

DPW Campus Design – Town Hall Hill

Proposal by the DPW Study Group

- Basis of Design
- Site and Building Plans
- Costs
- Other Considerations

Developed by the DPW Study Group:

- Anthony Garrett, Architect
- Jim Armstrong, Facilities Development
- Mark Dickinson, Facilities Development
- Kevin Kuechler, Hydrogeology

July 14, 2023
Updated July 20, 2023

DPW Campus | Rationale

Background

- The Truro Community has watched the Town of Truro struggling to define a new DPW Plan for many years, especially in the past four years.
- A small group of volunteer experts with connections to Truro formed a “DPW Study Group” to explore alternatives to the rigid design being considered.
Credentials include:
 - Licensed commercial architect with experience designing and building DPWs
 - Experienced commercial developer of complex properties
 - Experienced large-scale facilities manager
 - Water systems expert familiar with Truro water needs, operations, and options
- The result is “DPW Campus” which meets the requirements stated in the specifications in the proposals of Weston & Sampson
- The result is *improved, bigger, significantly cheaper, safer, and faster to implement than the proposed Public Safety Facility site.*

Space Needs Assessment	Rev 2
Office / Office Support	1,300 SF
Employee Facilities	1,700 SF
Workshops	2,900 SF
Vehicle Maintenance	5,400 SF
Wash Bay	1,350 SF
Vehicle & Equipment Storage	16,958 SF
TOTAL	29,608 SF

DPW Campus | Key Design Principles

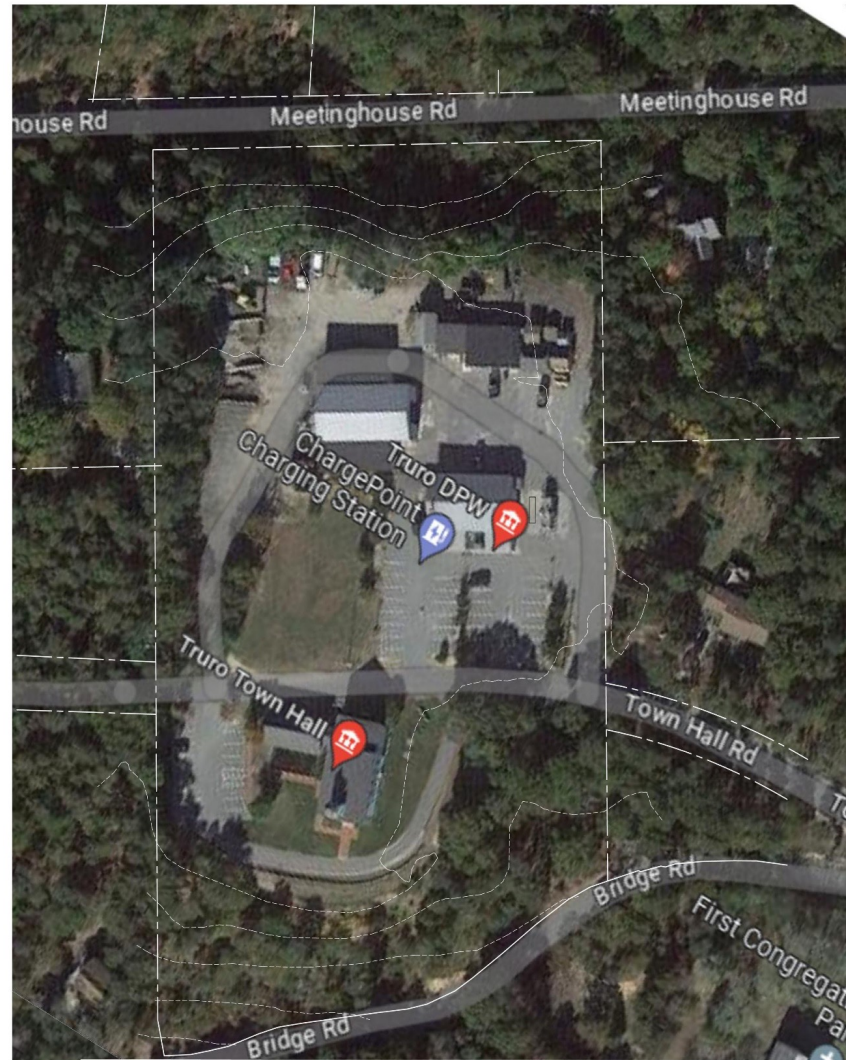
- Take a step back and think creatively.
- Heed earlier Select Board request, which asked if existing structures could be reused and/or repurposed
- Use the existing site as much as possible, working with the grade
- Employ a more pleasing and practical campus-like design to foster reuse and phased construction
- Design to be architecturally compatible with Town Hall
- Design for future needs with trends in mind, to avoid future added costs
- Maintain existing operations while improving the facility
- See separate *Basis of Design* document for additional detail and information

DPW Campus | Key Design Features

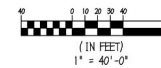
- *IMPROVED*
 - Energy efficient design with smaller carbon footprint and solar power generation
 - No incremental environmental concerns; no fuel station move required
 - Resolves Town Hall Hill potable water issue outstanding
 - Allows for future transition from salt to brine
 - Follows principles of Distributed Emergency Resources in Catastrophic Events; keeps the only emergency services near South Truro, diversifying response geographically and grid-wise
- *BIGGER*
 - 10% more useable space than W&S requirements
 - More office space and storage space; provides opportunities for shared space with Town Hall
- *CHEAPER*
 - Approximately one-half the cost of current proposed design. More acceptable to taxpayers
 - Unique to Town Hall Hill due to existing structures, environmental impacts, shared well, and siting options
- *SAFER*
 - No adverse, unknown or new traffic, safety or environmental impacts
- *FASTER*
 - Phase 1 of the plan could begin construction without further delay
 - No "change of use" required, no community opposition

DPW Campus | Phased Construction Plan

- Enables operations to continue without interruption
- No temporary DPW facilities required
- Reuses and where needed refurbishes major cost items:
 - Two existing buildings
 - Generator
 - Fuel Station
- Efficient phased construction and/or installation of three new buildings
- The phases are:
 - First two (2) buildings can be constructed while the current buildings remain occupied
 - Upon completion of Buildings 1 and 2, the current operations can be relocated into these buildings, enabling the demolition of the obsolete structures
 - This frees up the north end of the site for remaining construction
 - This will allow for operations at the site to continue without interruption, to begin immediately upon voter approval and for capital outlays to be staggered



EXISTING CONDITIONS SITE PLAN
 SCALE: 1" = 40.0'
 NORTH



14 JULY 2023
 PREP & REVISION

PROPOSED CAMPUS FOR THE
TOWN OF TRURO
 DEPARTMENT OF PUBLIC WORKS
 TOWN HALL ROAD
 TRURO, MASSACHUSETTS

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 CHAIR: N. BLOW NJ REG. NO. 34329
 ARCHITECT: A. GARRETT NJ REG. NO. 34328
 NY REG. NO. 13029
 MA REG. NO. 10524

EXISTING CONDITIONS
 SITE PLAN

DRAWING NUMBER:
EX-SP-100

Existing Conditions | DPW Facility | Photo Elevations



①



②



③



④



⑤



⑥



⑦



⑧



⑨



⑩



⑪



⑫



⑬



⑭

PHOTO SCHEDULE

PHOTO NUMBER	DESCRIPTION
1	EXISTING ENTRANCE AT S.E. CORNER AND FUEL STATION
2	WORKSHOP BUILDING, SOUTH & EAST ELEVATION
3	ADMINISTRATION BUILDING SOUTH ELEVATION
4	SALT BARN EAST ELEVATION
5	FENCE AT N.E. CORNER OF PROPERTIES
6	NORTH END OF PROPERTY, (DROP OFF IN TOPOGRAPHY)
7	NORTH ELEVATION OF SALT BARN
8	WEST END OF PROPERTY
9	NORTHWEST CORNER OF PROPERTY
10	TOWN HALL
11	SOUTH ELEVATION OF SALT BARN
12	WORKSHOP BUILDING SOUTH & WEST ELEVATION
13	SOUTH ELEVATION OF WORKSHOP BUILDING WITH GENERATOR
14	TOWN HALL ROAD LOOKING WEST

14 JULY 2023
 SERIES & REVISIONS

PROPOSED CAMPUS FOR THE
TOWN OF TRURO
 DEPARTMENT OF PUBLIC WORKS

TOWN HALL ROAD
 TRURO, MASSACHUSETTS

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 TOWN & BLOW ANTHONY GARRETT

NO. IN SET: 10 OF 100
 NO. AT ISSUE: 10 OF 100
 DATE: 07/20/23

PHOTO ELEVATIONS
 EXISTING CONDITIONS

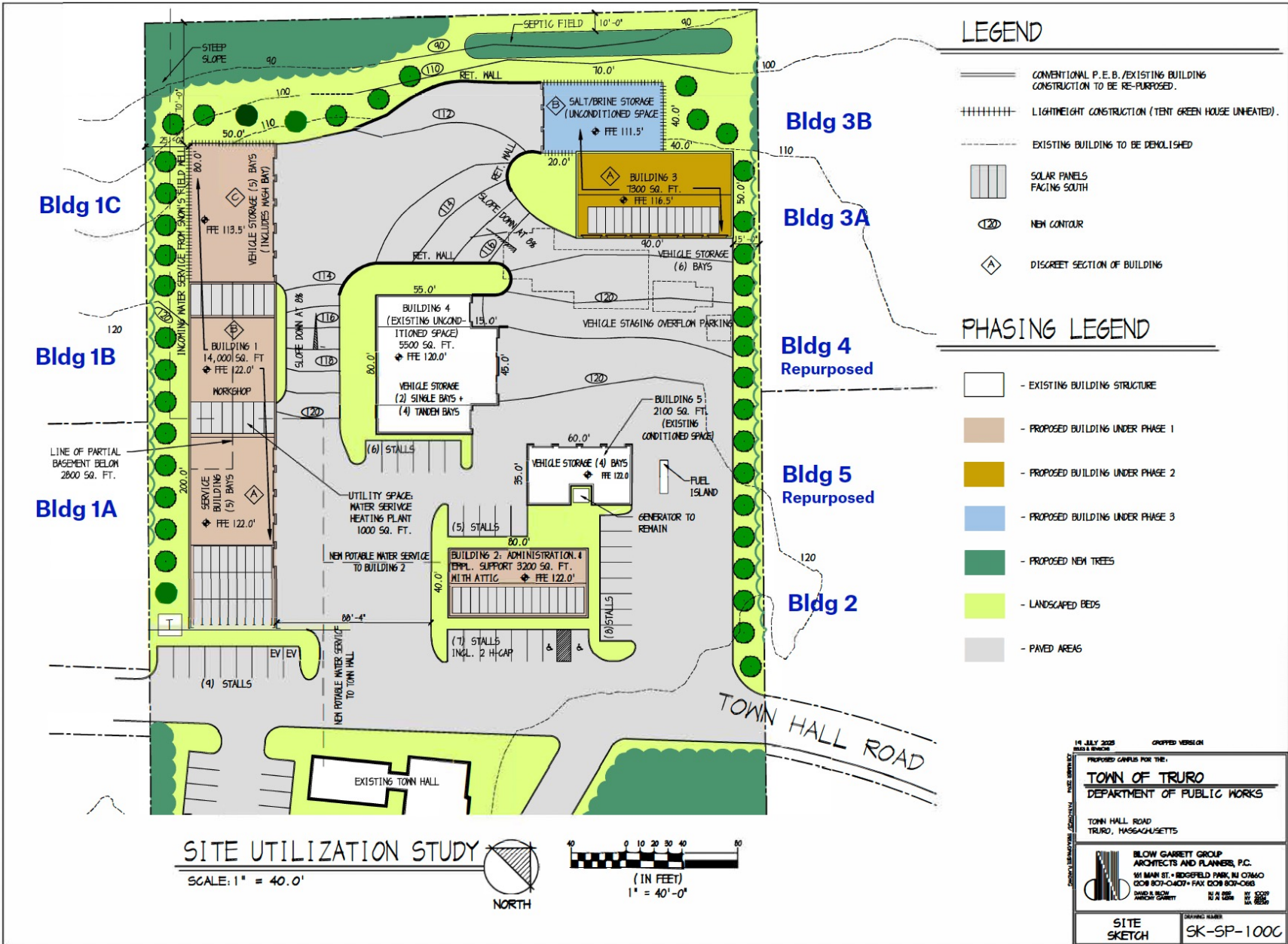
DRAWING NUMBER
SKE-100

Comparison of Facilities Specifications

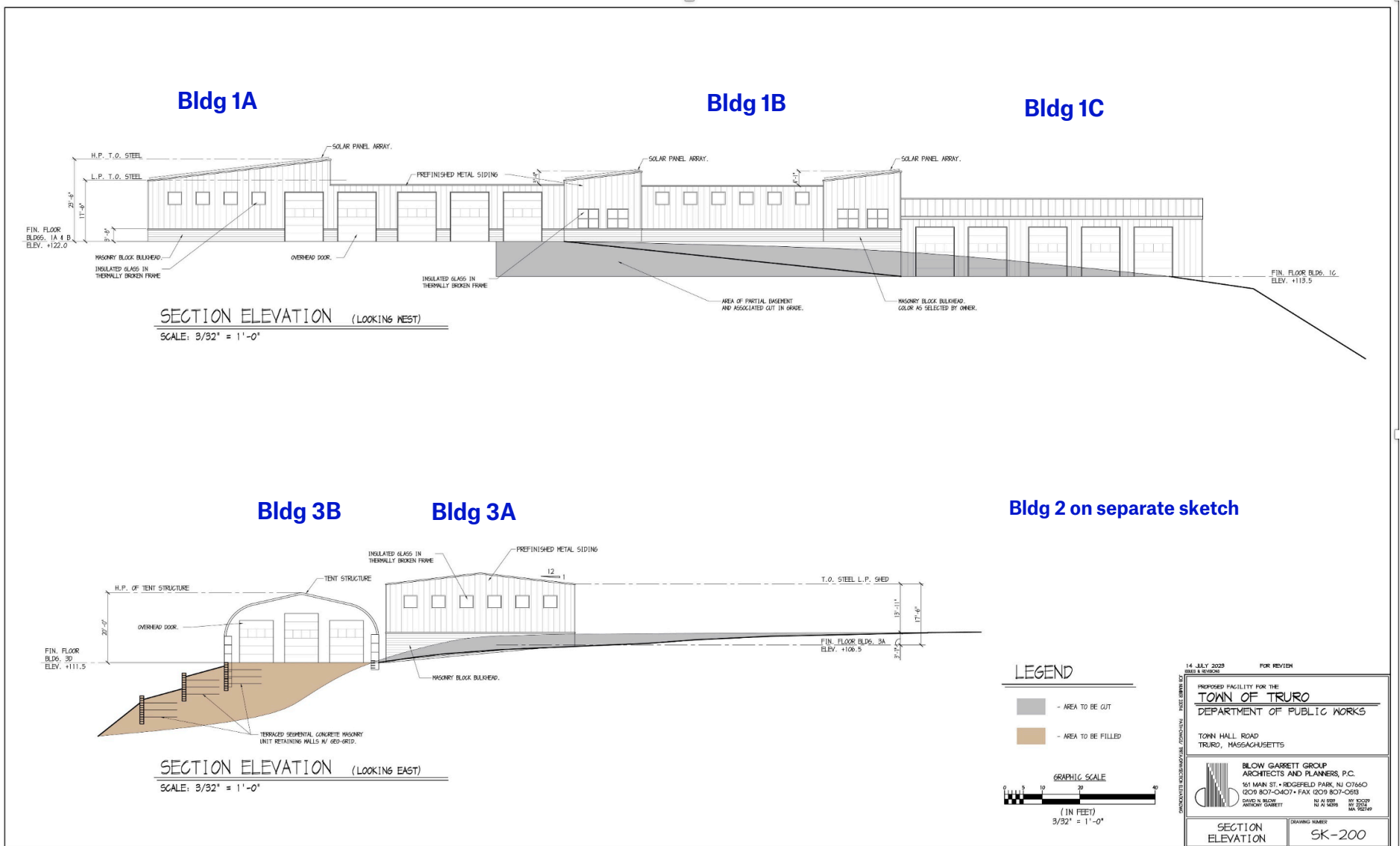
W&S (8 Mar 2023) vs DPW Campus (14 July 2023)

<u>BOTH PLANS</u>	<u>W&S</u>	<u>DPW CAMPUS</u>		<u>NET CHANGE</u>
Building Functions	SF	<u>Bldg</u>	SF	(- is less)
Office / Office Support	1,300	2	2,700	1,400
Employee Facilities	1,700	2	3,500	1,800
Workshops	2,900	1B	4,350	1,450
Vehicle Maintenance	5,400	1A	5,950	550
Wash Bay	1,350	1C	1,350	0
Vehicle & Equip Storage	16,958	several	14,750	-2,208
TOTALS	29,608		32,600	+2,992 +10%

DPW Campus | Site Detail

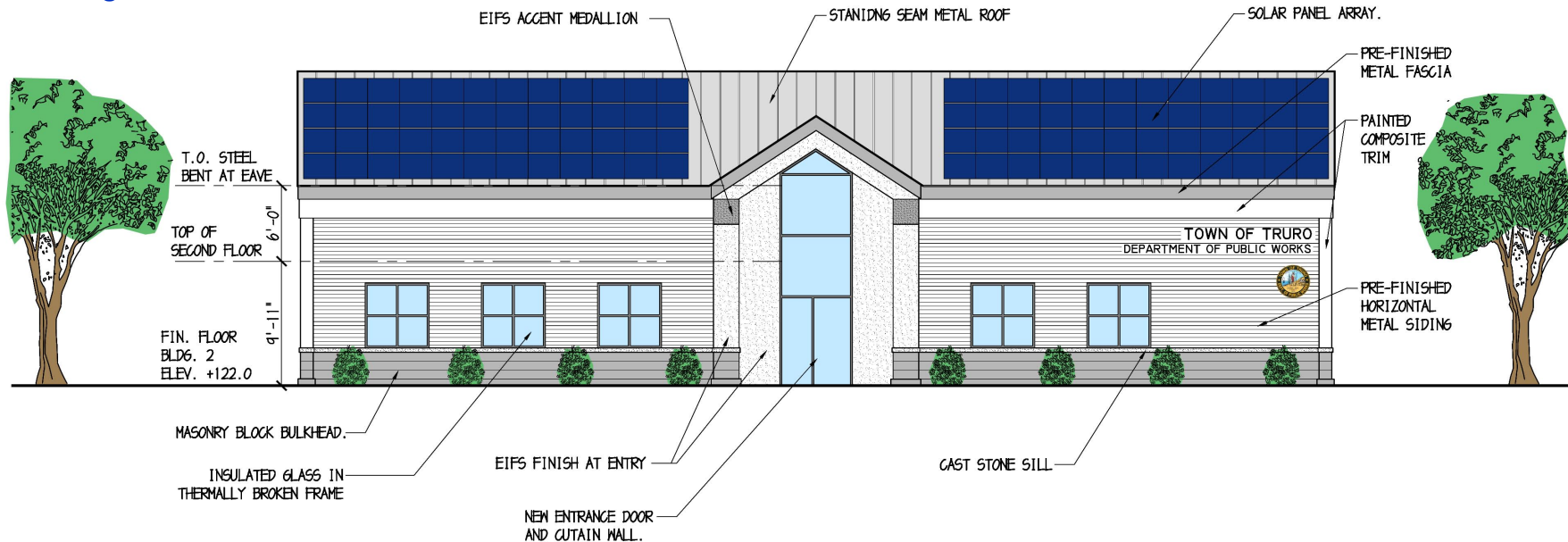


DPW Campus | Site Elevations | Buildings 1 and 3



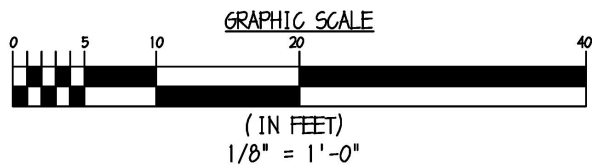
DPW Campus | Site Elevations | Building 2

Building 2 (Administration)



SOUTH ELEVATION (ADMINISTRATION BUILDING)

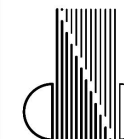
SCALE: 1/8" = 1'-0"



20 JULY 2023
ISSUES & REVISIONS

FOR REVIEW

PROPOSED FACILITY FOR THE
TOWN OF TRURO
DEPARTMENT OF PUBLIC WORKS
TOWN HALL ROAD
TRURO, MASSACHUSETTS



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DPW Campus | Concept Design | Attributes

- Working with the existing topography eliminates construction of massive retaining walls
- Utilizing current building footprints and foundations follows the overall characteristics of the site
- Repositioning existing buildings for appropriate uses to recapture the embodied energy in these structures while minimizing investment costs for these facilities, thus reducing costs
- Repurposing the existing infrastructure including fueling station, generator
- The new structures are proposed as Pre-Engineered Building structures (PEB), to eliminate excess labor and materials costs, thus reducing costs associated with construction and installation
- Providing potable water supply to both the new DPW Facility and Town Hall
- Inclusion of basement space where appropriate to work with the grades provides improved structural support and improved functionality such as:
 - Collection of oils from vehicles during maintenance
 - Overflow records storage for Town Hall
- Recommended shift to brine eliminates a salt storage unit, introduces safer storage and use significantly reduces construction and ongoing operational costs, is environmentally better
- Many other design benefits, as noted in separate *Basis of Design* document

DPW Campus | Green Strategies

- Use of Renewable Energy - Solar Power
- Improved thermal envelopes on new buildings that are conditioned
- Daylighting integrated into a lighting control system to reduce Energy Use
- Roofs to have a Solar Reflective Index (SRI) of 78
- Use of Demand Response Ventilation in spaces with limited occupancy reduces Energy Use
- Employing ventilation and air movement in lieu of full HVAC in appropriate locations, utilizing large-scale destratification fans for improved air circulation
- Integration of appropriate facets of “Passive House” features per the Energy Code
- Eliminating expensive HVAC systems in the vehicle storage areas
- Repurposing two existing buildings to recapture their Embodied Energy
- Repurposing the existing non-potable water/well on-site for
 - Vehicle and equipment washing
 - Flushing of toilets
 - Campus road and building surface clean-up
 - Other service sinks/hose bibbs in the facility not requiring potable water

Pursuing green building strategies, including Passive House Design, will result in these added benefits:

- Reduce carbon footprint
- Approach and achieve Net Zero Energy Consumption
- Reduce adverse environmental, safety and traffic impacts at this site and avoid new impacts on currently undeveloped land
- Save on hard and soft costs of operations, maintenance and other impacts
- Generate revenues from solar power to reduce NET costs for DPW

DPW Campus | Water Supply

New Well, Existing Well & Water Supply

Snow's Field

Blue - Zone 1
Protection Area
(Well)

Green - Water
Main to DPW
and Town Hall
(underground)
beneath TCT
land (purple)



Well Head -
small above-
ground unit at
center of circle

DPW Campus
Site
Orange - New
Bldgs with water

Town Hall receives
potable water

DPW Campus | Project Costs | Summary

Buildings x Function	Bldg	Total SF	Cost Total
Office / Office Support	2	2,700	\$1,426,480
Employee Facilities	2	3,500	\$1,838,760
Workshops	1B	4,350	\$2,829,530
Vehicle Maintenance	1A	5,950	\$4,795,780
Wash Bay	1C	1,350	\$185,625
Vehicle & Equip Storage	several	14,750	\$2,233,000
Fuel Station (unchanged)	n/a	-	\$0
<i>Salt/Brine Storage*</i>	<i>3B</i>	<i>2,800</i>	<i>\$308,000</i>
Buildings Total <i>excl. salt/brine</i>		32,600	13,309,175
Non-Building			
Site	est		\$1,100,000
Non-potable water well	est		\$55,000
Subtotal DPW Cost			\$14,464,175
Contingency		6%	\$867,851
Total DPW Cost			<u>\$15,332,026</u>
Town Hall - Shared Infrastructure			
Snow's Field - Well + piping	est		\$210,000
Total Cost w/ Town Hall			<u>\$15,542,026</u>

**Significantly less if switching to brine (recommended); NOT in calcs*

DPW Campus | Solar Energy Plan

SOLAR PLAN DETAILS					
Function	Bldg	Solar Width	Solar Length	Solar Sq Ft	Solar kW
Office / Office Support	2	26.1	80	2088	41.8
Workshops - S end	1B	20.6	50	1031	20.6
Workshops - N end	1B	20.6	50	1031	20.6
Vehicle Maintenance Garage	1A	46.4	50	2319	46.4
Vehicle & Equipment Storage	3A	20.0	80	1600	32.0
Vehicle & Equipment Storage	5	15.8	55	870	17.4
	Watts/SF		Totals	8938	178.8
	20				
			Generation - Hrs/Yr		1300
				MWh/yr	232
				\$/MWh	\$250
			Earned Revs/Yr	\$58,100	

DPW Campus | Solar Generated | Revenues

SOLAR ECONOMICS

Annual Earnings

\$58,100

Years of Impact

Scenario

A

B

Years of Operation (est)

25

50

Years to Payback Investment

4

4

Earning Years of Generation

21

46

DPW Costs w/Solar Revenues

Scenario

A

B

Total Earnings (\$ in millions)

\$1.22

\$2.67

DPW Costs

\$15.3

\$15.3

DPW Costs | Net Solar Earnings

\$14.1

\$12.7

- Anthony Garrett, AIA, LEED AP BD+C, PP has nearly 40 years' experience in architecture design, construction management and city planning. He has been a partner at Billow Garrett since 1999, a firm that has designed and developed many DPW facilities. Licensed as an architect in many states including MA, he has served as Planning Board Chairman in Boonton, NJ, serves on the Design Review Committee in Montville, NJ, and is the President of the Truro Part-Time Resident Taxpayers Association (TPRTA) in MA. He holds a Bachelor's degree from Rensselaer Polytechnic Institute. He is part owner of the Green Bay Packers.
- Jim Armstrong has nearly 40 years' experience in commercial facilities development for Texas Instruments (TI). He rose to Vice President of Operations within TI, a role he held for more than 13 years. He has developed complex facilities involving millions of square feet structurally located in diverse terrains and settings, while managing equipment valued in the hundreds of millions and a team of 6,000 employees.
- Mark Dickinson is the founder of Dickinson Development, a firm specializing in development and sales of commercial real estate. With more than 30 years' experience in mixed-use commercial real estate, he has led development of 3 million+ square feet of office, industrial, retail and hospitality properties, including Walkers Brook Crossing, Riverside Landing, Braintree Executive Center and Medsource Technologies HQ.
- Kevin Kuechler was trained as a civil engineer and hydrogeologist at Princeton University and in Management at MIT. For more than 30 years he has led and advised on hydrogeological risk assessments in local, state and federal projects. In Truro he has served as member, then Chair of the Truro Water Resources Oversight Committee (WROC, 2002-18) and as Truro's representative to the Provincetown Water & Sewer Board (2011-18). He remains active on wastewater treatment, water quality standards, ground water hydrology, and related Truro matters.