# APPENDIX A

# HISTORIC PHOTOGRAPHS

# AND NAUTICAL CHARTS


PHOTO 1

VIEW OF MANISTEE LIGHTHOUSE/DWELLING (1875)

U.S. National Archives and Records Administration

Washington, D.C.

PHOTO 2

VIEW OF MANISTEE HARBOR (c 1890)

Manistee County Historical Museum

Manistee, Michigan

PHOTO 3

VIEW OF MANISTEE SOUTH PIER, PERHEAD LIGHT

AND ELEVATED WALKWAY (c 1876-1894)

Manistee County Historical Museum

Manistee, Michigan

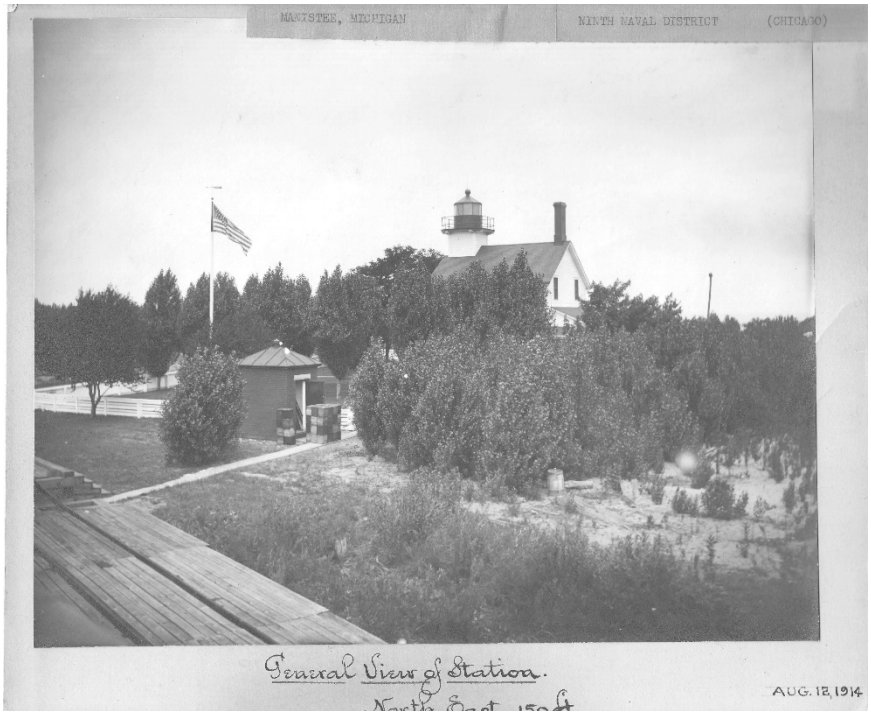



PHOTO 4

VIEW OF MANISTEE LIGHT STATION (1914)

U.S. National Archives and Records Administration

Washington, D.C.


PHOTO 5

VIEW OF OILHOUSE AT MANISTEE LIGHT STATION (1913)

U.S. National Archives and Records Administration

Washington, D.C.

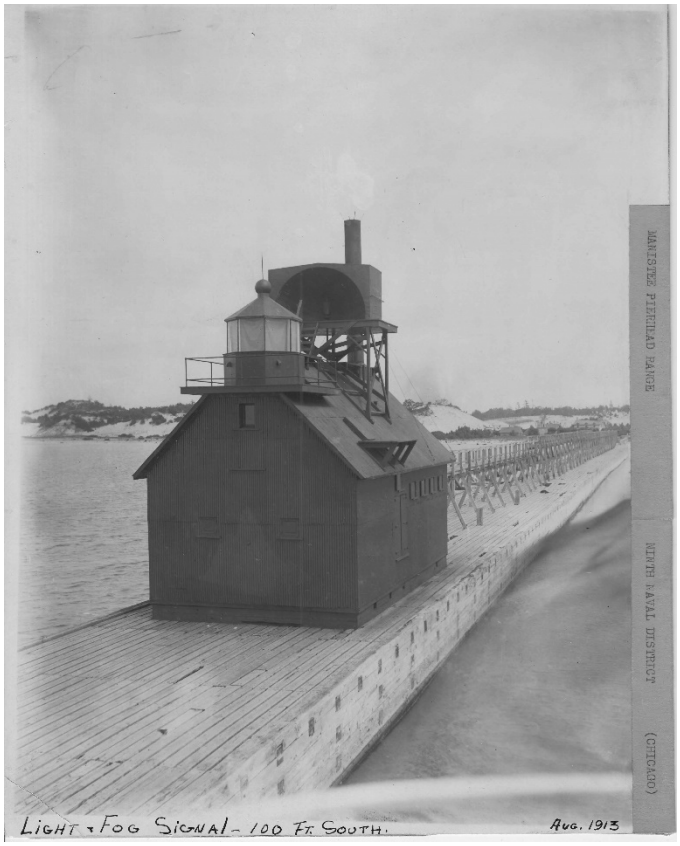



PHOTO 6

VIEW OF MANISTEE NORTH PIER,

FOG SIGNAL BUILDING WITH LANTERN AND

WOOD ELEVATED WALKWAY (1913)

U.S. National Archives and Records Administration

Washington, D.C.


PHOTO 7

VIEW OF MANISTEE NORTH PIER IN WINTER,

FOG SIGNAL BUILDING WITH LANTERN AND

WOOD ELEVATED WALKWAY (1913)

U.S. National Archives and Records Administration

Washington, D.C.


PHOTO 8

VIEW OF MANISTEE NORTH PIER,

FOG SIGNAL BUILDING WITH LANTERN AND

WOOD ELEVATED WALKWAY (1914)

U.S. National Archives and Records Administration

Washington, D.C.


PHOTO 9

VIEW OF MANISTEE NORTH AND SOUTH PIERS

AND SOUTH BREAKWATER (1915)

U.S. National Archives and Records Administration

Washington, D.C.

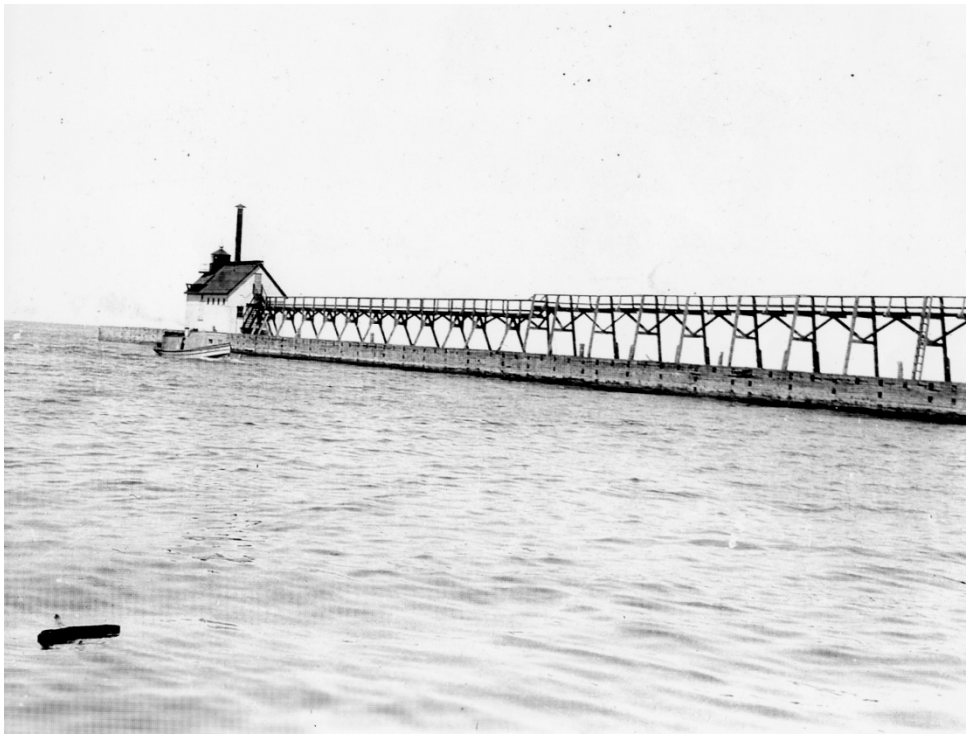


PHOTO 10

VIEW OF MANISTEE NORTH PIER,

FOG SIGNAL BUILDING WITH LANTERN

AND ELEVATED WALKWAY (c 1920)

Manistee County Historical Museum

Manistee, Michigan

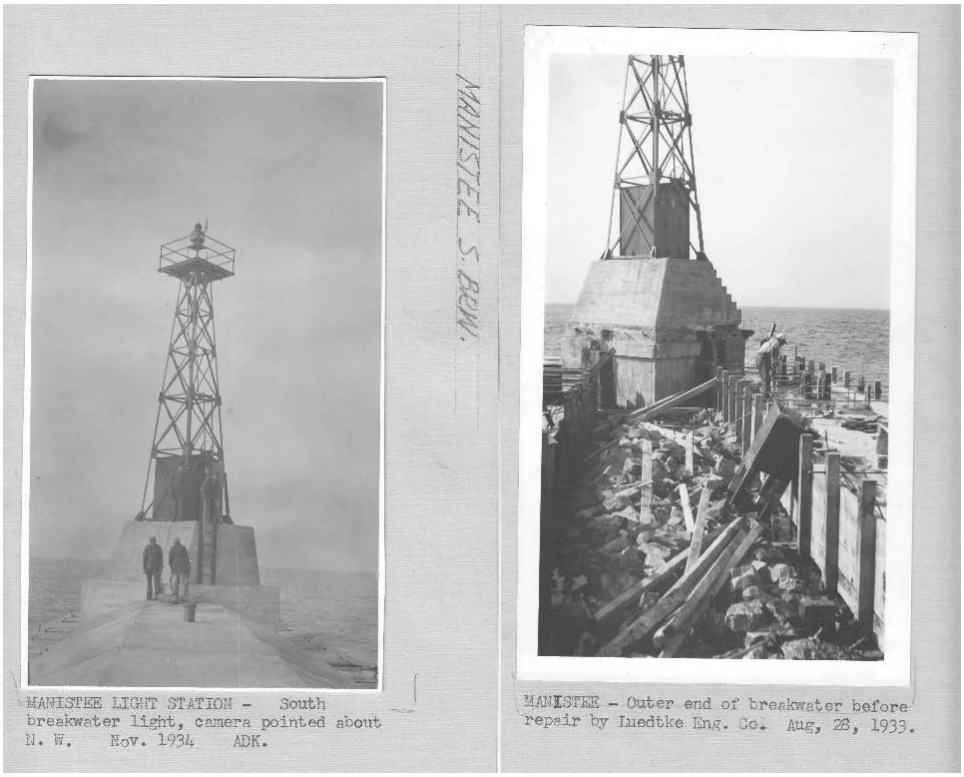



PHOTO 11 and PHOTO 12

VIEWS OF MANISTEE SOUTH BREAKWATER (1933/1934)

U.S. National Archives and Records Administration

Washington, D.C.


PHOTO 13

VIEW OF MANISTEE NORTH PIERHEAD LIGHT

AND ELEVATED WALKWAY (1935)

U.S. National Archives and Records Administration

Washington, D.C.

PHOTO 14

VIEW OF MANISTEE NORTH PIER,

AND NORTH PIERHEAD LIGHT (c  Early 1930s)

Manistee County Historical Museum

Manistee, Michigan

PHOTO 15

VIEW OF MANISTEE NORTH PIER,

SHOWING DAMAGED CATWALK (c Early to Mid 1930s)

Manistee County Historical Museum

Manistee, Michigan


PHOTO 16

VIEW OF MANISTEE NORTH PIER, ELEVATED WALKWAY

AND NORTH PIERHEAD LIGHT (1935)

U.S. National Archives and Records Administration

Washington, D.C.

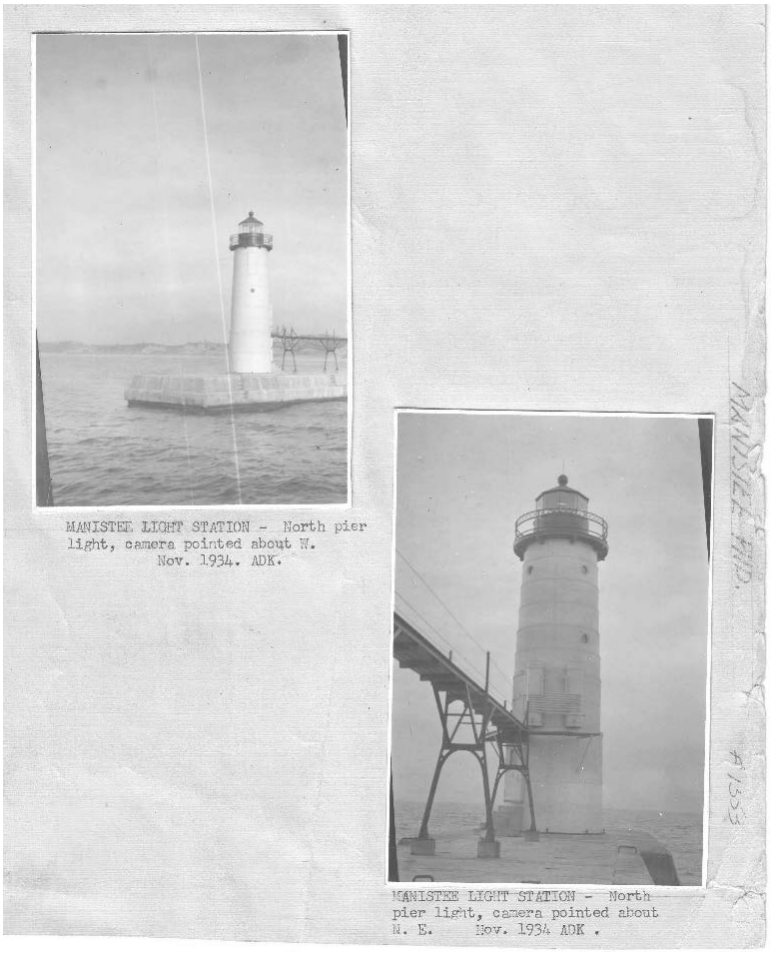



PHOTO 17 and PHOTO 18

VIEWS OF MANISTEE NORTH PIERHEAD LIGHT (1934)

U.S. National Archives and Records Administration

Washington, D.C.

PHOTO 19

VIEW OF MANISTEE NORTH PIERHEAD LIGHT (c 1930s)

Manistee County Historical Museum

Manistee, Michigan

PHOTO 20

VIEW OF MANISTEE NORTH PIER AND

LIGHT FROM ELEVATED WALKWAY (c 1930s)

Manistee County Historical Museum

Manistee, Michigan

PHOTO 21

VIEW OF MANISTEE NORTH PIER AND

PIERHEAD LIGHT (c 1930s)

Manistee County Historical Museum

Manistee, Michigan


PHOTO 22

VIEW OF MANISTEE NORTH PIER AND

ELEVATED WALKWAY (c Late 1930s-1940)

Manistee County Historical Museum

Manistee, Michigan

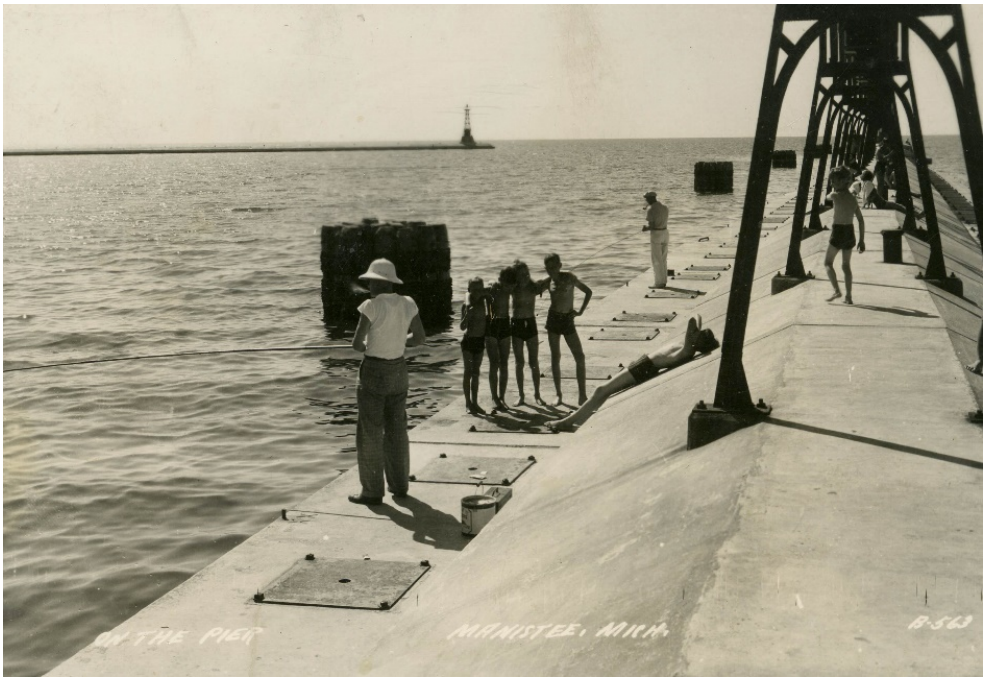


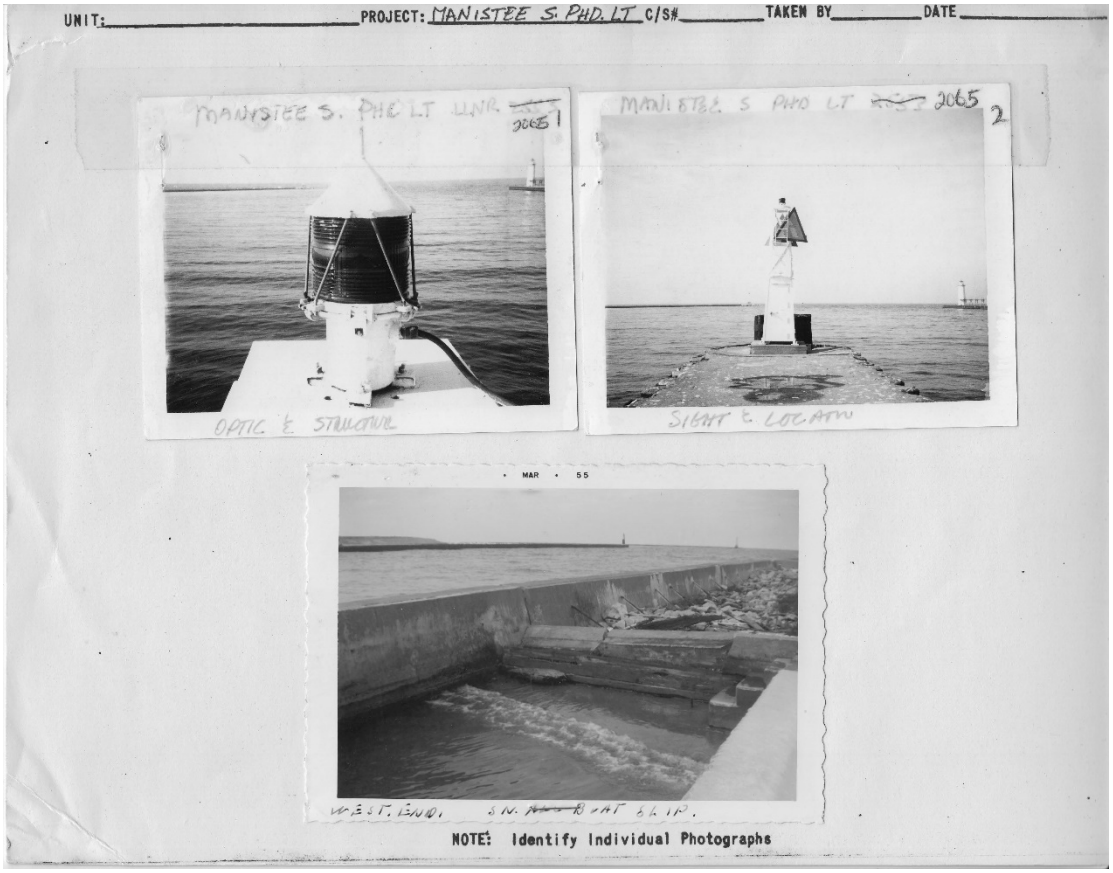

PHOTO 23

VIEW OF MANISTEE NORTH PIER AND

ELEVATED WALKWAY (c 1940)

Manistee County Historical Museum

Manistee, Michigan




PHOTOS 24, 25 AND 26

VIEW OF MANISTEE SOUTH PIERHEAD LIGHT (c 1955)

U.S. National Archives and Records Administration

Washington, D.C.

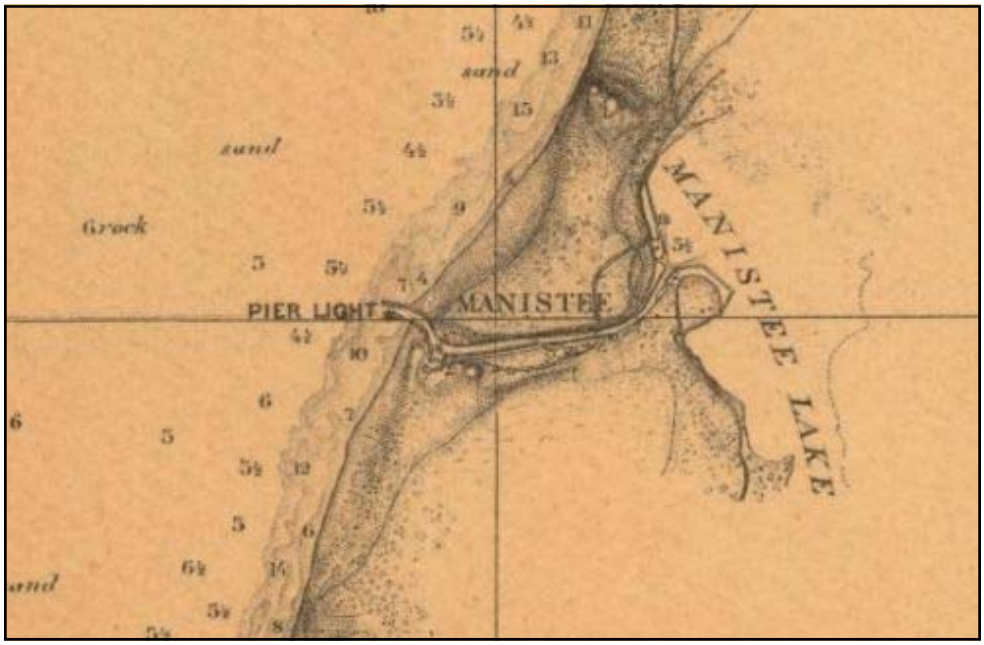

# HISTORIC NAUTICAL CHART #1
## 1876

**Partial Image from**

**South End of Lake Michigan**
**Headquarters of the Corps of Engineers, War Department**
**1876**

**Nautical Chart #LS50-00-1876**

**National Oceanic and Atmospheric Administration (NOAA)**
**Office of Coast Survey / Historical Map and Chart Collection**
**http://historicalcharts.noaa.gov**



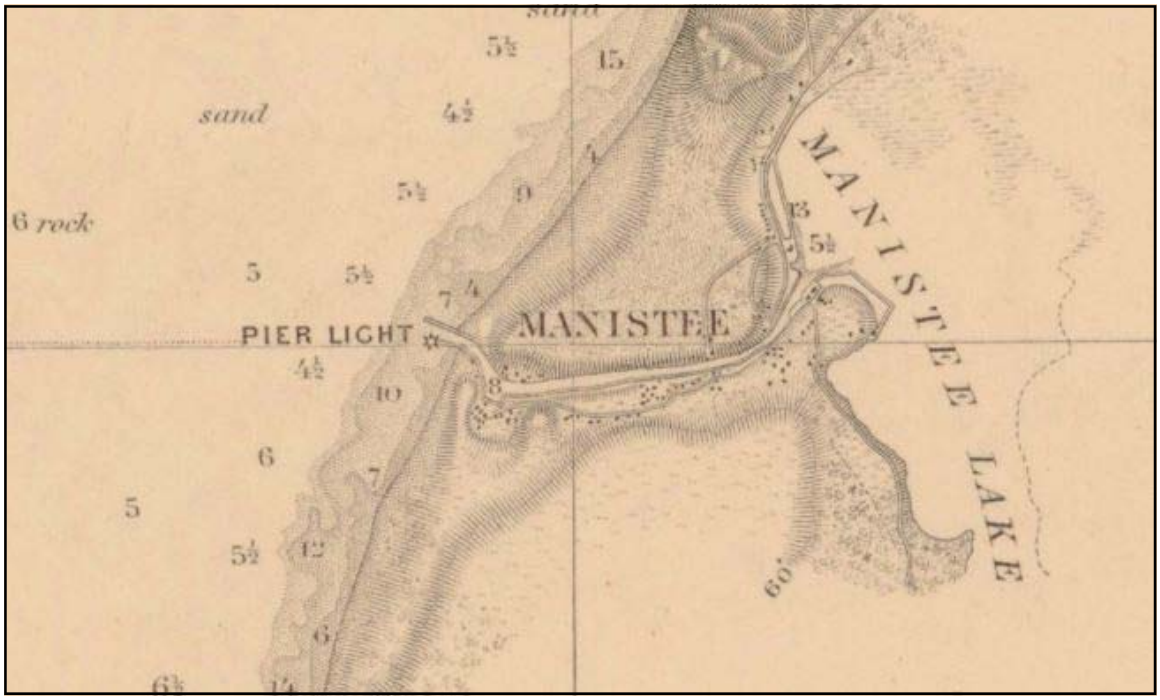

# HISTORIC NAUTICAL CHART #2
# 1878

**Partial Image from**

**Lake Michigan, Coast Chart No. 9**
**Ludington to Point-Betsey**
**Headquarters of the Corps of Engineers, War Department**
**1878**

**Nautical Chart #LS62-00-1878**

**National Oceanic and Atmospheric Administration (NOAA)**
**Office of Coast Survey / Historical Map and Chart Collection**
**http://historicalcharts.noaa.gov**



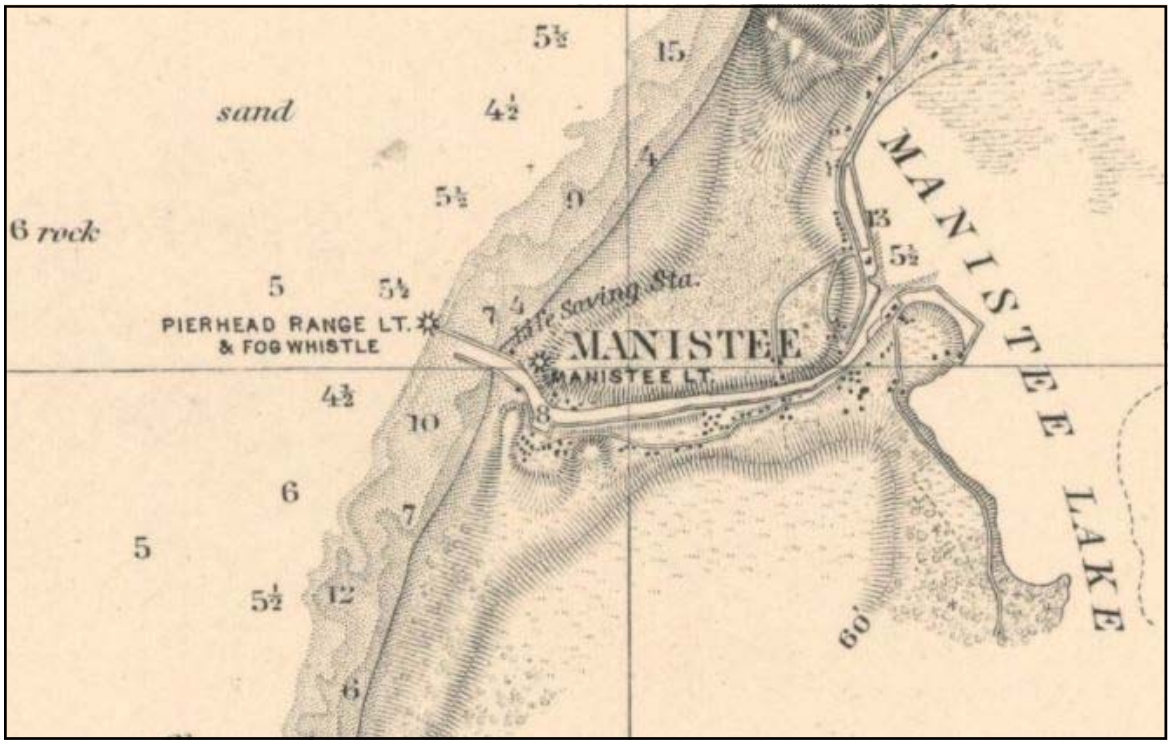

## HISTORIC NAUTICAL CHART #3
## 1880

**Partial Image from**

**Lake Michigan, Coast Chart No. 9**
**Ludington to Point-Betsey**
**Headquarters of the Corps of Engineers, War Department**
**1880**

**Nautical Chart #LS62-01-1880**

**National Oceanic and Atmospheric Administration (NOAA)**
**Office of Coast Survey / Historical Map and Chart Collection**
**http://historicalcharts.noaa.gov**



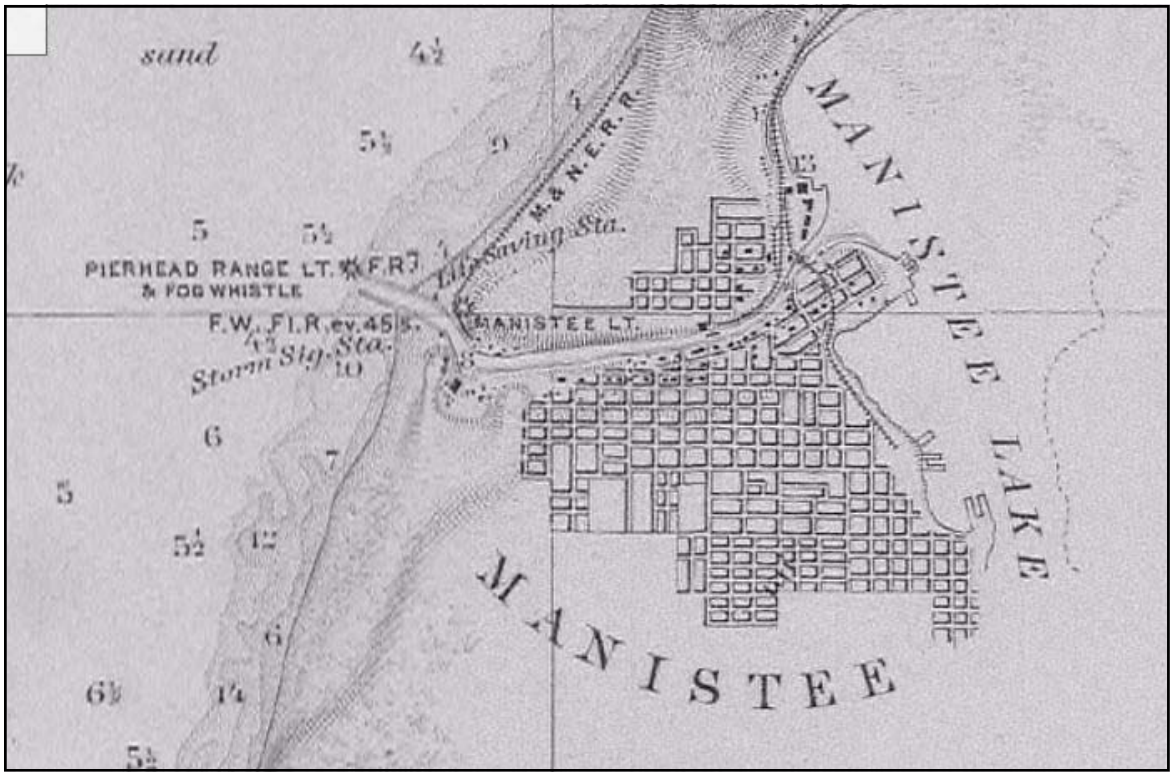

# HISTORIC NAUTICAL CHART #4
## 1897

**Partial Image from**

**South End of Lake Michigan**
**Headquarters of the Corps of Engineers, War Department**
**April 1897**

**Nautical Chart #LS50-04-1897**

**National Oceanic and Atmospheric Administration (NOAA)**
**Office of Coast Survey / Historical Map and Chart Collection**
**http://historicalcharts.noaa.gov**



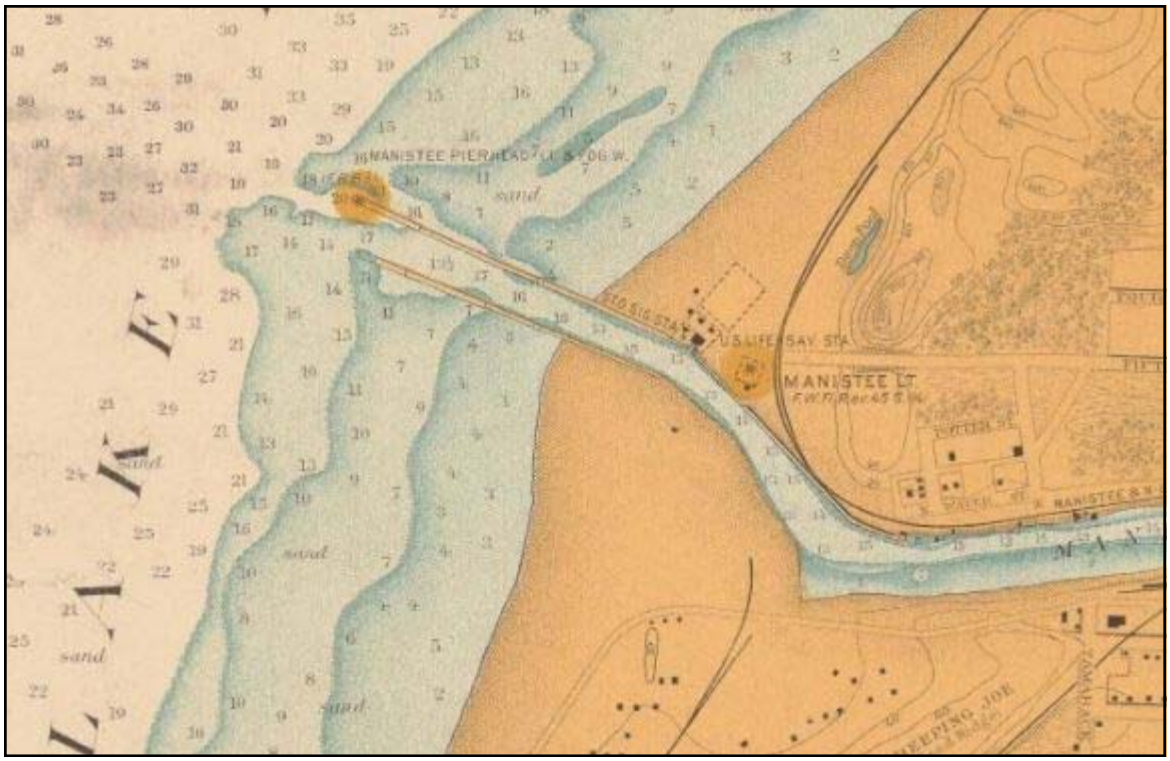

**HISTORIC NAUTICAL CHART #5**
**1900**

**Partial Image from**

**Lake Michigan, Coast Chart No. 9**
**Ludington to Point-Betsey**
**Headquarters of the Corps of Engineers, War Department**
**1900**

**Nautical Chart #9-07-1900**

**National Oceanic and Atmospheric Administration (NOAA)**
**Office of Coast Survey / Historical Map and Chart Collection**
**http://historicalcharts.noaa.gov**



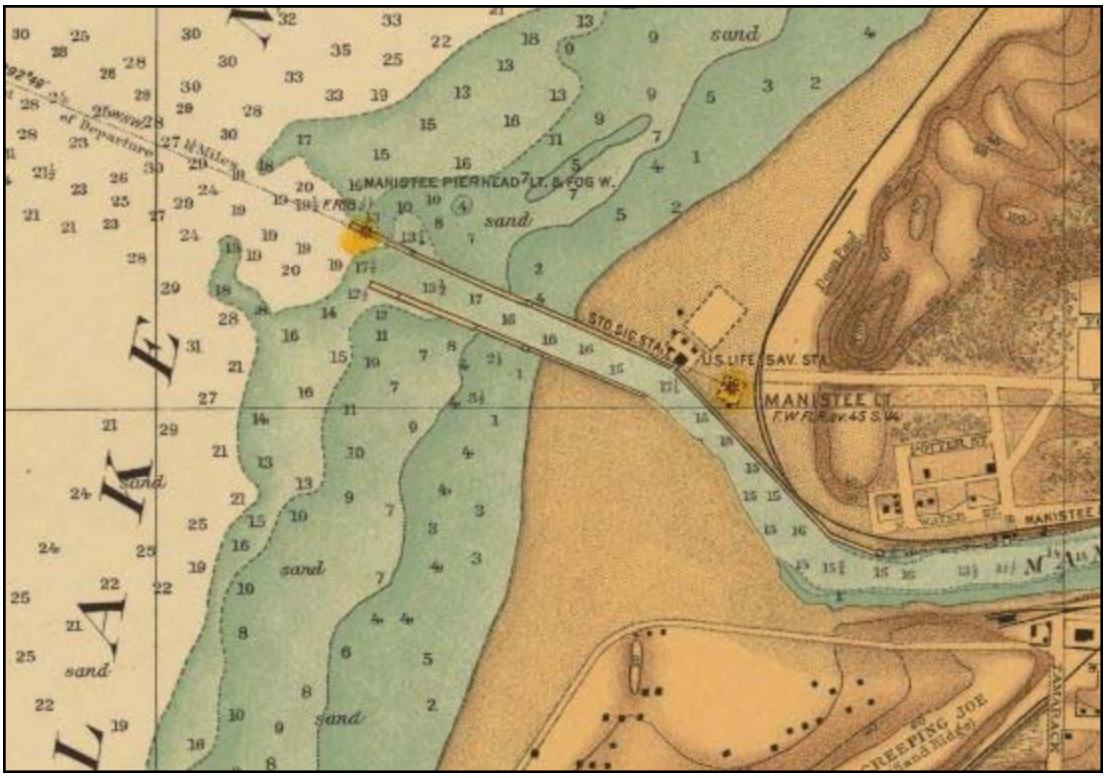

# HISTORIC NAUTICAL CHART #6
## 1904

**Partial Image from**

**Manistee Harbor, Michigan**
**Headquarters Corps of Engineers, U. S. Army**
**December 1904**

**Nautical Chart #LS776-12-1904**

**National Oceanic and Atmospheric Administration (NOAA)**
**Office of Coast Survey / Historical Map and Chart Collection**
**http://historicalcharts.noaa.gov**



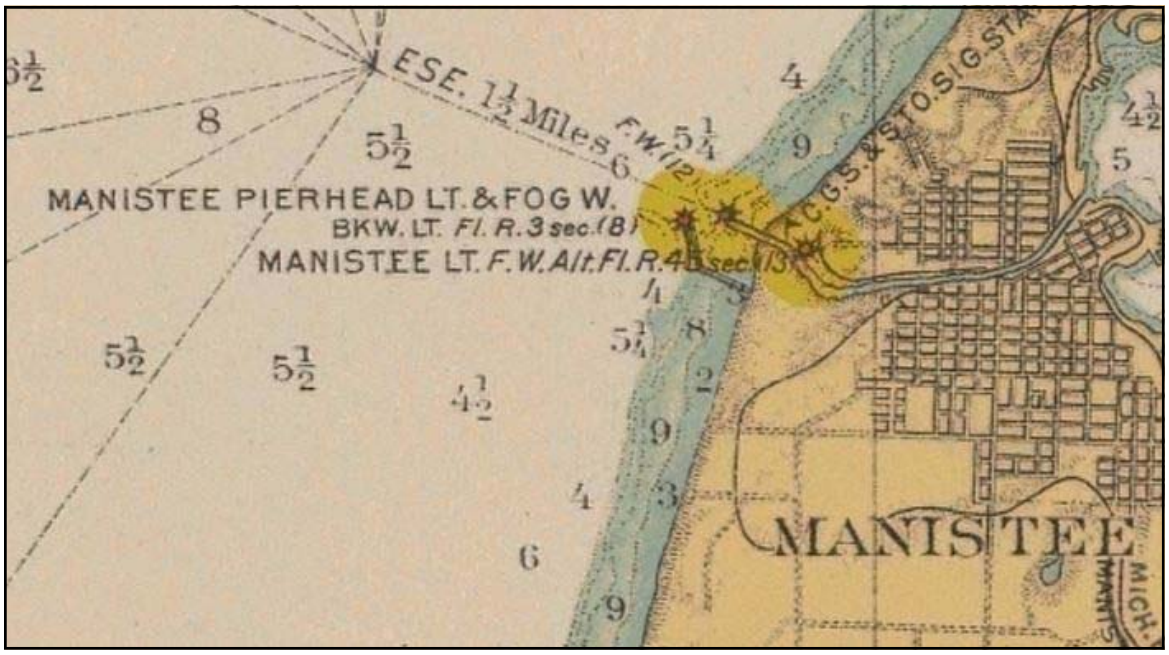

# HISTORIC NAUTICAL CHART #7
## 1911

**Partial Image from**

**Manistee Harbor, Michigan**
**Headquarters Corps of Engineers, U. S. Army**
**February 1911**

**Nautical Chart #LS893-02-1911**

**National Oceanic and Atmospheric Administration (NOAA)**
**Office of Coast Survey / Historical Map and Chart Collection**
**http://historicalcharts.noaa.gov**



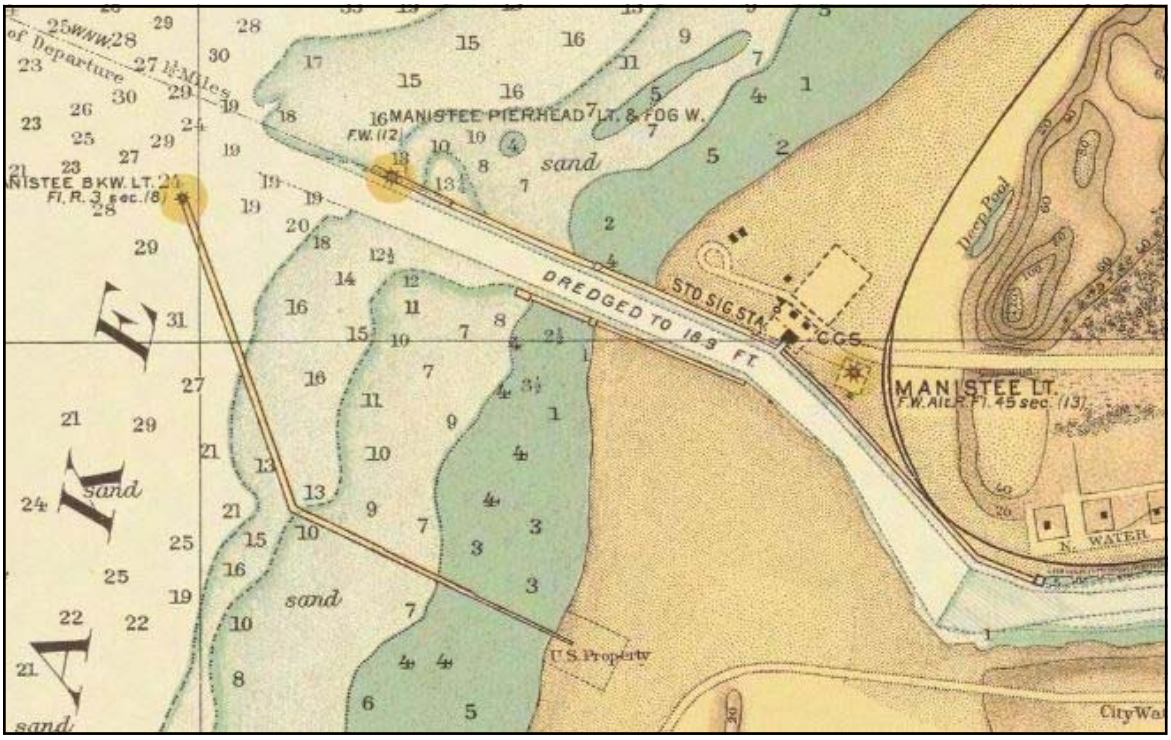

# HISTORIC NAUTICAL CHART #8
## 1919

**Partial Image from**

**Lake Michigan, Coast Chart No. 7**
**Benona to Point Betsie, Michigan**
**The Chief of Engineers, U. S. Army**
**September 1919**

**Nautical Chart #LS77-09-1919**

**National Oceanic and Atmospheric Administration (NOAA)**
**Office of Coast Survey / Historical Map and Chart Collection**
**http://historicalcharts.noaa.gov**



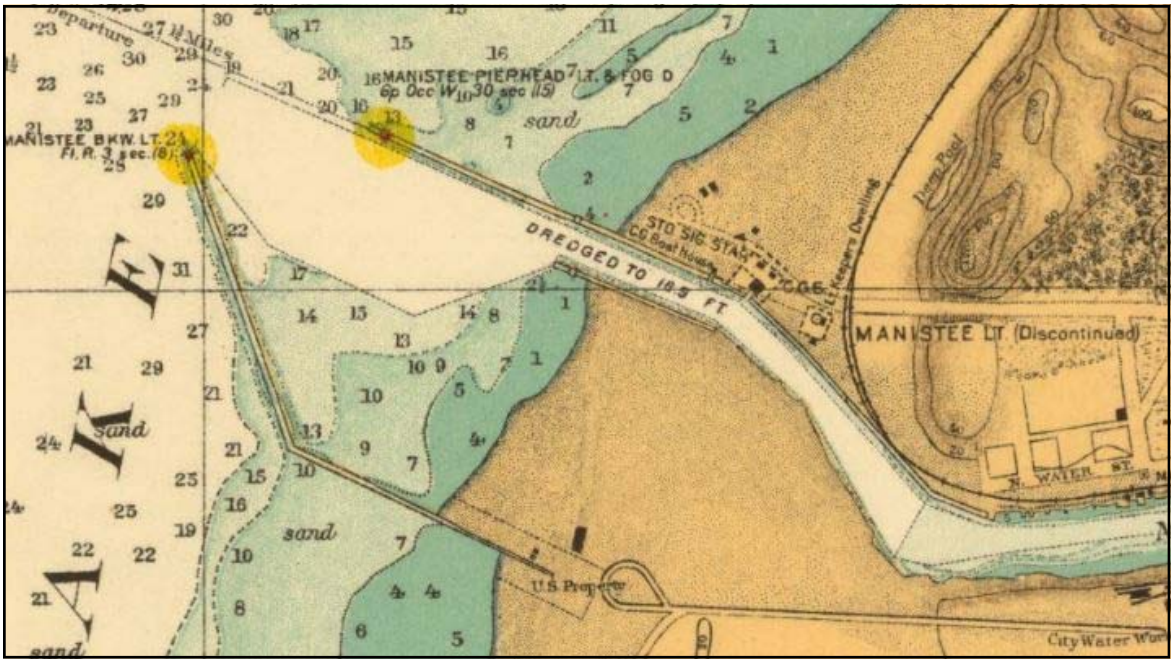

## HISTORIC NAUTICAL CHART #9
## 1920

**Partial Image from**

**Manistee Harbor, Michigan**
**The Chief of Engineers, U. S. Army**
**May 1920**

**Nautical Chart #LS776-05-1920**

**National Oceanic and Atmospheric Administration (NOAA)**
**Office of Coast Survey / Historical Map and Chart Collection**
**http://historicalcharts.noaa.gov**



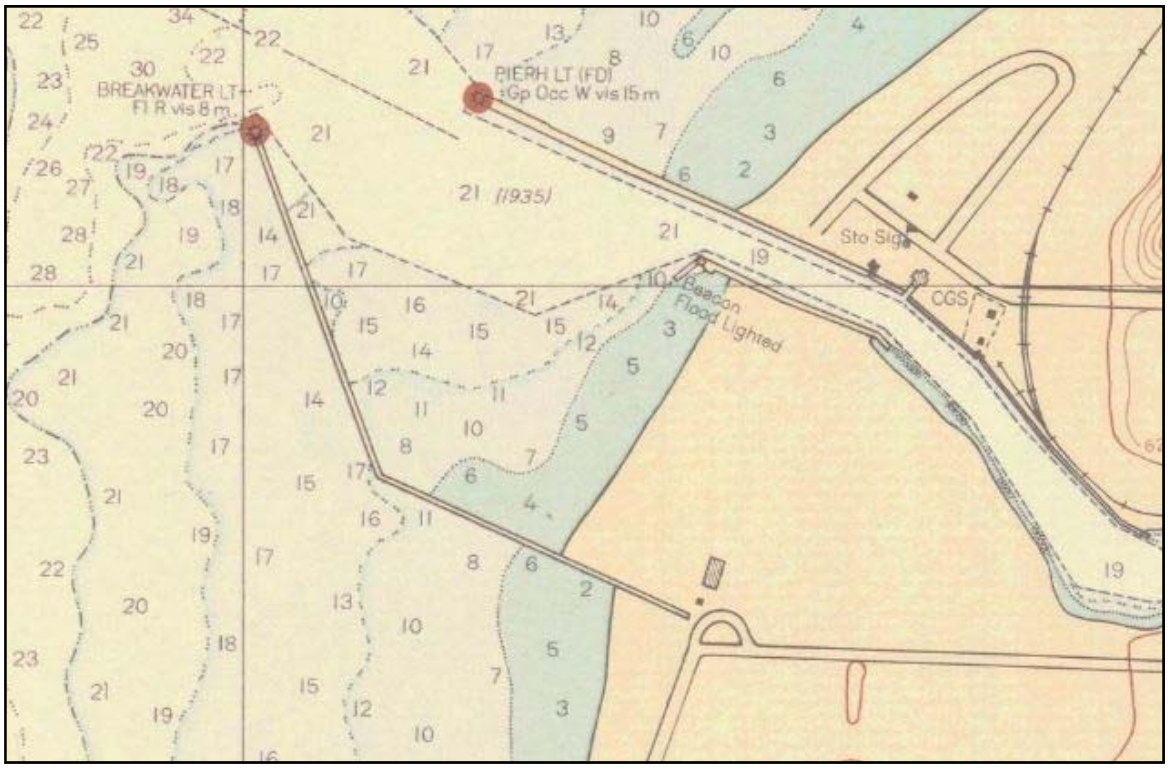

# HISTORIC NAUTICAL CHART #10
## 1928

**Partial Image from**

**Manistee Harbor, Michigan**
**The Chief of Engineers, U. S. Army**
**May 1928**

**Nautical Chart #LS776-05-1928**

**National Oceanic and Atmospheric Administration (NOAA)**
**Office of Coast Survey / Historical Map and Chart Collection**
**http://historicalcharts.noaa.gov**



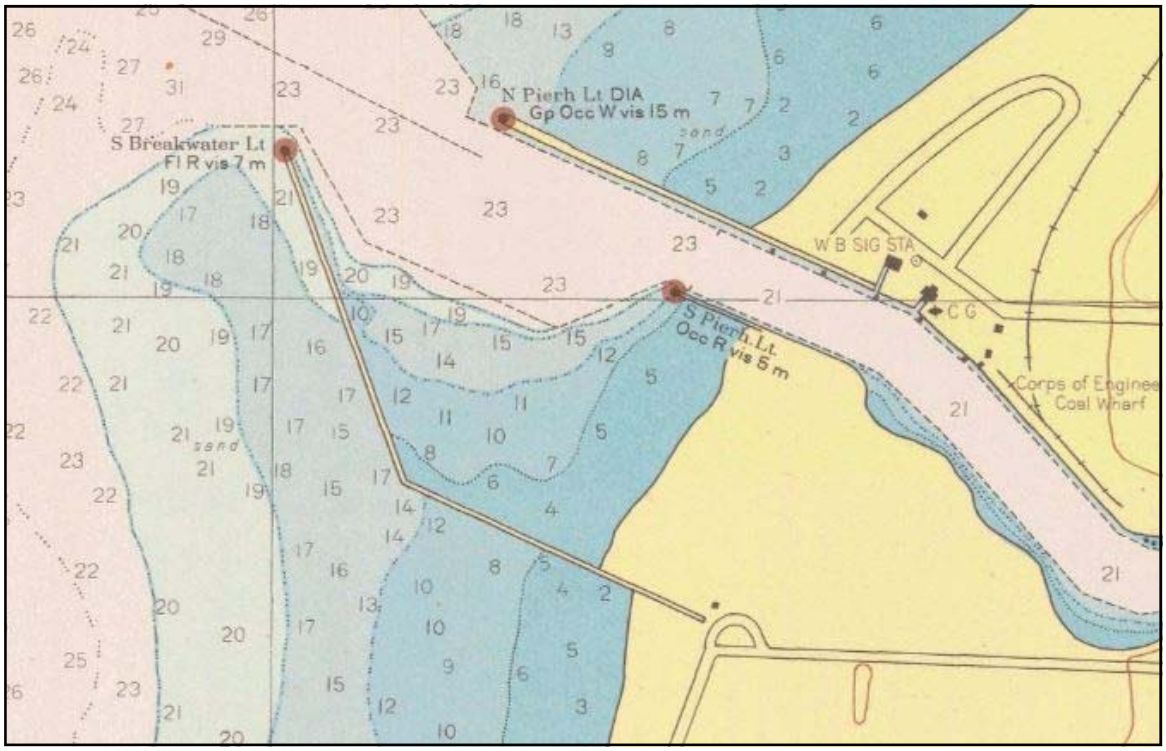

# HISTORIC NAUTICAL CHART #11
## 1936

**Partial Image from**

**Manistee Harbor, Michigan**
**War Department, Corps of Engineers**
**January 1936**

**Nautical Chart #LS776-01-1936**

**National Oceanic and Atmospheric Administration (NOAA)**
**Office of Coast Survey / Historical Map and Chart Collection**
**http://historicalcharts.noaa.gov**



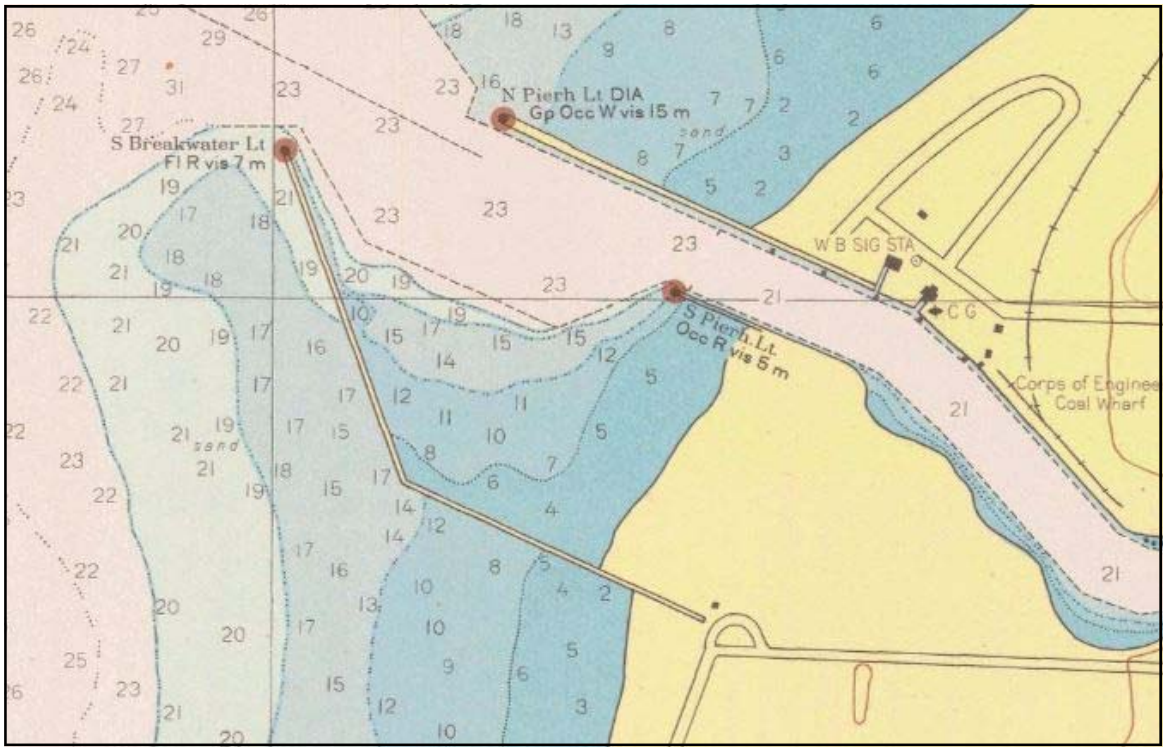

# HISTORIC NAUTICAL CHART #12
## 1947

**Partial Image from**

**Manistee Harbor, Michigan**
**Department of the Army, Corps of Engineers**
**November 1947**

**Nautical Chart #LS776-11-1947**

**National Oceanic and Atmospheric Administration (NOAA)**
**Office of Coast Survey / Historical Map and Chart Collection**
**http://historicalcharts.noaa.gov**



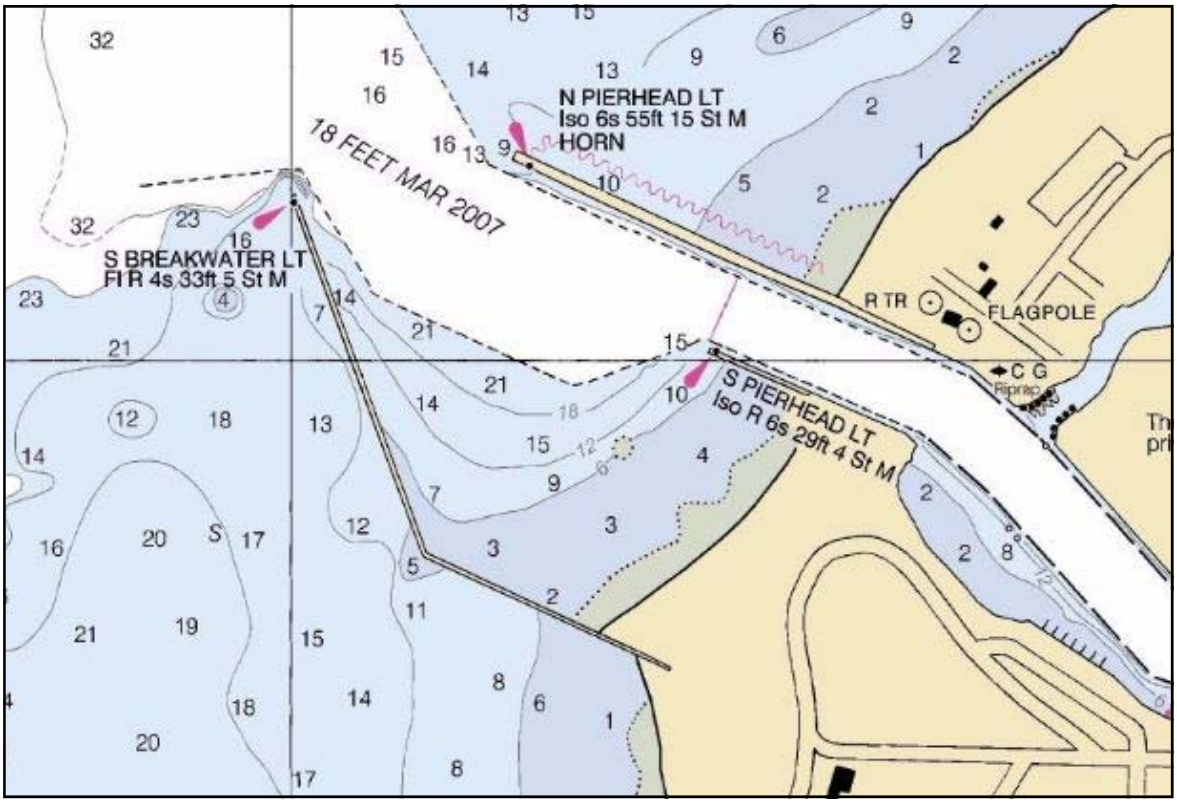

# HISTORIC NAUTICAL CHART #13
## 1951

**Partial Image from**

**Manistee Harbor, Michigan**
**Corps of Engineers, U. S. Army**
**February 1951**

**Nautical Chart #LS776-02-1951**

**National Oceanic and Atmospheric Administration (NOAA)**
**Office of Coast Survey / Historical Map and Chart Collection**
**http://historicalcharts.noaa.gov**




# HISTORIC NAUTICAL CHART #14
## 2008

**Partial Image from**

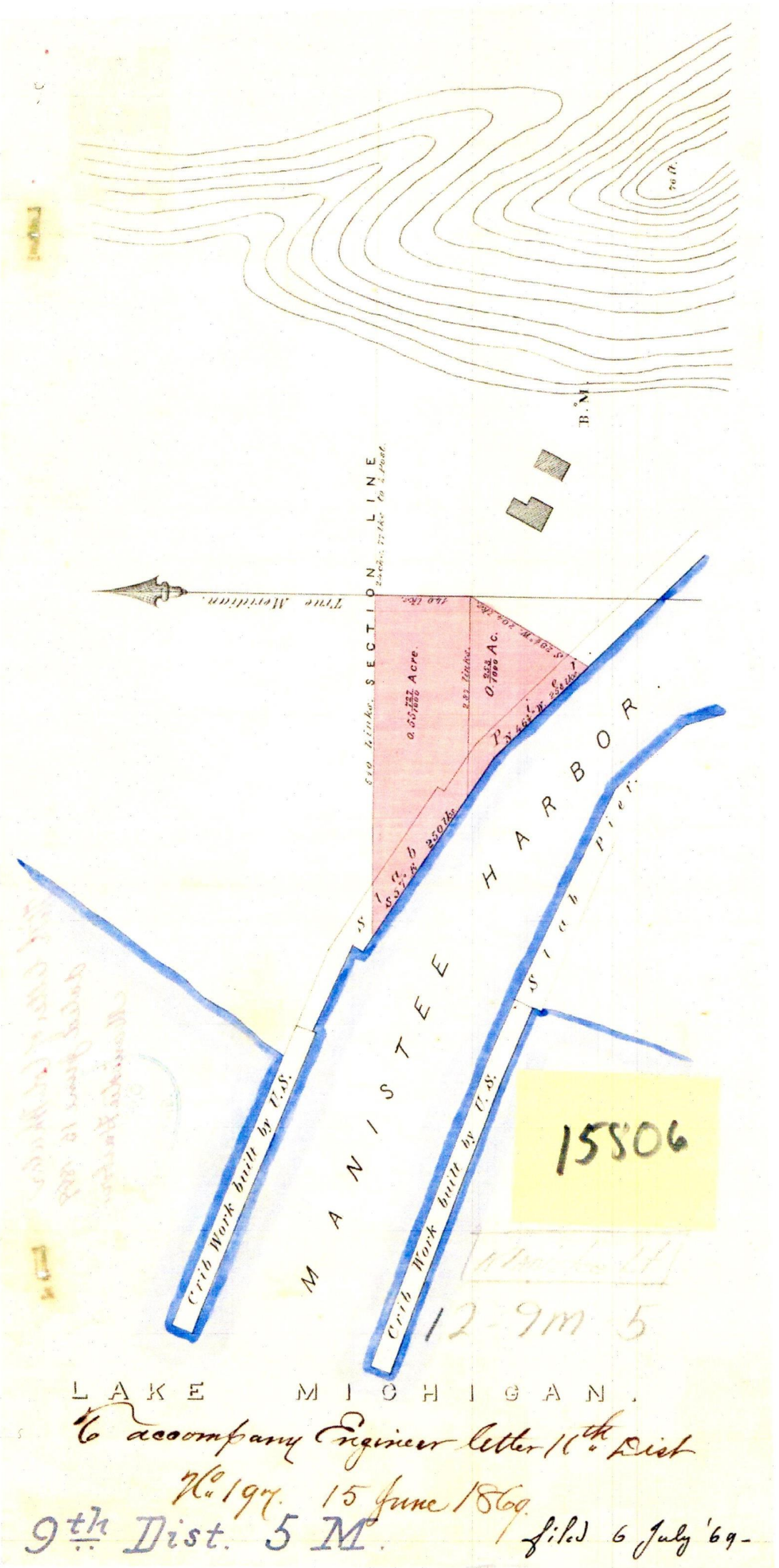
**Manistee Harbor, Michigan**
**National Oceanic and Atmospheric Administration**
**July 2008**

**Nautical Chart #14938-07-2008**

**National Oceanic and Atmospheric Administration (NOAA)**
**Office of Coast Survey / Historical Map and Chart Collection**
**http://historicalcharts.noaa.gov**

APPENDIX B

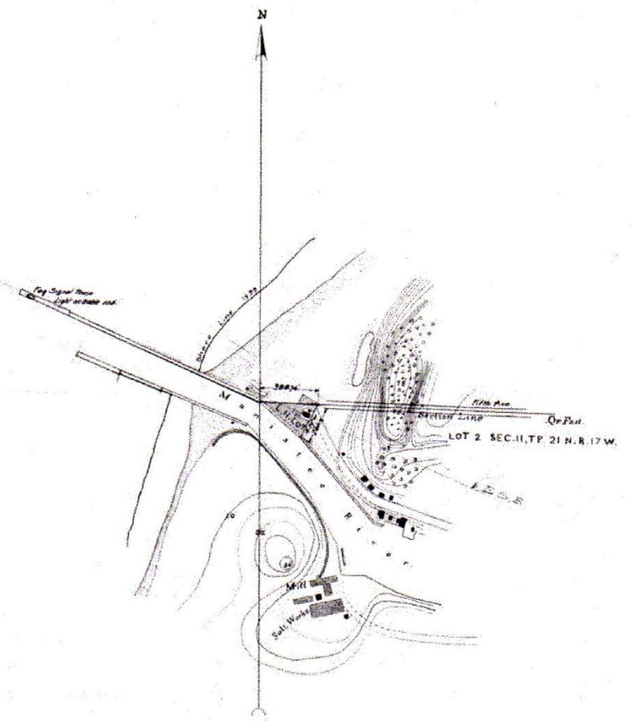
ARCHIVAL DRAWINGS




15506

12-9m 5

To accompany Engineer letter 10th Dist
No 197. 15 June 1869.
9th Dist. 5 M. filed 6 July '69-




# LIGHT-HOUSE SITE AT
# MANISTEE MICHIGAN

Surveyed and drawn under the direction of

CAPTAIN CHARLES E. L. B. DAVIS, U. S. A.

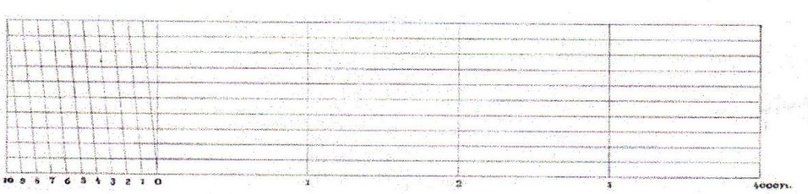
LIGHT-HOUSE ENGINEER.

BY

A R Flint.

1883

*Scale 50ch=*




RHL 1015230

Cabinet A
Drawer 11
Folio 2
Number 1

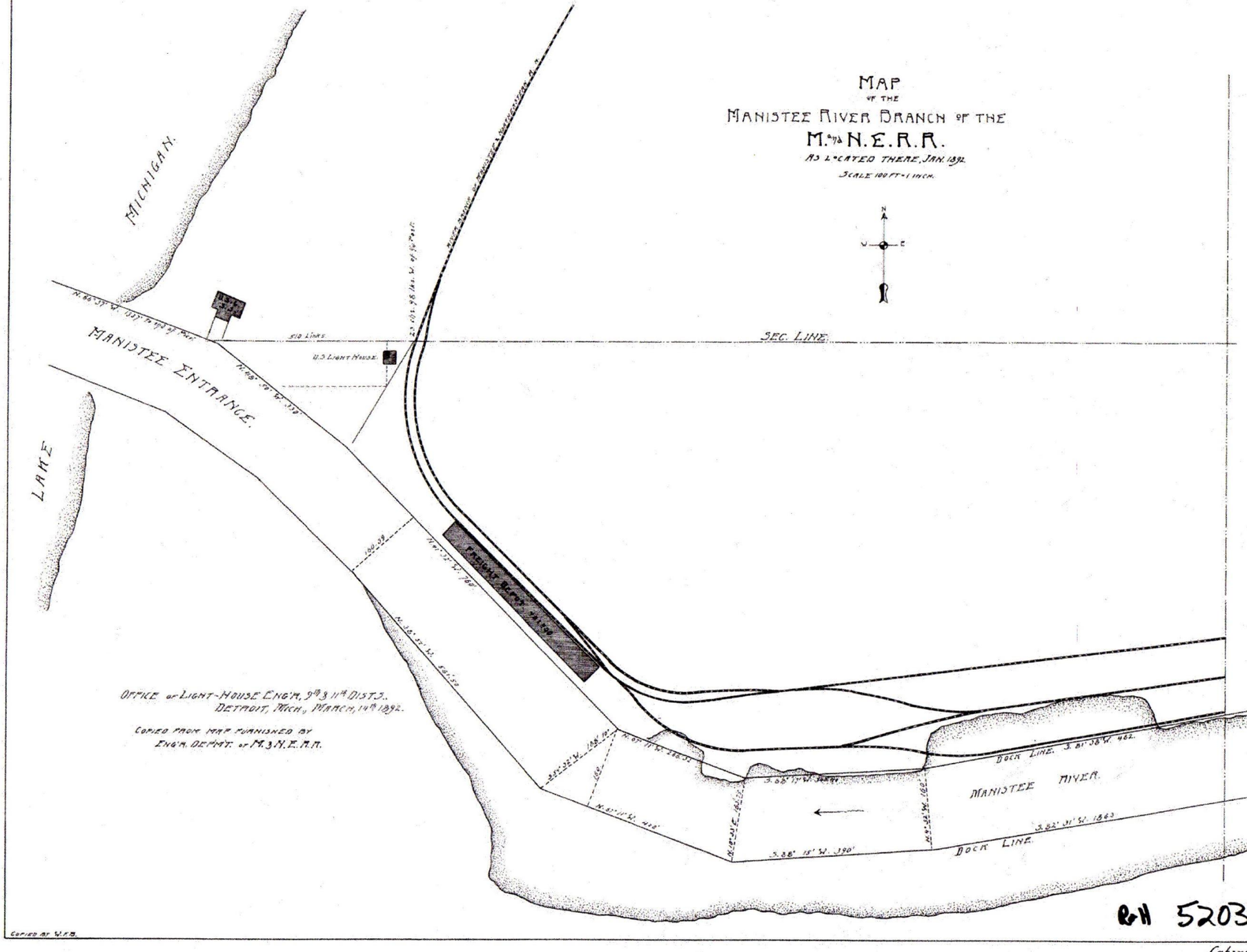
118

DRAWING #2 (1883)
SITE PLAN

# MAP
OF THE
## MANISTEE RIVER BRANCH OF THE
## M.& N.E.R.R.
AS LOCATED THERE, JAN. 1892.

SCALE 100 FT = 1 INCH.




OFFICE of LIGHT-HOUSE ENG'R, 9th & 11th DIST'S.
DETROIT, MICH., MARCH, 14th 1892.

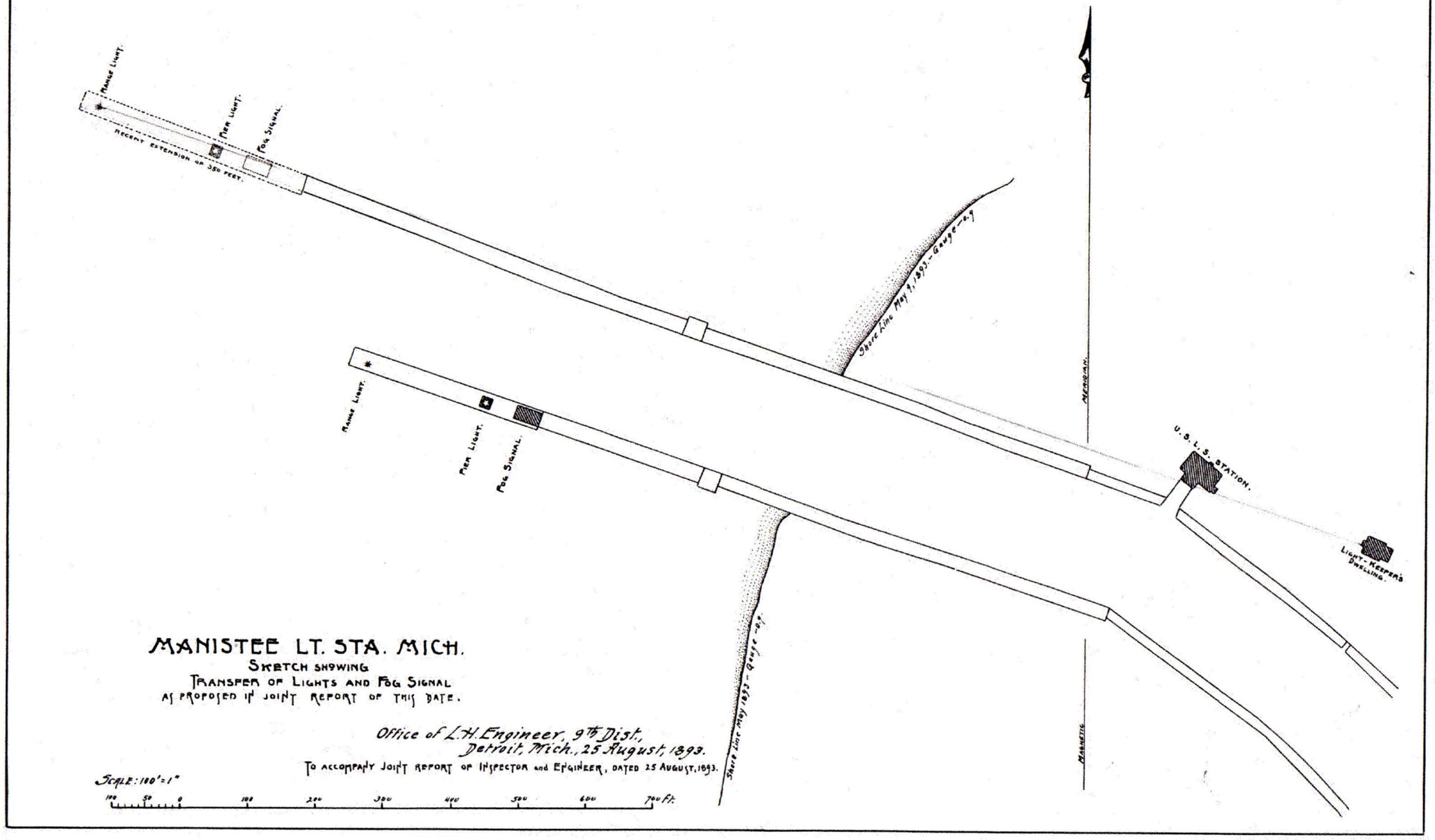
COPIED FROM MAP FURNISHED BY
ENG'R. DEPART. of M. & N.E.R.R.

COPIED BY W.F.B.

RH 52037

Cabinet A
Drawer 11
Folio
Number 2 12 18

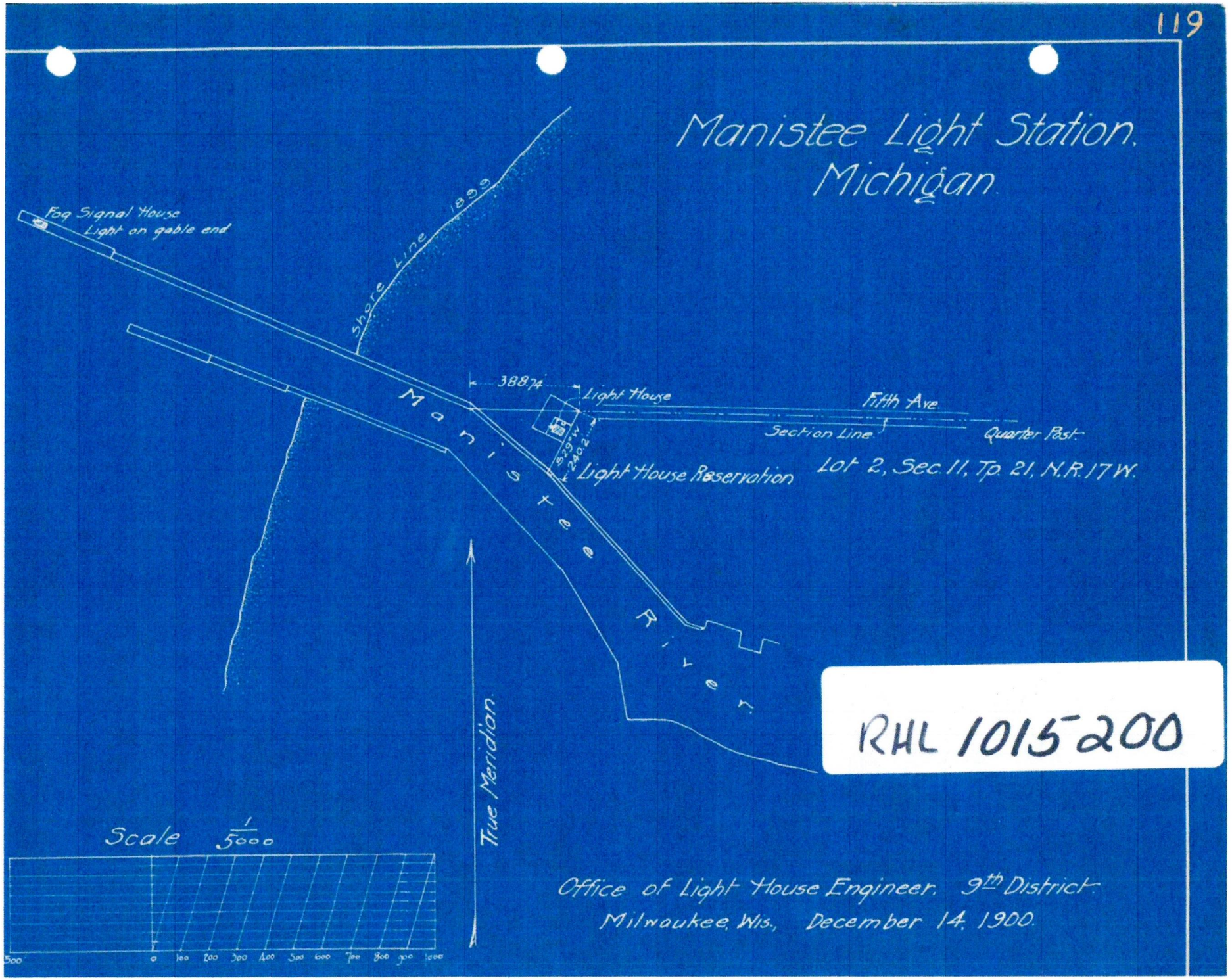
DRAWING #3 (1892)
SITE PLAN



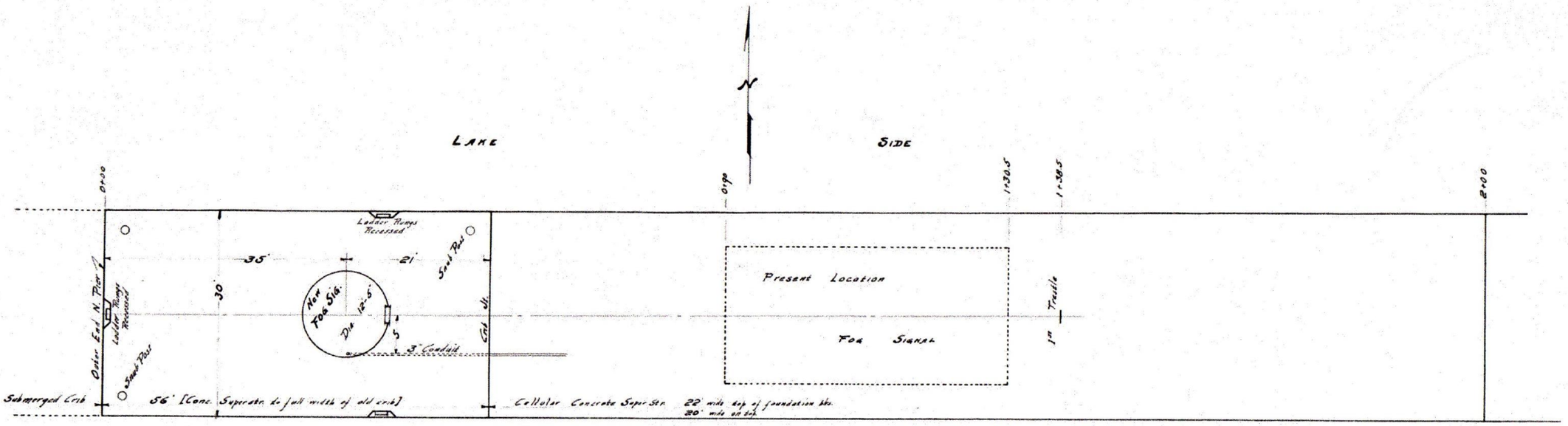

DRAWING #4 (1893)
SITE PLAN

Cabinet A
Drawer 11
Folio 2
Number 3

RHL 1015206




DRAWING #5 (1900)
SITE PLAN




CHANNEL SIDE

PLAN OF NORTH PIER

RHL 1015213

W. O. No. P. O. No. D. O No.

OFFICE OF SUPERINTENDENT OF LIGHTHOUSES
TWELFTH DISTRICT MILWAUKEE, WIS.

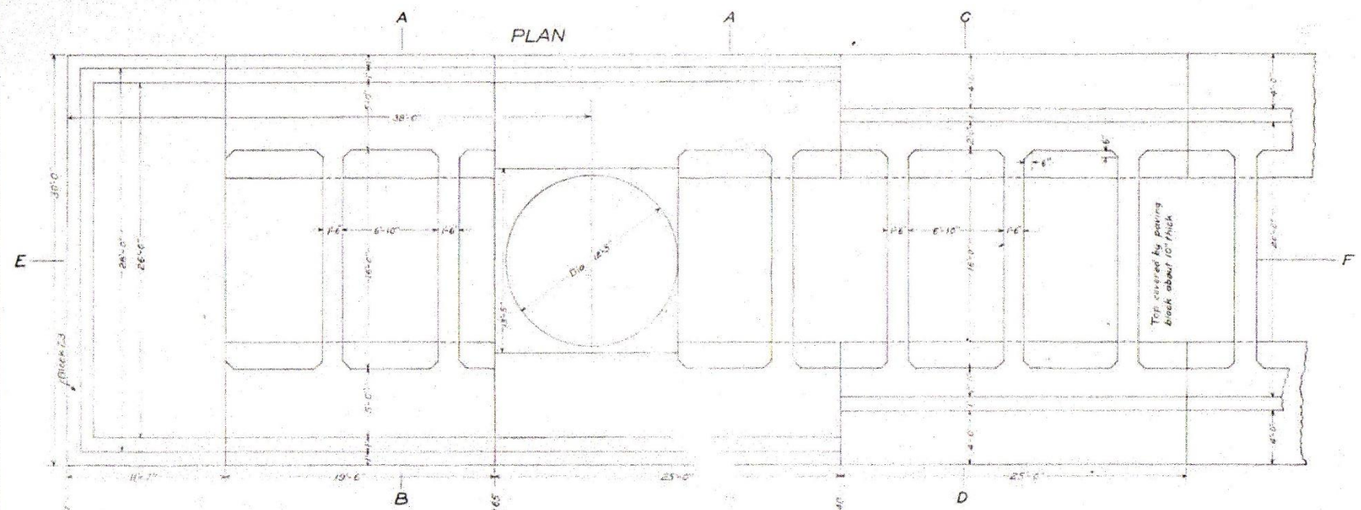
MANISTEE NORTH PIER
PROPOSED LOCATION FOR FOG SIGNAL
Scale 1" = 1'
Approved 5-29-26.
N. Shubrick Superintendent.
Asst. Engr. in charge.
Drawn by
Traced by
Checked by
Date of Instruction
26144

DRAWING #6 (1926)
NORTH PIER PLAN

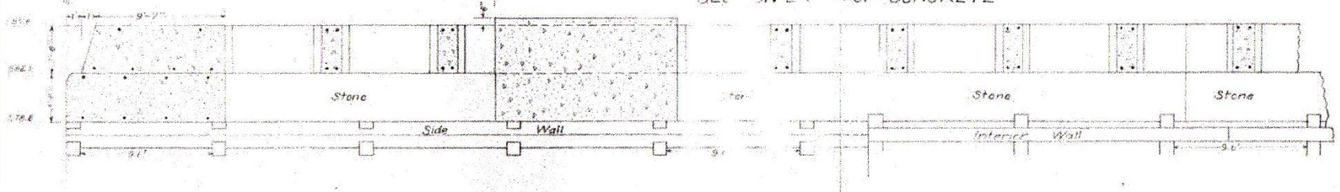
WAR DEPARTMENT

CORPS OF ENGINEERS U.S. ARMY

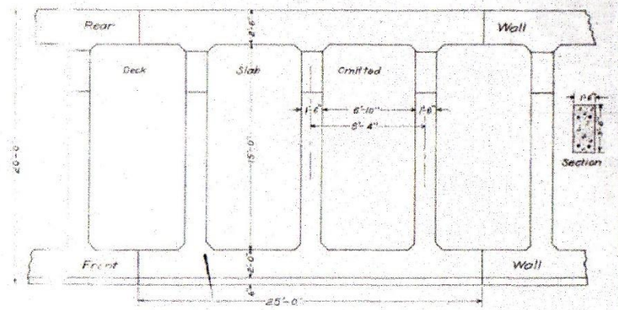
PLAN



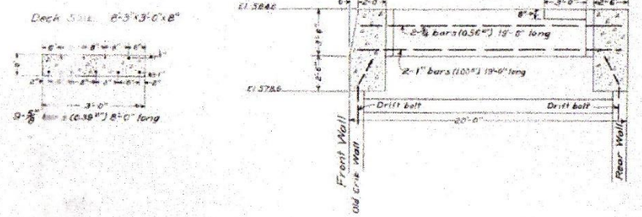

SECTION E-F OF CONCRETE



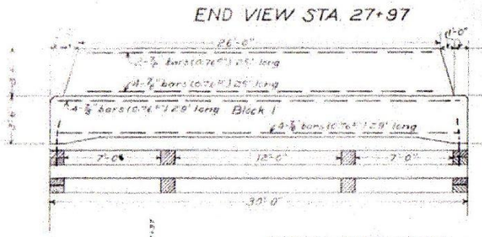

PLAN 12+40 - 15+90



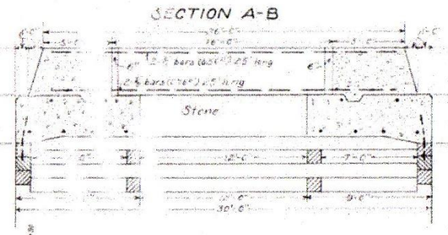

SECTION 12+40 - 15+90



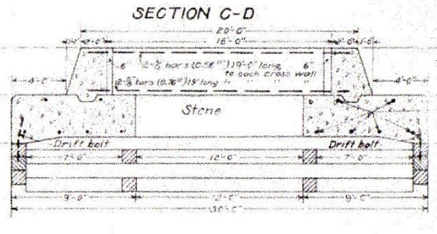

END VIEW STA. 27+97



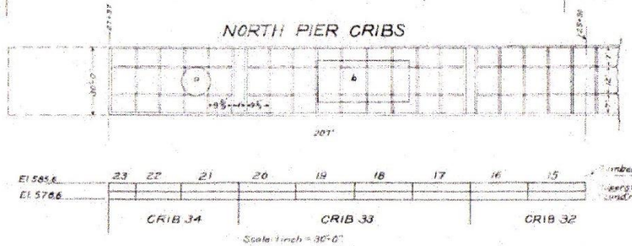

SECTION A-B




SECTION C-D

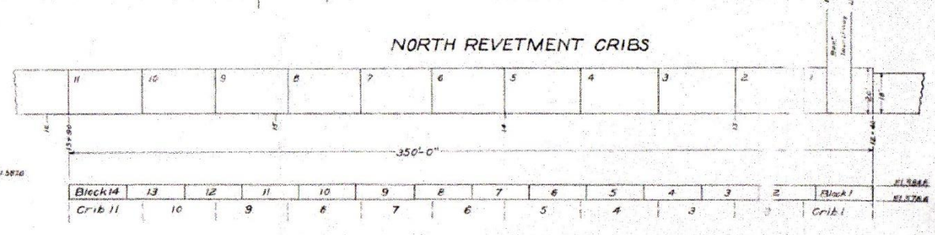



NORTH PIER CRIBS




a: Proposed Steel Tower, 12'-5" diameter.
b: Fog Signal, 18'+40', to be removed.

NORTH REVETMENT CRIBS




RHL 1015227

MANISTEE HARBOR, MICH.
CONCRETE SUPERSTRUCTURE
NORTH PIER STA. 12+40 TO 15+90
AND " 25+90 TO 27+97
In one sheet Scale: 1"=5'-0"

U.S. Engineer Office, Grand Rapids, Mich. June 10, 1926.

Submitted: Approved:

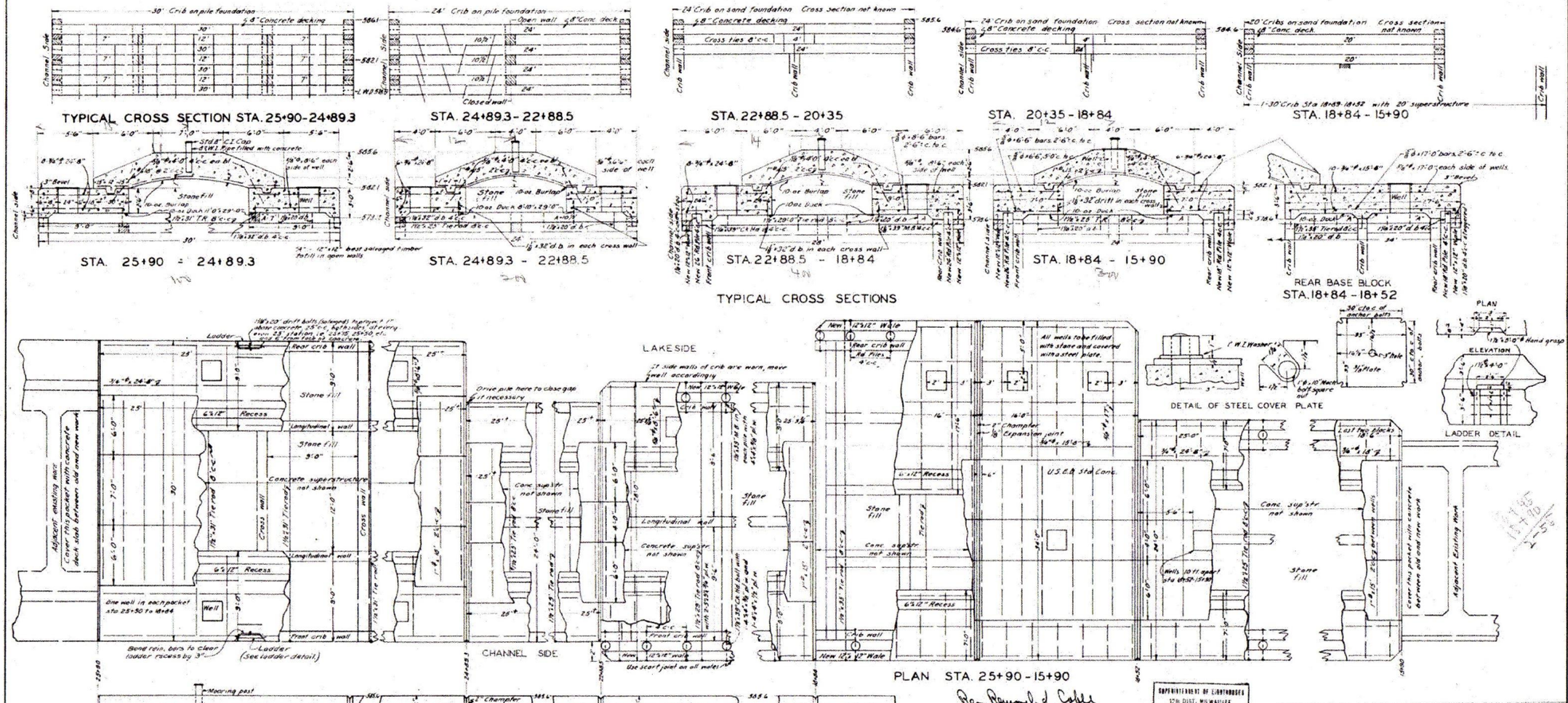
Assistant Engineer Major, Engineers

Drawn by Traced by E.H.N.

FILE-MANISTEE

DRAWING #7 (1926)
NORTH PIER DETAILS

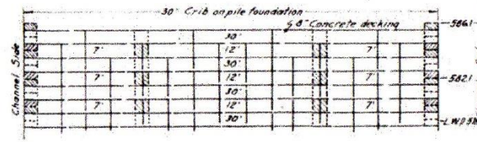
## TYPICAL CROSS SECTIONS OF EXISTING WORK



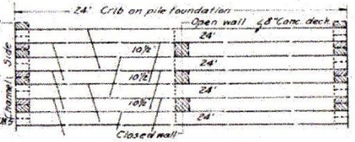

| Revisions | Date |
|---|---|
| Ladders shown at sta 25+75 in plan and elev. details | Jan 29, 1935 |
| Upper trans. rein. bars in base blocks sta 18+84 to 22+88.5 and both upper and lower trans. rein. bars sta. 22+89.5 to 25+90 marked to be on each side of wells" | Jan 29, 1935 |
| Trans. bars in base blocks sta. 15+90 to 18+84 added | Feb 12, 1935 |
| Lower trans bars in base blocks sta. 18+84 to 22+88.5 marked 2'-6" c to c | Feb. 12, 1935 |

DRAWING #8 (1935)
NORTH PIER DETAILS

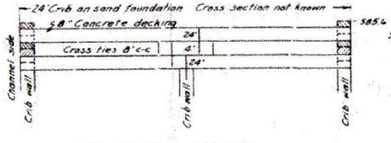
# TYPICAL CROSS SECTIONS OF EXISTING WORK



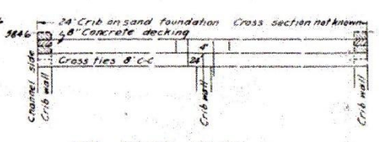

TYPICAL CROSS SECTION STA. 25+90-24+89.3



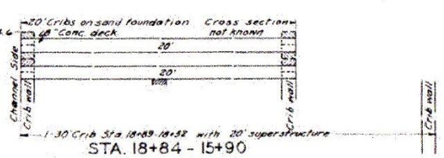

STA. 24+89.3 - 22+88.5



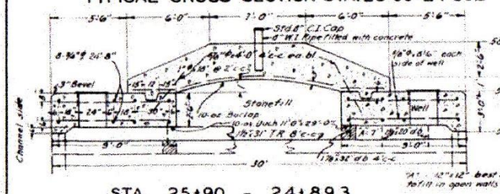

STA. 22+88.5 - 20+35



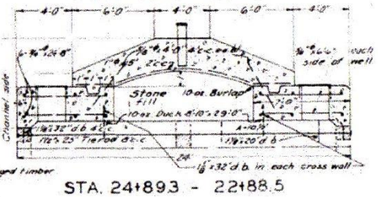

STA. 20+35 - 18+84



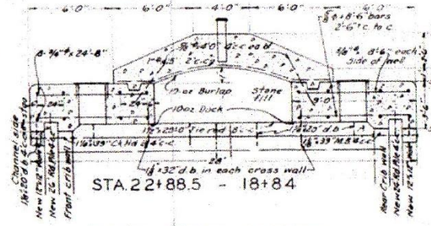

STA. 18+84 - 15+90



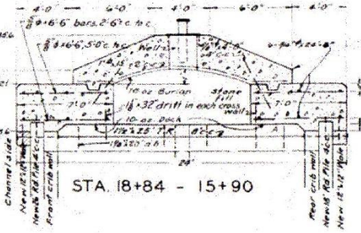

STA. 25+90 - 24+89.3



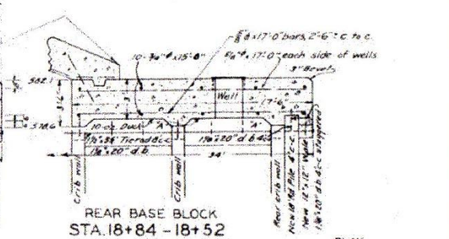

STA. 24+89.3 - 22+88.5




STA. 22+88.5 - 18+84

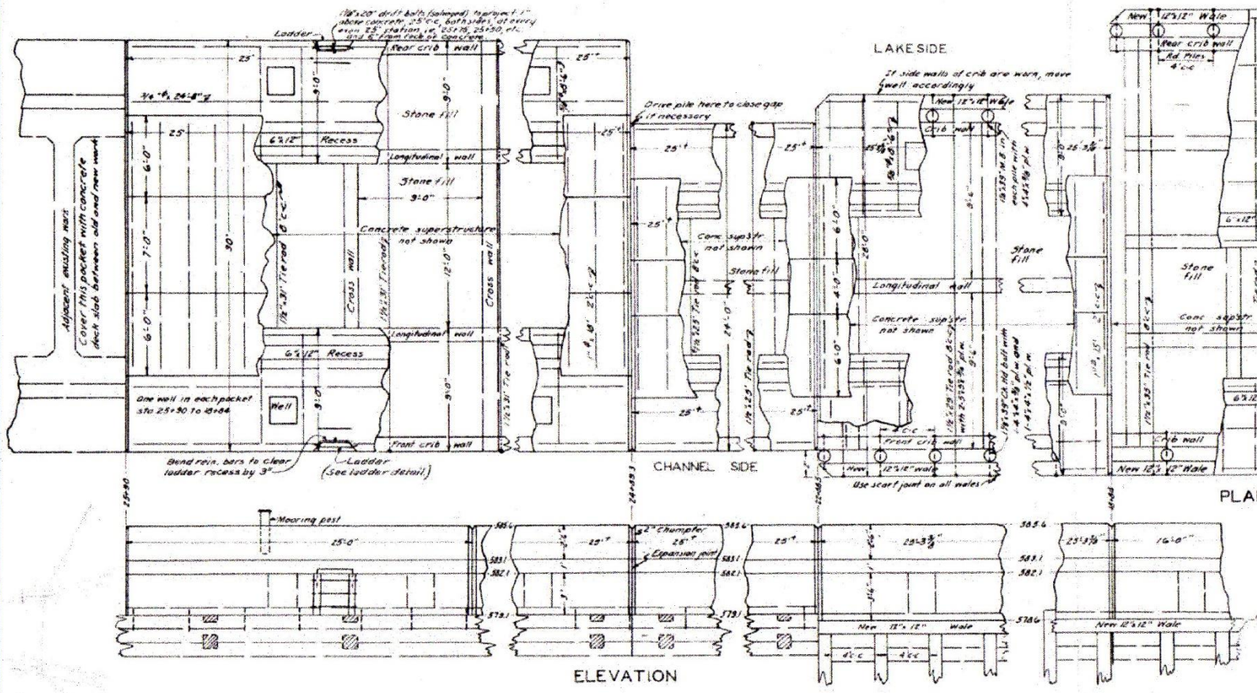


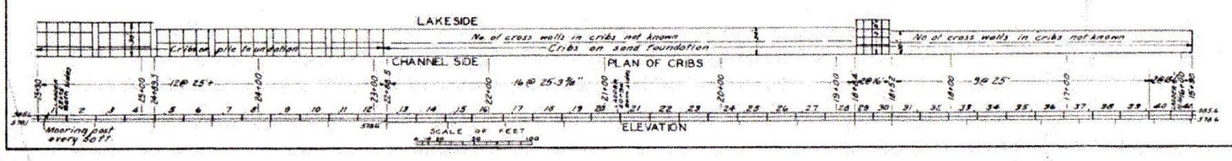

STA. 18+84 - 15+90

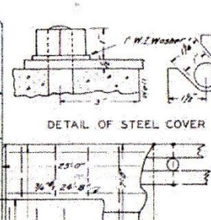


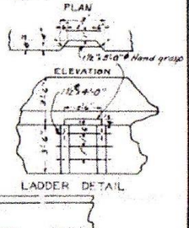

REAR BASE BLOCK
STA. 18+84 - 18+52

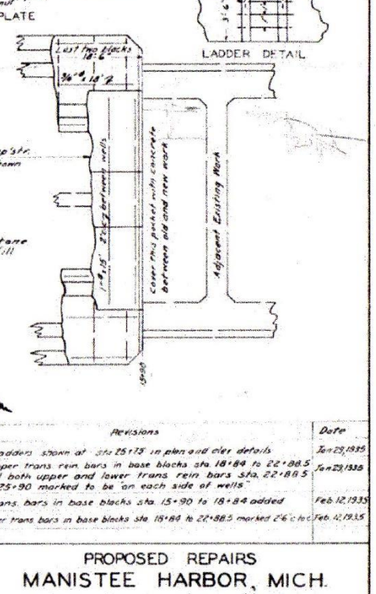
TYPICAL CROSS SECTIONS

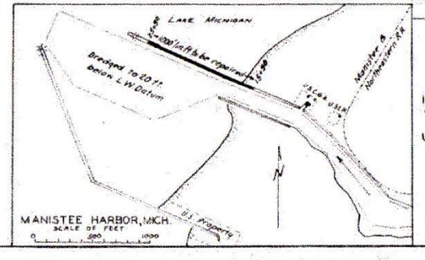



SUPERINTENDENT OF LIGHTHOUSES
12th DIST. MILWAUKEE
RECEIVED
Dated 11-6-1935
DATED — FROM — FILED
DR. No. 25132

Revised by Lands
U.S. Engineer Milwaukee

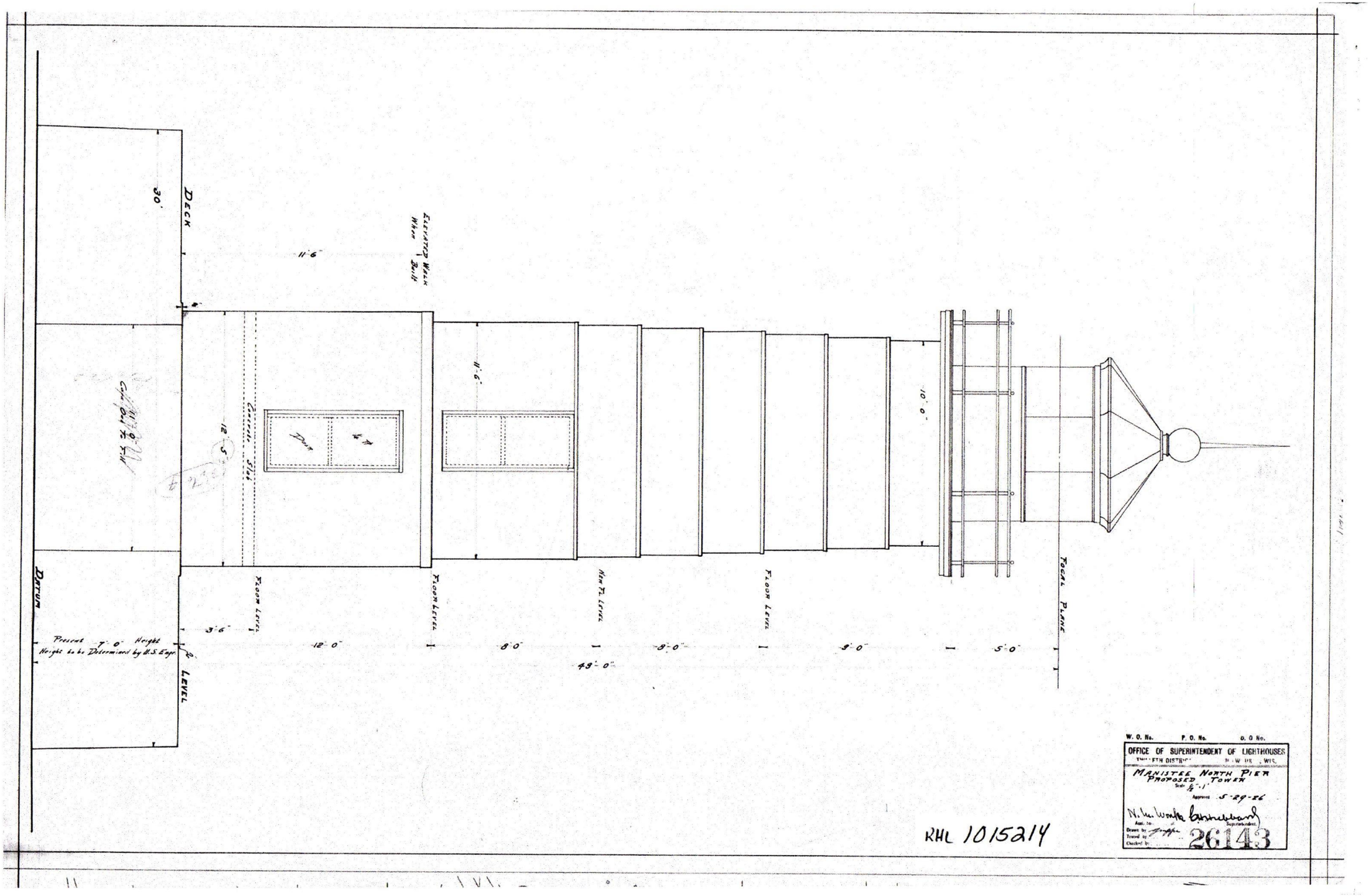
RHL 1015225

| Revisions | Date |
|---|---|
| Ladders shown at sta 25+75 in plan and elev. details | Jan 29, 1935 |
| Upper trans. rein bars in base blocks sta. 18+84 to 22+88.5 and both upper and lower trans rein bars sta. 22+88.5 25+90 marked to be on each side of wells" | Jan 29, 1935 |
| Trans. bars in base blocks sta. 15+90 to 18+84 added | Feb 12, 1935 |
| Lower trans bars in base blocks sta. 18+84 to 22+88.5 marked 2'-6" c to c | Feb. 12, 1935 |

PROPOSED REPAIRS
MANISTEE HARBOR, MICH.
NORTH PIER STA. 25+90 TO 15+90
IN ONE SHEET
SCALE - 1" = 5'-0"

U.S. ENGINEER OFFICE, MILWAUKEE, WIS. JAN. 11, 1935.
Submitted: A.F. Arnold, Associate Engineer
Approved: Lt. Col. Corps of Engineers
Drawn by KHH
Traced by KHH
FILE NO. 4-C-4.8

DRAWING #9 (1935)
NORTH PIER DETAILS




DRAWING #10 (1926)
NORTH PIERHEAD LIGHT

26250

PLAN OF DOOR FRAME.

TOP VIEW OF DOOR
LOOKING DOWN

BRACKET TO SUPPORT TOP
CONCRETE FLOOR

SECT. THUR DOOR
ON CENTER LINE

HALF ELEV. OF DOOR
Scale 1½ - 1'-0"

17-STUD ANGLES 3½"x3½"
Scale 1-1'-0"

MANISTEE · NORTH · PIERHEAD · MICH..
DETAILS OF STEEL WORK.
As Shown
August 31-1926
E. GUEST
26250

RHL 1015212

DRAWING #11 (1926)
NORTH PIERHEAD LIGHT

26259

Diam of old Tower 11'-6"

BASE OF CHICAGO SOUTH BKW. TOWER

Hole Now in this Ring

Two Lag Out

Rad. 6-2½

Cut Plate Here

Reinforcing Rods

8"x¾"

3½"x¾"L

3"

TOP PLAN

Scale ½"=1'-0"

6"x6"x½" - 0'-5"

6"

BRACKET TO CARRY FLOOR

8"15" H Beam 18#

5'-0"

5/16"

BASE PLAN

Scale ½"=1'-0"

1'-0"

1'-5"

SECTION OF NEW BASE.

Scale 3"=1'-0"

RIVETS ⅝" OPEN HOLES ¾" } UNLESS NOTED

4-5"x3½"x½"-0" To Carry Cor Iron Floor

3½"x½" Stiffening L's. DETAIL DR.

Rad outside of Sheet 6'-3"

Rad of Anchor Bolts 6'-5"

Rad of Anchor Bolts 6'-5"

¾" Anchor Bolts

¾" Anchor Bolts

Drilled in field

¾" Left Open

3½"x½" L

5" x 5" x ½" ANGLE 2'-0" LONG

5"

BRACKETS TO SUPPORT CONCRETE FLOOR

¾"

3"-6"

2.8"

CROSS SECTION

Treads Cut out of Raised Diamond Pattern Floor Plate

Scale 1½"=1'-0"

5/16" Steel Plate

11" Left Open

8"

SECTION OF BASE.

PLATE 8'-11"x¾"

3½"x½"

6"x6"x½" 0'-5"

6"

5'-8"

6'-5" RAD.

PLAN OF BASE SECTION.

Scale 3"=1'-0"

ELEVATION

Scale ½"=1'-0"

12'-3"

12'-0"

¾" Steel Plate

Deck Plate

Rivets of 3½"x6"L

Hole for ¾" Cap Screw

8'-6"

LOWER LADDER

Scale ½"=1'-0"

5'-5" Angle 18 #'s plate

5-¾" Reinforcing Tie Rods in 2½" Rods outside of Tower

Filled With Mineral Wool 150 C.F. to 12" = 1000 #

RAD. 5'-5"

RAD. 6'-5"

RAD. 6'-11"

Stair Opening 3'-0" x 3'-0"

Coal Chute Hole

Coal Chute

Concrete and Planks

2-3"x4" wood Blocks 6'-10" Long

5-¾" x 2'-0" Counter sunk Bolts Bolts Block

HALF PLAN OF TOP

HALF PLAN OF TOWER BASE

SHOWING REINFORCEMENT OF BOTH FLOORS

Scale 1"=1'-0"

MANISTEE NORTH PIERHEAD MICH.,
REMODELING OF STEEL TO BE TAKEN FROM
SO. END OF SOUTH BKW. CHICAGO ILL.,

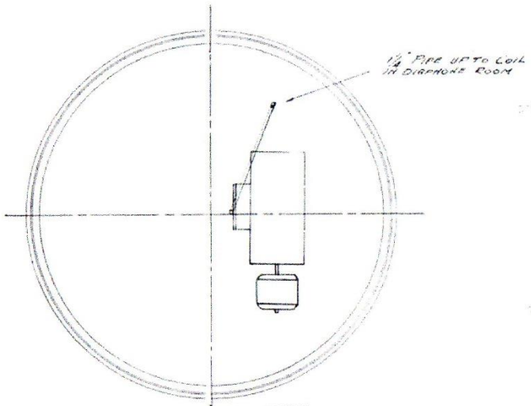
August 31 - 1926

E. GUEST

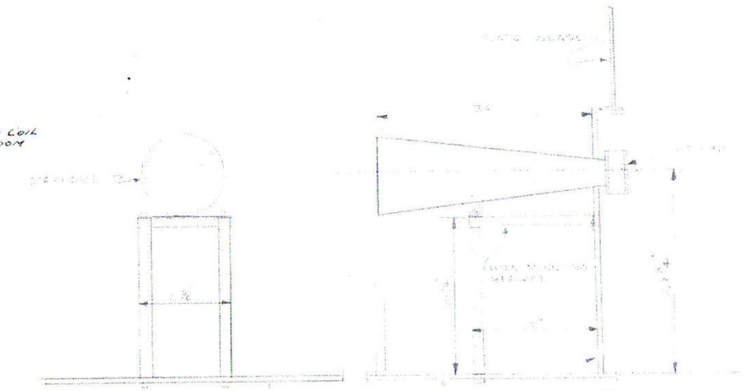
RHL 1015217

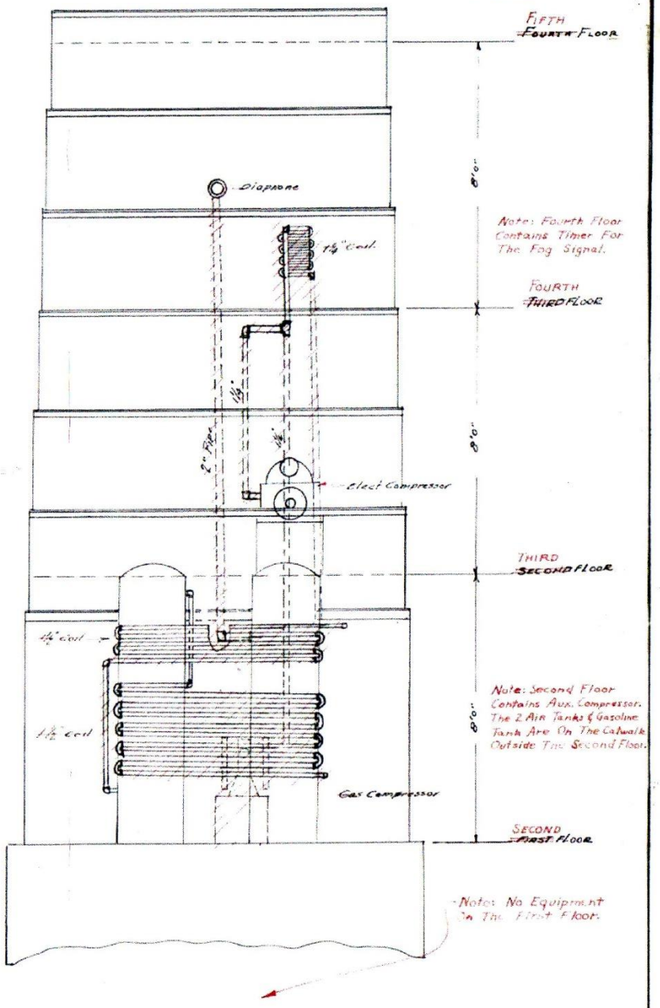
26259

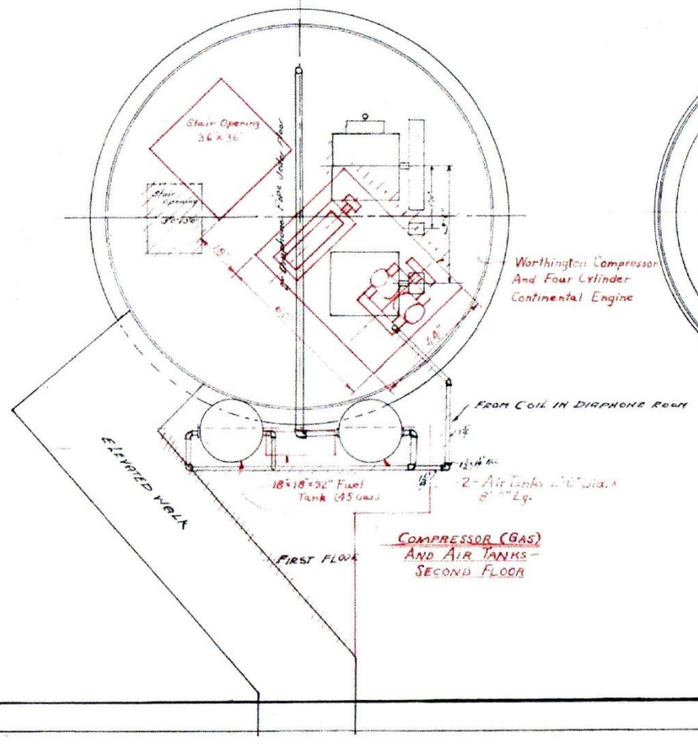
DRAWING #12 (1926)
NORTH PIERHEAD LIGHT

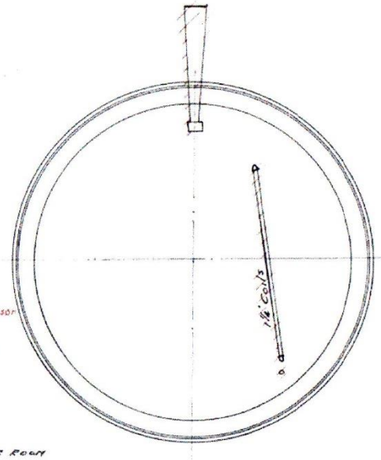



ELECTRIC COMPRESSOR
SECOND FLOOR
THIRD FLOOR






DIAPHONE ROOM
~~THIRD FLOOR~~
Note: Diaphone Now On The Fifth Floor.

RHL 1015210

A As Built Installation Worthington Compressor & Equipment V

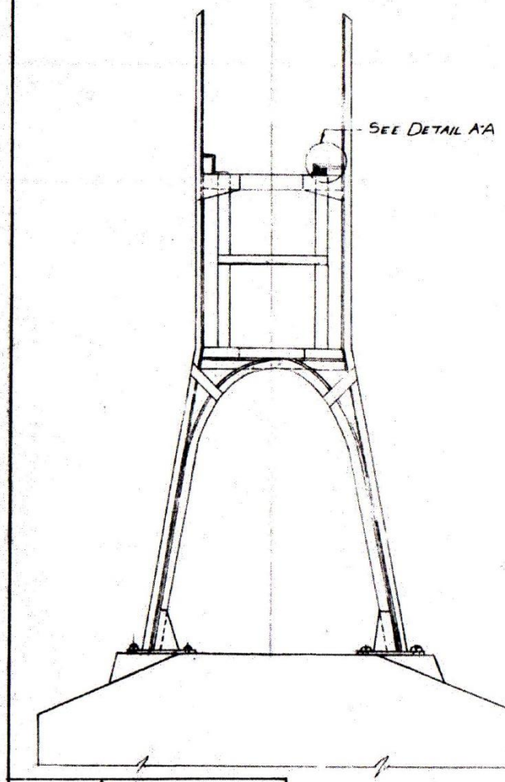
OFFICE OF THE SUPERINTENDENT OF LIGHTHOUSES
TWELFTH DISTRICT MILWAUKEE, WIS.

MANISTEE NORTH PIERHEAD
LOCATION OF MACHINERY

Scale ½"=1'-0"
Approved
F.M. Burton
Asst. Superintendent
Superintendent
Drawn By
Traced By
Checked By

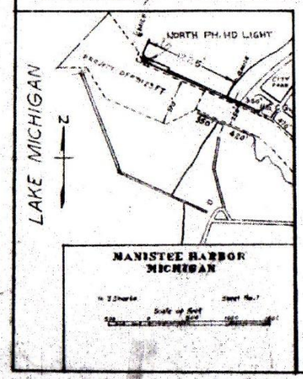
26261

DRAWING #13 (1949)
NORTH PIERHEAD LIGHT

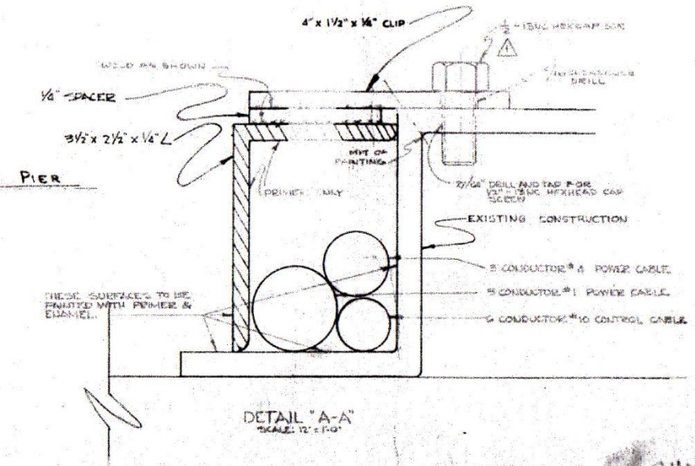



ELEVATED WALK ON NORTH PIER

NO SCALE




NOTE:
THIS DRAWING SUPERSEDES DRAWING NO. 1969-S SHEET 3 OF 9.




DETAIL "A-A"
SCALE: 12" = 1'-0"

RHL 1015218

| REVISION | DATE | APPD. | BY |
|---|---|---|---|
| | 5-7-62 | | AS BUILT ½ CAP SCR. RELOCATED, CONTRACT TO Nos 9327 COMPLETED 10-19-61 C/S 1296 WJ |

U.S. COAST GUARD NINTH DISTRICT CLEVELAND, OHIO

CIVIL ENGINEERING

| | |
|---|---|
| DESIGNED | DJV |
| DRAWN | WJD |
| TRACED | |
| CHECKED | DJV |

MANISTEE MOORINGS
MANISTEE MICHIGAN
NORTH PIER WALKWAY
NEW ELECTRICAL POWER & CONTROL CABLE
REVISION
CABLE PROTECTION DETAILS

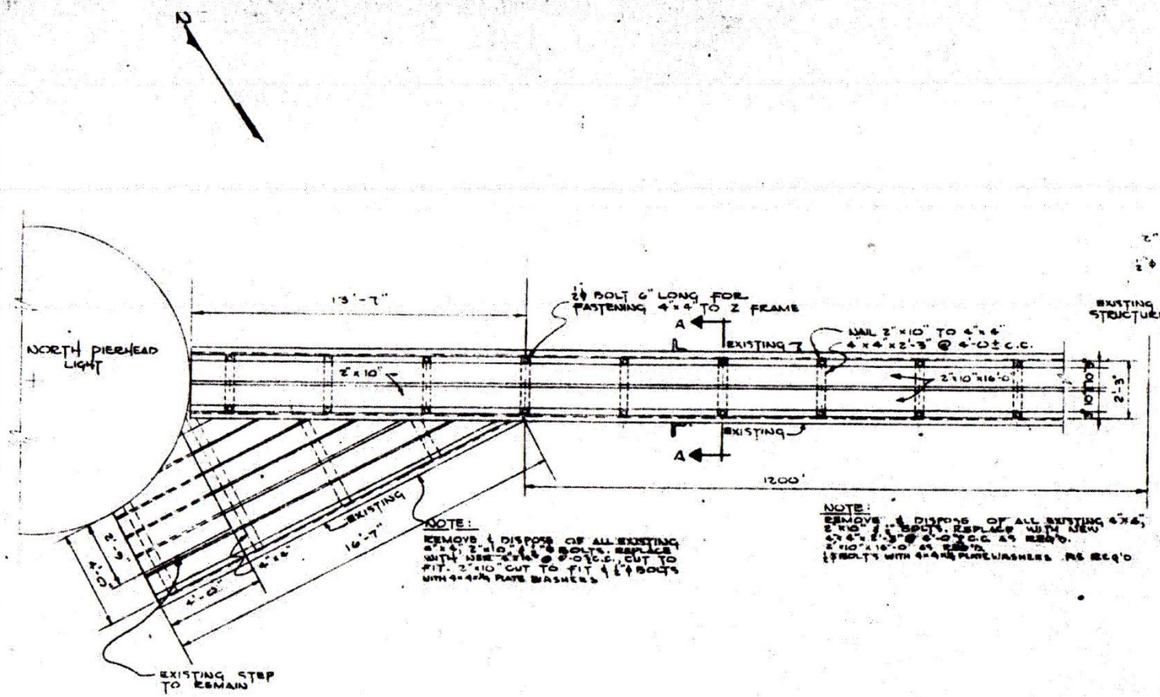
APPROVED: _____ DATE
CHIEF OF SECTION — U.S.C.G. CHIEF OF DIVISION

C/S 1296

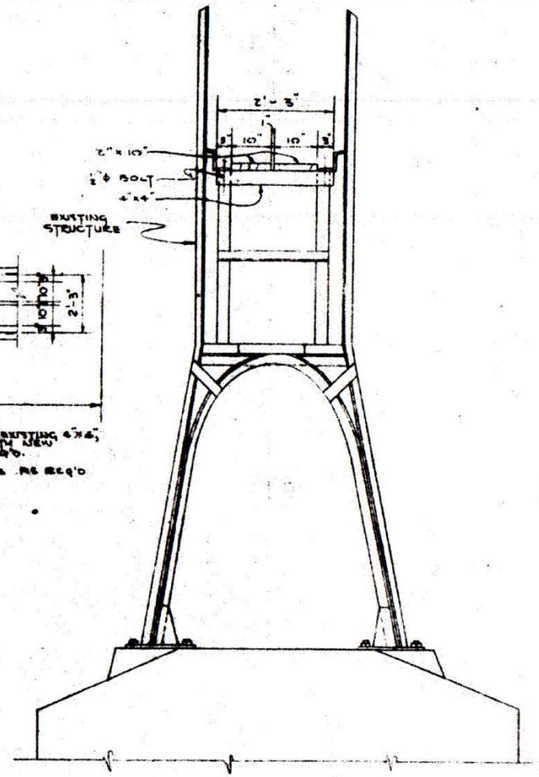
C. G. DRAWING NO.
1593-S

SCALE AS NOTED — SHEET 1 OF 1

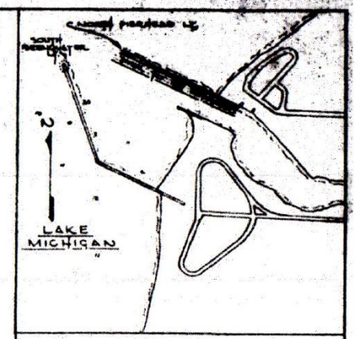
DRAWING #14 (1961)
ELEVATED WALKWAY




PLAN OF WALKWAY
SCALE: ⅜" = 1'-0"




SECTION A-A
NO SCALE




SOUNDINGS & ELEVATIONS ARE REFERRED TO INTERNATIONAL GREAT LAKES DATUM FOR LAKE MICHIGAN, ELEVATION 576.8' ABOVE MEAN WATER LEVEL AT FATHER POINT, QUEBEC.
TAKEN FROM U.S. CORPS OF ENGINEER MAP NO. 16

LOCATION MAP

RHC 1015220

| REVISION | DATE | APPD. | BY |
|---|---|---|---|

U. S. COAST GUARD NINTH DISTRICT WASHINGTON 25, D.C.

CIVIL ENGINEERING

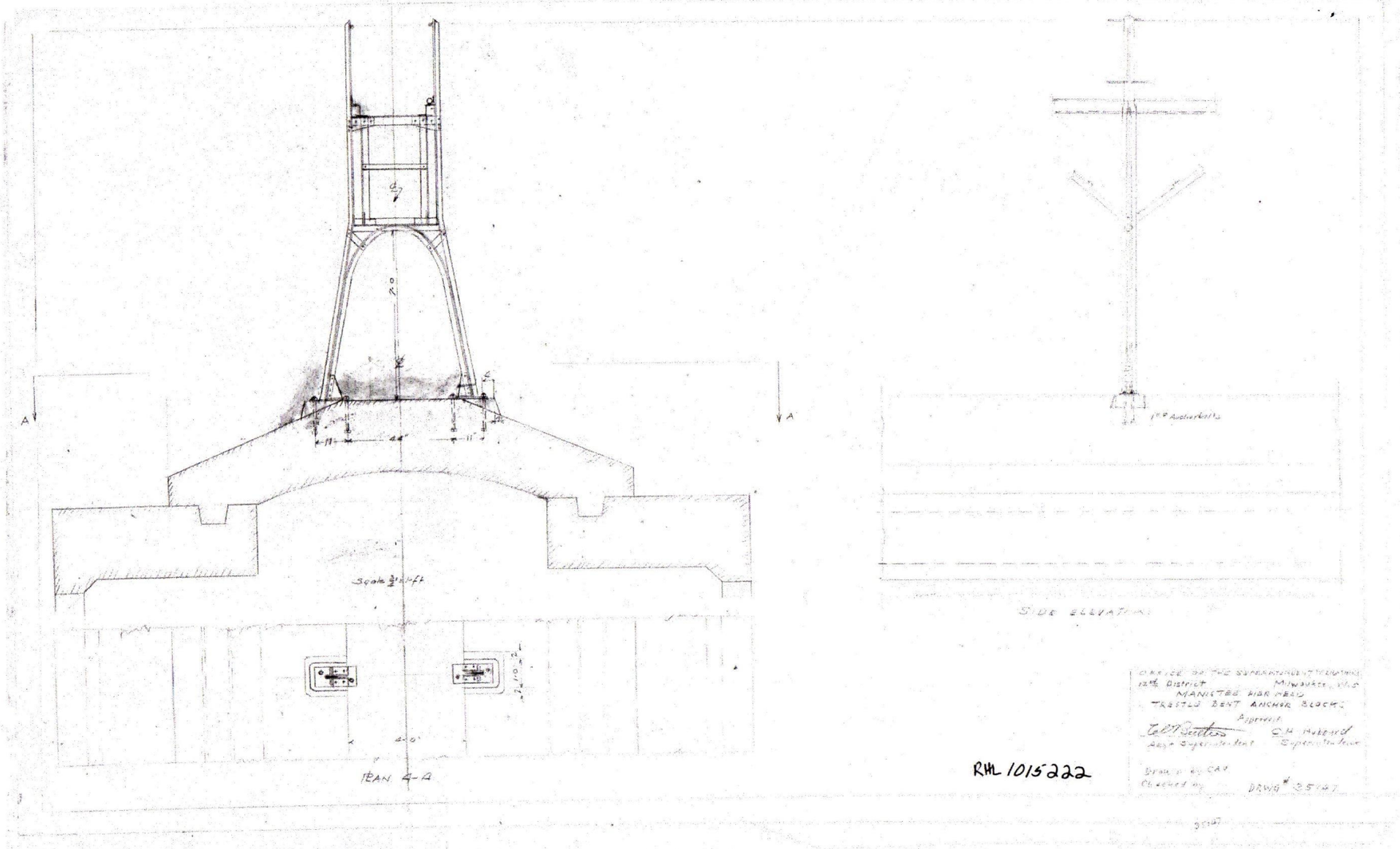
DESIGNED · WCC
DRAWN ·
TRACED ·
CHECKED WSK.

MANISTEE MOORINGS
MANISTEE, MICHIGAN
NORTH PIER WALKWAY
REPLACEMENT OF TIMBERS
PLAN & SECTION

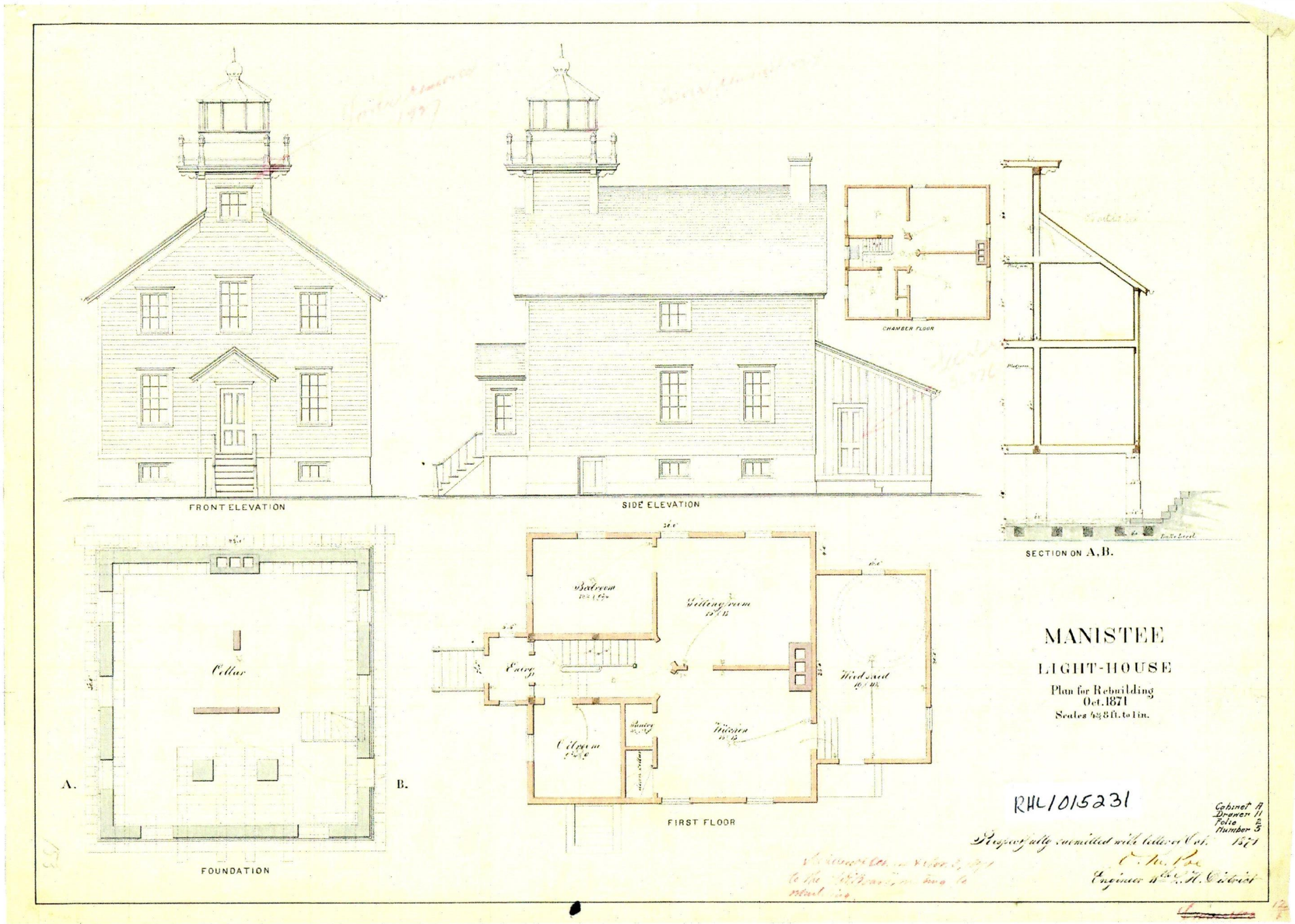
C/S 1554

C.G. DRAWING NO.
1849-5

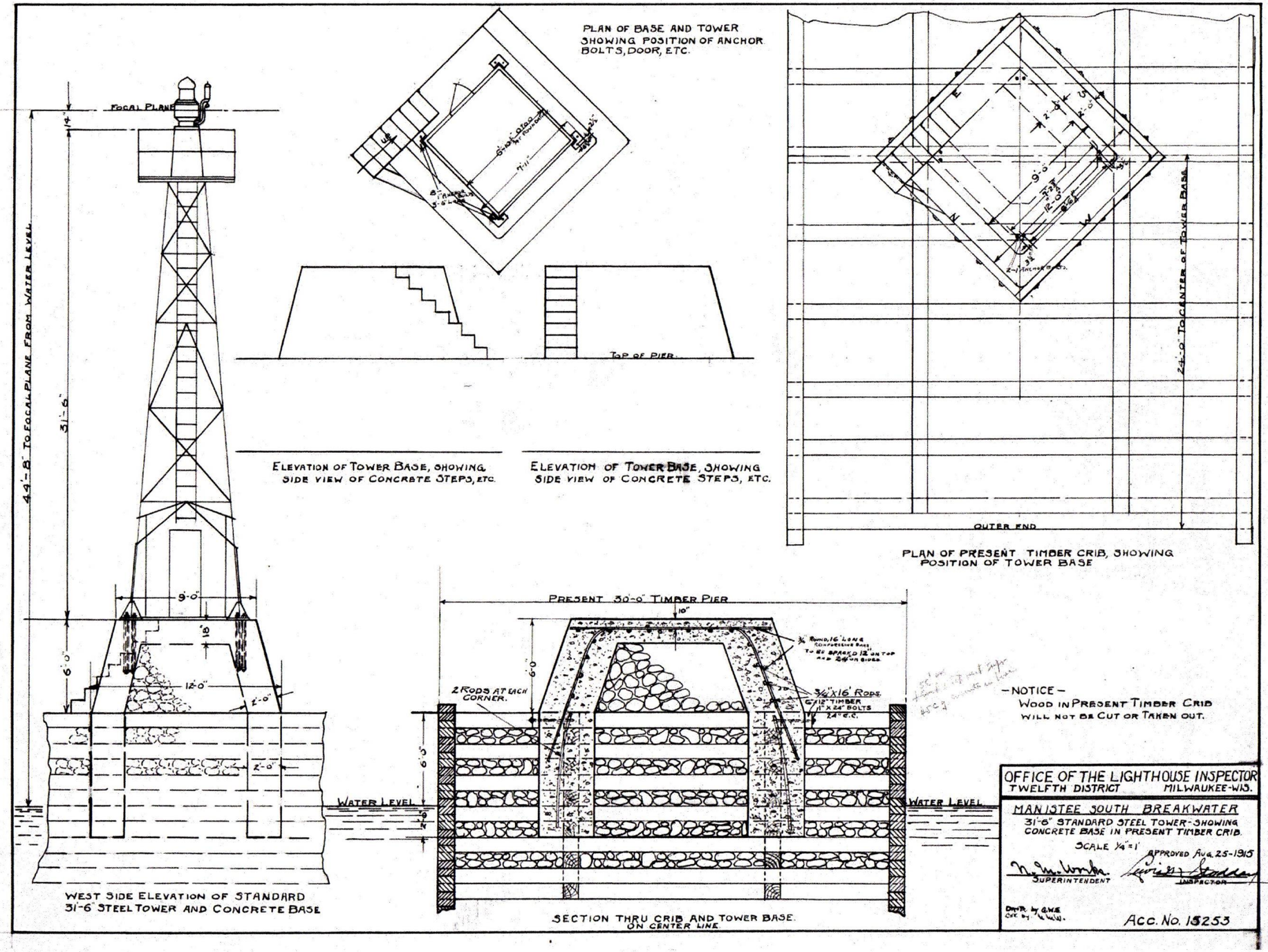
DRAWING #15 (1964)
ELEVATED WALKWAY




DRAWING #16 (c 1926)
ELEVATED WALKWAY




DRAWING #17 (1871)
LIGHTHOUSE/DWELLING

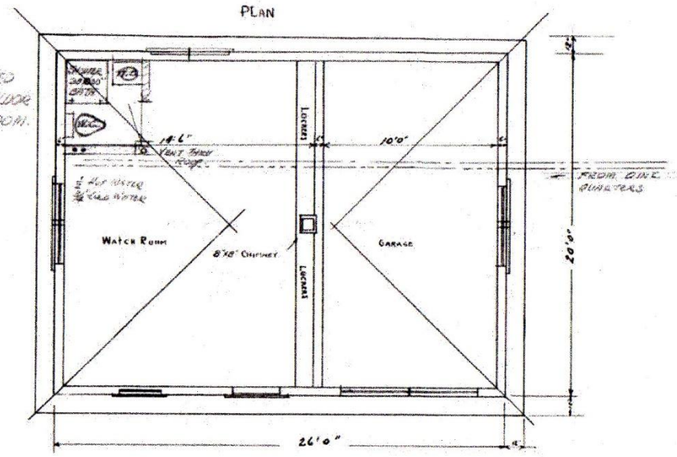


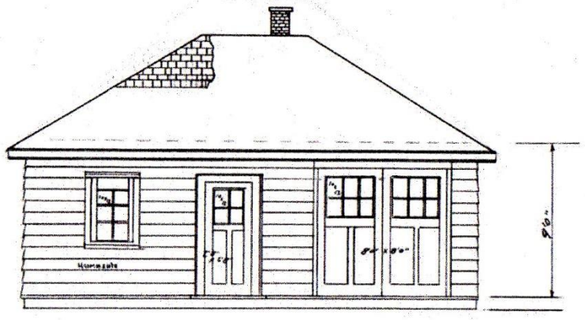

DRAWING #18 (1915)

SOUTH BREAKWATER LIGHT

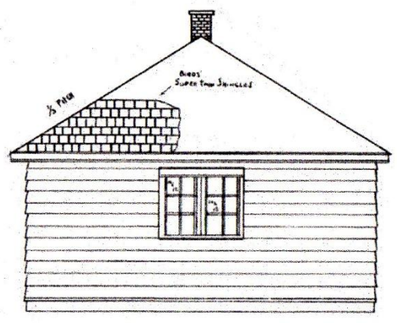
PLAN

4" REINFORCED CONCRETE FLOOR IN WASH ROOM.

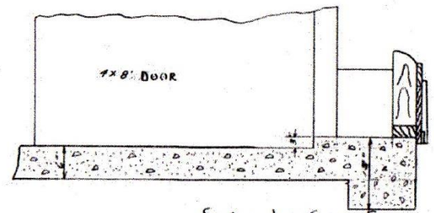


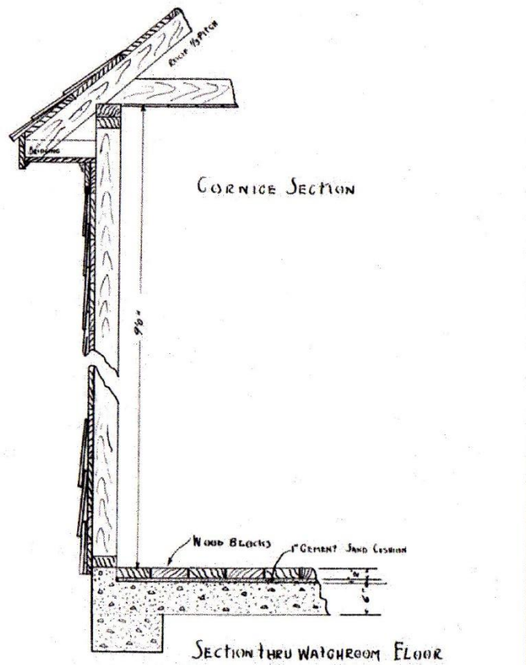

FRONT ELEVATION




END ELEVATION




SECTION THRU GARAGE FLOOR




CORNICE SECTION

SECTION THRU WATCHROOM FLOOR

WASH ROOM AS BUILT - IN 1947 - C.H.R.

OFFICE OF THE SUPERINTENDENT OF LIGHTHOUSES
TWELFTH DISTRICT MILWAUKEE, WIS

MANISTEE PIERHEAD
WATCH HOUSE AND GARAGE

SCALE 1/4"=1'0" 1"=10'0" APPROVED OCT 1926

E.O. Buttles
ASST. SUPERINTENDENT
DRAWN BY YOELKER
TRACED BY YOELKER
CHECKED BY

SUPERINTENDENT

26297

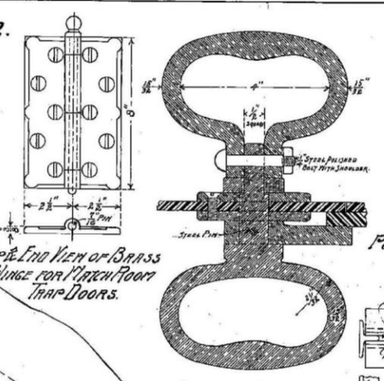
RHL 1015224

DRAWING #19 (1926/1927)
WATCHHOUSE & GARAGE

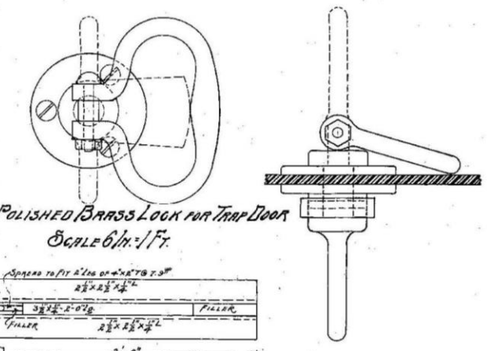
# MUSKEGON LIGHT STATION MICH.

PLATE 5.

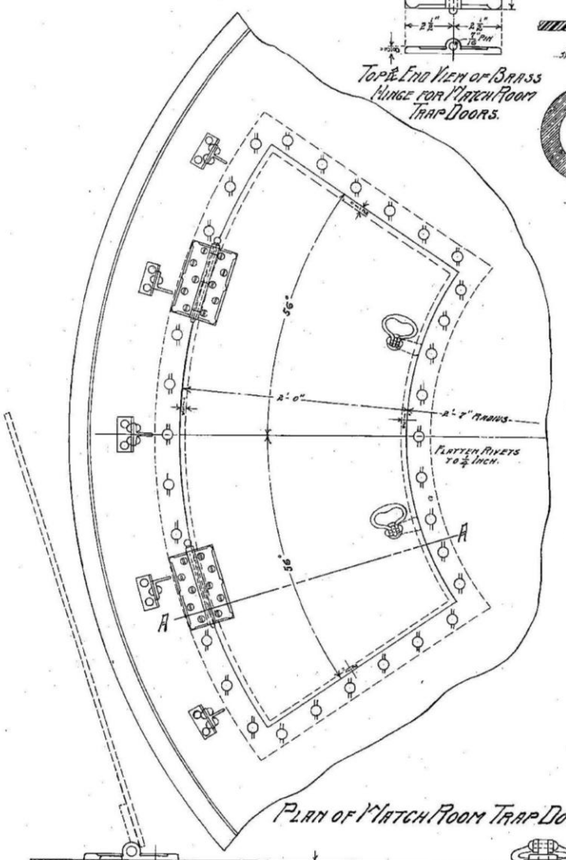
## DETAILS FOR METAL TOWER.



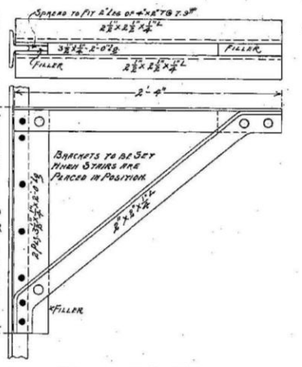
TOP & END VIEW OF BRASS HINGE FOR MATCH ROOM TRAP DOORS.



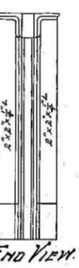
POLISHED BRASS LOCK FOR TRAP DOOR
SCALE 6 IN. = 1 FT.



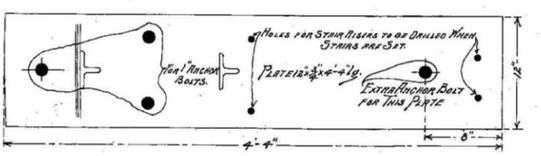
PLAN OF MATCH ROOM TRAP DOOR



TOP AND SIDE VIEW OF BRACKETS UNDER STAIRS. 2 REQUIRED.



END VIEW.

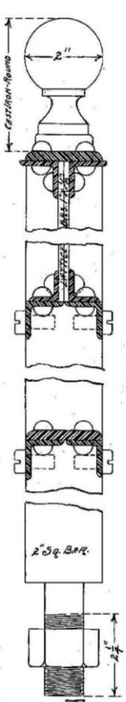


TOP VIEW OF LARGE BASE PLATE WHERE STAIRS START.

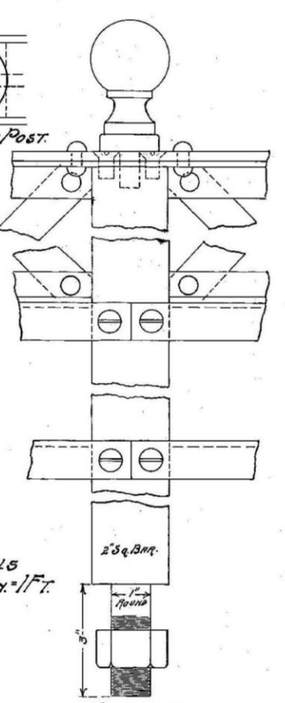
ENLARGED SECTION THROUGH A-A.

DIAGRAM OF RAIL.

PLAN
8 SECTIONS LIKE THIS
SCALE 1½ IN. = 1 FOOT.

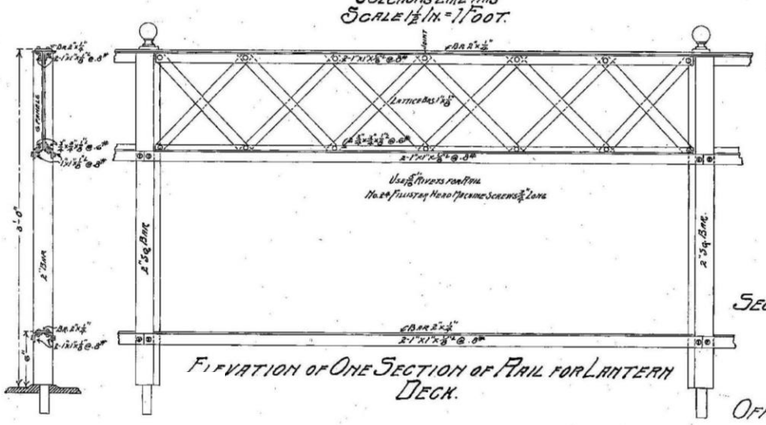


SECTION THROUGH RAIL.



DETAILS
SCALE 6 IN. = 1 FT.

ELEVATION.



ELEVATION OF ONE SECTION OF RAIL FOR LANTERN DECK.

OFFICE OF ENGINEER, NINTH LIGHT HOUSE DISTRICT.
MILWAUKEE, WIS., FEB. 10TH 1902.

RHL 1017042

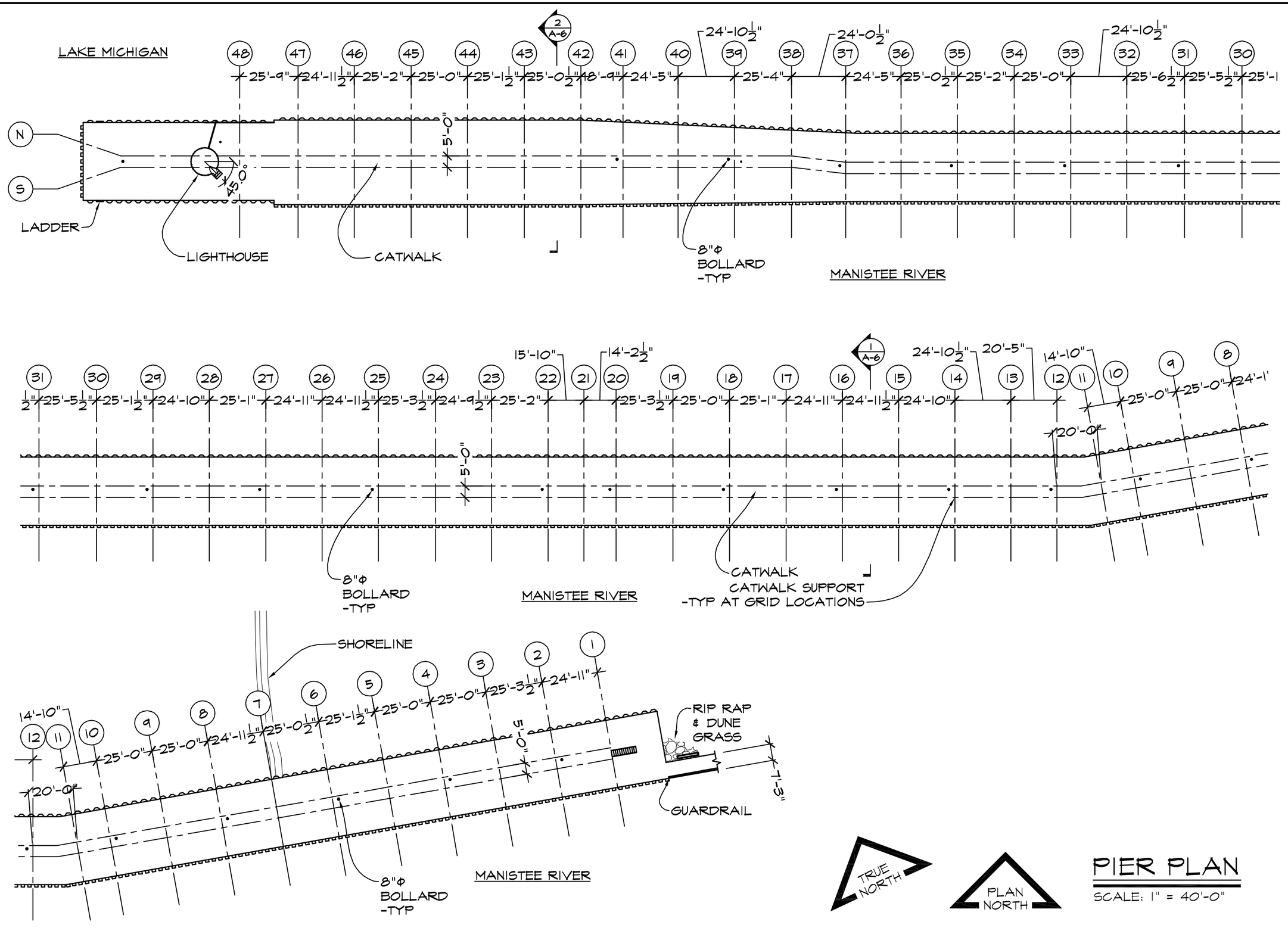
Cabinet A
Drawer 13
Folio 1
Number 12

136

DRAWING #20 (1902)
MUSKEGON SOUTH PIERHEAD LIGHT
EXAMPLE OF LANTERN DECK GUARDRAIL

# APPENDIX C

# DRAWINGS OF EXISTING CONDITIONS




# PIER PLAN

SCALE: 1" = 40'-0"

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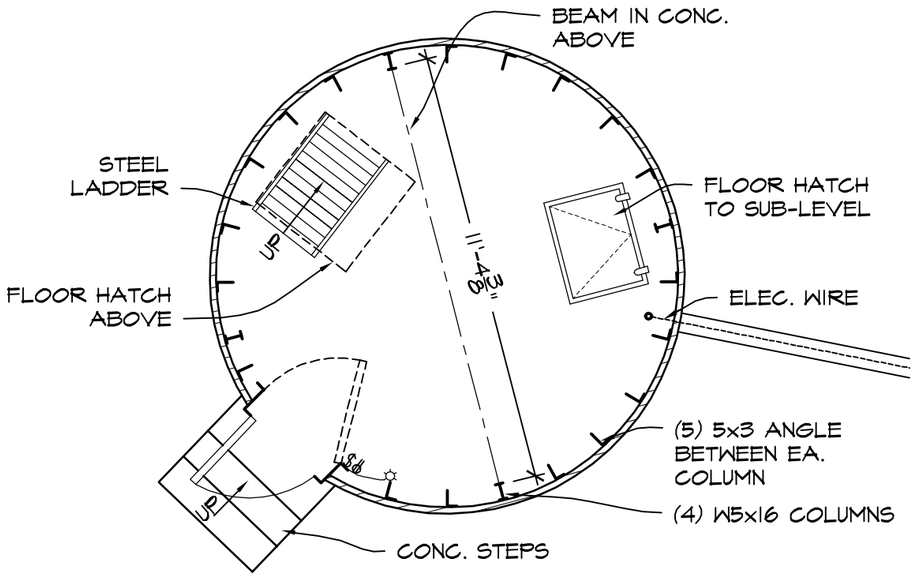
HISTORIC STRUCTURES REPORT
MANISTEE NORTH PIERHEAD LIGHT
& ELEVATED WALKWAY
MANISTEE, MICHIGAN

ISSUE: DATE:
DRAWN BY: YDS
APPROVED: K. CZAPSKI

PIER PLAN

A-1

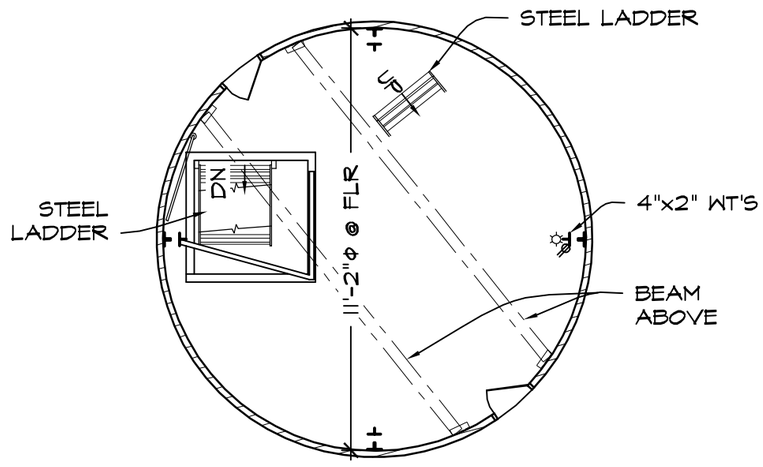



TRUE NORTH

PLAN NORTH

## LEVEL L-1

SCALE: 1/4" = 1'-0"

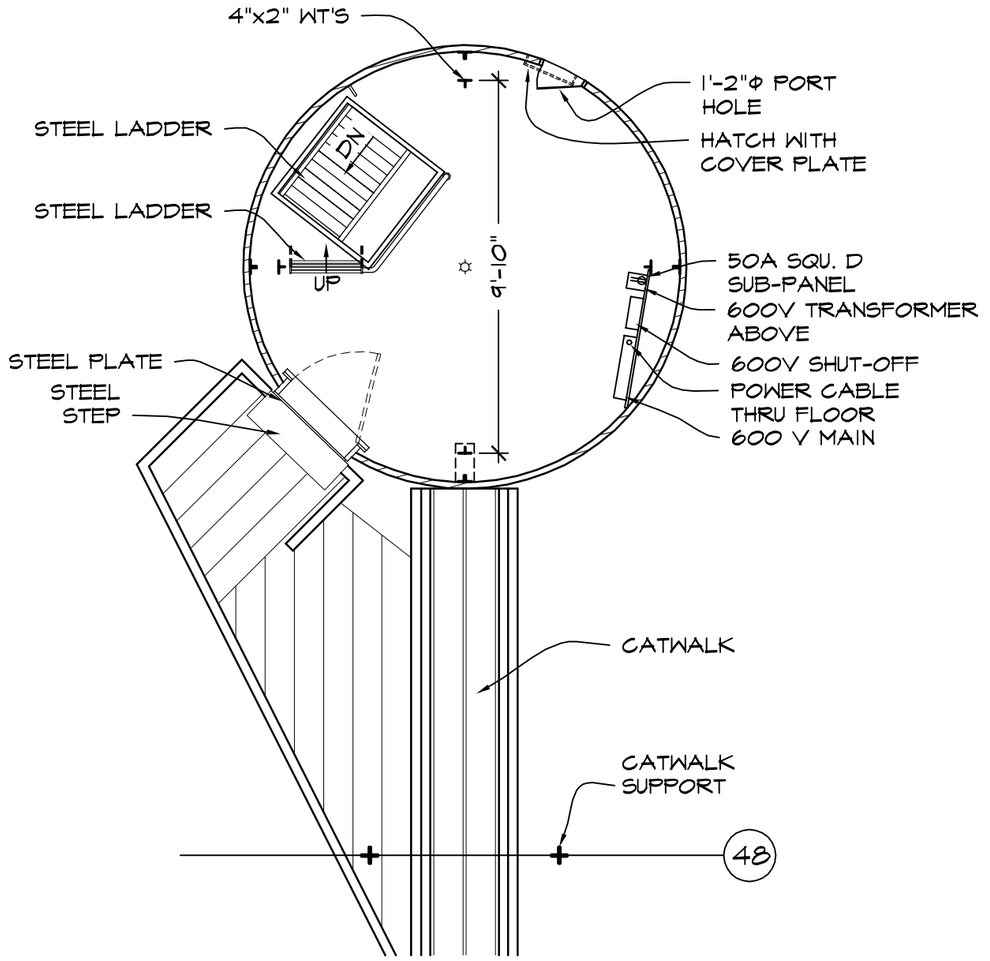



TRUE NORTH

PLAN NORTH

## LEVEL L-3

SCALE: 1/4" = 1'-0"




TRUE NORTH

PLAN NORTH

## LEVEL L-2

SCALE: 1/4" = 1'-0"

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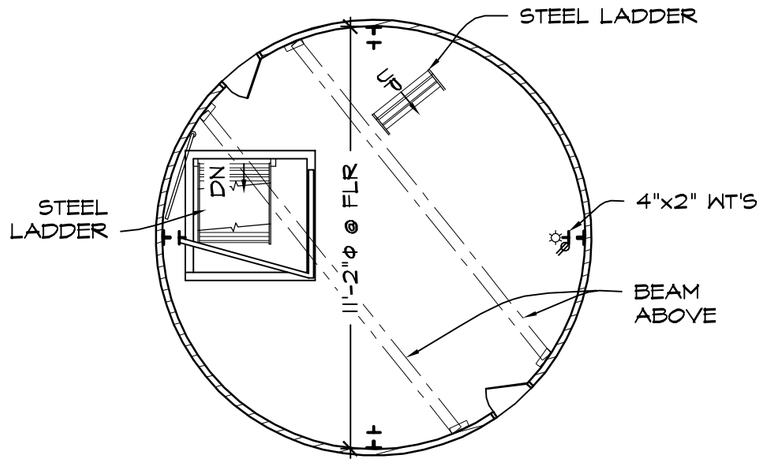
MANISTEE, MICHIGAN

ISSUE: DATE:

DRAWN BY: YDS
APPROVED: K. CZAPSKI

LIGHTHOUSE PLAN

A-2

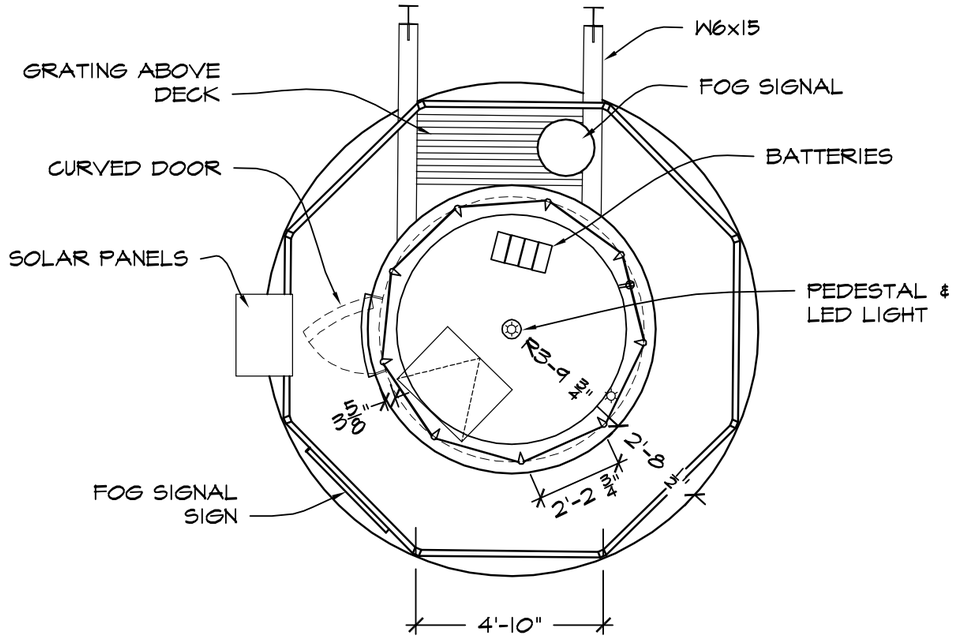



TRUE NORTH

PLAN NORTH

## LEVEL L-4

SCALE: 1/4" = 1'-0"




TRUE NORTH

PLAN NORTH

## LANTERN/LANTERN DECK LEVEL

SCALE: 1/4" = 1'-0"

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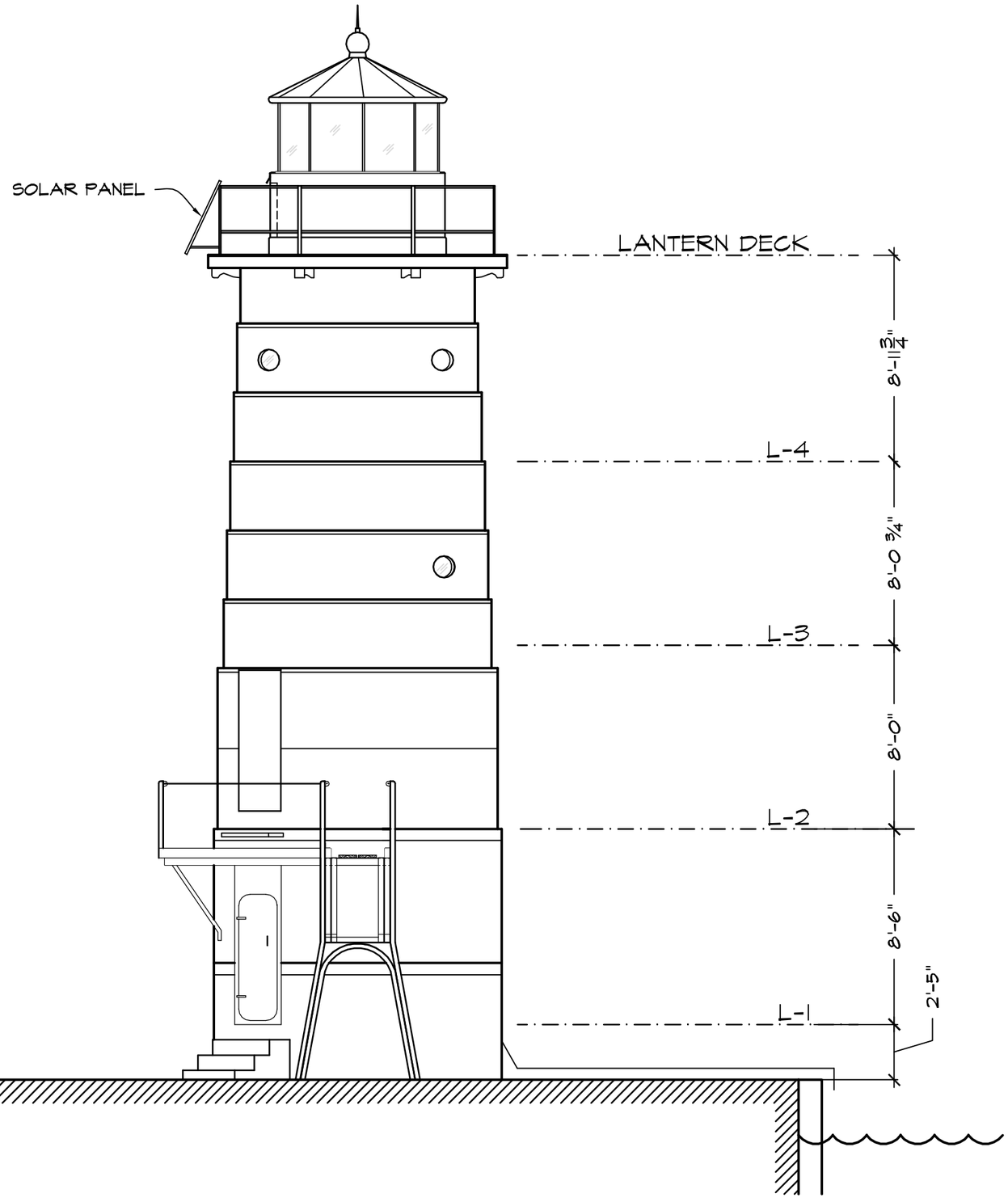
HISTORIC STRUCTURES REPORT
MANISTEE NORTH PIERHEAD LIGHT
& ELEVATED WALKWAY
MANISTEE, MICHIGAN

| | |
|---|---|
| HSR | DEC. 2014 |
| ISSUE: | DATE: |

DRAWN BY: YDS
APPROVED: K. CZAPSKI

LIGHTHOUSE PLAN

A-3




## EAST ELEVATION

SCALE: 3/16" = 1'-0"

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MANISTEE, MICHIGAN

ISSUE: DATE:
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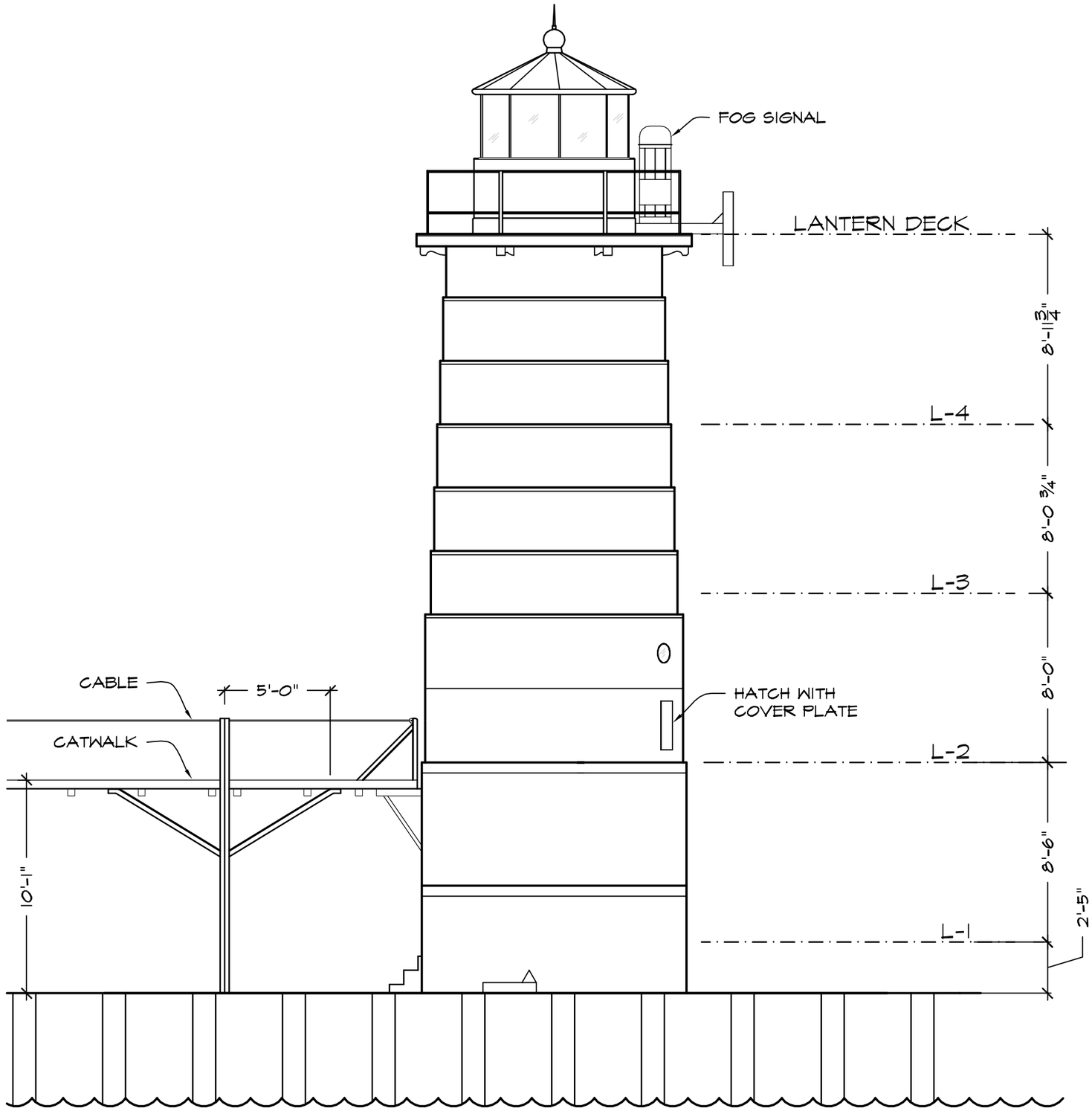
APPROVED: K. CZAPSKI

EAST ELEVATION

A-4




# NORTH ELEVATION

SCALE: 3/16" = 1'-0"

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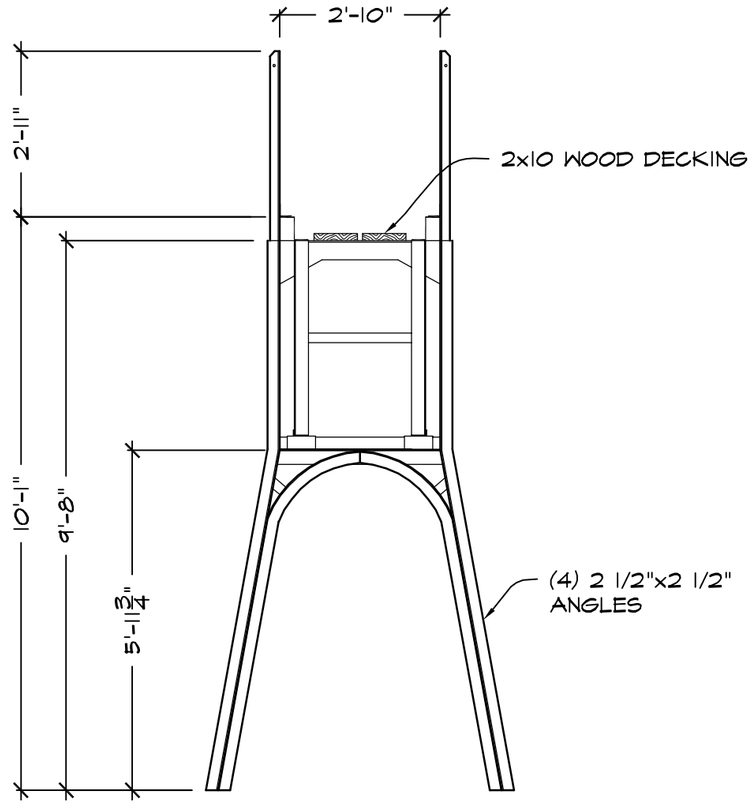
MANISTEE NORTH PIERHEAD LIGHT
& ELEVATED WALKWAY
MANISTEE, MICHIGAN

ISSUE: DATE:
DRAWN BY: YDS
APPROVED: K. CZAPSKI

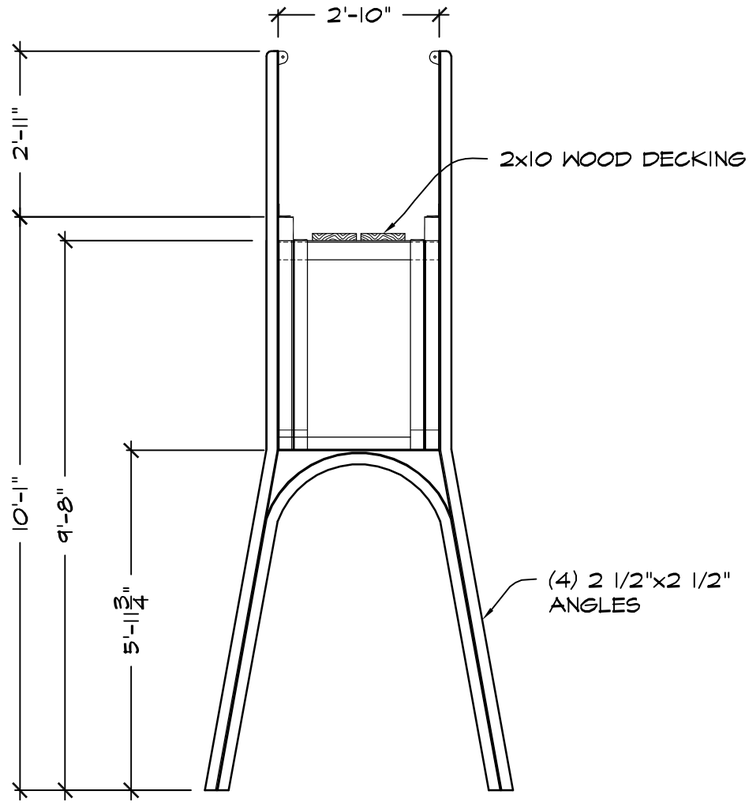
NORTH ELEVATION

A-5




1 A-1 CATWALK SUPPORT ELEVATION

SCALE: 3/8" = 1'-0"




2 A-1 CATWALK SUPPORT ELEVATION

SCALE: 3/8" = 1'-0"

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MANISTEE, MICHIGAN

ISSUE: DATE:

DRAWN BY: YDS
APPROVED: K. CZAPSKI

CATWALK SUPPORT ELEVATION

A-6

APPENDIX D

NATIONAL REGISTER OF HISTORIC PLACES
REGISTRATION FORM FOR MANISTEE NORTH PIER

NPS Form 10-900
(Rev. 8-86)

# Attachment C

OMB No. 1024-0018

**United States Department of the Interior**
National Park Service

# National Register of Historic Places Registration Form

RECEIVED
APR 05 1990
NATIONAL REGISTER

This form is for use in nominating or requesting determinations of eligibility for individual properties or districts. See instructions in *Guidelines for Completing National Register Forms* (National Register Bulletin 16). Complete each item by marking "x" in the appropriate box or by entering the requested information. If an item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, styles, materials, and areas of significance, enter only the categories and subcategories listed in the instructions. For additional space use continuation sheets (Form 10-900a). Type all entries.

## 1. Name of Property

historic name: Manistee North Pier
other names/site number: North Pier

## 2. Location

street & number: West end of Fifth Avenue — N/A not for publication
city, town: Manistee — N/A vicinity
state: Michigan code: MI county: Manistee code: 051 zip code: 49660

## 3. Classification

Ownership of Property
- [ ] private
- [X] public-local
- [ ] public-State
- [X] public-Federal

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

Number of Resources within Property

| Contributing | Noncontributing | |
|---|---|---|
| 0 | 0 | buildings |
| 0 | 0 | sites |
| 3 | 0 | structures |
| 0 | 0 | objects |
| 3 | 0 | Total |

Name of related multiple property listing: N/A

Number of contributing resources previously listed in the National Register: N/A

## 4. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1966, 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. [ ] See continuation sheet.

[illegible], HISTORIC PRESERVATION OFFICER — 3/31/90
Signature of certifying official — Date

U.S. DEPT. OF TRANSPORTATION
State or Federal agency and bureau

In my opinion, the property [X] meets [ ] does not meet the National Register criteria. [ ] See continuation sheet.

Nathan B. Haskell, Deputy SHPO — 3-8-90
Signature of commenting or other official — Date

Bureau of History
State or Federal agency and bureau

## 5. National Park Service Certification

I, hereby, certify that this property is:

- [✓] entered in the National Register. [ ] 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:) _____

Patrick Andrus — 5/17/90
for | Signature of the Keeper — Date of Action

## 6. Function or Use

**Historic Functions (enter categories from instructions)**
Transportation/water-related

**Current Functions (enter categories from instructions)**
Same

## 7. Description

**Architectural Classification (enter categories from instructions)**
Other: breakwater/lighthouse

**Materials (enter categories from instructions)**
foundation Concrete over timber cribs
walls
roof
other Iron, steel and wood

**Describe present and historic physical appearance.**

The North Pier is a man-made structure extending into Lake Michigan at Manistee, Michigan. The pier, extending about 1300 feet into the lake, is constructed of rubble-filled timber cribs topped by a concrete cap that has been built up at various times over the years. A cylindrical, metal-plate lighthouse stands near the pier's outer end, and is reached by a catwalk supported on metal stanchions.

The Manistee is an important river on the west side of the northern part of Michigan's Lower Peninsula. The part of the river passing through the city of Manistee, near the mouth, served as a major port during the later nineteenth century, when Manistee exported vast amounts of lumber to Chicago and other lake ports. The North Pier was part of harbor improvements begun during the 1850s and gradually expanded over the years, but a South Pier that once stood parallel to it across the river mouth was removed in the 1940s when the channel was widened.

The surviving North Pier consists of a series of rock-filled timber cribs encased in a concrete cap measuring about twelve feet wide at the top, and originally extending at the sides to below the water level. The sides have been enclosed in sheet steel piling for most of the pier's length. The depth of water along the north side of the pier increases from the shoreline to a depth of about thirteen feet near the outer end, at low water datum. The shipping channel to the south of the pier is maintained to a minimum available draft of twenty-three feet at low water datum to a point opposite the outer end of the south pier, and twenty-five feet beyond that point. The top of the pier is about seven feet above the mean level of the lake.

The elevated catwalk extends for about 1200 feet along the North Pier to the light tower. It stands on forty-eight metal stanchions spaced about twenty-five feet apart, and is elevated about ten feet above the pier's surface. Two-by-ten-inch planks form the actual catwalk deck.

The lighthouse stands about thirty-five feet from the end of the pier. The tower below the lantern is thirty-eight feet in height and is constructed of steel plates riveted together. Steel door entrances are located at a level two-and-one-half feet above the pier surface and at the catwalk level. The eight-foot high lantern contained an electric lamp and fifth order Fresnel lens, but the lens was replaced with a

[X] See continuation sheet

(Continues)

modern plastic one in the 1970s.

The Manistee North Pier is one of a series of harbor and river-mouth installations for Michigan cities constructed in the period after the Civil War by the federal government. The pier reflects the commercial and industrial growth of Manistee and the town's growth and development as a port and shipping center for its area. It also reflects the growing role of the federal government in the nineteenth century in providing harbor improvements and aids to navigation in growth of water-borne commerce at its lakeshore port. It, with other similar surviving piers along the west shore of Michigan's Lower Peninsula, reflects the growth and commercial and industrial development of cities such as Manistee, Grand Haven, Muskegon, and St. Joseph-- which began to develop in the early years of white settlement of the Lower Peninsula in the nineteenth century -- as shipping points for lumber and, later, agricultural goods produced upstream along the rivers that passed through them into Lake Michigan. These same ports also became transshipment points for goods from other lake ports, particularly Chicago, bound for points inland in Michigan. In time the coastal cities themselves generated manufactured goods which were shipped by water and a considerable passenger traffic.

## 8. Statement of Significance

Certifying official has considered the significance of this property in relation to other properties:

☐ nationally ☒ statewide ☐ locally

Applicable National Register Criteria ☒ A ☐ B ☐ C ☐ D

Criteria Considerations (Exceptions) ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G

Areas of Significance (enter categories from instructions)
Maritime History
Transportation

Period of Significance
1854-present

Significant Dates
1854
1875
1927

Cultural Affiliation
N/A

Significant Person
N/A

Architect/Builder
unknown

State significance of property, and justify criteria, criteria considerations, and areas and periods of significance noted above.

The harbor formed at the confluence of the Manistee River with Lake Michigan has been essential to the development and economy of the surrounding region. After permanent settlement commenced in 1841, improvement of the harbor mouth was necessary to handle large lake-faring ships. The North Pier was constructed first, followed a short time later by the South Pier. The North Pier remains in its original position while the South Pier was removed during harbor renovation during the 1940s.

Commerce at Manistee developed in conjunction with the logging industry, and schooners and steam barges shipped virtually the entire output of city mills to Chicago. At the height of the lumbering era several thousand cargoes a year were shipped through the harbor. Water-borne transportation was so dominant that Manistee residents neglected early railroad construction, and even after merging into the rail grid ships continued to serve nearly all of the residents' transportation needs well into the twentieth century.

Initial settlers discovered that wind and wave action and sand drifts had forced the mouth of the Manistee River well north of its former outlet, and it entered Lake Michigan by a long and heavily shoaled channel. Early vessels unloaded cargoes over the beach while lying at anchor. As commercial lumbering activity developed at Manistee during the mid-nineteenth century, the necessity of a navigable river permitting schooners to unload and load directly at sawmills became obvious. Samuel Potter was hired in 1854 to dam up the Manistee River to form a new direct outlet to Lake Michigan. The dam formed the basis for the North Pier, which has remained in the same location since 1854.

In the decade following the Civil War, the Corps of Engineers contracted out improvements to the Manistee harbor. Each year several wood cribs were constructed, floated to the end of the existing pier, sunk, and filled with stone. Work on the piers was completed by the 1880s, and the Corps of Engineers performed regular maintenance on the structures.

☒ See continuation sheet

SIGNIFICANCE (CONTINUATION)

The first government lighthouse marking the Manistee harbor was built in 1869. its light was mounted on a short tower atop a shoreside dwelling. In October of 1875 the light was moved to a small skeletal tower at the end of the south pier and the first elevated walkway, commonly called a catwalk, was constructed of wood. Manistee has had a catwalk on the pier ever since. The light for the lighthouse was originally provided by oil lamps magnified by a fresnel lens that permitted visibility many miles off shore. The oil lamps required constant maintenance and refilling and a light-keeper was required to maintain the lamp every few hours. In inclement weather the light was critical to lake shipping, and it was essential that the keeper be able to reach the lens and lantern. The catwalks were provided so that the keeper could reach the light above waves crashing over the pier.

In 1889 a steam fog signal was placed beside the light tower at the end of the pier and the light-keeper's responsibilities were expanded to include its maintenance. The keeper fired a steam boiler with coal to blow the signal, and the catwalk access acquired added importance.

In 1893 the Light House Board rebuilt the entire pierhead light system at Manistee. The old fog signal building was moved to the north pier and a wooden elevated walkway was built to the shore. An unusual device called a conduit light was extended 200 feet further along the pier into Lake Michigan. This device consisted of a small wood tunnel shielding a stanchion and miniature rail track. A lighted lamp was placed in a lens on a miniature car and manoeuvered by means of a rope pulley system out to the end of the pier via the conduit.

This conduit system was replaced in 1900 and the fog signal building, surmounted by a new light, was moved to the end of the pier. Elevated walkways were again erected to permit access to the end of the pier. A total of 175 feet of new elevated walkway were constructed, and an additional 254 feet were added the following year. Extensive repairs were also required after a 1905 storm, when Captain Thomas Robinson used the catwalk to salvage the equipment from the fog signal building and light structure on the night of October 19. The Manistee Daily News

SIGNIFICANCE (CONTINUATION)

reported "Captain Thomas Robinson and his assistants Thomas W. Robinson (Jr.) and Fred A. Henmin removed from the station all of the tools that could be carried and the lens from the pierhead light, which is valued at $2,000. Hardly had the work been finished when the sea crippled the elevated walk to the pierhead so that it was no longer safe to reach the station."

In the 1920s the Corps of Engineers completely rebuilt the north pier, capping it with concrete and shortening it to its present length. In 1926 a Captain Olsen arrived with the U.S. Lighthouse Tender SUMAC and the materials to build the final 600 feet of the elevated walkway as well as the new pierhead lighthouse. Both structures used riveted steel or iron construction, possibly salvaged and recycled from another location. Simultaneously the Bureau of Lighthouse electrified the pierhead light, reducing the need for a catwalk since hourly maintenance of the apparatus was no longer necessary. Several decades later the Coast Guard installed automatic lamp changers in the lens, virtually eliminating the need for daily maintenance. The catwalk was declared surplus property and was transferred to the City of Manistee in January 1990.

The pier, catwalk, and lighthouse stand together as a symbol to the people of Manistee of the importance of the port during the late nineteenth and early twentieth centuries. They compose a motif officially greeting visitors at the entrances to the port- "Manistee: the Victorian Port City". In the century past, when the harbor was the third busiest on Lake Michigan, the light and catwalk were an essential and enduring element of the industrial landscape.

Natural and cultural variables determined that catwalks were essential elements of pierhead lighthouses along the eastern shore of Lake Michigan. The prevailing westerly winds created hazardous conditions for maintaining the lights, and the same winds created ice jams along the shoreline, completely burying the piers. Access was impossible without catwalks. In February 1927, ice floes shattered the glass in the lantern of the new lighthouse- 48 feet above the water level.

SIGNIFICANCE (CONTINUATION)

In general, Great Lakes pier catwalks have experienced an evolutionary trend well illustrated by the Manistee catwalk. Initially constructed of wood, by the early twentieth century most catwalks had been replaced by iron or steel stanchions and bracing. Later, most of the catwalks were demolished and the piers reinforced and covered with concrete. The steel Manistee catwalk is anchored in a pier encased in concrete that rests on the original intact cribbing beneath it.

At the turn of the century there were thirteen catwalks on the east shore of Lake Michigan and one additional catwalk elsewhere in Michigan. Today the Manistee catwalk is one of four surviving in the state. Piers with catwalks have met similar fates in ports across the country. Modern technology was eliminated the need and the majority have been removed or demolished to eliminate maintenance and liability concerns. Thus, the Manistee North Pier, Catwalk, and Lighthouse are important surviving symbols of maritime and transportation history.

## 9. Major Bibliographical References

United States Lighthouse Board, Annual Reports, 1867-1939, National Archives, Washington, D.C.

Hyde, Charles K. The Northern Lights, Lighthouses of the Upper Great Lakes, Two Peninsula Press, Lansing, Michigan, 1986.

The Manistee News-Advocate, various editions, 1926-1927, on file in Manistee County Historical Museum, Manistee, Michigan.

Various other Manistee newspapers, 1869-1990, on file in Manistee County Historical Museum, Manistee, Michigan.

☐ See continuation sheet

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 # _____

Primary location of additional data:
- ☒ State historic preservation office
- ☐ Other State agency
- ☐ Federal agency
- ☐ Local government
- ☐ University
- ☒ Other

Specify repository: Manistee County Historical Museum

## 10. Geographical Data

Acreage of property 0.50

UTM References

| | Zone | Easting | Northing |
|---|---|---|---|
| A | 16 | 515230 | 4897760 |
| B | | | |
| C | | | |
| D | | | |

☐ See continuation sheet

Verbal Boundary Description The North Pier extends into Lake Michigan approximately 1,300 feet. It is situated west of Government Lot 4, Southwest 1/4 of Section 2, Township 21 North, Range 17 West.

☐ See continuation sheet

Boundary Justification Boundaries are defined by the junction of the pier base with the lakebed below low water datum, extending eastward to Government Lot 4 along the shoreline.

☐ See continuation sheet

## 11. Form Prepared By

name/title Steve Harold
organization Manistee Co. Historical Museum date January 18, 1990
street & number 425 River Street telephone 616-723-5531
city or town Manistee state Michigan zip code 49660

NPS Form 10-900-a
(8-86)

OMB Approval No. 1024-0018

United States Department of the Interior
National Park Service

# National Register of Historic Places Continuation Sheet

Section number _____ Page _____

SUPPLEMENTARY LISTING RECORD

NRIS Reference Number: 90000718 Date Listed: 5/17/90

Manistee North Pier
Property Name

Manistee
County

MI
State

Multiple Name

---

This property is listed in the National Register of Historic Places in accordance with the attached nomination documentation subject to the following exceptions, exclusions, or amendments, notwithstanding the National Park Service certification included in the nomination documentation.

for Patrick Andus
Signature of the Keeper

5/17/90
Date of Action

==========

Amended Items in Nomination:

The Period of Significance for this resource needs to be clarified. The nomination form list the Period of Significance as starting in 1854 and going to the present. The current lighthouse complex dates from a rebuilding in the 1920s and there is no explanation of any potential exceptional significance that would warrant extending the period to present. A more accurate Period of Significance for this resource would be Ca. 1925 -1940. This has been confirmed with the Federal Preservation Officer. The form is now officially amended to include this Period of Significance.

DISTRIBUTION:
National Register property file
Nominating Authority (without nomination attachment)

APPENDIX E

HISTORIC PAINT COLOR REPORT

# PAINT SAMPLE LOG

PROJECT: Manistee North Pierhead Light
Manistee, Michigan

DATE SAMPLES COLLECTED: June 25-26, 2014

SAMPLES COLLECTED BY: Ken Czapski, Sanders & Czapski Associates, PLLC
Marquette, Michigan

| STRUCTURE | PAINT SAMPLE NO. | LOCATION & SUBSTRATE |
|---|---|---|
| Light Tower | PS-1 | Interior – metal angle at Level L-1 |
| Light Tower | PS-2 | Interior – concrete ceiling slab at Level L-1 |
| Light Tower | PS-3 | Interior – concrete floor slab at Level L-1 |
| Light Tower | PS-4 | Exterior – "black" band at tower base |
| Light Tower | PS-5 | Exterior – "white" paint at tower base |
| Elevated Walkway | PS-6 | Exterior – walkway columns |
| Light Tower | PS-7 | Interior – wood door trim at Level L-2 |
| Light Tower | PS-8 | Interior – concrete floor slab at Level L-2 |
| Light Tower | PS-9 | Interior – lower metal wall surface at Level L-2 |
| Light Tower | PS-10 | Interior – upper metal wall surface at Level L-3 |
| Light Tower | PS-11 | Interior – concrete floor slab at Level L-3 |
| Light Tower | PS-12 | Interior – metal floor deck at Level L-4 |
| Light Tower | PS-13 | Interior – metal window sill in Lantern Room |
| Light Tower | PS-14 | Interior – metal wall in Lantern Room |

| STRUCTURE | PAINT SAMPLE NO. | LOCATION & SUBSTRATE |
|---|---|---|
| Light Tower | PS-15 | Interior – metal base in Lantern Room |
| Light Tower | PS-16 | Exterior – metal window sill of Lantern Room |
| Light Tower | PS-17 | Exterior – metal wall of Lantern Room |
| Light Tower | PS-18 | Exterior – metal floor deck outside of Lantern Room |

End

**Welsh Color & Conservation, Inc.**
Analysis of Historic Paints and Wallpapers

P.O. Box 767
Bryn Mawr, PA 19010-0767
Tel: 610-525-3564
E-mail: fswelsh@welshcolor.com
Website: www.welshcolor.com

February 9, 2016

Mr. Kenneth H. Czapski, AIA
Sanders & Czapski Associates, PLLC
109 South Front Street
Suite 210
Marquette, MI 49855-4645

Re: Manistee North Pierhead Lighthouse

Dear Ken:

We received 18 paint samples from your firm from the Manistee North Pierhead Lighthouse constructed in the 1927. The samples are from the interior and exterior. We conducted a preliminary stereomicroscopical inspection of all samples to determine whether or not they exhibited any early 20th century paint layers.

Our initial analyses disclose that the samples exhibit very poor and very disrupted paint layer evidence, none of which appears to be older than the mid-to-late 20th century, except for sample #2, from level 1's concrete ceiling. There is a hint of early white whitewash on some of the sample fragments in this envelope. Also, sample 10 from level 3's upper walls shows multiple layers of gray, but the disruption is such that I am not able to report on them with any degree of accuracy. The substrate on the samples from iron features is extraordinarily degraded, leaving no hint of any early coatings at all.

I have found that when there are specs for painting the lighthouses that I have worked on and where there is original paint, such as at Key West Lighthouse, and others, the whites were pure white lead. The best color for this in the B. Moore system seems to be: White Dove. In the historical white, lead-base, linseed oil paints, the linseed oil always contributed to a bit of yellowness in the paint. The modern titanium white, alkyd oil- or latex-based paints are too white compared to the white, lead-based paints of the 19th and early-to-mid 20th c. paints.

If you need to make another attempt at finding better evidence, please let me know. With the photos that you sent on the disk, I think that I can suggest some locations that still might hold some credible evidence. If you have any follow-up questions please call me.

Sincerely,

Frank S. Welsh

Frank S. Welsh

APPENDIX F

HAZARDOUS MATERIAL TEST REPORT

424 South Pine Street Ishpeming, MI 49849

906-485-1011 • 877-834-3827 • Fax: 906-485-1013

October 16, 2014 [U31-14133]

Mr. Ken Czapski
Sanders & Czapski Associates, PLLC
109 South Front Street, Suite 210
Marquette, Michigan 49855

**RE: MANISTEE NORTH PIERHEAD LIGHT & ELEVATED WALK**
**LEAD PAINT TESTING**

Dear Mr. Czapski:

As authorized, U.P. Engineers & Architects, Inc. (UPEA) has conducted lead analysis of paint samples collected from the Manistee North Pierhead Light & Elevated Walk. The scope of work included conducting lead testing on paint chip samples you collected at the lighthouse and this letter report with the findings. The sampling results are discussed below.

A total of eighteen paint chips samples that you collected from the Manistee North Pierhead Light & Elevated Walk were analyzed for the presence of lead using a Niton XLP x-ray fluorescence machine on October 13, 2014. The descriptions for the paint samples included in the sample bags are included as the component, substrate, color, and level in the attached table.

Lead was detected in each sample analyzed. Up to two readings were collected for each sample depending on the various surfaces and paint thicknesses present in the sample. The lead concentration and error are reported in $mg/cm^2$ for each sample in the attached table.

UPEA appreciated the opportunity to perform paint chip lead testing. If you have any questions or comments regarding the information presented, or if we can be of further assistance please contact me at (906) 485-1011. Thank you.

Sincerely,

**U.P. ENGINEERS & ARCHITECTS, INC.**

R. Robb Cookman

R. Robb Cookman, P.E.
Geo-Environmental Engineer

Enclosures: Lead Paint Testing Results Table

# Manistee North Pierhead Light & Elevated Walk
## Lead Paint Testing Results

Samples Collected By: K. Czapski, Sanders & Czapski, LLC
Samples Tested by R. Cookman, U.P. Engineers & Architects, Inc. 10/13/2014
Tested using a Niton XLp XRF

| Sample ID | COMPONENT | SUBSTRATE | COLOR | Level | Lead Concentration | Units |
|---|---|---|---|---|---|---|
| | Standard | | | | 3.42 +/- 0 | cps |
| | Standard | | | | 0 +/- 0.02 | mg / cm ^2 |
| | Standard | | | | 1.1 +/- 0.1 | mg / cm ^2 |
| | Standard | | | | 3.4 +/- 2.1 | mg / cm ^2 |
| ps-1 | Interior Vertical Angle Wall Struts | Metal | Grey | L-1 | 0.09 +/- 0.13 | mg / cm ^2 |
| ps-2 | Interior Concrete Ceiling | Concrete | Grey | L-1 | 25.6 +/- 19.4 | mg / cm ^2 |
| ps-3 | Interior Concrete Floor | Concrete | Red/Grey | L-1 | 5.4 +/- 4.2 | mg / cm ^2 |
| ps-4 | Exterior Black Band at Base of Tower | Metal | Black | | 0.12 +/- 0.18 | mg / cm ^2 |
| ps-4 | Exterior Black Band at Base of Tower | Metal | Black | | 22.6 +/- 18.9 | mg / cm ^2 |
| ps-5 | Exterior White Tower Paint at Base of Tower | Metal | White | | 9.7 +/- 6.3 | mg / cm ^2 |
| ps-6 | Catwalk | Metal | Black | | 0.4 +/- 0.4 | mg / cm ^2 |
| ps-6 | Catwalk | Metal | Black | | 0.4 +/- 0.6 | mg / cm ^2 |
| ps-7 | Wood Trim at Catwalk Door | Wood | Black | L-2 | 2.5 +/- 1.3 | mg / cm ^2 |
| ps-8 | Interior Concrete Floor | Concrete | Grey | L-2 | 7.2 +/- 5.7 | mg / cm ^2 |
| ps-9 | Interior walls | Metal | Dark Grey | L-2 | 9.6 +/- 8.1 | mg / cm ^2 |
| ps-10 | Interior upper walls | Metal | White | L-3 | 40 +/- 26 | mg / cm ^2 |
| ps-11 | Interior Concrete Floor | Concrete | Red/Grey | L-3 | 8.6 +/- 6.9 | mg / cm ^2 |
| ps-12 | Metal Floor Deck | Metal | Grey | L-4 | 4.3 +/- 2.8 | mg / cm ^2 |
| ps-13 | Interior Lantern Room - Window Sill | Metal | White | | 0.3 +/- 0.11 | mg / cm ^2 |
| ps-13 | Interior Lantern Room - Window Sill | Metal | White | | 2.1 +/- 1.1 | mg / cm ^2 |
| ps-14 | Interior Lantern Room - Wall | Metal | White | | 0.21 +/- 0.3 | mg / cm ^2 |
| ps-14 | Interior Lantern Room - Wall | Metal | White | | 0.6 +/- 0.3 | mg / cm ^2 |
| ps-15 | Interior Lantern - Grey Metal Base | Metal | Grey | | 0.7 +/- 0.3 | mg / cm ^2 |
| ps-15 | Interior Lantern - Grey Metal Base | Metal | Grey | | 2.3 +/- 1.2 | mg / cm ^2 |
| ps-16 | Interior Lantern - Black Paint on Window Sill | Metal | Black | | 4.5 +/- 2.8 | mg / cm ^2 |
| ps-17 | Exterior Lantern - Wall | Metal | White | | 3.7 +/- 2.4 | mg / cm ^2 |
| ps-18 | Exterior Lantern - Deck Floor | Metal | Black | | 8.9 +/- 6.9 | mg / cm ^2 |
| | Standard | | | | 0 +/- 0.02 | mg / cm ^2 |
| | Standard | | | | 0.9 +/- 0.1 | mg / cm ^2 |
| | Standard | | | | 1.1 +/- 0.1 | mg / cm ^2 |
| | Standard | | | | 3.4 +/- 2.1 | mg / cm ^2 |

# APPENDIX G

# SUPPLEMENTAL HISTORIC DATA

# CONSTRUCTION OF PIERHEAD CONDUITS

LIGHT-HOUSE ESTABLISHMENT.
OFFICE OF ENGINEERS NINTH AND ELEVENTH DISTRICTS
*Detroit, Mich., September 18, 1894*

SIRS: I have the honor to submit the following report concerning the introduction and use of the pierhead conduit, devised by me for use in connection with the lighting of pierheads by means of post lanterns, placed in advance of the usual pierhead beacon and forming therewith a range for approaching a harbor.:

The plan is to convey the lantern through a continuous inclosed conduit made of 1-inch boards measuring 1 foot wide by 2 feet 2 inches high in the clear, so as to allow the ordinary lantern, resting on a small car, to pass through. The conduit is supported at the desired elevation of the light on trestles placed at intervals of 16 feet, securely fastened to the pier timbers at their lower ends. The outer end of the conduit terminates in a box provided with three panes of glass on the front and on either side, forming a lantern having a galvanized sheet iron roof and globe ventilator.

The car with lantern is conveyed back and forth between the beacon tower or fog-signal house, and its position at the outer extremity, by means of an endless cord passing through a sheave or small blocks at the outer end, one-half the cord being supported by small rings (fair-leaders or friction rollers) attached to one side of the conduit near the roof, the other half being connected to the car and allowed to rest on the bottom of the conduit.

The details of the construction are shown on the accompanying drawing, together with sketches showing its application. The arrangement forms a continuous closed channel-way for the lantern, car, and maneuvering cord, completely housing them from weather, susceptible of operation at all seasons and at considerable distances.

The following conduits have been constructed under the Board's authority ate the various locations of the Ninth district, with the lengths at each place:

Manistee, Mich., distance from fog-signal house……290
Muskegon, Mich ……580
Grand Haven, Mich……378
Kalamazoo, Mich., no beacon; length of conduit from lamp or cleaning house……240
St Joseph, Mich……290
Kenosha, Wis……100
Racine, Wis……288
Sheboygan, Wis……264
Kewaunee, Wis……335

The cost of these structures was about $1.02 per linear foot, which includes all the necessary work of getting the ballast stone of the cribs out to fasten the trestles, and replacing the stone; also painting the conduit itself (not including trestles, which are rough) two coats of paint.

Only the conduit, that at Kewaunee, has had the test of a winter's season, the others having been placed since spring of this year. They have all worked successfully, and with comparative ease by hand power, excepting one at Muskegon, the longest, which is operated by a small winch.

Recent reports from Grand Haven indicate that it may be necessary to place a metal roof to the conduit to ensure its being perfectly tight against rain and snow. The estimate received for this purpose will increase the cost 7 cents per linear foot for sheet iron, painted two sides.

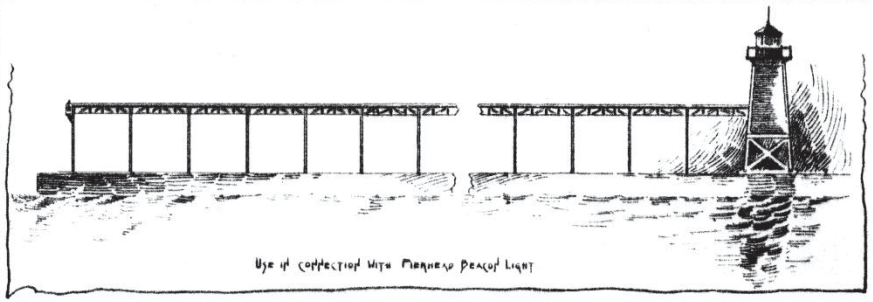
The conduit can be added to at any time there is an extension made to the harbor piers, until such time as a limit )probably from 600 to 700 feet) is reached, when it may be practicable to extend it on account of the amount of power necessary to propel the car. When this limit is reached, and an extension is necessary, it might be well to move the beacon light also.

Respectfully,

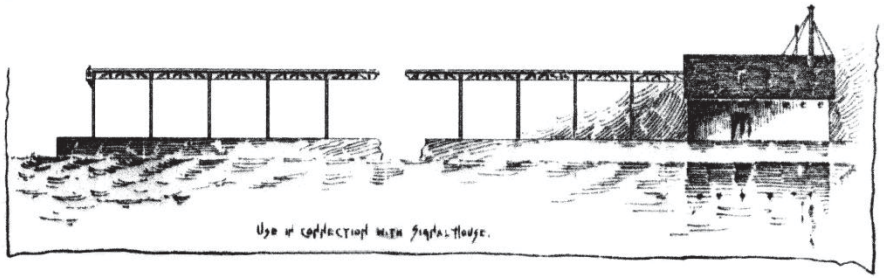
M. B. ADAMS
*Major of Engineers, U.S. Army, Light-House Engineer.*

The LIGHT-HOUSE BOARD
*Washington, D.C.*

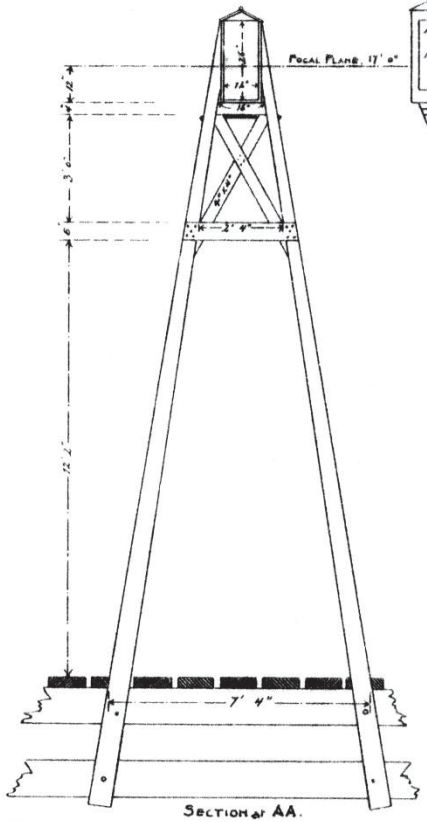
# Conduit for Pierhead Lights.



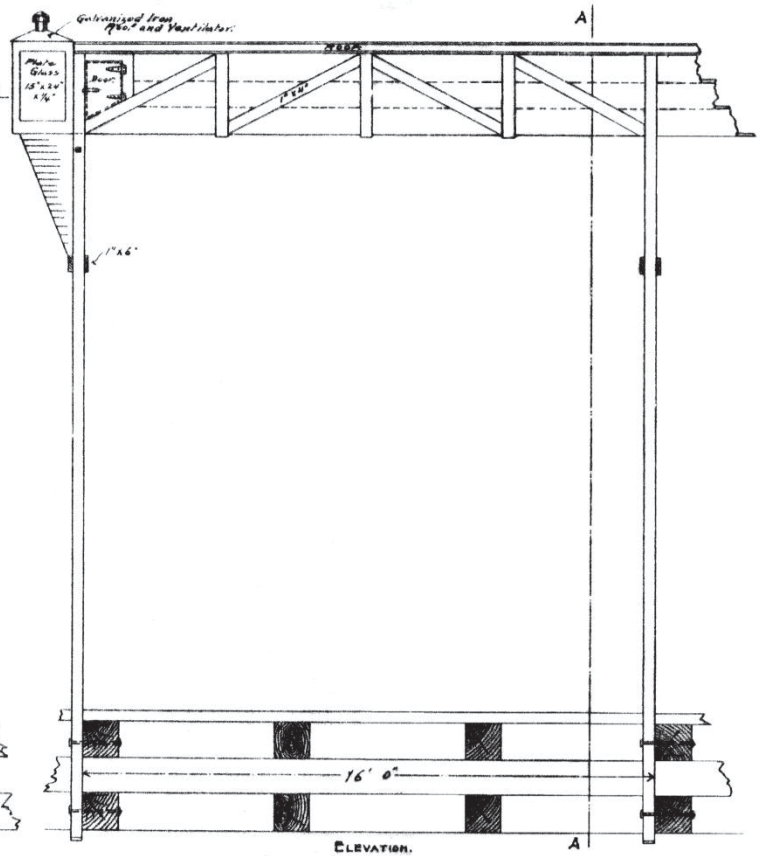
Use in connection with Pierhead Beacon Light



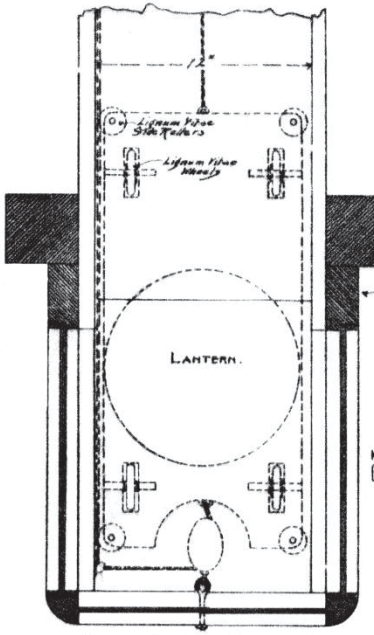
Use in connection with Signal House.



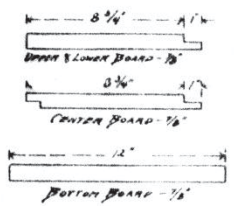

Section at AA.




Elevation.




Plan of Lantern Box




Details of Conduit Boards.


Section of Roof.

Scale of Plans:

Scale of Details:

Office of Light-House Engineer, 9th District,
Detroit, Mich., 1894.
M. R. Adams
Engineer.

# Chronological history of conduit installations on pierhead lights in Lake Michigan

## MANISTEE

1894 - The pierhead light and fog signal were transferred from the south to the north pier. The lantern shown from its outer end is run in and out. The conduit consists of framed trestles, erected and secured to the cross timbers of the pier with machine bolts, carrying a continuous box or conduit of 1-inch boards, sized and rabbeted, with battens and braces, and painted. The conduit is 290 feet long and extends shoreward to the new fog signal house on the north pier. A new elevated walk, 460 running feet long, was built on the north pier, extending shoreward from the rear of the fog signal house; the old elevated walk on the south pier was taken down and 463 feet of it was transferred to the north pier. The transfer of the fog signal plant from the south to the north pier was begun in May and much work was done on it. Various repairs were made.

*1900* - This light was changed on June 1, 1900 from a lantern-light to a sixth order 180º lens. The light in the end of the conduit was discontinued and the conduit was taken down. The fog signal building was moved some 260 feet lakeward and placed on a 2-foot superstructure about 42 feet from the outer end of the pier. An octagonal lantern was placed on the front gable of the fog signal building and the new sixth order light was established therein, and a watch room was erected beneath it. Some 250 feet of elevated walk were built. The whistle and sound deflector were raised some 4 feet, so as to clear the lantern. Various repairs were made.

## MUSKEGON PIERHEAD

1894 - Materials for construction of a conduit for running a lantern out to the end of the pier were delivered at the station.

1895 - A conduit 580 feet long, fir running in and out the lantern exhibited at the outer end, was built and the light was exhibited at the outer end on July 25, 1894, for the first time.

## GRAND HAVEN PIERHEAD

1894 - An elevated conduit on the south pier, for running in and out the lantern shown from its outer end, was begun in June, and at the close of the month much work had been done.

1895 - This light was discontinued May 4, 1895, on account of the removal of the pierhead light to the outer end of the pier. The conduit was taken down and stored for future use.

## KALAMAZOO RIVER PIERHEAD

1894 - The beacon of the light discontinued in 1892 was taken down and the good material stored that the main lighthouse. A fixed red lantern light was reestablished on the outer end of the south pier on May 23, 1894, and was Shown from the outer end of a conduit for running in and out of the lantern. The conduit is 240 feet long. It extends shoreward to a small lamp house on the pier at the outer end of the old elevated walk. The walk, which extended the length of the conduit, was removed, and a platform was built at the shore end of the conduit from which to work the light. Various repairs were made.

*1900* - A boat platform was erected and boat davits were provided. The conduit was taken down, and the light was taken from the conduit and shown from a post, and the light was carried in and out a distance of 152 feet on a lantern carriage.

# Chronological history of conduit installations on pierhead lights in Lake Michigan

**ST JOSEPH PIERHEAD**

1895 - The elevated conduit from which this light is shown was damaged during a storm on November 13, 1894. A post was temporarily erected at the outer end of the conduit on November 1, 1894, and the light was exhibited therefrom. Various repairs were made.

1897 - A red globe. For use in the conduit light, was shipped to the keeper. This light was discontinued November 16, 1896, the elevated conduit was taken down, and the beacon was moved to the end of the pier.

**SHEBOYGAN PIERHEAD**

1895 - The elevated conduit for the front range light was damaged by a schooner during a storm, but it was rebuilt at once.

**KEWAUNEE PIERHEAD**

1895 - The elevated conduit, from which the front pierhead range light was shown, was taken down, and on November 7, 1894, the light was discontinued.

*1896* - The conduit light was reestablished on October 17, 1895. Some 200 running feet of elevated conduit was built. Various repairs were made.

1898 - A water heater was set up in the fog signal house and pipe connections made with both boilers and water tank. A coal bin was built. The conduit was extended 210 feet, and on January 4, 1898, the fixed red lantern light was moved to the outer end. The following recommendation made in the Board's last two annual reports is renewed:

1899 - The beacon was moved 200 feet nearer the outer end of the pier. Some 200 feet of elevated walk was built and 200 feet of the conduit was removed. The gas machine was taken down and shipped to the light-house depot at St. Joseph, Mich., for storage. Two globe valves and a smokestack were provided for signal No. 1 and erected. Minor repairs were made. The following recommendation made in the Board's last three annual reports is renewed:

1904 - An eight-day post lantern was placed on top of the outer end of the conduit to be temporarily shown. The act approved on June 28, 1902, appropriated $5,000 for the erection of a keeper's dwelling. Nothing has been done toward the construction of this work, as no suitable site sufficiently near the station for its proper service has yet been obtained.

1905 - The conduit light at the head of the pier was discontinued, the conduit was taken down, the beacon was moved some 200 feet from its old location to the outer end of the pier, and a skeleton metal tower was erected 400 feet in the rear of the pierhead beacon for range light.

**RACINE PIERHEAD**

1896 - A fog bell was established. The pierhead tower was moved to the outer end of the pier, and the sixth-order fixed red light was reestablished therein on June 18, 1896. The conduit lantern light was discontinued and the conduit was taken down. Some 438 feet of elevated walk was built.

**KENOSHA PIERHEAD**

*1900* - The pierhead light and conduit destroyed by a gale on November 1, 1899, were reestablished five days later on a post erected 75 feet in front of the rear beacon, with a running carriage on wire.

# APPENDIX H

# THE SECRETARY OF THE INTERIOR'S STANDARDS FOR THE TREATMENT OF HISTORIC PROPERTIES

# Preservation as a Treatment

**Preservation** is defined as the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. New exterior additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a preservation project.

## Standards for Preservation

1. A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.
2. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color, and texture.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

## Preservation as a treatment

When the property's distinctive materials, features, and spaces are essentially intact and thus convey the historic significance without extensive repair or replacement; when depiction at a particular period of time is not appropriate; and when a continuing or new use does not require additions or extensive alterations, Preservation may be considered as a treatment.

The **Guidelines for the Treatment of Historic Properties** illustrate the practical application of these treatment standards to historic properties. These Guidelines are also available in **PDF format**.

The **Guidelines for the Treatment of Cultural Landscapes** apply these treatment standards to historic cultural landscapes.

# Restoration as a Treatment

**Restoration** is defined as the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project.

## Standards for Restoration

1. A property will be used as it was historically or be given a new use which reflects the property's restoration period.
2. Materials and features from the restoration period will be retained and preserved. The removal of materials or alteration of features, spaces, and spatial relationships that characterize the period will not be undertaken.
3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate and conserve materials and features from the restoration period will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.
4. Materials, features, spaces, and finishes that characterize other historical periods will be documented prior to their alteration or removal.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize the restoration period will be preserved.
6. Deteriorated features from the restoration period will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials.
7. Replacement of missing features from the restoration period will be substantiated by documentary and physical evidence. A false sense of history will not be created by adding conjectural features, features from other properties, or by combining features that never existed together historically.
8. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
9. Archeological resources affected by a project will be protected and preserved in place. If such resources must be disturbed,

mitigation measures will be undertaken.

0. Designs that were never executed historically will not be constructed.

## Restoration as a treatment

When the property's design, architectural, or historical significance during a particular period of time outweighs the potential loss of extant materials, features, spaces, and finishes that characterize other historical periods; when there is substantial physical and documentary evidence for the work; and when contemporary alterations and additions are not planned, Restoration may be considered as a treatment. Prior to undertaking work, a particular period of time, i.e., the restoration period, should be selected and justified, and a documentation plan for Restoration developed.

The **Guidelines for the Treatment of Historic Properties** illustrate the practical application of these treatment standards to historic properties. These Guidelines are also available in **PDF format**.

The **Guidelines for the Treatment of Cultural Landscapes** apply these treatment standards to historic cultural landscapes.

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# Technical Preservation Services

National Park Service
U.S. Department of the Interior



## Rehabilitation as a Treatment

**Rehabilitation** is defined as the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values.


### Standards for Rehabilitation

1. A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.
2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.
0. New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

## Rehabilitation as a treatment

When repair and replacement of deteriorated features are necessary; when alterations or additions to the property are planned for a new or continued use; and when its depiction at a particular period of time is not appropriate, Rehabilitation may be considered as a treatment.

The **Guidelines for the Treatment of Historic Properties** illustrate the practical application of these treatment standards to historic properties. These Guidelines are also available in **PDF format**.

The **Guidelines for the Treatment of Cultural Landscapes** apply these treatment standards to historic cultural landscapes.

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# Reconstruction

**Reconstruction** is defined as the act or process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location.

## Standards for Reconstruction

1. Reconstruction will be used to depict vanished or non-surviving portions of a property when documentary and physical evidence is available to permit accurate reconstruction with minimal conjecture, and such reconstruction is essential to the public understanding of the property.
2. Reconstruction of a landscape, building, structure, or object in its historic location will be preceded by a thorough archeological investigation to identify and evaluate those features and artifacts which are essential to an accurate reconstruction. If such resources must be disturbed, mitigation measures will be undertaken.
3. Reconstruction will include measures to preserve any remaining historic materials, features, and spatial relationships.
4. Reconstruction will be based on the accurate duplication of historic features and elements substantiated by documentary or physical evidence rather than on conjectural designs or the availability of different features from other historic properties. A reconstructed property will re-create the appearance of the non-surviving historic property in materials, design, color, and texture.
5. A reconstruction will be clearly identified as a contemporary re-creation.
6. Designs that were never executed historically will not be constructed.

## Reconstruction

When a contemporary depiction is required to understand and interpret a property's historic value (including the re-creation of missing components in a historic district or site); when no other property with the same associative value has survived; and when sufficient historical documentation exists to ensure an accurate reproduction, Reconstruction may be considered as a treatment.

The **Guidelines for the Treatment of Historic Properties** illustrate the practical application of these treatment standards to historic properties. These Guidelines are also available in **PDF format**.

The **Guidelines for the Treatment of Cultural Landscapes** apply these treatment standards to historic cultural landscapes.

# Preservation as a Treatment

**Preservation** is defined as the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. New exterior additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a preservation project.

## Standards for Preservation

1. A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.
2. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color, and texture.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

## Preservation as a treatment

When the property's distinctive materials, features, and spaces are essentially intact and thus convey the historic significance without extensive repair or replacement; when depiction at a particular period of time is not appropriate; and when a continuing or new use does not require additions or extensive alterations, Preservation may be considered as a treatment.

The **Guidelines for the Treatment of Historic Properties** illustrate the practical application of these treatment standards to historic properties. These Guidelines are also available in **PDF format**.

The **Guidelines for the Treatment of Cultural Landscapes** apply these treatment standards to historic cultural landscapes.

# Restoration as a Treatment

**Restoration** is defined as the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project.

## Standards for Restoration

1. A property will be used as it was historically or be given a new use which reflects the property's restoration period.
2. Materials and features from the restoration period will be retained and preserved. The removal of materials or alteration of features, spaces, and spatial relationships that characterize the period will not be undertaken.
3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate and conserve materials and features from the restoration period will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.
4. Materials, features, spaces, and finishes that characterize other historical periods will be documented prior to their alteration or removal.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize the restoration period will be preserved.
6. Deteriorated features from the restoration period will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials.
7. Replacement of missing features from the restoration period will be substantiated by documentary and physical evidence. A false sense of history will not be created by adding conjectural features, features from other properties, or by combining features that never existed together historically.
8. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
9. Archeological resources affected by a project will be protected and preserved in place. If such resources must be disturbed,

mitigation measures will be undertaken.

0. Designs that were never executed historically will not be constructed.

## Restoration as a treatment

When the property's design, architectural, or historical significance during a particular period of time outweighs the potential loss of extant materials, features, spaces, and finishes that characterize other historical periods; when there is substantial physical and documentary evidence for the work; and when contemporary alterations and additions are not planned, Restoration may be considered as a treatment. Prior to undertaking work, a particular period of time, i.e., the restoration period, should be selected and justified, and a documentation plan for Restoration developed.

The **Guidelines for the Treatment of Historic Properties** illustrate the practical application of these treatment standards to historic properties. These Guidelines are also available in **PDF format**.

The **Guidelines for the Treatment of Cultural Landscapes** apply these treatment standards to historic cultural landscapes.

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# Technical Preservation Services

National Park Service
U.S. Department of the Interior



## Rehabilitation as a Treatment

**Rehabilitation** is defined as the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values.


### Standards for Rehabilitation

1. A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.
2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.
0. New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

## Rehabilitation as a treatment

When repair and replacement of deteriorated features are necessary; when alterations or additions to the property are planned for a new or continued use; and when its depiction at a particular period of time is not appropriate, Rehabilitation may be considered as a treatment.

The **Guidelines for the Treatment of Historic Properties** illustrate the practical application of these treatment standards to historic properties. These Guidelines are also available in **PDF format**.

The **Guidelines for the Treatment of Cultural Landscapes** apply these treatment standards to historic cultural landscapes.

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# Reconstruction

**Reconstruction** is defined as the act or process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location.

## Standards for Reconstruction

1. Reconstruction will be used to depict vanished or non-surviving portions of a property when documentary and physical evidence is available to permit accurate reconstruction with minimal conjecture, and such reconstruction is essential to the public understanding of the property.
2. Reconstruction of a landscape, building, structure, or object in its historic location will be preceded by a thorough archeological investigation to identify and evaluate those features and artifacts which are essential to an accurate reconstruction. If such resources must be disturbed, mitigation measures will be undertaken.
3. Reconstruction will include measures to preserve any remaining historic materials, features, and spatial relationships.
4. Reconstruction will be based on the accurate duplication of historic features and elements substantiated by documentary or physical evidence rather than on conjectural designs or the availability of different features from other historic properties. A reconstructed property will re-create the appearance of the non-surviving historic property in materials, design, color, and texture.
5. A reconstruction will be clearly identified as a contemporary re-creation.
6. Designs that were never executed historically will not be constructed.

## Reconstruction

When a contemporary depiction is required to understand and interpret a property's historic value (including the re-creation of missing components in a historic district or site); when no other property with the same associative value has survived; and when sufficient historical documentation exists to ensure an accurate reproduction, Reconstruction may be considered as a treatment.

The **Guidelines for the Treatment of Historic Properties** illustrate the practical application of these treatment standards to historic properties. These Guidelines are also available in **PDF format**.

The **Guidelines for the Treatment of Cultural Landscapes** apply these treatment standards to historic cultural landscapes.

# APPENDIX I

# REFERENCES

The following references were used for the compilation of this report.


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