Marblehead Harbor Plan Implementation Committee Agenda

- Brief overview of the Marblehead Harbor Plan
- Overall Goals and where Marblehead currently stands
- Update: State Street Landing and Tucker's Wharf resilience project
- Update: CZM Funding Round for FY26

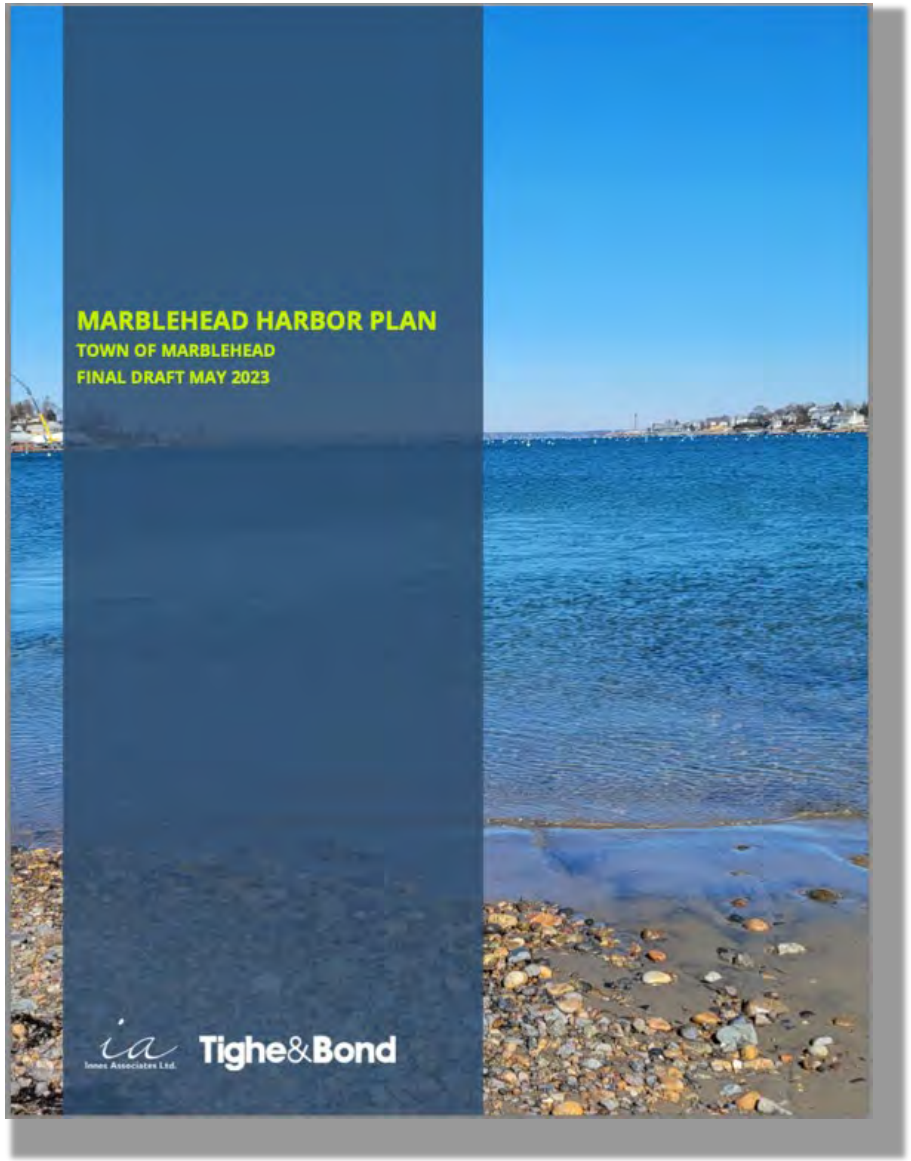
Marblehead Harbor Plan - Recap

- The 2023 Marblehead Harbor Plan represents written documentation of the community's goals, objectives, and recommendations for guiding public and private use of the waters and adjacent Town-owned lands.

- The **Harbor Plan Implementation Committee (HPIC)** was established by the Select Board and meets quarterly to provide broad stakeholder input to plan implementation.

Plan findings focused on five overall goals

1. Repair and maintain existing infrastructure
2. Support public access to the water
3. Support water-dependent and water-focused economic development
4. Address public safety on, in, and around the water
5. Develop policies and identify investments to address sea level rise and climate change



- *The plan includes dozens of specific recommended actions across these five goal categories, including priority ratings and cost estimates*

Ongoing work at Shipyard Area & State St. Landing

1. Repair and maintain existing infrastructure
2. Support public access to the water
3. Support water-dependent and water-focused economic development
4. Address public safety on, in, and around the water
5. Develop policies and identify investments to address sea level rise and climate change

This high priority work includes all of the Harbor Plan goal areas and the main focus of the CDP Office

Work on other individual Harbor Plan objectives

1. Repair and maintain existing infrastructure
2. Support public access to the water
3. Support water-dependent and water-focused economic development
4. Address public safety on, in, and around the water
5. Develop policies and identify investments to address sea level rise and climate change

Promoting public access

Reducing marine debris

Improving water quality

Marblehead Harbor Plan Implementation Committee – Project Update(s)

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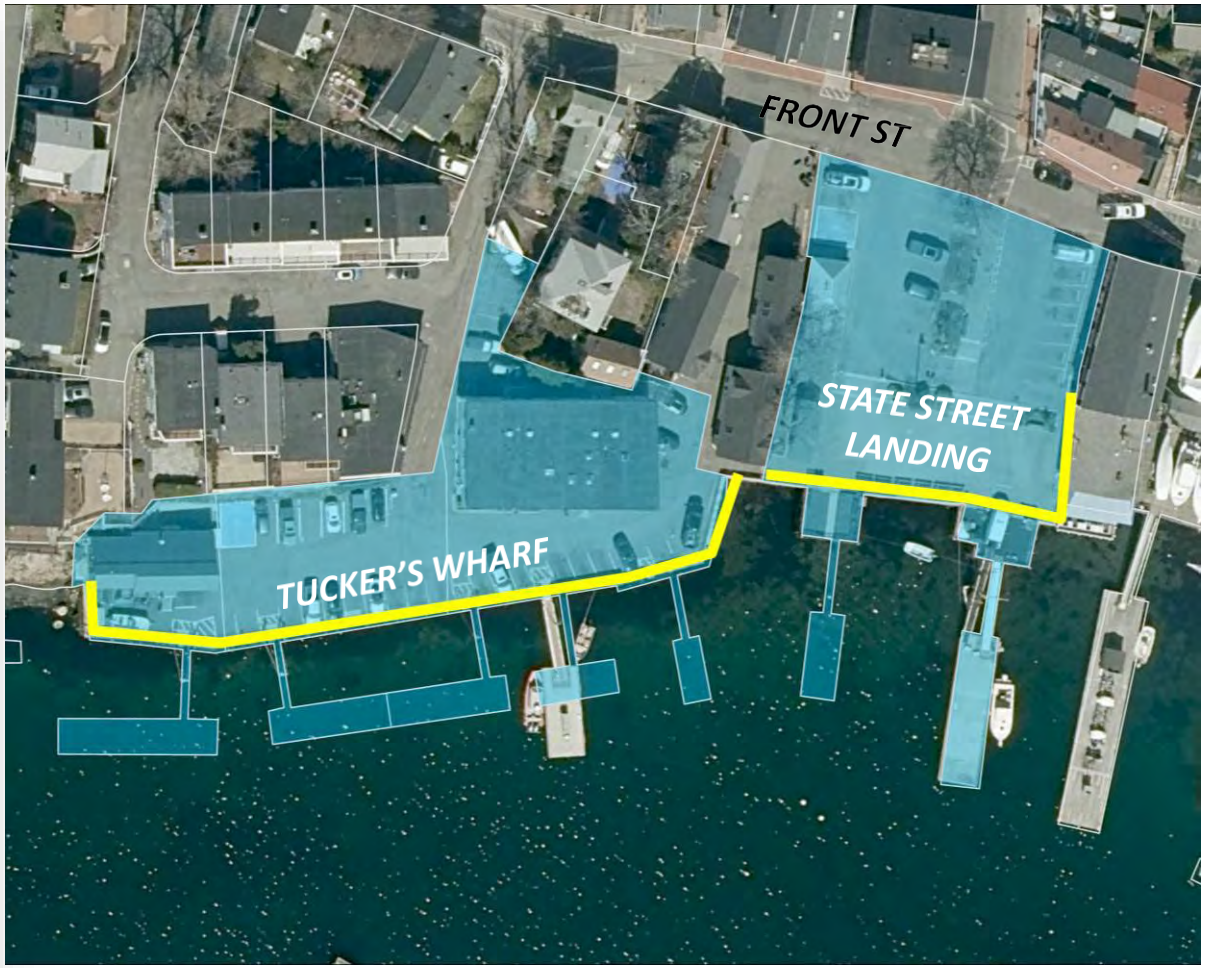
State Street Landing and Tucker's Wharf Resiliency Project



TOWN OF MARBLEHEAD INCORPORATED 1649

Salem Sound COASTWATCH

CZM

Project Overview

Where: State Street Landing and Tucker's Wharf

What: A project to develop resiliency alternatives for a Town-owned public wharf used for recreational and commercial water access, ending with a report and three concepts.

Why: Storms have inundated the site and damaged the seawall repeatedly in the recent past.

Who: Town of Marblehead, Salem Sound CoastWatch, Woods Hole Group, Collins Engineers, Massachusetts Office of Coastal Zone Management

When: Fall 2024 - June 30, 2025

Meeting Goals: *Review the results of the vulnerability assessment and receive feedback from the public on three conceptual alternatives.*

*Funding provided by Massachusetts Office of Coastal Zone Management with in-kind match funding provided by Salem Sound CoastWatch & Town of Marblehead

Scope of Work and Study Area

1) **Collect and Review Existing Information** - COMPLETE
    a) Gather licenses, drawings, and documentation
    b) Perform a site survey and draft existing conditions drawings
2) **Analyze the Site** - COMPLETE
    a) Perform a site-specific flood risk analysis
    b) Assess the seawall's condition and draft maintenance plan
3) **Draft Conceptual Alternatives** - COMPLETE
4) **Engage the Public** - ONGOING
5) **Refine Conceptual Alternatives** - COMPLETE
    a) Incorporate performance analysis and public feedback
    b) Develop design drawings, cost estimates, and a permitting matrix

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Vulnerability Assessment Tasks

- Asset Inventory
  - Critical Elevation Survey
- Review Flood Risk Modeling
  - Massachusetts Coast Flood Risk Model (MC-FRM)
  - Conduct Vulnerability Assessment
- Develop Design Flood Elevations (DFEs)
- Summary Memo

ACRONYMS:

MC-FRM – *Massachusetts Coast Flood Risk Model* - a hydrodynamic probabilistic model that describes coastal flood risk in Massachusetts in terms of annual chance of flooding under conditions predicted for 2030, 2050, and 2070 by a high sea level rise scenario.

DFE – *Design Flood Elevation* – an elevation recommended for a certain built feature in order to achieve a specific level of flood risk. DFEs can be calculated differently by a variety of sources, and then chosen for features such as a building or seawall based on risk tolerance and regulatory requirements.

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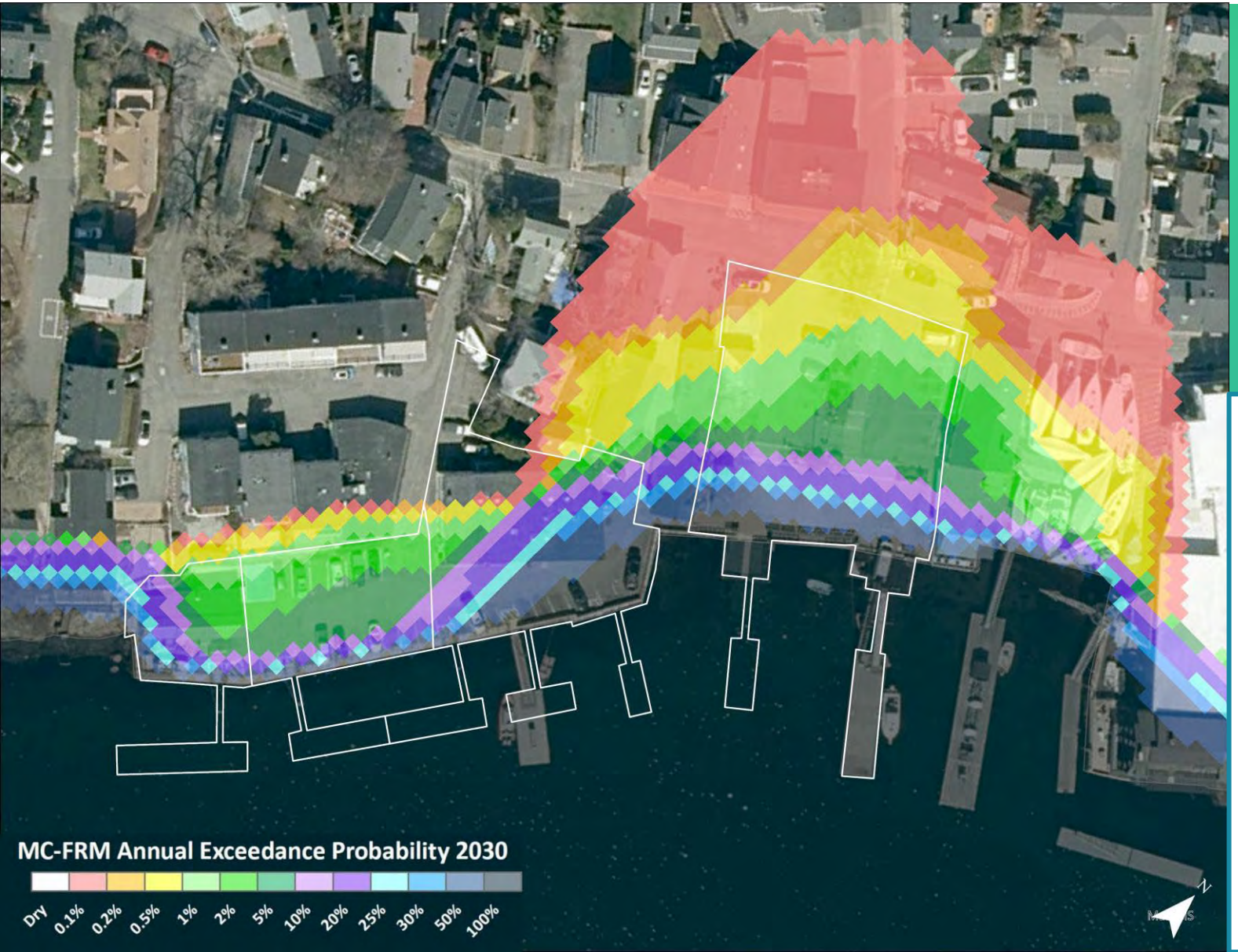
2030 MC-FRM Annual Exceedance Probability (AEP)
1.3' Sea Level Rise (SLR) from 2008 baseline



- "as soon as 2030"
- Varying annual probability from 100% - 0.1% across the site
- Does not include wave overtopping or precipitation

MC-FRM – *Massachusetts Coast Flood Risk Model* - a hydrodynamic probabilistic model that describes coastal flood risk in Massachusetts in terms of annual chance of flooding under conditions predicted for 2030, 2050, and 2070 by a high sea level rise scenario.

AEP – *Annual (Coastal Flood) Exceedance Probability* – the probability that at least one storm event will flood an area or building in one year.

SLR – *Sea Level Rise* – a global phenomenon of rising average sea level due to climate change driven expansion of sea water and introduction of meltwater from glaciers and ice sheets. Sea level rise in this presentation references Boston Harbor, and has been locally adjusted to reflect land subsidence.

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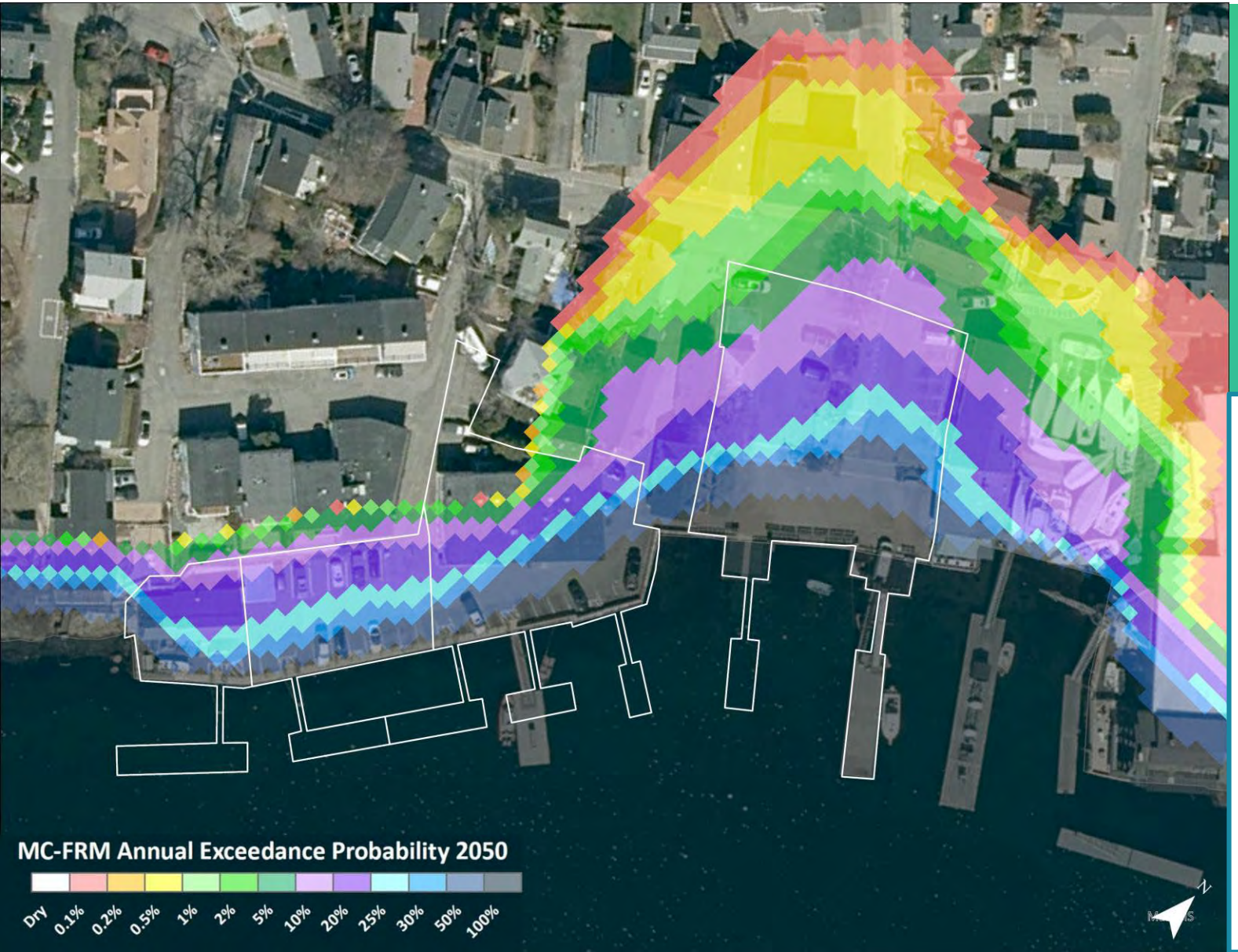
2050 MC-FRM Annual Exceedance Probability (AEP)
2.5' Sea Level Rise (SLR) from 2008 baseline



- "as soon as 2050"
- Varying annual probability from 100% - 1% across the site
- Does not include wave overtopping or precipitation

MC-FRM – *Massachusetts Coast Flood Risk Model* - a hydrodynamic probabilistic model that describes coastal flood risk in Massachusetts in terms of annual chance of flooding under conditions predicted for 2030, 2050, and 2070 by a high sea level rise scenario.

AEP – *Annual (Coastal Flood) Exceedance Probability* – the probability that at least one storm event will flood an area or building in one year.

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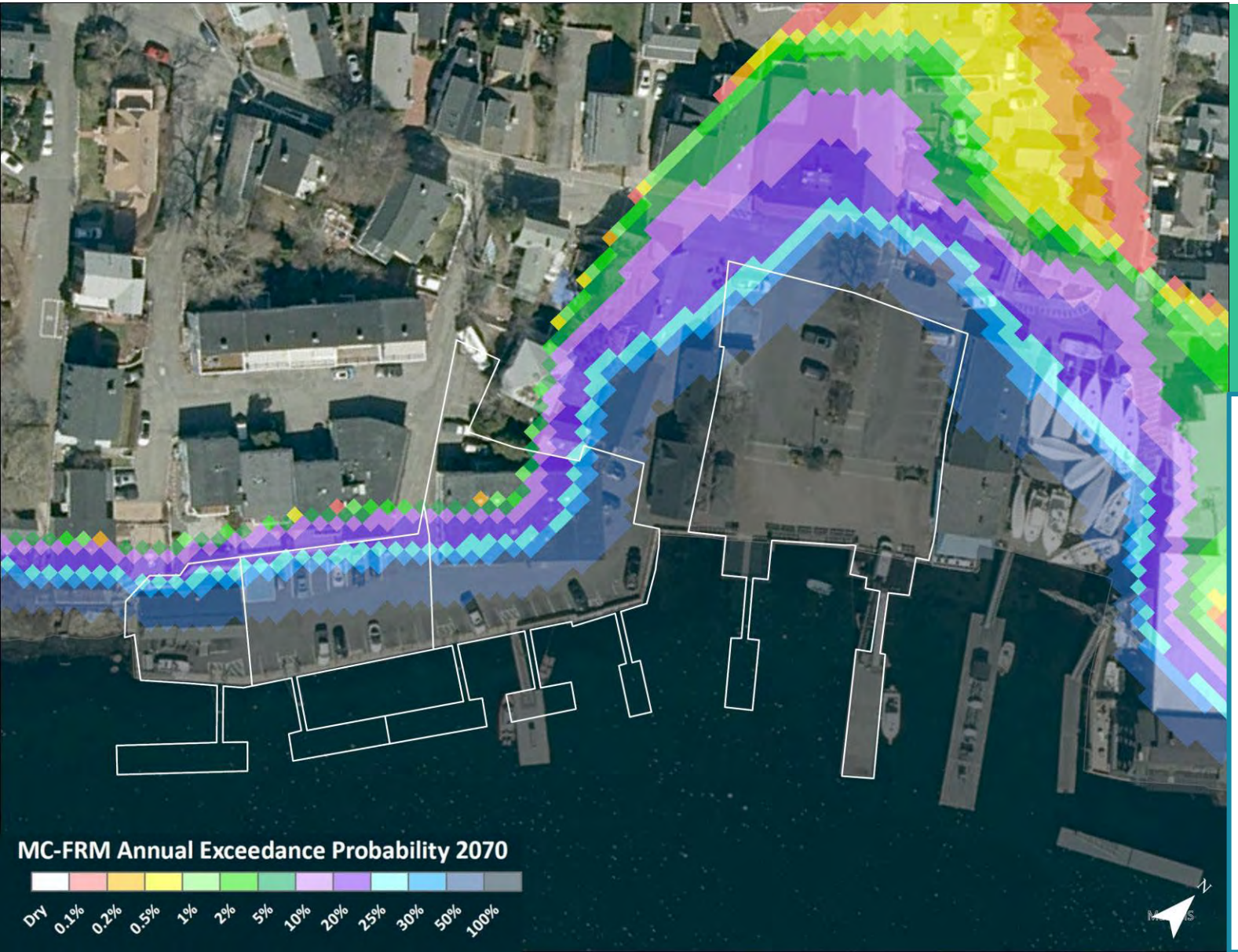
2070 MC-FRM Annual Exceedance Probability (AEP)
4.3' Sea Level Rise (SLR) from 2008 baseline



- "as soon as 2070"
- Varying annual probability from 100% - 20% across the site
- Does not include wave overtopping or precipitation

MC-FRM – *Massachusetts Coast Flood Risk Model* - a hydrodynamic probabilistic model that describes coastal flood risk in Massachusetts in terms of annual chance of flooding under conditions predicted for 2030, 2050, and 2070 by a high sea level rise scenario.

AEP – *Annual (Coastal Flood) Exceedance Probability* – the probability that at least one storm event will flood an area or building in one year.

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Key Takeaways: Flood Vulnerability

- The project area is highly vulnerable to coastal flooding.
  - Parking lots are expected to flood at least once per year in the near term and at least once per day as soon as 2070 if no changes are made.

- Buildings within the project area have varying levels of vulnerability to coastal flooding.
  - The Condo basement is highly vulnerable to flooding in the near term (> 5% annual chance as soon as 2030), with increasing vulnerability as time goes on
    - It could be inundated chronically as soon as 2070
  - The Harbormaster's Office and Condo first floor have little to no flood vulnerability until the 2070 time horizon.

- Waves splash over the wall and contribute to the volume of flood water behind the wall in small storms.
  - In larger storms, water flows freely over the wall, and the contribution of waves splashing over is not important

- Waves currently damage the wall and could cause more damage in the future.

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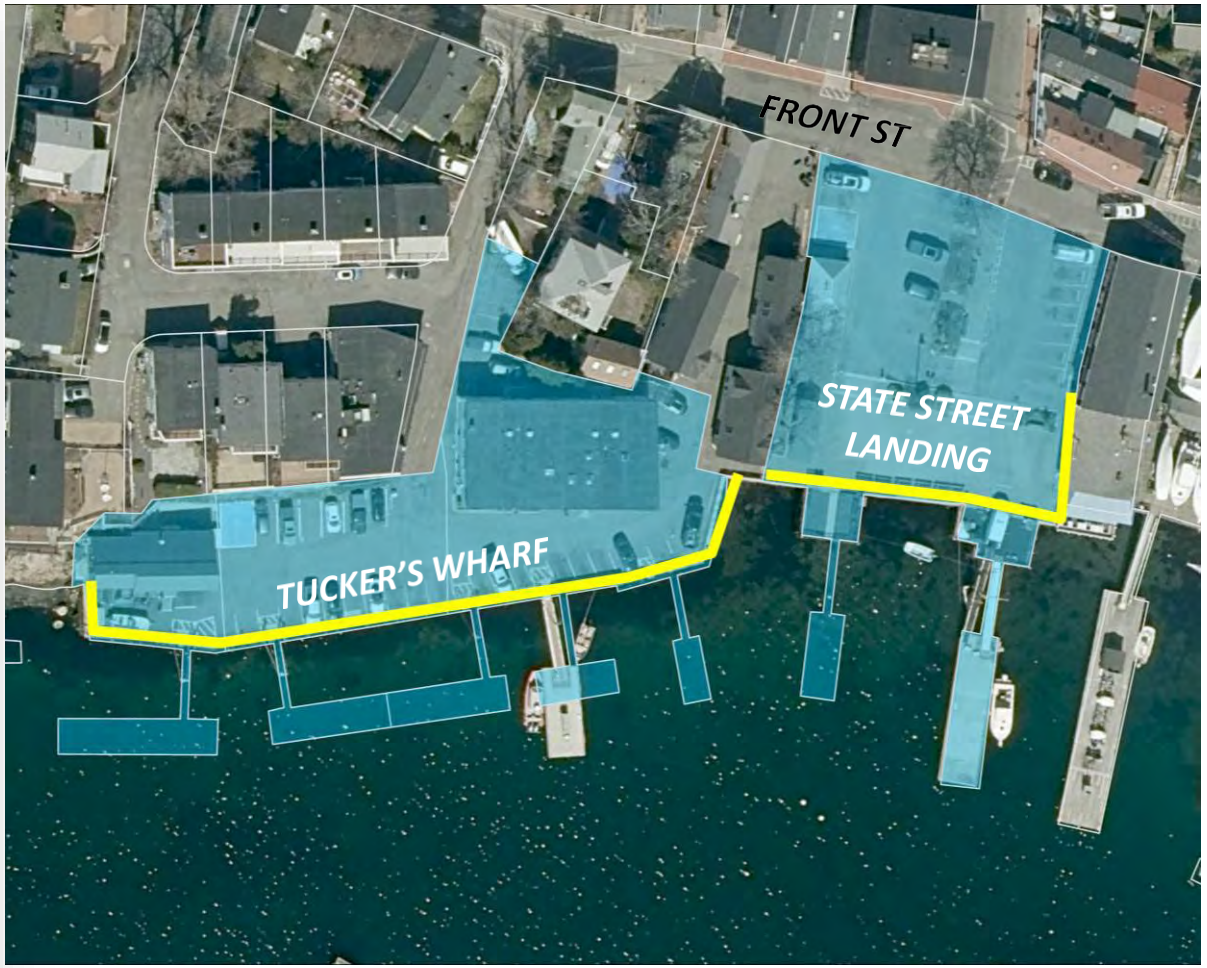
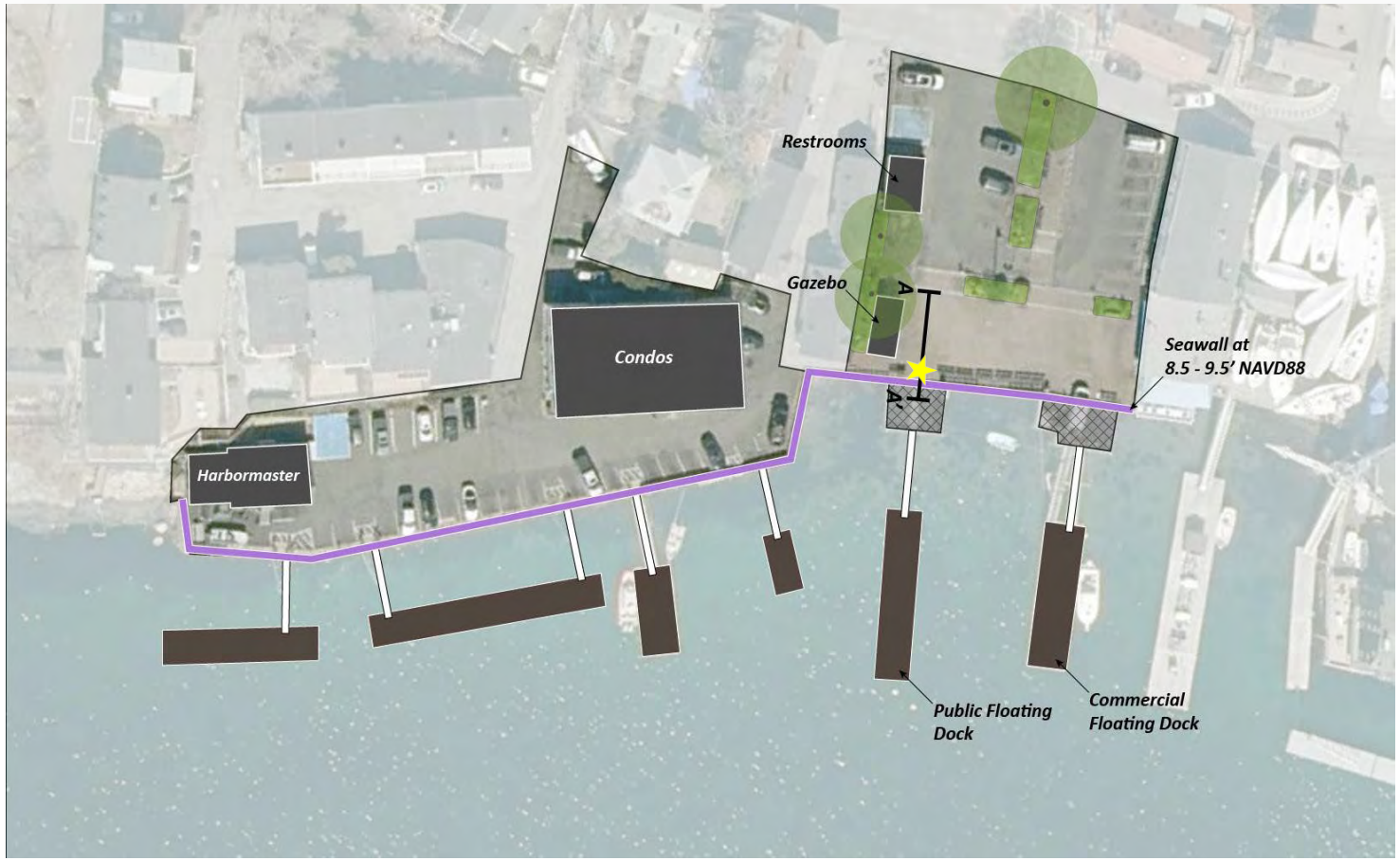
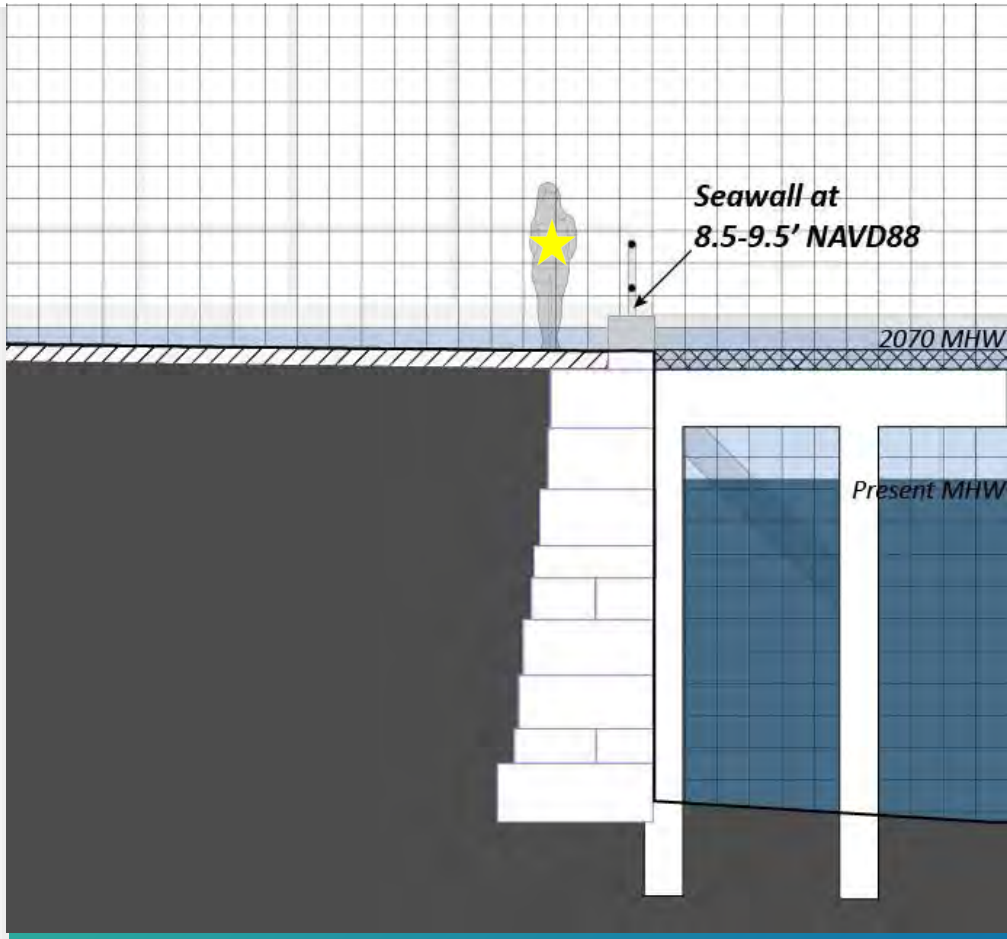
State Street Landing and Tucker's Wharf Resiliency Project

Conceptual Alternatives - Seawall



Existing Conditions





Seawall Elevation (ft NAVD88)	MHW vulnerability	Approx Stillwater AEP as soon as 2050	Approx Sig. Wave AEP as soon as 2050
8.5	*As soon as 2070*	*>5%*	*>5%*

Seawall cap: 8.5-9.5' NAVD88
Land behind seawall: ~8.0' NAVD88

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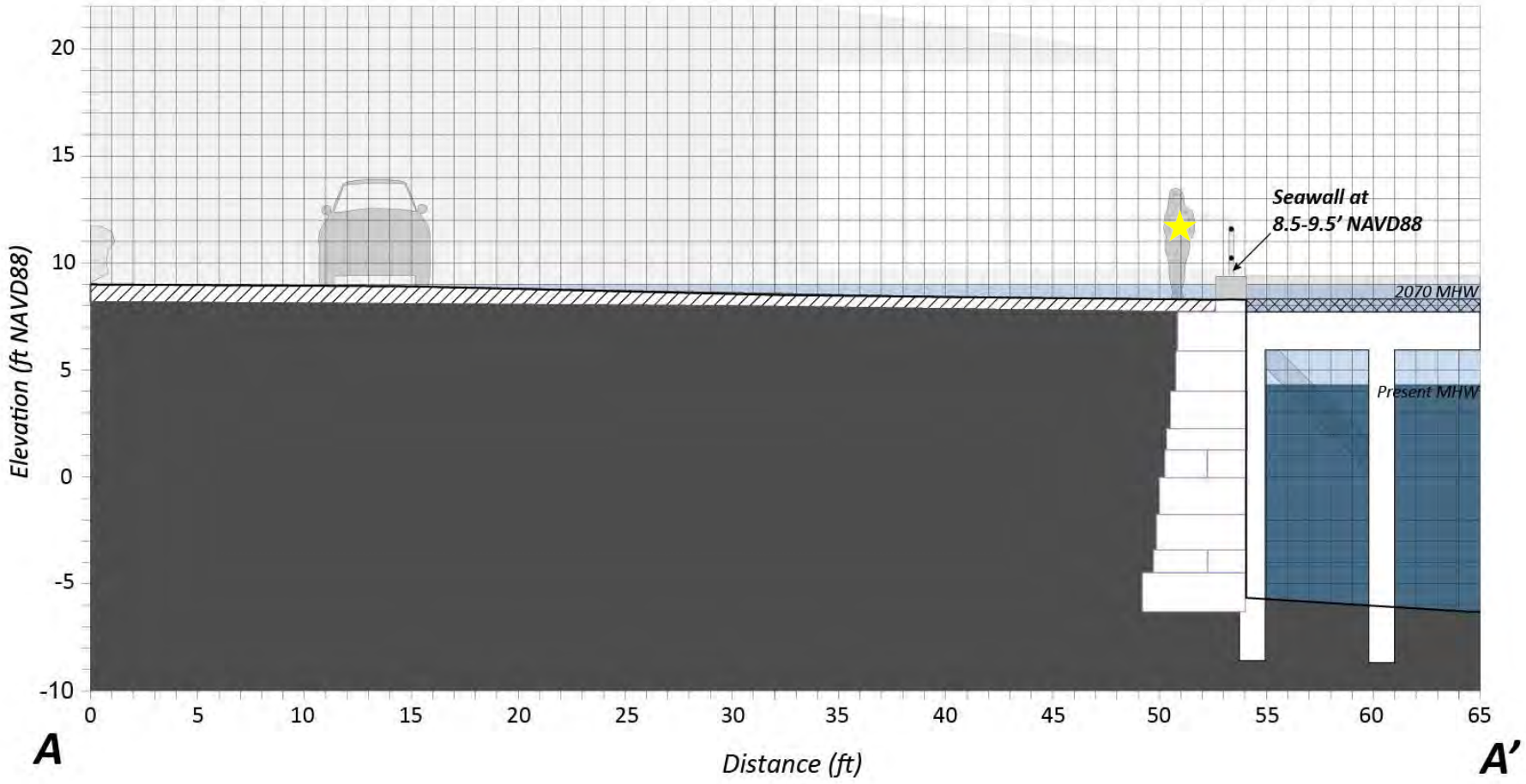
Existing Conditions



- Mean High Water inundation as soon as 2070
- Small seawall cap, dock access through gaps

Seawall Elevation (ft NAVD88)	MHW vulnerability	Approx Stillwater AEP as soon as 2050	Approx Sig. Wave AEP as soon as 2050
8.5	*As soon as 2070*	*>5%*	*>5%*

Seawall cap: 8.5-9.5' NAVD88
Land behind seawall: ~8.0' NAVD88

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GENERAL NOTES:

1. EXISTING CONDITIONS PLAN DEVELOPED BASED ON DRAWING TITLED "LAND OF SURVEY OF STATE STREET LANDING & TUCKER'S WHARF" PREPARED BY WOODS HOLE GROUP AND COLLINS ENGINEERS, INC. DATED APRIL 2025, AND SITE OBSERVATIONS BY COLLINS ENGINEERS, INC. ON JANUARY 14, 2025.
2. THE HORIZONTAL DATUM IS THE MASSACHUSETTS MAINLAND STATE PLANE COORDINATES, IN U.S. SURVEY FEET, REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83/2011) EPOCH 2010.00.
3. ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) IN U.S. SURVEY FEET.

ABBREVIATIONS

ACCMP	ASPHALT COATED CORRUGATED METAL PIPE
CB	CATCH BASIN
DMH	DROP MANHOLE
HDPE	HIGH-DENSITY POLYETHYLENE
PVC	POLYVINYL CHLORIDE
RCP	REINFORCED CONCRETE PIPE
SMH	SANITARY MANHOLE
SSP	STEEL SHEET PILE
SWE	STILLWATER ELEVATION

LEGEND

WATER LINE
SEWER LINE
SEWER FORCE MAIN
GAS LINE
ELECTRIC LINE
OVERHEAD WIRES
DRAINAGE LINE
PROPERTY LINE
ASSESSORS LINE
TREELINE
GUARDRAIL
FENCE
RETAINING WALL
STONE WALL

123/1234 DEED BOOK/PAGE
AP ASSESSOR'S PLAT
N/F NOW OR FORMERLY
(R) RECORD
(CA) CHORD ANGLE
NAIL/SPIKE FOUND/SET
DRILL HOLE FOUND/SET
IRON ROD/PIPE FOUND/SET
BOUND FOUND/SET
HC HANDICAPPED
LC LANDSCAPING
SIGN POST
SEWER MANHOLE

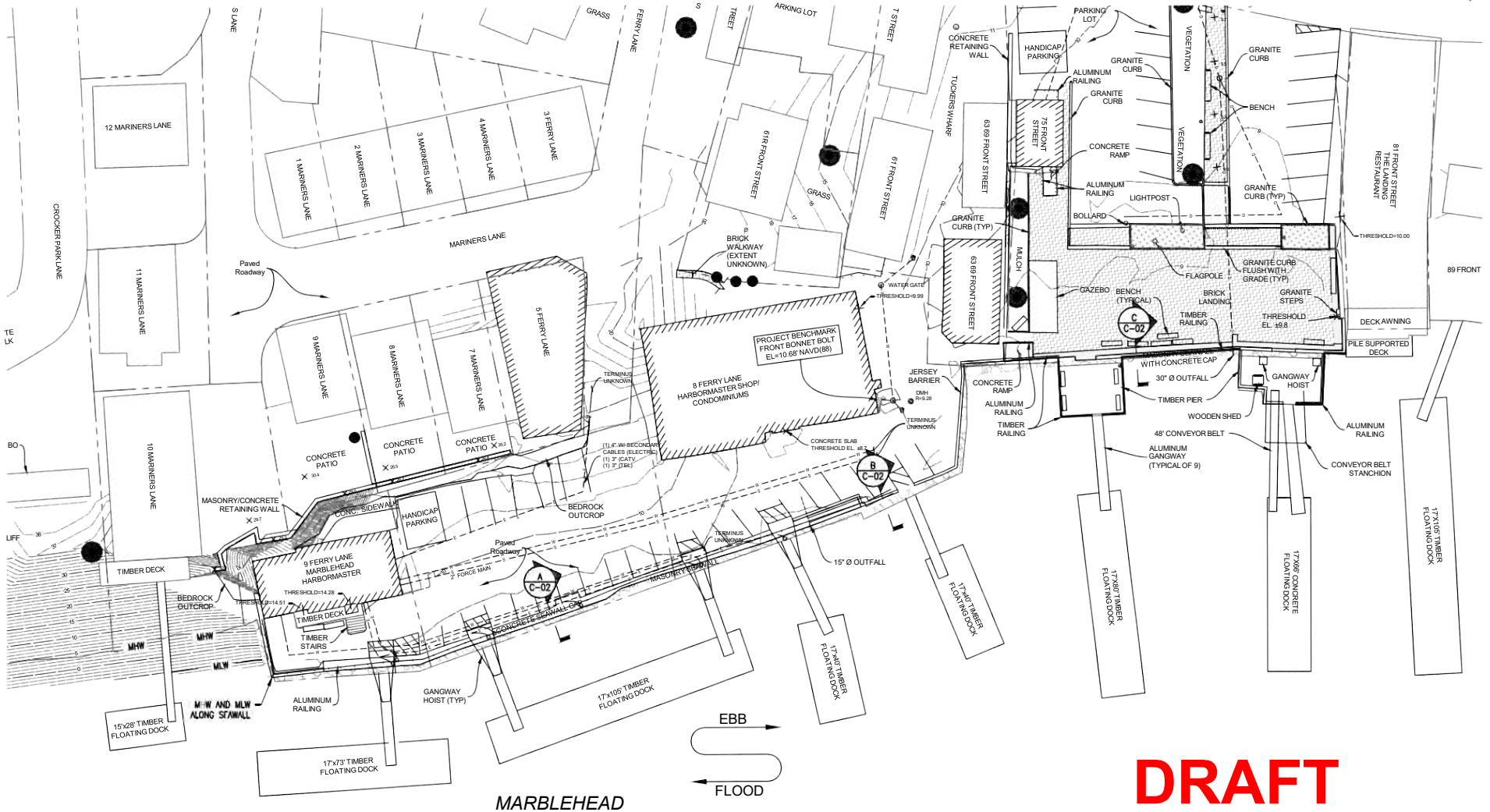
BOLLARD
CATCH BASIN
DOUBLE CATCH BASIN
WATER VALVE
GAS VALVE
WETLAND FLAG
DRAINAGE MANHOLE
FLARED END SECTION
GUY POLE
ELECTRIC MANHOLE
UP UTILITY/POWER POLE
LIGHTPOST

100' BUFFER ZONE
COASTAL BANK
FEMA FLOOD ZONE
MAJOR CONTOUR
MINOR CONTOUR
MEAN HIGH WATER
MEAN LOW WATER
STONE REVETMENT
COBBLESTONE
DEFECT
RMA24-X 2024 SOIL BORING
BH76-X 1976 SOIL BORING

WELL
MONITORING WELL
BENCH MARK
TREE
HYDRANT
IRRIGATION VALVE
UNKNOWN MANHOLE
UNKNOWN ELECTRICAL UTILITY

SCHEMATIC WATER LINE
SCHEMATIC SEWER LINE
SCHEMATIC GAS LINE
SCHEMATIC ELECTRIC LINE
SCHEMATIC DRAINAGE LINE

CONCEPTUAL DRAWINGS
-NOT FOR CONSTRUCTION-



DRAFT

EXISTING CONDITIONS PLAN
SCALE: 1"=20'

COLLINS ENGINEERS
#4855 Country Trails, Suite 103
New Hope, PA 18938
voice (401) 732-7714
web: collinseng.com

TOWN OF MARBLEHEAD

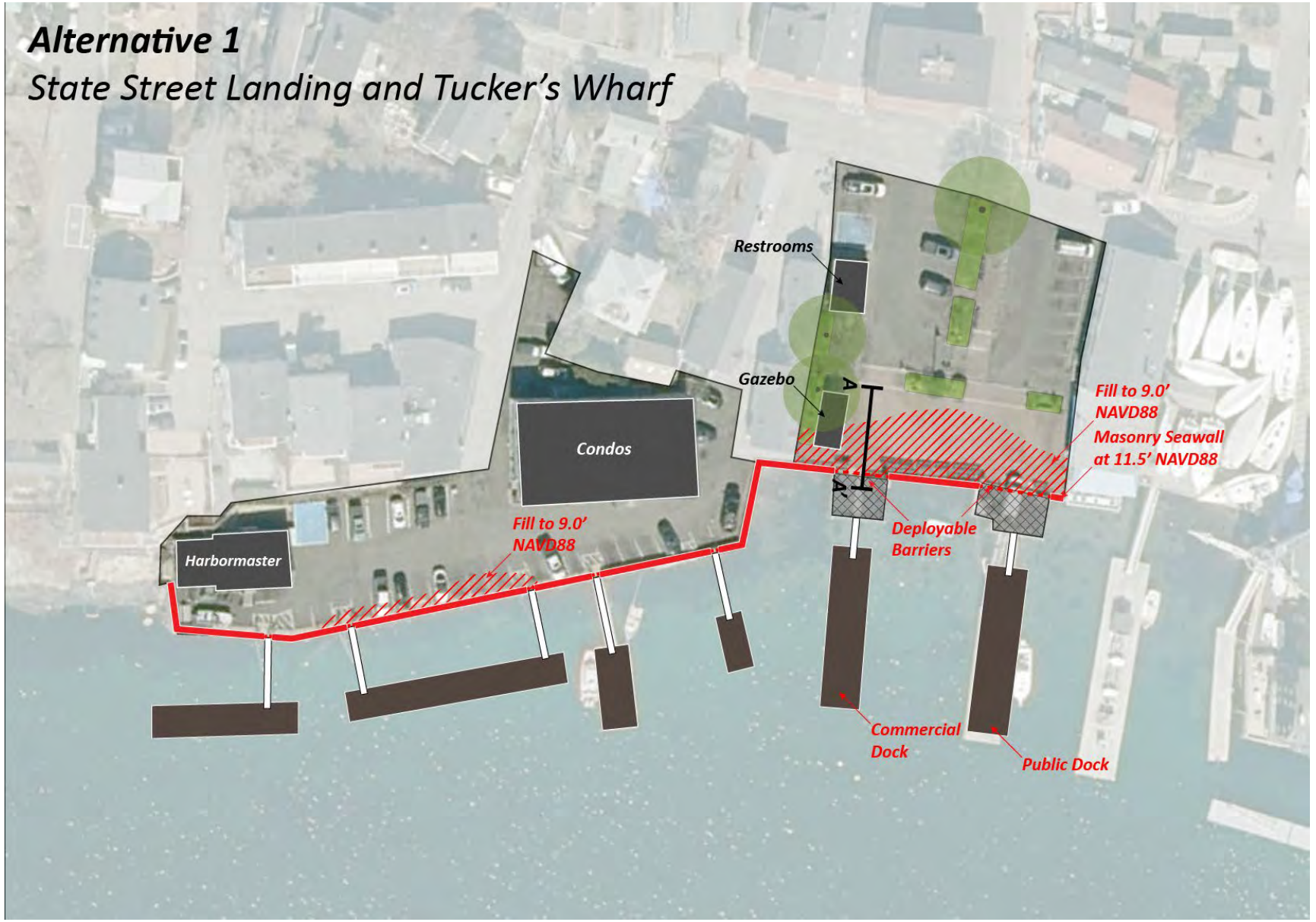
REV. NO.	DATE	REVISIONS DESCRIPTION

EXISTING CONDITIONS PLAN
STATE ST LANDING & TUCKER'S WHARF RESILIENCE PROJECT
TOWN OF MARBLEHEAD
MARBLEHEAD, MA
2025

designed by: AVR
checked by: CJS
approved by: DJG
QA/QC by: DJG
CE project no.: 15-18008
dwg name: CONCEPTUAL
date: JUNE 2025

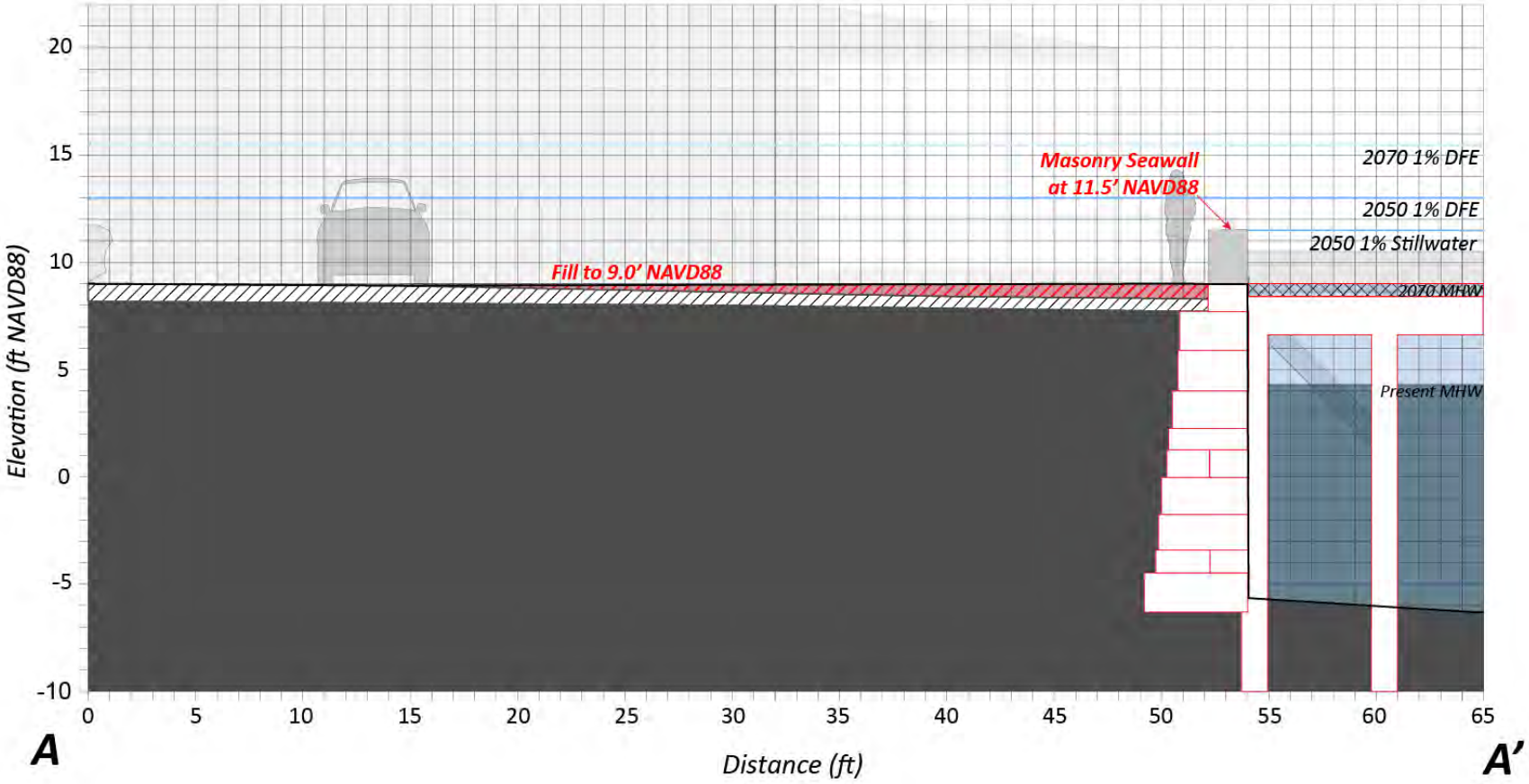
C-01
2 OF 14

Alternative 1



Seawall Elevation (ft NAVD88)	Fill Height (ft NAVD88)
11.5	*9'*

Alternative 1



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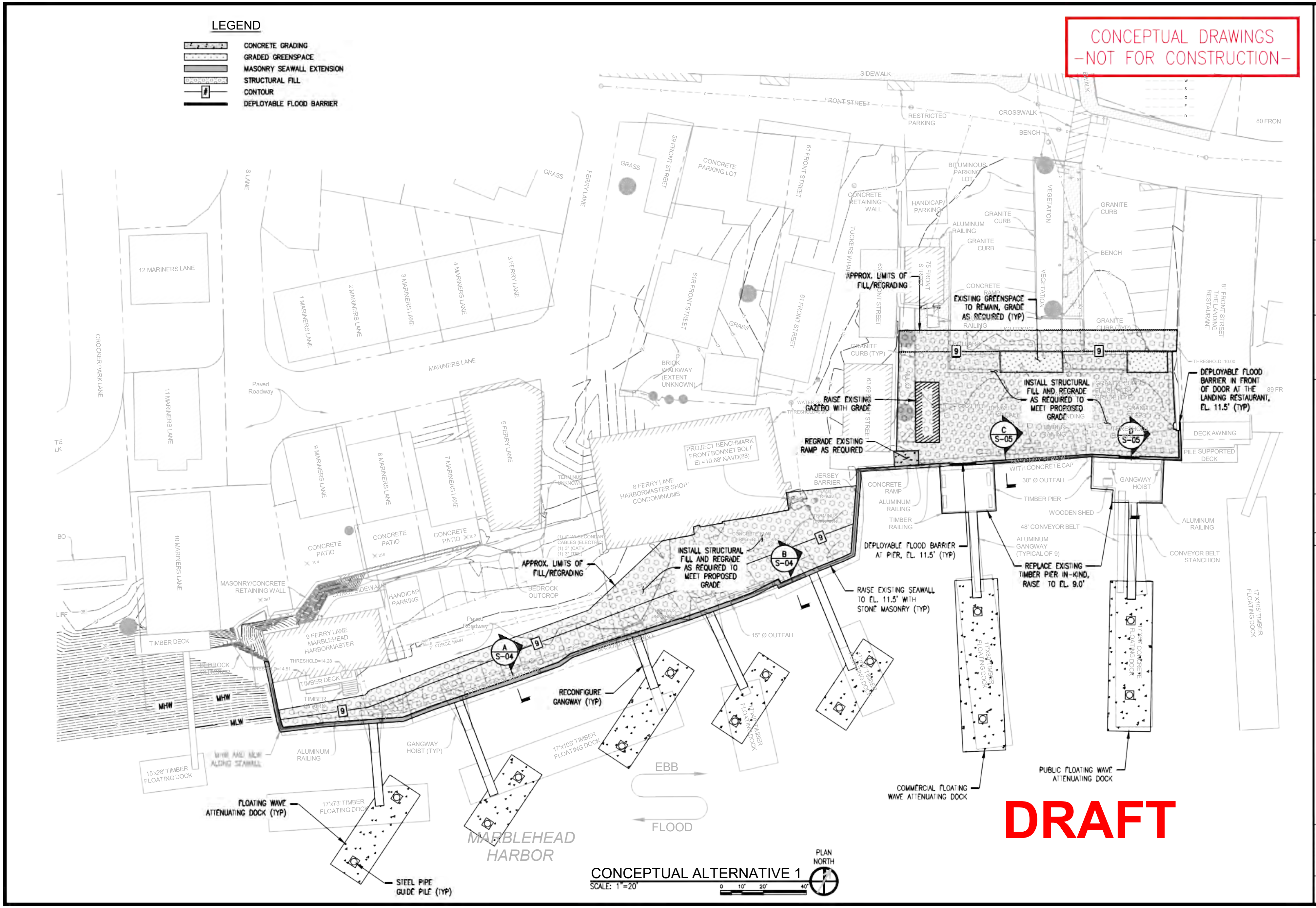
11.5	*9'*

Alternative 1

State Street Landing Public Pier



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ALTERNATIVE 1: PROPOSED CONDITIONS PLAN

STATE ST LANDING & TUCKER'S WHARF RESILIENCE PROJECT

TOWN OF MARBLEHEAD

MARBLEHEAD, MA

2025

REVISIONS

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S-01

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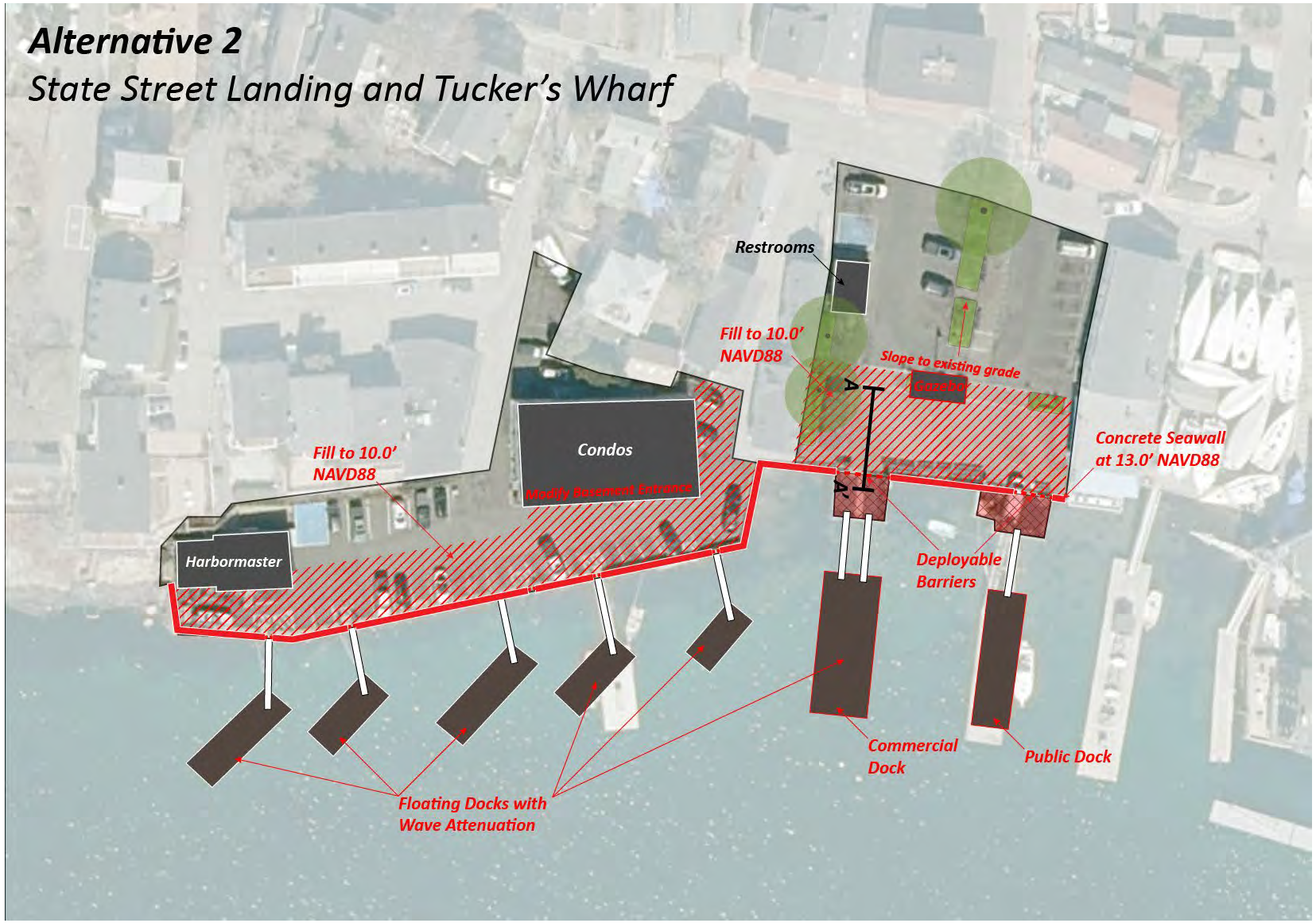
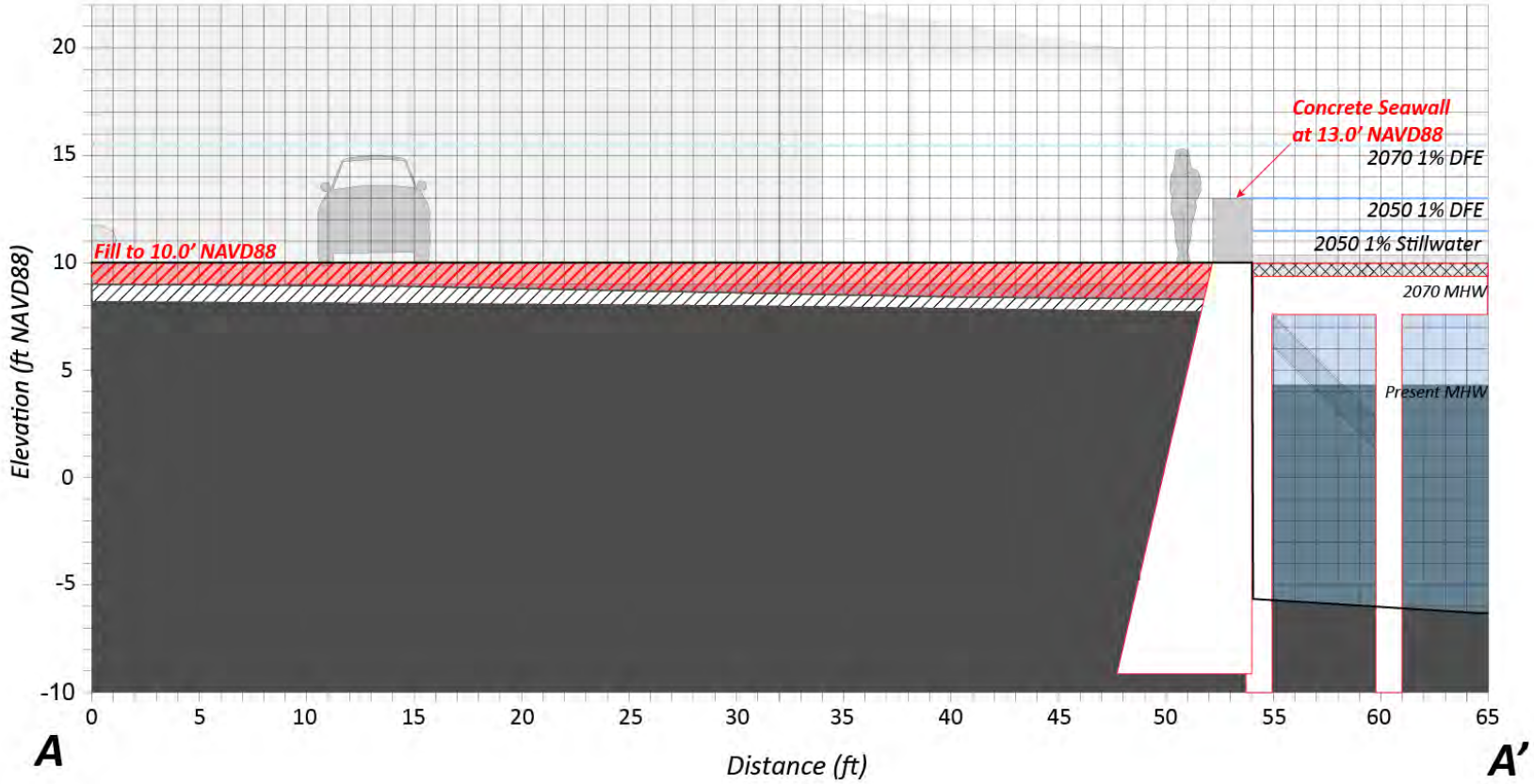
Alternative 2



Seawall Elevation (ft NAVD88)	Fill Height (ft NAVD88)
13'	*10'*

Alternative 2



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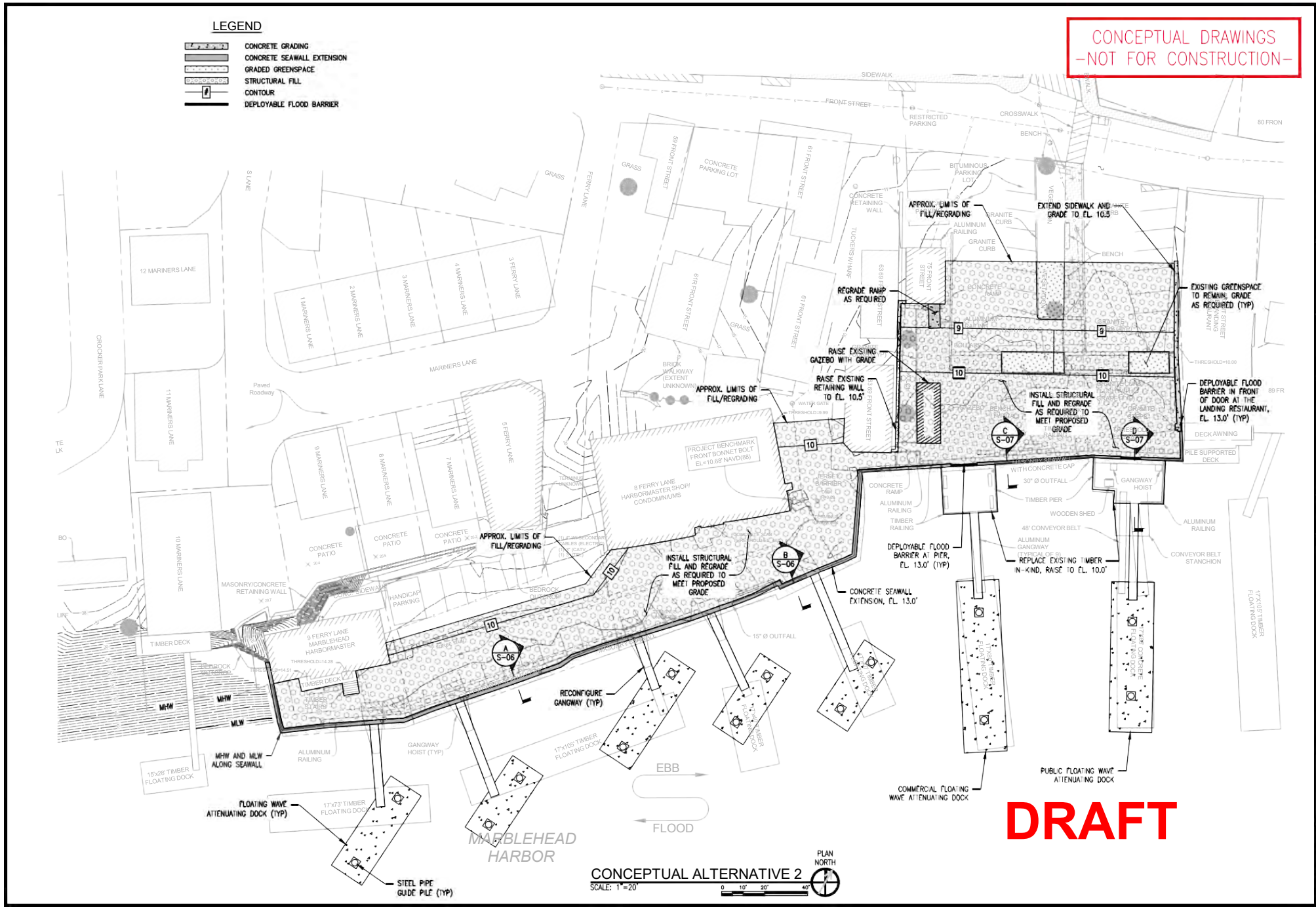

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TOWN OF MARBLEHEAD

REV. NO.	DATE	REVISIONS DESCRIPTION

ALTERNATIVE 2: PROPOSED CONDITIONS PLAN

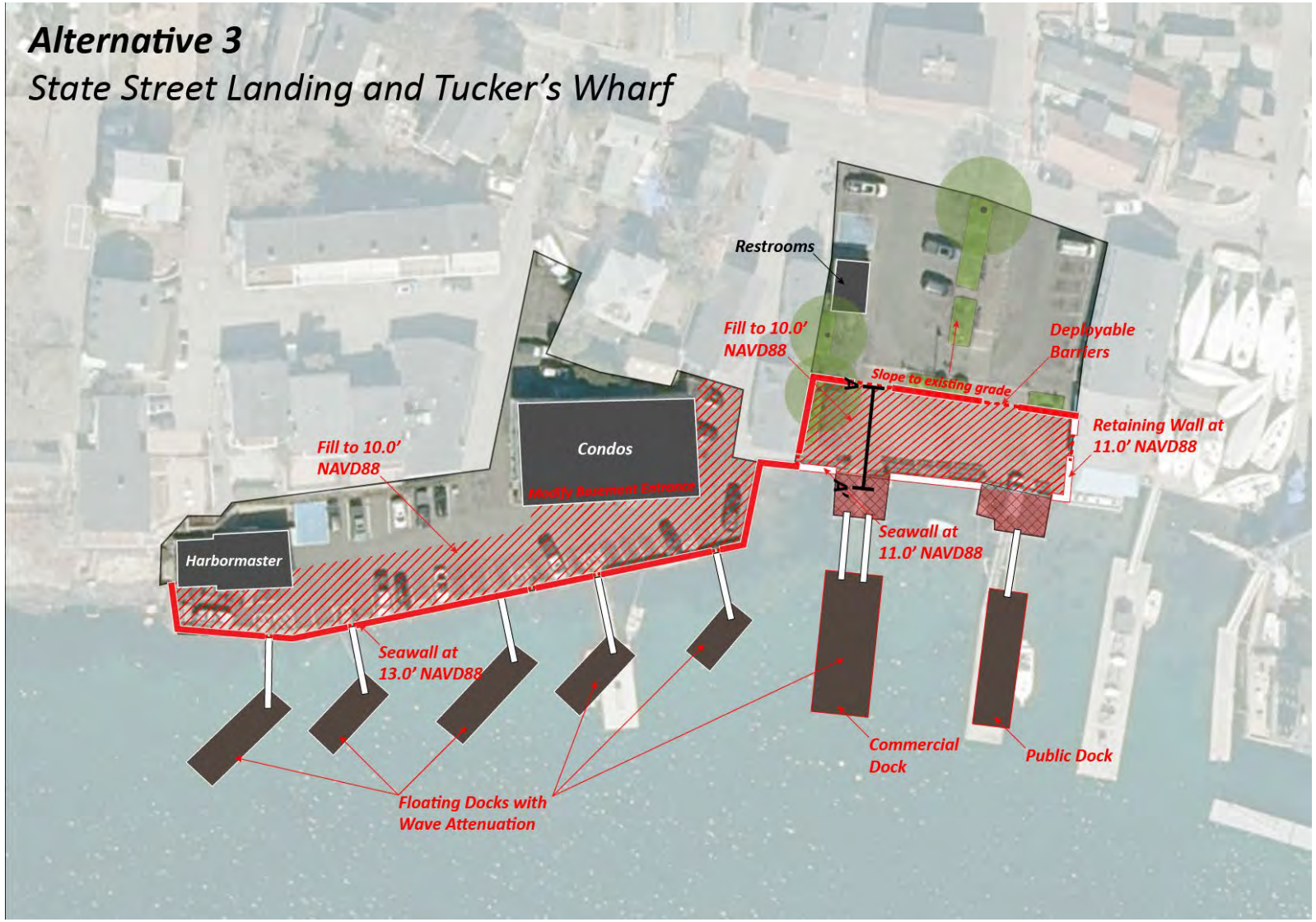
STATE ST LANDING & TUCKER'S WHARF RESILIENCE PROJECT
TOWN OF MARBLEHEAD

MARBLEHEAD, MA 2025

designed by: AVR
checked by: CVS
approved by: DJG
QA/QC by: DJG
CE project no.: 15-18008
dwg name: CONCEPTUAL
date: JUNE 2025

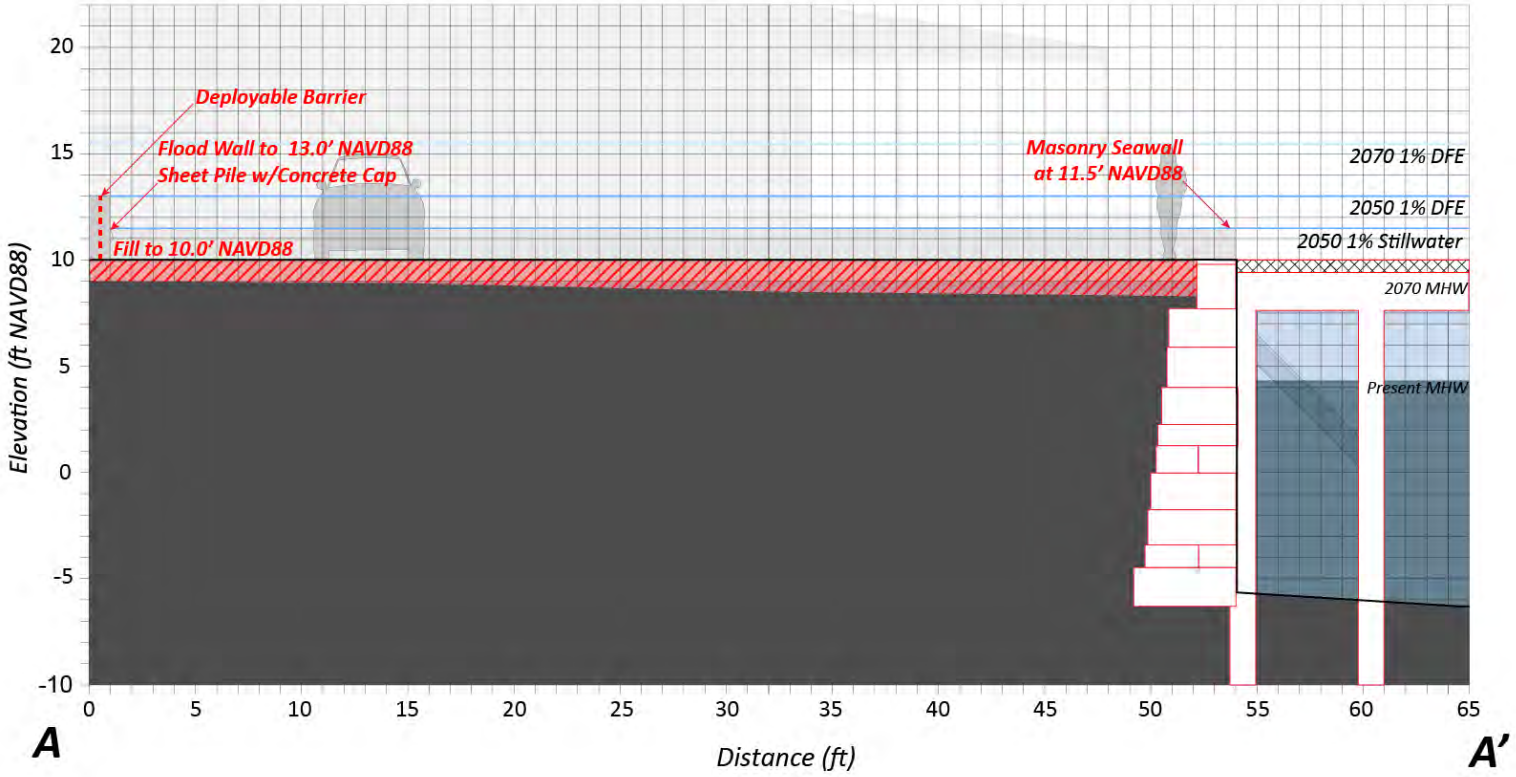
S-02
6 OF 14

Alternative 3



Seawall Elevation (ft NAVD88)	Fill Height (ft NAVD88)
11.5	*10'*

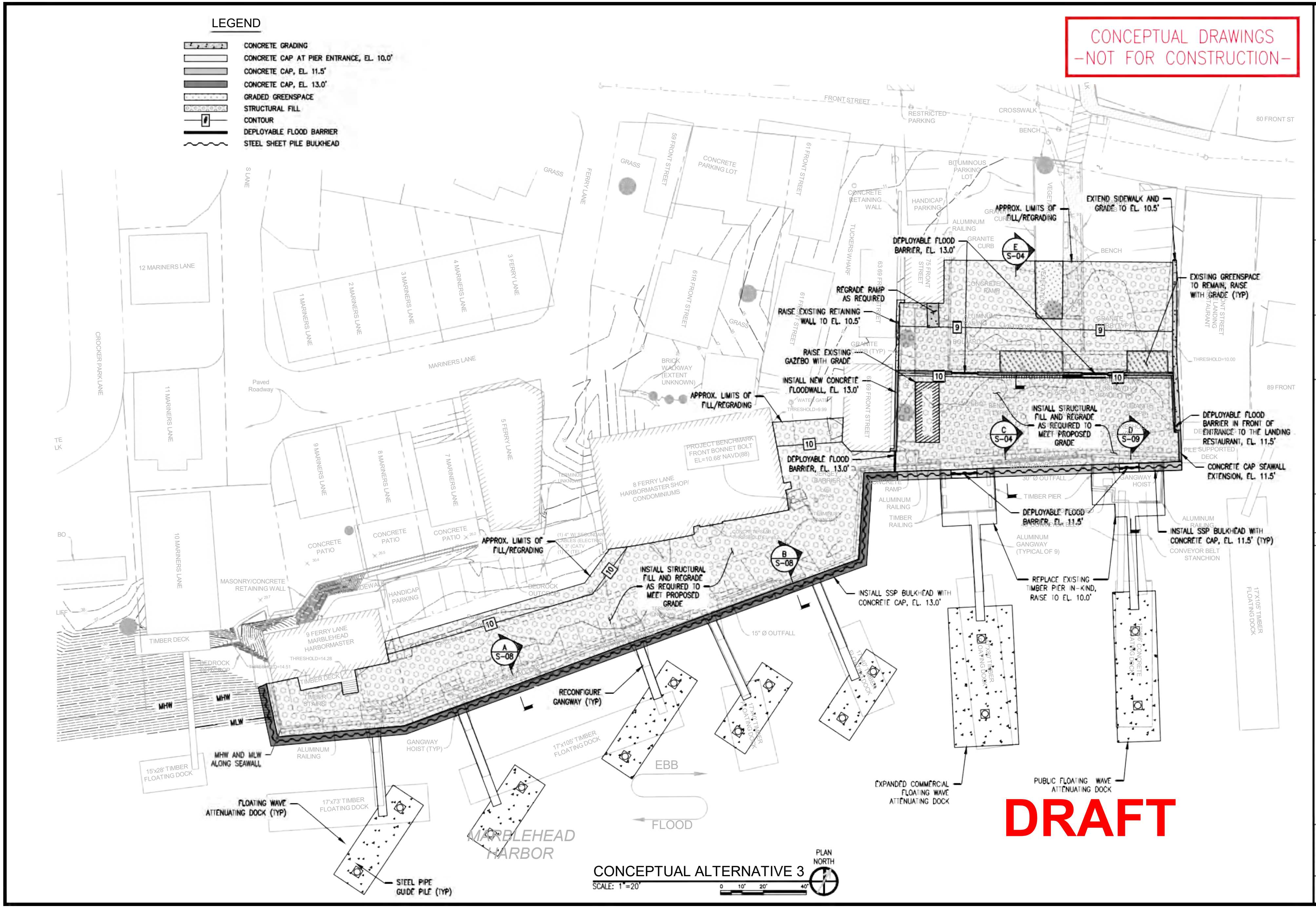
Alternative 3



Seawall Elevation (ft NAVD88)	Fill Height (ft NAVD88)
11.5	*10'*

Alternative 3

State Street Landing Public Pier



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REVISIONS

ALTERNATIVE 3: PROPOSED CONDITIONS PLAN

STATE ST LANDING & TUCKER'S WHARF RESILIENCE PROJECT

TOWN OF MARBLEHEAD

MARBLEHEAD, MA

2025

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S-03

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FY26 CZM Grant Opportunity

- Marblehead has applied for a 60% design grant to further whichever preferred alternative is selected at the State Street Land and Tucker's Wharf resiliency project

- Total amount requested: $448K
  - 14% (71K) match from the town bringing the total project amount to $519K

- Award date will be late August/early September

- This project will get Marblehead up to the permitting stage and will be a two-year grant

- Public engagement for the alternative designs will be on-going throughout the summer to help inform the preferred alternative design

MHD Shipyards: Federal Funding Opportunities

Port Infrastructure Development Program

- Originally due April 30th, extended to September 10th by new Administration
- $11.75 million requested
- $1.175 million in matching funds, awarded by MA's Federal Funds and Infrastructure office
- Application inclusive of all three sections of project
- If successful, remaining funding would be requested from future Town Meeting

Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation Program (PROTECT) Grant

- Originally due February 24th, new due date to be announced
- New application materials to be announced