

# ELDER CENTENNIAL BEACH BEACH & BLUFF ACCESS IMPROVEMENTS

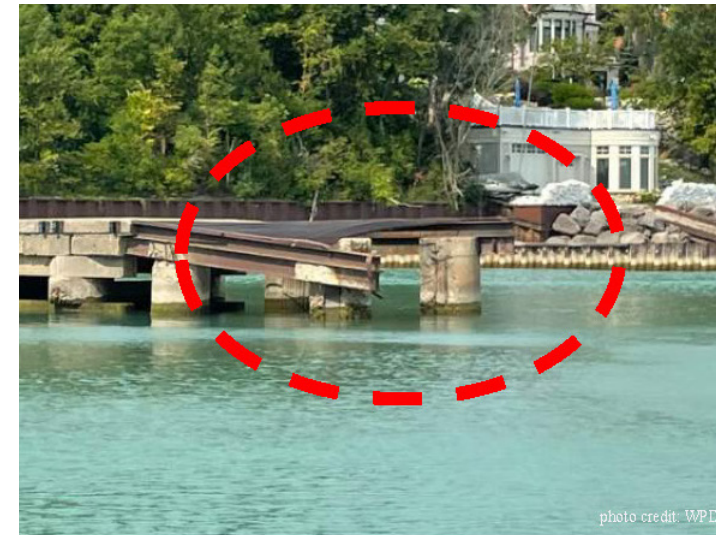
BOARD PRESENTATION AND DISCUSSION • MARCH 24, 2022







# Existing Beach Conditions



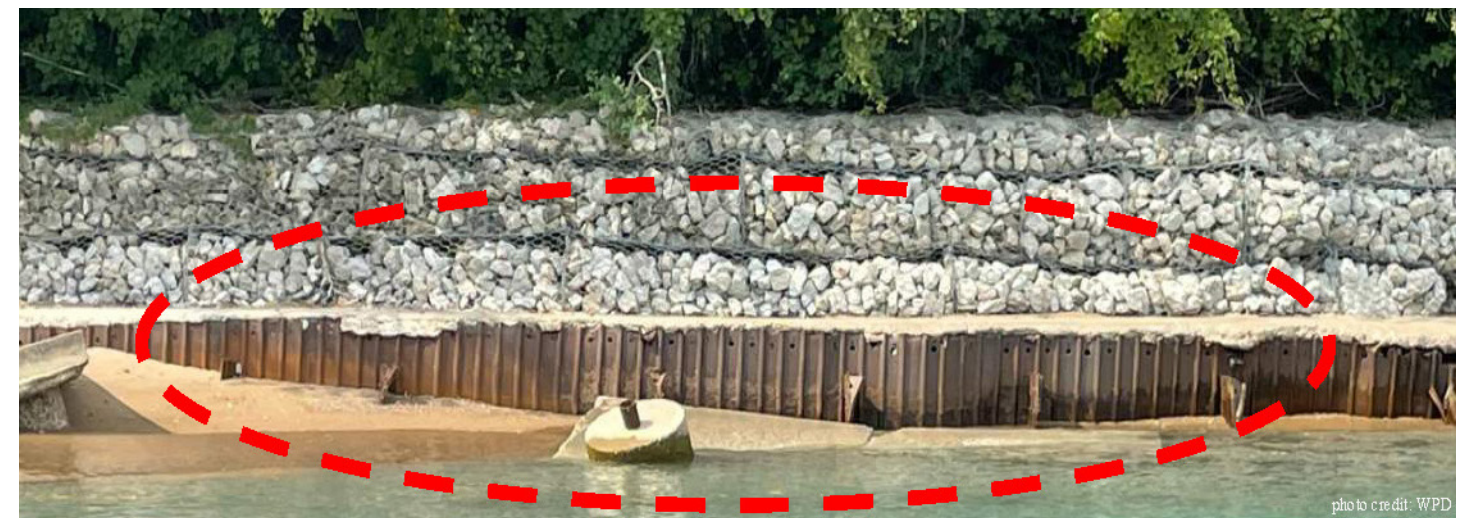
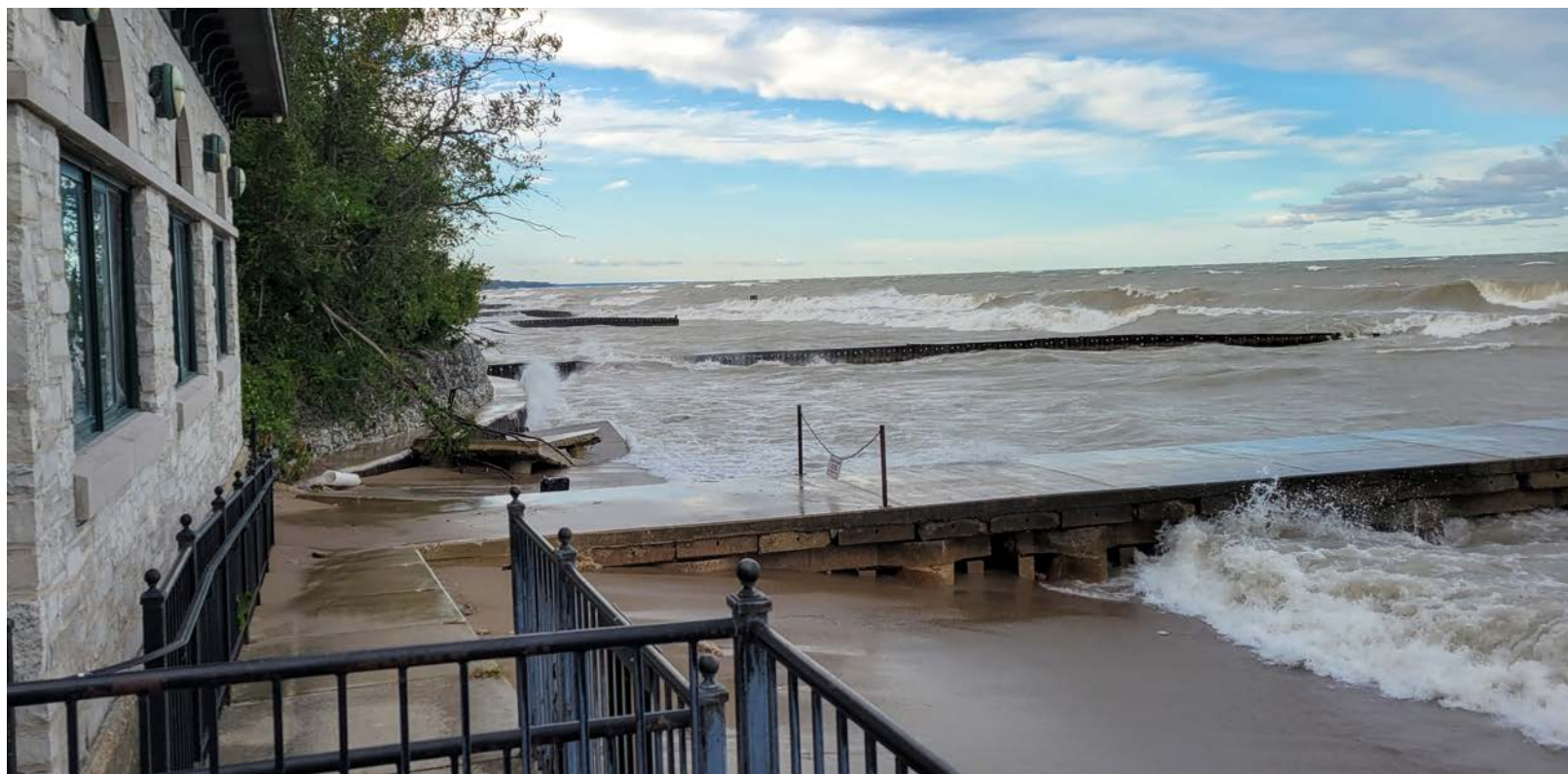
Damaged pier



Damaged pier



Damaged kayak storage rack foundations



Damaged steel sea wall





# 2030 Lakefront Master Plan Perspective

ELDER CENTENNIAL BEACH  
BEACH & BLUFF ACCESS IMPROVEMENTS



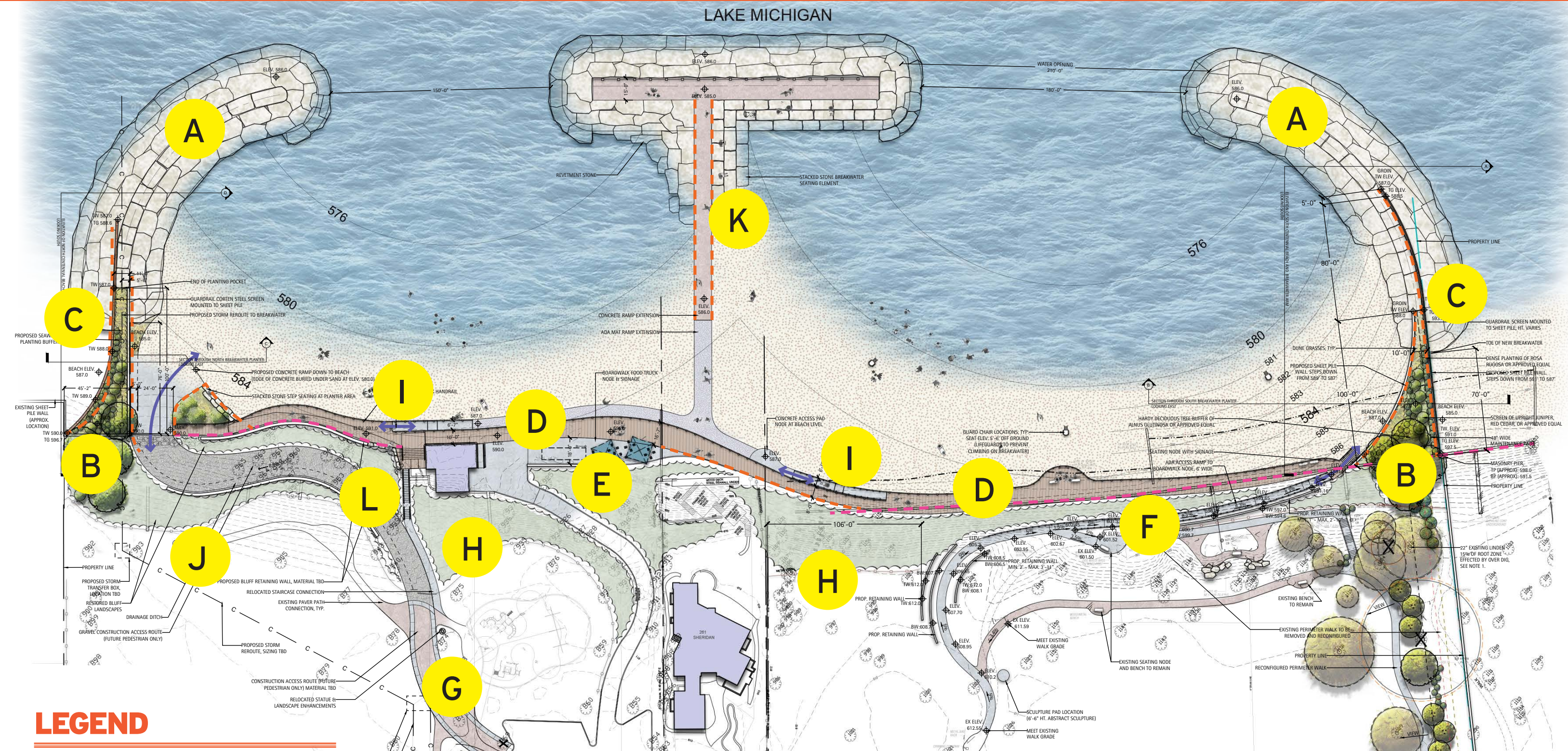
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# Beach & Bluff Restoration Plan | Plan Features

ELDER CENTENNIAL BEACH  
BEACH & BLUFF ACCESS IMPROVEMENTS



## LEGEND

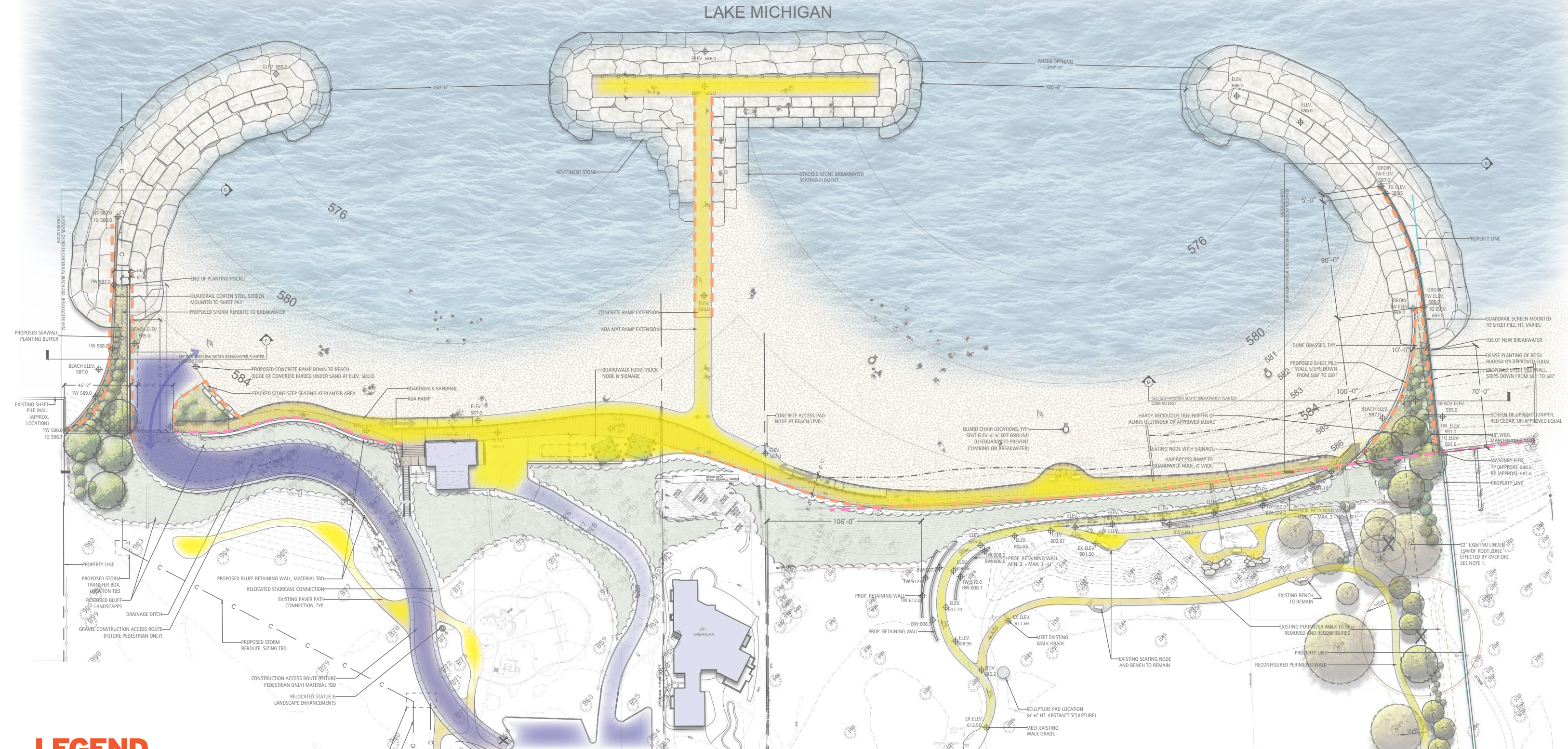
- |   |  |  |
|---|--|--|
| <b>A</b> BREAKWATERS WITH ADA ACCESSIBILITY TO CENTER ISLAND                          | <b>E</b> BOARDWALK PATIO WITH SEASONAL FOOD TRUCK VENUE & CAFE SEATING   | <b>I</b> ADA ACCESS RAMP TO BEACH                  |
| <b>B</b> PLANTING POCKETS INTEGRAL TO BREAKWATERS AT IN-LAND GROINS                   | <b>F</b> ADA ACCESS RAMP FROM BLUFF TO BEACH                             | <b>J</b> STORMWATER DISCHARGE IMPROVEMENTS         |
| <b>C</b> ARTFUL LOUVERED SCREEN ELEMENTS INTEGRAL TO PLANTING POCKETS AND BREAKWATERS | <b>G</b> MAINTENANCE ACCESS ROAD & PEDESTRIAN ACCESS PATH TO NORTH BEACH | <b>K</b> ACCESSIBLE ISLAND OVERLOOK & FISHING PIER |
| <b>D</b> EXPANSIVE ACCESSIBLE BOARDWALK WITH SEATING NODES AND REST AREA OVERLOOKS    | <b>H</b> NATIVE BLUFF RESTORATION  | <b>L</b> RESTORED STAIRS TO ELDER BEACH HOUSE      |





# Beach & Bluff Restoration Plan | Access & Circulation

ELDER CENTENNIAL BEACH  
BEACH & BLUFF ACCESS IMPROVEMENTS



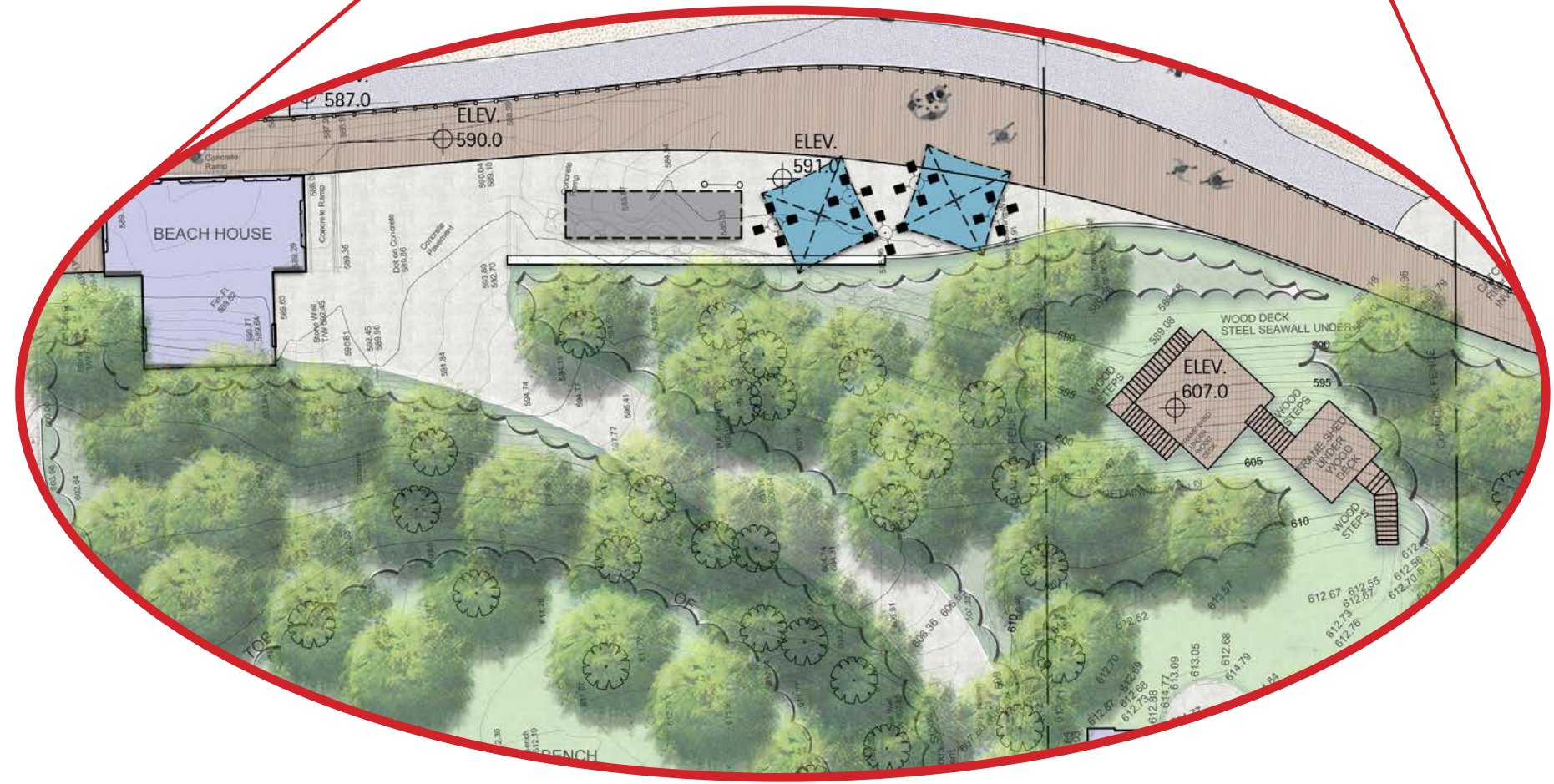
## LEGEND



ADA ACCESSIBLE PEDESTRIAN ROUTE

VEHICULAR ACCESS AND EMERGENCY ROUTES (PEDESTRIAN ACCESSIBLE)





- 1 IPE BOARDWALK FEATURE WITH FLUCTUATING WIDTH, SUPPORTED BY HELICAL PILES AND ANCHORED TO SEAWALL
- 2 ADA ACCESSIBLE RAMPS FROM BOARDWALK TO BEACH
- 3 BOARDWALK PATIO WITH FOOD TRUCK, UMBRELLAS & CAFE SEATING
- 4 CANTILEVERED BOARDWALK SEATING NODES
- 5 ACCESSIBLE ROUTE TO ISLAND OVERLOOK & FISHING PIER





# Proposed Beach & Boardwalk Images "A Place for All · All Day · All Seasons"

ELDER CENTENNIAL BEACH  
BEACH & BLUFF ACCESS IMPROVEMENTS



photo credit: Seiler Consulting

View looking south along Boardwalk



photo credit: Seiler Consulting

View looking north from south end of Centennial Beach





# Proposed Beach & Boardwalk Images "A Place for All · All Day · All Seasons"

ELDER CENTENNIAL BEACH  
BEACH & BLUFF ACCESS IMPROVEMENTS



*An early evening summer shot along the Boardwalk  
for a snack at the "Grill"*

*The quiet of a morning sunrise at  
Elder Beach and Boardwalk*







# Proposed Beach & Boardwalk Images "A Place for All · All Day · All Seasons"

ELDER CENTENNIAL BEACH  
BEACH & BLUFF ACCESS IMPROVEMENTS



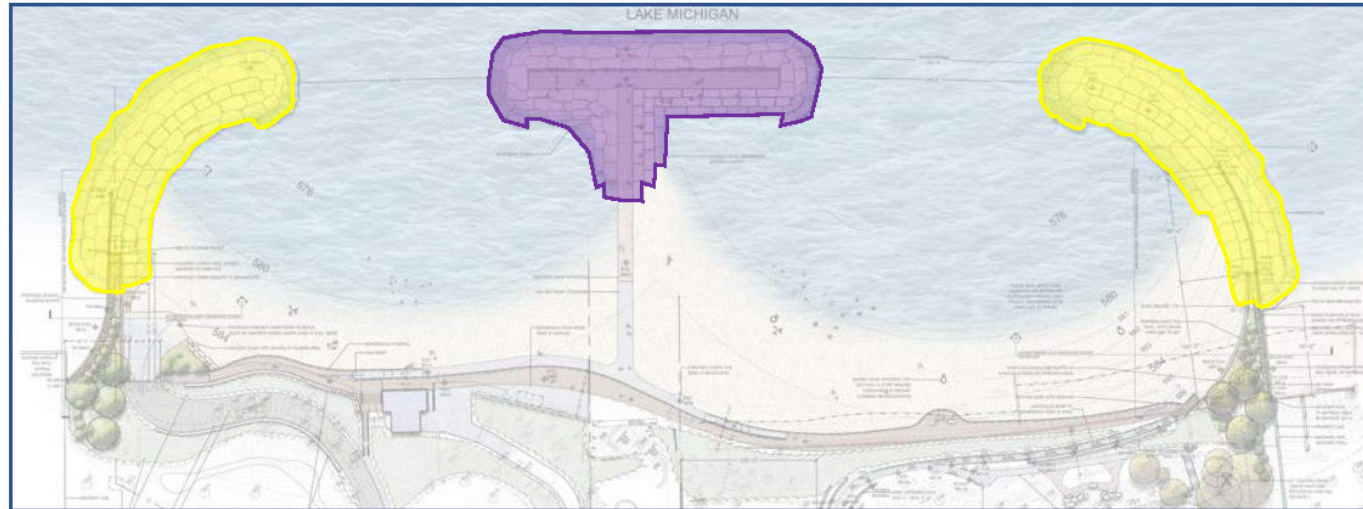
DAVID WALKER ARCHITECTURAL VISUALISATIONS 2022

*Summer beach enjoyment for all at Elder Beach House and beachfront pathway*

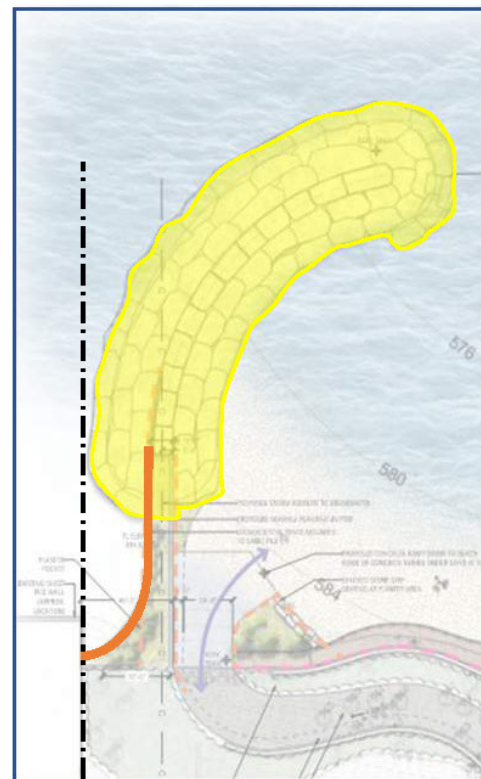




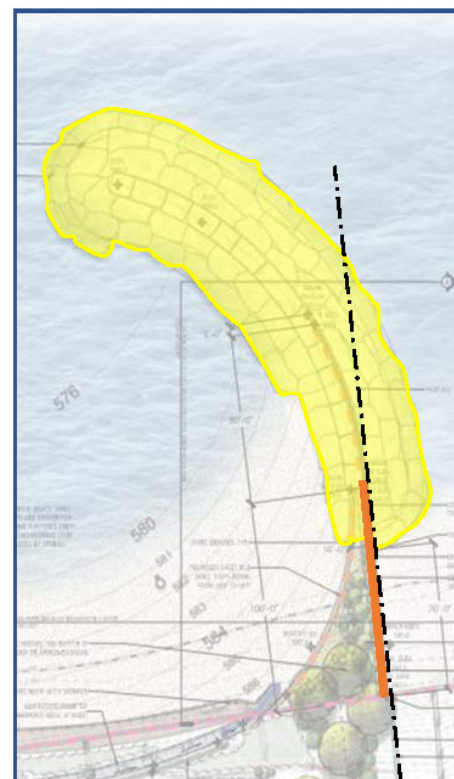
**Breakwaters** located in three locations of the New Beach are the primary structures designed to provide coastal resilience and protection against future damage and erosion. Made of stone and steel, these elements will dissipate wave energy far from the shoreline and guard the beach against sudden storm surges and rough water.



All breakwaters  
(north and south breakwaters shown in yellow, center breakwater shown in purple)



North breakwater  
(stone shown in yellow, steel shown in orange, property lines shown in black)



South breakwater

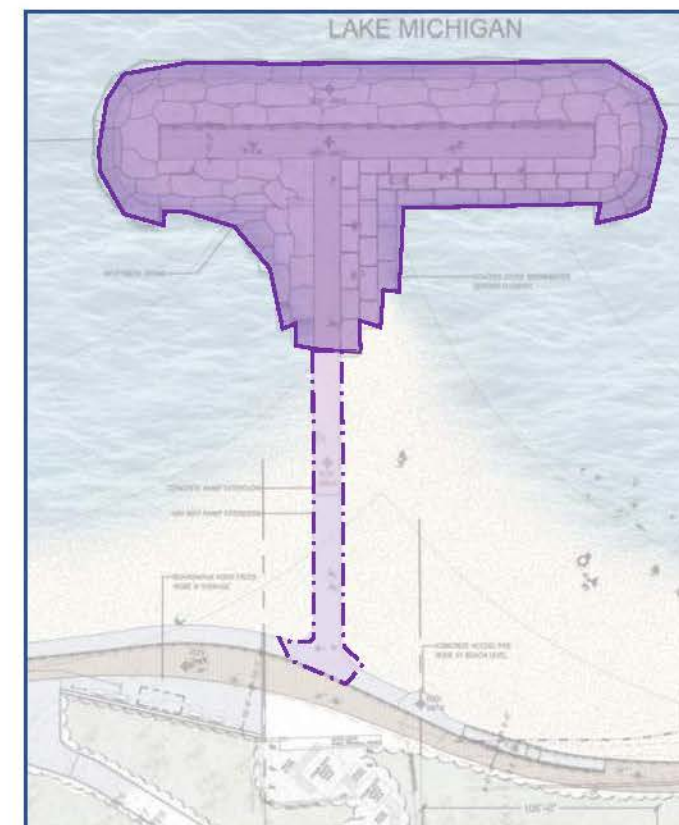
The Park District carefully designed the north and south breakwaters to maximize the beach area. As a result, the sections closest to the bluff will be constructed with steel sheet piles rather than stone to reduce the breakwater's footprint - resulting in a gain of approximately 8,800 square feet of additional beach area.

Using steel in lieu of the stone for the breakwater consumes less overall material, is less expensive to build, and is faster to install.

Additionally, through a generous gesture by the southern neighbor, approximately 20% of the southern breakwater stone will be located on private property, which provides more sandy beach spaces for patrons of the new beach.

The additional beach area also allows space for secondary erosion protection structures and landscape planting areas. Please see the "Planting pockets" section for more information.

Although the breakwaters provide safer lakefront environments, help reduce public exposure to dangerous rip tide currents, and increase recreational access to water, over time they naturally create a public safety issue. Sand accumulation on the northern breakwater face will exceed that of the south face, creating a vertical drop that could vary between 3 feet and 6 feet depending on lake levels. A vertical drop of this magnitude is a fall risk and therefore a public safety issue, which will be managed with guardrails in any location the fall risk exists. Please see the "Groin extension guardrails" section for more information.



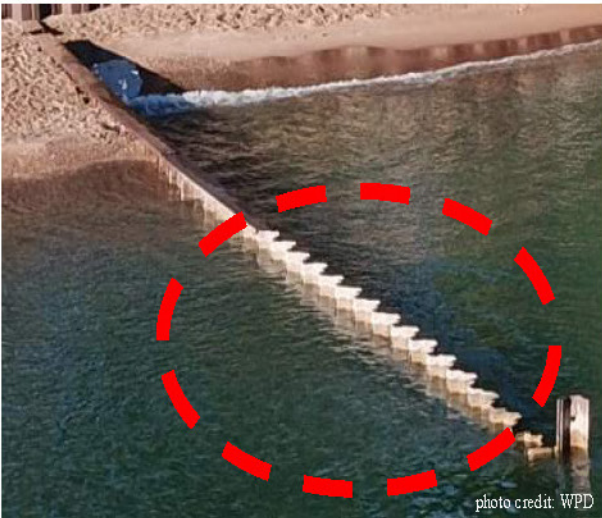
Center breakwater  
(stone shown in purple)

The center breakwater is connected to the shoreline by a concrete and steel walkway, which connects to the ADA ramp and boardwalk. This breakwater allows for sunbathing, socializing and other passive lake activities.





High water and extreme weather conditions have damaged existing infrastructure, causing beach and bluff erosion



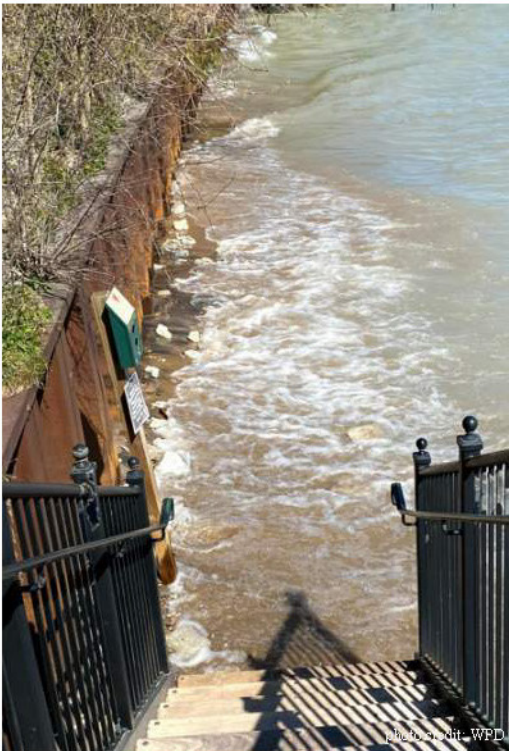
Damaged groin



Damaged groin



Beach erosion in 2020 meant stairs ended 24" above the beach level







# An Integrated Design Approach | Engineering, Aesthetics & Nature-based Planting

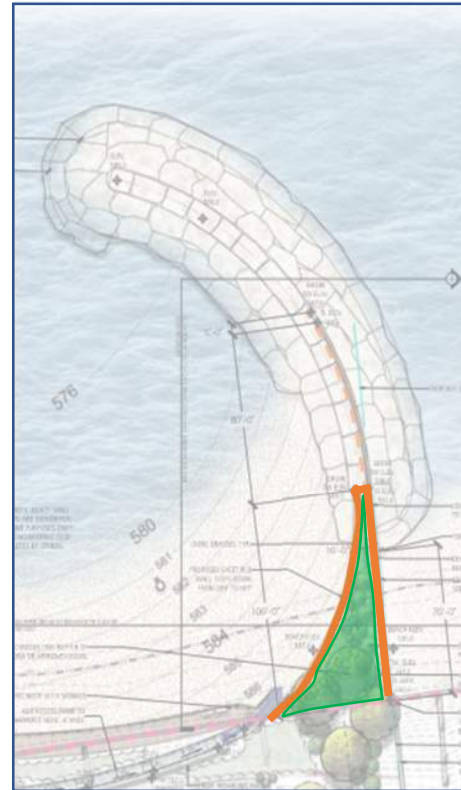
ELDER CENTENNIAL BEACH  
BEACH & BLUFF ACCESS IMPROVEMENTS



## PLANTING POCKETS - LOUVERED AIR SCREEN



North planting pocket  
(planting pocket shown in green, steel shown in orange)



South planting pocket

The planting pockets will burst with robust vegetative materials that can withstand the lakefront environment. Plants and trees such as Rosa Rugosa, Amelachier x Graniflora, Picea Abies, and Ammophila Brevigulata (shown below) will be densely planted in the pocket. Maintenance access paths also will be provided so Park District staff can appropriately care for this vegetation.



Rugosa Rose/Rockspray  
Cotoneaster



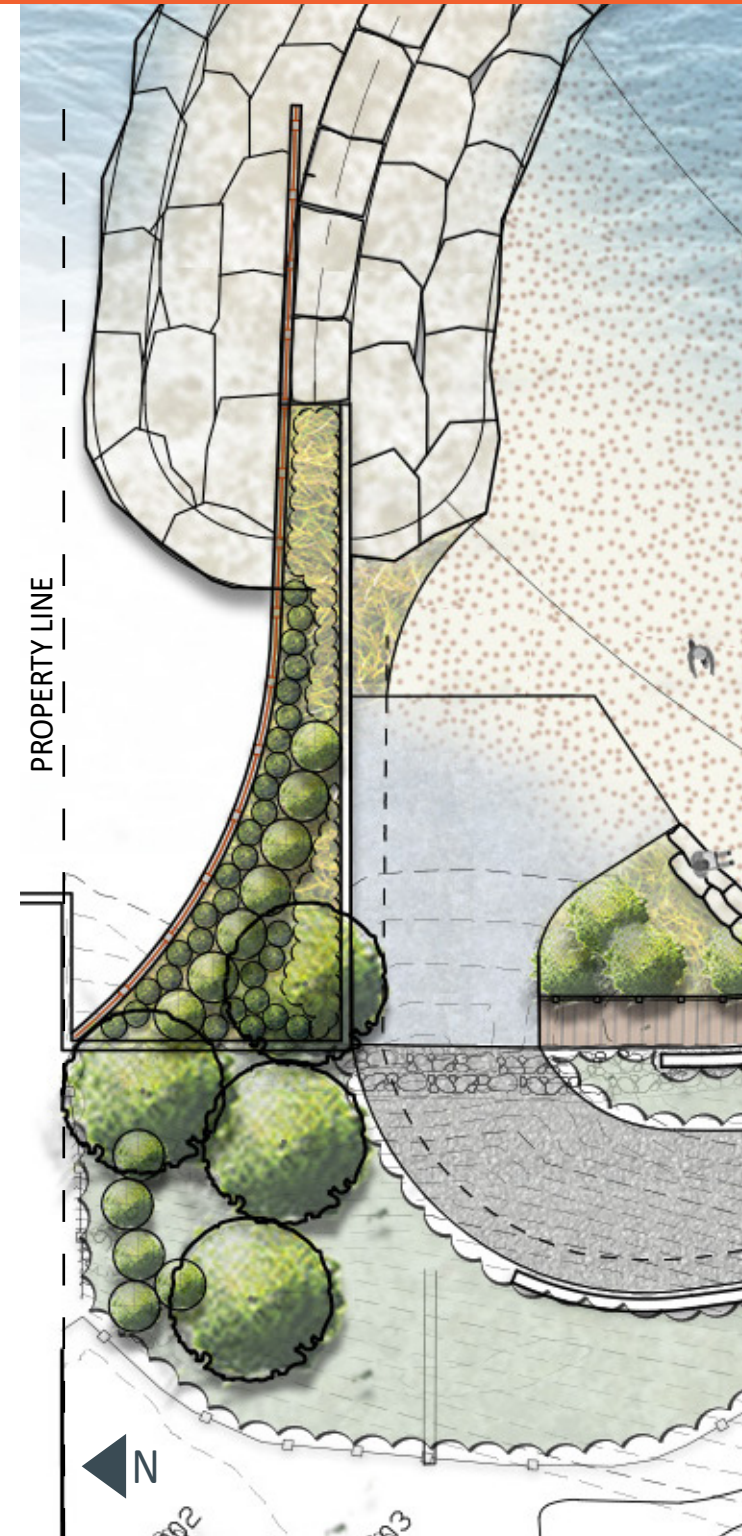
Dune Grass/Allium



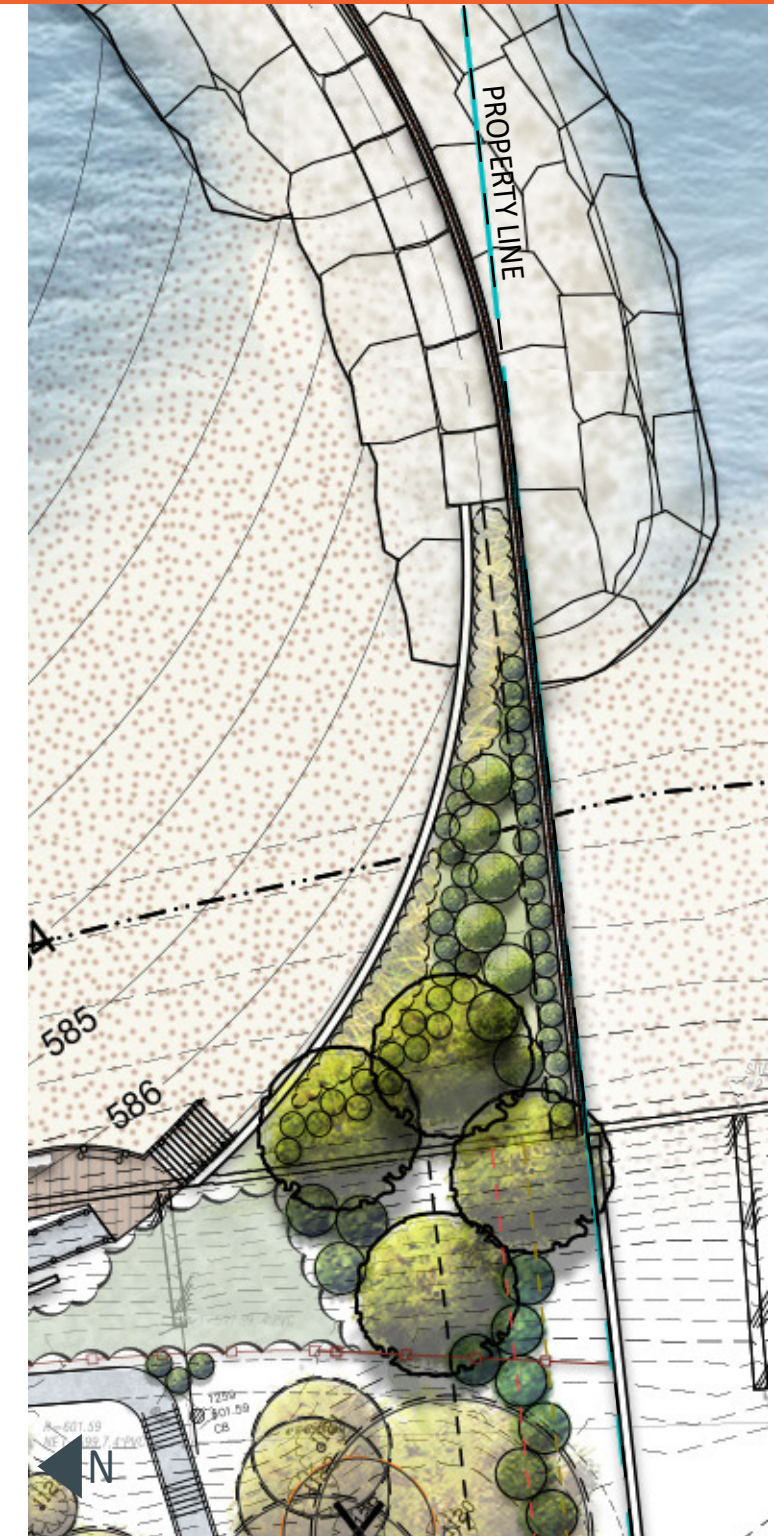
Serviceberry/Japanese  
Tree Lilac



Juniperus spp.



NORTH BREAKWATER & PLANTING POCKET



SOUTH BREAKWATER & PLANTING POCKET

**Planting pockets** at each breakwater provide another layer of erosion protection for the toe of the bluff. Bordered by steel sheet pile walls which function as a secondary groin, the pockets will be filled with sand, soil, and plants. Using steel for the pocket borders is better than stone, as the stone would occupy a larger footprint, take up beach space, and the voids between stones would allow waves to enter the pocket and wash out the soil.

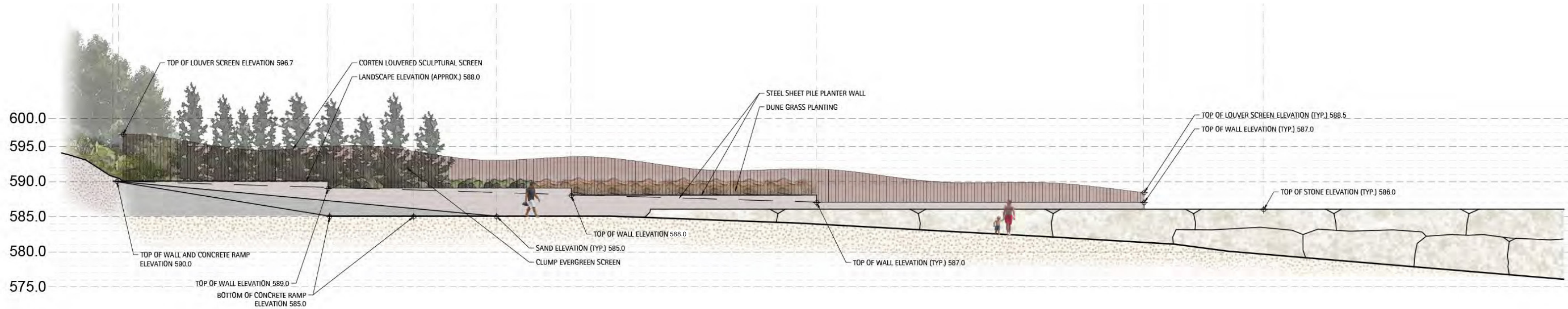




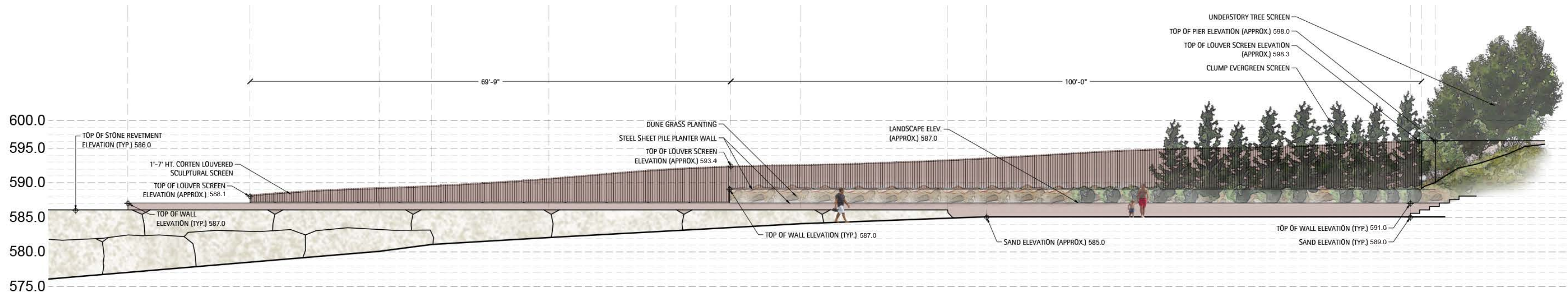
# An Integrated Design Approach | Breakwater Elevations

(A LONG-TERM SUSTAINABLE VALUE ADDED STRATEGY)

ELDER CENTENNIAL BEACH  
BEACH & BLUFF ACCESS IMPROVEMENTS



## NORTH BREAKWATER ELEVATION



## SOUTH BREAKWATER ELEVATION





# An Integrated Design Approach | N. Breakwater Perspectives

(A LONG-TERM SUSTAINABLE VALUE ADDED STRATEGY)

ELDER CENTENNIAL BEACH  
BEACH & BLUFF ACCESS IMPROVEMENTS

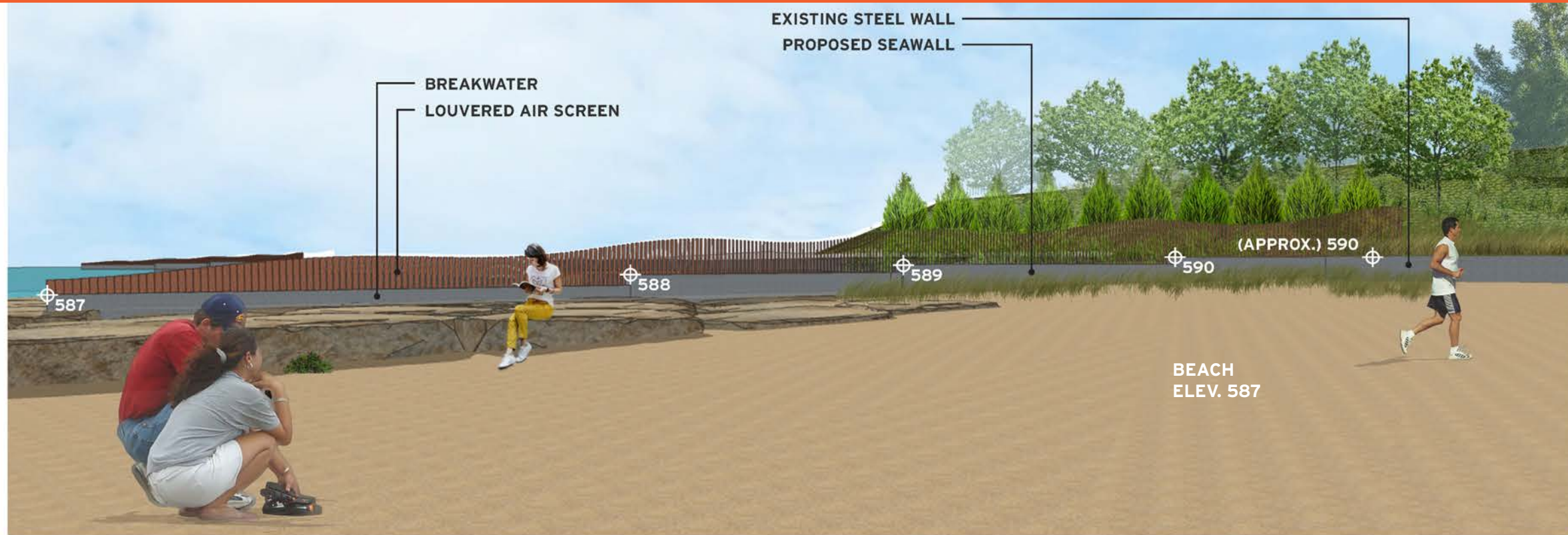


FIGURE 1: VIEW LOOKING SOUTHWEST FROM NORTHERN BEACH



FIGURE 2: VIEW LOOKING SOUTHEAST FROM NORTHERN BEACH





# An Integrated Design Approach | N. Breakwater Perspectives

(A LONG-TERM SUSTAINABLE VALUE ADDED STRATEGY)

ELDER CENTENNIAL BEACH  
BEACH & BLUFF ACCESS IMPROVEMENTS

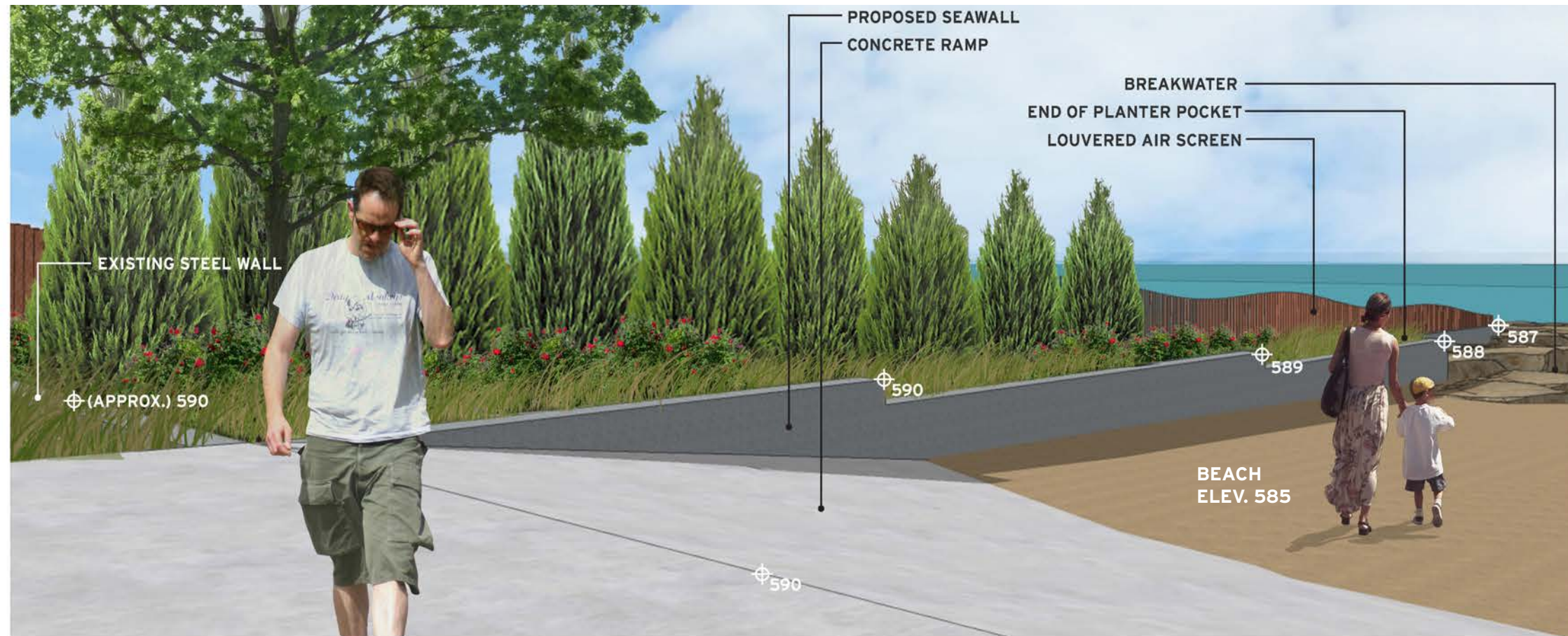


FIGURE 3: VIEW LOOKING NORTHEAST FROM ELDER BEACH RAMP

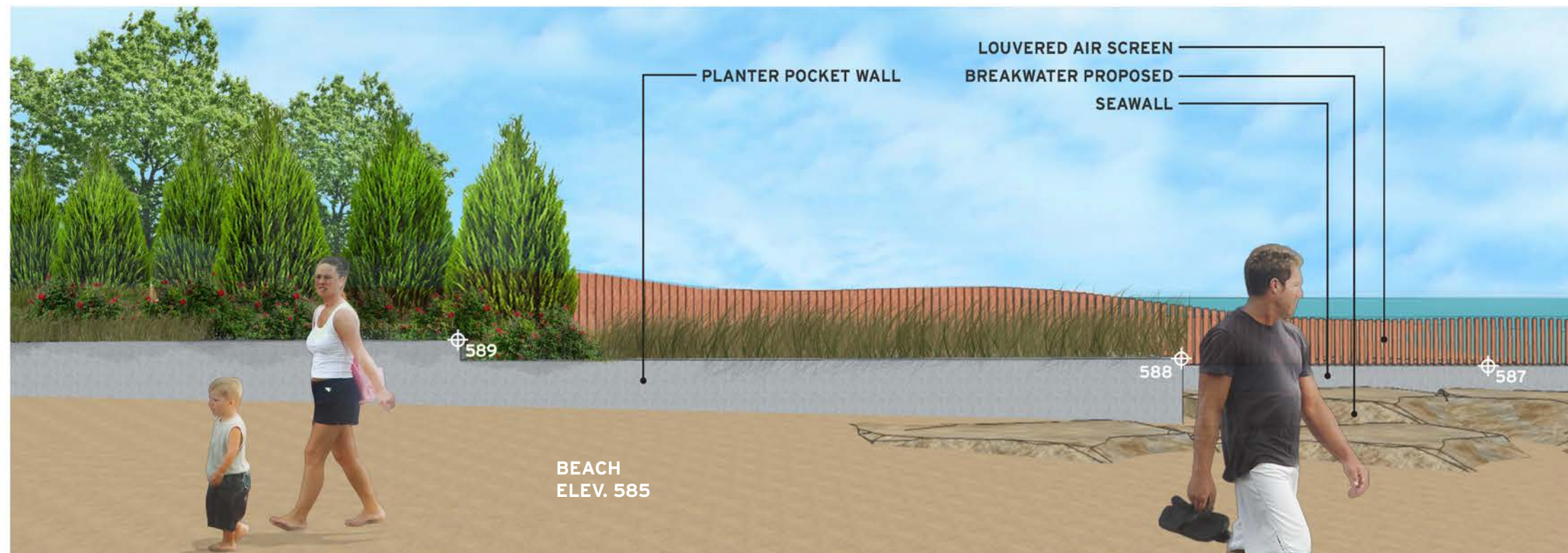


FIGURE 4: VIEW LOOKING NORTHWEST FROM ELDER BEACH





# An Integrated Design Approach | S. Breakwater Perspectives

(A LONG-TERM SUSTAINABLE VALUE ADDED STRATEGY)

ELDER CENTENNIAL BEACH  
BEACH & BLUFF ACCESS IMPROVEMENTS

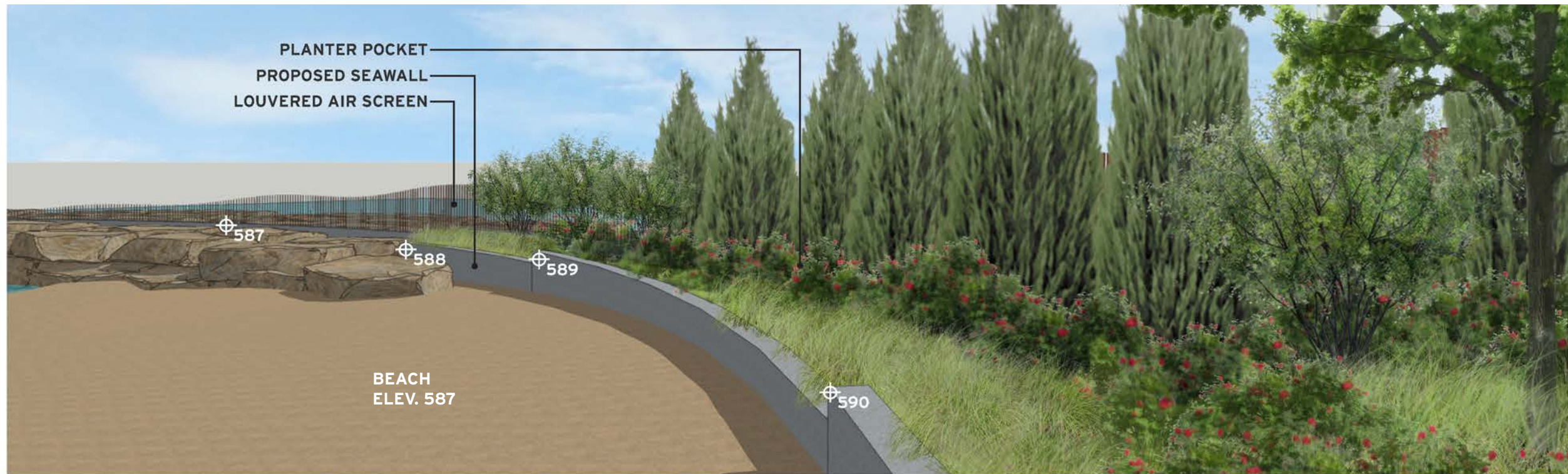


FIGURE 1: VIEW LOOKING SOUTHEAST FROM CENTENNIAL BEACH ACCESS POINT

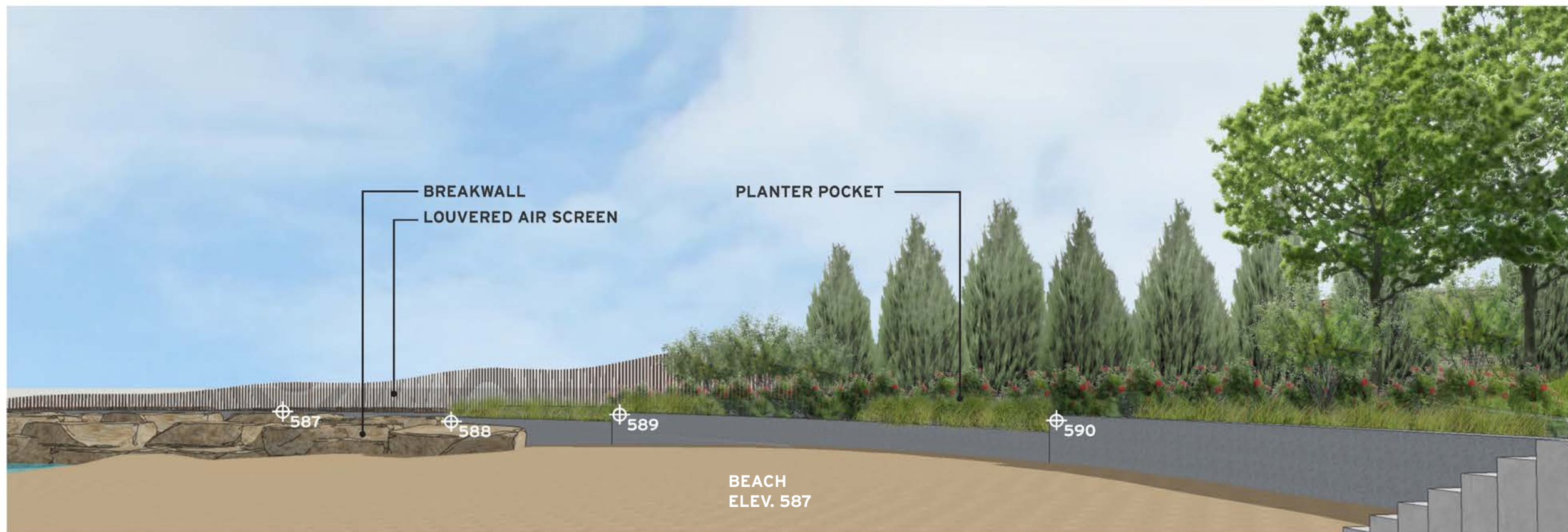


FIGURE 2: VIEW LOOKING SOUTH FROM CENTENNIAL BEACH





FIGURE 1: VIEW LOOKING NORTHEAST FROM ORCHARD 2020 BLUFF TOE

**LOUVED AIR SCREEN  
SERVES 3 PURPOSES:**

- 1. PROVIDES A **SAFETY** BARRIER FOR THE FIRST 100 FT.
- 2. AN ELEMENT OF **CONTROL** FOR DOGS ON THE BEACH
- 3. **EROSION CONTROL** THROUGH LOUVER VS. STONE COST SAVINGS

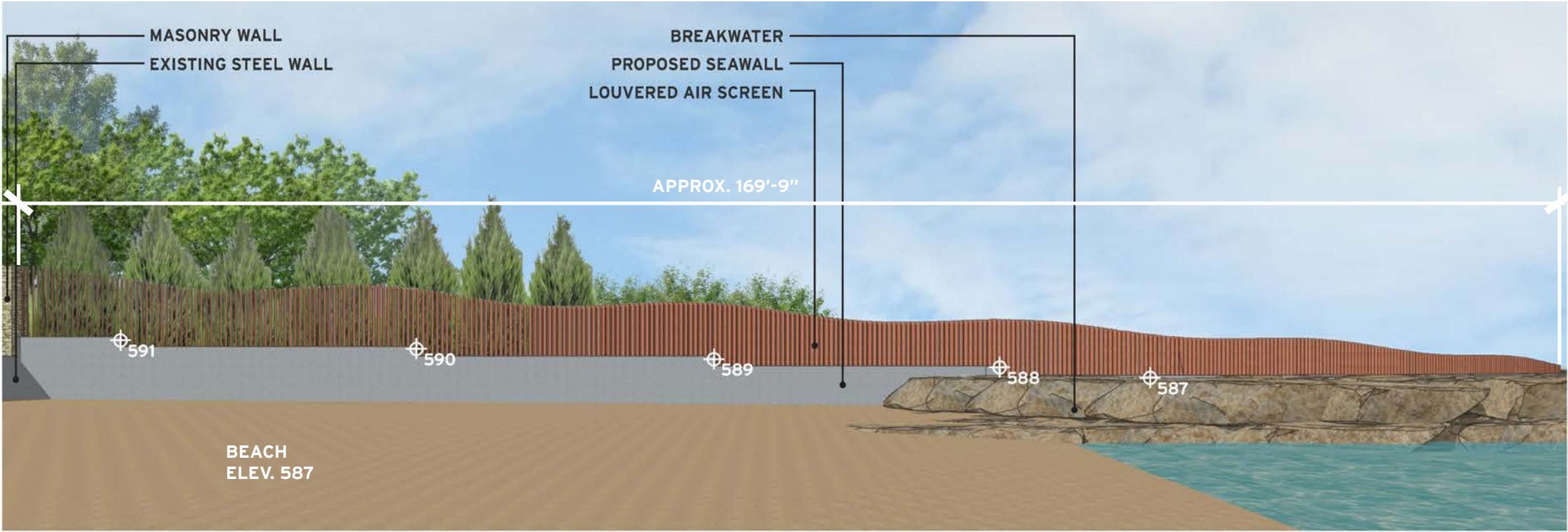


FIGURE 2: VIEW LOOKING NORTHWEST FROM ORCHARD 2020 BEACH



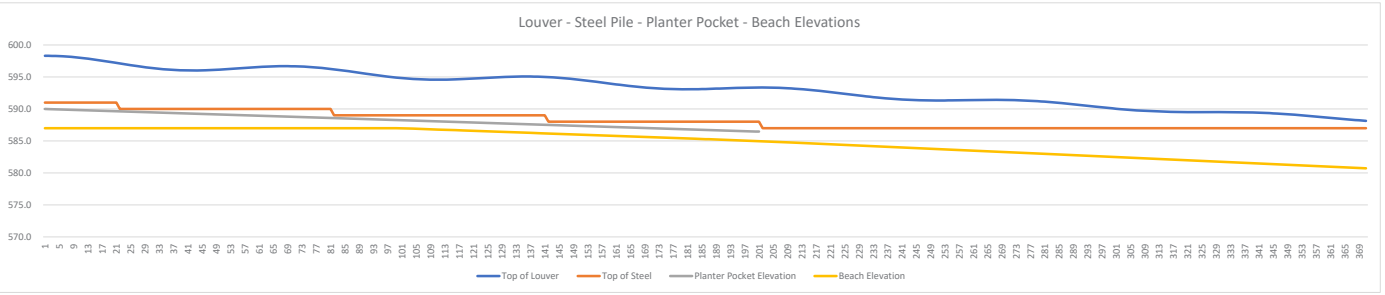


Louver length & overall height calculations

Louver #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Station (feet)	0	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12
Straight line decline	597.60	597.58	597.56	597.53	597.51	597.49	597.47	597.44	597.42	597.38	597.35	597.33	597.31	597.29	597.26	597.24	597.22	597.19	597.17	597.15	597.13	597.10	597.08	597.06	
sinusoidal delta	0.70	0.72	0.74	0.74	0.74	0.74	0.72	0.71	0.68	0.65	0.62	0.58	0.53	0.48	0.43	0.37	0.31	0.25	0.18	0.12	0.05	(0.01)	(0.08)	(0.15)	(0.21)
Top of Louver	598.30	598.30	598.29	598.28	598.25	598.22	598.19	598.15	598.10	598.05	597.99	597.93	597.86	597.79	597.71	597.63	597.55	597.47	597.38	597.29	597.20	597.11	597.02	596.94	596.85
Top of sheet pile cap	591.00	591.00	591.00	591.00	591.00	591.00	591.00	591.00	591.00	591.00	591.00	591.00	591.00	591.00	591.00	591.00	591.00	591.00	591.00	591.00	591.00	590.00	590.00	590.00	590.00
louver length (feet)	7.30	7.30	7.29	7.28	7.25	7.22	7.19	7.15	7.10	7.05	6.99	6.93	6.86	6.79	6.71	6.63	6.55	6.47	6.38	6.29	6.20	7.11	7.02	6.94	6.85
louver length (inches)	87.7	87.6	87.5	87.3	87.0	86.7	86.3	85.8	85.2	84.6	83.9	83.1	82.3	81.5	80.6	79.6	78.6	77.6	76.5	75.5	74.4	85.4	84.3	83.2	82.2
Beach Elevation	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0
Planter Pocket Elevation	590.0	590.0	590.0	589.9	589.9	589.9	589.9	589.9	589.9	589.8	589.8	589.8	589.8	589.8	589.8	589.7	589.7	589.7	589.7	589.7	589.6	589.6	589.6	589.6	589.6

Top of Louver	598.3	598.3	598.3	598.3	598.3	598.2	598.2	598.1	598.1	598.0	598.0	597.9	597.9	597.8	597.7	597.6	597.6	597.5	597.4	597.3	597.2	597.1	597.0	596.9	596.9
Top of Steel	591.0	591.0	591.0	591.0	591.0	591.0	591.0	591.0	591.0	591.0	591.0	591.0	591.0	591.0	591.0	591.0	591.0	591.0	591.0	591.0	590.0	590.0	590.0	590.0	590.0
Planter Pocket Elevation	590.0	590.0	590.0	589.9	589.9	589.9	589.9	589.9	589.9	589.8	589.8	589.8	589.8	589.8	589.8	589.7	589.7	589.7	589.7	589.7	589.6	589.6	589.6	589.6	589.6
Beach Elevation	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0	587.0

Louver-Planter Pocket Delta	8.30	8.32	8.33	8.33	8.32	8.31	8.30	8.27	8.24	8.21	8.17	8.12	8.07	8.02	7.96	7.90	7.83	7.77	7.70	7.63	7.56	7.48	7.41	7.34	7.27
Louver-Beach Delta	11.3	11.3	11.3	11.3	11.3	11.2	11.2	11.1	11.1	11.0	11.0	10.9	10.9	10.8	10.7	10.6	10.6	10.5	10.4	10.3	10.2	10.1	10.0	9.9	9.9







# QUESTIONS?

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