

Table of Contents

Section No.	
1.00	Determine Basin Area
1.10	Fleet Characteristics.....1-2
1.20	Stall Float Layout.....1-3
1.30	Transient Float Layout.....1-4
2.00	Determine Basin Depth
2.10	Basin Depth.....2-2
3.00	Obtain Existing Design References
3.10	Aerial Photographs.....3-2
3.20	Nautical Charts.....3-3
3.30	USGS Quadrangle Maps.....3-4
3.40	Existing Engineering Drawings and Documents.....3-5
3.50	Hydrographic/Topographic Surveys.....3-6
3.60	Land Use Maps.....3-7
4.00	Identify All Potential Sites
4.10	Deep Water Limitations.....4-2
4.20	Shallow Water Limitations.....4-3
4.30	Upland Access.....4-4
4.40	Land Ownership.....4-5
4.50	Environmental Considerations.....4-6
4.60	Archaeological or Historical Areas.....4-7
5.00	Site Visit - Apply Matrix
5.10	Alternative Sites.....5-2
5.20	Interviews.....5-3
5.30	Photographic Documentation.....5-4
5.40	Geotechnical Investigation.....5-5
5.50	Beach Composition.....5-6
5.60	Landside Access.....5-7
5.70	Instrumentation Needs.....5-8
6.00	Evaluate Select Site(s)
6.10	Preferred Site(s).....6-2
7.00	Perform Field Investigations
7.10	Surveying.....7-2
7.11	<i>Cadastral</i>7-3
7.12	<i>Topographic</i>7-4
7.13	<i>Hydrographic</i>7-5
7.20	Geotechnical.....7-6
7.21	<i>Surface Materials</i>7-7
7.22	<i>Sub-Bottom Materials</i>7-8
7.23	<i>Quarry Investigation</i>7-9
7.30	Environmental.....7-10
7.31	<i>Prospective Contamination</i>7-11
7.32	<i>Fish Migration</i>7-12
7.33	<i>Underwater Biota</i>7-13
7.34	<i>Wetlands</i>7-14
7.35	<i>Dredge Disposal/Upland Development</i>7-15

7.40	Hydraulic.....	7-16
7.41	Waves.....	7-17
7.42	Currents.....	7-18
7.43	Littoral Processes.....	7-19
7.44	Planning and Economics.....	7-20
8.00	Analyze Meteorological Conditions	
8.10	Wind.....	8-2
8.20	Air Temperature.....	8-3
8.30	Precipitation.....	8-4
9.00	Instrumentation Needs	
9.10	Anemometer.....	9-2
9.20	Wave Gauge.....	9-3
9.30	Tide Gauge.....	9-4
9.40	Video Camera Monitoring.....	9-5
10.00	Identify Water Level Variations	
10.10	Astronomical Tides.....	10-2
10.20	Tidal Data.....	10-3
10.30	Storm Surges.....	10-4
10.40	Sea Level Changes.....	10-5
10.50	Wave Setup.....	10-6
10.60	Seiches.....	10-7
10.70	Tsunamis.....	10-8
11.00	Perform Deep Water Wave Analysis	
11.10	Local Design Waves.....	11-2
11.11	<i>Delineate Fetches.....</i>	11-3
11.12	<i>Estimate Winds.....</i>	11-4
11.13	<i>Estimate Wave Height.....</i>	11-5
11.20	Nonlocal Waves (Swell).....	11-6
11.21	<i>Delineate Fetches.....</i>	11-7
11.22	<i>Estimate Winds.....</i>	11-8
11.23	<i>Estimate Wave Height.....</i>	11-9
11.30	Secondary Fetches.....	11-10
12.00	Analyze Wave Transformation	
12.10	Refraction.....	12-2
12.20	Diffraction.....	12-3
12.30	Reflection.....	12-4
12.40	Shoaling/Breaking.....	12-5
13.00	Identify Currents	
13.10	Tidal Currents.....	13-2
13.20	Wave-Induced Currents.....	13-3
13.30	River Discharge.....	13-4
14.00	Evaluate Sedimentation and Littoral Processes	
14.10	Sources.....	14-2
14.11	Rivers.....	14-3
14.12	Cliff Erosion.....	14-4
14.13	Offshore Bars.....	14-5
14.20	Sinks.....	14-6
14.21	Inlets and Lagoons.....	14-7
14.22	Headlands.....	14-8
14.23	Offshore Slopes.....	14-9

14.24	<i>Spits</i>	14-10
14.30	Transport Mechanisms	14-11
14.31	<i>Waves</i>	14-11
14.32	<i>Currents</i>	14-12
14.33	<i>Winds</i>	14-13
14.40	Estimate Sediment Budget	14-14
15.00	Develop Inner Harbor Wave Criteria	
15.10	Wave Disturbance.....	15-2
15.11	<i>Due to Harbor Resonance</i>	15-3
15.12	<i>From Entrance Channel</i>	15-4
15.13	<i>From Breakwater Transmission</i>	15-5
16.00	Develop Harbor Layout	
16.10	Basin Geometry	16-2
16.20	Water Quality	16-3
16.30	Float Layout	16-4
16.40	Upland Area	16-5
16.50	Wave Resonance/Seiche	16-6
17.00	Explore Breakwater Alternatives (in progress)	
17.10	Rubblemound	
17.11	<i>Determine Armor Type/Weight</i>	
17.12	<i>Determine Crest Height</i>	
17.13	<i>Determine Crest Width</i>	
17.14	<i>Determine Side Slopes</i>	
17.15	<i>Determine Layer Thickness</i>	
17.16	<i>Determine Toe Details</i>	
17.20	Floating	
17.30	Wave Barriers	
18.00	Develop Uplands	
18.10	Harbormaster's Office.....	18-2
18.20	Public Restrooms/Showers	18-3
18.30	Telephones	18-4
18.40	Parking	18-5
18.50	Utilities.....	18-6
18.60	Fuel Storage/Service	18-7
18.70	Gear Storage.....	18-8
18.80	Boat Storage.....	18-9
18.90	Infrastructure.....	18-10
19.00	Boat Handling/Haul-Out	
19.10	Straddle Hoist.....	19-2
19.20	Tidal Grid.....	19-3
19.30	Marine Railway	19-4
19.40	Crane Hoist	19-5
19.50	Hydraulic Trailer.....	19-6
19.60	Launch Ramp(s).....	19-7
19.70	Boat Storage.....	19-8
20.00	Waste Facilities	
20.10	Solid Waste Receptacles	20-2
20.20	Liquid (Oil) Containment.....	20-3
20.30	Boat Pump-out Facility	20-4

21.00	Utilities	
21.10	Power	21-2
21.20	Lighting	21-3
21.30	Water	21-4
21.40	Sewer	21-5
21.50	Fire Response	21-6
21.60	Spill Response	21-7

Appendices

Appendix A:	Bibliography
Appendix B:	Sources of Data
Appendix C:	Permits and Approvals
Appendix D:	Marine Construction Methods
Appendix E:	Contract Documents & Quality Assurance
Appendix F:	Operation and Maintenance
Appendix G:	Monitoring Completed Projects
Appendix H:	ADA Compliance
Appendix I:	Non-Point Source Pollution