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APPENDIX J

OPERATION, MAINTENANCE, REPAIR, REPLACEMENT AND REHABILITATION MANUAL

FIRE ISLAND INLET TO MONTAUK POINT

December 2015

OPERATION, MAINTENANCE, REPAIR, REPLACEMENT AND REHABILITATION MANUAL

FIRE ISLAND INLET TO MONTAUK POINT

Table of Contents

Table of Contents (continued)

APPENDIX A
I. AUTHORIZATION AND CONSTRUCTION HISTORY

II. PROJECT DESCRIPTION

APPENDIX B

ATTACHMENTS

Table of Contents (continued)

TABLES

FIGURES

OPERATION, MAINTENANCE, REPAIR, REPLACEMENT AND REHABILITATION MANUAL

FIRE ISLAND INLET TO MONTAUK POINT

I. INTRODUCTION

1. Project Location. The Federally authorized project area extends east from Fire Island Inlet to Montauk Point along the Atlantic Coast of Suffolk County, Long Island, New York as shown in Figure 1. The study area includes the barrier island chain from Fire Island Inlet to Southampton, the Atlantic Ocean shorelines from Southampton to Montauk Point, and the adjacent back-bay areas along Great South, Shinnecock and Moriches Bays. Total study length encompasses approximately 83 miles along the Atlantic Ocean and comprises approximately 70 percent of the total ocean frontage of Long Island, as well as hundreds of miles of bay shoreline.

2. Purpose. The Fire Island Inlet to Montauk Point, New York Storm Damage Reduction Project is a federally authorized project intended to provide beach erosion control and hurricane protection for approximately 83 miles of the Atlantic Coast of Long Island, from Fire Island Inlet to Montauk Point.

II. PROJECT DESCRIPTION

3. Plan. The Fire Island Inlet to Montauk Point, New York Storm Damage Reduction Project involves a multi-pronged approach to erosion and hurricane protection involving beachfill, sediment management and building retrofits. More specifically, the project includes a 15 ft high design dune (NGVD29) with a 90 ft wide berm placed along the Minimum Real Estate Impact (MREI) line. This line extends along Great South Bay and Moriches Bay and has a planned renourishment life of 50 yrs. Furthermore, a 13 ft high dune (NGVD29) and Proactive Breach Response Plan (BRP) is included along Shinnecock Bay. Additionally, modification of the Westhampton groin field; an Inlet Management Plan with sand bypassing at the three inlets; and a non-structural building retrofit plan for structures in the 10 year floodplain, in conjunction with road raising are also included. Other sediment management projects could also be initiated including but not limited to Downtown Montauk and Potato Road.

4. The project includes approximately 4.4M cubic yards of initial material placed on Fire Island. The locations of the beachfill projects were strategically chosen to protect both barrier island and inland properties, in addition to maintaining natural littoral processes. Locations are shown in Figure 2 and initial beachfill quantities are shown in Table 1. The initial beachfill quantities were updated in 2013 in the wake of Super Storm Sandy and will need to be revised once preconstruction survey profiles have been collected.

Available borrow areas with the project limits are shown in Attachment C. The large quantity of material placed at Smith Point County Park was to both protect inland communities such as Mastic Beach and provide supply to the littoral system which predominantly flows from northeast to southwest along Long Island. Smith Point County Park is a low lying area and is vulnerable to overwash and breaching. Two different design sections will be used on Fire Island and are shown below and in Table 1:

a. 90-foot wide berm with no dune (Fig 4)
b. 90-foot wide berm with a dune at +15.0 feet NGVD29 (Fig 5)

Table 1: Initial Beachfill Quantities

Design Reach	Design Section	Name	Reach Length (ft)	Total Initial Fill Volume (CY)
GSB-1A	Fig 6	Robert Moses State Park	23,200	822,790
GSB-1B	Fig 6	Fire Island Lighthouse	5,400	159,261
GSB-2A	Fig 5	Kismet to Lonelyville	9,000	268,687
GSB-2B	Fig 5	Town Beach to Corneille	4,400	378,793
GSB-2C	Fig 5	Ocean Beach to Seaview	3,800	188,920
GSB-2D	Fig 5	Ocean Bay Park to Point O'Woods	7,200	176,802
GSB-3A	Fig 5	Cherry Grove	3,000	9,623
GSB-3C	Fig 5	Fire Island Pines	6,400	334,628
GSB-3E	Fig 5	Water Island	1,200	12,674
GSB-3G	Fig 5	Davis Park	4,200	340,310
MB-1A	Fig 5	Smith Point County Park to TWA Memorial	6,400	326,589
MB-1B	Fig 6	Smith Point County Park (A)	13,000	744,675
MB-2A	Fig 6	Smith Point County Park (B)	7,800	668,819
Total			**95,000**	**4,432,572**

5. The project also includes areas of Proactive Beach Response where feeder beaches will be placed. Exact quantities of initial fill are unknown, but projects could be initiated fronting Shinnecock Bay (Fig 3). These would include a 90-foot wide berm with a dune at +13.0 feet. This design section is shown in Figure 6.

6. The project also includes 15 groins fronting the community of Westhampton. An Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R) Manual for the “Westhampton Interim Project, Moriches to Shinnecock Reach” was completed on October 25, 2012. To avoid repetitiveness, the body of that manual is not included in the

main report, however, it shall be considered part of this OMRR&R Manual and incorporated as Attachment E. The interim OMRR&R manual will be referred to as Reference 1, Attachment E in the remainder of this manual.

III. PURPOSE AND SCOPE OF THE OMRR&R MANUAL

7. Purpose. In accordance with the terms of the Project Cooperation Agreement (PCA) executed between the US Government and New York State Department of Environmental Conservation (NYSDEC), this Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R) Manual is provided to assist the non-Federal sponsor (State) in carrying out its obligations under the terms of the PCA. This manual describes operations, maintenance, inspection and record keeping procedures required to maintain the intended purpose of the project necessary to ensure desired project performance.

8. Superintendent. The State shall appoint a superintendent who shall be directly in charge of an organization responsible for the efficient operation of all of the structures and facilities, for inspection and maintenance of the project works, and for administration, all without cost to the United States. The Superintendent will assure the State's compliance with its obligations for OMRR&R under the terms of the PCA for this project. The Superintendent shall have the administrative, maintenance and operational responsibilities which are outlined in the OMRR&R manual.

9. Definitions. For the purposes of this OMRR&R manual, some important terms are defined below:

a. Maintenance, Repair, Replacement and Rehabilitation: For the purpose of this beachfill project, the terms maintenance, repair, replacement and rehabilitation are used interchangeably. These are defined collectively as (a) grading and reshaping the beach using sand beyond the project design section,(b) maintenance of any planted vegetation, sand fencing, and dune cross-overs, and (c) maintenance of groins and beach areas cited in Reference 1, Attachment E.

b. Periodic nourishment is defined as: (i) Placement of additional sand fill to restore an advanced nourishment berm at scheduled intervals, or (ii) Placement of additional sand fill for the project, when required, to restore the design section. Periodic nourishment is considered continuing project construction and shall be cost-shared in accordance with the terms of the PCA and PCA Amendment.

c. Advanced nourishment is defined as: periodic nourishment material placed at the time of initial construction.

d. Renourishment is defined as periodic nourishment placed after initial construction has been completed.

e. Project Life : Project life for the Fire Island to Montauk Point Reformulation Study project is 50 years.

f. Table of Tidal Datums: Tidal datums for the project area are listed below.

Table 2: Tidal Datum Relationships

Datum*	NAVD (ft)	NGVD (ft)	MLLW (ft)
Mean Higher High Water (MHHW)	1.3004	2.2454	3.0975
Mean High Water (MHW)	1.0482	1.9932	2.8452
North American Vertical Datum NAVD88	0.0000	0.945	1.7970
Mean Tide Level (MTL)	-0.3162	0.6288	1.4809
National Geodetic Vertical Datum NGVD29	-0.945	0.0000	0.8520
Mean Low Water (MLW)	-1.6806	-0.7356	0.1165
Mean Lower Low Water (MLLW)	-1.7970	-0.8520	0.0000

* computed using NOAA VDATUM ver. 3.2, at 1,552,000E, 322,000N (lat. 41.0324508N, long. 71.9419844W, eastern end of project site)

IV. ELEMENTS OF THE PLAN AND THEIR FUNCTION

10. Beachfill

a. The storm protective feature of the project consists of hydraulically placed sand fill, and is described in Paragraphs 4-6 above. Seaward of the storm protection dune and berm is additional sacrificial fill material known as periodic nourishment material. This sacrificial nourishment material is allowed to erode by natural processes, and is replaced at scheduled intervals shown in Table 2. The total renourishment assumes a 50-year design life. Note that while reaches GSB-3A and MB-2A require initial fill, renourishment is not expected in the future. Periodic nourishment is necessary because erosive forces act constantly on the shoreline. In order to ensure that the design section is in place when a storm hits, sufficient sand must be placed to account for normal, daily sand losses, sand losses due to small storms (less than 5-year recurrence interval) and effects of sea level rise within the project area limits.

Table 3: Renourishment Beachfill Quantities

Design Reach	Name	Renourishment Fill Length (ft)	Renourishment Interval (yr)	Renourishment Interval Volume (CY)	Total Renourishment Fill Volume (CY)
GSB-1A	Robert Moses State Park	12,000	4	410,422	4,925,067
GSB-1B	Fire Island Lighthouse	5,400	4	184,690	2,216,280
GSB-2A	Kismet to Lonelyville	9,000	4	307,817	3,693,800

GSB-2B	Town Beach to Corneille	4,400	4	150,488	1,805,858
GSB-2C	Ocean Beach to Seaview	3,800	4	129,967	1,559,604
GSB-2D	Ocean Bay Park to Point O'Woods	7,200	4	246,253	2,955,040
GSB-3A	Cherry Grove	3,000	4	0	0
GSB-3C	Fire Island Pines	6,400	4	437,784	5,253,404
GSB-3E	Water Island	2,000	4	13,681	164,169
GSB-3G	Davis Park	4,200	4	344,755	4,137,056
MB-1A	Smith Point County Park to TWA Memorial	6,400	4	87,557	1,050,681
MB-1B	Smith Point County Park (A)	13,000	4	177,850	2,134,196
MB-2A	Smith Point County Park (B)	0	4	0	0
Total		**76,800**		**2,491,263**	**29,895,155**

Note: The renourishment interval and volume shown in the table are estimates, actual renourishment will be based on monitoring results and funding

b. When hurricanes or northeasters or other high water events impact the project area, the design beach is designed to absorb the wave energy of the storm, thus protecting property landward of the beach. A beach the width of the design section will ensure that wave runup does not impact most structures. It also limits the height of waves which travel inland during very severe high water events, and provides a sufficient buffer so that erosion which occurs during storms does not undermine structures. During extreme storms it is expected that some portion of the design cross section will be eroded.

c. **Dunes.** Existing dunes along the 83 mile project vary in condition. Most of the areas that required initial fill also required dune restoration. However, some areas have been hit harder than others over the years. For example, reaches such as GSB-2B and GSB-3G will require more initial dune restoration than others to achieve the +15 ft design elevation. These areas may require renourishment periodically. Table 3 shows the initial required dune fill in square yards per linear foot of dune.

d. Dunes function as reservoirs of sand provided to the fronting berm during high

water events that exceed the berm height, and as levees that preclude the inland penetration of waves and storm surges. In addition, the dunes will ensure that wave runup does not impact most structures behind the dunes. Beach grasses and sand fence maintain dunes by trapping and holding wind-blown sand. Passage over dunes is restricted to dune walkovers and designated vehicle access ramps, in order to preclude dune erosion due to foot and vehicle traffic. For this area of the country, American beachgrass (Ammophila breviligulata) was planted. Damaged dune grass areas should be replanted. If the dune cross section itself has been eroded, it should be restored to the original design dimensions as soon as possible, followed by the replanting of beach grasses. Sand fencing should be maintained along the dunes to augment grasses for erosion control and capture of wind-blown sand.

Table 4: Initial Dune Quantities

Design Reach	Name	Reach Length (ft)	Dune Fill Volume (CY)	Dune Fill (SY/ft)
GSB-1A	Robert Moses State Park	23,200	58,946	2.5
GSB-1B	Fire Island Lighthouse	5,400	24,038	4.5
GSB-2A	Kismet to Lonelyville	9,000	56,703	6.3
GSB-2B	Town Beach to Corneille	4,400	45,879	10.4
GSB-2C	Ocean Beach to Seaview	3,800	22,589	5.9
GSB-2D	Ocean Bay Park to Point O'Woods	7,200	36,101	5.0
GSB-3A	Cherry Grove	3,000	163	0.1
GSB-3C	Fire Island Pines	6,400	34,345	5.4
GSB-3E	Water Island	1,200	2,541	2.1
GSB-3G	Davis Park	4,200	32,696	7.8
MB-1A	Smith Point County Park to TWA Memorial	6,400	31,196	4.9
MB-1B	Smith Point County Park (A)	13,000	54,760	4.2
MB-2A	Smith Point County Park (B)	7,800	18,707	2.4

e. **Minimum Beachfill Cross-Section.** In order for the beachfill to function as designed, the fill cross sections must be maintained to those shown in Figures 4 to 6 and Reference 1, Attachment E. Human activities which cause loss of material such as vehicle traffic, excavation, pipe outfalls which drain onto the beach, etc. should be prohibited. If human induced sand losses occur, the design cross section should be returned to its original dimensions as soon as possible and the cause of erosion should be removed or relocated. Natural losses due to wind should be minimized with the use of sand fence or other methods. Losses of beachfill due to non-storm erosion, storms, or other high water events should be noted during inspections so that maintenance or renourishment actions can be initiated.

11a. Groins

Between 1965 and 1970 fifteen ocean-fronting groins were constructed within the community of Westhampton in an attempt to stabilize the shoreline. The shore-perpendicular structures were effective in reducing recession within the field, however impoundment of littoral material within the compartments starved the downdrift beaches, accelerating erosion west of groin 15. In order to minimize these unintended impacts, the groin field was tapered as part of The Westhampton Interim Project. Specifically groins 14 and 15 were shortened and lowered and a new groin designated 14a was constructed. A more detailed description of the interim project and the requirements for maintenance may be found in Reference 1, Attachment E.

11b. Appurtenant Structures

a. Pedestrian Crossover. Pedestrian dune crossovers are raised timber structures which allow people to cross over the dune and access the beach without damaging dune vegetation or degrading the dune cross-section. A typical pedestrian crossover will consist of a pile-supported raised walkway over the top of the dune, with stairs or ramps on either side. Walkways are raised up above the top elevation of the dune with clearance for vegetation and some growth of the dune from the capture of wind-blown sand.

b. Vehicular Crossover. Vehicular crossovers are ramps which allow vehicles to cross over the dune and access the beach without damaging dune vegetation or the dune itself. A typical vehicular crossover will consist of gravel or other hard material surface placed on top of the sand dune, at a grade suitable for vehicular operation. Pedestrians may be allowed to cross over the dune via the vehicular crossovers, if beach operation allows.

c. Vegetation & Sand Fence. Vegetation on the dune captures wind-blown sand, keeping the sand within the project limits, and preventing sediment incursion onto upland properties. Captured wind-blown sand may cause the dunes to grow in height and width. American beach grass (Ammophila breviligulata) was specified in the Downtown Montauk Stabilization Project construction contract as suitable for this area of the country. Sand fencing around vegetated areas and designated locations prevents trespass, and minimizes damage from pedestrian or vehicular passage. Sand fencing may also be deployed to capture wind-blown sand, containing the sand and possibly causing the dunes to grow in height and width.

V. MAINTENANCE AND OPERATION OF THE PROJECT

12. Administrative Responsibilities

a. In accordance with the terms of the PCA for this project, the State shall be responsible for maintaining public ownership of the publicly-owned shore and public use of the privately-owned shore which are the basis of the Federal participation in the project. This includes, but is not limited to, preventing trespass or encroachment by private interests by the placement onto these shores or seaward of the established baseline of any temporary or permanent structures, except as specifically permitted by the District Engineer, U.S. Army Engineer District, New York (hereinafter referred to as the District Engineer) or authorized representative.

b. Prohibiting any excavation of or construction on, over, under, or through the dunes (including the 25-ft buffer zone landward of the dune), berms or groins (Ref 1) without prior written approval of the District Engineer or his authorized representative.

c. Prohibiting alterations in any feature of the project that may affect its functional performance unless prior written approval has been obtained from the District Engineer. If approved, the alterations shall be constructed in accordance with standard engineering practice. Advice regarding the effect of any proposed alterations on the functioning of the project and information concerning methods of construction acceptable under standard engineering practice may be obtained from the District Engineer or, if otherwise obtained, shall be submitted for approval. Drawings or prints showing such alterations as finally constructed shall be furnished to the District Engineer after completion of the work.

d. Permitting the District Engineer, or authorized representative, to have access to the project at all times.

e. The Superintendent shall assure that maintenance measures or repairs which the District Engineer deems necessary are promptly taken or made.

f. Any major repair, replacement, or rehabilitation design shall be approved by the District Engineer prior to execution, and inspected afterward for satisfactory accomplishment of the design.

g. The Superintendent shall maintain organized records of activities and costs covering maintenance, operation, inspection, repair and replacement of protective works. These records shall be available for inspection by the District Engineer or authorized representative. Copies shall be provided to the District Engineer or authorized representative upon written request.

13. Maintenance Responsibilities. The Superintendent shall provide such maintenance as may be required to ensure serviceability of the dune, berm, and groins (Ref 1) in time of hurricane or other severe storms or events in which above normal tides may be generated. Maintenance and repair will be performed for the life of the Interim Project, beginning at project turnover under the terms of the PCA. Prompt action shall be taken

to correct localized, excessive loss of dune or berm cross section, and dislocation of groin stone (Ref 1). However, it is acknowledged by all parties that the ultimate storm damage reduction capabilities of the project depends upon periodic renourishment of the dune and berm to replace losses due to erosion. If, for any reason the renourishment is delayed, the Superintendent will be responsible only for maintaining the dune and berm cross-section in the most effective condition, but will not be responsible for replacing lost material from offsite sources. The Superintendent shall ensure that:

a. The dune and berm shall be graded and reshaped to original cross section elevations to repair erosion caused by wind or wave action, or loss of elevation caused by human activities. This may include moving sand from areas of excessive accumulation to areas of depletion within practical limits of grading equipment. Maintenance activity shall commence when the berm elevation drops below +8.5 ft. NGVD for approximately 25% of the design berm width, for a continuous alongshore distance of 50 ft. Areas of the berm which accumulate material above approximately +10.5 ft. NGVD elevation, or which exceed the berm widths shown in Figures 4 to 6 and Reference 1, Attachment E by more than 15 ft. within the groin field and 15 ft. west of the groin field may be used as a sand source for eroded portions of the beach or dune. For the constructed dunes, maintenance activity shall commence when the dune top elevation drops below approximately +14.0 ft. NGVD for the +15.0 ft dune or +12.0 ft. NGVD for the +13.0 ft dune or when more than 5 ft. of the dune width is lost.

b. In the event of scarping, the scarp shall be flattened at controlled vehicle access points to allow safe passage to the beach.

c. Measures shall be taken to prevent sand from blowing off the dune or berm onto nearby streets and into adjacent properties. Sand fences shall be kept in an upright position and in serviceable condition. Sand fence and/or vegetation used to catch blowing sand shall be preserved and replaced where needed.

d. To prevent trespassing or encroachment of the dunes, signs indicating to keep off the dunes should be placed at intervals along the dune bases. Fencing should be used where necessary.

e. Hazardous conditions or debris shall be eliminated where possible. Abrupt variations in berm grade shall be smoothed out and the beach berm and foreshore shall be kept free of trash and hazardous debris during periods of recreational use. Hazardous conditions which cannot be eliminated shall be clearly marked and isolated from public access to the extent practicable.

f. Walkways over the dune shall be maintained and kept in a good state of repair.

g. Vehicle access shall be restricted to authorized accessways. The authorized vehicular access ramps shall be maintained in operable condition.

h. Causes of seepage, saturated areas, piping, or scour which endanger the stability

or functioning of project elements are to be remedied.

i. The maintenance of all groins shall meet requirements shown in Reference 1, Attachment E, Sec 16i.

14. Operational Responsibilities

a. Inspections. Conduct periodic inspections of the project to ensure that:

- Regular profile data is obtained.
- No drains discharge onto the beach.
- The beach is being kept free of trash and hazardous debris.
- The dune vegetation is not being damaged by such actions or events as burning, mowing, disease, drought, etc.
- There is no unauthorized vehicular traffic on the dunes or the beach, and no unauthorized pedestrian traffic on the dunes.
- There is no excavation or construction on, over, under, or through the beach, dunes,(incl. 25' landward right-of-way) or the groins except as specifically permitted by the District Engineer or his authorized representative.
- Any unusual conditions of the dune or beach fill such as scarping, steep slopes, excessive erosion, etc. are identified.
- Walkways over the dunes are exclusively for pedestrian use.
- The 25 foot right of way landward of the constructed dune cross-section is maintained clear of obstructions.
- Any change in the condition of the groins is identified, noting any settlement, rock displacement, basis for subsequent repair.
- Maintenance recommendations to remedy any problems are to be made and used as a basis for implementation.
- All access ways to the beach are to be maintained in proper operational condition.
- Access to structures on the beach whether temporary or permanent shall be maintained in a safe condition. Maintenance of access shall not compromise the design section.

Project inspections including a complete profile survey shall be made in March-April of each year. Project inspections including beach width measurements and groin inspections shall be made immediately before and after each severe tropical or extra tropical storm or high tidal event, if possible. The forms furnished with Attachment B shall be used as a checklist in making such inspection. Reports shall be submitted as described on Page 1 of 7 of Attachment B no later than 10 days after inspection.

1. Surveyed Profile Data. Annual profile surveys shall be made along profiles listed in Table 4 and Reference 1, Attachment E for a total of 110 annual survey profiles. Table 4 shows the coordinates of the profile origin points and are in feet, referenced to a New York State Plane NAD83, Long Island Zone 3104 projection. A full set of long profiles will be collected periodically by the New York District,

USACE. During those years, the New York District will coordinate with the Superintendent to reduce monitoring efforts. Aerials of the profile origin points are shown in Figures 7 through 26.

The annual profiles should be surveyed from the profile origin marker to wading depth (approximately Mean Lower Low Water) every March-April. Profiles shall be taken perpendicular to the shoreline, at azimuths shown in Table 4. Data shall be reported in the form of distances from the profile origin point and elevations relative to NAVD. Elevations should be taken approximately every 20 feet. At the dune, enough survey points should be taken to discern the existing cross section of the dune. In any case where the origin point is seaward of the dune, additional points shall be collected to capture all relevant features (i.e. dune crest, dune toe, berm limit, high water line, etc.). The profile number and the date of the survey should be indicated. Groin profiles shall be taken per requirements in Reference 1, Attachment E. Profile data will be used to show loss or gain of material beyond the minimum design section, and will be used to help initiate future renourishment. Profile data shall be included in the March-April inspection report to the District Engineer. The point of contact for any assistance needed in locating profiles or other survey questions is:

U.S. Army Corps of Engineers
Caven Point Marine Terminal
3 Chapel Avenue, Pt. Liberte
Jersey City, NJ 07305
Attn: Chief, Survey Section

Table 5: Coordinates of Profile Origin Points

Design Reach	Reach Name	Profile	Northing	Easting	Azimuth
GSB-1A	Robert Moses State Park	F1	166484	1177094	159
		F2	166489	1179345	178
		F3	166494	1181595	159
		F4	166731	1184390	178
		F5	166967	1187184	159
		F6	167299	1189755	175
		F7	167631	1192325	159
		F8	168307	1194977	173
		F9	168983	1197629	159
GSB-1B	Fire Island Lighthouse	F10	169543	1199891	170
		F11	170102	1202154	159
		F12	170816	1204667	159
GSB-2A	Kismet to Lonelyville	F13	171157	1205776	159
		F14	171541	1207090	159
		F15	171933	1208285	159
		F16	172392	1209649	159
		F17	172775	1210826	159
		F18	173087	1212030	159
		F19	173457	1212992	159
GSB-2B	Town Beach to Corneille	F20	173916	1214376	159
		F21	174200	1215275	159
		F22	174446	1216239	159
		F23	174775	1217360	159
GSB-2C	Ocean Beach to Seaview	F24	175071	1218827	159
		F25	175427	1220156	159
		F26	175791	1221346	159
GSB-2D	Ocean Bay Park to Point O'Woods	F27	176127	1222457	159
		F28	176540	1223792	159
		F29	176816	1224548	159
		F30	177406	1226277	159
		F31	177932	1227685	159
GSB-3A	Cherry Grove	F36	180743	1237559	159

GSB-3C	Fire Island Pines	F39	181991	1241331	159
		F40	182312	1242422	159
		F41	182800	1243822	159
		F42	183198	1244973	159
GSB-3E	Water Island	F49	186915	1253960	159
		F50	187177	1254638	159
GSB-3G	Davis Park	F55	189863	1260422	159
		F56	190541	1261723	159
MB-1A	Smith Point County Park to TWA Memorial	F71	208024	1298571	159
		F72	209886	1302770	159
MB-1B	Smith Point County Park (A)	F73	210496	1304328	159
		F74	211106	1305734	159
		F75	211969	1307345	159
		F76	212559	1308911	159
		F77	214321	1312891	159
		F78	215331	1315913	159
MB-2A	Smith Point County Park (B)	F79	216604	1318843	159
		F80	217657	1321197	159
MB-2C	Cupsogue	W1	220397	1330053	159
		W2	221060	1331311	159
		W3	221725	1332571	159
		W4	222227	1334218	159
		W5	222779	1335613	159
MB-2D	WHPTIN Pikes	W740	223136	1336217	159
		W5.1	223175	1336531	159
		W5.2	223425	1337182	159
		W5.3	223640	1337743	159
		W5.4	223853	1338084	159
		W6	223843	1338182	159
		W6.1	224195	1339249	159
		W7	224373	1339693	159
		W7.1	224533	1339966	159
		W7.2	224630	1340466	159
		W7.3	224865	1341126	159
		W8	224885	1341201	159
		W680	225207	1341898	159

		W9	225467	1342688	159
		W9.1	225470	1342826	159
		W9.2	225645	1343296	159
		W10	225965	1344213	159
		W10.1	226235	1344887	159
SB-1B	Sedge Island	W27	239203	1379544	159
		W28	240062	1381858	159
		W29	241026	1384235	159
		W30	242022	1386592	159
SB-1C	Tiana	W31	242572	1388075	159
		W32	243145	1389567	159
SB-1D	Shinnecock Inlet Park - West	W33	243809	1391011	159
		W34	244520	1393055	159
		W35	245473	1395000	159
		W36	245840	1395916	159
SB-2B	West of Shinnecock Inlet (WOSI)	W41	248165	1402161	159
		W47	248456	1402620	159
		W46	248726	1403090	159
		W42	248996	1403560	159
		W43	249331	1404307	159
		W45	249410	1404700	159
		W44	249496	1405109	159
P-1G	Potato Road	P34	280617	1468482	159
M-1F	Montauk Beach	M32	321050	1549102	159
		M33	321708	1550902	159
		M34	322467	1552663	159

New York State Plane Coordinates, NAD 1983, Long Island Zone 3104, Feet

2. Beach Width Measurements. All site inspections and pre- and post- storm inspections shall include measurement (1) from the origin point on the profile to the seaward base of the dune, and (2) from the seaward base of the dune to

the Mean High Water line. These measurements will be used to estimate the dimensions of the beach and dune. Assuming Mean High Water to be at +2.0 ft. NGVD and referring to project cross sections shown in Figures 4 to 6, measured beach widths can be compared with the design section. Beach widths shall be measured along all 110 profiles listed in Table 4 and Reference 1, Attachment E.

3. Changes to Profile Monitoring. If conditions warrant, the number profiles to be surveyed over the 30 year project life shall be increased, decreased, or relocated. The decision to alter profile locations and/or the frequency of survey shall be made jointly by the New York District and the local sponsor.

4. Joint Federal-Local Sponsor Inspection. Once a year, a joint inspection shall be made of the project with personnel from the New York District Operations Division and/or Engineering Division and the Superintendent or designated representative. The point of contact for arranging the joint inspection is:

   U.S. Army Engineer District, New York
   Corps of Engineers
   26 Federal Plaza
   New York, NY 10278-0090

   Attn: Chief, Readiness Unit

5. Exceptions to the Requirement for Annual Surveyed Profile Data. In those years when the Federal Coastal Monitoring program performs long range beach profile surveys, the Superintendent is not required to perform the March-April profile survey described in paragraph 14(a)1 above. The Superintendent shall contact the New York District office each year in January to confirm if an exception exists for that year. Point of contact at the District office is

   U.S. Army Engineer District, New York
   Program and Project Management Division
   26 Federal Plaza
   New York, NY 10278-0090

   Attn: Chief, Civil Management Branch

b. The Superintendent shall submit an annual report to the District Engineer covering inspection, maintenance, and operation of the project. Attachment B provides further guidance for the preparation and submittal of this report.

c. Storm Emergencies. The Superintendent will develop a storm emergency plan to cope with severe storm events. The emergency plan should cover measures that minimize the threat to life and damage to property and provide instructions for an orderly storm recovery effort. Pre-storm and post-storm procedures, including inspections and cleanup, and notification of the District Engineer, shall be

performed as necessary.

d. All activities related to the recreational use of the beach, such as provision of life guards, sanitary facilities, trash collection, scarp or slope adjustment, etc. are the responsibility of the non-Federal sponsor and/or their representatives.

e. Notify the New York District if typical maintenance measures of moving sand from accreted areas to eroded areas following a storm (or other erosive events) prove inadequate.

f. Accordingly request the New York District to initiate renourishment when required.

Table 6: Summary of Responsibilities

Administrative and Operational Responsibilities of the Superintendent		Dune and Berm	Pedestrian Crossovers	Vehicular Crossovers	Structures: Groin Field
1	Maintain public ownership and public use.	X	X	X	X
2	Prohibit any excavation of, or construction on, over, under or through project.	X	X	X	X
3	Prohibit alterations in any feature that may affect functional performance of project.	X	X	X	X
4	Perform day-to-day operation of the facilities.	X	X	X	X
5	Restrict vehicle and pedestrian access to authorized accessways	X	X	X	X
6	Permit the District Engineer or representative access to project.	X	X	X	X
7	Maintain organized record of activities and costs covering maintenance, operation, inspection, repair, replacement.	X	X	X	X
8	Ensure safe operation of recreational activities during construction and maintenance operations.	X	X	X	X
Maintenance Responsibilities of the Superintendent		**Dune and Berm**	**Pedestrian Crossovers**	**Vehicular Crossovers**	**Structures: Groin Field**
1	Grade and reshape design dune and berm to original elevations to repair erosion.	X			
2	Regrade storm scarps at pedestrian and vehicular access points	X	X	X	
3	Take measures to prevent sand from blowing off the reinforced dune onto streets and adjacent properties.	X			
4	Prevent trespass or encroachment on the dunes.	X			
5	Eliminate hazardous conditions or debris.	X	X	X	X
6	Maintain pedestrian crossovers in a good state of repair.		X		
7	Maintain vehicular crossovers in operable condition.			X	X
8	Remedy any causes of seepage, saturated areas, piping, or scour which endager the stability or function of project elements	X	X	X	X
Inspection and Reporting Responsibilities of the Superintendent		**Dune and Berm**	**Pedestrian Crossovers**	**Vehicular Crossovers**	**Structures: Groin Field**
1	Conduct semi-annual and pre- post- storm inspections including beach width measurements, inspection of structures, and Mar-Apr profile surveys.	X	X	X	X
2	Submit annual and pre-/post-storm reports to the District Engineer covering inspection, maintenance, operation, repair, replacement, and rehabilitation activities of the project.	X	X	X	X
3	Participate in yearly, joint inspection with Corps.	X	X	X	X

VI. OTHER MATTERS

15. Federal Monitoring.

a. Coastal Monitoring. The Corps of Engineers will monitor the project area for the duration of the project life. Coastal processes monitoring will be performed in order to measure erosion, accretion, and movement of the placed beachfill. The performance of the groins will also be observed.

b. Environmental Monitoring. The Corps of Engineers will periodically survey the project area to determine the impacts, if any, to shorebirds, vegetation or sea life (specifically the piping plover and seabeach amaranth). A description of the environmental monitoring program is provided in Appendix B.

16. Initiation of Renourishment. The determination of when the project should be renourished shall be made by the District Engineer in conjunction with New York State Department of Environmental Conservation (NYSDEC).

17. Post-Storm Fill Placement. In the event of significant storm erosion losses, if the beach fails to naturally build back to the design cross section within 14 days after the passage of a storm, and sufficient accreted material beyond the design section (figures 4 to 6) is not available within the project limits, beach renourishment action should be initiated. The Superintendent shall contact the District in order to inform the District Engineer that storm damage is beyond the scope of OMRR&R, and to request initiation of the renourishment process. The Superintendent shall indicate areas where significant erosion has taken place.

18. OMRR&R During Renourishment Operations. OMRR&R requirements continue during renourishment operations, with the addition of activities needed for safe operation of recreational activities during construction. Additionally, close communication between the contractor, non-Federal sponsor, local personnel and the District office is required.

VII. REFERENCES

1. “Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R) Manual, Westhampton Interim Project, Moriches to Shinnecock Reach”, October 25, 2012.

2. Offshore & Coastal Technologies, Inc. – East Coast (OCTI), 2006. Analysis of Post-Construction Monitoring Data, 1995-2005, Westhampton Interim Project. Prepared for U.S.Army Corps of Engineers, New York District, October.

FIGURES

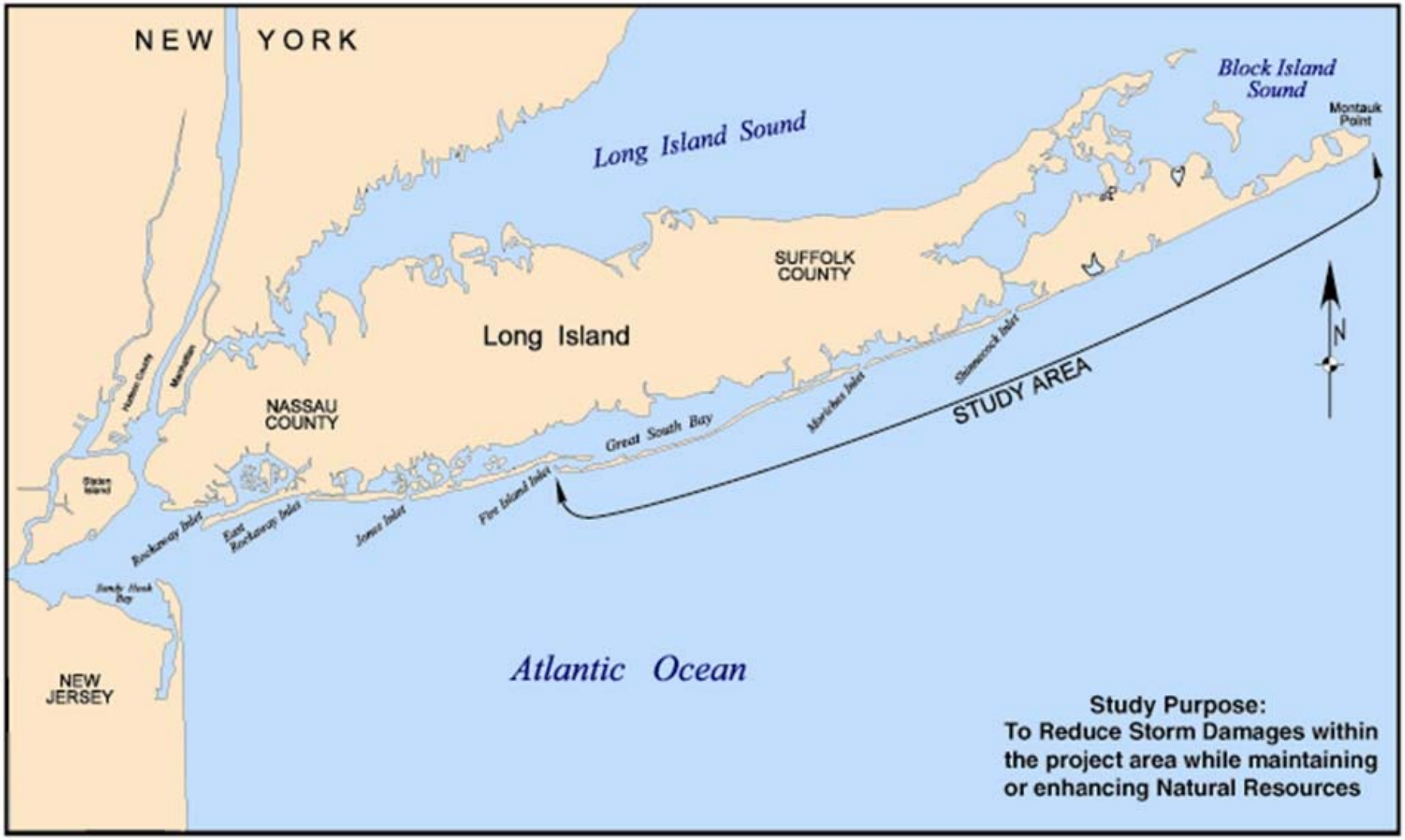


Figure 1: Overall Project Area

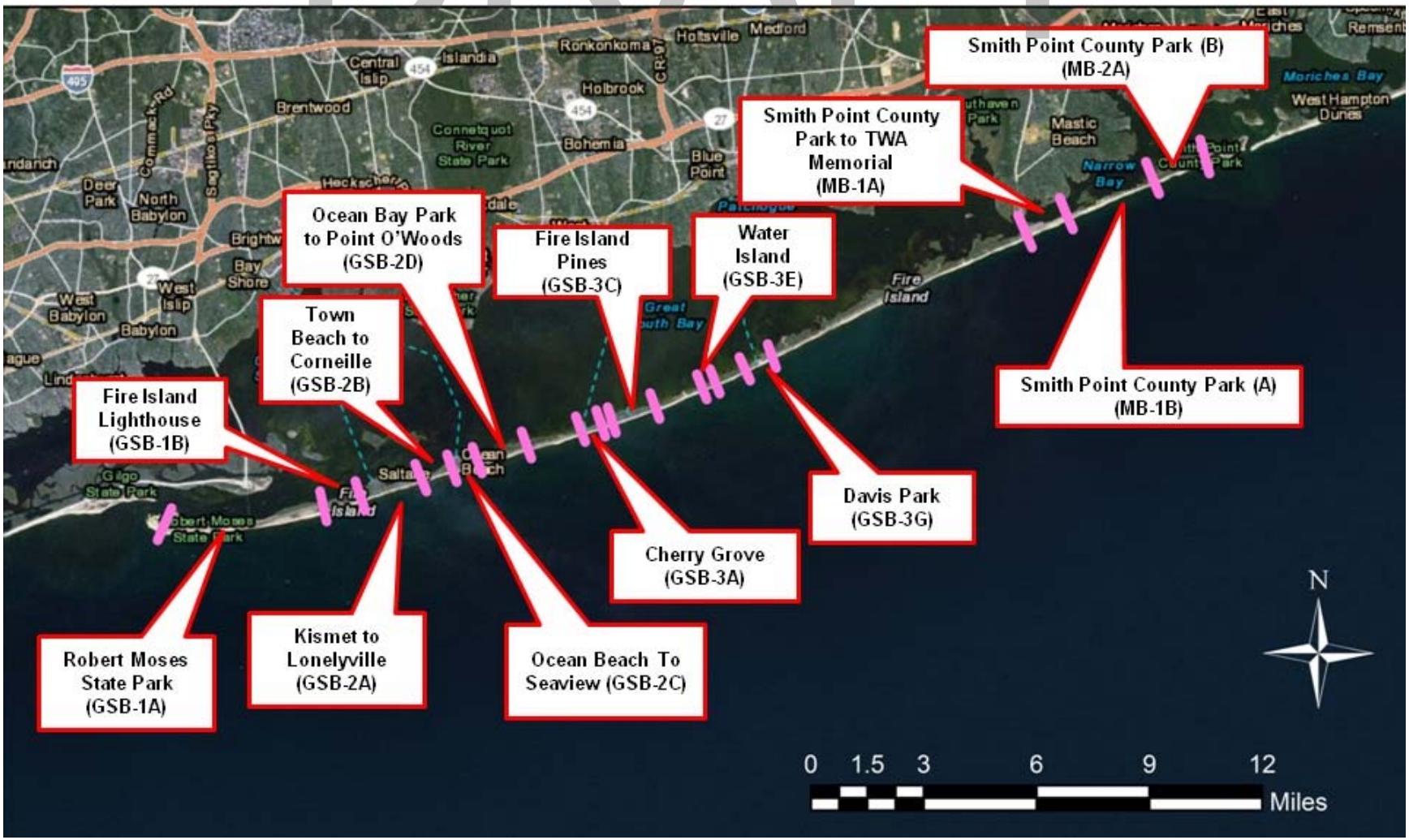


Figure 2: Fire Island Initial Placement Locations

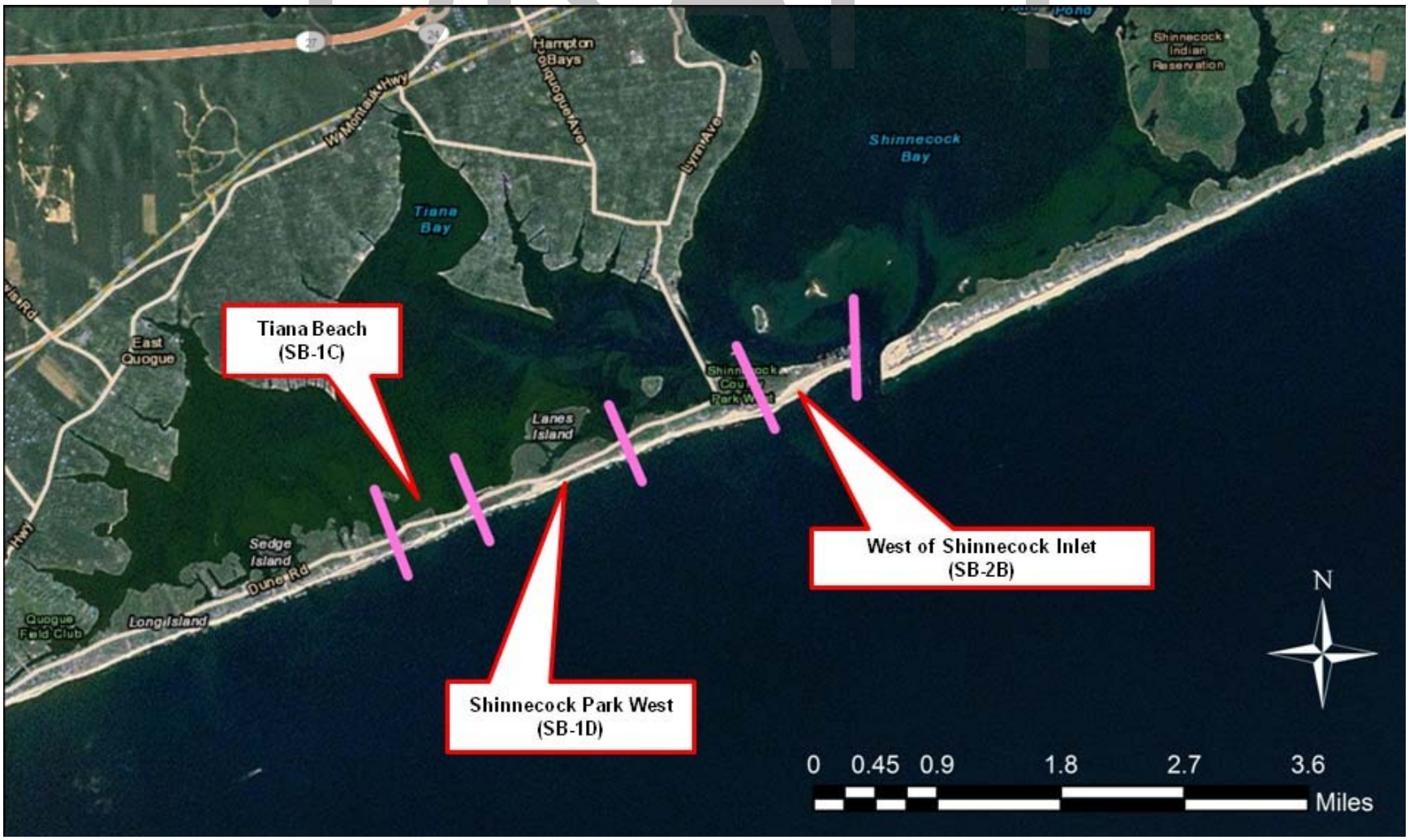


Figure 3: Shinnecock Initial Placement Locations

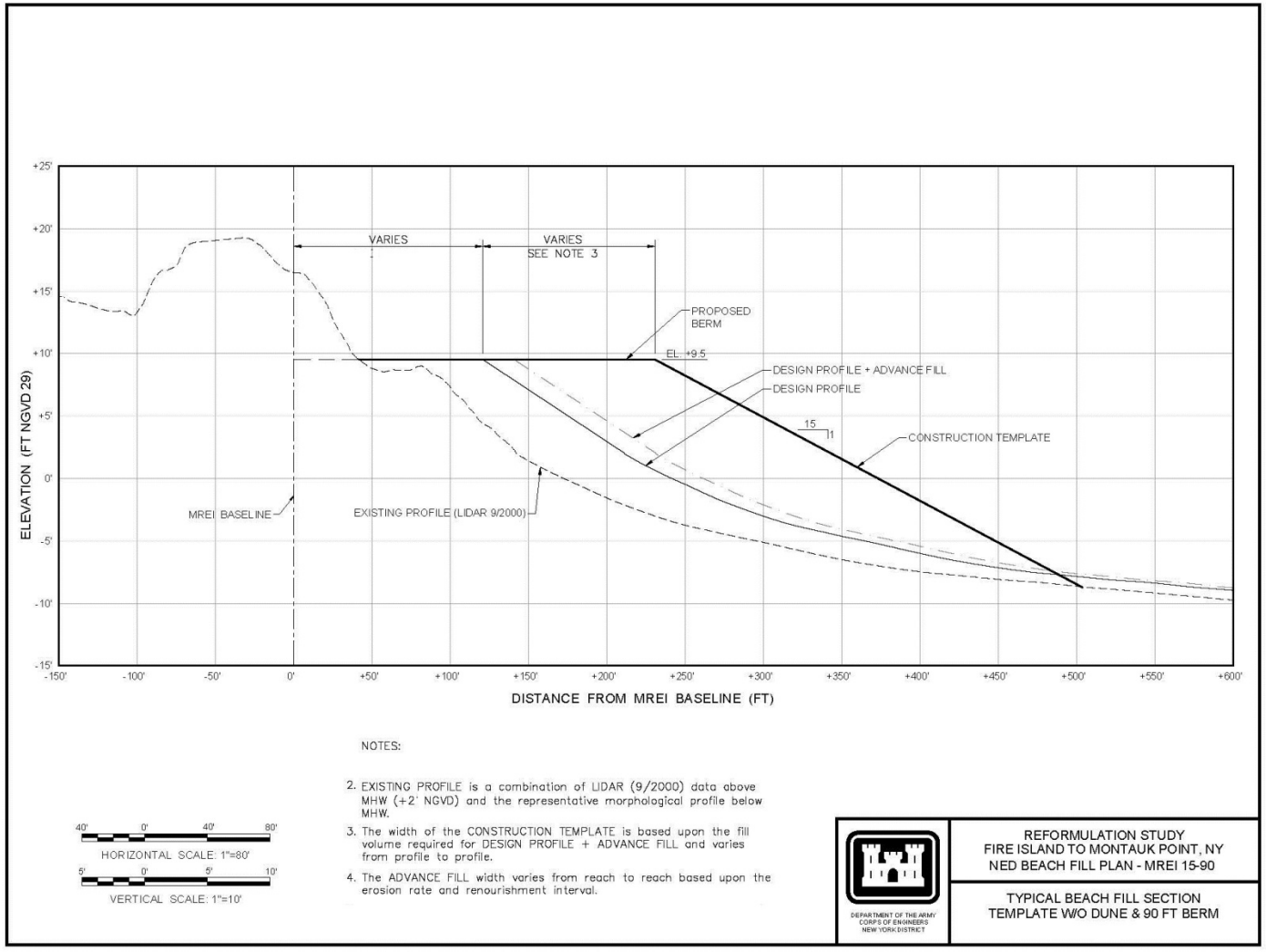


Figure 4: No dune design profile

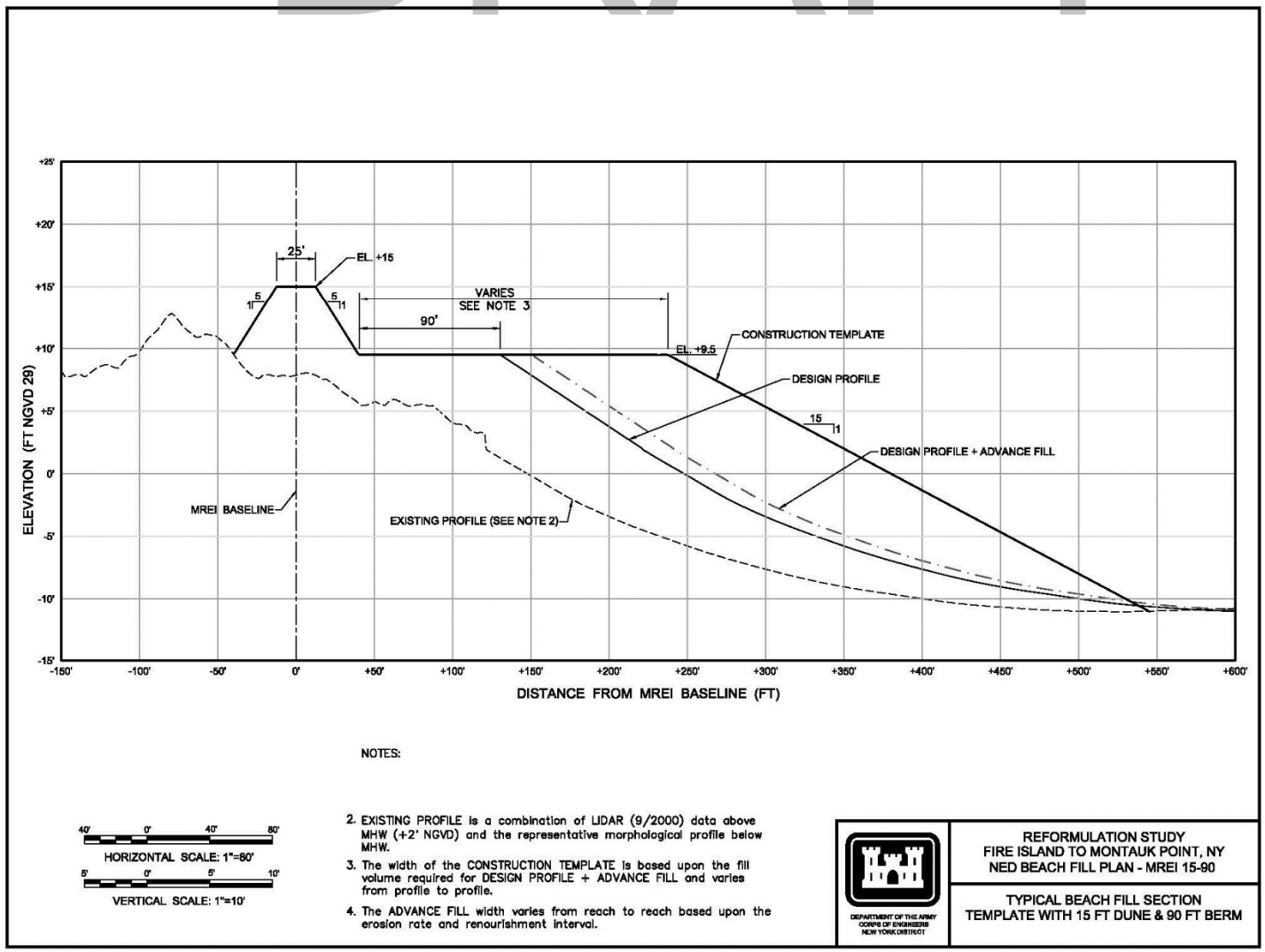


Figure 5: +15-foot dune design profile

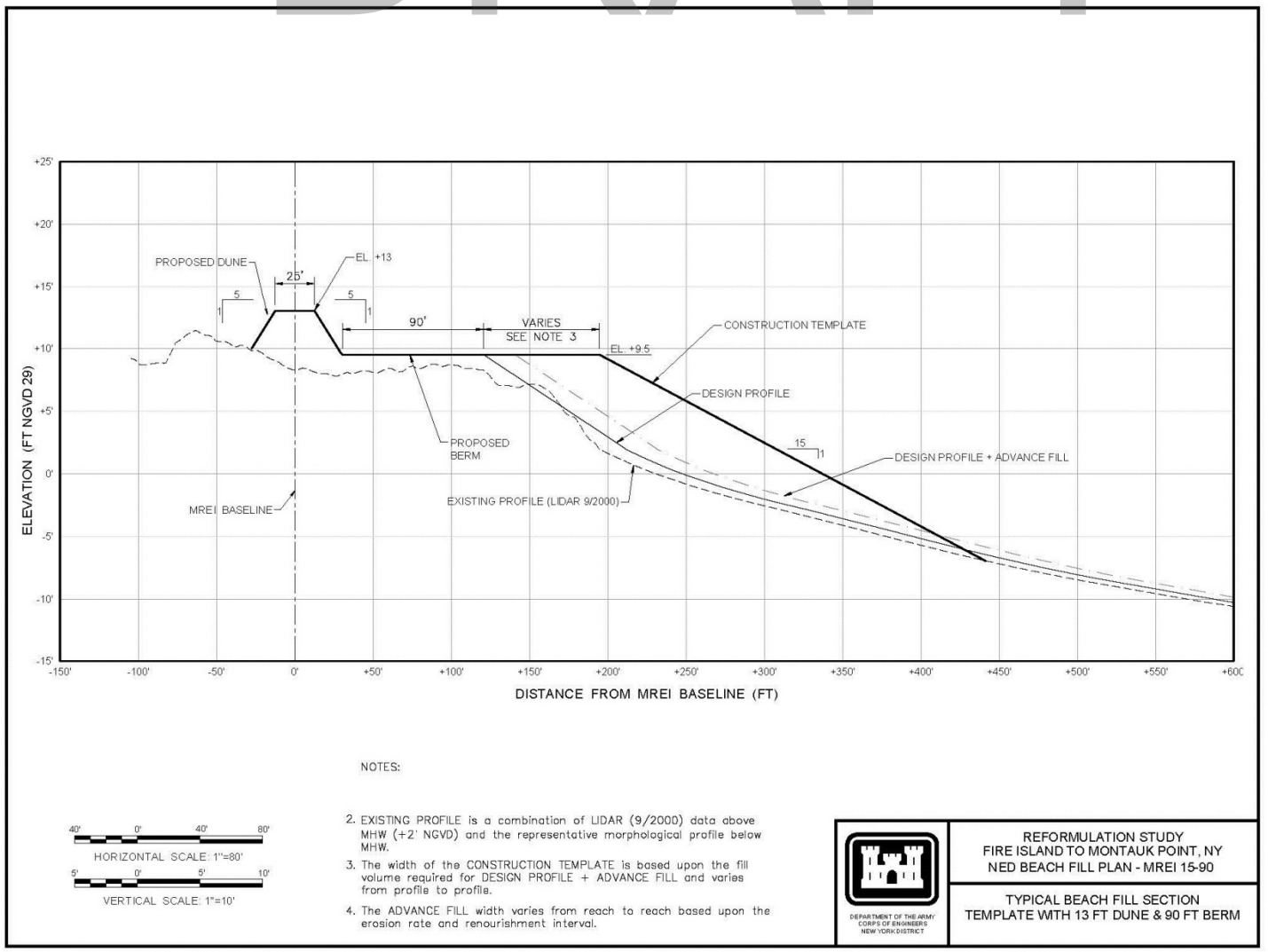


Figure 6: +13-foot dune design profile

Figure 7: F1 to F5 Profile Locations

Figure 8: F5 to F9 Profile Locations

Figure 9: F9 to F15 Profile Locations

Figure 10: F15 to F24 Profile Locations

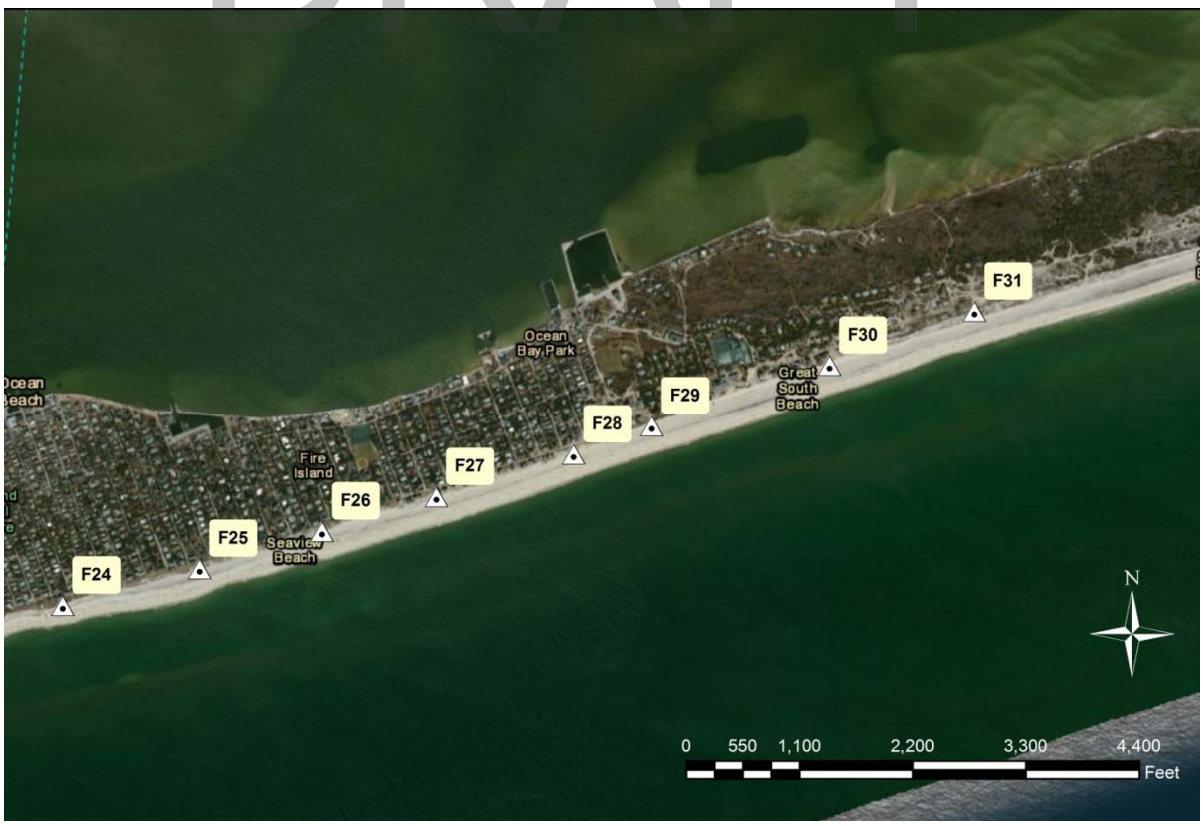


Figure 11: F24 to F31 Profile Locations

Figure 12: F31 to F36 Profile Locations

Figure 13: F36 to F42 Profile Locations

Figure 14: F42 to F50 Profile Locations

Figure 15: F50 to F56 Profile Locations

Figure 16: F71 to F76 Profile Locations

Figure 17: F76 to F79 Profile Locations

Figure 18: F79 to W1 Profile Locations

Figure 19: W1 to W5.2 Profile Locations

Figure 20: W5.2 to W10 Profile Locations

Figure 21: W10 to W10.1 Profile Locations

Figure 22: W27 to W32 Profile Locations

Figure 23: W32 to W36 Profile Locations

Figure 24: W36 to W44 Profile Locations

Figure 25: P34 Profile Location

Figure 26: M32 to M34 Profile Location

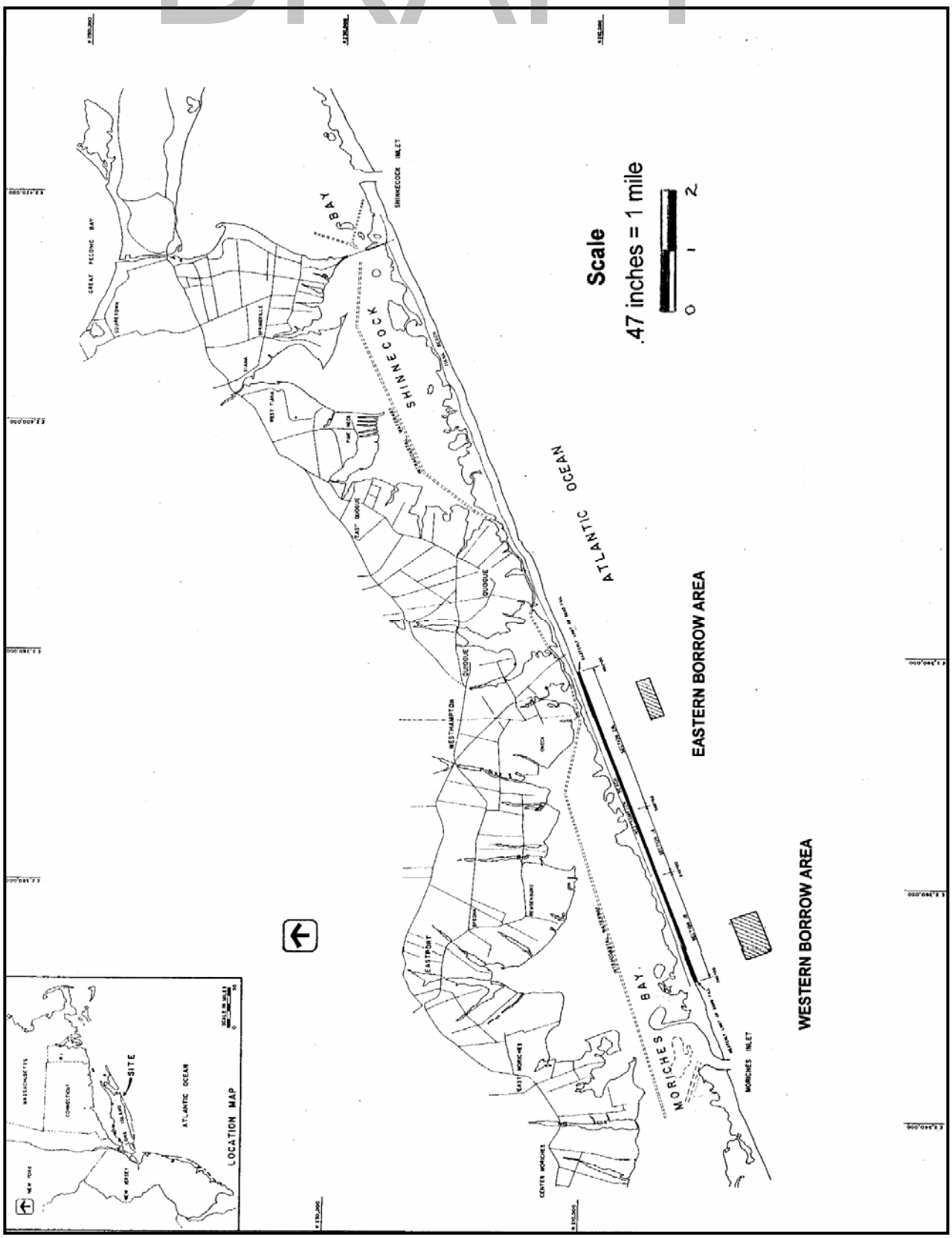


Figure 27: Subdivided sections of Reach 2

PLATES (AS BUILTS)

APPENDIX A

I. AUTHORIZATION AND CONSTRUCTION HISTORY

1. Authority. The Fire Island Inlet to Montauk Point, New York, Combined Beach Erosion Control and Hurricane Protection Project was authorized by the River and Harbor Act of 14 July 1960 in accordance with House Document 425, 86th Congress, 2nd Session, dated 21 June 1960, and was subsequently modified for the cost sharing of the beach erosion portion of the project in accordance with Section 103 of the River and Harbor Act of 12 October 1962. The project authorization was modified again by Section 31 of the Water Resources Development Act of 1974, which increased the Federal participation to 70% of the first cost of the project. The authorization was further modified by Section 502 of the Water Resources Development Act of 1986 (P.L. 99- 662), which directed the Secretary of the Army to apply the cost sharing provisions of Section 31(1) of the Water Resources Development Act of 1974 (P.L. 93-251) to include periodic nourishment of the continuing construction project at the Westhampton Beach, New York, for a period of 20 years after the date of enactment of P.L. 99-662. The Water Resources Development Act of 1992 further modified the Federal Participation in the project to extend the period of periodic nourishment for 30 years from the date of project completion for the Westhampton Interim with the non-Federal share not to exceed 35 percent of the total project cost.

2. The authorized project as described in House Document 425 (1960) provides for beach erosion control and hurricane protection along five reaches of the Atlantic Coast of New York from Fire Island Inlet to Montauk Point by: (a) widening of the beaches along the developed areas between Kismet and Mecox Bay to a minimum width of 100 feet at an elevation of 14 feet above mean sea level; (b) raising of dunes to an elevation of 20 feet above mean sea level from Fire Island Inlet to Hither Hills State Park; (c) at Montauk and opposite Lake Montauk Harbor by artificial placement of suitable sand; grass planting on the dunes; and (d) interior drainage structures at Mecox Bay, Sagaponack Lake and Georgica Pond. The project authorizes construction of 50 groins subject to future determination of their actual need, based on experience. Twenty-three of the 50 groins were authorized for the Moriches Inlet to Shinnecock Inlet Reach. Federal participation in the cost of periodic beach nourishment for a period not to exceed 10 years from the year of useful completion of the initial work in any section which may be considered as a nourishment unit was also recommended. The five reaches of the Authorized Project are as follows:

Reach 1 - Fire Island Inlet to Moriches Inlet
Reach 2 - Moriches Inlet to Shinnecock Inlet
Reach 3 - Shinnecock Inlet to Southhampton
Reach 4 - Southhampton to Beach Hampton
Reach 5 - Beach Hampton to Montauk Point

Reach 2 (Moriches to Shinnecock, which encompasses the Westhampton Interim Project Area in Reference 1, Attachment E) is further subdivided into subsections which are identified in Figure 27. Section 2a is the eastern section where groins number 1 through 11 were constructed. Section 1a is the middle section where groins number 12 through 15 were constructed. Section 1b is the section to the west of groin number 15.

3. Project History.

a. First Increment of Work. Following the original project authorization in 1960, a series of design memoranda were planned to be prepared for the entire project along the South Shore of Long Island from Fire Island Inlet to Montauk Point, New York. General Design Memorandum No. 1, dated September 1963, covers the portion of the project that lies between Moriches and Shinnecock Inlets and was approved by the Chief of Engineers on 9 January 1964. The GDM recommended improvements for the Moriches to Shinnecock reach substantially in accordance with HD 425 adjusted for existing conditions and criteria, and for the inclusion of 13 of the authorized 23 groins in the initial construction of this reach of the project. Local interests objected to the concurrent placement of dune and beachfill with groin construction. The Chief of Engineers concurred with the State of New York request to initially construct 11 groins in Reach 2, and 2 groins in Reach 4, with beach fill to be added as necessary but not sooner than 3 years after groin completion. The need for, and the design of, the 2 groins at East Hampton (Reach 4) was discussed in a special report of design memorandum scope generated in July 1964. The contract for the construction of 11 groins in Reach 2 was awarded in early 1965 and the construction was completed in September 1966. The contract for the construction of 2 groins in Reach 4 was awarded in February 1965 and the construction was completed in September 1965.

b. Second Increment of Work. In recognition of the critical condition of the beaches due to earlier storms, the Chief of Engineers urgently recommended to the State in June 1967 that placement of dune and beachfill in the 10 groin compartments (within the 11 groins) in Reach 2 (Section 2A) be undertaken. The State concurred and requested that work also be undertaken on additional groins, placement of dune and beach fill in Reach 2, as well as construction of groins, drainage structures and dune fill in Reach 4. Suffolk County, however, did not endorse the placement of dune and beach fill within the existing groins due to a lack of funds. In February 1969, Supplement No.1 to GDM No. 1 (Moriches to Shinnecock Reach) was prepared, which recommended the construction of 4 more groins and placement of beach fill backed by a dune at an elevation of 16 feet above mean sea level (MSL) in the 6,000 ft section of beach (Section 1a) west of the 11 groin field. Local interests furnished the necessary rights-of-way for construction in Reach 2 of four additional groins and dune and beach fill in Section 1a. The 4 new groins were filled with 1.95 million cubic yards of sand to construct a beach and dune. The groin construction was initiated in August 1969 and completed in July 1970, bringing the total number of groins in Reach 2 to fifteen. The beach and dune fill was placed between October 1969 and October 1970.

c. Efforts to Complete Reach 2. In anticipation of construction in 1972, the New York District prepared plans for 6 additional groins in section 1B. However, in November 1971, New York State withdrew support due to a moratorium it imposed on capital projects funding. In April 1973, the State requested that the New York District resume planning for the construction of section 1B. In November 1974, the Suffolk County Executive stated opposition to section 1B construction and the use of Moriches Bay and Inlet borrow sources. Based upon a 1975 request by the State, to develop a plan for section 1B using ocean borrow material for the required fill, the District initiated investigations and design efforts to develop borrow sources and the section 1B plan.

d. Supplement No.2 to GDM No. 1 (Moriches to Shinnecock Reach), dated July 1980, noted the severe erosion which had occurred during the storms in January and February 1978. These storms resulted in washovers of Dune Road and substantial destruction to homes in the vicinity of Moriches Inlet to Shinnecock Inlet. In March 1978, the Suffolk County Legislature approved participation in the Reach 2 proposed project. In April 1978, New York State endorsed improvements for Sections 1B, 1A and 2A of Reach 2. In November 1978, concerned Federal agencies agreed to a basis for proceeding with the development of Supplement No. 2 independent of the overall Fire Island Inlet to Montauk Point reformulation effort due to critical erosion in Section 1B. The plan developed in Supplement No. 2 provided for beach fill and dune construction in Section 1B to mitigate the erosion and provide storm surge protection, and for beach fill and dune construction in Sections 1A and 2A (the existing groin field) to mitigate the interruption of the littoral drift, provide beach erosion control and storm surge protection. The report recommended the placement of beach and dune fill in the 28,000 feet of Sections 2A, 1B and 1A generally 100 ft wide at elevation +12 ft MSL, except that in the groin field the berm elevation would be +14 ft. In areas of inadequate natural dunes, the berm would be backed by a dune 40 ft wide at elevation +16 with landward and seaward slopes of 1 on 5. No additional groins were included in Supplement 2. The 1980 GDM Supplement was approved on November 5 1980.

e. New York State included $10,322,000 (Non-Federal share of first construction cost for the proposed work at sections 2A, 1B, & 1A) in the 1981-1982 State Budget. The State contended that periodic nourishment should be cost shared at the same apportionment as the first construction cost (i.e. 70% Federal, 30% non-Federal). However,on 9 July 1981, Headquarters of the US Army Corps of Engineers (HQUSACE) confirmed the 6% Federal, 94% non-Federal interpretation of cost-sharing for periodic nourishment of the project.

f. Subsequently on 1 October 1981, New York State Department of Environmental Conservation stated by letter that the local cost sharing could not be provided for the project, as authorized. The New York State Department of Environmental Conservation indicated that they would pursue a Congressional change to the project authorization for periodic nourishment cost sharing; planning for

construction for the completion of the Moriches to Shinnecock reach was suspended due to lack of local support. Since there was a lack of support for the most critical area of the Fire Island to Montauk Point project, all work regarding the reformulation study was similarly suspended.

g. Present Work Considered. Since the halt in construction in 1970, erosion of the shoreline downdrift of the groin field continued to the point where Dune Road, the only land access to the homes in this area, became threatened due to the erosion. Additionally, the width of the barrier beach in this area narrowed to the point where the barrier island was frequently overwashed. This eventually caused a number of breaches that required repair. These breaches are summarized in Section 4.c. below.

h. After a series of meetings between the State and Federal governments, the District requested that the State propose a plan for section 1B of Reach 2 that was acceptable to all agencies within the State and County. By letter dated September 20, 1989, the State proposed such a plan and it became known as the State's preferred interim plan for the Westhampton Interim. The State's plan is a variation of, although providing a lesser level of protection than, the plan approved by HQUSACE (Supplement No. 2 to GDM No. 1; Moriches to Shinnecock Reach). In January 1990, the District responded to the plan, offering modifications to the State's plan to comply with Corps' methodology and criteria. The State agreed with the recommended changes, and in July 1990 submitted a letter which indicated the agreement of concerned parties and requested the Corps to proceed with the engineering and design efforts necessary for project implementation.

i. In July 1991 the District issued a Public Notice for this conceptual plan. The U.S. Environmental Protection Agency (USEPA) responded to the public notice by saying that they agreed in concept to the interim plan but could not fully endorse the plan until a full environmental assessment and/or environmental impact study is completed and the reformulation of the overall project is reinstated. The US Department of Interior (DOI) also provided correspondence which stated its concurrence with the proposed interim plan provided that the plan is implemented with regard for endangered and threatened species in the area.

j. In November 1992, the District submitted a conceptual study plan to prepare a Limited Reevaluation Report for the Westhampton Interim. The conceptual study plan described the proposed plan for the Westhampton Interim and discussed the pertinent issues including approximating the path leading to implementation of the project. In December 1992 the District was directed to initiate baseline data collection, including review of previous reports, on the uncompleted portion of Sections 1A,1B, and 2A. As the baseline data was collected, the District prepared an Initial Project Management Plan (IPMP) in accordance with ER 5-7-1 (FR) "Project Management". The IPMP provided the guidelines for the preparation of this Decision Document, which, among other things would evaluate the State's plan or a similar modified plan which would be acceptable to the State. The IPMP was approved by HQUSACE in July 1993.

k. In December 1994, the New York District completed a technical support document titled "Fire Island Inlet to Montauk Point, New York; Moriches to Shinnecock Reach - Interim Plan for Storm Damage Protection". This report evaluated the New York State's proposed interim plan in comparison to other alternatives for providing storm damage reduction to the Moriches to Shinnecock Reach of the authorized project. The report includes an analysis of the associated costs, benefits and environmental impacts for the various alternatives presented. The results of the economic analyses indicated that the State's plan, modified to include a dune height at elevation +15 feet NGVD, a berm height at elevation +9.5 NGVD and a tapered groin design which adds only one new groin inside the existing groin field and decreases the amount of shortening of the existing groins, is the most cost effective design of the alternatives considered.

4. Construction History.

a. First Increment of Work. The contract for the construction of 11 groins in Section 2a of Reach 2 was awarded in early 1965 and the construction was completed in September 1966. The contract for the construction of 2 groins in Reach 4 was awarded in February 1965 and the construction was completed in September 1965.

b. Second Increment of Work. In Reach 2, further construction occurred of 4 more groins and placement of beach fill backed by a dune at an elevation of 16 feet above mean sea level (MSL) in the 6,000 ft section of beach (Section 1a) west of the 11 groin fields (Section 2a). The 4 new groins were filled with 1.95 million cubic yards of sand to construct a beach and dune. The groin construction was initiated in August 1969 and completed in July 1970, bringing the total number of groins in Reach 2 to fifteen. The beach and dune fill was placed between October 1969 and October 1970.

c. Emergency Work. Breaches in the barrier beach are a constant threat. The barrier island was breached along 2,600 feet eastward from the east jetty of Moriches Inlet in 1980 and Public Law 99 emergency authority was invoked to repair the breached area. The barrier beach was breached again during the northeaster of 11-13 December 1992, where two significant breaches occurred in the vicinity of Pikes Beach, encompassing a span of approximately 4000 feet westward of the westernmost groin along the barrier island. In an effort to stem the flow of water in the western breach (dubbed Pikes Inlet), the District utilized approximately 60,000 cy of material already being dredged from the Intracoastal Waterway and placed it within the western breach. The placement of material to fill the Pikes Inlet breach was completed in January 1993. Complementing the artificial placement of material into Pikes Inlet, the natural littoral drift further shoaled material into the area thereby closing the western breach. The eastern breach was originally the smaller of the two and was dubbed Little Pikes Inlet. Additional winter storms plus tidal and littoral forces resulted in a growth of this breach to about 3000 feet wide and 12 feet deep. The remaining breached areas

were filled with material from a designated offshore borrow site. Construction of the breach closure of Little Pikes Inlet was initiated in May 1993 and was completed in November 1993 with about 1,700,000 cy of sand being placed.

d. Other work. Other interim maintenance projects have been initiated, mainly consisting of bypassing sediment that has accreted in the inlets and renourishing the groin fields. Table A1 shows a list of projects from 1996 to the present.

Table A1: Construction Activities 1996-2009

Date	Action	Quantity (cy)	Location
July-Oct 1996	Interim Project 1996 (west of groin 15)	2,518,592	643+80 to 745+00
Aug-Nov 1997	Interim Project 1997 (groin shortening, fill within groins 7 to 15)	1,010,938	534+66 to 570+05; 615+96 to 744+00
Dec 2000-Jan 2001	1st Renourishment (Fill placement: Groins 7-10, 13-15, & west of groin field)	981,000	534+66 to 570+05; 615+96 to 744+00
Dec 2004-Jan 2005	2nd Renourishment (Fill placement: Groins 7-9, 13-15, & west of groin field)	759,000	534+00 to 558+38; 613+68 to 689+83
Dec 2008-Jan 2009	3rd Renourishment (Fill placement: Groins 13-15, & west of groin field	627,000	612+00 to 693+90

Note: the locations refer to stations along the survey baseline.

APPENDIX B

ENVIRONMENTAL MONITORING

1. Environmental Monitoring.

   a. Maintenance personnel should be advised that there are civil and criminal penalties for harming, harassing or killing the Federally-threatened piping plover (Charadrius melodus) and seabeach amaranth (amaranthus pumilus) under Section 9 of the Endangered Species Act. These species may be found within the project area.

   b. Rights of entry should be provided to the Corps, U.S. Fish and Wildlife Service or designated representative where possible, for the purpose of conducting shorebird (piping plover and New York State endangered least tern) and seabeach amaranth survey/monitoring, fencing, posting and predator exclosure activities. Access should be given during daylight hours during the shorebird breeding season (1 April to 1 September).

   c. Mechanical beach cleaning from groin 15 westward should be prohibited during the breeding season (1 April to 1 September) to preserve shorebird feeding habitat and seabeach amaranth habitat. Trash and litter should be picked up manually.

   d. Offroad vehicular traffic, excluding emergency vehicles should be prohibited between 1 April and 1 September.

(Attachment A is a copy of the final PCA
for this project)

Attachment B

INSPECTION, MAINTENANCE AND OPERATIONAL REPORT
FIRE ISLAND INLET TO MOUNTAUK POINT

GENERAL

1. Inspections shall be made in March-April, i.e., at the beginning of the hurricane season and if possible, immediately before and after each hurricane or severe extratropical storm or other extreme high water event. Otherwise, inspections shall be made at intervals not to exceed three (3) months, and also at such intermediate times as may be necessary to ensure the best possible care of the beach, dunes and groins.

2. Two copies of inspection reports shall be submitted to:

Chief, Operations Division
Attn: Readiness Unit, Mr. Randall Hintz
U.S. Army Engineer District, New York
Corps of Engineers
26 Federal Plaza
New York, NY 10278-0090

One copy of inspection reports shall be submitted to:

Chief, Engineering Division
Attn: Civil Resources Branch
U.S. Army Engineer District, New York
Corps of Engineers
26 Federal Plaza
New York, NY 10278-0090

Reports shall be submitted no later than 10 days after inspection.

3. These forms shall be used as a checklist in making each inspection, and the conditions requiring maintenance work shall be inserted in the appropriate spaces. On the form on which the conditions requiring maintenance was first reported, there shall be inserted explanatory information describing the methods employed to correct the condition; or, in the event the inspection form is submitted prior to corrective action being taken, information shall be inserted regarding arrangements that have been made to have these conditions altered with corrective actions confirmed in the next report.

4. Maintenance or repair shall be performed as required to ensure serviceability of the structures in time of hurricane or other severe storm.

5. If spaces provided for the insertions are insufficient, the information should be continued on plain sheets and attached to the report.

CHECK SHEET FOR INSPECTION OF STONE GROINS

( ) Routine Inspection
( ) Prior to Hurricane Season
( ) Prestorm
( ) Post Storm
( ) Other _____

Groin _____ Location _____

Inspected by _____ Date _____

Item	Location on Structure	Structure Condition
1. Settlement, caving or sloughing		
2. Core or cap stone displaced, removed, or cracked through or lost of interlocking		
3. Toe Scour		
4. Unauthorized excavation or vandalism		
5. Unraveling of offshore end		
6. Accumulation of drift or debris		
7. Flanking at inshore end		
8. Excessive erosion or accumulation of sand adjacent to structure		

Required Maintenance Action(s):_____

FIRE ISLAND INLET TO MORICHES INLET

CHECK SHEET FOR INSPECTION OF BEACH, BERM AND DUNES

( ) Routine Inspection
( ) Prior to Hurricane Season
( ) Prestorm
( ) Post Storm
( ) Other _____

Inspected by _____ Date _____

Location _____

Item	Location along Project	Dune or Berm Condition
1. Unusual settlement		
2. Sloughing		
3. Erosion of berm or dune cross section		
4. Escarping		
5. Unauthorized excavation or vandalism		
6. Topping of berm or dune during high water		
7. Accumulation of drift or debris		
8. Excessive growth of undesirable grass and weeds		
9. Localized wind or wave erosion		

10. Encroachment ondune and berm right-of-way(unauthorized vehicular traffic, construction,etc.)

_____

11. Sand Fence/dune grass condition

_____

12. Sand accumulation on streets or accessways

_____

13. Condition of Public Accessways

_____

14. Excessive accumulationOf beach berm/dune

_____

Required Maintenance Action(s):_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

General Condition of dune and berm:

( ) good ( ) fair ( ) poor

Remarks:_____
_____
_____
_____
_____

CHECK SHEET FOR PRE & POSTSTORM AND QUARTERLY BEACH WIDTHS

Profile Number	Prestorm/ Quarterly Beach Width (ft)	Poststorm Beach Width (ft)	Profile Number	Prestorm/ Quarterly Beach Width (ft)	Poststorm Beach Width (ft)

Note: Beach width is measured from the origin point on the profile
to the seaward base of the dune, and from the seaward base of the dune to Mean High Water

Measured by:_____

Description of storm: ( ) hurricane ( ) extratropical ( ) other

Storm Duration:

_____

Approximate high water during event:

_____ Observed wave heights & direction:_____

Other local damage due to event:_____

_____

_ Required Maintenance Action(s):_____

_____

_____

CHECK SHEET FOR MARCH-APRIL BEACH PROFILE MEASUREMENT
(Use one sheet for each profile line)

Date _____ Corps of Engineers Profile Number _____

Profile Origin Coordinates _____N _____E

Point Number	Distance from Origin	Elevation (Ft. NGVD)	Point Number	Distance from Origin	Elevation (Ft. NGVD)

Required Maintenance Action(s):_____

_____

_____

SAMPLE MAINTENANCE REPORT

Date of Maintenance:_____ Date of Report: _____

Work done by: _____

Inspection done by: _____

1. Type of damage requiring action: _____

_____

_____

2. Cause of damage (include type of storm and date if appropriate):

_____

_____

_____

3. Maintenance action taken: _____

_____

_____

_____

4. Maintenance performed by: _____

_____

_____

5. Additional maintenance required: _____

_____

_____

(Attachment C is a copy of the available borrow areas located within the project limits)

(Attachment D is a copy of the survey benchmarks located within the project limits)

(Attachment E is a copy of the Westhampton OMRR&R Manual)

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	GILGO	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	GILGO 1995	Corps of Engineers New York District	13.58
LATITUDE	LONGITUDE	DATUM	DATUM
40° 36' 57.62342" W	73° 24' 12.61255" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
164268.011	1149854.147	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
50068.990	350476.245	---	APRIL 1995 / 2nd

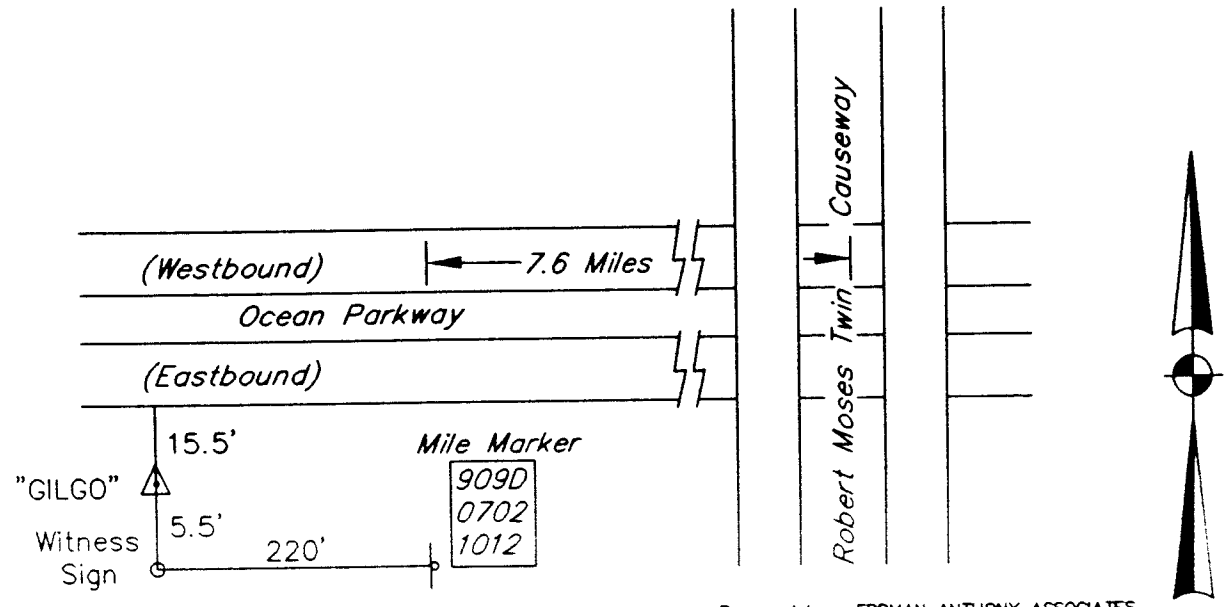
TO OBTAIN GRID AZIMUTH ADD − 0°23'24.6" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
GILGO AZ 1995	70° 32' 39.0"	-----	-----	NY-1337.618ft
SMOKE STACK	240° 02' 33.0"	-----	-----	-----
WATER TOWER	253° 35' 01.0"	-----	-----	-----

SCALE FACTOR = 1.00000320

A standard corps disk – type B monument was established April 1995 in the Town of Babylon. To reach from Captree State Park; Starting at the Robert Moses Twin Causeway Bridge over Ocean Parkway, go West 7.65 miles along Ocean Parkway to a turn around, then East 200'+/– along Ocean Parkway to the station on the right. The station is 15.5' South of the edge of pavement, 220' West of mile marker (909D/0702/1012), and 5.5' North of a witness post and sign. The disk is 0.3'+/ below the surface of the access cover. The access cover is 0.5'+/ below ground level. The disk is stamped GILGO 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers. Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959 REPLACES DA FORMS 1030 AND 1040, 1 FEB 57, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent agency is TRADOC.

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	GILGO AZ	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	GILGO AZ 1995	Corps of Engineers New York District	12.75
LATITUDE	LONGITUDE	DATUM	DATUM
40° 37' 01.94057" W	73° 23' 56.21896" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
164713.545	1151115.385	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
50204.789	350860.671	---	APRIL 1995 / 2nd

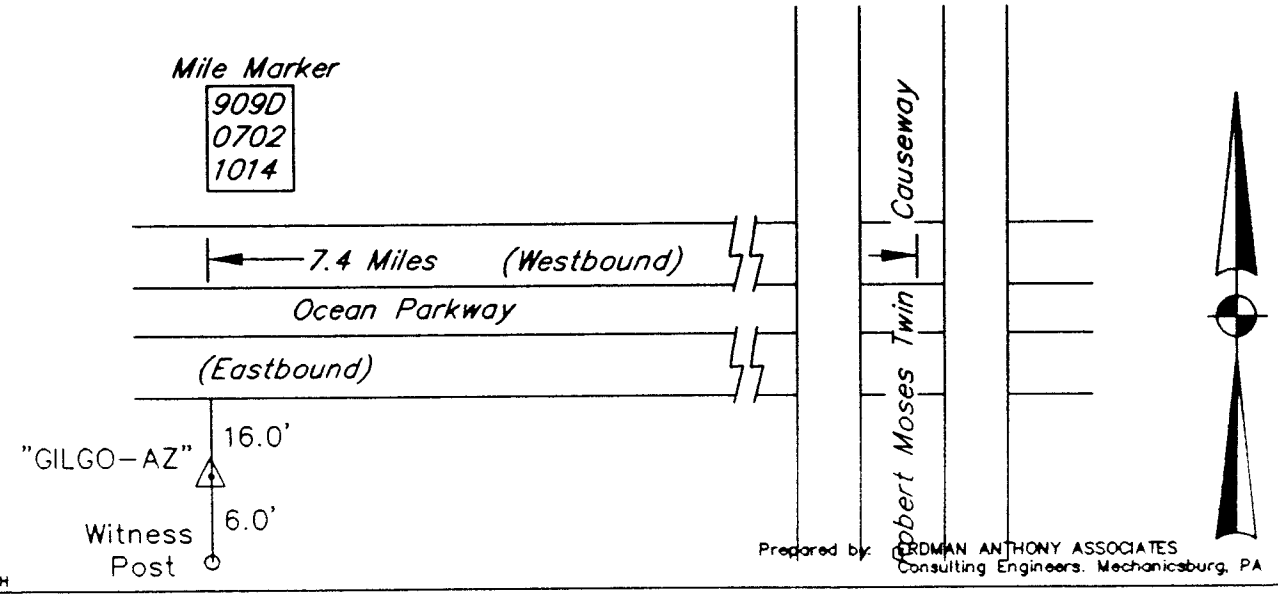
TO OBTAIN GRID AZIMUTH ADD − 0°23'35.3" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
GILGO 1995	250° 32' 39.0"	-----	-----	NY-1337.618ft

SCALE FACTOR = 1.00000312

A standard corps disk – type B monument was established April 1995 in the Town of Babylon. To reach from Captree State Park; Starting at the Robert Moses Twin Causeway Bridge over Ocean Parkway, go West 7.65 miles along Ocean Parkway to a turnaround, then East 0.35 miles along Ocean Parkway to the station on the right. The station is 16.0' South of the edge of pavement, opposite mile marker (909D/0702/1014) mounted on the guide rail in the median , and 6.0' North of a witness post and sign. The disk is 0.3'+/– below the surface of the access cover. The access cover is 0.5'+/– below ground level. The disk is stamped GILGO AZ 1995.



SKETCH

DA FORM 1 OCT 94 1959 REPLACES DA FORMS 1030 AND 1040, 1 FEB 37, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION

For use of this form, see TM 5-237; the proponent agency is TRADOC

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	CEDAR	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	CEDAR 1995	Corps of Engineers New York District	18.49
LATITUDE	LONGITUDE	DATUM	DATUM
40° 38' 02.91608" W	73° 19' 54.57579" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
171019.202	1169702.890	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
52126.757	356526.154	---	APRIL 1995 / 2nd

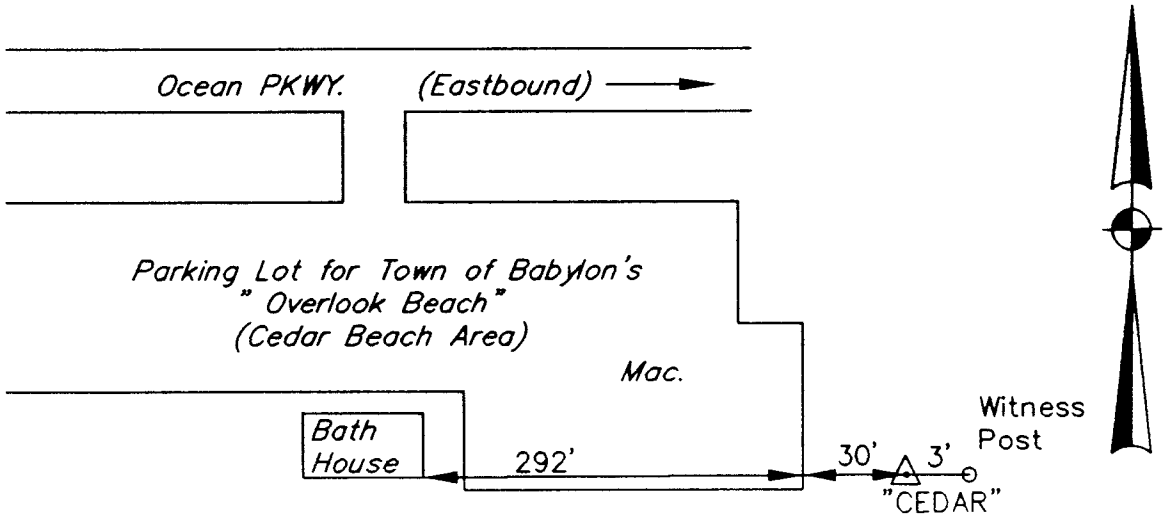
TO OBTAIN GRID AZIMUTH ADD − 0°26'13.3" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
CEDAR AZ 1995	260° 16' 58.9"	-----	-----	NY-1330.030ft
LIGHTHOUSE	90° 39' 09.9"	-----	-----	-----
MONUMENT	100° 41' 06.9"	-----	-----	-----

SCALE FACTOR = 1.00000197

A standard corps disk – type B monument was established April 1995 in the Town of Babylon. To reach from Captree State Park; Starting at the Robert Moses Twin Causeway Bridge over Ocean Parkway, go West 4.1 miles along Ocean Parkway to a turn around, then East 0.3 miles along Ocean Parkway to the entrance of the parking lot for the Town of Babylon, Overlook Beach. The station is located near the Southeast corner of the parking lot, in line with the South wall of the bath house, 322'+/− East of the South East corner of the bath house, 30'+/− East of the East side of the parking lot, and 3' West of a witness post and sign. The disk is 0.3'+/ below the surface of the access cover. The access cover is 0.5'+/− below ground level. The disk is stamped CEDAR 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers, Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959 REPLACES DA FORMS 1039 AND 1040, 1 FEB 57, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent agency is TRADOC.

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	CEDAR AZ	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	CEDAR AZ 1995	Corps of Engineers New York District	14.30
LATITUDE	LONGITUDE	DATUM	DATUM
40° 38' 00.79642" W	73° 20' 11.60090" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
170794.718	1168391.941	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
52058.334	356126.576	---	APRIL 1995 / 2nd

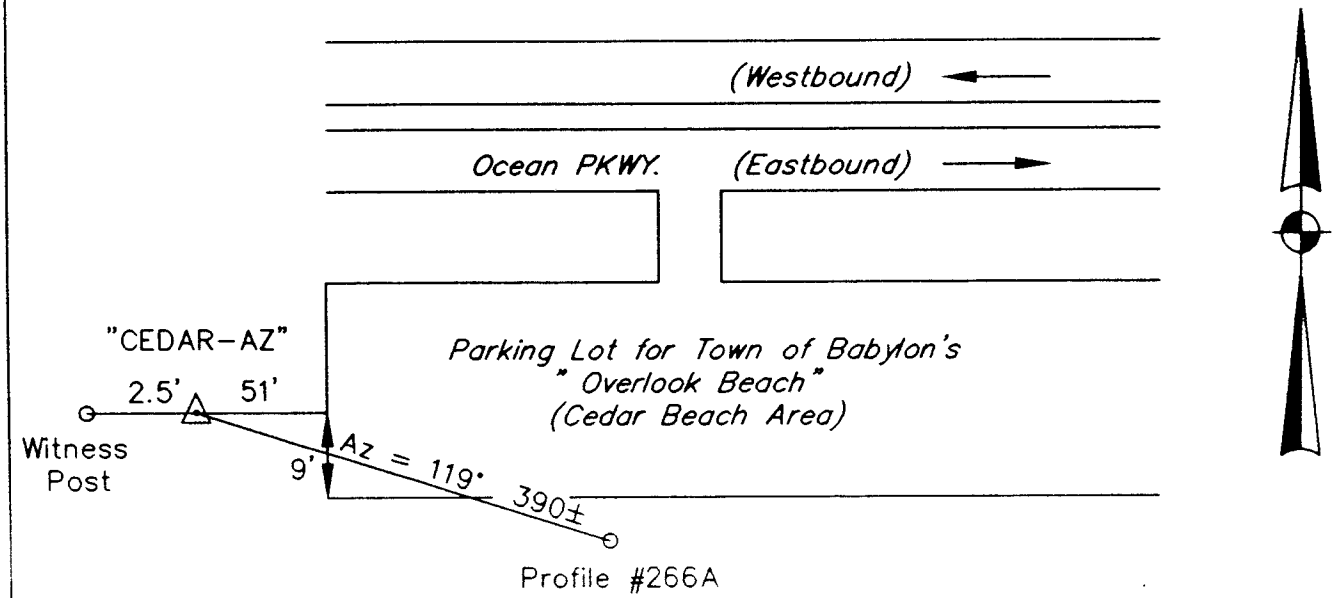
TO OBTAIN GRID AZIMUTH ADD − 0°26'02.2" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
CEDAR 1995	80° 16' 58.9"	-----	-----	NY-1330.030ft

SCALE FACTOR = 1.00000201

A standard corps disk type B monument was established April 1995 in the Town of Babylon. To reach from Captree State Park; Starting at the Robert Moses Twin Causeway Bridge over Ocean Parkway, go West 4.1 miles along Ocean Parkway to a turn around, then East 0.3 miles along Ocean Parkway to the entrance of the parking lot for the Town of Babylon, Overlook Beach. The station is located near the Southwest corner of the parking lot, 9'+/− North of the South edge of pavement, 51'+/ West of the West edge of pavement, 322'+/− East of the South East corner of the bath house, 30'+/− East of the East side of the parking lot, and 3' West of a witness post and sign. The disk is 0.3'+/− below the surface of the access cover. The access cover is 0.5'+/− below ground level. The disk is stamped CEDAR AZ 1995.



SKETCH

Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers, Mechanicsburg, PA

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	MOSES	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	MOSES 1995	Corps of Engineers New York District	15.15
LATITUDE	LONGITUDE	DATUM	DATUM
40° 37' 34.73170" W	73° 14' 55.37837" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
168353.892	1192794.278	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
51314.369	363564.423	---	APRIL 1995 / 2nd

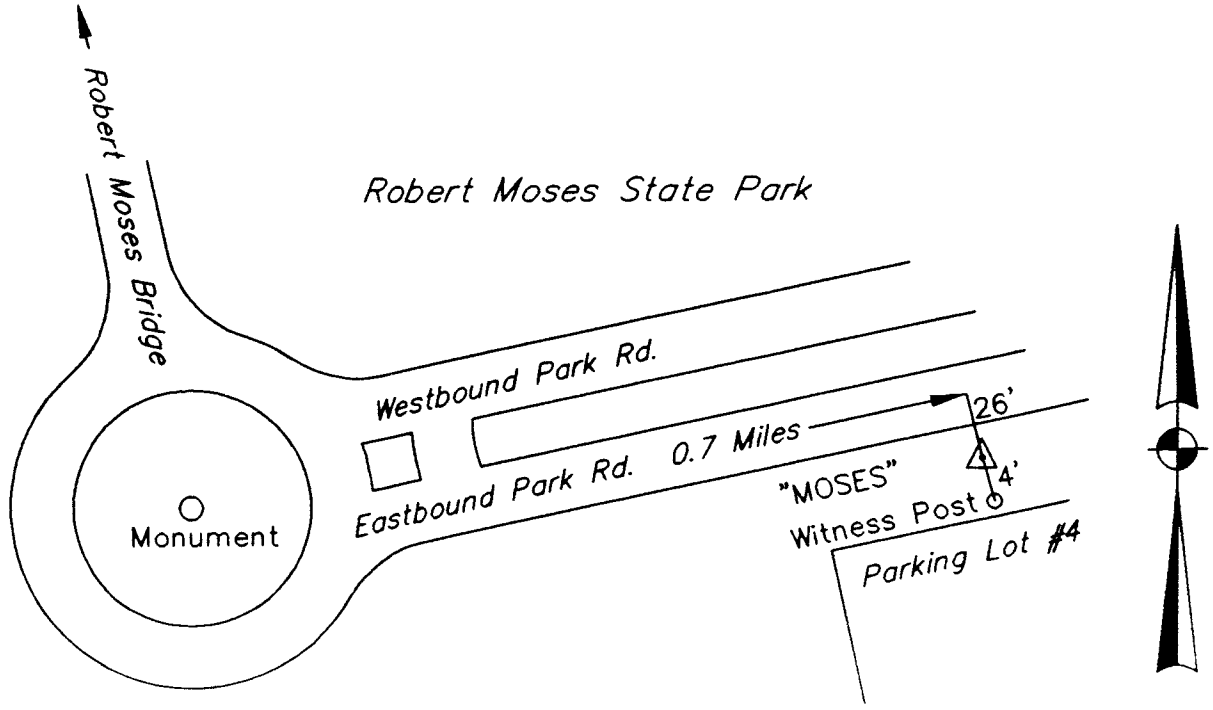
TO OBTAIN GRID AZIMUTH ADD − 0°29'29.0" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
MOSES AZ 1995	76° 24' 16.6"	-----	-----	NY-2868.696ft
MONUMENT	254° 15' 55.6"	-----	-----	-----
RADIO TOWER	263° 58' 30.6"	-----	-----	-----

SCALE FACTOR = 1.00000249

A standard corps disk – type B monument was established April 1995 in the Town of Islip. To reach from entrance of Robert Moses State Park, Fire Island, N.Y.; Starting at the Monument Tower on the common, go 0.7 miles East along the parks main road to the station on the right near the Northwest side of parking lot No.4. The station is 26.0' South of the center line of the roadway and 4.0' North of a witness post and sign. The disk is 0.3'+/− below the surface of the access cover. The access cover is 0.5'+/− below ground level. The disk is stamped MOSES 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers. Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959 REPLACES DA FORMS 1030 AND 1040, 1 FEB 37, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent agency is TRADOC.

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	MOSES AZ	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	MOSES AZ 1995	Corps of Engineers New York District	15.04
LATITUDE	LONGITUDE	DATUM	DATUM
40° 37' 41.15675" W	73° 14' 19.14238" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
169028.218	1195582.592	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
51519.904	364414.303	---	APRIL 1995 / 2nd

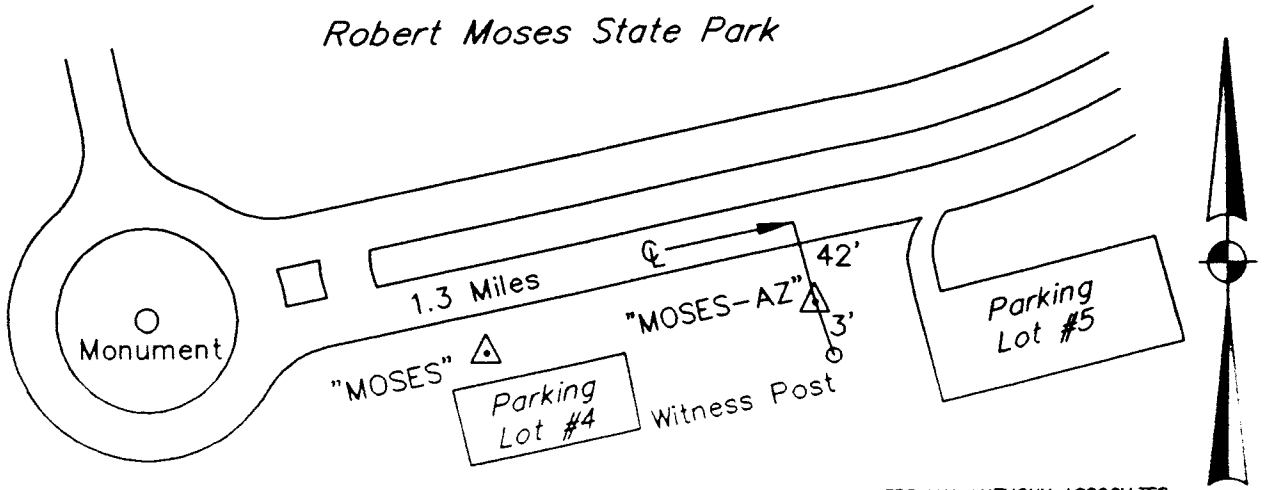
TO OBTAIN GRID AZIMUTH ADD − 0°29'52.7" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
MOSES 1995	256° 24' 16.6"	-----	-----	NY-2868.696ft

SCALE FACTOR = 1.00000237

A standard corps disk – type B monument was established April 1995 in the Town of Islip. To reach from entrance of Robert Moses State Park, Fire Island, N.Y.; Starting at the Monument Tower on the common, go 1.3 miles East along the parks main road to the station on the right near the Northwest side of parking lot No.5. The station is 42.0' South of the center line of the roadway and 3.0' North of a witness post and sign. The disk is 0.3'+/− below the surface of the access cover. The access cover is 0.5'+/− below ground level. The disk is stamped MOSES AZ 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers, Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959 REPLACES DA FORMS 1030 AND 1040, 1 FEB 57, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent agency is TRADOC.

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	OCEAN	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	OCEAN 1995	Corps of Engineers New York District	6.85
LATITUDE	LONGITUDE	DATUM	DATUM
40° 38' 45.70199" W	73° 09' 48.09355" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
175750.649	1216418.696	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
53568.905	370765.160	---	APRIL 1995 / 2nd

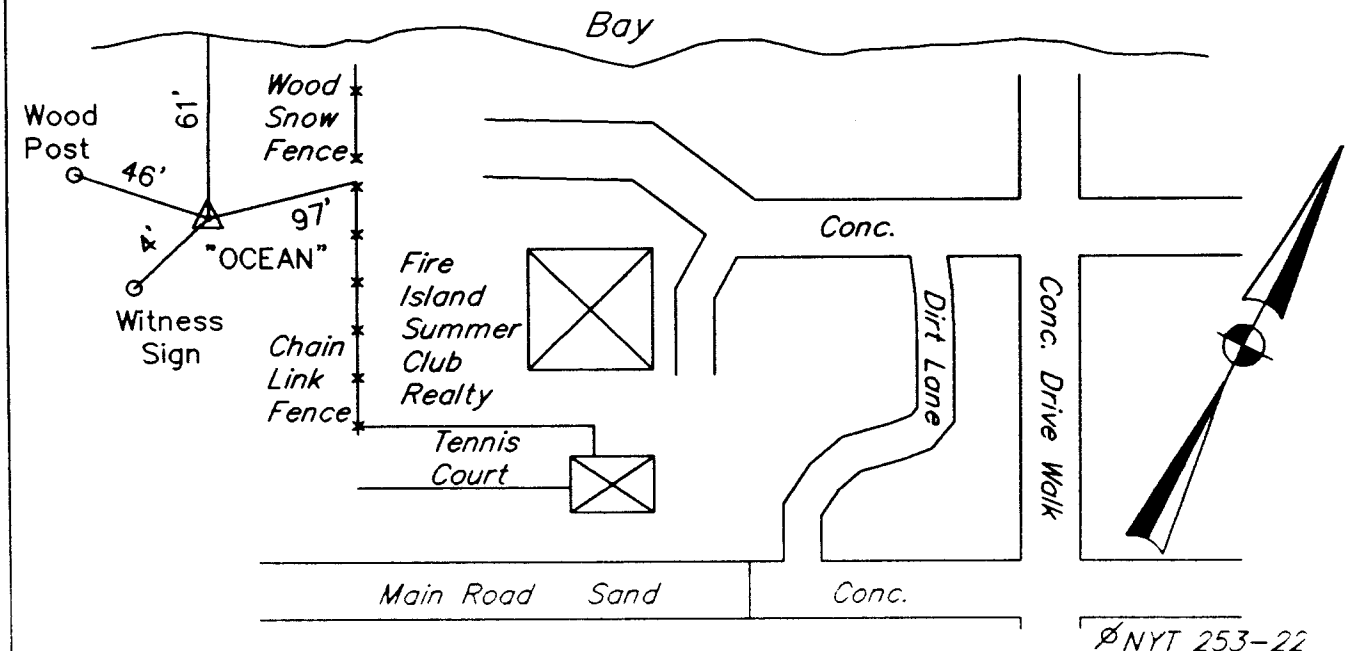
TO OBTAIN GRID AZIMUTH ADD − 0°32'50.0" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
OCEAN AZ 1995	179° 05' 18.3"	-----	-----	NY-1137.488ft
LIGHTHOUSE	251° 34' 19.8"	-----	-----	-----
MONUMENT	252° 49' 58.3"	-----	-----	-----

SCALE FACTOR = 1.00000121

A standard corps disk – type B monument was established April 1995 in the Town of Islip. To reach from Our Lady of Magnificent Church on Midway St. in Village of Ocean Beach, Fire Island, N.Y.; go 0.1 miles West on Midway St. to a four way intersection, turn right and a quick left and continue 0.1 miles West on Midway St to the first road/walk on the right, go 250'+/– along same to a concrete road/walk on the left, go 250'+/– along same to end near bay, walk 120'+/– Westerly along bay to fence for private property, continue 100' West along bay to the station on the left. The station is 61"+/– Southeast of the bay, and 4.0' Northeast of a witness post and sign. The disk is 0.3'+/– below the surface of the access cover. The access cover is 0.5'+/– below ground level. The disk is stamped OCEAN 1995



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers, Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959

REPLACES DA FORMS 1030 AND 1040, 1 FEB 37, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION

For use of this form, see TM 5-237; the proponent agency is TRADOC.

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	OCEAN AZ	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	OCEAN AZ 1995	Corps of Engineers New York District	10.90
LATITUDE	LONGITUDE	DATUM	DATUM
40° 38' 34.46245" W	73° 09' 47.99971" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
174613.306	1216436.793	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
53222.242	370770.676	---	APRIL 1995 / 2nd

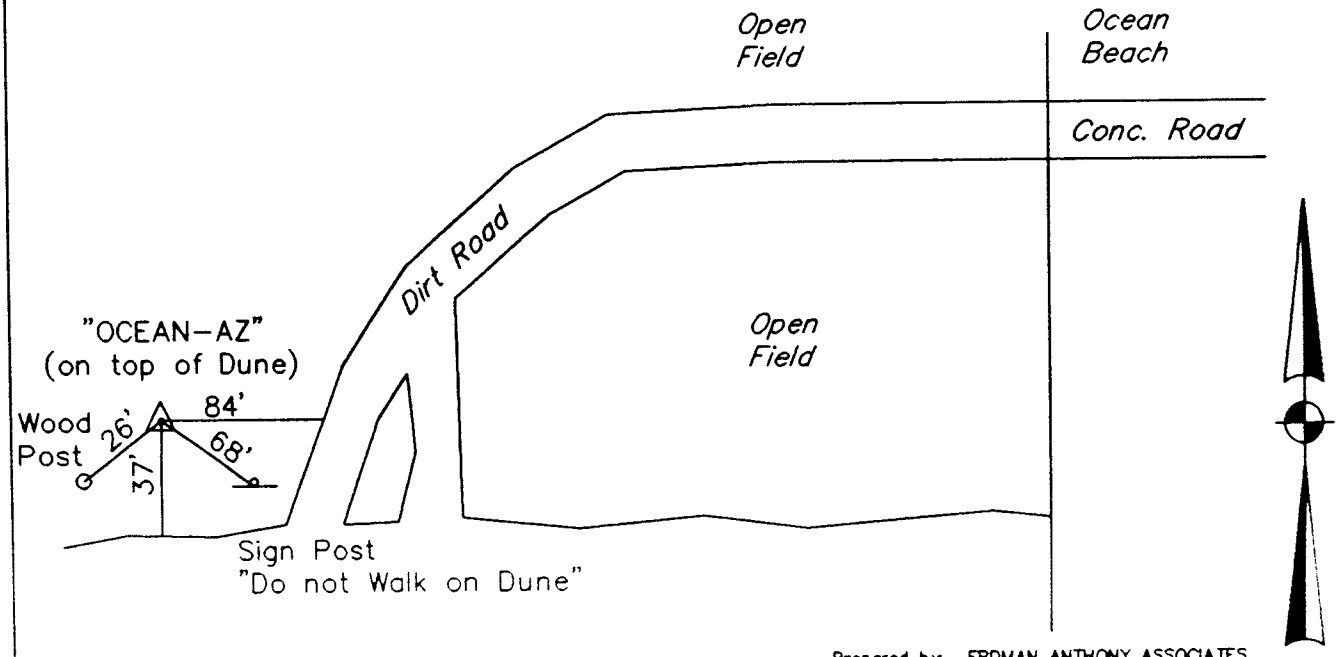
TO OBTAIN GRID AZIMUTH ADD − 0°32'50.1" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
OCEAN 1995	359° 05 18.3"	-----	-----	NY-1137.488ft

SCALE FACTOR = 1.00000141

A standard corps disk – type B monument was established April 1995 in the Town of Islip. To reach from Our Lady of Magnificent Church on Midway St. in the Village of Ocean Beach, Fire Island, N.Y.; go 0.1 miles West on Midway St. to a four way intersection, turn right and a quick left and continue 0.35 miles West along Midway St out of town to field and dirt road leading to beach, go South on dirt road to bay side of dunes to the station on the right. The dirt road is between the Village of Atlantique and the Village of Ocean Beach. The station is 84'+/− West of the dirt road and 37'+/− North of top of the dune. The disk is 0.3'+/−below the surface of the access cover. The access cover is 0.5'+/− below ground level. The disk is stamped OCEAN AZ 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers, Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959 REPLACES DA FORMS 1030 AND 1040, 1 FEB 57, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent agency is TRADOC.

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	PINES	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	PINES 1995	Corps of Engineers New York District	16.52
LATITUDE	LONGITUDE	DATUM	DATUM
40° 40' 03.34275" W	73° 03' 20.83319" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
183911.046	1246184.348	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
56056.199	379837.749	---	APRIL 1995 / 2nd

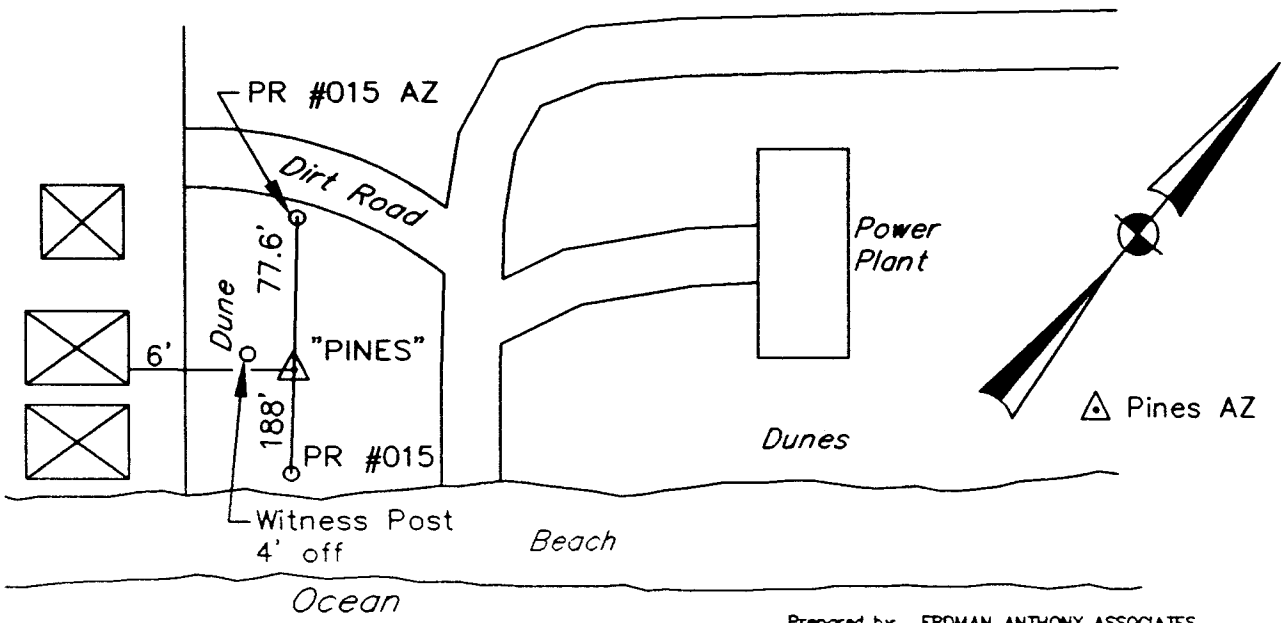
TO OBTAIN GRID AZIMUTH ADD − 0°37'03.3" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
PINES AZ 1995	72° 10' 48.5"	-----	-----	NY-1546.43ft
WATERTOWER (GREY BLUE)	117° 49' 35.5"	-----	-----	-----
RADIO TOWER	228° 14' 49.5"	-----	-----	-----

SCALE FACTOR = 0.99999995

A standard corps disk – type B monument was established April 1995 in the Town of Brookhaven. To reach from the National Parks Service building located Southwest of the intersection of Suffolk Boulevard and Pavilion Road, in Smith Point County Park, Fire Island, N.Y. Enter the beach at the National Park Service building, go 11.1 miles West along the Great South Beach into the Village of Fire Island Pines to a dirt road on the right, go 130'+/− North on the dirt road to station on the left. The station is 110'+/− west of the dirt road, 60'+/− East of three buildings, and 4.0' East of a witness post and sign. The disk is 0.3'+/− below the surface of the access cover. The access cover is 0.5'+/− below ground level. The disk is stamped PINES 1995.



SKETCH

Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers. Mechanicsburg, PA

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	PINES AZ	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	PINES AZ 1995	Corps of Engineers New York District	32.30
LATITUDE	LONGITUDE	DATUM	DATUM
40° 40' 07.86148" W	73° 03' 01.66263" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
184384.293	1247656.586	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
56200.445	380286.488	---	APRIL 1995 / 2nd

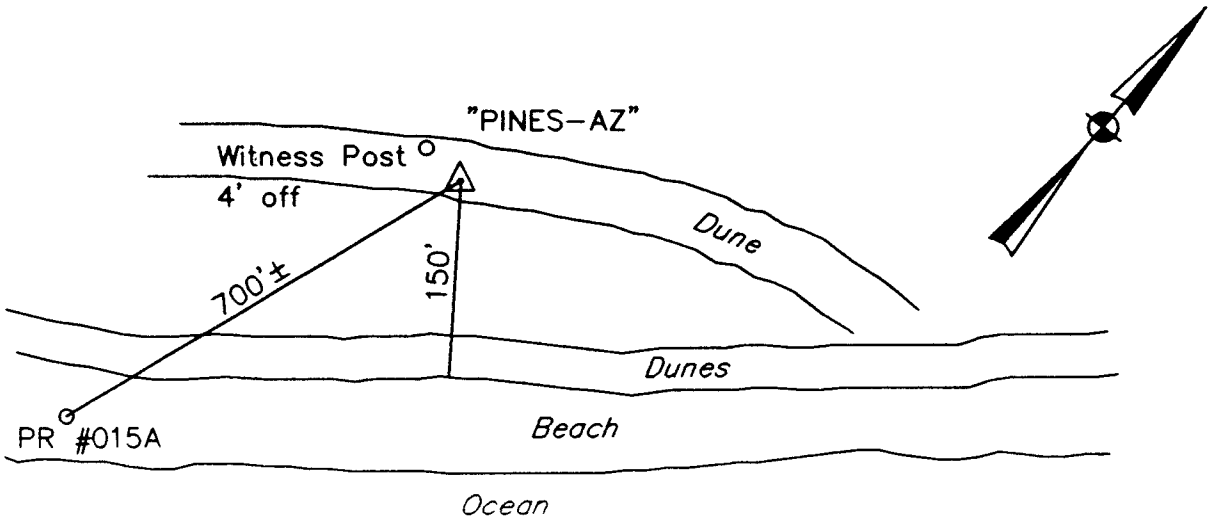
TO OBTAIN GRID AZIMUTH ADD − 0°37'15.9" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
PINES 1995	252° 10' 48.5"	-----	-----	NY-1546.43ft

SCALE FACTOR = 0.99999988

A standard corps disk – type B monument was established April 1995 in the Town of Brookhaven. To reach from the National Parks Service building located Southwest of the intersection of Suffolk Boulevard and Pavilion Road, in Smith Point County Park, Fire Island, N.Y. Enter the beach at the National Park Service building, go 10.8 miles West along the Great South Beach to the station on the right between the Village of Fire Island Pines and the Village of Water Island. The station is at the top of a dune 150'+/− North of the dune line on the beach and 4.0' South of a witness post and sign. The disk is 0.3'+/− below the surface of the access cover. The access cover is 0.5'+/− below ground level. The disk is stamped PINES AZ 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers, Mechanicsburg, PA

SKETCH

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	PLOVER	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	PLOVER 1995	Corps of Engineers New York District	10.74
LATITUDE	LONGITUDE	DATUM	DATUM
40° 41' 39.42453" W	72° 58' 40.19650" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
193876.820	1267695.355	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
59093.773	386394.317	---	APRIL 1995 / 2nd

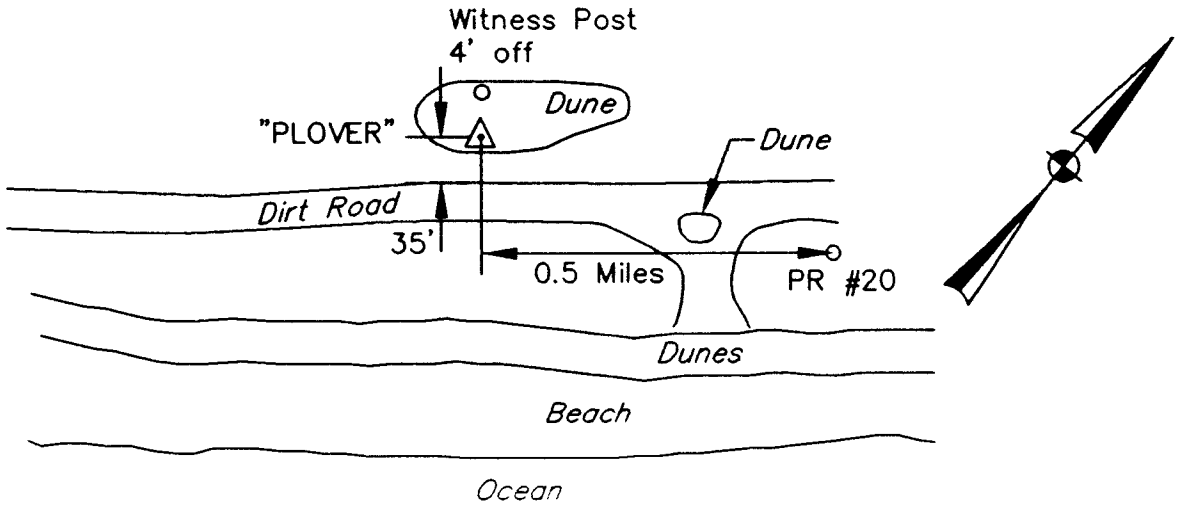
TO OBTAIN GRID AZIMUTH ADD − 0°40'06.9" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
PLOVER AZ 1995	244° 11' 13.7"	-----	-----	NY-1375.367ft
RADIO TOWER	43° 52' 46.2"	-----	-----	-----
SMOKE STACK	359° 31' 37.2"	-----	-----	-----
(white w/ black top)				

SCALE FACTOR = 0.99999858

A standard corps disk – type B monument was established April 1995 in the Town of Brookhaven. To reach from the National Parks Service building located Southwest of the intersection of Suffolk Boulevard and Pavilion Road, in Smith Point County Park, Fire Island, N.Y. Enter the beach at the National Park Service building, go 6.5 miles West along the Great South Beach to a road on the right into the dunes, go 0.1 miles West along this road to the station on the top of a dune on the right. The station is 35'+/− North of the edge of the road and 4.0' South of a witness post and sign. The disk is 0.3'+/− below the surface of the access cover. The access cover is 0.5'+/− below ground level. The disk is stamped PLOVER 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers. Mechanicsburg, PA

SKETCH

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	PLOVER AZ	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	PLOVER AZ 1995	Corps of Engineers New York District	7.94
LATITUDE	LONGITUDE	DATUM	DATUM
40° 41' 33.64974" W	72° 58' 56.35933" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
193277.940	1266457.221	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
58911.234	386016.933	---	APRIL 1995 / 2nd

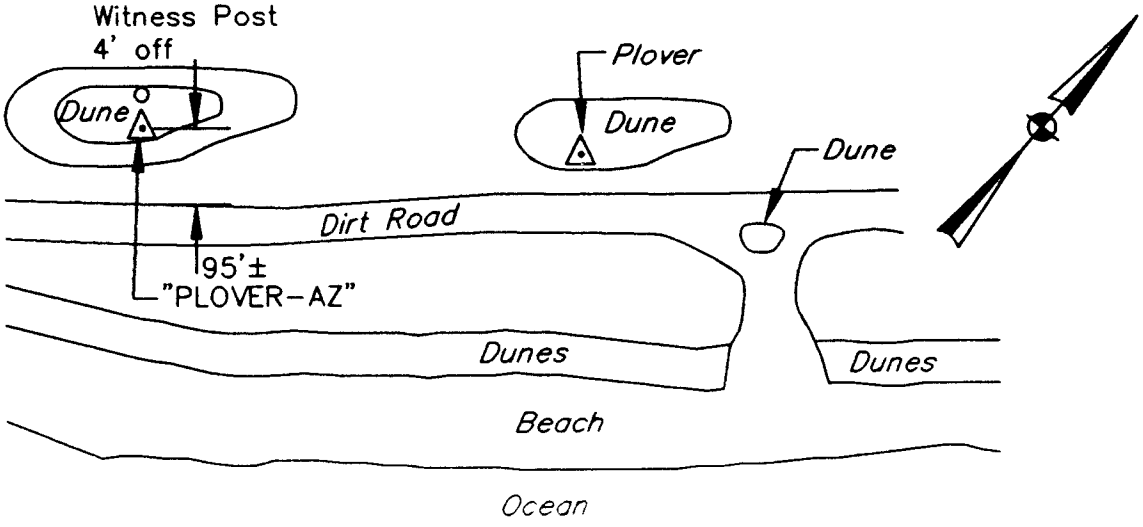
TO OBTAIN GRID AZIMUTH ADD − 0°39'56.3" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
PLOVER 1995	64° 11' 13.7"	-----	-----	NY-1375.367ft

SCALE FACTOR = 0.99999866

A standard corps disk – type B monument was established April 1995 in the Town of Brookhaven. To reach from the National Parks Service building located Southwest of the intersection of Suffolk Boulevard and Pavilion Road, in Smith Point County Park, Fire Island, N.Y. Enter the beach at the National Park Service building, go 6.5 miles West along the Great South Beach to a road on the right into the dunes, go 0.25 miles West along this road to the station on the top of a dune on the right. The station is the 95'+/– North of the edge of the road and 4.0' South of a witness post and sign. The disk is 0.3'+/– below the surface of the access cover. The access cover is 0.5'+/– below ground level. The disk is stamped PLOVER AZ 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers, Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959 REPLACES DA FORMS 1430 AND 1040, 1 FEB 57, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent agency is TRADOC.

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	PELICAN	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	PELICAN 1995	Corps of Engineers New York District	5.25
LATITUDE	LONGITUDE	DATUM	DATUM
40° 43' 26.39321" W	72° 53' 42.52385" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
204979.869	1290486.569	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
62477.989	393341.093	---	APRIL 1995 / 2nd

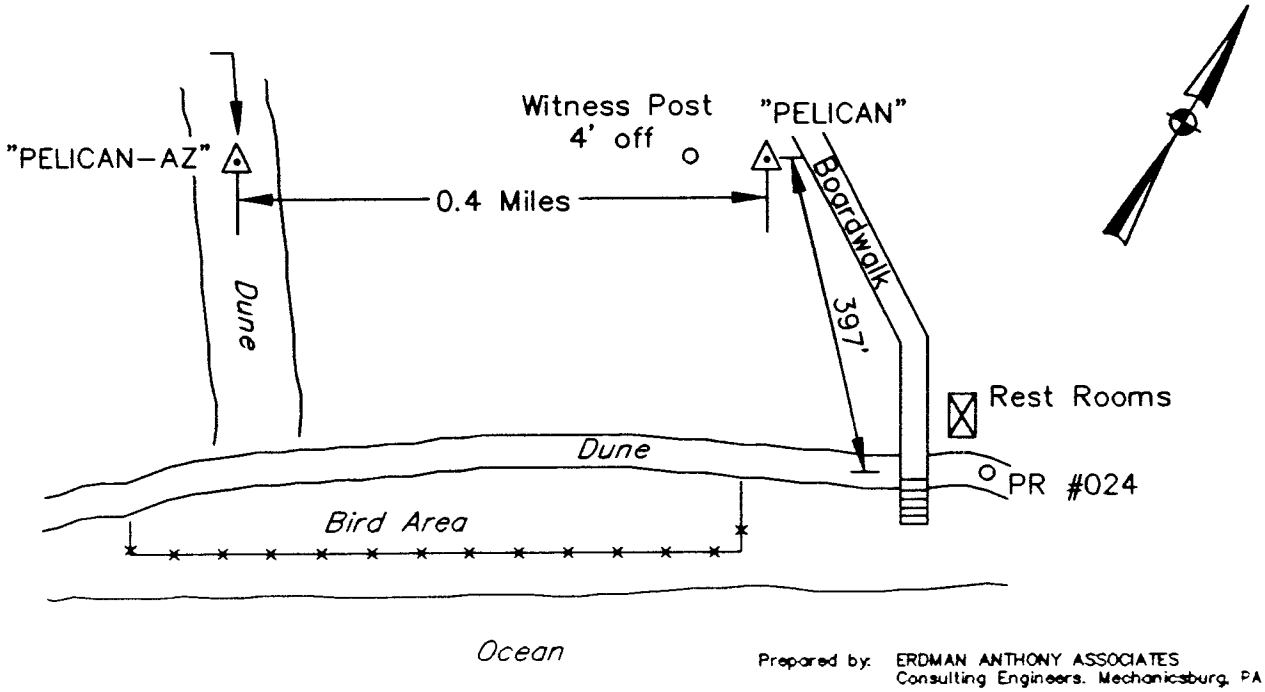
TO OBTAIN GRID AZIMUTH ADD − 0°43'21.6" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
PELICAN AZ 1995	247° 52' 34.8"	-----	-----	NY-1920.306ft
SMOKE STACK	301° 39' 02.3"	-----	-----	-----
WATER TOWER	329° 29' 21.3"	-----	-----	-----

SCALE FACTOR = 0.99999731

A standard corps disk – type B monument was established April 1995 in the Town of Brookhaven. To reach from the National Parks Service building located Southwest of the intersection of Suffolk Boulevard and enter the beach at the National Park Service building, go 1.75 miles West along the Great South Beach to a boardwalk on the right, go 379.0' North along the boardwalk to the station on the left. The station is 22.0' West of the center line of the boardwalk and 4.0' East of a witness post and sign. The disk is 0.3'+/– below the surface of the access cover. The access cover is 0.5'+/– below ground level. The disk is stamped PELICAN 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers. Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959

REPLACES DA FORMS 1030 AND 1040, 1 FEB 37, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION

For use of this form, see TM 5-237; the proponent agency is TRADOC.

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	PELICAN AZ	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	PELICAN AZ 1995	Corps of Engineers New York District	12.95
LATITUDE	LONGITUDE	DATUM	DATUM
40° 43' 19.46878" W	72° 54' 05.74425" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
204256.668	1288707.649	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
62257.557	392798.877	---	APRIL 1995 / 2nd

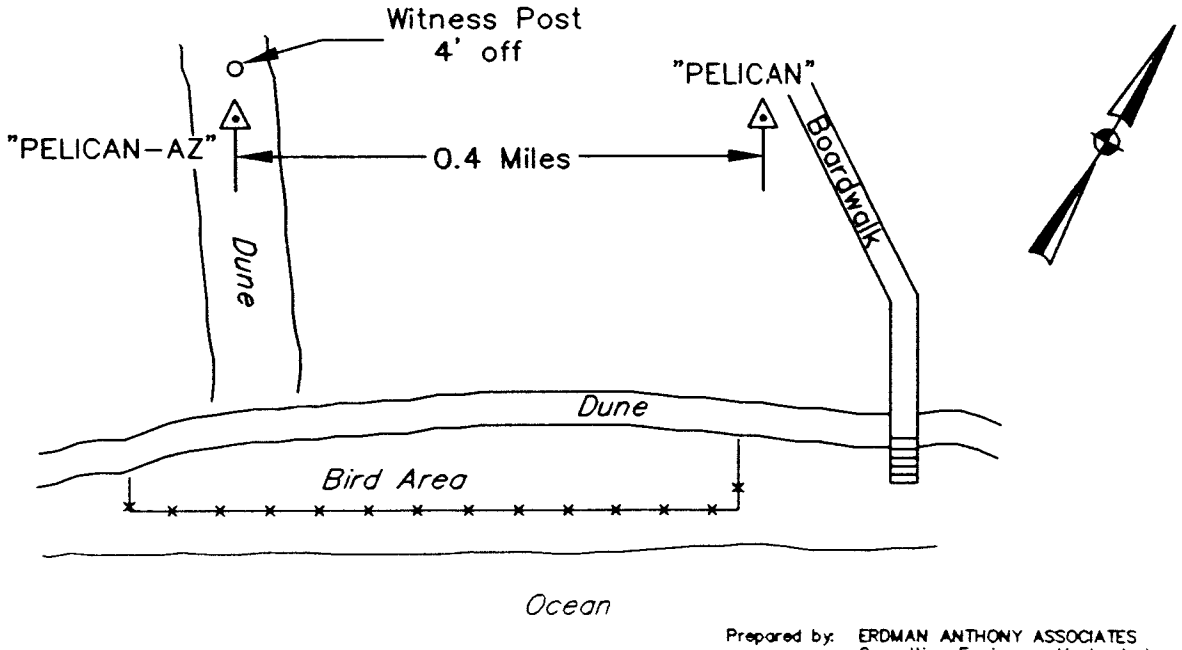
TO OBTAIN GRID AZIMUTH ADD − 0°43'06.4" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
PELICAN 1995	67° 52' 34.8"	-----	-----	NY-1920.306ft
SMOKE STACK	305° 04' 30.8"	-----	-----	-----
WATER TOWER	333° 12' 41.3"	-----	-----	-----

SCALE FACTOR = 0.99999739

A standard corps disk – type B monument was established April 1995 in the Town of Brookhaven. To reach from the National Parks Service building located Southwest of the intersection of Suffolk Boulevard and Pavilion Road, in Smith Point County Park, Fire Island, N.Y. Enter the beach at the National Park Service building, go 2.15 miles West along the Great South Beach to the station on top of a dune on the right. The station is 400'+/− North of the dune line on the beach and 4.0' East of a witness post and sign. The disk is 0.3'+/− below the surface of the access cover. The access cover is 0.5'+/− below ground level. The disk is stamped PELICAN AZ 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers, Mechanicsburg, PA

SKETCH

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	FLOYD	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	FLOYD 1995	Corps of Engineers New York District	9.97
LATITUDE	LONGITUDE	DATUM	DATUM
40° 44' 09.00275" W	72° 51' 29.69518" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
209422.865	1300656.631	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
63832.217	396440.934	---	APRIL 1995 / 2nd

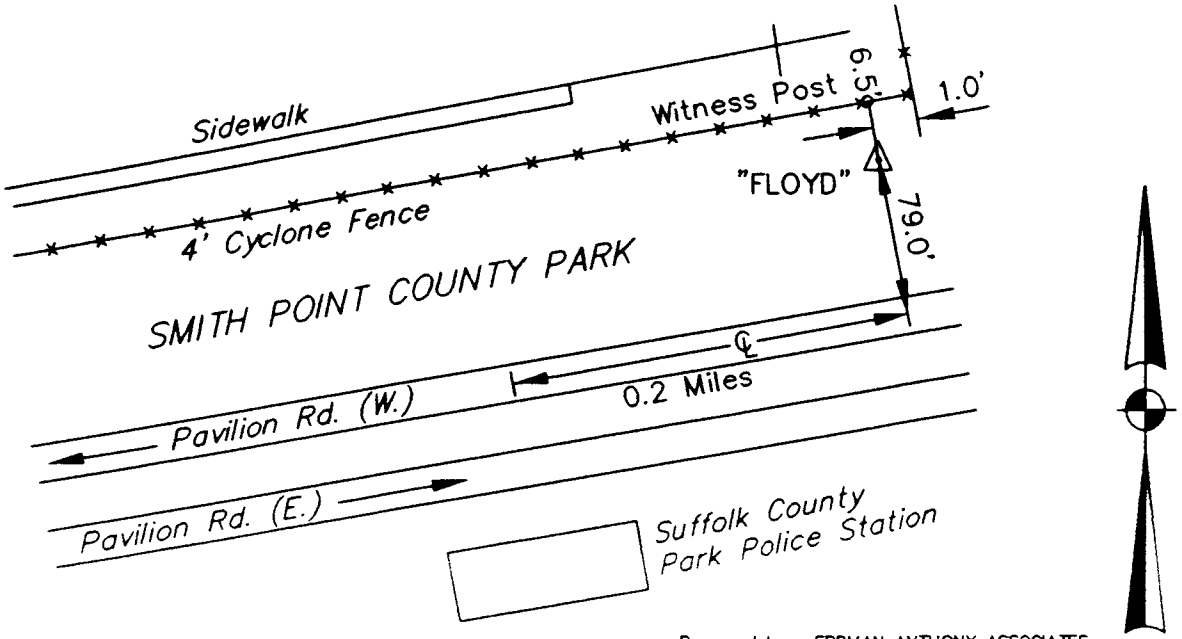
TO OBTAIN GRID AZIMUTH ADD − 0°44'48.5" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUBL) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
FLOYD AZ 1995	247° 12' 17.5"	-----	-----	NY-1555.002ft
RADIO TOWER	346° 12' 00.5"	-----	-----	-----
RADIO TOWER	28° 48' 55.0"	-----	-----	-----

SCALE FACTOR = 0.99999688

A standard corps disk – type B monument was established April 1995 in the Town of Brookhaven. To reach from the Suffolk County Park Police Station on Pavilion Road, in Smith Point County Park, Fire Island, N.Y., go 0.2 miles East along Pavilion Road to the station on the left near the Southeast corner of the main public parking lot. The station is 79.0' North of the center line of Westbound Pavilion Road, 1.0' West of the Southeast corner of the cyclone fence around the parking lot, and 6.5' South of a witness post and sign set along the cyclone fence around the parking lot. The disk is 0.3'+/− below the surface of the access cover. The access cover is 0.5'+/− below ground level. The disk is stamped FLOYD 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers. Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959 REPLACES DA FORMS 1030 AND 1040, 1 FEB 57, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent agency is TRADOC.

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	FLOYD AZ	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	FLOYD AZ 1995	Corps of Engineers New York District	10.41
LATITUDE	LONGITUDE	DATUM	DATUM
40° 44' 03.23443" W	72° 51' 48.41727" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
208820.399	1299223.081	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
63648.585	396003.987	---	APRIL 1995 / 2nd

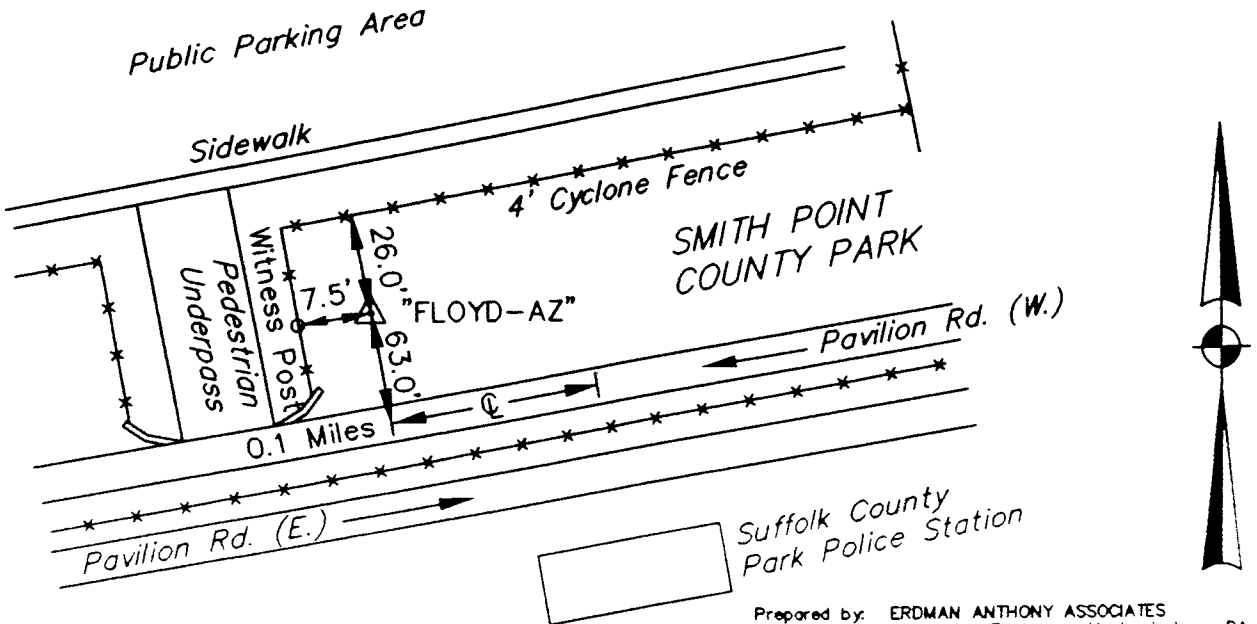
TO OBTAIN GRID AZIMUTH ADD − 0−44'36.2" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
FLOYD 1995	67° 12' 17.5"	-----	-----	NY-1555.002ft
RADIO TOWER	29° 53' 46.5"	-----	-----	-----
SMOKE STACK	288° 02' 24.0"	-----	-----	-----
(black top)				

SCALE FACTOR = 0.99999694

A standard corps disk − type B monument was established April 1995 in the Town of Brookhaven. To reach from the Suffolk County Park Police Station on Pavilion Road, in Smith Point County Park, Fire Island, N.Y., go 0.1 miles West along Pavilion Road to the station on the right near the Southeast corner of the fence at the pedestrian underpass to the beach at the main public parking lot. The station is 63.0' North of the center line of Westbound Pavilion Road, 26.0' South of the cyclone fence around the parking lot, and 7.5' East of a witness post and sign set along the cyclone fence on East side of the walkway to the underpass. The disk is 0.3'+/− below the surface of the access cover. The access cover is 0.5'+/− below ground level. The disk is stamped FLOYD AZ 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers, Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959 REPLACES DA FORMS 1020 AND 1040, 1 FEB 57, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent agency is TRADOC

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	NARROW	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	NARROW 1995	Corps of Engineers New York District	14.15
LATITUDE	LONGITUDE	DATUM	DATUM
40° 45' 10.40611" W	72° 47' 56.77466" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
215855.671	1316960.821	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
65792.940	401410.461	---	APRIL 1995 / 2nd

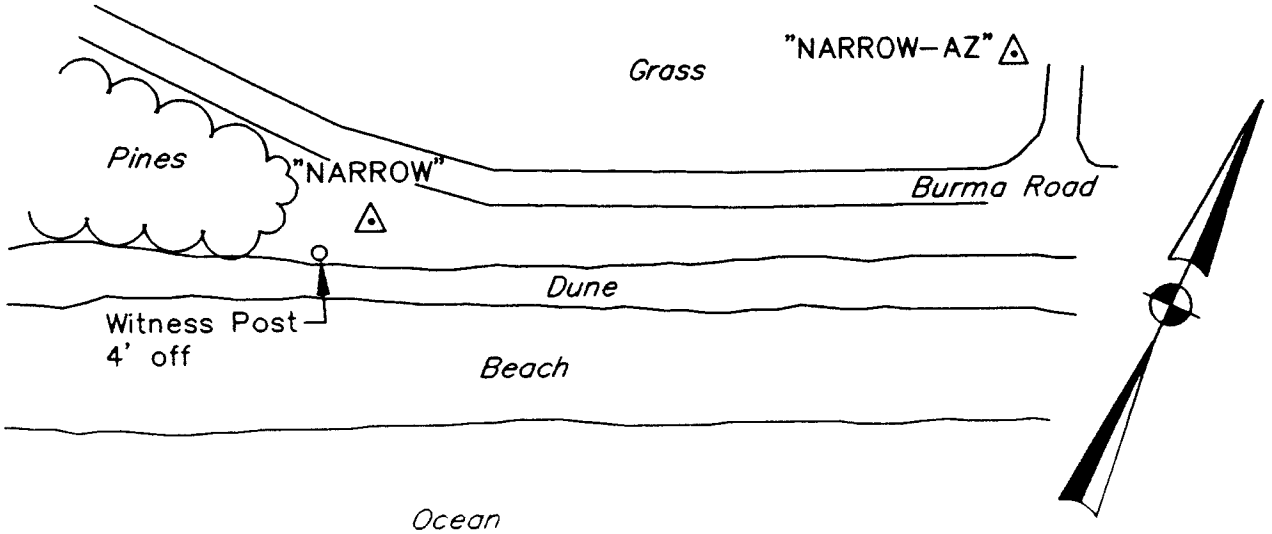
TO OBTAIN GRID AZIMUTH ADD − 0°47'07.7" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
NARROW AZ 1995	58° 25' 02.3"	-----	-----	NY-1470.462ft
RED/ WHITE STACK	332° 52' 11.3"	-----	-----	-----
RADIO TOWER	11° 45' 21.8"	-----	-----	-----

SCALE FACTOR = 0.99999633

A standard corps disk – type B monument was established April 1995 in the Town of Brookhaven. To reach from the National Parks Service building located Southwest of the intersection of Suffolk Boulevard and Pavilion Road, in Smith Point County Park, Fire Island, N.Y. Enter the beach at the National Park Service building, go 2.7 miles East along the Great South Beach to a jeep trail on the left, go 1.2 miles along jeep trail (Burma Road) to station on the right. The station is 55.0' South of the edge of the jeep trail and 4.0' North of a witness post and sign. The disk is 0.3'+/– below the surface of the access cover. The access cover is 0.5'+/– below ground level. The disk is stamped NARROW 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers, Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959

REPLACES DA FORMS 1030 AND 1040, 1 FEB 57, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION

For use of this form, see TM 5-237; the proponent agency is TRADOC.

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	NARROW AZ	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARK)	ELEVATION (FT.)
SUFFOLK Co., NY	NARROW AZ 1995	Corps of Engineers New York District	3.93
LATITUDE	LONGITUDE	DATUM	DATUM
40° 45' 17.84504" W	72° 47' 40.36196" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
216625.794	1318213.486	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
66027.674	401792.274	---	APRIL 1995 / 2nd

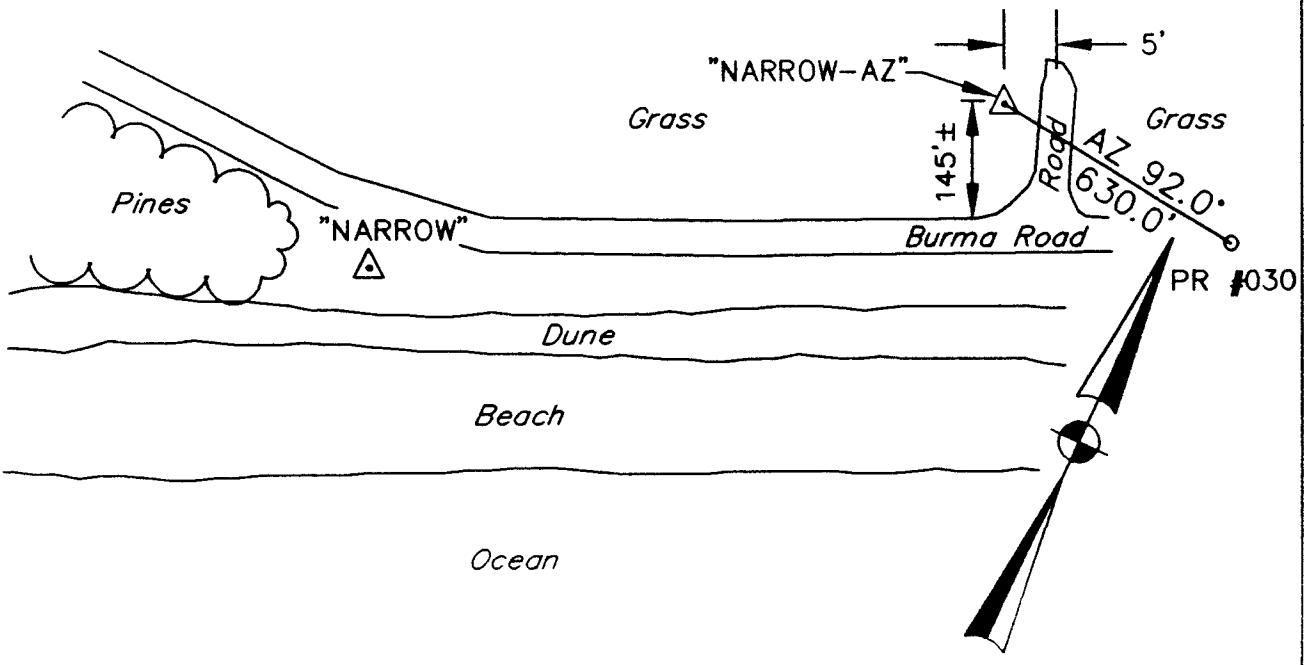
TO OBTAIN GRID AZIMUTH ADD − 0°47'18.5" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
NARROW 1995	238° 25' 02.3"	-----	----	NY-1470.462ft
RED/ WHITE STACK	331° 06' 50.8"	-----	----	----
RADIO TOWER	10° 06' 08.8"	-----	----	----

SCALE FACTOR = 0.99999627

A standard corps disk – type B monument was established April 1995 in the Town of Brookhaven. To reach from the National Parks Service building located Southwest of the intersection of Suffolk Boulevard and Pavilion Road, in Smith Point County Park, Fire Island, N.Y. Enter the beach at the National Park Service building, go 2.7 miles East along the Great South Beach to a jeep trail on the left, go 1.5 miles along jeep trail (Burma Road) to a jeep trail on the left, go 145'+/– North to the station on the left. The station is 5.0' West of the edge of the jeep trail and 4.0' East of a witness post and sign. The disk is 0.3'+/– below the surface of the access cover. The access cover is 0.5'+/– below ground level. The disk is stamped NARROW AZ 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers, Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959 REPLACES DA FORMS 1030 AND 1040, 1 FEB 57, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent agency is TRADOC

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	CUPSOGE	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	CUPSOGE 1995	Corps of Engineers New York District	14.23
LATITUDE	LONGITUDE	DATUM	DATUM
40° 46' 14.74354" W	72° 44' 07.57796" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
222614.394	1334504.368	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
67853.003	406757.745	---	APRIL 1995 / 2nd

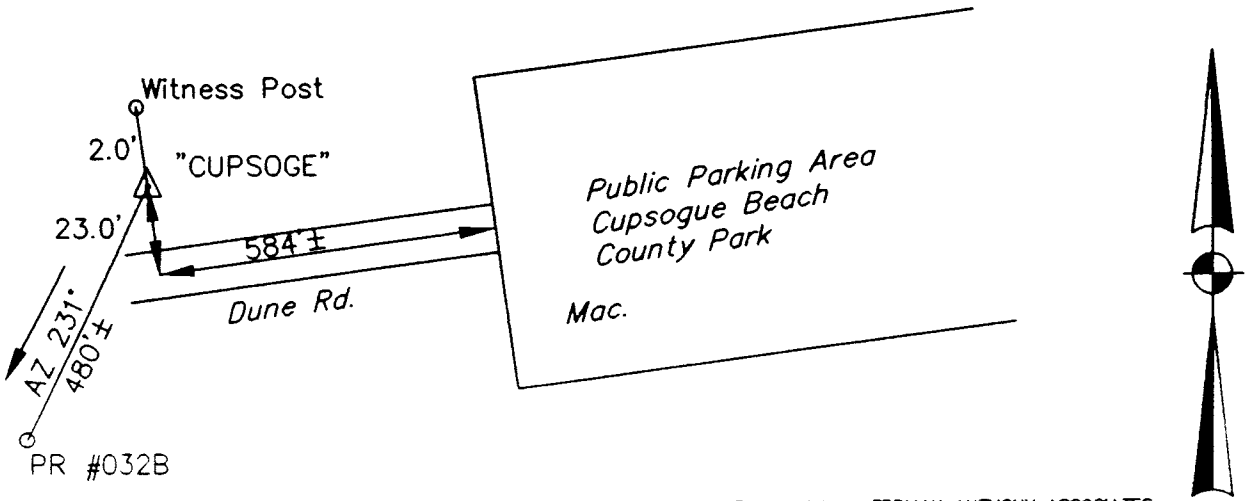
TO OBTAIN GRID AZIMUTH ADD − 0°49'37.7" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
CUPSOGE AZ 1995	71° 22' 01.7"	-----	-----	NY-1502.670ft
RADIO TOWER	283° 43' 22.7"	-----	-----	-----
RED/ WHITE STACK	312° 19' 05.2"	-----	-----	-----

SCALE FACTOR = 0.99999585

A standard corps disk − type B monument was established April 1995 in the Town of Brookhaven. To reach from the U.S. Post Office, Westhampton, Long Island N.Y. go Southeast 0.9 miles along Mill Road (Co. Rd #31) to Potunk Lane, go Southwest 0.6 miles along Potunk Lane to Stevens Lane, go 200.0' West along Stevens Lane to Jessup Lane, go Southwest 0.7 miles along Jessup Lane to Dune Road (Co.Rd #89), go 4.9 miles West along Dune Road to the parking area at Cupsogue Beach County Park, go 584.0' West of the West end of the parking lot along Dune Road to the station at the top of a small hill and on the right side of the road. The station is 23.0' North of the center line of Dune Road and 2.0' South of a witness post and sign. The disk is 0.3'+/− below the surface of the access cover. The access cover is 0.5'+/− below ground level. The disk is stamped CUPSOGE 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers, Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959 REPLACES DA FORMS 1030 AND 1040, 1 FEB 57, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent agency is TRADOC.

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	CUPSOGE AZ	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	CUPSOGE AZ 1995	Corps of Engineers New York District	5.20
LATITUDE	LONGITUDE	DATUM	DATUM
40° 46' 19.28349" W	72° 43' 48.98290" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
223094.501	1335928.276	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
67999.340	407191.753	---	APRIL 1995 / 2nd

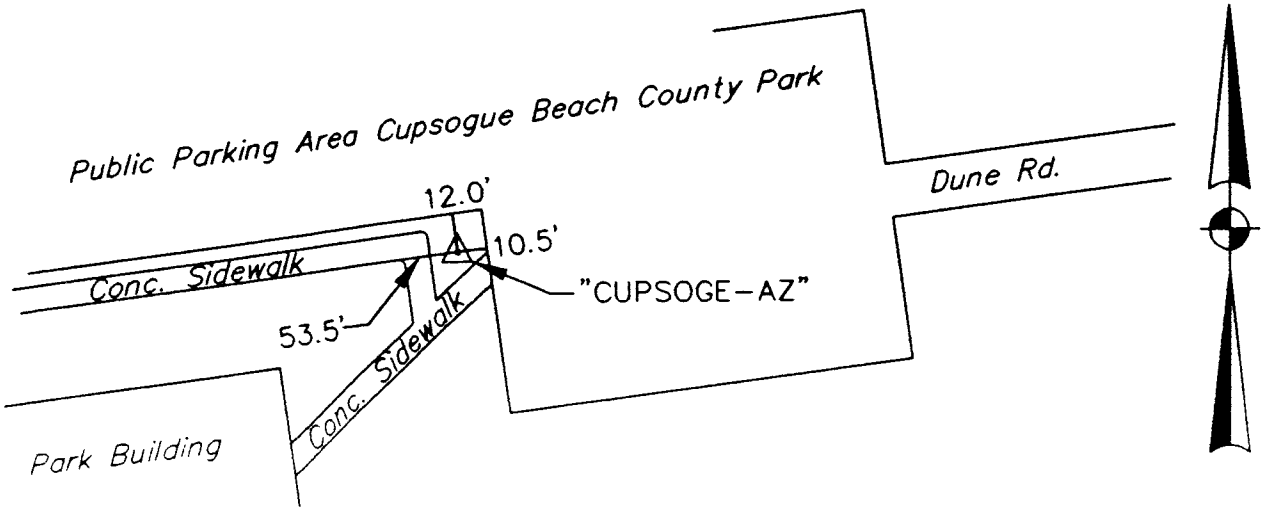
TO OBTAIN GRID AZIMUTH ADD − 0°49'49.8" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
CUPSOGE 1995	251° 22' 01.7"	-----	-----	NY-1502.670ft
RADIO TOWER	282° 37' 28.7"	-----	-----	-----
RED/ WHITE STACK	310° 55' 33.2"	-----	-----	-----

SCALE FACTOR = 0.99999582

A standard corps disk – type B monument was established April 1995 in the Town of Brookhaven. To reach from the U.S. Post Office, Westhampton, Long Island, N.Y., go Southeast 0.9 miles along Mill Road (Co.Rd #31) to Potunk Lane, go Southwest 0.6 miles along Potunk Lane to Stevens Lane, go 200.0' West along Stevens Lane to Jessup Lane, go Southwest 0.7 miles along Jessup Lane to Dune Road (Co.Rd #89), go 4.9 miles West along Dune Road to the parking area at Cupsogue Beach County Park. The station is located near the sidewalk entrance at the inner Southwest corner of the parking area at the East end of the lot, 12.0'South of the South edge of pavement, 10.5' West of the West edge of pavement, and 2.0' East of a witness post and sign. The disk is 0.3'+/− below the surface of the access cover. The access cover is 0.5'+/− below ground level. The disk is stamped CUPSOGE AZ 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers, Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959 REPLACES DA FORMS 1030 AND 1040, 1 FEB 37, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent agency is TRADOC.

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	POTUNK	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	POTUNK 1995	Corps of Engineers New York District	7.04
LATITUDE	LONGITUDE	DATUM	DATUM
40° 47' 44.54815" W	72° 38' 32.98595" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
232087.161	1360104.386	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
70740.308	414560.646	---	APRIL 1995 / 2nd

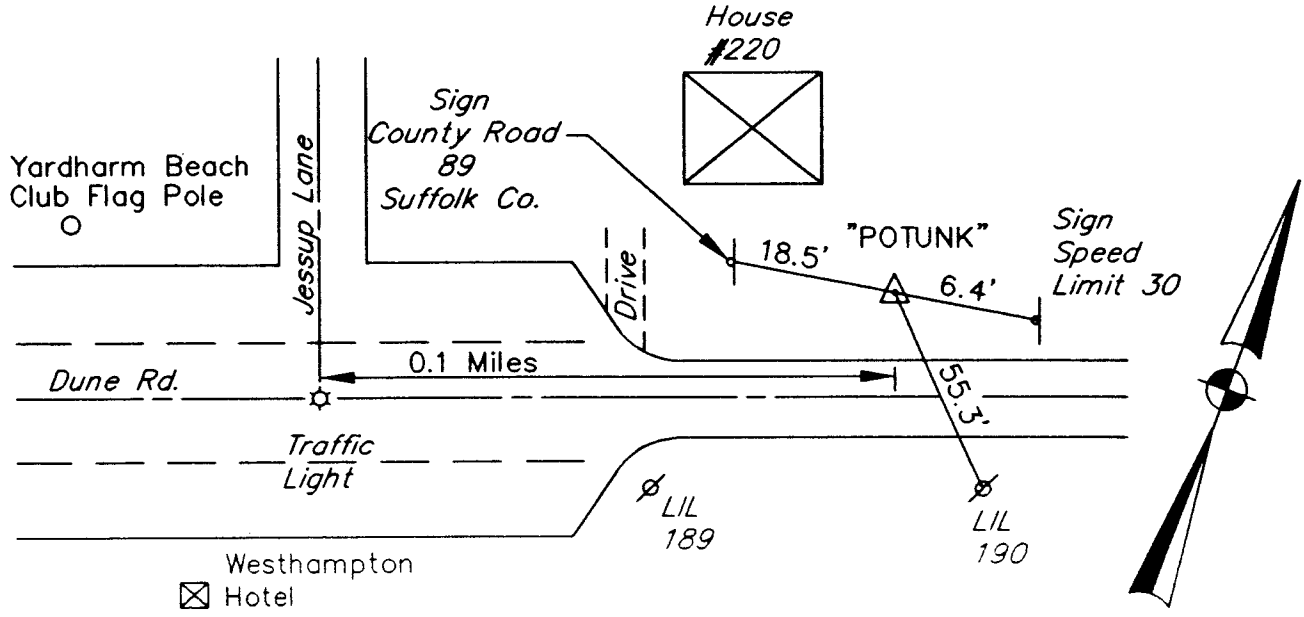
TO OBTAIN GRID AZIMUTH ADD − 0°53'16.5" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
POTUNK AZ 1995	247° 59' 00.9"			NY−1853.645ft
STEEPLE	233° 12' 20.9"			
FLAG POLE	250° 19' 45.9"			

SCALE FACTOR = 0.99999535

A standard corps disk – type B monument was established April 1995 in the Town of Southampton. To reach from the U.S. Post Office, Westhampton, Long Island, N.Y., go Southeast 0.9 miles along Mill Road (Co.Rd #31) to Potunk Lane, go Southwest 0.6 miles along Potunk Lane to Stevens Lane, go 200.0' West along Stevens Lane to Jessup Lane, go Southwest 0.7 miles along Jessup Lane to Dune Road (Co.Rd #89), go 0.1 miles East along Dune Road to the station on the left, in the Village of Westhampton Beach. The station is 18.5' Southeast of Suffolk Co. Rte #89 sign, 6.4' Northwest of 30 MPH Seed Limit sign, 55.3' Northwest of power pole (LIL 190) and 2.0' South of a witness post and sign. The disk is 0.3'+/− below the surface the access cover. The access cover is 0.5'+/−below ground level. The disk is stamped POTUNK 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers. Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959 REPLACES DA FORMS 1030 AND 1040, 1 FEB 37, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent agency is TRADOC.

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	POTUNK AZ	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	POTUNK AZ 1995	Corps of Engineers New York District	8.38
LATITUDE	LONGITUDE	DATUM	DATUM
40° 47' 37.94537" W	72° 38' 55.46603" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
231392.280	1358385.915	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
70528.508	414036.855	---	APRIL 1995 / 2nd

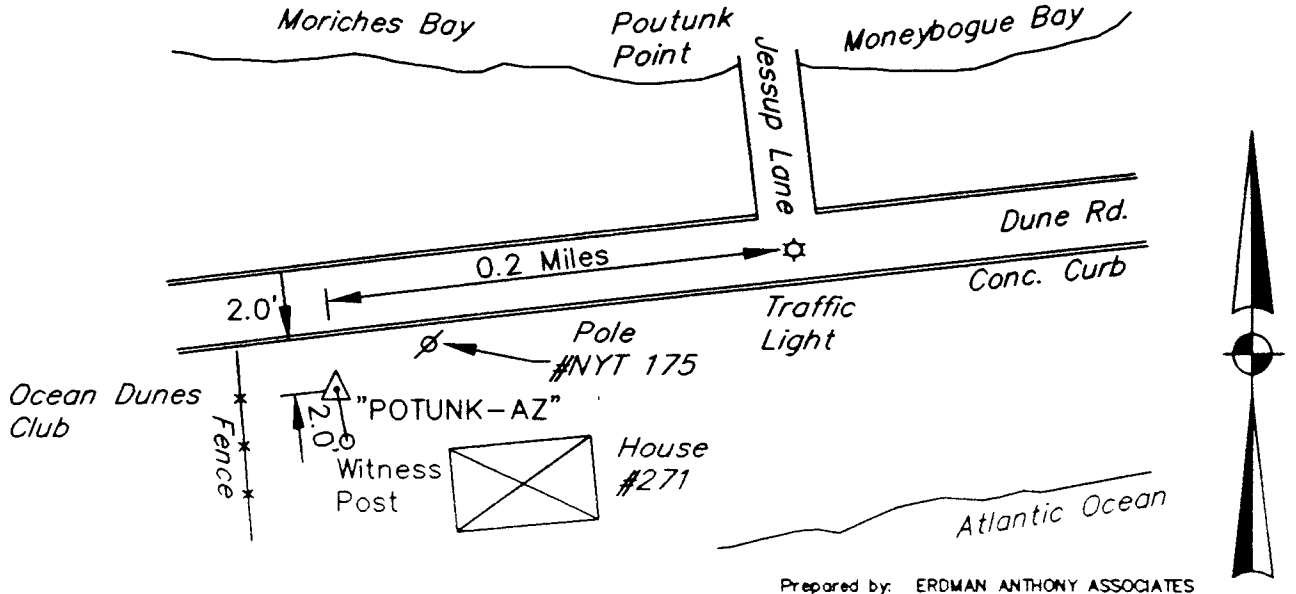
TO OBTAIN GRID AZIMUTH ADD − 0°53'01.8" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUBL) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
POTUNK 1995	67° 59 00.9			NY-1853.645ft
FLAGPOLE	60° 38' 11.9"			

SCALE FACTOR = 0.99999538

A standard corps disk – type B monument was established April 1995 in the Town of Southampton. To reach from the U.S. Post Office, Westhampton, Long Island, N.Y., go Southeast 0.9 miles along Mill Road (Co. Rd #31) to Potunk Lane, go Southwest 0.6 miles along Potunk Lane to Stevens Lane, go 200.0' West along Stevens Lane to Jessup Lane, go Southwest 0.7 miles along Jessup Lane to Dune Road (Co.Rd #89), 0.2 miles West along Dune Road to the station on the left, in the Village of Westhampton Beach. The station is 2.0' South of face curb on the South side of roadway, and 2.0' North of a witness post and sign. The disk is 0.3'+/– below the surface of the access cover. The access cover is 0.5'+/– below ground level. The disk is stamped POTUNK AZ 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers. Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959 REPLACES DA FORMS 1030 AND 1040, 1 FEB 37, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent agency is TRADOC.

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	SEDGE	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	SEDGE 1995	Corps of Engineers New York District	3.93
LATITUDE	LONGITUDE	DATUM	DATUM
40° 49' 09.24389" W	72° 33' 37.50990" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
241020.387	1382686.247	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
73463.161	421443.611	---	APRIL 1995 / 2nd

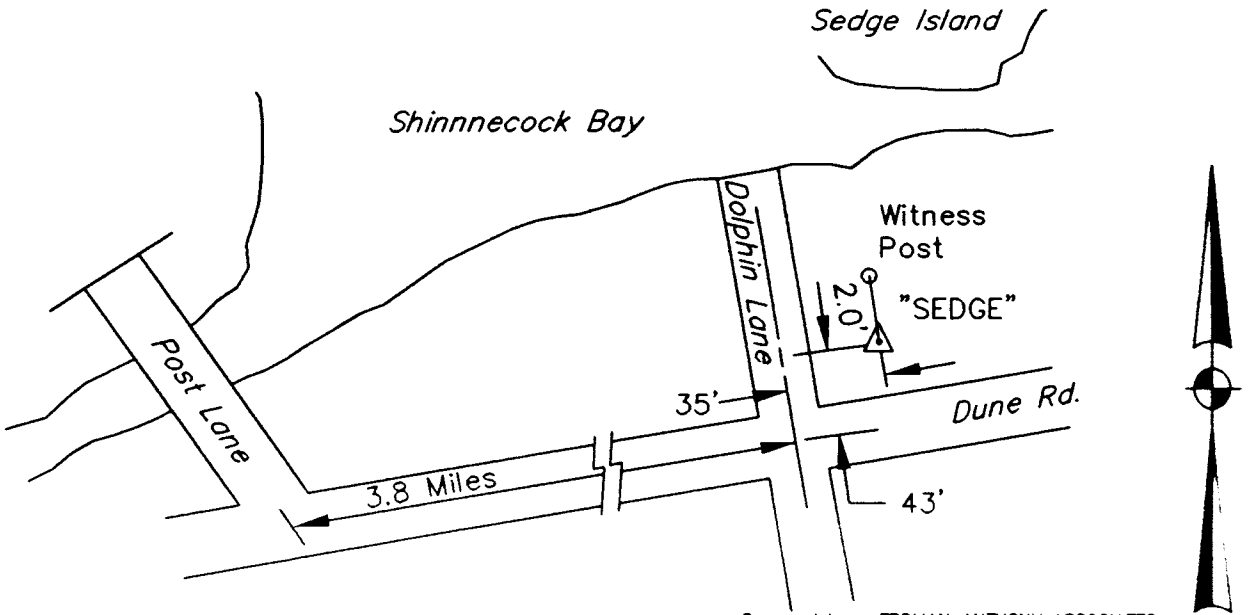
TO OBTAIN GRID AZIMUTH ADD − 0°56'29.8" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
SEDGE AZ 1995	59° 18' 29.4"			NY-3895.97ft
RADIO TOWER	345° 24' 53.9"			
WATER TOWER	24° 53' 57.4"			

SCALE FACTOR = 0.99999504

A standard corps disk – type B monument was established April 1995 in the Town of Southampton. To reach from the U.S. Post Office, Quoque, Long Island, N.Y.,go 200.0' West along Midland Street to Jessup Avenue, go 0.15 miles South along Jessup Avenue to Quoque Street (Main Street), go 0.4 miles along Quoque Street to Post Lane, go 0.7 miles Southeast along Post Lane to Dune road (Co.Rd.#89), go 3.8 miles East along Dune Road to Dolphin Lane in the Village of Tiana Beach. The station is on the left in the Northeast Quadrant of intersection, 35.0' East of the center line of Dolphin Lane, 43.0' North of the center line of Dune Road, and 2.0' South of a witness post and sign. The disk is 0.3'+/- below the surface of the access cover. The access cover is 0.5'+/- below ground level. The disk is stamped SEDGE 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers, Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959

REPLACES DA FORMS 1030 AND 1040, 1 FEB 37, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION

For use of this form, see TM 5-237; the proponent agency is TRADOC.

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	SEDGE AZ	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	SEDGE AZ 1995	Corps of Engineers New York District	4.35
LATITUDE	LONGITUDE	DATUM	DATUM
40° 49' 28.34404" W	72° 32' 53.51234" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
243008.969	1386036.490	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
74069.284	422464.767	---	APRIL 1995 / 2nd

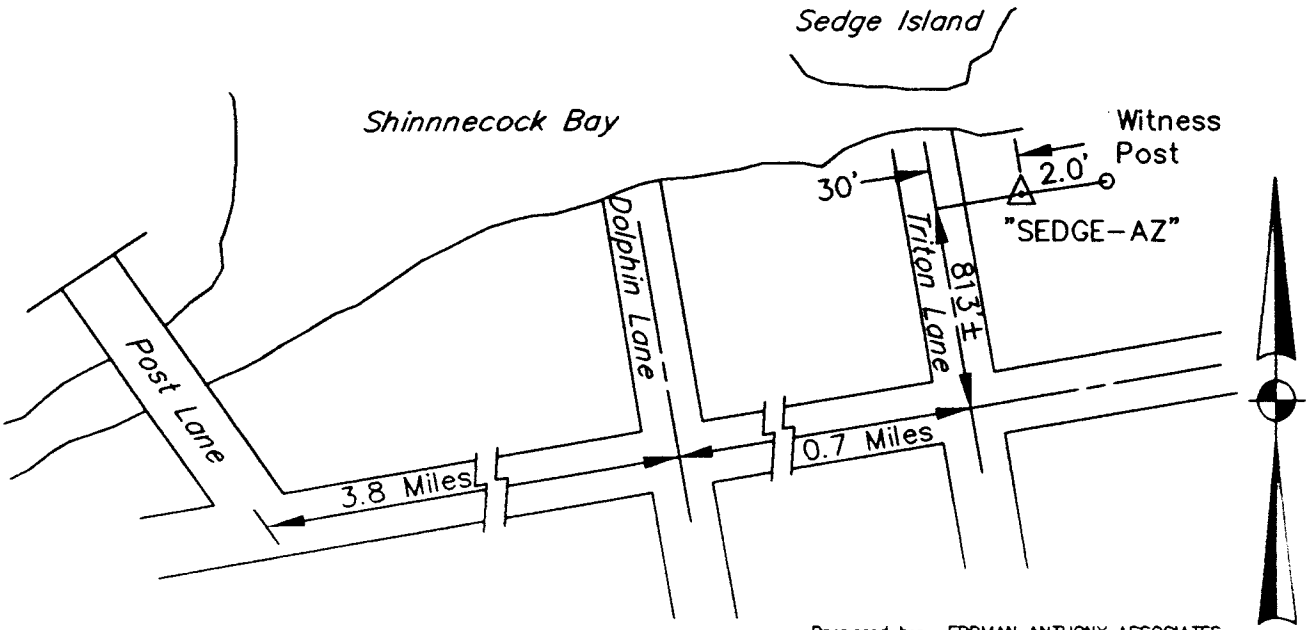
TO OBTAIN GRID AZIMUTH ADD − 0°56'58.6" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUBL) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
SEDGE 1995	239° 18' 29.4"			NY-3895.97ft
RADIO TOWER	333° 21' 34.4"			
WATER TOWER	18° 25' 17.4"			

SCALE FACTOR = 0.99999500

A standard corps disk – type B monument was established April 1995 in the Town of Southampton. To reach from the U.S. Post Office, Quogue, Long Island, N.Y., go 200.0'West along Midland Street to Jessup Avenue, go 0.15 miles South along Jessup Avenue to Quogue Street (Main Street), go 0.4 miles along Quogue Street to Post Lane, go 0.7 miles Southeast along Post Lane to Dune Road (Co.Rd.#89), go 4.5 miles East along Dune Road to Triton Lane, go 813.0' North along Triton Lane to the station on the right, in the Village of Tiana Beach. The station is 30.0' East of the center line of Triton Lane and 2.0' West of a witness post and sign. The disk is 0.3'+/- below the surface of the access cover. The access cover is 0.5'+/- below ground level. The disk is stamped SEDGE AZ 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers, Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959 REPLACES DA FORMS 1030 AND 1040, 1 FEB 37, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent agency is TRADOC.

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	SHINCOCK	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	SHINCOCK 1995	Corps of Engineers New York District	3.42
LATITUDE	LONGITUDE	DATUM	DATUM
40° 50' 59.05352" W	72° 27' 17.22445" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
252630.020	1411724.106	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
77001.784	430294.368	---	APRIL 1995 / 2nd

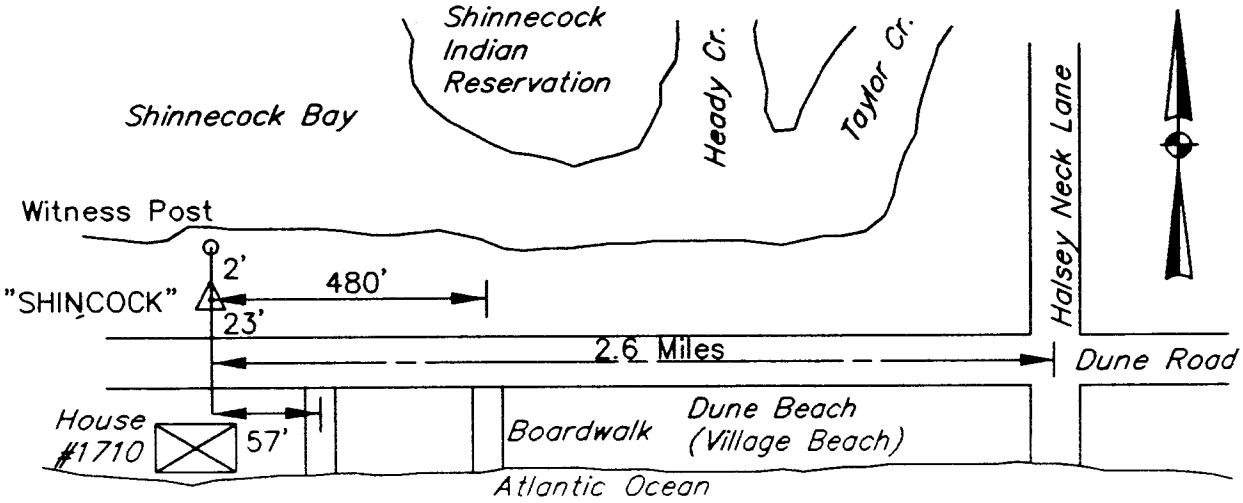
TO OBTAIN GRID AZIMUTH ADD − 1°00'38.5" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
SHINCOCK AZ 1995	64° 40' 04.0"	-----	-----	NY-1522.852ft
RADIO TOWER	10° 12' 42.0"	-----	-----	-----
WATER TOWER	39° 57' 52.0"	-----	-----	-----

SCALE FACTOR = 0.99999490

A standard corps disk – type B monument was established April 1995 in the Town of Southampton. To reach from Southampton College Long Island University, starting at the intersection of Montauk Highway (Rte 27A – Co.Rd.#80) and Tuckahoe Road, go 1.9 miles Southeast along Montauk Highway to Halsey Neck Lane, go 1.6 miles Southwest along Halsey Neck Lane to Dune Road, go 2.6 miles West along Dune Road to the station on the right, in the Village of Southampton Beach. The station is 57.0' West of the center line of a drive on the South side of Dune Road for house #1710 , 23.0' North of the center line of Dune Road, and 2.0' South of a witness post and sign. The disk is 0.3'+/– below the surface of the access cover. The access cover is 0.5'+/– below ground level. The disk is stamped SHINCOCK 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers. Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959 REPLACES DA FORMS 1030 AND 1040, 1 FEB 57, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent agency is TRADOC.

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	SHINCOCK AZ	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	SHINCOCK AZ 1995	Corps of Engineers New York District	3.23
LATITUDE	LONGITUDE	DATUM	DATUM
40° 51' 05.25042" W	72° 26' 59.16664" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
253281.597	1413100.524	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
77200.385	430713.901	---	APRIL 1995 / 2nd

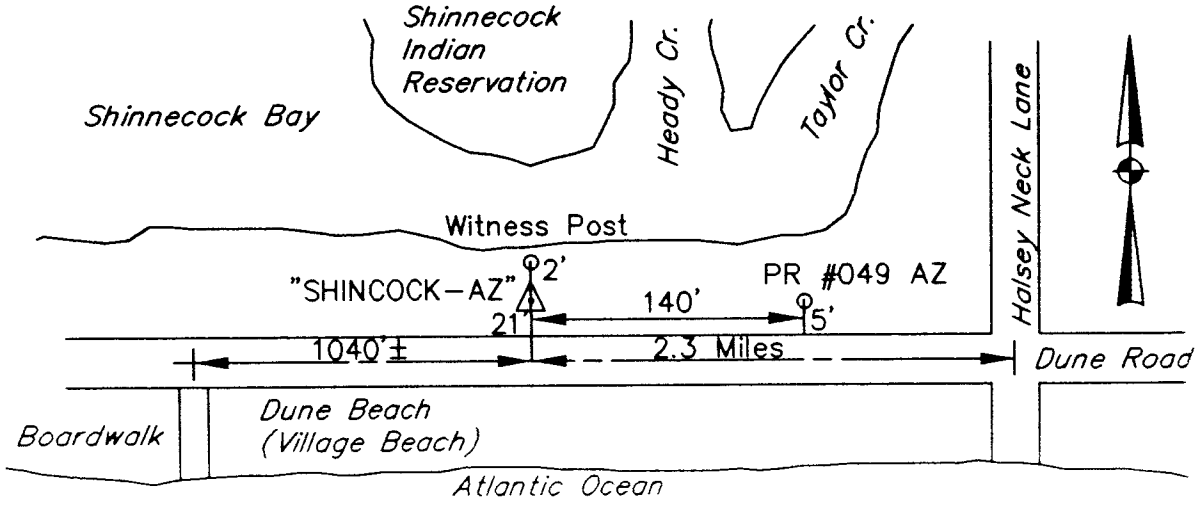
TO OBTAIN GRID AZIMUTH ADD − 1°00'50.3" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
SHINCOCK 1995	244° 40' 04.0"	-----	-----	NY-1522.852ft
RADIO TOWER	4° 56' 55.0"	-----	-----	-----
WATER TOWER	38° 01' 57.0"	-----	-----	-----

SCALE FACTOR = 0.99999490

A standard corps disk – type B monument was established April 1995 in the Town of Southampton. To reach from Southampton College Long Island University, starting at the intersection of Montauk Highway (Rte 27A – Co.Rd.#80) and Tuckahoe Road, go 1.9 miles Southeast along Montauk Highway to Halsey Neck Lane, go 1.6 miles Southwest along Halsey Neck Lane to Dune Road, go 2.3 miles West along Dune Road to the station on the right, in the Village of Southampton Beach. The station is 1040.0'+/– East of the center line of a boardwalk on the South side of Dune Road to Dune Beach, 21.0' North of the center line of Dune Road, and 2.0' South of a witness postand sign. The disk is 0.3'+/– below the surface of the access cover. The access cover is 0.5'+/– below ground level. The disk is stamped SHINCOCK AZ 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers, Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959 REPLACES DA FORMS 1030 AND 1040, 1 FEB 37, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent agency is TRADOC

COUNTRY: UNITED STATES	TYPE OF MARK: B (40ft deep)	STATION: ANDREWS		
LOCALITY: SUFFOLK Co., NY	STAMPING ON MARK: ANDREWS 1995	AGENCY (CAST IN MARKS): Corps of Engineers New York District	ELEVATION (FT.): 17.64	
LATITUDE: 40° 53' 08.91671" W	LONGITUDE: 72° 22' 19.78508" N	DATUM: NAD 83 (92)	DATUM: NGVD 29	
(NORTHING) (FT): 266184.569	(EASTING) (FT): 1434334.188	GRID AND ZONE: LAMBERT-LONG ISLAND,NY	ESTABLISHED BY (AGENCY): NEW YORK DISTRICT	
(NORTHING) (M): 81133.219	(EASTING) (M): 437185.935	GRID AND ZONE: ---	DATE: APRIL 1995	ORDER: 2nd

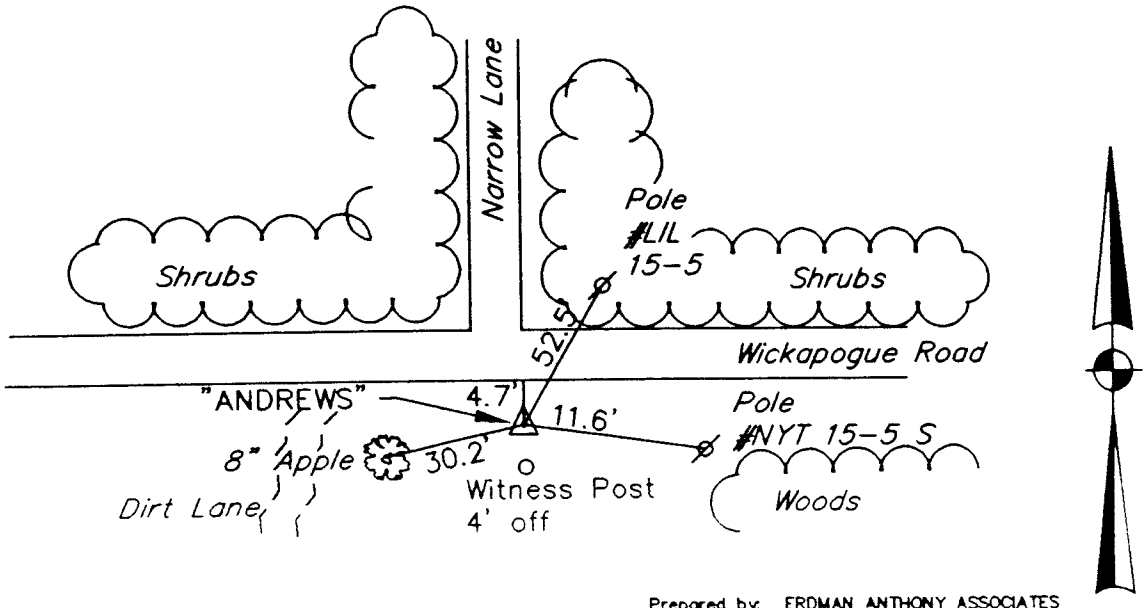
TO OBTAIN GRID AZIMUTH ADD − 1°03'53.1" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE ~~(METERS)~~ (FEET)
ANDREWS AZ 1995	343° 45' 28.7"			NY-1821.402 ft
CHIMNEY	330° 14' 40.7"			

SCALE FACTOR = 0.99999509

A standard corps disk – type B monument was established April 1995 in the Town of Southampton. To reach from intersection of Montauk Highway (Rte 27 – Co.Rd.#39), Hampton Road (Rte 27A), and Flying Point Road go 0.25 miles Southwest along Hampton Road to Narrow Lane, go 0.6 miles South along Narrow Lane to a "T" intersection with Wickapogue Road and the station on the opposite side of Wickapogue Road. The station is 52.5' Southwest of power pole (F40T LIL 15-5), 11.6' West of power pole (NYT 15-5 S), 4.7' South of the South edge of pavement and 4.0' North of a witness post and sign. The disk is 0.3'+/- below the surface of the access cover. The access cover is 0.5'+/- below ground level. The disk is stamped ANDREWS 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers, Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959

REPLACES DA FORMS 1030 AND 1040, 1 FEB 37, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION

For use of this form, see TM 5-237; the proponent agency is TRADOC

COUNTRY: UNITED STATES	TYPE OF MARK: B (40ft deep)	STATION: ANDREWS AZ	
LOCALITY: SUFFOLK Co., NY	STAMPING ON MARK: ANDREWS AZ 1995	AGENCY (CAST IN MARK): Corps of Engineers New York District	ELEVATION (FT.): 29.24
LATITUDE: 40° 53' 26.28597" W	LONGITUDE: 72° 22' 25.99394" N	DATUM: NAD 83 (92)	DATUM: NGVD 29
(NORTHING) (FT): 267933.277	(EASTING) (FT): 1433824.751	GRID AND ZONE: LAMBERT-LONG ISLAND,NY	ESTABLISHED BY (AGENCY): NEW YORK DISTRICT
(NORTHING) (M): 81666.226	(EASTING) (M): 437030.658	GRID AND ZONE: ---	DATE: APRIL 1995 / ORDER: 2nd

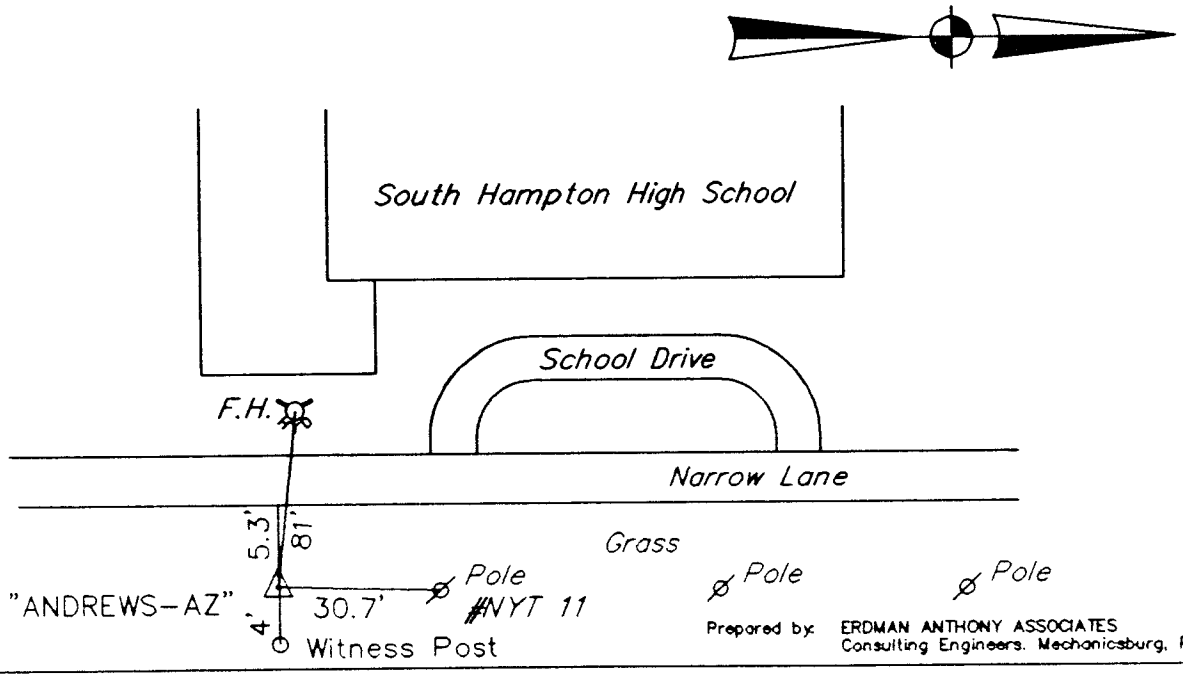
TO OBTAIN GRID AZIMUTH ADD − 1°03'49.0" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE ~~(METERS)~~ (FEET)
ANDREWS 1995	163° 45' 28.7"			NY-1821.402 ft
CHIMNEY	170° 47' 39.7"			

SCALE FACTOR = 0.99999515

A standard corps disk – type B monument was established April 1995 in the Town of Southampton. To reach from intersection of Montauk Highway (Rte 27 – Co.Rd.#39), Hampton Road (Rte 27A), and Flying Point Road, go 0.25 miles Southwest along Hampton Road to Narrow Lane, go 0.3 miles South along Narrow Lane to the station on the left and opposite the Southampton High School on the right. The station is 81.0' East on the opposite side of the road from a fire hydrant on the West side of Narrow Lane, 30.7' South of power pole (NYT 11), 5.3' East of the East edge of roadway pavement and 4.0' West of a witness post and sign. The disk is 0.3'+/– below the surface of the access cover. The access cover is 0.5'+/– below ground level. The disk is stamped ANDREWS AZ 1995.



SKETCH

Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers, Mechanicsburg, PA

DA FORM 1 OCT 94 1959 REPLACES DA FORMS 1039 AND 1040, 1 FEB 57, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent agency is TRADOC.

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	MECOX	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	MECOX 1995	Corps of Engineers New York District	10.14
LATITUDE	LONGITUDE	DATUM	DATUM
40° 53' 35.95815" W	72° 19' 37.59213" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
269155.512	1446737.395	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
82038.764	440966.440	---	APRIL 1995 / 2nd

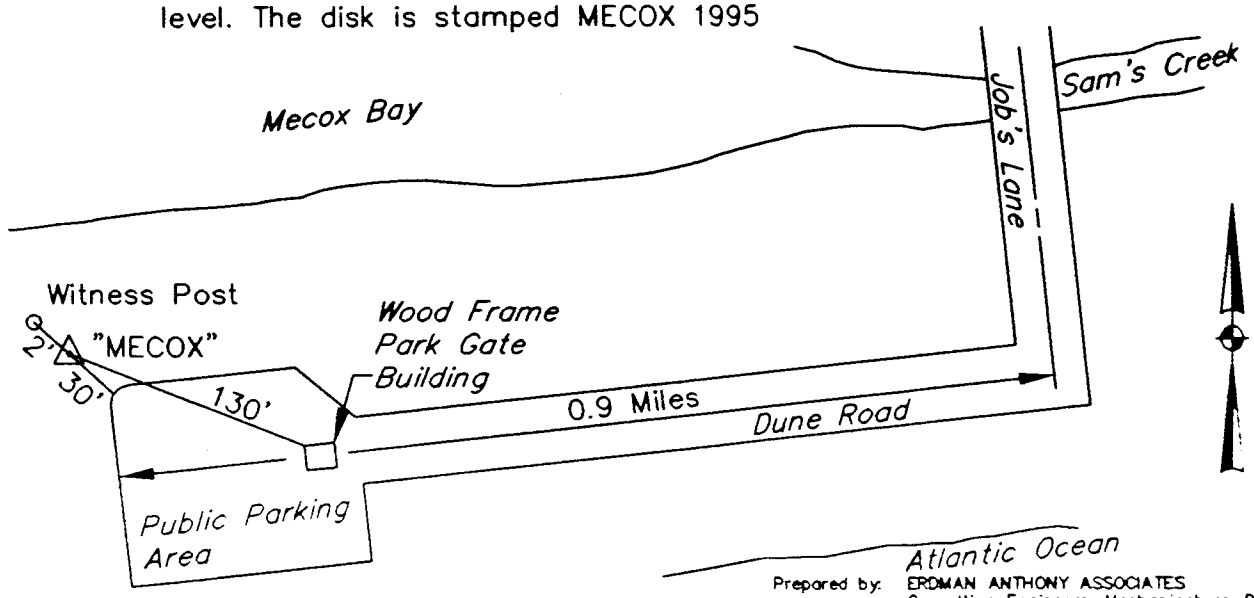
TO OBTAIN GRID AZIMUTH ADD − 1°05'39.1" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE ~~(METERS)~~ (FEET)
MECOX AZ 1995	62° 41' 56.6"			NY-1648.950 ft
RADIO TOWER	276° 54' 08.6"			
RADIO TOWER	348° 07' 42.6"			

SCALE FACTOR = 0.99999518

A standard corps disk – type B monument was established April 1995 in the Town of Southampton. To reach from the U.S. Post Office, Bridgehampton, Long Island, N.Y., go 800'+/– West along Montauk Highway (Rte 27) to Halsey Lane, go 1.0 miles Southwest along Halsey Lane to Paul's Lane, go 300'+/– Northwest along Paul's Lane to Halsey Lane, go 0.7 miles Southwest along Halsey Lane to Mecox Road, go 0.3 miles Southeast along Mecox Road to Job's Lane, 1.0 miles Southwest along Job's Lane to Dune Road, go 0.9 miles West to the station near the Northwest corner of a public parking area on top of a dune. The station is 130'+/– Northwest of the Northwest corner of a wood frame gate building at the entrance to the parking lot, 30.0' Northwest of the edge of pavement at the Northwest corner of the parking lot, and 2.0' Southeast of a witness post and sign. The disk is 0.3'+/– below the surface of the access cover. The access cover is 0.5'+/– below ground level. The disk is stamped MECOX 1995



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers, Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959 REPLACES DA FORMS 1030 AND 1040, 1 FEB 57, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent agency is TRADOC

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	MECOX AZ	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	MECOX AZ 1995	Corps of Engineers New York District	5.31
LATITUDE	LONGITUDE	DATUM	DATUM
40° 53' 43.15289" W	72° 19' 18.32768" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
269911.826	1448202.668	LAMBERT–LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
82269.289	441413.056	---	APRIL 1995 / 2nd

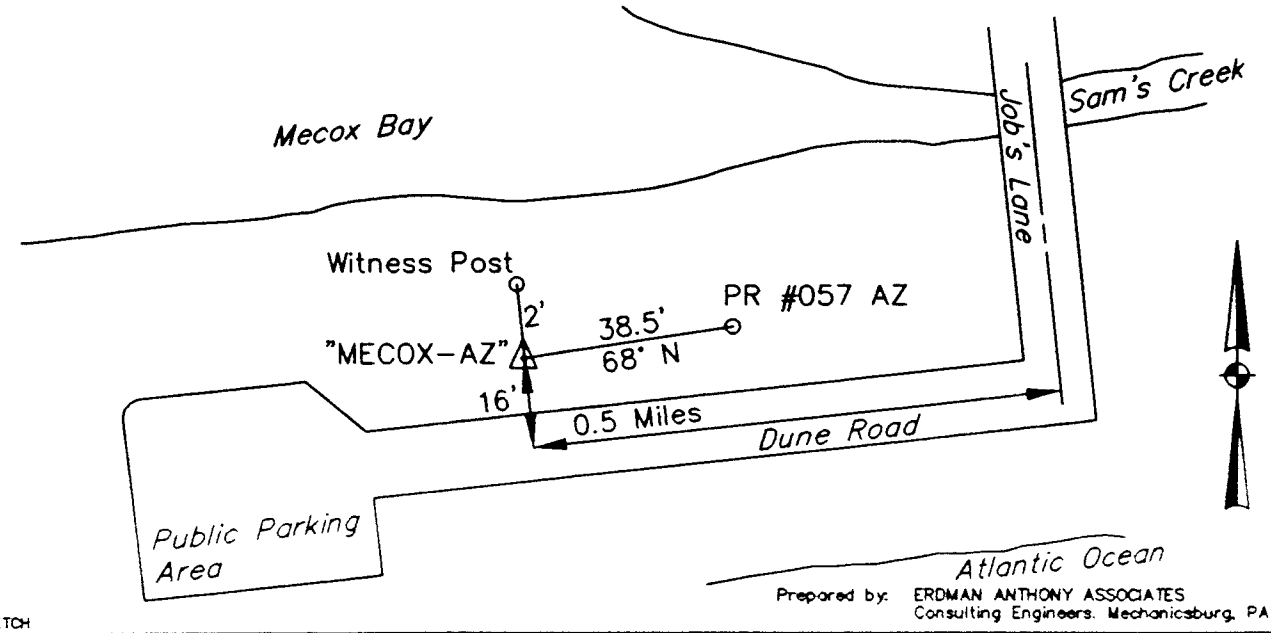
TO OBTAIN GRID AZIMUTH ADD − 1°05'51.7" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
MECOX 1995	242° 41' 56.6"			NY–1648.950ft
RADIO TOWER	273° 50' 28.6"			
RADIO TOWER	344° 51' 59.6"			

SCALE FACTOR = 0.99999521

A standard corps disk – type B monument was established April 1995 in the Town of Southampton. To reach from the U.S. Post Office, Bridgehampton, Long Island, N.Y., go 800'+/– West along Montauk Highway (Rte 27) to Halsey Lane, go 1.0 miles Southwest along Halsey Lane to Paul's Lane, go 300'+/– Northwest along Paul's Lane to Halsey Lane, go 0.7 miles Southwest along Halsey Lane to Mecox Road, go 0.3 miles Southeast along Mecox Road to Job's Lane, 1.0 miles Southwest along Job's Lane to Dune Road, go 0.5 miles West to the station on the right. The station is 16.0' North of the center line of Dune Road and 2.0' South of a witness post and sign. The disk is 0.3'+/– below the surface of the access cover. The access cover is 0.5'+/– below ground level. The disk is stamped MECOX AZ 1995



SKETCH

Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers, Mechanicsburg, PA

DA FORM 1 OCT 94 1959

REPLACES DA FORMS 1030 AND 1040, 1 FEB 37, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION

For use of this form, see TM 5-237; the proponent agency is TRADOC.

COUNTRY	TYPE OF MARK	STATION		
UNITED STATES	B (40ft deep)	LILY POND		
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARK)	ELEVATION (FT.)	
SUFFOLK Co., NY	LILY POND 1995	Corps of Engineers New York District	22.99	
LATITUDE	LONGITUDE	DATUM	DATUM	
40° 56' 10.06267" W	72° 12' 50.96372" N	NAD 83 (92)	NGVD 29	
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)	
285365.089	1477642.064	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT	
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE	ORDER
86979.453	450386.202	---	APRIL 1995	2nd

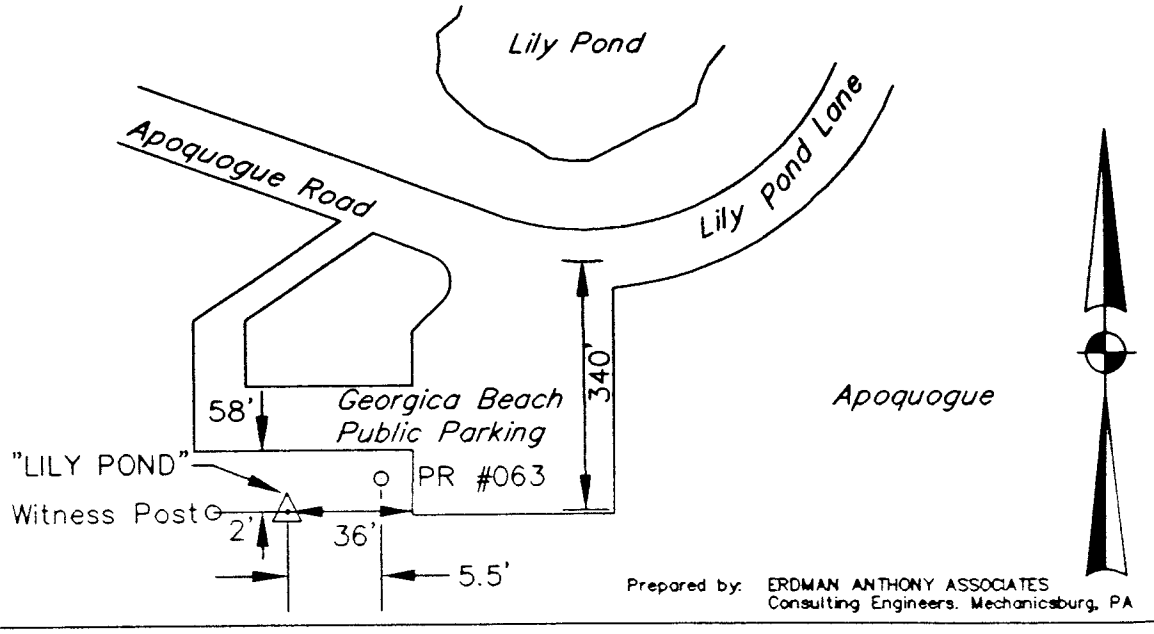
TO OBTAIN GRID AZIMUTH ADD − 1° 10' 05.1" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE ~~(METERS)~~ (FEET)
LILY POND AZ	27° 48' 34.4"			NY-1469.719ft
CHIMNEY	72° 35' 08.4"			

SCALE FACTOR = 0.99999602

A standard corps disk – type B monument was established April 1995 in the Town of East Hampton. To reach from the U.S. Post Office, East Hampton, Long Island, N.Y., go 1.2 miles Southwest along Montauk Highway (Rte 27) to Ocean Avenue, go 0.5 miles Southwest along Ocean Avenue to Lily Pond Lane, go 1.2 miles West along Lily Pond Lane to Apaquoque Road, go 340.0' South into the main parking lot for Georgica Beach to the station on top of a dune near the Southwest corner of the parking lot. The station is 58.0' South of the South edge of pavement in the West parking area, 36.0' West of the West edge pavement in the main parking area, and 2.0' East of a witness post and sign. The disk is 0.3'+/− below the surface of the access cover. The access cover is 0.5'+/− below ground level. The disk is stamped LILY POND 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers, Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959 REPLACES DA FORMS 1030 AND 1040, 1 FEB 37, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent agency is TRADOC.

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	LILY POND AZ	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	LILY POND AZ 1995	Corps of Engineers New York District	6.53
LATITUDE	LONGITUDE	DATUM	DATUM
40° 56' 22.76650" W	72° 12' 41.68587" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
286665.060	1478327.739	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
87375.685	450595.196	---	APRIL 1995 / 2nd

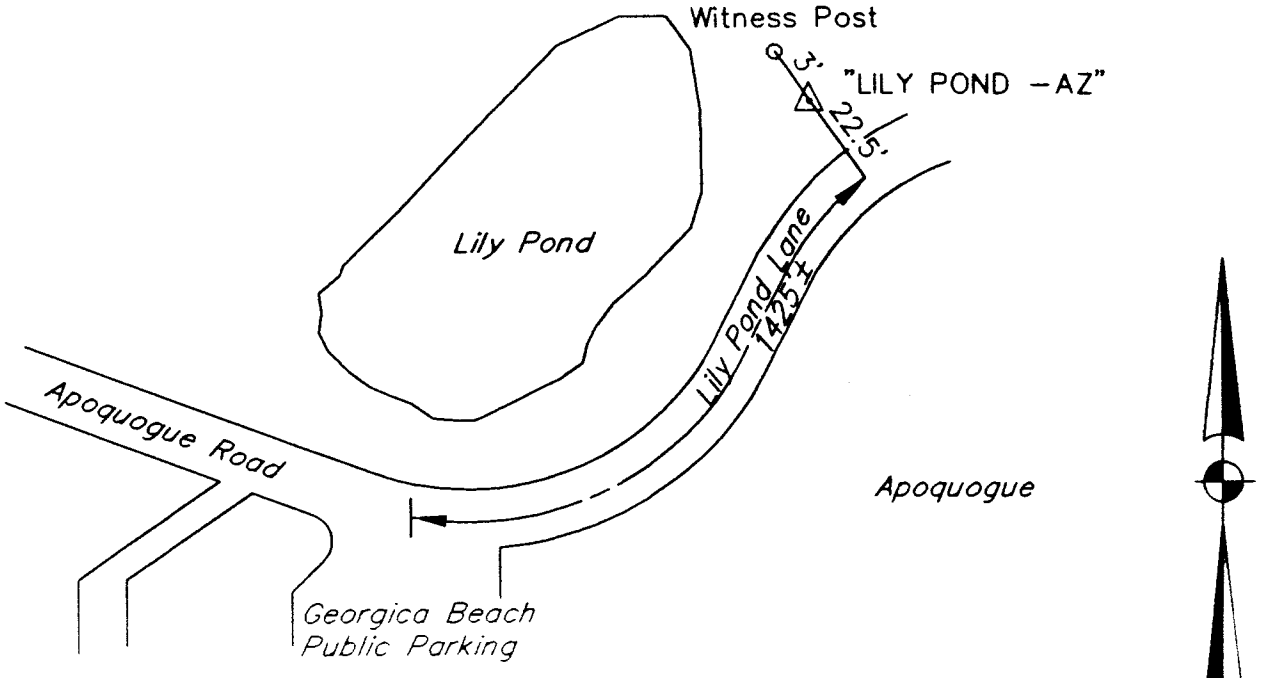
TO OBTAIN GRID AZIMUTH ADD − 1°10'11.2" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE ~~(METERS)~~ (FEET)
LILY POND 1995	207° 48' 34.4"			NY-1469.719ft
CHIMNEY	202° 48' 17.4"			

SCALE FACTOR = 0.99999612

A standard corps disk – type B monument was established April 1995 in the Town of East Hampton. To reach from the U.S. Post Office, East Hampton, Long Island, N.Y., go 1.2 miles Southwest along Montauk Highway (Rte 27) to Ocean Avenue, go 0.5 miles Southwest along Ocean Avenue to Lily Pond Lane, go 0.9 miles West along Lily Pond Lane to the station on right. The station is 22.5' Northeast of the center line of Lily Pond Lane and 3.0' Southwest of a witness post and sign. The disk is 0.3'+/– below the surface of the access cover. The access cover is 0.5'+/– below ground level. The disk is stamped LILY POND AZ 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers. Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959

REPLACES DA FORMS 1030 AND 1040, 1 FEB 37, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION

For use of this form, see TM 5-237; the proponent agency is TRADOC

COUNTRY: UNITED STATES	TYPE OF MARK: B (40ft deep)	STATION: AMAGANSETT		
LOCALITY: SUFFOLK Co., NY	STAMPING ON MARK: AMAGANSETT 1995	AGENCY (CAST IN MARKS): Corps of Engineers New York District	ELEVATION (FT.): 21.37	
LATITUDE: 40° 57' 49.98296" W	LONGITUDE: 72° 08' 17.51296" N	DATUM: NAD 83 (92)	DATUM: NGVD 29	
(NORTHING) (FT): 295912.364	(EASTING) (FT): 1498409.844	GRID AND ZONE: LAMBERT-LONG ISLAND,NY	ESTABLISHED BY (AGENCY): NEW YORK DISTRICT	
(NORTHING) (M): 90194.269	(EASTING) (M): 456716.234	GRID AND ZONE: ---	DATE: APRIL 1995	ORDER: 2nd

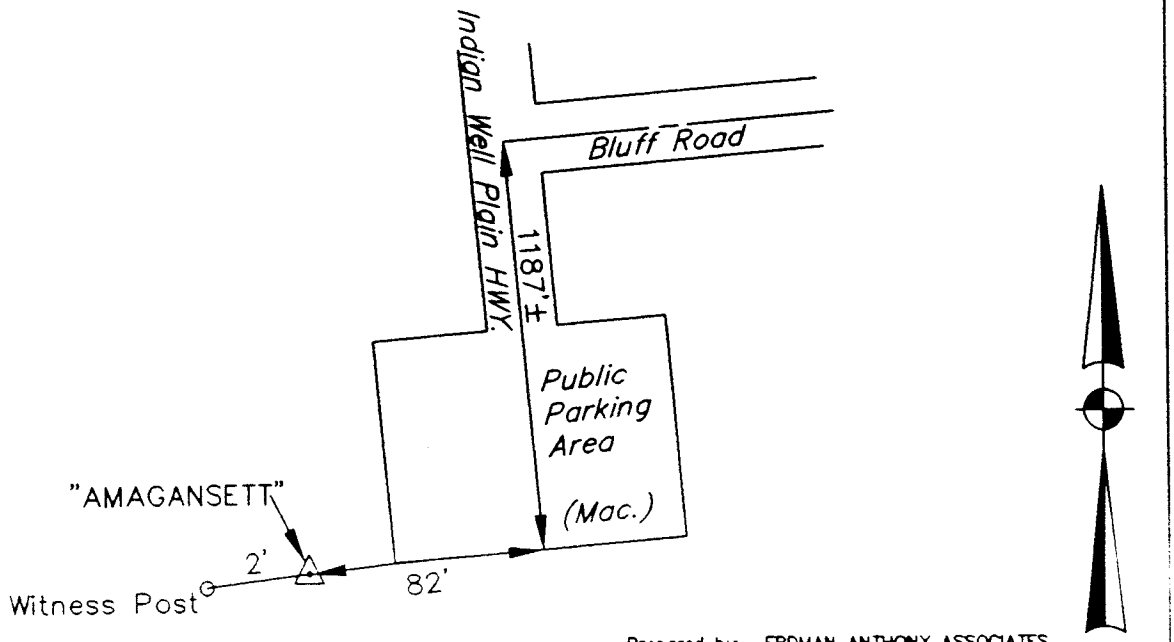
TO OBTAIN GRID AZIMUTH ADD − 1°13'04.0" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE ~~(METERS)~~ (FEET)
AMAGANSETT AZ 1995	338° 10' 34.3"			NY-1483.276ft
FLAG POLE	10° 42' 22.3"			

SCALE FACTOR = 0.99999687

A standard corps disk – type B monument was established April 1995 in the Town of East Hampton. To reach from the U.S. Post Office, Amagansett, Long Island, N.Y., go 0.9 miles West along Montauk Highway (Rte 27) to Indian Well Plain Highway, go 0.8' South along Indian Well Plain Highway to end of the parking lot at "The Atlantic Double Dunes Preserve", and the station on top of a dune to the left. The station is 82.0' West of the center line of Indian Well Plain Highway along the South edge of the parking lot, and 2.0' East of a witness post and sign. The disk is 0.3'+/– below the surface of the access cover. The access cover is 0.5'+/– below ground level. The disk is stamped AMAGANSETT 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers. Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959 REPLACES DA FORMS 1030 AND 1040, 1 FEB 37, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent agency is TRADOC

COUNTRY: UNITED STATES	TYPE OF MARK: B (40ft deep)	STATION: AMAGANSETT AZ	
LOCALITY: SUFFOLK Co., NY	STAMPING ON MARK: AMAGANSETT AZ 1995	AGENCY (CAST IN MARKS): Corps of Engineers New York District	ELEVATION (FT.): 6.72
LATITUDE: 40° 58' 03.70110" W	LONGITUDE: 72° 08' 24.31784" N	DATUM: NAD 83 (92)	DATUM: NGVD 29
(NORTHING) (FT): 297289.337	(EASTING) (FT): 1497858.431	GRID AND ZONE: LAMBERT-LONG ISLAND,NY	ESTABLISHED BY (AGENCY): NEW YORK DISTRICT
(NORTHING) (M): 90613.971	(EASTING) (M): 456548.163	GRID AND ZONE: ---	DATE: APRIL 1995 / ORDER: 2nd

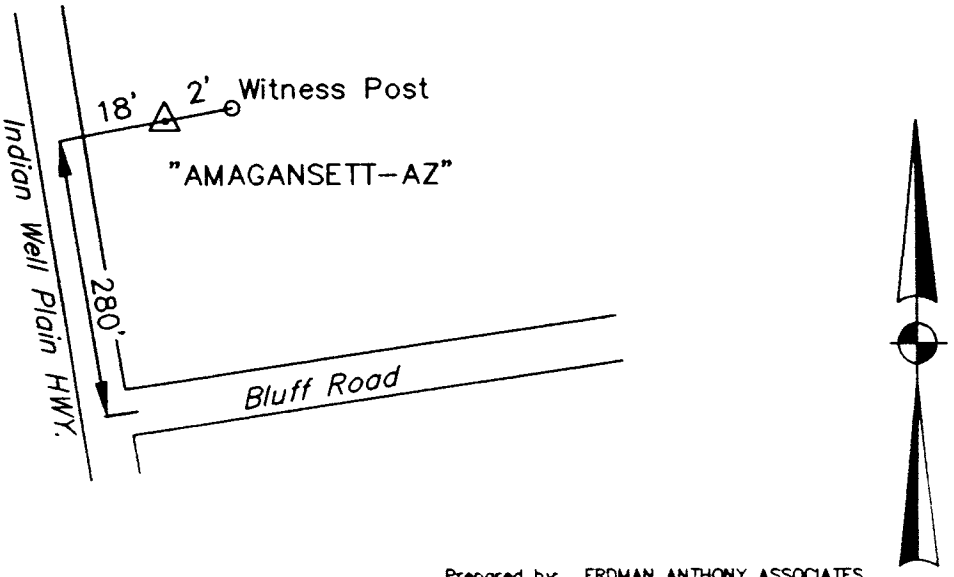
TO OBTAIN GRID AZIMUTH ADD − 1°12'59.5" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE ~~(METERS)~~ (FEET)
AMAGANSETT	158° 10' 34.3"			NY-1483.276ft
RADIO TOWER	240° 57' 20.3"			

SCALE FACTOR = 0.99999700

A standard corps disk – type B monument was established April 1995 in the Town of East Hampton. To reach from the U.S. Post Office, Amagansett, Long Island, N.Y., go 0.9 miles West along Montauk Highway (Rte 27) to Indian Well Plain Highway, go 0.6' South along Indian Well Plain Highway to the station on left. The station is 280.0' North of the intersection of Indian Well Plain Highway and Bluff Road, 18.0' West of the center line of Indian Well Plain Highway, and 2.0' East of a witness post and sign. The disk is 0.3'+/− below the surface of the access cover. The access cover is 0.5'+/− below ground level. The disk is stamped AMAGANSETT AZ 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers. Mechanicsburg, PA

SKETCH

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (28ft deep-hit refusal)	NAPEAGUE	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARK)	ELEVATION (FT.)
SUFFOLK Co., NY	NAPEAGUE 1995	Corps of Engineers New York District	10.27
LATITUDE	LONGITUDE	DATUM	DATUM
40° 59' 39.25492" W	72° 02' 59.92694" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
307498.840	1522522.336	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
93725.834	464065.736	---	APRIL 1995 / 2nd

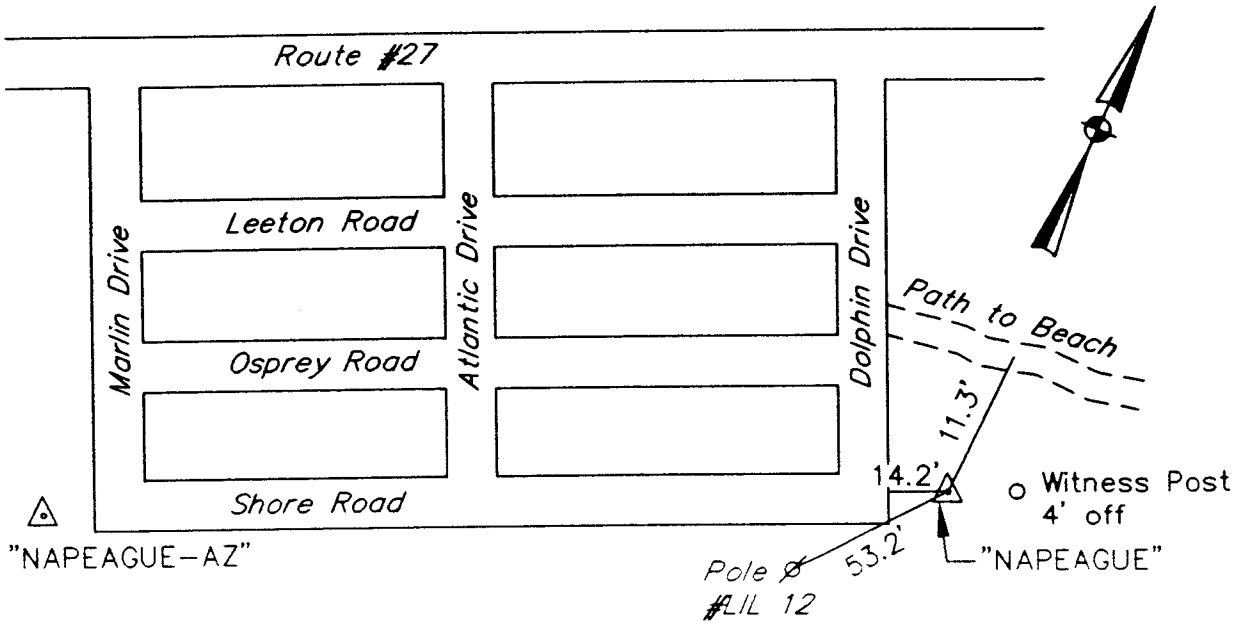
TO OBTAIN GRID AZIMUTH ADD − 1°16'31.7" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUBL) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
NAPEAGUE AZ 1995	248° 08 29.4			NY-1580.559ft
RADIO TOWER	340° 29' 12.4			

SCALE FACTOR = 0.99999806

A standard corps disk – type B monument was established April 1995 in the Town of East Hampton. To reach from the flagpole on a common in Amagansett, at the intersection of Montauk Highway (Rte 27) and Abrams Landing Road, go 4.6 miles East along Montauk Highway to Dolphin Drive, go 0.15 miles South along Dolphin Drive to the station on left near the end of the street. The station is 53.2' Northeast of power pole (LIL 12), 14.2' East of the edge of pavement and 2.0' West of a witness post and sign. The disk is 0.3'+/– below the surface of the access cover. The access cover is 0.5'+/– below ground level. Monument driven to refusal at 28' depth. The disk is stamped NAPEAGUE 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers. Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959 REPLACES DA FORMS 1030 AND 1040, 1 FEB 37, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent agency is TRADOC

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	NAPEAGUE AZ	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	NAPEAGUE AZ 1995	Corps of Engineers New York District	10.06
LATITUDE	LONGITUDE	DATUM	DATUM
40° 59' 33.76411" W	72° 03' 19.22245" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
306910.374	1521055.409	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
93546.469	463618.616	---	APRIL 1995 / 2nd

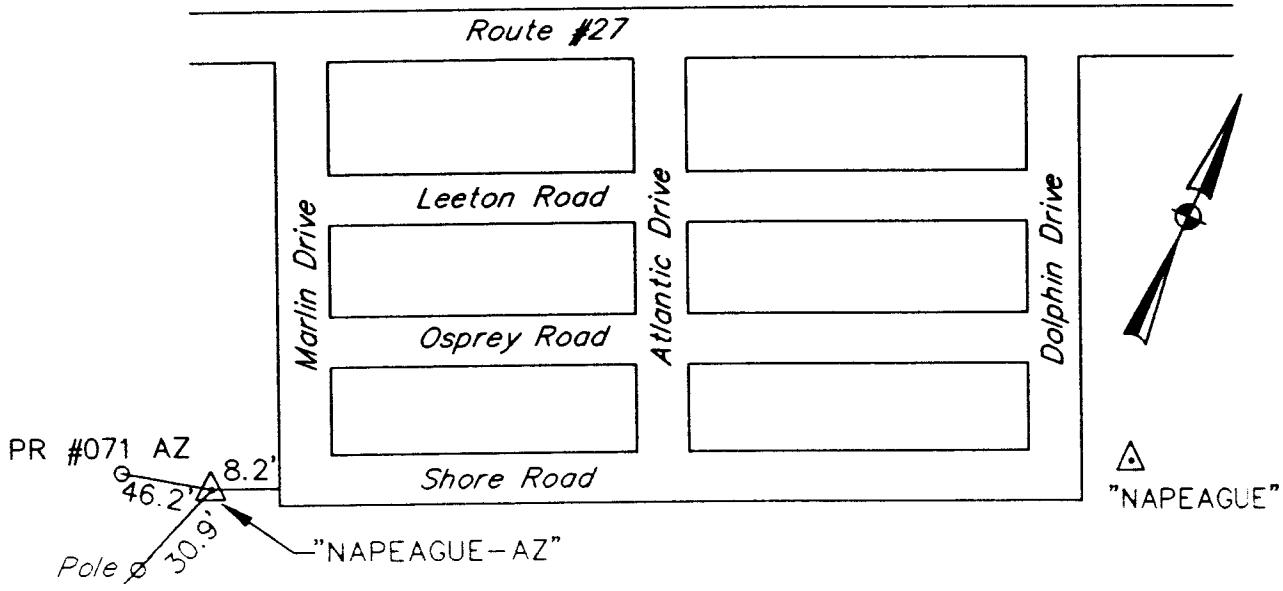
TO OBTAIN GRID AZIMUTH ADD − 1°16'19.1" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
NAPEAGUE 1995	68° 08' 29.4"			NY-1580.559ft

SCALE FACTOR = 0.99999799

A standard corps disk – type B monument was established April 1995 in the Town of East Hampton. To reach from the flag pole on a common in Amagansett, Long Island, N.Y., at the intersection of Montauk Highway (Rte 27) and Abrams Landing Road, go 4.3 miles East along Montauk Highway to Marlin Drive, go 0.15 miles South along Marlin Drive to the station on right near the end of the street. The station is 30.9' North east of power pole (not numbered), 8.2' West of the edge of pavement and 4.0' East of a witness post and sign. The disk is 0.3'+/− below the surface of the access cover. The access cover is 0.5'+/− below groundlevel. The disk is stamped NAPEAGUE AZ 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers. Mechanicsburg, PA

SKETCH

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (16ft deep-hit refusal)	LINCOLN	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	LINCOLN 1995	Corps of Engineers New York District	80.99
LATITUDE	LONGITUDE	DATUM	DATUM
41° 01' 34.00181" W	71° 57' 59.35503" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
319633.068	1545295.413	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
97424.354	471006.984	---	APRIL 1995 / 2nd

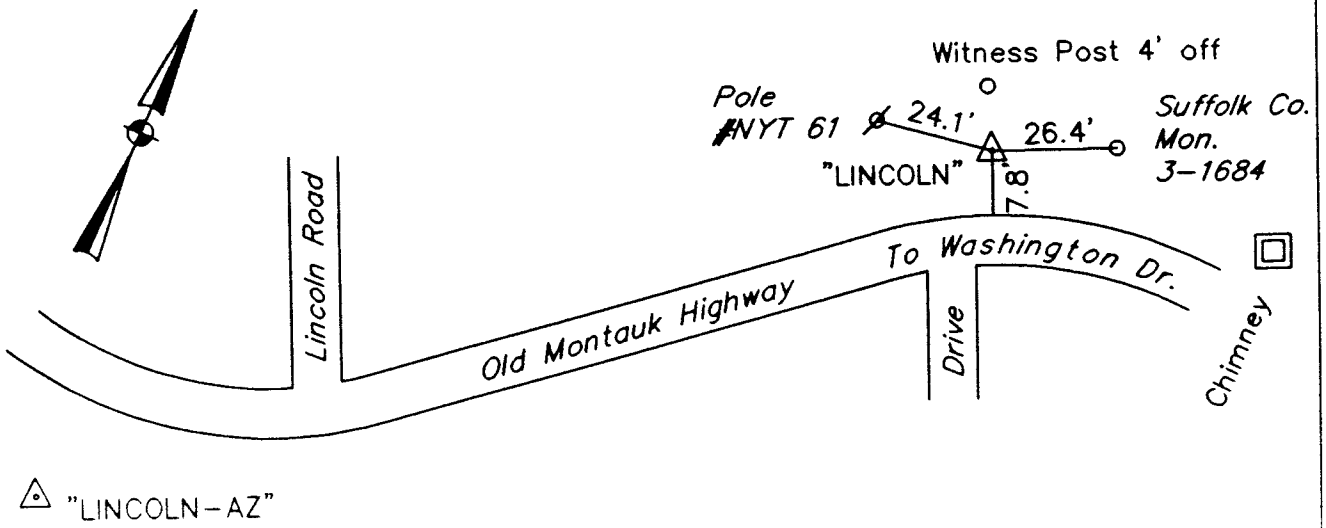
TO OBTAIN GRID AZIMUTH ADD − 1°19'48.3" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
LINCOLN AZ 1995	231° 56' 52.2"	-----	-----	NY-1405.298ft
CHIMNEY	71° 00' 29.2"	-----	-----	-----

SCALE FACTOR = 0.99999961

A standard corps disk – type B monument was established April 1995 in the Town of East Hampton. To reach from the entrance to Hither Hill State Park on Old Montauk Highway, go 2.6 miles East along Old Montauk Highway to the station on the left. The station is 150'+/– East of the intersection of Old Montauk Highway and Lincoln Road, 24.1' East of power pole (NYT 61), 26.4' West of the a Suffolk Co. survey monument "3 –1684", 7.8' North of the edge of roadway, and 4.0' South of a witness post and sign. The disk is 0.3'+/– below the surface of the access cover. The access cover is 0.5'+/– below ground level. Monument driven to refusal at 16' depth. The disk is stamped LINCOLN 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers. Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959 REPLACES DA FORMS 1030 AND 1040, 1 FEB 57, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent agency is TRADOC.

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (9ft deep-hit refusal)	LINCOLN AZ	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	LINCOLN AZ 1995	Corps of Engineers New York District	47.25
LATITUDE	LONGITUDE	DATUM	DATUM
41° 01' 25.69913" W	71° 58' 14.05085" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
318766.872	1544188.811	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
97160.337	470669.691	---	APRIL 1995 / 2nd

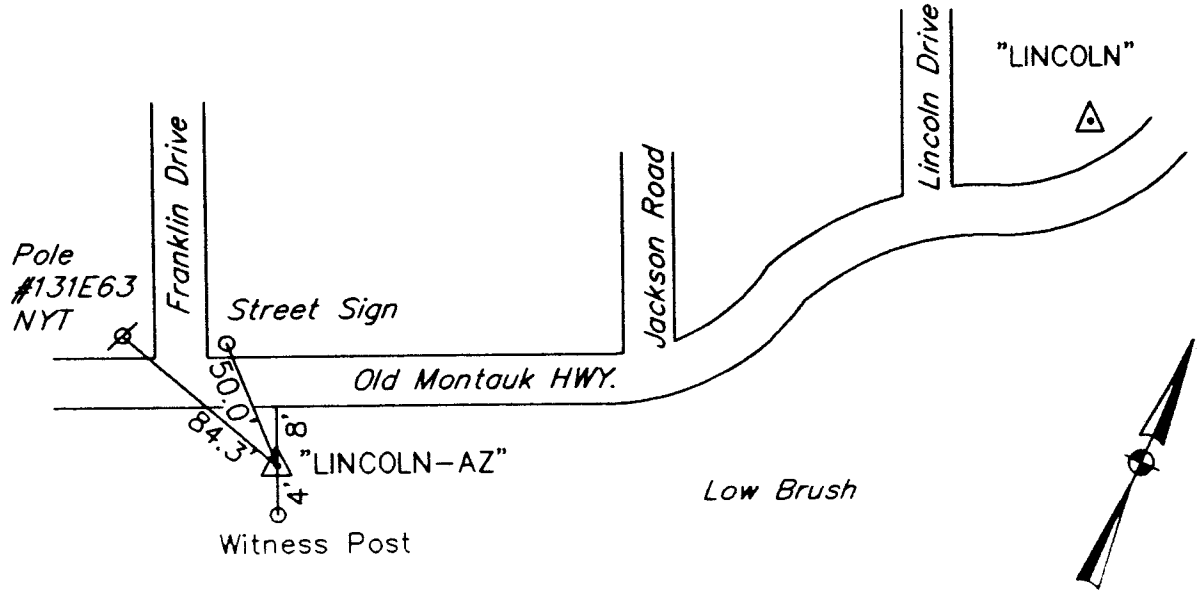
TO OBTAIN GRID AZIMUTH ADD − 1°19'38.7" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
LINCOLN 1995	51° 56' 52.2"	-----	-----	NY-1405.298ft

SCALE FACTOR = 0.99999948

A standard corps disk – type B monument was established April 1995 in the Town of East Hampton. To reach from the entrance to Hither Hill State Park on Old Montauk Highway, go 2.3 miles East along Old Montauk Highway to the intersection of Franklin Drive and the station on the right. The station is 84.3' Southeast of power pole (NYT 131E63 8361), 50.0' Southeast of a street name marker, 8.0' South of the edge of roadway, and 4.0' North of a witness post and sign. The disk is 0.3'+/– below the surface of the access cover. The access cover is 0.5'+/– below ground level. Monument driven to refusal at 9' depth. The disk is stamped LINCOLN AZ 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers. Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959 REPLACES DA FORMS 1030 AND 1040, 1 FEB 37, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent agency is TRADOC

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	OTIS	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	OTIS 1995	Corps of Engineers New York District	31.94
LATITUDE	LONGITUDE	DATUM	DATUM
41° 03' 03.46067" W	71° 54' 11.43602" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
329096.310	1562542.859	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
100308.756	476264.016	---	APRIL 1995 / 2nd

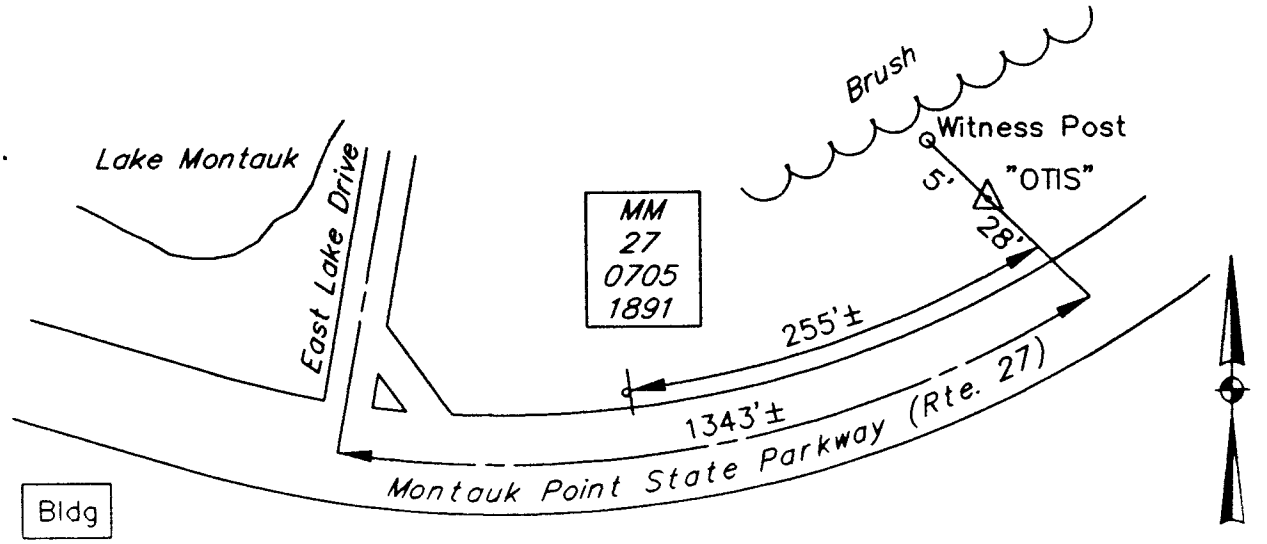
TO OBTAIN GRID AZIMUTH ADD − 1°22'17.4" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
OTIS AZ 1995	232° 24' 38.6"	-----	-----	NY-1556.037ft
SE CORNER BUILDING	233° 24' 28.6"	-----	-----	-----

SCALE FACTOR = 1.00000103

A standard corps disk – type B monument was established April 1995 in the Town of East Hampton. To reach from the flagpole on the plaza at Montauk on Montauk Point State Highway (Rte 27), go 2.45 to East Lake Drive, continue 1343'+/– East along Montauk Point State Highway to the station on the left. The station is 255'+/– East mile marker "MM 27 0705 1891", 28.0' North of the center line of Montauk Point State Highway, and 4.0' South of a witness post and sign. The disk is 0.3'+/– below the surface of the access cover. The access cover is 0.5'+/– below ground level. The disk is stamped OTIS 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers. Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959 REPLACES DA FORMS 1030 AND 1040, 1 FEB 57, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent agency is TRADOC.

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	OTIS AZ	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	OTIS AZ 1995	Corps of Engineers New York District	14.04
LATITUDE	LONGITUDE	DATUM	DATUM
41° 02' 54.37624" W	71° 54' 27.82046" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
328147.132	1561309.850	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
100019.446	475888.194	---	APRIL 1995 / 2nd

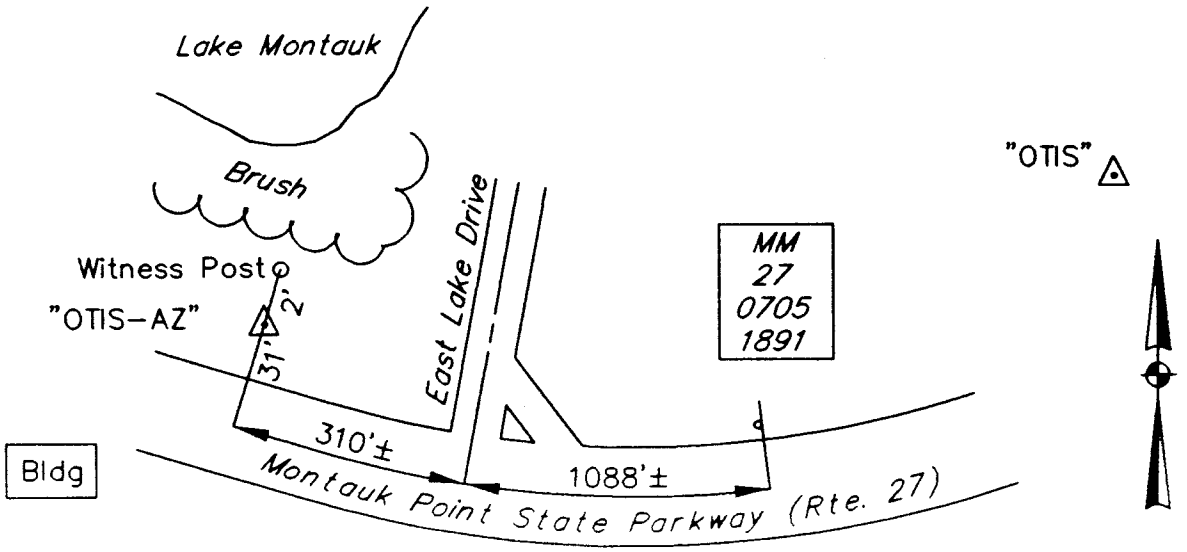
TO OBTAIN GRID AZIMUTH ADD − 1°22'06.7" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE (METERS) (FEET)
OTIS 1995	52° 24' 38.6"	-----	-----	NY-1556.037ft

SCALE FACTOR = 1.00000088

A standard corps disk – type B monument was established April 1995 in the Town of East Hampton. To reach from the Flagpole on the plaza at Montauk on Montauk Point State Highway (Rte 27), go 2.4 miles to the station on the left. The station is 310'+/– West of East Lake Drive along Montauk Point State Park Highway, 1398'+/– West of mile marker "MM 27 0705 1891" along Montauk Point State Park Highway, 31.0' North of the center line of Montauk Point State Highway, and 2.0' South of a witness post and sign. The disk is 0.3'+/–below the surface of the access cover. The access cover is 0.5'+/– below groundlevel. The disk is stamped OTIS AZ 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers, Mechanicsburg, PA

SKETCH

DA FORM 1 OCT 94 1959 REPLACES DA FORMS 1030 AND 1040, 1 FEB 37, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent agency is TRADOC.

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	END	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	END 1995	Corps of Engineers New York District	59.77
LATITUDE	LONGITUDE	DATUM	DATUM
41° 04' 21.54071" W	71° 51' 43.92167" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
337269.549	1573648.821	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
102799.964	479649.120	---	APRIL 1995 / 2nd

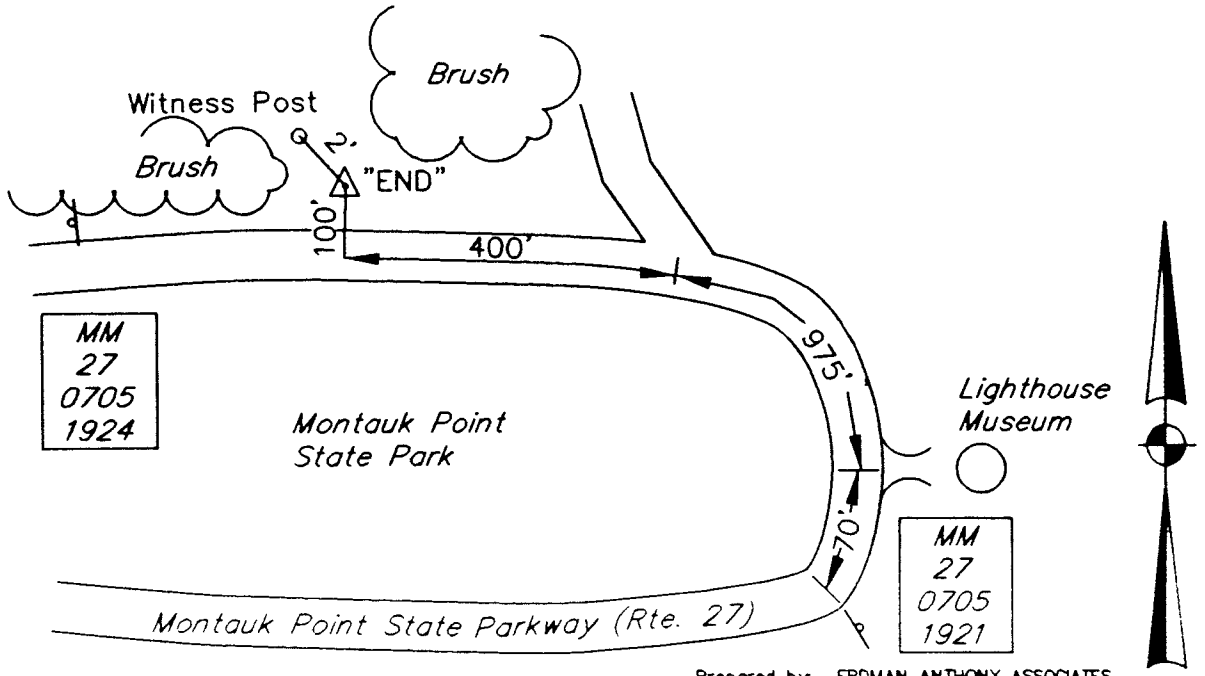
TO OBTAIN GRID AZIMUTH ADD − 1°23'53.9" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE ~~(METERS)~~ (FEET)
END AZ	339° 08' 47.3"			NY-1208.299ft
LIGHTHOUSE	112° 06' 45.3"			

SCALE FACTOR = 1.00000242

A standard corps disk – type B monument was established April 1995 in the Town of East Hampton. To reach starting at Montauk Point State Park, from the road to the Montauk Point Lighthouse Museum which is 70'+/– East of mile marker "MM 27 0705 1921" along Montauk Point State Highway (Rte 27), go 1375'+/– West along Montauk Point State Highway to the station on the right. The station is 100.0' North of the center line of Montauk Point State Highway, and 2.0' Southeast of a witness post and sign and in line with the lighthouse tower. The disk is 0.3'+/– below the surface of the access cover. The access cover is 0.5'+/– below ground level. The disk is stamped END 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers, Mechanicsburg, PA

SKETCH

COUNTRY	TYPE OF MARK	STATION	
UNITED STATES	B (40ft deep)	END AZ	
LOCALITY	STAMPING ON MARK	AGENCY (CAST IN MARKS)	ELEVATION (FT.)
SUFFOLK Co., NY	END AZ 1995	Corps of Engineers New York District	11.80
LATITUDE	LONGITUDE	DATUM	DATUM
41° 04' 32.79758" W	71° 51' 49.17636" N	NAD 83 (92)	NGVD 29
(NORTHING) (FT)	(EASTING) (FT)	GRID AND ZONE	ESTABLISHED BY (AGENCY)
338398.697	1573218.691	LAMBERT-LONG ISLAND,NY	NEW YORK DISTRICT
(NORTHING) (M)	(EASTING) (M)	GRID AND ZONE	DATE / ORDER
103144.129	479518.016	---	APRIL 1995 / 2nd

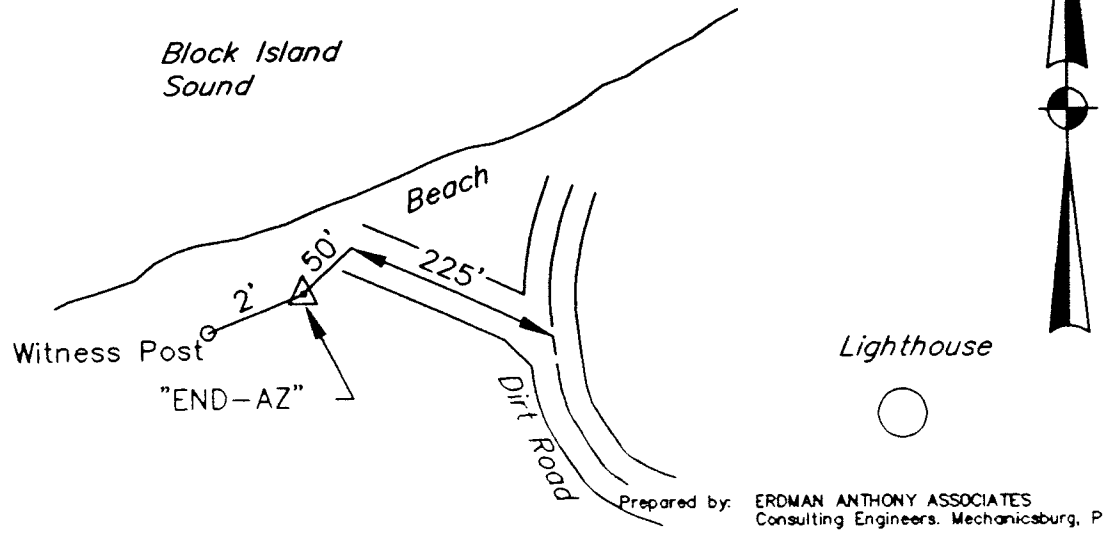
TO OBTAIN GRID AZIMUTH ADD − 1°23'50.4" TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID)	BACK AZIMUTH	GEOD DISTANCE (FEET)	GRID DISTANCE ~~(METERS)~~ (FEET)
END 1995	159° 08' 47.3"			NY-1208.299ft

SCALE FACTOR = 1.00000264

A standard corps disk – type B monument was established April 1995 in the Town of East Hampton. To reach starting at Montauk Point State Park, from the road to the Montauk Point Lighthouse Museum which is 70'+/– East of mile marker "MM 27 0705 1921" along Montauk Point State Highway (Rte 27), go 975'+/– West along Montauk Point State Highway to the service road for the Lighthouse Cafe & Shop on the right, go 200' +/– Northwest along the service road to a dirt road on the left, go Northwest along dirt road to a "Y" intersection, go 840'+/– Northeast along the right dirt road to another "Y" intersection, go 225'+/– Northwest along the left dirt road to the station on top of the dune line to the left. The station is 50.0' West of the dirt road and 2.0' Southeast of a witness post and sign and in line with the lighthouse tower. The disk is 0.3'+/– below the surface of the access cover. The access cover is 0.5'+/– below ground level. The disk is stamped END AZ 1995.



Prepared by: ERDMAN ANTHONY ASSOCIATES
Consulting Engineers. Mechanicsburg, PA

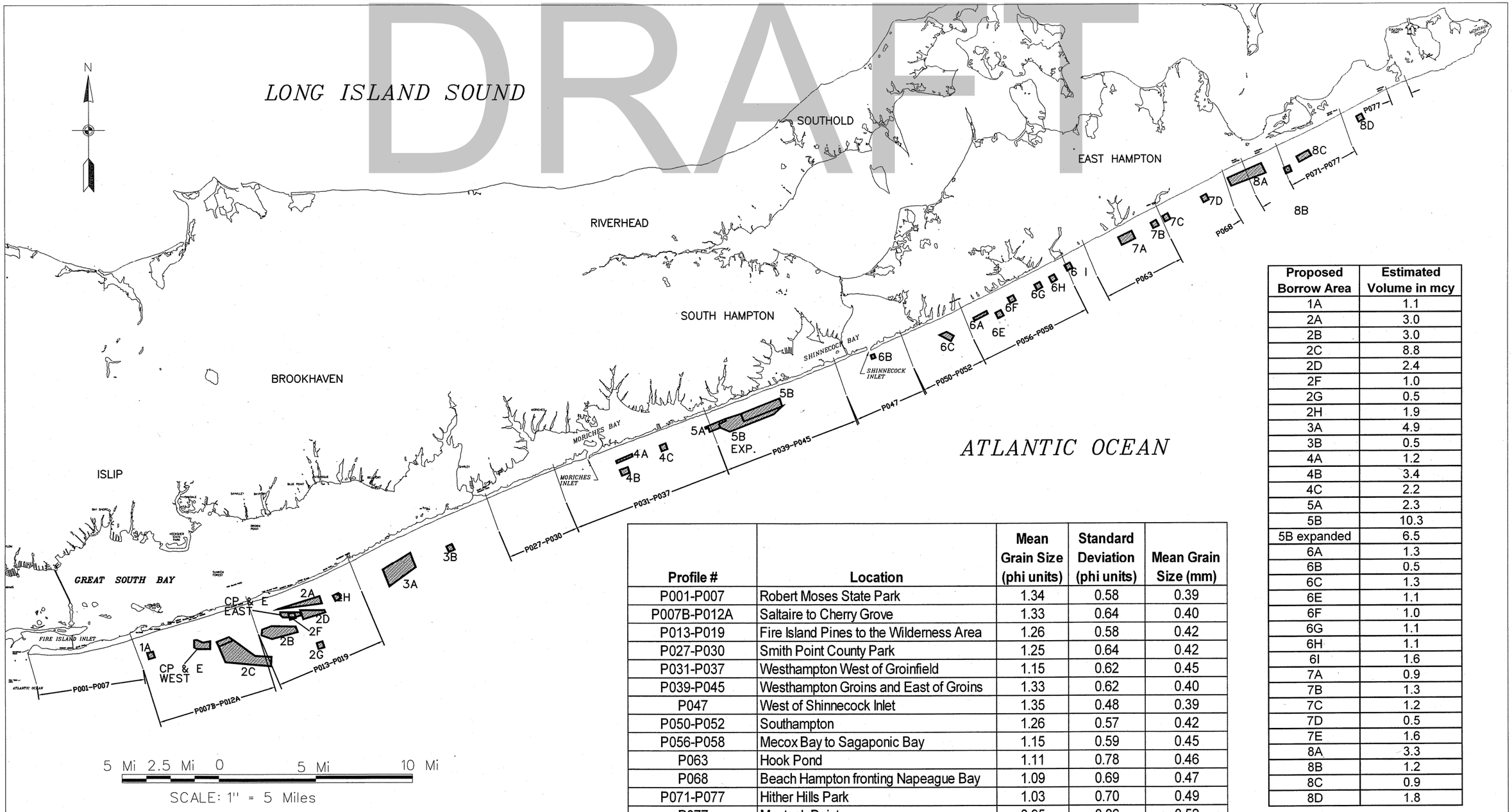
SKETCH

DA FORM 1 OCT 94 1959

REPLACES DA FORMS 1030 AND 1040, 1 FEB 37, WHICH ARE OBSOLETE

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION

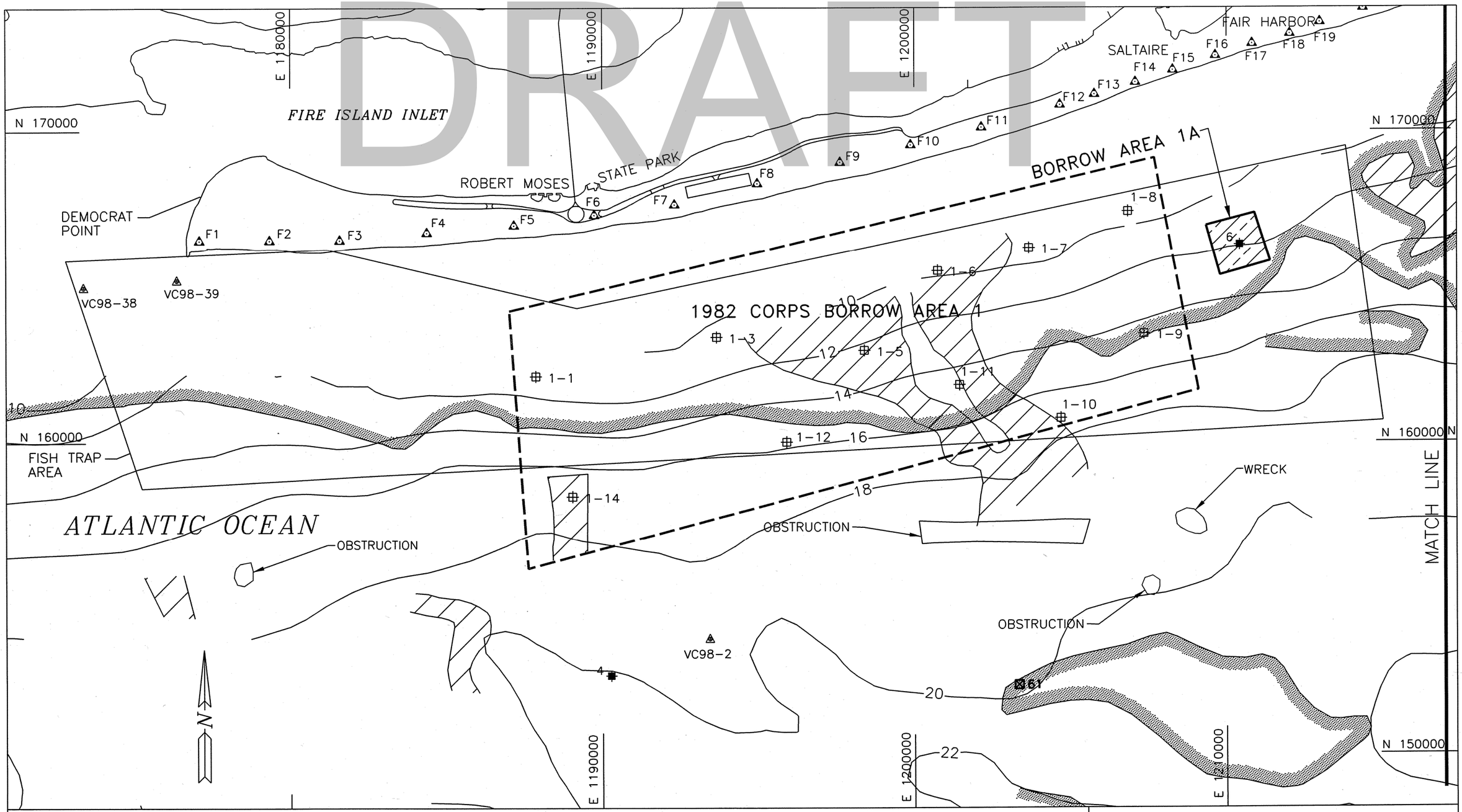
For use of this form, see TM 5-237; the proponent agency is TRADOC.



Profile #	Location	Mean Grain Size (phi units)	Standard Deviation (phi units)	Mean Grain Size (mm)
P001-P007	Robert Moses State Park	1.34	0.58	0.39
P007B-P012A	Saltaire to Cherry Grove	1.33	0.64	0.40
P013-P019	Fire Island Pines to the Wilderness Area	1.26	0.58	0.42
P027-P030	Smith Point County Park	1.25	0.64	0.42
P031-P037	Westhampton West of Groinfield	1.15	0.62	0.45
P039-P045	Westhampton Groins and East of Groins	1.33	0.62	0.40
P047	West of Shinnecock Inlet	1.35	0.48	0.39
P050-P052	Southampton	1.26	0.57	0.42
P056-P058	Mecox Bay to Sagaponic Bay	1.15	0.59	0.45
P063	Hook Pond	1.11	0.78	0.46
P068	Beach Hampton fronting Napeague Bay	1.09	0.69	0.47
P071-P077	Hither Hills Park	1.03	0.70	0.49
P077	Montauk Point	0.95	0.86	0.52

Proposed Borrow Area	Estimated Volume in mcy
1A	1.1
2A	3.0
2B	3.0
2C	8.8
2D	2.4
2F	1.0
2G	0.5
2H	1.9
3A	4.9
3B	0.5
4A	1.2
4B	3.4
4C	2.2
5A	2.3
5B	10.3
5B expanded	6.5
6A	1.3
6B	0.5
6C	1.3
6E	1.1
6F	1.0
6G	1.1
6H	1.1
6I	1.6
7A	0.9
7B	1.3
7C	1.2
7D	0.5
7E	1.6
8A	3.3
8B	1.2
8C	0.9
8D	1.8

BEACH MODEL AND LOCATION MAP



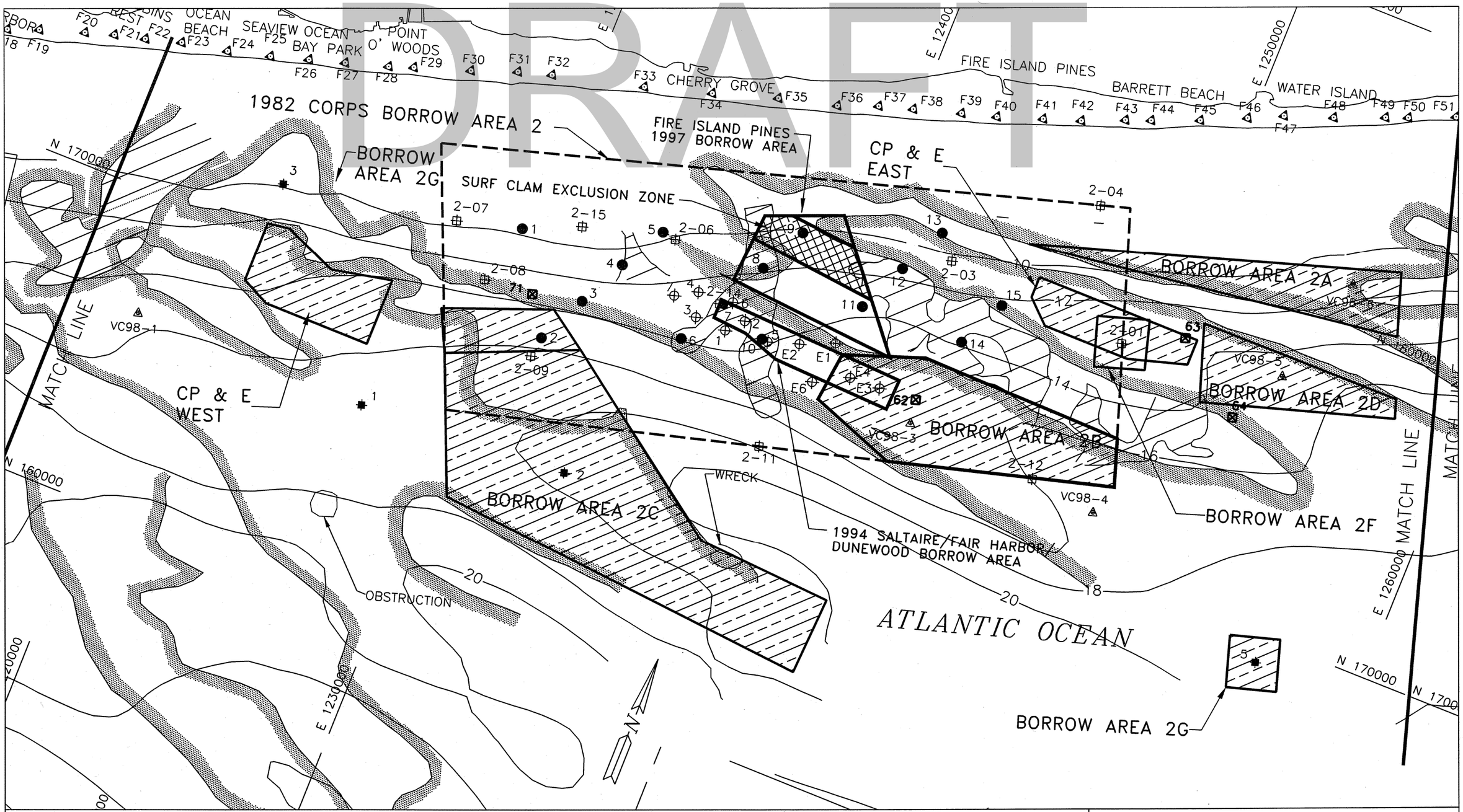
LEGEND:

- VC98 DENOTES VC98 CORES
- 4 DENOTES 97 CORES
- 1-1 DENOTES 79 CORES
- 61 DENOTES ICONS CORES
- BEACH CONTROL MONUMENT
- DENOTES APPROXIMATE LOCATION OF SUBSURFACE CHANNEL
- DENOTES APPROXIMATE LOCATION OF HOLOCENE DEPOSITS
- PREVIOUS BORROW AREAS
- PROPOSED BORROW AREAS

NOTE: CONTOURS ARE IN METERS BELOW NGVD

1500 0 1500 3000

BORROW AREA 1, CORES AND PROPOSED BORROW AREAS



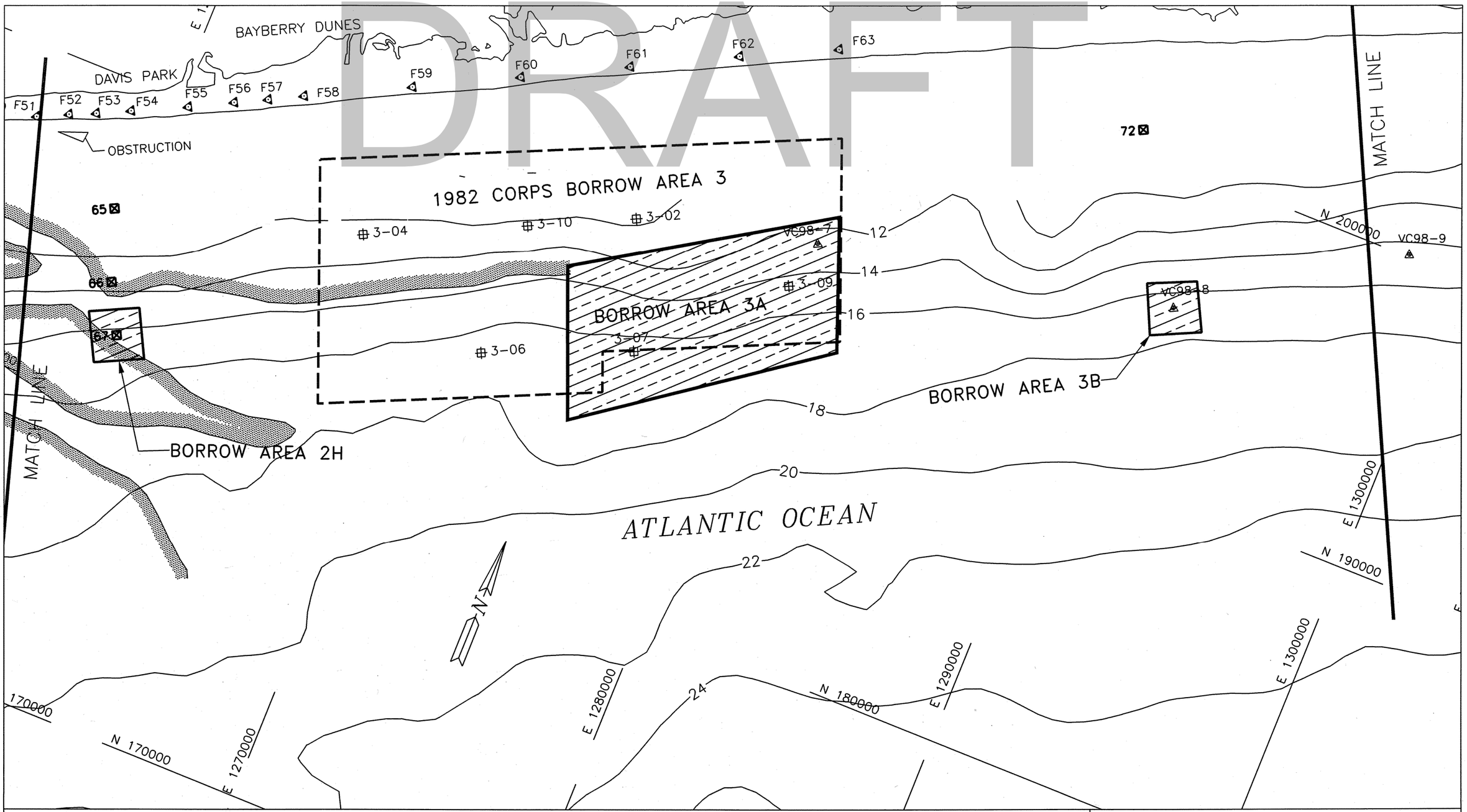
LEGEND:

- DENOTES VC98 CORES
- 2 DENOTES 97 CORES
- 4 DENOTES FII CORES
- 7 DENOTES CPE 1993 CORES
- 2–12 DENOTES 79 CORES
- 62 DENOTES ICONS CORES
- BEACH CONTROL MONUMENT
- DENOTES APPROXIMATE LOCATION OF SUBSURFACE CHANNEL
- DENOTES APPROXIMATE LOCATION OF HOLOCENE DEPOSITS
- PREVIOUS BORROW AREAS
- PROPOSED BORROW AREAS

NOTE: CONTOURS ARE IN METERS BELOW NGVD

1500 0 1500 3000

BORROW AREA 2, CORES AND PROPOSED BORROW AREAS



LEGEND:

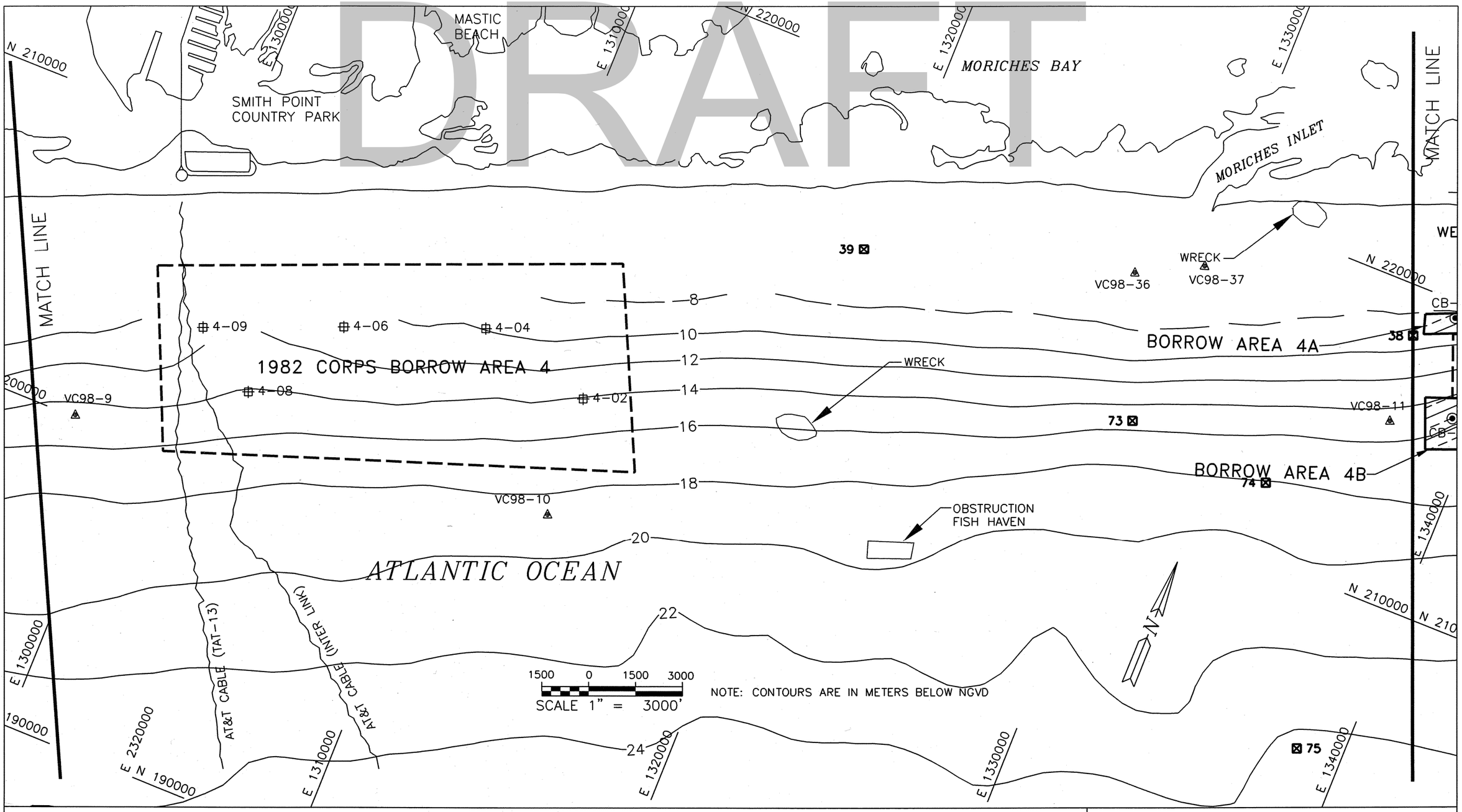
- ▲ DENOTES VC98 CORES
- ⊞ 1–12 DENOTES 79 CORES
- 62 ⊠ DENOTES ICONS CORES
- ▲ BEACH CONTROL MONUMENT
- DENOTES APPROXIMATE LOCATION OF SUBSURFACE CHANNEL
- DENOTES APPROXIMATE LOCATION OF HOLOCENE DEPOSITS
- PREVIOUS BORROW AREAS
- PROPOSED BORROW AREAS

1500 0 1500 3000
SCALE 1" = 3000'

NOTE: CONTOURS ARE IN METERS BELOW NGVD

BORROW AREA 3 AND CORE LOCATION

SHEET 4 OF 11



LEGEND:

- DENOTES VC98 CORES
- 4 DENOTES 97 CORES
- SHIN 03 DENOTES SHIN CORES
- 4 DENOTES FII CORES
- 7 DENOTES CPE 1993 CORES
- 1–12 DENOTES 79 CORES
- CB–43 DENOTES CB CORES
- 62 DENOTES ICONS CORES
- BEACH CONTROL MONUMENT
- DENOTES APPROXIMATE LOCATION OF SUBSURFACE CHANNEL
- DENOTES APPROXIMATE LOCATION OF HOLOCENE DEPOSITS
- PREVIOUS BORROW AREAS
- PROPOSED BORROW AREAS

BORROW AREA 4 CORE LOCATION

1117base-Abe-Working (Updated July 2008).dgn 7/24/2008 6:20:31 PM

MATCH LINE

WESTHAMPTON WESTERN BORROW AREA

BORROW AREA 4A

BORROW AREA 4B

BORROW AREA 4C

WESTHAMPTON EASTERN BORROW AREA

BORROW AREA 5A

BORROW AREA 5B

BORROW AREA 5B EXTENDED

MATCH LINE

CB-37 CB-38 CB-39 CB-18 CB-09 CB-08 CB-07 VC98-19 CB-04 CB-05

VC98-12 VC98-20 CB-06

VC98-13 CB-42 CB-41 CB-40 CB-17 CB-19 CB-16 VC98-18 CB-15 CB-14 VC98-24 VC98-22 CB-13 VC98-21

CB-44 CB-45 VC98-17 CB-26 CB-25 CB-24 CB-23 CB-22

CB-43 VC98-14 VC98-16 CB-30

CB-48 CB-47 CB-46 CB-36 CB-35 CB-34 CB-33 CB-32

VC98-15

CB-31

ATLANTIC OCEAN

76 ⊠ 77 ⊠ 78 ⊠

8 10 12 18 20 22 24 26

E 1340000 E 1350000 E 1360000 E 1380000

N 210000 N 220000 N 230000 N 240000

1500 0 1500 3000

SCALE 1" = 3000'

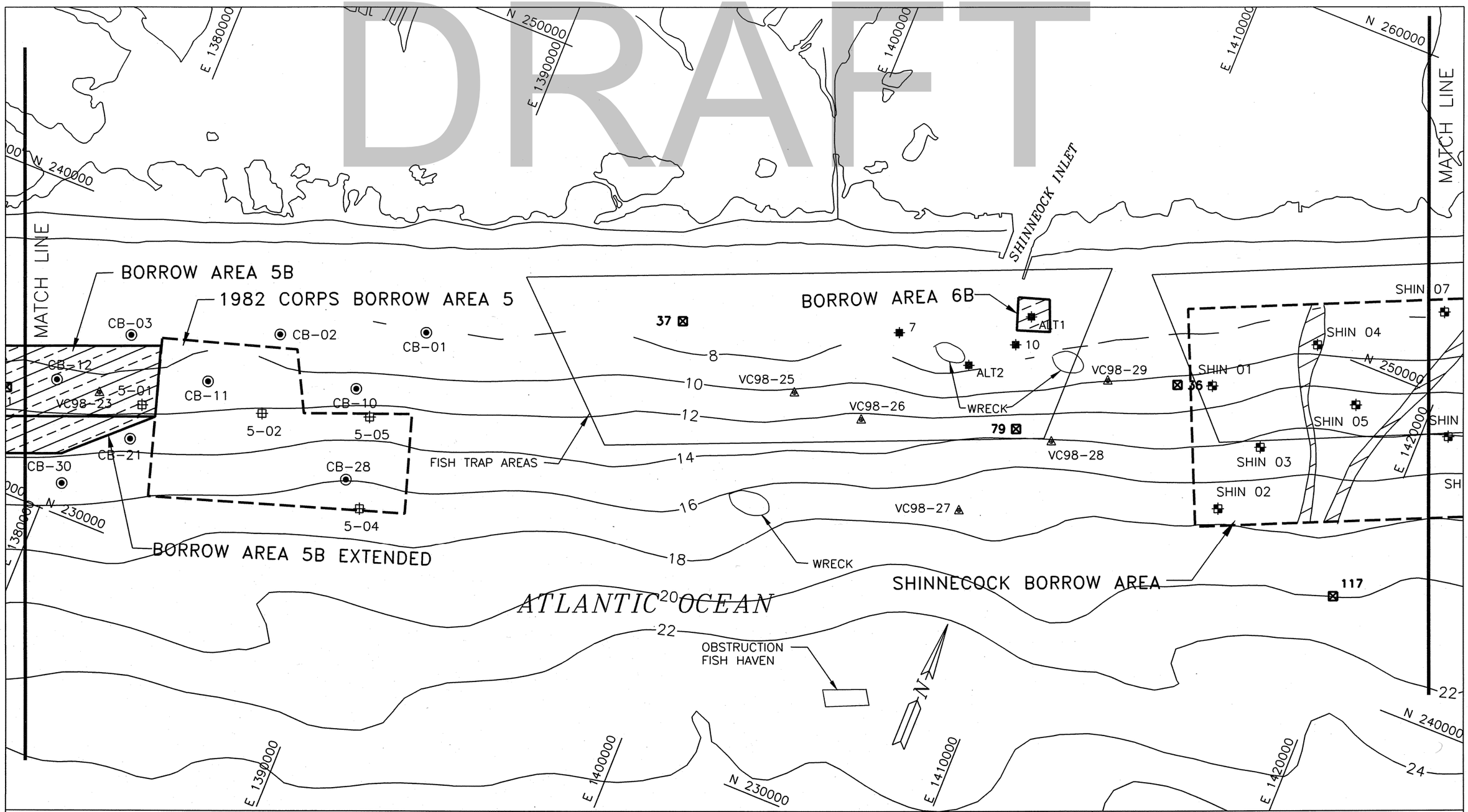
NOTE: CONTOURS ARE IN METERS BELOW NGVD

LEGEND:

- ▲ DENOTES VC98 CORES
- ■4 DENOTES 97 CORES
- SHIN 03 DENOTES SHIN CORES
- ●4 DENOTES FII CORES
- 7⊕ DENOTES CPE 1993 CORES
- 1–12 DENOTES 79 CORES
- CB–43 DENOTES CB CORES
- 62 ⊠ DENOTES ICONS CORES
- ◬ BEACH CONTROL MONUMENT
- DENOTES APPROXIMATE LOCATION OF SUBSURFACE CHANNEL
- DENOTES APPROXIMATE LOCATION OF HOLOCENE DEPOSITS
- PREVIOUS BORROW AREAS
- PROPOSED BORROW AREAS

WESTHAMPTON BORROW AREAS CORE LOCATION

SHEET 6 OF 11



LEGEND:

- DENOTES VC98 CORES
- 4 DENOTES 97 CORES
- SHIN 03 DENOTES SHIN CORES
- 5-01 DENOTES 79 CORES
- CB-43 DENOTES CB CORES
- 62 DENOTES ICONS CORES
- BEACH CONTROL MONUMENT
- DENOTES APPROXIMATE LOCATION OF SUBSURFACE CHANNEL
- DENOTES APPROXIMATE LOCATION OF HOLOCENE DEPOSITS
- PREVIOUS BORROW AREAS
- PROPOSED BORROW AREAS

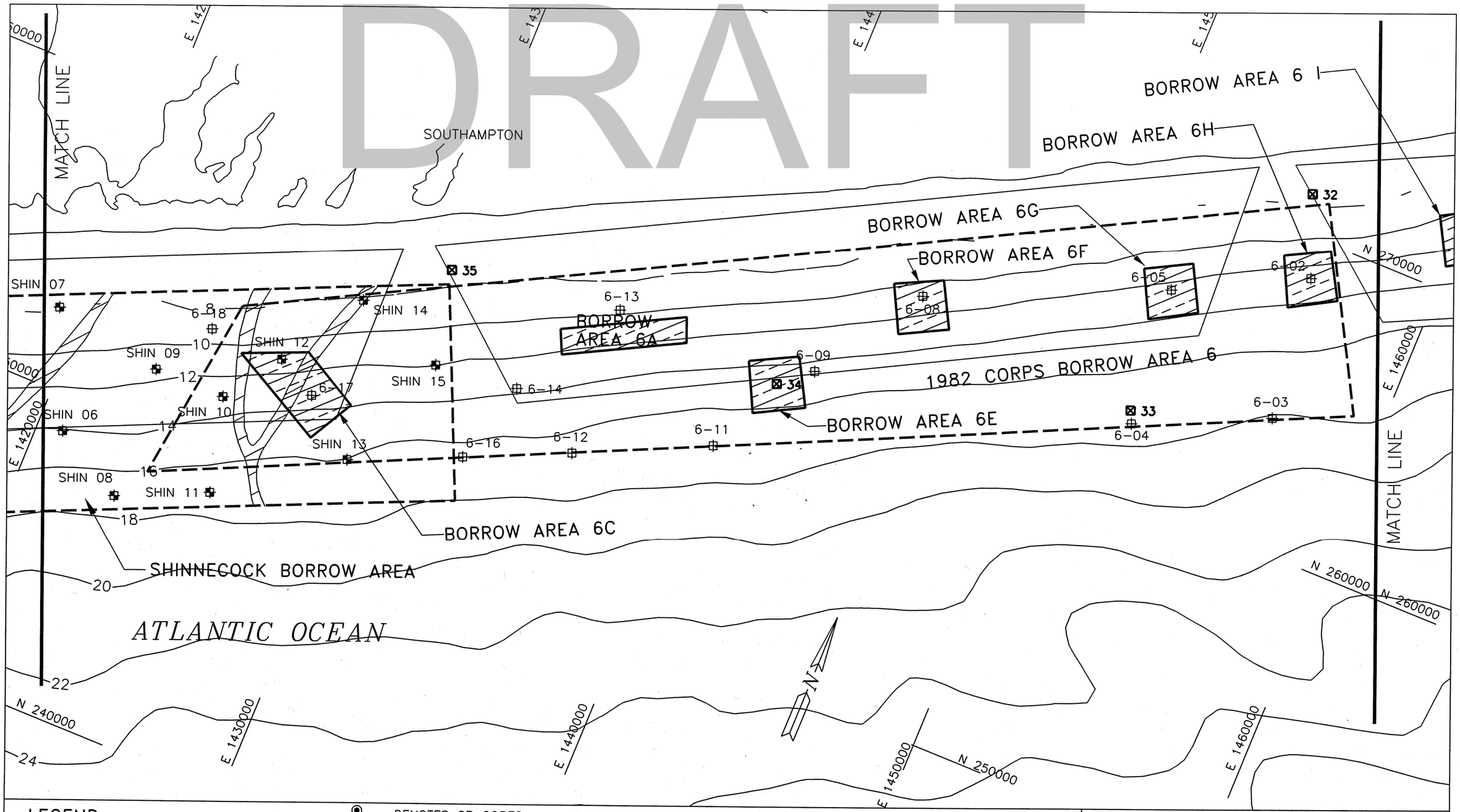
1500 0 1500 3000

SCALE 1" = 3000'

NOTE: CONTOURS ARE IN METERS BELOW NGVD

BORROW AREA 5, CORES AND PROPOSED BORROW AREAS

SHEET 7 OF 11



LEGEND:

- 4 — DENOTES 97 CORES
- SHIN 03 — DENOTES SHIN CORES
- 4 — DENOTES FII CORES
- 7 — DENOTES CPE 1993 CORES
- 1–12 — DENOTES 79 CORES
- CB–43 — DENOTES CB CORES
- 62 — DENOTES ICONS CORES
- BEACH CONTROL MONUMENT
- DENOTES APPROXIMATE LOCATION OF SUBSURFACE CHANNEL
- DENOTES APPROXIMATE LOCATION OF HOLOCENE DEPOSITS
- PREVIOUS BORROW AREAS
- PROPOSED BORROW AREAS

1500 0 1500 3000

SCALE 1" = 3000'

NOTE: CONTOURS ARE IN METERS BELOW NGVD

BORROW AREA 6
CORE LOCATION

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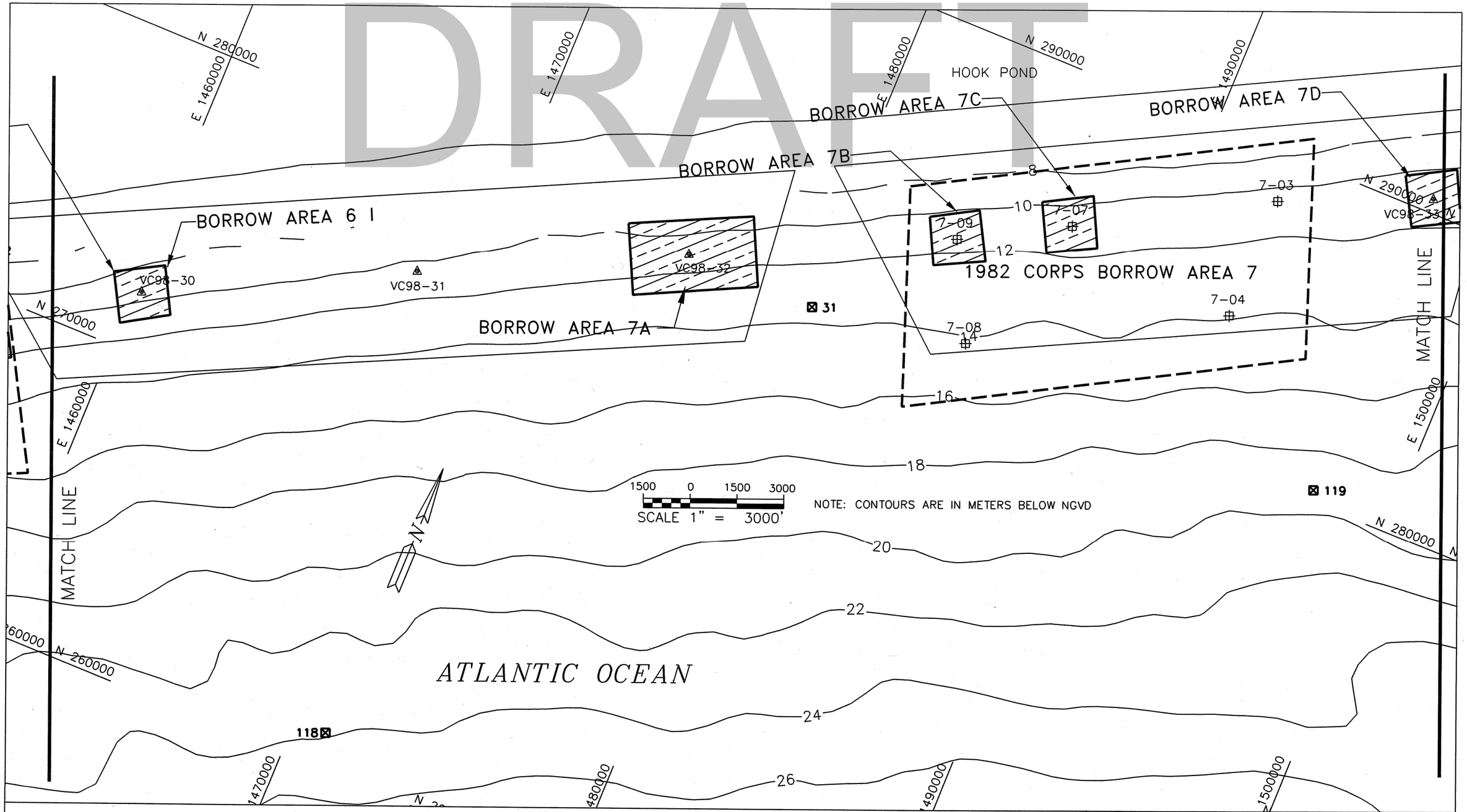

LEGEND:

- DENOTES VC98 CORES
- 4 DENOTES 97 CORES
- SHIN 03 DENOTES SHIN CORES
- 4 DENOTES FII CORES
- 7 DENOTES CPE 1993 CORES
- 1–12 DENOTES 79 CORES
- CB–43 DENOTES CB CORES
- 62 DENOTES ICONS CORES
- BEACH CONTROL MONUMENT
- DENOTES APPROXIMATE LOCATION OF SUBSURFACE CHANNEL
- DENOTES APPROXIMATE LOCATION OF HOLOCENE DEPOSITS
- PREVIOUS BORROW AREAS
- PROPOSED BORROW AREAS

HORIZONTAL SCALE

VERTICAL SCALE

BORROW AREA 7 CORE LOCATION

BEACH HAMPTON

NAPEAGUE BEACH

BEACH

BORROW AREA 8A

VC98-34

8-09

8-07

8

1982 CORPS BORROW AREA 8

8-08

8-01

8-10

10

12

14

16

18

20

22

24

26

BORROW AREA 8B

BORROW AREA 8C

ATLANTIC OCEAN

MATCH LINE

MATCH LINE

30

29

28

27

26

25

121

120

N 310000

N 300000

N 290000

N 280000

E 1500000

E 1510000

E 1520000

E 1530000

E 1540000

1500 0 1500 3000

SCALE 1" = 3000'

NOTE: CONTOURS ARE IN METERS BELOW NGVD

N

LEGEND:

- DENOTES VC98 CORES
- 4 DENOTES 97 CORES
- SHIN 03 DENOTES SHIN CORES
- 4 DENOTES FII CORES
- 7 DENOTES CPE 1993 CORES
- 1-12 DENOTES 79 CORES
- CB-43 DENOTES CB CORES
- 62 DENOTES ICONS CORES
- BEACH CONTROL MONUMENT
- DENOTES APPROXIMATE LOCATION OF SUBSURFACE CHANNEL
- DENOTES APPROXIMATE LOCATION OF HOLOCENE DEPOSITS
- PREVIOUS BORROW AREAS
- PROPOSED BORROW AREAS

FIGURE 10
BORROW AREA 8
CORE LOCATION

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MONTAUK BEACH

MONTAUK POINT

BORROW AREA 8D

VC98-35

MATCH LINE

E 1540000

E 1550000

E 1560000

E 1570000

E 1580000

N 330000

N 320000

N 310000

N 300000

20

19

18

15

14

16

21

23

24

22

17

1500 0 1500 3000

SCALE 1" = 3000'

NOTE: CONTOURS ARE IN METERS BELOW NGVD

N

LEGEND:

- ▲ DENOTES VC98 CORES
- ✸4 DENOTES 97 CORES
- SHIN 03 DENOTES SHIN CORES
- 4● DENOTES FII CORES
- 7⊕ DENOTES CPE 1993 CORES
- 1–12 DENOTES 79 CORES
- CB–43 DENOTES CB CORES
- 62⊠ DENOTES ICONS CORES
- DENOTES APPROXIMATE LOCATION OF SUBSURFACE CHANNEL
- DENOTES APPROXIMATE LOCATION OF HOLOCENE DEPOSITS
- PREVIOUS BORROW AREAS
- PROPOSED BORROW AREAS

FIGURE 11
BORROW AREA 8
CORE LOCATION

SHEET 11 OF 11

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DRAFT

OPERATION, MAINTENANCE, REPAIR, REPLACEMENT AND REHABILITATION MANUAL

WESTHAMPTON INTERIM PROJECT
MORICHES TO SHINNECOCK REACH

FINAL
October 25, 2012

OPERATION, MAINTENANCE, REPAIR, REPLACEMENT AND REHABILITATION MANUAL

WESTHAMPTON ITERIM PROJECT
MORICHES TO SHINNECOCK REACH

Table of Contents

Table of Contents (continued)

APPENDIX A
I. AUTHORIZATION AND CONSTRUCTION HISTORY

II. PROJECT DESCRIPTION

APPENDIX B

ATTACHMENTS

Table of Contents (continued)

TABLES

FIGURES

PLATES

OPERATION, MAINTENANCE, REPAIR, REPLACEMENT AND REHABILITATION MANUAL

WESTHAMPTON INTERIM PROJECT MORICHES TO SHINNECOCK REACH

I. INTRODUCTION

1. Project Location. The overall project area, for the Fire Island Inlet to Montauk Point (FIMP) Reformulation Study extends from Fire Island Inlet east to Montauk Point along the Atlantic Coast of Suffolk County, is about 83 miles long and comprises about 70 percent of the total ocean frontage of Long Island (Figure 1). Fire Island Inlet is located about 50 miles by water east of the Battery, New York City. Other inlets along the project area are Moriches Inlet and Shinnecock Inlet, 30 and 45 miles east of Fire Island Inlet, respectively. This manual covers the Westhampton Interim Project portion of the overall project area which is approximately 82 miles by water east of the Battery, New York, and is located between Cupsoque County Park to the west and Groin No. 1 of the 15 structure groin field constructed from 1965 to 1970 to the east (Figure 2).

2. Purpose. The Fire Island Inlet to Montauk Point, New York Storm Damage Reduction Project is a Federally authorized project which was originally intended to provide beach erosion control and hurricane protection for approximately 83 miles of the Atlantic Coast of Long Island, from Fire Island Inlet to Montauk Point. The Westhampton Interim Project portion of the project area was the area most in need of immediate attention along the 83 mile shoreline. This was due to the severe erosion which had occurred in this area resulting in breaching of the barrier island in 1992 and significant property damage. The interim plan was initially proposed by the State of New York to provide storm damage protection in the Westhampton area until a more permanent solution can be implemented. The New York District slightly modified the interim plan proposed by the State of New York to meet pertinent criteria. This operation and maintenance manual is for the Modified New York State plan as implemented.

II. PROJECT DESCRIPTION

3. Interim Project. The Westhampton Interim Project was initially developed as a short term solution to the severe erosion which had occurred along the Westhampton Beach shoreline following the construction of the 15 groin field in 1965-1970. The plan was designed with the intent of implementing a more long-term solution, such as the Authorized Plan for the Fire Island Inlet to Montauk Point Storm Damage Reduction Project some time after the interim project was completed. The interim project was designed to provide 30 years of erosion control (to September 31, 2027), as required under the New York Environmental Conservation Law, Article 34, the Coastal Erosion Hazards Areas Act. The project was designed based upon the premise that the interim project would be a soft or reversible solution to the areas west of the existing groin field, such that the interim project could either be reversed if found to be unacceptable or incorporated as a segment of the long-term project.

4. Modified New York State Plan Design. The design for this interim project is called the Modified New York State Plan. This plan is depicted on Plates 1 through 19, and consists of two basic improvement features, namely: (1) placement of beachfill both within and west of the existing groin field and groin transition area, and (2) modifications to existing groins 14 and 15 and construction of a new groin (14A), 845 feet west of groin 14. The beachfill dimensions differ along the shoreline, according to three placement areas as described in the following paragraphs.

5. The beachfill placement was designed to increase both the littoral transport in the project area and the level of protection west of groin 15. In the eastern portion of the project area, the beachfill extends from near groin 7 (Station 534+66) to groin 13 (Station 615+96). The design beachfill in this area (Figure 3a) is a 240-ft wide beach berm at elevation +9.5 ft. NGVD. The berm width is measured from the project reference line, which is on the order of 170 to 350 feet from the centerline of Dune Road right-of-way in the groin field portion of the project area. Fill has been placed in these groin compartments, as needed, to achieve the required berm width from the reference line. No dune construction was planned for this area because the existing dunes are adequate. The design beach slope is 1 V on 20 H from the berm crest to elevation -2.0 ft. NGVD. Seaward of this elevation, the design slope continues at 1 V to 30 H until the fill profile intersects the existing bottom. A wider and steeper construction profile was used when the project fill was initially placed. The design slopes were achieved through natural shaping of the profile from coastal processes over time (approximately 1-2 years).

6. A transitional fill area was provided for the 2,782 foot long segment of shoreline between existing groins 13 and 15. The main feature of this portion of the beach was a transitional berm width at el. 9.5 ft. NGVD which ties the 240 foot wide berm at groin 13 to the 90 foot wide berm at groin 15. The design beach slopes are the same as above. No additional dune construction was planned for this area.

7. The beachfill west of groin 15 extends a total distance of 10,020 feet from Station 643+80 to station 744+00. The design beachfill (Figure 3b) had a design berm width of 90 ft. at elevation +9.5 ft. NGVD, from Station 643+80 to Station 710+00. The berm transitioned from Station 710+00 to Station 744+00, where the design shoreline at 0 NGVD intersected the existing shoreline in Cupsogue Park. The design seaward slopes of this beachfill were the same as the slopes in the groin field. A dune section backed the design berm. The dune had side slopes of 1 V on 5 H, and a crest width of 25 ft. at elevation +15 ft. NGVD. Landward of the dune cross-section, fill was placed where required to the southern right-of-way of Dune Road, to provide elevation of +8 ft. NGVD. This landward area provides for a 25 foot dune buffer zone, adjacent to the dune for project maintenance, and a 75 ft. linear distance south of the right-of-way of Dune Road. Seven walkovers are provided for public access, plus one additional handicap ramp. Additionally, one vehicle access ramp is provided for maintenance access (Figure 9).The dune west of groin15 included beach grass on the top crest and landward slope and sand fence between the crest and seaward toe. The two borrow areas for the project, were located approximately .85 miles offshore and 2.9 miles east of and 1.4 miles west of groin15.

8. The plan included the shortening and lowering of groins 14 and 15. Specifically, 55 feet were removed from the outer end of groin 14, while the inshore end of groin 14 was lowered from elevation +16 ft. NGVD to +13 ft. NGVD and the intermediate section repaired to restore design grades & interlocking (the rebuilt groin 14 is shown in Plates 6 and 14). Similarly, 198 ft. was removed from the outer end of groin 15, while the inshore end of groin 15 was lowered from crest elevation +16 ft. NGVD to crest elevation +9.5 ft. NGVD (the rebuilt groin 15 is shown in Plates 6 and 16). A new groin designated 14a was constructed at Station 637+05. Groin 14a has a total length of 337 feet and an inshore section top elevation of +11 ft. NGVD (Plates 6 and 15). Typical groin cross sections are shown in Plates 14, 15 and 16.

Table 1: Construction Activities 1996-2009

Date	Action	Quantity (cy)	Location
July-Oct 1996	Interim Project 1996 (west of groin 15)	2,518,592	643+80 to 745+00
Aug-Nov 1997	Interim Project 1997 (groin shortening, fill within groins 7 to 15)	1,010,938	534+66 to 570+05; 615+96 to 744+00
Dec 2000-Jan 2001	1st Renourishment (Fill placement: Groins 7-10, 13-15, & west of groin field)	981,000	534+66 to 570+05; 615+96 to 744+00
Dec 2004-Jan 2005	2nd Renourishment (Fill placement: Groins 7-9, 13-15, & west of groin field)	759,000	534+00 to 558+38; 613+68 to 689+83
Dec 2008-Jan 2009	3rd Renourishment (Fill placement: Groins 13-15, & west of groin field	627,000	612+00 to 693+90

Note: the locations refer to stations along the survey baseline.

9. The Westhampton Interim Project was initially constructed in 1996-1997. The initial construction consisted of placement of approximately 4,000,00,000 cubic yards of sand dredged from the approved offshore borrow areas and placed at the Westhampton Interim project area between Groin 7 and the Cupsogue Park pavilion, along approximately 22,000 ft of Atlantic coast shoreline as detailed in paragraphs 5, 6 and 7 above. Three renourishment activities have been under taken since initial construction in 1996-1997, the last renourishment was accomplished December 2008-January 2009 (see Table 1). This last contract was not a completed renourishment fill, only the groin field transition area (Groin 13 to 15) within the total groin field , and approximately 5,000 ft west of Groin 15, was included in the contract area for renourishment (Plates 20 and 21). During preparation of construction plan documents, surveys were taken to determine the locations and volumes of renourishment fill required to obtain the design plus advanced nourishment template necessary to maintain the integrity of the project.

III. PURPOSE AND SCOPE OF THE OMRR&R MANUAL

10. Purpose. In accordance with the terms of the Project Cooperation Agreement (PCA) executed between the US Government and New York State Department of Environmental Conservation (NYSDEC), this Operation, Maintenance, Repair,

Replacement and Rehabilitation (OMRR&R) Manual is provided to assist the non-Federal sponsor (State) in carrying out its obligations under the terms of the PCA. This manual describes operations, maintenance, inspection and record keeping procedures required to obtain the intended purpose of the project necessary to ensure desired project performance.

11. Superintendent. The State shall appoint a superintendent who shall be directly in charge of an organization responsible for the efficient operation of all of the structures and facilities, for inspection and maintenance of the project works, and for administration, all without cost to the United States. The Superintendent will assure the State's compliance with its obligations for OMRR&R under the terms of the PCA for this project. The Superintendent shall have the administrative, maintenance and operational responsibilities which are outlined in the OMRR&R manual.

12. Definitions. For the purposes of this OMRR&R manual, some important terms are defined below:

a. Maintenance, Repair, Replacement and Rehabilitation: For the purpose of this beachfill project, the terms maintenance, repair, replacement and rehabilitation are used interchangeably. These are defined collectively as (a) Grading and reshaping the beach using sand beyond the project design section,(b) Maintenance of any planted vegetation, sand fencing, and dune cross-overs, and (c) maintenance of the nine (9) groins (#7 thru #15, including 14a) within the Westhampton Interim Project Area.

b. Periodic nourishment is defined as: (i) Placement of additional sand fill to restore an advanced nourishment berm at scheduled intervals, or (ii) Placement of additional sand fill for the project, when required, to restore the design section. Periodic nourishment is considered continuing project construction and shall be cost-shared in accordance with the terms of the PCA and PCA Amendment.

c. Advanced nourishment is defined as: periodic nourishment material placed at the time of initial construction.

d. Renourishment is defined as periodic nourishment placed after initial construction has been complete

e. Project Life: Project life for the Westhampton Interim is defined as 30 years from September 31, 1997 to September 31, 2027, or until such time that the Interim Project is super ceded by the Fire Island to Montauk Point Reformulation Study recommendations and project.

f. Table of Tidal Datums. Tidal datums are listed below.

Table 2: Tidal Datum Relationships

Datum	NAVD (ft)	NGVD (ft)
Mean High Water (MHW)	1.3	2.26
Mean Tide Level (MTL)	0.3	1.26
NAVD	0	0.96
NGVD	-0.96	0
Mean Lower Low Water (MLLW)	-2.0	-1.04

IV. ELEMENTS OF THE PLAN AND THEIR FUNCTION

13. Beach Fill

a. **Beach Fill.** The storm protective feature of the project consists of hydraulically placed sand fill, and is described in Paragraphs 5-7 above. Seaward of the storm protection dune and berm is additional sacrificial fill material known as periodic nourishment material. This sacrificial nourishment material is allowed to erode by natural processes, and is replaced at scheduled intervals (originally schedule for every 3 years from 1996, not to exceed a 30-year period from 1997, see Table 1). Periodic nourishment is necessary because erosive forces act constantly on the shoreline. In order to ensure that the design section is in place when a storm hits, sufficient sand must be placed to account for normal, daily sand losses, sand losses due to small storms (less than 5-year recurrence interval) and effects of sea level rise within the project area limits.

b. When hurricanes or northeasters or other high water events impact the project area, the design beach is designed to absorb the wave energy of the storm, thus protecting property landward of the beach. A beach the width of the design section will ensure that wave runup does not impact most structures. It also limits the height of waves which travel inland during very severe high water events, and provides a sufficient buffer so that erosion which occurs during storms does not undermine structures. During extreme storms it is expected that some portion of the design cross section will be eroded.

c. **Dunes.** Extending east of groin 15 to the eastern end of the interim project is an existing dune behind the +9.5 ft. NGVD design berm. Extending west of groin 15 to the transition area at the western end of the project, a constructed dune section backs the +9.5 ft. NGVD design berm. The constructed dune had side slopes of 1 V on 5 H, and a crest width of 25 ft. at elevation +15 ft. NGVD. The constructed dune may require renourishment at the time of beachfill renourishment to assure that the minimum design cross section is provided. Landward of the constructed dune cross-section is a 25 foot right of way that is to be maintained clear of obstructions so that maintenance vehicles can access the constructed dune.

d. Dunes function as reservoirs of sand provided to the fronting berm during high

water events that exceed the berm height, and as levees that preclude the inland penetration of waves and storm surges. In addition, the dunes will ensure that wave runup does not impact most structures behind the dunes. Beach grasses and sand fence maintain dunes by trapping and holding wind-blown sand. Passage over dunes is restricted to dune walkovers and the vehicle access ramp, in order to preclude dune erosion due to foot and vehicle traffic. For this area of the country, American beachgrass (Ammophila breviligulata) was planted. Damaged dune grass areas should be replanted. If the dune cross section itself has been eroded, it should be restored to the original design dimensions as soon as possible, followed by the replanting of beach grasses. Sand fencing should be maintained along the dunes to augment grasses for erosion control and capture of wind-blown sand.

e. **Minimum Beachfill Cross-Section.** In order for the beachfill to function as designed, the fill cross sections must be maintained at a minimum of +9.5 ft. NGVD for the berm widths described in Paragraphs 5-7 above, and shown in Figures 3a and 3b. The constructed minimum dune cross- section west of groin 15 to be maintained is a crest width of 25 ft. at elevation +15 ft. NGVD, with side slopes of 1 V on 5 H. Landward of the constructed dune cross-section is a 25 foot vehicle access right-of-way. Landward of the dune, between the dune and Dune Road, elevation is a minimum +8 ft. NGVD. Minimum dune cross-sections are shown in Figures 3a and 3b. Human activities which cause loss of material such as vehicle traffic, excavation, pipe outfalls which drain onto the beach, etc. should be prohibited. If human induced sand losses occur, the design cross section should be returned to its original dimensions as soon as possible and the cause of erosion should be removed or relocated. Natural losses due to wind should be minimized with the use of sand fence or other methods. Losses of beachfill due to non-storm erosion, storms, or other high water events should be noted during inspections so that maintenance or renourishment actions can be initiated.

14. Groins

a. Groins 7 through 13 serve the purpose of holding fill in the groin compartments of this reach of the project area. Groins 14 and 15, as well as groin 14a, which are all in the transition reach, help to maintain the project transition in this area, and also allow some sand transport to the west. This bypassing of sand serves to offset erosion losses and will help better stabilize the beach in the western project reach.

b. In order for the stone groins to function as designed, the structures must maintain their design height, length, and side slopes. The stones, particularly the larger armor stones, must also maintain their original size, i.e. any cracking which occurs should be noted during inspection so that cracked stone may be replaced. Flanking of the structures at their inshore ends must be prevented by maintaining the beachfill cross section at those locations. Stones which become dislodged or lost, slumping or loss of top elevation or side slope integrity, and scour at the base of the structures must be noted during inspection so that maintenance of the structures can be performed. Inspection should include the offshore ends of the

structures as much as practicable, as well as more readily accessible landward portions. Groin cross-sections are shown in Plates 14, 15 and 16.

V. MAINTENANCE AND OPERATION OF THE PROJECT

15. Administrative Responsibilities

a. In accordance with the terms of the PCA for this project, the State shall be responsible for maintaining public ownership of the publicly-owned shore and public use of the privately-owned shore which are the basis of the Federal participation in the project. This includes, but is not limited to, preventing trespass or encroachment by private interests by the placement onto these shores or seaward of the established baseline of any temporary or permanent structures, except as specifically permitted by the District Engineer, U.S. Army Engineer District, New York (hereinafter referred to as the District Engineer) or authorized representative.

b. Prohibiting any excavation of or construction on, over, under, or through the dunes (including the 25-ft buffer zone landward of the dune), berms or groins without prior written approval of the District Engineer or his authorized representative.

c. Prohibiting alterations in any feature of the project that may affect its functional performance unless prior written approval has been obtained from the District Engineer. If approved, the alterations shall be constructed in accordance with standard engineering practice. Advice regarding the effect of any proposed alterations on the functioning of the project and information concerning methods of construction acceptable under standard engineering practice may be obtained from the District Engineer or, if otherwise obtained, shall be submitted for approval. Drawings or prints showing such alterations as finally constructed shall be furnished to the District Engineer after completion of the work.

d. Permitting the District Engineer, or authorized representative, to have access to the project at all times.

e. The Superintendent shall assure that maintenance measures or repairs which the District Engineer deems necessary are promptly taken or made.

f. Any major repair, replacement, or rehabilitation design shall be approved by the District Engineer prior to execution, and inspected afterward for satisfactory accomplishment of the design.

g. The Superintendent shall maintain organized records of activities and costs covering maintenance, operation, inspection, repair and replacement of protective works. These records shall be available for inspection by the District Engineer or authorized representative. Copies shall be provided to the District Engineer or authorized representative upon written request.

16. Maintenance Responsibilities. The Superintendent shall provide such maintenance as may be required to insure serviceability of the dune, berm, and groins in time of hurricane or other severe storms or events in which above normal tides may be generated. Maintenance and repair will be performed for the life of the Interim Project, beginning at project turnover under the terms of the PCA. Prompt action shall be taken to correct localized, excessive loss of dune or berm cross section, and dislocation of groin stone. However, it is acknowledged by all parties that the ultimate storm damage reduction capabilities of the project depends upon periodic renourishment of the dune and berm to replace losses due to erosion. If, for any reason the renourishment is delayed, the Superintendent will be responsible only for maintaining the dune and berm cross-section in the most effective condition, but will not be responsible for replacing lost material from offsite sources. The Superintendent shall insure that:

a. The dune and berm shall be graded and reshaped to original cross section elevations to repair erosion caused by wind or wave action, or loss of elevation caused by human activities. This may include moving sand from areas of excessive accumulation to areas of depletion within practical limits of grading equipment. Maintenance activity shall commence when the berm elevation drops below +8.5 ft. NGVD for approximately 25% of the design berm width, for a continuous alongshore distance of 50 ft. Areas of the berm which accumulate material above approximately +10.5 ft. NGVD elevation, or which exceed the berm widths shown in Figures 3a and 3b by more than 15 ft. within the groin field and 15 ft. west of the groin field may be used as a sand source for eroded portions of the beach or dune. For the constructed dune west of groin 15, maintenance activity shall commence when the dune top elevation drops below approximately +14.0 ft. NGVD, or when more than 5 ft. from dune width as depicted in Figure 3b is lost. For the existing dune east of groin 15, maintenance activity shall commence when the dune top elevation drops below approximately +14.0 ft. NGVD, or when the dune cross section area becomes less than that of the constructed dune depicted in Figure 3b.

b. In the event of scarping, the scarp shall be flattened at controlled vehicle access points to allow safe passage to the beach.

c. Measures shall be taken to prevent sand from blowing off the dune or berm onto nearby streets and into adjacent properties. Sand fences shall be kept in an upright position and in serviceable condition. Sand fence and/or vegetation used to catch blowing sand shall be preserved and replaced where needed.

d. To prevent trespass or encroachment on the dunes, signs indicating to keep off the dunes should be placed at intervals along the dune bases. Fencing should be used where necessary.

e. Hazardous conditions or debris shall be eliminated where possible. Abrupt variations in berm grade shall be smoothed out and the beach berm and foreshore shall be kept free of trash and hazardous debris during periods of recreational use.

Hazardous conditions which cannot be eliminated shall be clearly marked and isolated from public access to the extent practicable.

f. Walkways over the dune shall be maintained and kept in a good state of repair.

g. Vehicle access shall be restricted to authorized accessways. The vehicular access ramp in the vicinity of Station 679+00 shall be maintained in operable condition.

h. Causes of seepage, saturated areas, piping, or scour which endanger the stability or functioning of project elements are to be remedied.

i. The maintenance of groins 14, 14a and 15 shall comprise the replacement of stone which has been displaced or lost to the Interim Project design section. New stone must be in accordance with original specifications as to quality and weight per cubic foot and as to minimum and maximum tonnage as indicated on record drawings. The original specifications for the Interim Project require that all stone used in the work shall be new and unused, sound , compact, hard, dense, durable stone of good quality, highly resistant to weathering and disintegration due to wetting and drying and alternate freezing and thawing. The stone shall be free from seams, fissures, planes of weakness, blasting cracks or other undesireable qualities which might contribute to crumbling or breaking during handling and placing in the groins or later weathering. It shall be free of all foreign material and shall weigh no less than 170 pounds per cubic foot and not more than 190 pounds per cubic foot dry in air. All stone shall be rough and angular in shape with the least principal dimension not less than one-third the greatest dimension. Flat slabs, boulders and parts of boulders are not acceptable. Regular shaped stones which are quarried in shapes for purposes other than groin construction are not acceptable. Special care should be exercised in the inspection and maintenance of the offshore end of the groins, to the extent practicable.

17. Operational Responsibilities

a. Inspections. Conduct periodic inspections of the project to insure that:

- Regular profile data is obtained.
- No drains discharge onto the beach.
- The beach is being kept free of trash and hazardous debris.
- The dune vegetation is not being damaged by such actions or events as burning, mowing, disease, drought, etc.
- There is no unauthorized vehicular traffic on the dunes or the beach, and no unauthorized pedestrian traffic on the dunes.
- There is no excavation or construction on, over, under, or through the beach, dunes, (incl. 25' landward right-of-way) or the groins except as specifically permitted by the District Engineer or his authorized representative.
- Any unusual conditions of the dune or beach fill such as scarping, steep slopes, excessive erosion, etc. are identified.

- Walkways over the dunes are exclusively for pedestrian use.
- The 25 foot right of way landward of the constructed dune cross-section is maintained clear of obstructions.
- Any change in the condition of the groins is identified, noting any settlement, rock displacement, basis for subsequent repair.
- Maintenance recommendations to remedy any problems are to be made and used as a basis for implementation.
- Maintain all access ways to the beach in proper operational condition.
- Access to structures on the beach whether temporary or permanent shall be maintained in a safe condition. Maintenance of access shall not compromise the design section.

Project inspections including a complete profile survey shall be made in March-April of each year. Project inspections including beach width measurements and groin inspections shall be made immediately before and after each severe tropical or extra tropical storm or high tidal event, if possible. The forms furnished with Attachment B shall be used as a checklist in making such inspection. Reports shall be submitted as described on Page 1 of 7 of Attachment B no later than 10 days after inspection.

1. Surveyed Profile Data. Annual profile surveys shall be made along 16 of the 38 profiles listed in Table 3. These profiles will be collected at stations P6, P8, P10, P13, P15, P17, P19, P21, P24, P26, P28, P30, P32, P33 and P35. A full set (38) of long profiles will be collected periodically by New York District, USACE. During those years New York District will coordinate with the Superintendent to reduce monitoring efforts. Descriptions of profile origin points are provided as Attachment C and shown in Figures 5 through 8.

The annual profiles should be surveyed from the profile origin marker to wading depth (approximately Mean Lower Low Water) every March-April. Profiles should be taken perpendicular to the shoreline, approximate azimuth of 159 degrees. Data should be reported in the form of distances from the profile origin point and elevations relative to NAVD. Elevations should be taken approximately every 20 feet. At the dune, enough survey points should be taken to discern the existing cross section of the dune. The profile number and the date of the survey should be indicated. Groin profiles along the structure centerline will also be taken of the new groin (14a) and groins number 7 through 15 (Figures 5 through 8). Profile data will be used to show loss or gain of material beyond the minimum design section, and will be used to help initiate future renourishment. Profile data shall be included in the March-April inspection report to the District Engineer. The point of contact for any assistance needed in locating profiles or other survey questions is:

U.S. Army Corps of Engineers
Caven Point Marine Terminal
3 Chapel Avenue, Pt. Liberte
Jersey City, NJ 07305
Attn: Chief, Survey Section

Table 3: Coordinates of Profile Origin Points

Profile Number	Northing	Easting	Azimuth	Annual Survey
P1	220397.1	1330053	159	
P2	221060.2	1331311	159	
P3	221724.8	1332571	159	
P4	222227	1334218	159	
P5	222494	1334916	159	
P6	222779.1	1335613	159	**X**
P7	223136.4	1336218	159	
P8	223174.7	1336531	159	**X**
P9	223424.7	1337183	159	
P10	223639.7	1337744	159	**X**
P11	223853.4	1338085	159	
P12	223842.8	1338182	159	
P13	224194.8	1339250	159	**X**
P14	224532.8	1339966	159	
P15	224629.8	1340467	159	**X**
P16	224864.8	1341127	159	
P17	225206.5	1341899	159	**X**
P18	225469.8	1342827	159	
P19	225644.8	1343297	159	**X**
P20	225939.9	1344092	159	
P21	226234.8	1344887	159	**X**
P22	226376.5	1345765	159	
P23	226794.1	1346168	159	**X**
P24	227149.7	1347106	159	**X**
P25	227576.4	1348224	159	
P26	227768.9	1348793	159	**X**
P27	227823.6	1349644	159	
P28	228326	1350293	159	**X**
P29	228743.8	1351418	159	
P30	229044.1	1352160	159	**X**
P31	229494.6	1353272	159	
P32	229705.8	1353793	159	**X**
P33	230005	1354561	159	**X**
P34	230106	1355152	159	
P35	230308.2	1356335	159	**X**
P36	230393.4	1356834	159	
P37	231893.6	1360445	159	
P38	233402.7	1364482	159	

New York State Plane Coordinates, NAD 1983, Long Island Zone 3104, Feet

2. Beach Width Measurements. All site inspections and pre- and post- storm inspections shall include measurement (1) from the origin point on the profile to the seaward base of the dune, and (2) from the seaward base of the dune to the Mean High Water line. These measurements will be used to estimate the dimensions of the beach and dune. Assuming Mean High Water to be at +1.3 ft NAVD (+2.0 ft. NGVD) and referring to project cross sections shown in Figures 3a and 3b, measured beach widths can be compared with the design section. Beach widths shall be measured along all 16 profiles listed in Table 3.

3. Changes to Profile Monitoring. If conditions warrant, the number profiles to be surveyed over the 30 year project life shall be increased, decreased, or relocated. The decision to alter profile locations and/or the frequency of survey shall be made jointly by the New York District and the local sponsor.

4. Joint Federal-Local Sponsor Inspection. Once a year a joint inspection shall be made of the project with personnel from the New York District Operations Division and/or Engineering Division and the Superintendent or designated representative. The point of contact for arranging the joint inspection is:

    U.S. Army Engineer District, New York
    Corps of Engineers
    26 Federal Plaza
    New York, NY 10278-0090
    Attn: Chief, Readiness Unit

5. Exceptions to the Requirement for Annual Surveyed Profile Data. In those years when the Federal Coastal Monitoring program performs long range beach profile surveys (full set of 38 stations in the project area, listed in Table 2), the Superintendent is not required to perform the March-April profile survey described in paragraph 14(a)1 above. The Superintendent shall contact the New York District office each year in January to confirm if an exception exists for that year. Point of contact at the District office is

    U.S. Army Engineer District, New York
    Program and Project Management Division
    26 Federal Plaza
    New York, NY 10278-0090
    Attn: Chief, Civil Management Branch

b. The Superintendent shall submit an annual report to the District Engineer covering inspection, maintenance, and operation of the project. Attachment B provides further guidance for the preparation and submittal of this report.

c. Storm Emergencies. The Superintendent will develop a storm emergency plan to cope with severe storm events. The emergency plan should cover measures that minimize the threat to life and damage to property and provide instructions for an orderly storm recovery effort. Pre-storm and post-storm procedures, including

inspections and cleanup, and notification of the District Engineer, shall be performed as necessary.

d. All activities related to the recreational use of the beach, such as provision of life guards, sanitary facilities, trash collection, scarp or slope adjustment, etc. are the responsibility of the non-Federal sponsor and/or their representatives.

e. Notify the New York District if storm or other erosion reduces the berm or dune to below the minimum design cross-section after maintenance measures to move sand from accreted areas to eroded areas prove inadequate to restore the design section.

f. Accordingly request the New York District to initiate renourishment when required.

VI. OTHER MATTERS

18. Federal Monitoring.

a. Coastal Monitoring. The Corps of Engineers will monitor the project area for the duration of the project life. Coastal processes monitoring will be performed in order to measure erosion, accretion, and movement of the placed sandfill. Additionally, the performance of the groins will be observed. The time between the start of initial construction and the second renourishment operation, which was estimated to be 6 years, contained most of the coastal processes monitoring activities (OCTI 2006).

b. Environmental Monitoring. The Corps of Engineers will periodically survey the project area to determine the impacts, if any, to shorebirds, vegetation or sea life (specifically the piping plover and seabeach amaranth). A description of the environmental monitoring program is provided in Appendix B.

19. Initiation of Renourishment. The determination of when the project should be renourished shall be made by the District Engineer in conjunction with NYSDEC.

20. Post-Storm Fill Placement. In the event of significant storm erosion losses, if the beach fails to naturally build back to the design cross section within 14 days after the passage of a storm, and sufficient accreted material beyond the design section (figures 3a and 3b) is not available within the project limits, beach renourishment action should be initiated. The Superintendent shall contact the District in order to inform the District Engineer that storm damage is beyond the scope of OMRR&R, and to request initiation of the renourishment process. The Superintendent shall indicate areas where significant erosion has taken place.

21. OMRR&R During Renourishment Operations. OMRR&R requirements continue during renourishment operations, with the addition of activities needed for safe operation of recreational activities during construction. Additionally, close communication between the contractor, non-Federal sponsor, local personnel and the District office is required.

VII. SUMMARY TABLE OF RESPONSIBILITIES

Table 4: Westhampton Interim Project Summary Table of Responsibilities

Administrative Responsibilities of the Superintendent	Dune & Berm	Groins	Walkovers & Accessways
Maintain public ownership of publicly owned shore and public use of privately owned shore.	X	X	X
Prohibit any excavation of, or construction on, over, under or through project without prior approval of the District Engineer.	X	X	X
Prohibit alterations in any feature that may affect functional performance of project without prior approval of the District Engineer.	X	X	X
Permit District Engineer access to project at all times.	X	X	X
Assure mainentance or repair measures deemed necessary by the District Engineer are done promptly.	X	X	X
Assure any major repair, replacement, or rehabilitation measures meet approval of District Engineer prior to execution and are inspected after execution.	X	X	X
Maintain organized record of activities and costs covering maintenance, operation, inspection, repair, and replacement.	X	X	X
Maintenance Responsibilities of the Superintendent	**Dune & Berm**	**Groins**	**Walkovers & Accessways**
Grade and reshape design berm and beach to original elevations to repair erosion.	X		
Flatten scarps at controlled vehicle access points to allow safe passage.			X
Take measures to prevent sand from blowing off dune or berm onto streets, properties, including deploying sand fence as necessary.	X		
Prevent trespass or encroachment on the dunes by posting signs indicating to keep off the dunes and using fencing as needed.	X		
Eliminate hazardous conditions or debris where possible. Mark hazards that cannot be eliminated to the extent practicable.	X	X	X
Maintain walkovers and handicap ramp in good repair.			X
Maintain vehicle accessway in good repair. Restrict access to authorized personnel.			X
Eliminate causes of seepage, saturation, piping and/or scour which endanger project stability.	X	X	X
Maintain groins 14, 14a and 15 by replacing displaced or lost stone.		X	
Inspection and Reporting Responsibilities of the Superintendent	**Dune & Berm**	**Groins**	**Walkovers & Accessways**
Conduct periodic inspections of dune & berm, groins, walkovers and accessways including beach width measurements and Mar-Apr beach profile survey.	X	X	X
Provide quarterly inspection reports including beach profile data or beach width measurements.	X	X	X
Provide record of activities and costs covering maintenance, operation, inspection, repair, and replacement.	X	X	X
Participate in yearly, joint inspection with USACE.	X	X	X
Other Responsibilities of the Superintendent	**Dune & Berm**	**Groins**	**Walkovers & Accessways**
Develop a storm emergency plan to cope with severe events.	X	X	X
Perform all activities related to recreational use.	X	X	X
Notify the District Engineer if the dune/berm has fallen below the minimum cross-section following grading and reshaping.	X		

VIII. REFERENCES

1. Offshore & Coastal Technologies, Inc. – East Coast (OCTI), 2006. Analysis of Post-Construction Monitoring Data, 1995-2005, Westhampton Interim Project. Prepared for U.S.Army Corps of Engineers, New York District, October.

FIGURES

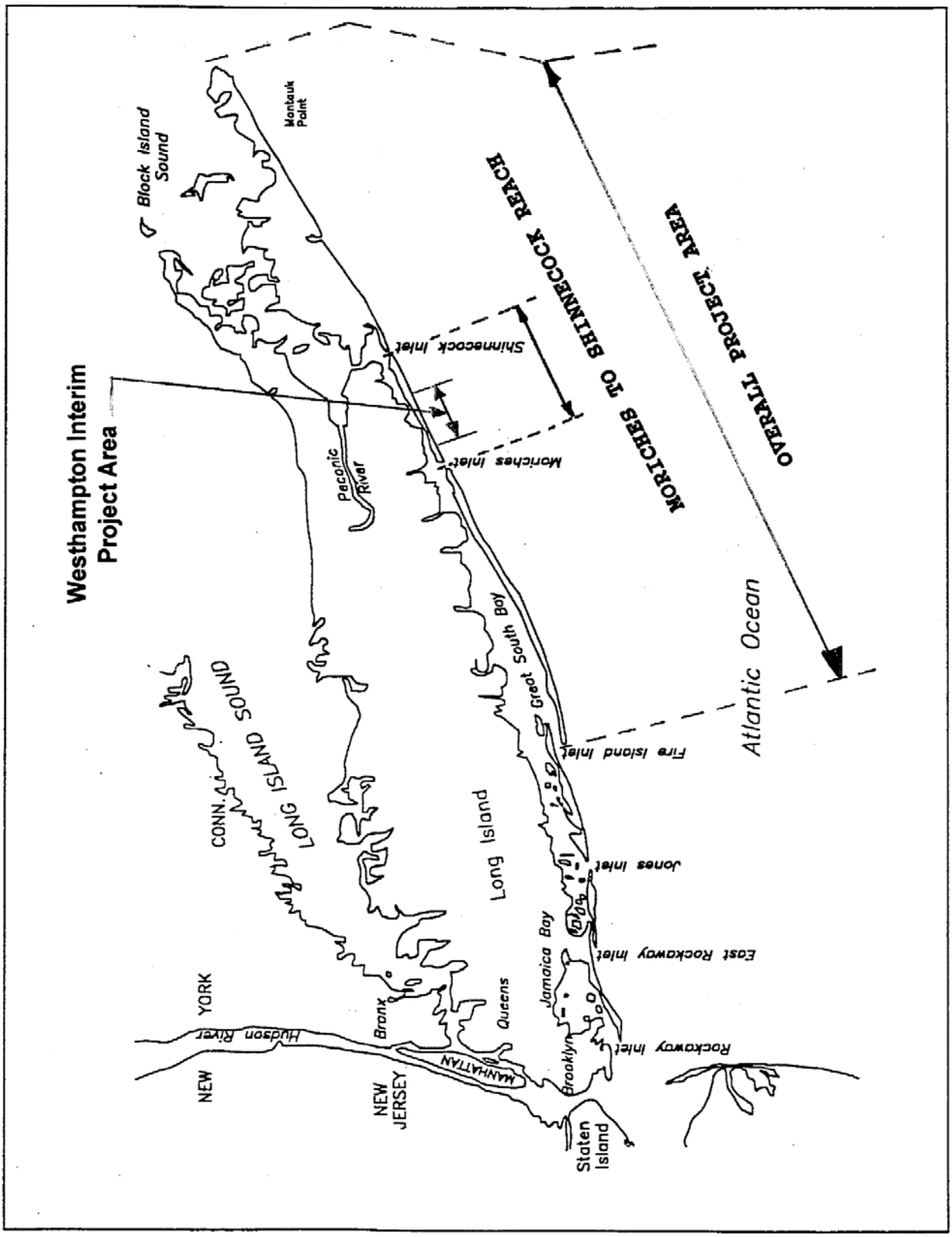


Figure 1: Overall Project Area

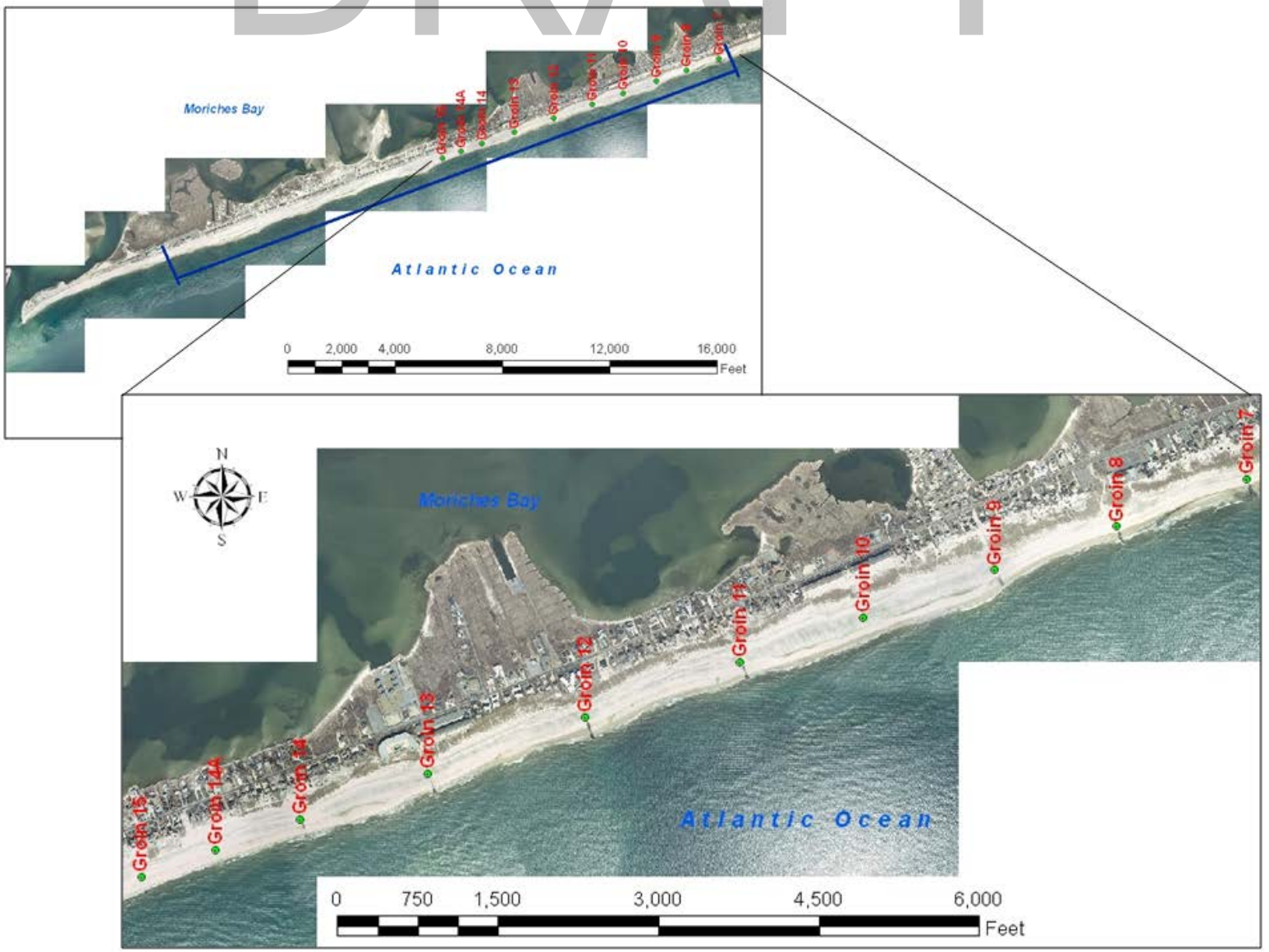


Figure 2: Interim Project Area and Groin 7 through Groin 15. Not all groins are visible in the photograph.

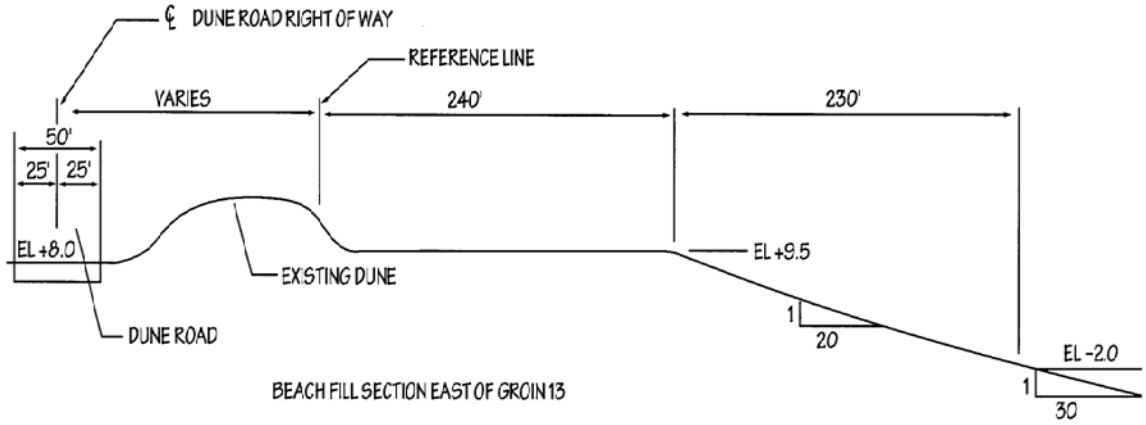


Figure 3a: Minimum Design Cross Sections East of Groin 13. Offshore slope extends to the intersection with the existing bottom.

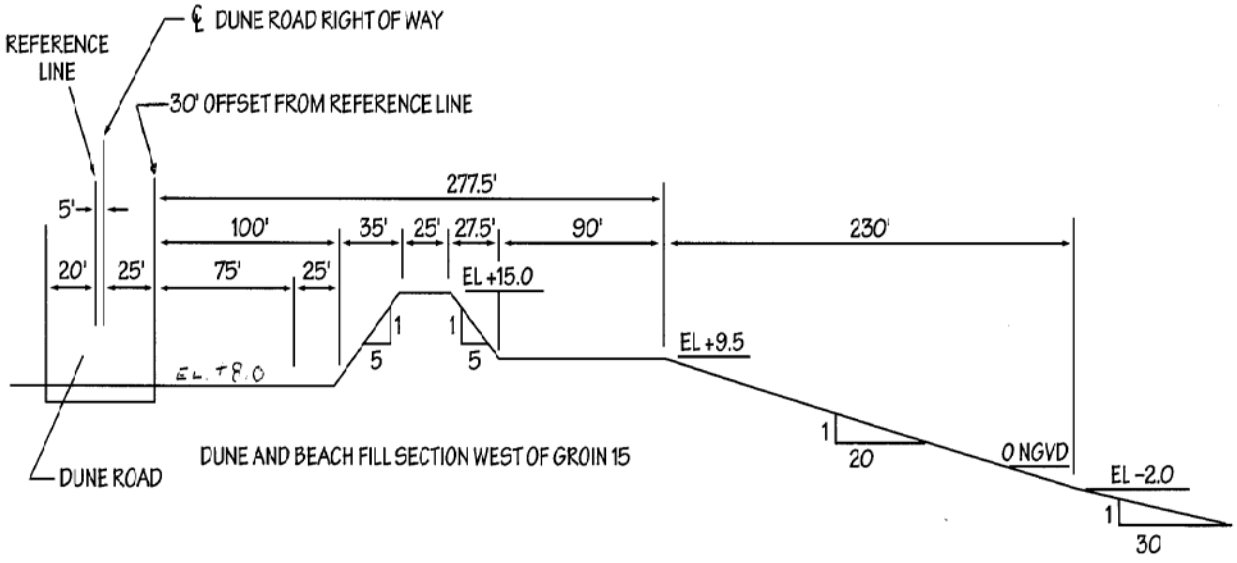


Figure 3b: Minimum Design Cross Sections West of Groin 15. Offshore slope extends to the intersection with the existing bottom.

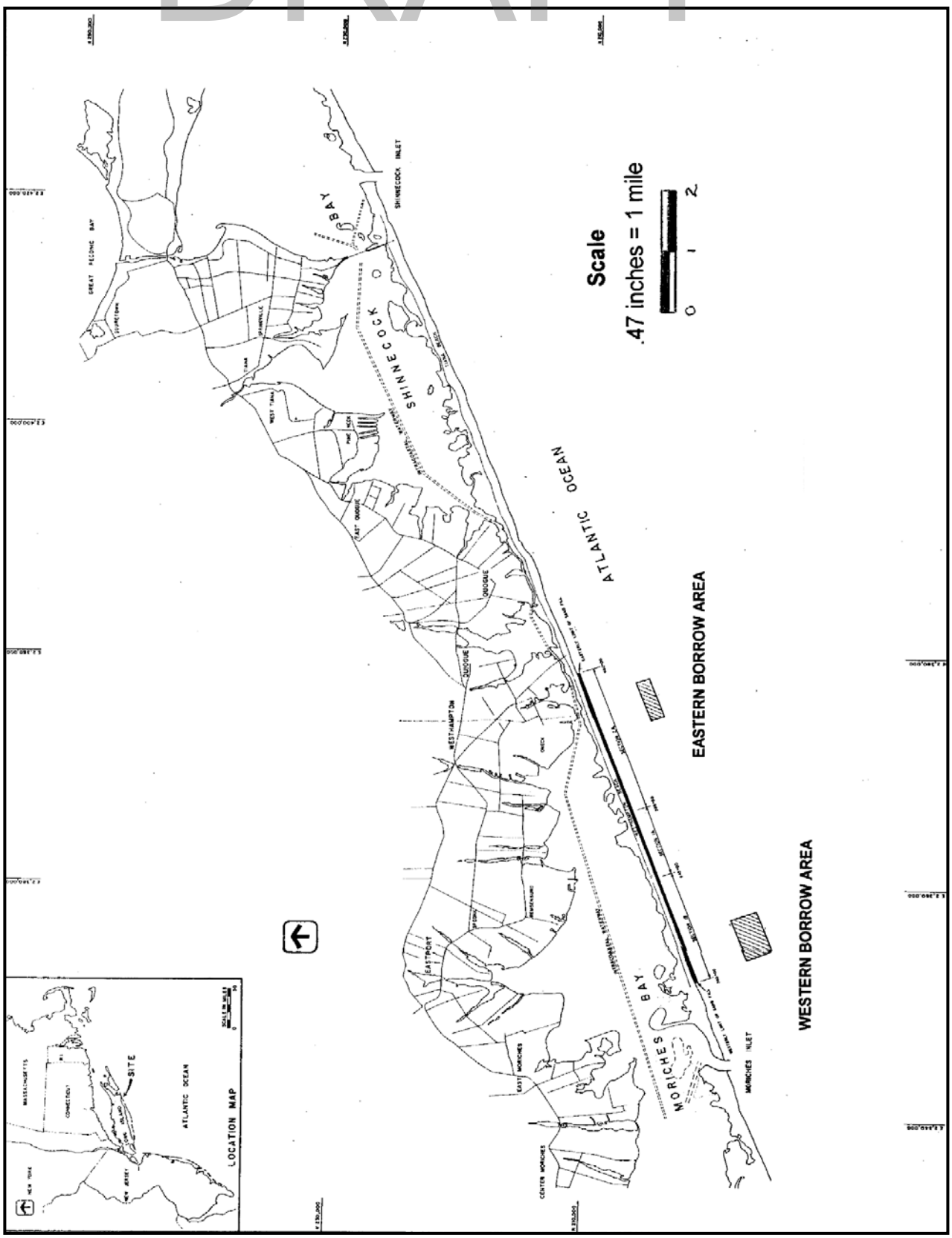


Figure 4: Borrow Area Locations for Initial Construction

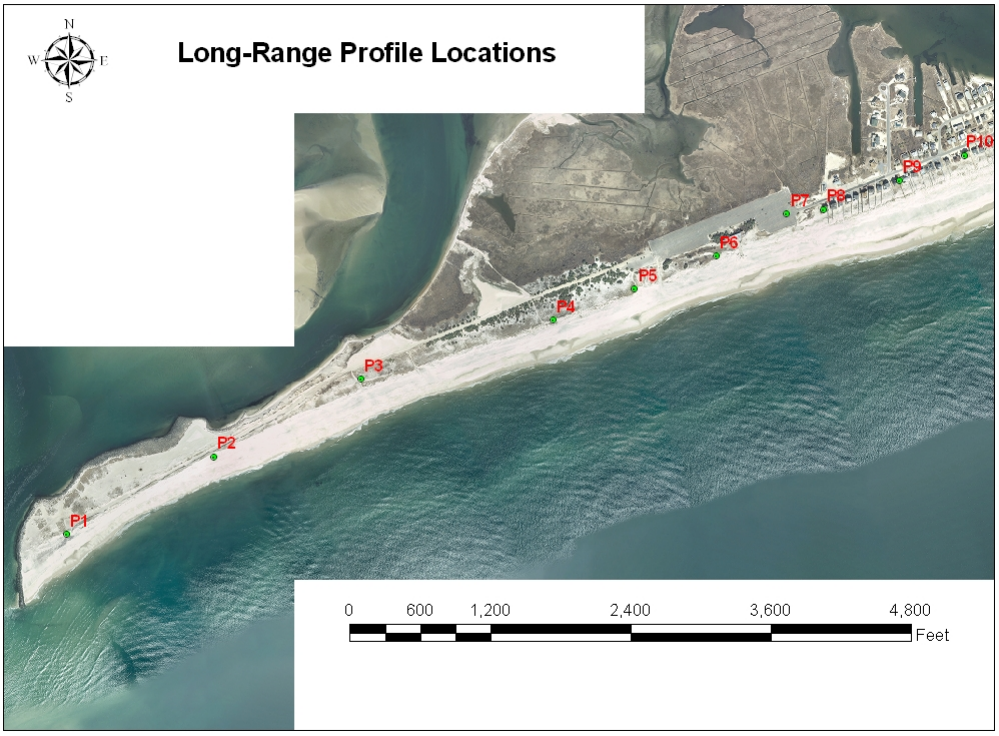


Figure 5: Locations of Groins and Beach Profiles (P1 through P10)

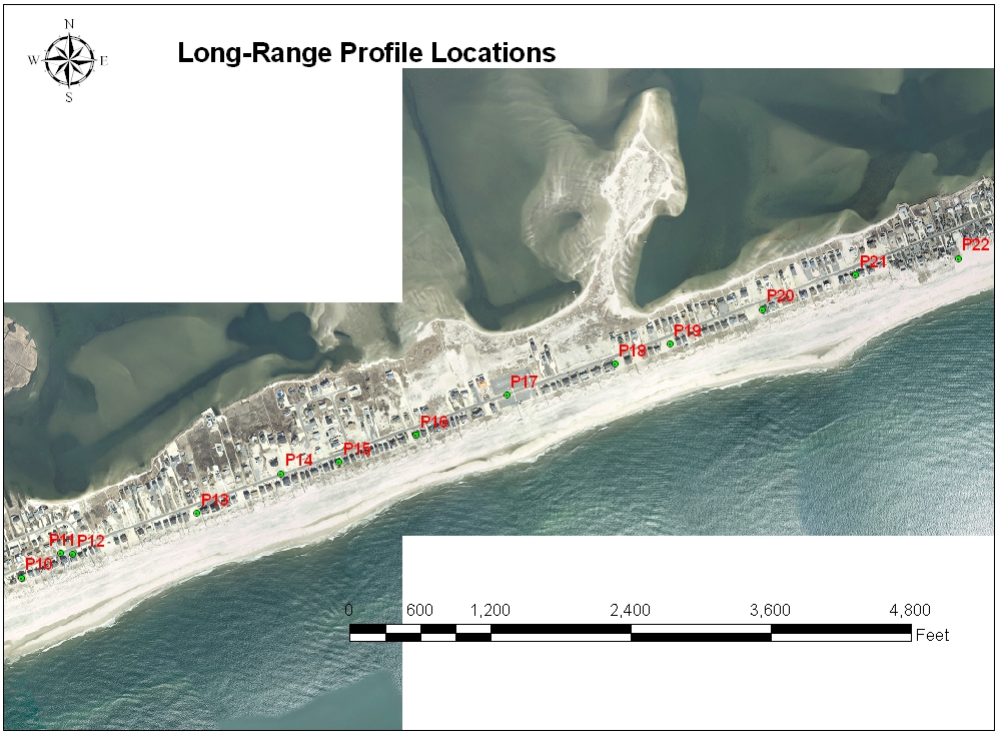


Figure 6: Locations of Groins and Beach Profiles (P10 through P22)

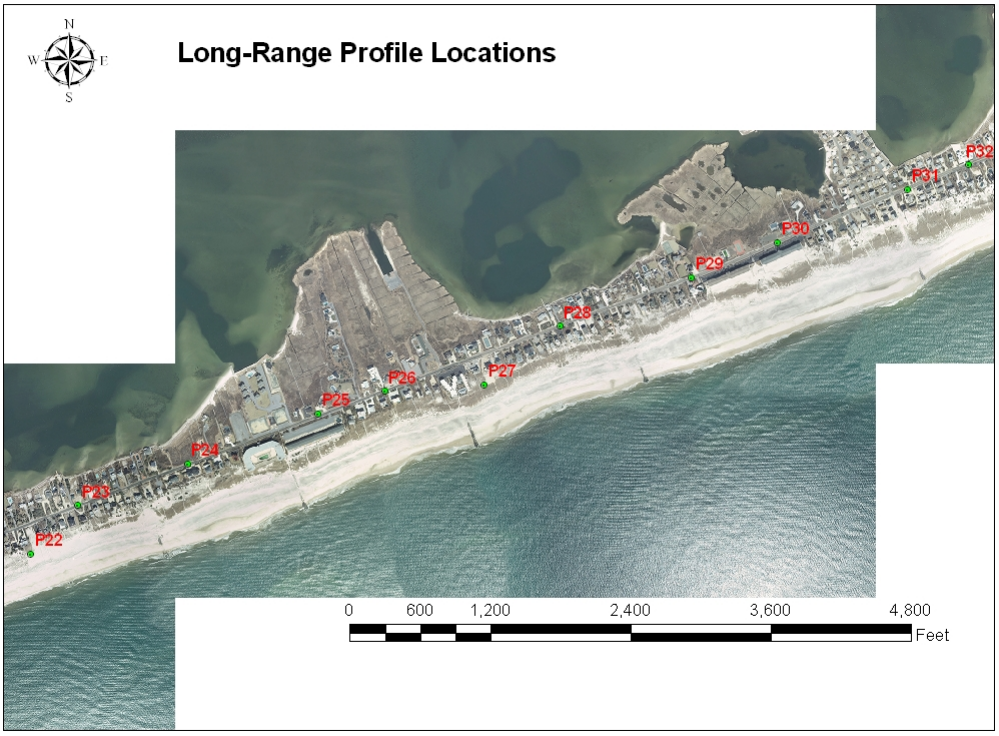


Figure 7: Locations of Groins and Beach Profiles (P22 through P32)

Figure 8: Locations of Groins and Beach Profiles (P32 through P37)

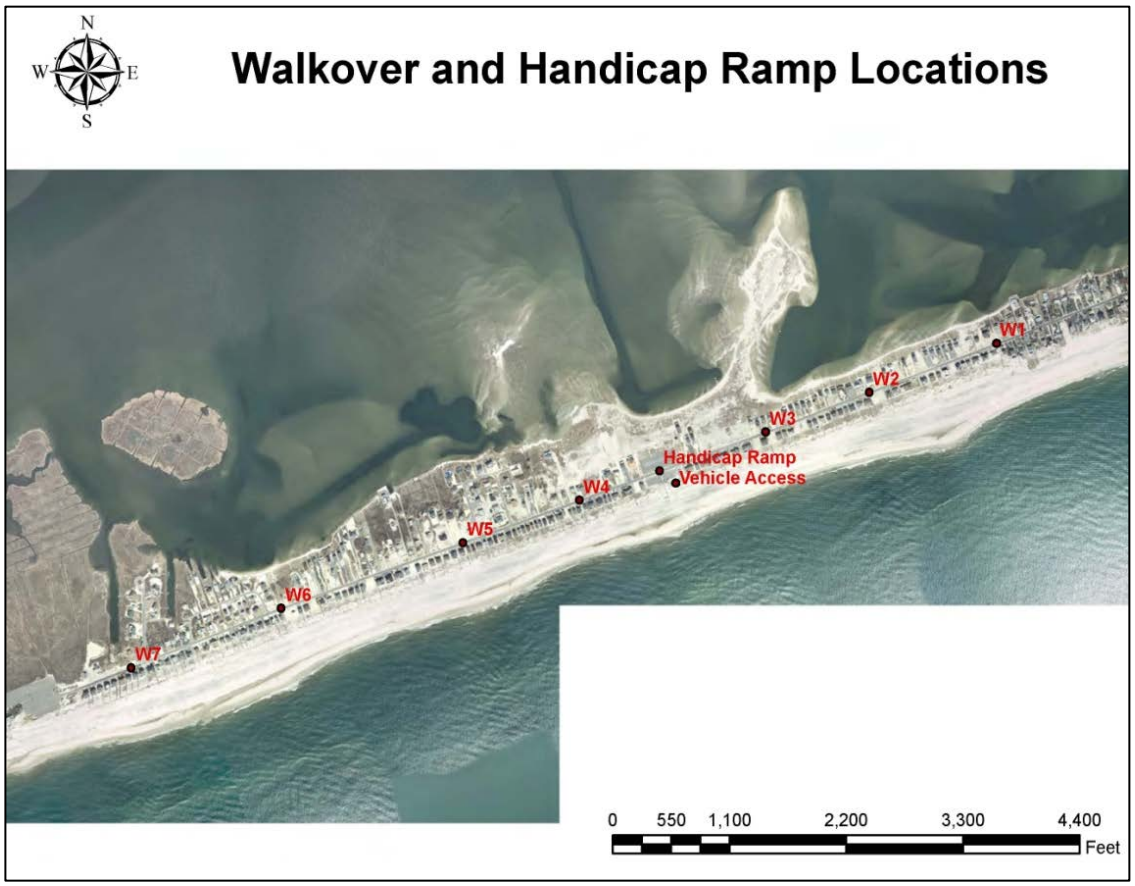


Figure 9: Locations of Walkovers, Handicap Ramp, and Vehicle Access

PLATES

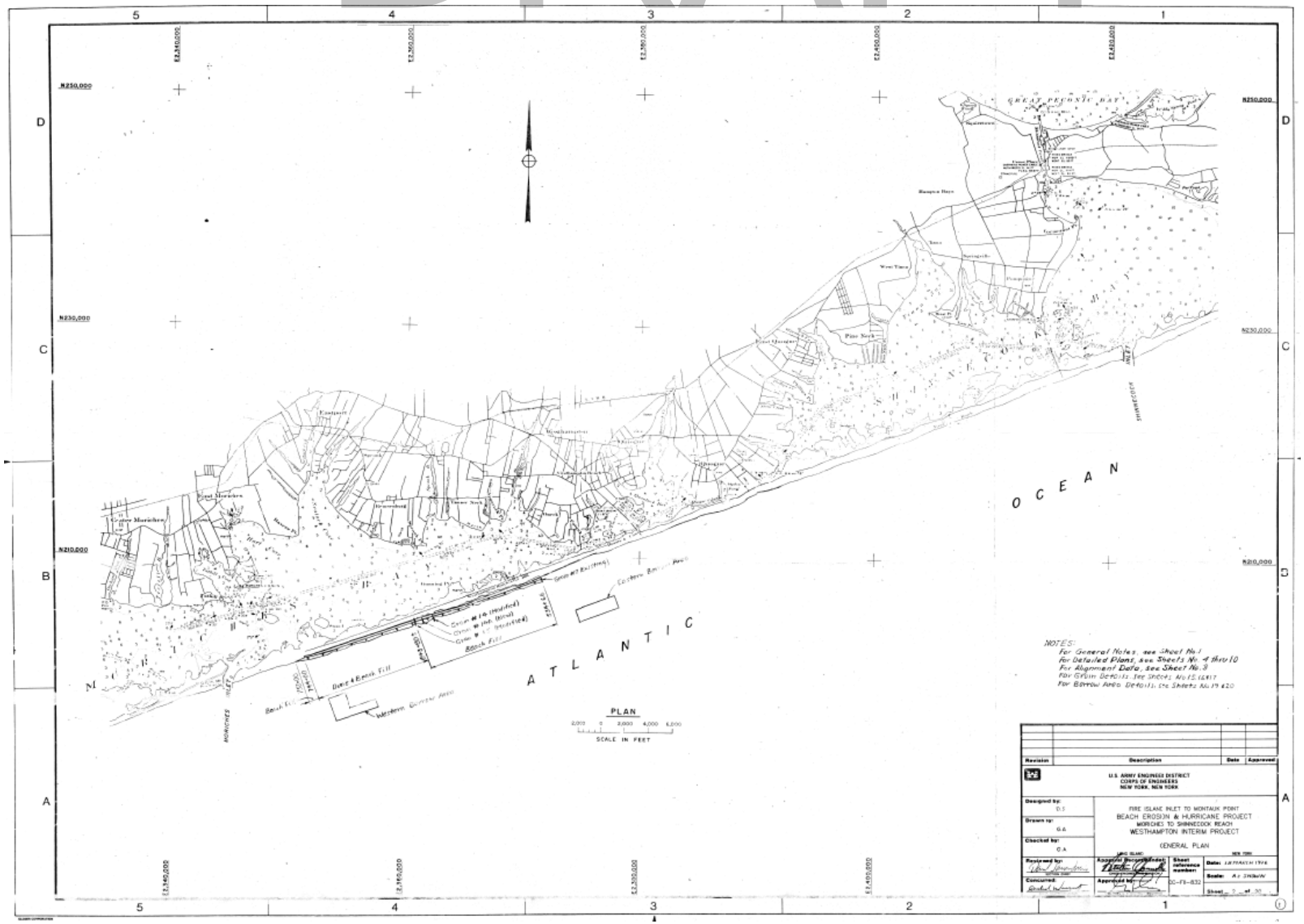


Plate 1: Westhampton Interim Project General Plan

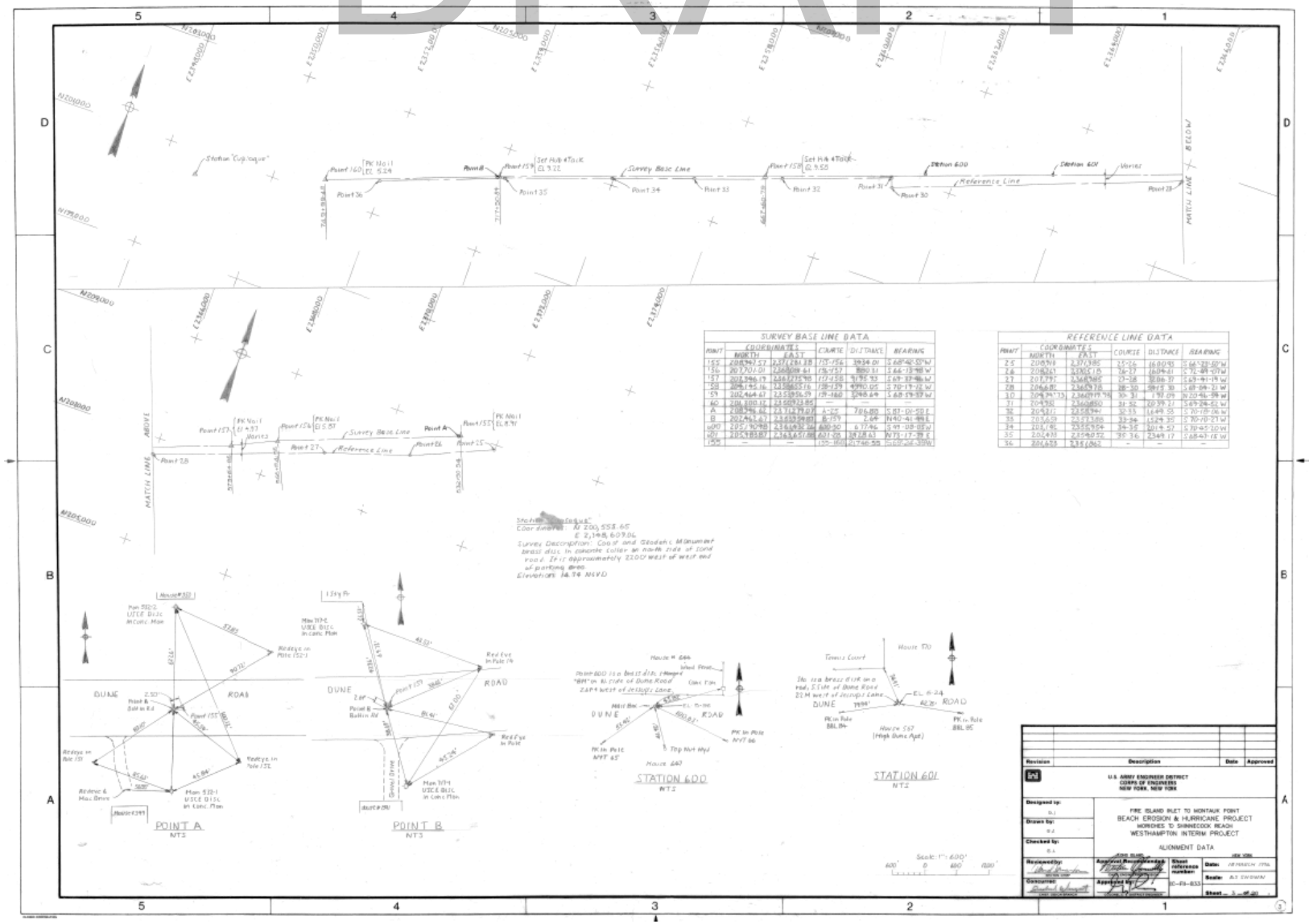


Plate 2: Westhampton Interim Project Alignment Data

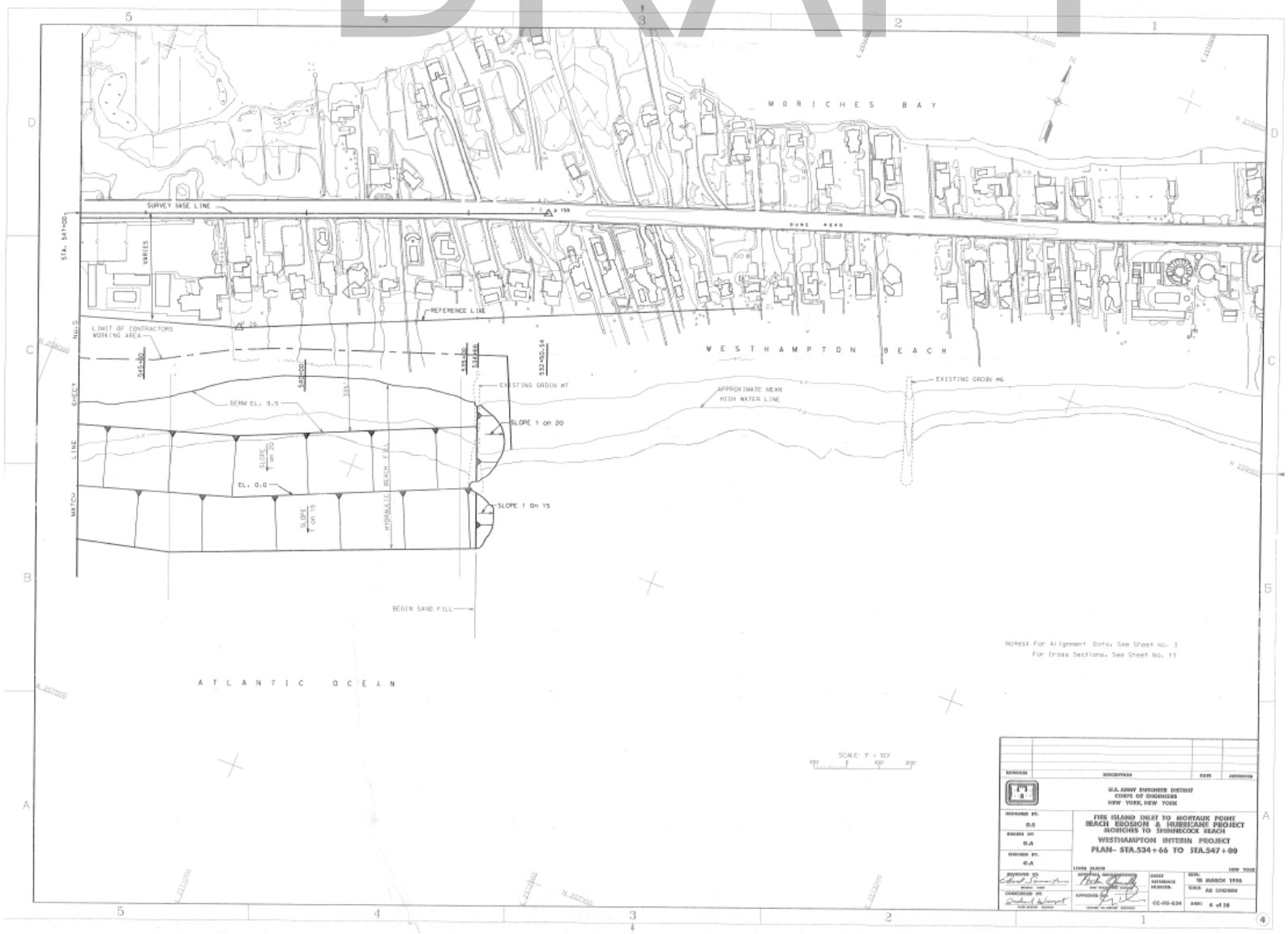


Plate 3: Westhampton Interim Project Detailed Plan Station 534+66 to Station 547+00

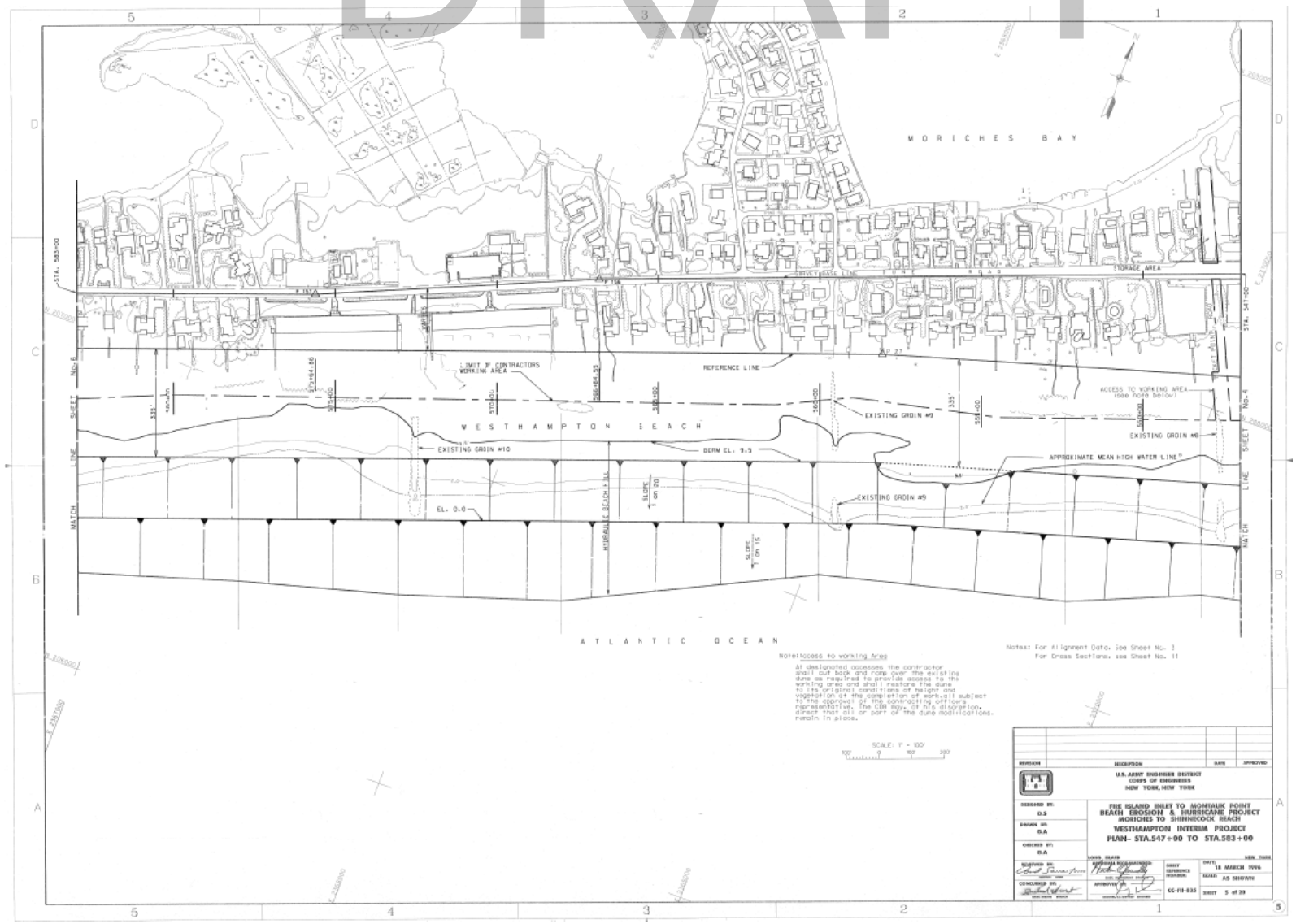


Plate 4: Westhampton Interim Project Detailed Plan Station 547+00 to Station 583+00

Plate 5: Westhampton Interim Project Detailed Plan Station 583+00 to Station 619+00

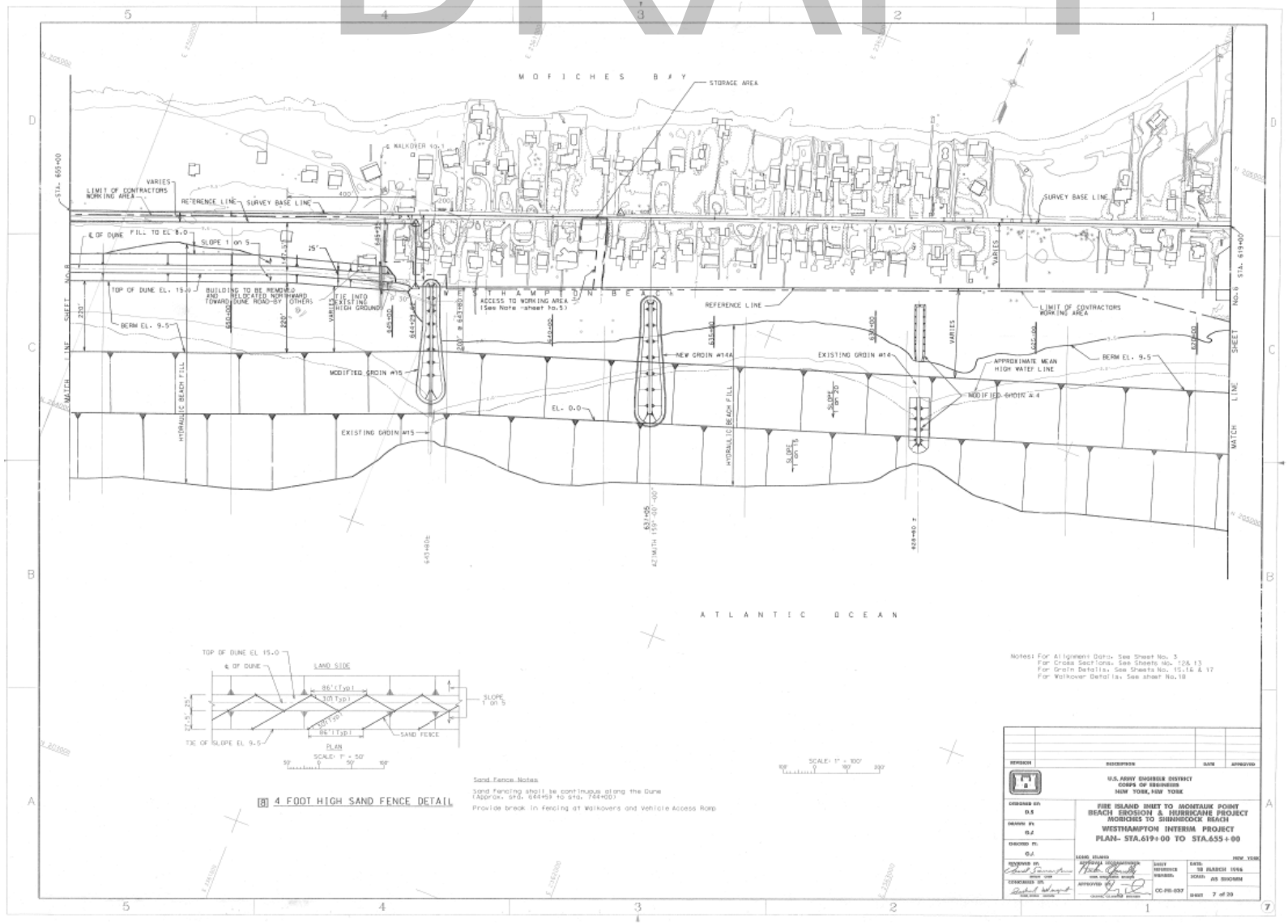


Plate 6: Westhampton Interim Project Detailed Plan Station 619+00 to Station 655+00

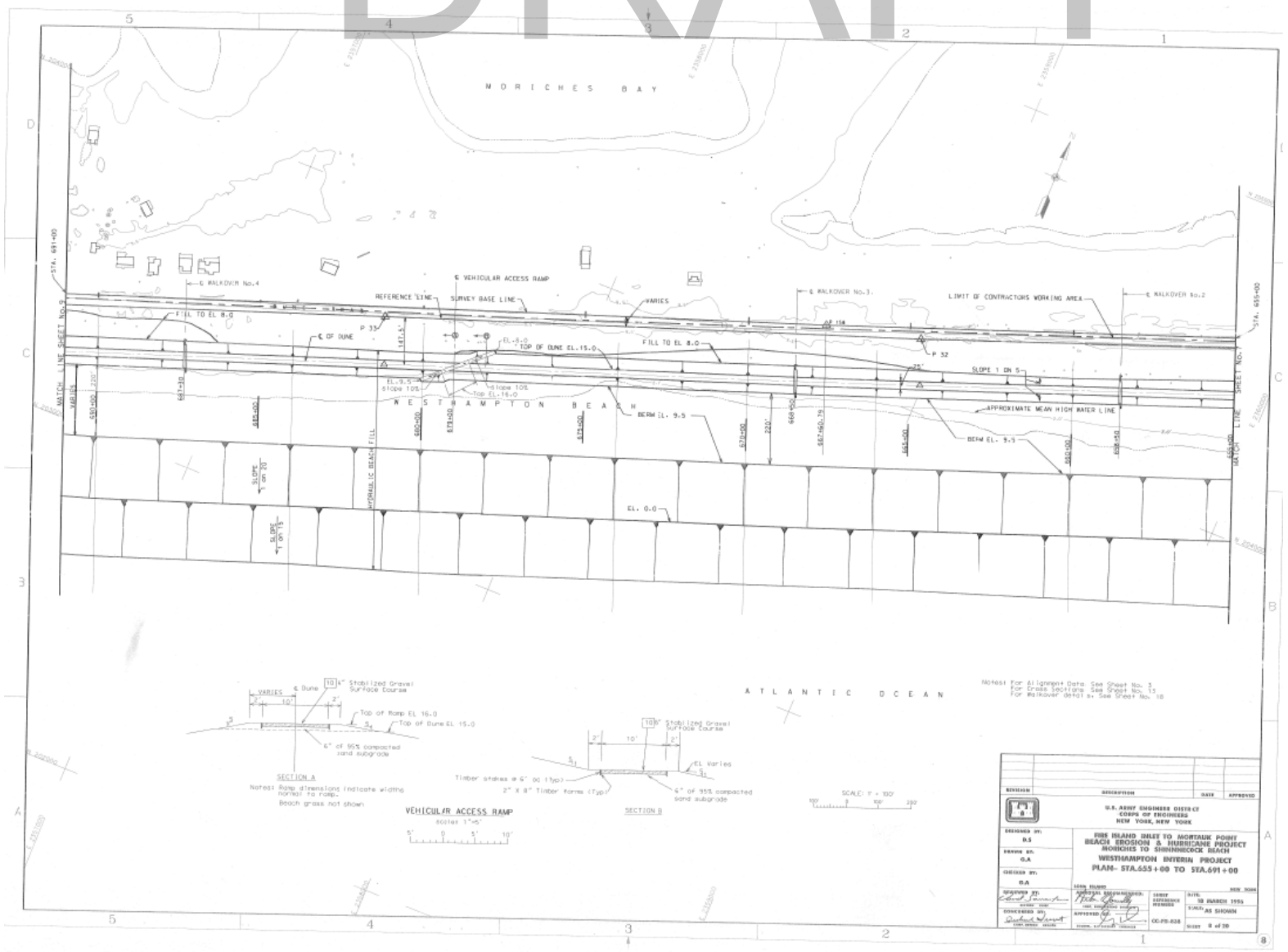


Plate 7: Westhampton Interim Project Detailed Plan Station 655+00 to Station 691+00

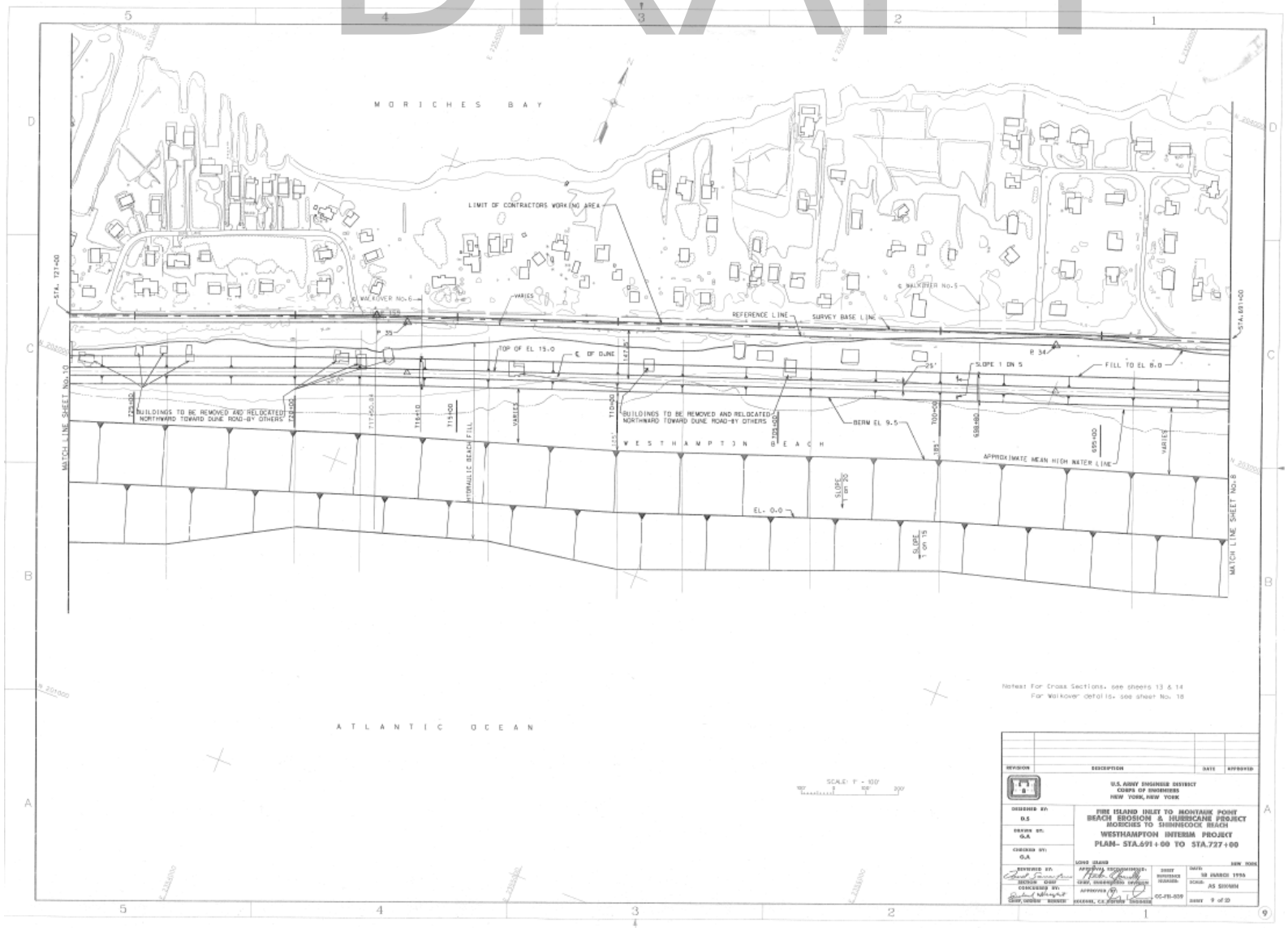


Plate 8: Westhampton Interim Project Detailed Plan Station 691+00 to Station 727+00

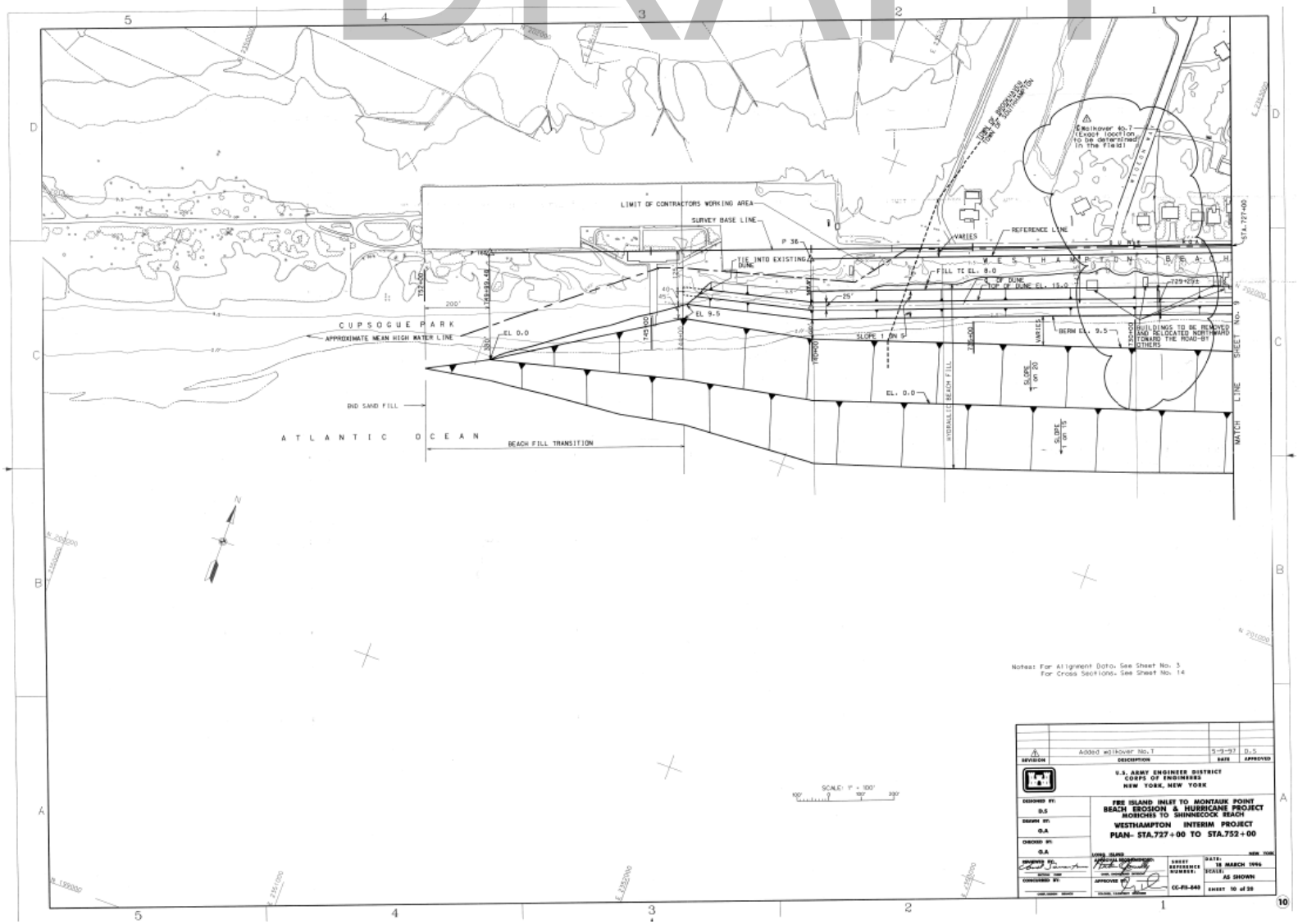


Plate 9: Westhampton Interim Project Detailed Plan Station 727+00 to Station 752+00

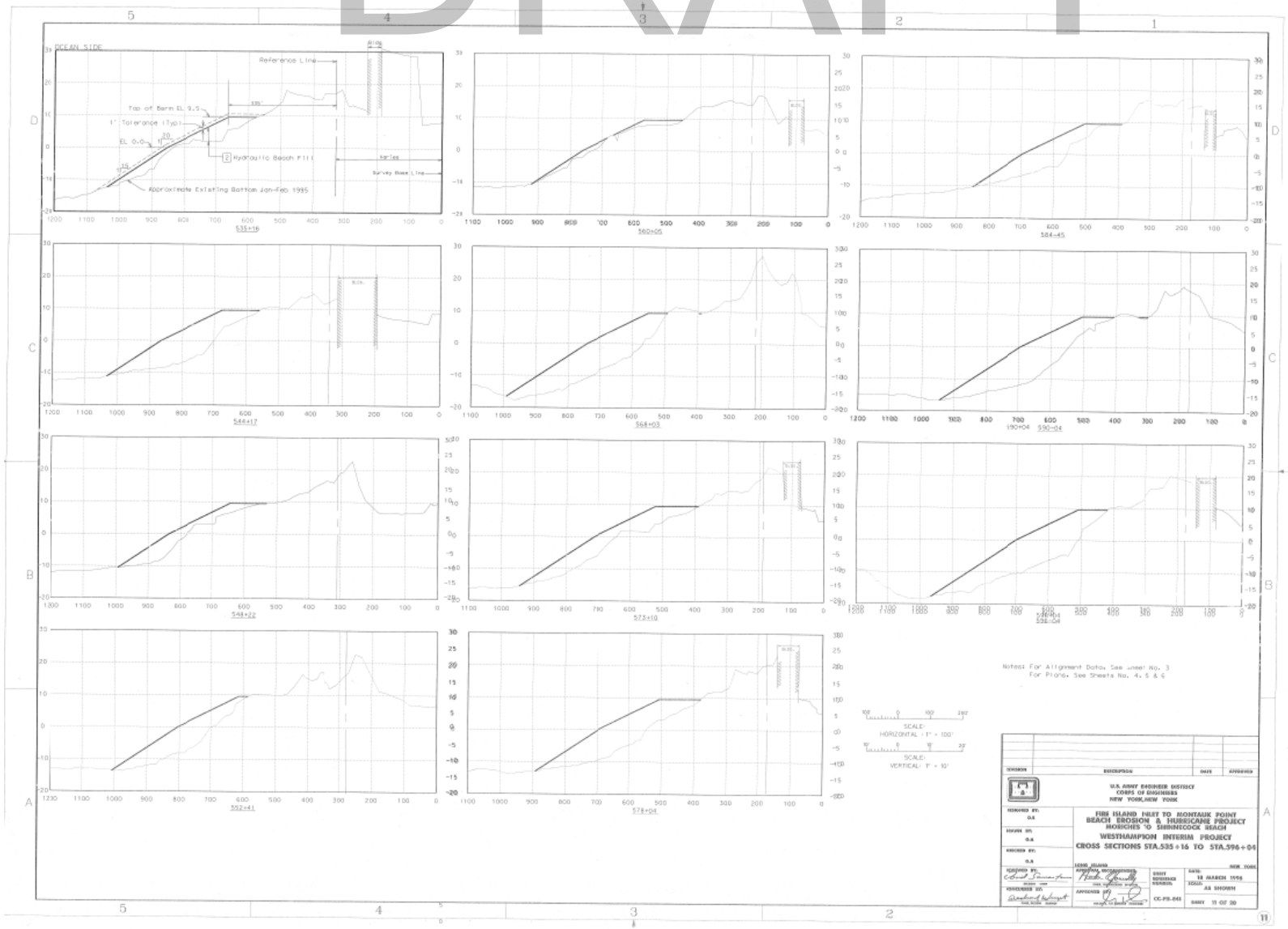


Plate 10: Westhampton Interim Project Cross Sections Station 535+16 to Station 596+04

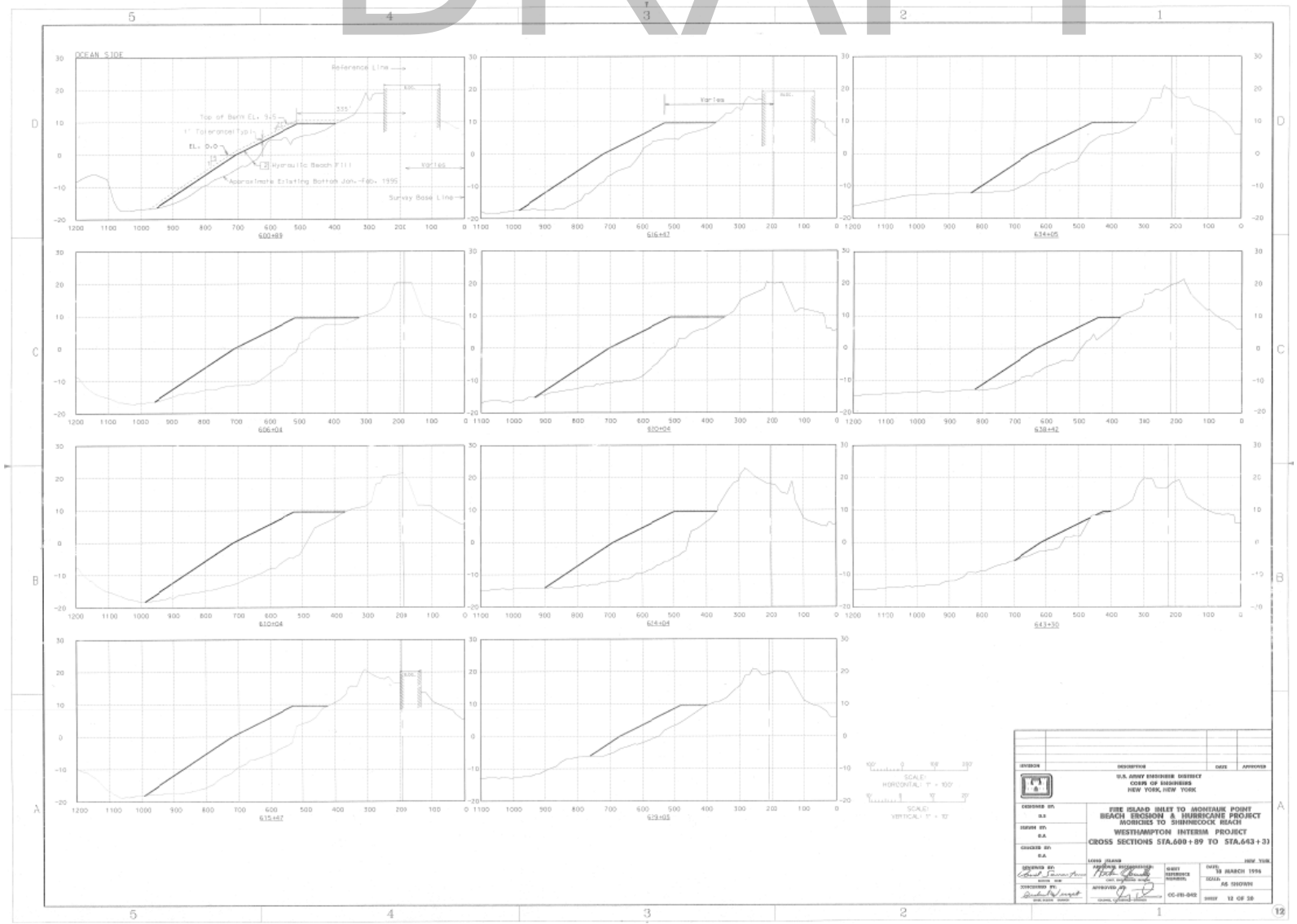


Plate 11: Westhampton Interim Project Cross Sections Station 600+89 to Station 643+30

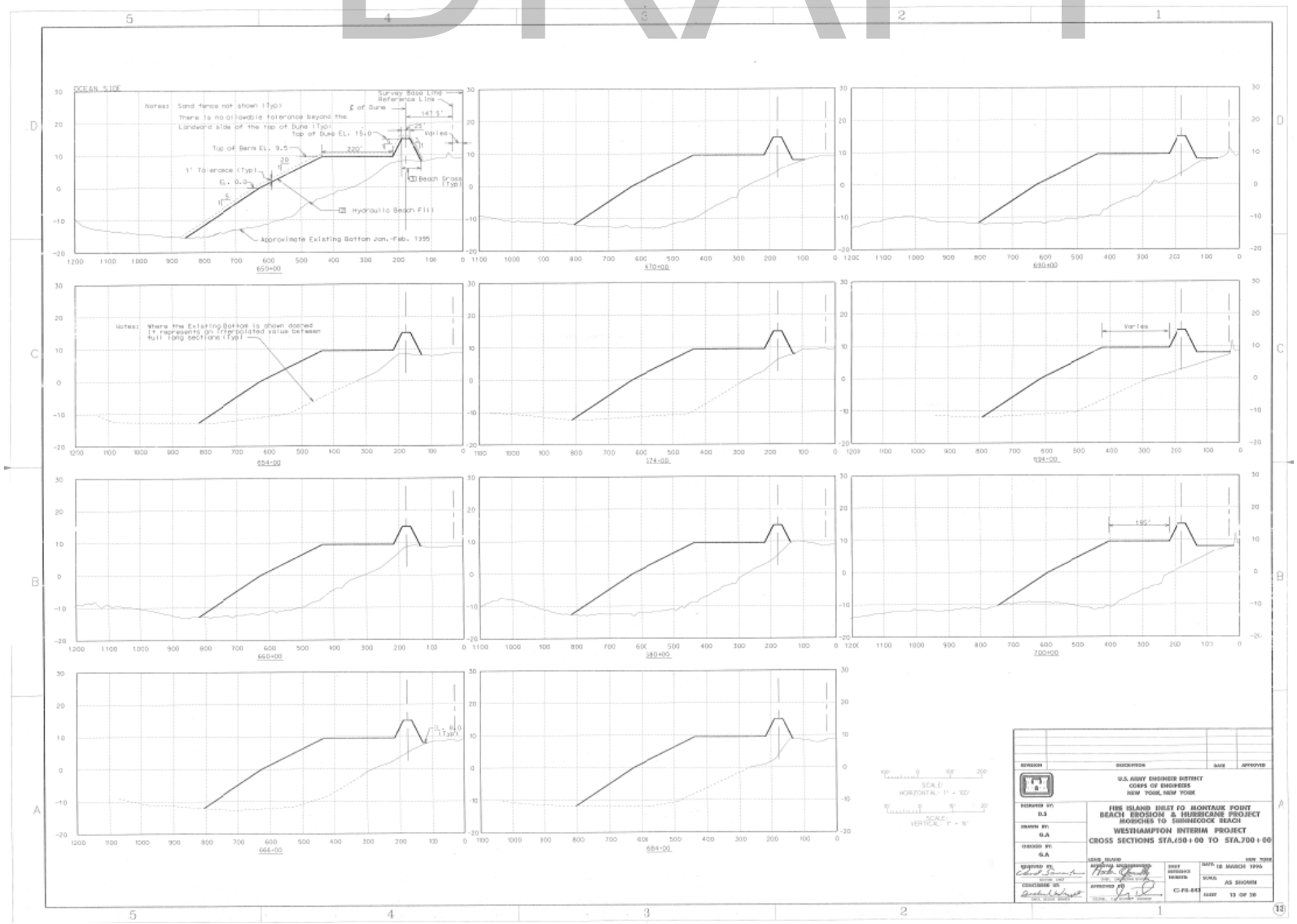


Plate 12: Westhampton Interim Project Cross Sections Station 650+00 to Station 700+00

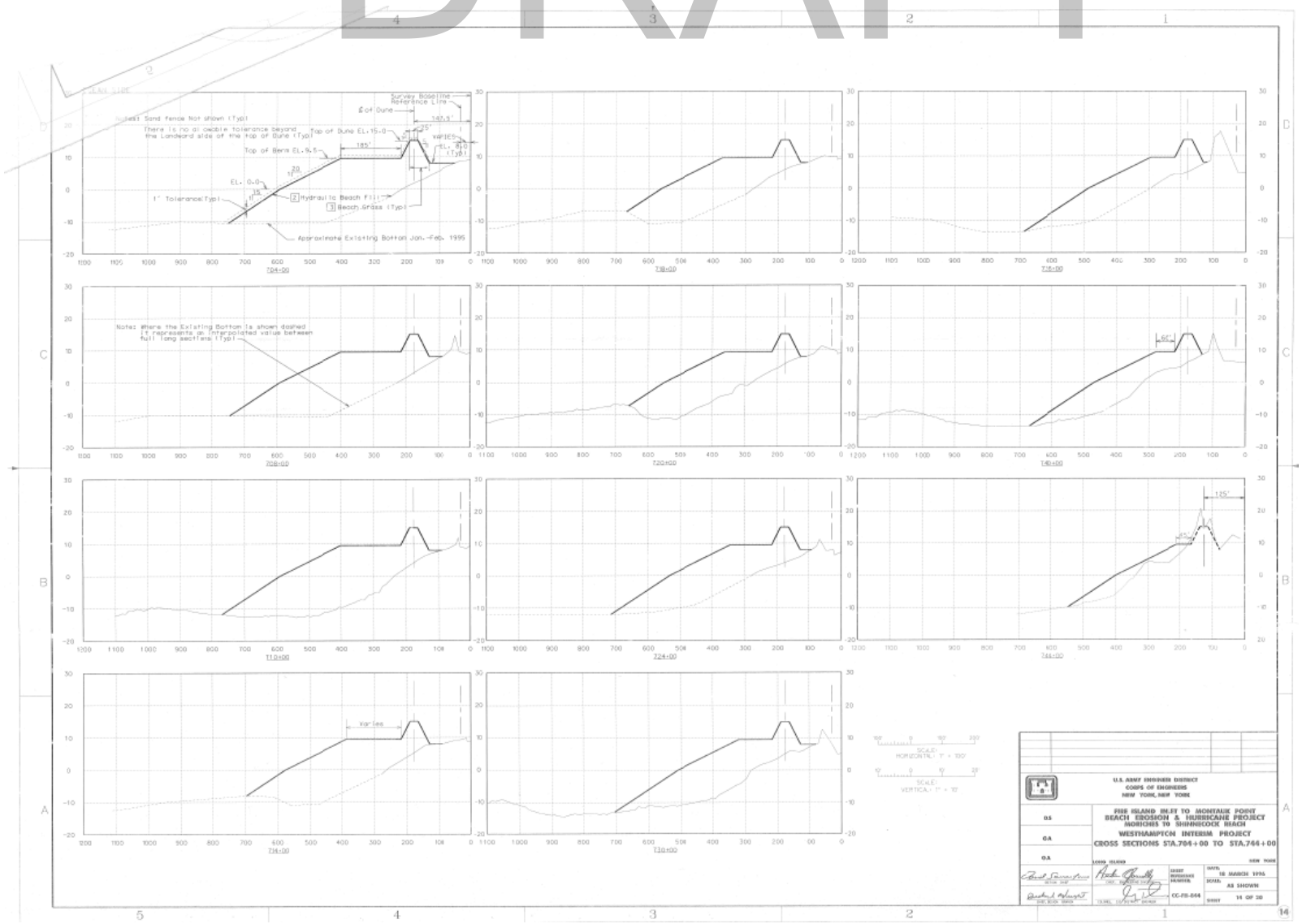


Plate 13: Westhampton Interim Project Cross Sections Station 704+00 to Station 744+00

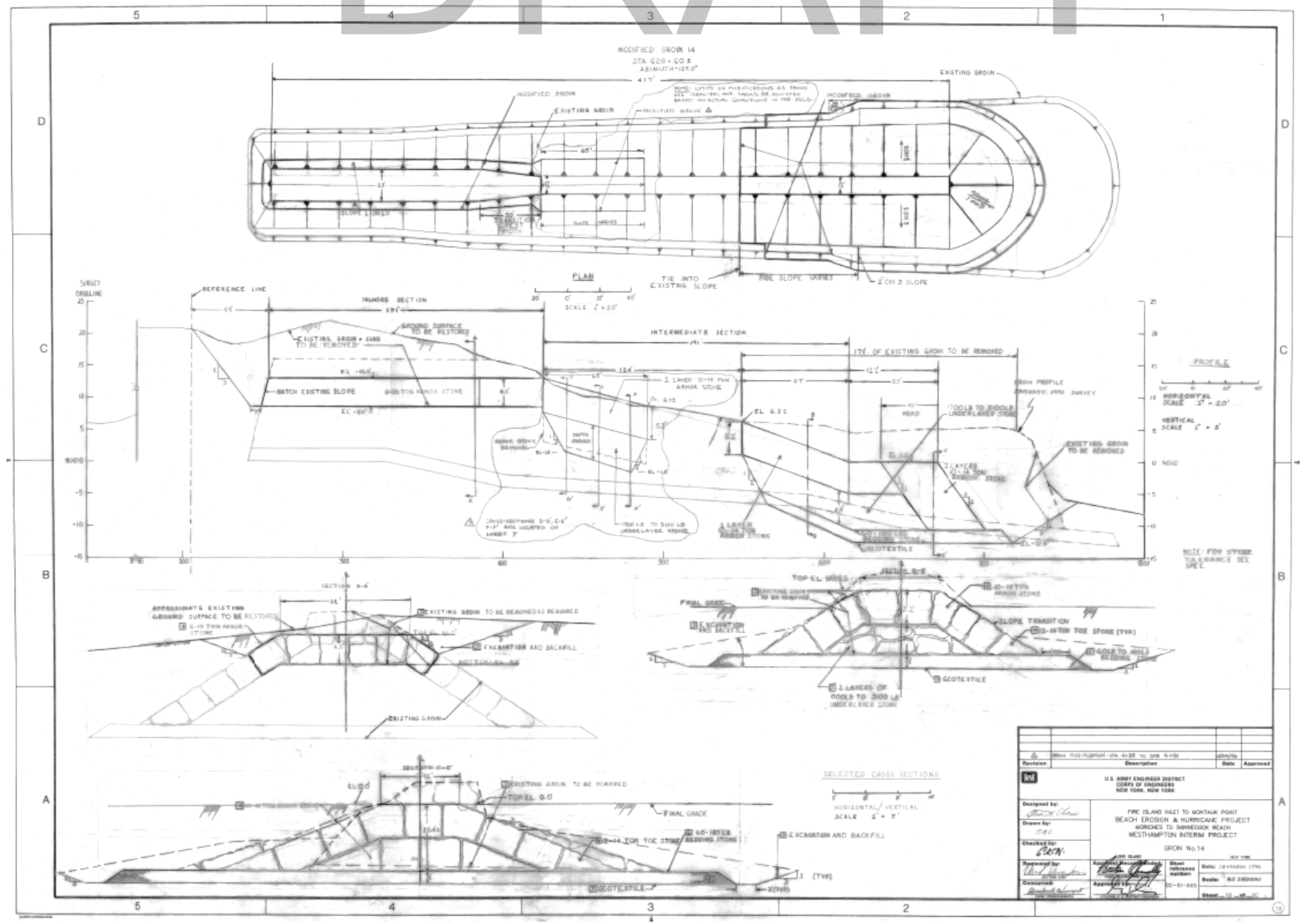


Plate 14: Westhampton Interim Project Groin No. 14

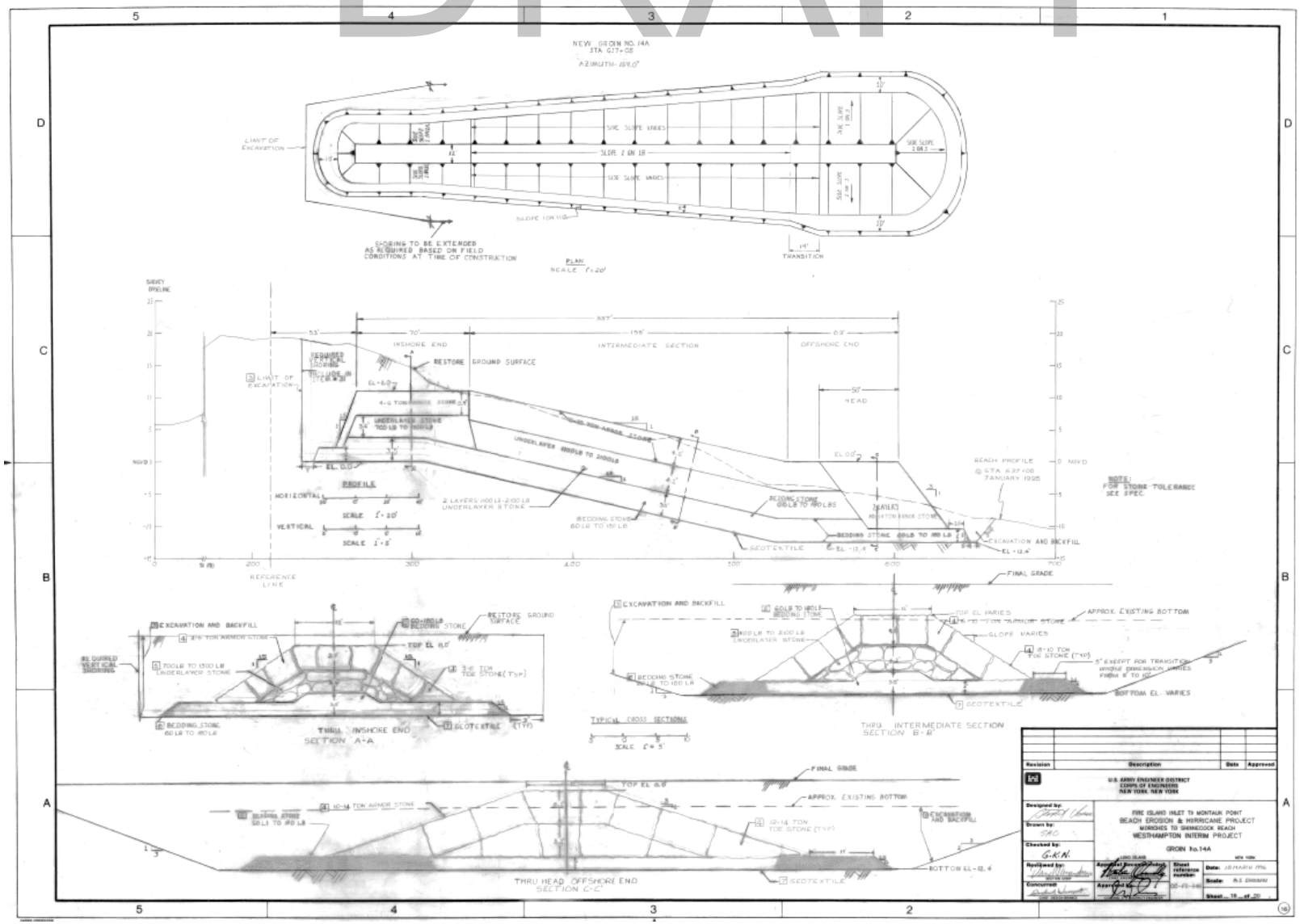


Plate 15: Westhampton Interim Project Groin No. 14A

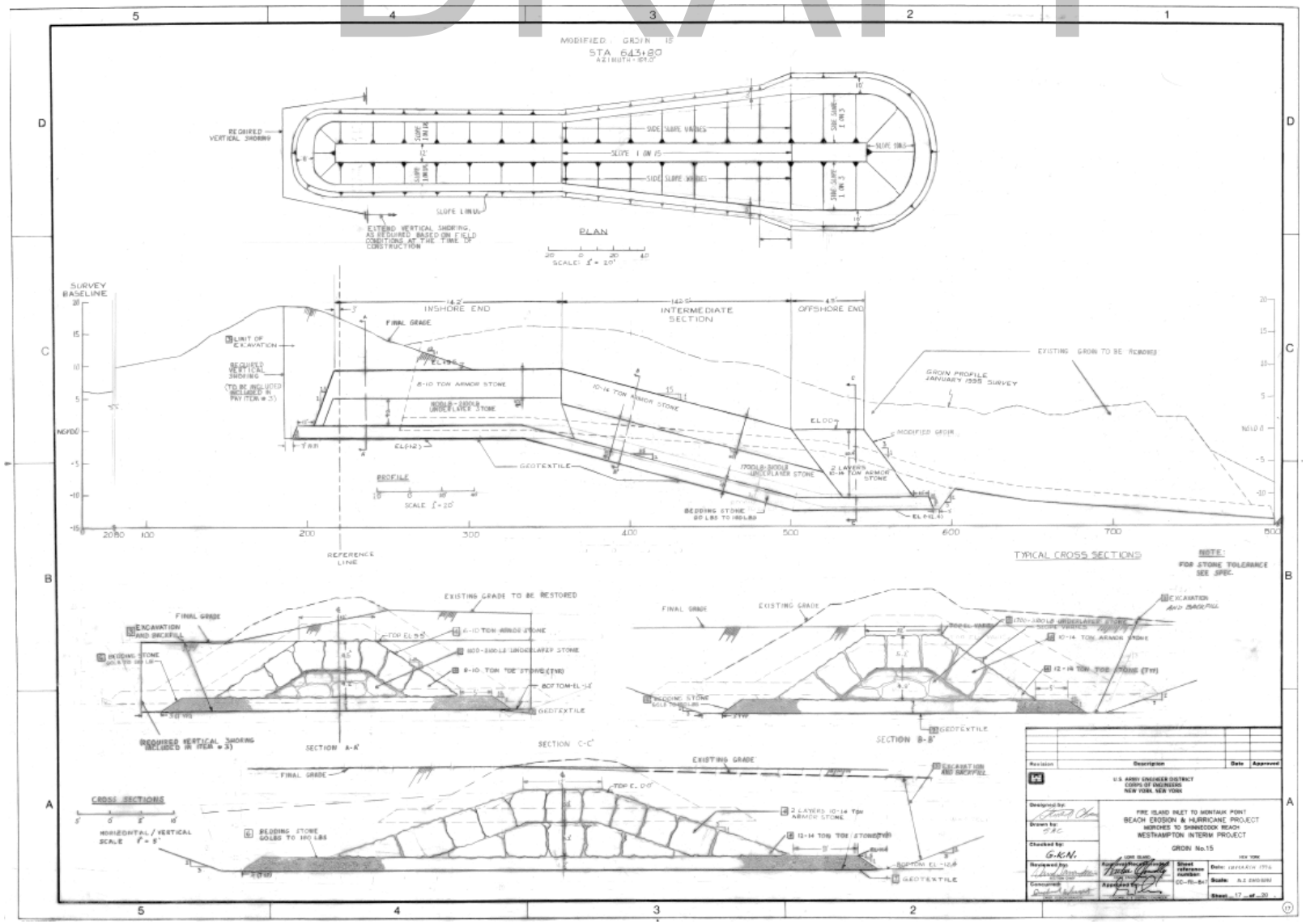


Plate 16: Westhampton Interim Project Groin No. 15

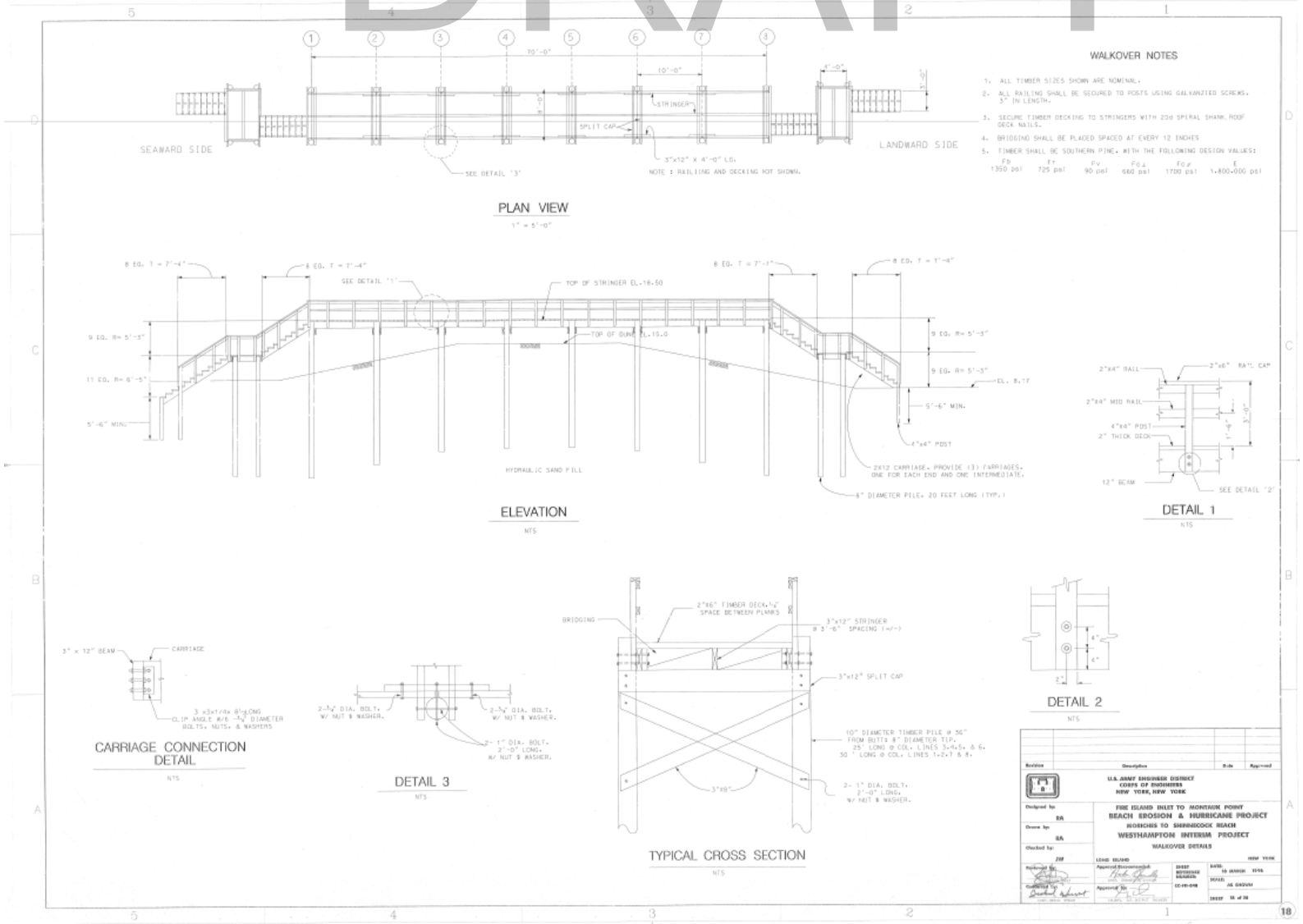


Plate 17: Westhampton Interim Project Walkover Details

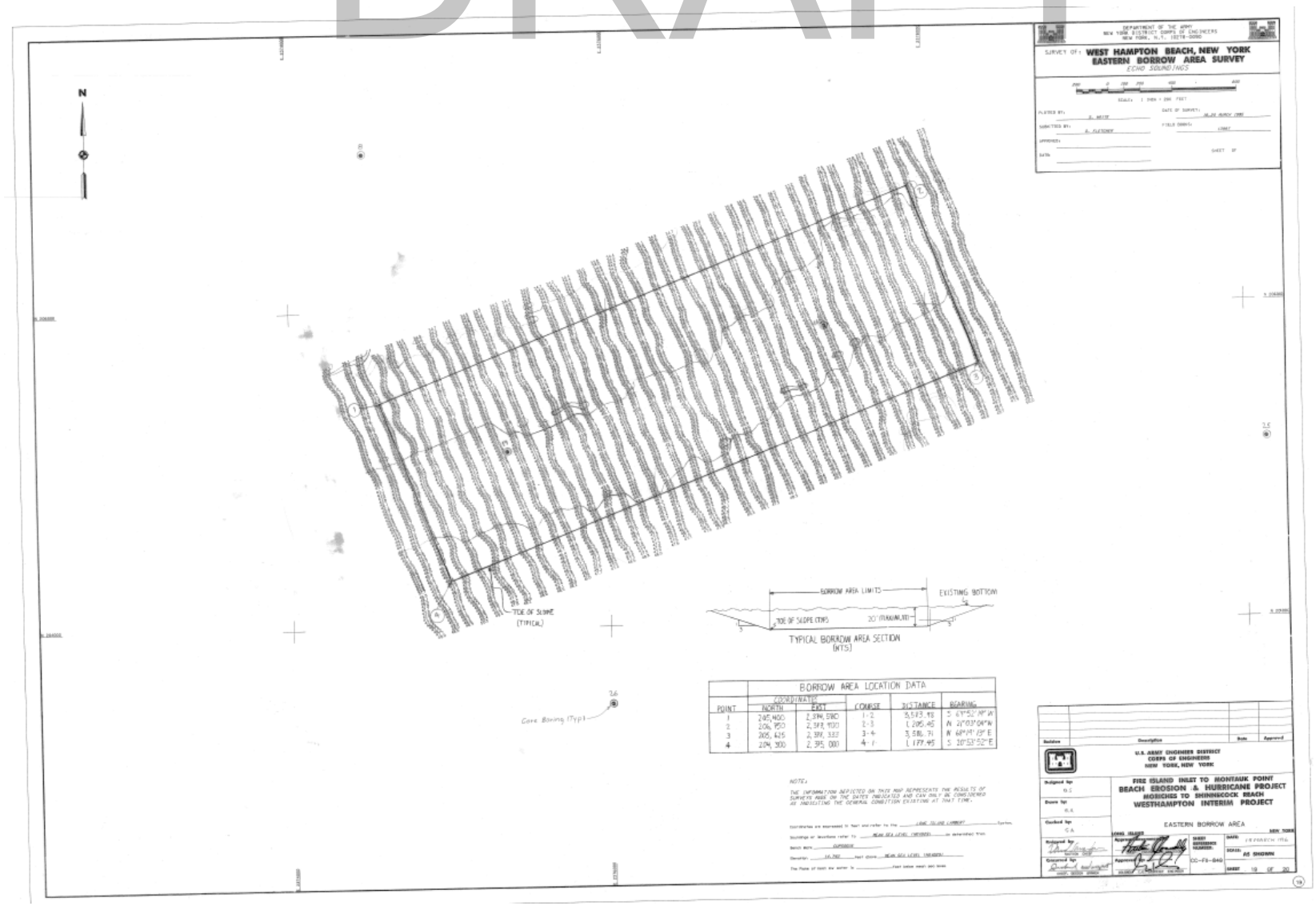


Plate 18: Westhampton Interim Project Eastern Borrow Area

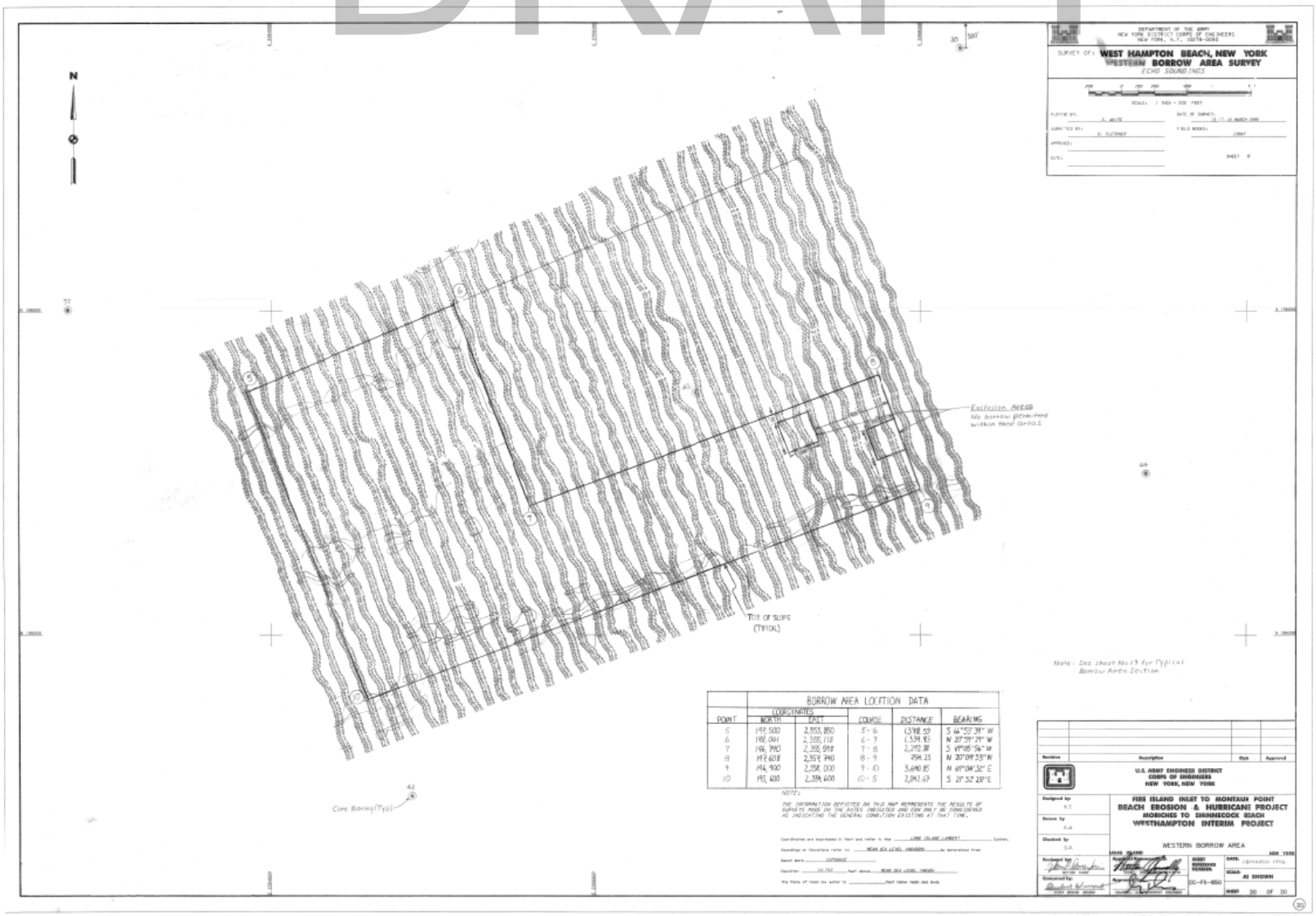


Plate 19: Westhampton Interim Project Western Borrow Area

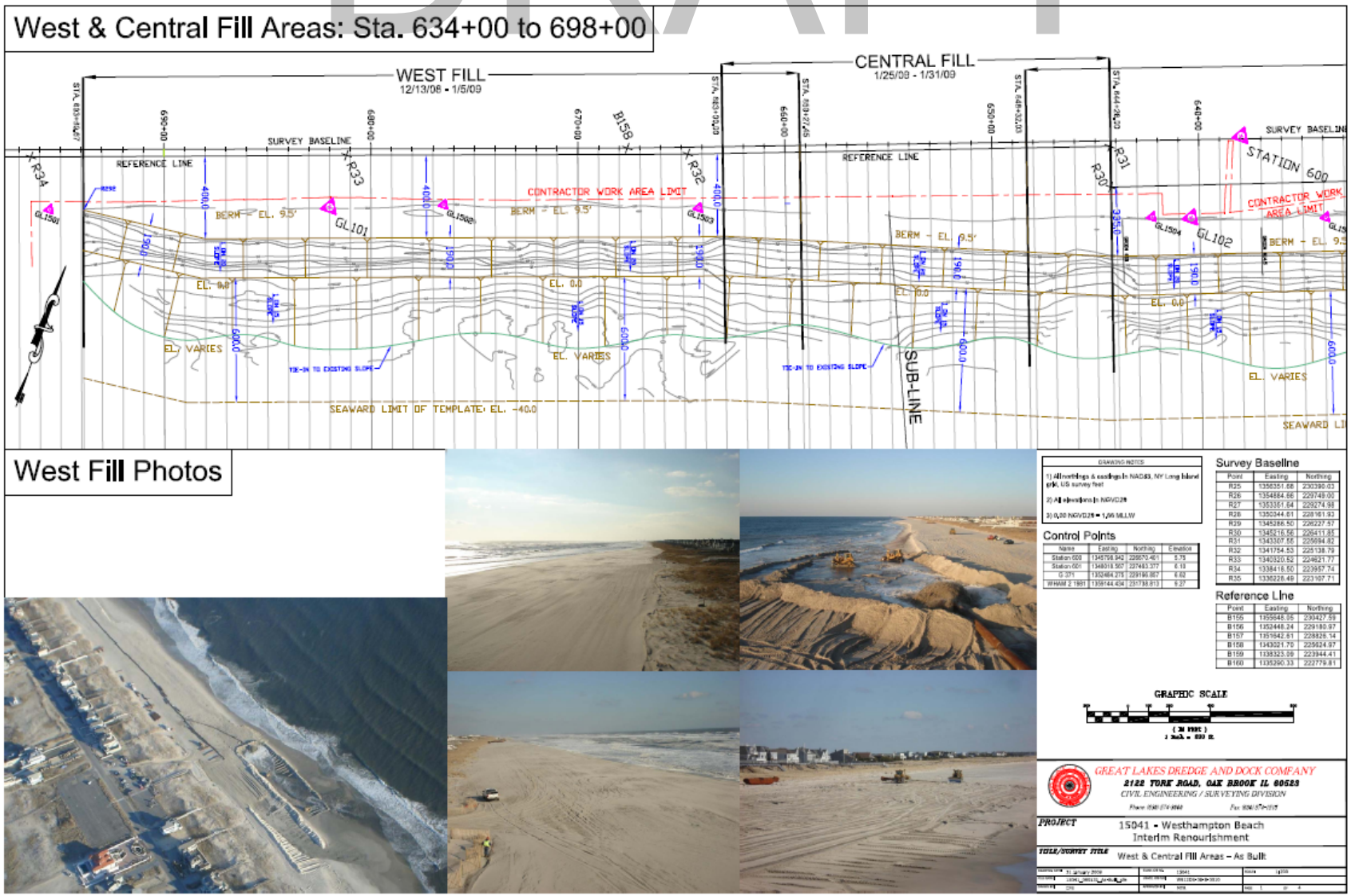


Plate 20: 2009 Renourishment As-Built Plan, West and Central Fill Areas

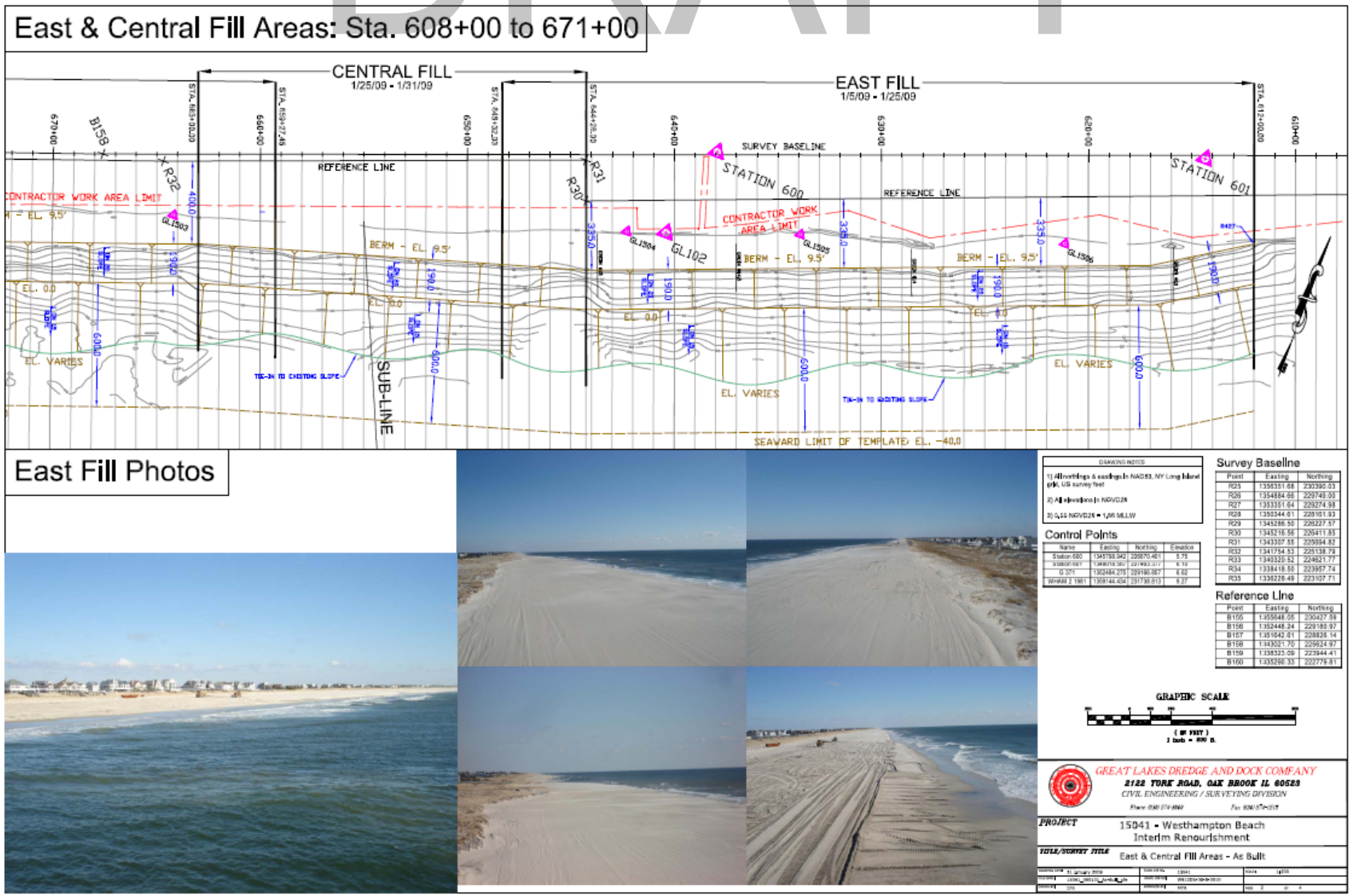


Plate 21: 2009 Renourishment As-Built Plan, East and Central Fill Areas

APPENDIX A

I. AUTHORIZATION AND CONSTRUCTION HISTORY

1. Authority. The overall Fire Island Inlet to Montauk Point, New York, Combined Beach Erosion Control and Hurricane Protection Project was authorized by the River and Harbor Act of 14 July 1960 in accordance with House Document 425, 86th Congress, 2nd Session, dated 21 June 1960, and was subsequently modified for the cost sharing of the beach erosion portion of the project in accordance with Section 103 of the River and Harbor Act of 12 October 1962. The project authorization was modified again by Section 31 of the Water Resources Development Act of 1974, which increased the Federal participation to 70% of the first cost of the project. The authorization was further modified by Section 502 of the Water Resources Development Act of 1986 (P.L. 99- 662), which directed the Secretary of the Army to apply the cost sharing provisions of Section 31(1) of the Water Resources Development Act of 1974 (P.L. 93-251) to include periodic nourishment of the continuing construction project at the Westhampton Beach, New York, for a period of 20 years after the date of enactment of P.L. 99-662. The Water Resources Development Act of 1992 further modified the Federal Participation in the project to extend the period of periodic nourishment for 30 years from the date of project completion for the Westhampton Interim with the non-Federal share not to exceed 35 percent of the total project cost.

2. The authorized project as described in House Document 425 (1960) provides for beach erosion control and hurricane protection along five reaches of the Atlantic Coast of New York from Fire Island Inlet to Montauk Point by: (a) widening of the beaches along the developed areas between Kismet and Mecox Bay to a minimum width of 100 feet at an elevation of 14 feet above mean sea level; (b) raising of dunes to an elevation of 20 feet above mean sea level from Fire Island Inlet to Hither Hills State Park; (c) at Montauk and opposite Lake Montauk Harbor by artificial placement of suitable sand; grass planting on the dunes; and (d) interior drainage structures at Mecox Bay, Sagaponack Lake and Georgica Pond. The project authorizes construction of 50 groins subject to future determination of their actual need, based on experience. Twenty-three of the 50 groins were authorized for the Moriches Inlet to Shinnecock Inlet Reach. Federal participation in the cost of periodic beach nourishment for a period not to exceed 10 years from the year of useful completion of the initial work in any section which may be considered as a nourishment unit was also recommended. The five reaches of the Authorized Project are as follows:

Reach 1 - Fire Island Inlet to Moriches Inlet
Reach 2 - Moriches Inlet to Shinnecock Inlet
Reach 3 - Shinnecock Inlet to Southhampton
Reach 4 - Southhampton to Beach Hampton
Reach 5 - Beach Hampton to Montauk Point

Reach 2 (Moriches to Shinnecock, which encompasses the Westhampton Interim Project Area) is further subdivided into subsections which are identified in Figure 4. Section 2a is

the eastern section where groins number 1 through 11 were constructed. Section 1a is the middle section where groins number 12 through 15 were constructed. Section 1b is the section to the west of groin number 15.

3. Project History.

a. First Increment of Work. Following the original project authorization in 1960, a series of design memoranda were planned to be prepared for the entire project along the South Shore of Long Island from Fire Island Inlet to Montauk Point, New York. General Design Memorandum No. 1, dated September 1963, covers the portion of the project that lies between Moriches and Shinnecock Inlets and was approved by the Chief of Engineers on 9 January 1964. The GDM recommended improvements for the Moriches to Shinnecock reach substantially in accordance with HD 425 adjusted for existing conditions and criteria, and for the inclusion of 13 of the authorized 23 groins in the initial construction of this reach of the project. Local interests objected to the concurrent placement of dune and beachfill with groin construction. The Chief of Engineers concurred with the State of New York request to initially construct 11 groins in Reach 2, and 2 groins in Reach 4, with beach fill to be added as necessary but not sooner than 3 years after groin completion. The need for, and the design of, the 2 groins at East Hampton (Reach 4) was discussed in a special report of design memorandum scope generated in July 1964. The contract for the construction of 11 groins in Reach 2 was awarded in early 1965 and the construction was completed in September 1966. The contract for the construction of 2 groins in Reach 4 was awarded in February 1965 and the construction was completed in September 1965.

b. Second Increment of Work. In recognition of the critical condition of the beaches due to earlier storms, the Chief of Engineers urgently recommended to the State in June 1967 that placement of dune and beachfill in the 10 groin compartments (within the 11 groins) in Reach 2 (Section 2A) be undertaken. The State concurred and requested that work also be undertaken on additional groins, placement of dune and beach fill in Reach 2, as well as construction of groins, drainage structures and dune fill in Reach 4. Suffolk County, however, did not endorse the placement of dune and beach fill within the existing groins due to a lack of funds. In February 1969, Supplement No.1 to GDM No. 1 (Moriches to Shinnecock Reach) was prepared, which recommended the construction of 4 more groins and placement of beach fill backed by a dune at an elevation of 16 feet above mean sea level (MSL) in the 6,000 ft section of beach (Section 1a) west of the 11 groin field. Local interests furnished the necessary rights-of-way for construction in Reach 2 of four additional groins and dune and beach fill in Section 1a. The 4 new groins were filled with 1.95 million cubic yards of sand to construct a beach and dune. The groin construction was initiated in August 1969 and completed in July 1970, bringing the total number of groins in Reach 2 to fifteen. The beach and dune fill was placed between October 1969 and October 1970.

c. Efforts to Complete Reach 2. In anticipation of construction in 1972, the New York District prepared plans for 6 additional groins in section 1B. However, in

November 1971, New York State withdrew support due to a moratorium it imposed on capital projects funding. In April 1973, the State requested that the New York District resume planning for the construction of section 1B. In November 1974, the Suffolk County Executive stated opposition to section 1B construction and the use of Moriches Bay and Inlet borrow sources. Based upon a 1975 request by the State, to develop a plan for section 1B using ocean borrow material for the required fill, the District initiated investigations and design efforts to develop borrow sources and the section 1B plan.

d. Supplement No.2 to GDM No. 1 (Moriches to Shinnecock Reach), dated July 1980, noted the severe erosion which had occurred during the storms in January and February 1978. These storms resulted in washovers of Dune Road and substantial destruction to homes in the vicinity of Moriches Inlet to Shinnecock Inlet. In March 1978, the Suffolk County Legislature approved participation in the Reach 2 proposed project. In April 1978, New York State endorsed improvements for Sections 1B, 1A and 2A of Reach 2. In November 1978, concerned Federal agencies agreed to a basis for proceeding with the development of Supplement No. 2 independent of the overall Fire Island Inlet to Montauk Point reformulation effort due to critical erosion in Section 1B. The plan developed in Supplement No. 2 provided for beach fill and dune construction in Section 1B to mitigate the erosion and provide storm surge protection, and for beach fill and dune construction in Sections 1A and 2A (the existing groin field) to mitigate the interruption of the littoral drift, provide beach erosion control and storm surge protection. The report recommended the placement of beach and dune fill in the 28,000 feet of Sections 2A, 1B and 1A generally 100 ft wide at elevation +12 ft MSL, except that in the groin field the berm elevation would be +14 ft. In areas of inadequate natural dunes, the berm would be backed by a dune 40 ft wide at elevation +16 with landward and seaward slopes of 1 on 5. No additional groins were included in Supplement 2. The 1980 GDM Supplement was approved on November 5 1980.

e. New York State included $10,322,000 (Non-Federal share of first construction cost for the proposed work at sections 2A, 1B, & 1A) in the 1981-1982 State Budget. The State contended that periodic nourishment should be cost shared at the same apportionment as the first construction cost (i.e. 70% Federal, 30% non-Federal). However,on 9 July 1981, Headquarters of the US Army Corps of Engineers (HQUSACE) confirmed the 6% Federal, 94% non-Federal interpretation of cost-sharing for periodic nourishment of the project.

f. Subsequently on 1 October 1981, New York State Department of Environmental Conservation stated by letter that the local cost sharing could not be provided for the project, as authorized. The New York State Department of Environmental Conservation indicated that they would pursue a Congressional change to the project authorization for periodic nourishment cost sharing; planning for construction for the completion of the Moriches to Shinnecock reach was suspended due to lack of local support. Since there was a lack of support for the most critical area of the Fire Island to Montauk Point project, all work regarding the

reformulation study was similarly suspended.

g. Present Work Considered. Since the halt in construction in 1970, erosion of the shoreline downdrift of the groin field continued to the point where Dune Road, the only land access to the homes in this area, became threatened due to the erosion. Additionally, the width of the barrier beach in this area narrowed to the point where the barrier island was frequently overwashed. Breaches in the barrier beach are a constant threat, and, in fact, the barrier island was breached along 2,600 feet eastward from the east jetty of Moriches Inlet in 1980 and Public Law 99 emergency authority was invoked to repair the breached area. NYSDEC contributed to the cost of the closure which was completed in early 1981. The barrier beach was breached again during the northeaster of 11-13 December 1992, where two significant breaches occurred in the vicinity of Pikes Beach, encompassing a span of approximately 4000 feet westward of the westernmost groin along the barrier island. In an effort to stem the flow of water in the western breach (dubbed Pikes Inlet), the District utilized approximately 60,000 cy of material already being dredged from the Intracoastal Waterway and placed it within the western breach. The placement of material to fill the Pikes Inlet breach was completed in January 1993. Complementing the artificial placement of material into Pikes Inlet, the natural littoral drift further shoaled material into the area thereby closing the western breach. The eastern breach was originally the smaller of the two and was dubbed Little Pikes Inlet. Additional winter storms plus tidal and littoral forces resulted in a growth of this breach to about 3000 feet wide and 12 feet deep. The District and the NYSDEC again agreed to share the cost of the breach closure to fill the remaining breached areas with material from a designated offshore borrow site. Construction of the breach closure of Little Pikes Inlet was initiated in May 1993 and was completed in November 1993 with about 1,700,000 cy of sand being placed.

h. After a series of meetings between the State and Federal governments, the District requested that the State propose a plan for section 1B of Reach 2 that was acceptable to all agencies within the State and County. By letter dated September 20, 1989, the State proposed such a plan and it became known as the State's preferred interim plan for the Westhampton Interim. The State's plan is a variation of, although providing a lesser level of protection than, the plan approved by HQUSACE (Supplement No. 2 to GDM No. 1; Moriches to Shinnecock Reach). In January 1990, the District responded to the plan, offering modifications to the State's plan to comply with Corps' methodology and criteria. The State agreed with the recommended changes, and in July 1990 submitted a letter which indicated the agreement of concerned parties and requested the Corps to proceed with the engineering and design efforts necessary for project implementation.

i. In July 1991 the District issued a Public Notice for this conceptual plan. The U.S. Environmental Protection Agency (USEPA) responded to the public notice by saying that they agreed in concept to the interim plan but could not fully endorse the plan until a full environmental assessment and/or environmental impact study is completed and the reformulation of the overall project is reinstated. The US

Department of Interior (DOI) also provided correspondence which stated its concurrence with the proposed interim plan provided that the plan is implemented with regard for endangered and threatened species in the area.

j. In November 1992, the District submitted a conceptual study plan to prepare a Limited Reevaluation Report for the Westhampton Interim. The conceptual study plan described the proposed plan for the Westhampton Interim and discussed the pertinent issues including approximating the path leading to implementation of the project. In December 1992 the District was directed to initiate baseline data collection, including review of previous reports, on the uncompleted portion of Sections 1A,1B, and 2A. As the baseline data was collected, the District prepared an Initial Project Management Plan (IPMP) in accordance with ER 5-7-1 (FR) "Project Management". The IPMP provided the guidelines for the preparation of this Decision Document, which, among other things would evaluate the State's plan or a similar modified plan which would be acceptable to the State. The IPMP was approved by HQUSACE in July 1993.

k. In December 1994 the New York District completed a technical support document titled "Fire Island Inlet to Montauk Point, New York; Moriches to Shinnecock Reach - Interim Plan for Storm Damage Protection". This report evaluated the New York State's proposed interim plan in comparison to other alternatives for providing storm damage reduction to the Moriches to Shinnecock Reach of the authorized project. The report includes an analysis of the associated costs, benefits and environmental impacts for the various alternatives presented. The results of the economic analyses indicated that the State's plan, modified to include a dune height at elevation +15 feet NGVD, a berm height at elevation +9.5 NGVD and a tapered groin design which adds only one new groin inside the existing groin field and decreases the amount of shortening of the existing groins, is the most cost effective design of the alternatives considered.

4. Construction History.

a. First Increment of Work. The contract for the construction of 11 groins in Section 2a of Reach 2 was awarded in early 1965 and the construction was completed in September 1966. The contract for the construction of 2 groins in Reach 4 was awarded in February 1965 and the construction was completed in September 1965.

b. Second Increment of Work. In Reach 2 further construction occurred of 4 more groins and placement of beach fill backed by a dune at an elevation of 16 feet above mean sea level (MSL) in the 6,000 ft section of beach (Section 1a) west of the 11 groin fields (Section 2a). The 4 new groins were filled with 1.95 million cubic yards of sand to construct a beach and dune. The groin construction was initiated in August 1969 and completed in July 1970, bringing the total number of groins in Reach 2 to fifteen. The beach and dune fill was placed between October 1969 and October 1970.

c. Emergency Work. Breaches in the barrier beach are a constant threat. The barrier island was breached along 2,600 feet eastward from the east jetty of Moriches Inlet in 1980 and Public Law 99 emergency authority was invoked to repair the breached area. The barrier beach was breached again during the northeaster of 11-13 December 1992, where two significant breaches occurred in the vicinity of Pikes Beach, encompassing a span of approximately 4000 feet westward of the westernmost groin along the barrier island. In an effort to stem the flow of water in the western breach (dubbed Pikes Inlet), the District utilized approximately 60,000 cy of material already being dredged from the Intracoastal Waterway and placed it within the western breach. The placement of material to fill the Pikes Inlet breach was completed in January 1993. Complementing the artificial placement of material into Pikes Inlet, the natural littoral drift further shoaled material into the area thereby closing the western breach. The eastern breach was originally the smaller of the two and was dubbed Little Pikes Inlet. Additional winter storms plus tidal and littoral forces resulted in a growth of this breach to about 3000 feet wide and 12 feet deep. The remaining breached areas were filled with material from a designated offshore borrow site. Construction of the breach closure of Little Pikes Inlet was initiated in May 1993 and was completed in November 1993 with about 1,700,000 cy of sand being placed.

II. PROJECT DESCRIPTION

5. Purpose. The Fire Island Inlet to Montauk Point, New York shoreline restoration project is a Federally authorized project which was originally intended to provide beach erosion control and hurricane protection for approximately 83 miles of the Atlantic Coast of Long Island, from Fire Island Inlet to Montauk Point. The current Westhampton Interim Project covered by this manual considers the uncompleted portion of the Moriches Inlet to Shinnecock Inlet reach, (Reach 2 of the authorized project). The Westhampton Interim Project Area was the area currently most in need of immediate attention along the 83 mile shoreline. This was due to the severe erosion which had occurred in this area resulting in breaching of the barrier island and significant property damage. The interim plan was initially proposed by the State of New York to provide storm damage protection for the Westhampton Interim area until a more permanent solution can be implemented. The New York District slightly modified the interim plan proposed by the State of New York to meet pertinent criteria. This operation and maintenance manual is for the Modified New York State plan.

6. Interim Plan. The interim plan was initially developed as a short term solution to the severe erosion which has occurred along Westhampton Beach following the completed construction of the existing groin field. The plan was designed with the notion that a more long-term solution, such as the authorized plan, may be implemented some time after the interim plan was completed. The interim plan was developed with the intent to provide 30 years of erosion control, as required under the New York Environmental Conservation Law, Article 34, the Coastal Erosion Hazards Areas Act. The plan was designed based upon the premise that the interim project would be a soft solution to the areas west of the existing groin field, such that the interim project could either be reversed if found to be unacceptable or incorporated as a segment of the long-term project.

7. Modified New York State Plan Design. The design for this interim project is the Modified New York State Plan. This plan is depicted on Plates 1 through 19, and consists of two basic improvement features, namely: (1) placement of beachfill both within and west of the existing groin field and proposed groin transition area, and (2) modifications to existing groins 14 and 15 and construction of a new groin, 845 feet west of groin 14. The beachfill dimensions differ along the shoreline, according to the three placement areas as described in the following paragraphs.

8. The beachfill placement was designed to increase both the littoral transport in the project area and the level of protection west of groin 15. In the eastern portion of the project area, the beachfill extends from near groin 7 (Station 534+66) to groin 13 (Station 615+96). The design beachfill in this area (Figure 3a) is a 240-ft wide beach berm at elevation +9.5 ft. NGVD. The berm width is measured from the project reference line, which is on the order of 170 to 350 feet from the centerline of Dune Road right-of-way in the groin field portion of the project area. Fill has been placed in these groin compartments, as needed, to achieve the required berm width from the reference line. No dune construction was planned for this area because the existing dunes are adequate. The design beach slope is 1 V on 20 H from the berm crest to elevation -2.0 ft. NGVD. Seaward of this elevation, the design slope continues at 1 V to 30 H until the fill profile intersects the existing bottom. A wider and steeper construction profile was used when the project fill was initially placed. The design slopes were achieved through natural shaping of the profile from coastal processes over time (approximately 1-2 years).

9. A transitional fill area was provided for the 2,782 foot long segment of shoreline between existing groins 13 and 15. The main feature of this portion of the beach was a transitional berm width at el. 9.5 ft. NGVD which ties the 240 foot wide berm at groin 13 to the 90 foot wide berm at groin 15. The design beach slopes are the same as above. No additional dune construction was planned for this area.

10. The beachfill west of groin 15 extends a total distance of 10,020 feet from Station 643+80 to station 744+00. The design beachfill (Figure 3b) had a design berm width of 90 ft. at elevation +9.5 ft. NGVD, from Station 643+80 to Station 710+00. The berm transitioned from Station 710+00 to Station 744+00, where the design shoreline at 0 NGVD intersected the existing shoreline in Cupsogue Park. The design seaward slopes of this beachfill were the same as the slopes in the groin field. A dune section backed the design berm. The dune had side slopes of 1 V on 5 H, and a crest width of 25 ft. at elevation +15 ft. NGVD. Landward of the dune cross-section, fill was placed where required to the southern right-of-way of Dune Road, to provide elevation of +8 ft. NGVD. This landward area provides for a 25 foot dune buffer zone, adjacent to the dune for project maintenance, and a 75 ft. linear distance south of the right-of-way of Dune Road. Seven walkovers are provided for public access, plus one handicap ramp. The dune west of groin #15 included beach grass on the top & backslope and sand fence between the crest and seaward toe. The two borrow areas for the project, were located approximately .85 miles offshore and 2.9 miles east of and 1.4 miles west of groin #15.

11. The plan included the shortening and lowering of groins 14 and 15. Specifically, 55

feet were removed from the outer end of groin 14, while the inshore end of groin 14 was lowered from elevation +16 ft. NGVD to +13 ft. NGVD and the intermediate section repaired to restore design grades & interlocking (the rebuilt groin 14 is shown in Plate 14). Similarly, 198 ft. was removed from the outer end of groin 15, while the inshore end of groin 15 was lowered from crest elevation +16 ft. NGVD to crest elevation +9.5 ft. NGVD (the rebuilt groin 15 is shown in Plate 16). A new groin designated 14a was constructed at Station 637+05. Groin 14a has a total length of 337 feet and an inshore section top elevation of +11 ft. NGVD (Plate 15).

12. Plan Sheets. Plan sheets for the initial construction are shown as Plates 3 through 9. The survey reference line coordinates are shown on Plate 2 of the plan drawings.

13. Source of Material. The two borrow areas (designated west borrow area and east borrow area) for the interim project restoration and future project nourishments are shown on Figure 4. The volumes available from the currently designated eastern and western areas are presently insufficient to meet the project nourishment quantities for a 30 year project life, including initial and all renourishment operations. It is anticipated that areas from which additional material may be obtained include areas adjacent to the eastern and western areas. These areas were texturally analyzed for the 1980 GDM Supplement, and were found to contain suitable beach quality sediment. Any additional testing required of these areas will be performed prior to removal of material for future project nourishment.

Table A1: Construction Activities 1996-2009

Date	Action	Quantity (cy)	Location
July-Oct 1996	Interim Project 1996 (west of groin 15)	2,518,592	643+80 to 745+00
Aug-Nov 1997	Interim Project 1997 (groin shortening, fill within groins 7 to 15)	1,010,938	534+66 to 570+05; 615+96 to 744+00
Dec 2000-Jan 2001	1st Renourishment (Fill placement: Groins 7-10, 13-15, & west of groin field)	981,000	534+66 to 570+05; 615+96 to 744+00
Dec 2004-Jan 2005	2nd Renourishment (Fill placement: Groins 7-9, 13-15, & west of groin field)	759,000	534+00 to 558+38; 613+68 to 689+83
Dec 2008-Jan 2009	3rd Renourishment (Fill placement: Groins 13-15, & west of groin field	627,000	612+00 to 693+90

Note: the locations refer to stations along the survey baseline.

APPENDIX B

ENVIRONMENTAL MONITORING

1. Environmental Monitoring.

   a. Maintenance personnel should be advised that there are civil and criminal penalties for harming, harassing or killing the Federally-threatened piping plover (Charadrius melodus) and seabeach amaranth (amaranthus pumilus) under Section 9 of the Endangered Species Act. These species may be found within the project area.

   b. Rights of entry should be provided to the Corps, U.S. Fish and Wildlife Service or designated representative where possible, for the purpose of conducting shorebird (piping plover and New York State endangered least tern) and seabeach amaranth survey/monitoring, fencing, posting and predator exclosure activities. Access should be given during daylight hours during the shorebird breeding season (1 April to 1 September).

   c. Mechanical beach cleaning from groin 15 westward should be prohibited during the breeding season (1 April to 1 September) to preserve shorebird feeding habitat and seabeach amaranth habitat. Trash and litter should be picked up manually.

   d. Offroad vehicular traffic, excluding emergency vehicles should be prohibited between 1 April and 1 September.

(Attachment A is a copy of the final PCA
for this project)

Attachment B

INSPECTION, MAINTENANCE AND OPERATIONAL REPORT
WESTHAMPTON INTERIM PROJECT
MORICHES TO SHINNECOCK REACH

GENERAL

1. Inspections shall be made in March-April, i.e., at the beginning of the hurricane season and if possible, immediately before and after each hurricane or severe extratropical storm or other extreme high water event. Otherwise, inspections shall be made at intervals not to exceed three (3) months, and also at such intermediate times as may be necessary to insure the best possible care of the beach, dunes and groins.

2. Two copies of inspection reports shall be submitted to:

Chief, Operations Division
Attn: Readiness Unit, Mr. Randall Hintz
U.S. Army Engineer District, New York
Corps of Engineers
26 Federal Plaza
New York, NY 10278-0090

One copy of inspection reports shall be submitted to:

Chief, Engineering Division
Attn: Civil Resources Branch
U.S. Army Engineer District, New York
Corps of Engineers
26 Federal Plaza
New York, NY 10278-0090

Reports shall be submitted no later than 10 days after inspection.

3. These forms shall be used as a checklist in making each inspection, and the conditions requiring maintenance work shall be inserted in the appropriate spaces. On the form on which the conditions requiring maintenance was first reported, there shall be inserted explanatory information describing the methods employed to correct the condition; or, in the event the inspection form is submitted prior to corrective action being taken, information shall be inserted regarding arrangements that have been made to have these conditions altered with corrective actions confirmed in the next report.

4. Maintenance or repair shall be performed as required to insure serviceability of the structures in time of hurricane or other severe storm.

5. If spaces provided for the insertions are insufficient, the information should be continued on plain sheets and attached to the report.

WESTHAMPTON INTERIM PROJECT
MORICHES TO SHINNECOCK REACH

CHECK SHEET FOR INSPECTION OF STONE GROINS

( ) Routine Inspection
( ) Prior to Hurricane Season
( ) Prestorm
( ) Post Storm
( ) Other _____

Groin _____ Location _____

Inspected by _____ Date _____

Item	Location on Structure	Structure Condition
1. Settlement, caving or sloughing		
2. Core or cap stone displaced, removed, or cracked through or lost of interlocking		
3. Toe Scour		
4. Unauthorized excavation or vandalism		
5. Unraveling of offshore end		
6. Accumulation of drift or debris		
7. Flanking at inshore end		
8. Excessive erosion or accumulation of sand adjacent to structure		

Required Maintenance Action(s):_____

WESTHAMPTON INTERIM PROJECT
MORICHES TO SHINNECOCK REACH

CHECK SHEET FOR INSPECTION OF BEACH, BERM AND DUNES

( ) Routine Inspection
( ) Prior to Hurricane Season
( ) Prestorm
( ) Post Storm
( ) Other _____

Inspected by _____ Date _____

Location _____

Item	Location along Project	Dune or Berm Condition
1. Unusual settlement		
2. Sloughing		
3. Erosion of berm or dune cross section		
4. Escarping		
5. Unauthorized excavation or vandalism		
6. Topping of berm or dune during high water		
7. Accumulation of drift or debris		
8. Excessive growth of undesirable grass and weeds		
9. Localized wind or wave erosion		

10. Encroachment ondune and berm right-of-way(unauthorized vehicular traffic, construction,etc.)

_____

11. Sand Fence/dune grass condition

_____

12. Sand accumulation on streets or accessways

_____

13. Condition of Public Accessways

_____

14. Excessive accumulationOf beach berm/dune

_____

Required Maintenance Action(s):_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

General Condition of dune and berm:

( ) good ( ) fair ( ) poor

Remarks:_____
_____
_____
_____
_____

WESTHAMPTON INTERIM PROJECT
MORICHES TO SHINNECOCK REACH

CHECK SHEET FOR PRE & POSTSTORM AND QUARTERLY BEACH WIDTHS

Profile Number	Prestorm/ Quarterly Beach Width (ft)	Poststorm Beach Width (ft)	Profile Number	Prestorm/ Quarterly Beach Width (ft)	Poststorm Beach Width (ft)

Note: Beach width is measured from the origin point on the profile
to the seaward base of the dune, and from the seaward base of the dune to Mean High Water

Measured by:_____
Description of storm: ( ) hurricane ( ) extratropical ( ) other
Storm Duration:
_____
Approximate high water during event:
_____ Observed wave heights & direction:_____
Other local damage due to event:_____
_____
_ Required Maintenance Action(s):_____
_____
_____

WESTHAMPTON INTERIM PROJECT
MORICHES TO SHINNECOCK REACH

CHECK SHEET FOR MARCH-APRIL BEACH PROFILE MEASUREMENT
(Use one sheet for each profile line)

Date _____ Corps of Engineers Profile Number _____

Profile Origin Coordinates _____N _____E

Point Number	Distance from Origin	Elevation (Ft. NGVD)	Point Number	Distance from Origin	Elevation (Ft. NGVD)

Required Maintenance
Action(s):_____

WESTHAMPTON INTERIM REACH
MORICHES TO SHINNECOCK REACH

SAMPLE MAINTENANCE REPORT

Date of Maintenance:_____ Date of Report: _____

Work done by: _____

Inspection done by: _____

1. Type of damage requiring action: _____

_____

_____

2. Cause of damage (include type of storm and date if appropriate):

_____

_____

_____

3. Maintenance action taken: _____

_____

_____

_____

4. Maintenance performed by: _____

_____

_____

5. Additional maintenance required: _____

_____

_____

ATTACHMENT C: SURVEY RECOVERY SHEETS

Westhampton Profile P35 Origin Recovery Sheet

Coordinates (NAD83): N 230,308.2; E 1,356,335 (Azimuth 159^{o})

Description: Origin is marked by a wood stake

Nearest Landmark: between House #331 and #333

Location: 55 ft from SE Corner of Middle Timber Walkway Landing

18 ft. East of Timber Walkway

Holding Tape on P35 Origin, Photo looking NNW

Last recovery date: April 12, 2012

Westhampton Profile P33 Origin Recovery Sheet

Coordinates (NAD83): N 230,005; E 1,354,561 (Azimuth 159^{o})

Description: Origin is unmarked

Nearest Landmark: on pavement fronting Dune Deck parking lot

Location: 42 ft from nearest SE Utility Pole

92 ft from nearest SW Utility Pole

Standing on P33 Origin
and Looking South

Last recovery date: April 12, 2012

Westhampton Profile P32 Origin Recovery Sheet

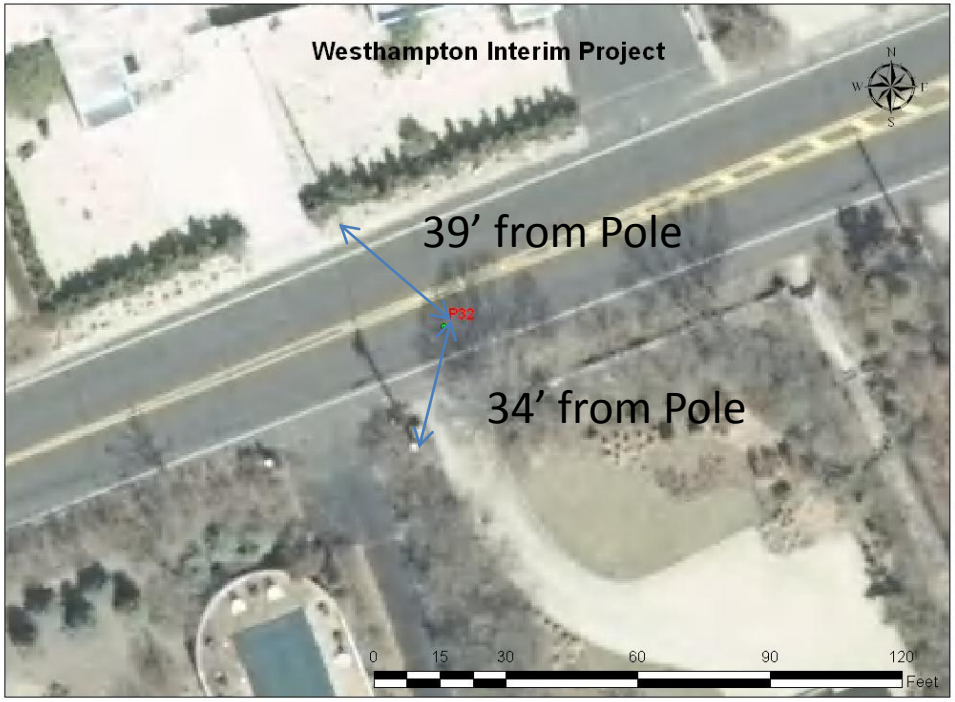
Coordinates (NAD83): N 229,705.8; E 1,353,793 (Azimuth 159^{o})

Description: Origin is unmarked on pavement.

Nearest Landmark: House #397

Location: 39 ft from nearest NW Utility Pole

34 ft from nearest SW Utility Pole



Standing on P32
Origin Looking South

Last recovery date: April 12, 2012

Westhampton Profile P30 Origin Recovery Sheet

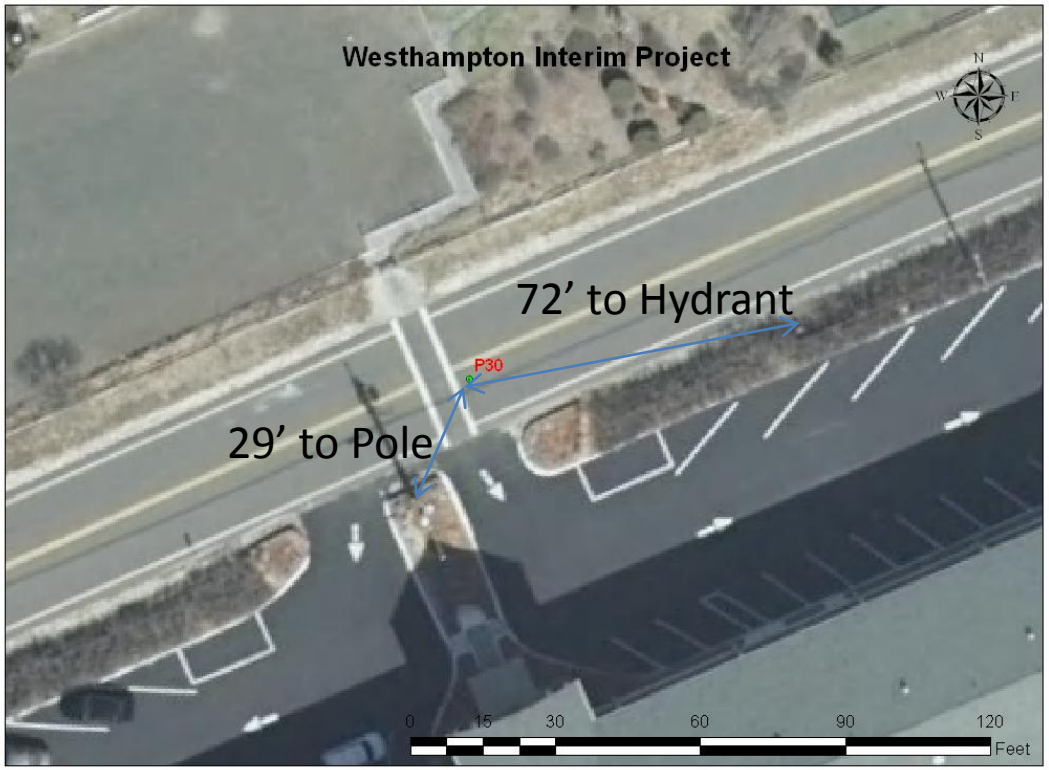
Coordinates (NAD83): N 229,044.1; E 1,352,160 (Azimuth 159^{o})

Description: Origin is unmarked

Nearest Landmark: on the pavement fronting parking lot

Location: 72 ft from nearest E Hydrant

29 ft from nearest SW Utility Pole)



Standing on P30 Origin, photo looking South

Last recovery date: April 12, 2012

Westhampton Profile P28 Origin Recovery Sheet

Coordinates (NAD83): N 228,326; E 1,350,293 (Azimuth 159^{o})

Description: Origin is unmarked on pavement

Nearest Landmark: House #512

Location: 68 ft from nearest E Utility Pole

61 ft from nearest SW Utility Pole

Standing on P28 Origin (Photo Looking South)

Last recovery date: April 12, 2012

Westhampton Profile P26 Origin Recovery Sheet

Coordinates (NAD83): N 227,768.9; E 1,348,793 (Azimuth 159^{o})

Description: Origin is unmarked on pavement

Nearest Landmark: Between House #557 and #559

Location: 11 ft from nearest SW Utility Pole

Standing on P26 Origin (Photo Looking South)

Last recovery date: April 12, 2012

Westhampton Profile P24 Origin Recovery Sheet

Coordinates (NAD83): N 227,149.7; E 1,347,106 (Azimuth 159^{o})

Description: Origin is unmarked on pavement

Nearest Landmark: House #605

Location: 62 ft from nearest E Utility Pole

75 ft from nearest SW Utility Pole

Standing on P24 Origin Looking South

Last recovery date: April 12, 2012

Westhampton Profile P23 Origin Recovery Sheet

Coordinates (NAD83): N 226,794.1; E 1,346,168 (Azimuth 159^{o})

Description: Origin is unmarked on pavement

Nearest Landmark: House #637

Location: 67 ft from nearest E Utility Pole

54 ft from nearest SW Utility Pole

Standing on P23 Origin, Photo Looking South

Last recovery date: April 12, 2012

Westhampton Profile P21 Origin Recovery Sheet

Coordinates (NAD83): N 226,634.8; E 1,344,887 (Azimuth 159^{o})

Description: Origin is unmarked

Nearest Landmark: House #673

Location: 42 ft to SW corner of house to the East

7 ft to the SE corner of the utility pad of the house to the West

Standing on P21 Origin
Looking South

Last recovery date: April 12, 2012

Westhampton Profile P19 Origin Recovery Sheet

Comment: P19 was relocated 11 ft to the SWW due to new construction. Coordinates have not been adjusted.

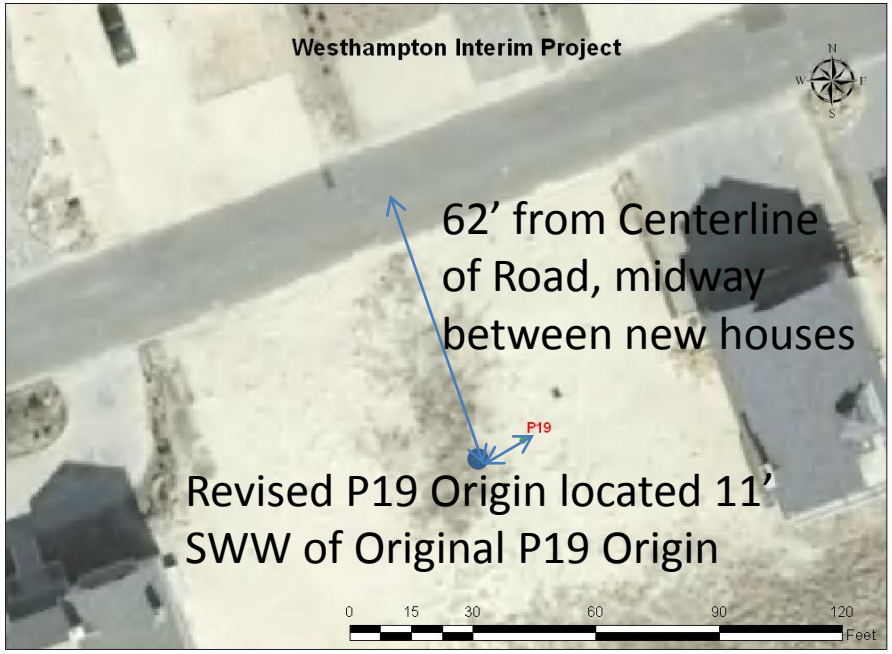
Coordinates (NAD83): N 226,644; E 1,343,297 (Azimuth 159^{o})

Description: Origin is unmarked

Nearest Landmark: Between House #723 and #725

Location: 42 ft to SW corner of house to the East

7 ft to the SE corner of the utility pad of the house to the



Standing on Revised P19 Origin, Photo Looking South

Last recovery date: April 12, 2012

Westhampton Profile P17 Origin Recovery Sheet

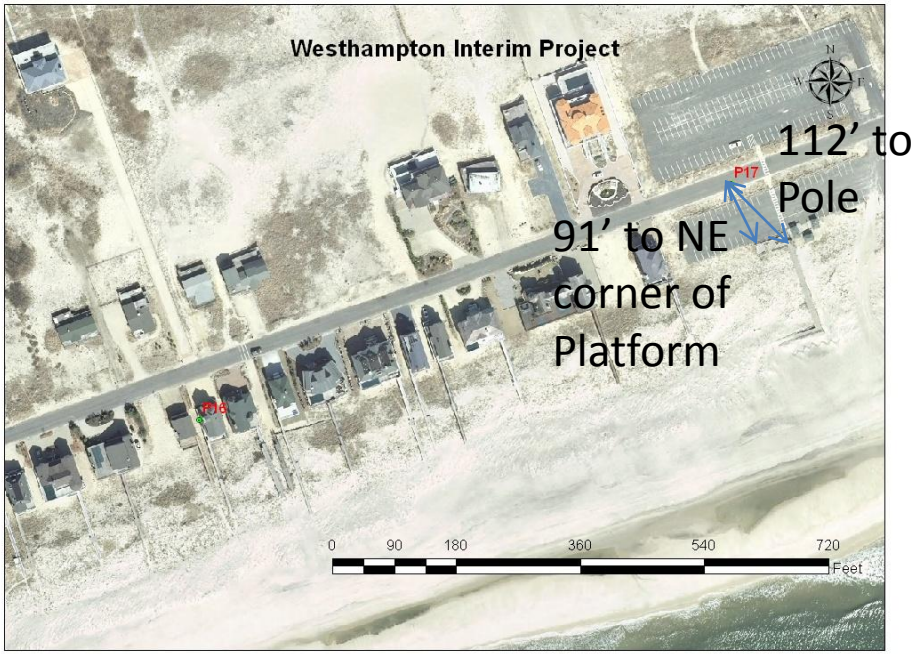
Coordinates (NAD83): N 225,206.5; E 1,341,899 (Azimuth 159^{o})

Description: Origin is unmarked

Nearest Landmark: In large parking lot

Location: 112 ft to Utility Pole

91 ft to the NE corner of Timber Platform



Standing on P17 Origin
Looking South

Last recovery date: April 12, 2012

Westhampton Profile P15 Origin Recovery Sheet

Comment: Origin was Relocated Approx. 50 ft to SWW due to new construction. Coordinates have not been changed.

Coordinates (NAD83): N 224,629.8; E 1,340,467 (Azimuth 159^{o})

Description: Origin is unmarked

Nearest Landmark: House #819

Location: 37 ft to NNW Pole

51 ft to the SE Corner of the House to the West

Standing on P15 Origin, Photo Looking South

Last recovery date: April 12, 2012

Westhampton Profile P13 Origin Recovery Sheet

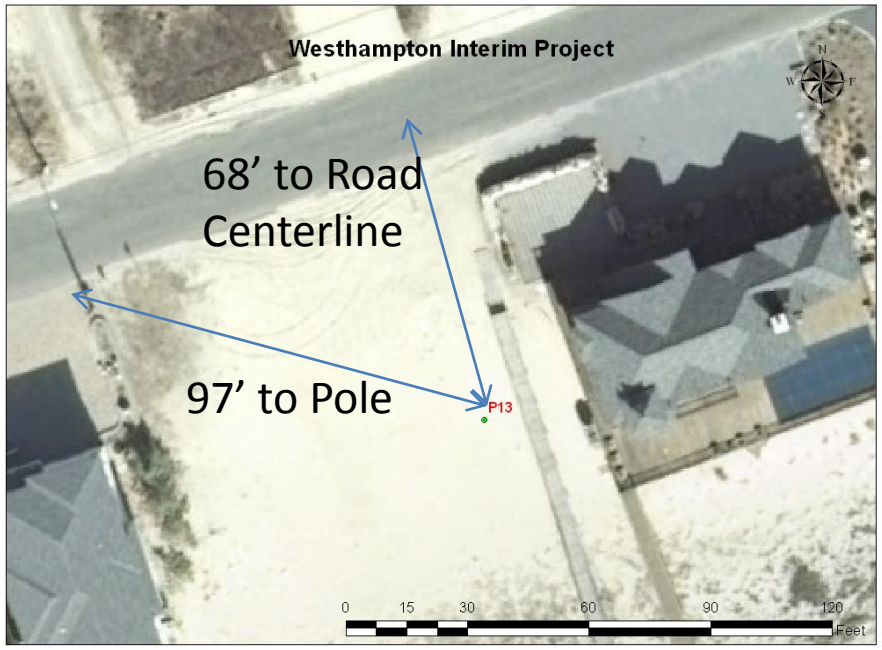
Coordinates (NAD83): N 224,194.8; E 1,339,250 (Azimuth 159^{o})

Description: Origin is unmarked

Nearest Landmark: House #857, and Inside County Park

Location: 68 ft to Centerline of Road

97 ft to the NW Utility Pole



Standing on P13 Origin, Photo Looking SSE

Last recovery date: April 12, 2012

Westhampton Profile P10 Origin Recovery Sheet

Comment: Origin was Relocated Approx. 50 ft to SWW due to new construction. Coordinates have not been changed.

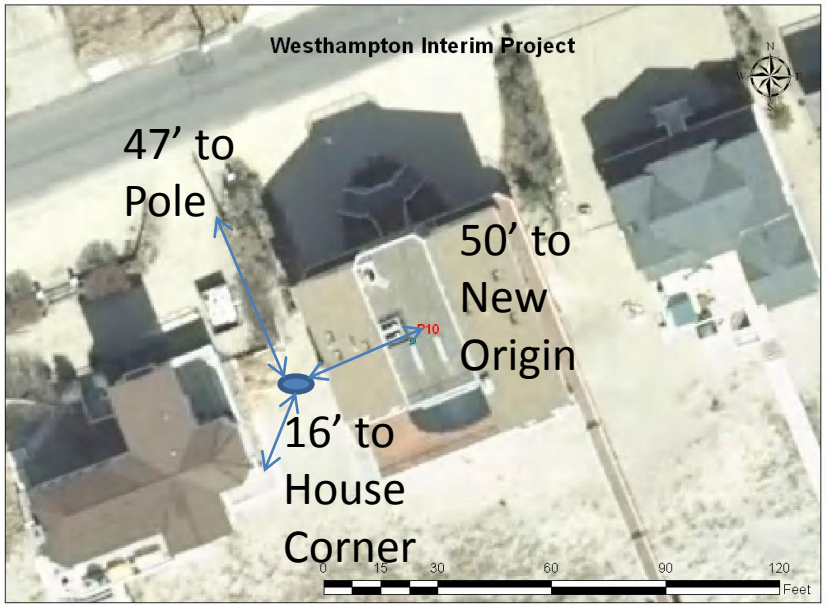
Coordinates (NAD83): N 223,639.7; E 1,337,744 (Azimuth 159^{o})

Description: Origin is unmarked

Nearest Landmark: House #915

Location: 47 ft to NNW Pole

16 ft to the SE Corner of the House to the West



Standing on P10 Origin, Photo Looking South

Last recovery date: April 12, 2012

Westhampton Profile P8 Origin Recovery Sheet

Comment: Origin was Relocated Approx. 20 ft to SWW due to new construction. Coordinates have not been changed.

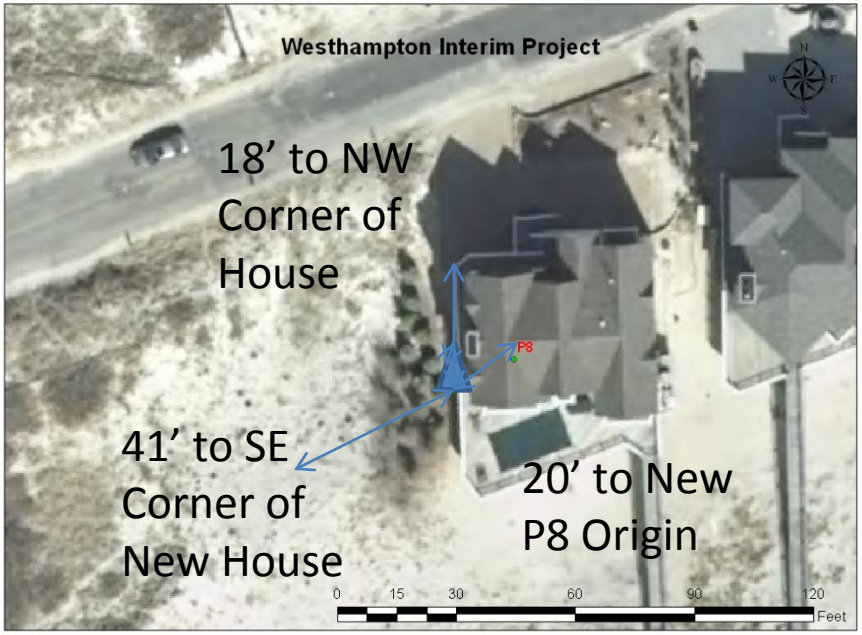
Coordinates (NAD83): N 223,174.7; E 1,336,531 (Azimuth 159^{o})

Description: Origin is unmarked

Nearest Landmark: House #955

Location: 18 ft to NW Corner of House

41 ft to the SE corner of the House to the West



Looking South, with Orange Tape Marking P8 Origin

Last recovery date: April 12, 2012

Westhampton Profile P6 Origin Recovery Sheet

Coordinates (NAD83): N 222,779.1; E 1,335,613 (Azimuth 159^{o})

Description: PVC Encased Rebar in Concrete Footing

Nearest Landmark: Parking Lot

Location: On Dune Crest SSE from Corner of Chain Link Fence

Looking South at P6 Origin, from Fence Corner

Looking South at P6 Origin

Last recovery date: April 12, 2012

DRAFT