Beach Path Improvements

Beach Path Improvements
with
Associated Beach & Dune Maintenance
February 1, 2016

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Beach Path Improvements →

Historical Overview

- Initial site meeting with Lower Township Recreation Department & Public Works to view beach issues. (2009)
- Lower Township requests preliminary design and cost for elevated timber dune cross-overs at two locations. (2010)
- Lower Township requests permission from NJDEP; and repairs beach paths at Rose Hill Parkway & Whittier Avenue. (May 2015)
- Lower Township requests HMM to design beach path improvements at Township owned beaches. (Dec. 2015)

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Street Side Obstacles

Timber Wall at Atlantic Avenue

Timber Wall, Signage, Vegetation at Bay Avenue

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Steep Slopes and Soft Sand

Rose Hill Parkway 1:1 Slope

Franklin Avenue 1:5 Slope

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Issues With Roll-outs

Slippery when sand covered & become unstable at the ends

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Lack of Fence to Demarcate Open & Closed Beach Paths

Whittier Avenue before repairs

Whittier Avenue after repairs

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Damage from Continued Use of Closed Beach Paths

Path between Franklin Avenue and Rose Hill Parkway

Use of closed path causing damage to frontal dune

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Wind Tunneling and Scour at Beach Paths

Northwest orientation of Rose Hill Parkway beach path

Aeolian transported sand settled on Beach Avenue

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Issues With Aeolian Transport of Sand Off The Beach

Covers roadways, driveways and sidewalks obstructing use

Covers storm inlets causing on-going maintenance issues

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Examples of Why Snow Fence is Ineffective as a Barrier

Greenland Avenue beach path

Woodland Avenue beach path

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Unauthorized Cutting of Dune Vegetation

Cutting of vines and shrub vegetation on Beach Ave dune

Plastic bag with debris dumped on the dune

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Design, Construction and Maintenance Considerations

A. NJDEP Guidance and Coastal Zone Management Rule Compliance

B. U.S. Department of the Army Corps of Engineers Design Standards & Neighboring Communities Beach Path Maintenance / Conditions

C. Reference to “Architectural Barriers Act (ABA) Accessibility Guidelines; Outdoor Developed Areas” and “Americans with Disabilities Act” (ADA) Accessibility Guidelines

D. Adaptive Management Approach to Design, Construction and Maintenance of Beach Paths, Beach and Dunes

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A. NJDEP Guidance and Coastal Zone Management Rule Compliance

N.J.A.C. 7:7-10.4 Standards applicable to dune creation and maintenance

(a) Dune creation and maintenance includes the placement and/or repair of sand fencing (including wooden support posts), the planting and fertilization of appropriate dune vegetation, **the maintenance and clearing of beach access pathways less than eight feet in width, and the construction or repair of approved dune walkover structures**. Bulldozing, excavation, grading, vegetation removal or clearing, and relocation of existing dunes are not authorized pursuant to this section.

(b) All dune creation and maintenance activities should be conducted in accordance with the specifications found in Guidelines and Recommendations for Coastal Dune Restoration and Creation Projects (DEP, 1985), and/or **Restoration of Sand Dunes Along the Mid-Atlantic Coast (Soil Conservation Service, 1992)**. The Department will provide site specific technical assistance for dune creation and maintenance projects, upon request.

(c) **All proposed dune vegetation shall be native to New Jersey** and should be limited to the following coastal species, to the maximum extent practicable: American Beachgrass (*Ammophila breviligulata*), Coastal Panicgrass (*Panicum amarulum*), Bayberry (*Myrica pensylvanica*), Beach Plum (*Prunus maritima*), Seaside Goldenrod (*Solidago sempervirens*), Beach Pea (*Lathyrus japonicus*), Bitter Panicgrass (*Panicum amarum*), Switchgrass (*Panicum virgatum*), Partridge Pea (*Chamaecrista fasiculata*), Eastern red cedar (*Juniperus virginiana*), Groundsel tree (*Baccharis halimifolia*), and Saltmeadow cordgrass (*Spartina patens*).

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The What and Why of Dunes:

- Sand dunes are the first line of defense against coastal storms.
- They act as flexible barriers to high tides and wave action.
- When dunes give way to storm winds and waves, the shifting sand mounds soon reappear.
- The dunes are reservoirs of sand that keep the shore intact.
- Vegetated dunes provide a unique natural barrier, (i.e. wildlife & aesthetic value).

Even the best vegetated dune will not remain that way unless a reasonable maintenance program is followed.

- ✓ Primary dune vegetation cannot tolerate trampling.
- ✓ Foot & Vehicle traffic must be prohibited or controlled.
- ✓ Dunes must be crossed to reach the beach.
- ✓ Mechanical dune cross-overs must be installed.
- ✓ Elevated walks, paved paths and sandy surfaces are satisfactory.
- ✓ Walkways, except elevated ones, should be curved to reduce wind erosion.
- ✓ All walkways should be fenced to channel the traffic across the dune.

Source: Restoration of Sand Dunes Along the Mid-Atlantic Coast (Soil Conservation Service, 1992)

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Why Use I-5 Soil Aggregate for Beach Path Improvements

1. The primary principle of selecting good footing is to choose materials that maintain stability.
2. Beach sand is comprised of rounded particles, or grains; the wear of water action has removed most angular corners.
3. Round particles create more voids and resist compaction. Because they are round they have poor stability causing the sand to roll and shift under foot.
4. The well sorted sand grains comprising beach sand are more prone to the erosive forces from wind and water.
5. The major component of firm and stable path footing is a mixture of angular shaped sand, silt, and clay particles, (e.g. mined I-5 soil aggregate).
6. The range of these particle sizes is a key component of creating a firm and stable path.
7. Materials with particles that are all the same size cannot compact, while materials consisting of different particle sizes causes the smallest particles to fill the gaps and promotes compaction resulting in a firm base.
8. Particles need some angularity to offer resistance to movement. Angular grain materials will be relatively more stable because they can nest together without rolling.

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B. U.S. Army Corps of Engineers Design Standards and Neighboring Communities Beach Path Maintenance & Conditions

Borough of Avalon I-5 beach path with split rail fence

North Wildwood I-5 soil aggregate base vehicle access

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C. Reference to ABA and ADA Accessibility Guidelines

The following is the latest and best information available on ADA accessibility for beach access on the Municipal level:

- Enforceable 2013 ABA Guidelines and Standards are in place for use by Federal agencies and on Federal lands only.
- The U.S. Access Board has not prepared rules under ADA for beach accessible routes.
- ADA guidelines are a work in progress.
- In the meantime the Federal Guidelines may be used as “best practices” on the municipal level.

Source: **Janet Zeller**, National Accessibility Program Manager, U.S. Forest Service, with input by **Nathan Caldwell**, US Fish and Wildlife Service Transit and Trails Coordinator, http://www.americantrails.org/resources/accessible/webinar-janet-zeller-accessible-trails.html

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- ✓ By applying ABA "best practice" design concepts, the beach paths will be made more accessible by using a firm and stable I-5 soil base, and reducing pathway steep slopes as practicable.

Accessibility is important…"When you make an area ADA-compliant, it's a benefit to people who are handicapped. But it's also a huge benefit to older folks and younger families with strollers," North Wildwood Mayor Patrick Rosenello said. "It helps improve access for a huge swath of our visitors and residents."

Source: A.C. Press 2014 *MMiller@pressofac.com*

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D. Adaptive Management Approach to Design, Construction and Maintenance of Beach Paths, Beach and Dunes

"Adaptive management [is a decision process that] promotes flexible decision making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood."
Source: DOI Adaptive Management Technical Manual

How Does Adaptive Management (AM) Apply:

- ✓ Periodic storm events and human activity continually alter dune development. AM allows for effective resource planning and implementation of effective path design and beach & dune maintenance activities.
- ✓ AM provides a powerful tool to prevent significant project and/or use impacts in a dynamic beach and dune environment.
- ✓ AM helps ensure that proposed improvements and maintenance activities are effectively planned and implemented such that actual impacts are avoided and/or minimized.

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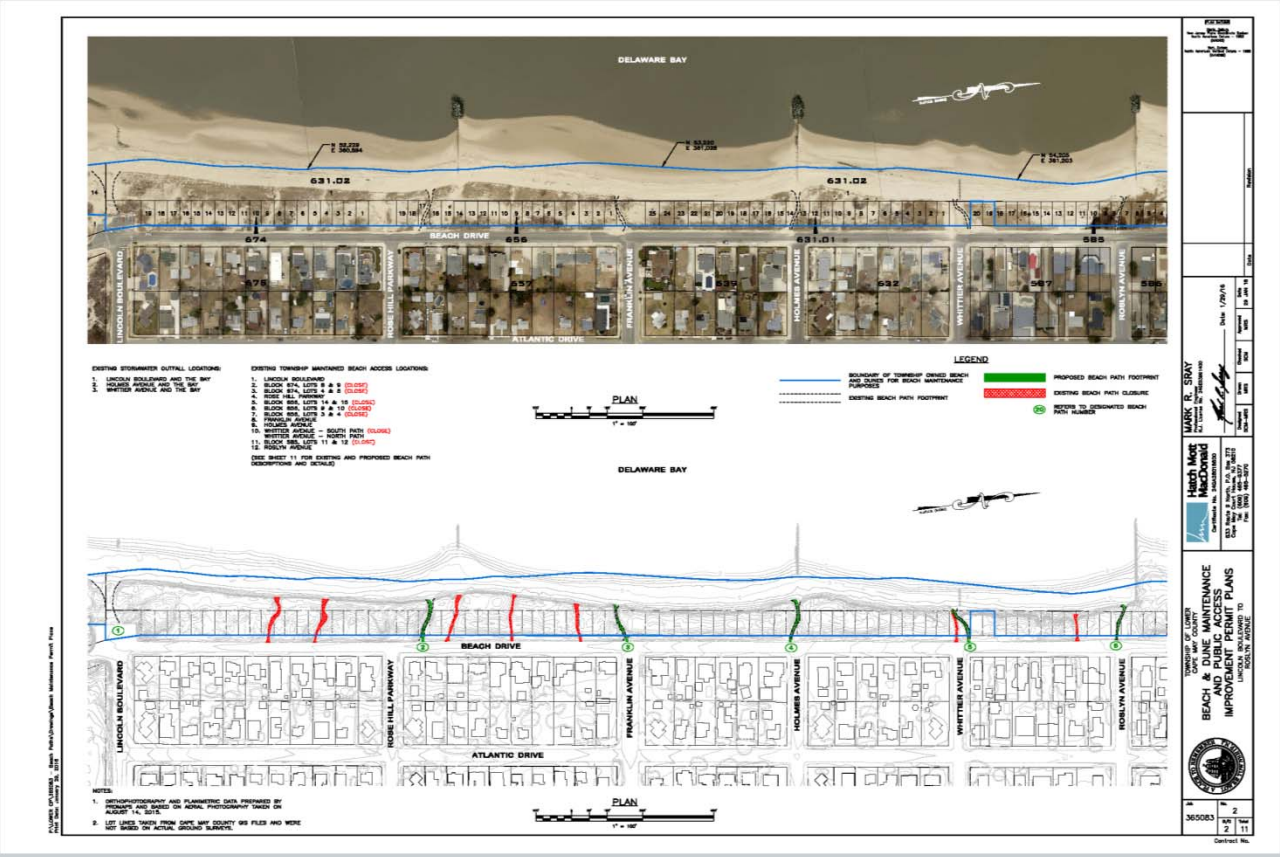
Lincoln Boulevard to Roslyn Avenue, Sheet 2



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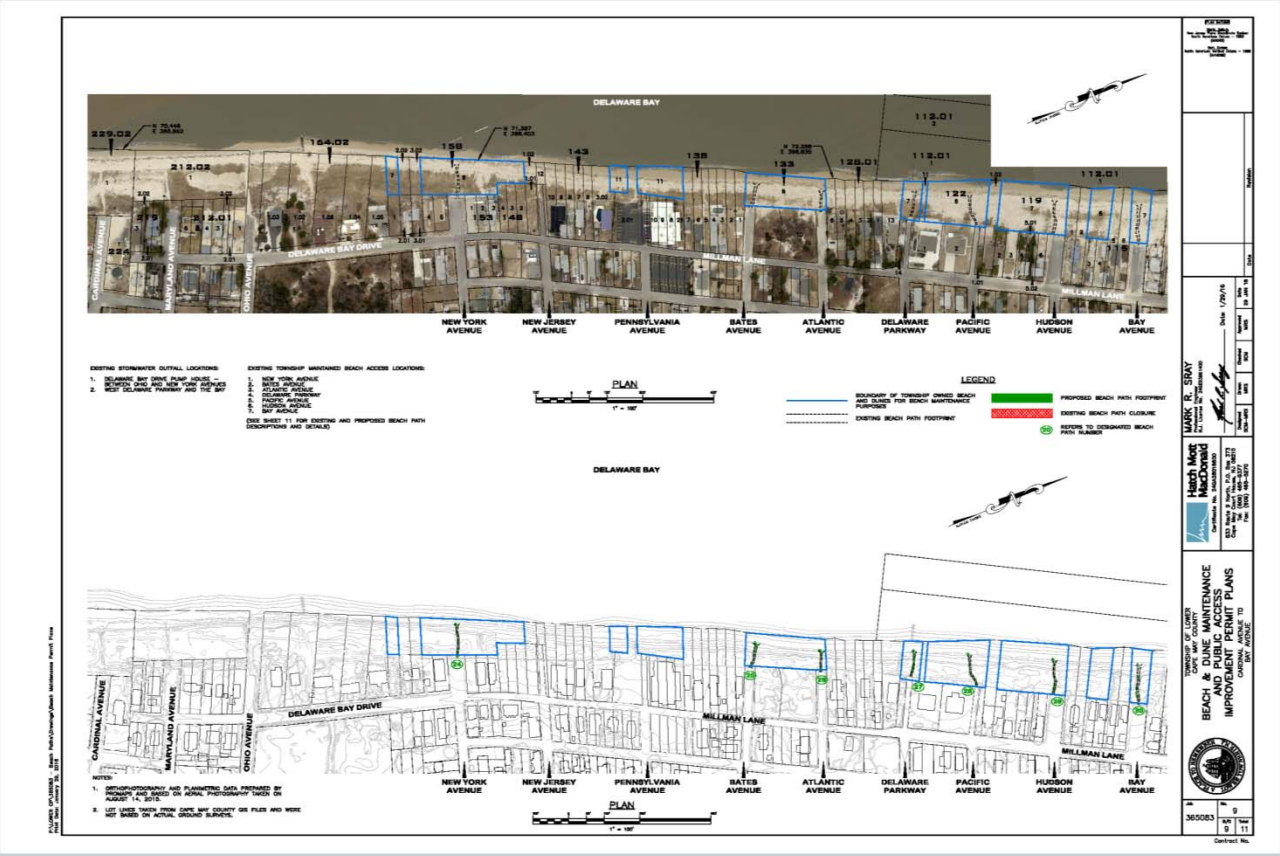
Cardinal Avenue to Bay Avenue, Sheet 9



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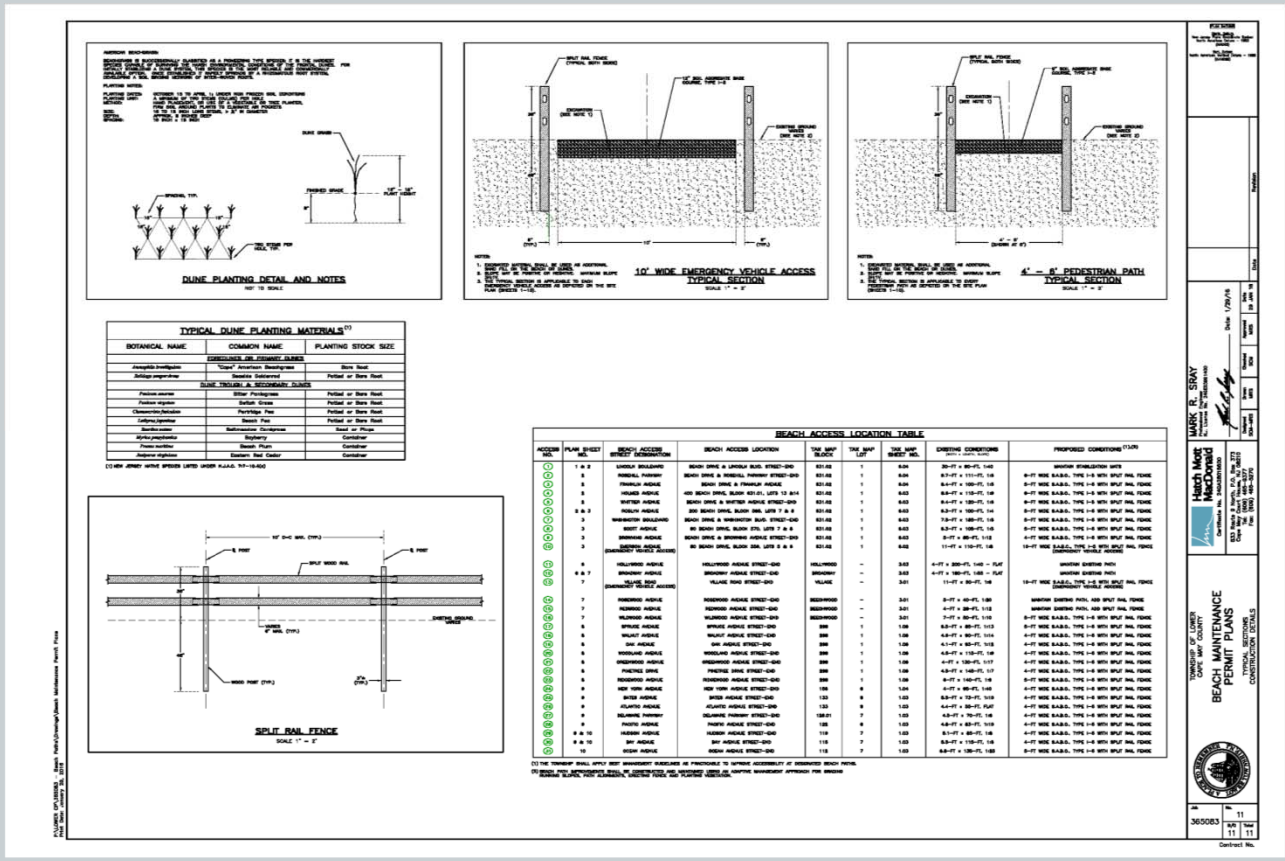
Typical Sections & Construction Details, Sheet 11



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Provide Beach Accessibility for More User Groups

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Improve Emergency Access

Emerson Avenue

Village Road

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Path Closures Will Eliminate Mid-block Beach Access Points

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Path Closures Will Reduce Destruction of the Frontal Dune and Trampling of Dune Vegetation

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Improved Beach Paths Will Reduce Maintenance Costs

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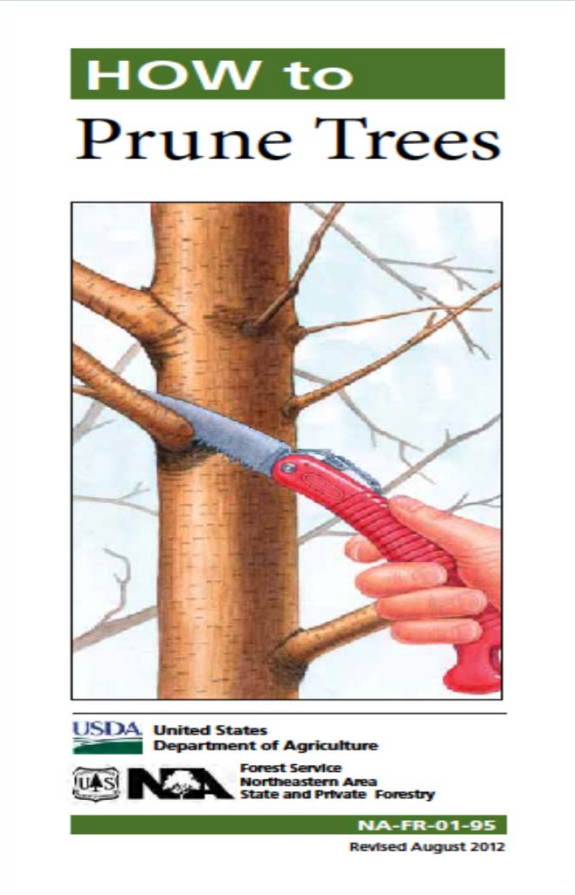
Proper Planting and Maintenance of Dune Vegetation



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Properly Maintain Wildlife Habitat

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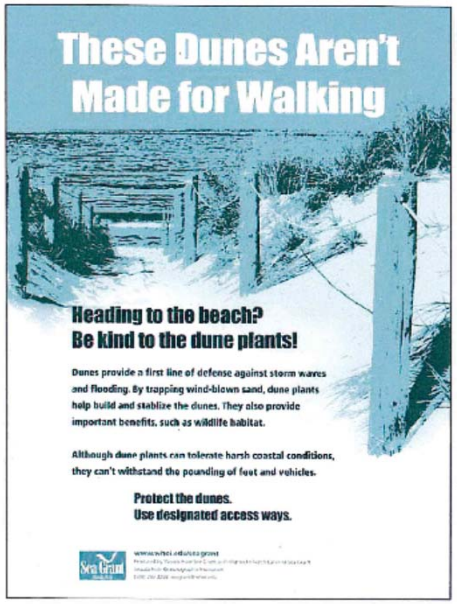
Management of Pedestrian Traffic in Heavy Use Areas

All-weather outdoor signs help educate and orient pedestrian traffic out of dune areas and are available free of charge from Woods Hole Sea Grant and Cape Cod Cooperative Extension.



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Public Notice

- Public access and beach path improvements are discussed at 10/15/15 RAB meeting with public attending. Meeting Minutes on LT website.
- HMM is authorized to proceed on beach maintenance & path upgrades at 12/7/2015 Council meeting.
- HMM updates Council at 12/21/2015 meeting and commits to present plans to public at 2/1/16 Council meeting.
- Public notice required for NJDEP application submittal includes; Newspaper, County Planning, Twp. Clerk, Planning Board, Environmental Commission and Construction Official.
- NJDEP application 30-day Public Comment Period Notice includes; 200’ radius property owners, County & Local Officials.

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A Place to Remember…

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Existing Coarse Aggregate Soils on Dunes and Beach

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Existing Use of Split Rail Fence

Wildwood Avenue

Roslyn Avenue

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Failed Use of Snow Fence on Newly Planted Dune

Whittier Avenue, 5/20/15

Whittier Avenue, 12/16/15

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Jonas Storm Data – Cape May Station

Day	Date	Time	Highest Tide (NAVD88)	Departure	Wind Speed, Direction & Gusts		
Saturday	1/23/16	8:30 am	5.96' *	3.47'	26 mph	ENE	57 mph
Saturday	1/23/16	8:42 pm	4.57'	3.03'	18 mph	NNE	37 mph
Sunday	1/24/16	8:54 am	4.78'	2.21'	17 mph	NNW	29 mph

*The highest observed water level ever recorded at the Ferry Terminal's NOAA Tide station

Hurricane Sandy

Wednesday	10/29/12	9:00 pm	5.75'	3.13'	50 mph	W	63 mph

Mean High Water = 1.99' NAVD

Source: NOAA Station: 8536110 Cape May, NJ (Ferry Terminal)

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Jonas Post-storm Beach Conditions

Lincoln Boulevard

Franklin Avenue

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Jonas Post-storm Beach Conditions

Whittier Avenue

Emerson Avenue

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Jonas Post-storm Beach Conditions

Wildwood Avenue

Bay Avenue

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Sandy Post-storm Beach Conditions

Holmes Avenue 10/30/12

Holmes Avenue 12/16/15

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Opinion of Probable Cost for Beach Path Improvements:

I-5 soil aggregate @ $10.50 ton x 647 tons = $6,793.00
Split rail fence @ $2.79 LF. x 5,504 LF = $15,368.00
Total = $22,161.00

Labor to be performed in-house by Department of Parks & Recreation and Department of Public Works.

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Steven C. Morey, CEP

Registrations
Certified Environmental Professional – Environmental Planning #09050439
Education
Graduate Certificate, Coastal Studies, Nova Southeastern University, 2014
BA, Geography, Glassboro State College, 1990
AAS, Civil Engineering Technology, Gloucester County Community College, 1987
Skills & Experience
Mr. Morey has extensive site planning and environmental consulting experience, on both public and private sector projects with particular proficiency in coastal zone management. His experience includes the preparation of NJ CZM Environmental Impact Statements (EIS) and technical reports, including a city-wide storm flooding engineering study, beach carrying capacity study, ESA Section 7 Formal Consultation Biological Assessment, and wetlands mitigation plans and other work products in support of permit application submissions to the US Army Corps of Engineers, US Fish and Wildlife Service, New Jersey Department of Environmental Protection (NJDEP), New Jersey Pinelands Commission, and the Pennsylvania Department of Environmental Resources.

Field investigation experience includes wetlands delineations in New Jersey, Pennsylvania, New York, West Virginia, and Delaware, wetlands mitigation site analyses, beach and dune delineations, site evaluations of soils and hydrologic conditions, biotic community inventories, wildlife habitat assessments, endangered/threatened species surveys, and photographic documentation and interpretation of site/project features and conditions.

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Steven C. Morey, CEP

Stormwater Outfall Extensions, Lower Township, NJ
Prepared EIS and threatened and endangered wildlife or plant species habitat impact assessments and applications for NJDEP Waterfront Development/CAFRA Individual Permits, NJDEP Tidelands Licenses, and US Army Corps of Engineers (USACE) approvals for reconstruction of 21 outfalls along the Delaware Bay.

Cox Hall Creek Basin Wetlands Restoration, Lower Township, NJ
Worked with the Cape May County Planning Department and U.S. Fish and Wildlife Service to coordinate a NJDEP Freshwater Wetlands permit and prepare a USACE Nationwide Permit for an outfall pipe/water control structure through the dunes to the Delaware Bay to allow controlled tidal ingress and freshwater egress to create a sustainable brackish marsh system in the 87-acre Cox Hall Creek lower wetlands basin.

Diamond Beach, Seapointe Village Resort, Lower Township, NJ
Prepared a NJDEP CAFRA permit application for a private beach resort for NJDEP approval for beach fee calculations, placement of seasonal tourism structures, and beach and dune maintenance activities. Tasks included performing dune delineations and a beach carrying capacity study.

Multiple Beach Renourishment Projects, Avalon Borough, Cape May County, NJ
Prepared an EIS, threatened and endangered wildlife or plant species habitat impact assessments, and applications to NJDEP and USACE for approvals for multiple beach renourishment projects. Performed site investigations for regulated wetlands. Prepared a Biological Assessment for the impacts of beach scraping on piping plover and seabeach amaranth habitat in support of a USFWS Section 7 Endangered Species Act Tier 2 Formal Consultation.