

600 State Street, Suite E | Portsmouth New Hampshire 03801

February 10, 2022

Captain Geno Marconi PDA Division of Ports & Harbors 555 Market Street Portsmouth, New Hampshire 03801

Re: Parking Study Concept Development Submission

Rye Harbor State Marina Driveway and Parking Layout Study

Rye, New Hampshire Project No. 5279

Dear Captain Marconi:

Appledore Marine Engineering, LLC. (AME) completed parking study at the Rye Harbor State Marina for the purpose of concept development. The following memorandum summarizes the project design guidelines, assumptions, and parking concept plans.

Four concepts were developed to promote safety and efficiency. The concepts have differing approaches to parking layouts, vehicle circulation, and Route 1A access. Aspects of any given approach deemed to be desirable can be incorporated into a more refined approach. The concepts are for general discussions and are intended to be refined during final conceptual development based on input from a traffic consultant, discussions with the NHDOT, and information from the stakeholder's review.

### 1. Introduction:

The Rye Harbor State Marina public waterfront facility consists of an access road, gatehouse, staging area, maneuvering area, ramp, day-use parking areas (vehicles and trailers), long-term boat storage areas, Isle of Shoals passenger vehicle parking area, IBH prep area, and wash down area.

A study was completed to evaluate the safety and efficiency of the current layout and develop concepts to improve the existing layout.

The goals of the study are to:

- a. Develop standard design criteria, and create concept plans that improve safety, utilization, and circulation.
- b. Review and discuss concept alternatives and guidelines with stakeholders.
- c. Evaluate the main drive for conformance with standard safety criteria.
- Develop a final conceptual plan with layout information, parking space count, and a summary report.

The boat ramp, recreation pier, customer parking, and entrance drive were evaluated as part of this study.

# 2. Concept Layouts Summary and Development:

### 2.1. General:

The concepts have differing approaches to parking layouts and circulation.

Concept 1 demonstrates how the existing drive can be converted to a one-way entrance with head in angled parking and creates a new exit drive onto Route 1A (note: the entrance/exit configuration shown in Concept 1 could be accommodated in any of the other layouts). The concept provides for angled head-in day use trailer parking and passenger vehicle parking oriented in an east to west direction.

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Concept 2 retains the existing access road configuration onto Route 1A but eliminates the on-drive parking. Day use trailer parking is accommodated in a mostly pull-through arrangement. Day use passenger vehicle parking is oriented in a north-south alignment, and staff/short term parking is in an east to west orientation

Concept 3 demonstrates how the existing drive can be converted to a one-way entrance with back-in angled parking and creates a new exit drive onto Route 1A. Day use trailer parking is accommodated in a pull-through arrangement. Day use passenger vehicle parking is oriented in a north to south alignment, and staff/short-term parking is in an east-west orientation.

Concept 4 retains the existing access road configuration onto Route 1A but eliminates the on-drive parking. The concept provides for angled head-in day use trailer parking and passenger vehicle parking oriented in a north to south direction, and staff/short term parking is in an east west orientation.

The following table summarizes the number of parking spaces provided for each concept. This parking count will change slightly depending on which entrance/exit configuration is used for the parking layout.

Concept	Day Use Vehicle -Trailer Spaces	Day Use Vehicle - Passenger Spaces	Crew Spaces	Access Road Spaces	Star Island Spaces	Overflow Spaces	Long Term Trailer Spaces <sup>3</sup>
Existing	30	77	27	12	12-15	20-25	61
1	33	75	28 <sup>1</sup>	<b>14</b> <sup>1</sup>	12-15	20-25	6+/- lost for exit
2	32	103	25 <sup>2</sup>	0	12-15	20-25	61
3	31	84	271	15 <sup>1</sup>	12-15	20-25	6+/- lost for exit
4	33	90	25 <sup>2</sup>	0	12-15	20-25	61

<sup>&</sup>lt;sup>1</sup> Includes two additional handicapped spaces

<sup>&</sup>lt;sup>2</sup> Includes four additional handicapped spaces

<sup>&</sup>lt;sup>3</sup> Average, varies seasonally

### 2.2. Main Access Road:

# 2.2.1. Existing Condition:

The two-way drive is 24 feet wide and has 12 angled parking spaces on the north side. The southbound Route 1A lane is designated for passing at the site drive. Sight distance onto Route 1A to the north could be restricted by boat storage. The access road has a bituminous concrete surface.

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#### 2.2.2. Solutions Explored:

- a. Concept 1 looks at the potential to convert the main access road to one-way (entrance only) and head-in angled parking along the north side. A new exit is proposed approximately 200 feet north of the existing drive.
- b. Concepts 2 & 4 retain two-way main access road. The road is widened, the on-road parking is eliminated for safety, and the turning radii improved.
- c. Concept 3 is like Concept 1 but has back-in angled parking along the drive. Back-in parking improves maneuvering sight distance but may be confusing to the average driver.
- d. The sightlines are improved by positioning boat storage to minimize conflicts (note: design standards for sightlines have not yet been evaluated).
- e. The potential to eliminate the passing zone on Route 1A has not yet been evaluated.
- f. Concepts with a new exit drive will require additional pavement, curbing, and signs at the Route 1A approach.

#### 2.3. Gate House:

## 2.3.1. Existing Condition:

The gatehouse location does not allow queueing of entering traffic without blocking the entrance intersection. The structure is old and will likely be replaced in the near term. The existing structure is currently not provided utilities.

### 2.3.2. Solutions Explored:

- a. The gate house is relocated to allow the maximum practical on-site queueing in all concepts.
- b. The gate house relocation will require some curbing and traffic island construction. It would also allow an opportunity to install conduits (water, communication, and electrical) as a part of that work.

# 2.4. Staging Area (Launch Ready, Tie-Down and Washdown Areas):

### 2.4.1. Existing Condition:

Staging is directed by attendants when present and typically occurs where space permits. Sometimes, staging is mixed with trailer maneuvering or occurs in travel aisles. The staging area's surface is gravel and unmarked. No change in the surface material is planned.

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A freshwater hose is provided from the main building to the southwest corner of the parking lot. The location of the hose and washdown limit oversight by attendants.

## 2.4.2. Solutions Explored:

- a. All concepts provide at least two 12' x 60' Ready Areas and Tie-down/wash areas. A consideration on offering one of the staging areas as a new washdown area is recommended.
- b. It is not practical to fully separate the Ready Areas from the maneuvering area, given the proximity of the ramp to the entrance. However, Concepts 2, 3 & 4 create protected ready areas and an area to wait for the ramp to clear to improve safety.
- c. The Tie-down areas are located along with the long-term boat storage. One of the two areas shares a space with the washdown area. As this is very short-term parking, the brief blockage of the longterm boats is considered acceptable. During peak periods, additional tie-downs could occur along the storage area.
- d. An opportunity exists to relocate the washdown area to a more visible location near the ready areas if the gate house is relocated

## 2.5. Maneuvering Area:

#### 2.5.1. Existing Condition:

The existing maneuvering area provides proper alignment to the ramp. However, it is located where all site traffic (vehicles and pedestrians) must pass through and create potential safety issues and conflicts. The surface of the maneuvering area is gravel and marked with concrete barriers to control vehicle movements. No change in the surface material is planned.

## 2.5.2. Solutions Explored:

- a. Concepts with a one-way entrance and new exit drive reduce the conflicting movements in the maneuvering area.
- b. Concepts 2, 3 & 4 provide a protected area to wait for the ramp to clear.

c. Traffic control in the maneuvering area with either blocks or curbing is contemplated under all concepts.

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## 2.6. Ramp:

## 2.6.1. Existing Condition:

The Ramp location is fixed. Ideally, it would be located further from the entrance; however, relocation is not practical given environmental and financial constraints.

# 2.7. Parking:

### 2.7.1. Existing Condition:

Existing day-use trailer parking is along the harbor riprap. The vehicles/trailers are oriented perpendicular to the riprap. None of the spaces are pull-through. Two-way traffic patterns are used throughout the area. The existing parking area surface is gravel and marked with lime to control vehicle movements. No change in the surface material is planned.

## 2.7.2. Solutions Explored:

- a. Concept 1 utilizes head-in angled parking for the vehicle/trailer combinations, making trailer maneuvering easier than the existing perpendicular ordination. A standard perpendicular parking configuration aligns day-use passenger vehicles east to west. All traffic circulation is two-way. The Star Island and the overflow parking areas remain as they currently exist. The parking alignments will be difficult to maintain with a gravel-surfaced lot.
- b. Concept 2 utilizes mostly pull-through angled parking for the vehicle/trailer combinations. Depending on availability, vehicle/trailer combinations can also use these spaces as head-in or back-in. The day-use passenger vehicles are aligned north to south in a standard perpendicular parking configuration. All traffic circulation is two-way. The Star Island and the overflow parking areas remain as they currently exist. The trailer parking is located away from the ramp (not desirable). The trailer space lengths vary, and the longer length spaces can accommodate two vehicle trailer combinations; however, efficient use of the space may require attendant assistance to prevent parking in the middle of the space.
- c. Concept 3 utilizes pull-through parking spaces for the vehicle/trailer combinations, which is the most desirable configuration for safety and maneuverability. The day-use passenger vehicles are aligned north to south. The Star Island and the overflow parking areas remain as they currently exist. The parking alignments are favorable for the gravel-surfaced lot.
- d. Concept 4 utilizes head-in angled parking for the vehicle/trailer combinations, making trailer maneuvering easier than a perpendicular orientation. The day-use passenger vehicles are aligned north to south. All traffic circulation is two-way. The Star Island and the overflow parking areas remain as they currently exist. The parking alignments are favorable for the gravel-surfaced lot.
- e. All concepts use east to west orientation for staff and short-term parking. This allows for the maximum number of spaces in an orientation that does not require travel through the staging areas.

# 2.8. Long Term Boat Storage Area:

### 2.8.1. Existing Condition:

Approximately, 61 spaces are provided for trailered boats are stored along Route 1A. The number of spaces occupied varies depending on seasonal need.

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## 2.8.2. Solutions Explored:

No substantial changes are required. In refining concepts, items to consider are assuring sightlines are not impacted at the drive(s) onto Route 1A. In addition, it may be advantageous to identify areas to shorter and longer stored boats depending on the site layout constraints. These areas have been shown on the concept plans. Angled spaces were explored as an alternative, however there was a loss in the number of spaces available.

## 2.9. Pedestrian/Handicapped Access:

## 2.9.1. Existing Condition:

No designated pedestrian crossing area exists at Main Drive and to the restrooms. Two designated handicapped parking and access ways exist at the restroom area.

### 2.9.2. Solutions Explored

- a. All concepts provide a crosswalk to access the kiosks along the main drive.
- b. Some additional handicapped areas could easily be added in the staff parking area and along the access drive as shown in various concepts if they are deemed warranted.
- c. The layouts do not bring the site into compliance with applicable ADA accessibility requirements; however, parking attendants can make additional maneuvering space available on an as-need basis with a gravel lot.

# 3. <u>Design Guidelines:</u>

The following guidelines were used in developing the conceptual plans. They are based on generally accepted standards and our experience in designing similar facilities:

## 3.1. Design Vehicle:

a. The design tow vehicle is a 19' tow vehicle with a 26' boat on a trailer (45' combined with boat, 42' combination without boat). The width is 8 feet.

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b. Large trucks (IBH) utilize the facility. Minimum turning radii for the expected route will be incorporated into the layout.

### 3.2. Main Access Drive:

- a. The minimum main access drive width is 20 feet for one-way traffic and 24' plus two 2-foot shoulders for two-way traffic.
- b. An adequate sightline must be provided at Route 1A (TBD) intersection.
- c. Turning radii are based on standard criteria for the towing combination.

## 3.3. Staging Areas:

- a. One ready area and one tie-down area should be provided per launch lane (2 each).
- b. The staging areas shall be 12' wide and 60 feet long.
- c. Ideally, the Ready Area will be located before the ramp maneuvering area, and the Tie-Down is situated after that ramp.

### 3.4. Maneuvering Area:

- a. The minimum approach and departure lanes width are 20 feet.
- b. The width of the area should match the ramp width.
- c. The minimum length is 50 feet from the end of the approach curve (the approach curve radius is 20 feet).

## 3.5. Parking Areas

#### 3.5.1. Towed Vehicles:

- a. Standard towed combination =  $40' \times 10'$  (42' if no overhang available).
- b. Double axel towed combination = 45' x 10' (47' if no overhang available).
- c. Angled parking (60 or 45 degrees) is preferred.
- d. One-way circulation is preferred.
- e. Pull through spaces are preferred.
- f. Locate as close to the ramp as practical.
- g. The minimum width of the parking aisle is 25.'

### 3.5.2. Passenger Vehicles:

- a. Parking stall size = 9' x 20' Preferred (9' x 18' min with wider aisle)
- b. The minimum aisle width is 24' for two-way travel, can be reduced to 15' for one-way 60 degrees angled.

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- c. Long-term parking users (Isle of Shoals visitors) require 24-hour unrestricted egress for parked vehicles.
- d. Handicapped accessible parking and access requirements were not evaluated.

## 3.6. Long Term Boat Storage:

- a. The standard boat stored on the trailer is 26 feet long by 8 feet wide.
- b. The minimum parking stall size provided is 26 feet by 10 feet
- c. The preferred parking stall size is 30 feet by 10 feet.
- d. Angled parking (60 or 45 degrees) is preferred for back-in parking.
- e. The minimum aisle width is 30 feet (based on head out maneuvering).

### 3.7. IBH Prep Area:

- a. IBH requires an area for prepping boats before launch and after retrieval.
- b. IBH operations are seasonal and occur during non-peak season (spring/fall) making the area available for parking use during the peak seasons.
- c. IBH uses a short tractor and 45-foot double axel trailer.
- d. A Laydown area for rigging boats with a truck-mounted crane is required; the approximate rigging area required is 50' x 35'.
- e. Multiple rigging areas are preferred to accommodate a high tide launch window.

# 3.8. Wash down Area:

- a. A single washdown area is required.
- b. The minimum size is 12' x 60'.
- c. The existing water connection is at the southwest corner of the parking area.

Please do not hesitate to reach out with any comments or questions.

Regards,

Lawrence Wagner, P.E. Principal-in-Charge

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Kyle Vandemoer, P.E. Project Manager

Attached: Rye Harbor Driveway & Parking Study Design Concepts







