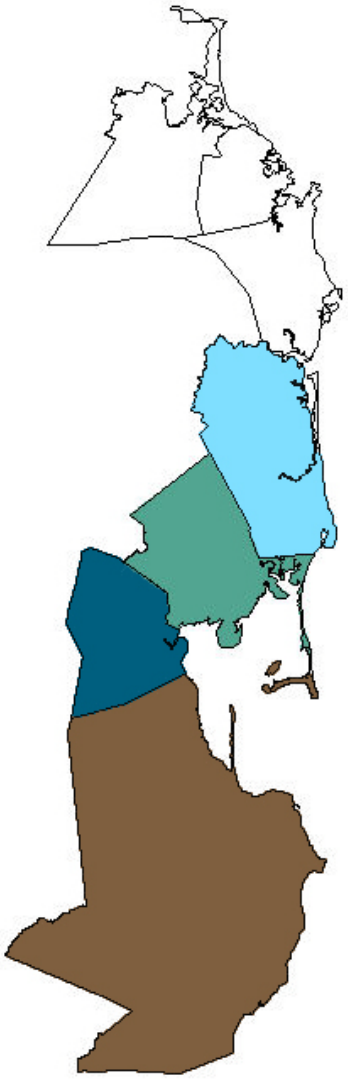
Massachusetts Coastal Infrastructure Inventory and Assessment Report Update

Project No. P13-2814-D05 (3841S)

Prepared for:
Massachusetts Department of Conservation and Recreation
Waterways Division
Hingham, MA

South Shore - South

Marshfield
Duxbury
Kingston
Plymouth



July 2015

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MASSACHUSETTS COASTAL INFRASTRUCTURE INVENTORY AND ASSESSMENT REPORT UPDATE

South Shore - South

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Massachusetts Coastal Infrastructure Inventory and Assessment Report Update 2015

SECTION I – COASTAL INFRASTRUCTURE AND ASSESSMENT PROGRAM

A. Introduction

1. The Project and Client

In 2006, the Commonwealth of Massachusetts initiated a Coastal Hazards Commission (CHC) to identify the vulnerability of the state to coastal hazards. As one of five working groups working under the CHC, the 20-Yr Infrastructure Plan was establish a prioritization for the repair of coastal structures. The focus areas of the Working Group include:

- Publicly owned infrastructure
- Infrastructure for which State is responsible
- Inventory of public hazards infrastructure
- Evaluation on conditions
- Development for a prioritization of work
- Estimation of capital and maintenance costs

In 2013, the Department of Conservation and Recreations (DCR) initiated the study to update of the Coastal Infrastructure Inventory and Assessment to reflect current conditions, update costs for investments required to maintain these coastal structures and to incorporate impacts from sea level rise into the estimated costs to make improvement to existing structures.

The Massachusetts coastline has been broken up into 5 major regions consisting of the North Shore, Boston Region, South Shore, South Coast, and the Cape and Islands.

2. Consultant Team

The consultant team that performed the demonstration project was led by Bourne Consulting Engineering (***BCE***) of Franklin, MA who was responsible for overall project management, specified areas of field assessments, and research. Assisting ***BCE*** was Applied Coastal Research and Engineering Inc. of Mashpee, MA, Childs Engineering Corporation, of Bellingham, MA, CLE Engineering, Inc of Marion, MA and Applied Geographics, Inc. of Boston, MA.

B. Purpose

1. Study Purpose

DCR seeks to identify the capacity of Massachusetts coastal structures to resist major coastal storms and prevent storm damage. In working toward this goal, DCR initiated a program in 2006 to perform an assessment of Commonwealth owned and/or maintained coastal structures. The first phase of this program was the performance of a demonstration project for coastal structures located on the South Shore. The demonstration project identified existing structures, their general conditions, ability to provide coastal protection and the probable cost for repairs. The information collected and developed has been incorporated into the MassGIS system to allow use for developing a 20 Year Coastal Infrastructure Plan.

This was followed up in 2007 with a complete state-wide assessment of coastal structures which culminated in a series of reports issued in 2009 which provided the baseline of condition for publically owned and/or maintained coastal protective structures.

These projects served as the basis for the performance of the 2013 current statewide inventory assessment of all Commonwealth coastal structures and the reassessment of their need for maintenance and/or repair. In this current assessment the study has been expanded to include:

- Federally owned and maintained coastal structures
- Identification of probable cost to improve coastal structures to meet current estimated coastal storm exposure levels including sea level rise impacts.
- Incorporation of structures missed in the original studies as well as corrections to the previous structure assessments as identified in the current structure assessments.

2. Goals of Study

The goals of the Massachusetts Coastal Infrastructure Inventory and Assessment Project include:

- To identify all the coastal structures the state either owns or has responsibility to maintain for the 5 regions included within the study which represent the complete coastal area of Massachusetts.
- Of the structures identified, determine the structure location and characteristics, the structure condition relative to providing coastal protection and the structure importance in relation to what it is protecting.
- To the degree possible, identify the structure elevation and the FIRM mapping flood elevation and category.
- To the degree possible, identify structure owner and available documents from local, state and federal agencies.
- To establish an estimated cost to rehabilitate the coastal structures to provide the level of project established in the structure's original design.
- To establish an estimated cost to improve the coastal structures to provide the level of project to meet current FEMA exposure levels and for sea level rise impacts.
- Provide the information in a format compatible for incorporation into the MassGIS system and Massachusetts Ocean Resource Information System (MORIS), which is a more user –friendly.

3. Limit of Study

Due to the time constraints and the amount of effort necessary to collect; process and compile the information, the following are identified as limitations of the information presented:

- All property ownership was taken as presumed. No legal investigation of ownership was performed during the project. Property ownership is based on town assessor maps. Where structures were located outshore of assessor map defined property lines, it was assumed to be Town land unless other information indicated otherwise. Where structures were located outshore of Mean Low Water, property is assumed to be State owned.
- The structure ownership was based on assessor maps and research at the local, state and federal levels. Where there was indication of public work on a structure on Town land or on private property, the structure was presumed to be Town owned. Where the structure was on state property, the structure was presumed to be state owned. Where ownership of the structure was not clear but was located on private property, the structure ownership was defined as unknown.
- The study included town and state owned structures as it was assumed that most town owned structures received state funding at some level for construction and/or maintenance.

- Structures that were determined to be private were not included in the initial study and this methodology was carried forward in the current study. In May of 2013 MA-CZM completed a separate study to identify privately owned structures and has identified over 6,600 privately owned structures. However, the study did not include field assessments of these structures nor any collection and inventory of associated documents.
- Undocumented structures considered to be on private land, but having the potential to have been publicly built and/or maintained, were identified as having an "unknown ownership".

- The prioritizing of structures was based primarily on risk to general infrastructure and density of housing. Infrastructure included was buildings, critical utility corridors and evacuation routes. These were based on interviews with representatives for each community.
- Research was performed at the local, state and federal levels. The local research was limited to location and documenting available coastal structure contract drawings. Research at DCR was restricted to available historic construction plans for coastal structures at the MA-DCR Waterways office in Hingham, MA, and MA-DCR Division of Urban Parks and Recreation in Boston, MA. No investigation of state archives was performed. Research at MA DEP Chapter 91 and USACE was limited to recorded permits and licenses found in their files. No investigation was performed at the Registry of Deeds.

C. Development of MORIS Database Attributes

The information collected within the study has been incorporated into MORIS, the Massachusetts Ocean Resource Information System. MORIS is an online mapping tool created by the Massachusetts Office of Coastal Zone Management (CZM), the Office of Geographic Information (MassGIS), SeaPlan, Applied Science Associates (ASA), Charlton Galvarino, and PeopleGIS. MORIS allows for the search and display of spatial data pertaining to the Massachusetts coastal structures.

In general MORIS allows users to interactively view various data layers (e.g., tide gauge stations, marine protected areas, access points, eelgrass beds, etc.) over a backdrop of aerial photographs, political boundaries, natural resources, human uses, bathymetry, or other data including Google base maps. Users can quickly create and share maps and download the actual data for use in a Geographic Information System (GIS). While designed for coastal management professionals, MORIS can be used by anyone interested in these data and maps.

MORIS is designed to:

- Provide spatial data that are, to the extent possible, accurate, scientifically sound, and credible.
- Provide information to decision makers, planners, and the general public that can be used to strengthen environmental policy and guide management decisions.
- Use a collaborative, interactive process that involves a variety of partners and data sources.
- Ensure that the data are available in an easily accessible and useful manner.

The specific attributes that would be incorporated into the MORIS system were developed based on the scope of work and the goals to be achieved. The following was established to standardize the data collection and presentation and to allow total flexibility for sorting by attributes in the final GIS database. The attributes identified below were input initially into a MS Access database which was used to manage the data from all the coastal communities within a single file which then was converted and incorporated in MORIS.

1. Database Attributes - Descriptions/Definitions

   a. Structure Number: A unique structure number was given to each coastal structure. The number was based on existing numbering systems that include the State Department of Environmental Protection community number followed by the local community assessor's parcel numbering system. The last three digits of the number represent the structure within the parcel. Where structures extend over several parcels, the structure is referenced to a parcel that is approximately in the center of the structure. Where Town assessor's references include letters, those are also included within the structure number. Some communities have block numbering within their numbering system and these are included. Communities without block numbering still have the block numbering included but these are illustrated as all zeros for that specific segment.

   Structures that are on Town property, which would otherwise not have a parcel number, are referenced to a parcel that is in the immediate vicinity of the coastal structure.

   On this basis, the following is the general numbering convention:

   CCC-MMM-BBB-PPP-SSS

Where:	CCC	DEP Community Number
	MMM	Community Map Number
	BBB	Block Number (000 if no block numbering system)
	PPP	Community Parcel Number
	SSS	Structure Number

   b. Property Ownership: Property ownership does not necessarily indicate structure ownership. All property ownership was on a "presumed" basis as no legal verification of ownership was performed. The ownership of the property was classified under four basic areas which were private ownership (Private), Town ownership (Local), Commonwealth of Massachusetts ownership (State), federal government ownership (Federal) or unknown. Property ownership was based on Town assessor's maps. Where the location was located above Mean Low Water, and not within a defined parcel, the property ownership was presumed to be the Town unless documentation was found to indicate otherwise. Where a structure was located offshore of Mean Low Water, the property ownership was presumed to be federal.

   c. Structure Ownership: The ownership of structures is identified separately from property ownership due to the situation where state or federal projects were constructed on local community or private property and the responsibility of maintaining the structure may be associated with the government entity that install it.

   In the case of structures installed by the Commonwealth of Massachusetts (DCR), the structure also has an associated easement that extends 10 feet from each side of the footing for maintenance access.

   The ownership of all structures is presumed as no verification of ownership was performed. Ownership of the structure was determined by research into historic state and federal permits and the entity indicated on the permits as the applicant. Where no other information was found, the following was utilized:

   - Structures located on private land but appearing to be significant structures were identified as owned by the Town or as "Unknown". Unknown was used were there was a question of local or private ownership.
   - Structures on Town property were assumed to be owned by the Town
   - Structures that were located off-shore were presumed to be federally owned

- Structures that were identified as being privately owned were eliminated from the database

d. Basis of Ownership: As indicated above, the identification of ownership is presumed and not based on legal research. The basis of structure ownership was provided to give rationale to the structure ownership and identified the research resource that identified the ownership or the methodology otherwise used. The responses utilized were limited to the following:

- DPW – DPW Employee Interview: Ownership based on local community representative providing indication of owner.
- DCR - Contract Drawings: Review of previous construction and/or maintenance drawings which indicate owner within the documents
- DEP – Ch 91 License: Owner as identified by existing DEP Chapter 91 License
- USACE – Permits: Owner as identified by existing US Army Corp Permit
- Property Ownership: Owner as identified by assessor's office
- Offshore Structure: Offshore structures are assumed to be Federal ownership unless otherwise defined.

e. Structure Owner's Name: If known, provides name of Structure Owner. Name reflects the presumed owner of publicly owned structures as no legal investigation of ownership was performed. For public structures, the ownership was restricted to the community name, the state agency or the federal agency based on supporting documents found from previous studies, design and/or construction.

f. Earliest Structure Record: The year of the oldest document located for the structure. The information is determined from the document research performed on the structure from local, state and federal agencies. If no documents could be found than this entry is denoted as 'Unknown". Where documentation of the structure could be found, the date from the oldest document was utilized.

g. Primary Structure / Secondary Structure: Many of the coastal structures consisted of combined structures which were rated separately. It was typically found that one structure was significantly more predominant (Ex. Bulkhead/Seawall) and was therefore identified as the Primary Structure while a smaller structure might exist in front (ex. Revetment) of it. The type, height and material of each structure are identified separately. The condition of each structure was based on the Primary Structure. Where there was no secondary structure, the fields were left blank.

h. Structure Type: The structure type was categorized into five basic coastal structure categories which were Bulkhead/Seawall, Revetment, Coastal Beach, Coastal Dune, and Jetty/Groin.

i. Structure Material: The identification of the coastal structure's material of construction was performed and represents the primary material. Stone structures consisted of both mortared and non-mortared conditions.

j. Structure Height: Each type of structure was categorized by its visible height in feet. While it is known most structures extend well below grade, it was assumed that the exposed height is approximately the same as the original design height. This value is utilized in developing an estimated construction cost. The Structure Height designation is broken into four specific ranges which are:

< 5 feet 5 to 10 feet 10 to 15 feet >15 feet

k. Structure Condition: This represents an initial or preliminary assessment of the condition for each structure was performed by the field teams and does not represent of full condition survey of the coastal structure. This initial assessment is by visual observation only with no detailed investigation or analysis performed. The condition assessments were based on a predefined five level rating system that ranged from Rating A for Excellent Condition to Rating F for Critical Condition. A detailed listing of the conditions and their definitions can be seen in Exhibit I-A.

l. Priority Rating: In order to account for the need for protection at any one site, a five level priority rating system was established. This allowed for consideration of public infrastructure protection, density of residential housing for development of structure overall importance for coastal protection. This rating included: evacuation routes; key public infrastructure including police, fire and hospital buildings; critical utility corridors and other areas of high public investment requiring greater protection. The ratings range from Level 1 for no infrastructure or residence protection to Level 5 for critical inshore infrastructure protection and/or high density residential. The detailed listing and definitions for the priority categories can be seen in Exhibit I-B.

m. Structure Repair / Reconstruction Cost: A preliminary estimation of construction costs to maintain or repair structures was made based on the preliminary field assessment of the structures. A Repair Cost Matrix was developed based on structure type, condition, height and material and can be seen in Exhibit C. Once each structure's type, height, and material classifications were determined, the cost per foot for the structure was determine from the Repair Cost Matrix and multiplied by the length of the structure to obtain the estimated repair/restoration cost. The cost matrix repair costs include a 20 percent construction cost contingency as well as 10 percent costs for engineering and permitting.

n. Structure Length: The length of each structure is provided and utilized in the development of the repair/reconstruction costs. The lengths are given to the nearest foot and taken as the linear distance along the structure, as determined by the GPS location, which takes into account structure angles and curvature. Groins and jetty lengths are generally perpendicular to the shoreline while all other structures represent the length parallel to the shoreline. Structure lengths are computed directly from the information shown on the GIS database and indicated within the community reports.

o. Structure Elevation: The elevation of structures was determined in feet from existing information where available. The datum used is NAVD 88 and elevations are to the nearest foot. From a previous study much of the south shore coastal structures had elevations defined based on LIDAR mapping data. Where available structure documentation with elevations was found, in areas with no LIDAR data, the information was included within the structure information. Where there was no LIDAR information or existing documentation, the item has been left blank.

LIDAR (Light Detection and Ranging) is technology that is currently being used for high-resolution topographic mapping by mounting a LIDAR sensor, integrated with Global Positioning System (GPS) and inertial measurement unit (IMU) technology, to the bottom of aircraft and measuring the pulse return rate to determine surface elevations.

p. FEMA Zone and Elevation: For each structure the FEMA Flood Insurance Rate Maps (FIRM) were researched for their Flood Zone designation and their Base Flood

Elevation from the most recent FIRM maps for the specific Town. The elevations are provided in feet on the same datum as the FIRM maps (NAVD88) with no adjustments or conversions.

q. Structure Comments: The engineering team provided a brief description and comment on the structure at the time of the field assessments which is provided in support of the condition rating that was given for the structure.

r. Pictures: At the time of the field assessments, digital photographs were taken to provide a general overview of the structure. The number of pictures was limited to a maximum of six. The first photograph for each structure is shown on the Structure Assessment Form. The list of all photographs is provided on the form. The list of photos includes the historic photos from the original assessment (suffix -PHO1A, -PHO1B, etc.) as well as the current photos (suffix – PHO13A, PHO13B, etc.)

s. Town Documents: Town documents represent the structure information that could be found in the Town's DPW/Engineering Department records. Where particular records could be found, a table of document information was developed and included within the database with limited descriptions.

t. MA - DCR Documents: MA-DCR documents represent the structure information that could be found within DCR – Waterways office in Hingham and at DCR's office in Boston. Where particular records could be found, a table of document information was developed and included within the database with limited descriptions.

u. MA - DEP Chp. 91 Licenses: MA-DEP Chapter 91 license documents represent the structure information that could be found within MA-DEP Chp 91 records in Boston. Where particular records could be found, they were scanned as pdf files and attached to the structure through the GIS database information. In addition, a table of license document information was developed and included within the database with limited descriptions

v. USACE Permits: USACE Permits represent the structure information that could be found within the Army Corp of Engineers regulatory office in Concord, MA. Where particular records could be found, they were scanned as pdf files and attached to the structure through the GIS database information. In addition, a table of license document information was developed and included within the database with limited descriptions.

D. Development of Repair and Improvement Costs

1. Coastal Structure Estimated Reconstruction/Repair Costs

A matrix to be used within the database has been developed to assess likely rehabilitation/repair costs to restore the coastal structures to their original design condition. No attempt was made to assess the level of exposure and associated level of protection that might be required to meet current design standards for these structures. These costs are only an estimation to bring these structures back to their original design intent based on 2013 construction costs.

The development of the cost matrix is based on the following:

a. Structure Condition Ratings – The condition of the coastal structures was determined in the field by the survey crew which was led by an engineer with waterfront structure

assessment and design experience. The definitions of the rating criteria utilized for the assessments are presented elsewhere.

The cost implications for each rating condition are as follows:

- A Rating Structures not requiring any maintenance, repair or rehabilitation cost and would not be expected to experience damage if subject to a major coastal storm event
- B Rating Structures requiring limited or no repair and would be expected to experience only minor damage if subject to a major coastal storm event. The value of these maintenance costs is assumed to be 10 percent of the construction cost.
- C Rating Structures requiring moderate to significant level of repair or reconstruction and would be expected to experience significant damage if subject to a major coastal storm event. The structure is presumed to be effective under a major storm event. The value of the repair costs is assumed to be 50 percent of the construction cost.
- D Rating Structures requiring significant level of rehabilitation or total reconstruction and would be expected to experience significant damage or possibly fail if subject to a major coastal storm event. The value of the repair costs is assumed to be 100 percent of the construction cost.
- F Rating Structures requiring complete reconstruction and would expect to provide little or no protection from a major coastal storm event. The value of the repair costs is assumed to be 100 percent of the construction cost plus a cost for removal/disposal of the original structure.

b. Height of Structure – Height of a structure is a major factor in the structure cost and therefore was identified as a significant factor is assessing rehabilitation/repair construction costs. The structures were broken down into four major categories based on visible structure heights which were:

< 5’	Structures that were less than five feet in height
5’-10’	Structures five to 10 feet in height
10’-15’	Structures over 10 feet to 15 feet in height
> 15’	Structures greater than 15 feet in height (assumed 20 feet)

c. Length of Structure – Length is based on field GPS location with measurements taken directly from GIS database information.

d. Structure Types

i. Bulkhead / Seawall Structures – These structures are assumed to be constructed out of concrete, steel, stone or wood with each having its own criteria for establishing costs. For each structure type the following was assumed:

ii. Concrete Seawalls – These walls were assumed to be gravity structures with the volume of concrete used based on the bottom width being one-half of the structure height. Costs of construction were based on a per cubic yard estimate that varied

from $850 to $950 per cubic yard depending on the structure height. Values for excavation and demolition of existing structure were also included.

iii. Stone Seawalls - These walls were treated the same as concrete seawalls and assumed to be gravity structures with the volume of the structure based on the bottom width being one-half of the structure height. Costs of construction were based on a per cubic yard estimate that varied from $750 to $850 per cubic yard depending on the structure height. Values for excavation and demolition of existing structure were also included.

iv. Steel Bulkheads – Steel bulkheads were presumed to be constructed with steel sheet piling. Tie back systems were presumed for structures over 10 feet in height. Shorter walls were assumed to have a cantilever design. The total depth of sheeting was presumed to be two times the exposed height. The cost for construction varied from $125 per square foot to $440 per square foot of exposed height plus the cost of excavation and demolition.

v. Timber Bulkheads – Timber bulkheads were presumed to be constructed with timber piles at eight foot on center, horizontal wale and vertical four inch sheathing. The unit costs for installed materials used included $55 per linear foot of pile and $8 to $10 per bfm for treated timber.

vi. Revetment Structures – Revetment structures were presumed to be constructed of dry placed (no concrete) stone with a two on one slope and a horizontal toe and crown equal to the thickness layer established for each height condition. The total thickness of the revetment layers varied from six to ten feet with the cost of armor and under-layer stone assumed to be $85 per ton.

vii. Groins and Jetties – Groins and jetties were assumed to be the same materials and construction as the revetment structures but would have two sides and therefore double the quantities.

viii. Coastal Beaches – Costs for restoration of Coastal beaches presumed the placement of beach nourishment sands at a 1-on-20 slope over the existing beach conditions. The cost for deposition of sand assumed relatively close source of material and utilized $40 per cubic yard for the material installed.

ix. Coastal Dunes – Restoration of coastal dunes assumed a cross section of nourished sand with a one-on-four slope on one side of a 25 foot width at the defined dune height. The cost for deposition of sand assumed relatively close source of material and utilized $40 per cubic yard for the material installed.

e. Contingency – A contingency of 20 percent was added to all costs to reflect the unknowns associated with this level of rehabilitation/repair estimating.

f. Engineering and Regulatory Approvals – A ten percent increase to the cost matrix prices was assessed to represent the engineering design and regulatory approval requirements for the restoration of these structures.

g. Coastal Structure Upgrade Factor / Upgrade Costs

The development of upgrade factors to identify improvement costs was identified as important element of this phase of the study due to the need for structures to meet current exposure conditions and to anticipate future sea level rise. Original structure design would have been based on current shoreline conditions at that time. Recent investigations have found that the shoreline

conditions have changed and generally resulting in lowering of beach/shoreline elevations and creating potential for larger wave conditions and forces.

In developing this impact, a review of the existing structure type and height, the normal tide conditions and the FEMA 100 yr event conditions was evaluated. The difference of the mid-tide elevation and FEMA V-zone condition was computed on top of which an estimate of 2.0 feet for sea level rise was added.

This provided a general expectation of likely overtopping of structures with the magnitude established by the differential in height. This was then broken down by range and multiplication factors established as seen in the following table:

Structure Cost Upgrade Factor Multiplier

Range	V-Zone Height Above Mid-Tide	Upgrade Factor
I	Non V-zones	1.20
II	<7 ft	1.50
III	7 to 12	2.00
IV	12 to 17	2.50
V	17 to 22	2.75
VI	22 to 27	3.00
VII	27 to 30+	3.25

The structure's presumed original cost in current dollars is multiplied by the Upgrade Factor to represent the probable current construction cost for the coastal structure if it was built today for withstanding the present day exposure conditions.

While this provides for an order of magnitude construction cost to achieve this condition, it does not attempt to determine whether any such significant improvement would be allowed either from a regulatory approval process or from the public as acceptance of the impact it may have.

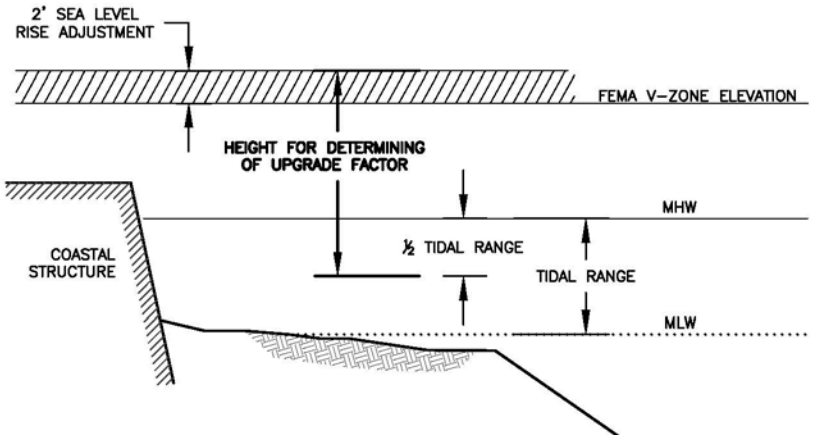


EXHIBIT I-C: Upgrade Factor Value Height Determination

EXHIBIT I=A

Structure Condition Table – 5 Level Rating System

Preliminary Condition Assessment		**Definition Based Upon Perceived Immediacy of Action and Potential to Cause Damage if Not Corrected**	**Level of Action Required**
A	Excellent	Like new condition. Structure expected to withstand major coastal storm without damage. Stable landform (beach, dune or bank). Adequate system exists to provide protection from major coastal storm	None
B	Good	Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure	Minor
C	Fair	Structure is sound but may exhibit minor deterioration, section loss, cracking, spalling, undermining, and/or scour. Structure adequate to withstand major coastal storm with little to moderate damage. Actions taken to reinforce structure to provide full protection from major coastal storm and for extending life of structure. Moderate wind or wave damage to landform exists. Landform may not be sufficient to fully protect shoreline during a major coastal storm. Actions taken to provide additional material for full protection and extended life	Moderate
D	Poor	Structure exhibits advanced levels of deterioration, section loss, cracking, spalling, undermining, and/or scour. Structure has strong risk of significant damage and possible failure during a major coastal storm Structure should be monitored until repairs/reconstruction can be initiated. Actions taken to reconstruct structure to regain full capacity to resist a major coastal storm. Landform eroded, stability threatened. Landform not adequate to provide protection during major coastal storm. Actions taken to recreate landform to adequate limits for full protection from a major coastal storm.	Major
F	Critical	Conditions of structure/landform may warrant emergency stabilization as failure may result in potential loss of property and/or life. Landform eroded, loss of integrity Structure exhibits critical levels of deterioration, section loss, cracking, spalling, undermining, and/or scour. Structure provides little or no protection from a major coastal storm. Actions taken to totally reconstruct structure to regain full capacity. Landform stability is severely compromised, rate of erosion/material loss may be increasing, and landform does not provide adequate protection from a major coastal storm. Actions taken to recreate landform to adequate limits for full protection from a major coastal storm.	Immediate

EXHIBIT I-B

Priority Rating System - 5 Level Rating System

Preliminary Priority Level Assessment		**Level Based Upon Perceived Immediacy of Action and Presence of Potential Risk to Inshore Structures if Not Corrected**	**Level of Action Required**
I	None	No Inshore Structures or Residential Dwelling Units Present	Long Term Planning Considerations
II	Low Priority	Inshore Structures Present with Limited potential for Significant Infrastructure Damage	Future Project Consideration
III	Moderate Priority	Inshore Structures with potential for Infrastructure Damage and/or Limited Residential Dwellings (<1 dwelling impacted / 100 feet of shoreline)	Consider for Active Project Improvement Listing
IV	High Priority	High Value Inshore Structures with Potential for Infrastructure Damage and/or Moderate Density Residential Dwellings (1-10 dwellings impacted / 100 feet of shoreline)	Consider for Next Project Construction Listing
V	Immediate / Highest Priority	Critical Inshore Structures Present with Potential for Infrastructure Damage and/or High Density Residential Dwellings Conditions of structure may warrant emergency stabilization as failure may result in potential loss of property and/or life. (>10 dwellings impacted / 100 feet of shoreline)	Consider For Immediate Action Due to Public Safety and Welfare Issues

EXHIBIT I - C

June 16, 2014

REPAIR / REHABILITATION COSTING DATA

STRUCTURE TYPE	STRUCTURE MATERIALS	STRUCTURE HEIGHT	STRUCTURE CONDITION RATING				
			A	B	C	D	F
BULKHEAD/ SEAWALL	CONCRETE	< 5 Feet	0	65	323	647	776
		5 To 10 Feet	0	192	959	1918	2302
		10 To 15 Feet	0	399	1996	3993	4791
		> 15 Feet	0	692	3461	6923	8307
	STEEL	< 5 Feet	0	62	312	624	749
		5 To 10 Feet	0	166	830	1660	1992
		10 To 15 Feet	0	418	2091	4182	5019
		> 15 Feet	0	878	4390	8781	10537
	STONE	< 5 Feet	0	56	281	562	646
		5 To 10 Feet	0	166	830	1660	1910
		10 To 15 Feet	0	347	1736	3473	3994
		> 15 Feet	0	605	3026	6052	6959
	WOOD	< 5 Feet	0	84	422	843	1012
		5 To 10 Feet	0	172	861	1723	2067
		10 To 15 Feet	0	225	1123	2247	2696
		> 15 Feet	0	332	1659	3318	3981
COASTAL BEACH	SAND	< 5 Feet	0	24	122	244	244
		5 To 10 Feet	0	98	489	978	978
		10 To 15 Feet	0	220	1100	2200	2200
		> 15 Feet	0	391	1956	3911	3911
COASTAL DUNE	SAND	< 5 Feet	0	27	133	267	267
		5 To 10 Feet	0	98	489	978	978
		10 To 15 Feet	0	213	1067	2133	2133
		> 15 Feet	0	373	1867	3733	3733
REVETMENT	STONE	< 5 Feet	0	38	188	375	413
		5 To 10 Feet	0	117	583	1167	1283
		10 To 15 Feet	0	238	1188	2375	2613
		> 15 Feet	0	400	2000	4000	4400
GROIN	STONE	< 5 Feet	0	58	292	583	642
		5 To 10 Feet	0	200	1000	2000	2200
		10 To 15 Feet	0	425	2125	4250	4675
		> 15 Feet	0	733	3667	7333	8067

Section II

Marshfield

Section II

Part A – Community Findings – Town of Marshfield

A. COMMUNITY DESCRIPTION

The Town of Marshfield consists of a land area of 28.5 square miles out of a total area of 31.7 square miles and had a population of 25,132 in the 2010 census. The City is located on the South Shore of Massachusetts and its location can be seen on this report's cover. The estimated length of shoreline that is directly exposed to open ocean waves is 12 miles with the remaining shoreline semi-protected by offshore structures or landforms. The Town is protected from major coastal storms by both natural and man-made shoreline structures that require maintenance to insure the long term protection of its coastline. The man-made and publicly owned structures that protect the Town were investigated for their ability to provide adequate protection from major coastal storms. Structures have been identified as publicly owned, including coastal dunes and beaches, based on evidence of investment of public funds made to create/enhance/maintain these structures. The assessment did not include floating or pile supported structures as they are assumed not to provide any significant coastal protection from major storm events.

B. STRUCTURE INVENTORY

Within the Town of Marshfield, there were 35 structures which had public or unknown ownership which provide significant coastal protection. The location of the structures can be seen in Sheets 1 through Sheet 3 in Section II-B of this report. The structures were categorized by their type and by their structural condition based on a preliminary field assessment. The distribution of structures by type and condition can be seen in the following table:

STRUCTURE TYPE AND QUANTITY - Town of Marshfield

Primary Structure (1)	Total Structures	Structure Condition Rating A	B	C	D	F	Total Length
Bulkhead / Seawall	18	1	4	9	4		9712
Revetment	10	1	1	1	7		4803
Breakwater							
Groin / Jetty	6			2	3	1	2041
Coastal Dune							
Coastal Beach	1		1				2069
	35	2	6	12	14	1	18625

Within the above table, the total length of each type of structure is also provided. The structures are listed by the type which is providing the primary coastal protection. Many sites have multiple structure types at the same location (i.e. revetment in front of seawall). These secondary structures, although not identified within these tables, are included in the development of repair/rehabilitation costs.

The development of repair costs has been included by structure type and by condition. In the Town of Marshfield case there are a total of 35 structures which would require approximately $ 33 million to bring all the coastal structures to "A" Rating. Most critical will be the structures in the "D" and "F" classifications as those are assumed to undergo some level of damage or failure during the next major coastal storm event. To reconstruct these structures, identified in the preliminary survey as being in poor condition, an estimated $ 25 million would be required to upgrade the Town's coastal protection.

STRUCTURE REPAIR / RECONSTRUCTION COST - Town of Marshfield

Primary Structure (1)	Total Structures	Structure Condition Rating A	B	C	D	F	Total Cost
Bulkhead / Seawall	18		$832,506	$6,605,749	$5,814,242		$ 13,252,497
Revetment	10		$20,592	$22,184	$12,998,624		$ 13,041,400
Breakwater							$ -
Groin / Jetty	6			$285,364	$3,842,381	$1,586,200	$ 5,713,945
Coastal Dune							$ -
Coastal Beach	1		$808,979				$ 808,979
	35	$ -	$ 1,662,077	$ 6,913,297	$ 22,655,247	$ 1,586,200	$ 32,816,821

Based on the limited research within the scope of this project research, the presumed ownership of the structures was established on an initial basis and would be subject to more intense review in future tasks. Structures identified as being owned privately were excluded from further consideration. Although ownership of the land on which the structure was located was a factor, the structure ownership was treated as a separate issue from land ownership. For the Town of Marshfield, the breakdown of structures by assumed ownership is as follows:

STRUCTURE OWNERSHIP / REPAIR COST - Town of Marshfield

Primary Structure (1)	Total Structures	Structure Condition Rating A	B	C	D	F	Total Cost
Town Owned	33		$1,662,077	$6,374,339	$22,623,372	$1,586,200	$ 32,245,988
Commonwealth of Massachusetts							$ -
Federal Government Owned	1				$31,875		$ 31,875
Unknown Ownership	1			$ 538,958			$ 538,958
	35	$ -	$ 1,662,077	$ 6,913,297	$ 22,655,247	$ 1,586,200	$ 32,816,821

The identification of presumed ownership was not based on the investigation of legal documents but relied on property ownership and from construction and regulatory documents that were found. A more detailed investigation of legal documents and agreements would be required where structure ownership is disputed. A more detailed identification of structure type, length, condition and location can be found in Section II-B which contains Structure Assessment Reports for each individual structure found.

C. STRUCTURE IMPROVEMENT (UPGRADE) COSTS

As part of the investigation and analysis, an estimate of what the cost for improvement of structures to be fully design for the wave conditions they now experience. This generally much greater than the original structure design and can be the result of a number of factors including but not limited to: more recent FEMA analysis as to the current extreme wave conditions; loss of beach area allowing access of larger waves; and sea level rise. The factors are broad estimates as to the likely cost for such improvements and do not account for regulatory construction limitations and public impacts that are likely to have a major influence on what level of improvements can actually be implemented. The costs should be considered an "order-of-magnitude" value for general consideration until a more accurate analysis with a specific method of structure design can be performed.

For the community the comparison of the current year construction cost of existing coastal structures as compared to the construction cost if all the structures were improved to meet current design levels can be seen in the following table:

STRUCTURE REPLACEMENT COST - Town of Marshfield

Primary Structure (1)	Total Structures	Replacement Costs Existing Structures	Upgraded Structures
Bulkhead / Seawall	18	$13,252,497	$70,151,328
Revetment	10	$13,041,400	$35,178,192
Breakwater			
Groin / Jetty	6	$5,713,945	$7,025,570
Coastal Dune			
Coastal Beach	1	$808,979	$24,275,577
	35	$32,816,821	$136,630,667

D. SUMMARY

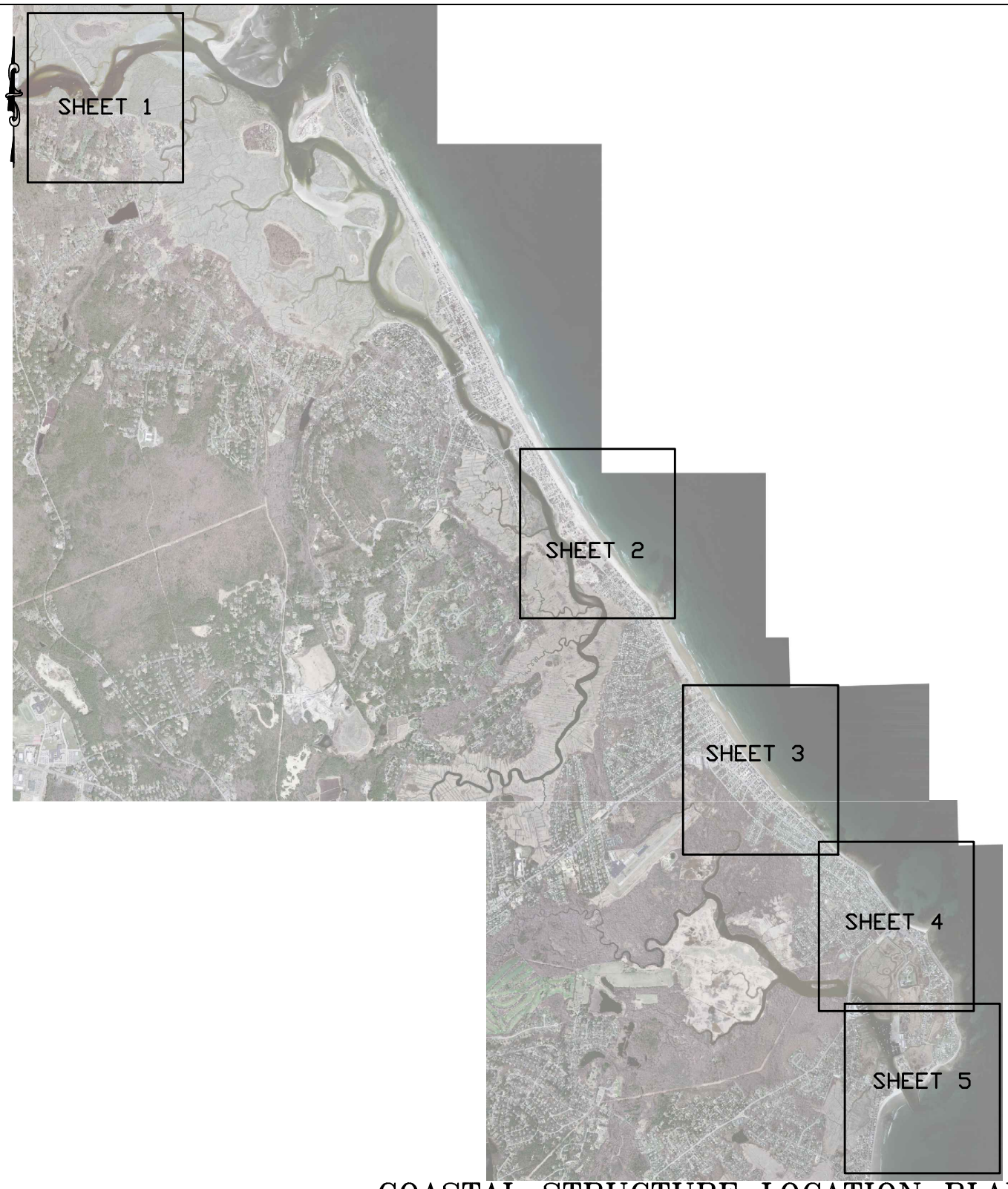
The enclosed reports and associated documents reflects the Town of Marshfield coastal structure information that will eventually be input into a state-wide GIS database and will be accessible through MORIS as part of MassGIS. This data, when compiled state-wide, will be critical in the development of both short term and long term planning for maintaining and improving Massachusetts coastal protection.

This database will also provide relatively quick access to identify available documentation for these structures as well as the ability to be updated as coastal structure improvements are made.

Section II - Marshfield

Part B

Structure Assessment Reports



COASTAL STRUCTURE LOCATION PLAN

TOWN OF MARSHFIELD
COASTAL INFRASTRUCTURE INVENTORY
ASSESSMENT REPORT UPDATE
MARCH 2015

N.T.S.

BCE Bourne Consulting Engineering, PC
3 Bent Street
Franklin, MA 02038
TEL. (508) 533-0666 FAX. (508) 533-0600

ORIENTATION SHEET

COASTAL STRUCTURE LOCATION PLAN

TOWN OF MARSHFIELD

COASTAL INFRASTRUCTURE INVENTORY
ASSESSMENT REPORT UPDATE

MARCH 2015

0 500

SCALE: 1"=500'-0"

BCE Bourne Consulting Engineering, PC
3 Bent Street
Franklin, MA 02038
TEL. (508) 533-0666 FAX. (508) 533-0600

SHEET 1

COASTAL STRUCTURE LOCATION PLAN

TOWN OF MARSHFIELD
COASTAL INFRASTRUCTURE INVENTORY
ASSESSMENT REPORT UPDATE
MARCH 2015

0 500
SCALE: 1"=500'-0"

BCE Bourne Consulting Engineering, PC
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Franklin, MA 02038
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COASTAL STRUCTURE LOCATION PLAN

TOWN OF MARSHFIELD
COASTAL INFRASTRUCTURE INVENTORY
ASSESSMENT REPORT UPDATE
MARCH 2015

0 500
SCALE: 1"=500'-0"

BCE Bourne Consulting Engineering, PC
3 Bent Street
Franklin, MA 02038
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SHEET 3

COASTAL STRUCTURE LOCATION PLAN

TOWN OF MARSHFIELD
COASTAL INFRASTRUCTURE INVENTORY
ASSESSMENT REPORT UPDATE
MARCH 2015

0 500
SCALE: 1"=500'-0"

Bourne Consulting Engineering, PC
3 Bent Street
Franklin, MA 02038
TEL. (508) 533-0666 FAX. (508) 533-0600

SHEET 4

COASTAL STRUCTURE LOCATION PLAN

TOWN OF MARSHFIELD
COASTAL INFRASTRUCTURE INVENTORY
ASSESSMENT REPORT UPDATE
MARCH 2015

0 500
SCALE: 1"=500'-0"

Bourne Consulting Engineering, PC
3 Bent Street
Franklin, MA 02038
TEL. (508) 533-0666 FAX. (508) 533-0600

SHEET 5

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure Assessment Form

Structure ID: 042-F20-001-000-100

Property Owner: Municipal

Address: Damon's Point & Damon's Point Road

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $3,328,000

Upgrade Factor: 2.5

Upgrade Cost: $8,320,000

Structure Owner Name: Town of Marshfield

Earliest Structure Record: Unknown

Waterway: Massachusetts Bay

TideRage: 9.87

Length: 832 Feet

Top Elevation: Feet

FIRM Map Zone: AE

FIRM Map Elevation: 10 Feet NAVD 88

Shape Length: 832

Primary Type: Revetment

Primary Material: Stone

Primary Height: Over 15 Feet

Height Above Beach: 0

Secondary Type:

Secondary Material:

Secondary Height:

Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	D Poor	*Priority Rating*	II Low Priority
Level of Action	Major	*Action*	Future Project Consideration
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Revetment is in Poor (D) condition with displaced stones, erosion of bank, undermining of roadway & partial collapse of end.
Priority II=Protects public right of way & town ramp & floats.
2006 / 2007 Assesment:

Structure Images:

042-F20-001-000-100-PHO13A.jpg
042-F20-001-000-100-PHO13B.jpg
042-F20-001-000-100-PHO13C.jpg
042-F20-001-000-100-PHO13D.jpg
042-F20-001-000-100-PHO13E.jpg
042-F20-001-000-100-PHO13F.jpg

Structure Documents:

042-F20-001-000-100-TWN13A
042-F20-001-000-100-TWN13B

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-J13-002-031-100

Structure Assessment Form

Property Owner: Municipal

Address: Rexame Beach, Parker Street & 325 Stardish Street

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $1,580,716

Upgrade Factor: 3

Upgrade Cost: $24,275,577

Structure Owner Name: Town of Marshfield

Earliest Structure Record: Unknown

Waterway: Massachusetts Bay

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
2069 Feet	Feet	VF	19 Feet NAVD 88	2069

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Coastal Beach	Sand	Over 15 Feet	0

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Coastal Dune	Sand	Over 15 Feet	B

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	B Good	*Priority Rating*	II Low Priority
Level of Action	Minor	*Action*	Future Project Consideration
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Coastal Beach is in Good (B) condition with medium to fine sand. Coastal Dune in great (A) condition & protects by fencing.
Priorty II= Protects town parking lot & structures
2006 / 2007 Assesment:

Structure Images:

042-J13-002-031-100-PHO13A.jpg
042-J13-002-031-100-PHO13B.jpg
042-J13-002-031-100-PHO13C.jpg
042-J13-002-031-100-PHO13D.jpg
042-J13-002-031-100-PHO13E.jpg

Structure Documents:

042-J13-002-031-100-TWN13A

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-L09-024-005-100

Structure Assessment Form

Property Owner: Municipal

Address: #108 to #128 Foster Avenue, 2nd Road to 3rd Street

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $165,623

Upgrade Factor: 2.75

Upgrade Cost: $4,161,704

Structure Owner Name: Marshfield

Earliest Structure Record: 1996

Waterway: Massachusetts Bay

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
379 Feet	13 Feet	VE	22 Feet NAVD 88	379

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Bulkhead/ Seawall	Concrete	10 to 15 Feet	12

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Revetment	Stone	Under 5 Feet	B

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Revise Length = 250'

Condition Rating	B Good	*Priority Rating*	IV High Priority
Level of Action	Minor	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change in Condition of structure, with recent rehabilitation and repairs. Priority IV = Okay
2006 / 2007 Assesment: This is a concrete seawall with random placed stone along the toe. Small amounts of physical erosion of the wall is evident along the toe of the wall, presumably due to abrasion from the armor stones. The crest and face of the wall appear almost as new

Structure Images:

042-L09-024-005-100-PHO13A.JPG

042-L09-024-005-100-PHO13B.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-L10-023-005-100

Structure Assessment Form

Property Owner: Municipal

Address: Foster Avenue, 3rd Street, 17 Rexhame Road and Surf A

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $0

Upgrade Factor: 2.75

Upgrade Cost: $116,039

Structure Owner Name: Marshfield

Earliest Structure Record: 1930

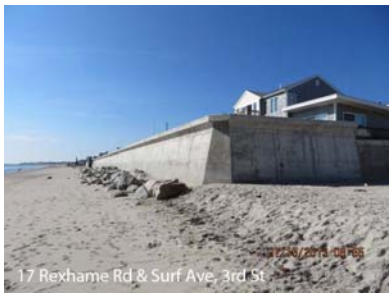
Waterway: Massachusetts Bay

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
22 Feet	13 Feet	VE	22 Feet NAVD 88	22

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Bulkhead/ Seawall	Concrete	5 to 10 Feet	12

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Revetment	Stone		A



2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Upgrade Condition = A (New) for 2000' section from Rexame Road to Old Beach Road

Condition Rating	A Excellent	*Priority Rating*	IV High Priority
Level of Action	None	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Northern 2,000' section from Rexame Road to Old Beach Road is being upgraded to Condition = A (New). Remaining 2,250' southern structure from Old Beach Road to #128 Foster Avenue remain as Condition = D (Poor) with minor repairs. Priority IV = Okay
2006 / 2007 Assesment: This is a concrete seawall with slab, concrete abutments perpendicular to the wall at approximately 50 foot spacing. There is severe cracking and spalling throughout the crest and face of the wall. Large areas of surface repair are evident along the c

Structure Images:

042-L10-023-005-100-PHO13A.JPG
042-L10-023-005-100-PHO13B.JPG
042-L10-023-005-100-PHO13C.JPG
042-L10-023-005-100-PHO13D.JPG
042-L10-023-005-100-PHO13E.JPG
042-L10-023-005-100-PHO13F.JPG
042-L10-023-005-100-PHO13G.JPG
042-L10-023-005-100-PHO13H.JPG
042-L10-023-005-100-PHO13I.JPG
042-L10-023-005-100-PHO13J.JPG

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-L10-023-005-200

Structure Assessment Form

Property Owner: Municipal

Address: #86 to #108 Foster Avenue and Brook Street

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $1,150

Upgrade Factor: 2.75

Upgrade Cost: $26,372

Structure Owner Name: Marshfield

Earliest Structure Record: 1931

Waterway: Massachusetts Bay

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
5 Feet	13 Feet	VE	22 Feet NAVD 88	5

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Bulkhead/ Seawall	Concrete	5 to 10 Feet	12

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Revetment	Stone	Under 5 Feet	C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Upgrade Condition = B (Good)

Condition Rating	B Good	*Priority Rating*	IV High Priority
Level of Action	Minor	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Structure has been recently repaired and rehabilitated to include work to core cap and seawall sections. Priority IV = Okay
2006 / 2007 Assesment: This structure is continuation of the adjacent struture, but now has riprap along the toe. This concrete seawall also exhibits major cracking, spalling and deterioration. The crest has been repaired for most of the length however major issues remain wi

Structure Images:

042-L10-023-005-200-PHO13A.JPG

042-L10-023-005-200-PHO13B.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-M04-006-007-100

Structure Assessment Form

Property Owner: Municipal

Address: 154 to 80 Bay Avenue

Inspection Date: 4/22/2015

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $0

Upgrade Factor: 0

Upgrade Cost: $0

Structure Owner Name: Marshfield

Earliest Structure Record: Unknown

Waterway:

TideRage:

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
1037		VE	VE	1037
Feet	Feet		Feet NAVD 88	

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Revetment	Stone	Under 5 Feet	10

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Bulkhead/ Seawall	Concrete	10 to 15 Feet	B

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	A Excellent	*Priority Rating*	III Moderate Priority
Level of Action	None	*Action*	Consider for Active Project Improvement Listing
Description	See Exhibits I-A for Condition rating description.		

Structure Assessment:

2013 Assesment: Revetment is in overall good condition. Seawall has horizontal cracking mid-height at 70 Bay Ave. Rest of wall in overall good condition.
2006 / 2007 Assesment:

Structure Images:

042-M04-006-007-100-PHO13A.jpg
042-M04-006-007-100-PHO13B.jpg
042-M04-006-007-100-PHO13C.jpg

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-M04-021-003-100

Structure Assessment Form

Property Owner: Municipal

Address: 20 to 84 Bay Ave.

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $929,070

Upgrade Factor: 2.75

Upgrade Cost: $4,272,345

Structure Owner Name: Marshfield

Earliest Structure Record: 1947

Waterway: Massachusetts Bay

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
810 Feet	10 Feet	VE	20 Feet NAVD 88	810

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Bulkhead/ Seawall	Concrete	5 to 10 Feet	10

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Revetment	Stone	Under 5 Feet	C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Revise length & incorporate new 210' section at #64 Bay Avenue

Condition Rating	C Fair	*Priority Rating*	IV High Priority
Level of Action	Moderate	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change in Condition = C of remaining structure, with minor revetment settlment and potential footing undermining. New 210' = Condition A. Priority IV = Okay
2006 / 2007 Assesment: This structure is a concrete seawall with a toe wall and rip rap along the front. There is significant cracking and spalling along the base of the wall, above the toe wall.

Structure Images:

042-M04-021-003-100-PHO13A.JPG

042-M04-021-003-100-PHO13B.JPG

042-M04-021-003-100-PHO13C.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-M04-022-001-100

Structure Assessment Form

Property Owner: Municipal

Address: 14 Bay Ave.

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $269,545

Upgrade Factor: 2.75

Upgrade Cost: $1,239,508

Structure Owner Name: Marshfield

Earliest Structure Record: 1965

Waterway: Massachusetts Bay

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
235 Feet	10 Feet	VE	20 Feet NAVD 88	235

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Bulkhead/ Seawall	Concrete	5 to 10 Feet	8

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Revetment	Stone	Under 5 Feet	C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Revise Length = 100' to Town Line

Condition Rating	C Fair	*Priority Rating*	III Moderate Priority
Level of Action	Moderate	*Action*	Consider for Active Project Improvement Listing
Description	See Exhibits I-A for Condition rating description.		

Structure Assessment:

2013 Assesment: No change in Condition of structure. Priority III = Okay
2006 / 2007 Assesment: This structure is a concrete access ramp to the beach. There is major cracking in places, some of which has been repaired with grout.

Structure Images:

042-M04-022-001-100-PHO13A.JPG
042-M04-022-001-100-PHO13B.JPG
042-M04-022-001-100-PHO13C.JPG
042-M04-022-001-100-PHO13D.JPG
042-M04-022-001-100-PHO13E.JPG
042-M04-022-001-100-PHO13F.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-M05-007-006-100

Structure Assessment Form

Property Owner: Municipal

Address: 238 Bay Avenue, Green Harbor Breakwater

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $1,586,200

Upgrade Factor: 1.2

Upgrade Cost: $1,730,400

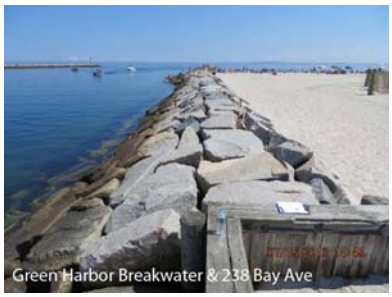
Structure Owner Name: Marshfield

Earliest Structure Record: 1949

Waterway: Green Harbor

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
721 Feet	7 Feet	VE	20 Feet NAVD 88	721



Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Groin/ Jettv	Stone	5 to 10 Feet	0

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Downgrade Condition = F

Condition Rating	F Critical	*Priority Rating*	III Moderate Priority
Level of Action	Immediate	*Action*	Consider for Active Project Improvement Listing
Description	See Exhibits I-A for Condition rating description.		

Structure Assessment:

2013 Assesment: Structure has been downgraded to Condition F (Failed) with the 1/3 end section has been destroyed as well as north side stones displacement throughout structure. Priority III = Okay
2006 / 2007 Assesment: This structure is a stone jetty along the south of the entrance to Green Harbor. There are some sections of armor stone which have come unraveled. There is a large failed section along the trunk which prevents safe access to the jetty head.

Structure Images:

042-M05-007-006-100-PHO13A.JPG
042-M05-007-006-100-PHO13B.JPG
042-M05-007-006-100-PHO13C.JPG
042-M05-007-006-100-PHO13D.JPG

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-M05-009-009-100

Structure Assessment Form

Property Owner: Municipal

Address: 238 Bay Avenue, Green Harbor Breakwater

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $1,079,898

Upgrade Factor: 2.5

Upgrade Cost: $3,555,878

Structure Owner Name: Marshfield

Earliest Structure Record: 1974

Waterway: Green Harbor

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
633 Feet	9 Feet	VE	17 Feet NAVD 88	633

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Bulkhead/ Seawall	Wood	10 to 15 Feet	10

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Revetment	Stone	5 to 10 Feet	C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	II Low Priority
Level of Action	Moderate	*Action*	Future Project Consideration
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change in Condition of structure. No beach located on harbor. Priority II = Okay
2006 / 2007 Assesment: This structure is a timber bulkhead with a stone revetment along the base. Some boards along the crest of the wall are split and cracked. Sections of some boards are missing completely. Some of the bolts in the wall are also missing. The revetment ex

Structure Images:

042-M05-009-009-100-PHO13A.JPG
042-M05-009-009-100-PHO13B.JPG
042-M05-009-009-100-PHO13C.JPG
042-M05-009-009-100-PHO13D.JPG
042-M05-009-009-100-PHO13E.JPG
042-M05-009-009-100-PHO13F.JPG

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-M05-009-014-100

Structure Assessment Form

Property Owner: Municipal

Address: 238 Bay Avenue, Green Harbor Breakwater

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $172,142

Upgrade Factor: 2.5

Upgrade Cost: $355,935

Structure Owner Name: Marshfield

Earliest Structure Record: Unknown

Waterway: Green Harbor

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
122		VE	17	122
Feet	Feet		Feet NAVD 88	

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Revetment	Stone	5 to 10 Feet	6

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Coastal Beach	Sand/ Stone	Under 5 Feet	D

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Downgrade Condition = D (Poor)

Condition Rating	D Poor	*Priority Rating*	II Low Priority
Level of Action	Major	*Action*	Future Project Consideration
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Structure has been downgraded to Condition D (Poor) with dislodged stones and erosion and minor undermining of roadway.
Priority II = Okay
2006 / 2007 Assesment: This structure is a small stone revetment. The armor stone has shifted and become unraveled.

Structure Images:

042-M05-009-014-100-PHO13A.JPG
042-M05-009-014-100-PHO13B.JPG
042-M05-009-014-100-PHO13C.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure Assessment Form

Structure ID: 042-M06-009-03B-100

Property Owner: Municipal

Address: Joseph Driebeck Way and Dyke Road, Town Landing

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $974,525

Upgrade Factor: 1.2

Upgrade Cost: $978,180

Structure Owner Name: Marshfield

Earliest Structure Record: Unknown

Waterway: Green Harbor

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
425 Feet	4 Feet	AE	10 Feet NAVD 88	425

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Bulkhead/ Seawall	Concrete	5 to 10 Feet	0

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Revetment	Stone	Under 5 Feet	D

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Revise Length = 500'

Condition Rating	D Poor	*Priority Rating*	II Low Priority
Level of Action	Major	*Action*	Future Project Consideration
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change in Condition of structure, length of structure has been revised = 500'. No beach on Green Harbor. Priority II = Okay
2006 / 2007 Assesment: This structure is a concrete seawall with stone revetment serving as a foundation. This wall lies behind the main

Structure Images:

042-M06-009-03B-100-PHO13A.JPG
042-M06-009-03B-100-PHO13B.JPG
042-M06-009-03B-100-PHO13C.JPG
042-M06-009-03B-100-PHO13D.JPG
042-M06-009-03B-100-PHO13E.JPG
042-M06-009-03B-100-PHO13F.JPG
042-M06-009-03B-100-PHO13G.JPG
042-M06-009-03B-100-PHO13H.JPG

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-M06-009-03B-200

Structure Assessment Form

Property Owner: Municipal

Address: Joseph Driebeck Way, Town Landing

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $20,592

Upgrade Factor: 1.2

Upgrade Cost: $246,470

Structure Owner Name: Marshfield

Earliest Structure Record: Unknown

Waterway: Green Harbor

TideRage: 9.87

Length: 176 Feet

Top Elevation: Feet

FIRM Map Zone: AE

FIRM Map Elevation: 10 Feet NAVD 88

Shape Length: 176

Primary Type: Revetment

Primary Material: Concrete

Primary Height: 5 to 10 Feet

Height Above Beach: 0

Secondary Type:

Secondary Material:

Secondary Height:

Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	B Good	*Priority Rating*	II Low Priority
Level of Action	Minor	*Action*	Future Project Consideration
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change in Condition of structure. No beach located on harbor. Priority II = Okay
2006 / 2007 Assesment: This structure is the concrete town boat ramp. The ramp and sidewalls show minor weathering and are generally in good condition.

Structure Images:

042-M06-009-03B-200-PHO13A.JPG
042-M06-009-03B-200-PHO13B.JPG
042-M06-009-03B-200-PHO13C.JPG
042-M06-009-03B-200-PHO13D.JPG

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure Assessment Form

Structure ID: 042-M06-009-03B-300

Property Owner: Municipal

Address: Joseph Driebeck Way and Dyke Road, Town Landing

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $21,894

Upgrade Factor: 1.2

Upgrade Cost: $190,994

Structure Owner Name: Marshfield

Earliest Structure Record: 1959

Waterway: Green Harbor

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
246 Feet	10 Feet	AE	10 Feet NAVD 88	246

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Bulkhead/ Seawall	Concrete	Under 5 Feet	0

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Coastal Beach	Sand/ Stone	Under 5 Feet	B

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Revise Length = 125' w/ recent improvements to handrails

Condition Rating	B Good	*Priority Rating*	II Low Priority
Level of Action	Minor	*Action*	Future Project Consideration
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change in Condition of structure. Recent improvements to handrails. No beach located on harbor. Priority II = Okay
2006 / 2007 Assesment: This structure is a small concrete seawall topped with timber wale. This wall lies behind the main pier. There is minor spalling evident.

Structure Images:

042-M06-009-03B-300-PHO13A.JPG

042-M06-009-03B-300-PHO13B.JPG

Structure Documents:

DEP

042-M06-009-03B-300-LIC13A

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-M06-009-03B-400

Structure Assessment Form

Property Owner: Municipal

Address: Joseph Driebeck Way and Dyke Road, Town Landing

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $36,580

Upgrade Factor: 1.2

Upgrade Cost: $53,100

Structure Owner Name: Marshfield

Earliest Structure Record: 1955

Waterway: Green Harbor

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
118 Feet	10 Feet	AE	10 Feet NAVD 88	118

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Revetment	Stone	Under 5 Feet	0

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Coastal Beach	Sand/ Stone	Under 5 Feet	C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Reconstruct 200' section of new stone bulkhead

Condition Rating	C Fair	*Priority Rating*	II Low Priority
Level of Action	Moderate	*Action*	Future Project Consideration
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change in Condition of remaining revetment structure. 200' section of structure has been replaced = Condition A (New). No beach on Green Harbor. Priority II = Okay
2006 / 2007 Assesment: This structure is a small stone revetment alongside a marsh. This fronts the north end of the parking lot for the town boat ramp. The stone in the revetment is severely weathered and the structure has come unraveled for most of its length.

Structure Images:

042-M06-009-03B-400-PHO13A.JPG

042-M06-009-03B-400-PHO13B.JPG

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure Assessment Form

Structure ID: 042-M06-010-001-100

Property Owner: Private

Address: 77 Central Street, Cherry Street and Joseph Driebeck W

Inspection Date: 7/15/2013

Presumed Structure Owner: Private

Estimated Reconstruction/Repair Cost: $538,958

Upgrade Factor: 1.2

Upgrade Cost: $1,293,499

Structure Owner Name: Unknown

Earliest Structure Record: 1959

Waterway: Green Harbor

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
562 Feet	10 Feet	AE	10 Feet NAVD 88	562

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Bulkhead/ Seawall	Concrete	5 to 10 Feet	0

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Revise length = 611'

Condition Rating	C Fair	*Priority Rating*	III Moderate Priority
Level of Action	Moderate	*Action*	Consider for Active Project Improvement Listing
Description	See Exhibits I-A for Condition rating description.		

Structure Assessment:

2013 Assesment: No change in general condition of structure new 62' bulkhead section & some concrete rehabilitation. No beach on Green Harbor. Priority III = Okay
2006 / 2007 Assesment: This structure is a seawall constructed of stacked concrete blocks. The blocks along the water line show spalling and erosion. Some blocks appear to have shifted and become displaced.

Structure Images:

042-M06-010-001-100-PHO13A.JPG
042-M06-010-001-100-PHO13B.JPG
042-M06-010-001-100-PHO13C.JPG
042-M06-010-001-100-PHO13D.JPG
042-M06-010-001-100-PHO13E.JPG
042-M06-010-001-100-PHO13F.JPG
042-M06-010-001-100-PHO13G.JPG

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-M08-017-012-100

Structure Assessment Form

Property Owner: Municipal

Address: 446 Ocean Street and Shawmut Avenue

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $1,162,000

Upgrade Factor: 1.2

Upgrade Cost: $1,394,400

Structure Owner Name: Marshfield

Earliest Structure Record: 1940

Waterway: Massachusetts Bay

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
581 Feet	19 Feet	VE	22 Feet NAVD 88	581

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Groin/ Jetty	Stone	5 to 10 Feet	6

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Downgrade Condition = D (Poor)

Condition Rating	D Poor	*Priority Rating*	II Low Priority
Level of Action	Major	*Action*	Future Project Consideration
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Structure has been downgraded to Condition D (Poor) due groin failure due with stone displacement. Priority II = Okay
2006 / 2007 Assesment: This is a stone groin. The sideslopes and crest are unraveled for a majority of the length of the structure. The head of the groin is completely unraveled.

Structure Images:

042-M08-017-012-100-PHO13A.JPG

042-M08-017-012-100-PHO13B.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-M08-017-012-200

Structure Assessment Form

Property Owner: Municipal

Address: #432 to #446 Ocean Street and Samoset Avenue

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $486,185

Upgrade Factor: 2.75

Upgrade Cost: $947,031

Structure Owner Name: Marshfield

Earliest Structure Record: Unknown

Waterway: Massachusetts Bay

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
145 Feet	19 Feet	VE	22 Feet NAVD 88	145

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Revetment	Stone	10 to 15 Feet	13

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Coastal Beach	Sand	5 to 10 Feet	D

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Downgrade Condition = D (Poor), Increase Priority IV = Residential

Condition	D	*Priority*	IV
Rating	Poor	*Rating*	High Priority
Level of Action	Major	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Structure has been downgraded to Condition D (Poor) due to revetment failure and stone diplacement
Priority IV = protects residential dwellings located behind structure.
2006 / 2007 Assesment: This structure is a stone revetment fronted by a groin and cobble beach. The sideslopes are mostly intact while the armor stone exhibits strong weathering.

Structure Images:

042-M08-017-012-200-PHO13A.JPG

042-M08-017-012-200-PHO13B.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-M08-017-012-300

Structure Assessment Form

Property Owner: Municipal

Address: 432 Ocean Street and Samoset Avenue

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $247,422

Upgrade Factor: 2.75

Upgrade Cost: $680,410

Structure Owner Name: Marshfield

Earliest Structure Record: 1940

Waterway: Massachusetts Bay

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
129	19	VE	22	129
Feet	Feet		Feet NAVD 88	

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Bulkhead/ Seawall	Concrete	5 to 10 Feet	6

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Coastal Beach		Under 5 Feet	C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Downgrade Condition = D (Poor), Increase Priority IV = Roadway & Add Cobble Berm

Condition Rating	D Poor	*Priority Rating*	IV High Priority
Level of Action	Major	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Structure has been downgraded to Condition D (Poor) due to spalls, cracks and missing top sections.
Priority IV = protects existing roadway (Ocean Strret) behind structure.
2006 / 2007 Assesment: Concrete seawall fronted by cobble beach. Ther is cracking and spalling and some stone missing from the crest. Toe is buried. There is some stones above the crest. The crest is covered with vegatation.

Structure Images:

042-M08-017-012-300-PHO13A.JPG

042-M08-017-012-300-PHO13B.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-M08-019-003-100

Structure Assessment Form

Property Owner: Municipal

Address: #379 to #425 Ocean Street, Samoset Avenue and Purita

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $792,056

Upgrade Factor: 2.75

Upgrade Cost: $2,885,152

Structure Owner Name: Marshfield

Earliest Structure Record: 1946

Waterway: Massachusetts Bay

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
547 Feet	14 Feet	VE	20 Feet NAVD 88	547

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Bulkhead/ Seawall	Concrete	5 to 10 Feet	11

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Coastal Beach	Sand/ Stone	5 to 10 Feet	C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	IV High Priority
Level of Action	Moderate	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change in Condition of structure. Priority III = Okay
2006 / 2007 Assesment: This structure is a concrete seawall fronted by a cobble beach. The north end of the wall is covered to the crest by the beach while the south end has no fronting beach and the toe of the wall is exposed. There is cracking and spalling along the wall a

Structure Images:

042-M08-019-003-100-PHO13A.JPG

042-M08-019-003-100-PHO13B.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-M08-034-003-100

Structure Assessment Form

Property Owner: Municipal

Address: 379 Ocean Street

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $149,000

Upgrade Factor: 1.2

Upgrade Cost: $357,600

Structure Owner Name: Marshfield

Earliest Structure Record: 1946

Waterway: Massachusetts Bay

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
149 Feet	Feet	VE	20 Feet NAVD 88	149

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Groin/ Jettv	Stone	5 to 10 Feet	6

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	III Moderate Priority
Level of Action	Moderate	*Action*	Consider for Active Project Improvement Listing
Description	See Exhibits I-A for Condition rating description.		

Structure Assessment:

2013 Assesment: No change in Condition of structure. Priority III = Okay
2006 / 2007 Assesment: This is a short stone groin. The sideslopes along the base are coming unraveled. Otherwise the structure is in fair condition.

Structure Images:

042-M08-034-003-100-PHO13A.JPG

042-M08-034-003-100-PHO13B.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-M08-042-002-100

Structure Assessment Form

Property Owner: Municipal

Address: #339 to #379 Ocean Street, Puritan Street and Hancock

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $946,788

Upgrade Factor: 2.75

Upgrade Cost: $3,238,543

Structure Owner Name: Marshfield

Earliest Structure Record: 1945

Waterway: Massachusetts Bay

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
614 Feet	14 Feet	VE	20 Feet NAVD 88	614

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Bulkhead/ Seawall	Concrete	5 to 10 Feet	14

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Revetment	Stone	5 to 10 Feet	C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	IV High Priority
Level of Action	Moderate	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change in Condition of structure, with minor overwash damage. Priority IV = Okay
2006 / 2007 Assesment: This structure is a concrete seawall. There is grouted armor stone along the base of the wall. The exhibits only minor cracking and is generally in good physical condition. However, the toe of the wall is becoming exposed along a large section.

Structure Images:

042-M08-042-002-100-PHO13A.JPG
042-M08-042-002-100-PHO13B.JPG
042-M08-042-002-100-PHO13C.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-M08-051-004-100

Structure Assessment Form

Property Owner: Municipal

Address: 328 Ocean Street and Church Street to 21 South Street

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $1,746,288

Upgrade Factor: 2.75

Upgrade Cost: $6,361,047

Structure Owner Name: Marshfield

Earliest Structure Record: 1930

Waterway: Massachusetts Bay

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
1206 Feet	14 Feet	VE	20 Feet NAVD 88	1206

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Bulkhead/ Seawall	Concrete	5 to 10 Feet	8

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Coastal Beach	Sand/ Stone	5 to 10 Feet	C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Downgrade condition of 224' section from North Street to #328 Ocean Street

Condition Rating	C Fair	*Priority Rating*	IV High Priority
Level of Action	Moderate	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change in Condition of overall structure, with minor spalls located on the top of the structure and cracks as well as no undermining of structure. Downgrade Condition = D for 224' section from North Street to #328 Ocean Street. Priority IV = Okay
2006 / 2007 Assesment: The structure is a concrete seawall fronted by a cobble beach. There is cracking and spalling evident and some large cracks which have been sealed. The toe is well buried.

Structure Images:

042-M08-051-004-100-PHO13A.JPG

042-M08-051-004-100-PHO13B.JPG

042-M08-051-004-100-PHO13C.JPG

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-M08-051-009-100

Structure Assessment Form

Property Owner: Municipal

Address: 308 Ocean Street and Dyke Road

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $62,381

Upgrade Factor: 1.2

Upgrade Cost: $74,857

Structure Owner Name: Marshfield

Earliest Structure Record: 1946

Waterway: Massachusetts Bay

TideRage: 9.87

Length: 107 Feet

Top Elevation: Feet

FIRM Map Zone: VE

FIRM Map Elevation: 20 Feet NAVD 88

Shape Length: 107

Primary Type: Groin/ Jettv

Primary Material: Stone

Primary Height: Under 5 Feet

Height Above Beach: 6

Secondary Type:

Secondary Material:

Secondary Height:

Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Downgrade Condition = D (Poor)

Condition Rating	D Poor	*Priority Rating*	II Low Priority
Level of Action	Major	*Action*	Future Project Consideration
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Structure has been downgraded to Condition D (Poor) with groin stone failure due to dislodged & displaced stones. Priority II = Okay
2006 / 2007 Assesment: This structure is a short stone groin. The sideslopes and crest are mostly unraveled.

Structure Images:

042-M08-051-009-100-PHO13A.JPG

042-M08-051-009-100-PHO13B.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-M08-051-014-100

Structure Assessment Form

Property Owner: Municipal

Address: 328 Ocean Street

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $273,405

Upgrade Factor: 2.75

Upgrade Cost: $603,941

Structure Owner Name: Marshfield

Earliest Structure Record: 1952

Waterway: Massachusetts Bay

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
55 Feet	14 Feet	VE	20 Feet NAVD 88	55

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Bulkhead/ Seawall	Concrete	10 to 15 Feet	14

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Coastal Beach	Sand/ Stone	5 to 10 Feet	D

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Downgrade Condition = D due to exposed footing

Condition Rating	D Poor	*Priority Rating*	IV High Priority
Level of Action	Major	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Structure has been downgraded to Condition D (Poor) due to exposed footing and outwash damage. Priority IV = Okay
2006 / 2007 Assesment: This structure is a concrete seawall with a wave return face. There is major cracking and some spalling along the face. Previous repairs are evident.

Structure Images:

042-M08-051-014-100-PHO13A.JPG

042-M08-051-014-100-PHO13B.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-M09-001-007-100

Structure Assessment Form

Property Owner: Municipal

Address: #26 to #76 Foster Avenue and Brook Street

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $727,605

Upgrade Factor: 2.5

Upgrade Cost: $16,620,862

Structure Owner Name: Marshfield

Earliest Structure Record: 1970

Waterway: Massachusetts Bay

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
1665 Feet	19 Feet	VE	17 Feet NAVD 88	1665

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Bulkhead/ Seawall	Concrete	10 to 15 Feet	16

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Revetment	Stone	Under 5 Feet	B

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Revise Length = 691'

Condition Rating	B Good	*Priority Rating*	IV High Priority
Level of Action	Minor	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change in Condition of structure. Priority IV = Okay
2006 / 2007 Assesment: This is a concrete seawall with a wave return face and stone revetment along the toe. The wall and revetment at toe appear recently constructed. There has been backfill placed behind the crest which appears stable. There is minor erosion along the to

Structure Images:

042-M09-001-007-100-PHO13A.JPG
042-M09-001-007-100-PHO13B.JPG
042-M09-001-007-100-PHO13C.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-M09-006-009-100

Structure Assessment Form

Property Owner: Municipal

Address: #542 Ocean Street to #26 Foster Avenue from Sherman

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $652,118

Upgrade Factor: 2.75

Upgrade Cost: $1,441,000

Structure Owner Name: Marshfield

Earliest Structure Record: 1930

Waterway: Massachusetts Bay

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
131 Feet	13 Feet	VE	22 Feet NAVD 88	131

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Revetment	Stone	Over 15 Feet	20

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Coastal Beach	Sand/ Stone	5 to 10 Feet	D

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Revise Length = 780'

Condition Rating	D Poor	*Priority Rating*	IV High Priority
Level of Action	Major	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change in Condition of structure. Priority IV = Okay
2006 / 2007 Assesment: This structure is a stone revetment. There is significant movement of the armor stone evident. Some armor stones are displaced and there are voids evident within the armor layer.

Structure Images:

042-M09-006-009-100-PHO13A.JPG

042-M09-006-009-100-PHO13B.JPG

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-M09-006-009-200

Structure Assessment Form

Property Owner: Municipal

Address: #446 to # 542 Ocean Street from Shawmut Ave and Sa

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $5,192,054

Upgrade Factor: 2.75

Upgrade Cost: $11,473,000

Structure Owner Name: Marshfield

Earliest Structure Record: 1930

Waterway: Massachusetts Bay

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
1043 Feet	13 Feet	VE	22 Feet NAVD 88	1043

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Revetment	Stone	Over 15 Feet	20

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Coastal Beach	Sand/ Stone	5 to 10 Feet	D

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Downgrade Condition = D (Poor)

Condition Rating	D Poor	*Priority Rating*	IV High Priority
Level of Action	Major	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Structure has been downgraded to Condition D (Poor) due to stone slope failures with voids.
Gravel beach is approximately 15' to 20' wide. Priority IV = Okay
2006 / 2007 Assesment: This is a stone revetment. There is some movement of the armor layer and displaced armor stones.

Structure Images:

042-M09-006-009-200-PHO13A.JPG

042-M09-006-009-200-PHO13B.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-N05-001-012-100

Structure Assessment Form

Property Owner: Municipal

Address: 5 Water Street at Blackmans Point

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $3,973,200

Upgrade Factor: 1.2

Upgrade Cost: $3,141,600

Structure Owner Name: Marshfield

Earliest Structure Record: 1931

Waterway: Massachusetts Bay

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
616 Feet	7 Feet	VE	20 Feet NAVD 88	616

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Groin/ Jetty	Stone	10 to 15 Feet	8

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Coastal Beach	Sand	10 to 15 Feet	B

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Increase priority & add Coastal Beach = 254'

Condition Rating	D Poor	*Priority Rating*	IV High Priority
Level of Action	Major	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change in Condition of structure. 8' beach located on north side of structure. Priority IV = Protects Entrance to Harbor
2006 / 2007 Assesment: This structure is a stone jetty which is along the north side of the inlet to Green Harbor. The armor stone is slumped and unraveled along the base of the jetty. There are at least two large areas along the jetty trunk which are slumped and failing. T

Structure Images:

042-N05-001-012-100-PHO13A.JPG

042-N05-001-012-100-PHO13B.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-N05-002-001-150

Structure Assessment Form

Property Owner: Federal

Address: 10 Cove Street - Green Harbor

Inspection Date:

Presumed Structure Owner: Federal

Estimated Reconstruction/Repair Cost: $31,875

Upgrade Factor: 2.75

Upgrade Cost: $87,656

Structure Owner Name: USACE

Earliest Structure Record: Unknown

Waterway: Green Harbor

TideRage: 9.87

Length: 85 Feet

Top Elevation: Feet

FIRM Map Zone: VE

FIRM Map Elevation: 14 Feet NAVD 88

Shape Length: 85

Primary Type: Revetment

Primary Material: Stone

Primary Height: Under 5 Feet

Height Above Beach: 0

Secondary Type:

Secondary Material:

Secondary Height:

Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	D Poor	*Priority Rating*	IV High Priority
Level of Action	Major	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Length determined from Google Earth measurement. No inspection report provided.
2006 / 2007 Assesment:

Structure Images: 042-N05-002-001-150-PHO13A.JPG

Structure Documents:

042-N05-002-001-150-PHO13A

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-N06-007-009-100

Structure Assessment Form

Property Owner: Municipal

Address: #24 to # 102 Ocean Street, Elderberry Lane and Iowa S

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $5,856,600

Upgrade Factor: 2.75

Upgrade Cost: $12,463,151

Structure Owner Name: Marshfield

Earliest Structure Record: 1930

Waterway: Massachusetts Bay

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
1135 Feet	9 Feet	VE	20 Feet NAVD 88	1135

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Bulkhead/ Seawall	Concrete	10 to 15 Feet	8

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Revetment	Stone	5 to 10 Feet	D

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	D Poor	*Priority Rating*	IV High Priority
Level of Action	Major	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change in Condition of structure, with numerous seawall and cap patches and revetment displacement. Beach recorded as 8' with 4' below revetment. Priority IV = Okay
2006 / 2007 Assesment: This structure is a concrete seawall with a wave return face. There is a stone revetment along the toe. There is spalling and cracking for the length of the structure. Some sections show severe cracking and major areas of repairs.

Structure Images:

042-N06-007-009-100-PHO13A.JPG
042-N06-007-009-100-PHO13B.JPG
042-N06-007-009-100-PHO13C.JPG
042-N06-007-009-100-PHO13D.JPG

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-N06-007-020-100

Structure Assessment Form

Property Owner: Municipal

Address: Elderberry Lane and #4 to #24 Ocean Street at Green H

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $848,491

Upgrade Factor: 2.75

Upgrade Cost: $3,612,667

Structure Owner Name: Marshfield

Earliest Structure Record: Unknown

Waterway: Massachusetts Bay

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
329 Feet	9 Feet	VE	23 Feet NAVD 88	329

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Bulkhead/ Seawall	Concrete	10 to 15 Feet	10

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Revetment	Stone	5 to 10 Feet	C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	IV High Priority
Level of Action	Moderate	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change in Condition of structure, with minor repairs to cracks and spalls. Priority IV = Okay
2006 / 2007 Assesment: This structure is a concrete seawall with a fronting toe revetment. There is surface spalling and cracking throughout.

Structure Images:

042-N06-007-020-100-PHO13A.JPG

042-N06-007-020-100-PHO13B.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure Assessment Form

Structure ID: 042-N07-001-003-100

Property Owner: Municipal

Address: 185 Ocean Street to 21 South Street and Reed Street at

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $1,843,985

Upgrade Factor: 2.75

Upgrade Cost: $7,851,236

Structure Owner Name: Marshfield

Earliest Structure Record: 1933

Waterway: Massachusetts Bay

TideRage: 9.87

Length: 715 Feet

Top Elevation: 14 Feet

FIRM Map Zone: VE

FIRM Map Elevation: 20 Feet NAVD 88

Shape Length: 715

Primary Type: Bulkhead/ Seawall

Primary Material: Concrete

Primary Height: 10 to 15 Feet

Height Above Beach: 12

Secondary Type: Revetment

Secondary Material: Stone

Secondary Height: 5 to 10 Feet

Secondary Condition: C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	IV High Priority
Level of Action	Moderate	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change in Condition of structure. Priority IV = Okay
2006 / 2007 Assesment: This structure is a concrete seawall with a wave return face. There is armor stone placed along the toe of the wall. The wall exhibits some cracking and spalling. The foundation is visible in some southern sections but is not undermined.

Structure Images:

042-N07-001-003-100-PHO13A.JPG

042-N07-001-003-100-PHO13B.JPG

Structure Documents:

USACE

042-N07-001-003-100-COE13A

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-N07-001-021-100

Structure Assessment Form

Property Owner: Municipal

Address: 21 South Street, Brant Rock

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $136,364

Upgrade Factor: 1.2

Upgrade Cost: $326,713

Structure Owner Name: Marshfield

Earliest Structure Record: 1940

Waterway: Massachusetts Bay

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
467		VE	20	467
Feet	Feet		Feet NAVD 88	

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Groin/ Jettv	Stone	Under 5 Feet	6

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Downgrade Condition C = Fair

Condition Rating	C Fair	*Priority Rating*	II Low Priority
Level of Action	Moderate	*Action*	Future Project Consideration
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Structure has been downgraded to Condition C (Fair) due to dislodged and displaced stones. Priority II = Okay
2006 / 2007 Assesment: This structure is a stone groin with the outer portion surrounded by a natural rock outcropping. The sideslopes and crest are in good condition with only minor weathering of the armor stone.

Structure Images:

042-N07-001-021-100-PHO13A.JPG

042-N07-001-021-100-PHO13B.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Marshfield

Structure ID: 042-N07-007-004-100

Structure Assessment Form

Property Owner: Municipal

Address: #102 to # 185 Ocean Street, Iowa Street and Reed Stre

Inspection Date: 7/15/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $5,545,492

Upgrade Factor: 2.75

Upgrade Cost: $12,254,000

Structure Owner Name: Marshfield

Earliest Structure Record: 1967

Waterway: Massachusetts Bay

TideRage: 9.87

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
1114 Feet	19 Feet	VE	20 Feet NAVD 88	1114

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Revetment	Stone	Over 15 Feet	20

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Coastal Beach	Sand/ Stone	5 to 10 Feet	D

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Downgrade Condition = D (Poor)

Condition Rating	D Poor	*Priority Rating*	IV High Priority
Level of Action	Major	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Structure has been downgraded to Condition D (Poor) due to dislodged stones and revetment failures. Priority IV = Okay
2006 / 2007 Assesment: This structure is a rubble mound revetment. The armor stone has shifted along much of the structure and some stones are broken. There are no areas of major failure.

Structure Images:

042-N07-007-004-100-PHO13A.JPG
042-N07-007-004-100-PHO13B.JPG
042-N07-007-004-100-PHO13C.JPG
042-N07-007-004-100-PHO13D.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering

Section II - Marshfield

Part C

Structure Photographs

SOURCE: BCE - FIELD PHOTOGRAPHS
LOCATION: Bourne Consulting Engineering
2015 REPORT UPDATE

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description
042-F20-001-000-100	042-F20-001-000-100-PHO13A.jpg		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-F20-001-000-100	042-F20-001-000-100-PHO13B.jpg		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-F20-001-000-100	042-F20-001-000-100-PHO13C.jpg		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-F20-001-000-100	042-F20-001-000-100-PHO13D.jpg		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-F20-001-000-100	042-F20-001-000-100-PHO13E.jpg		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-F20-001-000-100	042-F20-001-000-100-PHO13F.jpg		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-J13-002-031-100	042-J13-002-031-100-PHO13A.jpg		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-J13-002-031-100	042-J13-002-031-100-PHO13B.jpg		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-J13-002-031-100	042-J13-002-031-100-PHO13C.jpg		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-J13-002-031-100	042-J13-002-031-100-PHO13D.jpg		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-J13-002-031-100	042-J13-002-031-100-PHO13E.jpg		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-L09-024-005-100	042-L09-024-005-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-L09-024-005-100	042-L09-024-005-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-L10-023-005-100	042-L10-023-005-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-L10-023-005-100	042-L10-023-005-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-L10-023-005-100	042-L10-023-005-100-PHO13C.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-L10-023-005-100	042-L10-023-005-100-PHO13D.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-L10-023-005-100	042-L10-023-005-100-PHO13E.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-L10-023-005-100	042-L10-023-005-100-PHO13F.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-L10-023-005-100	042-L10-023-005-100-PHO13G.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-L10-023-005-100	042-L10-023-005-100-PHO13H.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-L10-023-005-100	042-L10-023-005-100-PHO13I.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey

SOURCE: BCE - FIELD PHOTOGRAPHS
LOCATION: Bourne Consulting Engineering
2015 REPORT UPDATE

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description
042-L10-023-005-100	042-L10-023-005-100-PHO13J.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-L10-023-005-200	042-L10-023-005-200-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-L10-023-005-200	042-L10-023-005-200-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M04-006-007-100	042-M04-006-007-100-PHO13A.jpg		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M04-006-007-100	042-M04-006-007-100-PHO13B.jpg		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M04-006-007-100	042-M04-006-007-100-PHO13C.jpg		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M04-021-003-100	042-M04-021-003-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M04-021-003-100	042-M04-021-003-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M04-021-003-100	042-M04-021-003-100-PHO13C.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M04-022-001-100	042-M04-022-001-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M04-022-001-100	042-M04-022-001-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M04-022-001-100	042-M04-022-001-100-PHO13C.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M04-022-001-100	042-M04-022-001-100-PHO13D.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M04-022-001-100	042-M04-022-001-100-PHO13E.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M04-022-001-100	042-M04-022-001-100-PHO13F.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M05-007-006-100	042-M05-007-006-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M05-007-006-100	042-M05-007-006-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M05-007-006-100	042-M05-007-006-100-PHO13C.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M05-007-006-100	042-M05-007-006-100-PHO13D.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M05-009-009-100	042-M05-009-009-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M05-009-009-100	042-M05-009-009-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M05-009-009-100	042-M05-009-009-100-PHO13C.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey

SOURCE: BCE - FIELD PHOTOGRAPHS
LOCATION: Bourne Consulting Engineering
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BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description
042-M05-009-009-100	042-M05-009-009-100-PHO13D.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M05-009-009-100	042-M05-009-009-100-PHO13E.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M05-009-009-100	042-M05-009-009-100-PHO13F.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M05-009-014-100	042-M05-009-014-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M05-009-014-100	042-M05-009-014-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M05-009-014-100	042-M05-009-014-100-PHO13C.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-100	042-M06-009-03B-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-100	042-M06-009-03B-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-100	042-M06-009-03B-100-PHO13C.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-100	042-M06-009-03B-100-PHO13D.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-100	042-M06-009-03B-100-PHO13E.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-100	042-M06-009-03B-100-PHO13F.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-100	042-M06-009-03B-100-PHO13G.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-100	042-M06-009-03B-100-PHO13H.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-200	042-M06-009-03B-200-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-200	042-M06-009-03B-200-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-200	042-M06-009-03B-200-PHO13C.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-200	042-M06-009-03B-200-PHO13D.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-300	042-M06-009-03B-300-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-300	042-M06-009-03B-300-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-400	042-M06-009-03B-400-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-400	042-M06-009-03B-400-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey

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BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description
042-M06-010-001-100	042-M06-010-001-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-010-001-100	042-M06-010-001-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-010-001-100	042-M06-010-001-100-PHO13C.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-010-001-100	042-M06-010-001-100-PHO13D.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-010-001-100	042-M06-010-001-100-PHO13E.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-010-001-100	042-M06-010-001-100-PHO13F.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-010-001-100	042-M06-010-001-100-PHO13G.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-017-012-100	042-M08-017-012-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-017-012-100	042-M08-017-012-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-017-012-200	042-M08-017-012-200-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-017-012-200	042-M08-017-012-200-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-017-012-300	042-M08-017-012-300-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-017-012-300	042-M08-017-012-300-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-019-003-100	042-M08-019-003-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-019-003-100	042-M08-019-003-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-034-003-100	042-M08-034-003-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-034-003-100	042-M08-034-003-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-042-002-100	042-M08-042-002-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-042-002-100	042-M08-042-002-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-042-002-100	042-M08-042-002-100-PHO13C.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-051-004-100	042-M08-051-004-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-051-004-100	042-M08-051-004-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey

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BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description
042-M08-051-004-100	042-M08-051-004-100-PHO13C.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-051-009-100	042-M08-051-009-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-051-009-100	042-M08-051-009-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-051-014-100	042-M08-051-014-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-051-014-100	042-M08-051-014-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M09-001-007-100	042-M09-001-007-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M09-001-007-100	042-M09-001-007-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M09-001-007-100	042-M09-001-007-100-PHO13C.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M09-006-009-100	042-M09-006-009-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M09-006-009-100	042-M09-006-009-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M09-006-009-200	042-M09-006-009-200-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M09-006-009-200	042-M09-006-009-200-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N05-001-012-100	042-N05-001-012-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N05-001-012-100	042-N05-001-012-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N05-002-001-150	042-N05-002-001-150-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N05-002-001-150	042-N05-002-001-150-PHO13A		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N06-007-009-100	042-N06-007-009-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N06-007-009-100	042-N06-007-009-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N06-007-009-100	042-N06-007-009-100-PHO13C.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N06-007-009-100	042-N06-007-009-100-PHO13D.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N06-007-020-100	042-N06-007-020-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N06-007-020-100	042-N06-007-020-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey

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BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description
042-N07-001-003-100	042-N07-001-003-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N07-001-003-100	042-N07-001-003-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N07-001-021-100	042-N07-001-021-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N07-001-021-100	042-N07-001-021-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N07-007-004-100	042-N07-007-004-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N07-007-004-100	042-N07-007-004-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N07-007-004-100	042-N07-007-004-100-PHO13C.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N07-007-004-100	042-N07-007-004-100-PHO13D.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey

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BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description
042-F20-001-000-100	042-F20-001-000-100-PHO13A.jpg		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-F20-001-000-100	042-F20-001-000-100-PHO13B.jpg		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-F20-001-000-100	042-F20-001-000-100-PHO13C.jpg		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-F20-001-000-100	042-F20-001-000-100-PHO13D.jpg		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-F20-001-000-100	042-F20-001-000-100-PHO13E.jpg		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-F20-001-000-100	042-F20-001-000-100-PHO13F.jpg		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-J13-002-031-100	042-J13-002-031-100-PHO13A.jpg		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-J13-002-031-100	042-J13-002-031-100-PHO13B.jpg		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-J13-002-031-100	042-J13-002-031-100-PHO13C.jpg		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-J13-002-031-100	042-J13-002-031-100-PHO13D.jpg		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-J13-002-031-100	042-J13-002-031-100-PHO13E.jpg		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-L09-024-005-100	042-L09-024-005-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-L09-024-005-100	042-L09-024-005-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-L10-023-005-100	042-L10-023-005-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-L10-023-005-100	042-L10-023-005-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-L10-023-005-100	042-L10-023-005-100-PHO13C.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-L10-023-005-100	042-L10-023-005-100-PHO13D.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-L10-023-005-100	042-L10-023-005-100-PHO13E.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-L10-023-005-100	042-L10-023-005-100-PHO13F.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-L10-023-005-100	042-L10-023-005-100-PHO13G.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-L10-023-005-100	042-L10-023-005-100-PHO13H.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-L10-023-005-100	042-L10-023-005-100-PHO13I.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey

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042-L10-023-005-100	042-L10-023-005-100-PHO13J.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-L10-023-005-200	042-L10-023-005-200-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-L10-023-005-200	042-L10-023-005-200-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M04-006-007-100	042-M04-006-007-100-PHO13A.jpg		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M04-006-007-100	042-M04-006-007-100-PHO13B.jpg		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M04-006-007-100	042-M04-006-007-100-PHO13C.jpg		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M04-021-003-100	042-M04-021-003-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M04-021-003-100	042-M04-021-003-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M04-021-003-100	042-M04-021-003-100-PHO13C.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M04-022-001-100	042-M04-022-001-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M04-022-001-100	042-M04-022-001-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M04-022-001-100	042-M04-022-001-100-PHO13C.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M04-022-001-100	042-M04-022-001-100-PHO13D.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M04-022-001-100	042-M04-022-001-100-PHO13E.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M04-022-001-100	042-M04-022-001-100-PHO13F.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M05-007-006-100	042-M05-007-006-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M05-007-006-100	042-M05-007-006-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M05-007-006-100	042-M05-007-006-100-PHO13C.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M05-007-006-100	042-M05-007-006-100-PHO13D.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M05-009-009-100	042-M05-009-009-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M05-009-009-100	042-M05-009-009-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M05-009-009-100	042-M05-009-009-100-PHO13C.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey

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042-M05-009-009-100	042-M05-009-009-100-PHO13D.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M05-009-009-100	042-M05-009-009-100-PHO13E.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M05-009-009-100	042-M05-009-009-100-PHO13F.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M05-009-014-100	042-M05-009-014-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M05-009-014-100	042-M05-009-014-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M05-009-014-100	042-M05-009-014-100-PHO13C.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-100	042-M06-009-03B-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-100	042-M06-009-03B-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-100	042-M06-009-03B-100-PHO13C.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-100	042-M06-009-03B-100-PHO13D.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-100	042-M06-009-03B-100-PHO13E.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-100	042-M06-009-03B-100-PHO13F.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-100	042-M06-009-03B-100-PHO13G.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-100	042-M06-009-03B-100-PHO13H.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-200	042-M06-009-03B-200-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-200	042-M06-009-03B-200-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-200	042-M06-009-03B-200-PHO13C.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-200	042-M06-009-03B-200-PHO13D.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-300	042-M06-009-03B-300-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-300	042-M06-009-03B-300-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-400	042-M06-009-03B-400-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-009-03B-400	042-M06-009-03B-400-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey

SOURCE: BCE - FIELD PHOTOGRAPHS
LOCATION: Bourne Consulting Engineering
2015 REPORT UPDATE

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description
042-M06-010-001-100	042-M06-010-001-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-010-001-100	042-M06-010-001-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-010-001-100	042-M06-010-001-100-PHO13C.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-010-001-100	042-M06-010-001-100-PHO13D.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-010-001-100	042-M06-010-001-100-PHO13E.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-010-001-100	042-M06-010-001-100-PHO13F.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M06-010-001-100	042-M06-010-001-100-PHO13G.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-017-012-100	042-M08-017-012-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-017-012-100	042-M08-017-012-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-017-012-200	042-M08-017-012-200-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-017-012-200	042-M08-017-012-200-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-017-012-300	042-M08-017-012-300-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-017-012-300	042-M08-017-012-300-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-019-003-100	042-M08-019-003-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-019-003-100	042-M08-019-003-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-034-003-100	042-M08-034-003-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-034-003-100	042-M08-034-003-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-042-002-100	042-M08-042-002-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-042-002-100	042-M08-042-002-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-042-002-100	042-M08-042-002-100-PHO13C.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-051-004-100	042-M08-051-004-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-051-004-100	042-M08-051-004-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey

SOURCE: BCE - FIELD PHOTOGRAPHS
LOCATION: Bourne Consulting Engineering
2015 REPORT UPDATE

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description
042-M08-051-004-100	042-M08-051-004-100-PHO13C.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-051-009-100	042-M08-051-009-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-051-009-100	042-M08-051-009-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-051-014-100	042-M08-051-014-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M08-051-014-100	042-M08-051-014-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M09-001-007-100	042-M09-001-007-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M09-001-007-100	042-M09-001-007-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M09-001-007-100	042-M09-001-007-100-PHO13C.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M09-006-009-100	042-M09-006-009-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M09-006-009-100	042-M09-006-009-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M09-006-009-200	042-M09-006-009-200-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-M09-006-009-200	042-M09-006-009-200-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N05-001-012-100	042-N05-001-012-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N05-001-012-100	042-N05-001-012-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N05-002-001-150	042-N05-002-001-150-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N05-002-001-150	042-N05-002-001-150-PHO13A		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N06-007-009-100	042-N06-007-009-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N06-007-009-100	042-N06-007-009-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N06-007-009-100	042-N06-007-009-100-PHO13C.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N06-007-009-100	042-N06-007-009-100-PHO13D.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N06-007-020-100	042-N06-007-020-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N06-007-020-100	042-N06-007-020-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey

SOURCE: BCE - FIELD PHOTOGRAPHS
LOCATION: Bourne Consulting Engineering
2015 REPORT UPDATE

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description
042-N07-001-003-100	042-N07-001-003-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N07-001-003-100	042-N07-001-003-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N07-001-021-100	042-N07-001-021-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N07-001-021-100	042-N07-001-021-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N07-007-004-100	042-N07-007-004-100-PHO13A.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N07-007-004-100	042-N07-007-004-100-PHO13B.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N07-007-004-100	042-N07-007-004-100-PHO13C.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
042-N07-007-004-100	042-N07-007-004-100-PHO13D.JPG		CLE Engineering Inc.	Marshfield	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey

Section II - Marshfield

Part D

Structure Documents

TOWN DOCUMENT LIST

MA DCR - DOCUMENT LIST

MA DEP – Chp 91 DOCUMENT LIST

USACE – PERMIT DOCUMENT LIST

TOWN: MARSHFIELD
SOURCE: Town of
LOCATION: Town Records
2013 REPORT UPDATE

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description
042-F20-001-000-100	042-F20-001-000-100-TWN13B			Marshfield					
042-F20-001-000-100	042-F20-001-000-100-TWN13A			Marshfield					
042-J13-002-031-100	042-J13-002-031-100-TWN13A			Marshfield					

TOWN: MARSHFIELD
SOURCE: MA-DCR
LOCATION: MA-DCR BOSTON and HINGHAM, MA
2015 REPORT UPDATE

No MA-DCR Documents for the Town of MARSHFIELD

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description

TOWN:
SOURCE: DEP
LOCATION: BOSTON, MA
2015 REPORT UPDATE

No DEP Documents for the Town of

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description
042-M06-009-03B-300	042-M06-009-03B-300-LIC13A		DEP	Marshfield					

TOWN: MARSHFIELD
SOURCE: US ACOE
LOCATION: CONCORD, MA
2015 REPORT UPDATE

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description
042-N07-001-003-100	042-N07-001-003-100-COE13A		USACE	Marshfield					

Section III

Duxbury

Section III

Part A – Community Findings – Town of Duxbury

A. COMMUNITY DESCRIPTION

The Town of Duxbury consists of a land area of 23.8 square miles out of a total area of 37.6 square miles and had a population of 15,059 in the 2010 census. The Town is located on the South Shore of Massachusetts and its location can be seen on this report's cover. The estimated length of shoreline that is directly exposed to open ocean waves is 4.7 miles with the remaining shoreline semi-protected by offshore structures or landforms. The Town is protected from major coastal storms by both natural and man-made shoreline structures that require maintenance to insure the long term protection of its coastline. The man-made and publicly owned structures that protect the Town were investigated for their ability to provide adequate protection from major coastal storms. Structures have been identified as publicly owned, including coastal dunes and beaches, based on evidence of investment of public funds made to create/enhance/maintain these structures. The assessment did not include floating or pile supported structures as they are assumed not to provide any significant coastal protection from major storm events.

B. STRUCTURE INVENTORY

Within the Town of Duxbury, there were 14 structures which had public or unknown ownership which provide significant coastal protection. The location of the structures can be seen in Sheets 1 through Sheet 3 in Section III-B of this report. The structures were categorized by their type and by their structural condition based on a preliminary field assessment. The distribution of structures by type and condition can be seen in the following table:

STRUCTURE TYPE AND QUANTITY - Town of Duxbury

Primary Structure (1)	Total Structures	Structure Condition Rating A	B	C	D	F	Total Length
Bulkhead / Seawall	11		6	4		1	3759
Revetment	3		2	1			952
Breakwater							
Groin / Jetty							
Coastal Dune							
Coastal Beach							
	14		8	5		1	4711

Within the above table, the total length of each type of structure is also provided. The structures are listed by the type which is providing the primary coastal protection. Many sites have multiple structure types at the same location (i.e. revetment in front of seawall). These secondary structures, although not identified within these tables, are included in the development of repair/rehabilitation costs.

The development of repair costs has been included by structure type and by condition. In the Town of Duxbury's case there are a total of 14 structures which would require approximately $ 3.6 million to bring all the coastal structures to "A" Rating. Most critical will be the structures in the "D" and "F" classifications as those are assumed to undergo some level of damage or failure during the next major coastal storm event. To reconstruct these structures, identified in the preliminary survey as being in poor condition, an estimated $ 1.7 million would be required to upgrade the Town's coastal protection.

STRUCTURE REPAIR / RECONSTRUCTION COST - Town of Duxbury

Primary Structure (1)	Total Structures	Structure Condition Rating A	B	C	D	F	Total Cost
Bulkhead / Seawall	11		$320,033	$1,334,805		$1,643,313	$ 3,298,151
Revetment	3		$52,047	$242,528			$ 294,575
Breakwater							$ -
Groin / Jetty							$ -
Coastal Dune							$ -
Coastal Beach							$ -
	14	$ -	$ 372,080	$ 1,577,333	$ -	$ 1,643,313	$ 3,592,726

Based on the limited research within the scope of this project research, the presumed ownership of the structures was established on an initial basis and would be subject to more intense review in future tasks. Structures identified as being owned privately were excluded from further consideration. Although ownership of the land on which the structure was located was a factor, the structure ownership was treated as a separate issue from land ownership. For the Town of Duxbury, the breakdown of structures by assumed ownership is as follows:

STRUCTURE OWNERSHIP / REPAIR COST - Town of Duxbury

Primary Structure (1)	Total Structures	Structure Condition Rating A	B	C	D	F	Total Cost
Town Owned	14		$372,080	$1,577,333	$1,643,313		$ 3,592,726
Commonwealth of Massachusetts							$ -
Federal Government Owned							$ -
Unknown Ownership							$ -
	14	$ -	$ 372,080	$ 1,577,333	$ 1,643,313	$ -	$ 3,592,726

The identification of presumed ownership was not based on the investigation of legal documents but relied on property ownership and from construction and regulatory documents that were found. A more detailed investigation of legal documents and agreements would be required where structure ownership is disputed. A more detailed identification of structure type, length, condition and location can be found in Section II-B which contains Structure Assessment Reports for each individual structure found.

C. STRUCTURE IMPROVEMENT (UPGRADE) COSTS

As part of the investigation and analysis, an estimate of what the cost for improvement of structures to be fully design for the wave conditions they now experience. This generally much greater than the original structure design and can be the result of a number of factors including but not limited to: more recent FEMA analysis as to the current extreme wave conditions; loss of beach area allowing access of larger waves; and sea level rise. The factors are broad estimates as to the likely cost for such improvements and do not account for regulatory construction limitations and public impacts that are likely to have a major influence on what level of improvements can actually be implemented. The costs should be considered an "order-of-magnitude" value for general consideration until a more accurate analysis with a specific method of structure design can be performed.

For the community the comparison of the current year construction cost of existing coastal structures as compared to the construction cost if all the structures were improved to meet

current design levels can be seen in the following table:

STRUCTURE REPLACEMENT COST - Town of Duxbury

Primary Structure (1)	Total Structures	Replacement Costs	
		Existing Structures	Upgraded Structures
Bulkhead / Seawall	11	$3,298,151	$17,890,494
Revetment	3	$294,575	$1,072,144
Breakwater			
Groin / Jetty			
Coastal Dune			
Coastal Beach			
	14	$3,592,726	$18,962,638

D. SUMMARY

The enclosed reports and associated documents reflects the Town of Duxbury's coastal structure information that will eventually be input into a state-wide GIS database and will be accessible through MORIS as part of MassGIS. This data, when compiled state-wide, will be critical in the development of both short term and long term planning for maintaining and improving Massachusetts coastal protection.

This database will also provide relatively quick access to identify available documentation for these structures as well as the ability to be updated as coastal structure improvements are made.

Section III - Duxbury

Part B

Structure Assessment Reports

COASTAL STRUCTURE LOCATION PLAN

0 200

SCALE: 1"=200'-0"

0 500

SCALE: 1"=500'-0"

TOWN OF DUXBURY
COASTAL INFRASTRUCTURE INVENTORY
ASSESSMENT REPORT UPDATE
MARCH 2015

BCE Bourne Consulting Engineering, PC
3 Bent Street
Franklin, MA 02038
TEL. (508) 533-8666 FAX. (508) 533-8669

ORIENTATION SHEET

COASTAL STRUCTURE LOCATION PLAN

TOWN OF DUXBURY
COASTAL INFRASTRUCTURE INVENTORY
ASSESSMENT REPORT UPDATE
MARCH 2015

0 200

SCALE: 1"=200'-0"

BCE Bourne Consulting Engineering, PC
3 Dean Street
Franklin, MA 02038
TEL. (508) 553-8696 FAX. (508) 553-0600

SHEET 2

COASTAL STRUCTURE LOCATION PLAN

TOWN OF DUXBURY
COASTAL INFRASTRUCTURE INVENTORY
ASSESSMENT REPORT UPDATE
MARCH 2015

0 200

SCALE: 1"=200'-0"

BCE Bourne Consulting Engineering, PC
3 Dean Street
Franklin, MA 02038
TEL. (508) 553-0606 FAX. (508) 553-0600

SHEET 3

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Duxbury

Structure ID: 018-180B-505-226-100

Structure Assessment Form

Property Owner: Municipal

Address: 396 Powder Point Ave. at King Caesar Rd.

Inspection Date: 4/24/2015

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $56,541

Upgrade Factor: 0

Upgrade Cost: $0

Structure Owner Name: Duxbury

Earliest Structure Record: Unknown

Waterway: Duxbury Harbor

TideRage: 10.68

Length: 401 Feet

Top Elevation: Feet

FIRM Map Zone:

FIRM Map Elevation: Feet NAVD 88

Shape Length: 401

Primary Type: Revetment

Primary Material: Stone

Primary Height: 5 to 10 Feet

Height Above Beach: 0

Secondary Type: Coastal Beach

Secondary Material: Sand

Secondary Height: Under 5 Feet

Secondary Condition: A

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	B Good	*Priority Rating*	III Moderate Priority
Level of Action	Minor	*Action*	Consider for Active Project Improvement Listing
Description	See Exhibits I-A for Condition rating description.		

Structure Assessment:

2013 Assesment: Revetment in fair to good condition. Coastal beach in good condition with no signs of erosion. Provides boat access.
2006 / 2007 Assesment:

Structure Images:

018-180B-505-226-100-PHO13A.jpg

018-180B-505-226-100-PHO13B.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Duxbury

Structure ID: 018-191-505-140-100

Structure Assessment Form

Property Owner: Municipal

Address: Long Point

Inspection Date: 7/16/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $16,274

Upgrade Factor: 2

Upgrade Cost: $204,452

Structure Owner Name: Duxbury

Earliest Structure Record: 1936

Waterway: Duxbury Harbor

TideRage: 10.68

Length: 158 Feet

Top Elevation: Feet

FIRM Map Zone: VE

FIRM Map Elevation: 13 Feet NAVD 88

Shape Length: 158

Primary Type: Bulkhead/ Seawall

Primary Material: Concrete

Primary Height: Under 5 Feet

Height Above Beach: 10

Secondary Type: Revetment

Secondary Material: Stone

Secondary Height: Under 5 Feet

Secondary Condition: B

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	B Good	*Priority Rating*	I None
Level of Action	Minor	*Action*	Long Term Planning Considerations
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: Revetment slope (100-500 lbs. stone) for 15' width in front of concrete seawall with railing (parking lot behind). Minor spalling.

Structure Images: 018-191-505-140-100-PHO13A.jpg

Structure Documents: Duxbury 2005 018-191-505-140-100-COE13

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Duxbury

Structure ID: 018-191-505-140-200

Structure Assessment Form

Property Owner: Municipal

Address: Long Point

Inspection Date: 7/16/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $5,130

Upgrade Factor: 2

Upgrade Cost: $101,250

Structure Owner Name: Duxbury

Earliest Structure Record: 1988

Waterway: Duxbury Harbor

TideRage: 10.68

Length: 135 Feet

Top Elevation: Feet

FIRM Map Zone: VE

FIRM Map Elevation: 12 Feet NAVD 88

Shape Length: 135

Primary Type: Revetment

Primary Material: Concrete

Primary Height: Under 5 Feet

Height Above Beach: 5

Secondary Type:

Secondary Material:

Secondary Height:

Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Length

Condition Rating	B Good	*Priority Rating*	I None
Level of Action	Minor	*Action*	Long Term Planning Considerations
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: Asphalt boat ramp with concrete sidewalls. Some deterioration at outshore corners of concrete walls.

Structure Images:

018-191-505-140-200-PHO13A.jpg

018-191-505-140-200-PHO13B.jpg

Structure Documents:

Duxbury 2005

018-191-505-140-200-COE13

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Duxbury

Structure ID: 018-200-470-053-100

Structure Assessment Form

Property Owner: Municipal

Address: Howards Landing

Inspection Date: 7/16/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $33,000

Upgrade Factor: 2

Upgrade Cost: $415,000

Structure Owner Name: Duxbury

Earliest Structure Record: 1993

Waterway: Duxbury Harbor

TideRage: 10.68

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
125 Feet	10 Feet	VE	14 Feet NAVD 88	125

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Bulkhead/ Seawall	Stone	5 to 10 Feet	6

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Coastal Beach	Sand/ Stone	5 to 10 Feet	B

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Length

Condition Rating	B Good	*Priority Rating*	I None
Level of Action	Minor	*Action*	Long Term Planning Considerations
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Stone block seawall for a filled wharf. Minor movement and rotation of the stones. Minor fill loss at the top of the structure exposing the filter fabric behind the seawall.
2006 / 2007 Assesment: Stone block seawall (dryset) forming filled wharf. Minor voids in wall, but no movement or rotation of stones observed. Minor fill loss noted.

Structure Images:

018-200-470-053-100-PHO13A.jpg

018-200-470-053-100-PHO13B.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Duxbury

Structure ID: 018-200-470-053-200

Structure Assessment Form

Property Owner: Municipal

Address: Howards Landing

Inspection Date: 7/16/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $445,952

Upgrade Factor: 2

Upgrade Cost: $970,944

Structure Owner Name: Duxbury

Earliest Structure Record: Unknown

Waterway: Duxbury Harbor

TideRage: 10.68

Length: 416 Feet

Top Elevation: 10 Feet

FIRM Map Zone: VE

FIRM Map Elevation: 14 Feet NAVD 88

Shape Length: 416

Primary Type: Revetment

Primary Material: Stone

Primary Height: 5 to 10 Feet

Height Above Beach: 2

Secondary Type: Coastal Beach

Secondary Material: Sand

Secondary Height: 5 to 10 Feet

Secondary Condition: C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	I None
Level of Action	Moderate	*Action*	Long Term Planning Considerations
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: 1.) Stone block seawall (dryset) forming filld wharf. Minor voids in wall, but no movement or rotation of stones observed. Minor fill loss noted.
2.) Dumped rip rap (100 to 500 lb. stones) along south shore edge of boat ramp. Provides little protecti

Structure Images:

018-200-470-053-200-PHO13A.jpg

018-200-470-053-200-PHO13B.jpg

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Duxbury

Structure ID: 018-201-997-078-100

Structure Assessment Form

Property Owner: Municipal

Address: 56 Massasoit Rd.

Inspection Date: 7/16/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $24,794

Upgrade Factor: 2

Upgrade Cost: $180,964

Structure Owner Name: Duxbury

Earliest Structure Record: Unknown

Waterway: Duxbury Harbor

TideRage: 10.68

Length: 161 Feet

Top Elevation: Feet

FIRM Map Zone: VE

FIRM Map Elevation: 12 Feet NAVD 88

Shape Length: 161

Primary Type: Bulkhead/ Seawall

Primary Material: Stone

Primary Height: Under 5 Feet

Height Above Beach: 3

Secondary Type: Coastal Beach

Secondary Material: Sand

Secondary Height: 5 to 10 Feet

Secondary Condition: B

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Address

Condition Rating	B Good	*Priority Rating*	III Moderate Priority
Level of Action	Minor	*Action*	Consider for Active Project Improvement Listing
Description	See Exhibits I-A for Condition rating description.		

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: Stone seawall with mortared joints and stairs to access beach. Steel railing is deteriorated. Some cracks and voids in mortar in joint. Appears to have concrete footing buried and is connected to private seawall on one side.

Structure Images:

018-201-997-078-100-PHO13A.jpg

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Duxbury

Structure ID: 018-210F-916-004-100

Structure Assessment Form

Property Owner: Municipal

Address: Duxbury Beach

Inspection Date: 7/16/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $147,610

Upgrade Factor: 2.5

Upgrade Cost: $2,440,655

Structure Owner Name: Duxbury

Earliest Structure Record: Unknown

Waterway: Duxbury Harbor

TideRage: 10.68

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
509 Feet	9 Feet	VE	20 Feet NAVD 88	509

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Bulkhead/ Seawall	Concrete	5 to 10 Feet	8

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Coastal Beach	Sand	5 to 10 Feet	B

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	B Good	*Priority Rating*	IV High Priority
Level of Action	Minor	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: Concrete seawall in satisfactory condition with some cracking for full height of front outshore face. Some deterioration at joints. 30" wide wall with wave return face. 2' high x 6' wide revetment along face (1 ton stone)

Structure Images:

018-210F-916-004-100-PHO13A.jpg

018-210F-916-004-100-PHO13B.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Duxbury

Structure ID: 018-211-939-118-100

Structure Assessment Form

Property Owner: Municipal

Address: Duxbury Beach

Inspection Date: 7/16/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $20,375

Upgrade Factor: 2.5

Upgrade Cost: $202,188

Structure Owner Name: Duxbury

Earliest Structure Record: Unknown

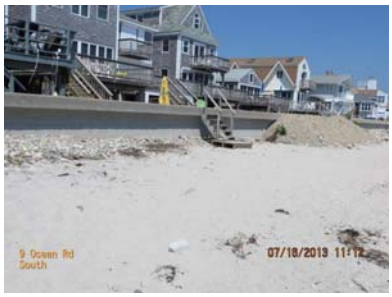
Waterway: Duxbury Harbor

TideRage: 10.68

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
125 Feet	9 Feet	VE	20 Feet NAVD 88	125

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Bulkhead/ Seawall	Concrete	Under 5 Feet	3

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Coastal Beach	Sand	5 to 10 Feet	B



2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	B Good	*Priority Rating*	IV High Priority
Level of Action	Minor	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: Concrete seawall in satisfactory condition with some vertical cracks for full height of front face. 30 inch wide wall with wave return face.

Structure Images:

018-211-939-118-100-PHO13A.jpg

018-211-939-118-100-PHO13B.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Duxbury

Structure ID: 018-211-939-131-100

Structure Assessment Form

Property Owner: Municipal

Address: Duxbury Beach

Inspection Date: 7/16/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $47,908

Upgrade Factor: 2.5

Upgrade Cost: $95,432

Structure Owner Name: Duxbury

Earliest Structure Record: Unknown

Waterway: Duxbury Harbor

TideRage: 10.68

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
59 Feet	9 Feet	VE	20 Feet NAVD 88	59

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Bulkhead/ Seawall	Concrete	Under 5 Feet	3

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Coastal Beach	Sand	5 to 10 Feet	C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	IV High Priority
Level of Action	Moderate	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: Concrete seawall in fair condition with cracking and spalling. Built 30 inch wide with wave return face.

Structure Images:

018-211-939-131-100-PHO13A.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Duxbury

Structure ID: 018-212-600-901-100

Structure Assessment Form

Property Owner: Municipal

Address: Duxbury Beach

Inspection Date: 7/16/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $544,825

Upgrade Factor: 2.5

Upgrade Cost: $2,277,625

Structure Owner Name: Duxbury

Earliest Structure Record: 1962

Waterway: Duxbury Harbor

TideRage: 10.68

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
475 Feet	9 Feet	VE	20 Feet NAVD 88	475

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Bulkhead/ Seawall	Concrete	5 to 10 Feet	10

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Revetment	Stone	Under 5 Feet	C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	IV High Priority
Level of Action	Moderate	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Concrete seawall with a wave return face. There was minor to moderate vertical cracking and scaling near the bottom of the structure. The wall appears to have rotated outshore and revetment stones outshore suggest an attempt to stabilize.
2006 / 2007 Assesment: Concrete wall in fair condition. Evidence of lateral movement and slight tilt to outshore. Appeared to have failed previously and revetment (average 1 to 2 ton stone) placed along outshore face to stabalize.

Structure Images:

018-212-600-901-100-PHO13A.jpg

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Duxbury

Structure Assessment Form

Structure ID: 018-212-901-001-100

Property Owner: Municipal

Address: Duxbury Beach

Inspection Date: 7/16/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $263,030

Upgrade Factor: 2.5

Upgrade Cost: $4,349,065

Structure Owner Name: Duxbury

Earliest Structure Record: 1953

Waterway: Duxbury Harbor

TideRage: 10.68

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
907 Feet	9 Feet	VE	20 Feet NAVD 88	907

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Bulkhead/ Seawall	Concrete	5 to 10 Feet	10

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Coastal Beach	Sand	5 to 10 Feet	B

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	B Good	*Priority Rating*	IV High Priority
Level of Action	Minor	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: Concrete seawall in satisfactory condition with some minor cracking. Wall built with 30" wide cap and wave return face.

Structure Images:

018-212-901-001-100-PHO13A.jpg
018-212-901-001-100-PHO13B.jpg
018-212-901-001-100-PHO13C.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Duxbury

Structure ID: 018-212-901-060-100

Structure Assessment Form

Property Owner: Municipal

Address: Duxbury Beach

Inspection Date: 7/16/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $1,978,767

Upgrade Factor: 2.5

Upgrade Cost: $3,423,998

Structure Owner Name: Duxbury

Earliest Structure Record: Unknown

Waterway: Duxbury Harbor

TideRage: 10.68

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
343 Feet	Feet	VE	20 Feet NAVD 88	343

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Bulkhead/ Seawall	Concrete	10 to 15 Feet	12

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Coastal Beach	Sand	5 to 10 Feet	F

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	F Critical	*Priority Rating*	IV High Priority
Level of Action	Immediate	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: Historic DCR documents indicate bulkhead construction at location. No evidence of bulkhead found. Currently, cobble beach with dune (approximately 10 feet high) inshore. Erosion of material landward of historic bulkhead line. Temporary stabablization

Structure Images:

018-212-901-060-100-PHO13A.jpg

018-212-901-060-100-PHO13B.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Duxbury

Structure ID: 018-212-901-064-100

Structure Assessment Form

Property Owner: Municipal

Address: Duxbury Beach

Inspection Date: 7/16/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $512,592

Upgrade Factor: 2.5

Upgrade Cost: $1,697,430

Structure Owner Name: Duxbury

Earliest Structure Record: 1946

Waterway: Duxbury Harbor

TideRage: 10.68

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
354 Feet	9 Feet	VE	20 Feet NAVD 88	354

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Bulkhead/ Seawall	Concrete	5 to 10 Feet	7

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Coastal Beach	Sand/ Stone	5 to 10 Feet	C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	IV High Priority
Level of Action	Moderate	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: First 50' is precast concrete seawall in fair condition with horizontal joint at mid-height. Concrete cracking and spalling near wall top and apex of curve. Remainder of structure is condition "B" with minor cracking (construction similar to adjacent s

Structure Images:

018-212-901-064-100-PHO13A.jpg

018-212-901-064-100-PHO13B.jpg

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Duxbury

Structure ID: 018-212-901-073-100

Structure Assessment Form

Property Owner: Municipal

Address: Duxbury Beach

Inspection Date: 7/16/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $622,821

Upgrade Factor: 2.5

Upgrade Cost: $2,603,685

Structure Owner Name: Duxbury

Earliest Structure Record: 1946

Waterway: Duxbury Harbor

TideRage: 10.68

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
543 Feet	9 Feet	VE	20 Feet NAVD 88	543

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Bulkhead/ Seawall	Concrete	5 to 10 Feet	12

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Revetment	Stone	Under 5 Feet	C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	IV High Priority
Level of Action	Moderate	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: Concrete seawall with 30" cap and wave return face. Revetment is 3' to 4' high x 6' to 8' wide with stone size 1 ton to 2 ton. Horz. Movement of about 3 wall sections (40'ea = 120' total) Horzontal cracking at wall mid-Height

Structure Images:

018-212-901-073-100-PHO13A.jpg

018-212-901-073-100-PHO13B.jpg

Structure Documents:

Section III - Duxbury

Part C

Structure Photographs

TOWN: DUXBURY
SOURCE: DEP
LOCATION: BOSTON, MA
2015 REPORT UPDATE

No DEP Documents for the Town of DUXBURY

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description
018-180B-505-226-100	18-180B-505-226-100-PHO13A.jpg		CLE Engineering Inc.	Duxbury	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
018-180B-505-226-100	18-180B-505-226-100-PHO13B.jpg		CLE Engineering Inc.	Duxbury	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
018-191-505-140-100	018-191-505-140-100-PHO13A.jpg		CLE Engineering Inc.	Duxbury	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
018-191-505-140-200	018-191-505-140-200-PHO13A.jpg		CLE Engineering Inc.	Duxbury	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
018-191-505-140-200	018-191-505-140-200-PHO13B.jpg		CLE Engineering Inc.	Duxbury	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
018-200-470-053-100	018-200-470-053-100-PHO13A.jpg		CLE Engineering Inc.	Duxbury	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
018-200-470-053-100	018-200-470-053-100-PHO13B.jpg		CLE Engineering Inc.	Duxbury	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
018-200-470-053-200	018-200-470-053-200-PHO13A.jpg		CLE Engineering Inc.	Duxbury	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
018-200-470-053-200	018-200-470-053-200-PHO13B.jpg		CLE Engineering Inc.	Duxbury	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
018-201-997-078-100	018-201-997-078-100-PHO13A.jpg		CLE Engineering Inc.	Duxbury	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
018-210F-916-004-100	18-210F-916-004-100-PHO13A.jpg		CLE Engineering Inc.	Duxbury	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
018-210F-916-004-100	18-210F-916-004-100-PHO13B.jpg		CLE Engineering Inc.	Duxbury	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
018-211-939-118-100	018-211-939-118-100-PHO13A.jpg		CLE Engineering Inc.	Duxbury	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
018-211-939-118-100	018-211-939-118-100-PHO13B.jpg		CLE Engineering Inc.	Duxbury	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
018-211-939-131-100	018-211-939-131-100-PHO13A.jpg		CLE Engineering Inc.	Duxbury	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
018-212-600-901-100	018-212-600-901-100-PHO13A.jpg		CLE Engineering Inc.	Duxbury	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
018-212-901-001-100	018-212-901-001-100-PHO13A.jpg		CLE Engineering Inc.	Duxbury	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
018-212-901-001-100	018-212-901-001-100-PHO13B.jpg		CLE Engineering Inc.	Duxbury	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
018-212-901-001-100	018-212-901-001-100-PHO13C.jpg		CLE Engineering Inc.	Duxbury	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
018-212-901-060-100	018-212-901-060-100-PHO13A.jpg		CLE Engineering Inc.	Duxbury	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
018-212-901-060-100	018-212-901-060-100-PHO13B.jpg		CLE Engineering Inc.	Duxbury	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
018-212-901-064-100	018-212-901-064-100-PHO13A.jpg		CLE Engineering Inc.	Duxbury	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
018-212-901-064-100	018-212-901-064-100-PHO13B.jpg		CLE Engineering Inc.	Duxbury	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
018-212-901-073-100	018-212-901-073-100-PHO13A.jpg		CLE Engineering Inc.	Duxbury	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
018-212-901-073-100	018-212-901-073-100-PHO13B.jpg		CLE Engineering Inc.	Duxbury	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey

Massachusetts Coastal Inventory and Assessment

018-180B-505-226-100-PHO13A.JPG

018-180B-505-226-100-PHO13B.JPG

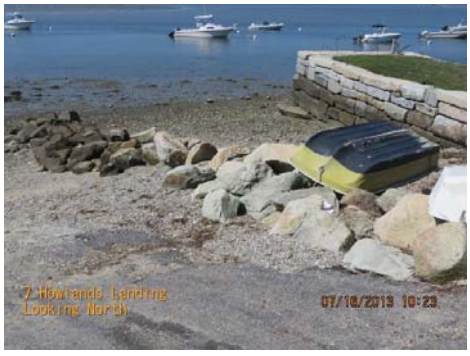
018-191-505-140-100-PHO13A.jpg

018-191-505-140-200-PHO13A.jpg

018-191-505-140-200-PHO13B.jpg

018-200-470-053-100-PHO13A.jpg

018-200-470-053-100-PHO13B.jpg



018-200-470-053-200-PHO13A.jpg

018-200-470-053-200-PHO13B.jpg

Massachusetts Coastal Inventory and Assessment

018-201-997-078-100-PHO13A.jpg

018-210F-916-004-100-PHO13A.jpg

018-210F-916-004-100-PHO13B.JPG

018-211-939-118-100-PHO13A.jpg

018-211-939-118-100-PHO13B.jpg

018-211-939-131-100-PHO13A.jpg

018-212-600-901-100-PHO13A.jpg

018-212-901-001-100-PHO13A.jpg

018-212-901-001-100-PHO13B.JPG

018-212-901-001-100-PHO13C.JPG

018-212-901-060-100-PHO13A.jpg

018-212-901-060-100-PHO13B.jpg


018-212-901-064-100-PHO13A.jpg

018-212-901-064-100-PHO13B.jpg

018-212-901-073-100-PHO13A.jpg

018-212-901-073-100-PHO13B.jpg

Section III - Duxbury

Part D

Structure Documents

TOWN DOCUMENT LIST

MA DCR - DOCUMENT LIST

MA DEP – Chp 91 DOCUMENT LIST

USACE – PERMIT DOCUMENT LIST

TOWN: DUXBURY
SOURCE: Town of
LOCATION: Town Records
2013 REPORT UPDATE

No Town Documents for the Town of DUXBURY

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description

TOWN: DUXBURY
SOURCE: DEP
LOCATION: BOSTON, MA
2015 REPORT UPDATE

No DEP Documents for the Town of DUXBURY

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description

TOWN: DUXBURY
SOURCE: DEP
LOCATION: BOSTON, MA
2015 REPORT UPDATE

No DEP Documents for the Town of DUXBURY

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description

TOWN: DUXBURY
SOURCE: US ACOE
LOCATION: CONCORD, MA
2015 REPORT UPDATE

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description
018-191-505-140-200	018-191-505-140-200-COE13		Duxbury	Duxbury	2005		4		
018-191-505-140-100	018-191-505-140-100-COE13		Duxbury	Duxbury	2005		4		

Section IV

Kingston

Section IV

Part A - Community Findings – Town of Kingston

A. COMMUNITY DESCRIPTION

The Town of Kingston consists of a land area of 18.5 square miles out of a total area of 20.4 square miles and had a population of 12,629 in the 2010 census. The Town is located on the Shore of Massachusetts and its location can be seen on this report's cover. The estimated length of shoreline that is directly exposed to open ocean waves is 3.2 miles with the remaining shoreline semi-protected by offshore structures or landforms. The Town is protected from major coastal storms by both natural and man-made shoreline structures that require maintenance to insure the long term protection of its coastline. The man-made and publicly owned structures that protect the Town were investigated for their ability to provide adequate protection from major coastal storms. Structures have been identified as publicly owned, including coastal dunes and beaches, based on evidence of investment of public funds made to create/enhance/maintain these structures. The assessment did not include floating or pile supported structures as they are assumed not to provide any significant coastal protection from major storm events.

B. STRUCTURE INVENTORY

Within the Town of Kingston, there were 11 structures which had public or unknown ownership which provide significant coastal protection. The location of the structures can be seen in Sheet 1 in Section II-B of this report. The structures were categorized by their type and by their structural condition based on a preliminary field assessment. The distribution of structures by type and condition can be seen in the following table:

STRUCTURE TYPE AND QUANTITY - Town of Kingston

Primary Structure (1)	Total Structures	Structure Condition Rating A	B	C	D	F	Total Length
Bulkhead / Seawall	4			3	1		659
Revetment	5		2		3		1515
Breakwater							
Groin / Jetty	2				2		139
Coastal Dune							
Coastal Beach							
	11		2	3	6		2313

Within the above table, the total length of each type of structure is also provided. The structures are listed by the type which is providing the primary coastal protection. Many sites have multiple structure types at the same location (i.e. revetment in front of seawall). These secondary structures, although not identified within these tables, are included in the development of repair/rehabilitation costs.

The development of repair costs has been included by structure type and by condition. In the Town of Kingston's case there are a total of 11 structures which would require approximately $ 1.5 million to bring all the coastal structures to "A" Rating. Most critical will be the structures in the "D" and "F" classifications as those are assumed to undergo some level of damage or failure during the next major coastal storm event. To reconstruct these structures, identified in the preliminary survey as being in poor condition, an estimated $ 1.2 million would be required to upgrade the Town's coastal protection.

STRUCTURE REPAIR / RECONSTRUCTION COST - Town of Kingston

Primary Structure (1)	Total Structures	Structure Condition Rating A	B	C	D	F	Total Cost
Bulkhead / Seawall	4			$132,913	$645,978		$ 778,891
Revetment	5		$247,298		$349,176		$ 596,474
Breakwater							$ -
Groin / Jetty	2				$81,037		$ 81,037
Coastal Dune							$ -
Coastal Beach							$ -
	11	$ -	$ 247,298	$ 132,913	$ 1,076,191	$ -	$ 1,456,402

Based on the limited research within the scope of this project research, the presumed ownership of the structures was established on an initial basis and would be subject to more intense review in future tasks. Structures identified as being owned privately were excluded from further consideration. Although ownership of the land on which the structure was located was a factor, the structure ownership was treated as a separate issue from land ownership. For the Town of Kingston, the breakdown of structures by assumed ownership is as follows:

STRUCTURE OWNERSHIP / REPAIR COST - Town of Kingston

Primary Structure (1)	Total Structures	Structure Condition Rating A	B	C	D	F	Total Cost
Town Owned	10		$241,332	$132,913	$1,076,191		$ 1,450,436
Commonwealth of Massachusetts							$ -
Federal Government Owned							$ -
Unknown Ownership	1		$5,966				$ 5,966
	11	$ -	$ 247,298	$ 132,913	$ 1,076,191	$ -	$ 1,456,402

The identification of presumed ownership was not based on the investigation of legal documents but relied on property ownership and from construction and regulatory documents that were found. A more detailed investigation of legal documents and agreements would be required where structure ownership is disputed. A more detailed identification of structure type, length, condition and location can be found in Section II-B which contains Structure Assessment Reports for each individual structure found.

C. STRUCTURE IMPROVEMENT (UPGRADE) COSTS

As part of the investigation and analysis, an estimate of what the cost for improvement of structures to be fully design for the wave conditions they now experience. This generally much greater than the original structure design and can be the result of a number of factors including but not limited to: more recent FEMA analysis as to the current extreme wave conditions; loss of beach area allowing access of larger waves; and sea level rise. The factors are broad estimates as to the likely cost for such improvements and do not account for regulatory construction limitations and public impacts that are likely to have a major influence on what level of improvements can actually be implemented. The costs should be considered an "order-of-magnitude" value for general consideration until a more accurate analysis with a specific method of structure design can be performed.

For the community the comparison of the current year construction cost of existing coastal structures as compared to the construction cost if all the structures were improved to meet current design levels can be seen in the following table:

STRUCTURE REPLACEMENT COST - Town of Kingston

Primary Structure (1)	Total Structures	Replacement Costs Existing Structures	Upgraded Structures
Bulkhead / Seawall	4	$778,891	$1,306,826
Revetment	5	$596,474	$5,373,878
Breakwater			
Groin / Jetty	2	$81,037	$97,245
Coastal Dune			
Coastal Beach			
	11	$1,456,402	$6,777,949

D. SUMMARY

The enclosed reports and associated documents reflects the Town of Kingston's coastal structure information that will eventually be input into a state-wide GIS database and will be accessible through MORIS as part of MassGIS. This data, when compiled state-wide, will be critical in the development of both short term and long term planning for maintaining and improving Massachusetts coastal protection.

This database will also provide relatively quick access to identify available documentation for these structures as well as the ability to be updated as coastal structure improvements are made.

Section IV - Kingston

Part B

Structure Assessment Reports

COASTAL STRUCTURE LOCATION PLAN

TOWN OF KINGSTON
COASTAL INFRASTRUCTURE INVENTORY
ASSESSMENT REPORT UPDATE
MARCH 2015

0 500
SCALE: 1"=500'-0"

BCE Bourne Consulting Engineering, PC
3 Bent Street
Franklin, MA 02038
TEL. (508) 533-0666 FAX. (508) 533-0600

SHEET 1

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Kingston

Structure ID: 037-038-000-034-100

Structure Assessment Form

Property Owner: Municipal

Address: 2 River Street

Inspection Date: 7/2/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $645,978

Upgrade Factor: 1.2

Upgrade Cost: $775,174

Structure Owner Name: Kingston

Earliest Structure Record: Unknown

Waterway: Jones River

TideRage: 10.56

Length: 186 Feet

Top Elevation: Feet

FIRM Map Zone: A2

FIRM Map Elevation: 10 Feet NAVD 88

Shape Length: 186

Primary Type: Bulkhead/ Seawall

Primary Material: Stone

Primary Height: 10 to 15 Feet

Height Above Beach: 0

Secondary Type:

Secondary Material:

Secondary Height:

Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Downgrade Condition Poor = D & incease priority

Condition Rating	D Poor	*Priority Rating*	II Low Priority
Level of Action	Major	*Action*	Future Project Consideration
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Structure has been downgraded to Condition D (Poor) with failing fender piles, deck cracks, settlement & voids. Town of Kingston plans to replace wharf structure. Priority II= protects town facilities.
2006 / 2007 Assesment: Stone block seawall (dryset) with concrete cap which forms filled town wharf. Fender piles around outshore end which apears to be helping retain stones. Many small voids in wall with signs of settling and fill loss inshore.

Structure Images:

037-038-000-034-100-PHO13A.JPG
037-038-000-034-100-PHO13B.JPG
037-038-000-034-100-PHO13C.JPG
037-038-000-034-100-PHO13D.JPG
037-038-000-034-100-PHO13E.JPG
037-038-000-034-100-PHO13F.JPG
037-038-000-034-100-PHO13G.JPG

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Kingston

Structure Assessment Form

Structure ID: 037-038-000-034-200

Property Owner: Municipal

Address: 2 River Street

Inspection Date: 7/2/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $261,079

Upgrade Factor: 1.2

Upgrade Cost: $211,460

Structure Owner Name: Kingston

Earliest Structure Record: Unknown

Waterway: Jones River

TideRage: 10.56

Length: 151 Feet

Top Elevation: Feet

FIRM Map Zone: A2

FIRM Map Elevation: 10 Feet NAVD 88

Shape Length: 151

Primary Type: Revetment

Primary Material: Concrete

Primary Height: 5 to 10 Feet

Height Above Beach: 0

Secondary Type: Bulkhead/ Seawall

Secondary Material: Stone

Secondary Height: Under 5 Feet

Secondary Condition: C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Downgrade Condition Poor = D, add stone seawall & increase priority

Condition Rating	D Poor	*Priority Rating*	II Low Priority
Level of Action	Major	*Action*	Future Project Consideration
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Ramp structure has been downgraded to Condition D (Poor) with many cracks, spalls and settlement. Stone seawall along parking lot is in Fair Condition = C. No beach on river. Priority II = protects parking lot.
2006 / 2007 Assesment: Bituminous concrete boat ramp beside town wharf. Moderate deterioration of pavement.

Structure Images:

037-038-000-034-200-PHO13A.JPG
037-038-000-034-200-PHO13B.JPG
037-038-000-034-200-PHO13C.JPG
037-038-000-034-200-PHO13D.JPG

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Kingston

Structure Assessment Form

Structure ID: 037-049-000-108-100

Property Owner: Municipal

Address: 7-33 Rocky Nook Ave.

Inspection Date: 7/2/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $340,704

Upgrade Factor: 2

Upgrade Cost: $4,816,500

Structure Owner Name: Kingston

Earliest Structure Record: 1959

Waterway: Kingston Bay

TideRage: 10.56

Length: 1014 Feet

Top Elevation: Feet

FIRM Map Zone: V2

FIRM Map Elevation: 15 Feet NAVD 88

Shape Length: 1014

Primary Type: Revetment

Primary Material: Stone

Primary Height: 10 to 15 Feet

Height Above Beach: 10

Secondary Type: Coastal Beach

Secondary Material: Sand

Secondary Height: 5 to 10 Feet

Secondary Condition: B

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	B Good	*Priority Rating*	III Moderate Priority
Level of Action	Minor	*Action*	Consider for Active Project Improvement Listing
Description	See Exhibits I-A for Condition rating description.		

Structure Assessment:

2013 Assesment: No change in Condition of structure, with some minor settlement & deformation & erosion at top revetment & rip-rap. Priority III = Okay
2006 / 2007 Assesment: Erosion rip rap slope (1 vertical to 2 horizontal) with 1 to 2 ton stones. Toed into sandy beach outshore (just below mean low water). Erosion evident above top of wall (stones dumped along top). Road inshore of slope.

Structure Images:

037-049-000-108-100-PHO13A.JPG
037-049-000-108-100-PHO13B.JPG
037-049-000-108-100-PHO13C.JPG
037-049-000-108-100-PHO13D.JPG
037-049-000-108-100-PHO13E.JPG
037-049-000-108-100-PHO13F.JPG
037-049-000-108-100-PHO13G.JPG

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Kingston

Structure ID: 037-059-000-030-100

Structure Assessment Form

Property Owner: Municipal

Address: Sunset Rd. & 20 Wharf Lane

Inspection Date: 7/2/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $179,197

Upgrade Factor: 2

Upgrade Cost: $296,418

Structure Owner Name: Kingston

Earliest Structure Record: Unknown

Waterway: Kingston Bay

TideRage: 10.56

Length: 127 Feet

Top Elevation: Feet

FIRM Map Zone: V4

FIRM Map Elevation: 13 Feet NAVD 88

Shape Length: 127

Primary Type: Revetment

Primary Material: Stone

Primary Height: 5 to 10 Feet

Height Above Beach: 4

Secondary Type: Coastal Beach

Secondary Material: Sand/ Stone

Secondary Height: Under 5 Feet

Secondary Condition: D

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Downgrade Condition Poor = D, revise length = 215' (both sides)

Condition Rating	D Poor	*Priority Rating*	III Moderate Priority
Level of Action	Major	*Action*	Consider for Active Project Improvement Listing
Description	See Exhibits I-A for Condition rating description.		

Structure Assessment:

2013 Assesment: Structure has been downgraded to Condition D (Poor) with displaced & deforming rip-rap with top of bank erosion & pavement damage. Priority III = Okay
2006 / 2007 Assesment: Placed rip rap slope (1 vertical to 2 horizontal) toed into sandy beach. 500 to 2000 lb. stone with chinking done well.

Structure Images:

037-059-000-030-100-PHO13A.JPG
037-059-000-030-100-PHO13B.JPG
037-059-000-030-100-PHO13C.JPG
037-059-000-030-100-PHO13D.JPG

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Kingston

Structure ID: 037-059-000-030-200

Structure Assessment Form

Property Owner: Unknown

Address: 96 Wharf Ln.

Inspection Date: 4/22/2015

Presumed Structure Owner: Unknown

Estimated Reconstruction/Repair Cost: $5,966

Upgrade Factor: 0

Upgrade Cost: $0

Structure Owner Name:

Earliest Structure Record: Unknown

Waterway: Kingston Bay

TideRage: 10.56

Length: 157 Feet

Top Elevation: Feet

FIRM Map Zone: VE

FIRM Map Elevation: 13 Feet NAVD 88

Shape Length: 157

Primary Type: Revetment

Primary Material: Stone

Primary Height: Under 5 Feet

Height Above Beach: 4

Secondary Type:

Secondary Material:

Secondary Height:

Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	B – Good	*Priority Rating*	II – Low Priority
Level of Action	Minor	*Action*	Future Project Consideration
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Revetment in Good to Fair condition with minor erosion at top of slope. Carry down boat access built into revetment.
2006 / 2007 Assesment:

Structure Images:

037-059-000-030-200-PHO13A.jpg

037-059-000-030-200-PHO13B.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Kingston

Structure ID: 037-059-000-051-100

Structure Assessment Form

Property Owner: Municipal

Address: Gray's Beach Park at 10 Braintree Ave.

Inspection Date: 7/2/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $81,003

Upgrade Factor: 2

Upgrade Cost: $225,924

Structure Owner Name: Kingston

Earliest Structure Record: Unknown

Waterway: Kingston Bay

TideRage: 10.56

Length: 201 Feet

Top Elevation: Feet

FIRM Map Zone: V4

FIRM Map Elevation: 13 Feet NAVD 88

Shape Length: 201

Primary Type: Bulkhead/ Seawall

Primary Material: Stone

Primary Height: Under 5 Feet

Height Above Beach: 4

Secondary Type: Coastal Beach

Secondary Material: Sand

Secondary Height: Under 5 Feet

Secondary Condition: C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Increase Priority

Condition Rating	C Fair	*Priority Rating*	II Low Priority
Level of Action	Moderate	*Action*	Future Project Consideration
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change in Condition of structure, with minor top of bank scour & limited stone displacement.
Priority II = protects snack bar & grinder pump station behind building, as well as stormwater infrastructure.
2006 / 2007 Assesment: Stone block seawall (dry set) with beach outshore. Snack bar building and park inshore. Many small voids and much erosion inshore.

Structure Images:

037-059-000-051-100-PHO13A.JPG
037-059-000-051-100-PHO13B.JPG
037-059-000-051-100-PHO13C.JPG
037-059-000-051-100-PHO13D.JPG
037-059-000-051-100-PHO13E.JPG

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Kingston

Structure ID: 037-059-000-051-200

Structure Assessment Form

Property Owner: Municipal

Address: Gray's Beach Park at 10 Braintree Ave.

Inspection Date: 7/2/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $70,928

Upgrade Factor: 2

Upgrade Cost: $197,824

Structure Owner Name: Kingston

Earliest Structure Record: Unknown

Waterway: Kingston Bay

TideRage: 10.56

Length: 176 Feet

Top Elevation: Feet

FIRM Map Zone: V4

FIRM Map Elevation: 13 Feet NAVD 88

Shape Length: 176

Primary Type: Bulkhead/ Seawall

Primary Material: Stone

Primary Height: Under 5 Feet

Height Above Beach: 3

Secondary Type: Coastal Beach

Secondary Material: Sand/ Stone

Secondary Height: Under 5 Feet

Secondary Condition: C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Revise Length 120'

Condition Rating	C	*Priority Rating*	I
Level of Action	Fair	*Action*	None
Description	Moderate	*Description*	Long Term Planning Considerations
	See Exhibits I-A for Condition rating description.		See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change in Condition of structure, with minor scour & displacement of top rip-rap. Priority I = Okay
2006 / 2007 Assesment: One 2 foot high course of stone blocks with 4 inch to 8 inch rocks dumped inshore of it. Erosion of material inshore.

Structure Images:

037-059-000-051-200-PHO13A.JPG
037-059-000-051-200-PHO13B.JPG
037-059-000-051-200-PHO13C.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Kingston

Structure ID: 037-059-000-051-300

Structure Assessment Form

Property Owner: Municipal

Address: Gray's Beach Park at 10 Braintree Ave

Inspection Date: 7/2/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $38,688

Upgrade Factor: 2

Upgrade Cost: $107,904

Structure Owner Name: Kingston

Earliest Structure Record: Unknown

Waterway: Kingston Bay

TideRage: 10.56

Length: 96 Feet

Top Elevation: Feet

FIRM Map Zone: V4

FIRM Map Elevation: 13 Feet NAVD 88

Shape Length: 96

Primary Type: Bulkhead/ Seawall

Primary Material: Stone

Primary Height: Under 5 Feet

Height Above Beach: 4

Secondary Type: Coastal Beach

Secondary Material: Sand/ Stone

Secondary Height: Under 5 Feet

Secondary Condition: C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	III Moderate Priority
Level of Action	Moderate	*Action*	Consider for Active Project Improvement Listing
Description	See Exhibits I-A for Condition rating description.		

Structure Assessment:

2013 Assesment: No change in Condition of structure, with minor scour (top of bank) at corner. Priority III = Okay
2006 / 2007 Assesment: Placed rip rap slope along edge of boat ramp and residential propoerty. 500 to 1500 lb. stone. Erosion at top of slope.

Structure Images:

037-059-000-051-300-PHO13A.JPG
037-059-000-051-300-PHO13B.JPG
037-059-000-051-300-PHO13C.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Kingston

Structure ID: 037-059-000-051-400

Structure Assessment Form

Property Owner: Municipal

Address: Gray's Beach Park at 10 Braintree Ave.

Inspection Date: 7/2/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $50,138

Upgrade Factor: 1.2

Upgrade Cost: $60,166

Structure Owner Name: Kingston

Earliest Structure Record: Unknown

Waterway: Kingston Bay

TideRage: 10.56

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
86 Feet	Feet	V4	13 Feet NAVD 88	86

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Groin/ Jettv	Stone	Under 5 Feet	3

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Revised Length = 160'

Condition Rating	D Poor	*Priority Rating*	I None
Level of Action	Major	*Action*	Long Term Planning Considerations
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change in Condition of structure, with displaced stones. Priority I = Okay
2006 / 2007 Assesment: 500 to 2000 lb. stone placed along edge of town beach. Several gaps in structure and dislodged stones.

Structure Images:

037-059-000-051-400-PHO13A.JPG
037-059-000-051-400-PHO13B.JPG
037-059-000-051-400-PHO13C.JPG
037-059-000-051-400-PHO13D.JPG

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Kingston

Structure ID: 037-059-000-051-500

Structure Assessment Form

Property Owner: Municipal

Address: Gray's Park Beach at 10 Braintree Ave

Inspection Date: 7/2/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $82,733

Upgrade Factor: 1.2

Upgrade Cost: $37,079

Structure Owner Name: Kingston

Earliest Structure Record: Unknown

Waterway: Kingston Bay

TideRage: 10.56

Length: 53 Feet

Top Elevation: Feet

FIRM Map Zone: V4

FIRM Map Elevation: 13 Feet NAVD 88

Shape Length: 53

Primary Type: Groin/ Jetty

Primary Material: Stone

Primary Height: Under 5 Feet

Height Above Beach: 2

Secondary Type: Coastal Beach

Secondary Material: Sand

Secondary Height: 5 to 10 Feet

Secondary Condition: C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Revise Length 120', Downgrade Condition Poor = D, Add Beach = 400'

Condition Rating	D	*Priority Rating*	I
Level of Action	Poor	*Action*	None
Description	Major	*Description*	Long Term Planning Considerations
	See Exhibits I-A for Condition rating description.		See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Structure has been downgraded to Condition D (Poor) due to displaced stones. Beach Condition = Fair = C. Priority I = Okay
2006 / 2007 Assesment: Dumped rip rap (100 to 1000 lb. stone) along edge of public beach. Movement and jumbling of stones.

Structure Images:

- 037-059-000-051-500-PHO13A.JPG
- 037-059-000-051-500-PHO13B.JPG
- 037-059-000-051-500-PHO13C.JPG
- 037-059-000-051-500-PHO13D.JPG
- 037-059-000-051-500-PHO13E.JPG
- 037-059-000-051-500-PHO13F.JPG

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Kingston

Structure ID: 037-059-000-051-600

Structure Assessment Form

Property Owner: Municipal

Address: Gray's Beach Park at 10 Braintree Ave

Inspection Date: 7/2/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $89,298

Upgrade Factor: 2

Upgrade Cost: $49,500

Structure Owner Name: Kingston

Earliest Structure Record: Unknown

Waterway: Kingston Bay

TideRage: 10.56

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
66 Feet	Feet	V4	13 Feet NAVD 88	66

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Revetment	Concrete	Under 5 Feet	1

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Coastal Beach	Sand	5 to 10 Feet	D

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Downgrade Condition Poor = D & Increase Priority II

Condition Rating	D Poor	*Priority Rating*	II Low Priority
Level of Action	Major	*Action*	Future Project Consideration
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Structure has been downgraded to Condition D (Poor) with displacment of concrete curb & scoured ramp surface. Priority II = protects public boat ramp & adjacent roadway.
2006 / 2007 Assesment: Bituminudious concrete emergency boat ramp with precast concrete curb around outshore end. Outshore end just above mean high water.

Structure Images:

037-059-000-051-600-PHO13A.JPG

037-059-000-051-600-PHO13B.JPG

037-059-000-051-600-PHO13C.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering

Section IV - Kingston

Part C

Structure Photographs

TOWN: KINGSTON
SOURCE: BCE - FIELD PHOTOGRAPHS
LOCATION: Bourne Consulting Engineering
2015 REPORT UPDATE

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description
037-038-000-034-100	037-038-000-034-100-PHO13A.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-038-000-034-100	037-038-000-034-100-PHO13B.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-038-000-034-100	037-038-000-034-100-PHO13C.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-038-000-034-100	037-038-000-034-100-PHO13D.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-038-000-034-100	037-038-000-034-100-PHO13E.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-038-000-034-100	037-038-000-034-100-PHO13F.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-038-000-034-100	037-038-000-034-100-PHO13G.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-038-000-034-200	037-038-000-034-200-PHO13A.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-038-000-034-200	037-038-000-034-200-PHO13B.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-038-000-034-200	037-038-000-034-200-PHO13C.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-038-000-034-200	037-038-000-034-200-PHO13D.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-049-000-108-100	037-049-000-108-100-PHO13A.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-049-000-108-100	037-049-000-108-100-PHO13B.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-049-000-108-100	037-049-000-108-100-PHO13C.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-049-000-108-100	037-049-000-108-100-PHO13D.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-049-000-108-100	037-049-000-108-100-PHO13E.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-049-000-108-100	037-049-000-108-100-PHO13F.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-049-000-108-100	037-049-000-108-100-PHO13G.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-059-000-030-100	037-059-000-030-100-PHO13A.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-059-000-030-100	037-059-000-030-100-PHO13B.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-059-000-030-100	037-059-000-030-100-PHO13C.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-059-000-030-100	037-059-000-030-100-PHO13D.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey

TOWN: KINGSTON
SOURCE: BCE - FIELD PHOTOGRAPHS
LOCATION: Bourne Consulting Engineering
2015 REPORT UPDATE

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description
037-059-000-030-200	037-059-000-030-200-PHO13A.jpg		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-059-000-030-200	037-059-000-030-200-PHO13B.jpg		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-059-000-051-100	037-059-000-051-100-PHO13A.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-059-000-051-100	037-059-000-051-100-PHO13B.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-059-000-051-100	037-059-000-051-100-PHO13C.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-059-000-051-100	037-059-000-051-100-PHO13D.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-059-000-051-100	037-059-000-051-100-PHO13E.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-059-000-051-200	037-059-000-051-200-PHO13A.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-059-000-051-200	037-059-000-051-200-PHO13B.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-059-000-051-200	037-059-000-051-200-PHO13C.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-059-000-051-300	037-059-000-051-300-PHO13A.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-059-000-051-300	037-059-000-051-300-PHO13B.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-059-000-051-300	037-059-000-051-300-PHO13C.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-059-000-051-400	037-059-000-051-400-PHO13A.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-059-000-051-400	037-059-000-051-400-PHO13B.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-059-000-051-400	037-059-000-051-400-PHO13C.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-059-000-051-400	037-059-000-051-400-PHO13D.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-059-000-051-500	037-059-000-051-500-PHO13A.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-059-000-051-500	037-059-000-051-500-PHO13B.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-059-000-051-500	037-059-000-051-500-PHO13C.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-059-000-051-500	037-059-000-051-500-PHO13D.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-059-000-051-500	037-059-000-051-500-PHO13E.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey

TOWN: KINGSTON
SOURCE: BCE - FIELD PHOTOGRAPHS
LOCATION: Bourne Consulting Engineering
2015 REPORT UPDATE

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description
037-059-000-051-500	037-059-000-051-500-PHO13F.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-059-000-051-600	037-059-000-051-600-PHO13A.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-059-000-051-600	037-059-000-051-600-PHO13B.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey
037-059-000-051-600	037-059-000-051-600-PHO13C.JPG		CLE Engineering Inc.	Kingston	2013	DIGITAL IMAGE	1	Structure Location	Structure Condtion Photo at Time of Survey

Massachusetts Coastal Inventory and Assessment

037-038-000-034-100-PHO13A.JPG

037-038-000-034-100-PHO13B.JPG

037-038-000-034-100-PHO13C.JPG

037-038-000-034-100-PHO13D.JPG

037-038-000-034-100-PHO13E.JPG

037-038-000-034-100-PHO13F.JPG

037-038-000-034-100-PHO13G.JPG

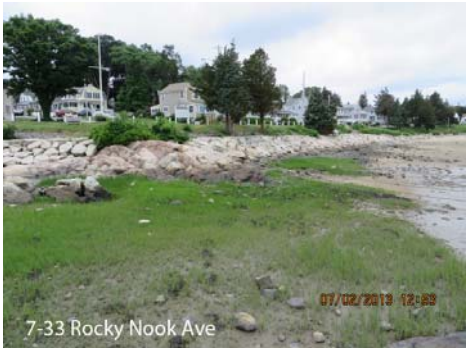
037-038-000-034-200-PHO13A.JPG

037-038-000-034-200-PHO13B.JPG


037-038-000-034-200-PHO13C.JPG

037-038-000-034-200-PHO13D.JPG

037-049-000-108-100-PHO13A.JPG



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037-049-000-108-100-PHO13E.JPG

037-049-000-108-100-PHO13F.JPG

037-049-000-108-100-PHO13G.JPG

Massachusetts Coastal Inventory and Assessment

037-059-000-030-100-PHO13A.JPG

037-059-000-030-100-PHO13B.JPG

037-059-000-030-100-PHO13C.JPG

037-059-000-030-100-PHO13D.JPG


037-059-000-030-200-PHO13A.JPG


037-059-000-030-200-PHO13B.JPG


037-059-000-030-200-PHO13C.JPG

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037-059-000-051-100-PHO13C.JPG

037-059-000-051-100-PHO13D.JPG

037-059-000-051-100-PHO13E.JPG

037-059-000-051-200-PHO13A.JPG

037-059-000-051-200-PHO13B.JPG

037-059-000-051-200-PHO13C.JPG

037-059-000-051-300-PHO13A.JPG

037-059-000-051-300-PHO13B.JPG

037-059-000-051-300-PHO13C.JPG

037-059-000-051-400-PHO13A.JPG

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037-059-000-051-400-PHO13C.JPG

037-059-000-051-400-PHO13D.JPG

037-059-000-051-500-PHO13A.JPG

037-059-000-051-500-PHO13B.JPG

037-059-000-051-500-PHO13C.JPG

037-059-000-051-600-PHO13A.JPG

037-059-000-051-600-PHO13B.JPG

037-059-000-051-600-PHO13C.JPG

Section IV - Kingston

Part D

Structure Documents

TOWN DOCUMENT LIST

MA DCR - DOCUMENT LIST

MA DEP – Chp 91 DOCUMENT LIST

USACE – PERMIT DOCUMENT LIST

TOWN: KINGSTON
SOURCE: Town of
LOCATION: Town Records
2013 REPORT UPDATE

No Town Documents for the Town of KINGSTON

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description

TOWN: KINGSTON
SOURCE: MA-DCR
LOCATION: MA-DCR BOSTON and HINGHAM, MA
2015 REPORT UPDATE

No MA-DCR Documents for the Town of KINGSTON

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description

TOWN: KINGSTON
SOURCE: DEP
LOCATION: BOSTON, MA
2015 REPORT UPDATE

No DEP Documents for the Town of KINGSTON

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description

TOWN: KINGSTON
SOURCE: US ACOE
LOCATION: CONCORD, MA
2015 REPORT UPDATE

No US ACOE Documents for the Town of KINGSTON

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description

Section V

Plymouth

Section V

Part A - Community Findings – Town of Plymouth

A. COMMUNITY DESCRIPTION

The Town of Plymouth consists of a land area of 96.5 square miles out of a total area of 134 square miles and had a population of 56,468 in the 2010 census. The Town is located on the South Shore of Massachusetts and its location can be seen on this report's cover. The estimated length of shoreline that is directly exposed to open ocean waves is 19.0 miles with the remaining shoreline semi-protected by offshore structures or landforms. The Town is protected from major coastal storms by both natural and man-made shoreline structures that require maintenance to insure the long term protection of its coastline. The man-made and publicly owned structures that protect the Town were investigated for their ability to provide adequate protection from major coastal storms. Structures have been identified as publicly owned, including coastal dunes and beaches, based on evidence of investment of public funds made to create/enhance/maintain these structures. The assessment did not include floating or pile supported structures as they are assumed not to provide any significant coastal protection from major storm events.

B. STRUCTURE INVENTORY

Within the Town of Plymouth, there were 45 structures which had public or unknown ownership which provide significant coastal protection. The location of the structures can be seen in Sheets 1 through Sheet 12 in Section V-B of this report. The structures were categorized by their type and by their structural condition based on a preliminary field assessment. The distribution of structures by type and condition can be seen in the following table:

STRUCTURE TYPE AND QUANTITY - Town of Plymouth

Primary Structure (1)	Total Structures	Structure Condition Rating A	B	C	D	F	Total Length
Bulkhead / Seawall	4			3	1		3285
Revetment	31		13	16	1	1	24532
Breakwater	1			1			2886
Groin / Jetty	9		1	2	3	3	1035
Coastal Dune							
Coastal Beach							
	45		14	22	5	4	31738

Within the above table, the total length of each type of structure is also provided. The structures are listed by the type which is providing the primary coastal protection. Many sites have multiple structure types at the same location (i.e. revetment in front of seawall). These secondary structures, although not identified within these tables, are included in the development of repair/rehabilitation costs.

The development of repair costs has been included by structure type and by condition. In the Town of Plymouth's case there are a total of 45 structures which would require approximately $ 31 million to bring all the coastal structures to "A" Rating. Most critical will be the structures in the "D" and "F" classifications as those are assumed to undergo some level of damage or failure during the next major coastal storm event. To reconstruct these structures, identified in the preliminary survey as being in poor condition, an estimated $ 9.5 million would be required to upgrade the Town's coastal protection.

STRUCTURE REPAIR / RECONSTRUCTION COST - Town of Plymouth

Primary Structure (1)	Total Structures	Structure Condition Rating A	B	C	D	F	Total Cost
Bulkhead / Seawall	4			$3,221,167	$423,878		$ 3,645,045
Revetment	31		$614,517	$11,007,295	$8,401,233	$190,806	$ 20,213,851
Breakwater	1			$6,132,750			$ 6,132,750
Groin / Jetty	9		$8,294	$131,872	$183,645	$233,046	$ 556,857
Coastal Dune							$ -
Coastal Beach							$ -
	45	$ -	$ 622,811	$ 20,493,084	$ 9,008,756	$ 423,852	$ 30,548,503

Based on the limited research within the scope of this project research, the presumed ownership of the structures was established on an initial basis and would be subject to more intense review in future tasks. Structures identified as being owned privately were excluded from further consideration. Although ownership of the land on which the structure was located was a factor, the structure ownership was treated as a separate issue from land ownership. For the Town of Plymouth, the breakdown of structures by assumed ownership is as follows:

STRUCTURE OWNERSHIP / REPAIR COST - Town of Plymouth

Primary Structure (1)	Total Structures	Structure Condition Rating A	B	C	D	F	Total Cost
Town Owned	38		$499,376	$14,262,334	$607,523	$390,468	$ 15,759,701
Commonwealth of Massachusetts	3		$123,435				$ 123,435
Federal Government Owned	3			$6,230,750	$8,401,233		$ 14,631,983
Unknown Ownership	1					$ 33,384	$ 33,384
	45	$ -	$ 622,811	$ 20,493,084	$ 9,008,756	$ 423,852	$ 30,548,503

The identification of presumed ownership was not based on the investigation of legal documents but relied on property ownership and from construction and regulatory documents that were found. A more detailed investigation of legal documents and agreements would be required where structure ownership is disputed. A more detailed identification of structure type, length, condition and location can be found in Section II-B which contains Structure Assessment Reports for each individual structure found.

C. STRUCTURE IMPROVEMENT (UPGRADE) COSTS

As part of the investigation and analysis, an estimate of what the cost for improvement of structures to be fully design for the wave conditions they now experience. This generally much greater than the original structure design and can be the result of a number of factors including but not limited to: more recent FEMA analysis as to the current extreme wave conditions; loss of beach area allowing access of larger waves; and sea level rise. The factors are broad estimates as to the likely cost for such improvements and do not account for regulatory construction limitations and public impacts that are likely to have a major influence on what level of improvements can actually be implemented. The costs should be considered an "order-of-magnitude" value for general consideration until a more accurate analysis with a specific method of structure design can be performed.

For the community the comparison of the current year construction cost of existing coastal structures as compared to the construction cost if all the structures were improved to meet current design levels can be seen in the following table:

STRUCTURE REPLACEMENT COST - Town of Plymouth

Primary Structure (1)	Total Structures	Replacement Costs Existing Structures	Upgraded Structures
Bulkhead / Seawall	4	$3,645,045	$14,291,498
Revetment	31	$20,213,851	$88,448,942
Breakwater	1	$6,132,750	$24,531,000
Groin / Jetty	9	$556,857	$1,243,527
Coastal Dune			
Coastal Beach			
	45	$30,548,503	$128,514,967

D. SUMMARY

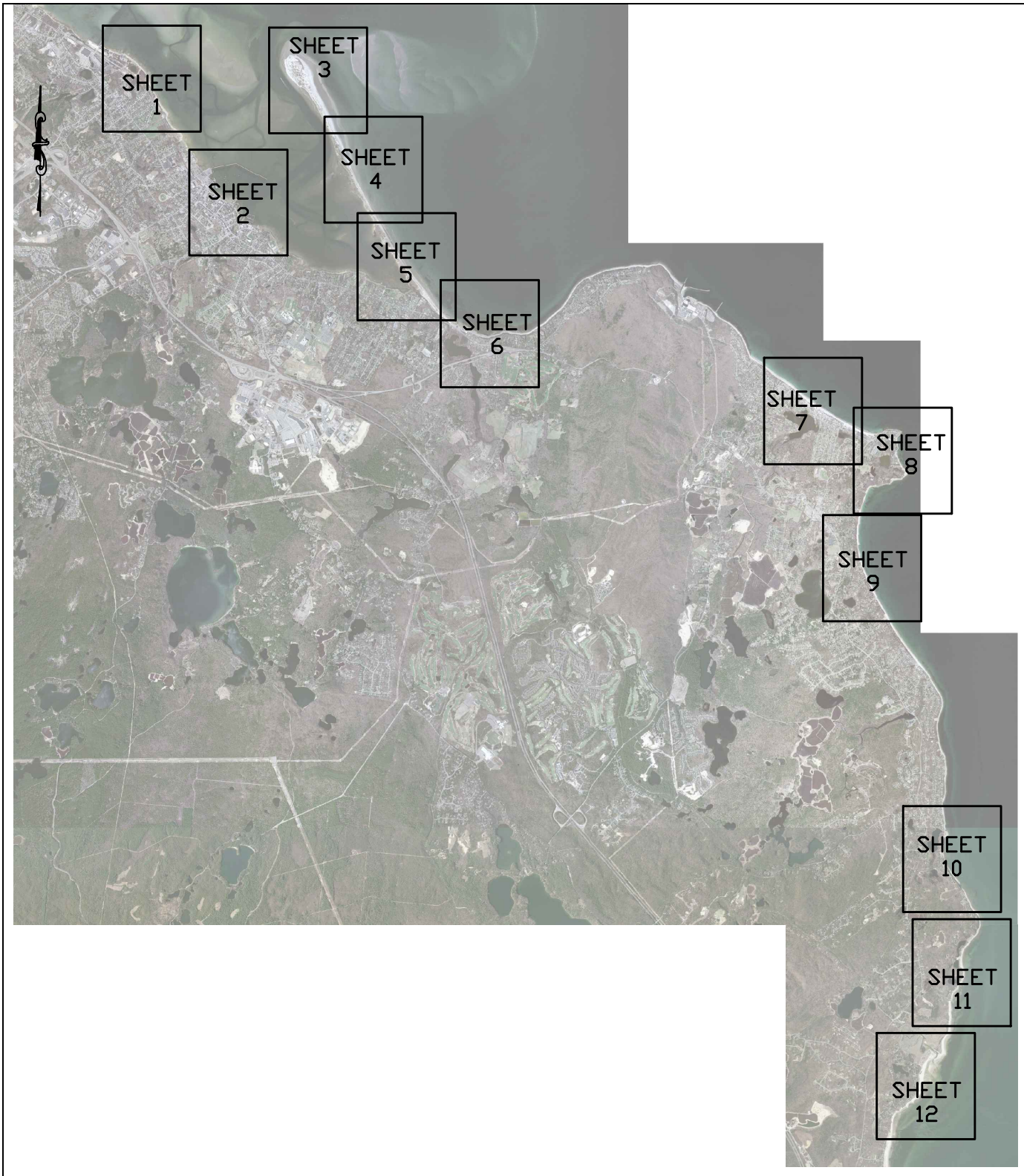
The enclosed reports and associated documents reflects the Town of Plymouth's coastal structure information that will eventually be input into a state-wide GIS database and will be accessible through MORIS as part of MassGIS. This data, when compiled state-wide, will be critical in the development of both short term and long term planning for maintaining and improving Massachusetts coastal protection.

This database will also provide relatively quick access to identify available documentation for these structures as well as the ability to be updated as coastal structure improvements are made.

Section V - Plymouth

Part B

Structure Assessment Reports



COASTAL STRUCTURE LOCATION PLAN

TOWN OF PLYMOUTH
COASTAL INFRASTRUCTURE INVENTORY
ASSESSMENT REPORT UPDATE
MARCH 2015

SCALE: N.T.S.

BCE Bourne Consulting Engineering, PC
3 Bent Street
Franklin, MA 02038
TEL. (508) 533-0666 FAX. (508) 533-0600

ORIENTATION SHEET

COASTAL STRUCTURE LOCATION PLAN

TOWN OF PLYMOUTH
COASTAL INFRASTRUCTURE INVENTORY
ASSESSMENT REPORT UPDATE
MARCH 2015

0 500
SCALE: 1"=500'-0"

Bourne Consulting Engineering, PC
3 Bent Street
Franklin, MA 02038
TEL. (508) 533-0666 FAX. (508) 533-0600

SHEET 1

COASTAL STRUCTURE LOCATION PLAN

TOWN OF PLYMOUTH
COASTAL INFRASTRUCTURE INVENTORY
ASSESSMENT REPORT UPDATE
MARCH 2015

0 500
SCALE: 1"=500'-0"

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3 Bent Street
Franklin, MA 02038
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COASTAL STRUCTURE LOCATION PLAN

TOWN OF PLYMOUTH
COASTAL INFRASTRUCTURE INVENTORY
ASSESSMENT REPORT UPDATE
MARCH 2015

0 500
SCALE: 1"=500'-0"

BCE Bourne Consulting Engineering, PC
3 Bent Street
Franklin, MA 02038
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SHEET 3

COASTAL STRUCTURE LOCATION PLAN

TOWN OF PLYMOUTH
COASTAL INFRASTRUCTURE INVENTORY
ASSESSMENT REPORT UPDATE
MARCH 2015

0 500
SCALE: 1"=500'-0"

BCE Bourne Consulting Engineering, PC
3 Bent Street
Franklin, MA 02038
TEL. (508) 533-0666 FAX. (508) 533-0600

SHEET 4

COASTAL STRUCTURE LOCATION PLAN

TOWN OF PLYMOUTH
COASTAL INFRASTRUCTURE INVENTORY
ASSESSMENT REPORT UPDATE
MARCH 2015

0 500
SCALE: 1"=500'-0"

Bourne Consulting Engineering, PC
3 Bent Street
Franklin, MA 02038
TEL. (508) 533-0666 FAX. (508) 533-0600

SHEET 5

COASTAL STRUCTURE LOCATION PLAN

TOWN OF PLYMOUTH
COASTAL INFRASTRUCTURE INVENTORY
ASSESSMENT REPORT UPDATE
MARCH 2015

0 500
SCALE: 1"=500'-0"

Bourne Consulting Engineering, PC
3 Bent Street
Franklin, MA 02038
TEL. (508) 533-0666 FAX. (508) 533-0600

SHEET 6

COASTAL STRUCTURE LOCATION PLAN

TOWN OF PLYMOUTH
COASTAL INFRASTRUCTURE INVENTORY
ASSESSMENT REPORT UPDATE
MARCH 2015

0 500
SCALE: 1"=500'-0"

BCE Bourne Consulting Engineering, PC
3 Bent Street
Franklin, MA 02038
TEL. (508) 533-0666 FAX. (508) 533-0600

SHEET 7

COASTAL STRUCTURE LOCATION PLAN

TOWN OF PLYMOUTH
COASTAL INFRASTRUCTURE INVENTORY
ASSESSMENT REPORT UPDATE
MARCH 2015

0 500
SCALE: 1"=500'-0"

Bourne Consulting Engineering, PC
3 Bent Street
Franklin, MA 02038
TEL. (508) 533-0666 FAX. (508) 533-0600

SHEET 8

COASTAL STRUCTURE LOCATION PLAN

TOWN OF PLYMOUTH
COASTAL INFRASTRUCTURE INVENTORY
ASSESSMENT REPORT UPDATE
MARCH 2015

0 500
SCALE: 1"=500'-0"

Bourne Consulting Engineering, PC
3 Bent Street
Franklin, MA 02038
TEL. (508) 533-0666 FAX. (508) 533-0600

SHEET 9

COASTAL STRUCTURE LOCATION PLAN

TOWN OF PLYMOUTH
COASTAL INFRASTRUCTURE INVENTORY
ASSESSMENT REPORT UPDATE
MARCH 2015

0 500
SCALE: 1"=500'-0"

BCE Bourne Consulting Engineering, PC
3 Bent Street
Franklin, MA 02038
TEL. (508) 533-0666 FAX. (508) 533-0600

COASTAL STRUCTURE LOCATION PLAN

TOWN OF PLYMOUTH
COASTAL INFRASTRUCTURE INVENTORY
ASSESSMENT REPORT UPDATE
MARCH 2015

0 500
SCALE: 1"=500'-0"

BCE Bourne Consulting Engineering, PC
3 Bent Street
Franklin, MA 02038
TEL. (508) 533-0666 FAX. (508) 533-0600

SHEET 11

COASTAL STRUCTURE LOCATION PLAN

TOWN OF PLYMOUTH
COASTAL INFRASTRUCTURE INVENTORY
ASSESSMENT REPORT UPDATE
MARCH 2015

0 500
SCALE: 1"=500'-0"

Bourne Consulting Engineering, PC
3 Bent Street
Franklin, MA 02038
TEL. (508) 533-0666 FAX. (508) 533-0600

SHEET 12

File:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-001-000-010-100

Structure Assessment Form

Property Owner: Municipal

Address: High Cliff

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $187,600

Upgrade Factor: 2

Upgrade Cost: $408,450

Structure Owner Name: Plymouth

Earliest Structure Record: Unknown

Waterway: Plymouth Bay

TideRage: 10.53

Length: 175 Feet

Top Elevation: Feet

FIRM Map Zone: V4

FIRM Map Elevation: 15 Feet NAVD 88

Shape Length: 175

Primary Type: Revetment

Primary Material: Stone

Primary Height: 5 to 10 Feet

Height Above Beach: 7

Secondary Type: Coastal Beach

Secondary Material: Sand/ Stone

Secondary Height: 5 to 10 Feet

Secondary Condition: C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	III Moderate Priority
Level of Action	Moderate	*Action*	Consider for Active Project Improvement Listing
Description	See Exhibits I-A for Condition rating description.		

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: This structure is a stone revetment fronting a concrete seawall. The stone is weathered and becoming unraveled. The wall is not visible for evaulation.

Structure Images:

057-001-000-010-100-PHO13A.jpg

057-001-000-010-100-PHO13B.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-006-062-019-100

Structure Assessment Form

Property Owner: Municipal

Address: High Cliff

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $113,950

Upgrade Factor: 2

Upgrade Cost: $1,237,020

Structure Owner Name: Plymouth

Earliest Structure Record: Unknown

Waterway: Plymouth Bay

TideRage: 10.53

Length: 530 Feet

Top Elevation: Feet

FIRM Map Zone: V4

FIRM Map Elevation: 15 Feet NAVD 88

Shape Length: 530

Primary Type: Revetment

Primary Material: Stone

Primary Height: 5 to 10 Feet

Height Above Beach: 7

Secondary Type: Coastal Beach

Secondary Material: Sand/ Stone

Secondary Height: 5 to 10 Feet

Secondary Condition: B

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	B	*Priority Rating*	III
Level of Action	Good	*Action*	Moderate Priority
Description	Minor		Consider for Active Project Improvement Listing
	See Exhibits I-A for Condition rating description.		

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: This structure is a stone revetment. The side slopes and crest are in excellent condition. There is minor and isolated cracking and displacement of some armor stones.

Structure Images:

057-006-062-019-100-PHO13A.jpg

057-006-062-019-100-PHO13B.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-007-000-042-100

Structure Assessment Form

Property Owner: Municipal

Address: Atlantic Ave.

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $320,221

Upgrade Factor: 2

Upgrade Cost: $354,750

Structure Owner Name: Plymouth

Earliest Structure Record: 1957

Waterway: Plymouth Bay

TideRage: 10.53

Length: 473 Feet

Top Elevation: Feet

FIRM Map Zone: V4

FIRM Map Elevation: 15 Feet NAVD 88

Shape Length: 473

Primary Type: Revetment

Primary Material: Stone

Primary Height: Under 5 Feet

Height Above Beach: 6

Secondary Type: Coastal Beach

Secondary Material: Sand

Secondary Height: 5 to 10 Feet

Secondary Condition: C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	IV High Priority
Level of Action	Moderate	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: This structure is a stone revetment. There are shifted armor stone and slumping of the side slopes evident, conditions worsens towards the south end of the structure.

Structure Images:

057-007-000-042-100-PHO13A.jpg

057-007-000-042-100-PHO13B.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-012-000-046A-100

Structure Assessment Form

Property Owner: Municipal

Address: Caswell Lane

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $654,992

Upgrade Factor: 2

Upgrade Cost: $1,426,074

Structure Owner Name: Plymouth

Earliest Structure Record: 1974

Waterway: Plymouth Bay

TideRage: 10.53

Length: 611 Feet

Top Elevation: Feet

FIRM Map Zone: V4

FIRM Map Elevation: 14 Feet NAVD 88

Shape Length: 611

Primary Type: Revetment

Primary Material: Stone

Primary Height: 5 to 10 Feet

Height Above Beach: 10

Secondary Type: Coastal Beach

Secondary Material: Sand

Secondary Height: 5 to 10 Feet

Secondary Condition: C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	IV High Priority
Level of Action	Moderate	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Placed rip rap stone revetment that is grouted at the northern corner with very steep side slopes. The grouted area has minor cracking. The majority of the structure has moderate movement with many stones displaced with minor to moderate erosion behind.
2006 / 2007 Assesment: This structure is a stone revetment. The side slopes are very steep and also vertical in some sections. The northern corner is grouted. There are many areas of shifted and displaced armor stones. The oversteepened side slopes are a stability concern.

Structure Images:

057-012-000-046A-100-PHO13A.jpg

057-012-000-046A-100-PHO13B.jpg

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-014A-000-001A-100

Structure Assessment Form

Property Owner: Municipal

Address: Caswell Lane

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $103,540

Upgrade Factor: 2

Upgrade Cost: $250,500

Structure Owner Name: Plymouth

Earliest Structure Record: 1983

Waterway: Plymouth Bay

TideRage: 10.53

Length: 334 Feet

Top Elevation: Feet

FIRM Map Zone: V4

FIRM Map Elevation: 14 Feet NAVD 88

Shape Length: 334

Primary Type: Revetment

Primary Material: Stone

Primary Height: Under 5 Feet

Height Above Beach: 3

Secondary Type: Coastal Beach

Secondary Material: Sand

Secondary Height: Under 5 Feet

Secondary Condition: C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	II Low Priority
Level of Action	Moderate	*Action*	Future Project Consideration
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: This structure is a small stone revetment fronting a parking lot. The stone is weathered and the side slopes have slumped along most of the section.

Structure Images:

057-014A-000-001A-100-PHO13A.jpg

057-014A-000-001A-100-PHO13B.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-014A-000-007-100

Structure Assessment Form

Property Owner: Municipal

Address: Town Wharf

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $268,488

Upgrade Factor: 1.2

Upgrade Cost: $644,100

Structure Owner Name: Plymouth

Earliest Structure Record: 1959

Waterway: Plymouth Bay

TideRage: 10.53

Length: 226 Feet

Top Elevation: Feet

FIRM Map Zone: A5

FIRM Map Elevation: 12 Feet NAVD 88

Shape Length: 226

Primary Type: Revetment

Primary Material: Stone

Primary Height: 10 to 15 Feet

Height Above Beach: 12

Secondary Type:

Secondary Material:

Secondary Height:

Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	III Moderate Priority
Level of Action	Moderate	*Action*	Consider for Active Project Improvement Listing
Description	See Exhibits I-A for Condition rating description.		

Structure Assessment:

2013 Assesment: The structure is a stone revetment underneath a timber pile supported quay wall. There is no access to evaluate the structure.
2006 / 2007 Assesment: This structure is a stone revetment beneath a wooden quay wall supported by timber piles. There is no access to

Structure Images:

057-014A-000-007-100-PHO13A.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure Assessment Form

Structure ID: 057-014A-000-007-200

Property Owner: Municipal

Address: 30 Town Wharf

Inspection Date: 4/22/2015

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $114,478

Upgrade Factor: 0

Upgrade Cost: $0

Structure Owner Name: Plymouth

Earliest Structure Record: Unknown

Waterway: Plymouth Bay

TideRage: 10.53

Length: 481 Feet

Top Elevation: Feet

FIRM Map Zone: V

FIRM Map Elevation: 12 Feet NAVD 88

Shape Length: 481

Primary Type: Revetment

Primary Material: Stone

Primary Height: 10 to 15 Feet

Height Above Beach: 12

Secondary Type:

Secondary Material:

Secondary Height:

Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	B Good	*Priority Rating*	II Low Priority
Level of Action	Minor	*Action*	Future Project Consideration
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Stone revetment in good condition. Supports side walk and street parking.
2006 / 2007 Assesment:

Structure Images:

057-014A-000-007-200-PHO13A.jpg

057-014A-000-007-200-PHO13B.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-014A-000-010A-100

Structure Assessment Form

Property Owner: Municipal

Address: Town Wharf

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $215,028

Upgrade Factor: 1.2

Upgrade Cost: $515,850

Structure Owner Name: Plymouth

Earliest Structure Record: 1935

Waterway: Plymouth Bay

TideRage: 10.53

Length: 181 Feet

Top Elevation: Feet

FIRM Map Zone: A5

FIRM Map Elevation: 12 Feet NAVD 88

Shape Length: 181

Primary Type: Revetment

Primary Material: Stone

Primary Height: 10 to 15 Feet

Height Above Beach: 12

Secondary Type:

Secondary Material:

Secondary Height:

Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	IV High Priority
Level of Action	Moderate	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Placed rip rap revetment with a cast in place footing on top supporting a precast with a wave return face. The precast concrete has moderate cracking and scaling of the concrete and has shifted and moved. The rip rap stones have shifted and settled creating voids under the footing. The toe was buried and minor scour. The footing has deteriorated with cracking and missing in locations where undermined.
2006 / 2007 Assesment: This structure is a stone revetment with a wave return face concrete cap. The cap is weathered and shows some spalling. Certain sections appear tilted forward somewhat. The stone sideslopes have slumped in some sections, appearing to create a gap

Structure Images: 057-014A-000-010A-100-PHO13A.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-014A-000-014-100

Structure Assessment Form

Property Owner: Municipal

Address: Water St.

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $51,170

Upgrade Factor: 1.2

Upgrade Cost: $612,750

Structure Owner Name: Plymouth

Earliest Structure Record: 1935

Waterway: Plymouth Bay

TideRage: 10.53

Length: 215 Feet

Top Elevation: Feet

FIRM Map Zone: A5

FIRM Map Elevation: 12 Feet NAVD 88

Shape Length: 215

Primary Type: Revetment

Primary Material: Stone

Primary Height: 10 to 15 Feet

Height Above Beach: 12

Secondary Type:

Secondary Material:

Secondary Height:

Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	B Good	*Priority Rating*	III Moderate Priority
Level of Action	Minor	*Action*	Consider for Active Project Improvement Listing
Description	See Exhibits I-A for Condition rating description.		

Structure Assessment:

2013 Assesment: Placed stone rip rap revetment with asphalt at the top. There is minor movement and settlement of stones. The toe of the structure is buried.
2006 / 2007 Assesment: This structure is a stone revetment. The sideslopes show some weathering but are generally in good condition.

Structure Images:

057-014A-000-014-100-PHO13A.jpg

057-014A-000-014-100-PHO13B.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-014A-000-021A-100

Structure Assessment Form

Property Owner: State

Address: Caswell Lane

Inspection Date: 7/22/2013

Presumed Structure Owner: State

Estimated Reconstruction/Repair Cost: $58,149

Upgrade Factor: 2

Upgrade Cost: $1,159,998

Structure Owner Name: Plymouth

Earliest Structure Record: Unknown

Waterway: Plymouth Bay

TideRage: 10.53

Length: 497 Feet

Top Elevation: Feet

FIRM Map Zone: V4

FIRM Map Elevation: 15 Feet NAVD 88

Shape Length: 497

Primary Type: Revetment

Primary Material: Stone

Primary Height: 5 to 10 Feet

Height Above Beach: 12

Secondary Type:

Secondary Material:

Secondary Height:

Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	B Good	*Priority Rating*	IV High Priority
Level of Action	Minor	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Placed rip rap stone revetment. There is minor movement of the stones with a few stones cracked. The toe of the revetment was buried.
2006 / 2007 Assesment: This structure is a stone revetment along the northwest corner of Plymouth Harbor Town boat ramp parking lot. The side slopes and crest are in good condition. The armor stone shows minor weathering.

Structure Images:

057-014A-000-021A-100-PHO13A.jpg

057-014A-000-021A-100-PHO13B.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-014A-000-021A-200

Structure Assessment Form

Property Owner: Federal

Address: Plymouth Harbor

Inspection Date: 7/22/2013

Presumed Structure Owner: Federal

Estimated Reconstruction/Repair Cost: $6,132,750

Upgrade Factor: 2

Upgrade Cost: $24,531,000

Structure Owner Name: Plymouth

Earliest Structure Record: 1974

Waterway: Plymouth Bay

TideRage: 10.53

Length: 2886 Feet

Top Elevation: Feet

FIRM Map Zone: V4

FIRM Map Elevation: 14 Feet NAVD 88

Shape Length: 2886

Primary Type: Breakwater

Primary Material: Stone

Primary Height: 10 to 15 Feet

Height Above Beach: 15

Secondary Type:

Secondary Material:

Secondary Height:

Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	IV High Priority
Level of Action	Moderate	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Placed rip rap stone revetment breakwater. There is minor movement of the stones with a few stones cracked, settled, and displaced. The toe of the breakwater was underwater at the time of inspection.
2006 / 2007 Assesment: This structure is a rubble mound breakwater around the northern side of Plymouth Harbor. There is a scour apron along the inside and outside toe for the outer 175 yards of the structure. Overall the crest and sideslopes appear in good condition. Howev

Structure Images:

057-014A-000-021A-200-PHO13A.jpg

057-014A-000-021A-200-PHO13B.jpg

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-014A-000-021A-300

Structure Assessment Form

Property Owner: State

Address: Town Wharf

Inspection Date: 7/22/2013

Presumed Structure Owner: State

Estimated Reconstruction/Repair Cost: $34,632

Upgrade Factor: 1.2

Upgrade Cost: $414,518

Structure Owner Name: Plymouth

Earliest Structure Record: 1974

Waterway: Plymouth Bay

TideRage: 10.53

Length: 296 Feet

Top Elevation: Feet

FIRM Map Zone: A5

FIRM Map Elevation: 12 Feet NAVD 88

Shape Length: 296

Primary Type: Revetment

Primary Material: Stone

Primary Height: 5 to 10 Feet

Height Above Beach: 12

Secondary Type:

Secondary Material: Concrete

Secondary Height:

Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	B Good	*Priority Rating*	III Moderate Priority
Level of Action	Minor	*Action*	Consider for Active Project Improvement Listing
Description	See Exhibits I-A for Condition rating description.		

Structure Assessment:

2013 Assesment: Placed rip rap revetment with a cast in place footing on top supporting a precast with a wave return face. The precast concrete has minor cracking and scaling of the concrete and has shifted and moved slightly. The rip rap stones have minor to moderate shifting and settling of the stones. The toe was buried. The footing has minor cracking and scaling.
2006 / 2007 Assesment: This structure is a stone revetment topped with wave return face concrete sections. The concrete cap shows minor cracking. The stone side slopes are in good condition and the stone itself shows some weathering.

Structure Images:

057-014A-000-021A-300-PHO13A.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-014A-000-021A-400

Structure Assessment Form

Property Owner: State

Address: Town Wharf

Inspection Date: 7/22/2013

Presumed Structure Owner: State

Estimated Reconstruction/Repair Cost: $30,654

Upgrade Factor: 1.2

Upgrade Cost: $366,905

Structure Owner Name: Plymouth

Earliest Structure Record: 1974

Waterway: Plymouth Bay

TideRage: 10.53

Length: 262 Feet

Top Elevation: Feet

FIRM Map Zone: A5

FIRM Map Elevation: 12 Feet NAVD 88

Shape Length: 262

Primary Type: Revetment

Primary Material: Concrete

Primary Height: 5 to 10 Feet

Height Above Beach: 12

Secondary Type:

Secondary Material:

Secondary Height:

Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Length

Condition Rating	B Good	*Priority Rating*	III Moderate Priority
Level of Action	Minor	*Action*	Consider for Active Project Improvement Listing
Description	See Exhibits I-A for Condition rating description.		

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: This structure is a concrete boat ramp for the town. There is some cracking along the surface of the ramp. It is generally in good condition.

Structure Images:

057-014A-000-021A-400-PHO13A.jpg

057-014A-000-021A-400-PHO13B.jpg

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-014A-000-021A-500

Structure Assessment Form

Property Owner: Municipal

Address: Town Wharf

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $42,602

Upgrade Factor: 1.2

Upgrade Cost: $510,150

Structure Owner Name: Plymouth

Earliest Structure Record: 1974

Waterway: Plymouth Bay

TideRage: 10.53

Length: 179 Feet

Top Elevation: Feet

FIRM Map Zone: A5

FIRM Map Elevation: 12 Feet NAVD 88

Shape Length: 179

Primary Type: Revetment

Primary Material: Stone

Primary Height: 10 to 15 Feet

Height Above Beach: 12

Secondary Type:

Secondary Material: Concrete

Secondary Height:

Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	B Good	*Priority Rating*	III Moderate Priority
Level of Action	Minor	*Action*	Consider for Active Project Improvement Listing
Description	See Exhibits I-A for Condition rating description.		

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: This structure is a stone revetment with a wave return face concrete cap. The concrete cap shows spalling and discoloration. The stone is weathered but in good condition. The side slopes remain entirely intact.

Structure Images:

057-014A-000-021A-500-PHO13A.jpg

057-014A-000-021A-500-PHO13B.jpg

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-017-000-161-100

Structure Assessment Form

Property Owner: Municipal

Address: Water St.

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $799,929

Upgrade Factor: 1.2

Upgrade Cost: $1,359,450

Structure Owner Name: Plymouth

Earliest Structure Record: 1948

Waterway: Plymouth Bay

TideRage: 10.53

Length: 477 Feet

Top Elevation: Feet

FIRM Map Zone: A5

FIRM Map Elevation: 13 Feet NAVD 88

Shape Length: 477

Primary Type: Revetment

Primary Material: Stone

Primary Height: 10 to 15 Feet

Height Above Beach: 12

Secondary Type: Coastal Beach

Secondary Material: Sand

Secondary Height: 5 to 10 Feet

Secondary Condition: C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	III Moderate Priority
Level of Action	Moderate	*Action*	Consider for Active Project Improvement Listing
Description	See Exhibits I-A for Condition rating description.		

Structure Assessment:

2013 Assesment: Dumped rip rap stone revetment that is mortared for the bottom half. The top has moderate movement and settlement of the stones and are not well connected. There is moderate erosion at the top due to settlement and additional stones have been added. The mortar on the bottom is cracking and loose with the stones have shifted.
2006 / 2007 Assesment: This structure is a stone revetment fronting a small park. The bottom half of the armor stone is grouted. The top and bottom sections are not well connected, with the top being slumped in sections.

Structure Images:

057-017-000-161-100-PHO13A.jpg

057-017-000-161-100-PHO13B.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-017-000-163-100

Structure Assessment Form

Property Owner: Municipal

Address: Water St.

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $1,041,300

Upgrade Factor: 1.2

Upgrade Cost: $1,950,437

Structure Owner Name: Plymouth

Earliest Structure Record: Unknown

Waterway: Plymouth Bay

TideRage: 10.53

Length: 468 Feet

Top Elevation: Feet

FIRM Map Zone: A5

FIRM Map Elevation: 13 Feet NAVD 88

Shape Length: 468

Primary Type: Bulkhead/ Seawall

Primary Material: Stone

Primary Height: 10 to 15 Feet

Height Above Beach: 12

Secondary Type: Coastal Beach

Secondary Material: Sand/ Stone

Secondary Height: 5 to 10 Feet

Secondary Condition: C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	III Moderate Priority
Level of Action	Moderate	*Action*	Consider for Active Project Improvement Listing
Description	See Exhibits I-A for Condition rating description.		

Structure Assessment:

2013 Assesment: Mortared stone seawall with rip rap along the toe. The stone along the toe has moderate movement, settlement, and displaced providing little protection at the base. The bottom of the wall the mortar is loose or missing.
2006 / 2007 Assesment: This structure is a grouted stone seawall with rip rap along the toe. The stone along the toe is slumped and unraveled to the point where it no longer protects the base of the wall. The base of the wall shows some missing grout between stones and other

Structure Images:

057-017-000-163-100-PHO13A.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure Assessment Form

Structure ID: 057-020-000-042-100

Property Owner: Municipal

Address: Water St.

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $336,345

Upgrade Factor: 1.2

Upgrade Cost: $507,960

Structure Owner Name: Plymouth

Earliest Structure Record: 1935

Waterway: Plymouth Bay

TideRage: 10.53

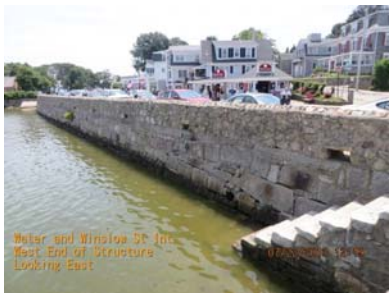
Length: 255 Feet

Top Elevation: Feet

FIRM Map Zone: A5

FIRM Map Elevation: 13 Feet NAVD 88

Shape Length: 255



Primary Type: Bulkhead/ Seawall

Primary Material: Stone

Primary Height: 5 to 10 Feet

Height Above Beach: 10

Secondary Type: Coastal Beach

Secondary Material: Sand/ Stone

Secondary Height: 5 to 10 Feet

Secondary Condition: C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	III Moderate Priority
Level of Action	Moderate	*Action*	Consider for Active Project Improvement Listing
Description	See Exhibits I-A for Condition rating description.		

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: This structure is a seawall of grouted stone. The stone is stacked at the bottom and has a cap of random placed grouted stone. There is grout missing and/or broken along the base of the wall.

Structure Images:

057-020-000-042-100-PHO13A.jpg

057-020-000-042-100-PHO13B.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-020-000-182-100

Structure Assessment Form

Property Owner: Municipal

Address: State Pier

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $423,878

Upgrade Factor: 2

Upgrade Cost: $847,756

Structure Owner Name: Plymouth

Earliest Structure Record: 1954

Waterway: Plymouth Bay

TideRage: 10.53

Length: 221 Feet

Top Elevation: Feet

FIRM Map Zone: V4

FIRM Map Elevation: 14 Feet NAVD 88

Shape Length: 221

Primary Type: Bulkhead/ Seawall

Primary Material: Concrete

Primary Height: 5 to 10 Feet

Height Above Beach: 8

Secondary Type:

Secondary Material:

Secondary Height:

Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	D Poor	*Priority Rating*	III Moderate Priority
Level of Action	Major	*Action*	Consider for Active Project Improvement Listing
Description	See Exhibits I-A for Condition rating description.		

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: This structure is a short concrete seawall with a wave return face cap and small armor stone strewn along the base. The wall shows severe cracking and spalling along the face. The northern end is slumped.

Structure Images:

057-020-000-182-100-PHO13A.jpg

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-020-000-182-200

Structure Assessment Form

Property Owner: Municipal

Address: State Pier

Inspection Date: 7/10/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $353,760

Upgrade Factor: 2.75

Upgrade Cost: $1,059,052

Structure Owner Name: Plymouth

Earliest Structure Record: 1954

Waterway: Plymouth Bay

TideRage: 10.53

Length: 330 Feet

Top Elevation: Feet

FIRM Map Zone: V4

FIRM Map Elevation: 14 Feet NAVD 88

Shape Length: 330

Primary Type: Revetment

Primary Material: Stone

Primary Height: 5 to 10 Feet

Height Above Beach: 10

Secondary Type: Coastal Beach

Secondary Material: Sand/ Stone

Secondary Height: 5 to 10 Feet

Secondary Condition: C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	III Moderate Priority
Level of Action	Moderate	*Action*	Consider for Active Project Improvement Listing
Description	See Exhibits I-A for Condition rating description.		

Structure Assessment:

2013 Assesment: Dumped stone rip rap revetment. There is minor to moderate movement and settlement of the stones. There are locations where the crest is slumped and there is cracking of the armor stones. There was no undermining visible at the time of inspection.
2006 / 2007 Assesment:

Structure Images:

057-020-000-182-200-PHO13.jpg

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-020-000-182-300

Structure Assessment Form

Property Owner: Municipal

Address: State Pier

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $706,860

Upgrade Factor: 2

Upgrade Cost: $2,826,250

Structure Owner Name: Plymouth

Earliest Structure Record: 1954

Waterway: Plymouth Bay

TideRage: 10.53

Length: 595 Feet

Top Elevation: Feet

FIRM Map Zone: V4

FIRM Map Elevation: 14 Feet NAVD 88

Shape Length: 595

Primary Type: Revetment

Primary Material: Stone

Primary Height: 10 to 15 Feet

Height Above Beach: 12

Secondary Type:

Secondary Material:

Secondary Height:

Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	III Moderate Priority
Level of Action	Moderate	*Action*	Consider for Active Project Improvement Listing
Description	See Exhibits I-A for Condition rating description.		

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: This structure is a stone revetment fronting a park. The sideslopes have slumped in some sections and the armor stone has shifted.

Structure Images:

057-020-000-182-300-PHO13A.jpg

057-020-000-182-300-PHO13B.jpg

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure Assessment Form

Structure ID: 057-020-000-182-400

Property Owner: Municipal

Address: Pilgrim Memorial State Park

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $1,132,164

Upgrade Factor: 2

Upgrade Cost: $4,526,750

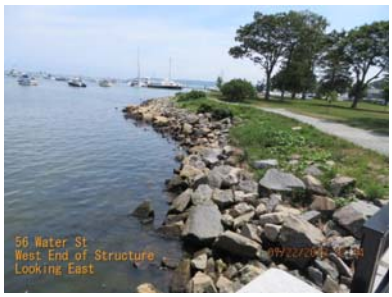
Structure Owner Name: Plymouth

Earliest Structure Record: 1954

Waterway: Plymouth Bay

TideRage: 10.53

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
953 Feet	Feet	V4	14 Feet NAVD 88	953



Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Revetment	Stone	10 to 15 Feet	10

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	III Moderate Priority
Level of Action	Moderate	*Action*	Consider for Active Project Improvement Listing
Description	See Exhibits I-A for Condition rating description.		

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: The structure is a stone revetment fronting a park. The stone is weathered and slumped. A backing of granite stone has become exposed. There is no defined side slope.

Structure Images:

057-020-000-182-400-PHO13A.jpg
057-020-000-182-400-PHO13B.jpg
057-020-000-182-400-PHO13C.jpg

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-023-000-026-100

Structure Assessment Form

Property Owner: Municipal

Address: Stephens Field

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $47,430

Upgrade Factor: 2

Upgrade Cost: $114,750

Structure Owner Name: Plymouth

Earliest Structure Record: 1998

Waterway: Plymouth Bay

TideRage: 10.53

Length: 153 Feet

Top Elevation: Feet

FIRM Map Zone: V4

FIRM Map Elevation: 14 Feet NAVD 88

Shape Length: 153

Primary Type: Revetment

Primary Material: Stone

Primary Height: Under 5 Feet

Height Above Beach: 4

Secondary Type: Coastal Beach

Secondary Material: Sand/ Stone

Secondary Height: Under 5 Feet

Secondary Condition: C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	III Moderate Priority
Level of Action	Moderate	*Action*	Consider for Active Project Improvement Listing
Description	See Exhibits I-A for Condition rating description.		

Structure Assessment:

2013 Assesment: Placed mortared rip rap stone revetment with minor movement and settlement with the exception of one location where there is a failure which the stones are displaced and settled. The toe of the revetment is buried.
2006 / 2007 Assesment: This structure is a small stone revetment fronting tennis courts. The crest is failed in one area and has slumped down.

Structure Images:

057-023-000-026-100-PHO13A.jpg

057-023-000-026-100-PHO13B.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-023-000-026-200

Structure Assessment Form

Property Owner: Municipal

Address: Stephens Field

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $303,534

Upgrade Factor: 2

Upgrade Cost: $346,500

Structure Owner Name: Plymouth

Earliest Structure Record: 1998

Waterway: Plymouth Bay

TideRage: 10.53

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
462		V4	14	462
Feet	Feet		Feet NAVD 88	

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Revetment	Stone	Under 5 Feet	1

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Coastal Beach	Sand	Under 5 Feet	F

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	F Critical	*Priority Rating*	II Low Priority
Level of Action	Immediate	*Action*	Future Project Consideration
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: This structure is line of strewn rubble and stone lying parallel to the shoreline. The is no slope or interlocking of stones/debris.

Structure Images:

057-023-000-026-200-PHO13A.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure Assessment Form

Structure ID: 057-037A-000-00A-150

Property Owner: Federal

Address: 391 Ryder Way - Long Beach

Inspection Date:

Presumed Structure Owner: Federal

Estimated Reconstruction/Repair Cost: $98,000

Upgrade Factor: 3

Upgrade Cost: $588,000

Structure Owner Name: USACE

Earliest Structure Record: Unknown

Waterway: Plymouth Bay

TideRage: 10.53

Length: 98 Feet

Top Elevation: Feet

FIRM Map Zone: VE

FIRM Map Elevation: 18 Feet NAVD 88

Shape Length: 98

Primary Type: Groin/ Jettv

Primary Material: Stone

Primary Height: 5 to 10 Feet

Height Above Beach: 0

Secondary Type:

Secondary Material:

Secondary Height:

Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	II Low Priority
Level of Action	Moderate	*Action*	Future Project Consideration
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: New Federal structure. No inspection conducted
2006 / 2007 Assesment:

Structure Images:

057-037A-000-00A-150-PHO13A.JPG
057-037A-000-00A-150-PHO13B.JPG
057-037A-000-00A-150-PHO13C.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure Assessment Form

Structure ID: 057-037A-000-156-100

Property Owner: Federal

Address: Plymouth Beach

Inspection Date: 7/10/2013

Presumed Structure Owner: Federal

Estimated Reconstruction/Repair Cost: $10,157,789

Upgrade Factor: 3

Upgrade Cost: $25,203,699

Structure Owner Name: Plymouth

Earliest Structure Record: Unknown

Waterway: Plymouth Bay

TideRage: 10.53

Length: 7199 Feet

Top Elevation: Feet

FIRM Map Zone: VE

FIRM Map Elevation: 18 Feet NAVD 88

Shape Length: 7199

Primary Type: Revetment

Primary Material: Stone

Primary Height: 5 to 10 Feet

Height Above Beach: 4

Secondary Type: Coastal Beach

Secondary Material: Sand

Secondary Height: Under 5 Feet

Secondary Condition: D

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	D	*Priority Rating*	III
	Poor		Moderate Priority
Level of Action	Major	*Action*	Consider for Active Project Improvement Listing
Description	See Exhibits I-A for Condition rating description.		

Structure Assessment:

2013 Assesment: Placed stone dike on Plymouth Beach. There are multiple locations that have failed with stones displaced. There is deterioration at the north end of the structure with moderate movement and displacement of the stones. There is moderate erosion behind the with additional dumped stones added behind to stabilize.
2006 / 2007 Assesment:

Structure Images:

057-037A-000-156-100-PHO13A.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-037A-000-339-100

Structure Assessment Form

Property Owner: Municipal

Address: Plymouth Beach

Inspection Date: 10/29/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $178,476

Upgrade Factor: 1.2

Upgrade Cost: $194,489

Structure Owner Name: Plymouth

Earliest Structure Record: 1970

Waterway: Plymouth Bay

TideRage: 10.53

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
278 Feet	Feet	V2	19 Feet NAVD 88	278

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Groin/ Jettv	Stone	Under 5 Feet	3

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	F Critical	*Priority Rating*	I None
Level of Action	Immediate	*Action*	Long Term Planning Considerations
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Remnants of an old adjustable grion many of the pile posts have been removed. All insert panels have been removed. The structure has completely failed and is non functional.
2006 / 2007 Assesment: This structure is the remains of an adjustable groin. All that remains are the concrete posts. All evidence of the insert panels is removed. The structure has completely failed and is non-functional.

Structure Images:

057-037A-000-339-100-PHO13A.jpg

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-039-000-010B-100

Structure Assessment Form

Property Owner: Municipal

Address: Eel River

Inspection Date: 7/23/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $2,476,571

Upgrade Factor: 2.5

Upgrade Cost: $10,985,345

Structure Owner Name: Plymouth

Earliest Structure Record: Unknown

Waterway: Plymouth Bay

TideRage: 10.53

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
2291 Feet	Feet	V2	19 Feet NAVD 88	2291

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Bulkhead/ Seawall	Concrete	5 to 10 Feet	4

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Coastal Beach	Sand/ Stone	Under 5 Feet	C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Length

Condition Rating	C Fair	*Priority Rating*	II Low Priority
Level of Action	Moderate	*Action*	Future Project Consideration
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Concrete seawall with a wave return face. The toe of the wall becomes exposed at the southern end. There is minor cracking and scaling of the concrete.
2006 / 2007 Assesment: This structure is a concrete seawall fronting a dirt parking lot. The wall shows minor cracking and spalling. The toe of the wall is becoming exposed at the southern end. Each groin is approximately 75 to 180 feet long.

Structure Images:

057-039-000-010B-100-PHO13A.jpg
057-039-000-010B-100-PHO13B.jpg
057-039-000-010B-100-PHO13C.jpg

Structure Documents:

USACE	March 2009	Site of Proposed	057-039-000-010B-100-COE13A

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure Assessment Form

Structure ID: 057-039-000-010B-200

Property Owner: Municipal

Address: Eel River

Inspection Date: 7/23/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $41,393

Upgrade Factor: 1.2

Upgrade Cost: $49,672

Structure Owner Name: Plymouth

Earliest Structure Record: Unknown

Waterway: Plymouth Bay

TideRage: 10.53

Length: 71 Feet

Top Elevation: Feet

FIRM Map Zone: V2

FIRM Map Elevation: 19 Feet NAVD 88

Shape Length: 71

Primary Type: Groin/ Jettv

Primary Material: Stone

Primary Height: Under 5 Feet

Height Above Beach: 3

Secondary Type:

Secondary Material:

Secondary Height:

Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Length

Condition Rating	D Poor	*Priority Rating*	II Low Priority
Level of Action	Major	*Action*	Future Project Consideration
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Five placed stone groins. The northern two have minor movement and displacement of stones. The remaining three have moderate to severe movement and displacement of the stones creating voids.
2006 / 2007 Assesment: This is a field of 5 stone groins. The stones have become largely unraveled so that no crest or side slopes are discernable. The groins are not serving much purpose.

Structure Images:

057-039-000-010B-200-PHO13A.jpg

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-041-000-029-100

Structure Assessment Form

Property Owner: Municipal

Address: Warren Cove

Inspection Date: 7/23/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $5,686,896

Upgrade Factor: 2.5

Upgrade Cost: $10,759,740

Structure Owner Name: Plymouth

Earliest Structure Record: 1956

Waterway: Plymouth Bay

TideRage: 10.53

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
3688		V2	19	3688
Feet	Feet		Feet NAVD 88	

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Revetment	Stone	5 to 10 Feet	8

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Bulkhead/ Seawall	Concrete	5 to 10 Feet	C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Length

Condition Rating	C Fair	*Priority Rating*	IV High Priority
Level of Action	Moderate	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: This structure is a stone revetment. It fronts a concrete seawall and has a wave return face in some sections. Along the center of the structure there are armor stone along the toe which have become displaced. This has resulted in some areas of a slum

Structure Images:

057-041-000-029-100-PHO13A.jpg

057-041-000-029-100-PHO13B.jpg

057-041-000-029-100-PHO13C.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-044-000-025-100

Structure Assessment Form

Property Owner: Municipal

Address: White Horse Beach

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $43,008

Upgrade Factor: 2.75

Upgrade Cost: $836,000

Structure Owner Name: Plymouth

Earliest Structure Record: 1957

Waterway: Plymouth Bay

TideRage: 10.53

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
128 Feet	Feet	V2	24 Feet NAVD 88	128

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Revetment	Stone	10 to 15 Feet	15

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Coastal Beach	Sand/ Stone	5 to 10 Feet	B

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	B Good	*Priority Rating*	IV High Priority
Level of Action	Minor	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: This structure is a rubble mound revetment. The sideslope is in good condition. There are single armor stones which are cracked.

Structure Images:

057-044-000-025-100-PHO13A.jpg

057-044-000-025-100-PHO13B.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-045A-000-100-100

Structure Assessment Form

Property Owner: Municipal

Address: White Horse Beach

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $154,370

Upgrade Factor: 2.75

Upgrade Cost: $2,304,242

Structure Owner Name: Plymouth

Earliest Structure Record: Unknown

Waterway: Plymouth Bay

TideRage: 10.53

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
718 Feet	Feet	V2	24 Feet NAVD 88	718

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Revetment	Stone	5 to 10 Feet	12

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Coastal Beach	Sand	5 to 10 Feet	B

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	B Good	*Priority Rating*	IV High Priority
Level of Action	Minor	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: This structure is a stone revetment. The sideslopes are in good condition. There are some armor stones along the bottom which have cracked.

Structure Images:

057-045A-000-100-100-PHO13A.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-045A-000-100-200

Structure Assessment Form

Property Owner: Municipal

Address: White Horse Beach

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $55,968

Upgrade Factor: 1.2

Upgrade Cost: $67,162

Structure Owner Name: Plymouth

Earliest Structure Record: 1952

Waterway: Plymouth Bay

TideRage: 10.53

Length: 96 Feet

Top Elevation: Feet

FIRM Map Zone: V2

FIRM Map Elevation: 24 Feet NAVD 88

Shape Length: 96

Primary Type: Groin/ Jettv

Primary Material: Stone

Primary Height: Under 5 Feet

Height Above Beach: 3

Secondary Type:

Secondary Material:

Secondary Height:

Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Length

Condition Rating	D Poor	*Priority Rating*	I None
Level of Action	Major	*Action*	Long Term Planning Considerations
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Six groins with no defined crest. The groins have moderate to severe movement and displacement. The groins are fully exposed at low water.
2006 / 2007 Assesment: This is a field of 6 stone groins, with approximately 200 foot spacing between them. The groins show no crest or side slopes and appear instead to be a linear pile of large stone. A majority of the length of each groin is above mean low water, so they

Structure Images:

057-045A-000-100-200-PHO13A.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-045A-000-113-100

Structure Assessment Form

Property Owner: Municipal

Address: White Horse Beach

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $73,248

Upgrade Factor: 2.75

Upgrade Cost: $1,423,812

Structure Owner Name: Plymouth

Earliest Structure Record: Unknown

Waterway: Plymouth Bay

TideRage: 10.53

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
218 Feet	Feet	V2	24 Feet NAVD 88	218

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Revetment	Stone	10 to 15 Feet	15

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Coastal Beach	Sand	5 to 10 Feet	B

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	B Good	*Priority Rating*	IV High Priority
Level of Action	Minor	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: This structure is a stone revetment. The side slope is in good condition. Some armor stone is cracked.

Structure Images:

057-045A-000-113-100-PHO13A.jpg

057-045A-000-113-100-PHO13B.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-045B-000-014A-100

Structure Assessment Form

Property Owner: Municipal

Address: White Horse Beach

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $18,848

Upgrade Factor: 2

Upgrade Cost: $372,000

Structure Owner Name: Plymouth

Earliest Structure Record: Unknown

Waterway: Plymouth Bay

TideRage: 10.53

Length: 496 Feet

Top Elevation: Feet

FIRM Map Zone: V4

FIRM Map Elevation: 15 Feet NAVD 88

Shape Length: 496

Primary Type: Revetment

Primary Material: Stone

Primary Height: Under 5 Feet

Height Above Beach: 6

Secondary Type:

Secondary Material:

Secondary Height:

Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Length

Condition Rating	B Good	*Priority Rating*	II Low Priority
Level of Action	Minor	*Action*	Future Project Consideration
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: This structure is the western reveted side slope of a small channel which connects Barlett's Pond to Cape Cod Bay. The side slope and crest are in good condition with some minor loss of crest elevation.

Structure Images:

057-045B-000-014A-100-PHO13A.jpg

057-045B-000-014A-100-PHO13B.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure Assessment Form

Structure ID: 057-045B-000-014A-200

Property Owner: Municipal

Address: White Horse Beach

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $18,772

Upgrade Factor: 2

Upgrade Cost: $370,500

Structure Owner Name: Plymouth

Earliest Structure Record: Unknown

Waterway: Plymouth Bay

TideRage: 10.53

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
494 Feet	Feet	V4	15 Feet NAVD 88	494

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Revetment	Stone	Under 5 Feet	0

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Length

Condition Rating	B Good	*Priority Rating*	II Low Priority
Level of Action	Minor	*Action*	Future Project Consideration
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: This structure is the eastern reveted side slope of a small channel which connects Barlett's Pond to Cape Cod Bay. The side slope and crest are in good condition with some minor loss of crest elevation.

Structure Images:

057-045B-000-014A-200-PHO13A.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-046-000-002A-100

Structure Assessment Form

Property Owner: Municipal

Address: Manomet Point

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $2,944,487

Upgrade Factor: 3

Upgrade Cost: $14,196,000

Structure Owner Name: Plymouth

Earliest Structure Record: Unknown

Waterway: Plymouth Bay

TideRage: 10.53

Length: 1183 Feet

Top Elevation: Feet

FIRM Map Zone: V2

FIRM Map Elevation: 28 Feet NAVD 88

Shape Length: 1183

Primary Type: Revetment

Primary Material: Stone

Primary Height: Over 15 Feet

Height Above Beach: 25

Secondary Type: Coastal Beach

Secondary Material: Sand/ Stone

Secondary Height: 5 to 10 Feet

Secondary Condition: C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Length

Condition Rating	C Fair	*Priority Rating*	IV High Priority
Level of Action	Moderate	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: This structure is a grouted stone revetment along the base of the bluff between Stage Point and Manomet Point. There are many areas of shifted and failing armor along the base of the structure.

Structure Images:

057-046-000-002A-100-PHO13A.jpg

057-046-000-002A-100-PHO13B.jpg

057-046-000-002A-100-PHO13C.jpg

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-046-000-003-100

Structure Assessment Form

Property Owner: Municipal

Address: Manomet Point

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $16,848

Upgrade Factor: 3

Upgrade Cost: $504,144

Structure Owner Name: Plymouth

Earliest Structure Record: 1999

Waterway: Plymouth Bay

TideRage: 10.53

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
144 Feet	11 Feet	V2	28 Feet NAVD 88	144

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Revetment	Concrete	5 to 10 Feet	0

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Condition Repaired, Length

Condition Rating	B Good	*Priority Rating*	III Moderate Priority
Level of Action	Minor	*Action*	Consider for Active Project Improvement Listing
Description	See Exhibits I-A for Condition rating description.		

Structure Assessment:

2013 Assesment: Boat ramp that transitions from asphalt at the top to concrete to sand at the bottom. There is cracking and spalling of the concrete and ends before mean low water.
2006 / 2007 Assesment: This is a stone/dirt/concrete ramp from street level down to the eastern end of White Horse Beach. There is some shifting and cracking of the concrete. The ramp is still functional, but poor condition.

Structure Images:

057-046-000-003-100-PHO13A.jpg

057-046-000-003-100-PHO13B.jpg

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-046-000-083-100

Structure Assessment Form

Property Owner: Municipal

Address: Manomet Point

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $695,955

Upgrade Factor: 3

Upgrade Cost: $2,956,875

Structure Owner Name: Plymouth

Earliest Structure Record: Unknown

Waterway: Plymouth Bay

TideRage: 10.53

Length: 415 Feet

Top Elevation: Feet

FIRM Map Zone: V2

FIRM Map Elevation: 28 Feet NAVD 88

Shape Length: 415

Primary Type: Revetment

Primary Material: Stone

Primary Height: 10 to 15 Feet

Height Above Beach: 15

Secondary Type: Coastal Beach

Secondary Material: Sand/ Stone

Secondary Height: 5 to 10 Feet

Secondary Condition: C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	IV High Priority
Level of Action	Moderate	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: This structure is a stone revetment along the base of the the northern face of Manomet Point. The stone appears to have been dumped rather than placed and thus the interlocking of the armor layer is poor. There is some shifting and cracking of armor st

Structure Images:

057-046-000-083-100-PHO13A.jpg

057-046-000-083-100-PHO13B.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure Assessment Form

Structure ID: 057-046C-000-027-100

Property Owner: Municipal

Address: White Horse Beach

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $1,055,920

Upgrade Factor: 2.5

Upgrade Cost: $2,873,738

Structure Owner Name: Plymouth

Earliest Structure Record: Unknown

Waterway: Plymouth Bay

TideRage: 10.53

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
985 Feet	Feet	V2	17 Feet NAVD 88	985

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Revetment	Stone	5 to 10 Feet	8

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:
Coastal Beach	Sand	5 to 10 Feet	C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	IV High Priority
Level of Action	Moderate	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: This structure is an almost vertical stone revetment. There are areas of displaced armor stone and slumped crest.

Structure Images:

057-046C-000-027-100-PHO13A.jpg
057-046C-000-027-100-PHO13B.jpg
057-046C-000-027-100-PHO13C.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-048-000-197-100

Structure Assessment Form

Property Owner: Municipal

Address: Manomet Bluffs

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $86,284

Upgrade Factor: 1.2

Upgrade Cost: $103,541

Structure Owner Name: Plymouth

Earliest Structure Record: Unknown

Waterway: Plymouth Bay

TideRage: 10.53

Length: 148 Feet

Top Elevation: Feet

FIRM Map Zone: V2

FIRM Map Elevation: 28 Feet NAVD 88

Shape Length: 148

Primary Type: Groin/ Jettv

Primary Material: Stone

Primary Height: Under 5 Feet

Height Above Beach: 3

Secondary Type:

Secondary Material:

Secondary Height:

Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Length

Condition Rating	D Poor	*Priority Rating*	II Low Priority
Level of Action	Major	*Action*	Future Project Consideration
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: This is a field of 13 stone groins. The tips extend approximately to mean low water. A majority of the groins are unraveled and not trapping sand. Each groin is about 75 to 100 feet long.

Structure Images:

057-048-000-197-100-PHO13A.jpg

057-048-000-197-100-PHO13B.jpg

057-048-000-197-100-PHO13C.jpg

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure Assessment Form

Structure ID: 057-050-000-003-100

Property Owner: Municipal

Address: Fisherman's Lane

Inspection Date: 7/22/2013

Presumed Structure Owner: Unknown

Estimated Reconstruction/Repair Cost: $33,384

Upgrade Factor: 1.2

Upgrade Cost: $36,379

Structure Owner Name:

Earliest Structure Record: Unknown

Waterway: Plymouth Bay

TideRage: 10.53

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
52 Feet	Feet	V2	20 Feet NAVD 88	52

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Groin/ Jettv	Stone	Under 5 Feet	1

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	F Critical	*Priority Rating*	I None
Level of Action	Immediate	*Action*	Long Term Planning Considerations
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: This structure is a pile of stonea at a small bend in the beach. This could either be a very old groin or simply natural armoring of a small promontory.

Structure Images:

057-050-000-003-100-PHO13A.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-052-000-025-100

Structure Assessment Form

Property Owner: Municipal

Address: Harlow's Landing

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $2,404,818

Upgrade Factor: 2.5

Upgrade Cost: $8,514,375

Structure Owner Name: Plymouth

Earliest Structure Record: 1959

Waterway: Plymouth Bay

TideRage: 10.53

Length: 1434 Feet

Top Elevation: Feet

FIRM Map Zone: V2

FIRM Map Elevation: 19 Feet NAVD 88

Shape Length: 1434

Primary Type: Revetment

Primary Material: Stone

Primary Height: 10 to 15 Feet

Height Above Beach: 12

Secondary Type: Coastal Beach

Secondary Material: Sand/ Stone

Secondary Height: 5 to 10 Feet

Secondary Condition: C

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	IV High Priority
Level of Action	Moderate	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: This structure is a stone revetment. It is grouted at the southern end and not grouted at the northern end. There are areas of slumped armor and voids between the stones. An old concrete seawall is visible behind some secitons of the structure.

Structure Images:

057-052-000-025-100-PHO13.JPG

057-052-000-025-100-PHO13A.jpg

057-052-000-025-100-PHO13B.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure Assessment Form

Structure ID: 057-052-000-025-200

Property Owner: Municipal

Address: Harlow's Landing

Inspection Date: 7/22/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $21,186

Upgrade Factor: 1.2

Upgrade Cost: $23,087

Structure Owner Name: Plymouth

Earliest Structure Record: 1953

Waterway: Plymouth Bay

TideRage: 10.53

Length:	Top Elevation:	FIRM Map Zone:	FIRM Map Elevation:	Shape Length:
33 Feet	Feet	V2	19 Feet NAVD 88	33

Primary Type:	Primary Material:	Primary Height:	Height Above Beach:
Groin/ Jettv	Stone	Under 5 Feet	3

Secondary Type:	Secondary Material:	Secondary Height:	Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Length

Condition Rating	F Critical	*Priority Rating*	III Moderate Priority
Level of Action	Immediate	*Action*	Consider for Active Project Improvement Listing
Description	See Exhibits I-A for Condition rating description.		

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: This is a field of 7 stone groins. A majority of each groin is unraveled. The tips of the groins extend approximately to mean low water. The groins are essentially non-functional. Each groin is approximately 50 feet long.

Structure Images:

057-052-000-025-200-PHO13A.jpg

Structure Documents:

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-053-021-019-100

Structure Assessment Form

Property Owner: Municipal

Address: Lookout Point

Inspection Date: 7/23/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $8,294

Upgrade Factor: 1.2

Upgrade Cost: $100,043

Structure Owner Name: Plymouth

Earliest Structure Record: 1992

Waterway: Plymouth Bay

TideRage: 10.53

Length: 143 Feet

Top Elevation: Feet

FIRM Map Zone: V2

FIRM Map Elevation: 21 Feet NAVD 88

Shape Length: 143

Primary Type: Groin/ Jettv

Primary Material: Stone

Primary Height: Under 5 Feet

Height Above Beach: 5

Secondary Type:

Secondary Material:

Secondary Height:

Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections: Length

Condition Rating	B Good	*Priority Rating*	IV High Priority
Level of Action	Minor	*Action*	Consider for Next Project Construction Listing
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: No change.
2006 / 2007 Assesment: This is a field of 5 stone groins south of the entrance to Ellisville Harbor. The crests and sideslopes are in good condition. Outer head and toe of structures was not evaluated due to high tide. Each groin is approximately 150 feet long.

Structure Images:

057-053-021-019-100-PHO13A.jpg

057-053-021-019-100-PHO13B.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering

2013 Masachusetts Coastal Infrastructure Inventory And Assessment Report

Town: Plymouth

Structure ID: 057-053-021-059-100

Structure Assessment Form

Property Owner: Municipal

Address: Ellisville Harbor

Inspection Date: 7/23/2013

Presumed Structure Owner: Municipal

Estimated Reconstruction/Repair Cost: $33,872

Upgrade Factor: 1.2

Upgrade Cost: $81,154

Structure Owner Name: Plymouth

Earliest Structure Record: 1960

Waterway: Plymouth Bay

TideRage: 10.53

Length: 116 Feet

Top Elevation: Feet

FIRM Map Zone: V2

FIRM Map Elevation: 21 Feet NAVD 88

Shape Length: 116

Primary Type: Groin/ Jettv

Primary Material: Stone

Primary Height: Under 5 Feet

Height Above Beach: 5

Secondary Type:

Secondary Material:

Secondary Height:

Secondary Condition:

2013 Changes:

Condition / Ratings / Corrections:

Condition / Ratings:
Corrections:

Condition Rating	C Fair	*Priority Rating*	II Low Priority
Level of Action	Moderate	*Action*	Future Project Consideration
Description	See Exhibits I-A for Condition rating description.	*Description*	See Exhibits I-B for Priority rating description.

Structure Assessment:

2013 Assesment: Placed stone rip rap groin. The head of the groin is unraveled and there are large voids. There is minor movement and settlement of stones with moderate to severe displacement of the stones near the middle of the structure. There is sand and stones built up on the northern side of the revetment. The displaced stones sit on the sand on the southern side of the revetment.
2006 / 2007 Assesment: This structure is a stone groin on the open beach just north of the entrance to Ellisville Harbor. The sideslopes and crest of the trunk are generally in good condition. The head of the groin has become unraveled.

Structure Images:

057-053-021-059-100-PHO13A.jpg

057-053-021-059-100-PHO13B.jpg

Structure Documents:

Section V - Plymouth

Part C

Structure Photographs

TOWN: PLYMOUTH
SOURCE: BCE - FIELD PHOTOGRAPHS
LOCATION: Bourne Consulting Engineering
2015 REPORT UPDATE

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description
057-052-000-025-200	057-052-000-025-200-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2013	DIGITAL IMAGE	1	Structure Location	Structure Condition Photo at Time of Survey
057-052-000-025-100	057-052-000-025-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2014	DIGITAL IMAGE	2	Structure Location	Structure Condition Photo at Time of Survey
057-052-000-025-100	057-052-000-025-100-PHO13B.jpg		Bourne Consulting Engineering	Plymouth	2015	DIGITAL IMAGE	3	Structure Location	Structure Condition Photo at Time of Survey
057-053-021-059-100	057-053-021-059-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2016	DIGITAL IMAGE	4	Structure Location	Structure Condition Photo at Time of Survey
057-053-021-059-100	057-053-021-059-100-PHO13B.jpg		Bourne Consulting Engineering	Plymouth	2017	DIGITAL IMAGE	5	Structure Location	Structure Condition Photo at Time of Survey
057-053-021-019-100	057-053-021-019-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2018	DIGITAL IMAGE	6	Structure Location	Structure Condition Photo at Time of Survey
057-053-021-019-100	057-053-021-019-100-PHO13B.jpg		Bourne Consulting Engineering	Plymouth	2019	DIGITAL IMAGE	7	Structure Location	Structure Condition Photo at Time of Survey
057-007-000-042-100	057-007-000-042-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2020	DIGITAL IMAGE	8	Structure Location	Structure Condition Photo at Time of Survey
057-007-000-042-100	057-007-000-042-100-PHO13B.jpg		Bourne Consulting Engineering	Plymouth	2021	DIGITAL IMAGE	9	Structure Location	Structure Condition Photo at Time of Survey
057-006-062-019-100	057-006-062-019-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2022	DIGITAL IMAGE	10	Structure Location	Structure Condition Photo at Time of Survey
057-006-062-019-100	057-006-062-019-100-PHO13B.jpg		Bourne Consulting Engineering	Plymouth	2023	DIGITAL IMAGE	11	Structure Location	Structure Condition Photo at Time of Survey
057-001-000-010-100	057-001-000-010-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2024	DIGITAL IMAGE	12	Structure Location	Structure Condition Photo at Time of Survey
057-001-000-010-100	057-001-000-010-100-PHO13B.jpg		Bourne Consulting Engineering	Plymouth	2025	DIGITAL IMAGE	13	Structure Location	Structure Condition Photo at Time of Survey
057-020-000-042-100	057-020-000-042-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2026	DIGITAL IMAGE	14	Structure Location	Structure Condition Photo at Time of Survey
057-020-000-042-100	057-020-000-042-100-PHO13B.jpg		Bourne Consulting Engineering	Plymouth	2027	DIGITAL IMAGE	15	Structure Location	Structure Condition Photo at Time of Survey
057-014A-000-014-100	057-014A-000-014-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2028	DIGITAL IMAGE	16	Structure Location	Structure Condition Photo at Time of Survey
057-014A-000-014-100	057-014A-000-014-100-PHO13B.jpg		Bourne Consulting Engineering	Plymouth	2029	DIGITAL IMAGE	17	Structure Location	Structure Condition Photo at Time of Survey
057-014A-000-007-100	057-014A-000-007-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2030	DIGITAL IMAGE	18	Structure Location	Structure Condition Photo at Time of Survey
057-014A-000-010A-100	057-014A-000-010A-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2031	DIGITAL IMAGE	19	Structure Location	Structure Condition Photo at Time of Survey
057-014A-000-021A-500	057-014A-000-021A-500-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2032	DIGITAL IMAGE	20	Structure Location	Structure Condition Photo at Time of Survey
057-014A-000-021A-500	057-014A-000-021A-500-PHO13B.jpg		Bourne Consulting Engineering	Plymouth	2033	DIGITAL IMAGE	21	Structure Location	Structure Condition Photo at Time of Survey
057-014A-000-021A-400	057-014A-000-021A-400-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2034	DIGITAL IMAGE	22	Structure Location	Structure Condition Photo at Time of Survey
057-014A-000-021A-400	057-014A-000-021A-400-PHO13B.jpg		Bourne Consulting Engineering	Plymouth	2035	DIGITAL IMAGE	23	Structure Location	Structure Condition Photo at Time of Survey

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description
057-014A-000-021A-300	057-014A-000-021A-300-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2036	DIGITAL IMAGE	24	Structure Location	Structure Condition Photo at Time of Survey
057-014A-000-021A-200	057-014A-000-021A-200-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2037	DIGITAL IMAGE	25	Structure Location	Structure Condition Photo at Time of Survey
057-014A-000-021A-200	057-014A-000-021A-200-PHO13B.jpg		Bourne Consulting Engineering	Plymouth	2038	DIGITAL IMAGE	26	Structure Location	Structure Condition Photo at Time of Survey
057-014A-000-021A-100	057-014A-000-021A-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2039	DIGITAL IMAGE	27	Structure Location	Structure Condition Photo at Time of Survey
057-014A-000-021A-100	057-014A-000-021A-100-PHO13B.jpg		Bourne Consulting Engineering	Plymouth	2040	DIGITAL IMAGE	28	Structure Location	Structure Condition Photo at Time of Survey
057-014A-000-001A-100	057-014A-000-001A-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2041	DIGITAL IMAGE	29	Structure Location	Structure Condition Photo at Time of Survey
057-014A-000-001A-100	057-014A-000-001A-100-PHO13B.jpg		Bourne Consulting Engineering	Plymouth	2042	DIGITAL IMAGE	30	Structure Location	Structure Condition Photo at Time of Survey
057-012-000-046A-100	057-012-000-046A-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2043	DIGITAL IMAGE	31	Structure Location	Structure Condition Photo at Time of Survey
057-012-000-046A-100	057-012-000-046A-100-PHO13B.jpg		Bourne Consulting Engineering	Plymouth	2044	DIGITAL IMAGE	32	Structure Location	Structure Condition Photo at Time of Survey
057-017-000-161-100	057-017-000-161-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2045	DIGITAL IMAGE	33	Structure Location	Structure Condition Photo at Time of Survey
057-017-000-161-100	057-017-000-161-100-PHO13B.jpg		Bourne Consulting Engineering	Plymouth	2046	DIGITAL IMAGE	34	Structure Location	Structure Condition Photo at Time of Survey
057-017-000-163-100	057-017-000-163-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2047	DIGITAL IMAGE	35	Structure Location	Structure Condition Photo at Time of Survey
057-020-000-182-300	057-020-000-182-300-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2048	DIGITAL IMAGE	36	Structure Location	Structure Condition Photo at Time of Survey
057-020-000-182-300	057-020-000-182-300-PHO13B.jpg		Bourne Consulting Engineering	Plymouth	2049	DIGITAL IMAGE	37	Structure Location	Structure Condition Photo at Time of Survey
057-020-000-182-400	057-020-000-182-400-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2050	DIGITAL IMAGE	38	Structure Location	Structure Condition Photo at Time of Survey
057-020-000-182-400	057-020-000-182-400-PHO13B.jpg		Bourne Consulting Engineering	Plymouth	2051	DIGITAL IMAGE	39	Structure Location	Structure Condition Photo at Time of Survey
057-020-000-182-400	057-020-000-182-400-PHO13C.jpg		Bourne Consulting Engineering	Plymouth	2052	DIGITAL IMAGE	40	Structure Location	Structure Condition Photo at Time of Survey
057-023-000-026-200	057-023-000-026-200-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2053	DIGITAL IMAGE	41	Structure Location	Structure Condition Photo at Time of Survey
057-023-000-026-100	057-023-000-026-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2054	DIGITAL IMAGE	42	Structure Location	Structure Condition Photo at Time of Survey
057-023-000-026-100	057-023-000-026-100-PHO13B.jpg		Bourne Consulting Engineering	Plymouth	2055	DIGITAL IMAGE	43	Structure Location	Structure Condition Photo at Time of Survey
057-039-000-010B-100	057-039-000-010B-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2056	DIGITAL IMAGE	44	Structure Location	Structure Condition Photo at Time of Survey
057-039-000-010B-100	057-039-000-010B-100-PHO13B.jpg		Bourne Consulting Engineering	Plymouth	2057	DIGITAL IMAGE	45	Structure Location	Structure Condition Photo at Time of Survey
057-039-000-010B-100	057-039-000-010B-100-PHO13C.jpg		Bourne Consulting Engineering	Plymouth	2058	DIGITAL IMAGE	46	Structure Location	Structure Condition Photo at Time of Survey

TOWN: PLYMOUTH
SOURCE: BCE - FIELD PHOTOGRAPHS
LOCATION: Bourne Consulting Engineering
2015 REPORT UPDATE

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description
057-039-000-010B-200	057-039-000-010B-200-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2059	DIGITAL IMAGE	47	Structure Location	Structure Condition Photo at Time of Survey
057-041-000-029-100	057-041-000-029-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2060	DIGITAL IMAGE	48	Structure Location	Structure Condition Photo at Time of Survey
057-050-000-003-100	057-050-000-003-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2061	DIGITAL IMAGE	49	Structure Location	Structure Condition Photo at Time of Survey
057-041-000-029-100	057-041-000-029-100-PHO13B.jpg		Bourne Consulting Engineering	Plymouth	2062	DIGITAL IMAGE	50	Structure Location	Structure Condition Photo at Time of Survey
057-041-000-029-100	057-041-000-029-100-PHO13C.jpg		Bourne Consulting Engineering	Plymouth	2063	DIGITAL IMAGE	51	Structure Location	Structure Condition Photo at Time of Survey
057-044-000-025-100	057-044-000-025-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2064	DIGITAL IMAGE	52	Structure Location	Structure Condition Photo at Time of Survey
057-044-000-025-100	057-044-000-025-100-PHO13B.jpg		Bourne Consulting Engineering	Plymouth	2065	DIGITAL IMAGE	53	Structure Location	Structure Condition Photo at Time of Survey
057-045A-000-113-100	057-045A-000-113-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2066	DIGITAL IMAGE	54	Structure Location	Structure Condition Photo at Time of Survey
057-045A-000-113-100	057-045A-000-113-100-PHO13B.jpg		Bourne Consulting Engineering	Plymouth	2067	DIGITAL IMAGE	55	Structure Location	Structure Condition Photo at Time of Survey
057-045A-000-100-100	057-045A-000-100-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2068	DIGITAL IMAGE	56	Structure Location	Structure Condition Photo at Time of Survey
057-045A-000-100-200	057-045A-000-100-200-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2069	DIGITAL IMAGE	57	Structure Location	Structure Condition Photo at Time of Survey
057-045B-000-014A-200	057-045B-000-014A-200-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2070	DIGITAL IMAGE	58	Structure Location	Structure Condition Photo at Time of Survey
057-045B-000-014A-100	057-045B-000-014A-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2071	DIGITAL IMAGE	59	Structure Location	Structure Condition Photo at Time of Survey
057-045B-000-014A-100	057-045B-000-014A-100-PHO13B.jpg		Bourne Consulting Engineering	Plymouth	2072	DIGITAL IMAGE	60	Structure Location	Structure Condition Photo at Time of Survey
057-046C-000-027-100	057-046C-000-027-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2073	DIGITAL IMAGE	61	Structure Location	Structure Condition Photo at Time of Survey
057-046C-000-027-100	057-046C-000-027-100-PHO13B.jpg		Bourne Consulting Engineering	Plymouth	2074	DIGITAL IMAGE	62	Structure Location	Structure Condition Photo at Time of Survey
057-046C-000-027-100	057-046C-000-027-100-PHO13C.jpg		Bourne Consulting Engineering	Plymouth	2075	DIGITAL IMAGE	63	Structure Location	Structure Condition Photo at Time of Survey
057-046-000-003-100	057-046-000-003-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2076	DIGITAL IMAGE	64	Structure Location	Structure Condition Photo at Time of Survey
057-046-000-003-100	057-046-000-003-100-PHO13B.jpg		Bourne Consulting Engineering	Plymouth	2077	DIGITAL IMAGE	65	Structure Location	Structure Condition Photo at Time of Survey
057-046-000-083-100	057-046-000-083-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2078	DIGITAL IMAGE	66	Structure Location	Structure Condition Photo at Time of Survey
057-046-000-083-100	057-046-000-083-100-PHO13B.jpg		Bourne Consulting Engineering	Plymouth	2079	DIGITAL IMAGE	67	Structure Location	Structure Condition Photo at Time of Survey
057-046-000-002A-100	057-046-000-002A-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2080	DIGITAL IMAGE	68	Structure Location	Structure Condition Photo at Time of Survey

TOWN: PLYMOUTH
SOURCE: BCE - FIELD PHOTOGRAPHS
LOCATION: Bourne Consulting Engineering
2015 REPORT UPDATE

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description
057-046-000-002A-100	057-046-000-002A-100-PHO13B.jpg		Bourne Consulting Engineering	Plymouth	2081	DIGITAL IMAGE	69	Structure Location	Structure Condition Photo at Time of Survey
057-048-000-197-100	057-048-000-197-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2082	DIGITAL IMAGE	70	Structure Location	Structure Condition Photo at Time of Survey
057-037A-000-156-100	057-037A-000-156-100-PHO13A.jpg		Bourne Consulting Engineering	Plymouth	2083	DIGITAL IMAGE	71	Structure Location	Structure Condition Photo at Time of Survey
057-020-000-182-200	057-020-000-182-200-PHO13.jpg		Bourne Consulting Engineering	Plymouth	2084	DIGITAL IMAGE	72	Structure Location	Structure Condition Photo at Time of Survey
057-037A-000-00A-150	057-037A-000-00A-150-PHO13A.JPG		Bourne Consulting Engineering	Plymouth	2085	DIGITAL IMAGE	73	Structure Location	Structure Condition Photo at Time of Survey
057-037A-000-00A-150	057-037A-000-00A-150-PHO13B.JPG		Bourne Consulting Engineering	Plymouth	2086	DIGITAL IMAGE	74	Structure Location	Structure Condition Photo at Time of Survey
057-037A-000-00A-150	057-037A-000-00A-150-PHO13C.JPG		Bourne Consulting Engineering	Plymouth	2087	DIGITAL IMAGE	75	Structure Location	Structure Condition Photo at Time of Survey

Massachusetts Coastal Inventory and Assessment

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057-001-000-010-100-PHO13B.jpg

057-006-062-019-100-PHO13A.jpg

057-006-062-019-100-PHO13B.jpg

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057-007-000-042-100-PHO13B.jpg

057-012-000-046A-100-PHO13A.jpg

057-012-000-046A-100-PHO13B.jpg

057-014A-000-001A-100-PHO13A.jpg

Massachusetts Coastal Inventory and Assessment

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057-014A-000-021A-200-PHO13B.jpg

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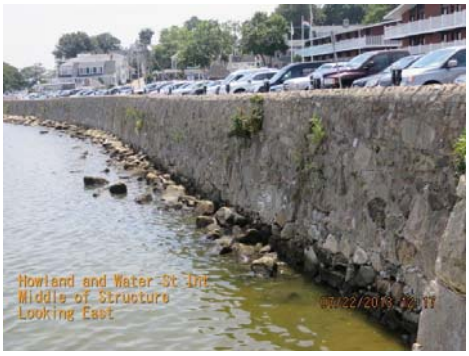

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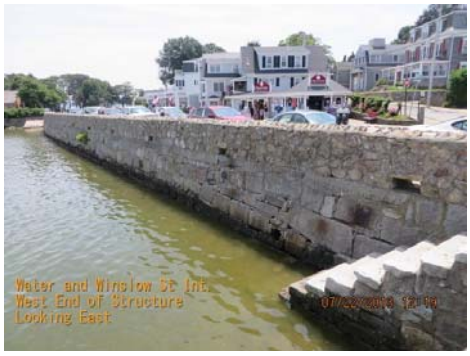

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057-020-000-042-100-PHO13B.jpg


057-020-000-182-100-PHO13A.jpg

057-020-000-182-200-PHO13A.jpg

057-020-000-182-200-PHO13B.jpg

057-020-000-182-300-PHO13A.jpg


057-020-000-182-300-PHO13B.jpg

057-020-000-182-400-PHO13A.jpg

057-020-000-182-400-PHO13B.jpg

057-020-000-182-400-PHO13C.jpg

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057-037A-000-00A-150-PHO13B.JPG

057-037A-000-00A-150-PHO13C.JPG

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057-053-021-019-100-PHO13B.jpg

057-053-021-059-100-PHO13A.jpg

057-053-021-059-100-PHO13B.jpg

Section V Plymouth

Part D

Structure Documents

TOWN DOCUMENT LIST

MA DCR - DOCUMENT LIST

MA DEP – Chp 91 DOCUMENT LIST

USACE – PERMIT DOCUMENT LIST

TOWN: PLYMOUTH
SOURCE: Town of
LOCATION: Town Records
2013 REPORT UPDATE

No Town Documents for the Town of PLYMOUTH

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description

TOWN: PLYMOUTH
SOURCE: MA-DCR
LOCATION: MA-DCR BOSTON and HINGHAM, MA
2015 REPORT UPDATE

No MA-DCR Documents for the Town of PLYMOUTH

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description

TOWN: PLYMOUTH
SOURCE: DEP
LOCATION: BOSTON, MA
2015 REPORT UPDATE

No DEP Documents for the Town of PLYMOUTH

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description

TOWN: PLYMOUTH
SOURCE: US ACOE
LOCATION: CONCORD, MA
2015 REPORT UPDATE

BCE Structure No	Document No	Contract/ Drawing Number	Entity	Municipality	Date	Title	Sheets	Location	Description
057-039-000-010B-100	057-039-000-010B-100-COE13A		USACE	Plymouth	March 2009	Site of Proposed Emergency Repair for Plymouth Beach Seawall	4	Ryder Way, Plymouth Bay	ACOE Permit Drawings