45-10-401

Rad. Sur. Gen.

COMPLETE

B-137

File

Date 10/26/45

Subject Spread of Air Borne Contamination

Those Eligible To Read The Attached

By Koval

Copy # 3 Lemmett

To

Before reading this document, sign and date below:

Name	Date	Name	Date
M.C. Lemmett	11-5		

CLASSIFICATION CANCELLED
DATE FEB 4 1959
Edgar J. Murphy
CO-ORDINATING ORGANIZATION DIRECTOR
OAK RIDGE NATIONAL LABORATORY
AUTHORITY DELEGATED BY AEC 9-10-57

This document has been approved for release to the public by:

Technical Information Officer Date
ORNL Site

This document has been approved for release to the public by:

David R Hamrin 4/21/95
Technical Information Officer Date
ORNL Site

10/26/45

Spread of Air Borne Contamination

Site X requested that the areas surrounding Units 3 and 4 be surveyed in order to determine the spread of air borne contamination. These surveys were made on Oct. 18 and 19 with results as shown in the following tables. For security reasons it was not possible to check spots at greater distances from the buildings at both Units 3 and 4. MCL

Unit III

Measurements of surface contamination were made with a Metallurgical Laboratories Velly Poppy calibrated at the same P.H.S. setting as that used when the readings were taken. Air samples were taken on the north side of the building (due to a southwesterly wind on that day) with a Filter Queen. Care was taken not to contaminate the filter paper in handling. Samples were taken for 30 minutes at a flow rate of 6 CFM. The stacks from the hoods are about 60 feet above the ground and are located at various points along the northern half of the building. Air from hoods and rooms of this unit is not cleaned before being exhausted from the stacks. Spots at which readings were taken are designated by numbers (corresponding to the number of the reading) marked on the attached blue print of Unit 3. The red numbers refer to air sample locations.

In most of the spots it was impossible to determine whether the contamination was deposited from the air or was rubbed off contaminated shoes. The most reliable readings are those obtained on the roofs of the two warehouses.

All surveys were made by G. Koval and R. Snell.

Surface Contamination

(1) 14 d/m/cm^2

(2) 13 d/m/cm^2

(3) 6 d/m/cm^2

(4) 2 d/m/cm^2 (on grass in school yard)

[redacted]

(5) On roof of warehouse

N

121	86	32
	184	
135	121	43

S

all readings are in d/m/cm^2

(6) On roof of old warehouse

N

36.5		73
43	79	121
56	121	173

S

all readings are in d/m/cm^2

(7) Zero

(8) 82 d/m/cm^2

(9) 6 d/m/cm^2

(10) 8 d/m/cm^2

(11) 7 d/m/cm^2

(12) 7.3 d/m/cm^2

(13) 9.5 d/m/cm^2

(14) 1.3 d/m/cm^2

(15) 35 d/m/cm^2

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Air Samples

Location	Time of Start	Time of 1st Count	C/m	Time of 2nd Count	C/m	d/m/meter^3 10/20	10/22
(1)	8:00	2:00-10/20	58	9:00-10/22	31	35	18
(2)	9:15	1:40-10/20	40	8:40-10/22	60	24	35
(3)	9:50	1:45-10/20	52	8:50-10/22	45	35	30
(4)	10:25	1:50-10/20	49	8:55-10/22	44	30	26

These values were calculated as follows:

$$d/m/m^3 = \left(\frac{1}{\text{Geom. Factor}}\right) \times \left(\frac{1}{\text{Self Absorption}}\right) \times \frac{1.2/m^3}{\text{C.F.}} \times C/m$$

Unit IV

Surface contamination surveys were made by J. Bradley using a metallurgical Laboratories Valley-Peggy calibrated in the same manner as the one at Unit 3. Air samples were taken and counted by J. Slayden. A brief description of each location is given in addition to marked spots on a blue print of the area. Unless otherwise stated, the procedures are the same as those described for Unit 3. There are neutrons at Unit 4.

Seventy-five percent of the air from the laboratories is passed through a precipitron and recirculated through the rooms again. The remaining twenty-five percent is exhausted through the north side of the building just below roof level.

Contamination at locations designated by numbers 7, 8, 15, 16, 17, 18, and 19 is probably due to air borne contamination. All other locations may have been contaminated by personnel traffic over these areas.

Surface Contamination

(1) Front lawn ranged from zero to 17 d/m/cm^2

(2) Lawn at foot of lounge steps 31 d/m/cm^2

(3) Remainder of west lawn zero to 7 "

(4) Wall at S. W. corner of building 4 "

(5) South courtyard near fence 6 "

(6) Wall near receiving gate 4 "

(7) Top of receiving gate post 0 "

(8) 20 feet outside of west fence 0 "

(9) N. of bldg. outside of fence zero to 4 d/m/cm^2

(10) Road on N. side of building 4 d/m/cm^2

(11) Directly outside greenhouse with storage tanks 46 d/m/cm^2

(12) 5 feet west of number (11) 14 d/m/cm^2

(13) N. balcony-east of entrance-average 28 d/m/cm^2

(14) Ditto-maximum reading 42 "

(15) Just off balcony on ground 32 [redacted]

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(16) 15 feet north of balcony 17 d/m/cm^2

(17) 30 feet north of balcony 11 "

(18) 50 feet north of balcony 3 "

(19) Top and side of north greenhouse zero to 2 d/m/cm^2

Air Samples

Note: Air samples were counted with a Dereschen electrometer giving results in terms of percent of tolerance. To obtain d/m/mt^3 multiply % tolerance value by 2400. All samples were held 24 hours before counting.

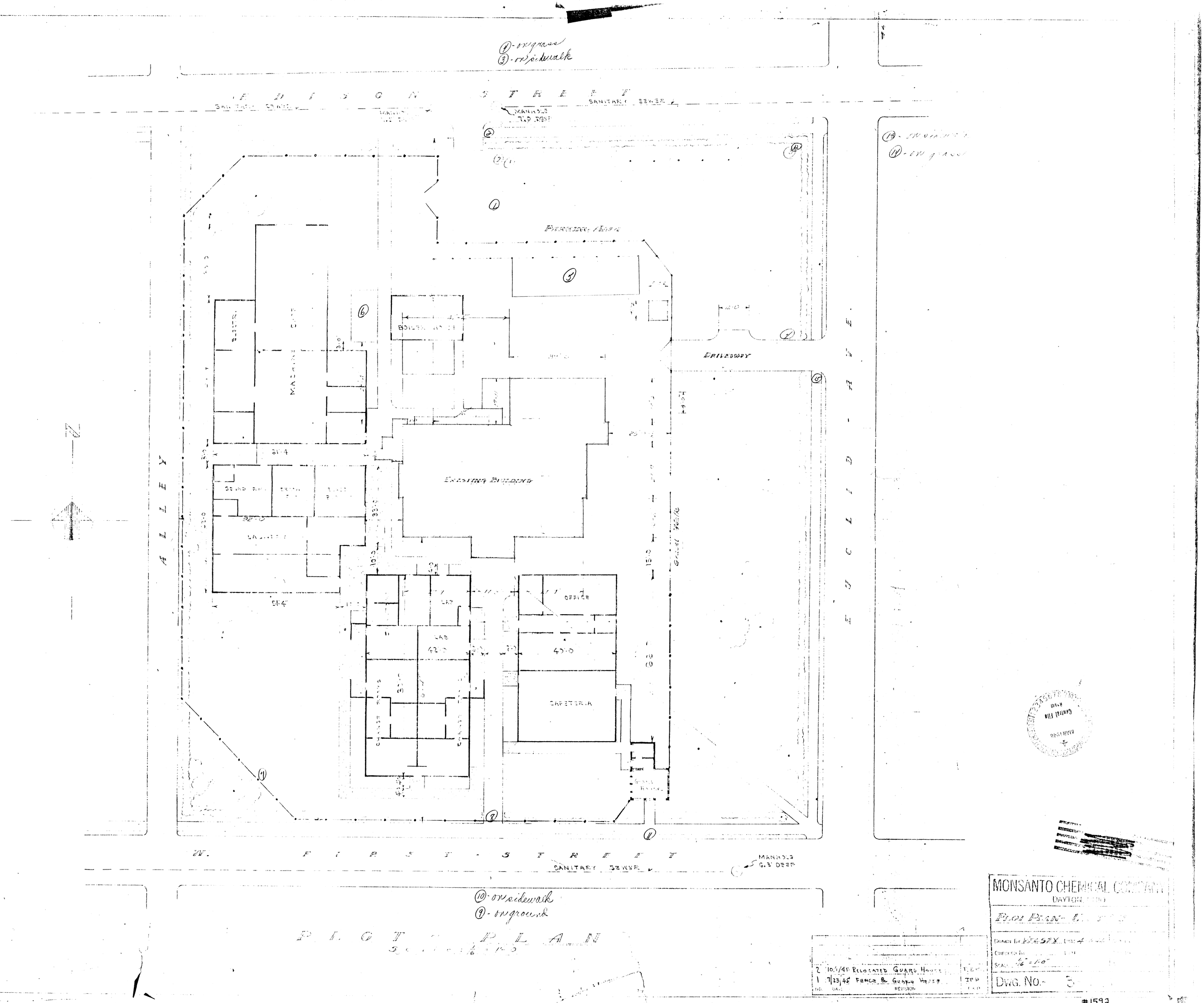
Location	% Tolerance
A. Loading dock (south side of building)	0.15
B. 25 feet from loading dock	0.10
C. 60 feet from loading dock	0.10
D. At receiving gate	0.05
E. West of building just outside lounge	0.23
F. Just inside fence west of lounge	0.03
G. On roof just outside long de-multiplier exhaust	1.38
H. On roof just outside acid dust exhaust	0.78
I. On front lawn 10 feet east of walk	0.26
J. Center of courtyard east of building	0.06
K. Near south guard station	0.04
L. At fence west of lounge	0.07

Distribution:
1 G. A. Tomas
2 K. E. Morgan
3 M. S. Leverett
4 W. G. Fernelius
5 J. E. Lum
6 Site Y
7 B. D. Wolf
8 Library
9 Central Files

J. E. Bradley

Geo. Koval

[redacted]



NO.	DATE	REVISION	
2	10/1/45	RELOCATED GUARD HOUSE	
1	7/23/45	FENCE & GUARD HOUSE	JFP

MONSANTO CHEMICAL COMPANY
DAYTON, OHIO

FLOOR PLAN

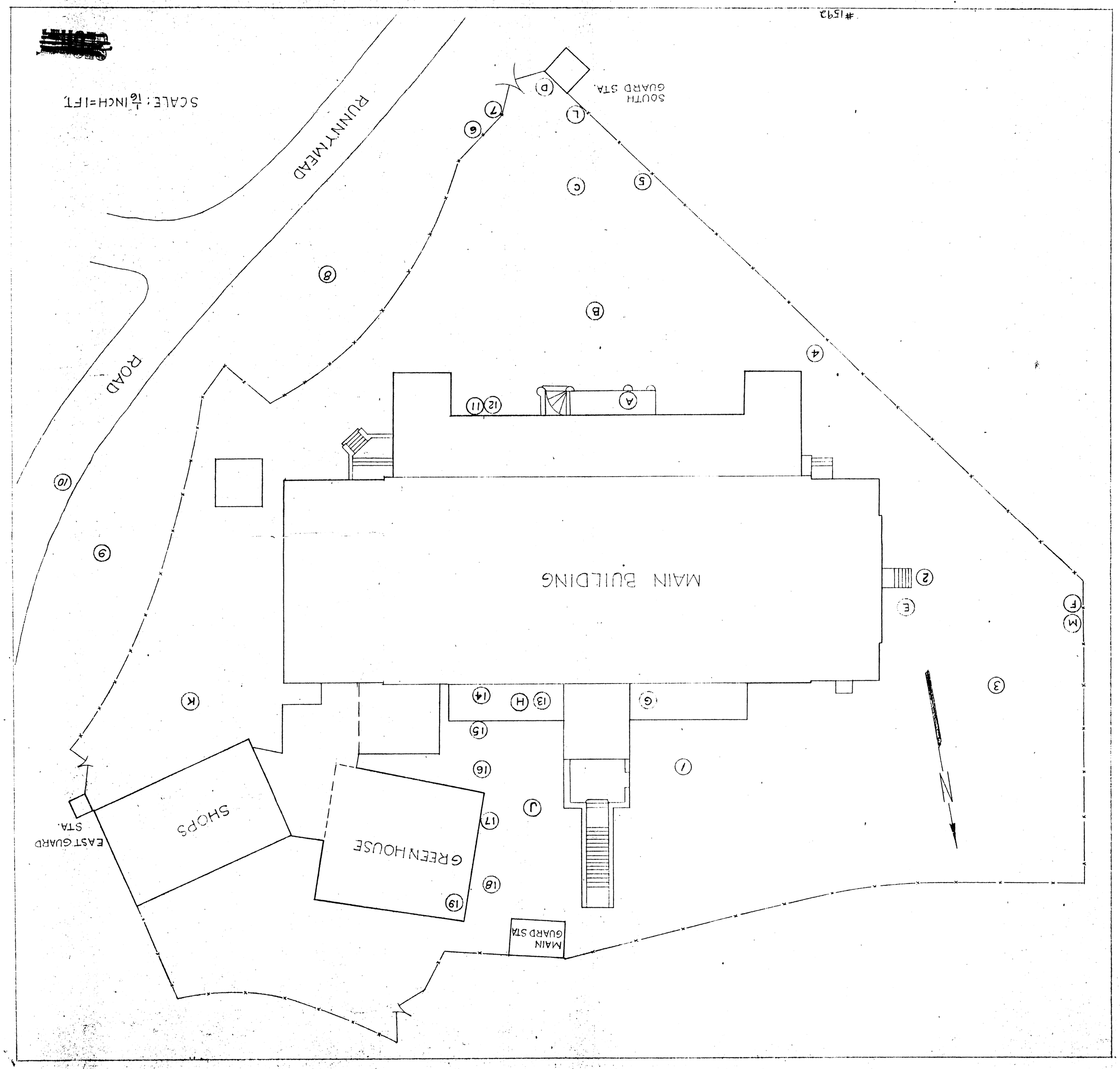
DRAWN BY KEASEX DATE 4

CHECKED BY

SCALE 1/16" = 1'-0"

DWG. NO.- 3

#1592


MAIN BUILDING
GREENHOUSE
SHOPS
MAIN GUARD STA
EAST GUARD STA.
SOUTH GUARD STA.
ROAD
RUNNYMEAD
SCALE: 1/16 INCH=1FT.
#1592