APPENDIX A

HISTORIC PHOTOGRAPHS



PHOTO 1

VIEW OF REAR RANGE LIGHT/DWELLING AND SMALL SHED (c 1880s)

Michigan Department of Natural Resources, Michigan Historical Center

Iron Industry Museum

Negaunee, Michigan



PHOTO 2

VIEW OF SMALL DOCKS AND BOATS AT MOUTH OF

FANNY HOOE CREEK (c 1880s)

Michigan Department of Natural Resources, Michigan Historical Center

Iron Industry Museum

Negaunee, Michigan



SCENE AT COPPER HARBOR.

PHOTO 3

VIEW OF DOCK (c 1880s)

Michigan Department of Natural Resources, Michigan Historical Center

Iron Industry Museum

Negaunee, Michigan



PHOTO 4

WOOD SIDEWALK LEADING TO ORIGINAL FRONT RANGE LIGHT (c 1880s)

Michigan Department of Natural Resources, Michigan Historical Center

Iron Industry Museum

Negaunee, Michigan



PHOTO 5

VIEW OF REAR RANGE LIGHT/DWELLING AND BARN (c 1910s)

MTU Archives and Copper Country Historical Collections

Michigan Technological University

Houghton, Michigan



PHOTO 6

VIEW OF REAR RANGE LIGHT/DWELLING AND FOOT BRIDGE(c 1910)

MTU Archives and Copper Country Historical Collections

Michigan Technological University

Houghton, Michigan



PHOTO 7

VIEW OF REAR RANGE LIGHT/DWELLING (c 1910)

MTU Archives and Copper Country Historical Collections

Michigan Technological University

Houghton, Michigan



PHOTO 8

VIEW OF KEEPER DAVIS AND WIFE IN WASH HOUSE (c 1910s)

MTU Archives and Copper Country Historical Collections

Michigan Technological University

Houghton, Michigan



PHOTO 9

VIEW OF ORIGINAL FRONT RANGE LIGHT (c 1912)

Michigan Department of Natural Resources, Michigan Historical Center

Iron Industry Museum

Negaunee, Michigan



PHOTO 10

VIEW OF ORIGINAL FRONT RANGE LIGHT (c 1912)

Michigan Department of Natural Resources, Michigan Historical Center

Iron Industry Museum

Negaunee, Michigan



PHOTO 11

PARTIAL VIEW OF REAR RANGE LIGHT/DWELLING AND

ORIGINAL FRONT RANGE LIGHT (c 1913)

Michigan Department of Natural Resources, Michigan Historical Center

Iron Industry Museum

Negaunee, Michigan

.



PHOTO 12

VIEW OF ORIGINAL FRONT RANGE LIGHT (c 1915)

Michigan Department of Natural Resources, Michigan Historical Center

Iron Industry Museum

Negaunee, Michigan



PHOTO 13

VIEW OF REAR RANGE LIGHT/DWELLING (c 1915)

Michigan Department of Natural Resources, Michigan Historical Center

Iron Industry Museum

Negaunee, Michigan



PHOTO 14

VIEW OF REAR RANGE LIGHT/DWELLING, BARN,

FOOTBRIDGE AND OUTBUILDINGS (c 1917)

Michigan Department of Natural Resources, Michigan Historical Center

Iron Industry Museum

Negaunee, Michigan



PHOTO 15

VIEW OF OILHOUSE CONVERTED TO FRONT RANGE LIGHT (c 1924)

Michigan Department of Natural Resources, Michigan Historical Center

Iron Industry Museum

Negaunee, Michigan



PHOTO 16

KEEPER CHARLES HAVEN AND WIFE (c 1930s)

Michigan Department of Natural Resources, Michigan Historical Center

Iron Industry Museum

Negaunee, Michigan



PHOTO 17

VIEW OF DOCK (c 1930s)

Michigan Department of Natural Resources, Michigan Historical Center

Iron Industry Museum

Negaunee, Michigan



PHOTO 18

VIEW OF DOCK (c 1930s)

Michigan Department of Natural Resources, Michigan Historical Center

Iron Industry Museum

Negaunee, Michigan



PHOTO 19

VIEW OF DOCK AND PRESENT DAY FRONT RANGE LIGHT (c 1930)

Michigan Department of Natural Resources, Michigan Historical Center

Iron Industry Museum

Negaunee, Michigan



PHOTO 20

VIEW OF DOCK AND PRESENT DAY FRONT RANGE LIGHT (c 1930)

Michigan Department of Natural Resources, Michigan Historical Center

Iron Industry Museum

Negaunee, Michigan



PHOTO 21

VIEW OF REAR RANGE LIGHT/DWELLING, BARN AND OUTBUILDINGS (c 1931)

Michigan Department of Natural Resources, Michigan Historical Center

Iron Industry Museum

Negaunee, Michigan



PHOTO 22

VIEW OF REAR RANGE LIGHT/DWELLING WITH

FANNY HOOE CREEK HIGHWAY BRIDGE IN BACKGROUND (c 1932)

Michigan Department of Natural Resources, Michigan Historical Center

Iron Industry Museum

Negaunee, Michigan



PHOTO 23

VIEW OF EXTERIOR MOUNTED LIGHT AT REAR RANGE LIGHT/DWELLING (c 1938)

Michigan Department of Natural Resources, Michigan Historical Center

Iron Industry Museum

Negaunee, Michigan



PHOTO 24

INSTALLATION OF GAS CYLINDERS AT REAR RANGE LIGHT/DWELLING (c 1938)

Michigan Department of Natural Resources, Michigan Historical Center

Iron Industry Museum

Negaunee, Michigan



PHOTO 25

VIEW OF REAR RANGE LIGHT/DWELLING (c 1941)

Michigan Department of Natural Resources, Michigan Historical Center

Iron Industry Museum

Negaunee, Michigan



PHOTO 26

VIEW OF ELEVATED TANK AND PRIVY (c 1941)

Michigan Department of Natural Resources, Michigan Historical Center

Iron Industry Museum

Negaunee, Michigan



PHOTO 27

VIEW OF BARN (c 1941)

Michigan Department of Natural Resources, Michigan Historical Center

Iron Industry Museum

Negaunee, Michigan



PHOTO 28

VIEW OF WASHHOUSE (c 1944)

Michigan Department of Natural Resources, Michigan Historical Center

Iron Industry Museum

Negaunee, Michigan



PHOTO 29

VIEW OF REAR RANGE LIGHT/DWELLING AND BARN (c 1940s)

Michigan Department of Natural Resources, Michigan Historical Center

Iron Industry Museum

Negaunee, Michigan

APPENDIX B

ARCHIVAL DRAWINGS

A

RANGE LIGHTS
at
COPPER HARBOR MICH.

accompanying letter of Col. W. F. Raynolds to the L.H. Board dated June 3d 1865.

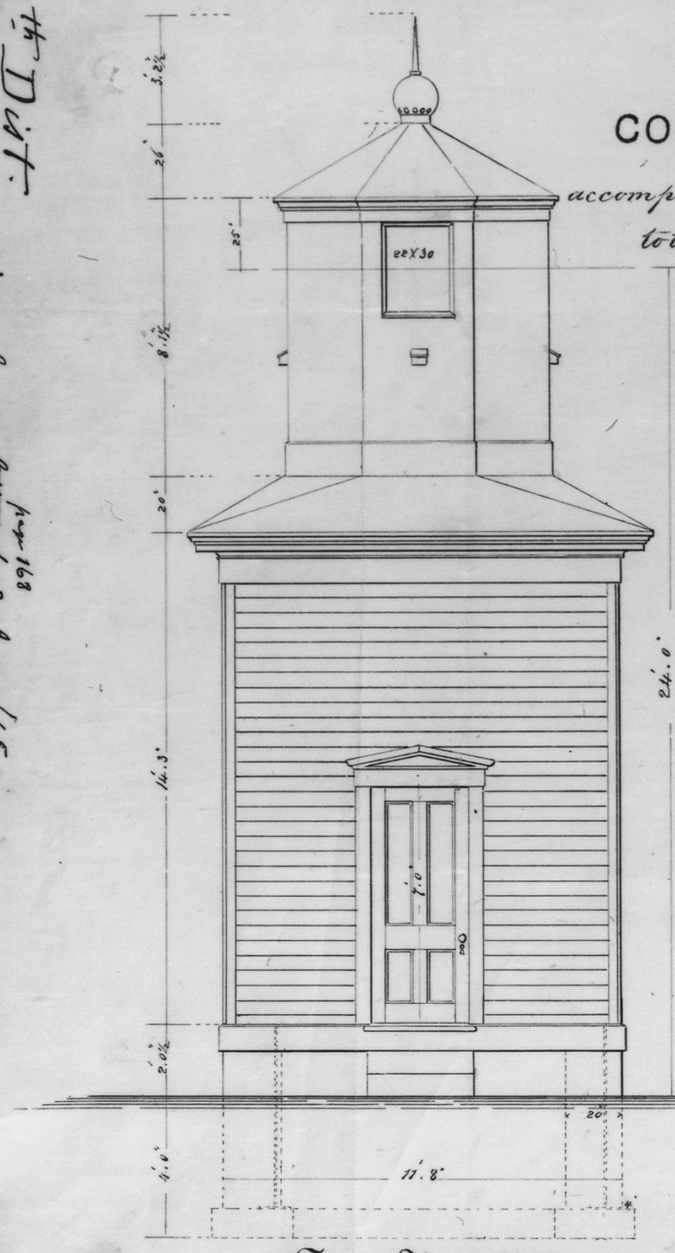
Plans approved & Construction authorized July 21st 1865

O. M. Poe
Engr Secy.

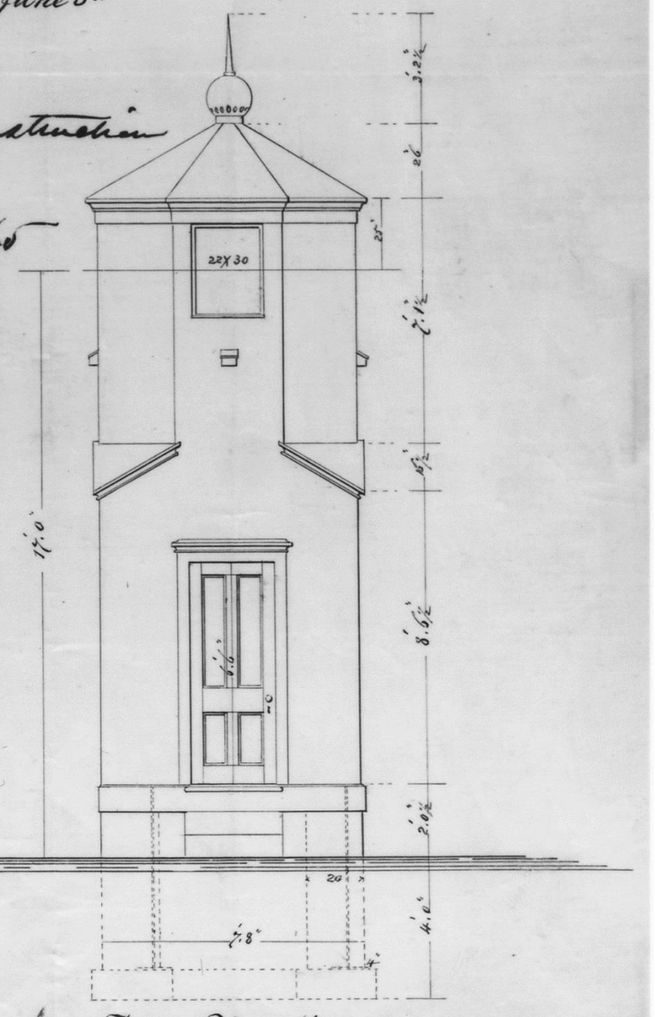
W. F. Raynolds
Lt Col Engrs

11th Dist.
5 C.

with Engr Letter of 3 June '65 -
p. 168 L.B. 21 July " -



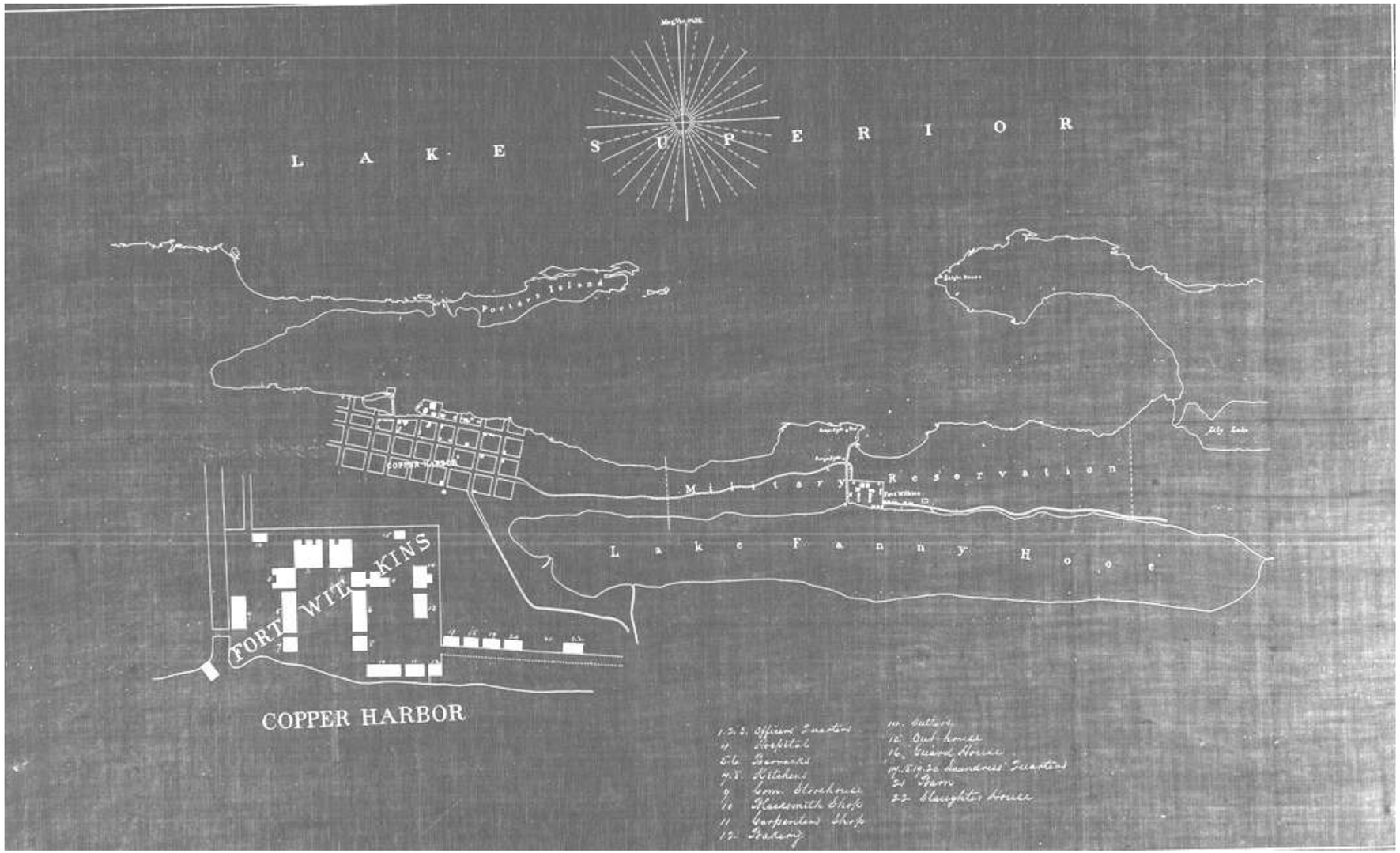
Front Elevation of REAR LIGHT



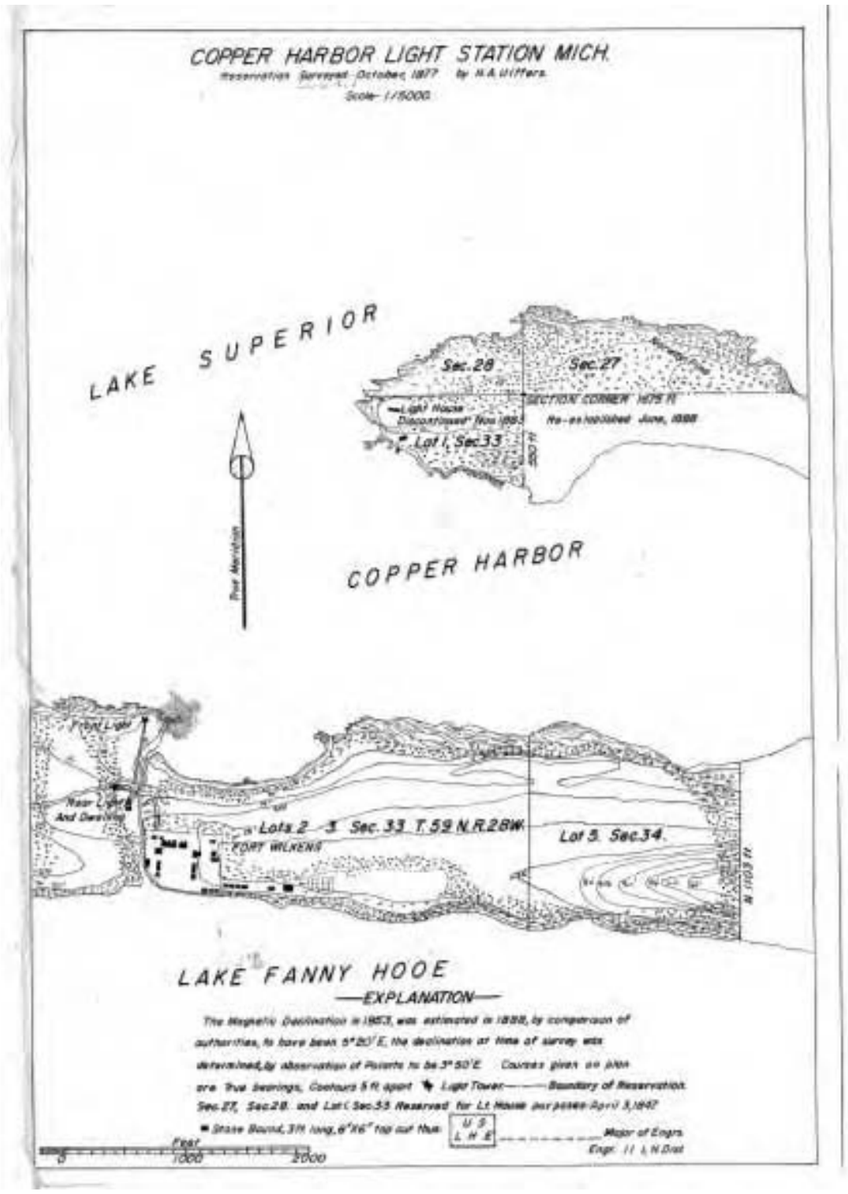
Front Elevation of FRONT LIGHT

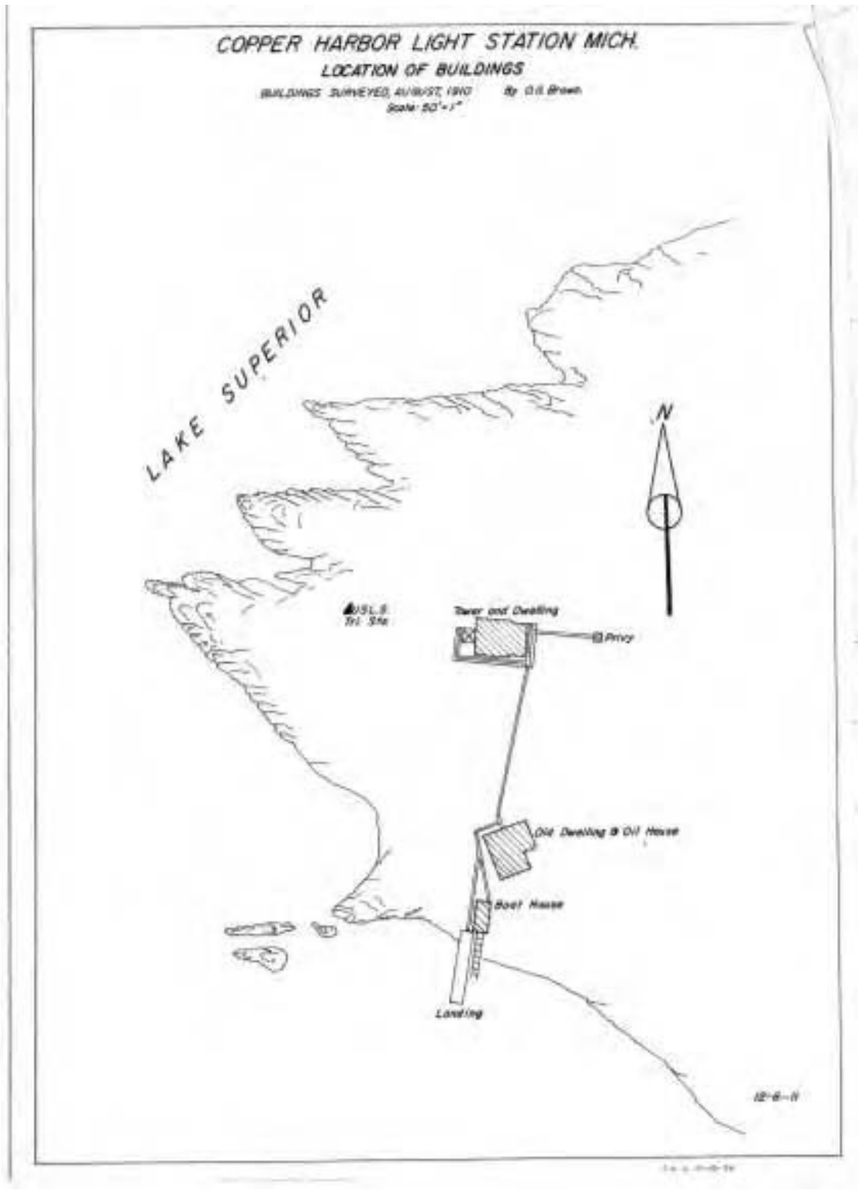
11-5C-1

DRAWING #1 (c 1865)
ORIGINAL FRONT AND
REAR RANGE LIGHTS



DRAWING #2 (c 1900s)
SITE PLAN



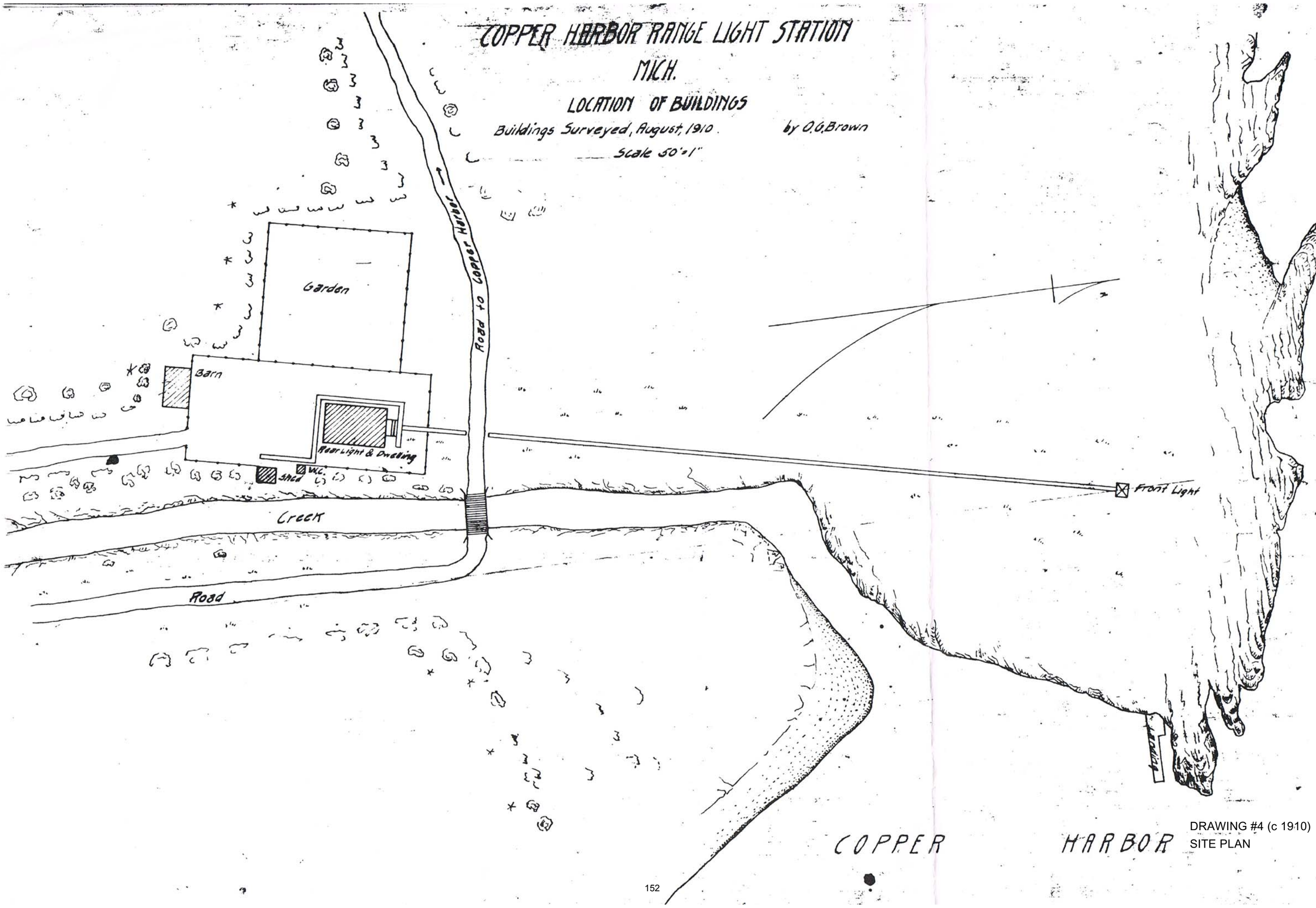


DRAWING #3 (c 1910s)
SITE PLAN

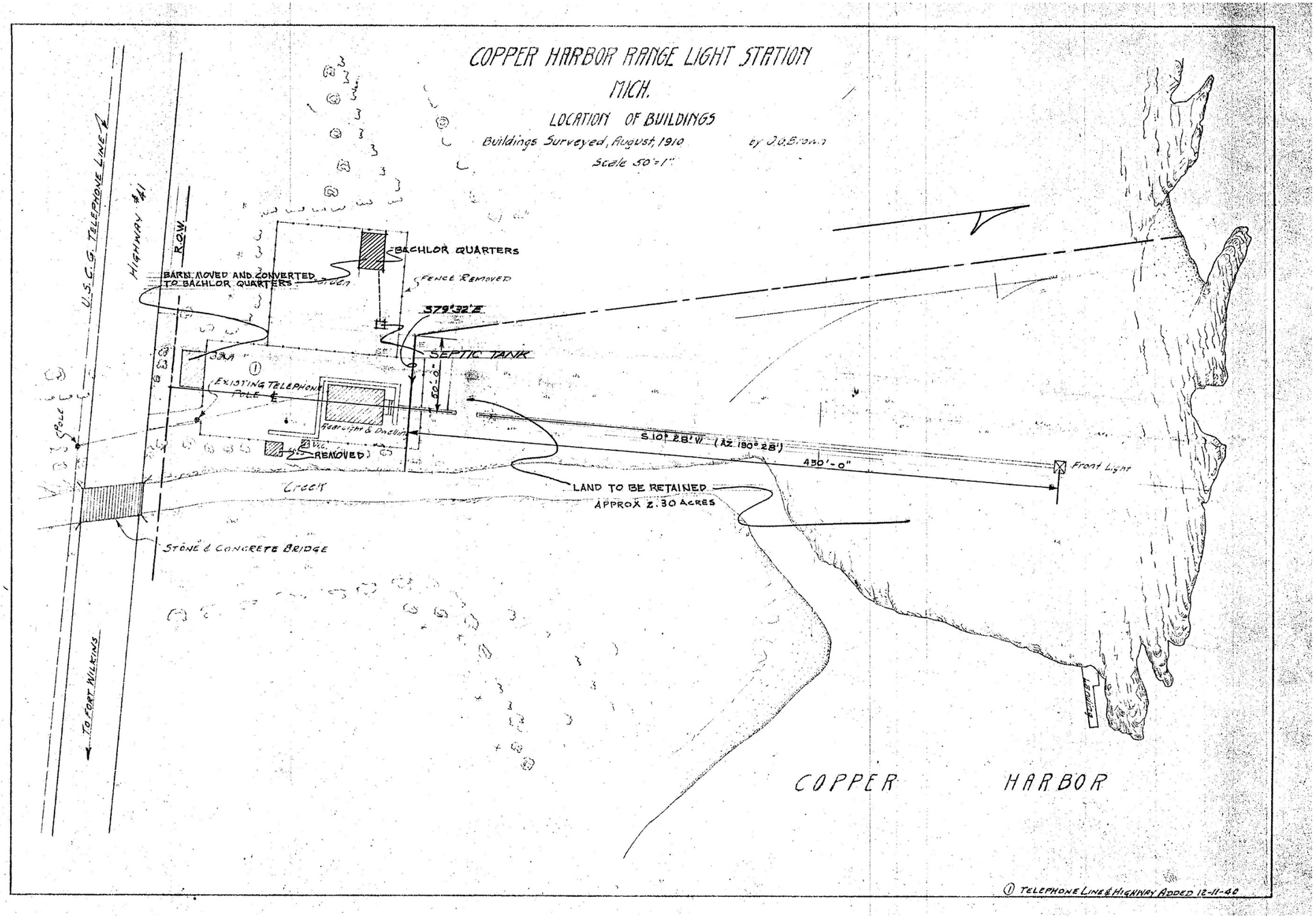
COPPER HARBOR RANGE LIGHT STATION
MICH.
LOCATION OF BUILDINGS

Buildings Surveyed, August, 1910. by O.G.Brown

Scale 50'=1"

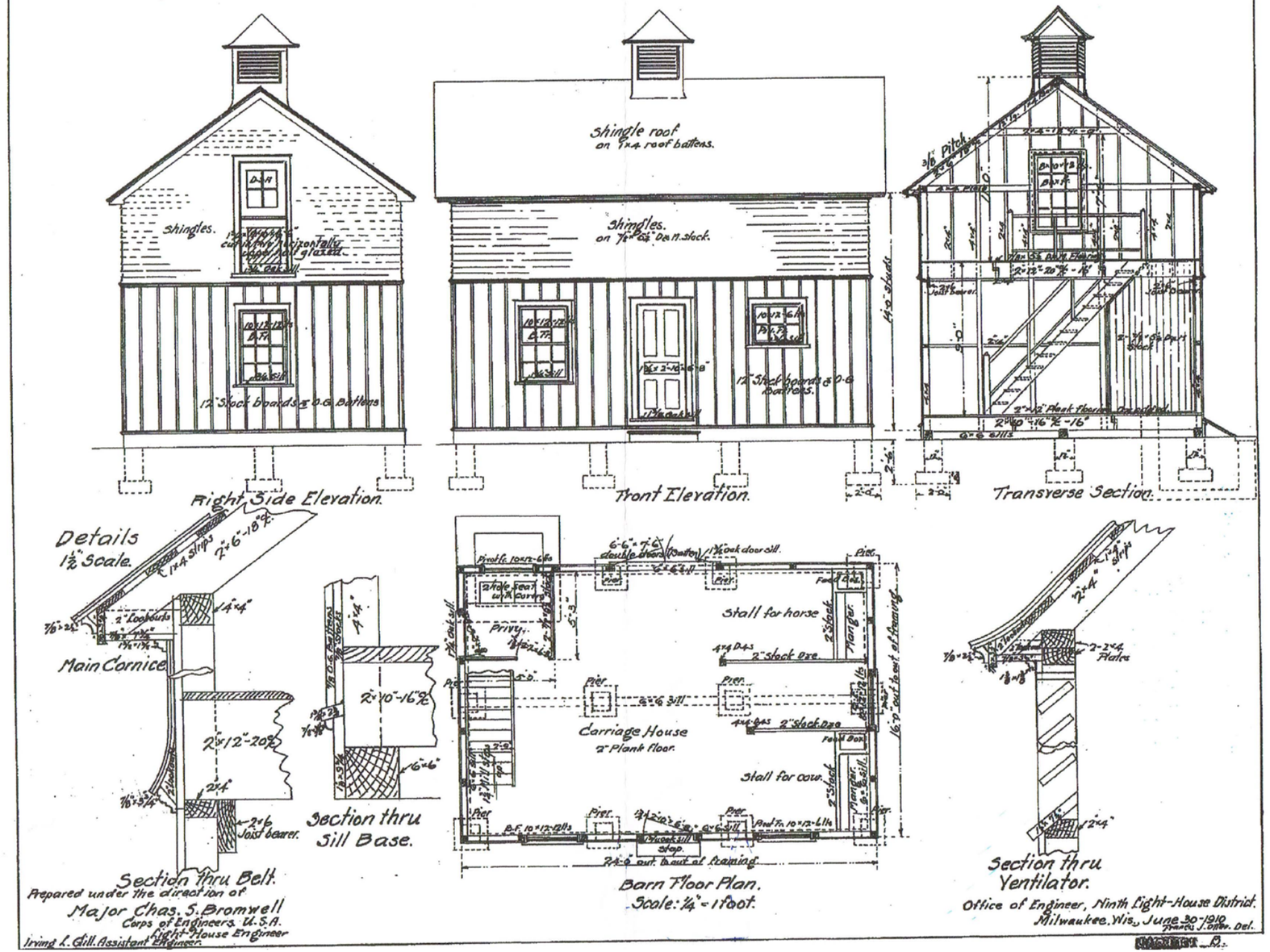


DRAWING #4 (c 1910)
SITE PLAN



DRAWING #5 (c 1940s)
SITE PLAN

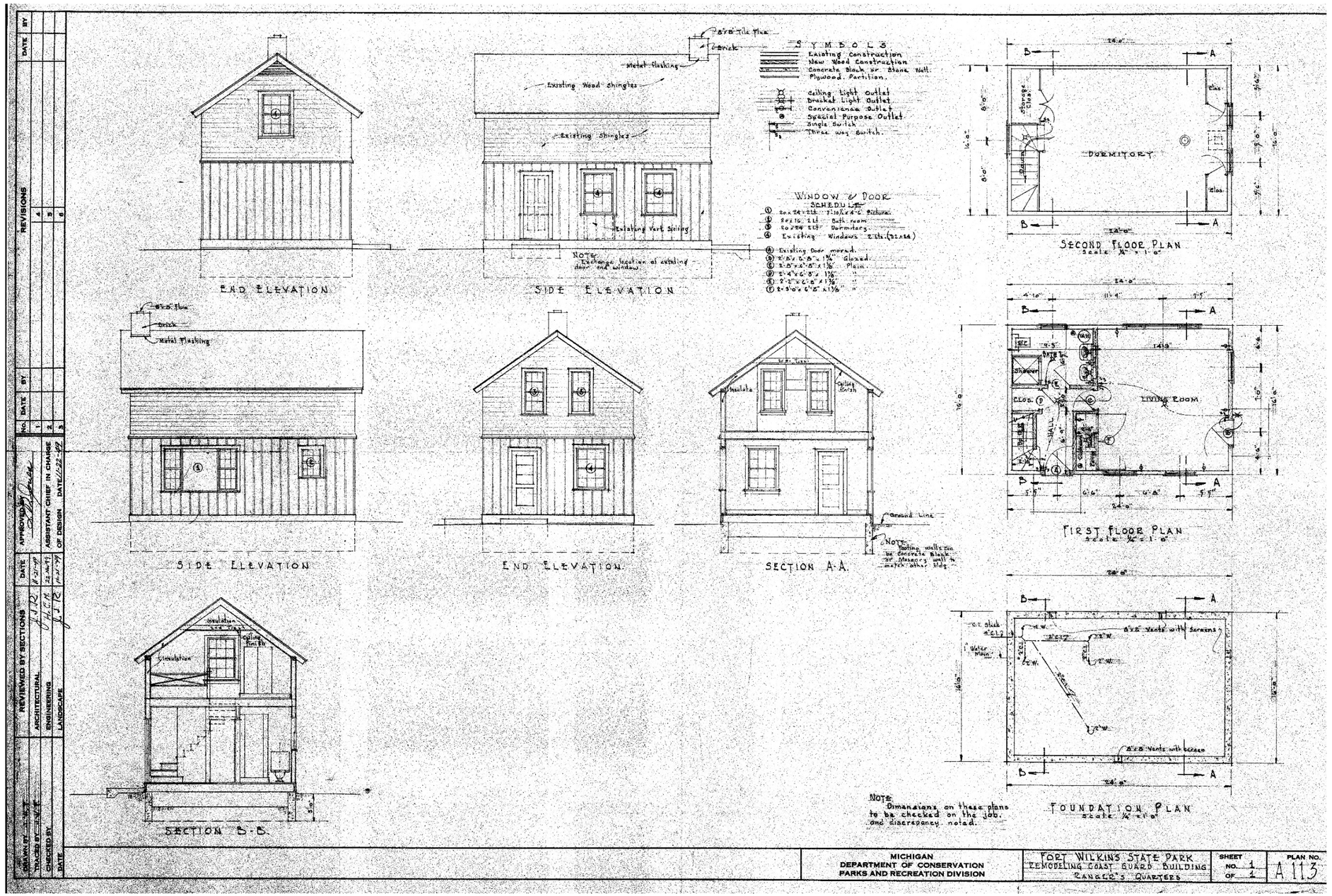
16'-0"×24'-0" Barn for Lt. Sta's. 9th L-H. District. Type No 1.



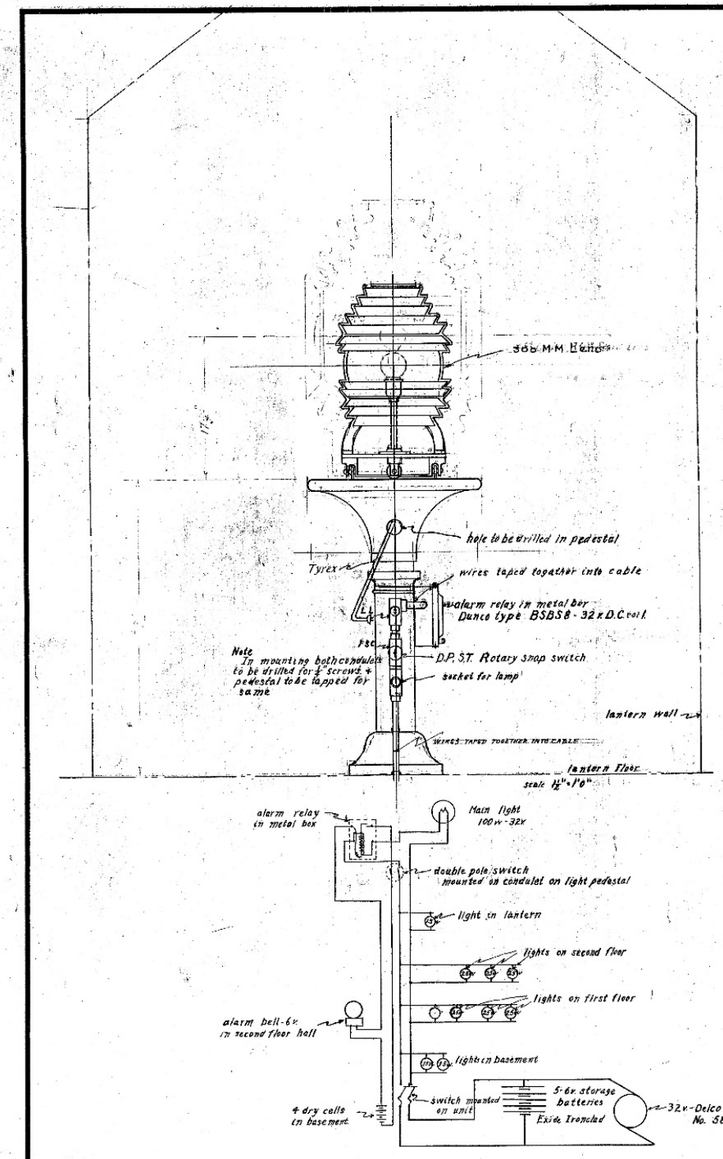
Prepared under the direction of
Major Chas. S. Bromwell
Corps of Engineers U.S.A.
Light-House Engineer
Irving L. Gill. Assistant Engineer.

Office of Engineer, Ninth Light-House District.
Milwaukee, Wis., June 30-1910
Francis J. Oster. Del.

DRAWING #6 (c 1910s)
BARN PLANS



DRAWING #7 (c 1949)
PLANS TO CONVERT BARN
TO DWELLING



Revised Nov. 1st 1933 — Moved from Mendota Lt.

LIST OF PARTS FOR ADJUSTABLE LAMP STAND

PART No.	NAME
1	Socket Body - Benco #4203 - standard
	" " #4210 mogul
2	Adjustable Lamp Stand extension-brass
3	" " " support- "
4	" " " cl nut - "
5	" " " base - "

OFFICE OF SUPERINTENDENT OF LIGHTHOUSES
ELEVENTH DISTRICT DETROIT, MICH.

COPPER HBR. R. RGE. LIGHT STATION MICH.
DETAILS OF LAMP STAND + WIRING DIAGRAM.

SCALE as shown APPROVED 11-7-30

A. D. Weil
ASST. SUPERINTENDENT L. H. ENGINEER

Chas. A. Park
SUPERINTENDENT, SENIOR L. H. ENG'R.

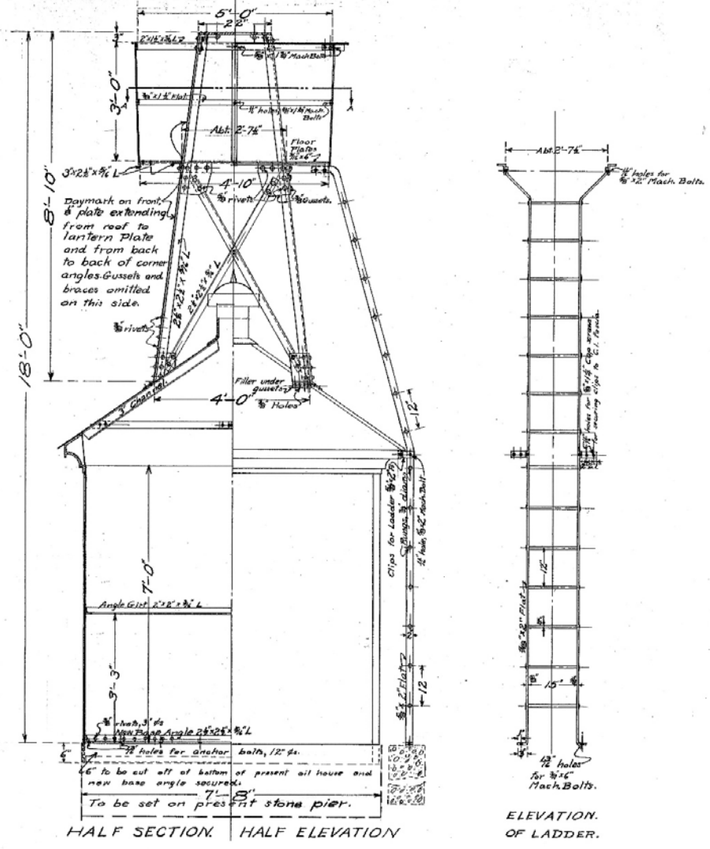
DRAWN
TRACED
CHECKED

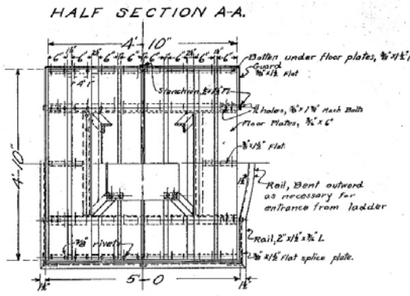
SHEET NO. 1 OF 1

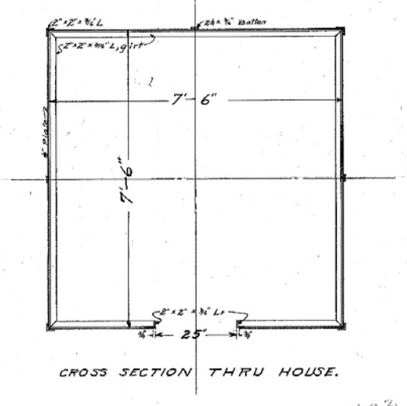
DR'G 11459-S

RHL 704,696

DRAWING #8 (c 1933)
LAMP DRAWING







Completed Oct. 1923

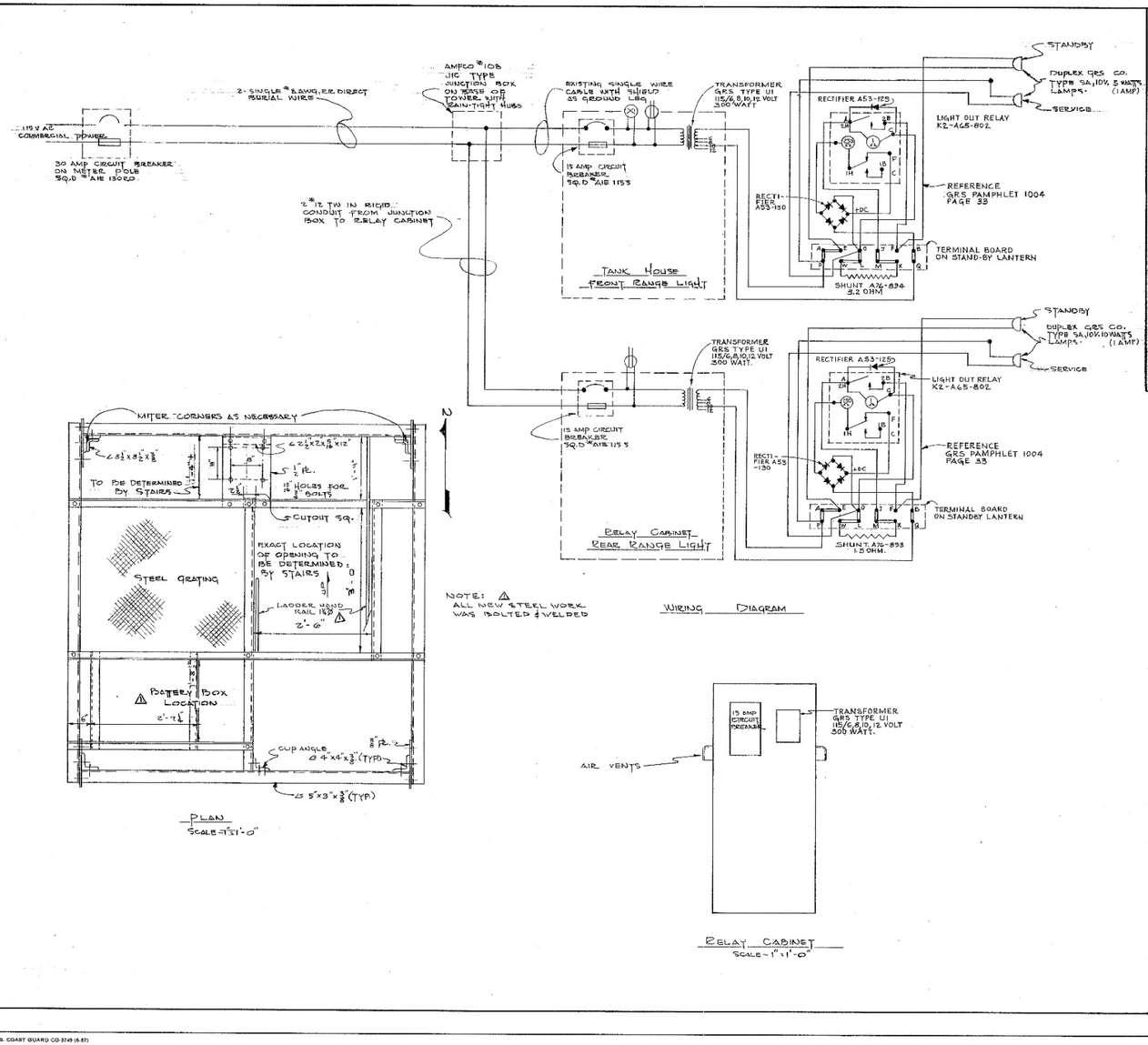
OFFICE OF SUPERINTENDENT OF LIGHTHOUSES
ELEVENTH DISTRICT DETROIT, MICH.

COPPER HARBOR RANGE, MICHIGAN.
Reconstruction of steel house for front range light structure.

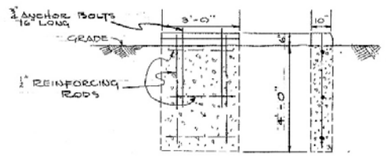
SCALE ¾"=1'-0" APPROVED Sept 4, 1923
Chas S Peirce
1ST ASST. SUPERINTENDENT.
SUPERINTENDENT.
DRAWN
TRACED
CHECKED
SHEET NO. OF
DR'G 10811-3

RHL 704, 693

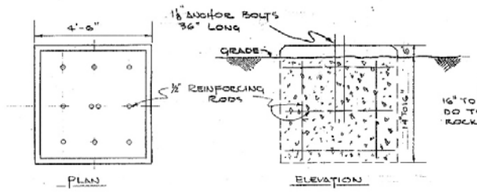
DRAWING #9 (c 1923)
MODIFICATIONS OF
OILHOUSE TO FRONT
RANGE LIGHT



DRAWING #10 (c 1960s)
MODERN REAR RANGE
LIGHT

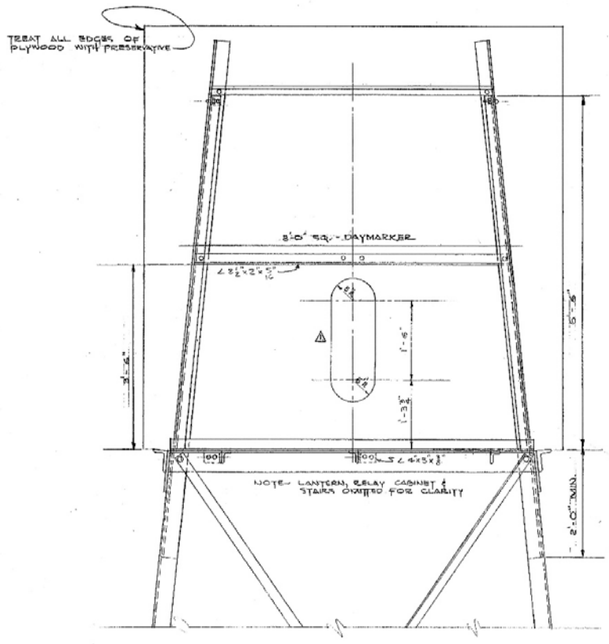


CONCRETE FOUNDATION UNDER STEEL STAIRS
SCALE - ½" = 1'-0"

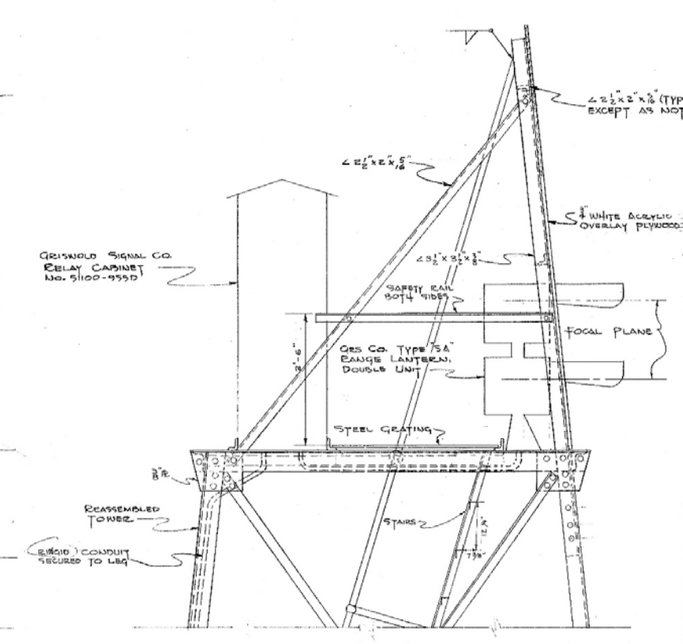


⚠ 16" TO 18" THICK FOUNDATIONS DO TO SOLID CONGLOMERATE ROCK FROM GRADE DOWN

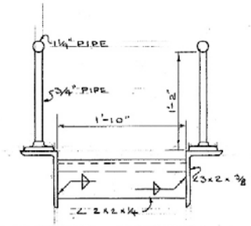
CONCRETE FOUNDATION UNDER TOWER LEGS
SCALE - ½" = 1'-0"



SOUTH ELEVATION
SCALE - 1" = 1'-0"



EAST ELEVATION
SCALE - 1" = 1'-0"



STAIR SECTION
NO SCALE

NOTES-
EXISTING STEEL STRUCTURE TO BE REMOVED FROM PORTAGE LIFE BOAT STATION AND RELOCATED AT GOUDIER HARBOR, 46°28'.1N 88°26'.8W ALONG RANGE LINE FROM THE FRONT RANGE

ALL DIMENSIONS SHALL BE FIELD CHECKED ON EXISTING TOWER PRIOR TO CONSTRUCTION.

REVISION	DATE	APPD.		BY
⚠	10-8-64	FH	AS BUILT 7/29/65 W/O 3159-64 & 5612-65	DEC

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

CIVIL ENGINEERING

DESIGNED - WCC
DRAWN - WCC
TRACED -
CHECKED - [illegible]

COPPER HARBOR REAR RANGE LIGHT
COPPER HARBOR, MICHIGAN

RELOCATION OF REAR RANGE LIGHT
ELEVATIONS & DETAILS

APPROVED [signature] 2-6-64 DATE
CHIEF OF SECTION — CHIEF OF DIVISION

C/S 1566

C. G. DRAWING NO. 1917-5

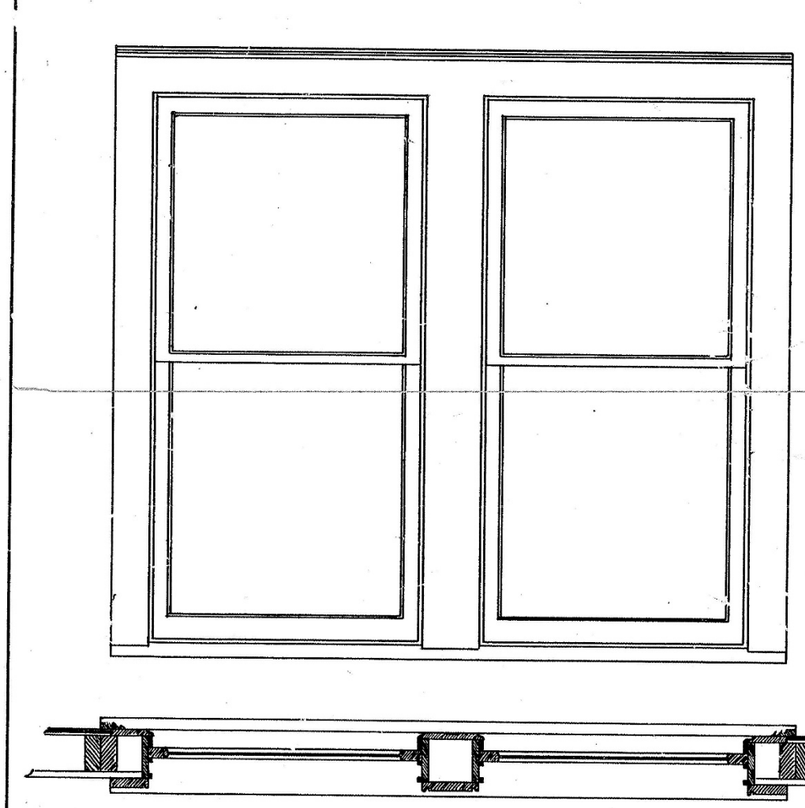
SCALE AS NOTED — SHEET 2 OF 2

TREAS. DEPT., U. S. COAST GUARD CG-3748 (6-52)

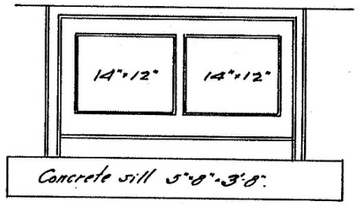
RHL 704, 688

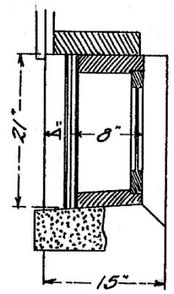
DRAWING #11 (c 1960s)
MODERN REAR RANGE
LIGHT

COPPER HARBOR RANGE LT. STA., MICH.

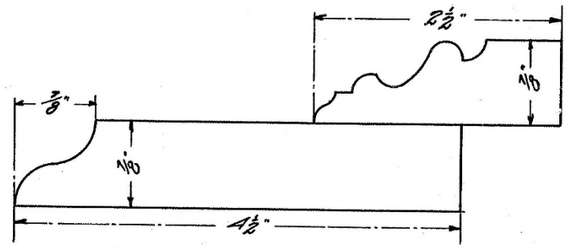






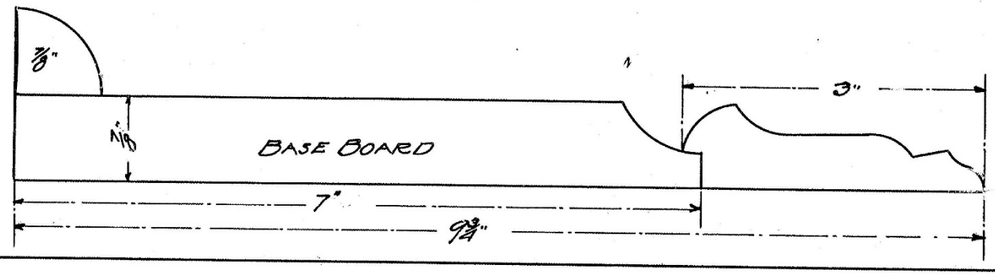


CELLAR WINDOW



DOOR & WINDOW TRIM.

Details for Double Window.
Follow same details for single window.



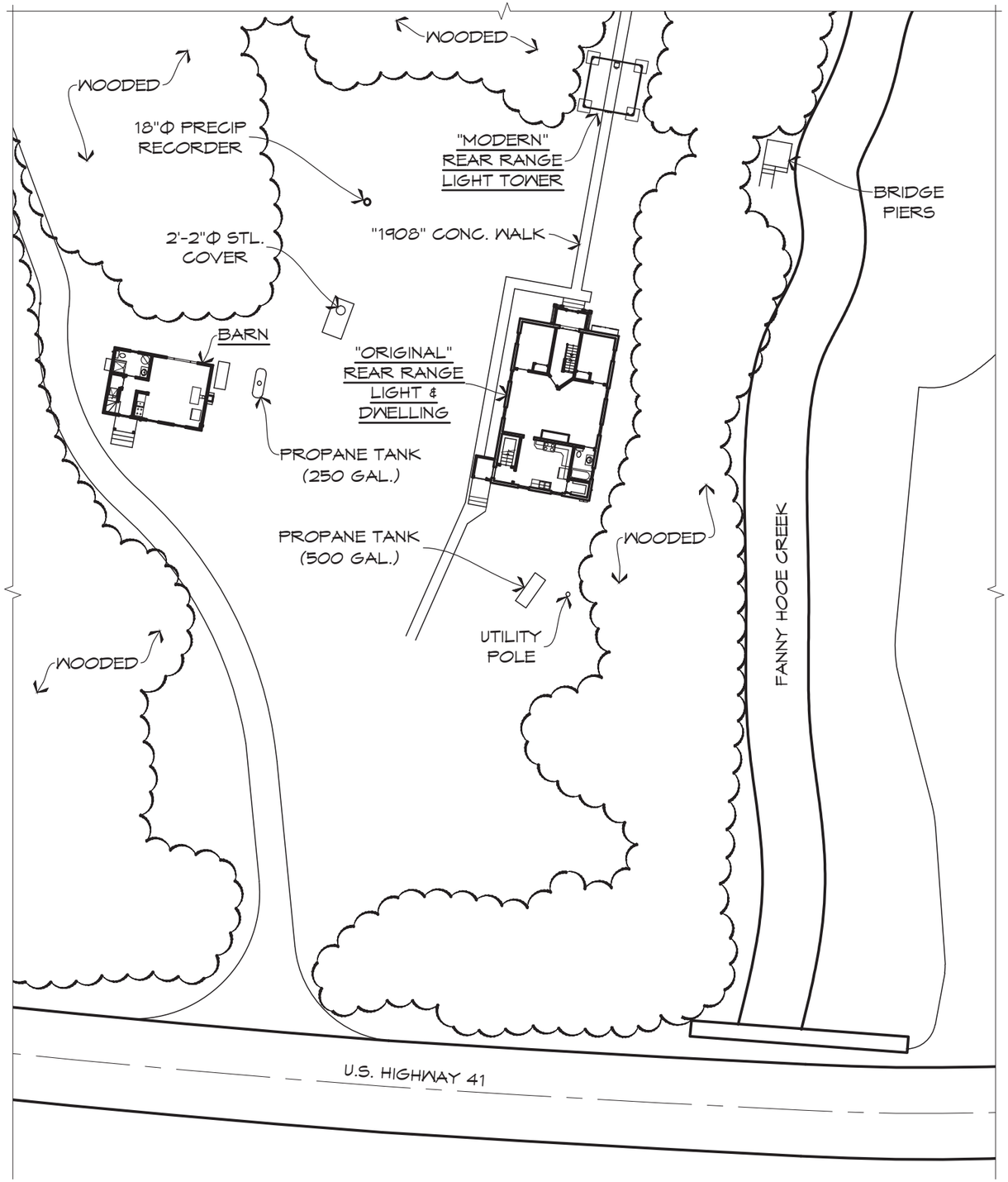
No 9869-M

RHL 704, 683

DRAWING #12 (c 1860s)
DETAILS

APPENDIX C

DRAWINGS OF EXISTING CONDITIONS

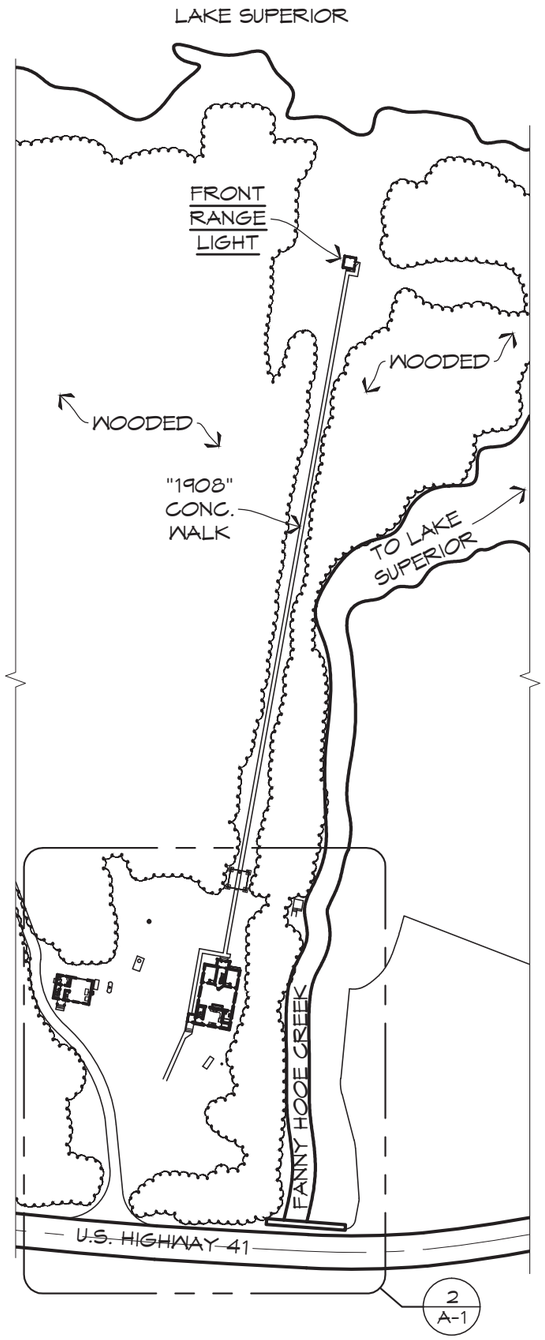


ENLARGED SITE PLAN

1" = 30'

2 / A-1

NORTH



COMPOSITE SITE PLAN

1" = 100'

1 / A-1

NORTH

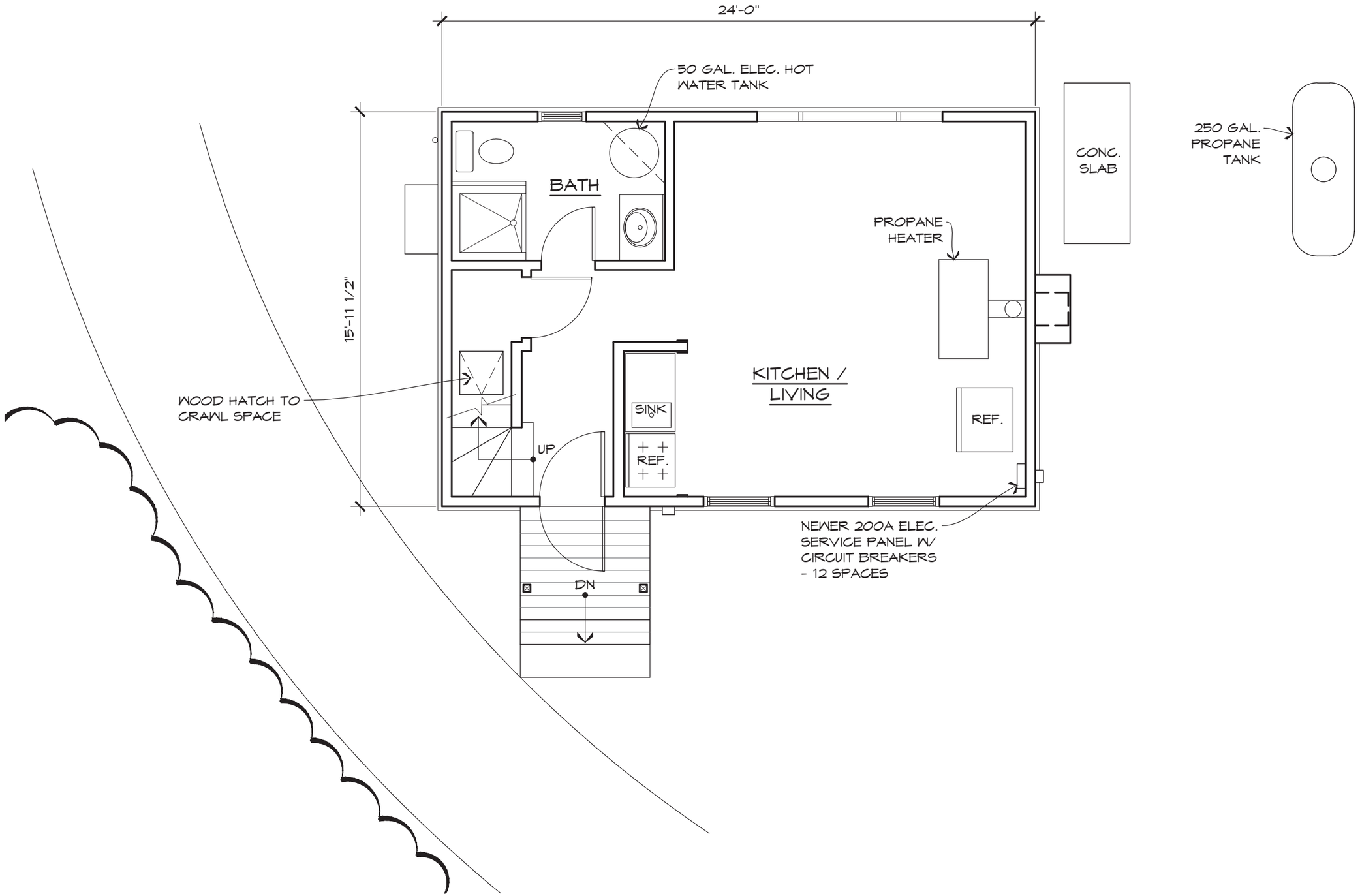
SANDERS & CZAPSKI ASSOCIATES, PLLC
architecture / landscape architecture / historic preservation
109 South Front Street / Suite 210 / Marquette, Michigan
Phone: 906.273.1207 / Fax: 906.273.1208
Www.Sanders-Czapski.com

HISTORIC STRUCTURES REPORT
COPPER HARBOR RANGE LIGHTS
COPPER HARBOR, MICHIGAN

HSR	JUNE 2015
ISSUE:	DATE:
DRAWN BY:	C. TIKKA
APPROVED:	K. CZAPSKI

SITE PLANS

A-1



BARN FIRST FLOOR PLAN

1/4" = 1'-0"

1 / A-2

PLAN NORTH

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architecture / landscape architecture / historic preservation
109 South Front Street / Suite 210 / Marquette, Michigan
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ISSUE:	HSR
DATE:	JUNE 2015
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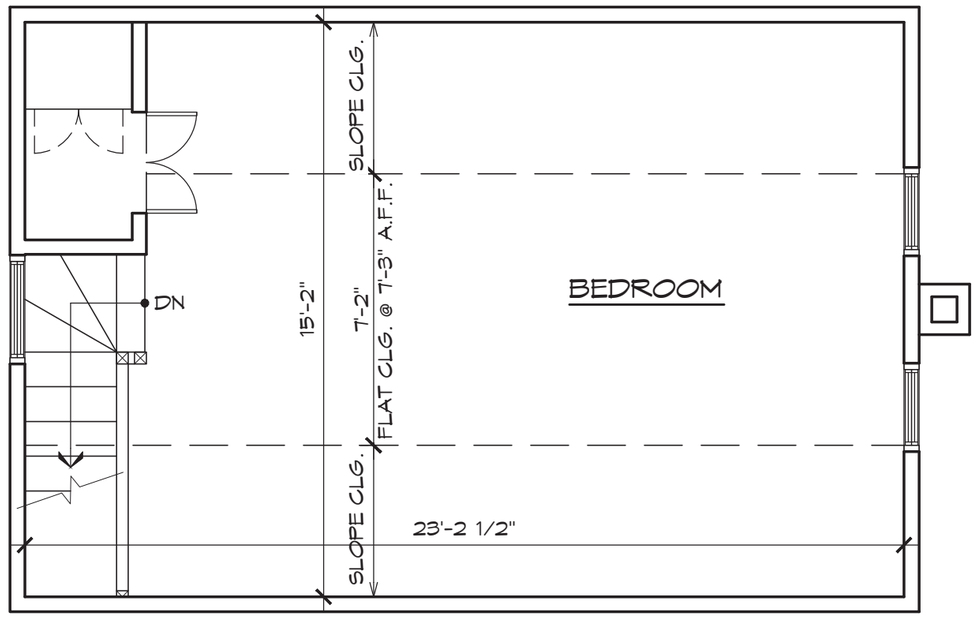
APPROVED:	K. CZAPSKI

BARN FIRST FLOOR PLAN

A-2



BARN SECOND FLOOR PLAN

1/4" = 1'-0"

1
A-3

PLAN NORTH

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architecture / landscape architecture / historic preservation
109 South Front Street / Suite 210 / Marquette, Michigan
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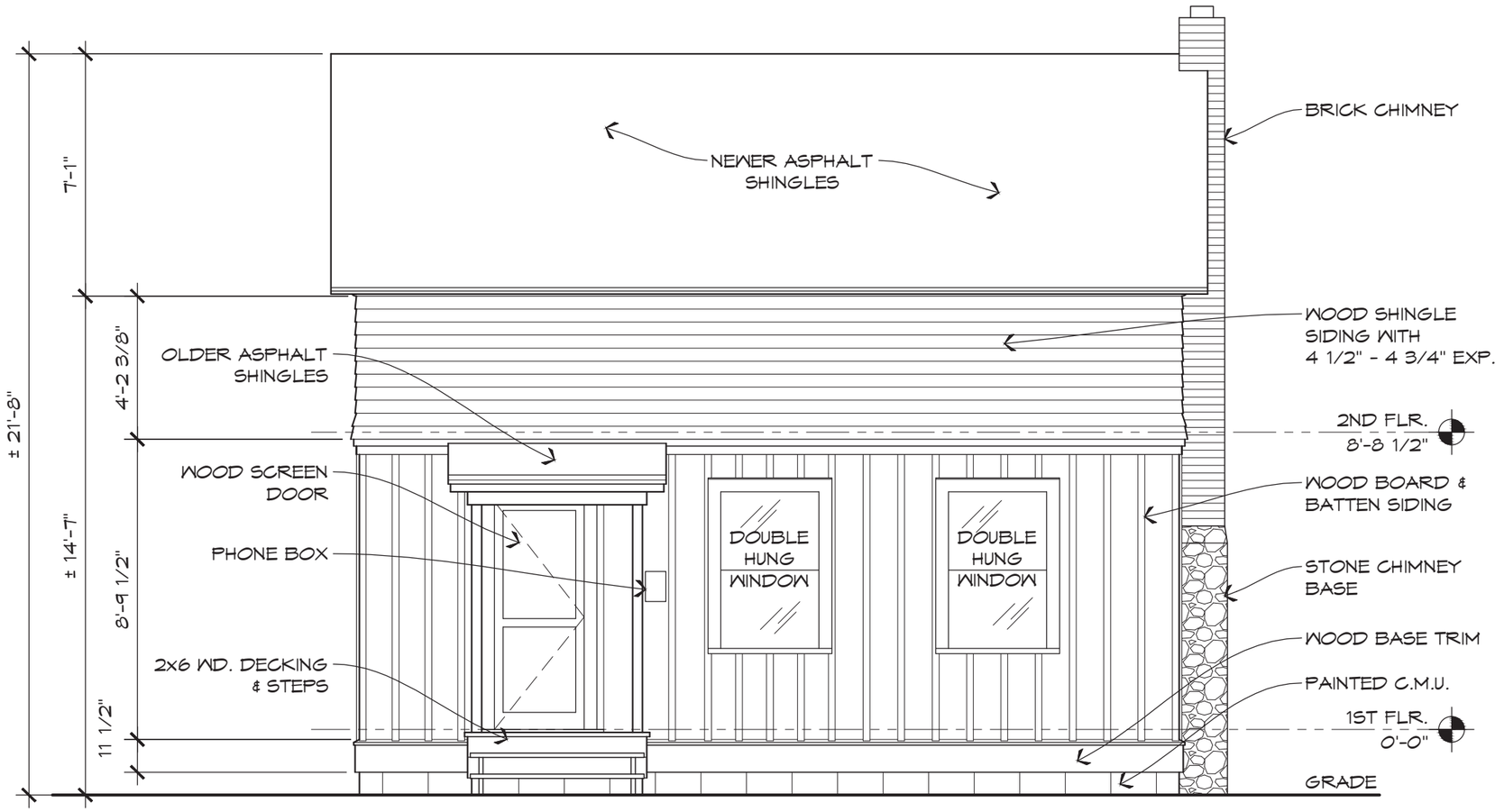
COPPER HARBOR, MICHIGAN

ISSUE:	HSR
DATE:	JUNE 2015
DRAWN BY:	C. TIKKA
APPROVED:	K. CZAPSKI

BARN
SECOND
FLOOR PLAN

A-3



BARN SOUTH ELEVATION

1/4" = 1'-0"

1
A-4

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architecture / landscape architecture / historic preservation
109 South Front Street / Suite 210 / Marquette, Michigan
Phone: 906.273.1207 / Fax: 906.273.1208
Www.Sanders-Czapski.com

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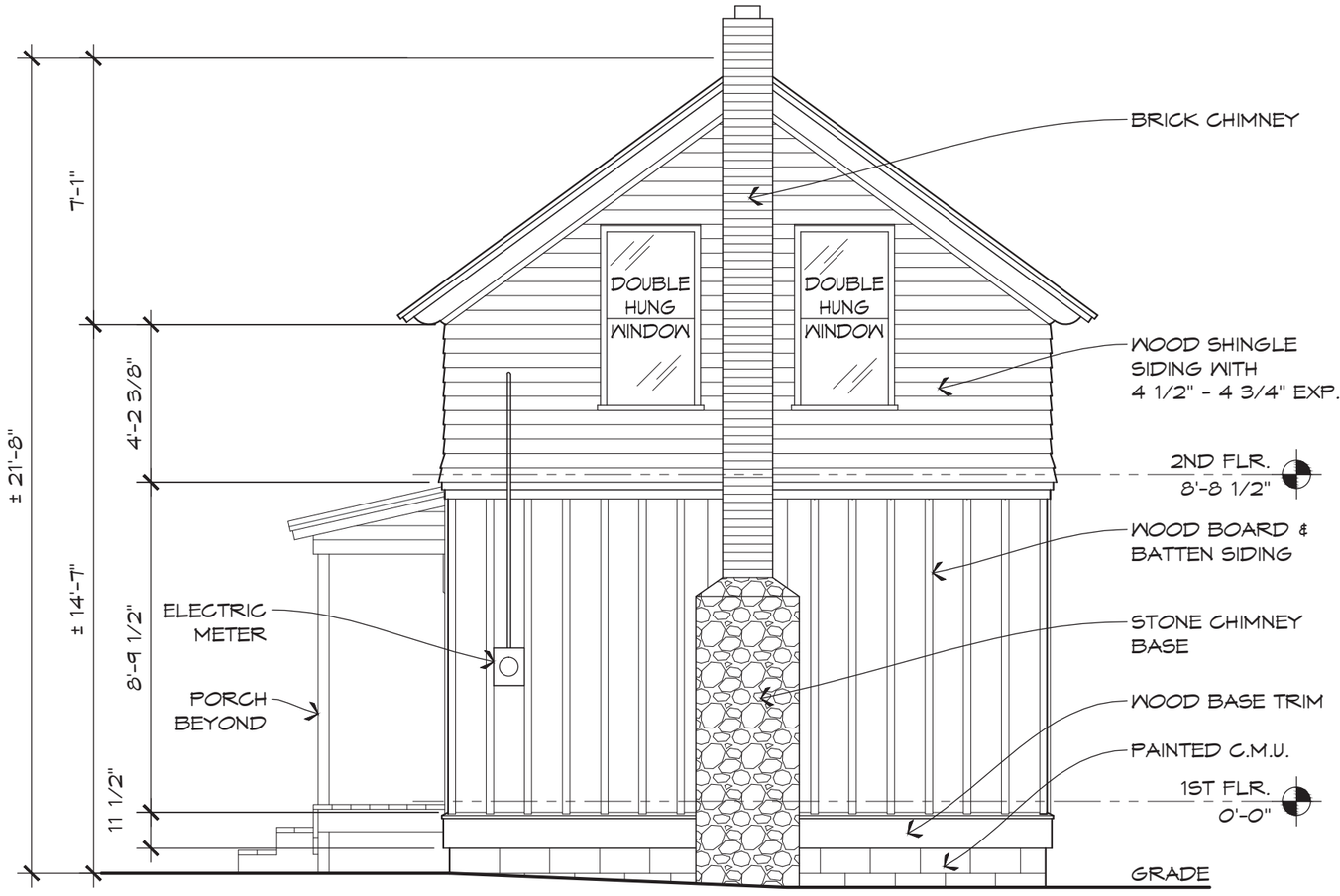
COPPER HARBOR, MICHIGAN

HSR	JUNE 2015
ISSUE:	DATE:
DRAWN BY:	G. TIKKA
APPROVED:	K. CZAPSKI

BARN SOUTH ELEVATION

A-4



BARN EAST ELEVATION

1/4" = 1'-0"

1
A-5

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architecture / landscape architecture / historic preservation
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Www.Sanders-Czapski.com

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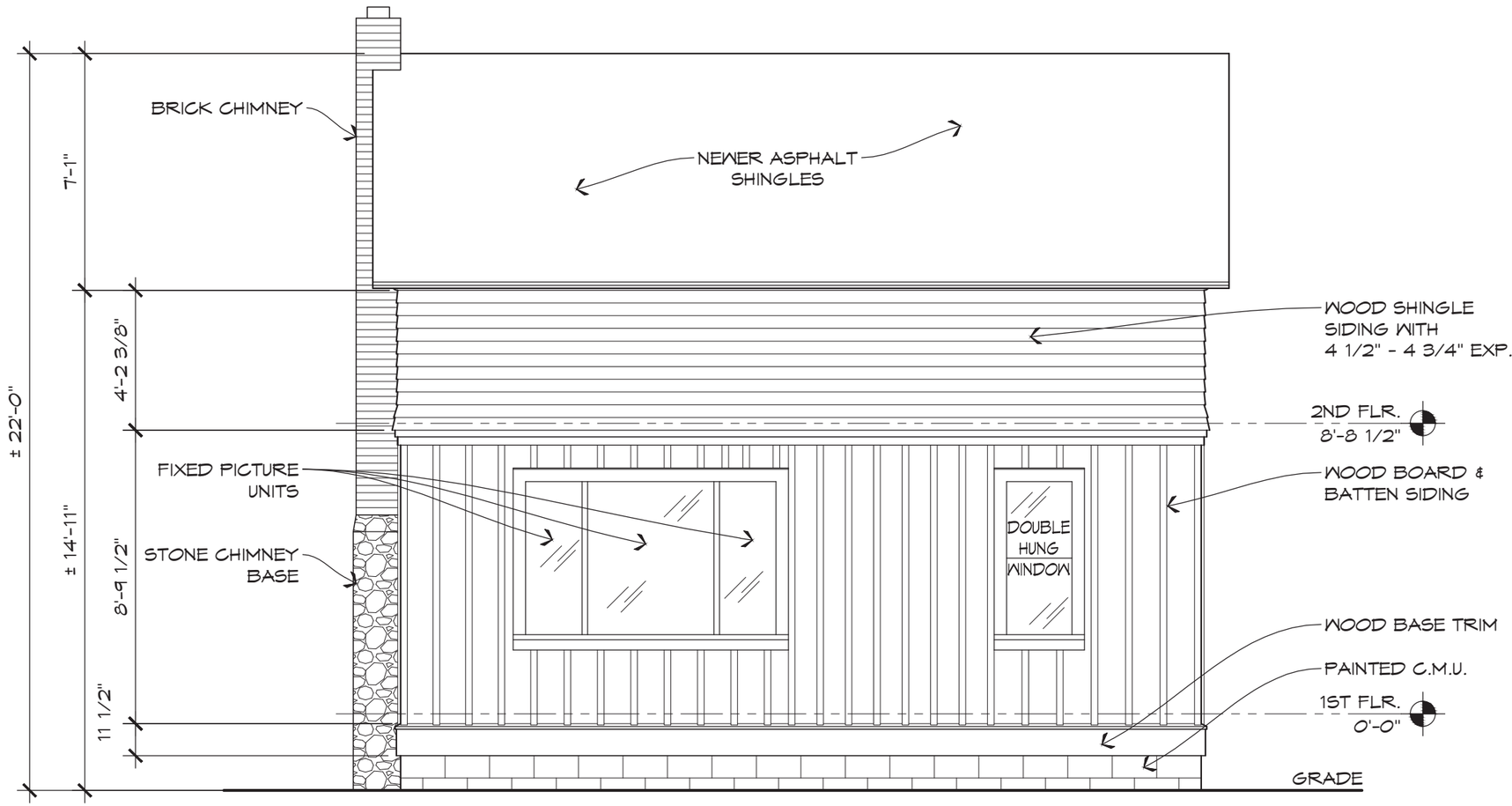
COPPER HARBOR, MICHIGAN

HSR	JUNE 2015
ISSUE:	DATE:
DRAWN BY:	C. TIKKA
APPROVED:	K. CZAPSKI

BARN EAST ELEVATION

A-5



BARN NORTH ELEVATION

1/4" = 1'-0"

1
A-6

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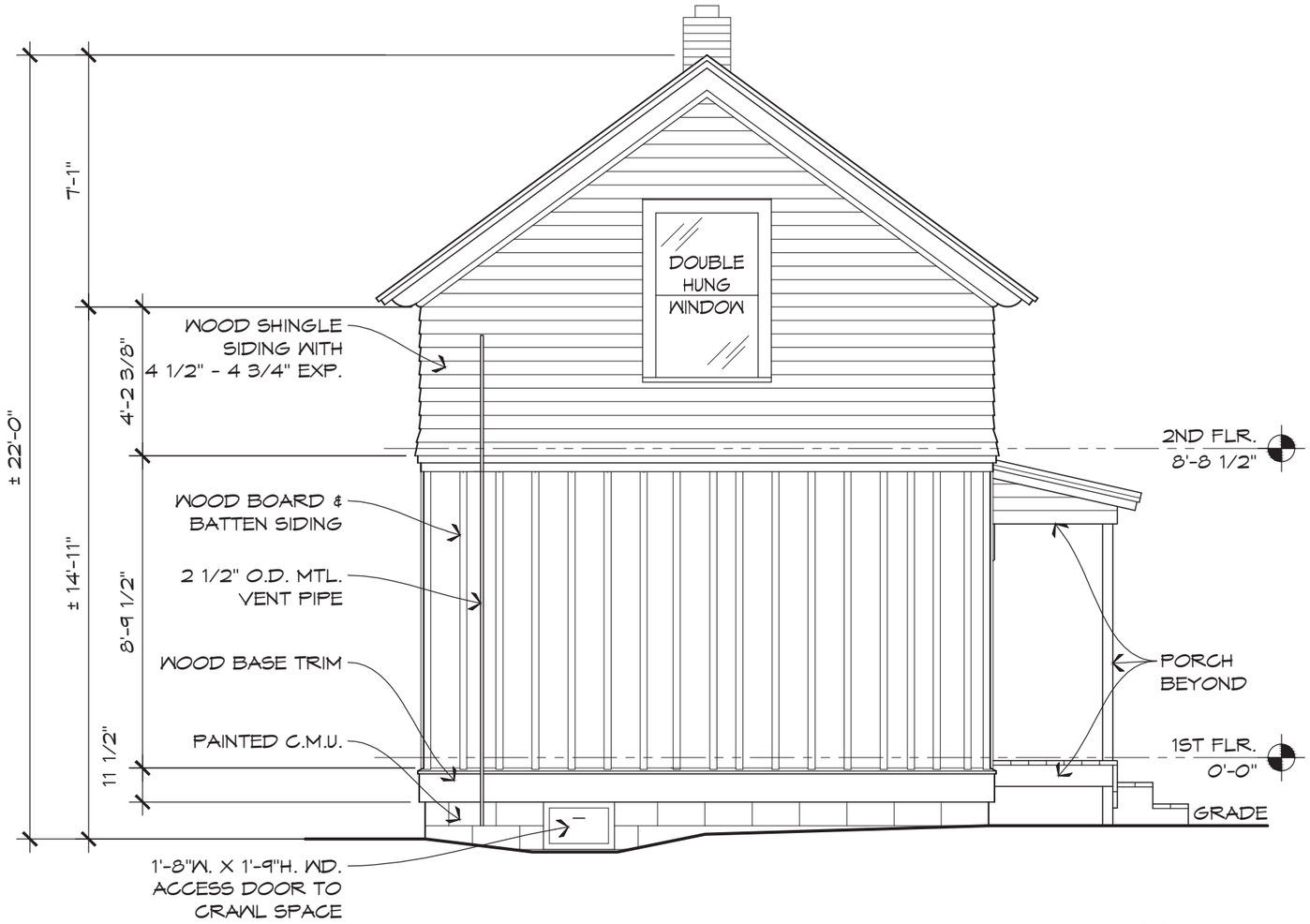
HISTORIC STRUCTURES REPORT
COPPER HARBOR RANGE LIGHTS
COPPER HARBOR, MICHIGAN

HSR	JUNE 2015
ISSUE:	DATE:
DRAWN BY:	G. TIKKA
APPROVED:	K. CZAPSKI

BARN NORTH ELEVATION

A-6



BARN WEST ELEVATION

1/4" = 1'-0"

1
A-7

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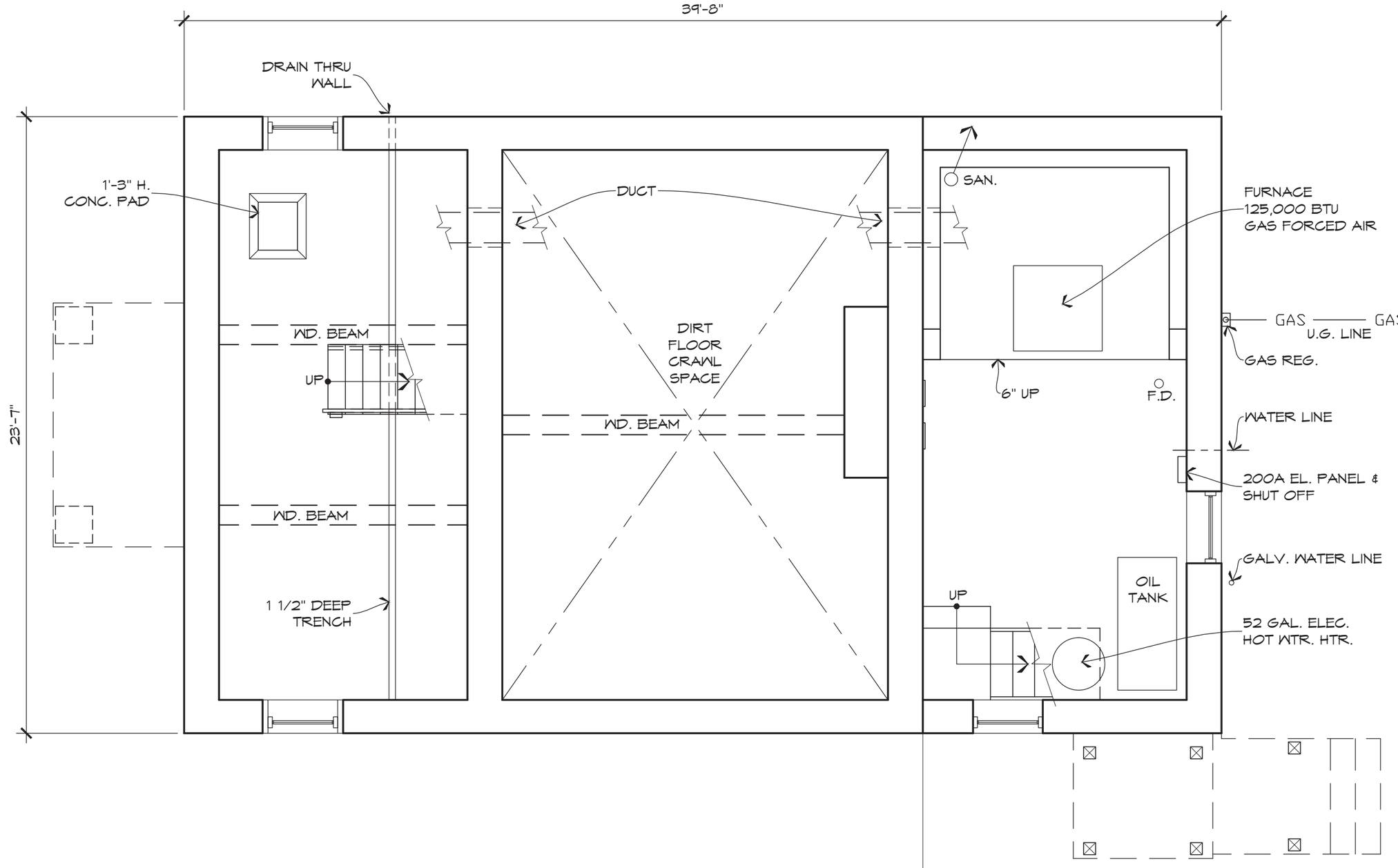
BARN WEST ELEVATION

A-7



REAR RANGE LIGHT BASEMENT PLAN

1/4" = 1'-0"

1
A-8

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REAR RANGE LT. BASEMENT PLAN

A-8

40'-0"

24'-0"

MTL. VENT PIPE

2 ELEC. METERS MAIN 200A 240V 3W 60HZ

BEDROOM

CLOS.

UP

DN

DN

WD. BEAM

LIVING RM.

BATH

SHELVES

PANTRY

REF.

ELEC. RANGE

SINK

KITCHEN

CLOS.

BEDROOM

DN

DN

CONC. WALK

REAR RANGE LIGHT FIRST FLOOR PLAN

1/4" = 1'-0"

1
A-9

PLAN NORTH

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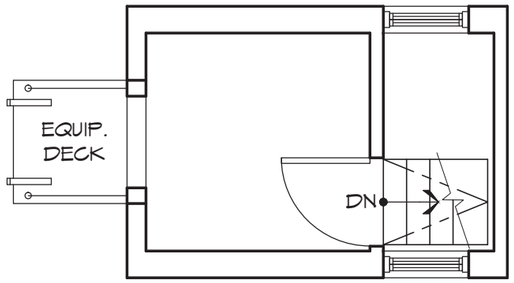
REAR RANGE LT. 1ST FLOOR PLAN

A-9

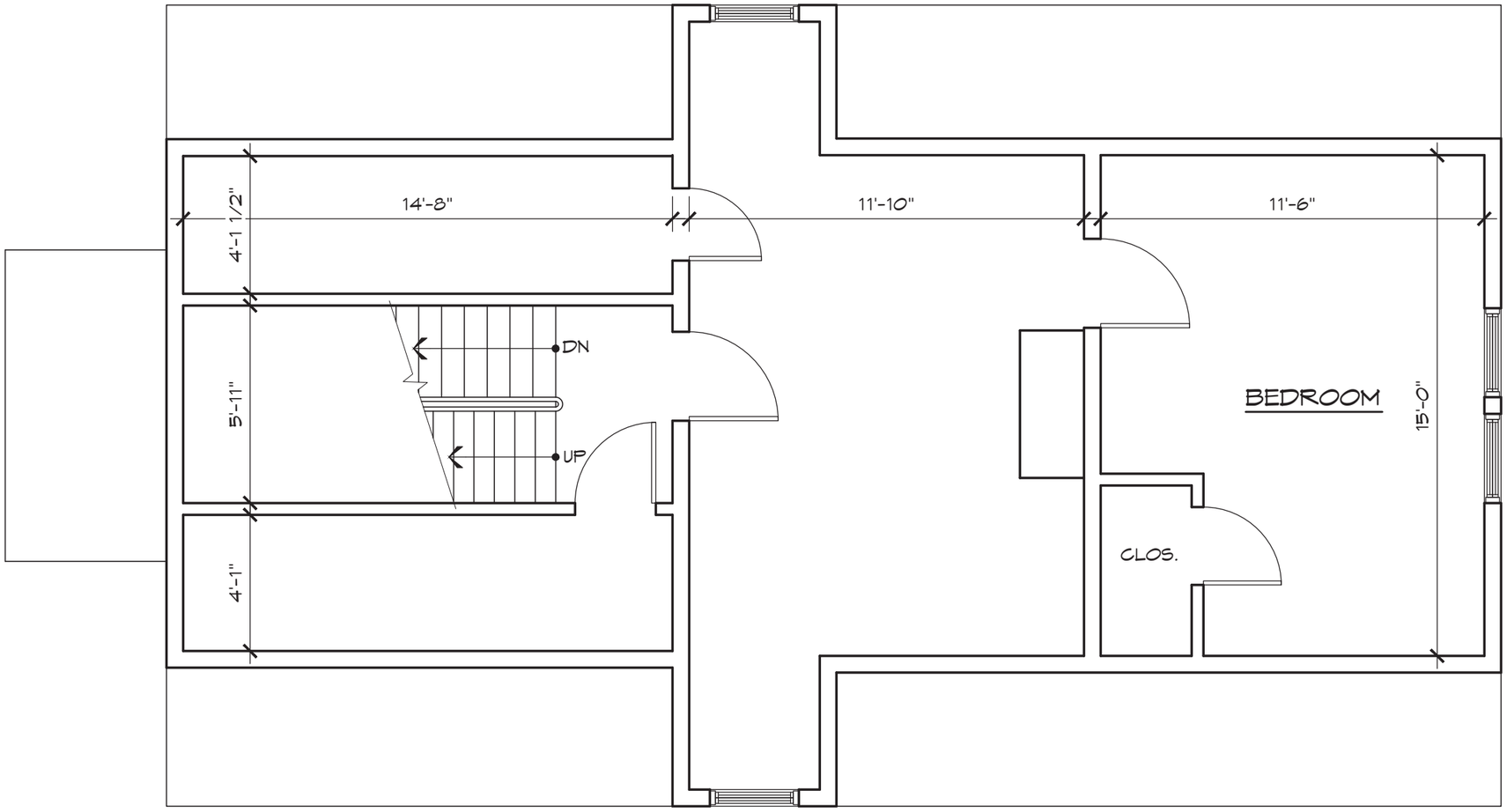


REAR RANGE LIGHT THIRD FLOOR PLAN

1/4" = 1'-0"

2 / A-10

PLAN NORTH



REAR RANGE LIGHT SECOND FLOOR PLAN

1/4" = 1'-0"

1 / A-10

PLAN NORTH

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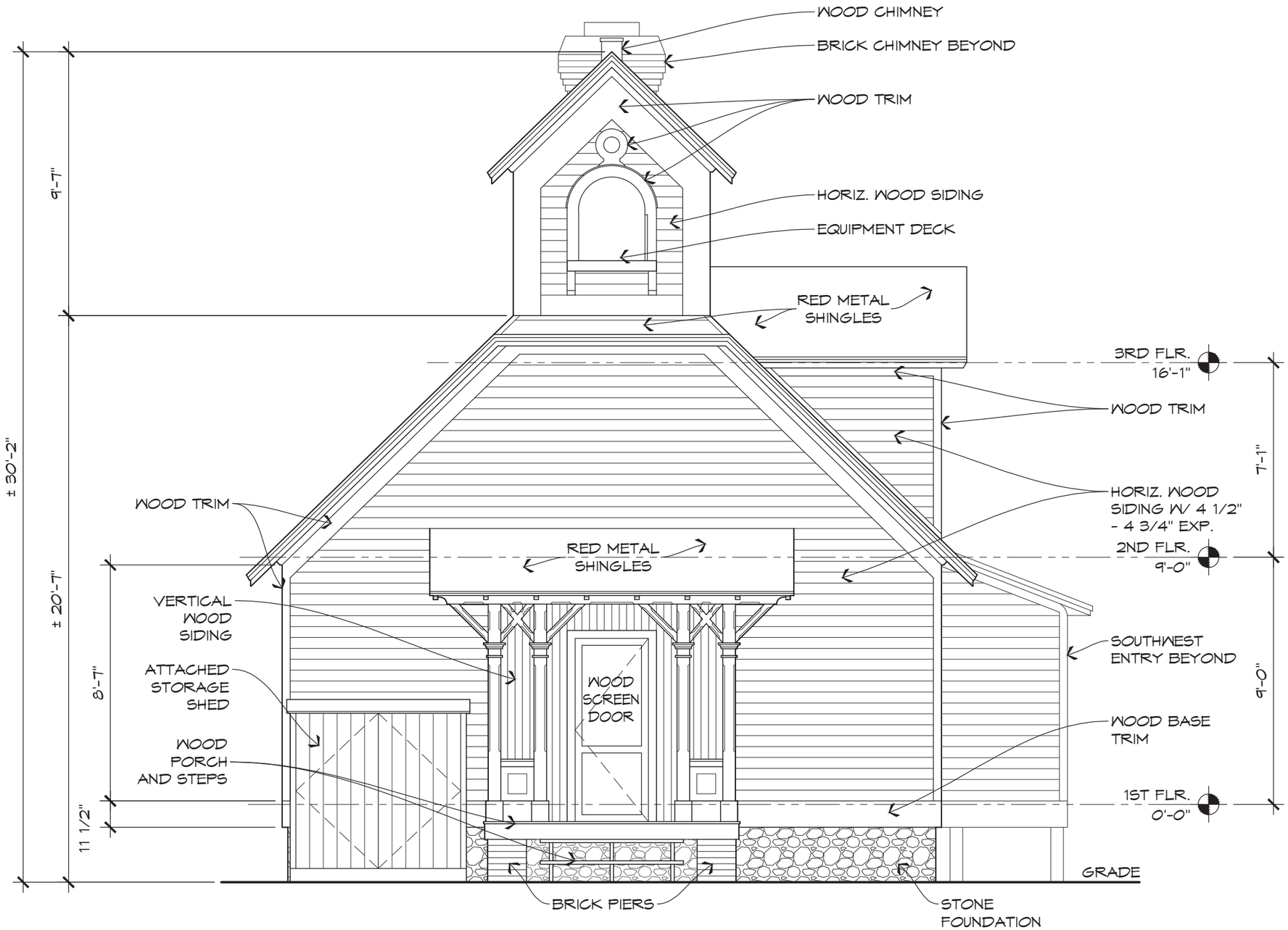
REAR RANGE LT. 2ND & 3RD FLR. PLANS

A-10



REAR RANGE LIGHT NORTH ELEVATION

1/4" = 1'-0"

1
A-11

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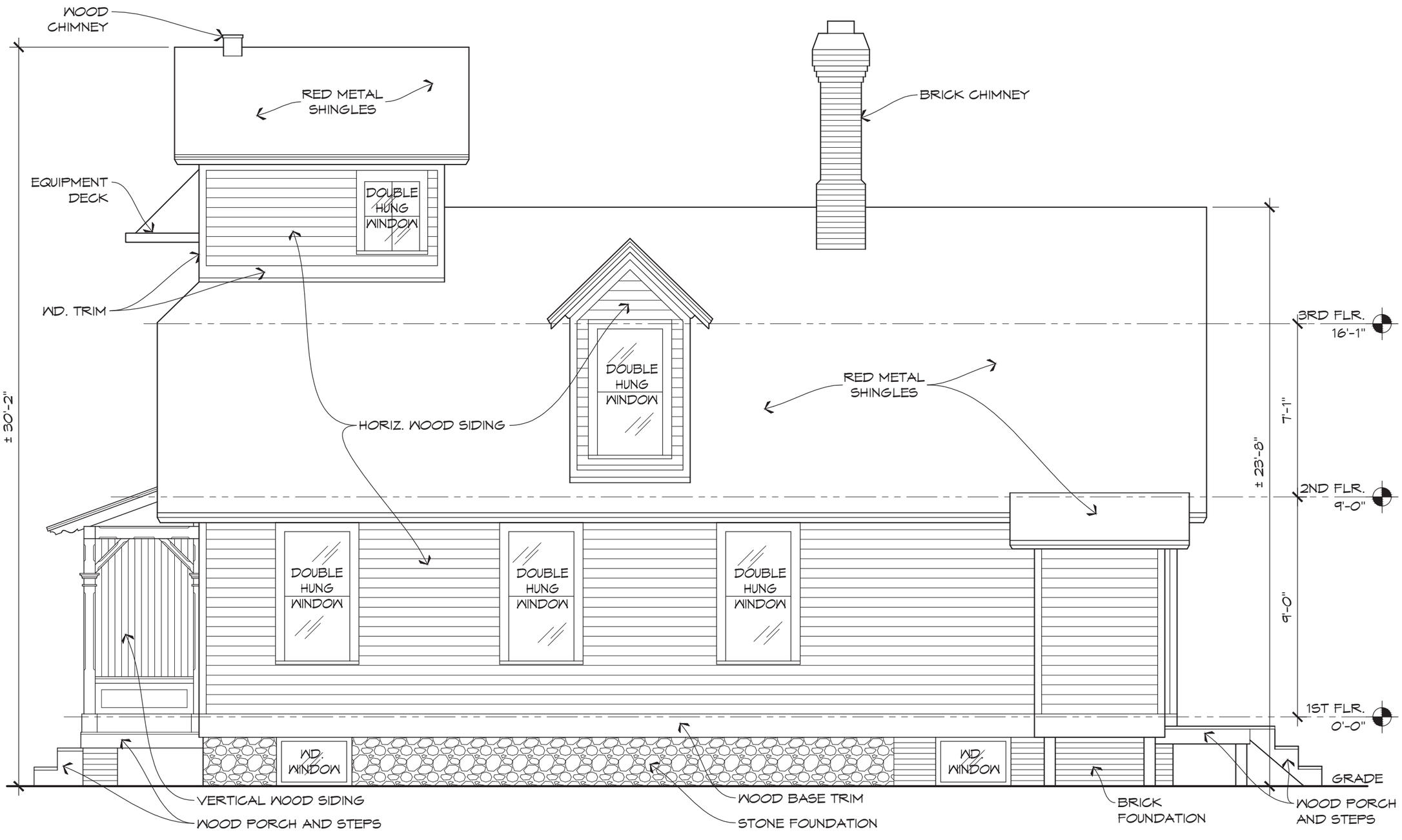
REAR RANGE LIGHT NORTH ELEVATION

A-11



REAR RANGE LIGHT WEST ELEVATION

1/4" = 1'-0"

1
A-12

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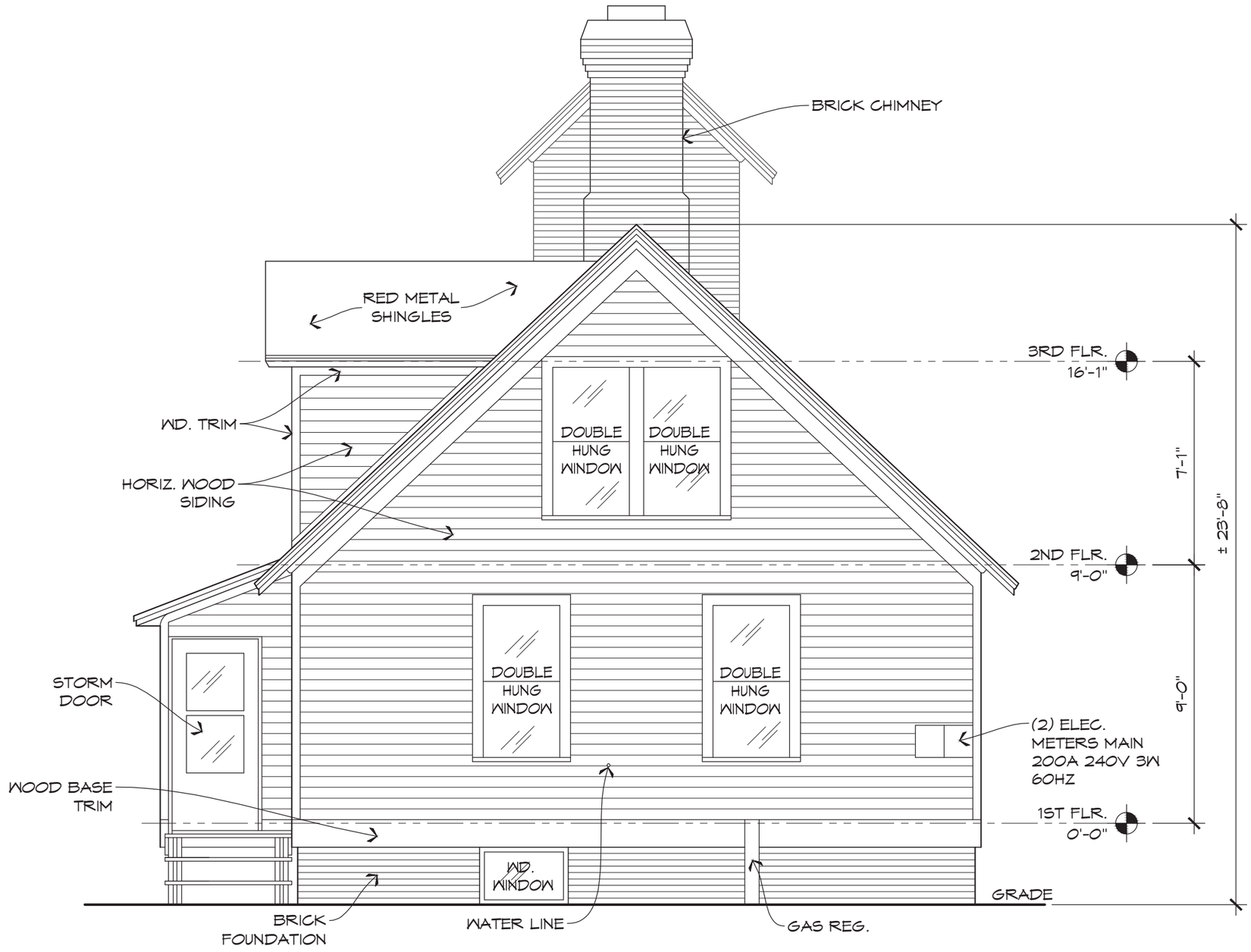
REAR RANGE LIGHT WEST ELEVATION

A-12



REAR RANGE LIGHT SOUTH ELEVATION

1/4" = 1'-0"

1
A-13

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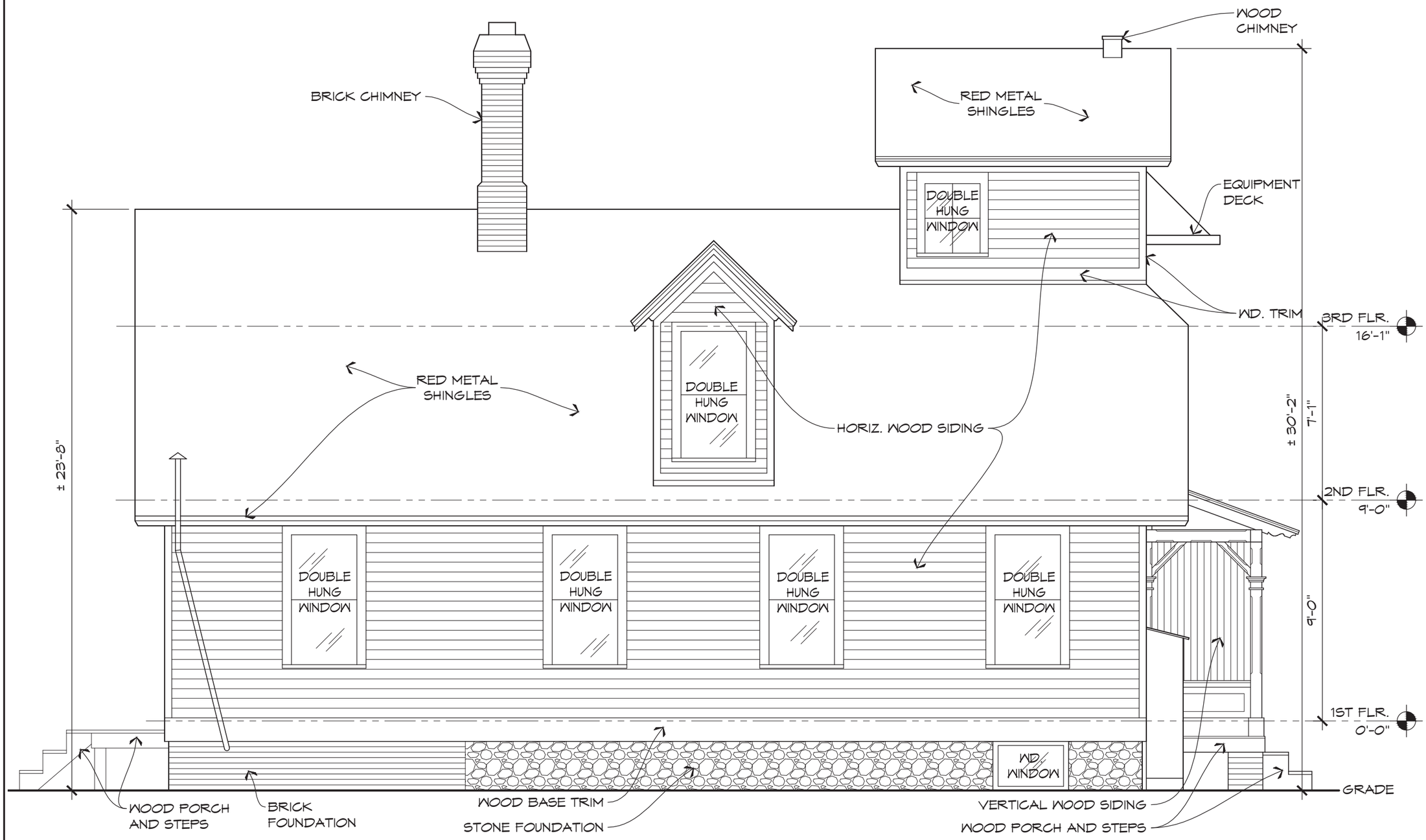
REAR RANGE LIGHT SOUTH ELEVATION

A-13



REAR RANGE LIGHT EAST ELEVATION

1/4" = 1'-0"

1
A-14

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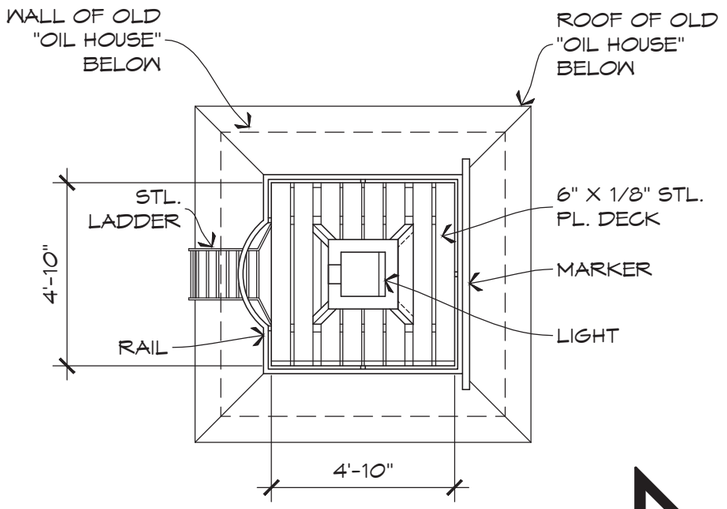
REAR RANGE LIGHT EAST ELEVATION

A-14

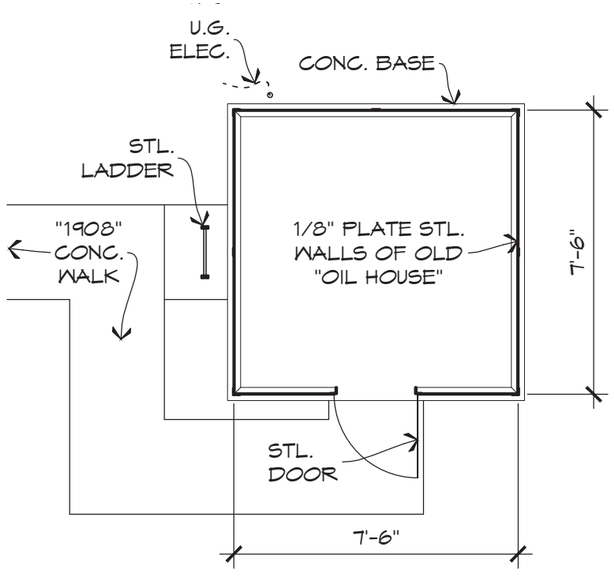


PLATFORM PLAN

1/4" = 1'-0"

2 / A-15

PLAN NORTH

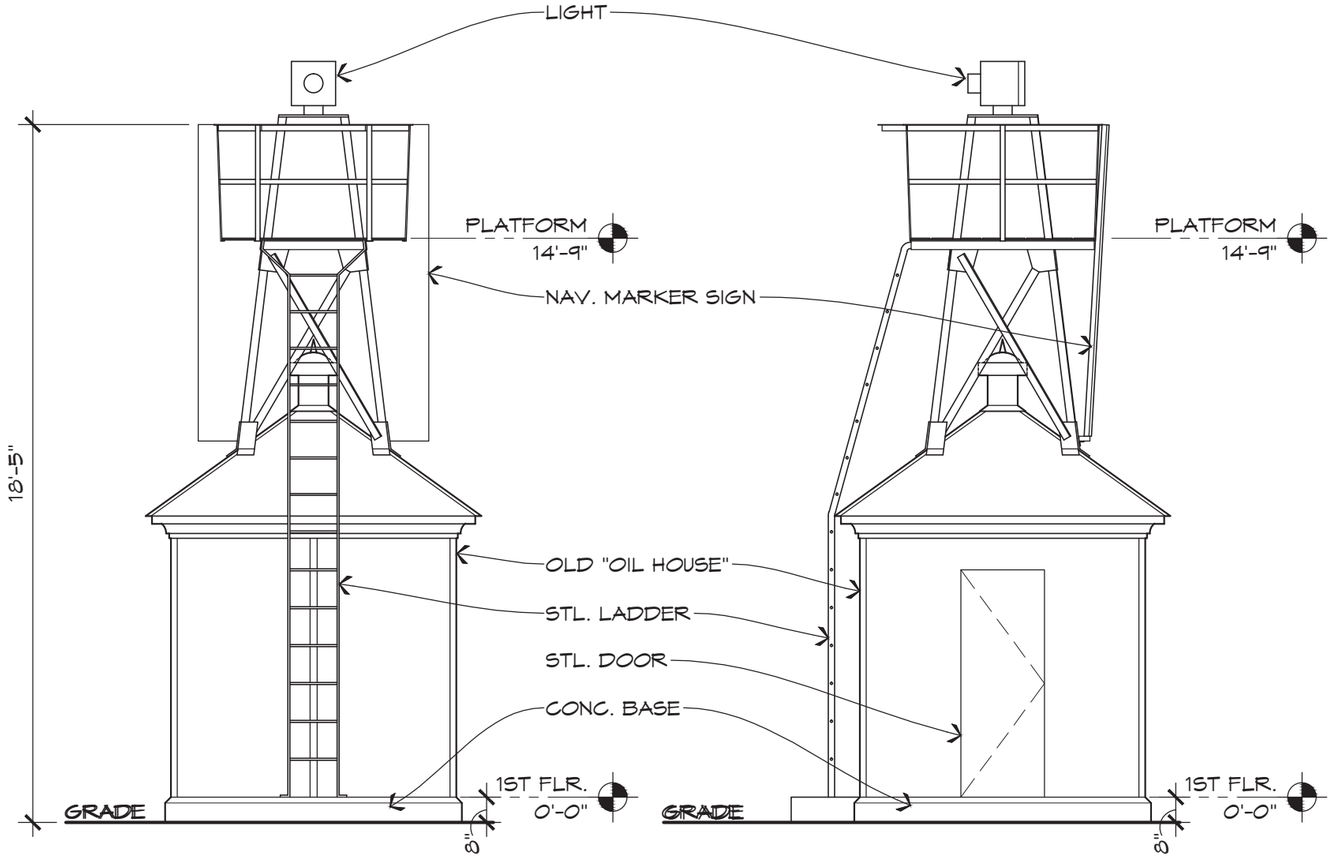


GROUND LEVEL PLAN

1/4" = 1'-0"

1 / A-15

PLAN NORTH



SOUTH ELEVATION

1/4" = 1'-0"

3 / A-15

EAST ELEVATION

1/4" = 1'-0"

4 / A-15

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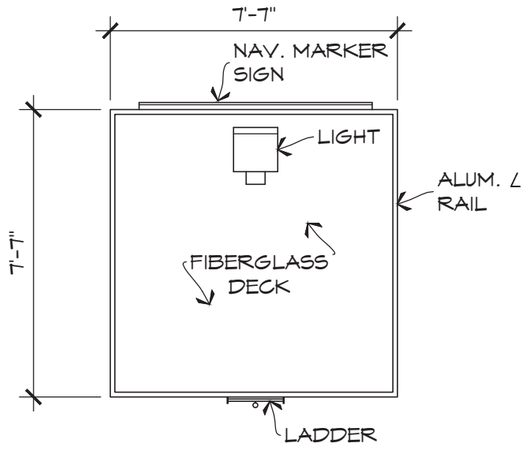
FRONT RANGE LIGHT PLANS & ELEVATIONS

A-15

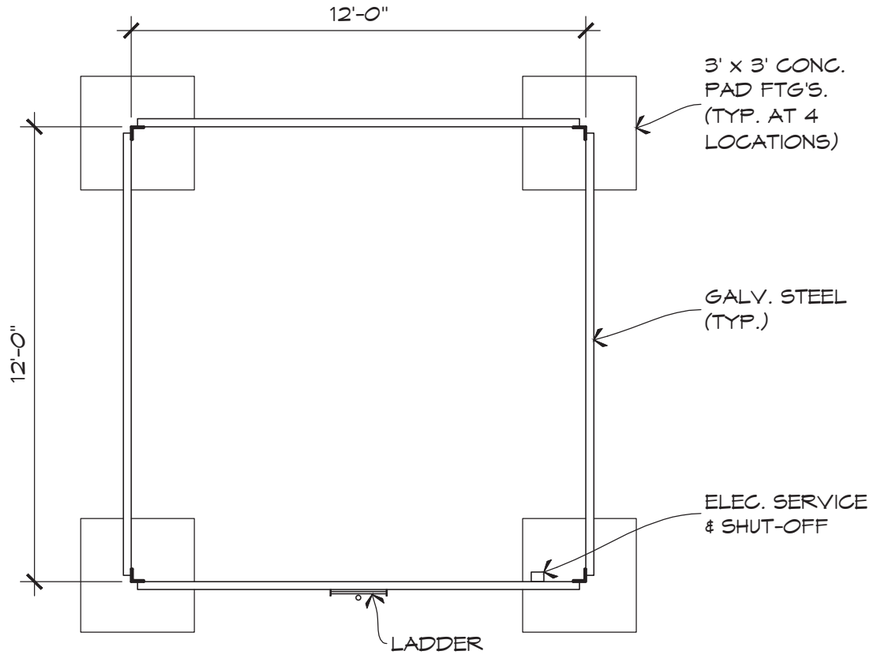


PLATFORM PLAN

2 / A-16

1/4" = 1'-0"

PLAN NORTH

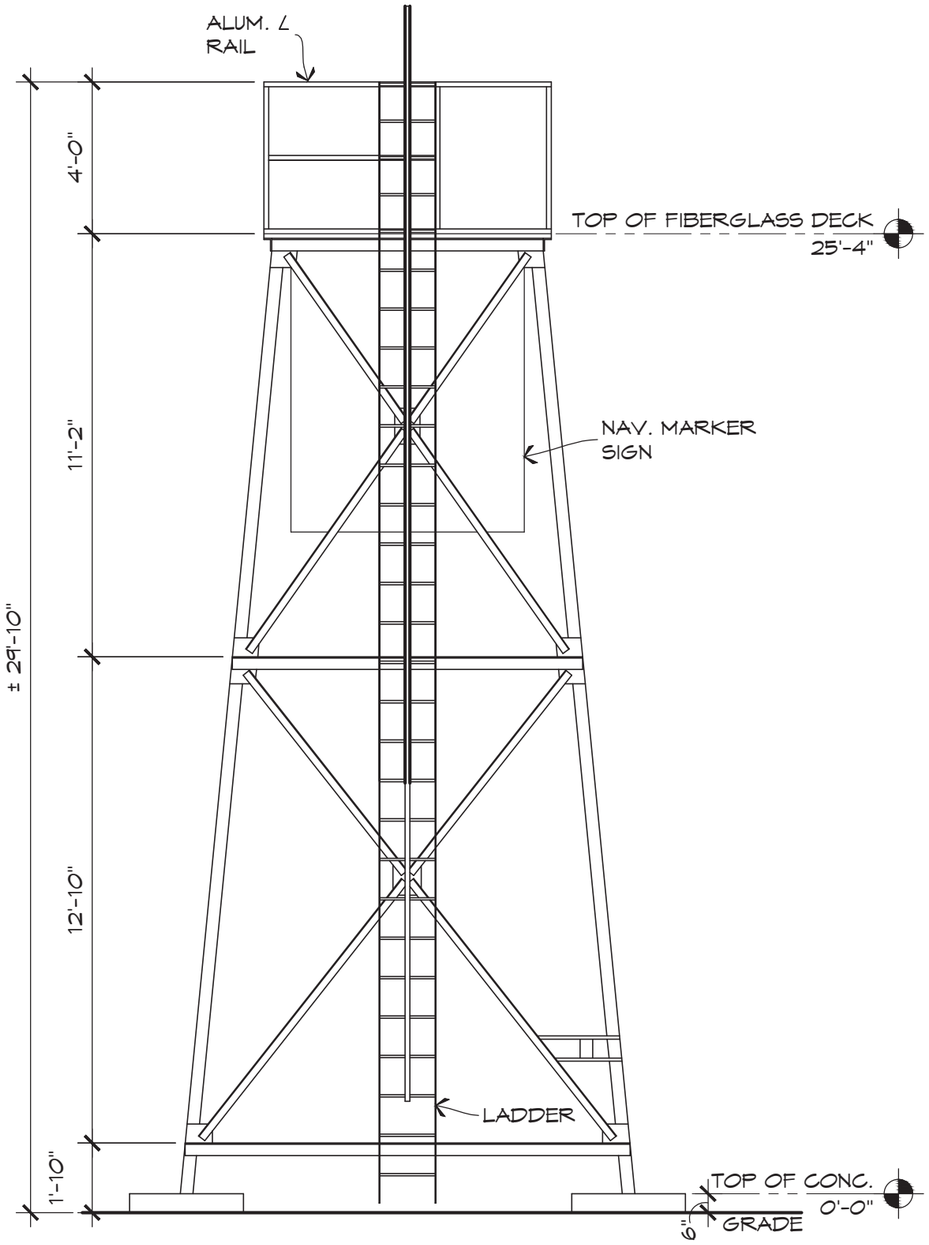


GROUND LEVEL PLAN

1 / A-16

1/4" = 1'-0"

PLAN NORTH



SOUTH ELEVATION

3 / A-16

1/4" = 1'-0"

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"MODERN" R. RANGE LT. PLANS & ELEV.

A-16

APPENDIX D

HAZARDOUS MATERIAL TEST REPORTS

UPEA
ENGINEERS & ARCHITECTS

100 Portage Street Houghton, MI 49931
906-482-4810 • 800-562-7684 • Fax: 906-482-9799

[S283-14114]

January 7, 2014

Sanders & Czapski Associates, PLLC
109 South Front Street, Suite 210
Marquette, MI 49855

RE: ASBESTOS and LEAD SAMPLING RESULTS from TWO BUILDINGS plus TWO STRUCTURES at the COPPER HARBOR RANGE LIGHT PROJECT

Dear Mr. Czapski:

As authorized, U.P. Engineers & Architects, Inc. (UPEA) has completed the referenced asbestos / Lead testing. UPEA has enclosed an Asbestos/Lead results report, which includes procedures and methodologies, analytical laboratory results, and applicable conclusions and recommendations.

UPEA appreciates the opportunity to perform these services for you. If you have any questions or comments regarding the information presented in this report, or if we can be of further assistance please contact me at (906) 482-4810.

Sincerely,

Bill Griffin, Ph.D., P.E.
Environmental Project Manager/Principal

Eric J. Bjorn
Michigan Certified Asbestos Inspector, Accreditation Number A41646
Michigan Certified Lead Inspector/Risk Assessor, Cert. Number P-05248

Enclosures

COPPER HARBOR RANGE LIGHTS
COPPER HARBOR, MICHIGAN

ASBESTOS / LEAD PAINT
RESULTS REPORT

Prepared By:
U.P. ENGINEERS & ARCHITECTS, INC.
100 Portage Street
Houghton, Michigan 49931

JANUARY 2014

I. ASBESTOS CONTAINING MATERIAL

1. SAMPLING

Asbestos samples were taken from both buildings – Old Barn Structure and Old Rear Range Light Building at the Copper Harbor site. The asbestos sampling was performed by Eric Bjorn; a State of Michigan licensed Asbestos Building Inspector (License # A41646) on Dec. 13, 2013.

The asbestos sampling consisted of five phases: 1) conduct a visual inspection of the building; 2) identify homogeneous areas; 3) sample selected suspect ACM from different homogeneous areas; 4) quantify ACM and PACM; 5) assess current conditions of sampled suspect ACM and the potential for disturbance of the ACM identified.

Bulk samples of identified suspect asbestos containing material (ACM) were collected in individual containers and sent to a National Voluntary Lab Accreditation Program (NVLAP)/American Industrial Hygiene Association (AIHA) accredited laboratory for analysis. The number of samples collected from each homogeneous area may vary depending on the professional judgment of the inspector and the type of material present.

2. SUSPECT ASBESTOS CONTAINING MATERIAL

Fifteen (15) samples (11-Old Rear Range Light Building), (4-Old Barn Structure) of suspect ACM were collected from the buildings and analyzed by Polarized Light Microscopy (PLM). Table 1 shows any confirmed ACMs. Table 2 presents the sample analysis results. In Table 2 the confirmed ACMs are reported in bold text. Copies of the analytical results are also included

This asbestos sampling was completed with limited destructive testing. Therefore, hidden materials may be discovered in walls or ceilings that contain asbestos. If such materials are encountered, all work shall stop immediately until proper testing is conducted to determine the content of the material.

TABLE 1
CONFIRMED ASBESTOS CONTAINING MATERIALS

FLOOR	LOCATION	MATERIAL	QUANTITY	FRIABLE
Kitchen Floor	Old Rear Range Light Building	Floor Tile	175 ± SF	No
Living / Dining	Old Rear Range Light Building	Floor Tile	340 ± SF	No

TABLE 2
SUMMARY OF ASBESTOS ANALYTICAL RESULTS
BUILDINGS LOCATED AT
OLD REAR RANGE LIGHT BUILDING & OLD BARN STRUCTURE
COPPER HARBOR, MICHIGAN

SAMPLE LOCATION	SAMPLE NUMBER	MATERIAL (CLASSIFICATION)	DESCRIPTION OF MATERIAL	ESTIMATED QUANTITY	FRIABLE YES / NO	ASBESTOS CONTENT
Old Rear Range Light Building	**A-1**	**Kitchen Floor Tile, Carpet Adhesive, Tile Mastic**	**Green Tile, Tan Adhesive, Black Mastic**	**175 S.F. +-**	**NO**	**3% CHRYSOTILE (IN TILE)**
Old Rear Range Light Building	A-2	Drywall - Kitchen	White, Granular			None
Old Rear Range Light Building	**A-3**	**Living / Dining Room Floor tile , Tile Mastic**	**Floor tile Tan, Mastic Black**	**340 S.F. +-**	**NO**	**3% CHRYSOTILE (IN TILE)**
Old Rear Range Light Building	A-4	Tile Underlayment	Black, Felt Like			None
Old Rear Range Light Building	A-5	Ceiling Drywall Mud Joint Material	White, Beige, Granular			0.75% CHRYSOTILE
Old Rear Range Light Building	A-6	12 x 12 Floor Tile and Adhesive (hall)	White & Green with Tan Adhesive			None
Old Rear Range Light Building	A-7	Bedroom Ceiling Plaster	Beige, Granular			None
Old Rear Range Light Building	A-8	12 x 12 Floor Tile and Adhesive (upstairs)	White & Green with Tan Adhesive			None
Old Rear Range Light Building	A-9	3rd Level Plaster & Skim Coat	Beige, White, Granular			None
Old Rear Range Light Building	A-10	South Basement Ceiling Board	Brown, Hard			None
Old Rear Range Light Building	A-11	South Basement Floor tile & Mastic	Tan, Soft			None
Old Barn Structure	Barn #1	Kitchen area Wall Board Surround	Brown, Hard			None
Old Barn Structure	Barn #2	Bathroom Sheet Vinyl & Mastic	Beige with Tan Mastic			None
Old Barn Structure	Barn #3	Living Rm. & Hall Ceiling Tile	Beige, Fibrous			None
Old Barn Structure	Barn #4	Bathroom Wainscott	Pink, Fibrous			None

NOTE: Material containing less than 1 percent asbestos is <u>not</u> classified as ABM Asbestos Containing Material.

3. CONCLUSIONS AND RECOMMENDATIONS

The results of the asbestos sampling conducted on 12/13/2013 at the buildings located at the Copper Harbor Range Light site, indicate the Old Rear Range Light Building does contain asbestos. Of the tested materials, asbestos was found in samples collected from the kitchen, and living/dining room floor areas.

Material or items not comprised of ACM or PACM may be removed, repaired or replaced by general maintenance staff or contractors. However, ACM or PACM items must be handled and disposed of by properly trained personnel. Subcontractors and employees working in the building should be instructed to report any hidden suspect ACM immediately upon discovery.

4. LIMITATIONS

Identification and testing of PACM was conducted by a trained professional licensed in the State of Michigan. Professional judgment was used in the selection of materials to be tested and the number of samples of each homogeneous material tested.

This report documents testing of ACM or PACM based on sampling strategies and priorities as described herein, and on the dates and at locations identified in this report. Modifications to the building or its interior through renovations, remodeling, building additions or changes to fixtures, facilities or furnishings that occur subsequent to the date of this report may add or remove ACM or PACM not identified in this report.

This report was completed to aid the building Owner, general contractors, and potential asbestos abatement contractors in locating ACM. Under no circumstances should this report be utilized as a bidding document or as a project specification document.

This report was completed with limited destructive testing. Therefore, materials may be discovered in walls or ceilings that contain asbestos. If such materials are encountered, all work shall stop immediately until proper testing may be conducted to determine the content of the material.

II. PAINT CONTAINING LEAD

1. SAMPLING AND ANALYTICAL METHODS

The lead paint testing results were obtained utilizing a Niton XLp X-Ray Fluoresence (XRF) instrument on-site. Two paint chip samples were taken from the exterior upper portion of both buildings where access with the XRF was not practical.

2. RESULTS

The results of the paint containing lead sampling conducted on December 13, 2013, indicate that all the buildings and outside range light tower structures have paint containing lead. All XRF readings as well as the two paint chip samples which were submitted to an AIHA and NVLAP certified laboratory for analyses are listed in Table 3. All results were positive for lead.

NOTE: Because *paint containing lead is present, air monitoring and proper personal protective equipment will be required during demolition depending upon the means and methods used.*

TABLE 3
Copper Harbor Range Lights
Lead Paint Testing Results

Reading No	Units	COMPONENT	SUBSTRATE	COLOR	SITE	ROOM	Lead Conc.	Lead Error
189	cps						5.92	0
190	mg / cm ^2	STANDARD					0	0.02
191	mg / cm ^2	STANDARD					1.1	0.1
192	mg / cm ^2	STANDARD					5.2	3.1
193	mg / cm ^2	WALL	DRYWALL	WHITE	rear range lgt. hse.	KITCHEN	8.6	6.1
194	mg / cm ^2	WALL	DRYWALL	YELLOW	rear range lgt. hse.	KITCHEN	1.7	0.4
195	mg / cm ^2	CEILING	DRYWALL	WHITE	rear range lgt. hse.	KITCHEN	0.16	0.18
196	mg / cm ^2	WINDOW CASING	WOOD	WHITE	rear range lgt. hse.	KITCHEN	3.6	1.5
197	mg / cm ^2	WINDOW	WOOD	WHITE	rear range lgt. hse.	KITCHEN	6.6	4.9
198	mg / cm ^2	WINDOW CASING	WOOD	BEIGE	rear range lgt. hse.	dining room	0.5	0.4
199	mg / cm ^2	WINDOW CASING	WOOD	BEIGE	rear range lgt. hse.	LIVING ROOM	0.7	0.3
200	mg / cm ^2	CEILING	DRYWALL	WHITE	rear range lgt. hse.	LIVING ROOM	0.22	0.3
201	mg / cm ^2	CEILING	DRYWALL	WHITE	rear range lgt. hse.	BATHROOM	0.24	0.22
202	mg / cm ^2	FLOOR	DRYWALL	YELLOW	rear range lgt. hse.	BATHROOM	0.12	0.13
203	mg / cm ^2	WINDOW CASING	WOOD	YELLOW	rear range lgt. hse.	BATHROOM	0.6	0.3
204	mg / cm ^2	CEILING	PLASTER	WHITE	rear range lgt. hse.	BEDROOM 1	0.06	0.1
205	mg / cm ^2	CEILING	PLASTER	WHITE	rear range lgt. hse.	BEDROOm 2	0.11	0.13
206	mg / cm ^2	BASEBOARD	WOOD	BEIGE	rear range lgt. hse.	BEDROOm 2	0.7	0.3
207	mg / cm ^2	STRINGER	WOOD	BROWN	rear range lgt. hse.	HALL	10.6	6.3
208	mg / cm ^2	WALL	WOOD	WHITE	rear range lgt. hse.	PORCH	16.8	8.1
209	mg / cm ^2	DOOR	WOOD	YELLOW	rear range lgt. hse.	PORCH	20.2	9.2
210	mg / cm ^2	TREAD	WOOD	BROWN	rear range lgt. hse.	HALL	5	3.3
211	mg / cm ^2	WALL	WOOD	WHITE	rear range lgt. hse.	light rm 3 level	1.9	0.8
212	mg / cm ^2	DOOR	WOOD	WHITE	rear range lgt. hse.	light rm 3 level	0.05	0.14
213	mg / cm ^2	WALL	PLASTER	WHITE	rear range lgt. hse.	light rm 3 level	1.2	0.2
214	mg / cm ^2	DOOR	WOOD	WHITE	rear range lgt. hse.	basement door	2.8	1.7
215	mg / cm ^2	CABINET	WOOD	YELLOW	rear range lgt. hse.	KITCHEN	2.5	1.3
216	cps						5.6	0
217	mg / cm ^2	STANDARD					0	0.03
218	mg / cm ^2	STANDARD					1.1	0.1
219	mg / cm ^2	STANDARD					3.9	2.2
220	mg / cm ^2	WINDOW STOOL	DRYWALL	WHITE	old barn bldg	LIVING ROOM	0.12	0.08
221	mg / cm ^2	WALL	DRYWALL	WHITE	old barn bldg	KITCHEN	0.3	0.51
222	mg / cm ^2	CEILING	DRYWALL	WHITE	old barn bldg	BATHROOM	0.13	0.19
223	mg / cm ^2	WALL	DRYWALL	WHITE	old barn bldg	BATHROOM	0.09	0.16
224	mg / cm ^2	WALL	WOOD	YELLOW	old barn bldg	BATHROOM	0.14	0.32
225	mg / cm ^2	TREAD	WOOD	GREY	old barn bldg	STAIR	0.01	0.05
226	mg / cm ^2	siding	WOOD	RED	old barn bldg	outside	0.8	0.2
227	mg / cm ^2	WINDOW trim	WOOD	WHITE	old barn bldg	outside	3.4	2.1
228	mg / cm ^2	WINDOW SASH	WOOD	YELLOW	old barn bldg	outside	0.26	0.32
229	mg / cm ^2	siding	WOOD	RED	rear range lgt. hse.	outside	0.5	0.4
230	mg / cm ^2	siding	WOOD	WHITE	rear range lgt hse.	outside	4.7	2.9
231	mg / cm ^2	steel tower	METAL	WHITE	rear range lgt tower	outside	8	5.2
232	mg / cm ^2	steel bldg	METAL	RED	front lgt tower	outside	8.2	6.2
233	mg / cm ^2	steel bldg	METAL	RED	front lgt tower	outside	10.1	7.1
234	mg / cm ^2	STANDARD					0	0.02
235	mg / cm ^2	STANDARD					1.1	0.1
236	mg / cm ^2	STANDARD					3.5	1.9

Paint Chips			Lead Conc. % by wt.	PPM
L-1	Upper Exterior Siding	rear range lgt hse	16.721	167,207
L-2	Upper Exterior Siding	old barn residence	18.920	189,201

Samples Tested by: E. Bjorn, UP Engineers Architects, Inc. 12/13/13, except paint chip samples.

SLi

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2512 W. Cary Street, Richmond, VA 23220-5117

Submitting Co.
U.P. Engineers & Architects (Asb)
100 Portage St.
Houghton, MI 49931

Lab Use-WO# 2820-13-373
Acct # 2820
Phone # (906) 482-4810
FAX # (906) 482-9789

Project Name: Copper Harbor Range Lights
Project Location: Copper Harbor, MI
Project Number: 283-14114
Purchase Order No.:

Special Instructions [include requests for special reporting or data packages]
Email Results to Eric Bjorn at UPEA
ebjorn@upea.com

Turn Around Time
[ ] 6-8 hours*
[ ] 24 hours*
[ ] 48 hours*
[ ] 72 hour*
[X] STANDARD (5 days)
[ ] Standard Full TCLP (10d)
[ ] Weekend*
* not available for all tests
Schedule rush organics, multi-metals & weekend tests in advance.

Matrix / Sample Type (Select ONE)
All samples on form should be of SAME matrix type. Use additional forms as needed.

[ ] Air	[ ] Solid
[ ] Aqueous	[ ] Waste
[X] Bulk	[ ] Wastewater
[ ] Hi-Vol Filter (PM10)	[ ] Water,Drinking
[ ] Hi-Vol Filter (TSP)	[ ] Compliance
[ ] Oil	[ ] Wipe
[ ] Paint	[ ] Wipe, Composite
[ ] Sludge	[ ]_____
[ ] Soil	[ ]_____

Tests / Analyses (Select ALL that Apply)

Asbestos Air / Fiber Counts
[ ] PCM (NIOSH 7400)
[ ] TEM (AHERA)
[ ] TEM (EPA Level II)
[ ]_____

Miscellaneous Tests
[ ] Total Dust (NIOSH 0500)
[ ] Resp. Dust (NIOSH 0600)
[ ] Silica - FTIR (NIOSH 7602)
[ ] Silica - XRD (NIOSH 7500)
[ ]_____

Asbestos Bulk / Asb ID
[X] PLM (EPA 600, 1993)
[ ] PLM (EPA Point Count)
[ ] PLM (Qualitative only)
[ ] NYELAP 198.1/.4
[ ] CARB (EPA Interim)
[ ] TEM (Chatfield)
[ ]_____

FOR ASBESTOS AIR:
TYPE OF RESPIRATOR USED:

Metals-Total Conc.
[ ] Lead
[ ] RCRA Metals
[ ]_____
[ ]_____

Extraction Procedures
[ ] TCLP / Lead
[ ] TCLP / RCRA Metal Profile
[ ] TCLP / FULL (w/ organics)
[ ]_____
[ ]_____

ORGANICS TESTS and other Analyses
NOTE: All samples for organics should be kept at 4°C from collection until testing. Schedule rush analyses in advance, indicate preservatives added & media type. Indicate analysis method for organics tests.

WorkOrderKey
V : \ 992 \ 992504

Sample (number)	Date Sampled	Time	Sample Identification (e.g. Employee, SSN, Bldg, Material)	Wipes: Wiped Area (ft²)	Wipes: Type¹ A,B,P,E	Air Samples: Time² Start	Air Samples: Time² Stop	Air Samples: Flow Rate³ Start	Air Samples: Flow Rate³ Stop	Air Samples: Total⁴ Air Vol	Organics: # containers	
A-1	12/13/2013		Kitchen floor tile under carpet with tile & carpet adhesive									
A-2	12/13/2013		Kitchen drywall									
A-3	12/13/2013		Living room floor tile - Tan 9x9 with Black adhesive									Sample #A-3 please test tile & adhesive
A-4	12/13/2013		Living room tile underlayment - Black									
A-5	12/13/2013		Living room ceiling Mud joint mat - White									
A-6	12/13/2013		12 x 12 Hall floor tile white & green with tan adhesive									Sample #A-6 please test tile & adhesive
A-7	12/13/2013		Bedroom #2 ceiling Plaster									
A-8	12/13/2013		Up stairs 12 x 12 floor tile white & green with tan adhesive									Sample #A-8 please test tile & adhesive
A-9	12/13/2013		3rd level stair tower exposed plaster									

¹Type: A=area B=blank P=personal S=solution ²Beginning/End of Sample Period ³Pump Calibration in Liters/Minute ⁴Volume in Liters (time in min * flow in L/min)

Sample Collection & Custody Information

Sampled by [NAME] ERIC BJORN [SIGNATURE] Eric B. [DATE/TIME] 12-13-13 P.M.

Relinquished by [NAME] ERIC BJORN [SIGNATURE] Eric B. [DATE/TIME] 12-13-13 P.M.

Received by [NAME] UPS [SIGNATURE] L. Bozzato [DATE/TIME] 12/19/13 1620

[ ]FX [ ]AS [X]UPS [ ]USM [ ]CL [ ]LG [ ]HD [ ]DB [ ]_____

Unusual Sample Condition Noted:

Waybill# 4900

STATE where samples were collected: MI

[ ] Sample return requested

[ ] Ambient temp [ ] Cool ____°C [ ] pH ____ [ ] Cl ____

[ ]R [ ]S

Chain-of-Custody documentation continued internally within lab.

LAB USE ONLY

Received in Lab by _____ Date/Time _____ [ ] Ambient Temp. [ ] Cool

[ ]FX [ ]AS [ ]UPS [ ]USM [ ]CL [ ]LG [ ]HD [ ]DB [ ]_____

Waybill# _____ [ ]R [ ]S

Unusual Sample Condition Noted:

Sample Collection & Custody Information

Chain-of-custody documentation continued internally within lab.

Sampled by [NAME] _____ [SIGNATURE] _____ [DATE/TIME] _____

Relinquished by [NAME] _____ [SIGNATURE] _____ [DATE/TIME] _____

[ ] Sample return requested [ ] STATE from which samples were collected

SLi Schneider Laboratories, Inc. 1/800-785-5227
2612 W. Cary Street, Richmond, VA 23220-5117

Submitting Co.: U.P. Engineers & Architects (Asb)
100 Portage St.
Houghton, MI 49931

Lab Use-WO#:
Acct #: 2820
Phone #: (906) 482-4810
FAX #: (906) 482-9799

Project Name: Copper Harbor Range Lights
Project Location: Copper Harbor, MI
Project Number: 283-14114
Purchase Order No.:

Special Instructions [include requests for special reporting or data packages]
Email Results to Eric Bjorn at UPEA
ebjorn@upea.com

Turn Around Time
[ ] 6-8 hours*
[ ] 24 hours*
[ ] 48 hours*
[ ] 72 hour*
[X] STANDARD (5 days)
[ ] Standard full TCLP (10d)
[ ] Weekend*
* not available for all tests
Schedule rush organics, multi-metals & weekend tests in advance.

Matrix / Sample Type (Select ONE)
All samples on form should be of SAME matrix type. Use additional forms as needed.
[ ] Air
[ ] Aqueous
[X] Bulk
[ ] Hi-Vol Filter (PM10)
[ ] Hi-Vol Filter (TSP)
[ ] Oil
[ ] Paint
[ ] Sludge
[ ] Soil
[ ] Solid
[ ] Waste
[ ] Wastewater
[ ] Water,Drinking
[ ] Compliance
[ ] Wipe
[ ] Wipe, Composite
[ ] _____
[ ] _____

Tests / Analyses (Select ALL that Apply)

Asbestos Air / Fiber Counts:
[ ] PCM (NIOSH 7400)
[ ] TEM (AHERA)
[ ] TEM (EPA Level II)
[ ]

Miscellaneous Tests:
[ ] Total Dust (NIOSH 0500)
[ ] Resp. Dust (NIOSH 0600)
[X] Silica - FTIR (NIOSH 7602)
[ ] Silica - XRD (NIOSH 7500)
[ ]

Asbestos Bulk / Asb ID:
[X] PLM (EPA 600, 1993)
[ ] PLM (EPA Point Count)
[ ] PLM (Qualitative only)
[ ] NYELAP 198.1/A
[ ] CARB (EPA Interim)
[ ] TEM (Chatfield)
[ ]

FOR ASBESTOS AIR:
TYPE OF RESPIRATOR USED:

Metals-Total Cont.:
[ ] Lead
[ ] RCRA Metals
[ ] _____
[ ] _____

Extraction Procedures:
[ ] TCLP / Lead
[X] TCLP / RCRA Metal Profile
[ ] TCLP / FULL (w/ organics)
[ ] _____
[ ] _____

ORGANICS TESTS and other Analyses
NOTE: All samples for organics should be kept at 4°C from collection until testing. Schedule rush analyses in advance. Indicate preservatives added & media type. Indicate analysis method for organics tests.

Sample (number)	Date Sampled	Time	Sample Identification (e.g. Employee, SSN, Bldg, Material)	Wipes: Wipe Area (ft²)	Wipes: Type[1] A,B,P,E	Air Info: Time[2] Start	Air Info: Time[2] Stop	Air Info: Flow Rate[3] Start	Air Info: Flow Rate[3] Stop	Air Info: Total[4] Air Vol	Organics: # containers
A-10	12/13/2013		South basement ceiling board - white								
A-11	12/13/2013		South basement stairway floor tile								
Barn #1	12/13/2013		Kitchen area wall board surround - white								
Barn #2	12/13/2013		Bathroom floor sheet vinyl								
Barn #3	12/13/2013		Living rm. & hall ceiling tile - white								
Barn #4	12/13/2013		Bathroom wainscot fiberboard - pink								

Sample #A-11 please test tile & adhesive

[1]Type: A=area B=blank P=personal E=evacuation [2]Beginning/End of Sample Period [3]Pump Calibration in Liters/Minute [4]Volume in Liters (time in min * flow in l/min)

Sample Collection & Custody Information

Sampled by [NAME] ERIC BJORN [SIGNATURE] Eric Bjorn [DATE/TIME] 12-13-13 P.M.

Relinquished by [NAME] ERIC BJORN [SIGNATURE] Eric Bjorn [DATE/TIME] 12-13-13 P.M.

Received by [NAME] UPS [SIGNATURE] L. Roberts [DATE/TIME] 12/19/13 11:0

[ ]FX [ ]AB [X]UPS [ ]USM [ ]CL [ ]LG [ ]HD [ ]DB [ ]____

Unusual Sample Condition Noted:

Waybill# 6900

STATE where samples were collected: MI

[ ] Sample return requested

[ ] Ambient temp [ ] Cool ___°C [ ] pH ___ [ ] Cl ___

[ ]R [ ]S

Chain-of-Custody documentation continued internally within lab.

LAB USE ONLY

Received in Lab by _____ Date/Time _____ [ ] Ambient Temp. [ ] Cool

[ ]FX [ ]AB [ ]UPS [ ]USM [ ]CL [ ]LG [ ]HD [ ]DB [ ]____

Waybill# _____ [ ]R [ ]S

Unusual Sample Condition Noted:

Sample Collection & Custody Information

Chain-of-custody documentation continued internally within lab.

Sampled by [NAME] _____ [SIGNATURE] _____ [DATE/TIME] _____

Relinquished by [NAME] _____ [SIGNATURE] _____ [DATE/TIME] _____

[ ] Sample return requested

STATE from which samples were collected

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804-353-6778 • 800-785-LABS (5227) • (FAX) 804-359-1475

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LABORATORY ANALYSIS REPORT

Asbestos Identification by EPA Method[1] 600/R-93/116; EPA 600/M4-82-020

ACCOUNT #:	2820-13-373	**DATE COLLECTED:**	12/13/2013
CUSTOMER:	UP Engineers & Architects (Asb)	**DATE RECEIVED:**	12/19/2013
ADDRESS:	100 Portage St.	**DATE ANALYZED:**	12/20/2013
	Houghton, MI 49931	**DATE REPORTED:**	12/20/2013
PROJECT NAME:	Copper Harbor Rng Lt		
JOB LOCATION:	Copper Harbor MI		
PROJECT NO.:	283-14114		
PO NO.:		**SampleType:**	BULK

Customer Sample No.	SLI Sample/ Layer ID	Sample Identification/ Layer Name	PLM Analysis Results: Asbestos Fibers	PLM Analysis Results: Other Materials
A-1	32108052	Kit FL Tile Cpt & Adhsv		
Layer 1:		Adhesive Tan, Soft	None Detected	100% NON FIBROUS MATERIAL
Layer 2:		Floor Tile Green, Organically Bound	3% CHRYSOTILE	97% NON FIBROUS MATERIAL
Layer 3:		Mastic Black, Bituminous	None Detected	2% CELLULOSE FIBER 98% NON FIBROUS MATERIAL
A-2	32108053	Kit Drywall		
Layer 1:		Drywall White, Powdery	None Detected	4% CELLULOSE FIBER 96% NON FIBROUS MATERIAL
A-3	32108054	LV RM FL Tile/Adhsv		
Layer 1:		Floor Tile Tan, Organically Bound	3% CHRYSOTILE	97% NON FIBROUS MATERIAL
Layer 2:		Mastic Black, Bituminous	None Detected	2% CELLULOSE FIBER 98% NON FIBROUS MATERIAL

Total Number of Pages in Report: 3

Results relate only to samples as received by the laboratory. Visit www.slabinc.com for current certifications.

Accrediting bodies: AIHA-LAP, LLC 100527, NVLAP 101150-0, VELAP/NELAC 460135 - Call laboratory for current national and state certifications.

Method reporting limit is 1%. PLM analysis is based on Visual Estimation and NESHAP recommends that any asbestos content less than 10 percent be verified by PLM Point Count or TEM Analysis. This report must not be reproduced except in full with the approval of the laboratory.

Customer Sample No.	SLI Sample/ Layer ID	Sample Identification/ Layer Name	PLM Analysis Results Asbestos Fibers	Other Materials
A-4	32108055	LV RM Tile		
Layer 1:	Undercoating Black, Fibrous		None Detected	65% CELLULOSE FIBER 15% MINERAL/GLASS WOOL 20% NON FIBROUS MATERIAL
A-5	32108056	LV RM Ceiling Mud Jnt		
Layer 1:	Mudded Joint Pipe Beige, Granular		2% CHRYSOTILE	98% NON FIBROUS MATERIAL
A-6	32108057	Hall FL Tile & Adhsv		
Layer 1:	Floor Tile White/Green, Organically Bound		None Detected	100% NON FIBROUS MATERIAL
Layer 2:	Adhesive Tan, Soft		None Detected	100% NON FIBROUS MATERIAL
A-7	32108058	BR 2 Ceiling		
Layer 1:	Ceiling Plaster Beige, Granular		None Detected	100% NON FIBROUS MATERIAL
A-8	32108059	Upstairs FL Tile & Adhsv		
Layer 1:	Floor Tile White/Green, Organically Bound		None Detected	100% NON FIBROUS MATERIAL
Layer 2:	Mastic Tan, Soft		None Detected	100% NON FIBROUS MATERIAL
A-9	32108060	3rd Level Stair Tower		
Layer 1:	Plaster Beige, Granular		None Detected	100% NON FIBROUS MATERIAL
Layer 2:	Skim Coat White, Granular		None Detected	100% NON FIBROUS MATERIAL
A-10	32108061	South Bsmnt Ceiling Brd		
Layer 1:	Ceiling Board White/Brown, Hard		None Detected	20% CELLULOSE FIBER 20% MINERAL/GLASS WOOL 60% NON FIBROUS MATERIAL

Total Number of Pages in Report: 3

Results relate only to samples as received by the laboratory. Visit www.slabinc.com for current certifications.

Accrediting bodies: AIHA-LAP, LLC 100527, NVLAP 101150-0, VELAP/NELAC 460135 - Call laboratory for current national and state certifications.

Method reporting limit is 1%. PLM analysis is based on Visual Estimation and NESHAP recommends that any asbestos content less than 10 percent be verified by PLM Point Count or TEM Analysis. This report must not be reproduced except in full with the approval of the laboratory.

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LABORATORY ANALYSIS REPORT

Asbestos ID by PLM using EPA Method[1] 600/R-93/116 with Point Count[1]; EPA 600/M4-82-020

ACCOUNT #: 2820-14-374
CUSTOMER: UP Engineers & Architects (Asb)
ADDRESS: 100 Portage St.
Houghton, MI 49931
PROJECT NAME: Copper Harbor Rng LT
JOB LOCATION: Copper Harbor MI
PROJECT NO.: 283-14114
PO NO.:

DATE COLLECTED: 12/13/2013
DATE RECEIVED: 1/2/2014
DATE ANALYZED: 1/3/2014
DATE REPORTED: 1/6/2014

SampleType: BULK

Customer Sample No.	SLI Sample/ Layer ID	Sample Identification/ Layer Name	PLM Analysis Results: Asbestos Fibers	PLM Analysis Results: Other Materials
A-5	32114568	Living Room Ceiling		
Layer 1:		Mudded Joint Pipe Beige, Granular, Homogenous	0.75% CHRYSOTILE	99.25% NON FIBROUS MATERIAL

Analyst: MOHAMMED B. HASHIM

Reviewed By: Hind Eldanaf, Microscopy Supervisor

Total Number of Pages in Report: 1

Results relate only to samples as received by the laboratory.

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Accrediting bodies: AIHA-LAP, LLC 100527, NVLAP 101150-0, VELAP/NELAC 460135 - Call laboratory for current national and state certifications.

Samples analyzed by the EPA Point Count test method. Samples analyzed by the EPA Test Method are subject to the inherent limitations of polarized light microscopy including matrix interference. This method has a reporting limit of <0.25% for friable samples. The limit for non-friable, organically bound samples is <0.01%. This report must not be reproduced except in full with the approval of the lab, and must not be used to claim NVLAP or other government agency endorsement.

Customer Sample No.	SLI Sample/ Layer ID	Sample Identification/ Layer Name	PLM Analysis Results Asbestos Fibers	Other Materials
A-11	32108062	South Bsmnt Stairway Tile		
Layer 1:	Floor Tile Beige, Organically Bound		None Detected	100% NON FIBROUS MATERIAL
Layer 2:	Mastic Tan, Soft		None Detected	100% NON FIBROUS MATERIAL
Barn 1	32108063	Kit Wall Brd		
Layer 1:	Wallboard Brown, Hard		None Detected	20% CELLULOSE FIBER 20% MINERAL/GLASS WOOL 60% NON FIBROUS MATERIAL
Barn 2	32108064	Bath FL Sheet Vinyl		
Layer 1:	Vinyl Sheet Flrng Beige, Org.Bound/Fibrous		None Detected	35% CELLULOSE FIBER 15% MINERAL/GLASS WOOL 50% NON FIBROUS MATERIAL
	Sample was inhomogenous, subsamples of each component were analyzed separately.			
Layer 2:	Mastic Tan, Soft		None Detected	100% NON FIBROUS MATERIAL
Barn 3	32108065	LV RM & Hall Ceiling		
Layer 1:	Ceiling Tile Beige, Fibrous		None Detected	40% CELLULOSE FIBER 40% MINERAL/GLASS WOOL 20% NON FIBROUS MATERIAL
Barn 4	32108066	Bath Fiberboard		
Layer 1:	Fiber Board Pink, Fibrous		None Detected	65% CELLULOSE FIBER 15% MINERAL/GLASS WOOL 20% NON FIBROUS MATERIAL

Analyst: **MOHAMMED B. HASHIM** **Reviewed By:** **Hind Eldanaf, Microscopy Supervisor**

Total Number of Pages in Report: 3

Results relate only to samples as received by the laboratory. Visit www.slabinc.com for current certifications.

Accrediting bodies: AIHA-LAP, LLC 100527, NVLAP 101150-0, VELAP/NELAC 460135 - Call laboratory for current national and state certifications.

Method reporting limit is 1%. PLM analysis is based on Visual Estimation and NESHAP recommends that any asbestos content less than 10 percent be verified by PLM Point Count or TEM Analysis. This report must not be reproduced except in full with the approval of the laboratory.

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Submitting Co.: U.P. Engineers & Architects (Asb)
100 Portage St.
Houghton, MI 49931

Lab Use-WOs: 2820-13-372
Acct #: 2820
Phone #: (906) 482-4810
FAX #: (906) 482-9799

Project Name: Copper Harbor Range Lights
Project Location: Copper Harbor, MI
Project Number: 283-14114
Purchase Order No.:

Special Instructions [include requests for special reporting or data packages]
Email Results to Eric Bjorn at UPEA
ebjorn@upea.com

Turn Around Time
- [ ] 6-8 hours*
- [ ] 24 hours*
- [ ] 48 hours*
- [ ] 72 hour*
- [X] STANDARD (5 days)
- [ ] Standard Full TCLP (10d)
- [ ] Weekend*

* not available for all tests
Schedule rush organics, multi-metals & weekend tests in advance.

Matrix / Sample Type (Select ONE)
All samples on form should be of SAME matrix type. Use additional forms as needed.
- [ ] Air
- [ ] Aqueous
- [ ] Bulk
- [ ] Hi-Vol Filter (PM10)
- [ ] Hi-Vol Filter (TSP)
- [ ] Oil
- [X] Paint
- [ ] Sludge
- [ ] Soil
- [ ] Solid
- [ ] Waste
- [ ] Wastewater
- [ ] Water,Drinking
- [ ] Compliance
- [ ] Wipe
- [ ] Wipe, Composite
- [ ] _____

Tests / Analytes (Select ALL that Apply)

Asbestos Air / Fiber Counts:
- [ ] PCM (NIOSH 7400)
- [ ] TEM (AHERA)
- [ ] TEM (EPA Level II)
- [ ] _____

Asbestos Bulk / Asb ID:
- [ ] PLM (EPA 600, 1993)
- [ ] PLM (EPA Point Count)
- [ ] PLM (Qualitative only)
- [ ] NYELAP 198.1/.4
- [ ] CAELAP (EPA Interim)
- [ ] TEM (Chatfield)
- [ ] _____

Metals-Total Conc.:
- [X] Lead
- [ ] RCRA Metals
- [ ]
- [ ] _____

Miscellaneous Tests:
- [ ] Total Dust (NIOSH 0500)
- [ ] Resp. Dust (NIOSH 0600)
- [ ] Silica - FTIR (NIOSH 7602)
- [ ] Silica - XRD (NIOSH 7500)
- [ ] _____

FOR ASBESTOS AIR: TYPE OF RESPIRATOR USED:

Extraction Procedures:
- [ ] TCLP / Lead
- [ ] TCLP / RCRA Metal Profile
- [ ] TCLP / FULL (w/ organics)
- [ ] _____
- [ ] _____

ORGANICS TESTS and other Analyses
NOTE: All samples for organics should be kept at 4°C from collection until testing. Schedule rush analyses in advance. Indicate preservatives added & media type. Indicate *analysis method* for organics tests.

Sample (number)	Date Sampled	Organics Time	Sample Identification (e.g. Employee, SSN, Bldg, Material)	Wipes: Wiped Area (ft²)	Wipes: Type[1] A,B,P,E	Air Samples: Time[2] Start	Air Samples: Time[2] Stop	Air Samples: Flow Rate[3] Start	Air Samples: Flow Rate[3] Stop	Air Samples: Total[4] Air Vol	Organics: # containers
L-1	12/13/2013		Rear Range Light house White siding paint - upper portion								
L-2	12/13/2013		Old Barn - residense White siding paint - upper portion								

WorkOrderKey
V : \ 991 \ 991364

Sample Collection & Custody Information

[1]Type: A=area B=blank P=personal E=excursion. [2]Beginning/End of Sample Period [3]Pump Calibration in Liters/Minute [4]Volume in Liters (time in min * flow in L/min)

Sampled by [NAME] ERIC BJORN [SIGNATURE] E Bjorn [DATE/TIME] 12-13-13 P.M.
STATE where samples were collected: MI

Relinquished by [NAME] ERIC BJORN [SIGNATURE] E Bjorn [DATE/TIME] 12-13-13 P.M.
[ ] Sample return requested

Received by [NAME] UPS [SIGNATURE] L. Roberts [DATE/TIME] 12/18/13 11:40
[ ] Ambient temp [ ] Cool ___°C [ ] pH ___ [ ] Cl ___
[ ]FX [ ]AB [X]UPS [ ]USM [ ]CL [ ]LG [ ]HD [ ]DB [ ]
Waybill# 6900
[ ]R [ ]S
Unusual Sample Condition Noted:
Chain-of-Custody documentation continued internally within lab.

LAB USE ONLY
Received in Lab by Date/Time
[ ] Ambient Temp. [ ] Cool
[ ]FX [ ]AB [ ]UPS [ ]USM [ ]CL [ ]LG [ ]HD [ ]DB [ ]
Waybill# [ ]R [ ]S
Unusual Sample Condition Noted:

Sample Collection & Custody Information
Chain-of-custody documentation continued internally within lab.
Sampled by [NAME] [SIGNATURE] [DATE/TIME]
Relinquished by [NAME] [SIGNATURE] [DATE/TIME]
[ ] Sample return requested
[ ] STATE from which samples were collected

192

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LABORATORY ANALYSIS REPORT

Lead Analysis based on EPA 7000B Method
Using Preparation Method EPA 3050B

ACCOUNT #: 2820-13-372
CUSTOMER: UP Engineers & Architects (Asb)
ADDRESS: 100 Portage St.
Houghton, MI 49931
PROJECT NAME: Copper Harbor Rng Lt
JOB LOCATION: Copper harbor MI
PROJECT NO.: 283-14114
PO NO.:

DATE RECEIVED: 12/19/2013
DATE ANALYZED: 12/19/2013
DATE REPORTED: 12/20/2013

Sample Type: PAINT

SLI Sample No.	Customer Sample No.	Collection Date	Sample Description	Sample Wt (mg)	Total Lead (µg)	Lead Conc (% by wt)	Lead Conc PPM
32108015	L-1	12/13/2013	Rr Range Light Hse Upper	316	52,837.5	16.721	167,207
32108016	L-2	12/13/2013	Old Barn Residence Upper	323	61,111.9	18.920	189,201

Analysis Run ID: 52809

Analyst: **Ryan Smith**
Total Number of Pages in Report: 1
Results relate only to samples as received by the laboratory.

Reviewed By **Omar H. Elshowaya, Analyst**
Visit www.slabinc.com for current certifications.

Accrediting bodies: AIHA-LAP, LLC 100527, NVLAP 101150-0, VELAP/NELAC 460135 - Call laboratory for current national and state certifications.

Minimum Reporting Limit: 10.0 µg. Lead Based Paint contains 0.5% lead by weight per Federal statute. The OSHA Lead in Construction Standard, 29 CFR 1926.62, is invoked if any lead is present in the sample. All internal QC parameters were met. Unusual sample conditions, if any, are described.

APPENDIX E

HISTORIC COLOR REPORT

PAINT SAMPLE LOG

PROJECT: Copper Harbor Range Light Station
Copper Harbor, Michigan

DATE SAMPLES COLLECTED: September 26-27, 2013

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

STRUCTURE	PAINT SAMPLE NO.	LOCATION & SUBSTRATE
Front Range Light	FRL-1	Exterior – metal wall surface near base
Front Range Light	FRL-2	Exterior – metal framework at light
Barn	B-4	Exterior – wood water table trim
Barn	B-5	Exterior – wood drip cap above water table
Barn	B-6	Exterior – wood siding / vertical battens
Barn	B-7	Exterior – wood siding / vertical boards
Barn	B-8	Exterior – wood siding w/out brown paint
Barn	B-9	Exterior – wood window sill
Barn	B-10	Exterior – wood shingles at second floor
Barn	B-11	Interior – wood quarter round trim at stair
Rear Range Light	RRL-12	Exterior – horizontal wood siding w/ brown paint
Rear Range Light	RRL-13	Exterior – wood window trim
Rear Range Light	RRL-14	Exterior – cement parge coat over brick
Rear Range Light	RRL-15	Exterior – horizontal wood siding at second floor with white paint

STRUCTURE	PAINT SAMPLE NO.	LOCATION & SUBSTRATE
Rear Range Light	RRL-16	Exterior – wood corner board trim
Rear Range Light	RRL-17	Exterior – horizontal wood siding w/ brown paint
Rear Range Light	RRL-18	Exterior – wood window trim
Rear Range Light	RRL-19	Exterior – north porch, wood trim at base
Rear Range Light	RRL-20	Exterior – north porch, solid wood panel at wall
Rear Range Light	RRL-21	Exterior – north porch, wood column
Rear Range Light	RRL-22	Exterior – north porch, wood trim at lower wall
Rear Range Light	RRL-23	Exterior – north porch, vertical wood siding
Rear Range Light	RRL-24	Interior, kitchen – wood trim at window sill
Rear Range Light	RRL-25	Interior, kitchen – wood window trim
Rear Range Light	RRL-26	Interior, kitchen – wood door frame
Rear Range Light	RRL-27	Interior, bedroom – interior face of double hung wood window sash
Rear Range Light	RRL-28	Interior, front stair hall – wood door leading to basement
Rear Range Light	RRL-29	Interior, front stair hall – wood trim
Rear Range Light	RRL-30	Interior, front stair hall – wood stair tread
Rear Range Light	RRL-31	Interior, south basement stair hall – wood base
Rear Range Light	RRL-32	Interior, front stair hall – ceiling plaster
Rear Range Light	RRL-33	Interior, front stair hall – wood door to north porch
Rear Range Light	RRL-34	Interior, living room – wood base
Rear Range Light	RRL-35	Interior, 2nd floor – plaster on brick chimney

STRUCTURE	PAINT SAMPLE NO.	LOCATION & SUBSTRATE
Rear Range Light	RRL-36	Interior, 3rd floor, lantern room stair – wall plaster
Rear Range Light	RRL-37	Interior, 3rd floor, lantern room – wood door trim
Rear Range Light	RRL-38	Interior, 3rd floor, lantern room – wood window sill
Rear Range Light	RRL-39	Interior, 3rd floor, lantern room – wood floor
Rear Range Light	RRL-40	Interior, 3rd floor, lantern room – wood wall paneling
Rear Range Light	RRL-41	Interior, 3rd floor, lantern room – wood window frame
Rear Range Light	RRL-42	Interior, 3rd floor, lantern room – interior face of wood window sash
Rear Range Light	RRL-43	Exterior, 3rd floor, lantern room – exterior face of wood window sash
Rear Range Light	RRL-44	Exterior, horizontal wood siding at 3rd floor lantern room
Rear Range Light	RRL-45	Exterior, wood soffit trim at 3rd floor lantern room
Rear Range Light	RRL-46	Interior, south basement stair hall – ceiling plaster

End

1/14/13

COOPER HARBOR

REAR RANGE LIGHT

EXTERIOR

RRL-12	W's + DK Brown (No substrate + paint deteriorated)
RRL-13	DK Green + W, + DK Green + Yel's + W's. "
RRL-14	W + MRB + Yels
RRL-15	8/10 W's + Yels + W's (No substrate + paint deteriorated)
RRL-16	W + DK Green + W + DK Green + W + DK Green + 6 DK Browns
RRL-17	W's + DK Browns
RRL-18	W's + DK Green + W + DK Green + Brown + Yel + Brown + Yel. + W.
RRL-19	Same as RRL-17
RRL-20	Same as RRL-15
RRL-21	W's + 2 DK Greens + 3/4 DK Browns
RRL-22	Same as RRL-21
RRL-23	Ocher "P" + 8/10 W's + 4 DK Browns
RRL-43	5/9 W's + Yel's + YW
RRL-44	W's + Yel's + W's. (deteriorated w/ NO substrate)
RRL-45	Several W's + 2 Grays + W's + DK Greens + DK Browns
RRL-41	Listed @ Interior / Labeled as Exterior: 2 Yel's, + 1 white. - not old. - no substrate.

Interior

RRL-24	5/8 W's + Gray, Yel, Pink + W's. (No substrate)
RRL-25	Yel, Pink, W's (not old)
RRL-26	8/10 W's
RRL-27	3/5 W's + YW, Lt Greens, Tan + W + Tan.
RRL-28	10/11 W's + YW + Gray
RRL-29	6/8 W's + YW + Lt Brown
RRL-30	3/5 W's + Lt Brown
RRL-31	W + Blue Green + Gray + W's + Grays
RRL-32	5/7 W's + Yel.
RRL-33	1 layer new W paint on new plaster
RRL-34	YW, 2/3 W's, Lt Brown (not old)
RRL-35	2 W's (new) on new plaster
RRL-36	1/2 W's + YW's + Greens + Yel's + W's (Poor evidence of 1st sev. layers)
RRL-37	4/5 W's
RRL-38	W's (Poor evidence)
RRL-39	Disrupted layering - maybe 8/10 layers grays - impossible to determine which is oldest.
RRL-40	20+ W's
RRL-42	5/8 W's
RRL-46	Lt Green, + Tan + Gray + YW, Pink, Green, W. (not old)

1/14/13

COOPER HARBOR

FRONT RANGE LIGHT

EXTERIOR

FRL-1 Orange Red "P" + 3/5 MRB's + 4 Reds

FRL-2 Traces of Orange Red "P" + MRB + MRB's + Reds + Blue + Orange + Reds. (Poor Evidence)

BARN

EXTERIOR

B-4 Weathered wood; no old paints, just ½ new Brown

B-5 Same as B-4

B-6 Several deteriorated Dk Browns + Several new Dk Browns (terr. blz evidence)

B-7 Paint evidence too deteriorated to accurately evaluate - Several old + new Dk Browns

B-8 Ocher + Brownish Ocher

B-9 Window Sills should be avoided - always - no old paints.

B-10 Traces of Ocher + Brownish Ocher (or Pink?) + Ycl + W.

INTERIOR

B-11 Clearcoat - shellac or varnish + Gray

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

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E-mail: fswelsh@welshcolor.com
Website: www.welshcolor.com

March 3, 2014

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

Re: Copper Harbor, Rear Range Lighthouse

Dear Ken:

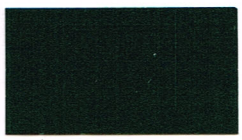
We received 35 paint samples from your firm from the Copper Harbor Rear Range Lighthouse constructed in 1866. The samples are from both the exterior and interior. We conducted a stereomicroscopical analysis of each sample to determine the layer structure and the color of the ca. 1900 – 1910 finish coats, which is the period of historic significance.

Our analyses and color evaluation disclose that most of the samples exhibit good-to-average paint layer evidence. Following our preliminary inspection of your samples in the lab, the notes for which we sent to you earlier, we selected the best ones to evaluate for colors of the finish coats that we felt probably represent the ca. 1900 – 1910 period. We matched these colors to the Munsell color system.

On the exterior, in general, the samples from the body of the structure, RRL-12, 15, 17, 19, 20, 21, 22, 23, 43, 44, & possibly 45, exhibit numerous white finish paints. Those from the early 1900's are close to Munsell color 5 Y 9/0.5. The samples that appear to represent the trim of the structure, RRL- 13, 16, & 18, have multiple dark greens. The dark greens from the early 20th century are all very close to Munsell 5 G 2/4.

On the interior, all of the trim samples exhibit multiple layers of white paint. Those from the turn of the century are close to Munsell 5 Y 9/.05. One wall sample, RRL-36, exhibits a number or yellowish whites and pale yellows that appear to be turn-of-the-century. The best candidate for color evaluation is one whose color is close to 2.5 Y 9/2. One ceiling sample, RRL-32, shows multiple whites that are all close to 5 Y 9/.05. The floor sample, RRL-39, shows multiple grays that are all very close to 5 B 5/1. Samples of these colors are attached in the tables below.

No other color evidence for the period of historical significance existed on the submitted samples.

Feature: Exterior	Color: Dark Green Finish Type: Oil Reflectance: Gloss	Color sample:  The Munsell Color notation is: 5 G 2/4

Feature: Exterior & Interior	Color: White Finish Type: Oil Reflectance: Gloss and Semi-Gloss	Color sample:  The Munsell Color notation is: 5 Y 9/0.5

Feature: Interior	Color: Pale Yellow Finish Type: Oil Reflectance: Semi-Gloss	Color sample:  The Munsell Color notation is: 2.5 Y 9/2

Feature: Interior	Color: Gray Finish Type: Oil Reflectance: Semi-Gloss	Color sample:  The Munsell Color notation is: 5 B 5/1

On our website, http://welshcolor.com/matching.html, we provide additional information on color matching new paint. If you have any follow-up questions or need additional color samples, please call me.

Sincerely,

Frank S. Welsh

Frank S. Welsh

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

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Website: www.welshcolor.com

March 3, 2014

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

Re: Copper Harbor, Front Range Lighthouse

Dear Ken:

We received two paint samples from your firm from the Copper Harbor, Front Range Lighthouse constructed in the 1920's. The samples are from the exterior. We conducted a stereomicroscopical analysis of both samples to determine the layer structure and the original color of the first finish coat, which is the period of historic significance.

Our analyses and color evaluation disclose that the samples exhibit average paint layer evidence. Following our preliminary inspection of these samples in the lab, the notes for which we sent to you earlier, we selected the best one to evaluate for color of the original finish coat. We matched the original color to the Munsell color system.

On the exterior, the original color on sample FRL-1 (metal wall), is a moderate reddish brown, 10 R 3/4. A sample of this color is attached in the table below.

No other original color evidence existed on the submitted samples.

Feature: Exterior	Color: Moderate Reddish Brown Finish Type: Oil Reflectance: Gloss	Color sample:  The Munsell Color notation is: 10 R 3/4

On our website, http://welshcolor.com/matching.html, we provide additional information on color matching new paint. If you have any follow-up questions or need additional color samples, please call me.

Sincerely,



Frank S. Welsh

PAINT SAMPLE LOG - BARN

PROJECT: Copper Harbor Range Light Station
Copper Harbor, Michigan

DATE SAMPLES COLLECTED: January 28, 2015

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

Supplemental / additional Paint Samples collected from the Barn due to the first samples being inconclusive.

STRUCTURE	PAINT SAMPLE NO.	LOCATION & SUBSTRATE
Barn	B-12	Exterior – wood wall shingle – north wall
Barn	B-13	Exterior – wood soffit – west wall
Barn	B-14	Exterior – wood quarter round / fascia – west wall
Barn	B-15	Exterior – wood trim below shingles – north wall
Barn	B-16	Exterior – vertical wood siding – south wall
Barn	B-17	Exterior – wood wall shingle – east wall
Barn	B-18	Exterior – wood quarter round / fascia – east wall
Barn	B-19	Exterior – wood window jamb – south wall
Barn	B-20	Exterior – wood soffit – south wall
Barn	B-21	Exterior – wood wall shingle – south wall
Barn	B-22	Exterior – vertical wood siding batten – south Wall
Barn	B-23	Exterior – wood trim below shingles – west wall

End

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

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Website: www.welshcolor.com

February 9, 2015

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

Re: Copper Harbor Range Light Station
Barn

Dear Ken:

We received twelve paint samples from your firm from the Barn at the Copper Harbor Range Light Station, constructed in 1910's in Copper Harbor, Michigan. The samples are from the exterior and are from all representative features of the structure. We conducted a stereomicroscopical analysis of each sample to determine the layer structure and the original color of the first finish coat.



Our analyses and color evaluation disclose that all but one of the samples exhibit good paint layer evidence. There are between eight and nine layers of paint on the samples. All exhibit the same first four layers. The first two are the original prime and finish coats. They are a Moderate Orange Yellow, oil-based, semi-gloss paint. Hence we can conclude that the Barn was originally painted in a monochrome scheme originally.

We matched the original color to 8 YR 7/5 in the Munsell color system. However, because the original paint color is in between two standard colors in the Munsell system, we looked for a closer match in a proprietary paint company fan deck and found one that is a very good match in the Benjamin Moore paint color system: #2165-40. A sample of this B. Moore color is attached below. Each sample that you sent to us and their respective paint layer structures are described in the attached Laboratory Data Sheets.

Feature: Exterior wood	Color: Moderate Orange Yellow Finish Type: Oil Reflectance: Semi-gloss	Color sample:  B. Moore Color is: #2165-40

If you have any follow-up questions please let me know.

Sincerely,

Frank S. Welsh

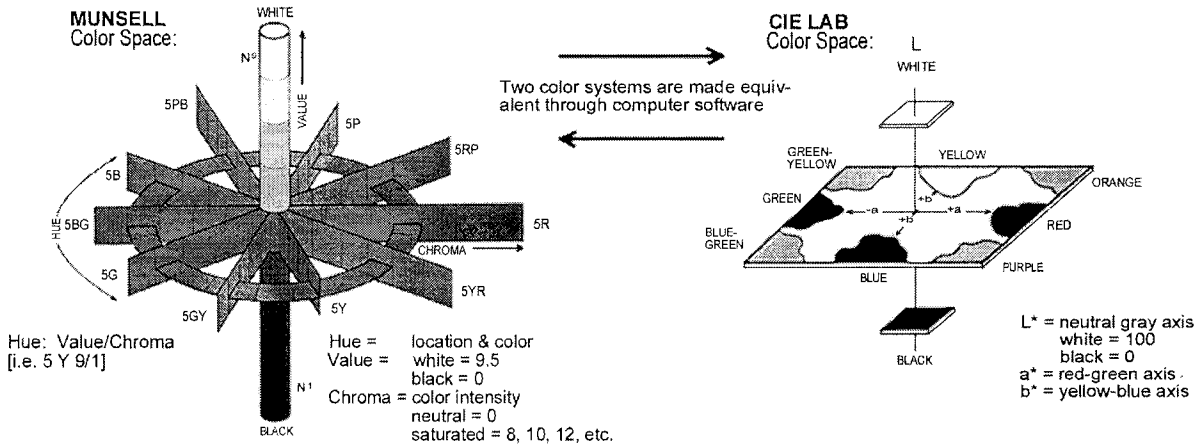
Frank S. Welsh

LABORATORY DATA

PROJECT	DATE OF ANALYSIS
BARN @ COPPER HARBOR RANGE LIGHT STATION	2/6/2015
SPACES	**ANALYST**
EXTERIOR	E.S.W.

EQUIPMENT AND METHODOLOGY

- Equipment
  - Bausch & Lomb stereomicroscope (10 - 105x)
  - Nikon SKE polarized light microscope
  - Schott halogen fiber-optic illuminator (3200K)
- Evaluation of samples for original color
  - Architectural paints discolor as they age
  - Attempts made to find cleanest & brightest evidence
- Color assessment and matching:
  - Visual matching in tungsten light 3200K
  - Colors named according to traditional usage
  - Mathematical color system: CIE LAB (L* a* b*)
  - Visual color system: Munsell
  - Portable spectrophotometer (0 - 45° geometry)
  - General illumination: Tungsten (2400K)
  - PC for spectrophotometric & CIE to Munsell software
  - Requisite samples bleached with U.V. radiation to attempt reversal (20% - 50%) of yellowing of oil binder



DESCRIPTION OF PRESENTATION OF LABORATORY DATA FROM THE ANALYSIS

- The following pages contain all of the requisite information found on each sample gathered during the laboratory analysis of the historically significant coatings.
- The information on these pages is the data from which the conclusions have been drawn that are presented in the summary of finishes.
- The key to abbreviations used in the data sheets is found on the following page.
- Illustrations diagramming the locations from which the samples were taken are included in the Field Note - Sample Location sheets.

KEY TO THE ABBREVIATIONS USED IN THE LABORATORY DATA SHEETS

For Layer/Coat:

- P = prime or sealer coating
- I = intermediate or second prime
- Gr = ground or base coating for marbling or graining
- F = finish for final coating

For Color Name:

- W = white
- YW = yellowish white
- YG = yellowish gray
- GY = grayish yellow
- BL = blue
- GRN = green
- BRN = brown
- MRB = moderate reddish brown
- MOY = moderate orange yellow
- POY = pale orange yellow
- LT = light
- MED = medium
- VRY = very
- PL = pale
- GRY = gray or grayish
- BLK = black

For Munsell Value:

- This is the color reference value in the Munsell Color System.

For Type of coating:

- O = oil
- D = distemper or calcimine
- Wsh = whitewash
- Vrn = varnish
- Stn = stain
- Pb = lead content

For Gloss:

- Fl = flat finish
- L = low gloss
- S = semi-gloss
- G = gloss
- H = high-gloss

For Age:

- orig = original
- er = early
- md = middle
- lt = late
- c = century

LABORATORY DATA SHEETS

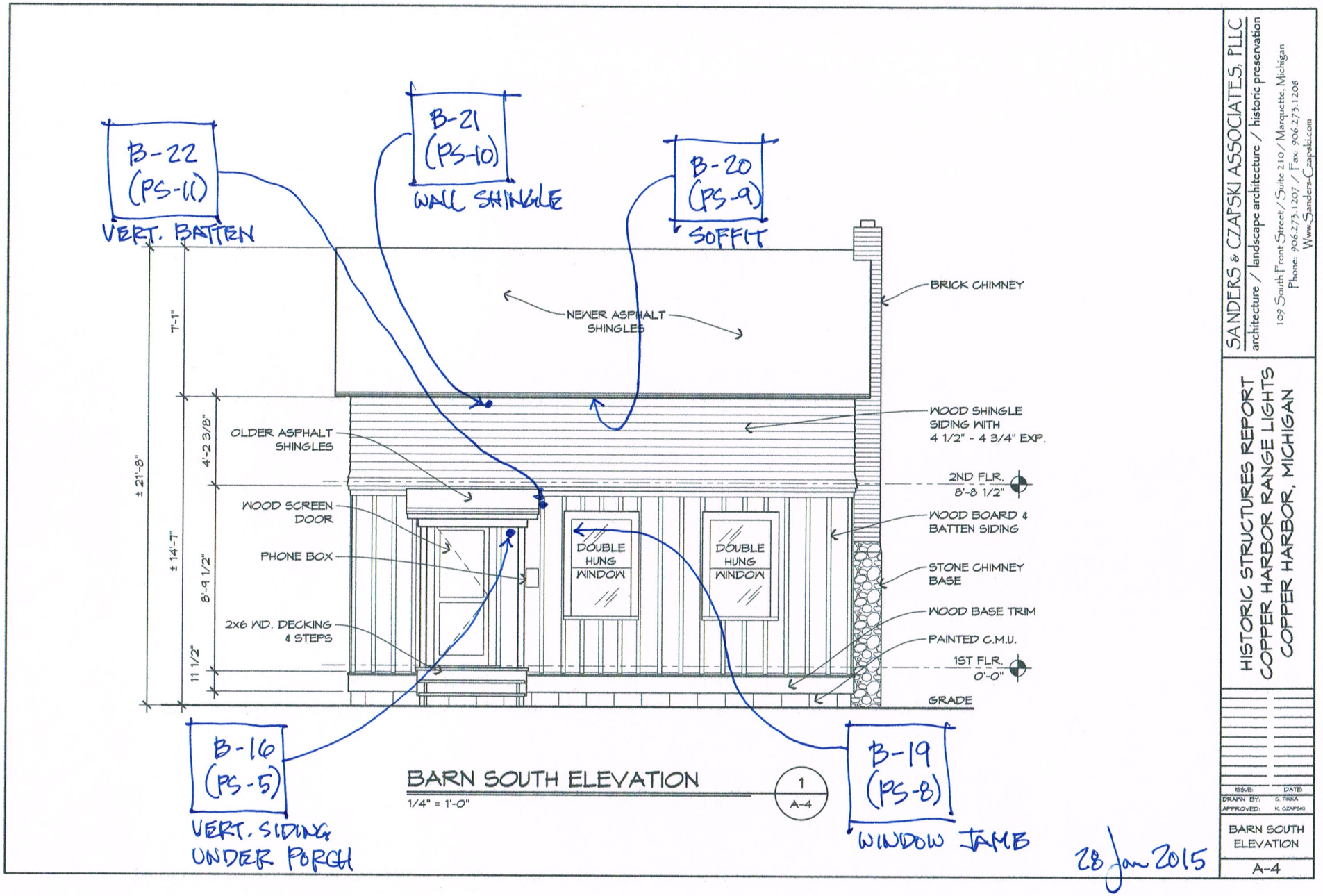
BARN

Sample Number	Location/ Description	Layers and Comments
B-12	Wall shingle North elev.	1P Mod Orng Yel Orig 2F Mod Orng Yel * " 3F Pale Yellsh Pink er 20th c 4F Lt Yellsh Brown er 20th c - dirt + paint removal disturbance 5-8 F's Med Lt Yellows 20th c * 2F = 8YR 7/5 or B. Moore # 2165-40
B-13	Soffit @ West elev.	Poor evidence, but same as B-12
B-14	Soffit's 1/4 round Mold @ West elev.	Same as B-12
B-15	Horizontal Trim Mold @ top of battens @ North Elev (sample taken from under side of molding.)	1P 2F 3F 4F } Same as 1-4 in B-12 - Disturbance from paint removal 5-8 F's Dark Browns 20th c
B-16	Vertical wood siding @ South elev.	Same as B-15
B-17	Wood shingle @ East elev.	No old paints - only 4 recent yellows.
B-18	Soffit's 1/4 round mold @ East elev.	Poor evidence because of weathering, but same as B-12
B-19	Window trim @ South wall	Very weathered/poor evidence. Appears to have same orig mod orange yellow as all other samples - SD - - - 1-4 F's Same as B-12 5-8 F's Yellows 20th c 9F White "

LABORATORY DATA SHEETS

BARN

Sample Number	Location/ Description	Layers and Comments	Sample Number	Location/ Description	Layers and Comments
B-20	Soffit @ South elev.	Same as B-19			
B-21	Wall shingle @ South elev.	Same as B-12			
B-22	Batten @ South elev.	Poor evidence but same as B-15.			
B-23	Horizontal trim mold @ top of battens @ S.W. Corner	Same as B-15			



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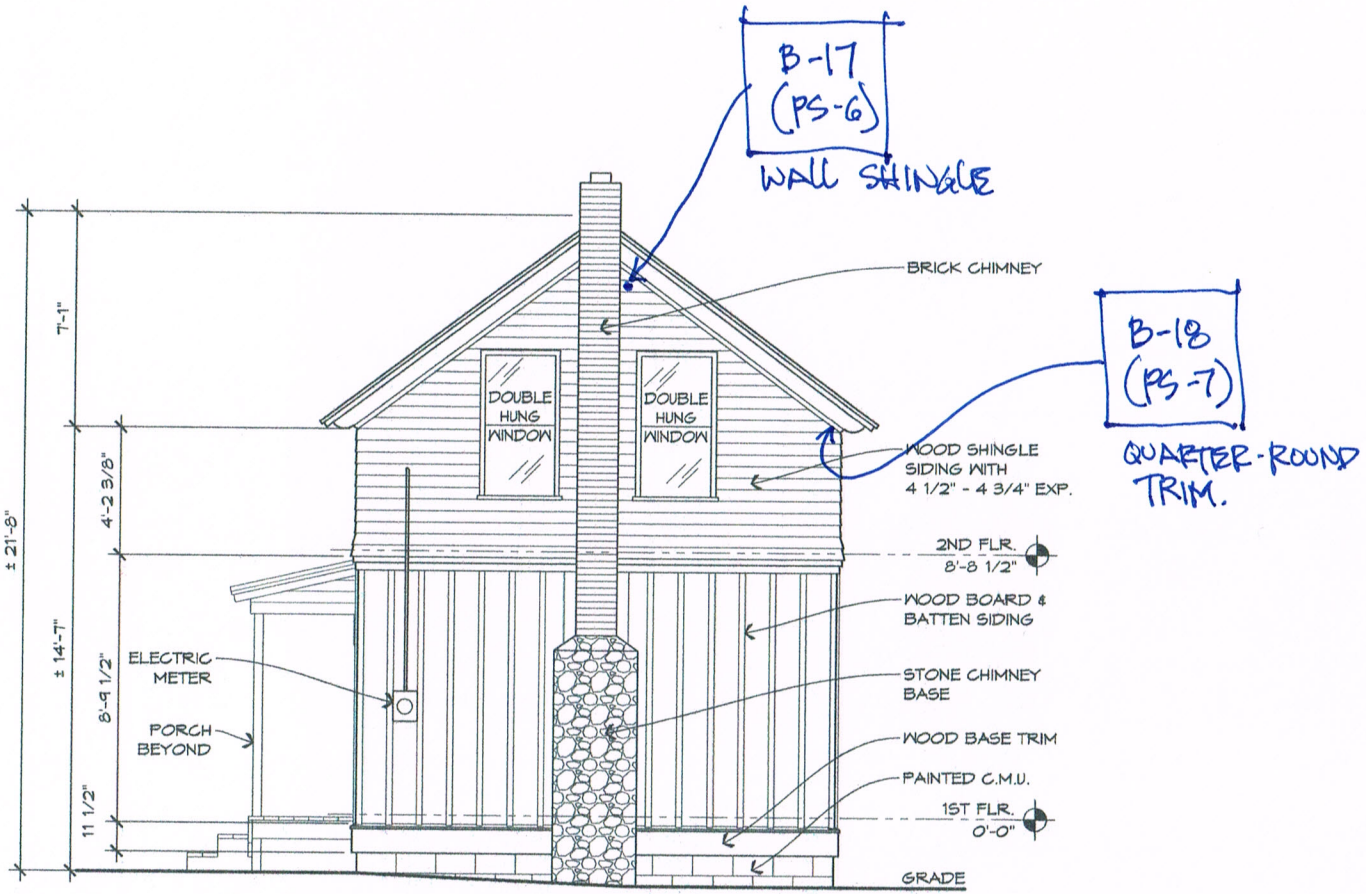
HISTORIC STRUCTURES REPORT
COPPER HARBOR RANGE LIGHTS
COPPER HARBOR, MICHIGAN

ISSUE:	DATE:
DRAWN BY:	S. TIKKA
APPROVED:	K. CZAPSKI

BARN SOUTH ELEVATION

A-4



BARN EAST ELEVATION

1/4" = 1'-0"

1 / A-5

28 Jan 2015

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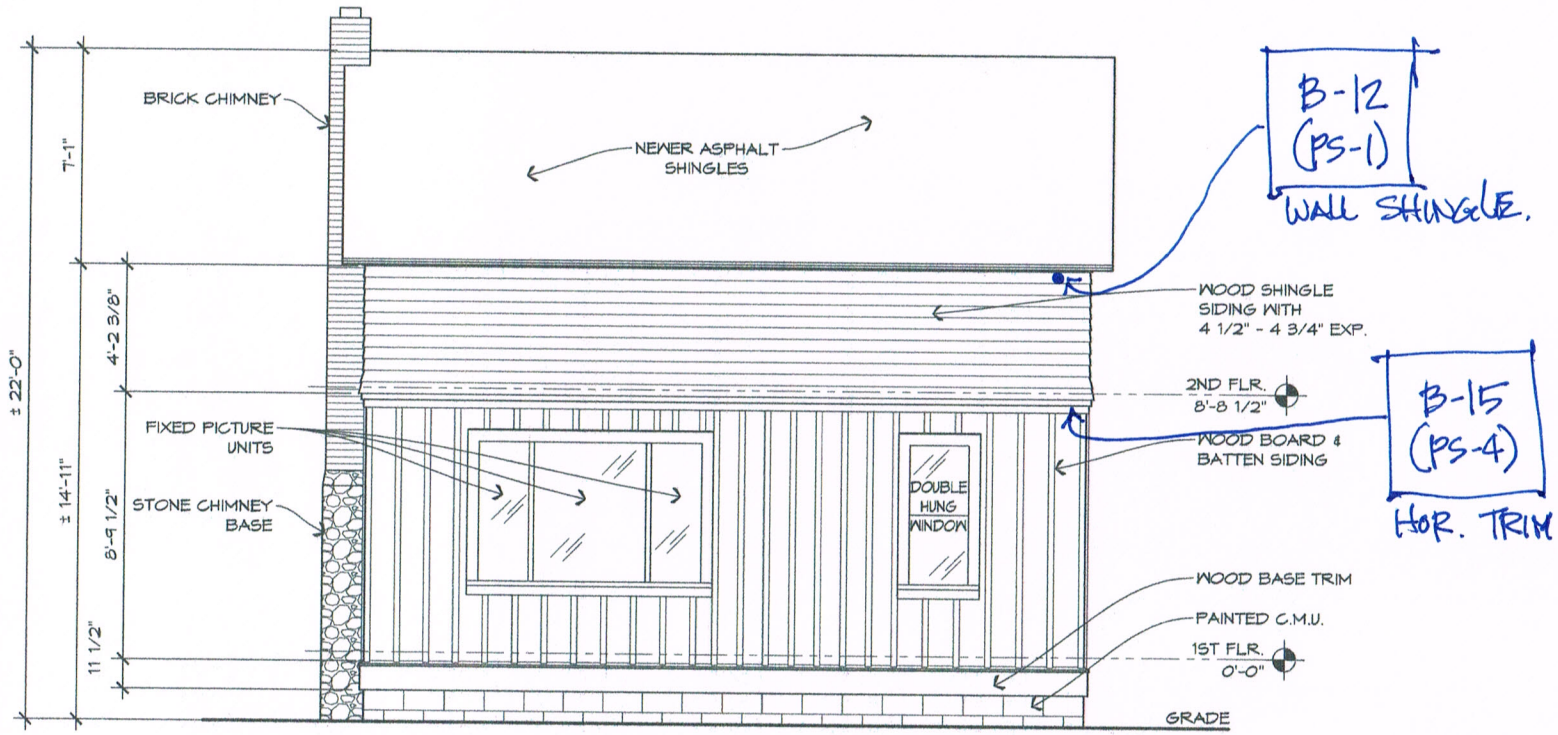
HISTORIC STRUCTURES REPORT
COPPER HARBOR RANGE LIGHTS
COPPER HARBOR, MICHIGAN

ISSUE: DATE:
DRAWN BY: C. TIKKA
APPROVED: K. CZAPSKI

BARN EAST ELEVATION

A-5



BARN NORTH ELEVATION

1/4" = 1'-0"

1
A-6

20 Jan 2015

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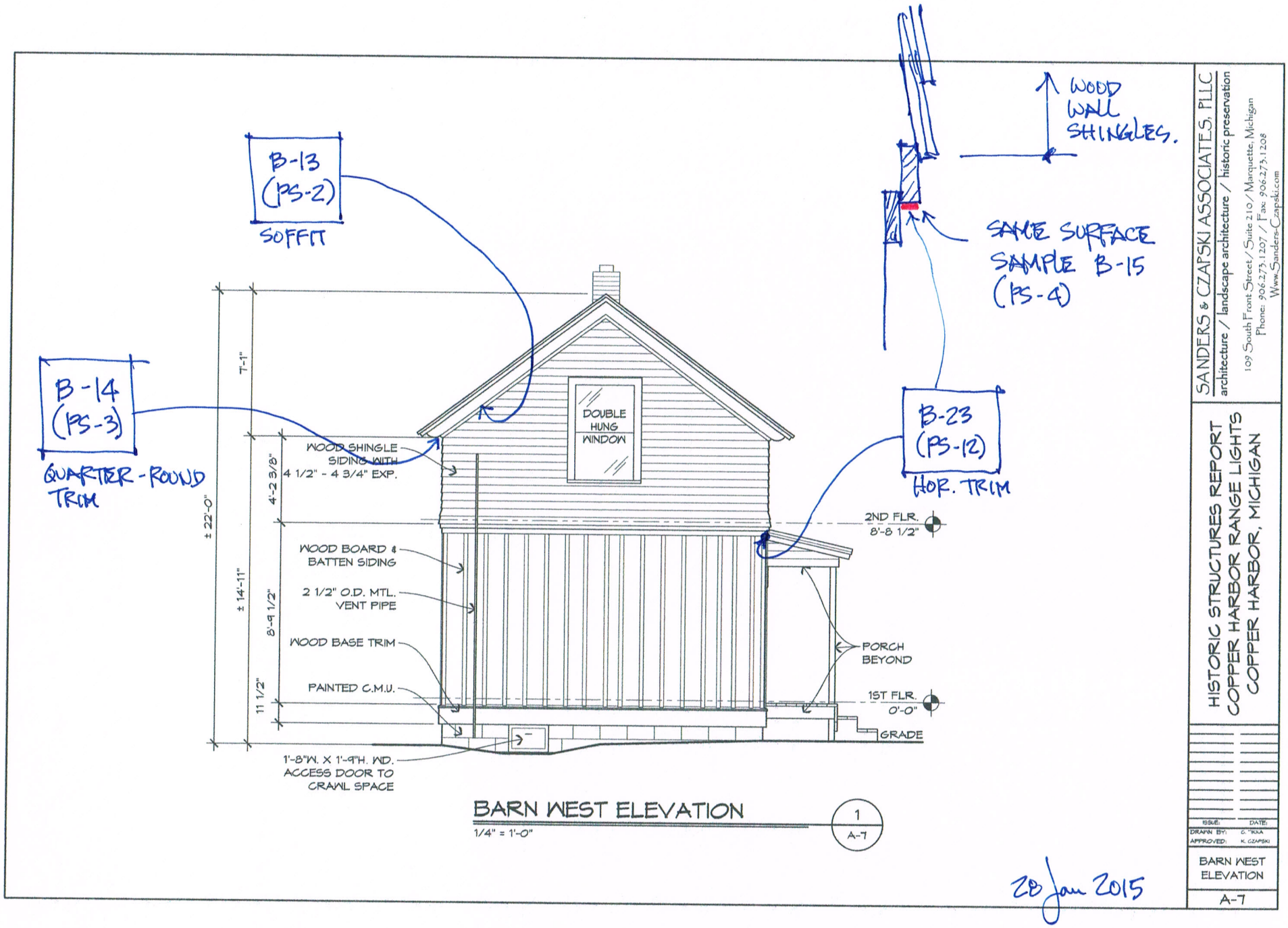
HISTORIC STRUCTURES REPORT
COPPER HARBOR RANGE LIGHTS
COPPER HARBOR, MICHIGAN

ISSUE:	DATE:
DRAWN BY:	C. TRIA
APPROVED:	K. CZAPSKI

BARN NORTH ELEVATION

A-6



BARN WEST ELEVATION

1/4" = 1'-0"

1
A-7

20 Jan 2015

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HISTORIC STRUCTURES REPORT
COPPER HARBOR RANGE LIGHTS
COPPER HARBOR, MICHIGAN

ISSUE: DATE:
DRAWN BY: C. KKA
APPROVED: K. CZAPSKI

BARN WEST ELEVATION

A-7

PAINT SCHEDULE

This "Paint Schedule" is reprinted from the 1902 U.S. Lighthouse Board "Instructions and Directions to Lighthouse and Light Vessel Keepers of the United States." It is included in this report for general reference only.

Outside Colors:

Dark Red	for wooden structures
Brown or White	for wooden structures
Red or Lead color	for trimmings of structure
Black	for lanterns and gallery railings
Brown	for iron structures and to replace black on the outside of all structures
Red, Green or Brown	for outside shutters
Red	in exceptional cases, to mark the starboard side in entering channels
Whitewash	on stone and brick work where a change in the natural color is authorized and on rough board work

Inside Colors:

White	for the interior of lanterns, and generally for all interior woodwork except hardwood
Green	for pedestals and work tables
Lead color	for floors, staircases, and walls when authorized to be painted. Hard-pine floors and hard woods generally are not to be painted, but shall be kept well oiled or scrubbed.
Black	for iron staircases and railings, and for interior iron work in general, except pedestals and service tables.
Black or white	underside of tower stairways
Whitewash	for walls, cellars, and outhouses, and rough-board work when painting has not been authorized.
Light sea green drab or cream colored transparent oil paint:	for plastered walls [adopted May 3, 1909]

APPENDIX F

THE SECRETARY OF THE INTERIOR 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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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**.

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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.

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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.

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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.
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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.

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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.
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APPENDIX G

REFERENCES

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

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