

Stearns Meadow Drinking Water Treatment Plant

Planning Board Meeting
September 14, 2023

Tighe & Bond



**Woodard
& Curran**





Agenda

- ▶ Project Background
- ▶ Project Objectives
- ▶ Site Overview
- ▶ Building Overview
- ▶ Site Layout and Circulation
- ▶ Stormwater
- ▶ Climate Resilience
- ▶ Q&A and Public Comment



Project Background

Stearns Meadow Water Treatment Plant

- ▶ Water System Master Plan by Tighe and Bond (2021) recommended a new Water Treatment Plant
- ▶ The Town of Scituate Water Department serves approx. 7,900 services. Approx. population of 19,000.
- ▶ Approx. 1.553 million gallons per day (MGD)
- ▶ The current Old Oaken Bucket (OOB) Treatment Plant is unable to effectively manage the manganese levels from the OOB Pond.
- ▶ Design and construction of the new WTP at Stearns Meadow was approved at the September 2022 Special Town Meeting



Existing Old Oaken Bucket Water Treatment Plant



Project Objectives

Water Treatment Plant Performance

- ▶ Permitted Average Flow (OOB): 0.79 MGD
- ▶ WTP Design Capacity: 3.0 MGD
- ▶ Filtered Water Turbidity 0.1 NTU
- ▶ Finished Water Manganese <0.05 mg/l
- ▶ Meet all EPA and MassDEP Water Quality Standards
- ▶ Ability for future PFAS treatment
- ▶ Process automation and remote monitoring capabilities

Water Supply Operations Resiliency

- ▶ Capability to produce 3 million gallons in 16 hours





Site Overview – Original Concept (April 2022)

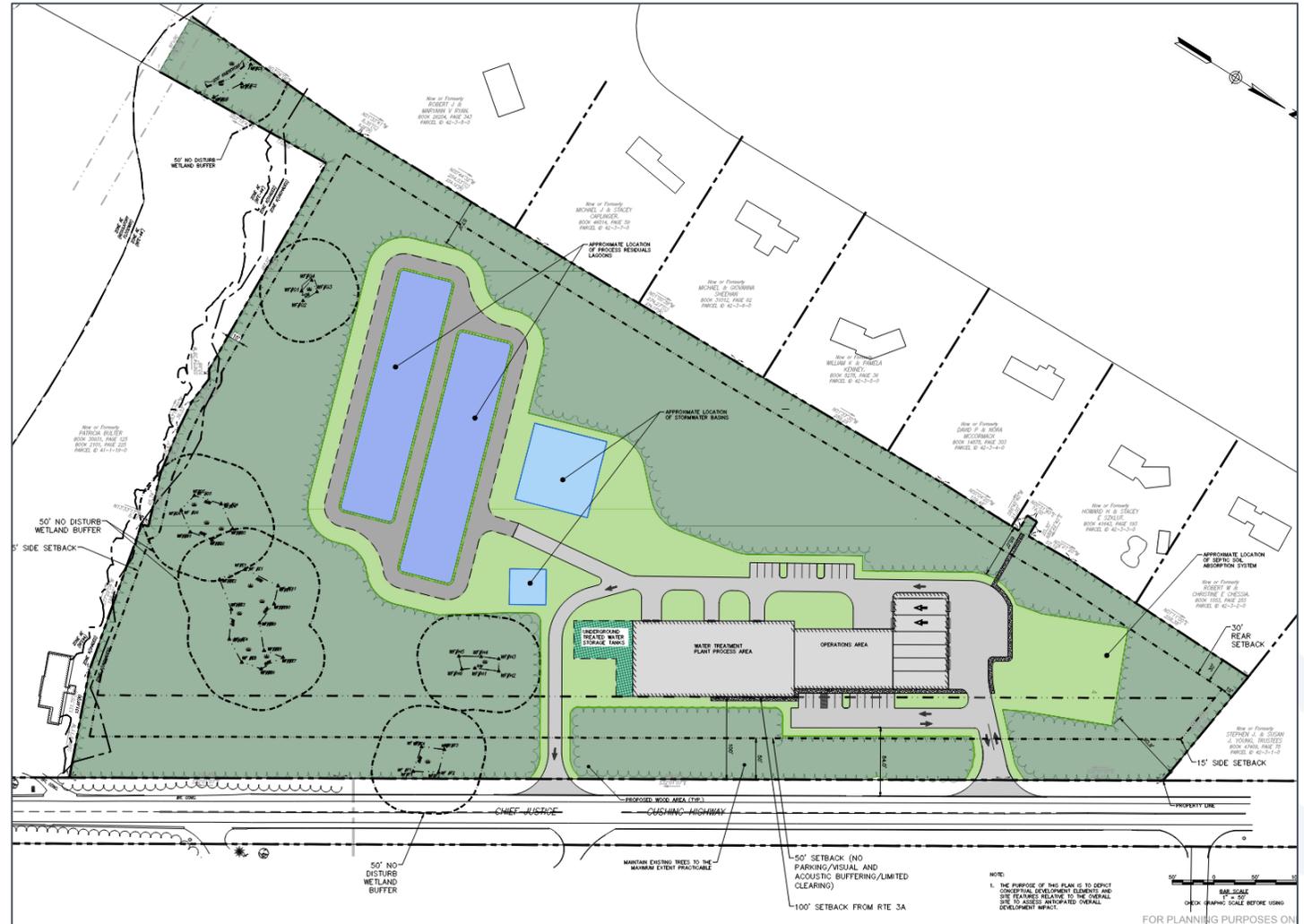
Site Characteristic	Area
Building Area	43,500 S.F.
Impervious Area (excluding building)	57,500 S.F.
Facility Footprint	8.8 Acres





Site Overview – September 2022

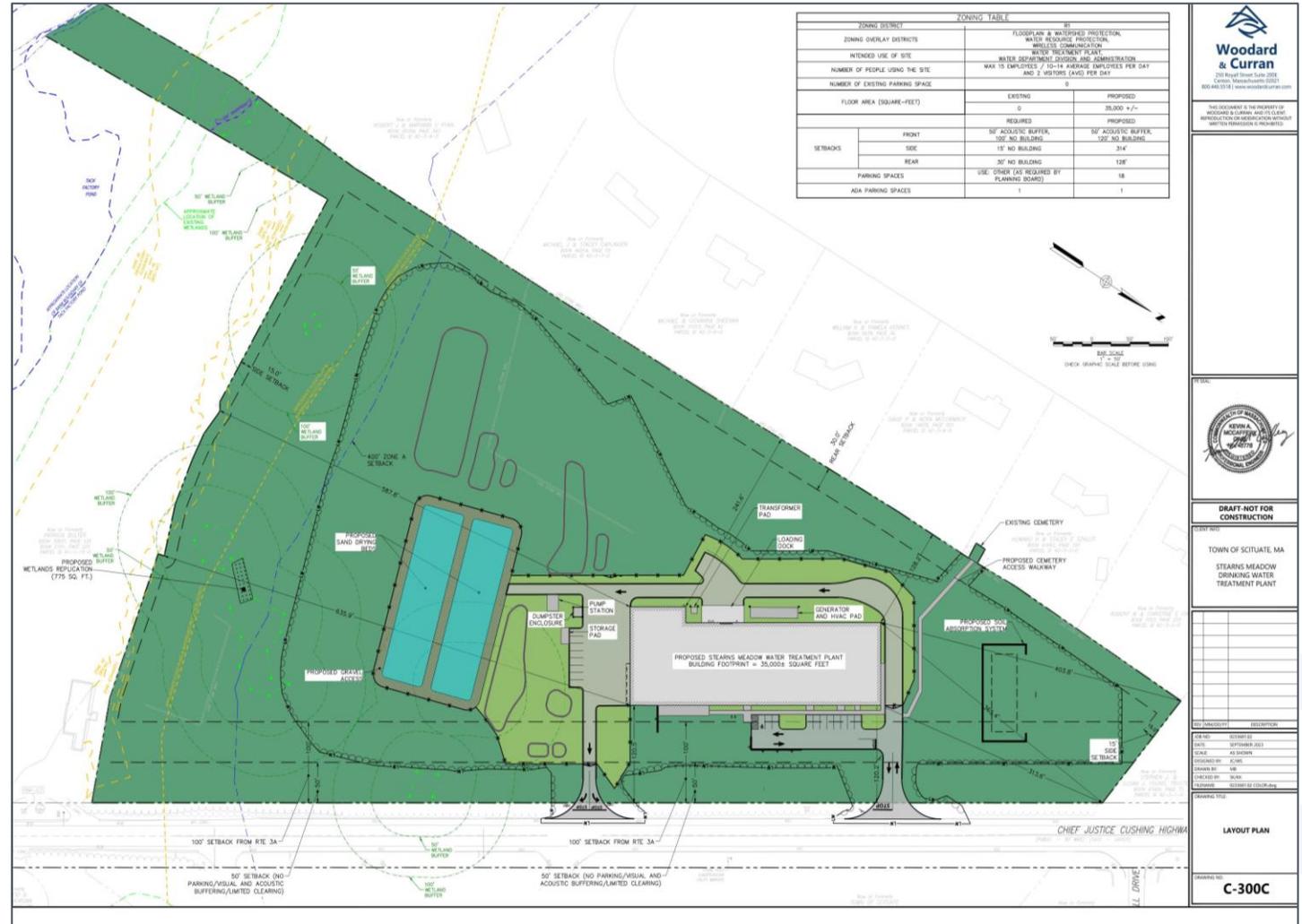
Site Characteristic	Area
Building Area	35,000 S.F.
Impervious Area (excluding building)	40,000 S.F.
Facility Footprint	5.9 Acres



Site Overview – Proposed



Site Characteristic	Area
Building Area	35,000 S.F.
Impervious Area (excluding building)	35,500 S.F.
Facility Footprint	4.0 Acres
Total Disturbance (Limit of Work)	9.1 Acres

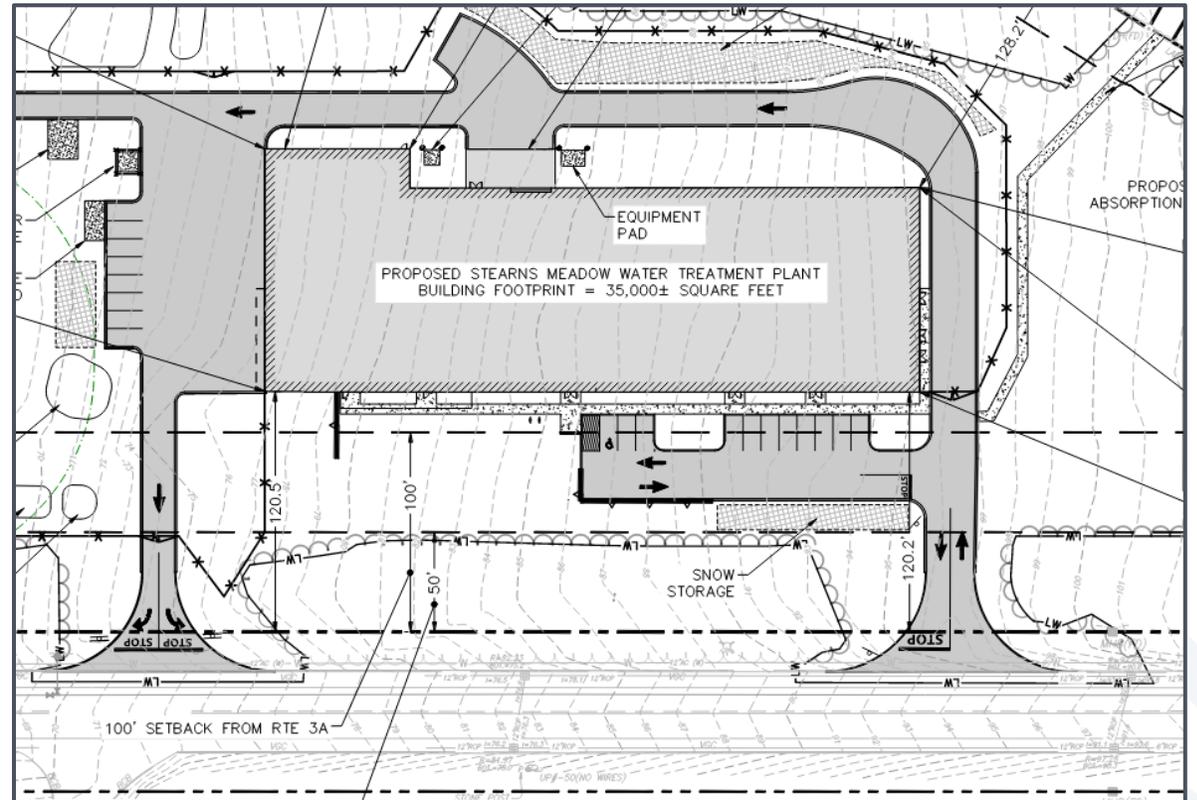




Site Overview – Parking

Current Parking Calculations

- ▶ Staff
 - 15 total (typ. 10-14 onsite)
 - 4 Water Treatment Operators
 - 8 Distribution Crew Members
 - 2 Administrative Personnel
 - 1 Superintendent
 - 3 Public Visitors
- ▶ Proposed Parking Spaces
 - Total of 19 Parking Spaces
 - 18 Parking Spaces
 - 8 at lower garage area (secured)
 - 10 in front parking area
 - 1 Accessible Parking Space

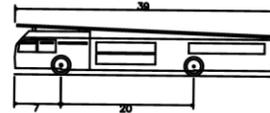




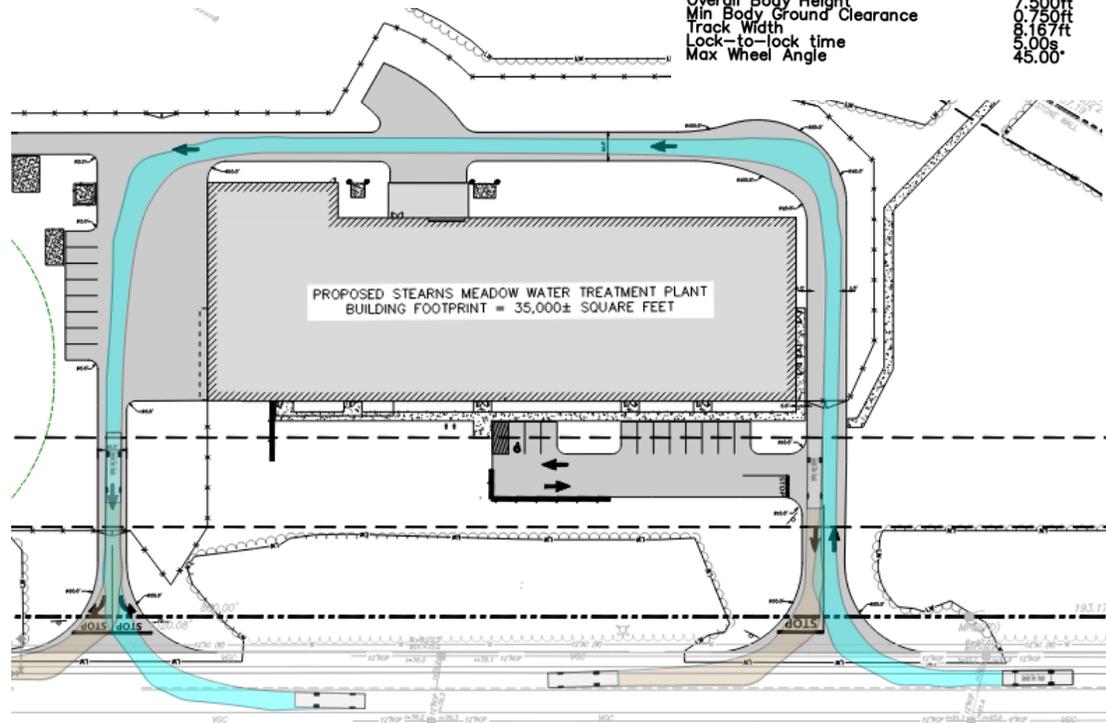
Site Access – Emergency Access & Deliveries

- ▶ Emergency Access by Fire Trucks is Paramount to Safety and Security of Facility
- ▶ Delivery Trucks Must Deliver Chemicals to the Facility on a Routine Basis

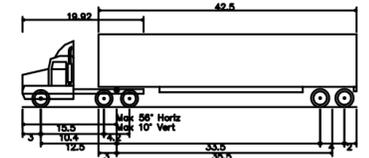
Fire Truck



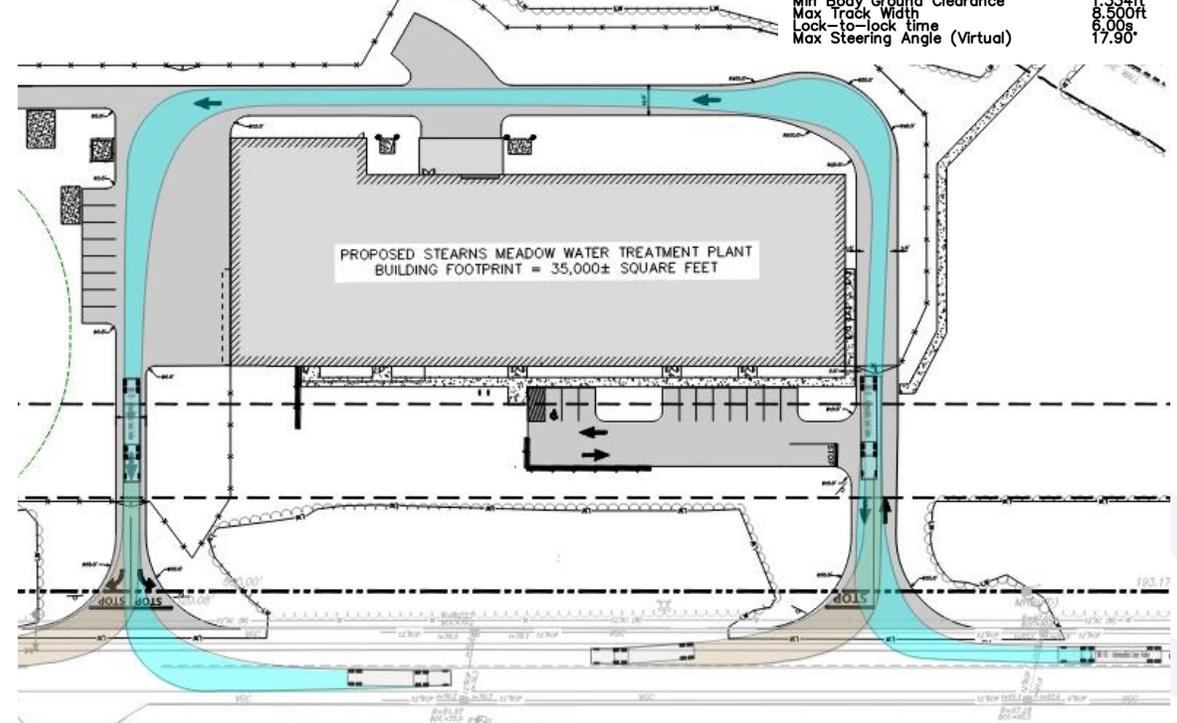
Aerial Fire Truck
Overall Length 39.000ft
Overall Width 8.167ft
Overall Body Height 7.500ft
Min Body Ground Clearance 0.750ft
Track Width 8.167ft
Lock-to-lock time 5.00s
Max Wheel Angle 45.00°



Delivery Truck



WB-50 – Intermediate Semi-Trailer
Overall Length 55.000ft
Overall Width 8.500ft
Overall Body Height 12.052ft
Min Body Ground Clearance 1.334ft
Max Track Width 8.500ft
Lock-to-lock time 6.00s
Max Steering Angle (Virtual) 17.90°





Site Access – Trip Estimates

Traffic Study Findings

Traffic Increases are Minimal and Well Within Typical Traffic Fluctuations

- ▶ Chapelle Engineering Conducted a Traffic Study and estimated trip generation based on the Institute of Transportation Engineering (ITE) *Trip Generation Manual*.
 - Utilized Land Use Code 170 (Utilities) and 30,000 square foot building (excludes garage area) to estimate trip generations NOT the number of employees utilizing the site.
- ▶ Study (*using ITE methods*) estimated:
 - 370 trips generated per weekday daily
 - 4.7% Increase during peak hours on south side
 - 3.3% Increase during peak hours on north side
- ▶ Study concluded that estimated trips are below MassDOT Impact Assessment Guidelines, no further evaluations required.

Current OOB Facility Traffic

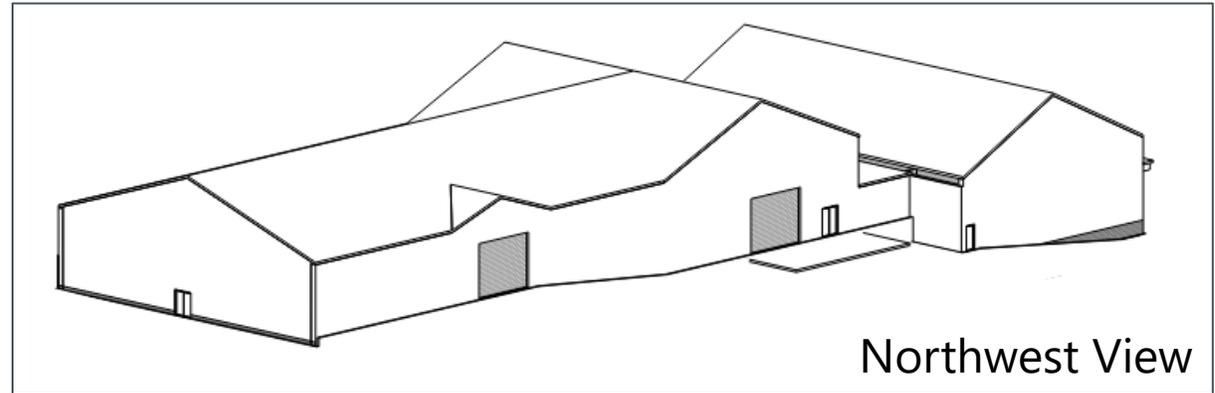
- ▶ Typical shifts for Water Department staff 7AM to 3PM
- ▶ Estimated ~114 trips per weekday daily based on current activity at OOB, including:
 - Worker commutes
 - Treatment operator visiting remote sites
 - Distribution crew responses
 - Visitors



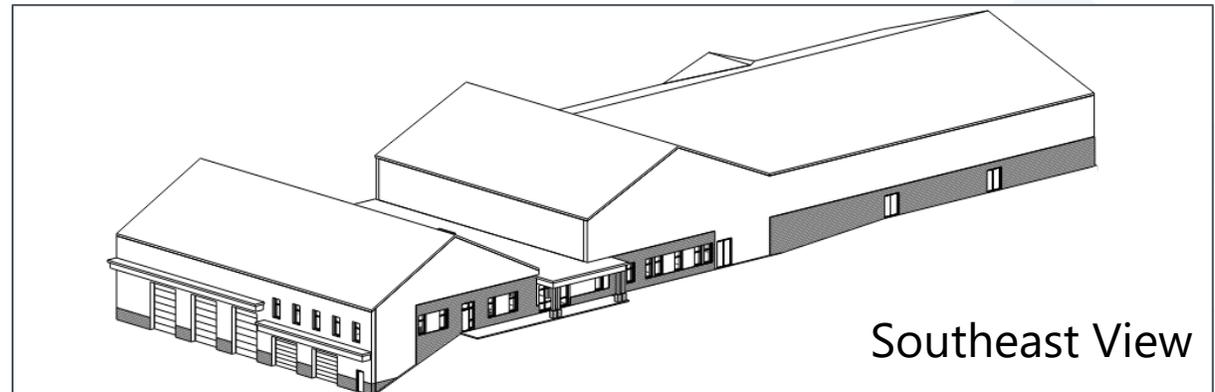
Building Overview – Dimensions

Building Dimensions

- ▶ Building is 35,000 +/- S.F.
- ▶ Building Components:
 - Treatment Process Area
 - Operations functions
 - 5 Bay Garage (equipment storage)



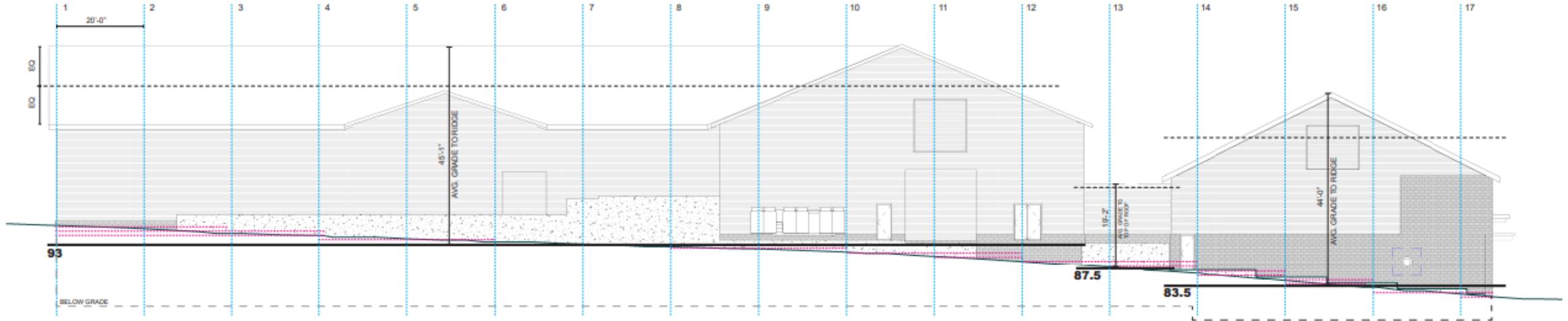
Northwest View



Southeast View



Building Overview – Height



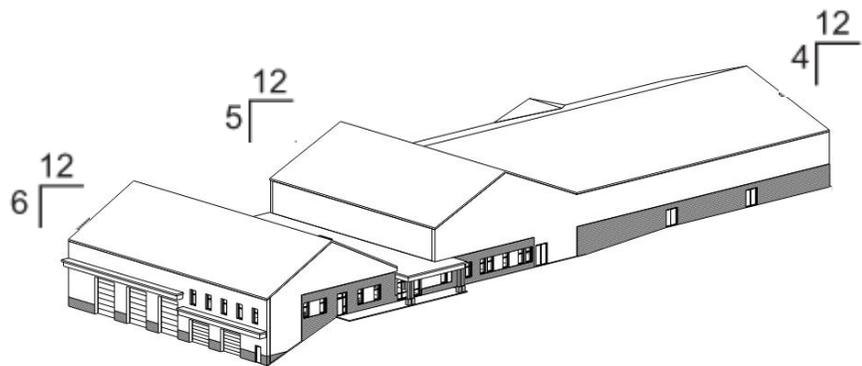
Average = 34' - 4"

- AVERAGE HEIGHT
- AVERAGE GRADE
- INTERMEDIATE GRADE
- BELOW GRADE BUILDING OUTLINE

Max Height

**Height taken from average grade to ridge height

83.5 (Garage)	44'-0"
87.5 (Flat Roof)	19'-2"
93 (Processing)	45'-1"

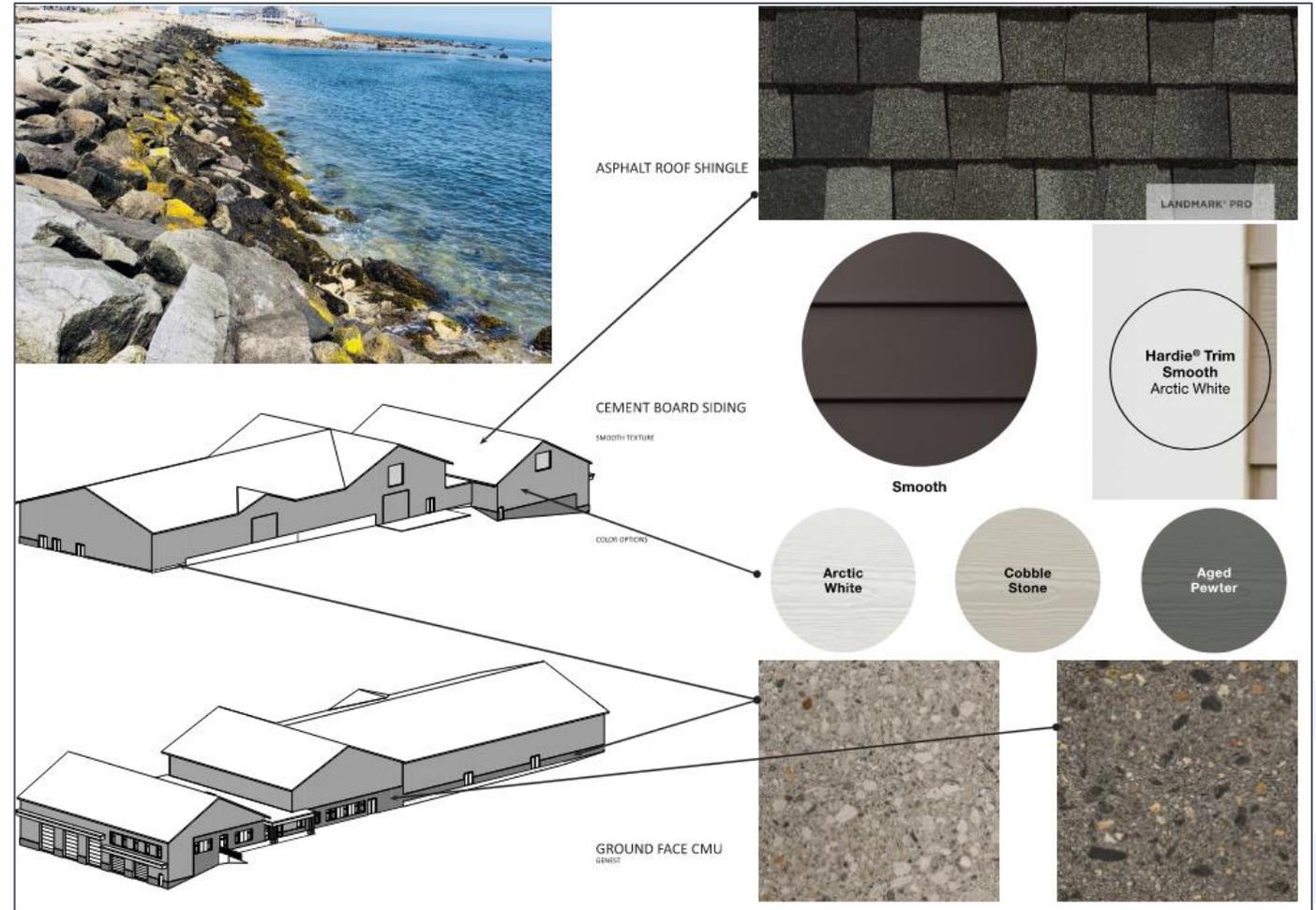


1 SOUTH EAST VIEW
SCALE

Building Overview - Materials

Exterior Materials

- ▶ Picked to blend with adjacent properties
- ▶ Traditional "New England" aesthetic
 - Asphalt shingle roof
 - Cement board siding
 - Two-toned concrete masonry units (CMU) foundation.

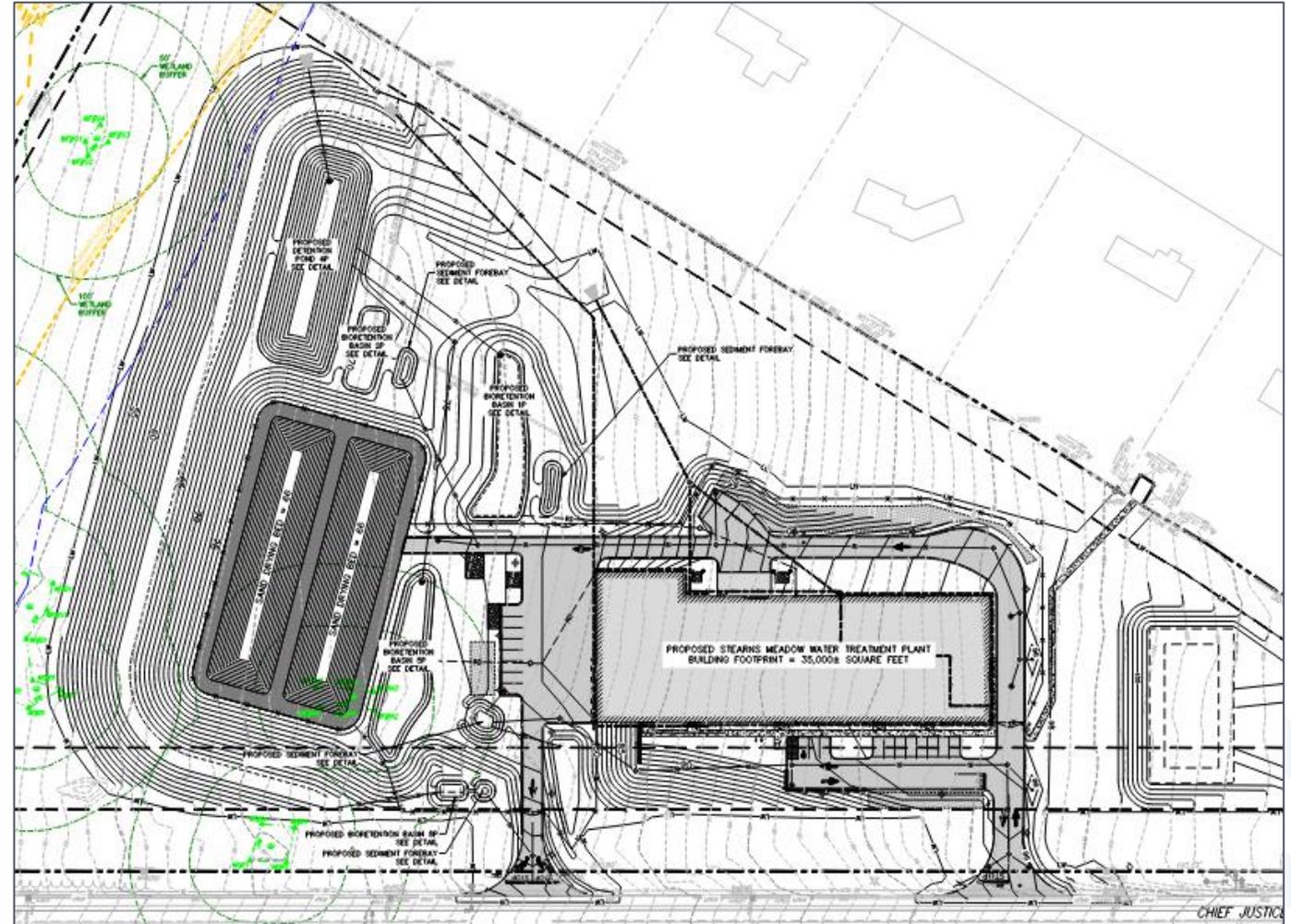




Stormwater

Stormwater Approach & Results -

- ▶ catch basins > forebays > biofiltration > infiltration = 94% TSS Removal
- ▶ Flow rates: 8% to 38% reduction for events modeled
- ▶ Flow volume: 2.5% increase for 100-year (6.66 ac-ft vs. 6.49 ac-ft) [assumed 0.17 in/hr]
- ▶ Adequate volume retained for groundwater recharge





Climate Resilience

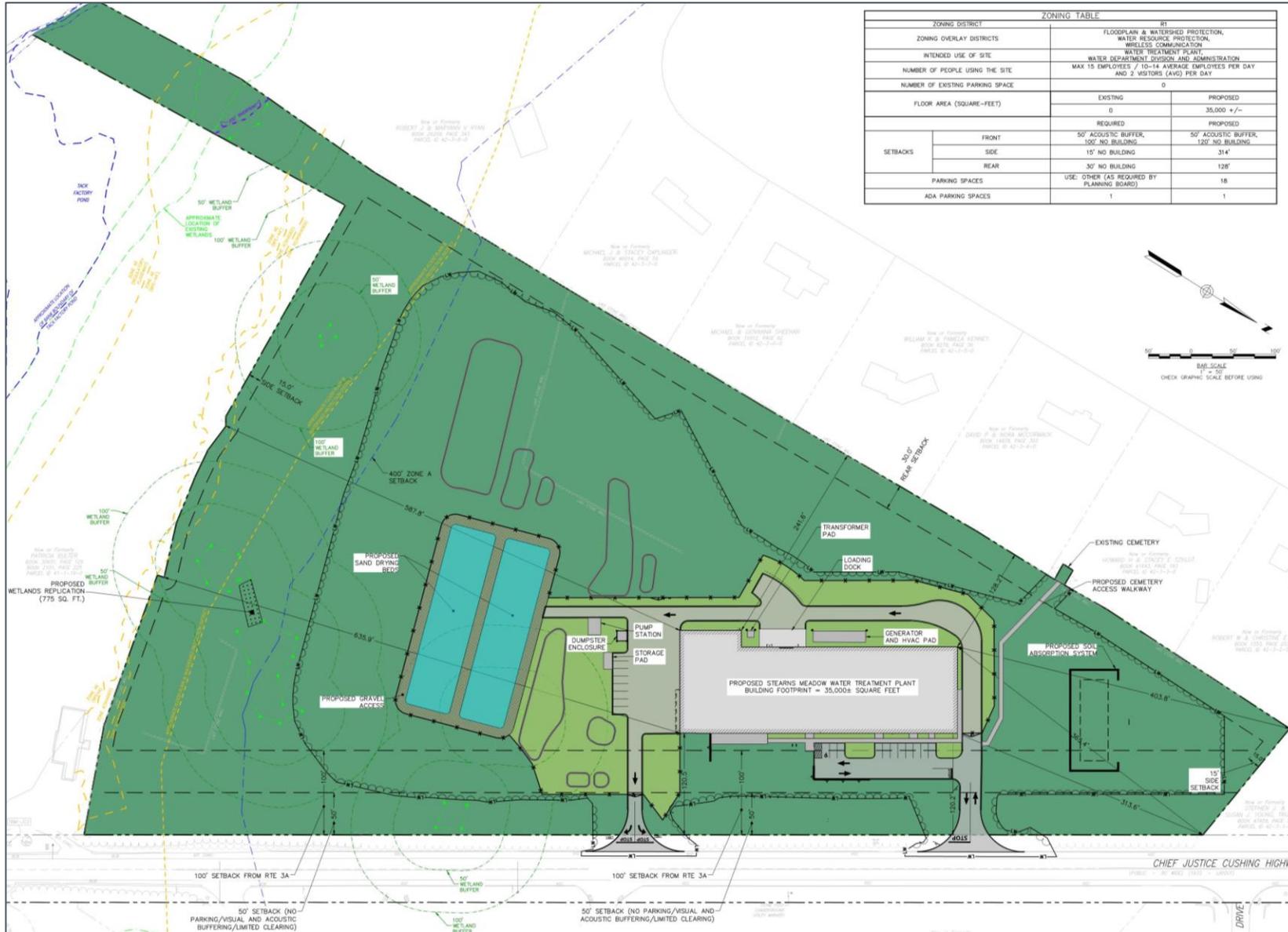
- ▶ New WTP Completely Outside of Flood Plain
- ▶ Updated Equipment for Energy Efficiency
 - LED Lighting
 - High Efficiency Motors
- ▶ Utilizes Sloped Site for Treatment Process Hydraulics
- ▶ EV Charging Station (Town Vehicles)
- ▶ Building is "Solar Ready"
- ▶ Zero Liquid Discharge
 - Septic System
 - Sand Drying Beds



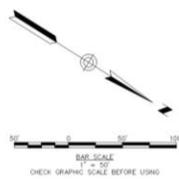


Renderings

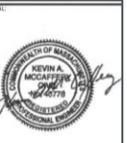
Current Site Layout – August 2023



ZONING DISTRICT		RT	
ZONING OVERLAY DISTRICTS		FLOODPLAIN & WATERSHED PROTECTION, WATER RESOURCE PROTECTION, WIRELESS COMMUNICATION	
INTENDED USE OF SITE		WATER TREATMENT PLANT	
NUMBER OF PEOPLE USING THE SITE		MAX 15 EMPLOYEES / 10-14 AVERAGE EMPLOYEES PER DAY AND 2 VISITORS (AVG) PER DAY	
NUMBER OF EXISTING PARKING SPACE		0	
FLOOR AREA (SQUARE-FEET)		EXISTING	PROPOSED
		0	35,000 +/-
		REQUIRED	PROPOSED
FRONT		50' ACOUSTIC BUFFER, 100' NO BUILDING	50' ACOUSTIC BUFFER, 120' NO BUILDING
SIDE		15' NO BUILDING	31'
REAR		30' NO BUILDING	128'
PARKING SPACES		USE OTHER (AS REQUIRED BY PLANNING BOARD)	18
ADA PARKING SPACES		1	1



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DRAFT-NOT FOR CONSTRUCTION

TOWN OF SCITUATE, MA
STEARNS MEADOW DRINKING WATER TREATMENT PLANT

REV	DATE	DESCRIPTION
01	02/28/21	ISSUE FOR PERMIT
02	09/28/23	AS SHOWN

LAYOUT PLAN
DRAWING NO: **C-300C**



Tighe & Bond



**Woodard
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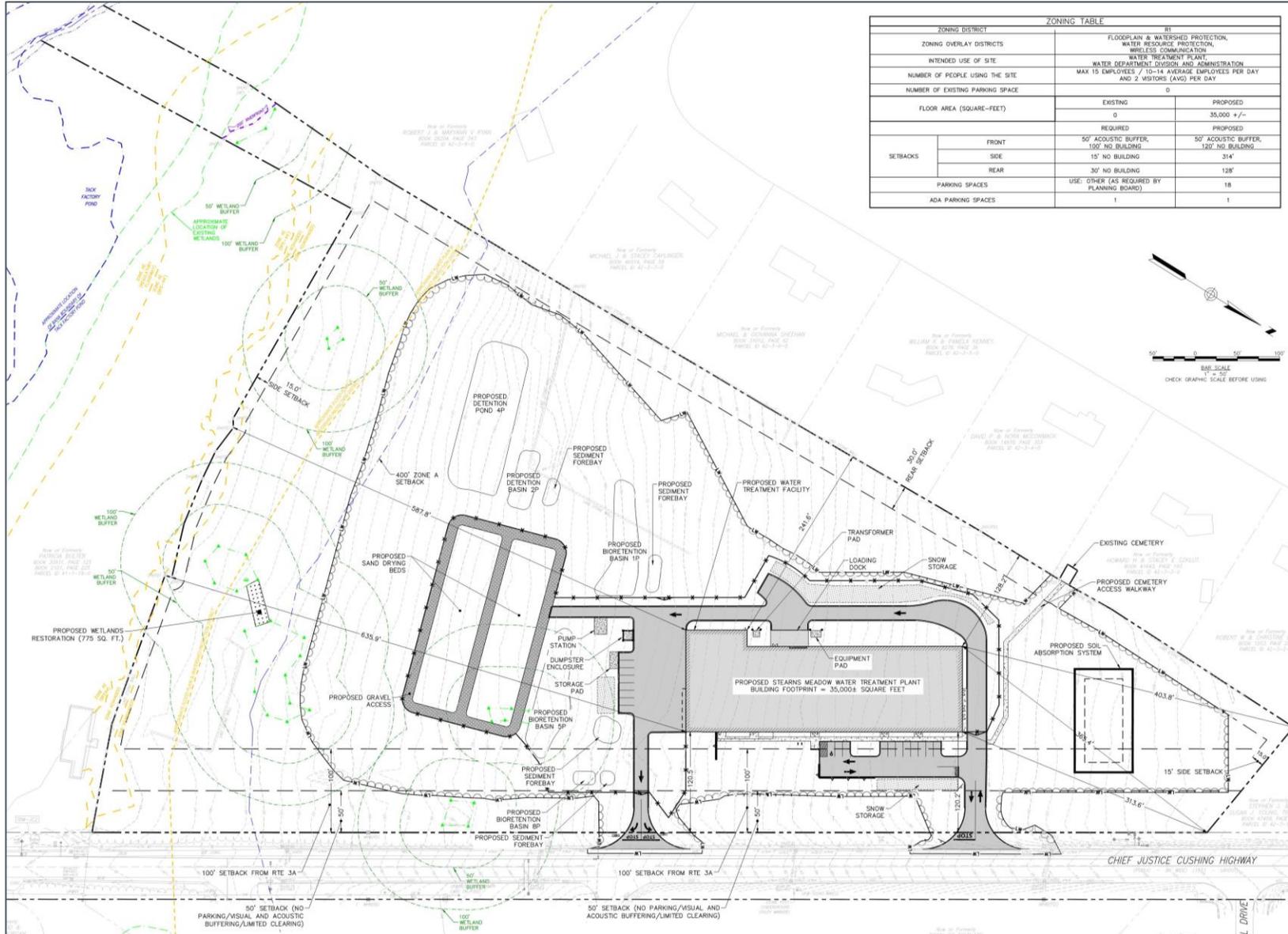


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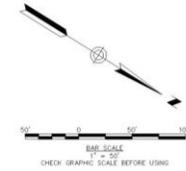


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Layout Plan



ZONING DISTRICT		R1	
ZONING OVERLAY DISTRICTS		FLOODPLAIN & WATERSHED PROTECTION, WATER RESOURCE PROTECTION, WIRELESS COMMUNICATION	
INTENDED USE OF SITE		WATER TREATMENT PLANT	
NUMBER OF PEOPLE USING THE SITE		MAX 15 EMPLOYEES / 10-14 AVERAGE EMPLOYEES PER DAY AND 2 VISITORS (AVG) PER DAY	
NUMBER OF EXISTING PARKING SPACE		0	
FLOOR AREA (SQUARE-FOOT)		EXISTING	PROPOSED
		0	35,000 +/-
		REQUIRED	PROPOSED
SETBACKS	FRONT	50' ACOUSTIC BUFFER, 100' NO. BUILDING	50' ACOUSTIC BUFFER, 120' NO. BUILDING
	SIDE	15' NO BUILDING	31'
	REAR	30' NO BUILDING	128'
PARKING SPACES		USE: OTHER (AS REQUIRED BY PLANNING BOARD)	
		18	18
ADA PARKING SPACES		1	1



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ISSUE FOR PERMIT

CLIENT: TOWN OF SCITUATE, MASSACHUSETTS
453 CHIEF JUSTICE CUSHING HIGHWAY
STEARNS MEADOW DRINKING WATER TREATMENT PLANT

REV	DATE	DESCRIPTION
01	02/18/2023	ISSUE FOR PERMIT
02	AUGUST 15, 2023	AS SHOWN
03	JC	DESIGNED BY
04	608	DRAWN BY
05	SK	CHECKED BY
06	02/18/2023	FILENAME: 021823.DWG C-300.dwg

OVERALL SITE LAYOUT PLAN

DRAWING NO: **C-300**



Q&A and Public Comment

Thank you!

Tighe&Bond



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