Bayside Seawall Concept Plan

Treatment Options
Assessment Summary

Bayside Community Meeting
June 23, 2018
**PROJECT OVERVIEW**

- **Low timber wall, 87 lf, 18-24” ht.** Good condition; Small watercraft storage area
- **Gravel boat launch**
- **Timber crib wall, 135 lf EW, 20 lf NS, 48-72” ht.** Poor condition
- **Granite pier wall with stone rip rap slopes, recently restored**

**Project Scope:**

**TIER ONE ASSESSMENT**
Utilizes a decision matrix to evaluate seawall options based on six criteria:

- Context sensitivity
- Impacts to site functionality
- Constructability
- Affordability
- Durability and maintenance
- Level of permitting

**CONCEPT DESIGN**
Tier two focuses on conceptual design to better define site impacts, constructability, and probable construction costs. Deliverables include:

- Scaled concept-level plans
- Cross-sections
- Concept-level opinion of probable costs
- Memo outlining constructability considerations
ASSESSMENT of Seawall Treatment Options

"The existing seawall... is in usable but decaying condition. In general, it appears that this portion of the seawall is going to need to be addressed in the next couple of years."

- Report on Inspection of the Northport Village Corporation Seawall at Bayside

**Existing Seawall**

**Decision Matrix**

**Evaluation Criteria:**
- Context sensitivity
- Impacts to site function
- Constructability
- Affordability
- Durability & Maintenance
- Level of Permitting

**Evaluated Options:**
- Option B: In-Kind Repair
- Option D: Rip Rap Slope / Stone Revetment
- Option E: Quarried Granite Block Wall
- Option F: Precast Concrete Wall
- Option G: Cast-in-place Concrete
- Option H: Vertical Retaining Wall
- Hybrid Option: Stone revetment-wall combination
Maine Historic Preservation Commission reviews projects that have Federal funding and/or permitting requirements (ACOE Permits, Shoreland/DEP).

Treatment Guidelines:

In addressing site needs, the historic character of a property must be retained and preserved. As such, the removal of distinctive materials or alteration of features, spaces and spatial relationships that characterize a property should be avoided. Historical photos provided by Penobscot Marine Museum and the Bayside Historical Society.
Parking: Since its early days, the site has accommodated parking capacity INFORMALLY. The site is at capacity.

Considerations: Possible to shift the existing loop drive away from the waterfront to accommodate those options that require more space without dramatic change to the layout and function of the area.

The ONLY way to expand parking capacity is to FORMALIZE parking (i.e. – pave and stripe shoulders and parking areas). This approach is NOT RECOMMENDED as it would negatively impact the historic integrity of the district.

No changes in roadway or circulation are recommended.

Historical photos provided by Penobscot Marine Museum and the Bayside Historical Society.
ASSESSMENT

CONTEXT SENSITIVITY - Parking & Circulation

Lawn Area: Since its early days, the site included lawn areas along the waterfront. While not extensive, these areas provided opportunities for seating and gathering.

Considerations: We have heard some discussion regarding the balance of use along the waterfront. The area is currently gravel and used for vehicles, which block both access and views.

This project may provide an opportunity to restore lawn areas and seating opportunities.

If this is a community desire, then the policies and provisions for parking should be revisited (separate from this project).

Historical photos provided by Penobscot Marine Museum and the Bayside Historical Society.
Several scenarios impact parking on the waterside of the loop drive and/or the location of the loop drive to accommodate parking or add lawn area.

We considered a number of options which are described in the table below. For comparison, the revetment seawall is shown since it requires the most space:

**KEY:**
- A. Revetment seawall
- B. Lawn area (8’ min.)
- C. Circle drive (no change)
- D. Parking/storage (33’ min.)

<table>
<thead>
<tr>
<th>OPTION NO.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>PARKING PROVIDED</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>LAWN AREA PROVIDED</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>CIRCLE DRIVE SHIFTED BACK</td>
<td>NO</td>
<td>YES</td>
<td>YES*</td>
<td>YES</td>
</tr>
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* Circle drive shifted back to maximum possible to allow lawn and parking with revetment scenario.
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<td>NO</td>
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<td>YES</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>LAWN AREA PROVIDED</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
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<td>YES*</td>
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--- | --- | --- | --- | ---
PARKING PROVIDED | NO | YES | YES | NO
LAWN AREA PROVIDED | YES | NO | YES | YES
CIRCLE DRIVE SHIFTED BACK | NO | YES | YES* | YES

* Circle drive shifted back to maximum possible to allow lawn and parking with revetment scenario.
ASSESSMENT

Impacts to site function
No loss or relocation of parking

Context sensitivity
The approach matches what is there now.

Constructability
Can be prefabricated in cells on high ground nearby, then dropped in place on the prepared base & backfilled. May require a cofferdam.

Affordability
Up-front costs are high – the highest of all the options.

Durability & Maintenance
Maintenance requirements are moderate. The wood structure will require upkeep.
Durability is low in comparison to the other options & estimated life cycle costs are higher

Level of Permitting
PBR to full NRPA, ACOE, MHPC

Option B. In-Kind Repair
(Timber Crib Replacement)
ASSESSMENT

Impacts to site function
Loss or relocation of parking.

Context sensitivity
Historic precedent. The approach matches what was there during the Period of Significance.

Constructability
Relatively simple to construct, however, to achieve a more finished look, the stones should be individually laid and fitted.

Affordability
Up-front costs are low – or about half of the next lowest price option (Hybrid option), but site work may add cost.

Durability & Maintenance
Maintenance requirements are low. Durability is high & estimated life cycle costs are low.

Level of Permitting
Full NRPA, ACOE, MHPC.

Option D. Stone Revetment

Seawall Treatment Options

Summary:

Historical photo provided by Penobscot Marine Museum.
ASSESSMENT

Seawall Treatment Options

Option E. Quarried Granite Block Wall

Impacts to site function
No loss or relocation of parking

Context sensitivity
The approach ties in with the treatment of the pier and is in keeping with the historic character of the area.

Constructability
Blocks would be locally sourced and most likely delivered via water. Weight of the blocks will require heavy equipment for placement.

Affordability
Up-front costs are around high – the second highest cost of construction.

Durability & Maintenance
Maintenance requirements are low. Durability is high & estimated life cycle costs are low.

Level of Permitting
Full NRPA, ACOE, MHPC

Summary:

Example – Rockport, MA

Example – Quarried Stone

Example – Rockport, MA

Example – Quarried Stone
ASSESSMENT

Impacts to site function
No loss or relocation of parking

Context sensitivity
The available block finishes are not compatible with the historic character of the village.

Constructability
Blocks would be proprietary and limited by local availability. Weight of the blocks will require heavy equipment for placement. Blocks otherwise simple to install.

Affordability
Up-front costs are moderate – the third lowest cost of construction.

Durability & Maintenance
Maintenance requirements are low. Durability is high & estimated life cycle costs are low.

Level of Permitting
Full NRPA, ACOE, MHPC

Option F. Precast Concrete Block Wall

Seawall Treatment Options
ASSESSMENT

Impacts to site function
No loss or relocation of parking, but installation would require excavation into the parking area and temporary loss of parking.

Context sensitivity
The wood sheathing would address context sensitivity. Appearance would be similar to existing wall.

Constructability
Would require construction of a wide footing and a higher level of excavation.

Affordability
Up-front costs are moderate.

Durability & Maintenance
Maintenance requirements are moderate due to sheathing. Durability is moderate & estimated life cycle costs are moderate.

Level of Permitting
Full NRPA, ACOE, MHPC

Option G. Cast-in-place Concrete with Wood Sheathing

Seawall Treatment Options

Summary:

Example of textured wall treatment

Similar in look to existing wall

Credit: Reddi-rock.com
Option H. Timber Bulkhead – Vertical Wall

ASSESSMENT

Impacts to site function
No loss or relocation of parking in the long term.

Context sensitivity
The wood sheathing would address context sensitivity. Appearance would be similar to existing wall.

Constructability
Would require piles similar to those used in the wharf application.

Affordability
Up-front costs are moderate.

Durability & Maintenance
Maintenance requirements are moderate due to wood elements. Durability is moderate & estimated life cycle costs are moderate due to the sheathing. The concrete durability is high.

Level of Permitting
Full NRPA, ACOE, MHPC

Summary:

Credit: Reddi-rock.com

Example of timber bulkhead treatment

Similar in look to existing wall
ASSESSMENT

Impacts to site function
Loss or relocation of parking.

Context sensitivity
The approach is appropriate for the context and a continuation of existing treatments and materials.

Constructability
Straight forward constructability. Stones would require careful placement for appearance and granite blocks would require heavy equipment for placement.

Affordability
Up-front costs are in the low end of the options. Site work costs may be an additional expense.

Durability & Maintenance
Maintenance requirements are low. Durability is high & estimated life cycle costs are low.

Level of Permitting
Full NRPA, ACOE, MHPC
Notes:
Options B, E, F, & G include a budget ($110k) for a cofferdam, or enclosure for water removal to allow for construction activities. The time of year or contractor means and methods may eliminate the need, but some cost should be considered for difficulties associated with tidal work.
<table>
<thead>
<tr>
<th>OPTION NO.*</th>
<th>DESCRIPTION</th>
<th>CONTEXT SENSITIVITY</th>
<th>IMPACTS TO SITE FUNCTIONALITY</th>
<th>CONSTRUCTABILITY</th>
<th>AFFORDABILITY</th>
<th>DURABILITY &amp; MAINTENANCE</th>
<th>LEVEL OF PERMITTING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td>EXISTING CONDITION</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td><strong>B</strong></td>
<td>IN-KIND REPLACEMENT</td>
<td>20</td>
<td>20</td>
<td>15</td>
<td>9</td>
<td>10</td>
<td>15</td>
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<tr>
<td><strong>D</strong></td>
<td>STONE REVETMENT</td>
<td>20</td>
<td>10</td>
<td>15</td>
<td>18</td>
<td>20</td>
<td>10</td>
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<tr>
<td><strong>E</strong></td>
<td>QUARRIED GRANITE WALL</td>
<td>20</td>
<td>20</td>
<td>10</td>
<td>13</td>
<td>20</td>
<td>12</td>
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<tr>
<td><strong>F</strong></td>
<td>PRECAST CONCRETE BLOCK WALL</td>
<td>0</td>
<td>20</td>
<td>15</td>
<td>18</td>
<td>20</td>
<td>12</td>
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<tr>
<td><strong>G</strong></td>
<td>CAST-IN-PLACE CONCRETE WALL WITH WOOD SHEATHING</td>
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<td>20</td>
<td>5</td>
<td>11</td>
<td>15</td>
<td>12</td>
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<tr>
<td><strong>H</strong></td>
<td>TIMBER BULKHEAD VERTICAL RETAINING WALL</td>
<td>15</td>
<td>20</td>
<td>10</td>
<td>11</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td><strong>I</strong></td>
<td>HYBRID: STONE REVETMENT WITH GRANITE BLOCK WALL</td>
<td>20</td>
<td>10</td>
<td>15</td>
<td>18</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>OPTION NO.*</td>
<td>DESCRIPTION</td>
<td>DESCRIPTION</td>
<td>SCORING (UP TO 120 POINTS)</td>
<td>SCORING (PERCENTAGE OF TOTAL)</td>
<td>OUGHT TO CONSIDER</td>
<td>OUGHT NOT TO CONSIDER</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
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<td></td>
</tr>
<tr>
<td>A</td>
<td>EXISTING CONDITION</td>
<td>No build / do nothing approach</td>
<td>0</td>
<td>0%</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>IN-KIND REPLACEMENT</td>
<td>Timber crib with wood sheathing</td>
<td>89</td>
<td>74%</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>STONE REVETMENT</td>
<td>Individually laid and fitted</td>
<td>93</td>
<td>78%</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>QUARRIED GRANITE WALL</td>
<td>Large block, locally supplied</td>
<td>95</td>
<td>79%</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>PRECAST CONCRETE BLOCK WALL</td>
<td>Proprietary, large blocks, Assumes no batter</td>
<td>85</td>
<td>71%</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>CAST-IN-PLACE CONCRETE WALL WITH WOOD SHEATHING</td>
<td>Wood sheathing added for look similar to Option B (In-kind)</td>
<td>78</td>
<td>65%</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>TIMBER BULKHEAD VERTICAL RETAINING WALL</td>
<td>Piles with wood wall behind; Existing crib may stay in place</td>
<td>83</td>
<td>69%</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>HYBRID: STONE REVETMENT WITH GRANITE BLOCK WALL</td>
<td>Hand laid rough stone with large block, locally supplied</td>
<td>93</td>
<td>78%</td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
Top Scoring

Highest-Rated Treatment Options

OPTION E. Quarried granite – 95 POINTS
OPTION D. Stone Revetment – 93 POINTS
OPTION I. Hybrid stone revetment & granite block – 93 POINTS
OPTION B. In-Kind Replacement – 89 POINTS

CONSIDERATIONS:

OPTIONS D & I may result in some reduction in parking at key “pinch points,” where space is limited. Both options would likely require an adjustment in the loop drive area for parking to be maintained along the waterfront.

OPTION D would provide open views to the water since the treatment would not require a guardrail. If parking on the waterside is continued, there would need to be a safety barrier to prevent the encroachment of vehicles.