27B *132502701-0055*	4-Bay Garage Office - Black Mastic on Wall	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
28A *132502701-0056*	4-Bay Garage Office - Sheetrock	Gray/Tan Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
28B *132502701-0057*	4-Bay Garage Office - Sheetrock	Gray/Tan Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
29A *132502701-0058*	4-Bay Garage Office - Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
29B *132502701-0059*	4-Bay Garage Office - Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
30A *132502701-0060*	4-Bay Garage Bathroom - Gray Window Caulk	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
30B *132502701-0061*	4-Bay Garage Bathroom - Gray Window Caulk	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
31A *132502701-0062*	4-Bay Garage Boiler Room - Sheetrock	Gray/Tan Fibrous Homogeneous	10% Cellulose 2% Glass	88% Non-fibrous (Other)	None Detected
31B *132502701-0063*	4-Bay Garage Boiler Room - Sheetrock	Gray/Tan Fibrous Homogeneous	10% Cellulose 2% Glass	88% Non-fibrous (Other)	None Detected
32A *132502701-0064*	4-Bay Garage Boiler Room - Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
32B *132502701-0065*	4-Bay Garage Boiler Room - Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
33A *132502701-0066*	4-Bay Garage Interior - Ceiling Panel	Brown/White Fibrous Homogeneous	95% Cellulose	5% Non-fibrous (Other)	None Detected
33B *132502701-0067*	4-Bay Garage Interior - Ceiling Panel	Brown/White Fibrous Homogeneous	95% Cellulose	5% Non-fibrous (Other)	None Detected
34A *132502701-0068*	4-Bay Garage Attic - Black Building Paper	Black Fibrous Homogeneous	80% Cellulose	20% Non-fibrous (Other)	None Detected
34B *132502701-0069*	4-Bay Garage Attic - Black Building Paper	Black Fibrous Homogeneous	80% Cellulose	20% Non-fibrous (Other)	None Detected
35A *132502701-0070*	4-Bay Garage Exterior - Roof Shingle	Black Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
35B *132502701-0071*	4-Bay Garage Exterior - Roof Shingle	Black Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
36A *132502701-0072*	4-Bay Garage Exterior - Roof Paper	Black Fibrous Homogeneous	80% Cellulose	20% Non-fibrous (Other)	None Detected

Initial report from: 05/17/2025 15:15:49

EMSL Analytical, Inc.
5 Constitution Way, Unit A Woburn, MA 01801
Tel/Fax: (781) 933-8411 / (781) 933-8412
http://www.EMSL.com / bostonlab@emsl.com

EMSL Order: 132502701
Customer ID: WESA62
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
36B *132502701-0073*	4-Bay Garage Exterior - Roof Paper	Black Fibrous Homogeneous	80% Cellulose	20% Non-fibrous (Other)	None Detected
37A *132502701-0074*	Shop Office Shed - Roof Shingle	Black Fibrous Homogeneous	10% Synthetic	90% Non-fibrous (Other)	None Detected
37B *132502701-0075*	Shop Office Shed - Roof Shingle	Black Fibrous Homogeneous	10% Synthetic	90% Non-fibrous (Other)	None Detected
38A *132502701-0076*	Shop/Shop Office Exterior - White Roof Trim Caulk	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
38B *132502701-0077*	Shop/Shop Office Exterior - White Roof Trim Caulk	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
39A *132502701-0078*	Shop Exterior - Black Caulk	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
39B *132502701-0079*	Shop Exterior - Black Caulk	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
40A *132502701-0080*	Shop Office Exterior - Roof Shingle	Black Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
40B *132502701-0081*	Shop Office Exterior - Roof Shingle	Black Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
41A *132502701-0082*	Shop Office Exterior - White Caulk	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
41B *132502701-0083*	Shop Office Exterior - White Caulk	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
42A *132502701-0084*	Shop Exterior - Roof Shingle	Black Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
42B *132502701-0085*	Shop Exterior - Roof Shingle	Black Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
43A *132502701-0086*	Shop 2-Bay Garage Exterior - Tan Seam Sealant	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
43B *132502701-0087*	Shop 2-Bay Garage Exterior - Tan Seam Sealant	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
44A *132502701-0088*	2-Bay Garage Interior - Ceiling Sheetrock	Gray/Tan Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
44B *132502701-0089*	2-Bay Garage Interior - Ceiling Sheetrock	Gray/Tan Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
45A *132502701-0090*	Office Exterior - Roof Shingle	Black Non-Fibrous Homogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected
45B *132502701-0091*	Office Exterior - Roof Shingle	Black Non-Fibrous Homogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected

Initial report from: 05/17/2025 15:15:49

EMSL Analytical, Inc.
5 Constitution Way, Unit A Woburn, MA 01801
Tel/Fax: (781) 933-8411 / (781) 933-8412
http://www.EMSL.com / bostonlab@emsl.com

EMSL Order: 132502701
Customer ID: WESA62
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
46A *132502701-0092*	Office Exterior - Roof Paper	Black Non-Fibrous Homogeneous	60% Cellulose	40% Non-fibrous (Other)	None Detected
46B *132502701-0093*	Office Exterior - Roof Paper	Black Non-Fibrous Homogeneous	60% Cellulose	40% Non-fibrous (Other)	None Detected
47A *132502701-0094*	Office Addition Exterior - Roof Shingle	Black Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
47B *132502701-0095*	Office Addition Exterior - Roof Shingle	Black Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
48A *132502701-0096*	Office Addition Exterior - Roof Paper	Black Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
48B *132502701-0097*	Office Addition Exterior - Roof Paper	Black Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
49A *132502701-0098*	TP - 7 - 4-Bay Garage Exterior - Foundation Damproofing	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
49B *132502701-0099*	TP - 7 - 4-Bay Garage Exterior - Foundation Damproofing	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
50A *132502701-0100*	TP - 7 - 4-Bay Garage Exterior - Addition Foundation Damproofing	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
50B *132502701-0101*	TP - 7 - 4-Bay Garage Exterior - Addition Foundation Damproofing	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Analyst(s)
Kevin Pine (101)

Steve Grise, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 “Interim Method”) but augmented with procedures outlined in the 1993 (”final”) version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Woburn, MA NVLAP Lab Code 101147-0, CT PH-0315, MA AA000188, RI PLM00139, VT AL998919, ME LB-0039

Initial report from: 05/17/2025 15:15:49

OrderID: 132502701

EMSL ANALYTICAL, INC.
TESTING LABS • PRODUCTS • TRAINING

Asbestos Bulk Building Materials - Chain of Custody

EMSL Order Number / Lab Use Only

132502701

EMSL Analytical, Inc.
200 Route 130 North
Cinnaminson, NJ 08077
PHONE: (800) 220-3675
EMAIL: CinnAsblab@EMSL.com

Customer Information		Billing Information	
Customer ID:		Billing ID:	
Company Name:	Weston & Sampson	Company Name:	
Contact Name:	Craig Miner	Billing Contact:	
Street Address:	55 Walkers Brook Drive	Street Address:	
City, State, Zip:	Reading, MA 01867	Country: USA	City, State, Zip:	Country:
Phone:	1-800-SAMPSON	Phone:	
Email(s) for Report:	minerc@wseinc.com, Pettigrew.Caleb@wseinc.com	Email(s) for Invoice:	

Project Information

Project Name/No: Truro DPW
Purchase Order:
EMSL LIMS Project ID: (If applicable, EMSL will provide)
US State where samples collected: MA
State of Connecticut (CT) must select project location: ☐ Commercial (Taxable) ☐ Residential (Non-Taxable)
Sampled By Name: Caleb Pettigrew
Sampled By Signature: Caleb Pettigrew
Date Sampled: 5-9-25
No. of Samples in Shipment: 101

Turn-Around-Time (TAT)

☐ 3 Hour ☐ 6 Hour ☐ 24 Hour ☐ 32 Hour ☐ 48 Hour ☐ 72 Hour ☐ 96 Hour ☒ 1 Week ☐ 2 Week

Please call ahead for large projects and/or turnaround times 6 Hours or Less. *32 Hour TAT available for select tests only; samples must be submitted by 11:30am.

Test Selection

PLM - Bulk (reporting limit)

- ☒ PLM EPA 600/R-93/116 (<1%)
- ☐ PLM EPA NOB (<1%)
- ☐ POINT COUNT
  - ☐ 400 (<0.25%) ☐ 1,000 (<0.1%)
- ☐ POINT COUNT w/ GRAVIMETRIC
  - ☐ 400 (<0.25%) ☐ 1,000 (<0.1%)
- ☐ NIOSH 9002 (<1%)
- ☐ NYS 198.1 (Friable - NY)
- ☐ NYS 198.6 NOB (Non-Friable - NY)
- ☐ NYS 198.8 (Vermiculite SM-V)

TEM - Bulk

- ☐ TEM EPA NOB
- ☐ NYS NOB 198.4 (Non-Friable - NY)
- ☐ TEM EPA 600/R-93/116 w Milling Prep (0.1%)

Other Tests (please specify)

☒ Positive Stop - Clearly Identified Homogeneous Areas (HA)

Sample Number	HA Number	Sample Location	Material Description
01A-B		Office Closet	Tan carpet mastic
02A-C		↓	white leveling compound
03A-B		Office Bathroom	Wall sheetrock
04A-B		↓	Joint compound
05A-B		↓	Grey sink caulk
06A-B		Office Exterior	Building paper
07A-B		2-Bay Garage Exterior	Tan caulk on door, wood to concrete
08A-B		↓	white window glazing
09A-B		↓	White caulk on door, wood to wood
10A-B		2-Bay Garage Interior	White window glazing

Special Instructions and/or Regulatory Requirements (Sample Specifications, Processing Methods, Limits of Detection, etc.)

Method of Shipment: Drop-off
Sample Condition Upon Receipt: 8M 1015

Relinquished by:	Date/Time:	Received by:	Date/Time
Caleb Pettigrew	5-13-25 10:00	REC'D EMSL-BOSTON MAY 13 2025	
Relinquished by:	Date/Time:	Received by:	Date/Time
		Walk in	

Controlled Document - Asbestos Bulk R7 9/14/2021

☒ **AGREE TO ELECTRONIC SIGNATURE** (By checking, I consent to signing this Chain of Custody document by electronic signature.)

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

EMSL ANALYTICAL, INC.
TESTING LABS • PRODUCTS • TRAINING

Asbestos Bulk Building Materials - Chain of Custody

EMSL Order Number / Lab Use Only

132502701

EMSL Analytical, Inc.
200 Route 130 North
Cinnaminson, NJ 08077

PHONE: (800) 220-3675
EMAIL: CinnAsblab@EMSL.com

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Special Instructions and/or Regulatory Requirements (Sample Specifications, Processing Methods, Limits of Detection, etc.)

Sample Number	HA Number	Sample Location	Material Description
11A-B		Shop Exterior	White Window caulk
12A-B		Shop office Exterior	White door caulk
13A-B		↓	Building paper
14A-B		Shed Exterior	Red Shingle
15A-B		Salt Shed Garage Exterior	Black foundation damproofing
16A-B		Salt Shed Garage Interior	Black rafter sealant
17A-B		Shed Exterior	Roof shingle
18A-B		Concrete shed Exterior	Grey caulk
19A-B		↓	White window glazing
20A-B		Concrete Shed Interior	White caulk
21A-B		4-Bay Garage Exterior	White window glazing
22A-B		↓	Corner white caulk
23A-B		↓	White window caulk
24A-B		Shed	Roof shingle
25A-B		4-Bay Garage Interior	Expansion joint
26A-B		4Bay Garage office	Sink undercoat
27A-B		↓	Black mastic on sill
28A-B		↓	Sheetrock
29A-B		↓	Joint compound
30A-B		4-Bay Garage Bathroom	Grey window caulk
31A-B		4-Bay Garage Boiler Room	Sheetrock
32A-B		↓	Joint compound
33A-B		4-Bay Garage Interior	Ceiling panel
34A-B		4-Bay Garage Attic	Black building paper
35A-B		4-Bay Garage Exterior	Roof Shingle

Method of Shipment:	drop-off		Sample Condition Upon Receipt:	
Relinquished by:		Date/Time: 5-13-25 10:00	Received by: RE'C'D EMSL-BOSTON MAY 13 2025	Date/Time
Relinquished by:		Date/Time:	Received by:	Date/Time

Controlled Document - Asbestos Bulk R7 09/14/2021

☒ AGREE TO ELECTRONIC SIGNATURE (By checking, I consent to signing this Chain of Custody document by electronic signature.)

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

OrderID: 132502701

EMSL ANALYTICAL, INC.
TESTING LABS • PRODUCTS • TRAINING

Asbestos Chain of Custody (Air, Bulk, Soil)

EMSL Order Number / Lab Use Only

132502701

EMSL Analytical, Inc.
200 Route 130 North
Cinnaminson, NJ 08077

PHONE: (800) 220-3675
EMAIL: CinnAsblab@EMSL.com

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Special Instructions and/or Regulatory Requirements (Sample Specifications, Processing Methods, Limits of Detection, etc.)

Sample Number	Sample Location / Description	Volume, Area or Homogeneous Area	Date / Time Sampled (Air Monitoring Only)
36 A-B	4-Bay Garage Exterior	Roof paper	
37 A-B	Shop office Shed	Roof shingle	
38 A-B	Shop / Shop office Exterior	White roof trim caulk	
39 A-B	Shop Exterior	Black caulk	
40 A-B	Shop Office Exterior	Roof Shingle	
41 A-B	↓	White caulk	
42 A-B	Shop Exterior	Roof Shingle	
43 A-B	Shop 12-Bay Garage Exterior	Tan seam sealant	
44 A-B	2-Bay Garage Interior	Ceiling Sheetrock	
45 A-B	Office Exterior	Roof shingle	
46 A-B	↓	Roof paper	
47 A-B	Office Addition Exterior		
48 A-B	↓		
49 A-B	TP-7-4Bay Garage Exterior	Foundation dampproofing	
50 A-B	↓	Addition foundation dampproofing	

Method of Shipment:	Drop-off			Sample Condition Upon Receipt:	
Relinquished by:		Date/Time:	5-13-25 10:00	Received by: REC'D EMSL-BOSTON MAY 13 2025	Date/Time
Relinquished by:		Date/Time:		Received by:	Date/Time

Controlled Document - COC-05 Asbestos R16 10/26/2021

☒ AGREE TO ELECTRONIC SIGNATURE (By checking, I consent to signing this Chain of Custody document by electronic signature.)

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

EMSL Analytical, Inc.

3303 Parkway Center Court, Orlando, FL, 32808
Telephone: (407)-599-5887 Fax:(407)-599-9063
www.emsl.com

EMSL Order ID: 342551235
LIMS Reference ID: JD51235
EMSL Customer ID: WESA62

Attention: Craig Miner
Weston & Sampson Engineers, Inc. [WESA62]
55 Walkers Brook Drive, Suite 100v
Reading, MA 01867
(978) 532-1900
minerc@wseinc.com

Project Name: Truro DPW
Customer PO:
EMSL Sales Rep: Josh Silverman
Received: 05/14/2025 10:22
Reported: 05/21/2025 10:10

Analytical Results

Analyte	Results	RL	Weight(g)	Prep Date & Tech	Prep Method	Analysis Date & Analyst	Analytical Method	Q	DF
Client Sample ID: L1/Office Bathroom, Light Blue Wall Paint									**Date Sampled: 05/13/25**
Matrix: Chips									**LIMS Reference ID: JD51235-01**
Lead	<0.0081 % wt	0.0081 % wt	0.1975	05/15/25 DT	SW-846 3050B	05/15/25 SM	SW 846-7000B		1
Sample Comments:									
Client Sample ID: L2/Office Exterior, White Trim Paint									**Date Sampled: 05/13/25**
Matrix: Chips									**LIMS Reference ID: JD51235-02**
Lead	11.9 % wt	0.582 % wt	0.2751	05/15/25 DT	SW-846 3050B	05/15/25 SM	SW 846-7000B	D	100
Sample Comments:									
Client Sample ID: L3/2- Bay Garage Exterior, Grey/Green Paint									**Date Sampled: 05/13/25**
Matrix: Chips									**LIMS Reference ID: JD51235-03**
Lead	0.147 % wt	0.0064 % wt	0.2534	05/15/25 DT	SW-846 3050B	05/15/25 SM	SW 846-7000B		1
Sample Comments:									
Client Sample ID: L4/Shop Office Exterior, Green Paint									**Date Sampled: 05/13/25**
Matrix: Chips									**LIMS Reference ID: JD51235-04**
Lead	<0.0064 % wt	0.0064 % wt	0.2943	05/15/25 DT	SW-846 3050B	05/15/25 SM	SW 846-7000B		1
Sample Comments:									
Client Sample ID: L5/Salt Shed Garage Exterior, Grey Paint									**Date Sampled: 05/13/25**
Matrix: Chips									**LIMS Reference ID: JD51235-05**
Lead	<0.0064 % wt	0.0064 % wt	0.2561	05/15/25 DT	SW-846 3050B	05/15/25 SM	SW 846-7000B		1
Sample Comments:									
Client Sample ID: L6/4- Bay Garage Exterior, Grey Paint									**Date Sampled: 05/13/25**
Matrix: Chips									**LIMS Reference ID: JD51235-06**
Lead	0.0105 % wt	0.0064 % wt	0.274	05/15/25 DT	SW-846 3050B	05/15/25 SM	SW 846-7000B		1
Sample Comments:									
Client Sample ID: L7/4- Bay Garage Interior, Office White Wall									**Date Sampled: 05/13/25**
Matrix: Chips									**LIMS Reference ID: JD51235-07**
Lead	<0.0064 % wt	0.0064 % wt	0.254	05/15/25 DT	SW-846 3050B	05/15/25 SM	SW 846-7000B		1
Sample Comments:									
Client Sample ID: L8/4- Bay Garage Interior, White Paint									**Date Sampled: 05/13/25**
Matrix: Chips									**LIMS Reference ID: JD51235-08**
Lead	<0.0064 % wt	0.0064 % wt	0.2587	05/15/25 DT	SW-846 3050B	05/15/25 SM	SW 846-7000B		1
Sample Comments:									

EMSL Analytical, Inc.

3303 Parkway Center Court, Orlando, FL, 32808
Telephone: (407)-599-5887 Fax:(407)-599-9063
www.emsl.com

EMSL Order ID: 342551235
LIMS Reference ID: JD51235
EMSL Customer ID: WESA62

Attention: Craig Miner
Weston & Sampson Engineers, Inc. [WESA62]
55 Walkers Brook Drive, Suite 100v
Reading, MA 01867
(978) 532-1900
minerc@wseinc.com

Project Name: Truro DPW
Customer PO:
EMSL Sales Rep: Josh Silverman
Received: 05/14/2025 10:22
Reported: 05/21/2025 10:10

Certified Analyses included in this Report

Analyte	Certifications
SW 846-7000B in Chips	
Lead	34-AIHA ELLAP,34-LA,34-OH

List of Certifications

Code	Description	Number	Expires
34-LA	LA - Asbestos (PCM, PLM and TEM), Fungi and Bacteria, Lead and Metals	0519	06/30/2027
34-AIHA ELLAP	American Industrial Hygiene Association (AIHA LAP, LLC) - ELLAP	163563	03/01/2026
34-AIHA IHLAP	American Industrial Hygiene Association (AIHA LAP, LLC) - IHLAP	163563	03/01/2026
34-A2LA Food	A2LA Food Microbiology Certificate	2845.49	03/31/2026
34-OH	OH - Lead in Paint Chips, Wipes, Soil and Air	E10057	11/22/2025

Please see the specific Field of Testing (FOT) on www.emsl.com <http://www.emsl.com> for a complete listing of parameters for which EMSL is certified.

Notes and Definitions

Item	Definition
D	Analyte was reported from a dilution run.
(Dig)	For metals analysis, sample was digested.
[2C]	Reported from the second channel in dual column analysis.
DA	Direct Analysis
DF	Dilution Factor
MDL	Method Detection Limit.
ND	Analyte was NOT DETECTED at or above the detection limit.
NR	Spike/Surrogate showed no recovery.
Q	Qualifier
RCS	Respirable Crystalline Silica
RL	Reporting Limit
Wet	Sample is not dry weight corrected.

Measurement of uncertainty and any applicable definitions of method modifications are available upon request. Per EPA NLLAP policy, sample results are not blank corrected.

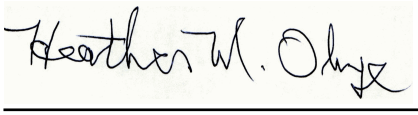
EMSL Analytical, Inc.

3303 Parkway Center Court, Orlando, FL, 32808
Telephone: (407)-599-5887 Fax:(407)-599-9063
www.emsl.com

EMSL Order ID: 342551235
LIMS Reference ID: JD51235
EMSL Customer ID: WESA62

Attention: Craig Miner
Weston & Sampson Engineers, Inc. [WESA62]
55 Walkers Brook Drive, Suite 100v
Reading, MA 01867
(978) 532-1900
minerc@wseinc.com

Project Name: Truro DPW
Customer PO:
EMSL Sales Rep: Josh Silverman
Received: 05/14/2025 10:22
Reported: 05/21/2025 10:10



Heather Ohye Laboratory Manager or other approved signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. QC sample results are within quality control criteria and met method specifications unless otherwise noted. All results for soil samples are reported on a dry weight basis, unless otherwise noted.

Analysis following EMSL SOP for the Determination of Environmental Lead by FLAA. The laboratory has a reporting limit of 0.0064% by wt., based upon a minimum sample weight of 0.25g submitted to the lab, and is not responsible for any result or reporting limit provided in mg/cm2 since it is dependent upon an area value provided by non-lab personnel. A "<" (less than) result signifies that the analyte was not detected at or above the reporting limit. Measurement of uncertainty and definitions of modifications are available upon request. Results in this report are not blank corrected unless specified.

T065559

EMSL ANALYTICAL, INC.
TESTING LABS • PRODUCTS • TRAINING

Lead Chain of Custody

EMSL Order Number / Lab Use Only

JD51235

EMSL Analytical, Inc.
200 Route 130 North
Cinnaminson, NJ 08077

PHONE: (800) 220-3675
EMAIL: CinnaminsonLeadLab@emsl.com

Customer Information		Billing Information	
Customer ID:		Billing ID:	
Company Name:	Weston & Sampson	Company Name:	
Contact Name:	Craig Miner	Billing Contact:	
Street Address:	55 Walkers Brook Drive	Street Address:	
City, State, Zip:	Reading, MA 01867	Country: USA	City, State, Zip: / Country:
Phone:	1-800-SAMPSON		Phone:
Email(s) for Report:	minerc@wseinc.com, Pettigrew.Caleb@wseinc.com		Email(s) for Invoice:

Project Information

Project Name/No:	Truro DPW	Purchase Order:	
EMSL LIMS Project ID: (If applicable, EMSL will provide)		US State where samples collected: MA	State of Connecticut (CT) must select project location: ☐ Commercial (Taxable) ☐ Residential (Non-Taxable)
Sampled By Name:	Caleb Pettigrew	Sampled By Signature:	No. of Samples in Shipment: 8

Turn-Around-Time (TAT)

☐ 3 Hour ☐ 6 Hour ☐ 24 Hour ☐ 32 Hour ☐ 48 Hour ☐ 72 Hour ☐ 96 Hour ☒ 1 Week ☐ 2 Week

Please call ahead for large projects and/or turnaround times 6 Hours or Less. *32 Hour TAT available for select tests only; samples must be submitted by 11:30am.

MATRIX	METHOD	INSTRUMENT	REPORTING LIMIT	SELECTION
CHIPS ☒ % by wt. ☐ ppm (mg/kg) ☐ mg/cm² *Reporting Limit based on a minimum 0.25g sample weight. **Not appropriate for Ceramic Tiles - XRF is recommended	SW 846-7000B	Flame Atomic Absorption	0.008% (80ppm)	☒
	SW 846-6010D*	ICP-OES	0.0004% (4ppm)	☐
AIR	NIOSH 7082	Flame Atomic Absorption	4µg/filter	☐
	NIOSH 7300M / NIOSH 7303M	ICP-OES	0.5µg/filter	☐
	NIOSH 7300M / NIOSH 7303M	ICP-MS	0.05µg/filter	☐
WIPE ☐ ASTM ☐ NON-ASTM	SW 846-7000B	Flame Atomic Absorption	10µg/wipe	☐
*If no box is checked, non-ASTM Wipe is assumed	SW 846-6010D*	ICP-OES	1.0µg/wipe	☐
TCLP	SW 846-1311 / 7000B / SM 3111B	Flame Atomic Absorption	0.4 mg/L (ppm)	☐
	SW 846-1311 / SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	☐
SPLP	SW 846-1312 / 7000B / SM 3111B	Flame Atomic Absorption	0.4 mg/L (ppm)	☐
	SW 846-1312 / SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	☐
TTLC	22 CCR App. II, 7000B	Flame Atomic Absorption	40mg/kg (ppm)	☐
	22 CCR App. II, SW 846-6010D*	ICP-OES	2mg/kg (ppm)	☐
STLC	22 CCR App. II, 7000B	Flame Atomic Absorption	0.4 mg/L (ppm)	☐
	22 CCR App. II, SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	☐
Soil	SW 846-7000B	Flame Atomic Absorption	40mg/kg (ppm)	☐
	SW 846-6010D*	ICP-OES	2mg/kg (ppm)	☐
Wastewater	SM 3111B / SW 846-7000B	Flame Atomic Absorption	0.4 mg/L (ppm)	☐
Unpreserved ☐ / Preserved with HNO3 ☐ PH<2	EPA 200.7	ICP-OES	0.020 mg/L (ppm)	☐
Drinking Water	EPA 200.5	ICP-OES	0.003 mg/L (ppm)	☐
Unpreserved ☐ / Preserved with HNO3 ☐ PH<2	EPA 200.8	ICP-MS	0.001 mg/L (ppm)	☐
TSP/SPM Filter	40 CFR Part 50	ICP-OES	12 µg/filter	☐
Other:				☐

Sample Number	Sample Location	Volume / Area	Date / Time Sampled
L1	Office Bathroom	Light blue wall paint	
L2	Office Exterior	white trim paint	
L3	2-Bay Garage Exterior	Grey/green paint	
L4	Shop Office Exterior	Green paint	
L5	Salt Shed Garage Exterior	Grey paint	

Method of Shipment:	Drop-off	Sample Condition Upon Receipt:	
Relinquished by:	Date/Time: 5-13-25 10:00	Received by:	Date/Time: MAY 14 2025
Relinquished by:	Date/Time:	Received by:	Date/Time

REC'D EMSL-BOSTON MAY 13 2025

Controlled Document - COC-25 Lead R11 05/09/2022

*6010C Available Upon Request

☒ **AGREE TO ELECTRONIC SIGNATURE** (By checking, I consent to signing this Chain of Custody document by electronic signature.)

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

EMSL ANALYTICAL, INC.
TESTING LABS • PRODUCTS • TRAINING

EMSL Analytical, Inc.
200 Route 130 North
Cinnaminson, NJ 08077

PHONE: (800) 220-3675
EMAIL: CinnaminsonLeadLab@emsl.com

Lead Chain of Custody

Lab Use Only

JD51235

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Special Instructions and/or Regulatory Requirements (Sample Specifications, Processing Methods, Limits of Detection, etc.)

Sample Number	Sample Location	Volume / Area	Date / Time Sampled
L6	4-Bay Garage Exterior	Grey paint	
L7	4-Bay Garage Interior	office white wall	
L8	↓	white paint	

Method of Shipment: Drop off		Sample Condition Upon Receipt:	
Relinquished by:	Date/Time: 5-13-25 10:00	Received by:	Date/Time: MAY 14 2025 10:22 AM
Relinquished by:	Date/Time:	Received by:	Date/Time

Controlled Document - COC-25 Lead R17 05/09/2022

☒ **AGREE TO ELECTRONIC SIGNATURE** (By checking, I consent to signing this Chain of Custody document by electronic signature.)

REC'D EMSL-BOSTON MAY 13 2025

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

T065559

EMSL ANALYTICAL, INC.
TESTING LABS • PRODUCTS • TRAINING

Lead Chain of Custody

EMSL Order Number / Lab Use Only

JD51235

EMSL Analytical, Inc.
200 Route 130 North
Cinnaminson, NJ 08077

PHONE: (800) 220-3675
EMAIL: CinnaminsonLeadLab@emsl.com

Customer Information		Billing Information	
Customer ID:		Billing ID:	
Company Name:	Weston & Sampson	Company Name:	
Contact Name:	Craig Miner	Billing Contact:	
Street Address:	55 Walkers Brook Drive	Street Address:	
City, State, Zip:	Reading, MA 01867	Country: USA	City, State, Zip: / Country:
Phone:	1-800-SAMPSON		Phone:
Email(s) for Report:	minerc@wseinc.com, Pettigrew.Caleb@wseinc.com		Email(s) for Invoice:

Project Information

Project Name/No:	Truro DPW	Purchase Order:	
EMSL LIMS Project ID: (If applicable, EMSL will provide)		US State where samples collected: MA	State of Connecticut (CT) must select project location: ☐ Commercial (Taxable) ☐ Residential (Non-Taxable)
Sampled By Name:	Caleb Pettigrew	Sampled By Signature:	No. of Samples in Shipment: 8

Turn-Around-Time (TAT)

☐ 3 Hour ☐ 6 Hour ☐ 24 Hour ☐ 32 Hour ☐ 48 Hour ☐ 72 Hour ☐ 96 Hour ☒ 1 Week ☐ 2 Week

Please call ahead for large projects and/or turnaround times 6 Hours or Less. *32 Hour TAT available for select tests only; samples must be submitted by 11:30am.

MATRIX	METHOD	INSTRUMENT	REPORTING LIMIT	SELECTION
CHIPS* ☒ % by wt. ☐ ppm (mg/kg) ☐ mg/cm² *Reporting Limit based on a minimum 0.25g sample weight. **Not appropriate for Ceramic Tiles - XRF is recommended	SW 846-7000B	Flame Atomic Absorption	0.008% (80ppm)	☒
	SW 846-6010D*	ICP-OES	0.0004% (4ppm)	☐
AIR	NIOSH 7082	Flame Atomic Absorption	4µg/filter	☐
	NIOSH 7300M / NIOSH 7303M	ICP-OES	0.5µg/filter	☐
	NIOSH 7300M / NIOSH 7303M	ICP-MS	0.05µg/filter	☐
WIPE ☐ ASTM ☐ NON-ASTM *If no box is checked, non-ASTM Wipe is assumed	SW 846-7000B	Flame Atomic Absorption	10µg/wipe	☐
	SW 846-6010D*	ICP-OES	1.0µg/wipe	☐
TCLP	SW 846-1311 / 7000B / SM 3111B	Flame Atomic Absorption	0.4 mg/L (ppm)	☐
	SW 846-1311 / SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	☐
SPLP	SW 846-1312 / 7000B / SM 3111B	Flame Atomic Absorption	0.4 mg/L (ppm)	☐
	SW 846-1312 / SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	☐
TTLC	22 CCR App. II, 7000B	Flame Atomic Absorption	40mg/kg (ppm)	☐
	22 CCR App. II, SW 846-6010D*	ICP-OES	2mg/kg (ppm)	☐
STLC	22 CCR App. II, 7000B	Flame Atomic Absorption	0.4 mg/L (ppm)	☐
	22 CCR App. II, SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	☐
Soil	SW 846-7000B	Flame Atomic Absorption	40mg/kg (ppm)	☐
	SW 846-6010D*	ICP-OES	2mg/kg (ppm)	☐
Wastewater	SM 3111B / SW 846-7000B	Flame Atomic Absorption	0.4 mg/L (ppm)	☐
Unpreserved ☐ / Preserved with HNO3 ☐ PH<2	EPA 200.7	ICP-OES	0.020 mg/L (ppm)	☐
Drinking Water	EPA 200.5	ICP-OES	0.003 mg/L (ppm)	☐
Unpreserved ☐ / Preserved with HNO3 ☐ PH<2	EPA 200.8	ICP-MS	0.001 mg/L (ppm)	☐
TSP/SPM Filter	40 CFR Part 50	ICP-OES	12 µg/filter	☐
Other:				☐

Sample Number	Sample Location	Volume / Area	Date / Time Sampled
L1	Office Bathroom	Light blue wall paint	
L2	Office Exterior	white trim paint	
L3	2-Bay Garage Exterior	Grey/green paint	
L4	Shop Office Exterior	Green paint	
L5	Salt Shed Garage Exterior	Grey paint	

Method of Shipment: Drop-off		Sample Condition Upon Receipt:	
Relinquished by:	Date/Time: 5-13-25 10:00	Received by:	Date/Time: MAY 14 2025
Relinquished by:	Date/Time:	Received by:	Date/Time

REC'D EMSL-BOSTON MAY 15 2025

*6010C Available Upon Request

☒ **AGREE TO ELECTRONIC SIGNATURE** (By checking, I consent to signing this Chain of Custody document by electronic signature.)

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

EMSL ANALYTICAL, INC.
TESTING LABS • PRODUCTS • TRAINING

EMSL Analytical, Inc.
200 Route 130 North
Cinnaminson, NJ 08077

PHONE: (800) 220-3675
EMAIL: CinnaminsonLeadLab@emsl.com

Lead Chain of Custody

EMSL Order Number (Lab Use Only)

JD51235

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Special Instructions and/or Regulatory Requirements (Sample Specifications, Processing Methods, Limits of Detection, etc.)

Sample Number	Sample Location	Volume / Area	Date / Time Sampled
L6	4-Bay Garage Exterior	Grey paint	
L7	4-Bay Garage Interior	office white wall	
L8	↓	white paint	

Method of Shipment: Drop-off		Sample Condition Upon Receipt:	
Relinquished by:	Date/Time: 5-13-25 10:00	Received by:	Date/Time: MAY 14 2025 10:22 AM
Relinquished by:	Date/Time:	Received by:	Date/Time

Controlled Document - COC-25 Lead R17 05/09/2022

☒ **AGREE TO ELECTRONIC SIGNATURE** (By checking, I consent to signing this Chain of Custody document by electronic signature.)

REC'D EMSL-BOSTON MAY 13 2025

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

TABLE OF CONTENTS

VOLUME 1
(Divisions 00 through 01)

DIVISION 00 — PROCUREMENT AND CONTRACTING REQUIREMENTS

Document 00 01 10	Table of Contents
Document 00 02 00	List of Prequalified Contractors
Document 00 11 13	Advertisement for Bids
Document 00 21 13	Instructions to Bidders
Document 00 31 32	Subsurface Data
Document 00 31 43	Permits
Document 00 41 13	Form for General Bid
Document 00 41 13.13	Form for Sub-Bid
Document 00 43 43	Prevailing Wage Rates
Document 00 45 13	General Contractor DCAM Update Statement
Document 00 45 13.13	Sub-Bid DCAM Update Statement
Document 00 52 00	Agreement
Document 00 52 00.13	Subcontract Form
Document 00 61 13.13	Performance Bond
Document 00 61 13.16	Payment Bond
Document 00 63 25	Substitution Request Form
Document 00 63 63	State Regs-ATT. D-Change Order
Document 00 72 00	General Conditions (EJDOC 2018)
Document 00 73 00	Supplementary Conditions (EJDOC 2018)
Document 00 73 73.13	State Statutes and Regulations – Commonwealth of Massachusetts – Revisions to General Conditions
Document 00 73 73.43	Attachment B - Excerpts from MGL Chapters 30, 82, and 149

DIVISION 01 – GENERAL REQUIREMENTS

Section 01 03 00	**Alternates**
Section 01 11 00	Control of Work and Materials
Section 01 12 16	**Scope and Sequence of Work**
Section 01 14 00	Special Provisions
Section 01 14 19.16	Dust Control
Section 01 22 00	Measurement and Payment
Section 01 25 13	Product Substitution Procedures
Section 01 31 00	Project Management and Coordination
Section 01 31 19.23	Construction Meetings
Section 01 32 16	**Construction Scheduling**
Section 01 32 33	Construction Photographs
Section 01 33 23	Submittals
Section 01 33 23.13	Submittal of Operation and Maintenance Manuals
Section 01 35 29	Health and Safety Plan
Section 01 42 00	References
Section 01 43 39	Mock-Ups

Section 01 45 00	Quality Control
Section 01 45 23	Structural Tests and Inspections
Section 01 45 29	Testing Laboratory Services
Section 01 52 13	Temporary Facilities
Section 01 55 26.13	Signage (Traffic Control)
Section 01 56 00	Construction Zone Safety Plan
Section 01 57 19	Environmental Protection
Section 01 73 29	Cutting, Coring, and Patching
Section 01 74 13	Cleaning Up
Section 01 78 00	Project Closeout
Section 01 78 39	Project As-Built Record Drawings
Section 01 91 13	General Commissioning Requirements
Section 01 91 13.01	Commissioning of Building Assemblies
Section 01 92 13	Operations and Maintenance Manuals

VOLUME 2
(Divisions 02 through 22)

DIVISION 02 – EXISTING CONDITIONS

Section 02 41 13.36	Utility Abandonment
Section 02 41 16	Demolition
Section 02 61 00.16	Handling, Transportation, Reuse and Off-Site Disposal of Excavated Material
Section 02 61 26.13	Asbestos Abatement for Underground Utilities
Section 02 80 00.13	Universal and Hazardous Waste
Section 02 82 33	Asbestos Abatement
Section 02 83 19	Lead Based Coatings Removal
Section 02 83 90	Abatement of PCB-Containing Materials

DIVISION 03 - CONCRETE

Section 03 05 00	Field Concrete
Section 03 05 10	Concrete Moisture Vapor Reduction Admixture
Section 03 05 13	Concrete Sealers
Section 03 30 00	Cast-in-Place Concrete
Section 03 48 46	**Precast Concrete Block**

DIVISION 04 — MASONRY

Section 04 00 01*	Masonry Filed Sub-Bid Requirements * Filed Sub-Bid Required
Section 04 20 00 *	Unit Masonry (* Filed Sub-Bid Required as part of 04 00 01)
Section 04 72 00 *	Cast Stone Masonry (* Filed Sub-Bid Required as part of 04 00 01)

DIVISION 05 — METALS

Section 05 00 01 *	Miscellaneous and Ornamental Iron Filed Sub-Bid Requirements * Filed Sub-Bid Required
Section 05 40 00	Cold-Formed Metal Framing
Section 05 50 00 *	Metal Fabrications (*Filed Sub-Bid Required as part of 05 00 01)
Section 05 50 01 *	Miscellaneous Metals – Salt Shed (*Filed Sub-Bid Required as part of 05 00 01)
Section 05 51 13 *	Metal Pan Stairs (*Filed Sub-Bid Required as part of 05 00 01)
Section 05 51 19 *	Metal Grating Stairs (*Filed Sub-Bid Required as part of 05 00 01)
Section 05 52 13 *	Pipe and Tube Railings (*Filed Sub-Bid Required as part of 05 00 01)

DIVISION 06 — WOOD, PLASTICS AND COMPOSITES

Section 06 10 00	Rough Carpentry
Section 06 16 00	Sheathing
Section 06 20 13	Exterior Finish Carpentry
Section 06 20 23	Interior Finish Carpentry
Section 06 40 23	Interior Architectural Woodwork
Section 06 64 00	Plastic Paneling

DIVISION 07 — THERMAL AND MOISTURE PROTECTION

Section 07 00 01*	Waterproofing, Dampproofing, and Caulking Requirements *Filed Sub-Bid Required
Section 07 00 02*	Roofing and Flashing *Filed Sub-Bid Required
Section 07 11 13*	Bituminous Dampproofing (*Filed Sub-Bid Required as part of 07 00 01)
Section 07 13 53*	Membrane Water Proofing (*Filed Sub-Bid Required as part of 07 00 01)
Section 07 21 00	Thermal Insulation
Section 07 21 19	Formed-In-Place Insulation
Section 07 26 00	Vapor Retarders
Section 07 27 13*	Modified Bituminous Sheet Air Barriers (*Filed Sub-Bid Required as part of 07 00 01)
Section 07 27 26	Fluid-Applied Membrane Air Barriers
Section 07 42 93	Soffit Panels
Section 07 54 19 *	Polyvinyl Chloride (PVC) Roofing (*Filed Sub-Bid Required as part of 07 00 02)
Section 07 62 00 *	Sheet Metal Flashing and Trim (*Filed Sub-Bid Required as part of 07 00 02)
Section 07 84 43	Joint Firestopping
Section 07 92 00 *	Joint Sealants (*Filed Sub-Bid Required as part of 07 00 01)

DIVISION 08 — OPENINGS

Section 08 11 00	Metal Doors and Frames
Section 08 11 19	**Stainless-Steel Doors and Frames**
Section 08 14 16	Flush Wood Doors
Section 08 17 43	**Integrated Composite Door Opening Assemblies**
Section 08 31 13	Access Doors and Frames
Section 08 36 13	**Sectional Doors**
Section 08 43 13	**Aluminum Framed Storefronts**
Section 08 45 13	**Structured-Polycarbonate-Panel Assemblies**
Section 08 71 00	Door Hardware
Section 08 80 00 *	Glazing * *Filed Sub-Bid Required
Section 08 91 19	Fixed Louvers

DIVISION 09 — FINISHES

Section 09 00 01 *	Resilient Floors Filed Sub-Bid Requirements * Filed Sub-Bid Required
Section 09 05 06	Common Work Results for Flooring
Section 09 21 16.23	Gypsum Board Shaft Wall Assemblies
Section 09 22 16	Non-Structural Metal Framing
Section 09 29 00	Gypsum Board
Section 09 30 13*	Ceramic Tiling* *Filed Sub-Bid Required
Section 09 51 23*	Acoustical Tile Ceilings* *Filed Sub-Bid Required
Section 09 65 13 *	Resilient Base and Accessories (*Filed Sub-Bid Required as part of 09 00 01)
Section 09 65 19 *	Resilient Tile Flooring (*Filed Sub-Bid Required as part of 09 00 01)
Section 09 65 66 *	Resilient Athletic Flooring (*Filed Sub-Bid Required as part of 09 00 01)
Section 09 67 23	Resinous Flooring
Section 09 68 13	Tile Carpeting
Section 09 77 23	Plastic Wall Panels
Section 09 90 00*	Painting* (*Filed Sub-Bid Required as part of 09 90 00)

DIVISION 10 — SPECIALTIES

Section 10 14 16	Plaques
Section 10 14 19	Dimensional Letter Signage
Section 10 14 20	Building Signage
Section 10 14 23.16	Room-Identification Panel Signage
Section 10 21 13.19	Plastic Toilet Compartments
Section 10 22 13	Wire Mesh Partitions
Section 10 26 00	Wall & Door Protection
Section 10 28 00	Toilet, Bath, and Laundry Accessories
Section 10 44 13	Fire Extinguisher Cabinets

Section 10 44 16	Fire Extinguishers
Section 10 51 13	Metal Lockers
Section 10 75 16	Ground-Set Flagpoles

DIVISION 11 — EQUIPMENT

Section 11 11 26	Vehicle Washing Equipment
Section 11 11 29	Lubrication Dispensing System
Section 11 24 23	Fall Protection
Section 11 30 13	Residential Appliances

DIVISION 12 — FURNISHINGS

Section 12 24 13	Roller Window Shades
Section 12 35 30	Residential Casework
Section 12 36 61.16	Solid Surfacing Countertops
Section 12 40 00	Equipment, Furnishings and Accessories
Section 12 48 13	Entrance Floor Mats
Section 12 48 16	Entrance Floor Grilles

DIVISION 13 — SPECIAL CONSTRUCTION

Section 13 42 00	**Pre-Engineered Metal Building**

DIVISION 14 — CONVEYING SYSTEMS

Section 14 22 13	Crane Systems
Section 14 45 00	Vehicle Lifts

DIVISION 21 — FIRE SUPPRESSION

Section 21 00 01 *	Fire Suppression Filed Sub-Bid Requirements *Filed Sub-Bid Required
Section 21 00 50 *	Basic Fire Suppression Requirements (* Filed Sub-Bid Required as part of Section 21 00 01)
Section 21 05 23 *	General-Duty Valves for Fire Protection Piping (* Filed Sub-Bid Required as part of Section 21 00 01)
Section 21 05 29 *	Hangers and Supports for Fire Suppression Piping and Equipment (* Filed Sub-Bid Required as part of Section 21 00 01)
Section 21 05 48 *	Vibration and Seismic Controls for Fire Suppression Piping (* Filed Sub-Bid Required as part of Section 21 00 01)
Section 21 11 00 *	Facility Fire-Suppression Water-Service Piping (* Filed Sub-Bid Required as part of Section 21 00 01)
Section 21 11 19 *	Fire Department Connections (* Filed Sub-Bid Required as part of Section 21 00 01)
Section 21 13 13 *	Wet-Pipe Sprinkler Systems (* Filed Sub-Bid Required as part of Section 21 00 01)
Section 21 13 16 *	Dry-Pipe Sprinkler Systems (* Filed Sub-Bid Required as part of Section 21 00 01)

DIVISION 22 — PLUMBING

Section 22 00 01 *	Plumbing Filed Sub-Bid Requirements *Filed Sub-Bid Required
Section 22 00 50 *	Basic Plumbing Requirements (* Filed Sub-Bid Required as part of Section 22 00 01)
Section 22 05 13 *	Common Motor Requirements for Plumbing Equipment (* Filed Sub-Bid Required as part of Section 22 00 01)
Section 22 05 19 *	Meters and Gages for Plumbing Piping (* Filed Sub-Bid Required as part of Section 22 00 01)
Section 22 05 23 *	Valves for Plumbing Piping (* Filed Sub-Bid Required as part of Section 22 00 01)
Section 22 05 29 *	Hangers and Supports for Plumbing Piping and Equipment (* Filed Sub-Bid Required as part of Section 22 00 01)
Section 22 05 48 *	Vibration and Seismic Controls for Plumbing Piping and Equipment (* Filed Sub-Bid Required as part of Section 22 00 01)
Section 22 07 19 *	Plumbing Piping Insulation (* Filed Sub-Bid Required as part of Section 22 00 01)
Section 22 08 00 *	Commissioning of Plumbing (* Filed Sub-Bid Required as part of Section 22 00 01)
Section 22 11 16 *	Domestic Water Piping (* Filed Sub-Bid Required as part of Section 22 00 01)
Section 22 11 19 *	Domestic Water Piping Specialties (* Filed Sub-Bid Required as part of Section 22 00 01)
Section 22 11 22 *	Domestic Water Pumps (* Filed Sub-Bid Required as part of Section 22 00 01)
Section 22 13 16 *	Sanitary Waste and Vent Piping (* Filed Sub-Bid Required as part of Section 22 00 01)
Section 22 13 19 *	Sanitary Waste Piping Specialties (* Filed Sub-Bid Required as part of Section 22 00 01)
Section 22 13 20 *	Sanitary Drains (* Filed Sub-Bid Required as part of Section 22 00 01)
Section 22 13 23 *	Sanitary Waste Interceptors (* Filed Sub-Bid Required as part of Section 22 00 01)
Section 22 14 13 *	Facility Storm Drainage Piping (* Filed Sub-Bid Required as part of Section 22 00 01)
Section 22 14 23 *	Storm Drain Piping Specialties (* Filed Sub-Bid Required as part of Section 22 00 01)
Section 22 15 13 *	General-Service Compressed-Air Piping (* Filed Sub-Bid Required as part of Section 22 00 01)
Section 22 15 19 *	General-Service Packaged Air Compressors and Receivers (* Filed Sub-Bid Required as part of Section 22 00 01)
~~**Section 22 34 00 ***~~	~~**Fuel-Fired Domestic Water Heater**~~ ~~**(* Filed Sub-Bid Required as part of Section 22 00 01)**~~
Section 22 42 00 *	Commercial Plumbing Fixtures (* Filed Sub-Bid Required as part of Section 22 00 01)
Section 22 45 00 *	Emergency Plumbing Fixtures (* Filed Sub-Bid Required as part of Section 22 00 01)

VOLUME 3
(Divisions 23 through 33)

DIVISION 23 — HEATING, VENTILATING AND AIR CONDITIONING

Section 23 00 01 *	HVAC Filed Sub-Bid Requirements *Filed Sub-Bid Required
Section 23 00 50 *	Basic HVAC Requirements (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 05 13 *	Common Motor Requirements for HVAC Equipment (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 05 16 *	Expansion Fittings and Loops for HVAC Piping (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 05 17 *	Sleeves and Sleeve Seals for HVAC Piping (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 05 19 *	Meters and Gages for HVAC Piping (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 05 23 *	General-Duty Valves for HVAC Piping (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 05 29 *	Hangers and Supports for HVAC Piping and Equipment (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 05 48 *	Vibration and Seismic Controls for HVAC (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 05 53 *	Identification for HVAC Piping and Equipment (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 05 93 *	Testing, Adjusting, and Balancing for HVAC (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 07 13 *	Duct Insulation (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 07 19 *	HVAC Piping Insulation (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 08 00 *	Commissioning of HVAC (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 09 00 *	Building Management System (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 09 24 *	Gas Monitoring Systems (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 21 13 *	Hydronic Piping (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 21 16 *	Hydronic Piping Specialties (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 21 23 *	Hydronic Pumps (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 23 00 *	Refrigerant Piping (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 25 13 *	Water Treatment for Closed-Loop Hydronic Systems

	(* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 31 10 *	Ductwork and Accessories (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 34 23 *	HVAC Power Ventilators (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 35 16 *	Vehicle Exhaust Systems (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 37 13 *	Air Diffusers, Registers, and Grilles (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 37 23 *	HVAC Gravity Ventilators (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 38 13	**Commercial-Kitchen Hoods**
Section 23 51 23 *	Gas Vents (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 57 33	**Geothermal Energy – Direct Use (Heating Applications)**
Section 23 72 00 *	Air to Air Energy Recovery Equipment (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 74 33 *	Dedicated Outdoor-Air Units (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 81 26 *	Split System Air-Conditioners (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 82 16 *	Heating and Cooling Coils (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 82 39 *	Unit Heaters (* Filed Sub-Bid Required as part of Section 23 00 01)
Section 23 83 16 *	Radiant Heating Hydronic Piping (* Filed Sub-Bid Required as part of Section 23 00 01)

DIVISION 26 — ELECTRICAL

Section 26 00 01 *	Electrical Filed Sub-Bid Requirements *Filed Sub-Bid Required
Section 26 00 50 *	Electrical Work – General Provisions (* Filed Sub-Bid Required as part of Section 26 00 01)
Section 26 00 51 *	Electrical Temporary Light and Power (* Filed Sub-Bid Required as part of Section 26 00 01)
Section 26 05 19 *	Low Voltage Electrical Power Conductors and Cables (* Filed Sub-Bid Required as part of Section 26 00 01)
Section 26 05 26 *	Grounding and Bonding for Electrical Systems (* Filed Sub-Bid Required as part of Section 26 00 01)
Section 26 05 29 *	Hangers and Supports for Electrical Systems (* Filed Sub-Bid Required as part of Section 26 00 01)
Section 26 05 33 *	Raceways and Boxes for Electrical Systems (* Filed Sub-Bid Required as part of Section 26 00 01)
Section 26 05 44 *	Sleeves and Seals for Electrical Raceways and Cabling (* Filed Sub-Bid Required as part of Section 26 00 01)
Section 26 05 48 *	Seismic Controls for Electrical Work (* Filed Sub-Bid Required as part of Section 26 00 01)
Section 26 05 53 *	Identification for Electrical Systems

	(* Filed Sub-Bid Required as part of Section 26 00 01)
Section 26 05 73 *	Protective Device Coordination (* Filed Sub-Bid Required as part of Section 26 00 01)
Section 26 08 00 *	Commissioning of Electrical Systems (* Filed Sub-Bid Required as part of Section 26 00 01)
Section 26 09 23 *	Lighting Control Devices (* Filed Sub-Bid Required as part of Section 26 00 01)
Section 26 09 43 *	Lighting Control System (* Filed Sub-Bid Required as part of Section 26 00 01)
Section 26 09 43.23 *	Relay-Based Lighting Controls (* Filed Sub-Bid Required as part of Section 26 00 01)
Section 26 22 13 *	Low-Voltage Distribution Transformers (* Filed Sub-Bid Required as part of Section 26 00 01)
Section 26 24 16 *	Panelboards (* Filed Sub-Bid Required as part of Section 26 00 01)
Section 26 27 13 *	Electricity Metering (* Filed Sub-Bid Required as part of Section 26 00 01)
Section 26 27 26 *	Wiring Devices (* Filed Sub-Bid Required as part of Section 26 00 01)
Section 26 28 16 *	Enclosed Switches and Circuit Breakers (* Filed Sub-Bid Required as part of Section 26 00 01)
Section 26 29 13 *	Manual and Magnetic Motor Controllers (* Filed Sub-Bid Required as part of Section 26 00 01)
Section 26 29 23 *	Variable Frequency Motor Controllers (* Filed Sub-Bid Required as part of Section 26 00 01)
Section 26 31 00	Photovoltaic Collectors
Section 26 32 13.14 *	Diesel Engine Generator
Section 26 36 00 *	Transfer Switches (* Filed Sub-Bid Required as part of Section 26 00 01)
Section 26 43 13 *	Surge Protection for Low-Voltage Electrical Power Circuits (* Filed Sub-Bid Required as part of Section 26 00 01)
Section 26 51 00 *	Interior Lighting (* Filed Sub-Bid Required as part of Section 26 00 01)
Section 26 56 00 *	Exterior Lighting (* Filed Sub-Bid Required as part of Section 26 00 01)

DIVISION 27 — COMMUNICATIONS

Section 27 15 13 *	**Communications Copper Horizontal Cabling (* Filed Sub-Bid Required as part of Section 26 00 01)**

DIVISION 28 – ELECTRONIC SAFETY AND SECURITY

Section 28 31 11 *	Digital, Addressable Fire-Alarm System (* Filed Sub-Bid Required as part of Section 26 00 01)

DIVISION 31 — EARTHWORK

Section 31 00 00	Earthwork
Section 31 05 13.22	Controlled Density Fill
Section 31 05 19	Geotextile Fabric

Section 31 11 00	Clearing and Grubbing
Section 31 23 16.26	Rock Excavation and Disposal
Section 31 23 19	Dewatering
Section 31 25 00	Erosion and Sedimentation Control
Section 31 37 00	Riprap
Section 31 50 00	Support of Excavation

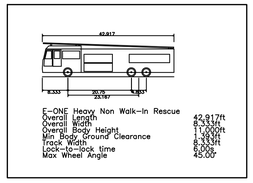
DIVISION 32 — EXTERIOR IMPROVEMENTS

Section 32 11 00	Sidewalk Construction and Replacement
Section 32 12 00	Paving
Section 32 14 13	Precast Concrete Unit Paving
Section 32 16 00	Curbing
Section 32 31 11	**Barrier Arm Gate and Gate Operators**
Section 32. 32 23.13	Segmental Retaining Wall System
Section 32 91 19	Loaming & Seeding
Section 32 93 00	Trees, Shrubs, Groundcovers and Landscaping

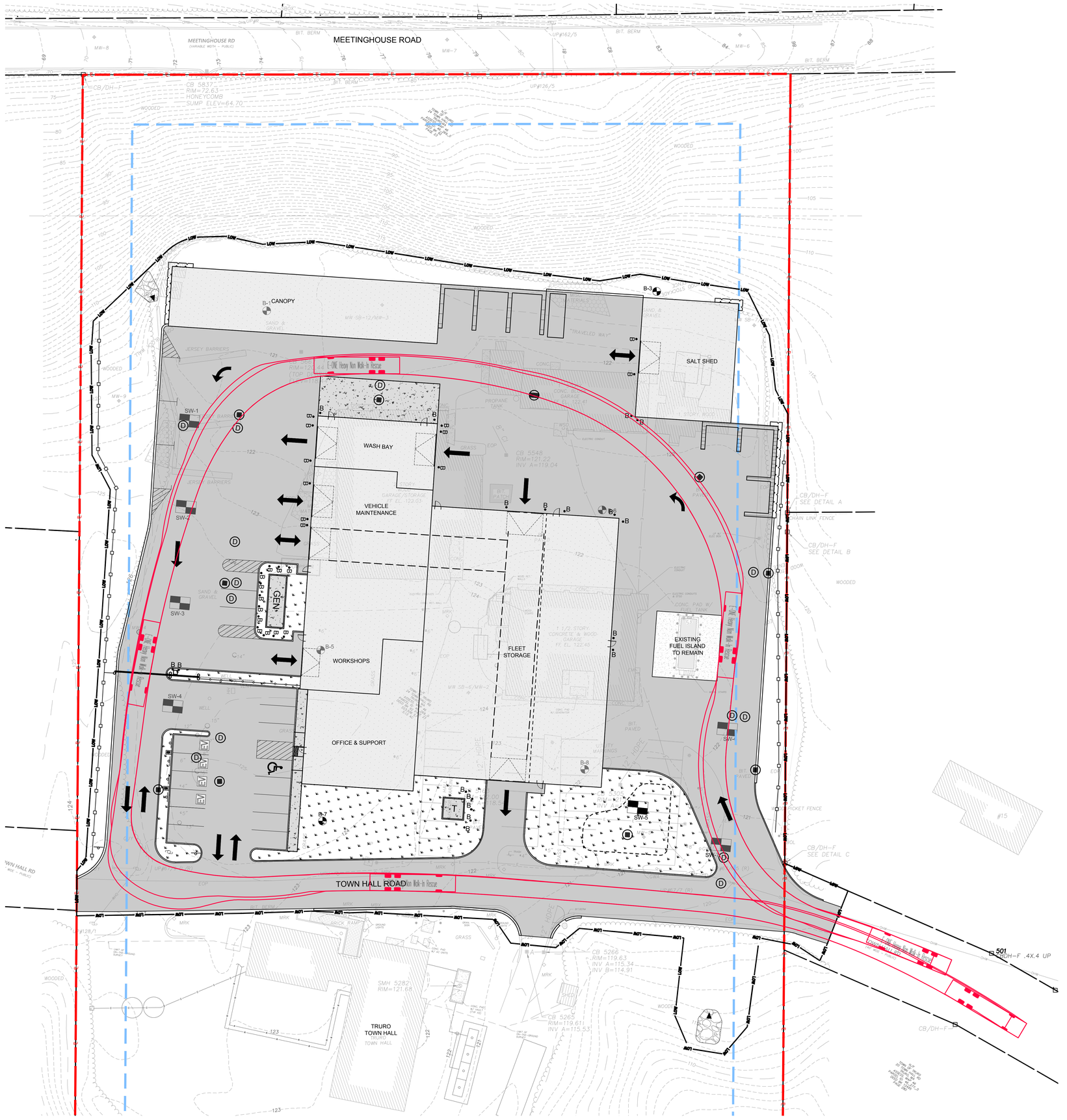
DIVISION 33 — UTILITIES

Section 33 05 26.13	Tracer Tape
Section 33 11 13	Water Service Connections
Section 33 11 13.13	Ductile Iron Pipe and Fittings for Water Mains
Section 33 11 13.28	HDPE Pipe
Section 33 11 13.34	Connections to Existing Water Mains
Section 33 11 13.43	Insulation for Pipelines
Section 33 12 22	Hydrants and Valves for Potable Water Work
Section 33 16 56	**Ground-Level Plastic Water Storage Cisterns**
Section 33 31 13.16	Polyvinyl Chloride Gravity Pipe and Fittings
Section 33 31 13.46	Connections to Existing Structures
Section 33 32 16.25	**Grinder Pump Units**
Section 33 34 00	**On-Site Wastewater Disposal**
Section 33 39 13	Precast Manholes and Catch Basins
Section 33 41 13	Reinforced Concrete Pipe
Section 33 41 13.16	Polyethylene Drainage Pipe (Perforated)
Section 33 41 13.22	Corrugated Polyethylene (HDPE) Drainage Pipe
Section 33 44 20	Downspout Boots
Section 33 44 26	Underground Stormwater Chamber System

--- END OF TABLE ---



E-ONE Heavy Non Walk-In Rescue	
Overall Length	42.917ft
Overall Width	8.333ft
Overall Body Height	11.000ft
Min Body Ground Clearance	1.383ft
Track Width	8.333ft
Lock-to-lock time	6.00s
Max Wheel Angle	45.00°



0 20 50 100

SCALE: 1" = 20'

Project:
TRURO NEW DEPARTMENT OF PUBLIC WORKS

17 TOWN HALL ROAD,
TRURO, MA 02666

Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
978.532.1900 800.SAMPSON

www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

COA:

Seal:

Issued For:
SCHEMATIC DESIGN
NOT RELEASED FOR CONSTRUCTION

Scale: AS NOTED

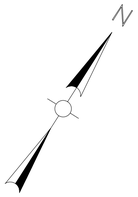
Date: 05 /30/ 2025
Drawn By:
Reviewed By:
Aporoved By:

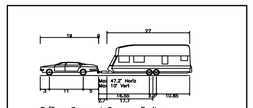
W&S Project No.: ENG24 - 1552
W&S File No.:

Drawing Title:
TRUCK TURNING PLAN
FIRE TRUCK CIRCULATION

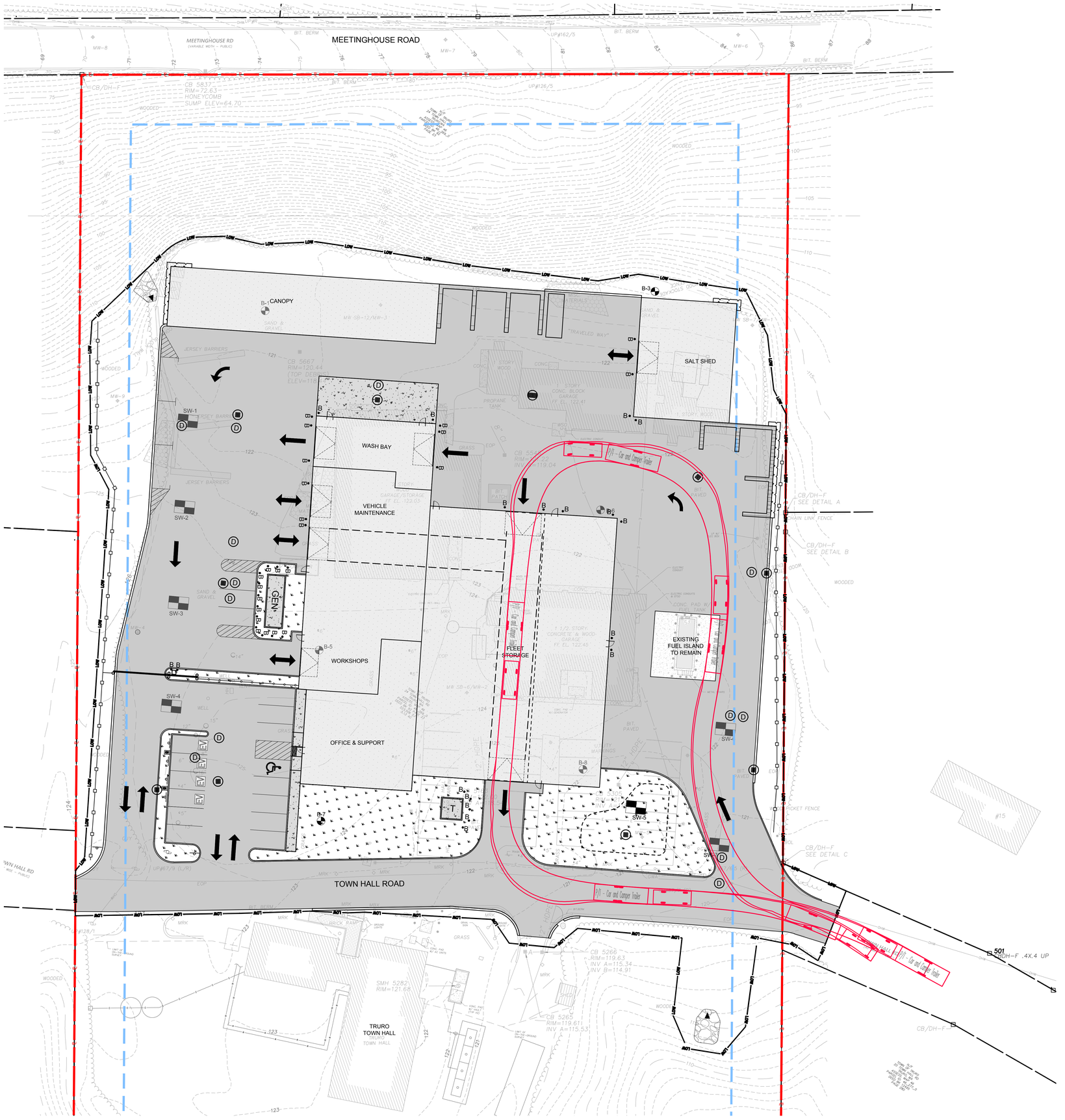
Sheet Number:
FIG.1

COPYRIGHT © 2025 WESTON & SAMPSON, INC.





P/T – Car and Camper Trailer	
Overall Length	48.701ft
Overall Width	8.000ft
Overall Body Height	10.009ft
Min Body Ground Clearance	0.795ft
Max Track Width	8.000ft
Lock-to-lock time	3.00s
Max Steering Angle (Virtual)	21.50°



0 20 50 100

SCALE: 1" = 20'

Project:

TRURO NEW DEPARTMENT OF PUBLIC WORKS

17 TOWN HALL ROAD,
TRURO, MA 02666

Weston & Sampson

Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
978.532.1900 800.SAMPSON

www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

COA:

Seal:

Issued For:

SCHEMATIC DESIGN NOT RELEASED FOR CONSTRUCTION

Scale: AS NOTED

Date: 05 /30/ 2025

Drawn By:

Reviewed By:

Aporoved By:

W&S Project No.: ENG24 - 1552

W&S File No.:

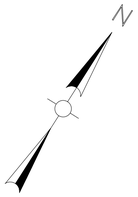
Drawing Title:

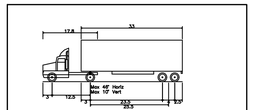
TRUCK TURNING PLAN "TRASH COMPACTOR"

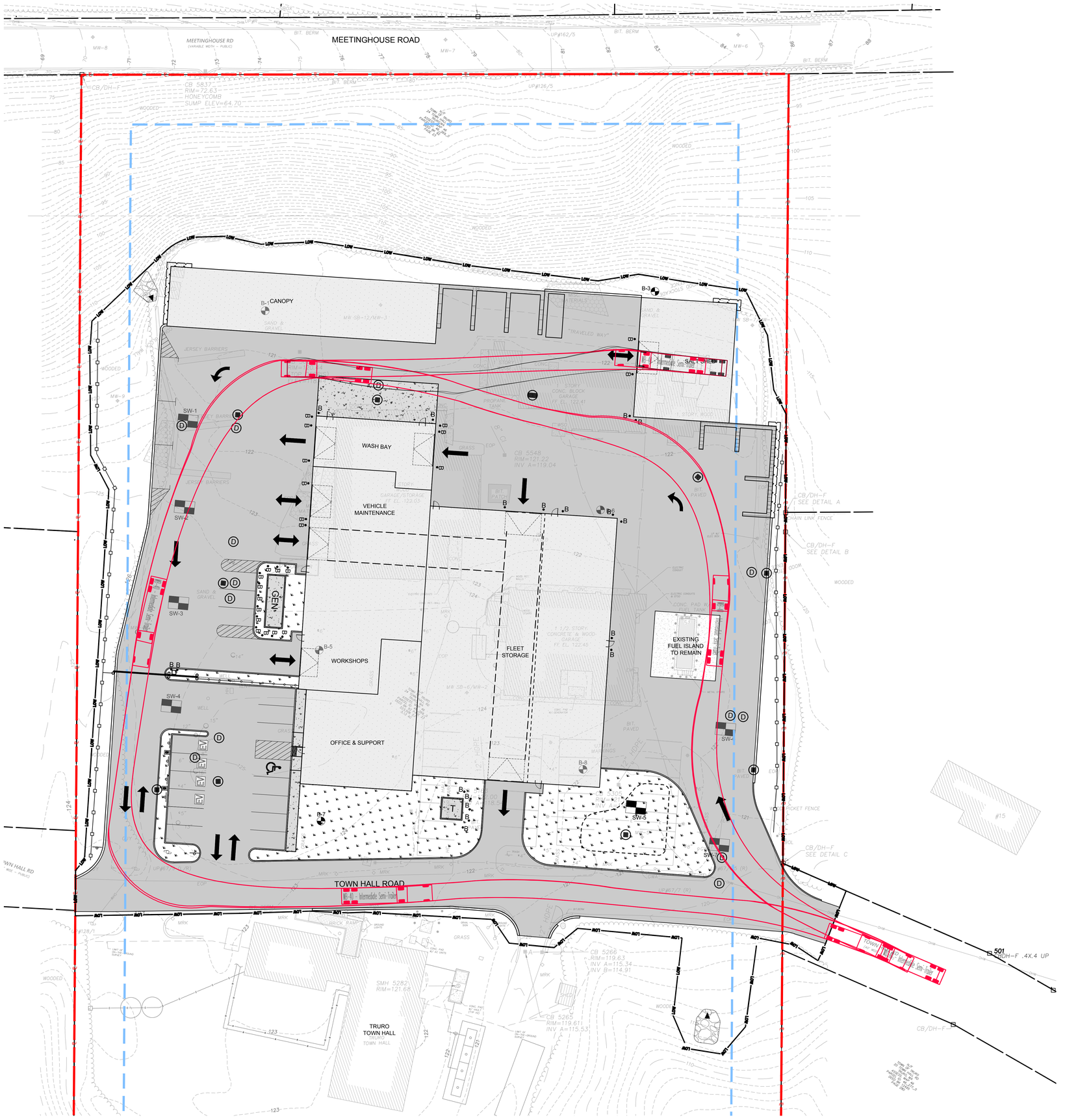
Sheet Number:

FIG.2

COPYRIGHT © 2025 WESTON & SAMPSON, INC.







0 20 50 100

SCALE: 1" = 20'

Project:

TRURO NEW DEPARTMENT OF PUBLIC WORKS

17 TOWN HALL ROAD,
TRURO, MA 02666

Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
978.532.1900 800.SAMPSON

www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

COA:

Seal:

Issued For:

SCHEMATIC DESIGN
NOT RELEASED FOR
CONSTRUCTION

Scale: AS NOTED

Date: 05 /30/ 2025

Drawn By:

Reviewed By:

Aporoved By:

W&S Project No.: ENG24 - 1552

W&S File No.:

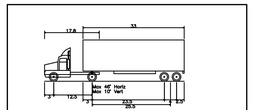
Drawing Title:

TRUCK TURNING
PLAN
WB-40
SALT SHED

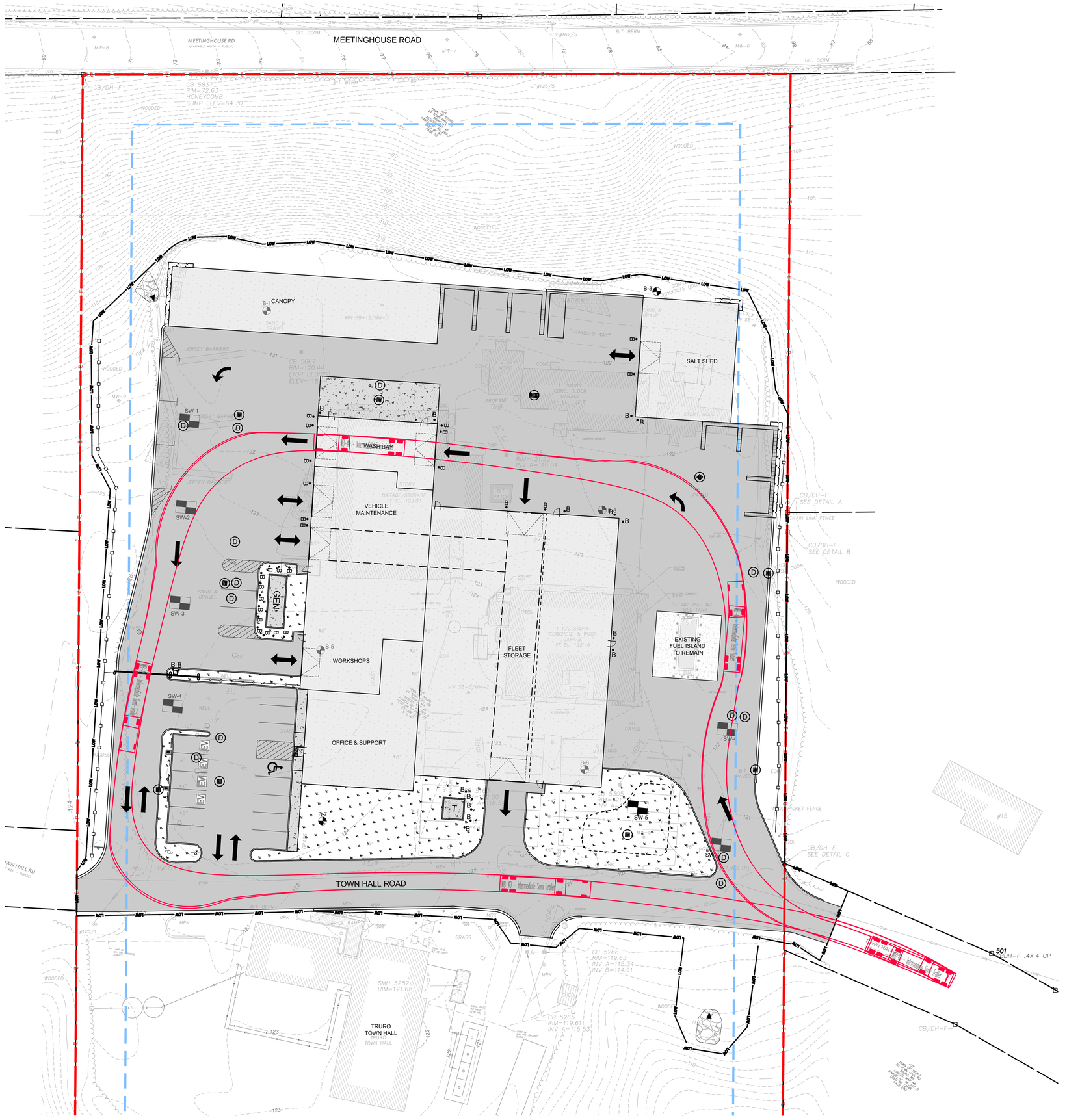
Sheet Number:

FIG.3

COPYRIGHT © 2025 WESTON & SAMPSON, INC.



WB-40 – Intermediate Semi-Trailer	
Overall Length	45.499ft
Overall Width	8.000ft
Overall Body Height	13.500ft
Min Body Ground Clearance	4.000ft
Track Width	8.000ft
Lock-to-lock time	4.0s
Max Steering Angle (Virtual)	20.0°



0 20 50 100

SCALE: 1" = 20'

Project:

TRURO NEW DEPARTMENT OF PUBLIC WORKS

17 TOWN HALL ROAD,
TRURO, MA 02666

Weston & Sampson

Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
978.532.1900 800.SAMPSON

www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

COA:

Seal:

Issued For:

SCHEMATIC DESIGN
NOT RELEASED FOR
CONSTRUCTION

Scale: AS NOTED

Date: 05 /30/ 2025

Drawn By:

Reviewed By:

Aporoved By:

W&S Project No.: ENG24 - 1552

W&S File No.:

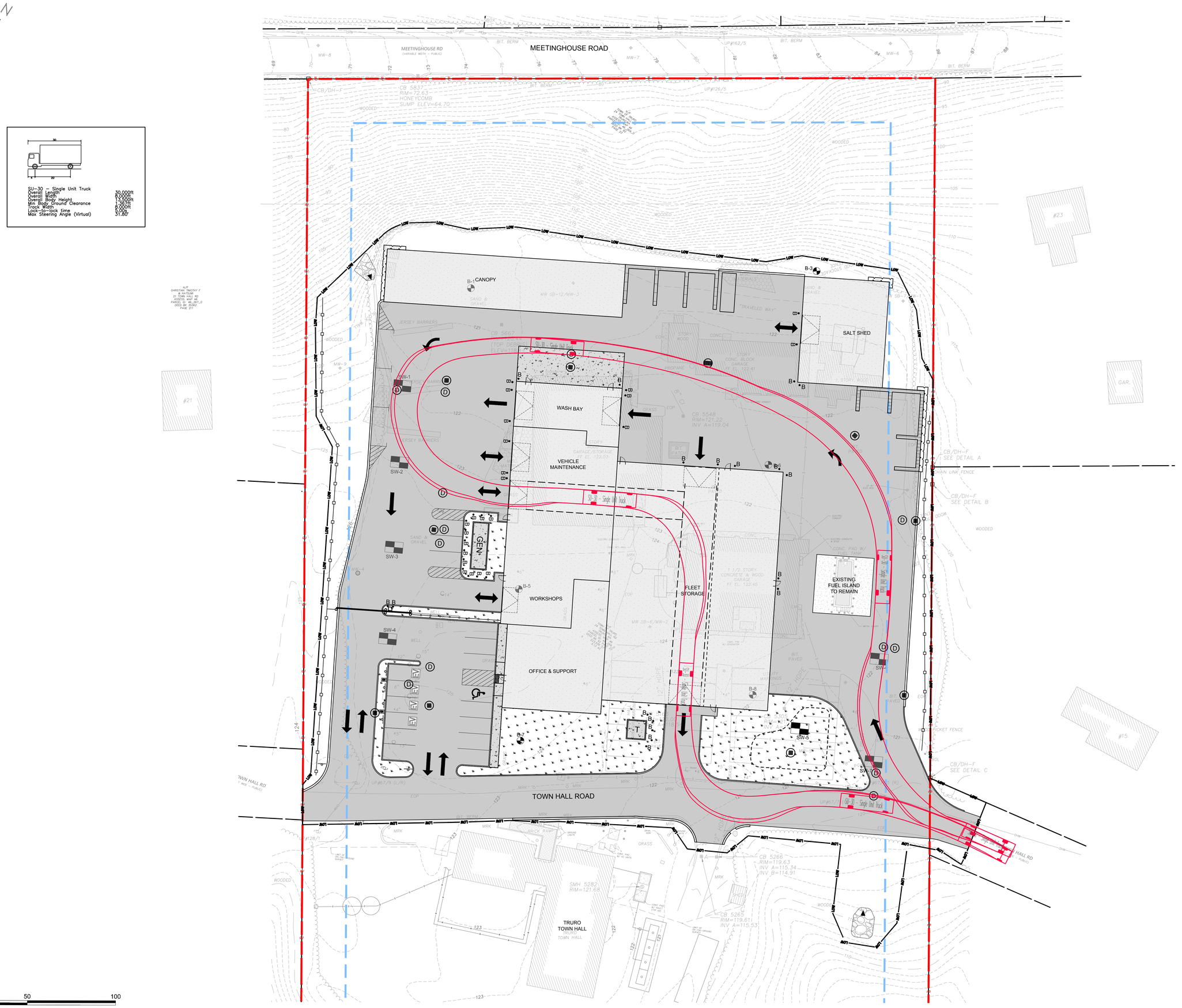
Drawing Title:

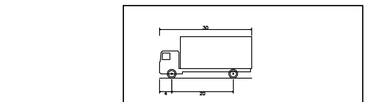
TRUCK TURNING
PLAN
WB-40
WASH BAY

Sheet Number:

FIG.4

COPYRIGHT © 2025 WESTON & SAMPSON, INC.





SU-30 - Single Unit Truck	
Overall Length	30.000ft
Overall Width	8.000ft
Overall Body Height	13.550ft
Min Body Ground Clearance	1.367ft
Track Width	8.000ft
Lock-to-lock time	5.00s
Max Steering Angle (Virtual)	31.80°

NOT
CHRISTOPHER MURPHY F
& NATHAN F
21 TOWN TRAIL RD
ASSESS. MAP 46
PARCEL ID 46.267.0
SECTION 2
PAGE 211

0 20 50 100

SCALE: 1" = 20'

Project:
TRURO NEW DEPARTMENT OF PUBLIC WORKS

17 TOWN HALL ROAD,
TRURO, MA 02666

Weston & Sampson

Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
978.532.1900 800.SAMPSON

www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

COA:

Seal:

Issued For:
SCHEMATIC DESIGN NOT RELEASED FOR CONSTRUCTION

Scale: AS NOTED

Date: 05 /30/ 2025
Drawn By:
Reviewed By:
Aporoved By:

W&S Project No.: ENG24 - 1552
W&S File No.:

Drawing Title:
TRUCK TURNING PLAN (SU-30) THROUGH INTERIOR FLEET MAINTENANCE

Sheet Number:
FIG.5

COPYRIGHT © 2025 WESTON & SAMPSON, INC.

100 Foxborough Blvd., Suite 250, Foxborough, MA 02035
Tel: 508.698.3034

Estimated Total Project Costs Summary (UPDATED POST-SD REPORT SUBMISSION)

	Base Pricing	Base Price + Pricing Alternates
Construction Costs	± $ 19,500,000	± $ 25,695,370
Soft Costs & Contingencies **	± $ 7,217,550	± $ 7,217,550
Opinion of Probable Total Project Costs	**± $ 26,717,550**	**± $ 32,912,920**
2024 Appropriation	($ 2,800,000)	($ 2,800,000)
Total Remaining Appropriation	**± $ 23,917,550**	**± $ 30,112,920**

** Soft Cost & Contingencies are based on full design and build out for budgeting & planning purposes.

Alternates (construction costs):

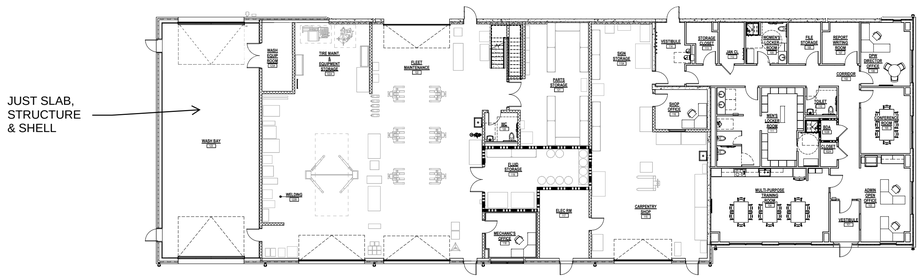
- Alternate 1 – Detached Canopy = $ 1,105,000
- Alternate 2 – 7,900 SF Storage Garage & 1,665 SF Mezzanines = $ 2,784,600
- Alternate 3 – Wash Bay Wall Finishes & Vehicle Wash Equipment = $ 937,100
- Alternate 4 – 5,000 SF Storage Garage = $ 1,368,670
- Total (construction costs) = $ 6,195,370

Changes from SD Report:

- Added an alternate for 7,900 SF of fleet storage & 1,665 SF of mezzanine that was formerly in the base design
- Removed the Solar Rooftop alternate from total project costs
    - It is understood that the town may consider solar in the future
    - Estimated cost = $ 800,000
    - Estimate cost based of a 142 kW system and a 23,600 SF facility
    - Reduction in roof area and solar system is not expected to be a 1:1 reduction in costs
- Removed Geothermal & Ground Source Heat Pump (GSHP) alternate from total project costs
    - The Town should decide on what HVAC option to move forward with by mid/late June for the project to stay on schedule (refer to Cost-Benefit Analysis)
    - Estimated cost of GSHP in lieu of Air Source Heat Pump (ASHP) = $1,200,000
    - Estimated cost based off of 23,600 SF facility with a 30 ton heating load
    - Reduction in roof area and solar system is not expected to be a 1:1 reduction in costs

SITE AND BUILDING PLANS - BASE DESIGN





Other Design Considerations

(A) Mechanical System Design (*Town to decide by mid/late June to stay on schedule*)
Ground Source Heat Pumps in lieu of Air Source Heat Pumps = add $ 1.2 M
- cost based off of 23,600 SF facility with a 30 ton heating load

(B) Solar Rooftop = add $ 800,000
- cost based of a 142 kW system and a 23,600 SF facility

SITE AND BUILDING PLANS - WITH ALTERNATES



