NPS Form 10-900
(Oct. 1990)

OMB No. 10024-0018

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in *How to Complete the National Register of Historic Places Registration Form* (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If an item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instruction. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name: Fire Control Tower No. 23

other names/site number:

2. Location

street and number: Sunset Boulevard N/A not for publication

city or town: Lower Township N/A vicinity

state: New Jersey county: Cape May County 009 zip code: 08212

3. State/Federal/Tribal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this [x] nomination [ ] request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property [x] meets [ ] does not meet the National Register criteria. I recommend that this property be considered significant [ ] nationally [x] statewide [ ] locally. ([ ] See continuation sheet for additional comments.)

Signature of certifying official/Title Date

Marc A. Matsil, Assistant Commissioner Natural & Historic Resources/DSHPO

State or Federal agency and bureau American Indian Tribe

In my opinion, the property [ ] meets [ ] does not meet the National Register criteria. ([ ] See continuation sheet for additional comments.)

Signature of certifying official/Title Date

State or Federal agency and bureau American Indian Tribe

4. National Park Service Certification

I hereby certify that the property is: Signature of the Keeper Date of Actior

[x] entered in the National Register. Patrick Andrus 11/17/2003
[ ] See continuation sheet.
[ ] determined eligible for the National Register.
[ ] See continuation sheet.
[ ] determined not eligible for the National Register.
[ ] removed from the National Register.
[ ] other. (explain:) _____

5. Classification

Ownership of Property
(Check as many boxes as apply)

- [ ] private
- [ ] public-local
- [X] public-State
- [ ] public-Federal

Category of Property
(Check only one box)

- [X] building(s)
- [ ] district
- [ ] site
- [ ] structure
- [ ] object

Number of Resources within Property
(Do not include previously listed resources in the count.)

Contributing	Noncontributing	
1		buildings
		sites
		structures
		objects
1	0	Total

Name of related multiple property listing
(Enter "N/A" if property is not part of a multiple property listing.)

N/A

Number of contributing resources previously listed in the National Register

N/A

6. Function or Use

Historic Functions
(Enter categories from instructions)

Defense

Historic Subfunctions
(Enter subcategories from instructions)

Military Facility

Current Functions
(Enter categories from instructions)

Vacant/Not In Use

Current Subfunctions
(Enter subcategories from instructions)

7. Description

Architectural Classification
(Enter categories from instructions)

Other

Materials
(Enter categories from instructions)

Foundation	Concrete
Walls	Concrete
Roof	Concrete

Narrative Description
(Describe the historic and current condition of the property on one or more continuation sheets.)

8. Statement of Significance

Applicable National Register Criteria

(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

- [X] **A** Property is associated with events that have made a significant contribution to the broad patterns of our history.
- [ ] **B** Property is associated with the lives of persons significant in our past.
- [ ] **C** Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- [ ] **D** Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations

(Mark "x" in all the boxes that apply.)

Property is

- [ ] **A** owned by religious institution or used for religious purposes..
- [ ] **B** removed from its original location.
- [ ] **C** a birthplace or grave.
- [ ] **D** a cemetery.
- [ ] **E** a reconstructed building, object, or structure.
- [ ] **F** a commemorative property.
- [ ] **G** less than 50 years of age or achieved significance within the past 50 years.

Areas of Significance

(Enter categories from instructions)

Military

Period of Significance

1942-1944

Significant Dates

1942

Significant Person

(Complete if criterion B is marked above)

N/A

Cultural Affiliation

Architect/Builder

Army Corps of Engineer, Phila

9. Major Bibliographical References

Bibliography

(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS:)

- [ ] preliminary determination of individual listing (36 CFR 67) has been requested.
- [ ] previously listed in the National Register
- [ ] previously determined eligible by the National Register
- [ ] designated a National Historic Landmark
- [ ] recorded by Historic American Buildings Survey
- [ ] recorded by Historic American Engineering Record
- [ ] See continuation sheet for additional HABS/HAER documentation.

Primary location of additional data:

- [ ] State Historic Preservation Office
- [X] Other State Agency (Repository Name: Delaware State Historic Preservation Office)
- [X] Federal Agency (Repository Name: National Archives, College Park and Philadelphia)
- [X] Local Government (Repository Name: Cape May County Courthouse and Historical Society)
- [ ]
- [X] Other (Repository Name: Cape May Point State Park and Cape Henlopen State Park)

10. Geographical Data

Acreage of Property: 0.9

UTM References
(Place additional UTM references on a continuation sheet.)
18 502823 4310278

Verbal Boundary Description
(Describe the boundaries of the property on a continuation sheet.)

Boundary Justification
(Explain why the boundaries were selected on a continuation sheet.)

11. Form Prepared By

name/title: Margaret Newman, Historic Preservation Specialist

organization: Holt Morgan Russell Architects date: 7/1/2002

street & number: 350 Alexander Street telephone: (609) 924-1358

city or town: Princeton state: New Jersey zip code: 08540-

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps

A **USGS map** (7.5 or 15 minute series) indicating the property's location.

A **Sketch map** for historic districts and properties having large acreage or numerous resources.

Photographs

Representative **black and white photographs** of the property

Additional items
(Check with the SHPO or FPO for any additional items)

Property Owner

(Complete this item at the request of the SHPO or FPO.)

name: State of New Jersey, Division of Parks and Forestry

street & number: 501 East State Street, P.O. Box 404 telephone: (609) 984-0370

city or town: Trenton state: New Jersey zip code: 08625-

Architectural Description

Fire Control Tower No. 23 is located on Sunset Boulevard in Lower Township, Cape May County, New Jersey. Set in an area that is now undeveloped (Photos 1, 2) but was once surrounded by an industrial plant at the tip of Cape May, Fire Control Tower No. 23 is a cast-in-place, reinforced concrete, cylindrical tower, owned by the State of New Jersey and a part of Cape May Point State Park. The Tower was built in 1942 as a component of a visual fire control, or targeting, system used to direct coastal guns to protect American shores during World War II. Part of the Harbor Defenses of the Delaware, an element of the 1940 modernization of the national system of coastal defense, the Tower was an integral part of Fort Miles based at Cape Henlopen, Delaware.

In this visual system developed in the beginning of the 20th century, soldiers stationed in the Tower scanned the horizon for enemy ships. If a ship was spotted, the observers identified its exact location using an azimuth, a visual instrument that provided the geographic coordinates of the target. These coordinates were sent to the plotting room of a gun battery where with at least one other set of coordinates obtained from another tower, the aiming point of the guns was determined. Fire Control Tower No. 23 worked in conjunction with three other New Jersey towers to help aim the guns of the battery located in Cape May.

Tower No. 23 is 71-feet tall with a diameter of 17 feet. Its walls and roof are 1 foot thick. It has an overhanging, concrete roof with a diameter of 20 feet (Photos 3, 4). There are six levels in the Tower that are separated by 6-inch concrete floors. Each level has windows; Levels 1-5 have four openings in the walls that roughly correspond to the compass directions. On Level 1, there are three windows and a door on the East Elevation (all now blocked in). Level 2-5 each has four windows, which originally housed wood frames, sash and screens (Photos 5, 7, 9). Some of these frames survive and one sash is partially extant. Level 6, the observation level, has two 12-inch slit windows that run three quarters of the circumference of the Tower (Photos 6). Although no longer extant, the roof originally had a wood railing around it (Figure 1).

The interior of the Tower is largely utilitarian, with the majority of the levels having unfinished concrete floors, walls and ceilings (Photos 7, 8). Each level retains six original features in addition to the windows, common throughout. A three-sided concrete flue located almost due north traverses each interior floor. This flue has an interior terra cotta vertical stack. At each level, a metal sleeve is attached. This flue and sleeve were built to vent the coal space heaters that were housed in the Tower. On Level 1, there is a rectangular opening at the bottom of the flue, providing access to clean it (see Photo 7). To the east of the flue on each level, there are four round openings in each floor and ceiling. These accepted the wiring for the utilities of the tower. In the case of Fire Control Tower No. 23, there was only a single wire and hole used; the only utility within the Tower was a telephone communication system which

Architectural Description

connected the Tower to the plotting room of the Cape May gun battery. The concrete floor of each level has two openings: one circular, the other semi-circular. The circular opening is located in the same spot on each floor. This was originally used for hoisting equipment up from the ground level. When not in use, this opening was covered. Similar to a manhole, the cover was recessed within the opening so it could be flush with the floor. In addition to the hoist opening, there is also a semicircular ladder opening on each level. This opening is located in two places, staggered between levels. This ensured that if a soldier fell from a ladder, he would only fall to the floor below, not all the way through the tower. The ladders between floors were originally wood, tied into the concrete walls with metal brackets; one ladder survives between Level 5 and 6. At each ladder opening, there is a metal handrail that surrounds it.

While Levels 1-4 are basically identical and served as intermediary access to the top two floors, Level 5 and Level 6 were the working floors of the Tower. Each has unique features that illustrate the role each played in the functioning of the Tower. Both are currently painted bright blue. While this may not be original, it is unclear when the paint was added. Level 5 has tongue and groove flooring covering the concrete. In front of the concrete flue, there is a 3-foot x 3-foot metal sheet nailed to the floor (Photo 9). Both the flooring and metal sheet are original. We believe this level was used as the day room where those who were on duty but not on observation duty were housed. A team of three or four probably manned the Tower. Two would have manned the observation level while the other soldier(s) was called up from Level 5 if required. The wood flooring and coal space heater made the space more comfortable. The metal sheet provided protection of the wood floor from the heat and sparks of the coal heater. At the ladder opening in the wood floor, there was a hatch that could further seal off this level to retain the heat. Hinges from this hatch are still extant (Photo 10). From Level 5, the extant original wood ladder brings one up to Level 6, the observation level.

Level 6 is a two-step observation level—a lower section towards the west and a higher level towards the east—that has the two slit windows. The concrete openings of the slit windows were covered with a system of wooden windows (Photos 11, 12). The top windows were operable; they slid up and down on metal rods to either cover or expose the opening. The windows on the bottom had fixed wood sash. Originally, the azimuth instrumentation was housed on the lower level. A triangular pattern of holes in the concrete, indicating the tripod that held the instruments, marks the spot of their original location, flanking the hoist opening. Level 6 also has the same blue paint on the wall found on Level 5. There is also some indication of red paint on the floor. This does not appear to be original and was more than likely added after it was no longer used by the military. A movable ladder that no longer survives brought observers out to the roof through a square opening located to the west. This ladder was movable; if permanent, its location would have obscured the view through the observation windows.

Architectural Description, continued

Because of the long-range capabilities of the new weaponry developed during the 1930s and the fact that the aiming system was still optically based, there was a need for many fire control towers. Multiple towers for each gun not only allowed for target tracking from different points of view but also ensured that if there was a combat causality, the fire control system could remain intact. At Fort Miles, the Army Corp of Engineers built fifteen cylindrical concrete towers with one, two and three observation decks—four in New Jersey and eleven in Delaware. The number of decks and height of the towers was determined to ensure that total visual coverage for the guns was obtained. In New Jersey, there were four towers built, two in Cape May, one in Wildwood Gables (now Wildwood Crest) and one in North Wildwood. All of these towers had a two-step upper observation level; the other Cape May tower had an additional level, as did the one in Wildwood Crest.

Fire Control Tower No. 23 is representative of the fire control, or base end stations, built during the 1940 Modernization Program in which standardization of the plans for fortifications was emphasized. Along the flat Atlantic and Gulf coasts, these stations were generally located in towers; on the Pacific, they were dug into elevated coastal slopes. The Atlantic Coast towers were simple concrete towers, either square or cylindrical. Most were left unadorned, although some were disguised as water towers, lighthouses or beachfront houses. The homogenization of design simplified maintenance, training and ammunition manufacture. This can be seen throughout the fortifications, especially with the fire control stations. While the stations may look different from the exterior, they all functioned the same way and were basically the same on the interior. Whether towers or built into the cliff, built square or round, in concrete or steel, with wood or steel, there is a uniformity of function that is universal to all forts of this era. Fire Control Tower No. 23 is a good, largely intact, example of the function of the fire control towers in national defense during the World War II era.

Statement of Significance

Fire Control Tower No. 23 is eligible for the National Register of Historic Places under Criterion A for its association with the U.S. coastal defense system established during World War II. Built between June and September 1942 as part of the Harbor Defenses of the Delaware, a component of the 1940 modernization of the United States system of coastal defense, Fire Control Tower No. 23 was an integral part of Fort Miles based at Cape Henlopen, Delaware established to protect resources in Delaware, Pennsylvania and New Jersey. Working with the other New Jersey towers, observers in Tower No. 23 used azimuth instruments and sent target coordinates to the plotting room where, through triangulation with at least one other tower, the aiming point of the gun was determined and the guns located at Cape May were aimed. Initially, two 155-mm guns were located in Cape May. In 1943, Battery 223 with its two 6-inch guns replaced these first guns. Tower No. 23 provided position finding for both.

Increased technological advances in long-range weaponry during the 1930s had two important effects on coastal fortification design. On the weaponry side, fewer fortifications were required to protect the same area. This reduced the number of guns but increased the fire control network. At this stage, fire control remained a visual system. As many as a dozen observation stations were required to visually cover the range of a single gun. On the fortification side, the increased range of armaments from both battleships and airplanes meant that all the components of the permanent harbor defenses needed to be able to withstand a direct hit. This resulted in structures that were built of thick, reinforced concrete.

The upgrading of the American defenses was begun when the Harbor Defense Board drafted a new harbor defense master plan and began construction in 1940. This was a reaction to the belief that the American defenses were inadequate and events on the world stage that indicated it was time for modernization. While activities occurring in the U.S. after 1940 may have added to the urgency for the need for modernization—including the attack on Pearl Harbor and the German submarine offensive off the East Coast in 1941-42—the overhaul of the coastal defense system was not done in reaction to these events. It was based on the 1940 plan and was underway long before these events occurred.

The 1940 Modernization of the Coastal Defense was a significant chapter in the history of the defense of the United States. By 1940, the increasing emphasis on national defense due to troubles in Europe and Japan led to a complete overhaul of the American defense system based on the San Francisco model. This modernization program was to be comprehensive, covering both coasts of the United States, Hawaii, areas of the Caribbean, the Panama Canal Zone and beyond. The modernization of the Harbor Defenses of the Delaware and the four fire control towers built in New Jersey was included in this program. By the end of World War II, about two-thirds of the system was constructed. Fire Control Tower No. 23 is an important surviving element of this system of national protection.

Statement of Significance, continued

Historical Background

Today, Sunset Boulevard, the location of Fire Control Tower No. 23, is a remote part of Cape May County at the tip of the State of New Jersey. Once the site of commercial, residential and even industrial development, it is now a part of the 125-acre Cape May Point State Park.

In 1623 Cornelius Jacobus Mey of the Dutch West India Company sailed into the Delaware Bay. He called the land to the west Cape Cornelius and the land to the east, Cape Mey. South of Cape Cornelius he named for an associate Thymen Jacobsen Hindlopen. Hindlopen and Mey stuck and became Cape May and Cape Henlopen. At the time of the arrival of the Dutch West India Company, the Sickoneysincks, Lenape Indians, occupied both areas.[1]

In 1816, at the end of what is now called Sunset Boulevard but was originally called the Cape Island Turnpike, the road that has connected Cape May Point to Cape May since the beginning of the nineteenth century, Captain Wilmon Whilldin established a landing for a passenger steamship that provided service between Cape May and Philadelphia. For most of the nineteenth century, upon arriving at Cape May Point, passengers boarded hotel wagons and traveled to Cape May on the Cape Island Turnpike. The steamer spurred development along the Cape Island Turnpike;[2] an early map of Cape May Point shows houses along the road as early as the 1840s.[3] With the introduction of rail service, passengers used the Delaware Bay and Cape May Railroad, which brought them from the landing to Cape May City along the oceanfront by the Cape May Lighthouse. Development followed; houses sprang up at Sea Grove, an 1875 Presbyterian resort constructed near the Lighthouse and rail line.

The Whillden family originally owned the property on which Fire Control Tower No. 23 is located.[4] While the spelling varies, the Whilldens were early settlers to the area. Wilmon Whilldin began the steamship from Philadelphia; Isaac Whillden owned the Tower 23 property; Alexander Whilldon founded Sea Grove.[5] Early maps of the area indicate that there may have been a house near or even on the site of Tower No. 23. On several maps, there is a house indicated with the name "Little" or "J.H. Little."[6] However, deed research does not corroborate this. No deeds were found under the name of "Little" and the deeds associated with the project site do not show the name "Little." This may mean that the Little family rented the building seen on the maps. However, according to the deeds, there does not appear to have been a structure built on the site until the Tower was built in 1942. More than likely, therefore, the building seen on the maps was located next to the project site not on it (Figures 1, 2).

The steamship ceased operation in 1903. In 1905, the Cape May Sand Company began operations at Cape May Point. Because of its proximity to the fresh water of the Delaware River, this was an ideal location for a processing plant for construction sand. Production continued through the early 1940s when intensive mining in combination with the erosion of the bay led to an end of the sand operation.[7] This industry was located next to Fire Control Tower No. 23 and was still in limited production when the Army selected the site.[8]

Statement of Significance, continued

This selection of the site by the Army and the closing of the Cape May Sand Company occurred simultaneously with the introduction of magnesite production at Cape May Point. In the early 1940s, the Northwest Magnesite Company began constructing a plant across Sunset Boulevard from the Tower property. During the late 1930s-early 1940s, production of magnesite was established in the U.S. because sources of natural magnesite ore—Austria, Greece and China—were cut off because of war. While there was some naturally occurring magnesite in the U.S., particularly in the Northwest (hence the name Northwest Magnesite Company which began in the state of Washington), the natural supply was not sufficient to meet U.S. needs. Faced with the same problem, English scientists developed a way to extract magnesite, a mineral that consists of magnesium carbonate, from seawater. At Cape May, the Northwest Magnesite Company used magnesite for the production of refractory bricks. These bricks were used in high temperature furnaces at steel mills and other facilities. The ability of these bricks to withstand high temperatures made them essential to steel production. With the onset of war, steel was in great demand; a large quantity of magnesite was needed to support its production. The Northwest Magnesite Company first looked at Lewes, Delaware for its eastern base of operations; however, this land had already been taken by the Army as the future home of Fort Miles. With the demise of the Cape May Sand Company, Cape May Point was an ideal location for the extraction process. Seawater was pulled in and mixed with water and dolomite from Chester County, Pennsylvania, which converted the soluble magnesium salts of seawater into milk of magnesia. This substance was processed further and made into bricks. Because seawater contained only a small fraction of the metal (.13 percent), hundreds of millions of gallons were extracted per day.[9] Construction of the magnesite plant began in early 1942.[10] The magnesite plant coexisted with Fire Control Tower No. 23 for the duration of the Tower's tenure with the Army; the Northwest Magnesite Company eventually owned the Tower (Figure 3). Magnesite production was the largest industrial enterprise in Cape May County and employed hundreds of local workers until it closed in 1983.[11]

Coastal Defense History of the United States

Early in 1794, the United States undertook its first national program of construction for its own protection. This system focused exclusively on its seacoast communities where distinctly defensive forts were built to discourage attack as well as provide protection if an attack were to occur. In the eighteenth century, guns on shore were much more dependable and accurate than those afloat. The mere presence of guns and fortifications, therefore, was seen as a reliable method of deterrence. The fortifications and its guns were placed to deny the enemy a strategic position or at least, to force the enemy to move into positions pre-selected by the defender into open locations or otherwise unattractive areas. By placing the forts in the right location, an economical use of personnel and equipment could be assured. This was an important feature of these early American fortifications; the American public was generally against possessing a standing, professional army. The early characteristics of the first system of fortification—defensive and economical—continued throughout the history of American coastal defense in which eight generations of systems were developed.[12]

Statement of Significance, continued

Following the first system, which emphasized open works and earthen parapets, more permanent fortifications of stone construction, were built. The second system of construction was built from 1804-1812, just before the impending War of 1812. These forts were often star shaped. Fort McHenry in Baltimore and the island fort, originally called Fort Wood, which now houses the Statue of Liberty are two extant examples from this period of construction. The third and fourth systems of seacoast fortifications were devised in the years 1817-1867 and largely continued the second system. Overseen by French fortification expert, Simon Bernard, the Bernard Board established a national infrastructure that was based on hexagonal fortifications. Fort Sumter in Charleston, South Carolina is one from this era that survives. Following the Civil War where technological innovations in armament had made the single fort a hindrance rather than a strategic advantage, the fifth system, 1870-1875, evolved into dispersed batteries over large stretches of land. This system was further honed in 1885 when President Cleveland and his Secretary of War, William Endicott, established a board to review the entire coastal defense infrastructure. Known as the Endicott Period (1890-1910), the sixth system emphasized weapons rather than fortifications for the first time. Reinforced concrete batteries were built to blend into their surrounding; disappearing carriages allowed guns to be hidden when not in use. Heavy guns were installed around the continental harbors. This period lasted through the Spanish-American War and into the first years of the twentieth century. Fort Mott, located in Pennsville, New Jersey, is a fort with features from this era. In 1905, President Roosevelt and his Secretary of War William Howard Taft devised the seventh system known as the Taft Period. This system accessorized the Endicott period defenses with searchlights and electrification. A new aiming system was developed during the Taft Period. Prior to this, sighting instruments on individual guns did the aiming. This was highly ineffective for moving targets, largely depending on educated guessing. The new system relied on optically sophisticated instruments, mathematical triangulation and instant transmission of data for highly accurate aiming. This aiming system continued to be used during WWII and at Fort Miles with the fire control towers, including Tower No. 23. Under Roosevelt and Taft, there was also a reorganization of the Army; field and coastal artillery units were separated as distinct entities. The Army was installed as the defender of the coast in permanent fortifications with the Navy as free roamers, responsible for the protecting the waters beyond. Several batteries at Fort MacArthur outside Los Angeles are from the Taft era. Most of the fortifications from this era were built outside the continental United States, including several found in Puerto Rico. During World War I, there was some construction of rapidly erected guns in previously undefended positions. However, this was emergency construction and was abandoned within a year or two. This 150 years of American coastal defense history informed the final period of seacoast defense fortification construction erected during World War II.[13]

Evolution of the Harbor Defenses of the Delaware

With each generation of coastal defense, fewer fortifications were required. This was a result of increased technology of armament in which guns became longer-ranged, more flexible and more accurate. It also was because increased commerce demanded more spacious harbors and wider river mouths leading to

Statement of Significance, continued

fewer strategic positions with passable ports. For the defense of the Delaware, this evolution is clear. In 1750, the first guns were mounted on Society Hill, in the heart of the city of Philadelphia. On the eve of the Revolution, Mud Island was fortified. This island was a few miles below Philadelphia and remained the principal protection through 1820 when a third generation of defense was built at Fort Delaware on Pea Patch Island, forty miles down river. This was supplemented through the years to become a three-tiered defense—including Fort Dupont and Fort Mott—that lasted almost 100 years. Some of the batteries of this system are still extant and date from 1896-1903. The line moved down an additional fifty miles with the emplacement of four long-ranged guns erected after World War I at Fort Saulsbury. Finally, the entire area of the river and its harbor was defensively enclosed with the installation of Fort Miles on Cape Henlopen and Cape May at the mouth of the river during the Harbor Defense Modernization of World War II begun in 1940 (Figure 4).[14]

Harbor Defense Modernization, 1940-1945

In 1931, the Army established a Harbor Defense Board to supervise the execution of projects involving coastal defense. With the growing tension between the United States and Japan, funds spent until 1938 focused on the Pacific Coast. The threat of war in Europe in 1939 prompted expansion to the Atlantic Coast. At this point in history, the U.S. Navy was on par with the British. However, the Army was little more than a token force that was ill prepared to counter threats to its security.[15] With this in mind, in 1940, the Harbor Defense Board surveyed the seacoast defenses. This review led the Chief of Coast Artillery to say, "With but few exceptions our seacoast batteries are outmoded and today are woefully inadequate..."[16]

Few military principles were as enduring as that of the superiority of guns ashore over those afloat. However, the technological advances in artillery made in the 1930s made this 200-year maxim obsolete. No longer could this principle be the basis of a sound American defense system. There was an increasing awareness of the threat posed to permanent harbor defenses by long-range artillery from ships and carrier-borne aircraft. No longer was the mere existence of coastal artillery a deterrent from attack; technology had advanced so that air and sea borne armament was a true threat. An entirely new system was required in which new, farther-reaching guns were installed and fortified to withstand attack. This prompted the Harbor Defense Board to draft a new harbor defense master plan that would take into account these new requirements. The resulting document called for a comprehensive program of construction to produce a complete American system of seacoast fortifications.[17]

The Secretary of War, the War Department and Congress approved the Harbor Defense Modernization Program in September 1940. Some of the proposed construction was to be entirely new, like at Fort Miles. Other construction supplemented existing fortifications. The 1940 Plan included the defense of nineteen harbors along both coasts of the United States as well as the Caribbean, Hawaii and along some of the Canadian coast. These defenses were based on new, paired 16-inch or 6-inch guns. 16-inch guns,

Statement of Significance, continued

the most massive of coastal artillery yet developed, had a range of twenty-six miles. 6-inch guns could hit targets that were nine miles out. This modernization program also included the construction of fire control towers, searchlights, additional fixed and mobile guns for antiaircraft, railway guns, mine fields with their own protective units of searchlights and secondary armament, beach defenses with automatic weapons and barbed wire barricades and barrage balloons.[18] Fortifications from Florida to Maine on the East Coast were upgraded or installed. The West Coast was equally modernized; California, Washington and Oregon were installed with new armaments. The Harbor Defenses of Portland, Narragansett Bay, Long Island Sound, the Delaware, Charleston, Tampa Bay, San Francisco and Puget Sound among others all saw modernization during this program.[19]

Between 1940-1943 the optical aiming system developed during the Taft Period reached its American peak with the coastal defense system. This system depended on mathematical triangulation through coordinates provided by base-end stations, often referred to as fire control stations. Base end stations were constructed at fixed distances along the coastline. From the towers, coastal artillery soldiers scanned the horizon for enemy activity. If a ship was spotted, the men would use an instrument called an azimuth that determined the azimuth, or horizontal angle, measured in a clockwise direction from a line parallel to true south. The azimuth measured the horizontal angle to the target from the tower. One tower worked in tandem with another tower, with one station serving as the prime and the other as the secondary. The line between the two towers constituted a known distance. Therefore, because two angles (one from each of the two towers) and a side of the triangle were known, the guns could be directed and the targeting side of the triangle could be determined.[20]

Each of these fire control stations had at least two azimuths but some had as many as eight. The azimuths were always paired. One was used in the base end duties explained above to initially aim the guns. The other azimuth was used for spotting after the gun was fired. Looking through this second azimuth, the location of the splash was identified and its coordinates determined. Observing the splash enabled the necessary corrections to be made to successfully aim and hit the target. A two-man team manned each azimuth. One man was an observer and the other was a reader (Figure 5). When a ship was in the area, a time interval bell sounded at a fixed interval (often every fifteen to thirty seconds). The observer spotted and followed the ship through the azimuth while the reader noted the coordinates on the azimuth at the determined intervals. The reader then sent these coordinates via a telephone communication system to the plotting room of the gun battery (Figure 6). In the plotting room, arm setters manned the plotting table, which had posts, each representing the tower assigned to it. One arm setter set the coordinates from the prime tower; the other set the coordinates from the secondary tower. The coordinates enabled the setters on the board to pinpoint the target. This was then translated into aiming directions. The guns were fired and the process was duplicated with the corrections derived from the splash coordinates.[21]

By WWII, triangulation through azimuth reading was a sophisticated system. In addition to the coordinates from the observers, the plotting room personnel also took into account the weather, tide and

Statement of Significance, continued

wind as well as the time it took for a shell to reach its target. For the larger guns, it could take as long as fifty-three seconds for a shell to travel the twenty-six miles to its target.[22] For the other adjustments, there were supplemental devices in addition to the plotting board. There was a deflection board, a range percentage corrector and a wind-component indicator. An operator manned each of these. All of these components were factored together every fifteen to thirty seconds, forwarded electrically to each gun, which were aimed accordingly and fired (see Figure 6).

With the increasing tensions in Europe and Japan, all existing regular and National Guard coast artillery regiments were brought up to full strength in 1940. Several new coast artillery regiments also were added. By the fall of 1941, there were 45,000 troops in coastal defense. In January 1942 that number was 54,000. It swelled to 70,000 in 1943 when there were forty-seven regiments defending the fixed seacoast defenses of the U.S.: nineteen in the Regular Army, twelve in the National Guard and sixteen in the Organized Reserves.[23]

Fort Miles

In 1682, William Penn declared Cape Henlopen, Delaware for the "usage of the citizens of Lewes and Sussex County," making this land one of the first American lands designated for public use. The military began to use the land when during World War I, the area was designated as the Cape Henlopen Military Reservation and consisted of a bivouac and a single gun emplacement. This single gun was supplemented by another temporary battery and gun at Cape May. Although both guns were removed in 1918, the Navy continued to use a portion of the land at Cape Henlopen for a wireless telegraph plant. In 1938, the Army once again made Cape Henlopen a military base, naming it Fort Miles in 1939.[24]

The Army named its new base after Lieutenant General Nelson Appleton Miles. Miles was born in 1839 near Westminster, Massachusetts. In 1861, at the outbreak of the Civil War, Miles organized and led a company of volunteers from Massachusetts. During the Civil War, he distinguished himself in many important battles and was made brigadier general in 1864 and major general in 1865. He remained in the Army as a colonel and led campaigns against the Native Americans in the West. Famous for his acceptance of the surrender of the Apache under Geronimo, he became a Commanding General of the Army, rising to the rank of Lieutenant General in 1901. He served during the Spanish-American War and led troops that occupied Puerto Rico. He retired in 1903, wrote several autobiographies and died in Washington D.C. in 1925. The new fort was named after him to commemorate his hundredth birthday.[25]

Cape Henlopen was chosen for its strategic position adjacent to the Delaware Bay and the Delaware River. Its charge was the protection of the cities in this region and also the vast industrial centers located up river including DuPont Company plants, oil refineries in Chester and shipyards in Philadelphia. Following the Modernization Plan, the Philadelphia District of the Army Corps of Engineers began the installation of the massive eleven-foot thick concrete emplacements for the 16-inch guns at Fort Miles in

Statement of Significance, continued

1940. These guns were to be the primary weapons of the fortification. The plan called for five additional batteries including a 12-inch battery, two 6-inch support batteries and the 6-inch battery of Cape May. Together, these guns sealed off the Delaware River. In addition to the land-based protection, Fort Miles also had mine fields, patrol boats and airplanes protecting the Delaware.

On October 3, 1941, Lieutenant H.B. Vaughn approved plans and specifications for the first four fire control towers of Fort Miles. Each tower was assigned a number. When its proposed site was surveyed, the towers were also assigned a location number. Both numbers were used for the tower throughout its history. Fire Control Tower No. 23 was built at location 18, for instance. Unfortunately, throughout the records and over the years, these numbers vary. Fire Control Tower No. 23 is sometimes referred to as 22 and its location as 17. For the sake of clarity, however, we will always refer to the Tower as 23 and its location as 18. The first fire control towers built at Fort Miles were built on the Delaware side and included Tower No. 3 South, 4, 5 and 7. All four of these provided fire control for the 16-inch guns. Two also provided fire control for the mine batteries, an additional layer of protection at Fort Miles.[26]

Before the ultimate design was chosen for the towers at Fort Miles, alternative plans were devised. Because of their need to be quickly constructed as well as strong, all the proposed designs were made out of reinforced concrete. The final scheme used was a reinforced concrete cylinder with an equal diameter throughout the height of the tower. At the top, the number of observation levels varied from one to three depending on the location of the tower as well as the number of batteries it was determined necessary for the tower to serve. The more batteries it provided fire control data for, the more observation levels it required. These first towers on the Delaware side, 3, 4, 5 and 7 were built with steel doors and interior ladders; the railing on top was also metal pipe. Construction began at the end of 1941.

Fort Miles grew rapidly. On January 8, 1942, $140,000 was allotted for the Harbor Defenses of the Delaware to expand its protection. Two 155-mm guns were installed at Cape May and in March 1942, the Army Corps of Engineers and the War Department began surveying locations for the towers in New Jersey. These surveys included the proposed location of each of the installations, their approximate acreage, the recommended battery the towers would serve, the azimuth of the right and left limits of the recommended field of fire, and a rough estimate of the cost of the land to be procured and surveyed (Figures 7, 8, 9). Four towers were proposed: one at Cape May Point, one in Cape May, one in Wildwood Gables (now Wildwood Crest) and one in North Wildwood. Tower No. 23 was built at Cape May Point. Tower No. 24 was built in Cape May. These two were built first. In March, approval was given for the construction of these two towers from the January allotment. $19,000 was set aside for Tower 23—$18,500 for construction and $500 for land acquisition—and $18,500 for Tower No. 24. Originally, the Corps of Engineers proposed building all four New Jersey towers at the same time. This plan would have sped up the process and saved money. Ultimately, it did not happen this way; the Cape May towers were built first; the Wildwood towers followed. At Wildwood Gables, Tower 25 was built and at North Wildwood, Tower 26.

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On March 23, 1942, it was decided that Tower No. 23 should have a single, two-step observation level with the same cylindrical design used in Delaware. Importantly, in Cape May, wood was used for the door, ladder and top railing instead of steel as it was in the first towers in Delaware (Figure 10). A 1942 report called for the substitution of wood for steel wherever practical because of the steel shortage.[27]

White Construction of New York built Fire Control Tower No. 23 under a government contract. The 1939 Reorganization Act authorized by President Roosevelt allowed private industry to participate in war construction projects. This ensured that the massive building campaign required to prepare the U.S. for war could be accomplished. The Corps of Engineers Philadelphia branch oversaw this contract. The Tower was built using a "sliding form" (or "slip form"), allowing for a continuous pour of concrete. First, piles were driven into the ground, either standard wood piles or mushroom piles that expanded at the end; each tower had about fourteen of these piles. A June 1942 memo indicates that the foundation piles for Tower No. 23 were being driven.[28] Next, two cylindrical forms were created using 4-inch, vertical tongue and groove boards. There was a 1-foot space between them into which the reinforcing bars were positioned and the concrete was poured. As the concrete hardened, the form was moved up the structure and more concrete was added, creating a continuous pour with no visible horizontal joints. The form was on jacked steel, which supported the system while the concrete hardened. To form windows, rectangular boxes were slid into place and the concrete was poured around them. At Fire Control Tower No. 23, evidence of this system of construction can be seen in a horizontal seam at the location of the observation slit windows. Below this, the slip form method was used; above it, more traditional formed concrete was used to create the top of the Tower and the roof cap (see Photos 3, 12).

It took about 2 ½-3 days to build the exterior concrete shell at Tower No. 23. Once this was done, finishers came in to complete the Tower. They added the concrete floors, the metal handrails around the ladder openings, the wood windows, ladders and railing on the roof and installed the tongue and groove flooring on the fifth floor. While Tower No. 23 was being built so was the magnesite plant across the street, which also used sliding form construction for its tanks (Margaret Newman interview with Frederick Ehmann who was in charge of all concrete poured at Fort Miles and Margaret Newman interview with Frank Purgatorio of West Cape May, New Jersey who worked for White Construction building the Tower).

By September 1942, the Cape May towers were complete. The Wildwood towers were done by January 1943. Tower No. 23 cost about $25,000 to construct. The Cape May towers were significantly more than the Delaware towers; this was due to foundation difficulties the Army Corp of Engineers did not anticipate in the Cape May region. Labor costs in New Jersey were also higher than in Delaware.

When first constructed, the two towers in Cape May, Towers 23 and 24, provided position-finding facilities for the 155-mm guns. Battery 223 replaced these guns in July 1943. Battery 223 had two 6-inch

Statement of Significance, continued

guns. The New Jersey towers were built knowing they would eventually provide fire control coordinates for Battery 223 when it was constructed.

The four towers in New Jersey served Battery 223 after it was completed. Tower No. 23 provided range finding for Battery 223 only. It worked with each of the other New Jersey towers. Tower No. 23 had two azimuth instruments and exclusively served this battery. It was B^1S^1 of Battery 223. The "B" stood for base end, which was actual fire control or aiming of the guns with readings from one of the azimuth. The "S" stood for spotting, which was done after the shell was fired. There could be as many as sixteen azimuths, along the Fort Miles coastline, dedicated to a battery. This led to extremely accurate aiming.

The other New Jersey towers served Battery 223 as well as other gun batteries located in Delaware. Tower 24 located on Beach Avenue in Cape May City had six azimuths. Two of its azimuths were designated B^2S^2 of Battery 223. The other instruments were dedicated to Battery Smith and Battery 519 in Delaware. Tower 25 was located at Wildwood Gables and also had six azimuths; two of which were B^3S^3 of Battery 223; the other four were dedicated to Battery Smith and Battery 519. B^4S^4 of Battery 223 were two of the four azimuths at Tower 26 in North Wildwood; the other two were B^8S^8 of Battery Smith.[29]

Searchlights were also built at both Delaware and New Jersey to work in conjunction with the towers to spot enemy ships at night. There was a searchlight to the east of Tower 24. There was another searchlight in West Cape May. There were two additional lights near Battery 223; one of which was fairly close to Tower No. 23[30] (Margaret Newman interview with Richard Straughn of Erma, New Jersey whose father was a searchlight operator in Cape May) (Figure 11).

By the end of construction at Fort Miles in 1943-44, of which the New Jersey towers and Battery 223 were part of the last phase, the total fire control system included eleven concrete towers in Delaware and four in New Jersey. There were also five metal towers constructed in Delaware. This gave a total of twenty fire control towers working six batteries and three mine batteries. Five of the batteries were located in Delaware and one was located in Cape May. All the mine batteries were operated on the Delaware side. At Fort Miles, fire control towers stretched from Fenwick Island to North Wildwood. Almost 200 miles of shoreline was dotted with these towers.

Originally, there were 96 men from the 261st Coast Artillery stationed at Fort Miles when it was first established in 1939-40. The 261st was a reserve battery that was stepped up to permanent assignment with the onset of the war. By the end of the summer of 1941, more men arrived from the 261st as well as five batteries of the 21st Coast Artillery who had been in training at Fort Dupont further up the Delaware River. Three of the 21st were artillery; the other two were used to plant mines.[31] Navy and Air Force personnel joined the coastal artilleries until there were 2,000 men stationed at Fort Miles.

Statement of Significance, continued

Each battery was divided into several subdivisions. The men who worked in the towers were on range detail. "The range detail, under the command of the range officer, installs and maintains the fire control and position-finding equipment, mans the position-finding, observing and spotting stations, furnishes the data for determining the range and direction to targets, determines the positions of impact, operates the plotting and computing devices used to determine the firing data, and records and transmits data at prescribed intervals." The usual means of communication within a battery was telephone, although megaphone was used for shorter distances. Visual signaling was a skill each possessed in case of a breakdown of telephone communication.[32]

The towers and guns were manned twenty-four hours a day. According to Mrs. Marie Michel Naples who had a summerhouse on New Jersey Avenue in Cape May, Tower 24 was manned by three men who rotated the tower watch looking for ships. During the war, a chain link fence enclosed the tower and only certain military personnel were allowed into the secure area (Mrs. Marie Michel Naples email to Elizabeth Bailey, Mid-Atlantic Center for the Arts). Because the instrumentation called for pairs of men, two would be on duty at a time while one (or two) would be "on call." At Fire Control Tower No. 23, two men manned the two Model 1910A azimuths located on Level 6. Another man or men would be on call on Level 5 available to climb up to the observation level if required. The Time Interval Bell in Cape May sounded every 15 seconds when a ship was in the area. Readings were taken each time the bell sounded (Elizabeth Bailey interview with Henry "Hank" Branagan, January 11, 2002. He was a rammer with the 8-man crew that operated each of the four 155-mm guns. These guns were in place before Battery 223 was completed in 1943. Mr. Branagan was stationed at Cape May from December 1941 through March 1943).

Mr. Branagan does not remember ever using the guns, except during testing. This was corroborated by two different men stationed on the Delaware side of Fort Miles who also said the guns were never fired in anger. All the men vividly remember testing the artillery, however. According to radio operator John J. Gallo who joined the National Guard and was sent to Fort Miles with Battery A when the battalion was federalized in 1941, when the guns were tested, the artillery men would shout "Shot on way!" to the men in the towers who would use their instruments to watch for a plume of water to identify where the shell struck.[33] The men would use the azimuth to identify the coordinates of the plume of water; the accuracy of the aiming system was then assessed.

According to Captain Leonard L. Millar of Rehoboth who was stationed in Cape May at the beginning of his career but later went to Delaware where he commanded Battery C, "The object of artillery was if a ship came down and tried to get through, we were supposed to fire at the ship." He said ships were required to stop at the entrance of the bay for inspection by the Coast Guard. In order to make better time, allied ships would not always stop. Battery C's guns provided a clear message when it was fired in front of the ships, called a "bring to" shot. "It would throw up a geyser that would bring them to a stop pretty quickly." Captain Millar agreed that the guns were never fired in anger.[34]

Statement of Significance, continued

After the War

After mid-1942, the need for continental defense progressively declined as the emphasis shifted from facilities to production, from home front to combat in war theaters. Construction workers were sent to factories. By September 1942, the prospect of completing the seacoast defense modernization planned for in 1940 seemed unlikely. For those that had been completed, it seemed even more unlikely that the guns would ever be used.

As military and naval events in all theaters began to turn in favor of the Allies, the project was gradually curtailed until mid-1944 when the shifting of the war away from American shores brought it to a halt. Dismantling of the coastal defense system had begun as early as 1943. The Modernization was not a fully completed system. Only about two-thirds of the system was constructed and some fortifications were never provided with anticipated armament. The technology of amphibious invasion, including land troops and air attacks, along with the heavy guns of ships made obsolete the entire concept of harbor defense by long-range artillery. "Amphibious warfare had been developed to such an extent during the war that beaches far removed from built-up ports were successfully used...this enabled the fixed defenses at large seaports to be outmaneuvered, and since not all of the coastline could be effectively defended by permanent fortifications, they lost their value."[35]

By 1948, only seven short years after the system was developed, it was outmoded. By 1950, the US Army had dismantled all its fixed gun harbor defenses; the coastal defense reservations were either converted to other military uses or declared surplus. By 1950, the Coast Artillery was abolished as a separate branch of the Army and recombined with the Field Artillery to form a single Artillery branch.[36] Fire Control Tower No. 23 was decommissioned in 1944. The Tower, its land and appurtenances were transferred to the Navy in 1953. The Navy held ownership of the Tower for eleven years. No record has been found indicating the Navy ever used the Tower. The Navy then sold the property to the Northwest Magnesite Company in 1964. By 1965, the handrail was gone from the roof and there was graffiti on the Tower (Figure 12). At some point in the late 1960s, workers from the magnesite plant blocked in the ground floor openings of the Tower (Margaret Newman interview with Frank Purgatorio of West Cape May, New Jersey). The Northwest Magnesite Company built a power station and brought electricity to the site in 1968, although the Tower was never electrified.[37] A 1960s photograph shows the Tower enveloped by the magnesite plant (see Figure 3).

The Army closed Fort Miles in 1958; part of it was used as a Naval Radio Station from 1963-1976. The rest became the Fort Miles Recreation Area, Cape Henlopen State Park, Fenwick Island State Park, Delaware Seashore State Park and Henlopen Acres.

By 1988, plans were underway for the demolition of the Northwest Magnesite Company site at Cape May Point. Declining steel production in U.S. had caused the plant to close its doors in 1983.[38] In September 1999, 125 acres of land, including the magnesite plant and Fire Control Tower No. 23, became a part of

Statement of Significance, continued

Cape May Point State Park and a Wildlife Management Area under the Green Acres program. In the 1930s, this land was the Witmer Stone Wildlife Refuge; in 1999, it was once again made into a place attractive to nature lovers and history buffs alike.[39]

Of the fifteen reinforced concrete towers that were built between 1941-1944 on both the Delaware and Cape May sides of Fort Miles, all are extant in Delaware but only two survive in New Jersey. At Cape Henlopen State Park, one is open to the public. In New Jersey, both Cape May towers are extant. However, a hotel consumed Tower 24 in the 1960s. Still visible above the hotel's roof, the Tower is now used as a utility shaft. Tower 25 was demolished. Tower 26 in North Wildwood was converted into a beach house in the 1960s or 70s. It was demolished in January 2000.[40] Tower No. 23, therefore, is the only tower from this era remaining on the New Jersey side that is viable for interpretation.

There were other coastal fortifications built in New Jersey. There is a range finder tower at Fort Mott that is open to the public. This is representative of an earlier system, built in 1901-02. Fort Hancock was involved in the Harbor Defenses of New York for World War II. None of its towers remain. Fort Tilden, also involved in the defense of New York has a fire control tower still extant. The New York towers were built square. The one at Fort Tilden is disguised as a lighthouse. There is another square tower next to Montauk Point Lighthouse at the tip of Long Island, New York. Fort Story in Virginia also has one fire control tower still extant. This is made out of granite. Several base end stations in California remain. However, due to the geography of the west coast, these are very different than the towers of the eastern seaboard.

There are other towers tucked away along the seacoast; however, most from the Harbor Defense Modernization, 1940-1945 have been lost. Similarly, most of the batteries, barracks and auxiliary support buildings that were erected between 1940-1945 also have been lost. The World War II system that remains is rarely interpreted; it survives because it was forgotten not because it was valued. The seacoast fortifications that have undergone restoration are specimens of the Third System and earlier. This is because of their relative rarity but also because of the public tendency to equate antiquity with historical and architectural value. As with much of its history, the U.S. has looked to the preservation of its distant past, often at the expense of its recent history. At Fire Control Tower No. 23, the only freestanding fire control tower left in New Jersey from this era, there is significant opportunity to interpret the national system of coastal defense of the eastern seaboard during WWII.

Since the Revolutionary War, there have been hundreds of forts erected on both coasts that participated in the coastal defense system of the United States. The system of fixed armament protecting American shores went through several incarnations until its final configuration in World War II, after which technological advances made the entire concept of fixed gun protection obsolete.

Statement of Significance, continued

Fort Miles and its system of fire control was an important component of the national system of construction for defense that was occurring due to the 1940 Modernization of the Coastal Defense master plan. Fire Control Tower No. 23, an integral part of this system, aided in the protection of resources in New Jersey, Delaware and Pennsylvania. It is an intact example of a vital component of our national defense built during World War II.

Statement of Significance, continued

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Entry 42. Former Security Classified General Correspondence Relation to the Harbor Defenses of the Delaware, 1933-1941. 1.5 cu. ft. F-05-23-09-6 to F-05-24-01-1. NA Boxes 1-4.

Entry 42A. Miscellaneous Photographs and Negatives Relating to Harbor Defenses of the Delaware, 1941-1942. 1 cu. ft. F-05-25-02-1 to F-05-25-02-1. NA Box 1 (with Entry 27).

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Geographical Data

Verbal Boundary Description
The site consists of a .918 acre plot of land comprised by Lot 6 of Block 790.

Boundary Justification
The boundary was determined when the United States of America acting by and through the General Services Administration sold the land to the Northwest Magnesite Company, 5 October 1964 (Cape May County Deed Book 1115 page 64). This transaction included roughly .918 acre of land on which the Tower was constructed.

Photographs

Holt Morgan Russell Architects took all of the photographs. The negatives for the photographs are located at the Mid-Atlantic Center for the Arts, Cape May, New Jersey.

Photo 1: May 2002
Fire Control Tower No. 23, looking east.

Photo 2: May 2002
Fire Control Tower No. 23, looking east. Sunset Boulevard is shown to the right of the photograph.

Photo 3: May 2002
Fire Control Tower No. 23, looking southwest.

Photo 4: May 2002
Fire Control Tower No. 23, looking northwest.

Photo 5: January 2002
Fire Control Tower No. 23, exterior of Level 3 window on the north elevation.

Photo 6: January 2002
Fire Control Tower No. 23, exterior of the observation slit windows, Level 6.

Photo 7: January 2002
Fire Control Tower No. 23, interior Level 1 showing concrete flue, metal sleeve for space heater, flue cleanout, ladder opening and blocked in original door. A sash from Level 6 is leaning against the wall.

Photo 8: January 2002
Fire Control Tower No. 23, interior Level 3 showing flue, north and west windows, ladder opening and metal handrail. Levels 1-4 were unfinished concrete and provided access to the upper working levels of the Tower.

Photo 9: January 2002
Fire Control Tower No. 23, interior Level 5 showing original tongue and groove flooring and metal plate in front of the flue. Originally, a space heater was located here. The metal plate protected the wood flooring which provided additional comfort for the soldiers who used this room when they were not on duty on Level 6.

Photo 10: January 2002
Fire Control Tower No. 23, interior Level 5 showing the two step observation level of Level 6, east and south windows and metal handrail around the ladder opening.

Photo 11: January 2002
Fire Control Tower No. 23, interior Level 6 showing the two step observation level with the lower level to the west and the upper level to the east, the metal handrail that divided the two levels, he observation slit windows, original sash and window hardware.

Photo 12: January 2002
Fire Control Tower No. 23, interior Level 6 showing the extant original ladder and handrail as well as the line in the concrete which represents the transition between slip form construction and formed concrete. Below this line, the Tower was built by using a sliding form which allowed for a continuous pour of concrete. Above it, the rest of the Tower and the roof were formed concrete.

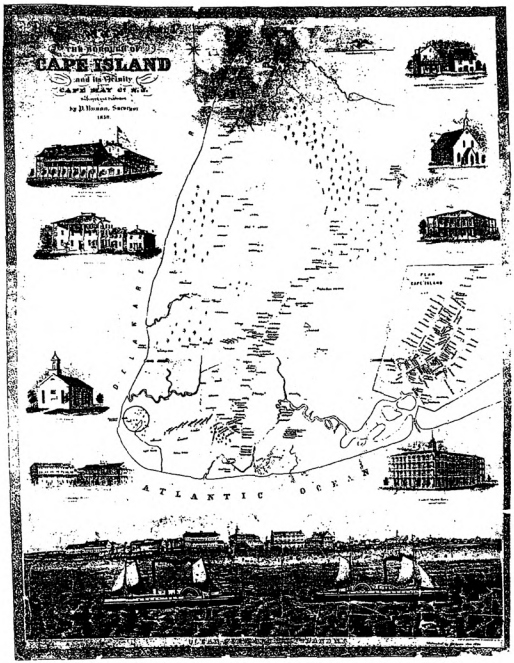


Fig. 11. 1850 NUNAN MAP OF CAPE ISLAND

Figure 1: 1850 Nunan Map. There appears to be a building with the name "Little" on or near the site of Fire Control Tower No. 23. However, deed research does not corroborate that Little ever owned the property. Therefore, if it is the tower site, Little could have been renting the building. More likely, however, the building stands on a site adjacent to but not including the project site.[1]

[1] Horace Richards, *A Book of Maps of Cape May, 1610-1878* (Cape May, New Jersey: Cape May Geographic Society, 1954), 26.

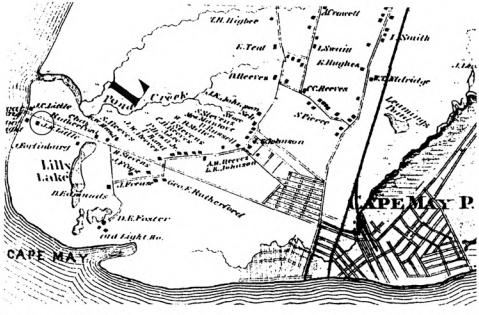


Figure 2: Detail of 1872 Beers Map. J.H. Little house continues to be listed.[2]

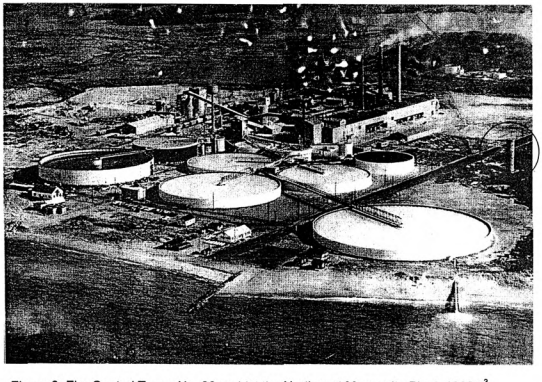


Figure 3: Fire Control Tower No. 23 amidst the Northwest Magnesite Plant, 1960s.[3]

[2] Richards, 40.
[3] *Cape May Star and Wave*, August 16, 2001, A5.

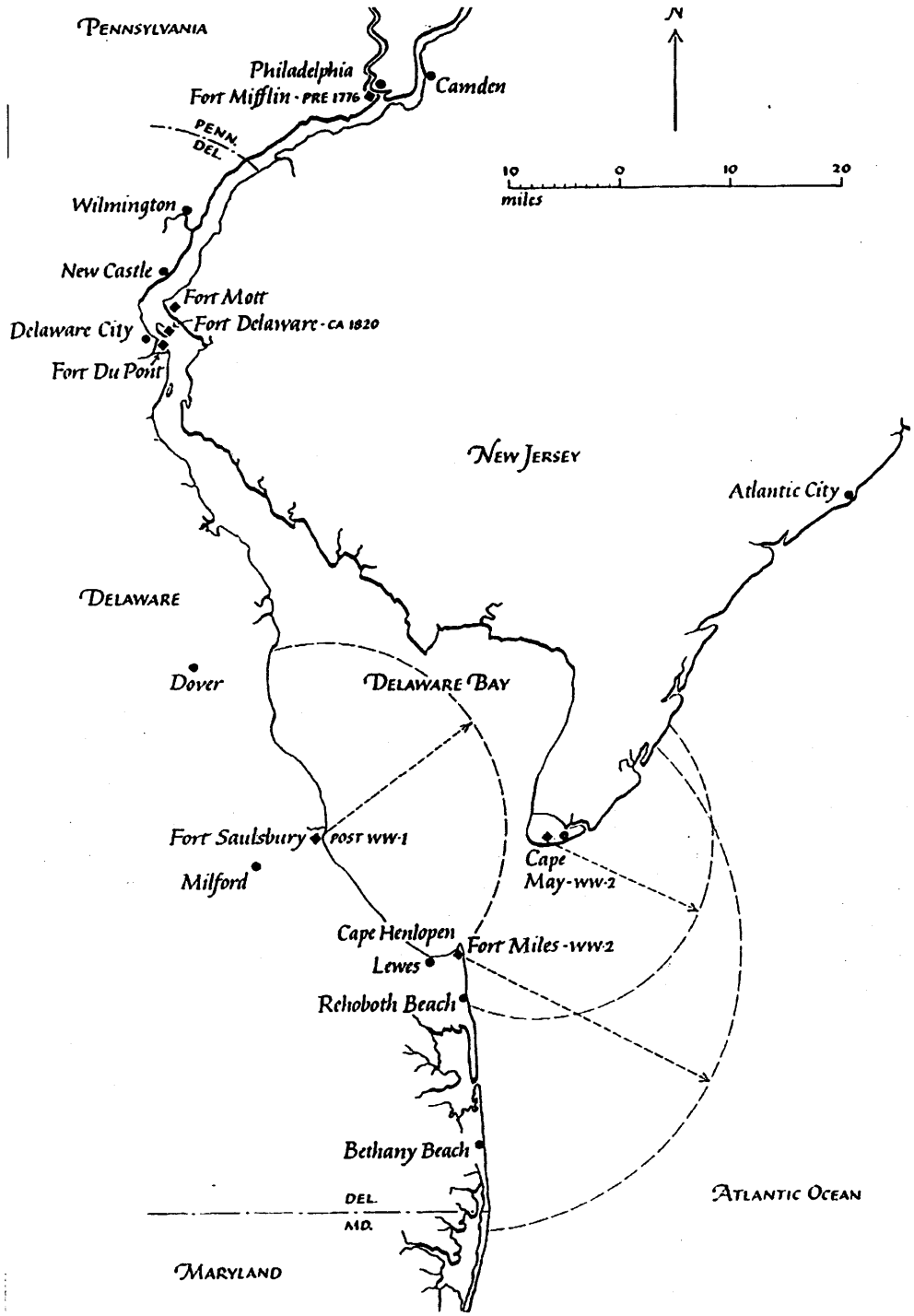


Figure 4: Map of the Delaware Region showing the seaward shifting of fortifications. Between 1800 and 1945, the range of coastal artillery increased by a factor of 25. More water area could be covered, increasing the range more than 600 times.[4]

[4] Ibid., 13.

Figure 5: Howard S. Schroeder, a commercial artist in New York, spent three years as a mine planter with Battery B of the 21st Coast Artillery at Fort Miles. This 1943 painting shows how the fire control towers of Fort Miles worked: two men armed the azimuth and were connected to the plotting room via the headsets visible here. The window sash behind the men are the same as the upper observation slit window of Tower No. 23.[5]

Figure 6: March 1942 plotting room at Fort Story, Virginia. The plotting board and supplemental range-correction board and deflection board would resemble that found at Fort Miles.[6]

[5] http://www2.newszap.com/lookingback/ww2/lewesartist.html

[6] Ibid., "Fort Story. Coast artillery. In this coast artillery plotting room at Fort Story, Virginia, officers who direct the firing of the big guns work out the problems that are a part of gunnery."

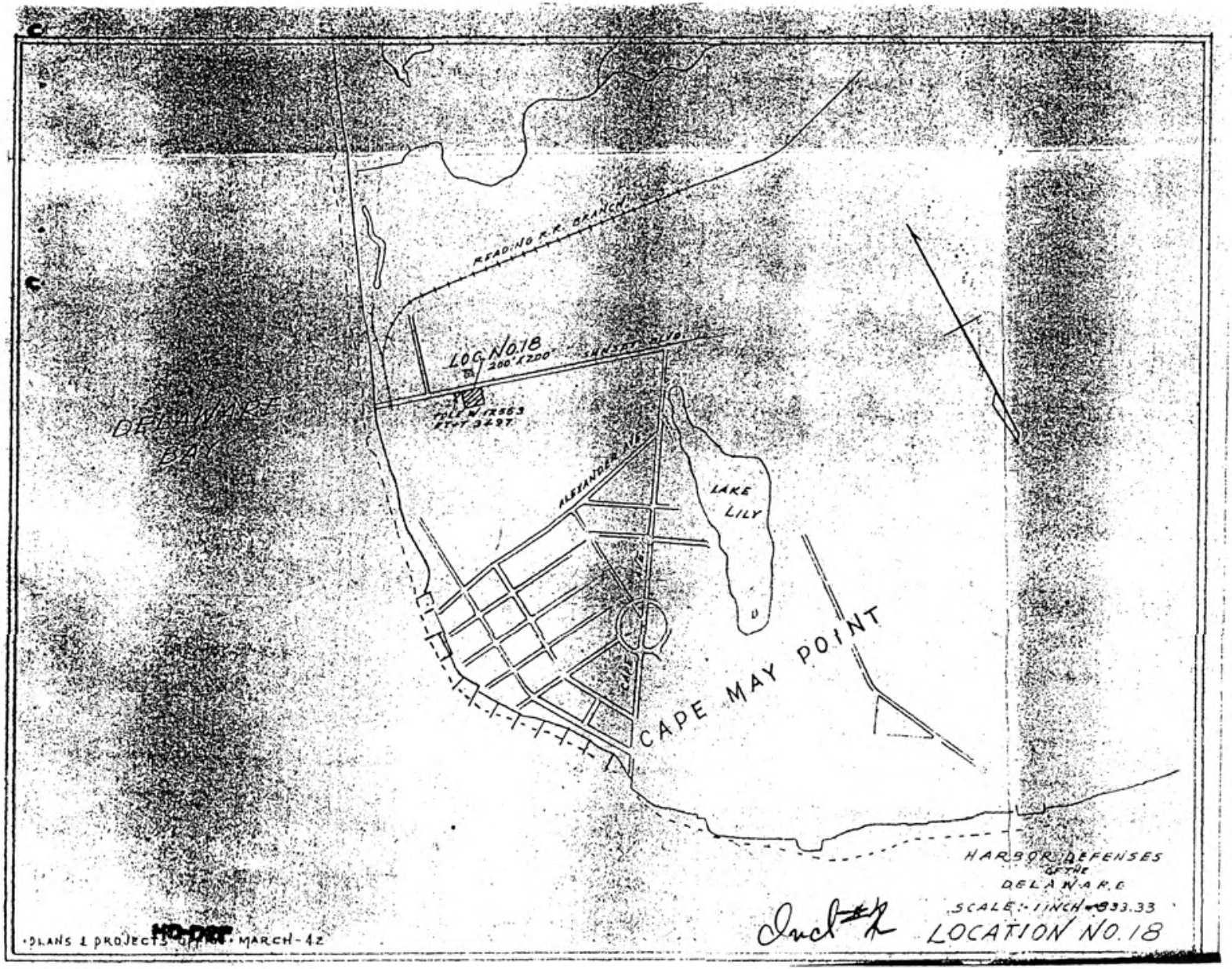


Figure 7: Proposed location for Tower No. 23 at location 18.[7]

[7] Entry 28, Formerly Security Classified General Correspondence Relating to the Harbor Defense of the Delaware, 1941-1944, Box 4. Philadelphia Branch of the National Archives.

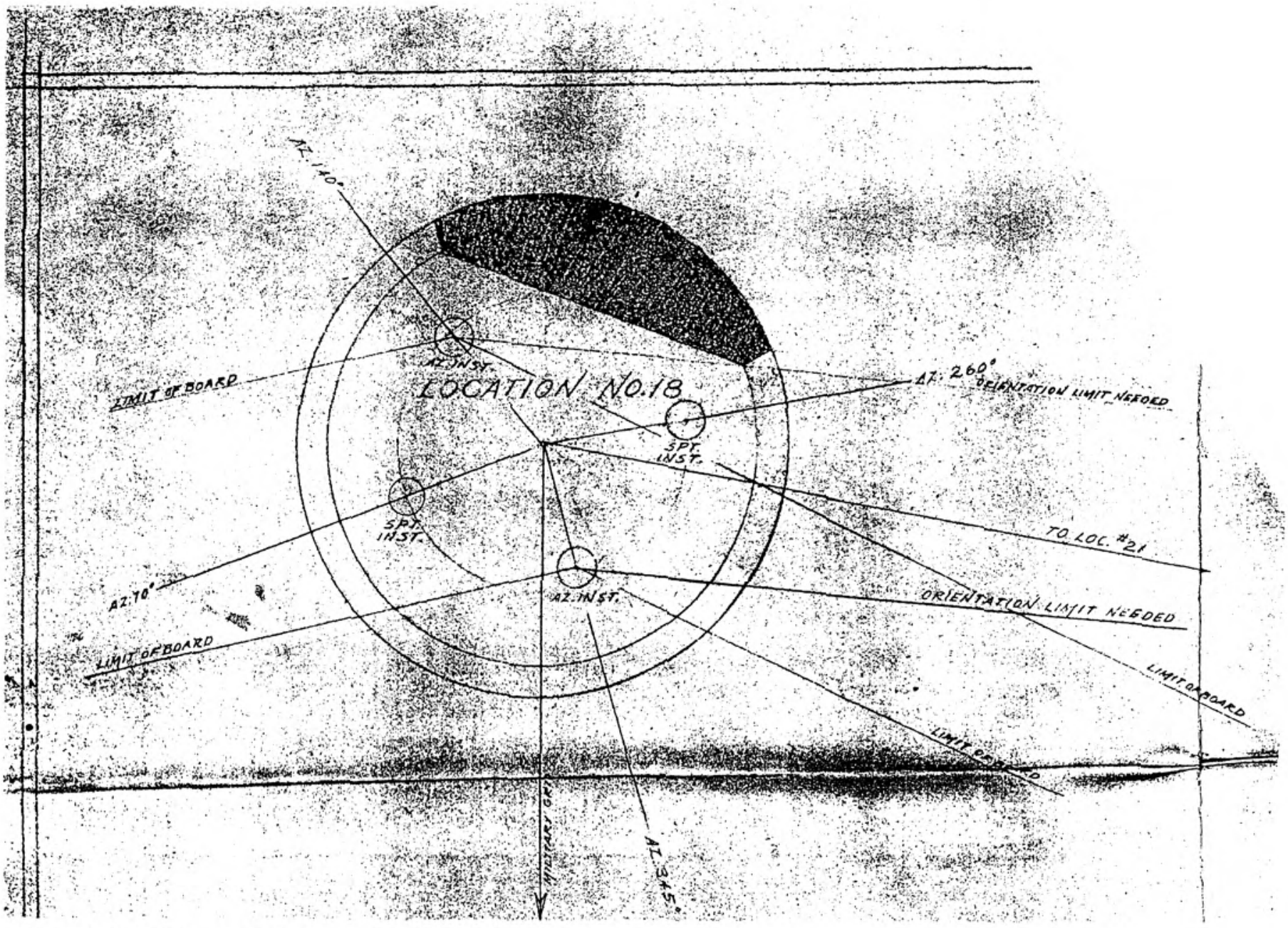


Figure 8: Orientation study for Tower No. 23 at location 18.[8]

[8] Ibid.

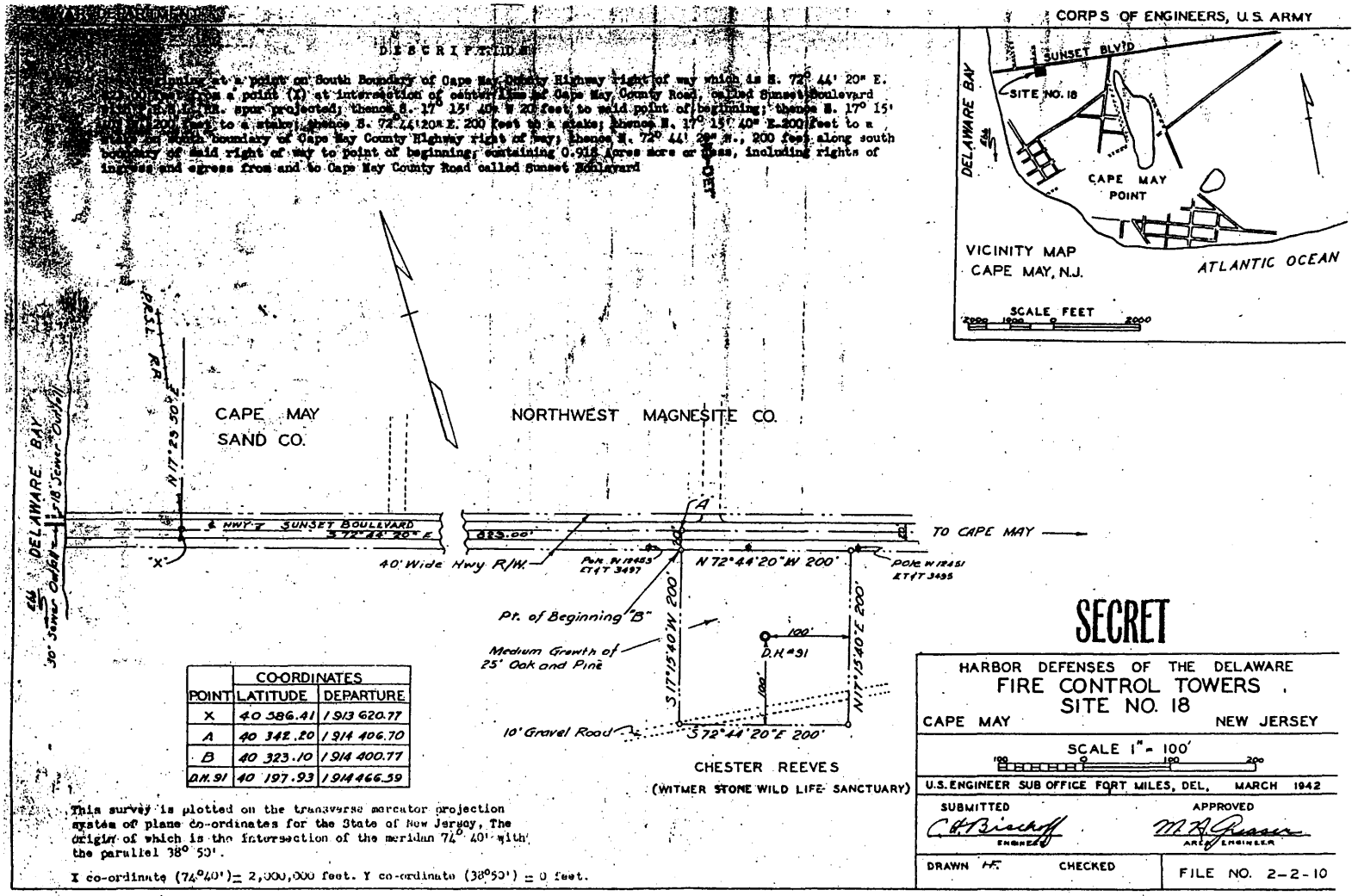


Figure 9: March 1942 site plan for Tower No. 23. Note the trees were medium growth, 25' oak and pine.[9]

[9] Record Group 77—Philadelphia District. Folder 9, Cape May, New Jersey. Located in Stack 330, Row 5, Compartment 3, Shelf Section 3, Drawer 2. College Park Branch of the National Archives.

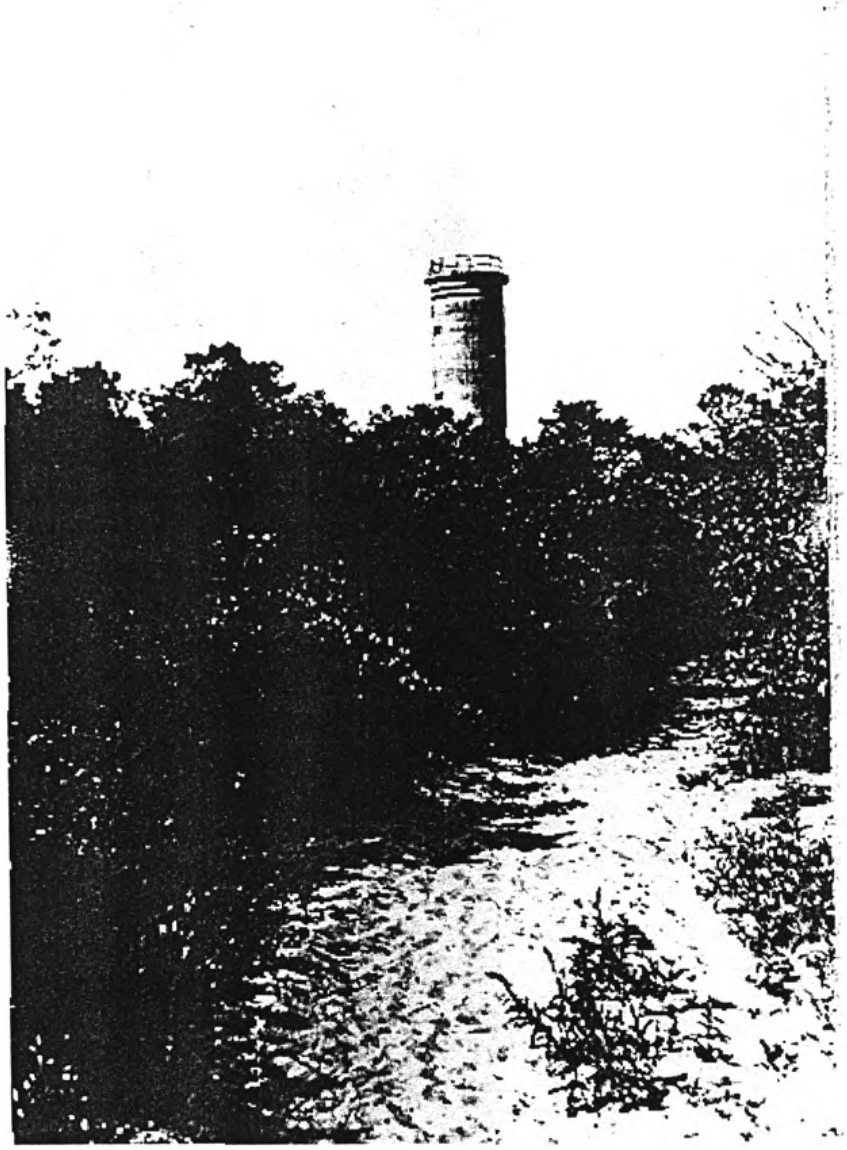


Figure 10: This photograph was taken in 1947. It shows the original handrail on the roof. We know it was wood because of a description of it done by the Army (see Appendix). Note the height of the trees in the photograph. When Tower No. 23 was built, it was camouflaged. Emissions from the magnesite plant destroyed the surrounding vegetation, especially the trees.[10]

[10] Cape May County Historical and Genealogical Society, vertical photo file "Cape May Point."

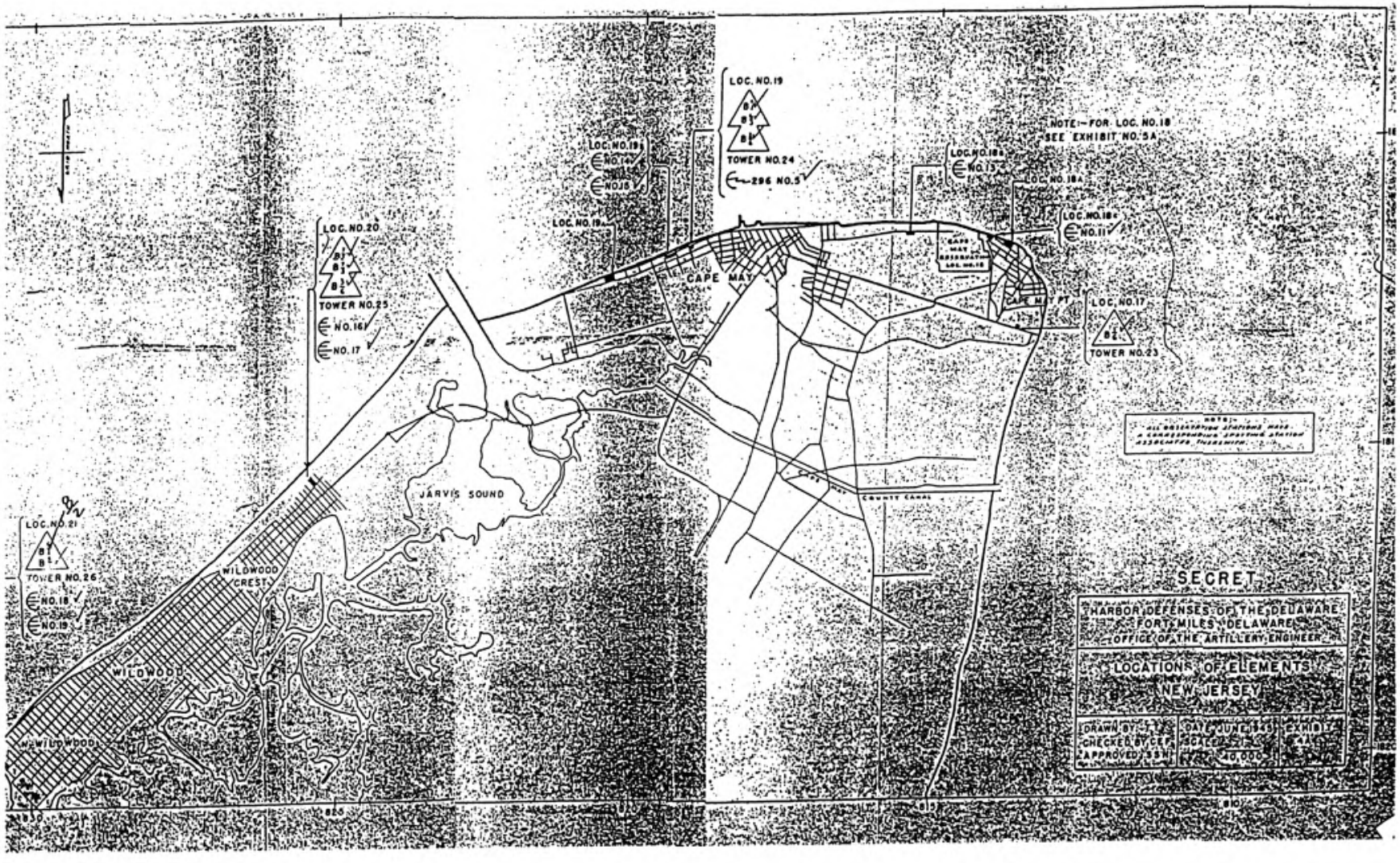


Figure 11: 1945 map of the New Jersey side of Fort Miles. "LOC" stands for location. "B" is battery and the numbers refer to the gun battery with which each tower was associated. The other listed features are the search lights used in conjunction with the towers at night. Throughout the records, the location and number of Fire Control Tower No. 23 change. In this case, its location is listed as 17. However, it is more commonly referred to as location 18.[11]

[11] Cape May Point State Park Archives.

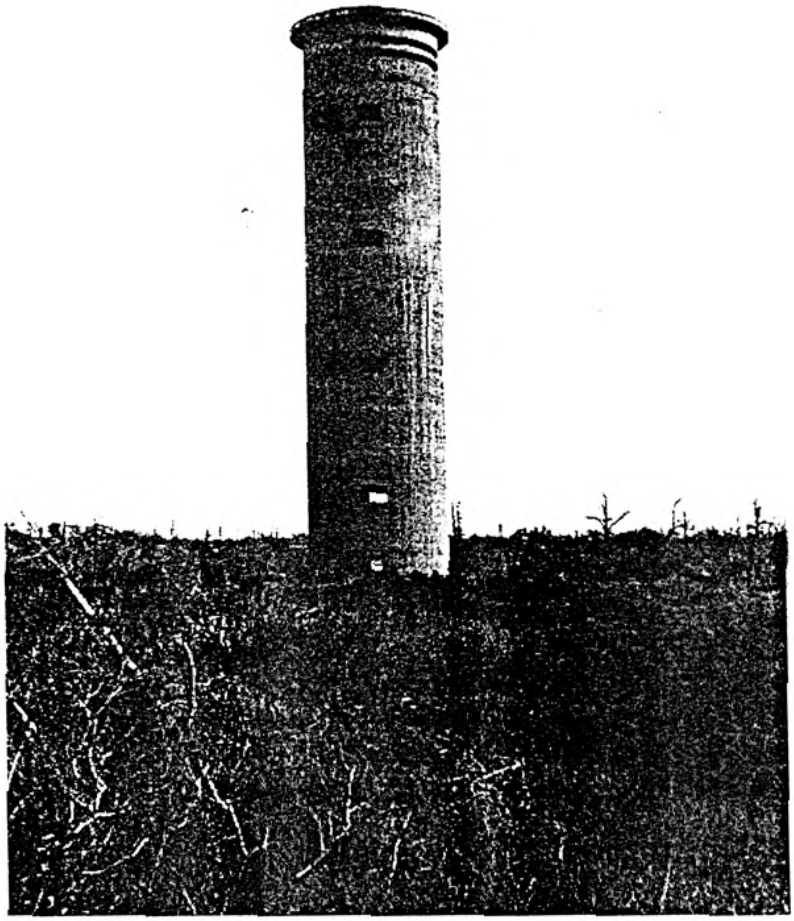
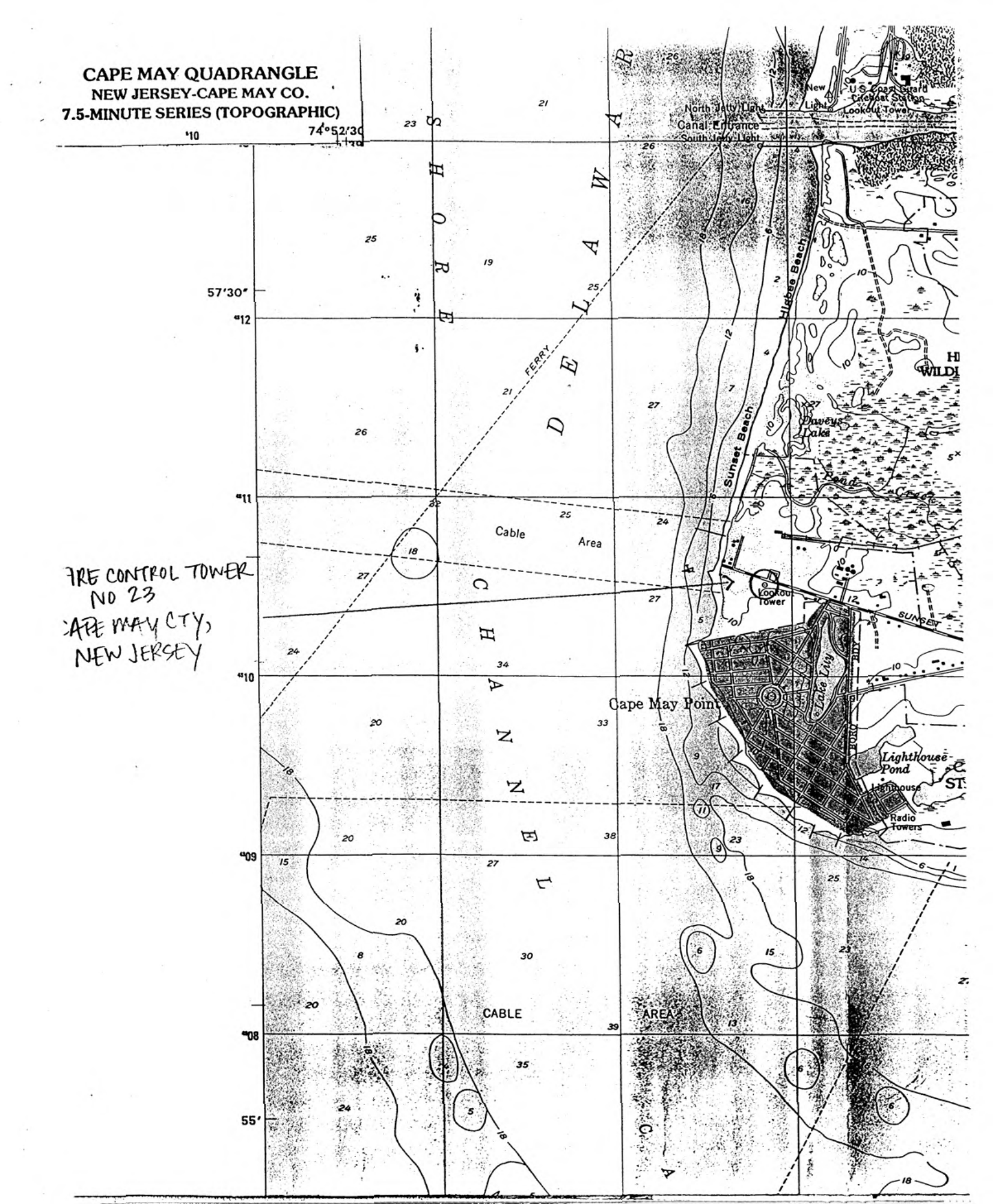
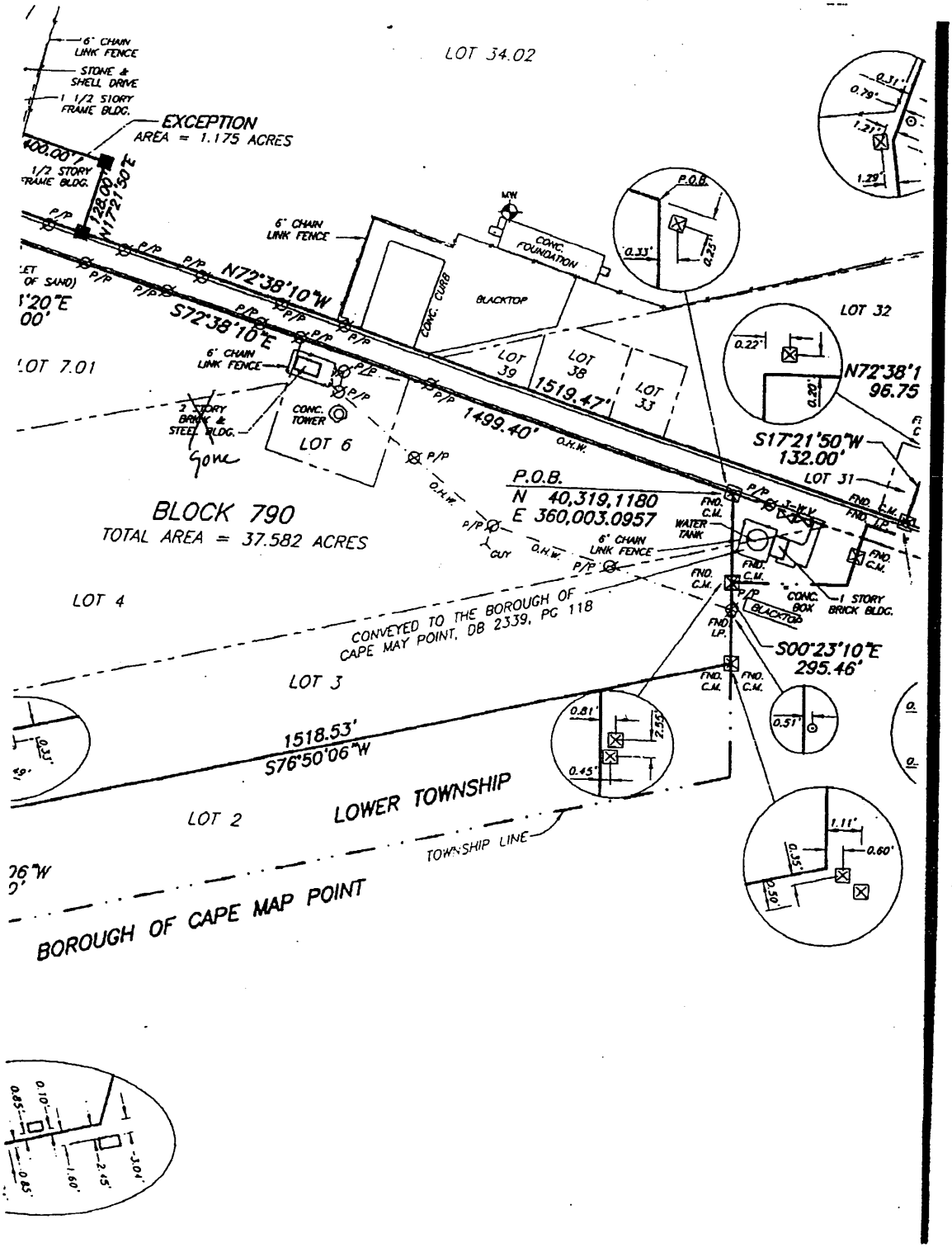


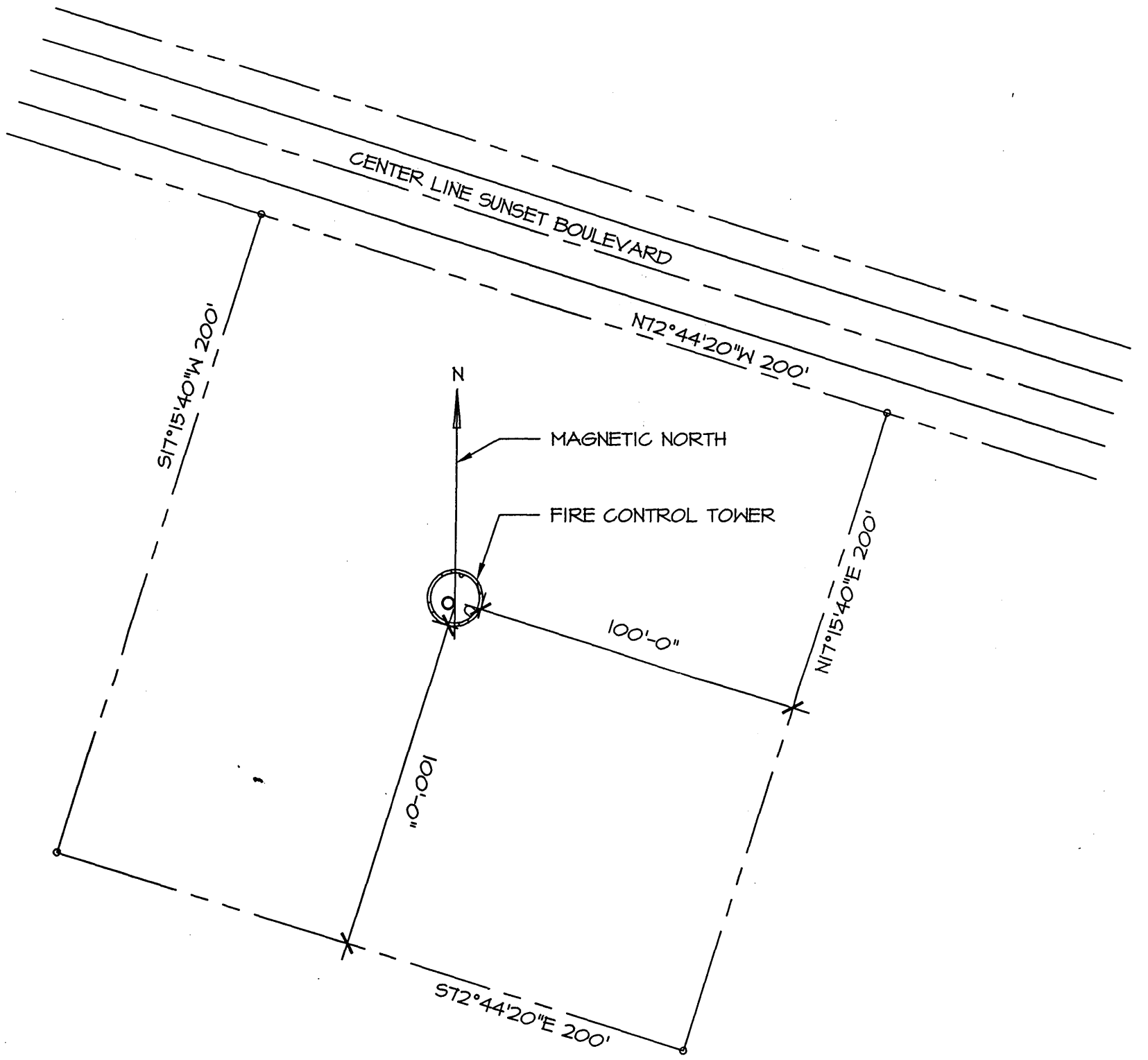
Figure 12: Fire Control Tower No. 23 in 1965. In 1965, the magnesite plant owns the tower. Note the handrail is already gone and the trees are mostly destroyed. There is also graffiti evident on the tower, which implies that it is not in use. At the lower level of the tower, it appears as though the openings of Level 1 are not yet blocked in.[12]

[12] Ibid., Cape May Historical and Genealogical Society



FRE CONTROL TOWER
NO 23
CAPE MAY CTY,
NEW JERSEY


LOT 34.02
6" CHAIN LINK FENCE
STONE & SHELL DRIVE
1 1/2 STORY FRAME BLDG.
EXCEPTION
AREA = 1.175 ACRES
1/2 STORY FRAME BLDG.
N17°21'50"E
128.00'
6" CHAIN LINK FENCE
CONC. FOUNDATION
BLACKTOP
CONC. CURB
N72°38'10"W
S72°38'10"E
LOT 39
LOT 38
LOT 33
1519.47'
LOT 32
N72°38'1
96.75
LOT 7.01
6" CHAIN LINK FENCE
2 STORY BRICK & STEEL BLDG.
CONC. TOWER
LOT 6
1499.40'
O.H.W.
P.O.B.
N 40,319,1180
E 360,003.0957
S17°21'50"W
132.00'
LOT 31
WATER TANK
FND. C.M.
FND. I.P.
6" CHAIN LINK FENCE
GUY
CONC. BOX
1 STORY BRICK BLDG.
BLACKTOP
S00°23'10"E
295.46'
BLOCK 790
TOTAL AREA = 37.582 ACRES
LOT 4
CONVEYED TO THE BOROUGH OF CAPE MAY POINT, DB 2339, PG 118
LOT 3
1518.53'
S76°50'06"W
LOT 2
LOWER TOWNSHIP
TOWNSHIP LINE
BOROUGH OF CAPE MAP POINT



PLAN NORTH

1 / A-101 SITE PLAN - SITE NO. 18

SCALE: 1" = 40'-0"

HOLT · MORGAN · RUSSELL ARCHITECTS, P.A.

350 Alexander Street Princeton NJ 08540 609·924·1358 Fax 609·924·5985

ARCHITECTURE · PLANNING · INTERIORS · HISTORIC PRESERVATION

SCALE: AS NOTED

DRAWN BY:

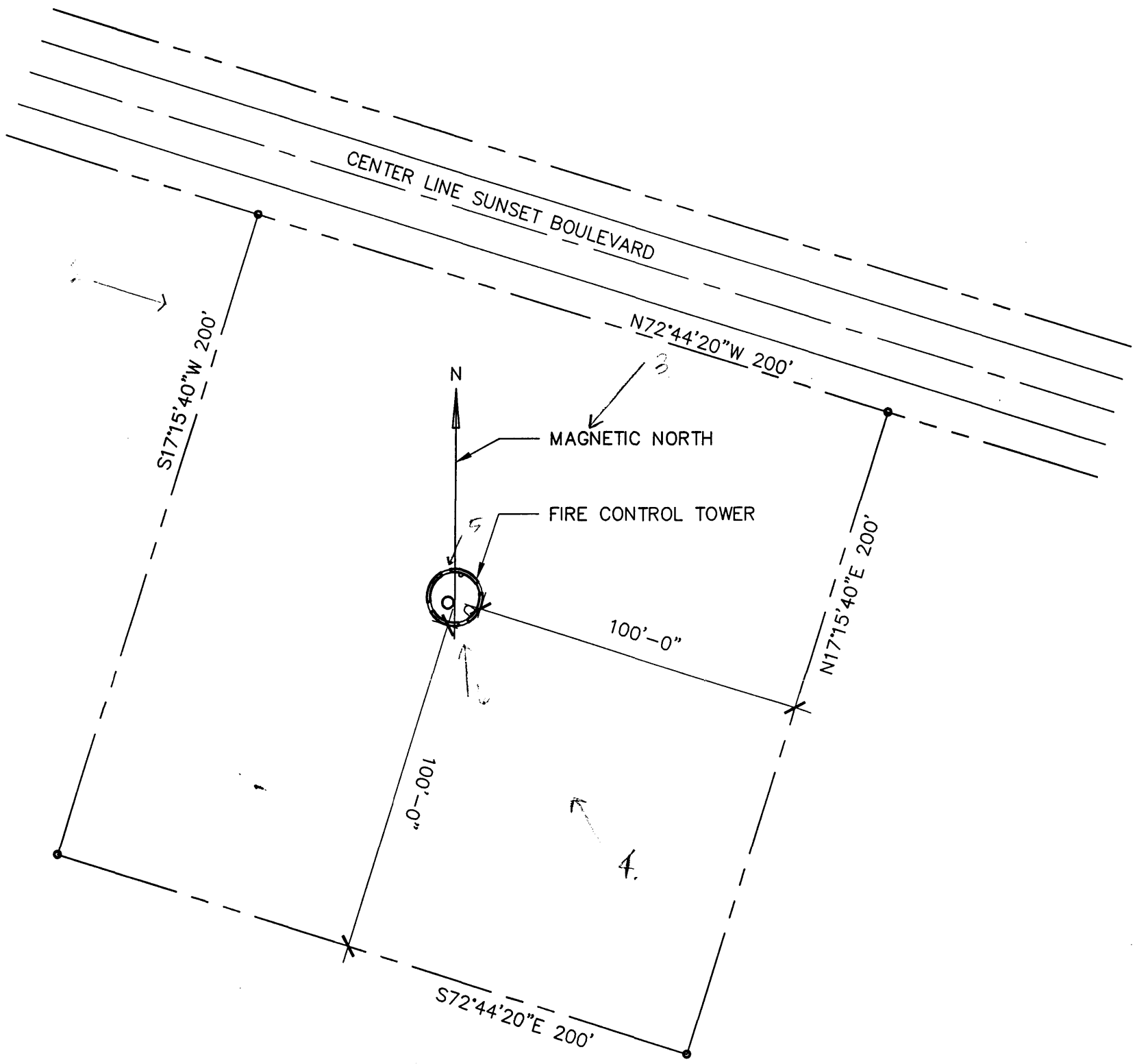
DATE: 07/30/02

SITE PLAN

FIRE CONTROL TOWER NO. 23

CAPE MAY COUNTY, NEW JERSEY

A-101



PLAN NORTH

1 / A-101 SITE PLAN – SITE NO. 18

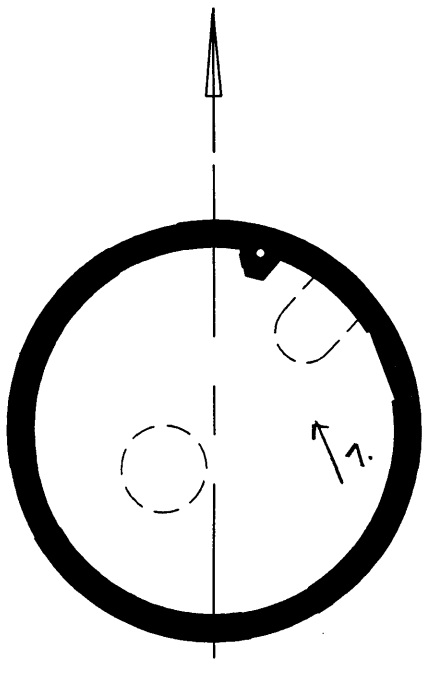
SCALE: 1" = 40'-0"

HOLT · MORGAN · RUSSELL ARCHITECTS, P.A.
350 Alexander Street Princeton NJ 08540 609·924·1358 Fax 609·924·5985
ARCHITECTURE · PLANNING · INTERIORS · HISTORIC PRESERVATION

SCALE: AS NOTED
DRAWN BY:
DATE: 07/30/02

EXTERIOR PHOTO LOCATIONS
FIRE CONTROL TOWER NO. 23
CAPE MAY COUNTY, NEW JERSEY

A-101



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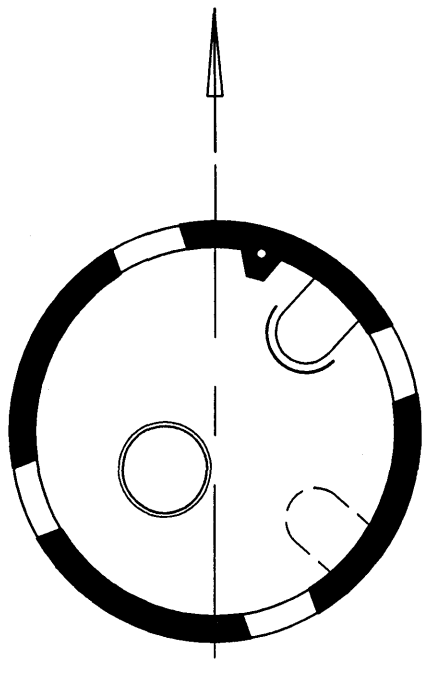

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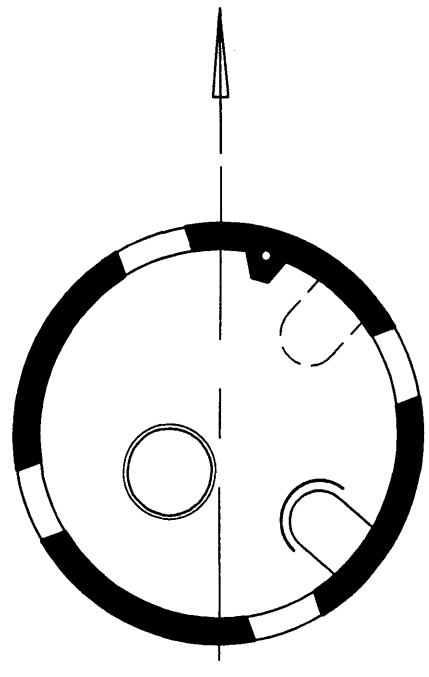

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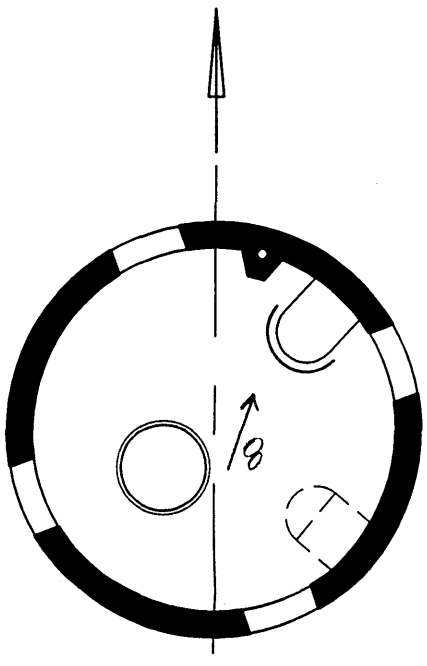

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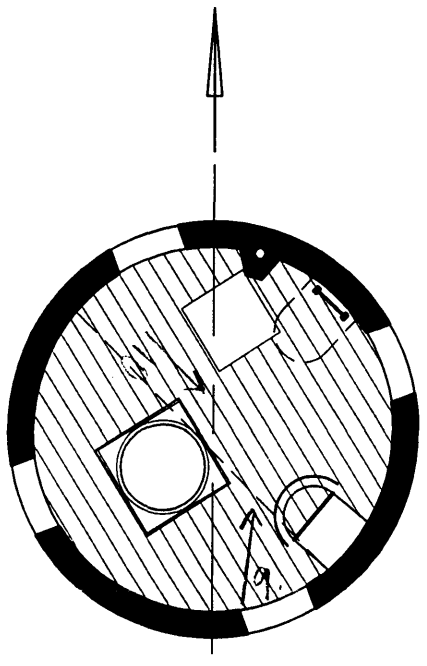

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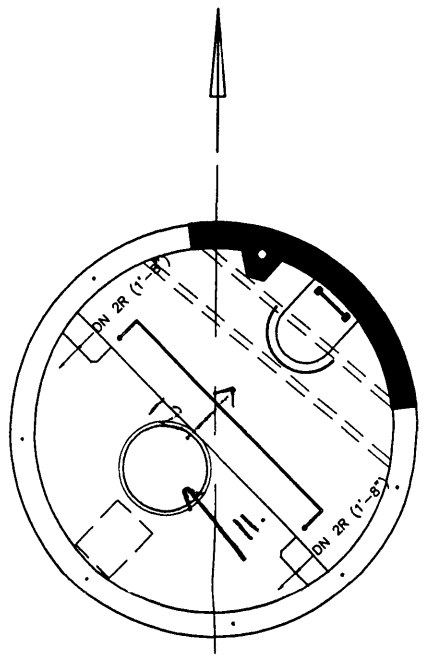

6 A101 LEVELS 6.0 & 6.1 FLOOR PLAN

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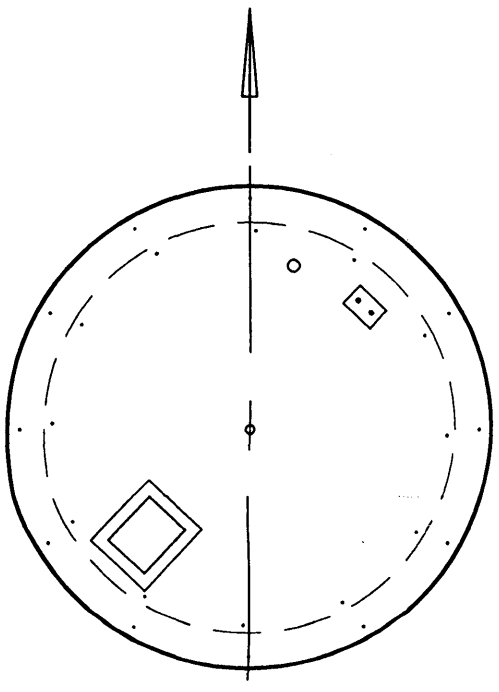

7 A101 ROOF PLAN

SCALE: N.T.S.

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SCALE: N.T.S.UID
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INTERIOR PHOTO LOCATIONS
FIRE CONTROL TOWER NO. 23
CAPE MAY COUNTY, NEW JERSEY

A-102