

90.20 - 241 - *Nippon Vehicle Mfg. Company*

Nippon Vehicle Mfg., 35° 07' N No Change.
Company 136° 55' E

Mosaic 217

(PIS-2 Target Folder Japan No. 7, 23 Nov. 1944)

SEE:- 21BC DA Rpt. #77.

SEE:- 21BC DA Rpt. #128 dated 12 July '45. Rpt. attached to
target 197-90.20.

AREA NO. 90:20	TARGET I. 241	LIMITED DAMAGE INTERPRETATION NO. <u>30</u>	CONFIDENTIAL	D/P
			SHEET NO.	OF

NIPPON VEHICLE COMPANY

STATUS AS OF: 23 July 1945
COVER USED: 3PR/5M 350, 3R:34
MOST RECENT PRIOR REPORT: PV/DA 48 to 5 July 1945

Since D/P 41 was issued, covering the status of the target to 9 June 1945, the weight of new damage is severe along the northern third of the plant. Buildings 40 to 46, inclusive, are almost wholly damaged with at least 50% of the damage structural. Several minor structures throughout the plant are damaged or destroyed. There are many instances in which interpretation cannot be made for lack of sufficient evidence.

This report is limited by lack of stereo cover and comparison is impossible. Its value is questionable. It is suggested that PV/DA 48 be accepted as the final status of the target until later evidence becomes available, which is unlikely.

LEE W. KILGORE
Major, Air Corps
Chief, Evaluation Section
Photographic Branch
Air Information Division, AC/AS-2

3

NIPPON VEHICLE MANUFACTURING CO.
90.20-241
Lat. 35° 07' N - Long. 136° 55' E
NAGOYA, JAPAN

1. DESCRIPTION OF TARGET

a. Nippon Vehicle Manufacturing Co. (Japan Rolling Stock Manufacturing Co., Ltd.), Nagoya was, before the war, the 2nd largest manufacturer of boilers, railroad cars and locomotives in Japan.

b. The plant is located between the east branch of the Hori River and the Tokkaido Mainline Railroad, immediately south of the Atsuta branch of the Nagoya Arsenal, approximately 3 miles northeast of Nagoya Harbor and 3 1/4 miles of the Nagoya Railroad Station.

c. The plant comprises 48 listed buildings and has a built-up area of approximately 814,000 square feet.

2. SUMMARY

a. The interpretation of building functions was ~~only~~ fair. Of a total of 48 buildings:

- (1) 18 ~~were~~ interpreted correctly
- (2) 9 ~~were~~ interpreted as having similar occupancy
- (3) 6 ~~were~~ unidentified
- (4) 15 ~~were~~ interpreted incorrectly

b. The structural analysis was good. The comparison, however, was made on only 21 buildings on which data (~~both reported and field~~) were available. The interpretation of the combustibility was very accurate: 16 out of a total of 17 combustible buildings were reported as such. Determination of structural materials was also accurate.

c. The limited damage assessment report checks very closely with field data. ~~From the following table a comparison can be made:~~
as shown in table

TABLE

	Actual Sq.Ft.	Reported Sq.Ft.
Total Building area	813,600	814,000
Structural Damage	54,600	55,700
Superficial Damage	232,700	213,200
Total Damage	286,700	268,900

3. SOURCE OF DATA

a. Reported:

- (1) AC/AS Intell. Building Construction Analysis - 17 April 1945
- (2) AC/AS Intell Limited Damage Report #41 - 10 July 1945

b. Field Data:

- (1) USSBS (G-2, PIC) field notes including Japanese Damage and production data.

4. FUNCTIONAL ANALYSIS

a. USE OF PLANT:

Reported: Railroad Car and Locomotive manufacture, possible tank manufacture.

Actual: Railroad Car and Locomotive manufacture and accessories.

b. BOUNDARIES:

Interpretation of plant boundaries was fairly accurate. Found to be associated with the plant, and not reported as such, were a group of 9 buildings (a foundry, 4 machine shops, an apprentice school, and several smaller buildings) which were located on the opposite side of the canal. There was no physical connection between the two groups of buildings.

c. BUILDING IDENTIFICATION: (See F/A Table)

d. SUMMARY OF TABULATION:

<u>POINT SCORE</u>		PRIMARY BUILDINGS		TOTAL BUILDINGS	
		No.	%	No.	%
		<u>Bldgs.</u>	<u>Corr.</u>	<u>Bldgs.</u>	<u>Corr.</u>
	Correct	6	67	18	37.5
	Of Similar Occupancy	2	22	9	18.7
Total Plant 64.6	Unidentified	0		6	12.5
Primary Buildings 83.5	Incorrect	1	11	15	31.3
	Totals	9	100	48	100

e. REMARKS:

The character of ~~the~~ ^{many} buildings in this plant was such that ~~the functions~~ ^{their use} of ~~many~~ could be readily changed without affecting their appearance, thereby making ~~the~~ ^{them} identification of ~~such buildings~~ by photographic interpretation alone rather difficult.

5. STRUCTURAL ANALYSIS

a. CHECK ON SCALE MEASUREMENT:

Building 8 was measured to determine scale check. Linear dimensions ~~in error by 3%~~ were 97% correct.

b. S/A (See S/A Table)

c. SUMMARY OF TABULATION:

(1) Construction Type:

Construction Type	No. Bldgs.	No. Corr.	% Corr.
Wood (W)	14	13	93
Steel Frame (S)	6	4	67
Reinforced Concrete (R/C)	1	0	0
Total	21	17	81

(2) Combustibility:

Building Combustibility	No. Bldgs.	No. Corr.	% Corr.
Combustible (C)	17	16	94
Non-Combustible (N)	3	3	100
Fire Resistant (R)	1	0	0
Total	21	19	91

6. DAMAGE ASSESSMENT

a. (See D/A Table)

b. SUMMARY OF TABULATION:

	ACTUAL		REPORTED	
	Sq.Ft.	%Dam.	Sq.Ft.	%Dam.
Total Building Area	813,600		813,600	
Damage				
Structural	54,600	18.9	55,700	20.7
Superficial	232,700	81	213,200	79.4
Total	286,700	35.2	268,900	33

c. REMARKS:

Three attacks were made on this plant: 8 January 194⁵, 17 May 194⁵, 26 June 194⁴. Only the first two, however, were considered in the JTG report. Therefore, damage data (from Jap sources) for the first two raids only was used in the above figure.

d. EFFECTS OF RAIDS ON PRODUCTION:

Chart — shows the Japanese figures for the effect of air attack on production. Using December 1944 production as 100%, the figure for the end of January 194⁵ ~~was~~ ^{was} 95%, and for the end of May, 70%.

W. G.

For book

①

NIPPON VEHICLE MANUFACTURING CO., LTD

90.20 - 241

LAT. $35^{\circ}07'N$; LONG. $136^{\circ}55'E$.

NAGOYA, JAPAN

A. DESCRIPTION OF TARGET :

1. Nippon Vehicle Manufacturing Co. (Japan Rolling Stock Manufacturing Co., Ltd.) Nagoya was before the war, the 2nd largest manufacturer of boilers, railroad cars and locomotives in Japan.

2. The plant is located between the E. branch of the Hori River and the Tokkaido Mainline RR ^{spell out} and immediately S. of the Atsuta branch of the Nagoya Arsenal. The plant is approximately 3 miles NE. of Nagoya Harbor and $3\frac{1}{4}$ miles of the Nagoya ^{spell out} RR Station.

3. The plant comprises 48 listed buildings, B. SUMMARY: and has a built-up area of approximately 814,000 square feet.

B. SUMMARY

1. The interpretation of building functions was only fair. Of a total of 48 buildings:
 - a) 18 interpreted correctly.
 - b) 9 interpreted as having similar occupancy
 - c) 6 unidentified
 - d) 15 interpreted incorrectly

2. The ~~structural~~ structural analysis was good. The comparison, however, was made on only 21 buildings on which data (both reported and ~~in~~ field) was available. The ~~photo~~ interpretation of the combustibility of the buildings in this group was very close to the facts: 16 correct out of 17 reported combustible buildings. Determination of structural materials was also accurate.

3. The Limited Damage Assessment report checks very closely with field data. ^{From} the following figures also a comparison can be made.

	ACTUAL	REPORTED
Total built-up area		813,600 square feet.
TOTAL DAMAGE	286,700	268,900
STRUCTURAL DAMAGE	54,600	55,700
SUPERFICIAL DAMAGE	232,700	213,200

11

REFERENCE ITEMS
C DATA SOURCE

1. REPORTED: a. AC/AS BUILDING CONSTRUCTION ANALYSIS
17 APRIL 1945

b. AC/AS LIMITED DAMAGE REPORT #41

2. FIELD DATA AA/TX/5

a. USSBS FIELD ~~DATA~~ NOTES INCLUDING
JAPANESE DAMAGE & PRODUCTION DATA.

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(PACIFIC)

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Third Level Report No. _____
Page No. _____

(A) F/A - FUNCTIONAL ANALYSIS

1. USE OF PLANT:

Reported: R.R. Car & locomotive manufacture, possible tank manufacture.

Actual: R.R. Car & locomotive manufacture and accessories

2. BOUNDARIES: Interpretation of plant boundaries was fairly accurate. Found to be associated with the plant, and not reported as such, were a group of 9 buildings (a foundry, 4 machine shops, apprentice school, and several smaller buildings) which were located on the opposite side of the canal. There was no apparent connection between

3. BUILDING IDENTIFICATION: (See F/A Table in two groups of buildings.)
~~COMPARISON OF F/A WITH ACTUAL FUNCTIONS~~

4. SUMMARY OF TABULATION:

POINT SCORE 64.6

2. FOR PRIMARY BLDGS. 83.5

	PRIMARY/BIDS		TOTAL	
	No.	%	No.	%
CORRECTLY IDENTIFIED	6	67	18	37.5
OF SIMILAR OCCUPANCY	2	22	9	18.7
UNIDENTIFIED	0	0	6	12.5
INCORRECTLY IDENTIFIED	1	11	15	31.3
TOTALS	9	100	48	100

5. SUMMARY OF REMARKS:

The character of the buildings in this plant was such that the functions of many buildings could be readily changed without very much affecting the appearance of these buildings. - thereby making the identification

6. ~~SOURCES OF INFORMATION: (Both Reported and Field Data).~~ of such buildings by photo-interpretation alone rather difficult.

FOR BOOK

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(PACIFIC)

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Page No. _____

(B) S/A - STRUCTURAL ANALYSIS:

1. Check on scale measurement:

BUILDING # B ~~WAS~~ WAS MEASURED TO DETERMINE
SCALE CHECK. LINEAR DIMENSIONS OFF BY 3%

2. S/A (See S/A Table)

3. SUMMARY OF TABULATION:

CONSTRUCTION TYPE:
(21 BUILDINGS CONSIDERED)

CONSTRUCTION TYPE	NO. BLDGS	NO. CORRECT	% CORRECT
WOOD (W)	14 -	13 -	93 -
STEEL FRAME (S)	6 -	4 -	67 -
REINFORCED CONCRETE (R/C)	1 -	0 -	0 -
TOTAL	21 -	17 -	81 -

COMBUSTIBILITY
(21 BUILDINGS CONSIDERED)

COMBUSTIBILITY	NO. BLDGS	NO. CORRECT	% CORRECT
COMBUSTIBLE (C)	17 -	16 -	94 -
NON-COMBUSTIBLE (N)	3 -	3 -	100 -
FIRE RESISTANT (R)	1 -	0 -	0 -
TOTAL	21 -	19 -	91 -

4. ~~SUMMARY OF REMARKS:~~

~~5. SOURCES OF INFORMATION (Both Reports and Field Data)~~

FOIR BOOK

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(PACIFIC)

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Third Level Report No. _____
Page No. _____

(C) D/A - DAMAGE ASSESSMENT:

1. (See D/A Table)
2. SUMMARY OF TABULATION:

PLANT AREA	TOTAL DAMAGE				STRUCTURAL DAMAGE				SUPERFICIAL DAMAGE			
	Actual	% Reported	%	%	Actual	% Reported	%	%	Actual	% Reported	%	%
813.6	286.7	35.2	268.9	33	54.6	18.9	55.7	20.7	232.7	81	213.2	79.4

NOTE: AREA FIGURES ARE GIVEN IN 1000 SQ. FT.

3. SUMMARY OF REMARKS: THREE ATTACKS WERE MADE ON THIS PLANT: 8 JAN. 1944, 17 MAY 1944, 26 JUNE 1944. ONLY THE FIRST TWO, HOWEVER, WERE CONSIDERED IN THE JTG. REPORT. THEREFORE, DAMAGE DATA (FROM JAP SOURCES) FOR THE FIRST TWO RAIDS ONLY WAS USED IN THE ABOVE FIGURES.
4. EFFECTS OF RAIDS ON PRODUCTION (~~if available~~): (See Graph)
~~USIA~~ JAP GRAPHICAL DATA ON PRODUCTION LOSS AS A RESULT OF THE RAIDS STATES (USING AS A BASIS 100% PRODUCTION IN DECEMBER 1944, AT THE END OF JAN. 1945 95%
 END OF MAY 1945 70%)
5. SOURCES OF INFORMATION: (Both Report and Field Data)

Report written by: _____

Date: _____

2

NIPPON VEHICLE MANUFACTURING CO.
90.20-241
LAT. 35° 07' N - LONG. 136° 55' E
NAGOYA, JAPAN

1. ~~X~~. DESCRIPTION OF TARGET:

a. ~~X~~. Nippon Vehicle Manufacturing Co. (Japan Rolling Stock Manufacturing Co., Ltd.), Nagoya was, before the war, the 2nd largest manufacturer of boilers, railroad cars and locomotives in Japan.

b. ~~X~~. The plant is located between the ~~E.~~^{east} branch of the Hori River and the Tokkaido Mainline Railroad, ~~and~~^{south} immediately ~~S.~~^{south} of the Atsuta branch of the Nagoya Arsenal, ~~the plant is~~^{approximately} 3 miles ~~SW~~^{northeast} of Nagoya Harbor and 3 1/2 miles of the Nagoya Railroad Station.

c. ~~X~~. The plant comprises 48 listed buildings and has a built-up area of approximately 814,000 square feet.

2. ~~X~~. SUMMARY

a. ~~X~~. The interpretation of building functions was only fair. Of a total of 48 buildings:

- (1) ~~X~~ 18 interpreted correctly.
- (2) ~~X~~ 9 interpreted as having similar occupancy
- (3) ~~X~~ 6 Unidentified
- (4) ~~X~~ 15 Interpreted incorrectly.

b. ~~X~~. The structural analysis was good. The comparison, however, was made on only 21 buildings on which data (both reported and field) ~~was~~^{were} available. The interpretation of the combustibility ~~sample of the~~^{accurate,} buildings, ~~in this group~~^{close to the facts:} was very ~~close to the facts:~~^{out of a total of 17 combustible} 16 ~~correct out of~~^{buildings were reported as such.} 17 reported combustible buildings. Determination of structural materials was also accurate.

c. ~~X~~. The limited damage assessment report checks very closely with ~~field~~^{field}

TABLE

data. From the following figures a comparison can be made:

	ACTUAL	REPORTED
Total built up area	813,600 sq ft	
Total remaining area	213,600	
Total Damage	286,700	286,000 268,900
Structural Damage	54,600	55,700
Superficial Damage	232,700	213,200
Total Damage	286,700	268,900

SOURCE OF DATA

3 p. REFERENCE FILES

a. X. Reported: Intell.

(1) X. AC/AS Building Construction Analysis - 17 April 1945

(2) X. AC/AS Intell. Limited Damage Report #41 - 10 July 1945

b. X. Field Data:

(G-2, PIC)

(1) X. USSBS Field notes including Japanese Damage & production data.

4. ~~A~~ - FUNCTIONAL ANALYSIS

a. USE OF PLANT:

Reported: R.R. Car & Locomotive manufacture, possible tank manufacture. *speed out*

Actual: R.R. Car & Locomotive manufacture and accessories.

b. BOUNDARIES: Interpretation of plant boundaries was fairly accurate.

Found to be associated with the plant, and not reported as such, were a group of 9 buildings (a foundry, 4 machine shops, ^{an} apprentice school, and several smaller buildings) which were located on the opposite side of the canal.

There was no ~~apparent~~ ^{physical} connection between the two groups of buildings.

c. BUILDING IDENTIFICATION: (see F/A Table)

d. SUMMARY OF TABULATION:

Point Score 64.6
 a) for primary bldgs 83.5
 Point Score
 Total Plant 64.6
 Primary Buildings 83.5

	PRIMARY BLDGS.		TOTAL BLDGS.	
	No. Bldgs	% Cor.	No. Bldgs	% Cor.
Correct	6	67	18	37.5
Of Similar Occupancy	2	22	9	18.7
Unidentified	0	0	6	12.5
Incorrect	1	11	15	31.3
TOTALS	9	100	48	100

e. ~~SUMMARY~~ REMARKS:

The character of the buildings in this plant was such that the functions of many ~~buildings~~ could be readily changed without ~~very much~~ affecting the ^{ir} appearance of ~~the buildings~~, thereby making the identification of such buildings by photographic interpretation alone rather difficult.

S. - STRUCTURAL ANALYSIS:

a. CHECK ON SCALE MEASUREMENT:

Building /8 was measured to determine scale check. Linear dimensions ^{in error} by 3%.

b. S/A (See S/A Table)

c. SUMMARY OF TABULATION:

(2) COMBUSTIBILITY
(only 21 buildings considered)

~~Combustibility~~
(21 buildings considered)

Building Combustibility	NO. BLDGS	NO. CORR.	% CORR.
Combustible (C)	17	16	94
Non-Com " (N)	3	3	100
Fire Resistant (R)	1	0	0
TOTAL	21	19	91

Reverse these two tables

(1) CONSTRUCTION TYPE
(only 21 buildings considered)

~~Construction Type~~
(21 buildings considered)

Construction Type	NO. BLDGS.	NO. CORR.	% CORR.
Wood (W)	14	13	93
Steel Frame (S)	6	4	67
Reinforced Concrete (R/S)	1	0	0
TOTAL	21	17	81

6. D/A - DAMAGE ASSESSMENT:

a. (See D/A Table)

b. SUMMARY OF TABULATION:

	ACTUAL		REPORTED	
	Sq. Ft.	% Dam.	Sq. Ft.	% Dam.
Total Bldg. Area	813,600 ✓		813,600 ✓	
Damage				
Structural	54,600 ✓	18.9 ✓	55,700 ✓	20.7 ✓
Superficial	232,700 ✓	81 ✓	213,200 ✓	79.4 ✓
Total	286,700 ✓	35.2 ✓	268,900 ✓	33 ✓

c. ~~SUMMARY~~ OF REMARKS:

Three attacks were made on this plant: 8 January 1944, 17 May 1944, 26 June 1944. Only the first two, however, were considered in the JTG report. Therefore, damage data (from Jap sources) for the first two raids only was used in the above figure.

d. EFFECTS OF RAIDS ON PRODUCTION:

(See ~~Chart~~ ^{Chart}) Jap ~~graphical~~ data on production loss as a result of the raids states (using, as a basis, 100% production in December 1944).

End of January 1945 75%
 End of May 1945 30%

Chart — shows the Japanese ~~estimate~~ ^{figures} of ~~for~~ ^{production} the effect of air attack on production. Using December 1944 production as 100%, ~~production~~ the figure for the end of January 1945 is 95%, and for the end of May, 70%

UNITED STATES STRATEGIC BOMBING SURVEY
(PACIFIC)

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Third Level Report No. 241
Page No. 1-8

INDUSTRY: ROLLING STOCK MANUFACTURE & REPAIR

NAME OF TARGET: NIPPON VEHICLE MANUFACTURING COMPANY

TARGET NUMBER: 90:20-241

LOCATION: NAGOYA, JAPAN L/T. 35° 07' N LONG. 136° 55' E

SOURCES OF DATA:

J. T. G. ~~FOR~~ BLDG CONST. ANALYSIS 17 APRIL 1945
JTG. LIMITED DAMAGE REPORT # 41
FIELD DATA - AA-X5

SUMMARY:

THE INTERPRETATION OF THIS PLANT'S ^{ON FUNCTION & STRUCTURE} ~~GENERAL~~ ^{IN GENERAL} GOOD. ~~SCORING FOR THE~~
ALTHOUGH THE OVERALL FUNCTIONAL ANALYSIS IS ^{ONLY FAIR} ~~QUITE LAWF~~
BOTH THE FUNCTIONAL AND STRUCTURAL ANALYSIS OF THE PRIMARY
BLDGS. IS ~~EXCEPTIONALLY HIGH~~ GOOD.

DESCRIPTION OF TARGET: THIS PLANT IS SITUATED BETWEEN THE E. BRANCH
OF THE HORI RIVER AND THE TOKAIDO MAIN LINE ^{AND} IMMEDIATELY
SOUTH OF THE ATSUTA BRANCH OF THE NAGOYA ARSENAL. ^{IT IS} APPROX
3 MILES N.E. OF NAGOYA HARBOR, AND 3/4 MILES SE OF THE
NAGOYA RAILROAD STATION.

GENERAL REMARKS:

~~NO DAMAGE ASSESSMENT REPORTS ARE AVAILABLE.~~

UNITED STATES STRATEGIC BOMBING SURVEY
(PACIFIC)

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Third Level Report No. 241
Page No. 3-8

(A) F/A - FUNCTIONAL ANALYSIS

1. USE OF PLANT:

Reported: R.R. CAR & LOCOMOTIVE MANUFACTURE, POSS. TANK MANUFACTURE

Actual: R.R. CAR & LOCOMOTIVE MANUFACTURE

2. BOUNDARIES: INTERPRETATION OF THE BOUNDARIES OF THE PLANT WAS FAIRLY ACCURATE. THERE IS ^{HOWEVER} A BLOCK OF 9 BUILDINGS ASSOCIATED WITH THIS PLANT, LOCATED ^{APPARENT} ON THE OPPOSITE SIDE OF A CANAL. ~~HOWEVER~~, THERE IS NO ~~OBVIOUS~~ CONNECTION BETWEEN THE TWO GROUPS OF BLDG. BUILDINGS.

3. BUILDING IDENTIFICATION: (See F/A Table)

4. SUMMARY OF TABULATION:

	PRIMARY	TOTAL	POINT SCORE
CORRECTLY IDENT	6 67%	18 31.5%	PRIMARY 83.5
SIMILAR OCCUR	2 22%	9 18.75%	
UNIDENT	0 0	6 12.5%	TOTAL 64.6
WRONG	4 11%	15 31.25%	
TOTAL	9 100%	48 100%	600

5. SUMMARY OF REMARKS:

THE FUNCTION OF MANY OF THE ^{BUILDINGS} ~~BLDGS.~~ OF THIS PLANT ^{VERY MUCH} COULD BE ^{CORRECT} READILY ^{MUCH} CHANGED WITHOUT AFFECTING THE APPEARANCE OF THE ~~BLDGS.~~ BUILDING.

BY P.I. ADONE
ALMOST 100%

6. SOURCES OF INFORMATION: (Both Reported and Field Data).

J. T. G. ~~FIELD~~ BLDG. CONSTR. ANALYSIS, 17 APRIL '45

FIELD DATA - AA - X5

UNITED STATES STRATEGIC BOMBING SURVEY
(PACIFIC)

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Third Level Report No. 241
Page No. 7-8

(B) S/A - STRUCTURAL ANALYSIS:

1. Check on scale measurement:

APPROX. 3% ERROR

2. S/A (See S/A Table)

3. SUMMARY OF TABULATION:

		PRIMARY BLDGS. - 6 CONSIDERED	
No OF FLOORS IN BLDGS	76% 76% CORRECT	100%	CORRECT
* ROOF MATERIAL	86% - OK	100%	"
COMBUSTIBILITY OF BLDG	90% ✓	100%	"
CONSTRUCTION TYPE	86% ✓	83 1/3 %	"
AVERAGE	84.5% CORRECT?	AVERAGE	96% CORRECT

93.

- * FIELD DATA REFERS TO ACTUAL TYPE OF MATERIAL, WHEREAS
J.T.G. REFERS TO COMBUSTIBILITY OF THAT MATERIAL
4. SUMMARY OF REMARKS:

FOR THE ABOVE FIGURES, 21 BUILDINGS (ON WHICH THERE WAS COMPLETE DATA) WERE USED.

5. SOURCES OF INFORMATION (Both Reports and Field Data)

J.T.G. ~~FOLDER~~ BLDG. CONSTRUCTION ANALYSIS 17 APRIL '45
FIELD DATA - AA-X5

UNITED STATES STRATEGIC BOMBING SURVEY
(PACIFIC)

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Third Level Report No. 241
Page No. 4-8

(C) D/A - DAMAGE ASSESSMENT:

1. (See D/A Table)

2. SUMMARY OF TABULATION:

	IN THOUS. SQ. FT.		% OF ERROR
	ACTUAL	REPORTED	
STRUCT. DAMAGE	232.7	213.2	18.4% UNDER
SUPER. " "	54.0	55.7	3.1% OVER

SEE
OTHER SIDE

PRIMARY BLDGS.

STRUCT. DAMAGE	58.3	56.3	5.4% UNDER
SUPER. DAMAGE	34.6	33.8	2.3% UNDER

3. SUMMARY OF REMARKS: THREE ATTACKS WERE MADE ON THIS PLANT, THE FIRST 2 ATTACKS ONLY WERE CONSIDERED IN J.T.G. REPORT, THEREFORE THIS REPORT IS CONCERNED ONLY WITH DAMAGE UP TO THAT TIME.

4. EFFECTS OF RAIDS ON PRODUCTION (if available):

SEE PRODUCTION CHART

5. SOURCES OF INFORMATION: (Both Report and Field Data)

- J.T.G. DAMAGE REPORT # 41

FIELD DATA - P.I.C. AA-X5

Report written by: C.E. BURNHAM LT. (jg.) USNR.

Date: 15 JAN. '46

3

NIPPON VEHICLE MANUFACTURING CO.
90.21-241
Lat. 35° 07' N - Long. 136° 55' E
NAGOYA, JAPAN

1. DESCRIPTION OF TARGET

a. Nippon Vehicle Manufacturing Co. (Japan Rolling Stock Manufacturing Co., Ltd.), Nagoya was, before the war, the 2nd largest manufacturer of boilers, railroad cars and locomotives in Japan.

b. The plant is located between the east branch of the Hori River and the Tokkaido Mainline Railroad, immediately south of the Atsuta branch of the Nagoya Arsenal, approximately 3 miles northeast of Nagoya Harbor and 3 1/4 miles of the Nagoya Railroad Station.

c. The plant comprises 48 listed buildings and has a built-up area of approximately 814,000 square feet.

2. SUMMARY

a. The interpretation of building functions was only fair. Of a total of 48 buildings:

- (1) 18 interpreted correctly
- (2) 9 interpreted as having similar occupancy
- (3) 6 unidentified
- (4) 15 interpreted incorrectly

b. The structural analysis was good. The comparison, however, was made on only 21 buildings on which data (both reported and field) were available. The interpretation of the combustibility was very accurate: 16 out of a total of 17 combustible buildings were reported as such. Determination of structural materials was also accurate.

c. The limited damage assessment report checks very closely with field data. From the following table a comparison can be made:

TABLE ____

	<u>Actual</u> <u>Sq.Ft.</u>	<u>Reported</u> <u>Sq.Ft.</u>
Total building area	813,600	██████████
Structural Damage	54,600	55,700
Superficial Damage	232,700	213,200
Total Damage	286,700	268,900

3. SOURCE OF DATA

a. Reported:

- (1) AC/AS Intell. Building Construction Analysis - 17 April 1945
- (2) AC/AS Intell Limited Damage Report #41 - 10 July 1945

b. Field Data:

- (1) USSBS (G-2, PIC) field notes including Japanese Damage and production

data.

4. FUNCTIONAL ANALYSIS

a. USE OF PLANT:

Reported: Railroad Car and Locomotive manufacture, possible tank manufacture.

Actual: Railroad Car and Locomotive manufacture and accessories.

b. BOUNDARIES:

Interpretation of plant boundaries was fairly accurate. Found to be associated with the plant, and not reported as such, were a group of 9 buildings (a foundry, 4 machine shops, an apprentice school, and several smaller buildings) which were located on the opposite side of the canal. There was no physical connection between the two groups of buildings.

c. BUILDING IDENTIFICATION: (See F/A Table)

d. SUMMARY OF TABULATION:

		PRIMARY BUILDINGS		TOTAL BUILDINGS	
		No. Bldgs.	% Corr.	No. Bldgs.	% Corr.
<u>POINT SCORE</u>	Correct	6	67	18	37.5
	Of Similar Occupancy	2	22	9	18.7
Total Plant 64.6	Unidentified	0		6	12.5
Primary Buildings 83.5	Incorrect	1	11	15	31.3
	Totals	9	100	48	100

e. REMARKS:

The character of the buildings in this plant was such that the functions of many could be readily changed without affecting their appearance, thereby making the identification of such buildings by photographic interpretation alone rather difficult.

5. STRUCTURAL ANALYSIS

a. CHECK ON SCALE MEASUREMENT:

Building 8 was measured to determine scale check. Linear dimensions in error by 3%.

b. S/A (See S/A Table)

c. SUMMARY OF TABULATION:

(1) Construction Type:	No.	No.	%
Construction Type	Bldgs.	Corr.	Corr.
Wood (W)	14	13	93
Steel Frame (S)	6	4	67
Reinforced Concrete (R/C)	1	0	0
Total	21	17	81

(2) Combustibility:

Building Combustibility	No.	No.	%
	Bldgs.	Corr.	Corr.
Combustible (C)	17	16	94
Non-Combustible (N)	3	3	100
Fire Resistant (R)	1	0	0
Total	21	19	91

6. DAMAGE ASSESSMENT

a. (See D/A Table)

b. SUMMARY OF TABULATION:

	ACTUAL		REPORTED	
	Sq.Ft.	%Dam.	Sq.Ft.	%Dam.
Total Building Area	813,600		813,600	
Damage				
Structural	54,600	18.9	55,700	20.7
Superficial	232,700	81	213,200	79.4
Total	286,700	35.2	268,900	33

c. REMARKS:

Three attacks were made on this plant: 8 January 1944, 17 May 1944, 26 June 1944. Only the first two, however, were considered in the JTG report. Therefore, damage data (from Jap sources) for the first two raids only was used in the above figure.

d. EFFECTS OF RAIDS ON PRODUCTION:

Chart ___ shows the Japanese figures for the effect of air attack on production. Using December 1944 production as 100%, the figure for the end of January 1945 is 95%, and for the end of May, 70%.

PRIMARY BLDGS

A. $100 \times \frac{8}{9} = 89 \checkmark$

B. $100 \times \frac{6}{6} = 100.0$

$100 \times \frac{5}{6} = 83.3$
 $\frac{2 \overline{) 183.3}}{91.65}$

92

C.

A	STD	-	58.3	✓
R	STD	-	56.3	✓
A	SU	D	34.6	✓
R	SU	D	33.8	✓
A	T	D	92.9	✓
R	T	D	90.1	✓

$.4 [100 \times (1 - \frac{2.8}{92.9})] = 38.8 \checkmark$

$.3 [100 \times (1 - \frac{2.0}{58.3})] = 29.0 \checkmark$

$.3 [100 \times (1 - \frac{.8}{34.6})] = 29.3 \checkmark$
 $\frac{97.1 \checkmark}{97.1 \checkmark}$

97

D. $100 \times \frac{213.2}{228.4} = 93 \checkmark$

E. $100 \times \frac{62.9}{62.9} = 100$

79.3

$100 \times \frac{36.8}{62.9} = 58.5$

$\frac{2 \overline{) 158.5}}{79.3}$

F. $.4 [100 \times (1 - \frac{2.8}{228.4})] = 39.5$
 29.7

$.4 [100 \times (1 - \frac{2.0}{228.4})] = 29.9$

$.4 [100 \times (1 - \frac{.8}{228.4})] = 99.1$

99

F/A Pt. Score = 83

Verulype Checked

D/A TABLE
TARGET NO. 90.20/24

NAME OF TARGET NIPPON VEHICLE Co

3RD LEVEL REPORT

BUILDING NO.	BLDG. AREA	STRUCTURAL (1000s SQ. FT.)			SUPERFICIAL (1000s SQ. FT.)			REMOVED (1000s SQ. FT.)			REMARKS				
		A	R	R	A	R	R	A	R	R					
7	P	15.2	15.2	15.2	—	—	—	—	—	—	—	—	—	—	destroyed
8		19.8	3.6	—	16.3	16.5	—	—	—	—	—	—	—	—	destroyed
9	P	26.1	6.0	6.0	20.1	20.1	—	—	—	—	—	—	—	—	destroyed
10		7.4	7.4	3.9	—	3.5	—	—	—	—	—	—	—	—	destroyed
11a-b		5.3	4.5	4.5	—	—	—	—	—	—	—	—	—	—	destroyed
c		1.3	—	—	—	—	—	—	—	—	—	—	—	—	micro damage - reported undamaged
12		7.3	7.3	7.3	—	—	—	—	—	—	—	—	—	—	destroyed
13		5.2	5.2	5.2	—	—	—	—	—	—	—	—	—	—	"
14		6.5	6.5	6.5	—	—	—	—	—	—	—	—	—	—	"
15		7.0	7.0	7.0	—	—	—	—	—	—	—	—	—	—	"
16		7.8	7.8	7.8	—	—	—	—	—	—	—	—	—	—	"
17		7.2	7.2	7.2	—	—	—	—	—	—	—	—	—	—	"
18		5.9	5.9	2.0	—	1.9	—	—	—	—	—	—	—	—	"
21		3.6	3.6	3.6	—	—	—	—	—	—	—	—	—	—	destroyed
22		28.0	28.0	28.0	—	—	—	—	—	—	—	—	—	—	"
23		31.8	31.8	31.8	—	—	—	—	—	—	—	—	—	—	"
24a		6.3	—	3	3.1	—	—	—	—	—	—	—	—	—	"
b		6.3	6.3	6.3	—	—	—	—	—	—	—	—	—	—	destroyed
c		3.1	3.1	3.1	—	—	—	—	—	—	—	—	—	—	"
26	P	23.6	23.6	23.6	—	—	—	—	—	—	—	—	—	—	"
30a		8.0	8.0	—	—	—	—	—	—	—	—	—	—	—	"
b		5.6	1.3	—	—	—	—	—	—	—	—	—	—	—	"
31		13.5	13.5	13.5	—	—	—	—	—	—	—	—	—	—	destroyed
32		4.2	4.2	4.2	—	—	—	—	—	—	—	—	—	—	"
33		4.4	4.4	4.4	—	—	—	—	—	—	—	—	—	—	"
36	P	36.8	—	—	4.5	4.1	—	—	—	—	—	—	—	—	"
43		3.9	3.9	3.9	—	—	—	—	—	—	—	—	—	—	destroyed
46	P	136.7	13.5	11.5	10.0	9.6	—	—	—	—	—	—	—	—	"
48		19.0	4.0	4.0	—	—	—	—	—	—	—	—	—	—	"

NOTE BLDGS NOT LISTED HERE WERE LISTED AS HAVING NO VISIBLE DAMAGE.

Verity checked

F/A TABLE

BUILDING NO.	PRIMARY	FUNCTION		EVALUATION						TARGET NO.	PAGE		
		REPORTED	ACTUAL	CORRECT	SIMILAR	UNIDENT	WRONG	CORRECT	SIMILAR	UNIDENT	WRONG	POINT SCORE	3RD LEVEL REPORT
39		UNIDENTIFIED											
40	✓	FOUNDRY		SANDCASTING (FOUNDRY)			X				45		
41		STORAGE		FOUNDRY	X		X				100		
42		STORAGE		STORAGE	X						100		
43	3.9	STORAGE		MACHINE SHOP			X				15		
44		UNIDENTIFIED		SCRAP RECOVERY		X					70		
45		PROB MISC. STORAGE		MACHINE SHOP			X				45		
46	126.7	PROB ASSEMBLY OF CARS OR LOCOMOTIVES - MACHINING POSS: CAR OR LOCOMOTIVE SHED		BOILER SHOP			X				20		
47		UNIDENTIFIED		MACHINE SHOP	X						80		
48	19.0	UNIDENTIFIED		TRACK SHOP			X				25		
49		TURNTABLE		BOILER SHOP			X				45		
				TURNTABLE	X						100		
											3045		
												REMARKS	

NIPPON VEHICLE MANUFACTURING CO

Verity checked

F/A TABLE

BUILDING NO.	PRIMARY	FUNCTION		EVALUATION				TARGET NO.	PAGE
		REPORTED	ACTUAL	CORRECT	SIMILAR	UNIDENT.	WRONG	POINT SCORE	3RD LEVEL REPORT
REMARKS									
1		PROB. CAR SHED	CAR SHED	X				95	
2		STORAGE	KITCHEN & DINING ROOM			X		15	
3		STORAGE	CAR SHED		X			70	
4		BOILER SHOP	MACHINE SHOP		X			85	
5		BOILER & BOILER TUBE SHOP	R.R. CAR ASSEMBLY			X		85	
6		FREIGHT CAR ASSEMBLY	R.R. CAR ASSEMBLY	X				100	
7	15.2	PASSENGER CAR ASSEMBLY	PAINT SHOP			X		0	
8	19.8	FINISHING, PAINTING ETC.	LOCOMOTIVE BOILER SHOP			X		70	
9	26.1	PASSENGER CAR ASSEMBLY	R.R. CAR ASSEMBLY	X				100	
10	2.4	PROB. OFFICES	STORAGE - BICYCLES			X		20	
11	6.6	PHOTO ROOM & MESS HALL	ADMINISTRATION			X		10	
12	7.3	OFFICES	ADMINISTRATION	X				100	
13	5.2	UNIDENTIFIED	DINING ROOM - WORKERS			X		45	
14	6.5	REPORTER MEDICAL STR.	DISPENSARY	X				100	
15	7.0	UNIDENTIFIED	OFFICES			X		45	
16	7.8	TIMBER STORAGE	OFFICES			X		0	
17	7.2	WOOD WORKING SHOP	CARPENTER SHOP	X				100	
18	5.9	UNIDENTIFIED	LUMBER DRYING BLDG			X		45	
19-20		STORAGE	CARPENTER SHOPS			X		15	
21	3.6	STORAGE	PATTERN SHOP (WOOD)			X		15	
22	28.0	SAW MILL	CARPENTER & LUMBER CUTTING	X				100	
23	31.8	WOOD WORKING SHOP	WOOD WORKING SHOP	X				100	
24	11.6 (6.3)	(a) BOILER HOUSE (b) PROB. STORAGE	(a) BOILER HOUSE (b) SAND REMOVAL	X		X		60	
25		CAR ASSEMBLY SHOP	MACHINE SHOP		X			85	
26	23.6	PASSENGER CAR ASSEMBLY	R.R. CAR ASSEMBLY	X				100	
27		METAL WORK SHOP	PLATE SHOP	X				100	
28		STORAGE BLDGS	STORAGE BLDG	X				100	
29		STORAGE	PIPE STORAGE	X				100	
30	13.0	PASSENGER CAR SHED	BOILER SHOP			X		85	
31	13.5	STORAGE & DRAFTING	STORAGE		X			85	
32	8.6	STORAGE	STORAGE	X				100	
34		STORAGE	WAREHOUSE OFFICE	X				70	
35		STORAGE	MACHINE SHOP			X		15	
36	36.8	HEAVY SHOP	FORGE		X			85	
37		PROB. TRANS. OR D.C. CONVERTORS	COMPRESSORS - AIR	X				85	
38		STORAGE	DINING ROOM			X		15	

Nippon Vehicle Manufacturing Company.

Veritype Check

90.20-241

S/A TABLE

BUILDING NO.	PLAN AREA 1000 SQ. FT.		NUMBER FLOORS		SIZE OF BAY		ROOF MATERIAL		COMBUSTIBILITY OF BUILDING		CONSTR'N TYPE		TARGET NO. <i>9020-241</i>	PAGE <i>7-8</i>
	A	REPORTED	A	REPORTED	A	R	A	REPORTED	A	REPORTED	A	R	3RD LEVEL REPORT	REMARKS
1			1	1			SM/W	C	C	C	W	W		
2			2	1			SM/W	C	C	C	W	W		
3			2	1			SM/W	C	C	C	W	W		
4			1	1			SM/W	C	C	C	W	W		
5			1	1			SM/W	C	C	C	W	W		
6			1	1			SM/W	C	P	C	W	W		
8	19.8	20,000	19,800	1	1		N	N		C	S	S		
9	26.1	✓		1	1		SM/W	C	P	C	S	W		
20				1	1		SM/W	C		C	W	W		
22	28.0	x✓		1	1		W	N		C	W	S		
25				1	1		SM	N	P	N	S	S		
27				1	1		SM/W	C	P	C	W	W		
28				2	1		T/W	C		C	W	W		
30	13.0			1	1		WESM	C		C	W	W		
36	36.8			1	1		SM	N	P	N	S	S		
37				2	1		C	N		R	R/C	S		
38				2	1		SM/W	C		C	W	S		
39				1	1		WESM	C		C	W/S	S		
40				1	1		SM	N	P	N	S	W		
42				1	1		W/CA	C		C	W	W		
44				1	1		W/CA	C		C	W	W		

Symbols used for type of material used.
Symbols for combustibility of material used.

NIPPON VEHICLE MANUFACTURING CO.

90.20 - 241

Lat. $35^{\circ}07'N$. - Long. $136^{\circ}55'E$.

NAGOYA, JAPAN

1. DESCRIPTION OF TARGET

a. Nippon Vehicle Manufacturing Co. (Japan Rolling

Stock Manufacturing Co., Ltd.), Nagoya was, before

the War, the ^{second} ~~2nd~~ largest manufacturer of boilers,

railroad cars and locomotives in Japan before the war.

b. The plant is located between the east branch

of the Hori River and the Tokkaido Mainline Railroad,

immediately south of the Atsuta branch of the Nagoya

Arsenal, approximately 3 miles northeast of Nagoya

Harbor and $3\frac{1}{4}$ miles south east of the Nagoya

Railroad Station.

c. The plant comprises 48 listed ~~structures~~ buildings and has a built-up area of approximately 814,000 square feet.

2. SUMMARY

a. The interpretation of building functions was only fair. Of a total of 48 buildings:

- (1) 18 were ^{identified} ~~interpreted~~ correctly.
- (2) 9 were ^{identified} ~~interpreted~~ as having similar occupancy.
- (3) 6 were un^{identified} identified.
- (4) 15 were ~~interpreted~~ ^{identified} incorrectly.

b. The structural analysis was good. The comparison, however, was made on only 21

buildings on which comparable data were available. The interpretation of the combustibility was very accurate: 16 out of a total of 17 combustible buildings were reported as such.

Determination of structural materials was also accurate.

e. The limited damage assessment report checks very closely with field data, as shown in Table —

	ACTUAL Actual Sq. Ft.	REPORTED Reported Sq. Ft.
Total Building Area	813,600	
Structural Damage	54,600	55,700
Superficial Damage	232,700	213,200
Total Damage	286,900	268,900

3. SOURCE OF DATA

a. Reported &

- (1) AC/AS Intelligence Building Construction Analysis, 17 April 1945
- (2) AC/AS Intelligence Limited Damage Report # 41, 10 July 1945

b. Field Data &

- (1) USSBS (G-2, PIC) field notes including Japanese damage and production data.

4. FUNCTIONAL ANALYSIS

a. USE OF PLANT X

Reported: Railroad car and locomotive manufacture, possible tank manufacture.

Actual: Railroad car, ~~and~~ locomotive and accessories manufacture.

b. BOUNDARIES X

Interpretation of plant boundaries was fairly accurate. Found to be associated with the plant, and not reported as such, were a group of 9 buildings (a foundry, 4 machine shops, an apprentice school, and several smaller buildings) which were located on the opposite side of

an adjacent canal. There was no physical connection between the two groups of buildings.

c. BUILDING IDENTIFICATION (E/A Table)

d. SUMMARY OF TABULATION:

TABLE

POINT SCORE	PRIMARY BUILDINGS		TOTAL BUILDINGS	
	No. Bldgs	%	No. Bldgs	%
Total Plant 64.6	Correct 6	67	18	37.5
Primary Buildings 83.5	Of Similar Occupancy 2	22	9	18.7
	Unidentified 0	—	6	12.5
	Incorrect 1	11	15	31.3
	Total 9	100	48	100

e. REMARKS

The character of many buildings in this plant was such that their use could be readily changed without affecting their

appearance, thereby making identification by

photographic interpretation alone rather difficult.

5. STRUCTURAL ANALYSIS

a. CHECK ~~ON~~ ^{ON} SCALE MEASUREMENTS

~~Building~~ Building 8 was measured to determine scale check. Linear dimensions were 97% ^{percent} correct.

b. S/A (See S/A Table)

c. SUMMARY OF FABULATION

(1) CONSTRUCTION TYPE

TABLE —

Construction Type	No. Bldgs _x	No. Corr.	% Corr.
Wood Frame (W)	14	13	93
Steel Frame (S)	6	4	67
Reinforced Concrete (R/C)	1	0	0
Total	21	17	81

Highland
42034
30000
42041
42042
42045

(2) COMBUSTIBILITY

TABLE _____

Building Combustibility	No. Bldgs*	No. Corr.	% Corr.
Combustible (C)	17	16	94
Non-Combustible (N)	3	3	100
Fire-Resistant (R)	1	0	0
Total	21	19	91

6. DAMAGE ASSESSMENT

a. ~~D/A~~ (see D/A Table) X

b. SUMMARY OF FABULATION X

TABLE _____

	ACTUAL		REPORTED	
	Sq Ft X	% Dam X	Sq Ft X	% Dam X
Total Building Area			813,600	
Damage				
Structural	54,600	18.9	55,700	20.7
Superficial	232,700	81	213,200	79.4
Total Damage	286,700	35.2	268,900	33

c. REMARKS X

Three attacks were made on this plant: 8 January 1945, 17 May 1945, and 26 June 1945. Only the first two, however, were considered in the AC/AS Intelligence report. Therefore, damage data ~~(field data)~~ ^{from Japanese} ~~sources checked in the field~~ ^{and from Jap sources} for the first two raids

only were considered in the ~~above~~
~~figures~~. tabulation,

90.20-241

Nippon Vehicle Company. Nagoya
Locomotives and rolling stock repairs,

Subjects investigated:

(a) Functional Analysis.

1. JTG published material available
2. Complete data on F/A.
3. No conclusions as yet.

(b) Structural Analysis.

1. As above
2. Complete analysis by P. I. Industrial Team #5.
3. No conclusions at this time.

(c) Damage.

1. Fire and H.E. bomb damage obtained by field checks.
2. Photos obtained.
3. No conclusions as yet.

11/5/45

Mr. S. Tokunaga, Managing-director, Nippon Rolling Stock Co.

By: Takashi Thomas Sato, Interpreter, Damage Assessment Team

Form of Organization: Joint-stock Company (sponsored 9/1896)

Capitalization: 20,000,000 yen(all paid-up)

Shareholders: 1,500 persons(dispersed throughout the Nation)

Subsidiaries: None

Factories: Nagoya Factory(Main Office)

Narumi Factory(Branch Factory)

Offices: Tokyo Branch Office

Korea Branch Office(Jinsen)

Products: Various locomotives, passenger tram-cars,
freight-cars, and accessories.

Employees: Office-workers--450 persons
Factory-workers--2882 persons(10-30)

(7)

PIC-44-XS

11/5/45

Mr. S. Tokunaga, Managing-director, Nippon Rolling Stock Co.

By: Takashi Thomas Sato, Interpreter, Damage Assessment Team

Form of Organization: Joint-stock Company (sponsored 9/1896)

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⑦

PIC-AA-X5

TEAM LOG SHEET

TEAM No. PIC-AA-X5

TEAM COMDR. Lt. Chappell,

TARGET No. 90.20-241

TARGET LOCATION Nippon Vehicle Mfg. Co.
Nagoya, Japan.

DATE 11/26/45

*Photo No.	Description	Requested By
Pack 15: 1	Exterior Bldg. #5 and #6 looking NW.	
2	" " #8 and #9 " W.	
3	" " #8 and #9 " E.	
4	" of E. end of Bldg. #36 and S. end of Bldg #37 looking NNW.	
5	Interior Bldg. #40 looking E. from center section.	
6	Exterior Bldg. #42, #44 and #45 looking W.	
7	" " #46 from W. end looking ESE.	
8	Interior " #46 from W. end looking E.	
9	" " #46 from W. end looking E.	
10	" " #46 from W. end looking SE.	
11	" " #46 looking NE toward damaged N. wall in center of main section.	
12	" " #46 looking NW toward Boiler soaking pits. (47)	

(11)

PIC-AA-X5

1 of 2

*Photo No. must correspond with Photographers Photo No.

TEAM LOG SHEET

TEAM No. PIC-AA-X5

TEAM COMDR. Lt. Chappell

TARGET No. 90.20-241

TARGET LOCATION Nippon Vehicle Mfg. Co.
Nagoya, Japan.




DATE 11/26/45

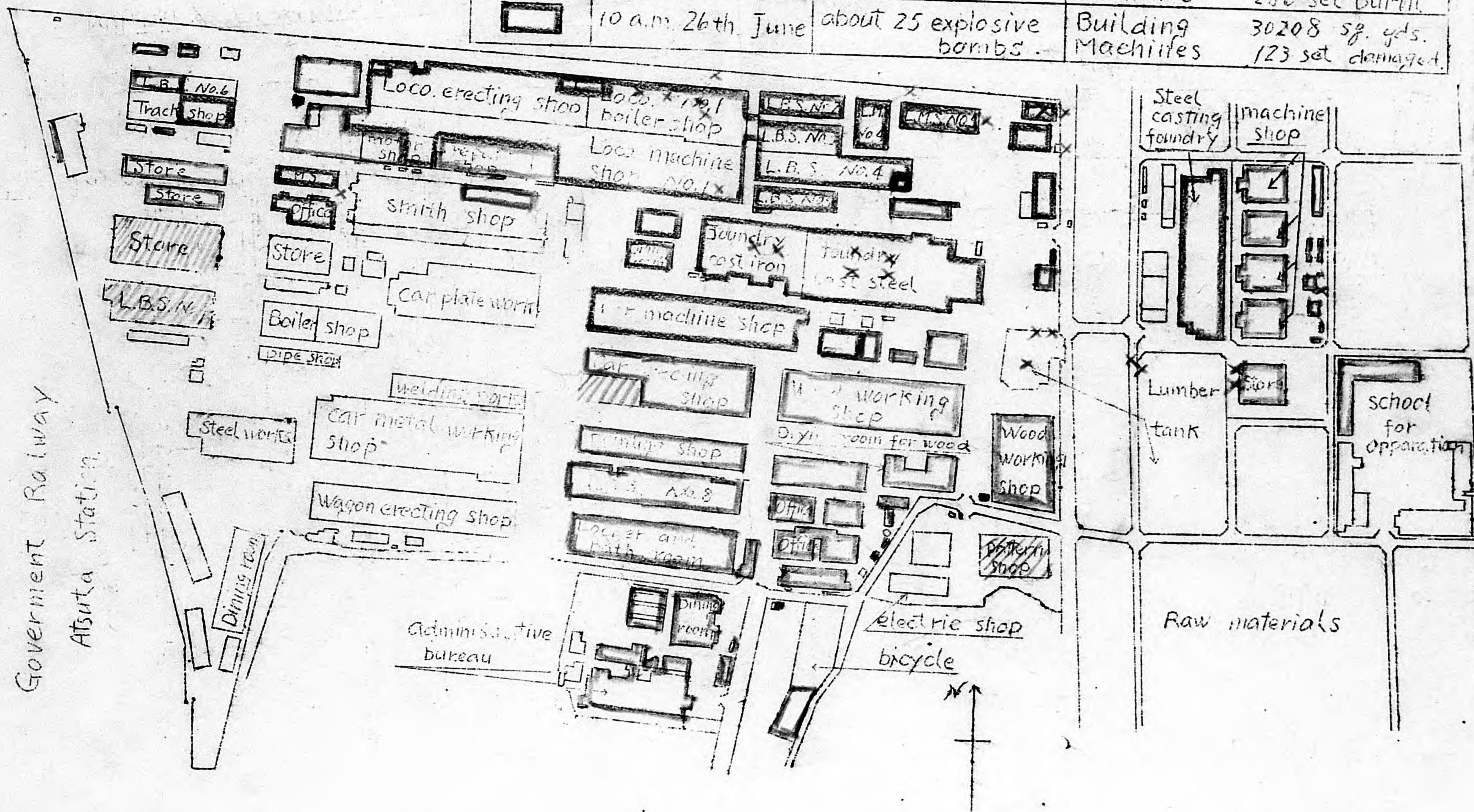
*Photo No.	Description	Requested By
Pack 16: 1	Interior Bldg. #46 looking E. at E. end of #46.	
2	Interior Bldg. #46 looking E. at E. end of #46.	
3	Exterior from Bldg. #28 toward Bldg. #48 looking NNW.	
		⑪ PIC-AA-X5 2 OF 2

*Photo No. must correspond with Photographers Photo No.

The Japan Rolling Stock
Manufacturing Co. Ltd.
(Nippon Sharyo K.K.)

Military Arsenal
Atsuta Works

Damage caused by the air raid			
	Date	Air raid	Damages
	1945 1 a.m. 8th Jan.	about 300 incandescent bombs	Building 4638 sq. yds. Machines 18 set burnt
	2 a.m. 17th May	about 200 incandescent bombs	Building 34897 sq. yds. Machines 286 set burnt
	10 a.m. 26th June	about 25 explosive bombs	Building 30208 sq. yds. Machines 123 set damaged



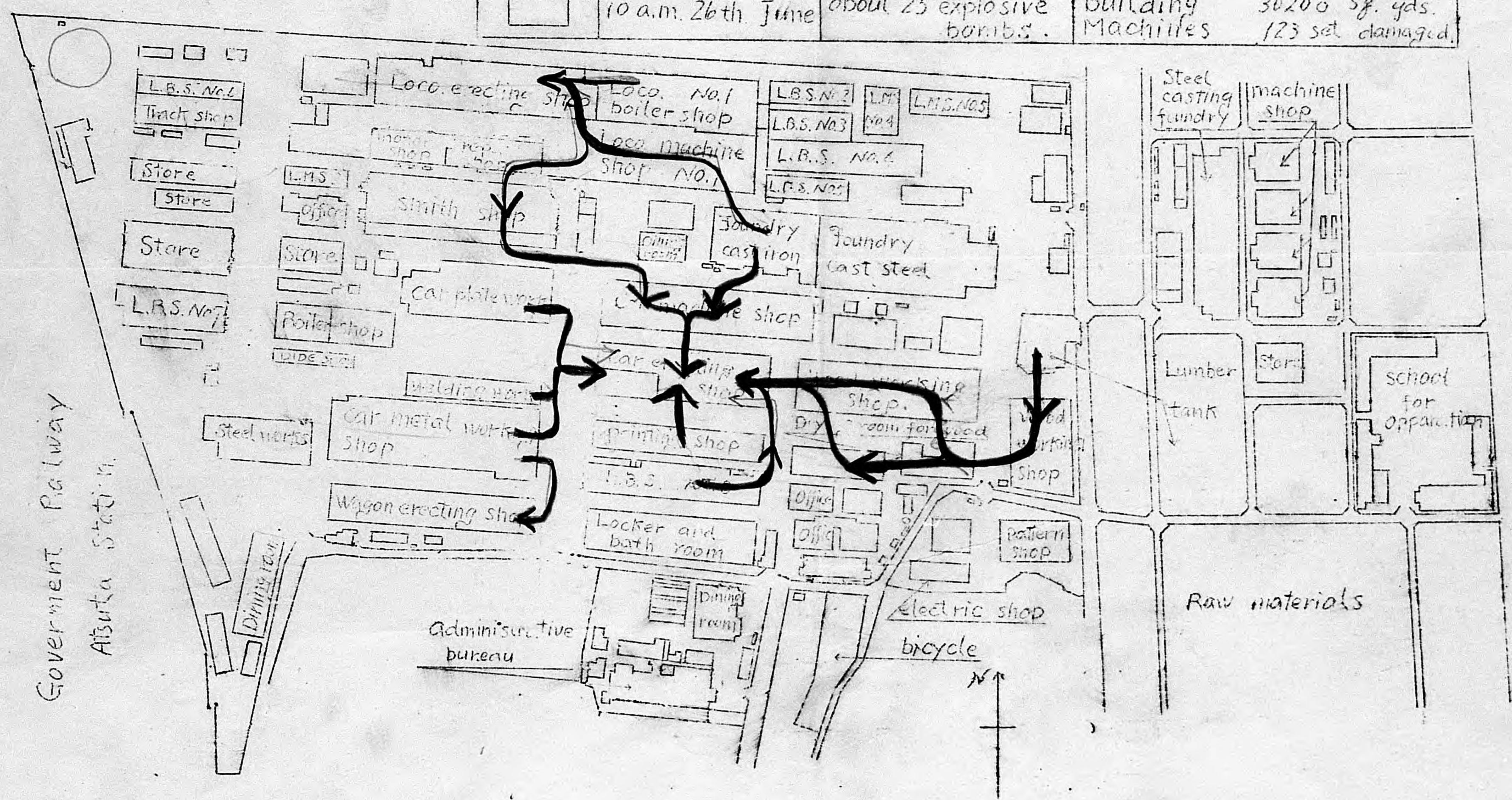
5

FIG-AA-X5

The Japan Rolling Stock
Manufacturing Co. Ltd.
(Nippon Sharyo K.K.)

Military Arsenal
Aizuta Works

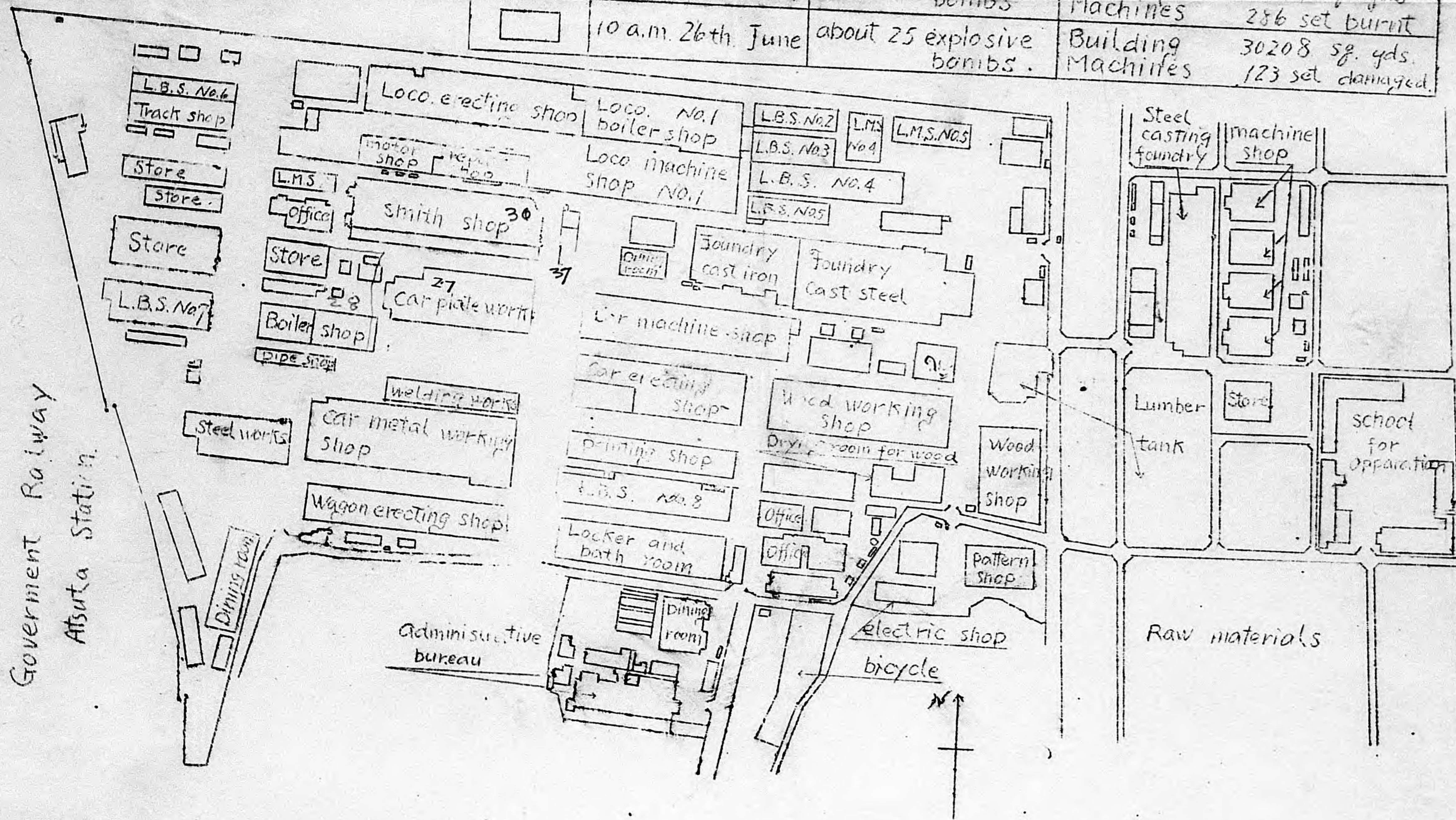
Damage caused by the air raid			
	Date.	Air raid	Damages
□	1945 1 a.m. 8th Jan.	about 300 incandescent bombs	Building 4638 sq. yds. Machines 18 set burnt
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The Japan Rolling Stock
 Manufacturing Co. Ltd.
 (Nippon Sharyo K.K.)

Military Arsenal
 Atsuta Works

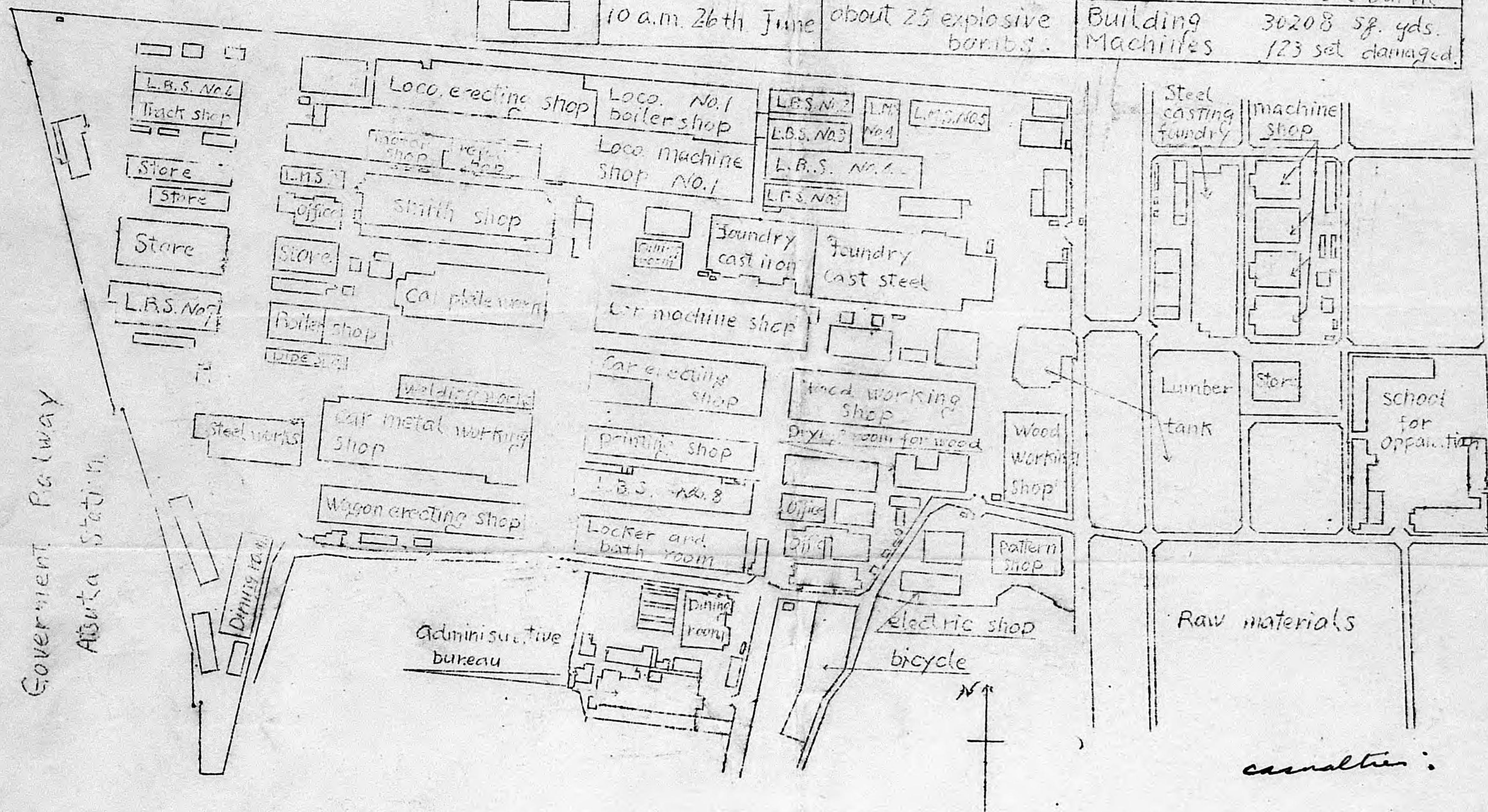
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The Japan Rolling Stock
Manufacturing Co. Ltd.
(Nippon Sharyo K.K.)

Military Arsenal
Atsuta Works

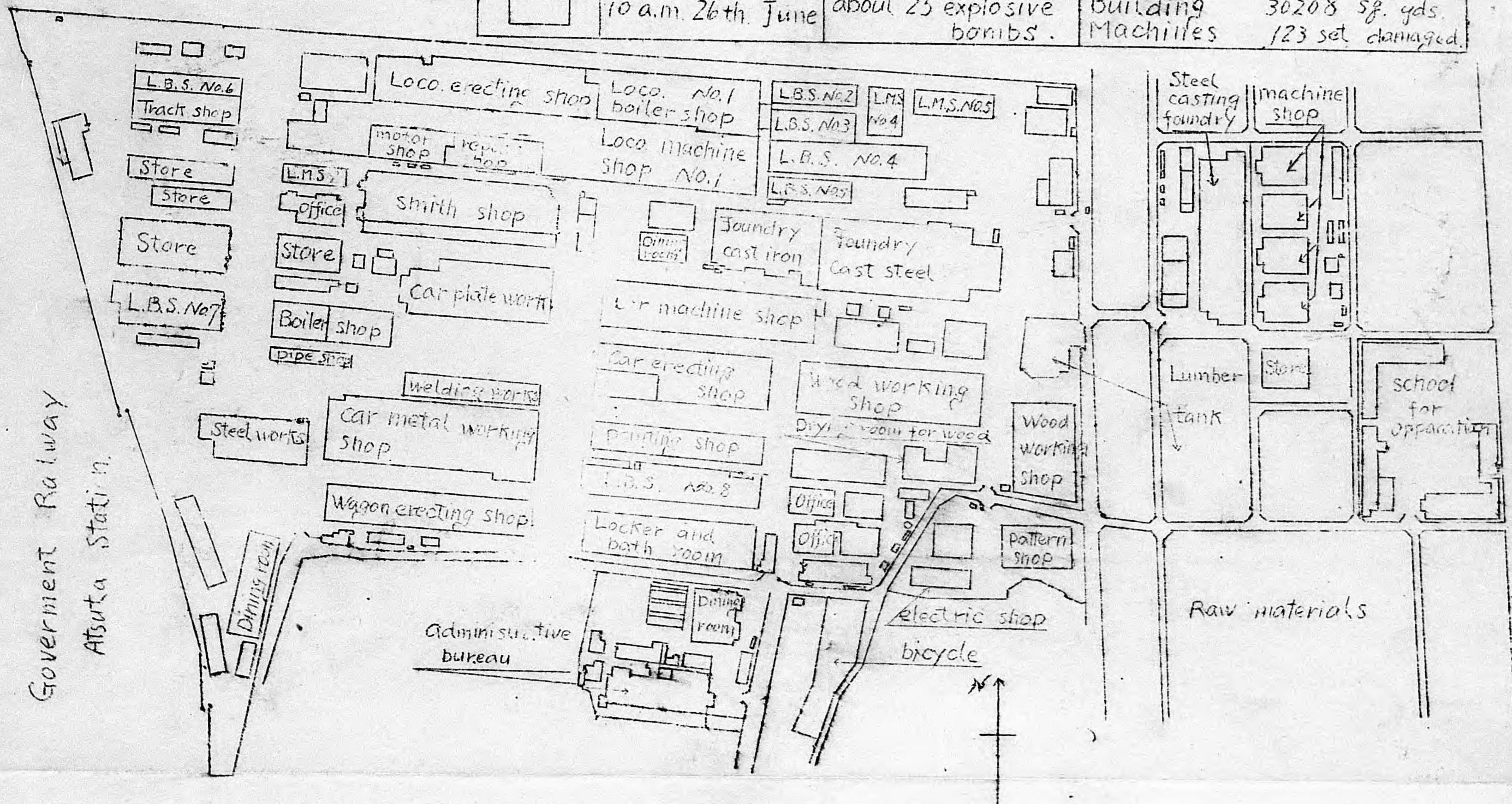
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The Japan Rolling Stock
Manufacturing Co. Ltd.
(Nippon Sharyo K.K.)

Military Arsenal
Atsuta Works

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□	1945 1 a.m. 8th Jan.	about 300 incandescent bombs	Building 4638 sq. yds. Machines 18 set burnt
□	2 a.m. 17th May	about 200 incandescent bombs	Building 34897 sq. yds. Machines 286 set burnt
□	10 a.m. 26th June	about 25 explosive bombs.	Building 30208 sq. yds. Machines 123 set damaged



8

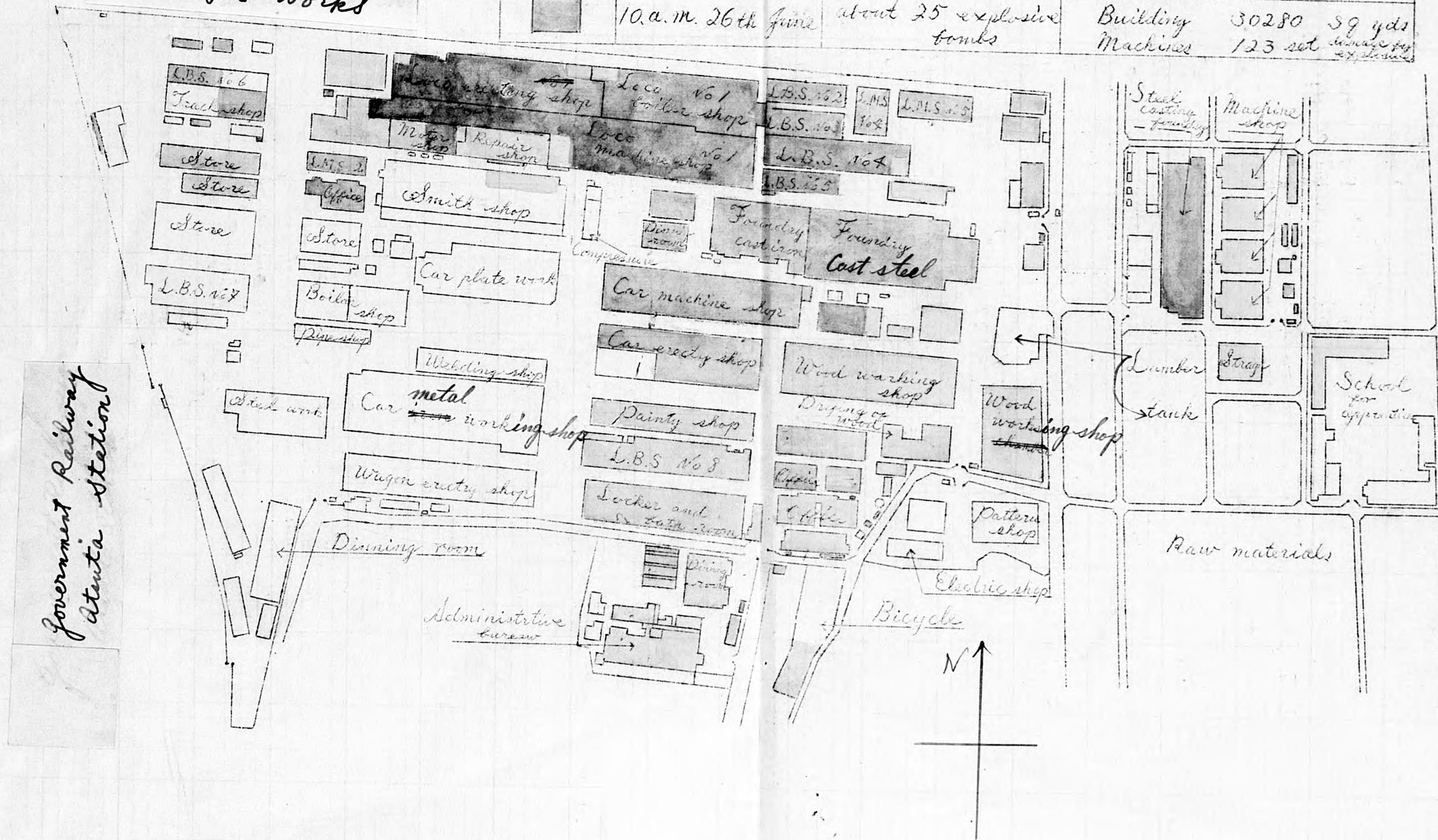
PIC-AA-X5

The Japan Rolling Stock Manufacturing Co., Ltd.

(Nippon Sharyo K. K.)

Damage caused by the air raid			
	Date	Air raid	Damage
□	1945 1 a.m. 8th Jan	about 300 incandescent bombs	Building 4636 sq yds Machines 18 set burnt
□	2 a.m. 17th May	about 2000 incandescent bombs	Building 34897 sq yds Machines 286 set burnt
■	10 a.m. 26th June	about 25 explosive bombs	Building 30280 sq yds Machines 123 set <small>damaged by explosive</small>

Military Arsenal
Atsuta Works



Government Railway
Atsuta Station

4

PIC-AA-X5

FIELD PHOTO LOG

90:20-241
 NIPPON VEHICLE MFG. CO.
 NAGOYA, JAPAN-

NEG. NO.	FIELD EXPOS.	SUBJECT
PIC-AA-15-7	10	- Exterior Bldg # 46 from west end looking ESE.
15-8	11	- Interior " # 46 " " " " E.
15-9	12	- " " # 46 " " " " E.
15-10	1	- Interior Bldg # 46 " " " " SE.
15-11	2	- Interior of Bldg # 46 looking NE toward damaged N. wall in center of main section.
15-12	3	- " " " # 46 " NW " Boiler soaking pits (#47).
16-1	4	- " " " # 46 " E at E end of # 46.
16-2	5	- " " " # 46 " E at E end of # 46.
15-6	6	- Exterior of Bldg # 42, 44 & 45 looking W.
15-5	7	- Interior of Bldg # 40 looking E from center section.
15-2	8	- Exterior of Bldg # 8 & 9 looking W.
15-3	9	- " " " # 8 & 9 " E.
15-1	10	- " " " # 5 & 6 " NW.
15-4	11	- " " E end of # 36 & S end of # 37 looking NNW.
16-3	12	- Exterior from Bldg # 28 toward Bldg # 48 looking NNW.

MR. TOKUNAGA - MANAGING DIRECTOR

(12)

PIC-AA-X5

CORRECTED
PHOTO LOG

90:20-241

NIPPON VEHICLE MFG. CO.

NAGOYA, JAPAN

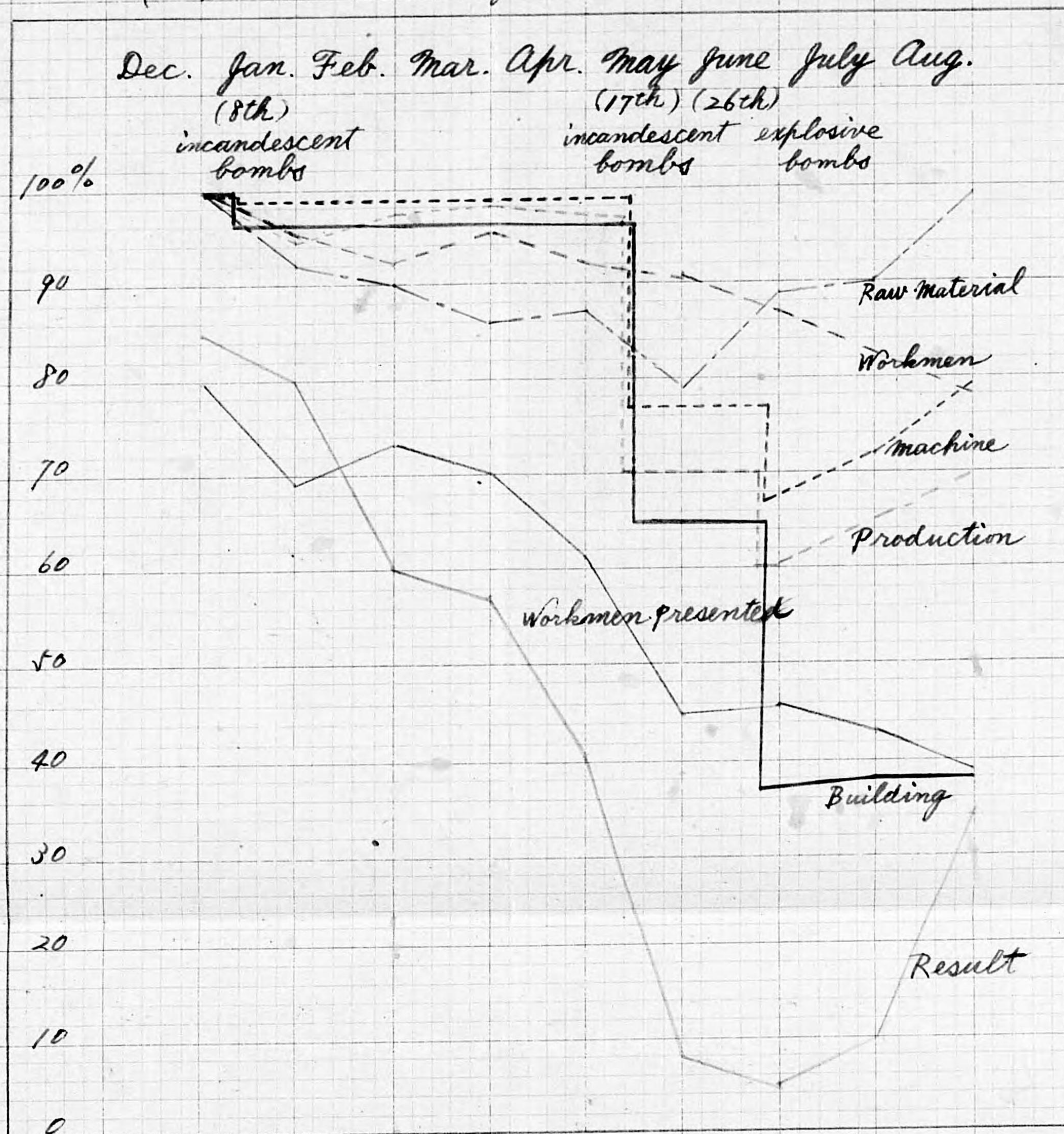
PIC-AA-X5

NEG NO.	S U B J E C T
PIC-AA-15:1	- Exterior Bldg #5 & #6 looking NW.
:2	- " " #8 & #9 " W.
:3	- " " #8 & #9 " E.
:4	- " of E. end of Bldg #36 & S. end of Bldg #37 looking NNW.
:5	- Interior Bldg #40 looking E. from center section.
:6	- Exterior " #42, #44 and #45 looking W.
:7	- " " #46 from W. end looking ESE.
:8	- Interior " #46 " W. " " E.
:9	- " " #46 " W. " " E.
:10	- " " #46 " W. " " SE.
:11	- " " #46 looking NE toward damaged N. wall in center of main section.
:12	- " " #46 " NW " Boiler soaking pits (#47).
16:1	- Interior Bldg #46 looking E. at E. end of #46.
:2	- " " #46 " E. " E. " " #46.
:3	- Exterior from Bldg #28 toward Bldg #48 looking NNW.

12

PIC-AA-X5

Diagram Showing the Manufacturing Conditions
at the Time of the Air Raid
 (100% at the end of Dec. 1944)

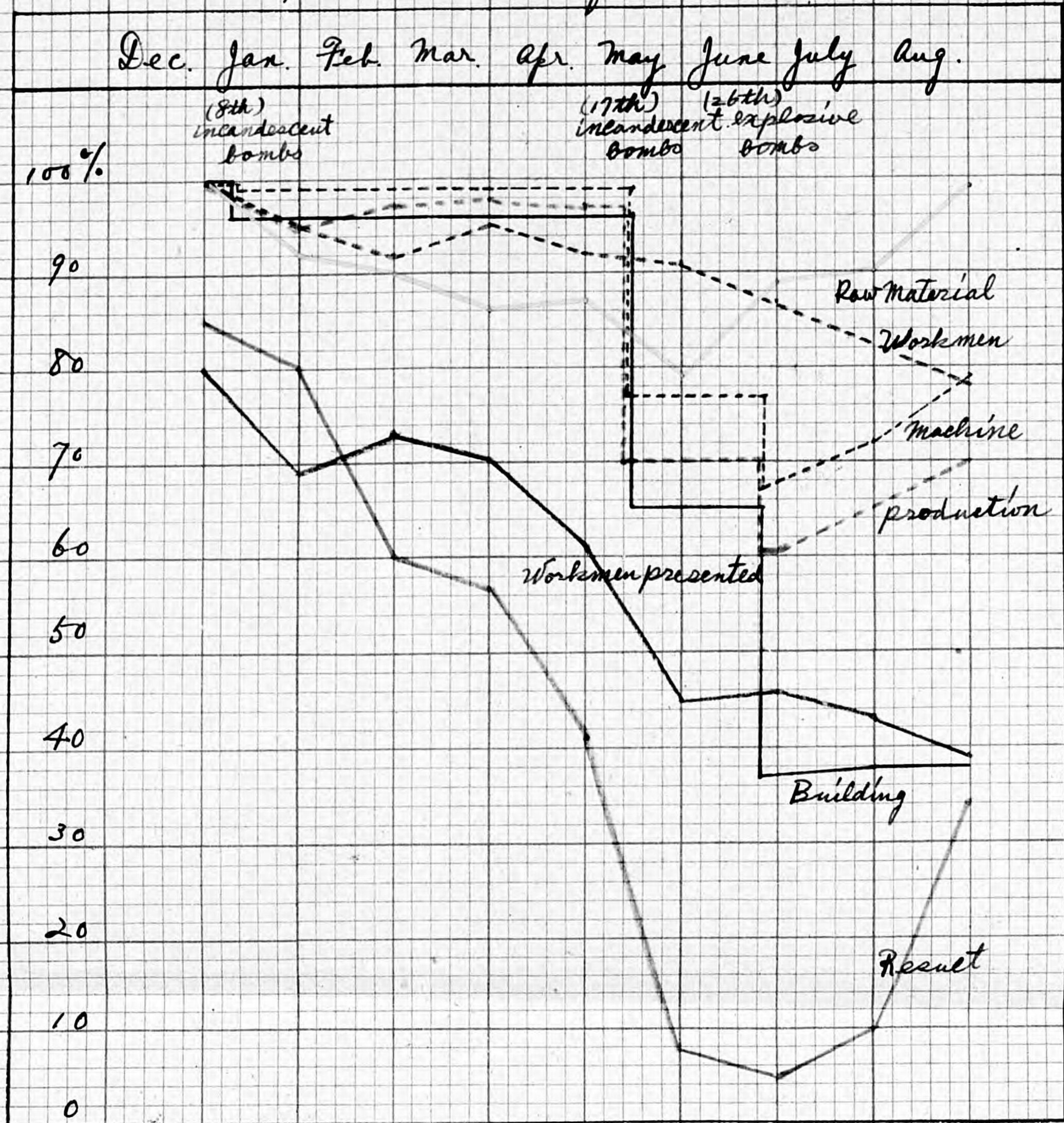


Notice:

1. Building area (Sq yds)	110,528	105,892 (-4636) burnt	105,892	105,892	105,892	70,995 (-34,897) burnt	40,715 (-30,280) damaged	41,911 (+1,196) rebuilt	41,911
2. Number of Machines (set)	1,320	1,302 (-18) burnt	1,302	1,302	1,302	1,016 (-286) burnt	893 (-123) damaged	957 (+64) repaired	1,042 (+85) repaired
3. Price of Raw Material & Finished Article (1,000 yen)	6,881	6,300	6,208	5,903	5,966	5,408	5,800	6,152	6,777
4. Number of Workmen & those presented	3,807 3,046	3,624 2,638	3,507 2,767	3,614 2,664	3,494 2,310	3,463 1,725	3,321 1,770	3,127 1,629	2,963 1,499
5. Capacity of Production & Result	810 689	770 651	785 489	795 462	785 330	570 65	485 39	525 83	570 278

The Japan Rolling-Stock Manufacturing Co. Ltd.
 (Nippon Sharyo Seizo K. K.)

Diagram Showing the Manufacturing Conditions
at the Time of the Air Raid
 (100% at the end of Dec. 1944)



Notice:—

1. Building Area (sq. yds)	110,528	105,892 (-4,636)	105,892	105,892	105,892	70,995 (-34,897)	40,715 (-30,280)	41,911 (+1,196)	41,911
		burnt				burnt	damaged	rebuilt	
2. Number of Machines (set)	1,320	1,302 (-18)	1,302	1,302	1,302	1,016 (-286)	893 (-123)	987 (+64)	1,042 (+85)
		burnt				burnt	damaged	repaired	repaired
3. Price of Raw Material & Finished Article (1,000 yen)	6,881	6,300	6,208	5,903	5,766	5,408	5,800	6,152	6,777
4. Number of Workmen & those presented	3,807	3,624	3,507	3,614	3,494	3,463	3,321	3,127	2,963
	3,046	2,638	2,767	2,664	2,310	1,725	1,770	1,629	1,499
5. Capacity of Production & Result	810	770	785	795	785	570	485	525	570
	689	651	589	462	330	65	39	83	278

The Japan Rolling-Stock Manufacturing Co. Ltd
 (Nippon Sharyo Seizo K.K.)

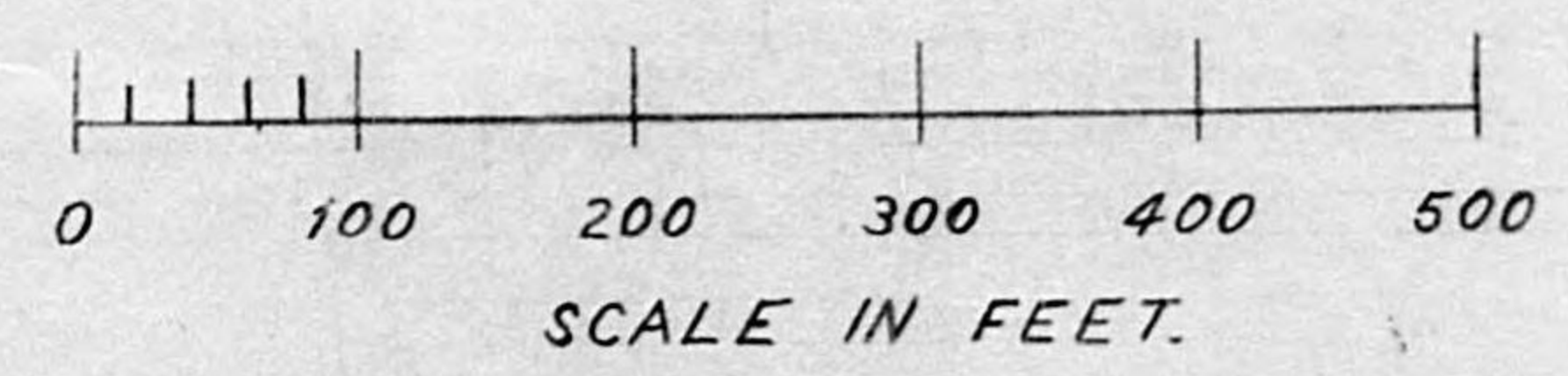
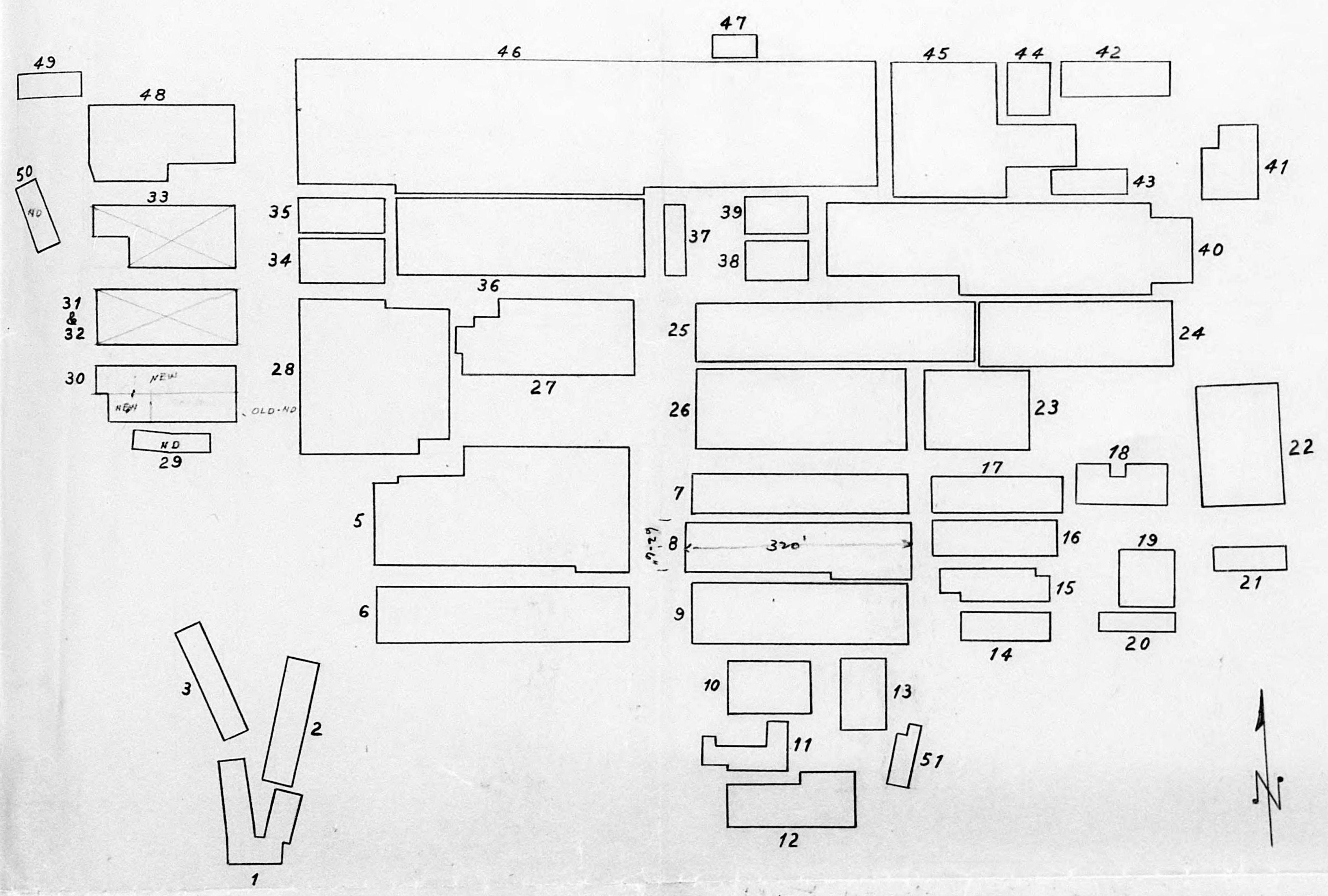
Casualties:

death 2
 injury 3
 student 475 (including Naruse)

③

PIC-AA-X5

27
 81
 132
 2.5
 80
 35
 113
 2.5
 440
 106
 25
 530
 212
 2650
 150
 185
 215
 270
 74
 7.57
 168
 720
 54
 18
 189
 31
 32
 105 = 270
 100
 237
 432
 54
 216
 247
 10
 104
 213
 85
 267.8
 5
 32
 66
 30
 54
 216
 2.5



TARGET No.: 90.20-241 NAME: NIPPON VEHICLE MFG. CO.

U. S. S. B. S.
DAMAGE ASSESMENT WORK SHEET


FUNCTION				NAME OF PLANT NIPPON VEHICLE CO.			
				TYPE OF INDUSTRY <i>R.R. Locomotive Manufacture</i>			
STRUCTURAL ANALYSIS	YEAR BUILT	ORIGINAL USE		REMARKS	CITY NAGOYA	TARGET NO. 241	BLDG. NO.
	FLOOR	TYPE	THICKNESS		LAT. 35.47N	LONG 136.55E	AREA 90.20
	FLOOR	TYPE	THICKNESS		INTEL. SUBJECT NUMBER AA-X5		DATE 11/5-6
	WALLS	TYPE	THICKNESS		PHOTOGRAPHY SARGENT HENRY ROWAN		ROLL-NEG NUMBER
	ROOF MATERIAL	TYPE	THICKNESS		INTERIOR	EXTERIOR	
	TRUSS	TYPE	SPAN		STRUCT. DETAIL NO. OF EXPOSURES		
	CRANES NO.	TYPE	LOAD CAPACITY		TEAM		
	MACHINERY REMOVED TO		REASON		<i>Lt. L.S. Chappell.</i>		
	REPAIRS AND CLEARANCES				<i>Lt. W. Corlett</i>		
	NEW CONSTRUCTION				<i>Lt. R.W. Ayers.</i>		
				<i>Mr. Thomas Gato (Interp.)</i>			

DAMAGE ASSESMENT	DESTROYED
	STRUCTURAL DAMAGE
	SUPERFICIAL DAMAGE
	ROOF DISTURBANCE
	MINOR DAMAGE

GENERAL NOTES - SECTIONS - PLANS - ETC -

ENCLOSURES

1. ~~Bldg Schedule Shts. 1 thru 23
Corlett & Chappell.~~
2. ~~Functional Analysis.~~
3. ~~Damage Assessment
in Color - Ayers~~
4. ~~F/A made by Plant. Officials~~
5. ~~Plot of Raid damage.
made by fleet officials~~
6. ~~Graph - showing effect of
raids on plant
production.~~
7. ~~Photographs.
(Ground Shts).~~



FUNCTIONAL ANALYSIS

NIPPON VEHICLE COMPANY - NAGOYA

BLDG. NO	FUNCTION OF BUILDING	CONST	REMARKS
1	R.R. CAR SHED (OVER TRACK)	W	X
2	KITCHEN & DINING ROOM	W	X
3	R.R. CAR SHED	W	
4	MACHINE SHOP	W	X
5	R.R. CAR ASSEMBLY	W	X
6	R.R. CAR ASSEMBLY	W	
7	PAINT SHOP	W	
8	LOCOMOTIVE BOILER SHOP	S	
9	R.R. CAR ASSEMBLY	S	
10	STORAGE - BICYCLES	W	
11	ADMINISTRATION	W	
12	ADMINISTRATION	W	1 STORY
13	DINNING ROOM - WORKERS	W	
14	DISPENSARY	W	
15	OFFICES	W	
16	OFFICES	W	2 STORIES
17	CARPENTER SHOP	W	
18	LUMBER DRYING BUILDING	M	X
19	CARPENTER SHOP	W	X
20	CARPENTER SHOP	W	X
21	PATTERN SHOP - (WOOD)	W	
22	CARPENTER & LUMBER CUTTING SHOP	W	
23	WOOD WORKING SHOP	W	
24	BOILER ROOM b-SAND REMOVAL	W	
25	MACHINE SHOP	S	X
26	R.R. CAR ASSEMBLY	W	
27	PLATE SHOP	W	X
28	STORAGE - BUILDINGS	W	X
29	PIPE STORAGE	W	
30	BOILER SHOP	W	
31	STORAGE	W	
32	STORAGE	W	
33	STORAGE	W	
34	WAREHOUSE OFFICE	W	
35	MACHINE SHOP	W	
36	FORGE	S	
37	COMPRESSORS - AIR	C	
38	DINNING ROOM	W	
39	SAND CASTING (FOUNDRY)	S	
40	FOUNDRY	W	
41	STORAGE	W	
42	MACHINE SHOP	W	
43	SCRAP RECOVERY	W	
44	MACHINE SHOP	W	
45	BOILER SHOP	S	
46	MACHINE SHOP	S	
47	BOILER SHOP	S	
48	TRACK SHOP	W	
49	TURN TABLE	S	

W.C.

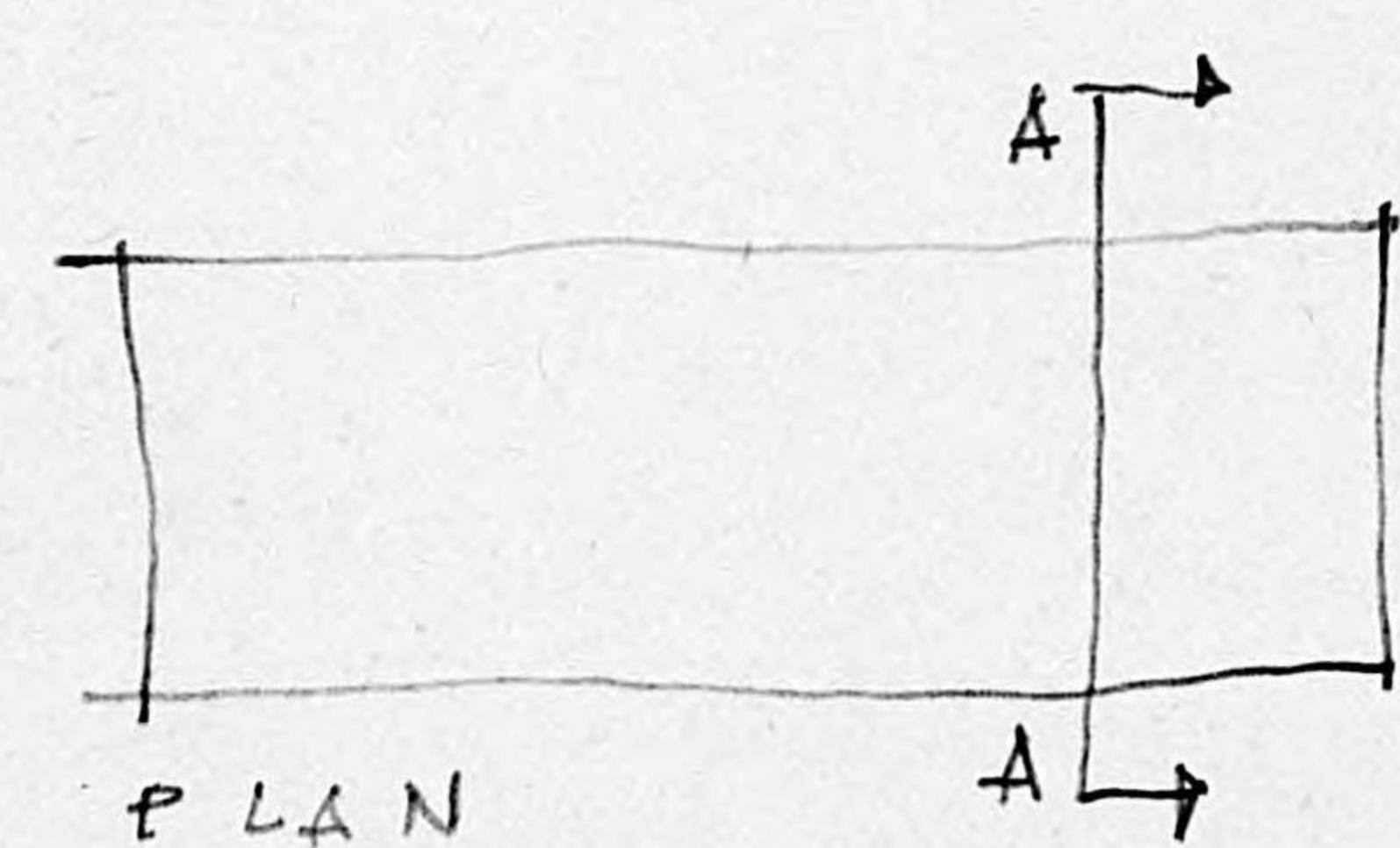
U. S. S. B. S.
DAMAGE ASSESMENT WORK SHEET

FUNCTION			
B.R. CAR SHED.			
STRUCTURAL ANALYSIS	YEAR BUILT	ORIGINAL USE	REMARKS
	FLOOR	TYPE	THICKNESS
		DIRT	
	FLOOR	TYPE	THICKNESS
		1	
	WALLS	TYPE	THICKNESS
		Shiplap horiz. Siding	
	ROOF MATERIAL	TYPE	THICKNESS
		Corr. Iron	
	TRUSS	TYPE	SPAN
	Wood -	See Section A-A	
CRANES NO.	TYPE	LOAD CAPACITY	
MACHINERY REMOVED TO		REASON	
REPAIRS AND CLEARANCES			
NEW CONSTRUCTION			

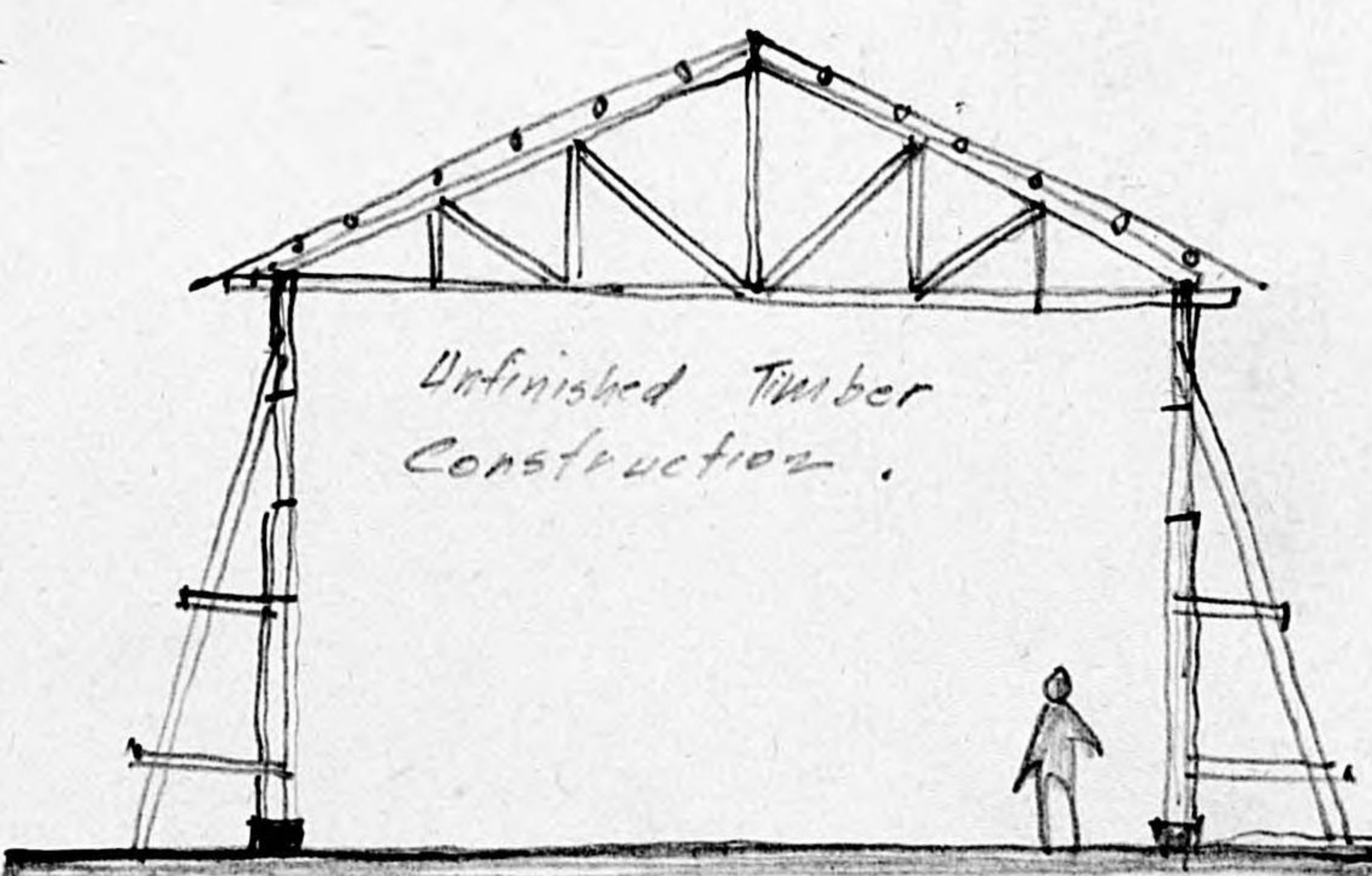
NAME OF PLANT		
TYPE OF INDUSTRY		
CITY	TARGET NO.	BLDG. NO.
		1
LAT.	LONG	AREA
INTEL. SUBJECT NUMBER		DATE
PHOTOGRAPHY		ROLL - NEG NUMBER
INTERIOR	EXTERIOR	
STRUCT. DETAIL	NO. OF EXPOSURES	
TEAM		

DAMAGE ASSESMENT	DESTROYED
	STRUCTURAL DAMAGE
	SUPERFICIAL DAMAGE
	ROOF DISTURBANCE
	MINOR DAMAGE

GENERAL NOTES - SECTIONS - PLANS - ETC -



PLAN



SECTION. A-A

BLDG. NUMBER

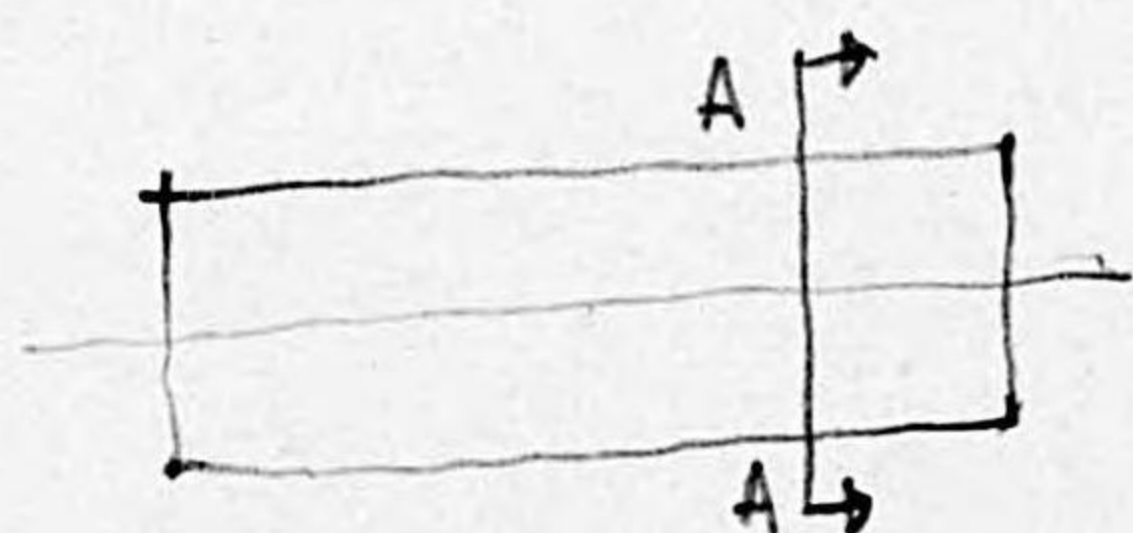
1

U. S. S. B. S.
DAMAGE ASSESMENT WORK SHEET

FUNCTION			NAME OF PLANT		
<i>DINING ROOM</i>			TYPE OF INDUSTRY		
YEAR BUILT		ORIGINAL USE	CITY	TARGET NO.	BLDG. NO.
			LAT.	LONG	AREA
			INTEL. SUBJECT NUMBER		DATE
			PHOTOGRAPHY		ROLL - NEG NUMBER
			INTERIOR	EXTERIOR	
			STRUCT. DETAIL	NO. OF EXPOSURES	
STRUCTURAL ANALYSIS					
FLOOR	TYPE	THICKNESS			
<i>Concrete</i>					
FLOOR	TYPE	THICKNESS			
<i>2nd Wood</i>					
WALLS	TYPE	THICKNESS			
<i>Stud - pressed Seaweed</i>	<i>Ext. Stucco Int.</i>				
ROOF MATERIAL	TYPE	THICKNESS			
	<i>Corr. Iron</i>				
TRUSS	TYPE	SPAN			
<i>Wood</i>					
CRANES NO.	TYPE	LOAD CAPACITY			
<i>None</i>					
MACHINERY REMOVED TO		REASON			
-					
REPAIRS AND CLEARANCES					
-					
NEW CONSTRUCTION					
-					

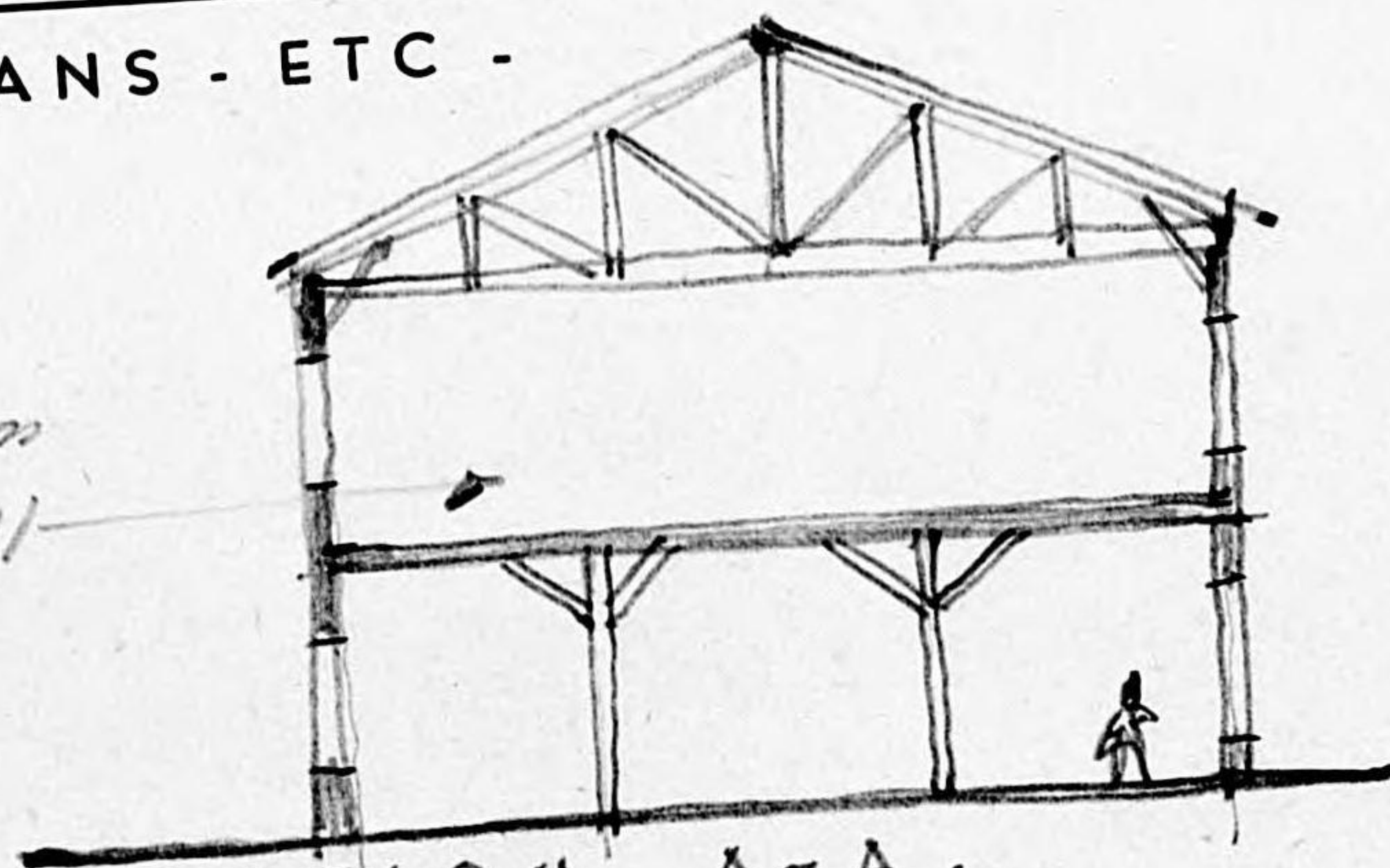
DAMAGE ASSESMENT	DESTROYED
	STRUCTURAL DAMAGE
	SUPERFICIAL DAMAGE
	ROOF DISTURBANCE
	MINOR DAMAGE

GENERAL NOTES - SECTIONS - PLANS - ETC -



PLAN

*Drafting Room
& Mess hall*



SECTION A-A

NOTE
.BLDG. 3

*SAME CONST. AS
BLDG. 1 - NO WALLS*

BLDG. NUMBER

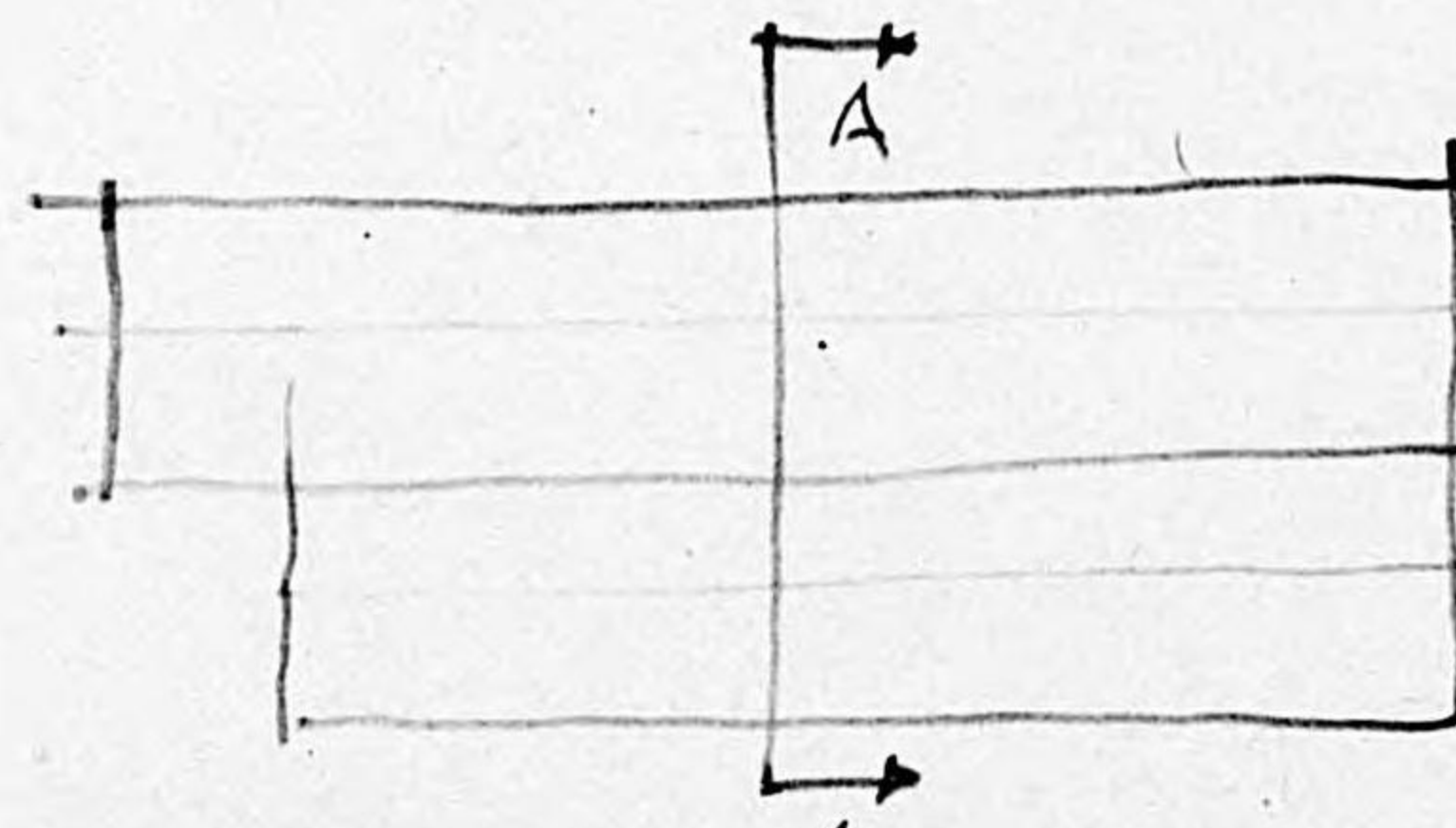
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U. S. S. B. S.
DAMAGE ASSESMENT WORK SHEET

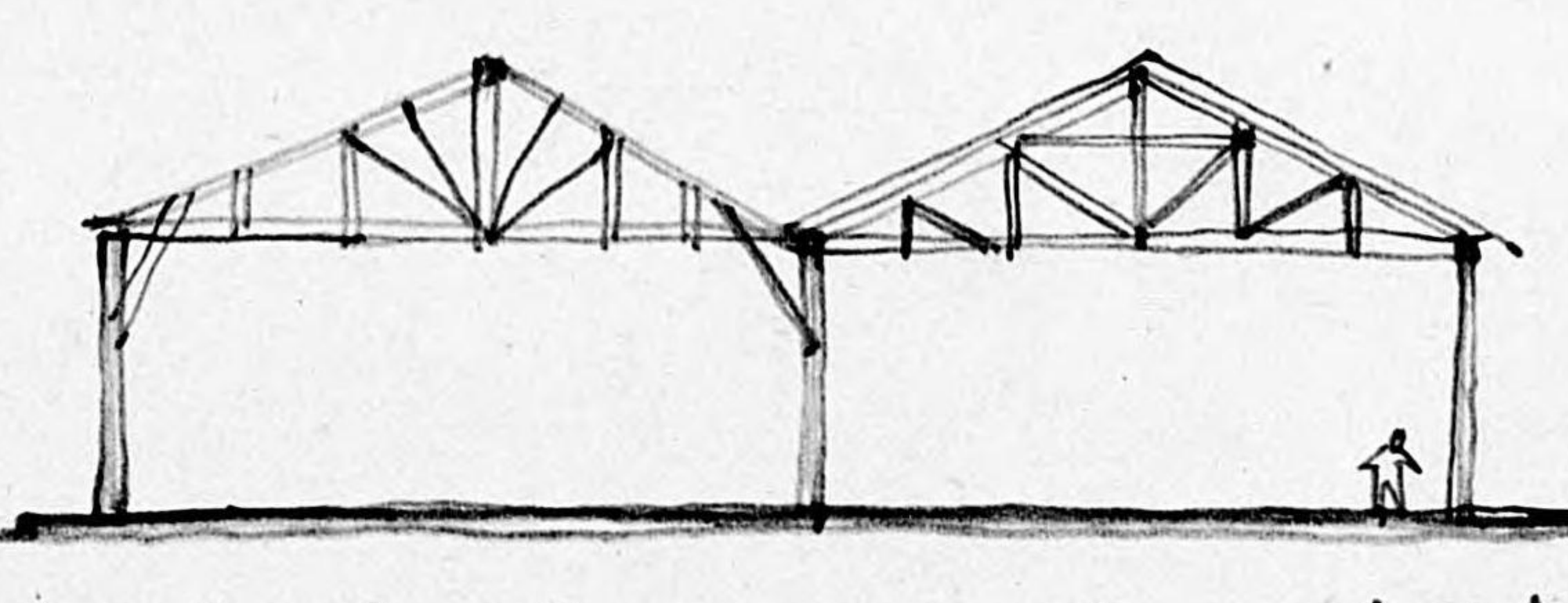
FUNCTION			NAME OF PLANT		
M A C H I N E S H O P			TYPE OF INDUSTRY		
STRUCTURAL ANALYSIS	YEAR BUILT	ORIGINAL USE	REMARKS		
	FLOOR	TYPE	THICKNESS		
	Dirt				
	FLOOR	TYPE	THICKNESS		
	1				
	WALLS	TYPE	THICKNESS		
	Vert. corr. lean on studs				
	ROOF MATERIAL	TYPE	THICKNESS		
	Corr. Iron on timber Purlins				
	TRUSS	TYPE	SPAN		
Simple Wood - See sketch.					
CRANES NO.	TYPE	LOAD CAPACITY			
none					
MACHINERY REMOVED TO		REASON			
-					
REPAIRS AND CLEARANCES					
-					
NEW CONSTRUCTION					
-					
TEAM					

DAMAGE ASSESMENT	DESTROYED
	STRUCTURAL DAMAGE
	SUPERFICIAL DAMAGE
	ROOF DISTURBANCE
	MINOR DAMAGE

GENERAL NOTES - SECTIONS - PLANS - ETC -



PLAN



SECTION A-A

Bought timber construction.

BLDG. NUMBER

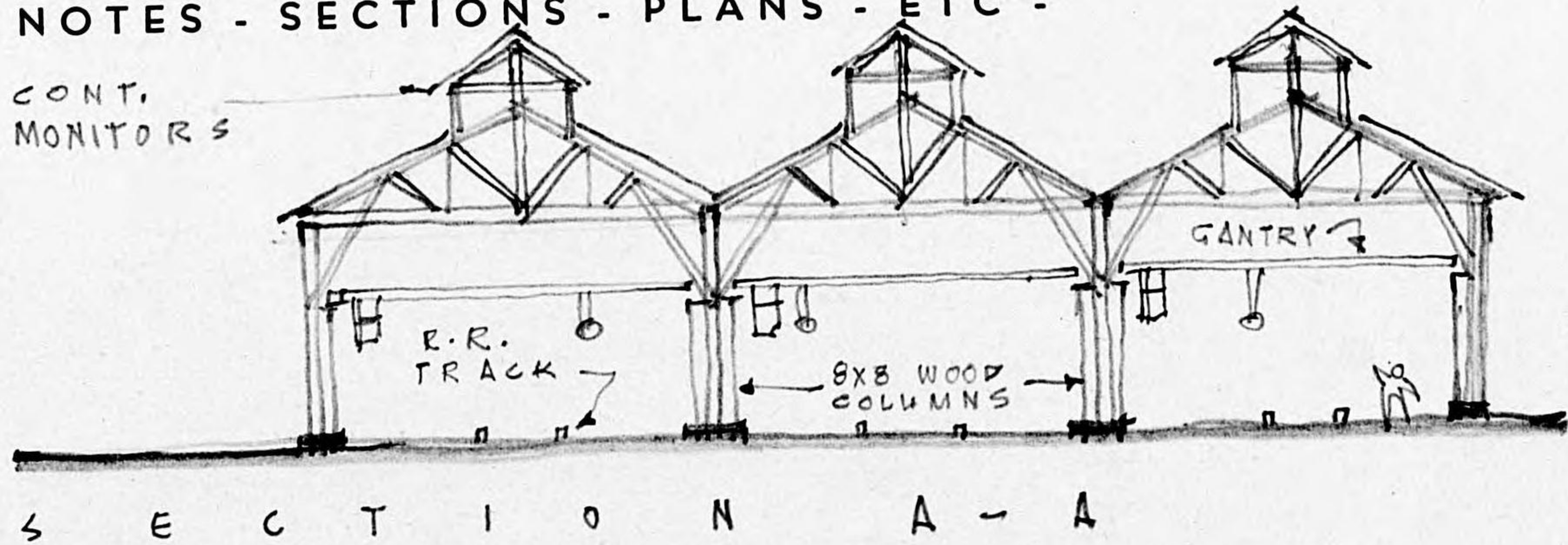
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U. S. S. B. S.
DAMAGE ASSESMENT WORK SHEET

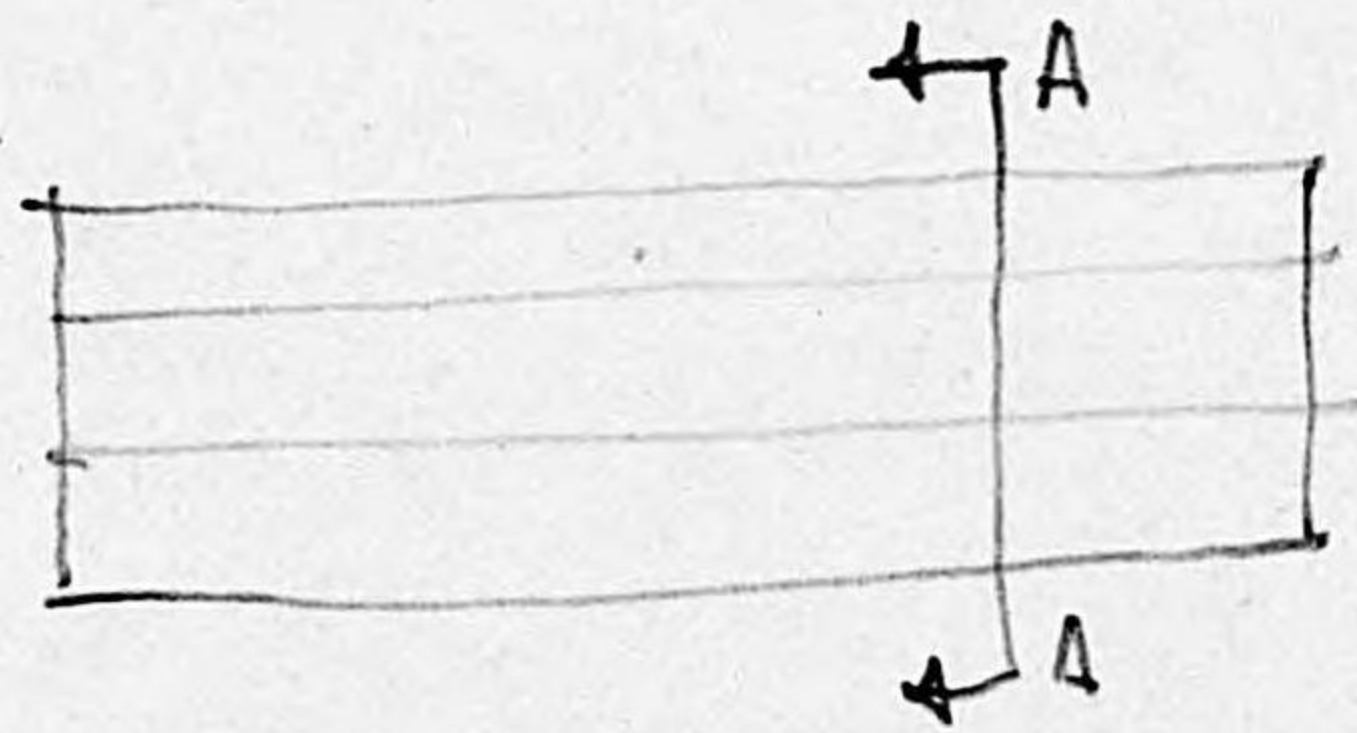
FUNCTION				NAME OF PLANT			
R.R. CAR ASSEMBLY				TYPE OF INDUSTRY			
STRUCTURAL ANALYSIS	YEAR BUILT	ORIGINAL USE	REMARKS	CITY	TARGET NO.	BLDG. NO.	
	FLOOR	TYPE	THICKNESS	LAT.	LONG	AREA	5
	DIRT						
	FLOOR	TYPE	THICKNESS	INTEL. SUBJECT NUMBER			DATE
	1			PHOTOGRAPHY			ROLL - NEG NUMBER
	WALLS	TYPE	THICKNESS				INTERIOR
	COCC. IRON.			✓			
	ROOF MATERIAL	TYPE	THICKNESS	STRUCT. DETAIL		NO. OF EXPOSURES	
	COCC. IRON			TEAM			
	TRUSS	TYPE	SPAN				
WOOD.							
CRANES NO.	TYPE	LOAD CAPACITY	REASON				
GANTRIES		3	See Sketch				
MACHINERY REMOVED TO							
REPAIRS AND CLEARANCES							
NEW CONSTRUCTION							

DAMAGE ASSESMENT	DESTROYED
	STRUCTURAL DAMAGE
	SUPERFICIAL DAMAGE
	ROOF DISTURBANCE
	MINOR DAMAGE

GENERAL NOTES - SECTIONS - PLANS - ETC -



S E C T I O N A - A



P L A N

BLDG. NUMBER

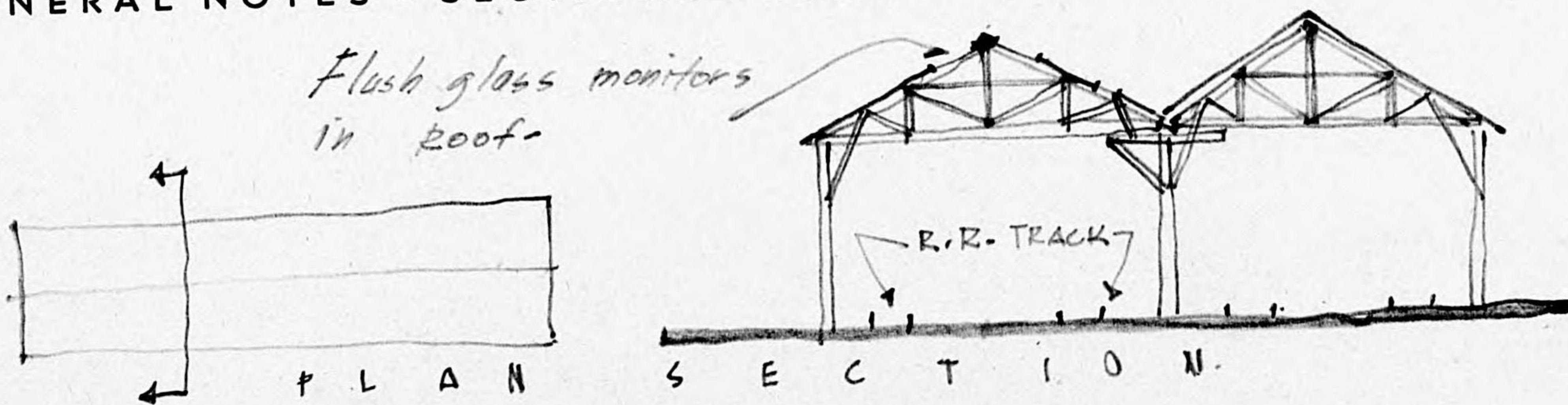
5

U. S. S. B. S.
DAMAGE ASSESMENT WORK SHEET

FUNCTION			NAME OF PLANT		
<i>B. R. CAR ASSEMBLY SHED</i>					
STRUCTURAL ANALYSIS	YEAR BUILT		ORIGINAL USE		REMARKS
	FLOOR	TYPE	THICKNESS		
	<i>DIET.</i>				
	FLOOR	TYPE	THICKNESS		
	<i>1</i>				
	WALLS	TYPE	THICKNESS		
	<i>Stud - 1/2 x 8</i>		<i>SIDING</i>		
	ROOF MATERIAL	TYPE	THICKNESS		
		<i>CORR. IRON</i>			
TRUSS	TYPE	SPAN			
	<i>Rough</i>	<i>timber</i>			
CRANES NO.	TYPE	LOAD CAPACITY			
	<i>none</i>				
MACHINERY REMOVED TO		REASON			
REPAIRS AND CLEARANCES					
NEW CONSTRUCTION					
			TYPE OF INDUSTRY		
CITY		TARGET NO.	BLDG. NO.		
			<i>6</i>		
LAT.	LONG	AREA			
INTEL. SUBJECT NUMBER				DATE	
PHOTOGRAPHY				ROLL - NEG NUMBER	
				<i>PIC-AA-15:1</i>	
INTERIOR		EXTERIOR			
		<input checked="" type="checkbox"/>			
STRUCT. DETAIL		NO. OF EXPOSURES			
TEAM					

DAMAGE ASSESMENT	DESTROYED
	STRUCTURAL DAMAGE
	SUPERFICIAL DAMAGE
	ROOF DISTURBANCE
	MINOR DAMAGE

GENERAL NOTES - SECTIONS - PLANS - ETC -



BLDG. NUMBER

6

U. S. S. B. S.
DAMAGE ASSESMENT WORK SHEET

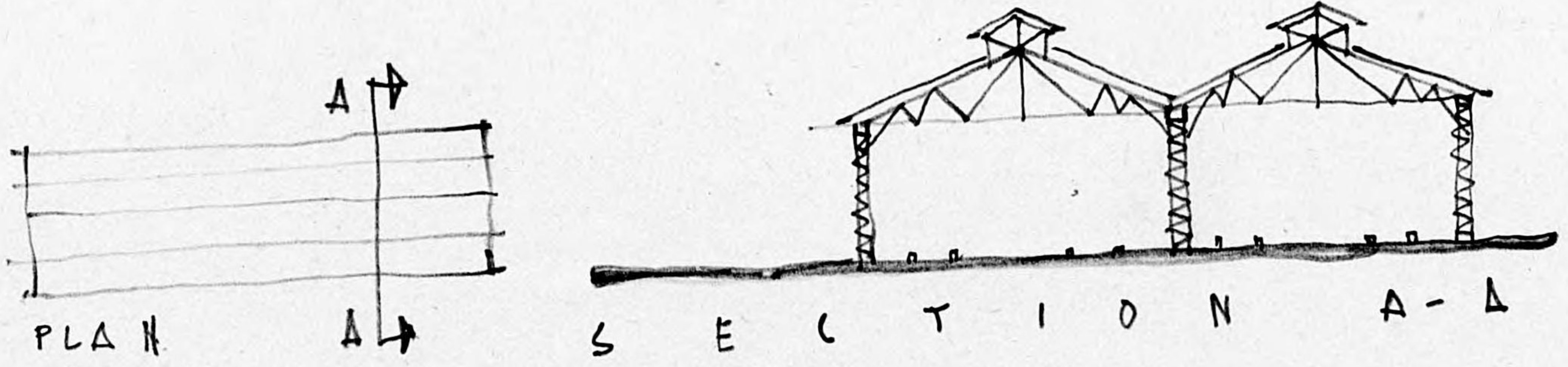
FUNCTION			
LOCKER & BATH HOUSE			
STRUCTURAL ANALYSIS	YEAR BUILT	ORIGINAL USE	REMARKS
			New used as Assembly Bldg
	FLOOR	TYPE	THICKNESS
		Concrete	
	FLOOR	TYPE	THICKNESS
		1	
	WALLS	TYPE	THICKNESS
		Corr. Iron.	
	ROOF MATERIAL	TYPE	THICKNESS
		Wood Purlins -	Corr. Iron
TRUSS	TYPE	SPAN	
	Steel -	See Section A-A.	
CRANES NO.	TYPE	LOAD CAPACITY	
	none		
MACHINERY REMOVED TO		REASON	
-			
REPAIRS AND CLEARANCES			
-			
NEW CONSTRUCTION			
-			

NAME OF PLANT		
TYPE OF INDUSTRY		
CITY	TARGET NO.	BLDG. NO.
		9
LAT.	LONG	AREA
INTEL. SUBJECT NUMBER		DATE
PHOTOGRAPHY		
INTERIOR	EXTERIOR	ROLL-NEG NUMBER
	✓✓	PIC-AA- 15:2 15:3
STRUCT. DETAIL	NO. OF EXPOSURES	

TEAM

DAMAGE ASSESMENT	DESTROYED
	STRUCTURAL DAMAGE
	SUPERFICIAL DAMAGE
	ROOF DISTURBANCE
	MINOR DAMAGE

GENERAL NOTES - SECTIONS - PLANS - ETC -



BLDG. NUMBER
9

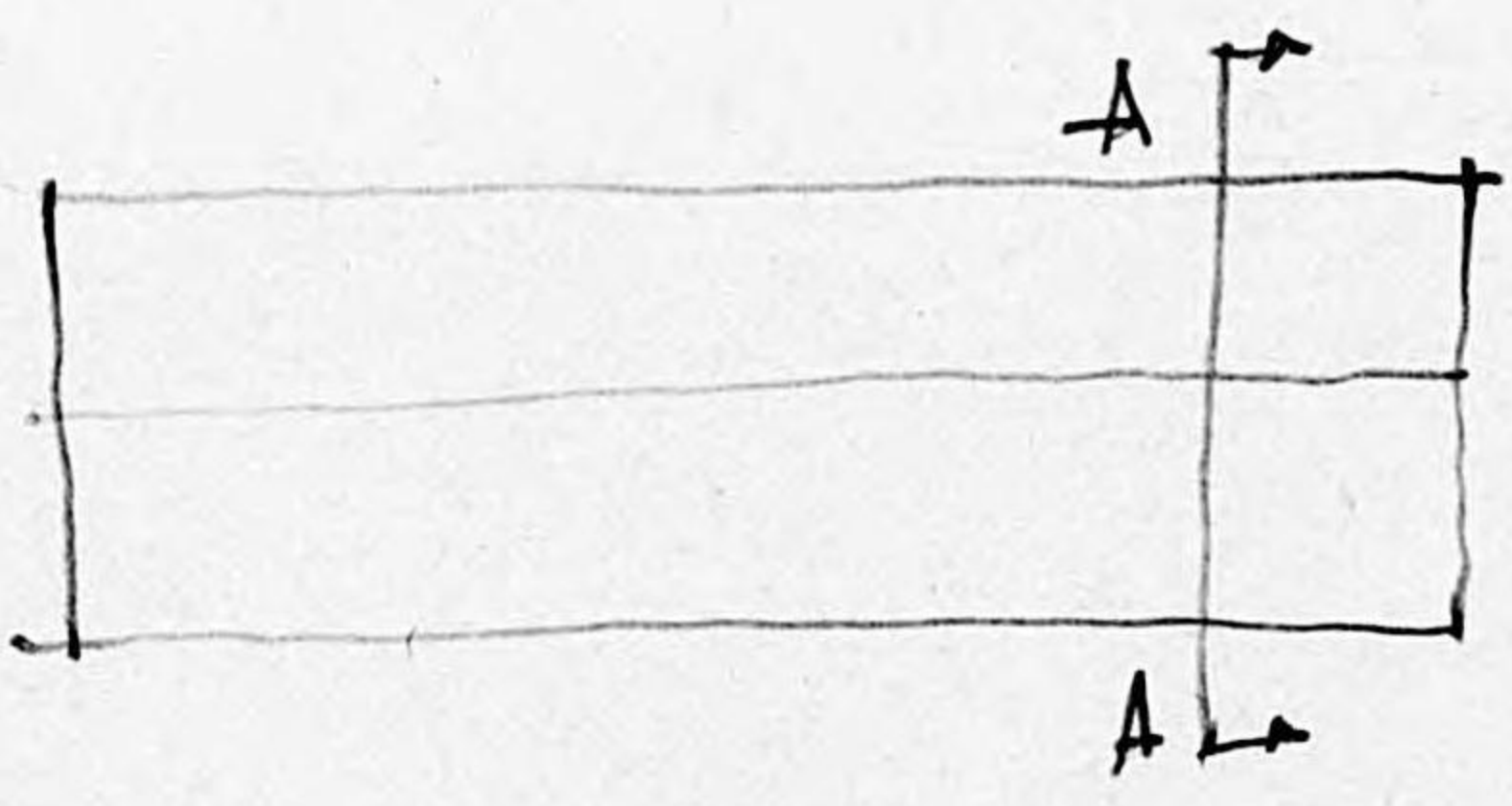
U. S. S. B. S.
DAMAGE ASSESMENT WORK SHEET

FUNCTION			NAME OF PLANT		
LOCOMOTIVE BOILER SHOP			TYPE OF INDUSTRY		
STRUCTURAL ANALYSIS	YEAR BUILT	ORIGINAL USE	CITY		TARGET NO. BLDG. NO.
	FLOOR	TYPE	LAT. LONG AREA		8
	FLOOR	TYPE	INTEL. SUBJECT NUMBER		DATE
	WALLS	TYPE	PHOTOGRAPHY		ROLL - NEG NUMBER
	ROOF MATERIAL	TYPE	INTERIOR EXTERIOR		PIC-AA-15:2 15:3
	TRUSS	TYPE	STRUCT. DETAIL		NO. OF EXPOSURES
	CRANES NO.	TYPE	TEAM		
	MACHINERY REMOVED TO	REASON			
	REPAIRS AND CLEARANCES				
	NEW CONSTRUCTION				

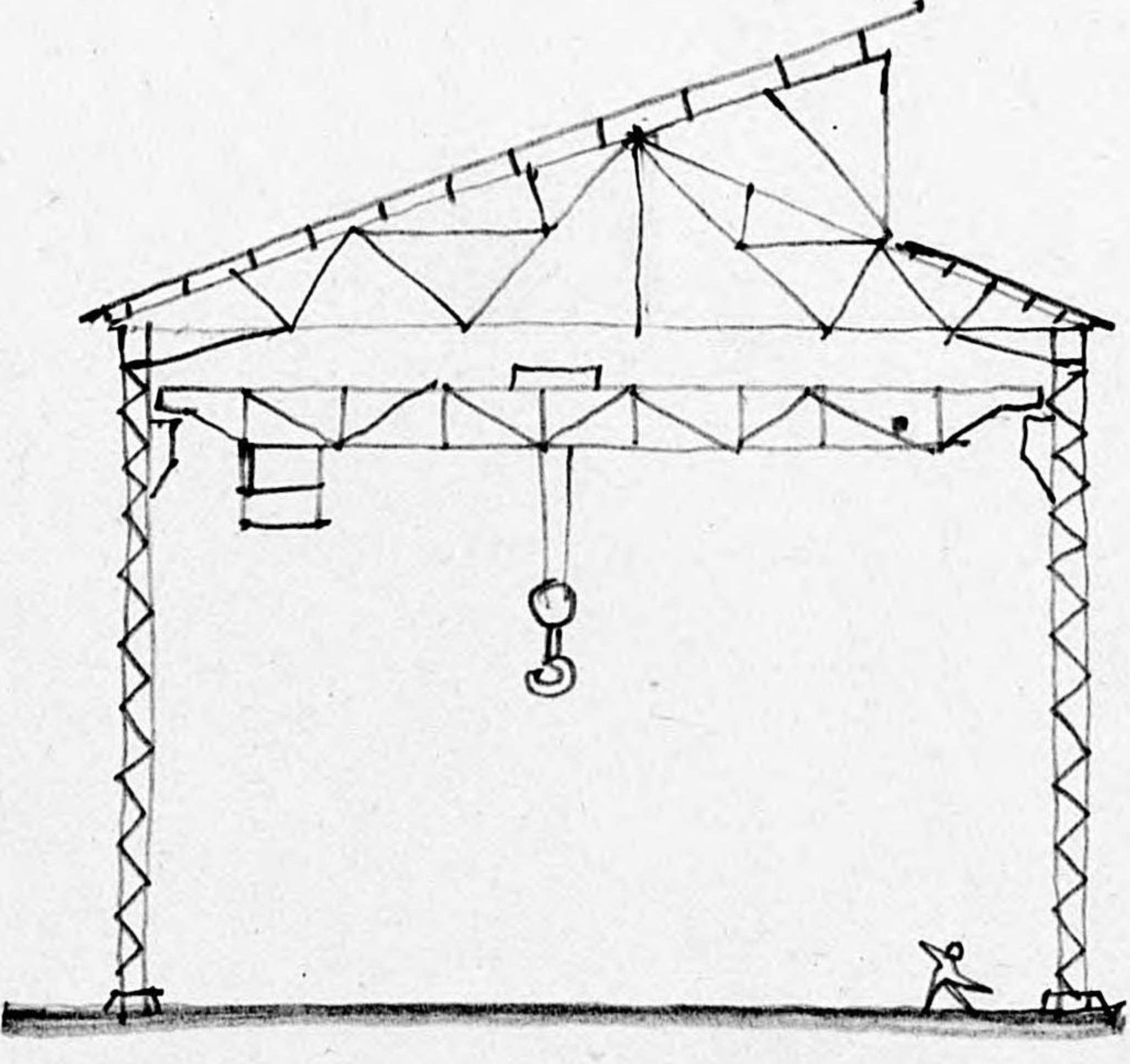
DAMAGE ASSESMENT	DESTROYED
	STRUCTURAL DAMAGE
	SUPERFICIAL DAMAGE
	ROOF DISTURBANCE
	MINOR DAMAGE

GENERAL NOTES - SECTIONS - PLANS - ETC -

NOTE BLDG. 7 DESTROYED



P L A N



S E C T I O N A - A

BLDG. NUMBER
8

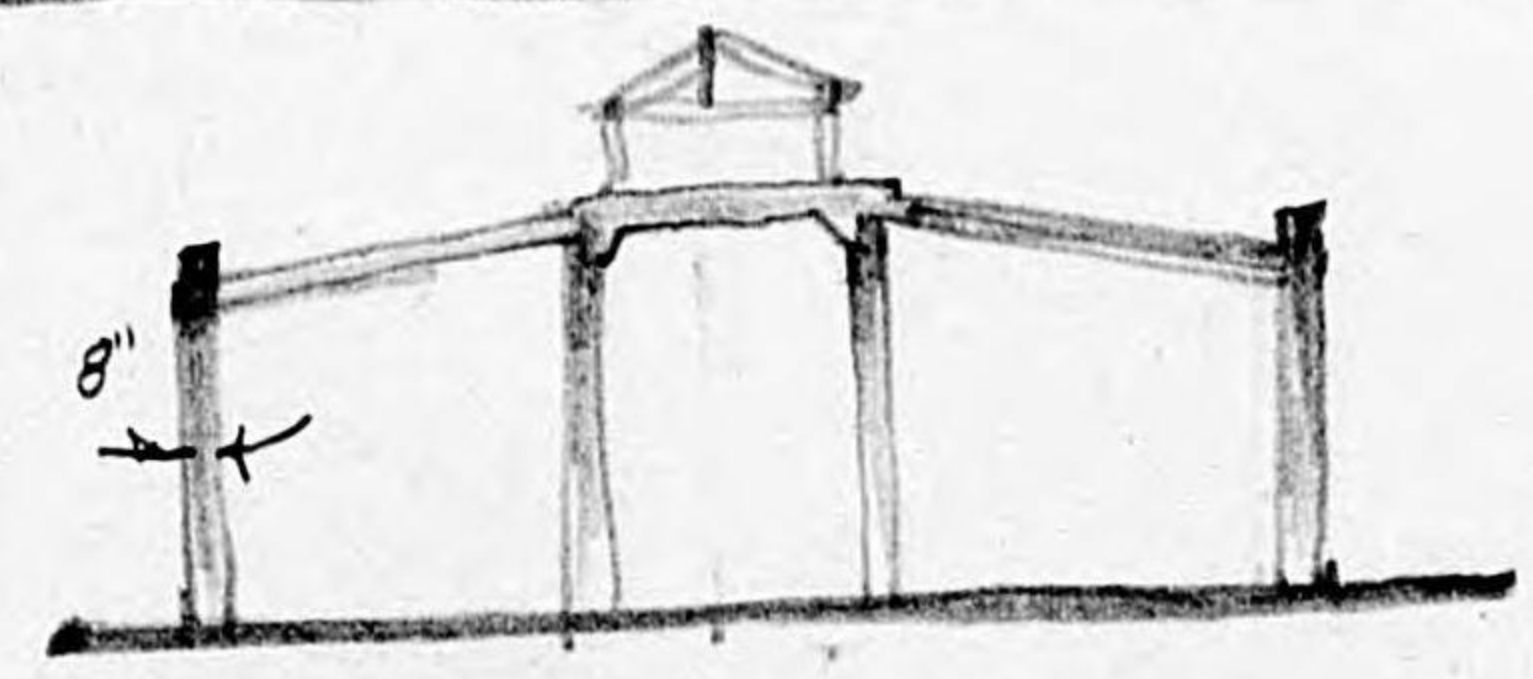
U. S. S. B. S.
DAMAGE ASSESMENT WORK SHEET

STRUCTURAL ANALYSIS	FUNCTION CARPENTER SHOP			NAME OF PLANT		
	YEAR BUILT			TYPE OF INDUSTRY		
	ORIGINAL USE			CITY	TARGET NO.	BLDG. NO.
	REMARKS			LAT.	LONG	AREA
	FLOOR	TYPE	THICKNESS	20		
	<i>DIRT.</i>					
	FLOOR	TYPE	THICKNESS	INTEL. SUBJECT NUMBER		
	WALLS			DATE		
	<i>1/2 x 6" Vert Siding on studs</i>			PHOTOGRAPHY		
	ROOF MATERIAL			INTERIOR		
<i>Corr. Iron.</i>			EXTERIOR			
TRUSS			STRUCT. DETAIL			
<i>Rough Timber</i>			NO. OF EXPOSURES			
CRANES NO.			TEAM			
TYPE						
LOAD CAPACITY						
MACHINERY REMOVED TO						
REASON						
REPAIRS AND CLEARANCES						
NEW CONSTRUCTION						

DAMAGE ASSESMENT	DESTROYED
	STRUCTURAL DAMAGE
	SUPERFICIAL DAMAGE
	ROOF DISTURBANCE
	MINOR DAMAGE

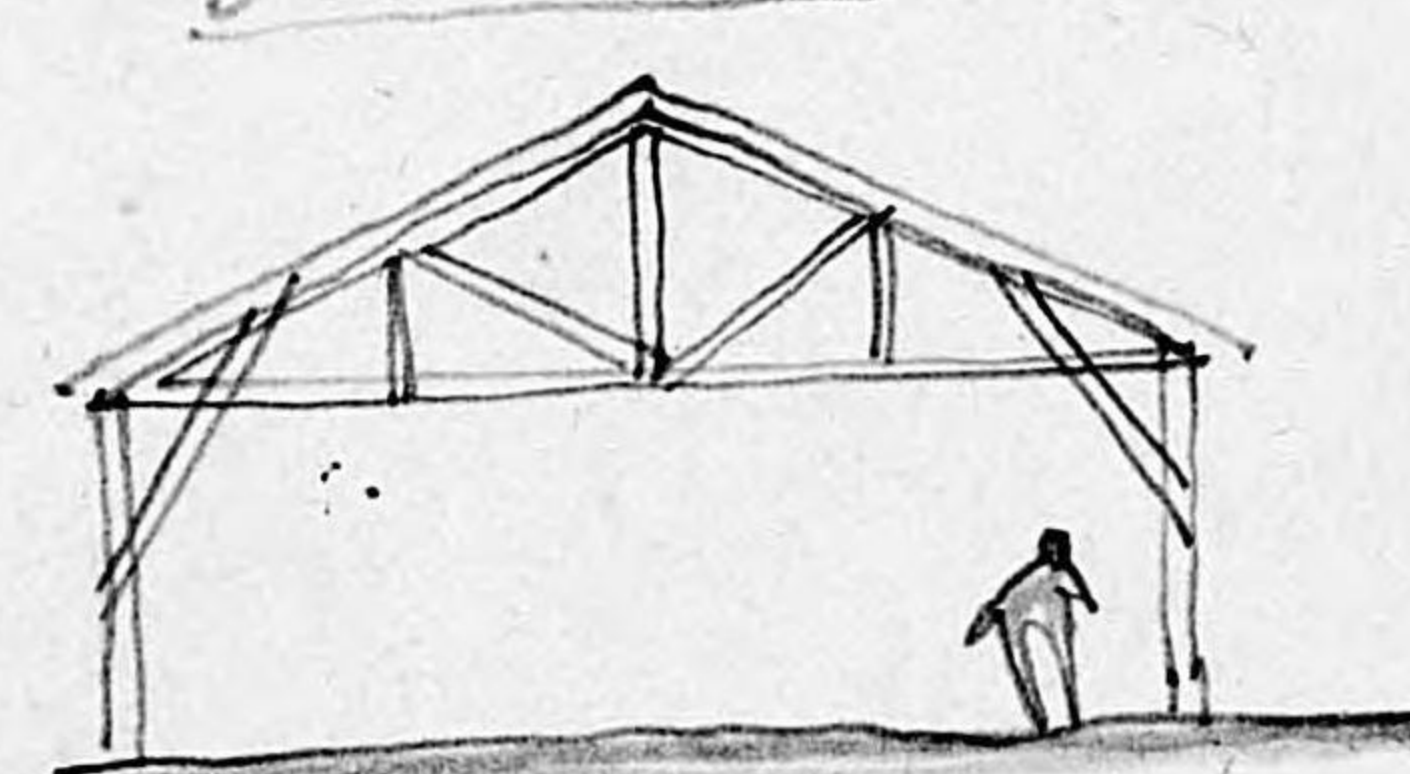
GENERAL NOTES - SECTIONS - PLANS - ETC -

NOTE BLDGS. 10.
11.
DESTROYED 12.
13.
14.
15.
16.
17.



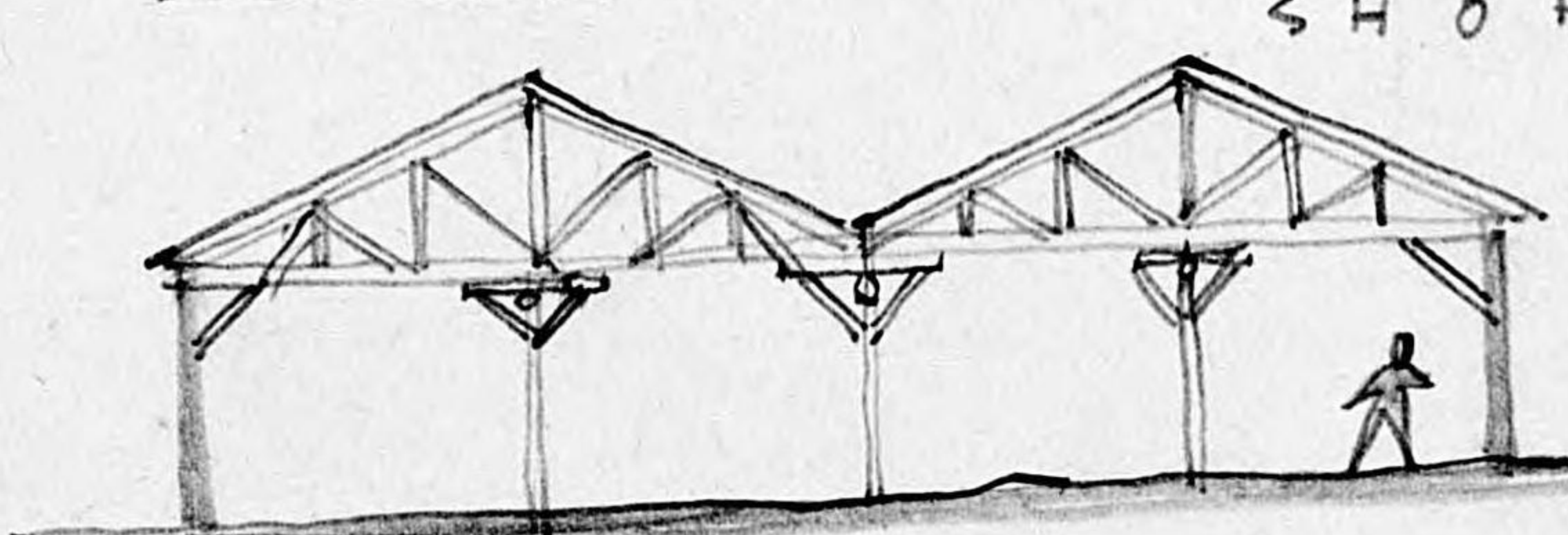
SECTION
Hollow Tile walls
Continuous wood monitor
Concrete floor.
LUMBER DRYING CELLS
BLDG. NO. 18

BLDG. 20.



SECTION

BLDG 19 CARPENTER SHOPS



SECTION

BLDG. NUMBER
20

U. S. S. B. S.
DAMAGE ASSESMENT WORK SHEET

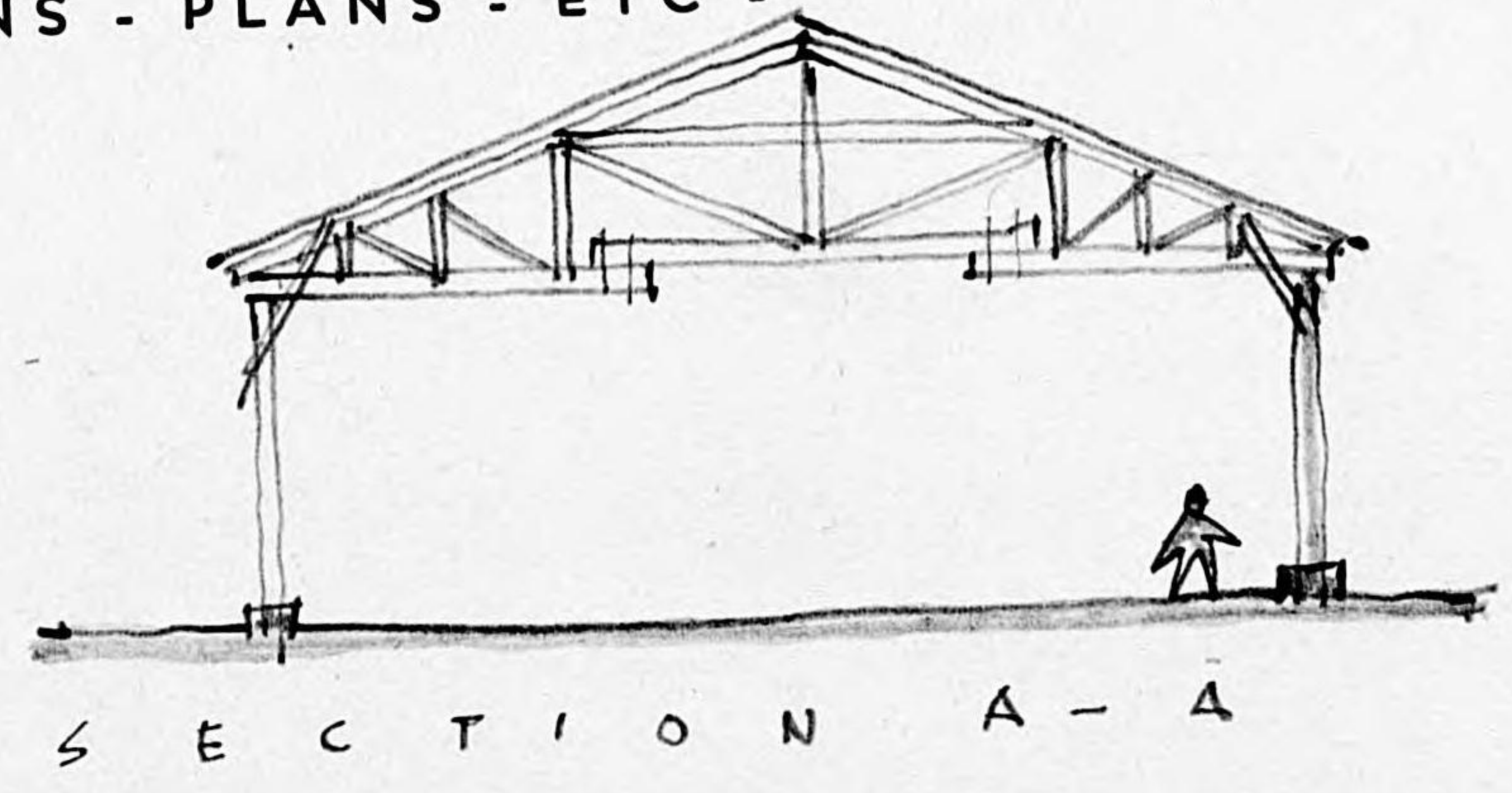
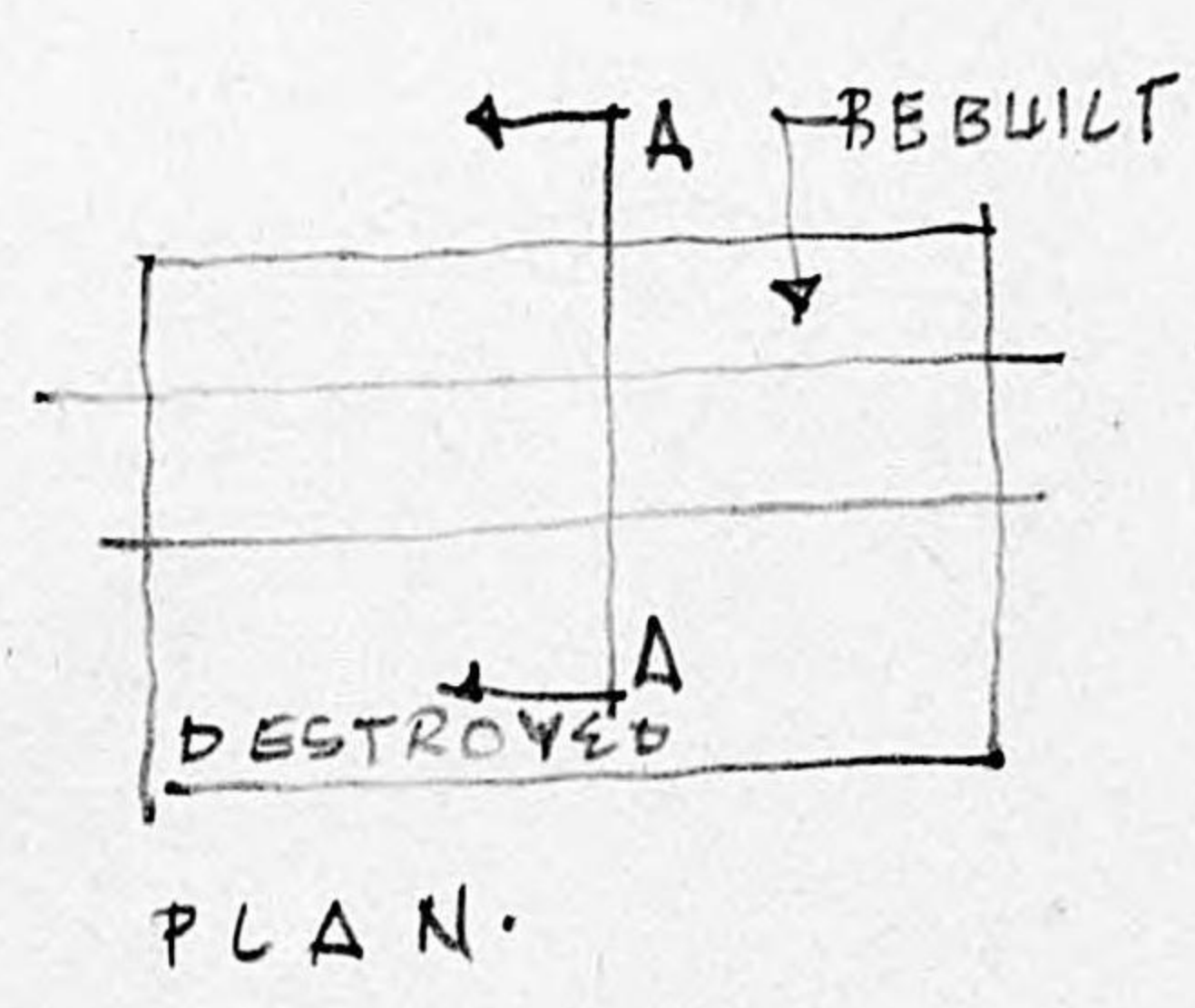
STRUCTURAL ANALYSIS	FUNCTION		
	WOOD WORKING SHOP		
	YEAR BUILT	ORIGINAL USE	REMARKS
	FLOOR	TYPE	THICKNESS
	DIRT		
	FLOOR	TYPE	THICKNESS
	1		
	WALLS	TYPE	THICKNESS
	4x4 stud. - Pressed Seaweed		
	ROOF MATERIAL	TYPE	THICKNESS
1/2x6" Sheathing			
TRUSS	TYPE	SPAN	
Rough Wood Timber Truss			
CRANES NO.	TYPE	LOAD CAPACITY	
-			
MACHINERY REMOVED TO	REASON		
-			
REPAIRS AND CLEARANCES			
-			
NEW CONSTRUCTION			
-			

NAME OF PLANT		
TYPE OF INDUSTRY		
CITY	TARGET NO.	BLDG. NO.
		22
LAT.	LONG	AREA
INTEL. SUBJECT NUMBER		DATE
PHOTOGRAPHY		ROLL - NEG NUMBER
INTERIOR	EXTERIOR	
STRUCT. DETAIL	NO. OF EXPOSURES	

TEAM

DAMAGE ASSESMENT	DESTROYED
	STRUCTURAL DAMAGE
	SUPERFICIAL DAMAGE
	ROOF DISTURBANCE
	MINOR DAMAGE

GENERAL NOTES - SECTIONS - PLANS - ETC -



NOTE
BLDG 21
DESTROYED

BLDG. NUMBER
22.

U. S. S. B. S.
DAMAGE ASSESMENT WORK SHEET

STRUCTURAL ANALYSIS	FUNCTION		
	MACHINE SHOP		
	YEAR BUILT	ORIGINAL USE	REMARKS
	FLOOR	TYPE	THICKNESS
	BRICK		
	FLOOR	TYPE	THICKNESS
	1		
	WALLS	TYPE	THICKNESS
	Corr. Iron on Angle Iron		
	ROOF MATERIAL	TYPE	THICKNESS
	Corr. Iron		
TRUSS	TYPE	SPAN	
	Steel	See Section A-A	
CRANES NO.	TYPE	LOAD CAPACITY	
-			
MACHINERY REMOVED TO	REASON		
-			
REPAIRS AND CLEARANCES			
NEW CONSTRUCTION			

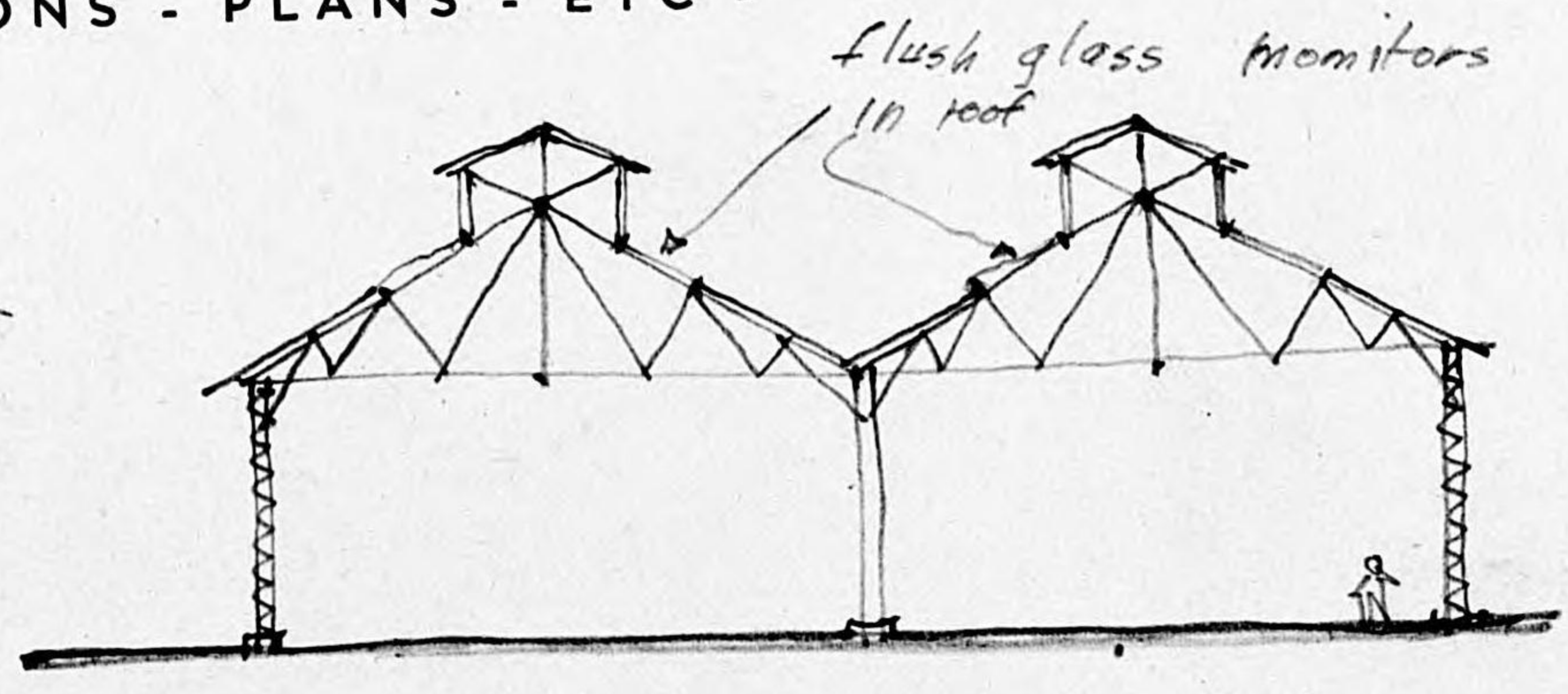
NAME OF PLANT		
TYPE OF INDUSTRY		
CITY	TARGET NO.	BLDG. NO.
		25
LAT.	LONG	AREA
INTEL. SUBJECT NUMBER		DATE
PHOTOGRAPHY		
INTERIOR		EXTERIOR
STRUCT. DETAIL		NO. OF EXPOSURES

TEAM

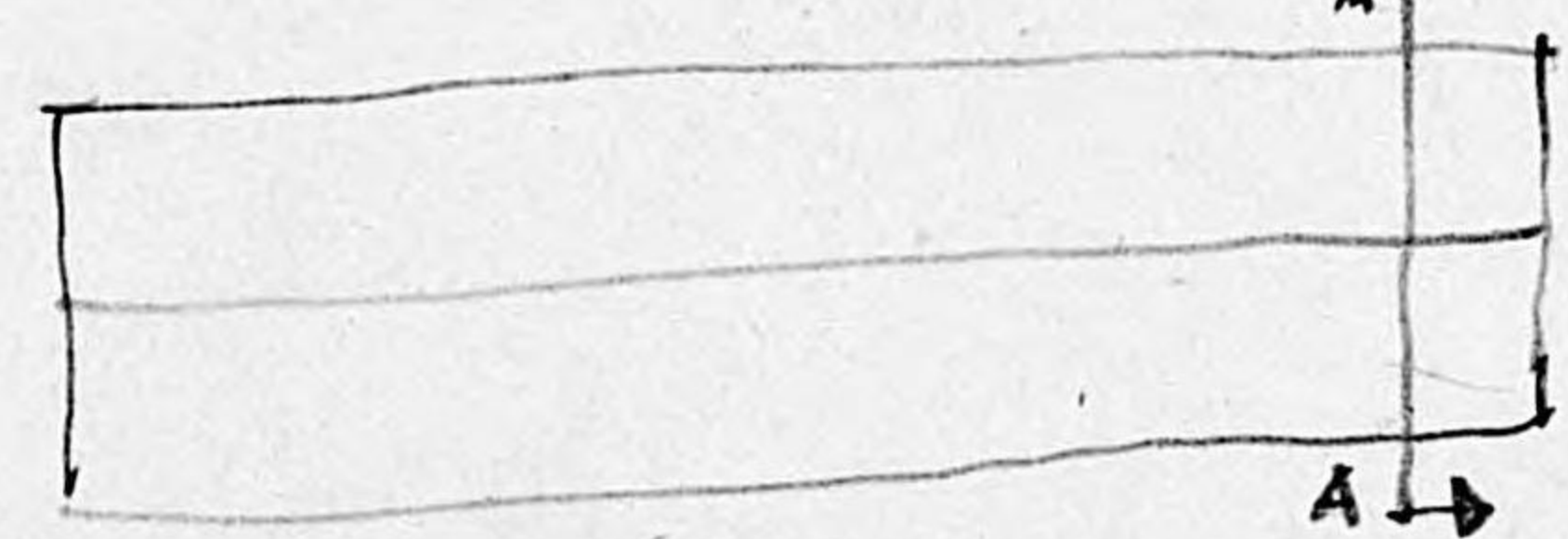
DAMAGE ASSESMENT	DESTROYED
	STRUCTURAL DAMAGE
	SUPERFICIAL DAMAGE
	ROOF DISTURBANCE
	MINOR DAMAGE

GENERAL NOTES - SECTIONS - PLANS - ETC -

NOTE
 BLDG 23 = WOOD WORKING.
 BLDG 24 = DESTROYED
 REMOVAL OF SAND FROM
 MOLDS.



SECTION A-A



PLAN

NOTE BLDG 26 } DESTROYED.
 R.R. CAR ASSEMBLY }

BLDG. NUMBER

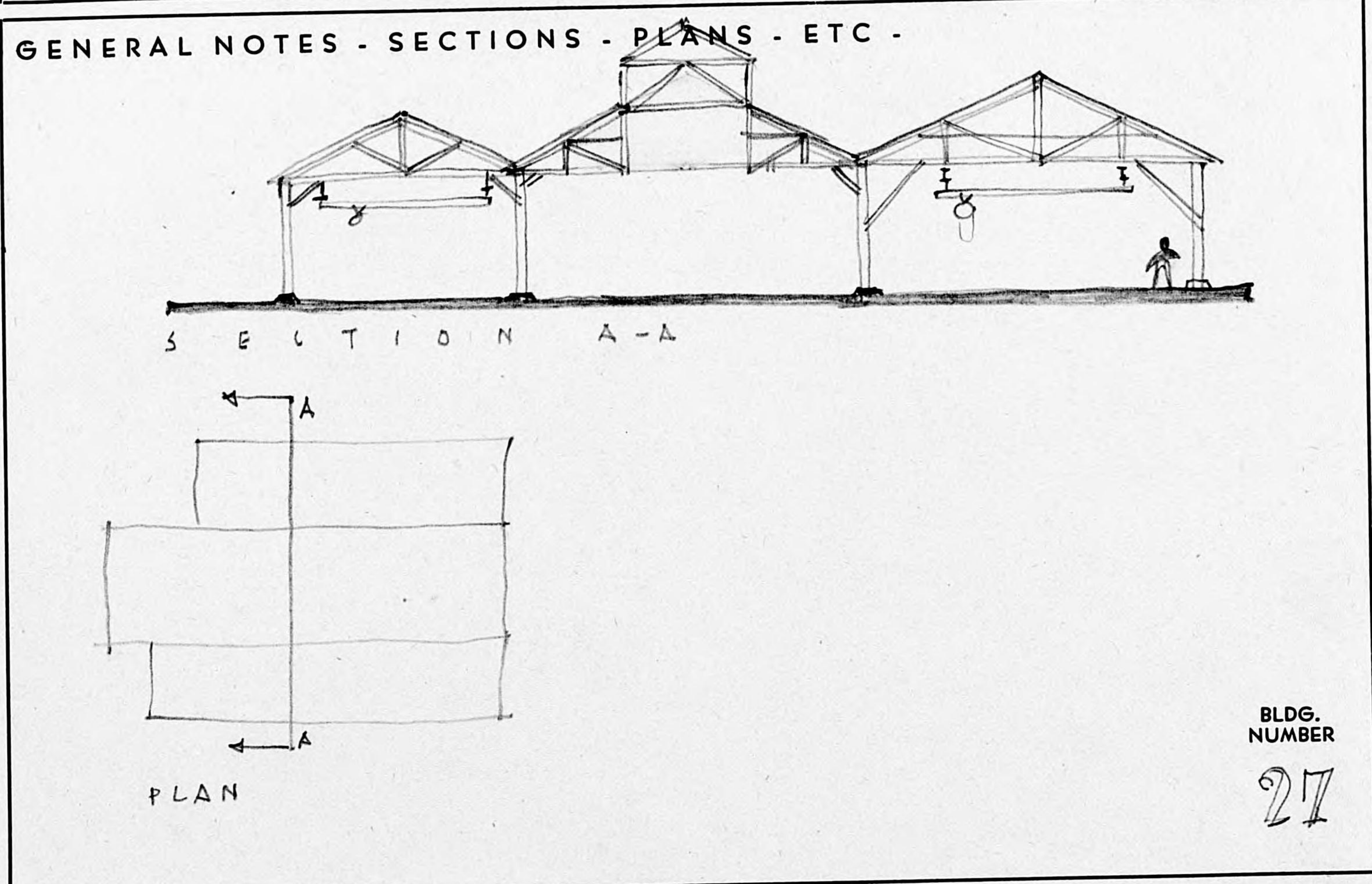
25

**U. S. S. B. S.
DAMAGE ASSESMENT WORK SHEET**

FUNCTION			
PLATE SHOP			
STRUCTURAL ANALYSIS	YEAR BUILT	ORIGINAL USE	REMARKS
	FLOOR	TYPE	THICKNESS
	DIET		
	FLOOR	TYPE	THICKNESS
	1		
	WALLS	TYPE	THICKNESS
	Corr. Iron on Wood Framing		
	ROOF MATERIAL	TYPE	THICKNESS
	Corr. Iron		
	TRUSS	TYPE	SPAN
Wood - See Section A-A			
CRANES NO.	TYPE	LOAD CAPACITY	
Small Gantry			
MACHINERY REMOVED TO		REASON	
-		-	
REPAIRS AND CLEARANCES			
-			
NEW CONSTRUCTION			
-			

NAME OF PLANT		
TYPE OF INDUSTRY		
CITY	TARGET NO.	BLDG. NO.
		27
LAT.	LONG	AREA
INTEL. SUBJECT NUMBER		DATE
PHOTOGRAPHY		
INTERIOR		EXTERIOR
STRUCT. DETAIL	NO. OF EXPOSURES	
TEAM		

DAMAGE ASSESMENT	DESTROYED
	STRUCTURAL DAMAGE
	SUPERFICIAL DAMAGE
	ROOF DISTURBANCE
	MINOR DAMAGE



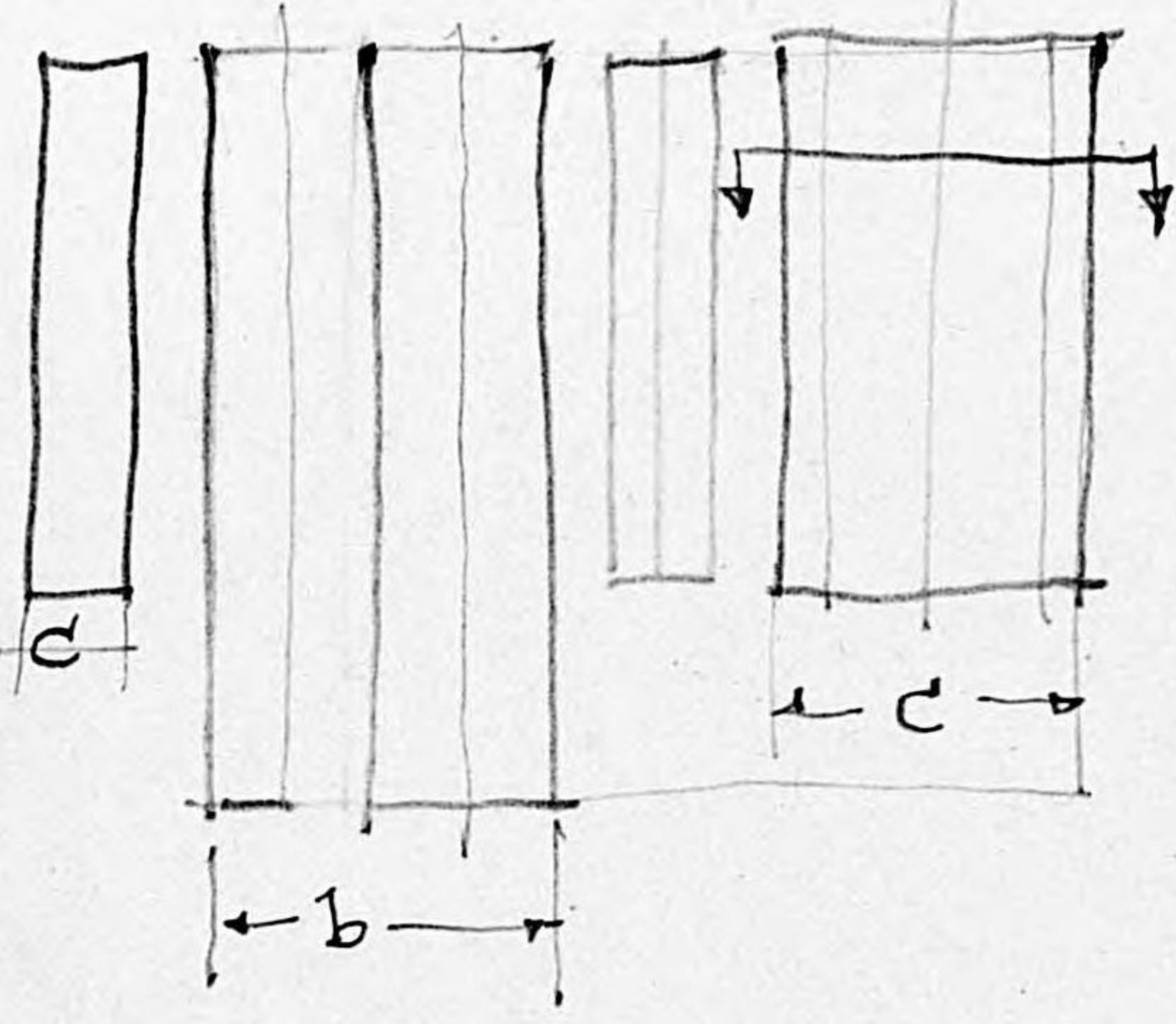
U. S. S. B. S.
DAMAGE ASSESMENT WORK SHEET

FUNCTION			
STORAGE BLDG.			
STRUCTURAL ANALYSIS	YEAR BUILT	ORIGINAL USE	REMARKS
	FLOOR	TYPE	THICKNESS
	Dirt		
	FLOOR	TYPE	THICKNESS
	2 nd Wood		
	WALLS	TYPE	THICKNESS
	Wood Vert. Siding on studs - Battens		
	ROOF MATERIAL	TYPE	THICKNESS
	Slate tile		
	TRUSS	TYPE	SPAN
Heavy wood			
CRANES NO.	TYPE	LOAD CAPACITY	
MACHINERY REMOVED TO		REASON	
-			
REPAIRS AND CLEARANCES			
-			
NEW CONSTRUCTION			
-			

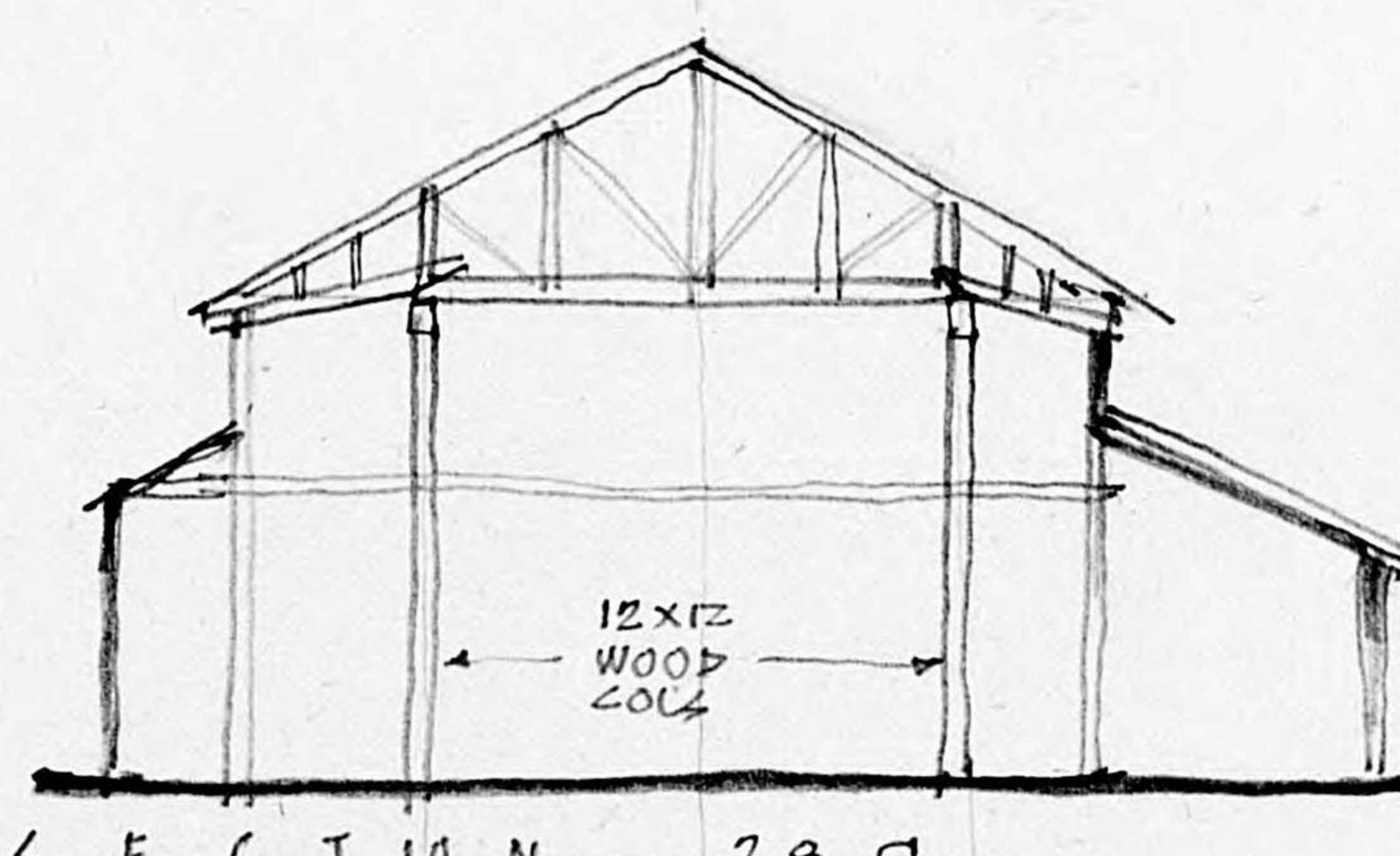
NAME OF PLANT		
TYPE OF INDUSTRY		
CITY	TARGET NO.	BLDG. NO.
LAT.	LONG	AREA
INTEL. SUBJECT NUMBER		DATE
PHOTOGRAPHY		ROLL - NEG NUMBER
INTERIOR	EXTERIOR	
STRUCT. DETAIL	NO. OF EXPOSURES	
TEAM		

DAMAGE ASSESMENT	DESTROYED
	STRUCTURAL DAMAGE
	SUPERFICIAL DAMAGE
	ROOF DISTURBANCE
	MINOR DAMAGE

GENERAL NOTES - SECTIONS - PLANS - ETC .



PLAN



SECTION 28C

BLDG 28b - same const. as bldg. 6

28C - PIPE SHOP same const. as bldg. 20

BLDG. NUMBER
28c

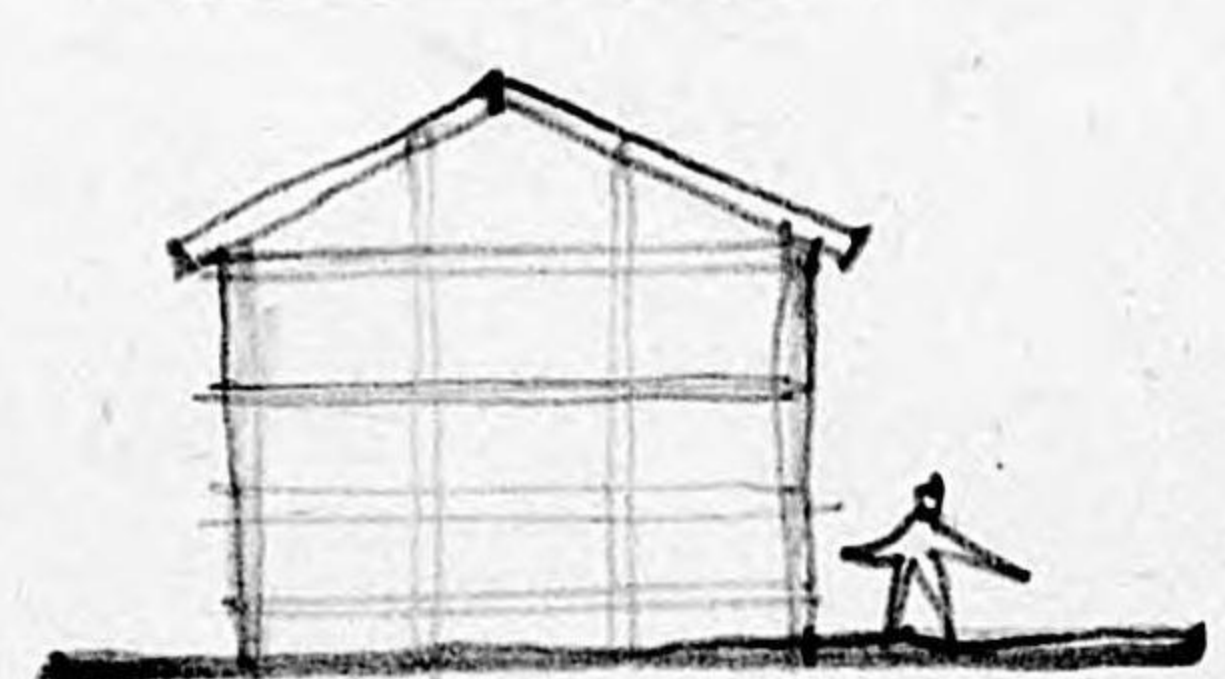
U. S. S. B. S.
DAMAGE ASSESMENT WORK SHEET

FUNCTION				NAME OF PLANT				
S T O R A G E				TYPE OF INDUSTRY				
STRUCTURAL ANALYSIS	YEAR BUILT	ORIGINAL USE	REMARKS	CITY	TARGET NO.	BLDG. NO.		
	FLOOR	TYPE	THICKNESS	LAT.	LONG	AREA	30	
	FLOOR	TYPE	THICKNESS	INTEL. SUBJECT NUMBER				DATE
	WALLS	TYPE	THICKNESS	PHOTOGRAPHY			ROLL - NEG NUMBER	
	ROOF MATERIAL	TYPE	THICKNESS					
	TRUSS	TYPE	SPAN	INTERIOR	EXTERIOR		STRUCT. DETAIL NO. OF EXPOSURES	
	CRANES NO.	TYPE	LOAD CAPACITY	TEAM				
	MACHINERY REMOVED TO	REASON						
	REPAIRS AND CLEARANCES							
	NEW CONSTRUCTION							

DAMAGE ASSESMENT	DESTROYED
	STRUCTURAL DAMAGE
	SUPERFICIAL DAMAGE
	ROOF DISTURBANCE
	MINOR DAMAGE

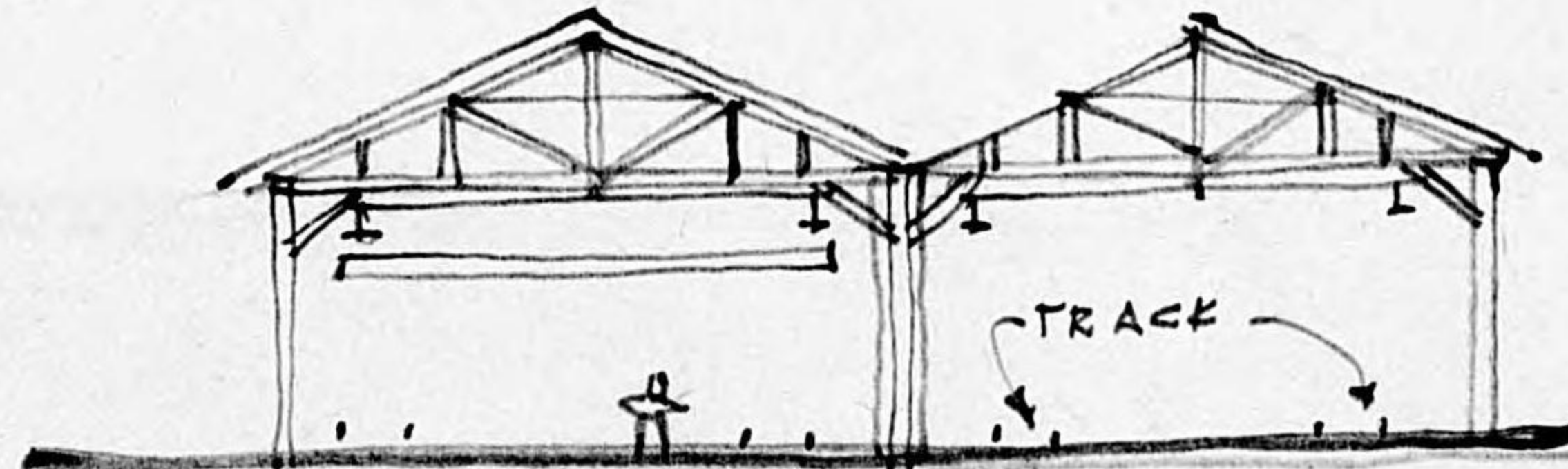
GENERAL NOTES - SECTIONS - PLANS - ETC -

BLDG. 29.



SECTION

Wood frame
Pipe storage
Corm. 1100 siding
And Roof.

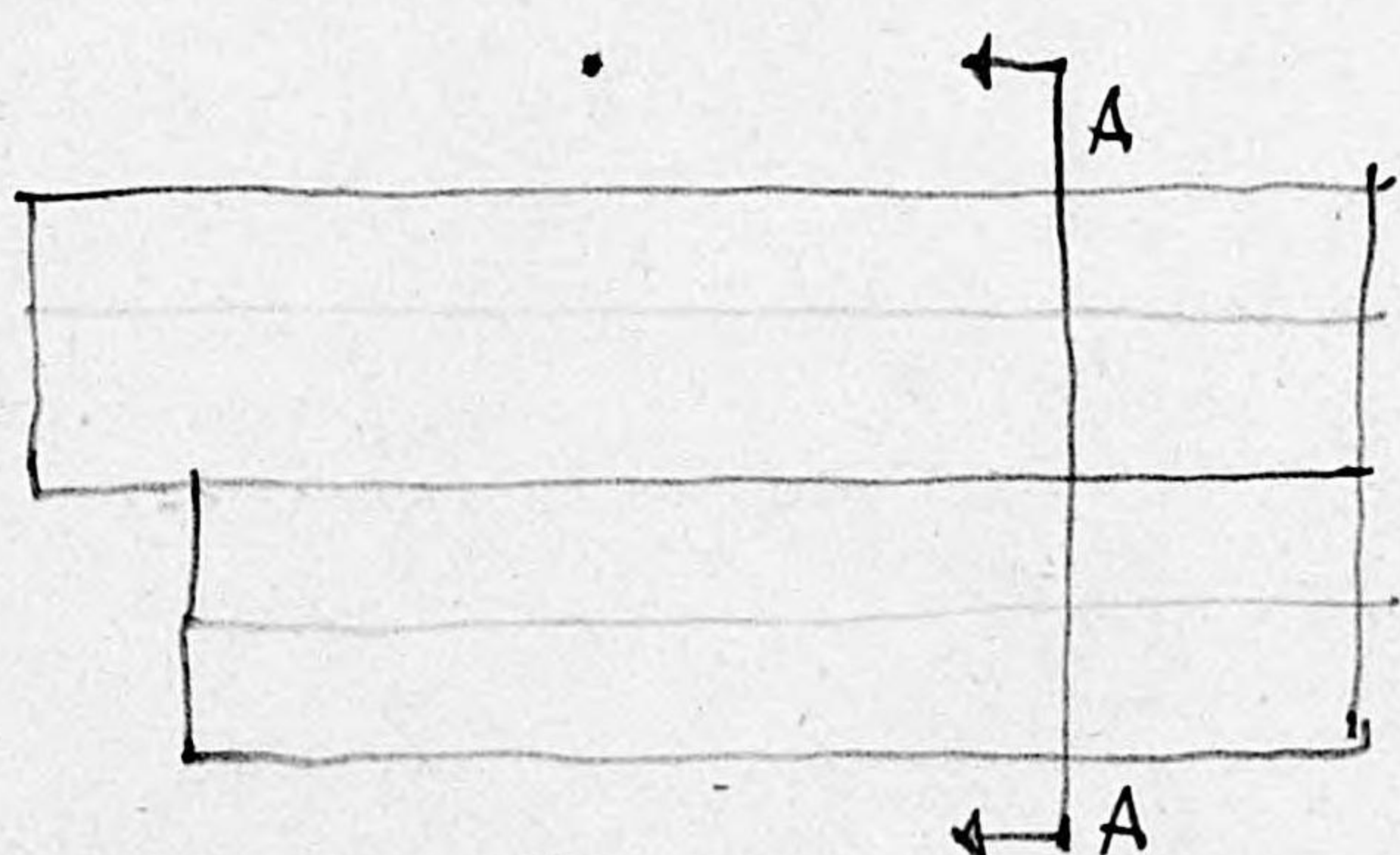


SECTION A-A

NOTE

BLDG 31.
SAME CONST.
AS 30- } DESTROYED.

BLDG. 32
33a-b
34
35 }



PLAN

BLDG. NUMBER

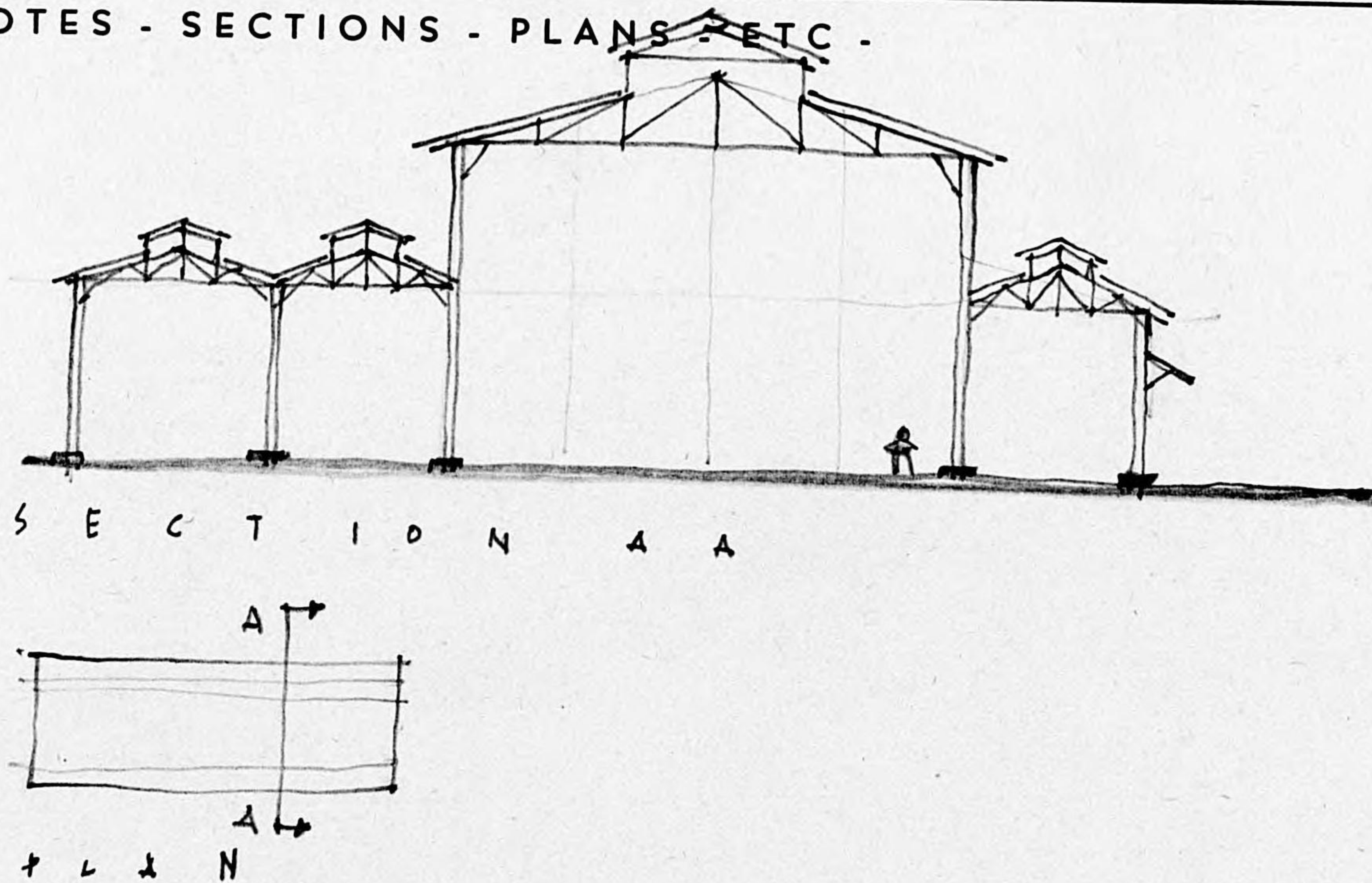
30

U. S. S. B. S.
DAMAGE ASSESMENT WORK SHEET

FUNCTION				NAME OF PLANT		
FORGE				TYPE OF INDUSTRY		
STRUCTURAL ANALYSIS	YEAR BUILT	ORIGINAL USE	REMARKS	CITY	TARGET NO.	BLDG. NO.
	FLOOR	TYPE	THICKNESS	LAT.	LONG	AREA
	DIRT			36		
	FLOOR	TYPE	THICKNESS			
	1			INTEL. SUBJECT NUMBER		
	DATE			PHOTOGRAPHY		
	WALLS	TYPE	THICKNESS	INTERIOR		EXTERIOR
	Corr. Iron Side Walls Conc. End walls.					ROLL - NEG NUMBER
	ROOF MATERIAL	TYPE	THICKNESS	STRUCT. DETAIL		NO. OF EXPOSURES
	Corr. Iron					15:4
TRUSS	TYPE	SPAN	TEAM			
Steel - See Section A-A -						
CRANES NO.	TYPE	LOAD CAPACITY				
-						
MACHINERY REMOVED TO		REASON				
-						
REPAIRS AND CLEARANCES						
-						
NEW CONSTRUCTION						
-						

DAMAGE ASSESMENT	DESTROYED
	STRUCTURAL DAMAGE
	SUPERFICIAL DAMAGE
	ROOF DISTURBANCE
	MINOR DAMAGE

GENERAL NOTES - SECTIONS - PLANS - ETC -



BLDG. NUMBER

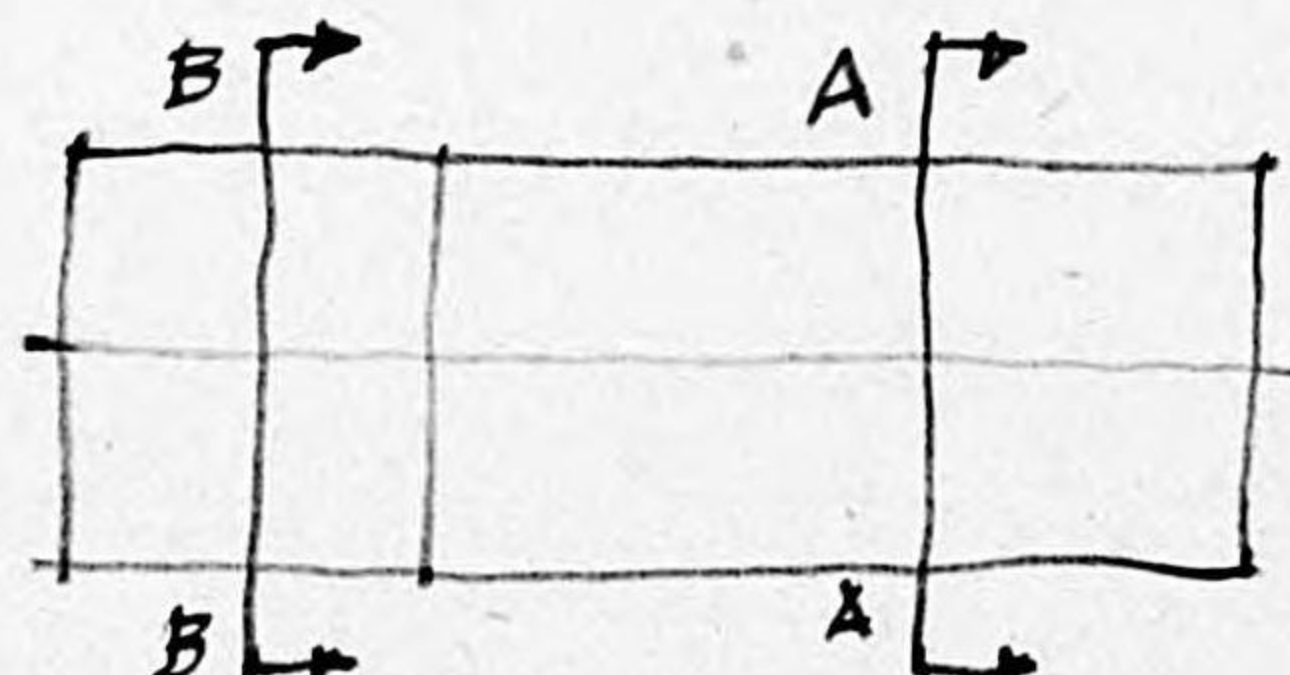
36

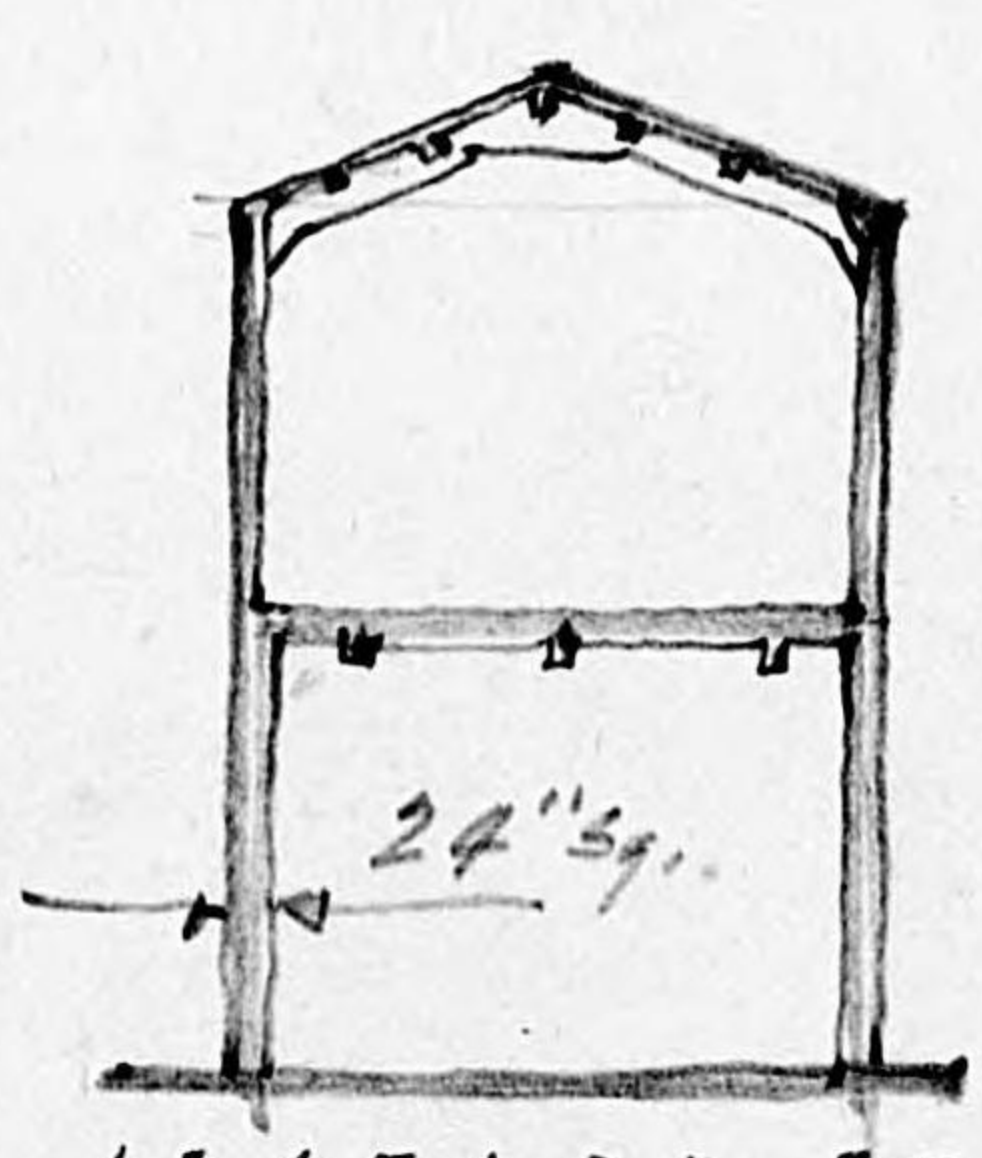
U. S. S. B. S.
DAMAGE ASSESMENT WORK SHEET

FUNCTION				NAME OF PLANT		
COMPRESSORS				TYPE OF INDUSTRY		
STRUCTURAL ANALYSIS	YEAR BUILT	ORIGINAL USE	REMARKS			
	FLOOR	TYPE	THICKNESS			
		Concrete				
	FLOOR	TYPE	THICKNESS			
		2 nd Concrete				
	WALLS	TYPE	THICKNESS			
		Concrete				
	ROOF MATERIAL	TYPE	THICKNESS			
		Concrete Slab.				
	TRUSS	TYPE	SPAN			
	R/C	concrete				
CRANES NO.	TYPE	LOAD CAPACITY				
	NONE					
MACHINERY REMOVED TO		REASON				
-						
REPAIRS AND CLEARANCES						
-						
NEW CONSTRUCTION						
-						
PHOTOGRAPHY						
INTERIOR			EXTERIOR		ROLL - NEG NUMBER	
			✓		PIC-AA-15:4	
STRUCT. DETAIL			NO. OF EXPOSURES			
TEAM						

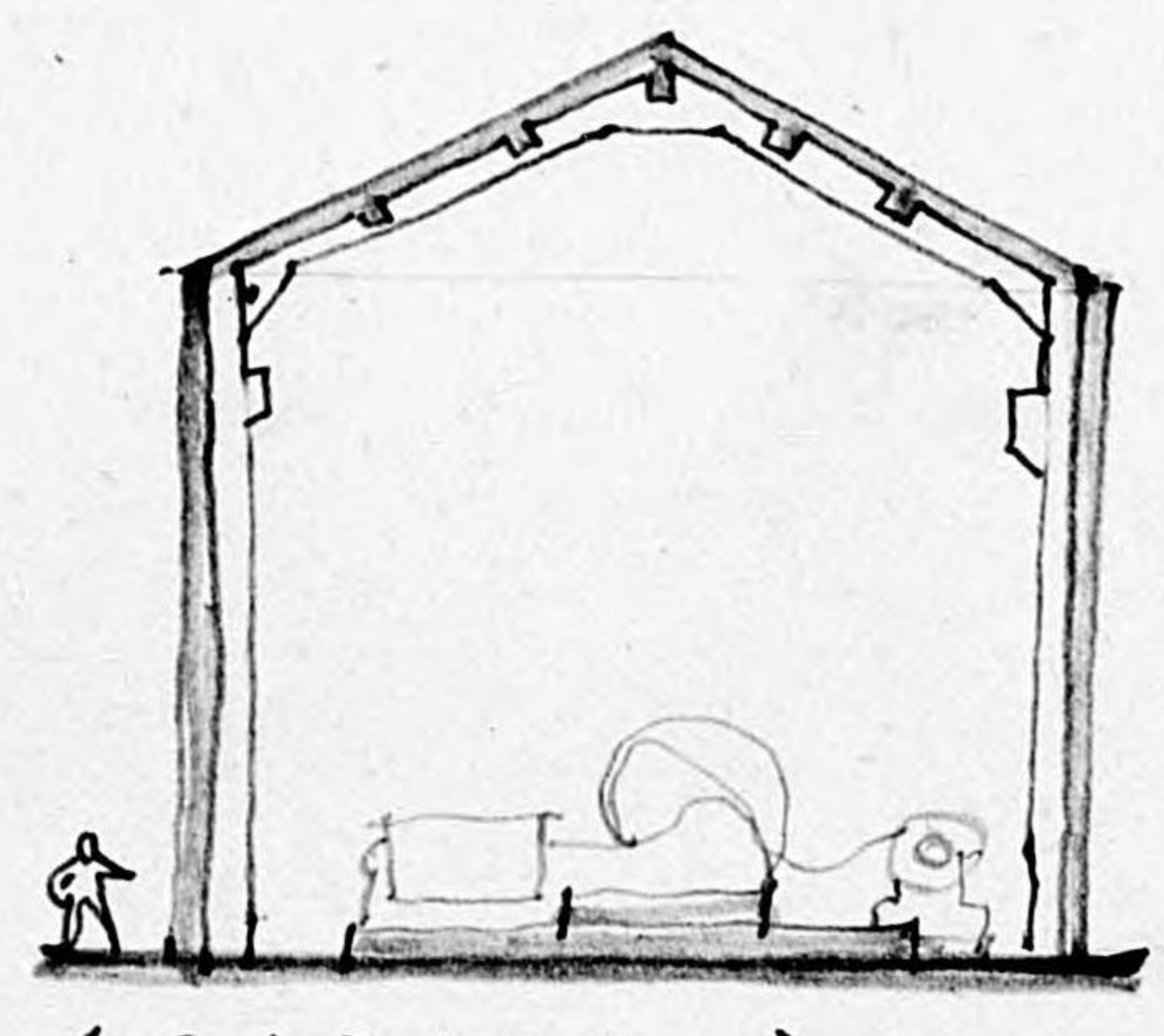
DAMAGE ASSESMENT	DESTROYED
	STRUCTURAL DAMAGE
	SUPERFICIAL DAMAGE
	ROOF DISTURBANCE
	MINOR DAMAGE

GENERAL NOTES - SECTIONS - PLANS - ETC -





SECTION B-B



SECTION A-A

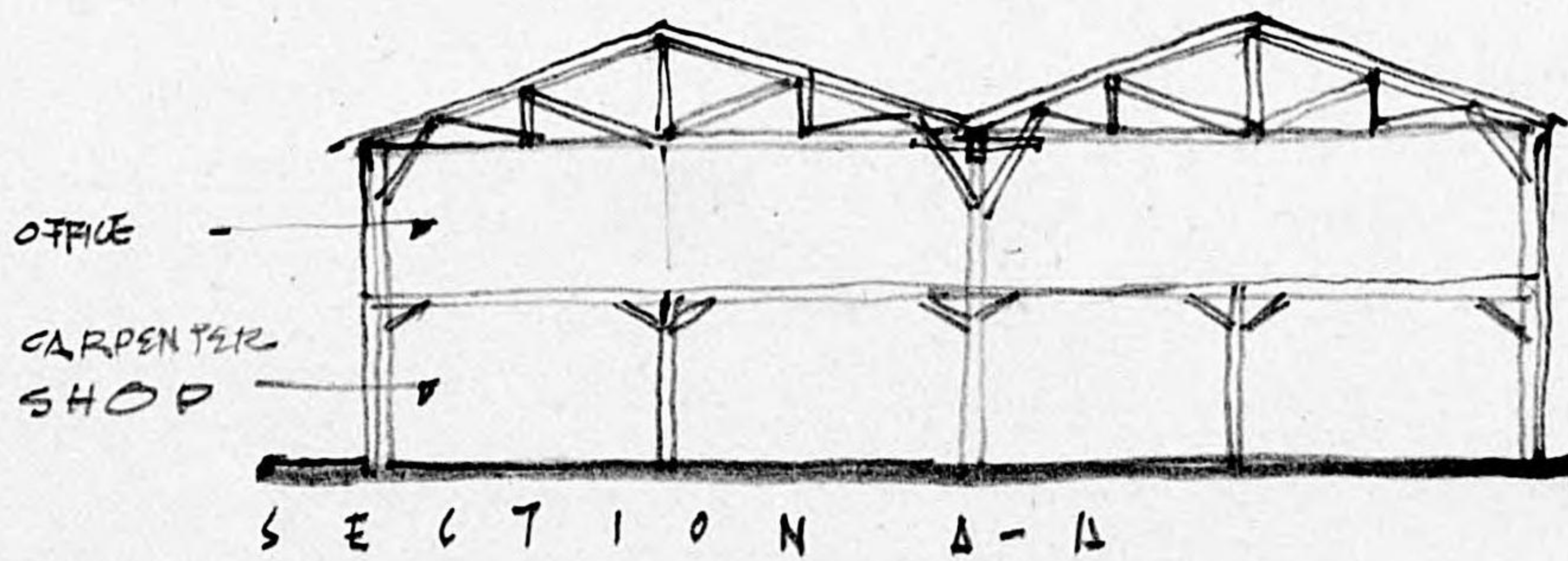
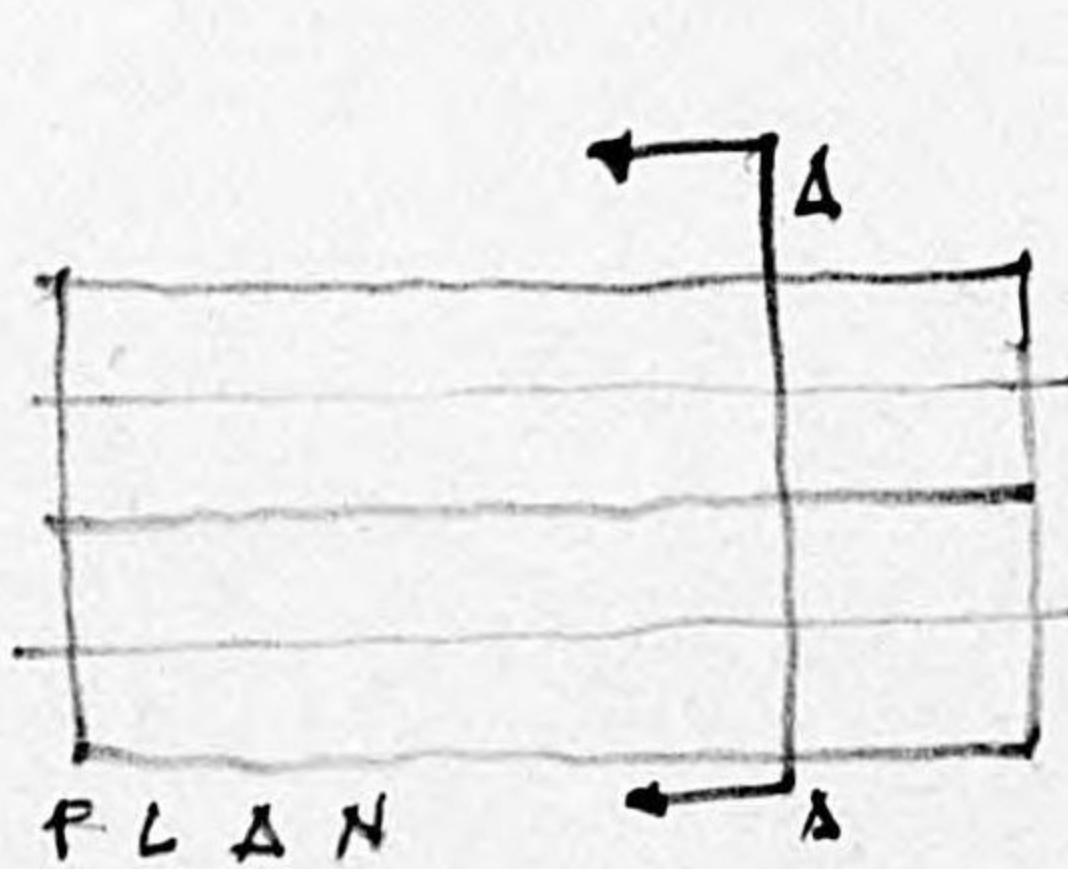
BLDG. NUMBER
37

U. S. S. B. S.
DAMAGE ASSESMENT WORK SHEET

FUNCTION D I N I N G R O O M .			NAME OF PLANT		
			TYPE OF INDUSTRY		
STRUCTURAL ANALYSIS	YEAR BUILT	ORIGINAL USE	REMARKS		
	FLOOR	TYPE	THICKNESS		
	DIRT				
	FLOOR	TYPE	THICKNESS		
	2nd	Wood.			
	WALLS	TYPE	THICKNESS		
	Stud.	Horiz wood siding			
	ROOF MATERIAL	TYPE	THICKNESS		
		Corr. Iron			
	TRUSS	TYPE	SPAN		
	Wood-	See section A-A-			
CRANES NO.	TYPE	LOAD CAPACITY			
	none				
MACHINERY REMOVED TO		REASON			
-					
REPAIRS AND CLEARANCES					
-					
NEW CONSTRUCTION					
-					
PHOTOGRAPHY					
INTERIOR				EXTERIOR	
STRUCT. DETAIL				NO. OF EXPOSURES	
TEAM					

DAMAGE ASSESMENT	DESTROYED
	STRUCTURAL DAMAGE
	SUPERFICIAL DAMAGE
	ROOF DISTURBANCE
	MINOR DAMAGE

GENERAL NOTES - SECTIONS - PLANS - ETC -



BLDG. NUMBER

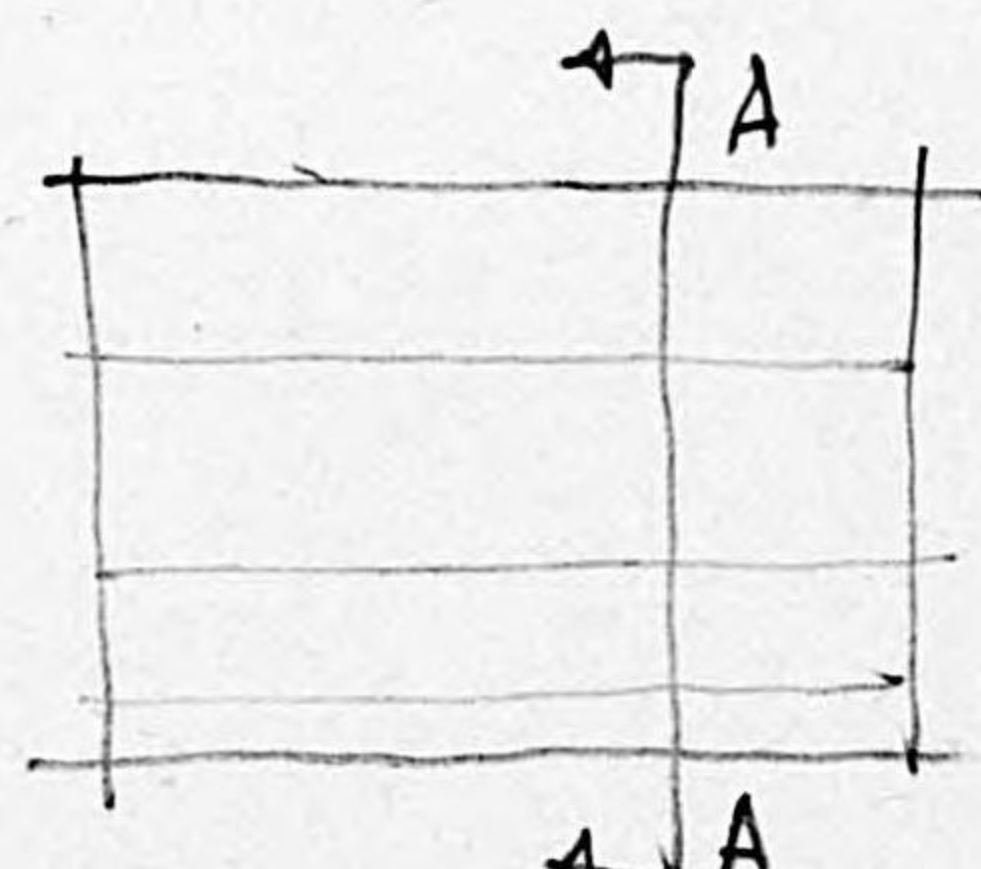
38

U. S. S. B. S.
DAMAGE ASSESMENT WORK SHEET

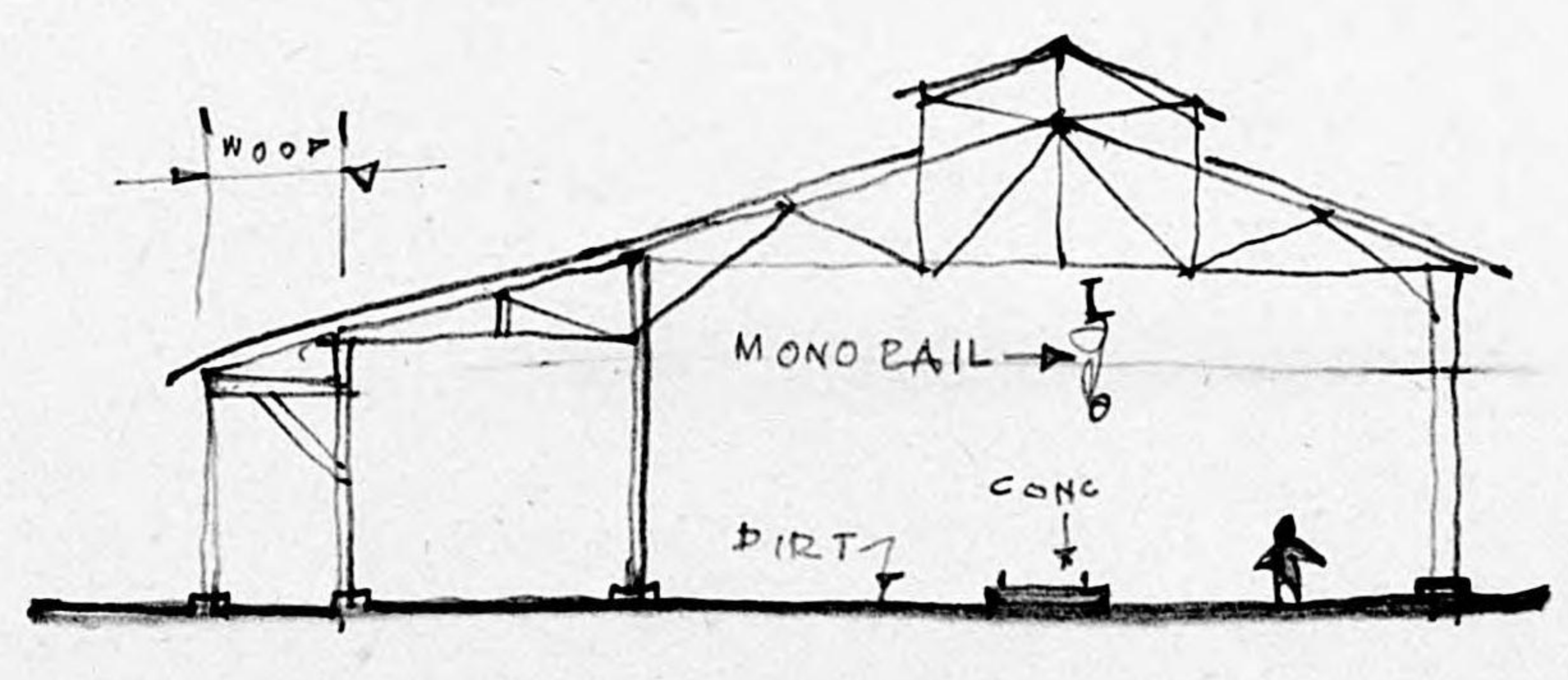
FUNCTION			NAME OF PLANT		
CASTING SHOP			TYPE OF INDUSTRY		
STRUCTURAL ANALYSIS	YEAR BUILT	ORIGINAL USE	REMARKS		
	FLOOR	TYPE	THICKNESS		
		<i>Diex.</i>			
	FLOOR	TYPE	THICKNESS		
		<i>1</i>			
	WALLS	TYPE	THICKNESS		
		<i>Corr. Iron.</i>			
	ROOF MATERIAL	TYPE	THICKNESS		
		<i>1/2" x 6" Wood Sheeting</i>	<i>under Corr. Iron.</i>		
	TRUSS	TYPE	SPAN		
	<i>Steel</i>				
CRANES NO.	TYPE	LOAD CAPACITY			
	<i>1 Mono Rail</i>				
MACHINERY REMOVED TO		REASON			
		<i>-</i>			
REPAIRS AND CLEARANCES					
<i>-</i>					
NEW CONSTRUCTION					
<i>-</i>					
			CITY	TARGET NO.	BLDG. NO.
			LAT.	LONG	AREA
			39		
			INTEL. SUBJECT NUMBER		DATE
			PHOTOGRAPHY		
			INTERIOR	EXTERIOR	
			STRUCT. DETAIL	NO. OF EXPOSURES	
TEAM					

DAMAGE ASSESMENT	DESTROYED
	STRUCTURAL DAMAGE
	SUPERFICIAL DAMAGE
	ROOF DISTURBANCE
	MINOR DAMAGE

GENERAL NOTES - SECTIONS - PLANS - ETC -



PLAN



SECTION A A

BLDG. NUMBER

39

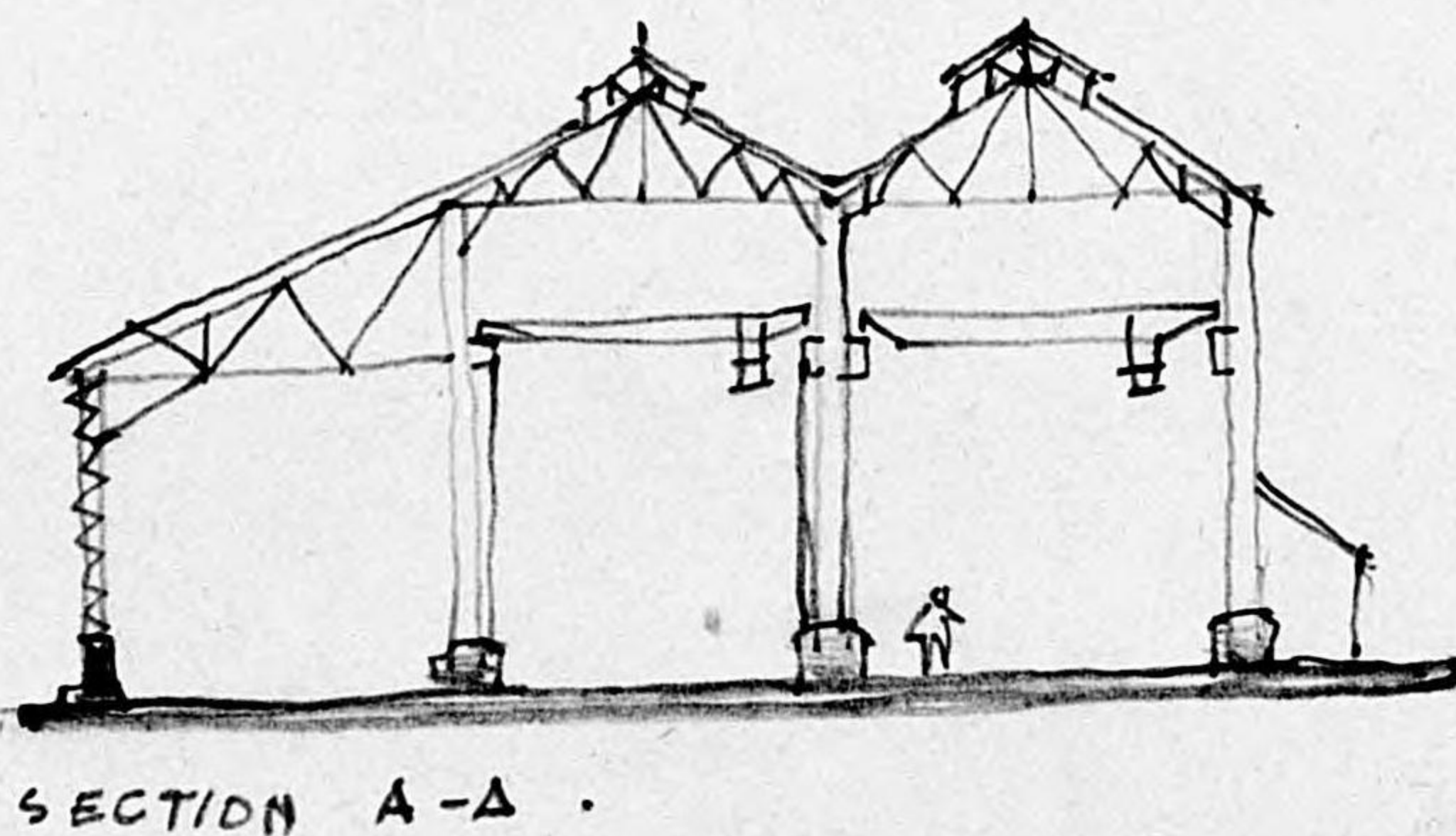
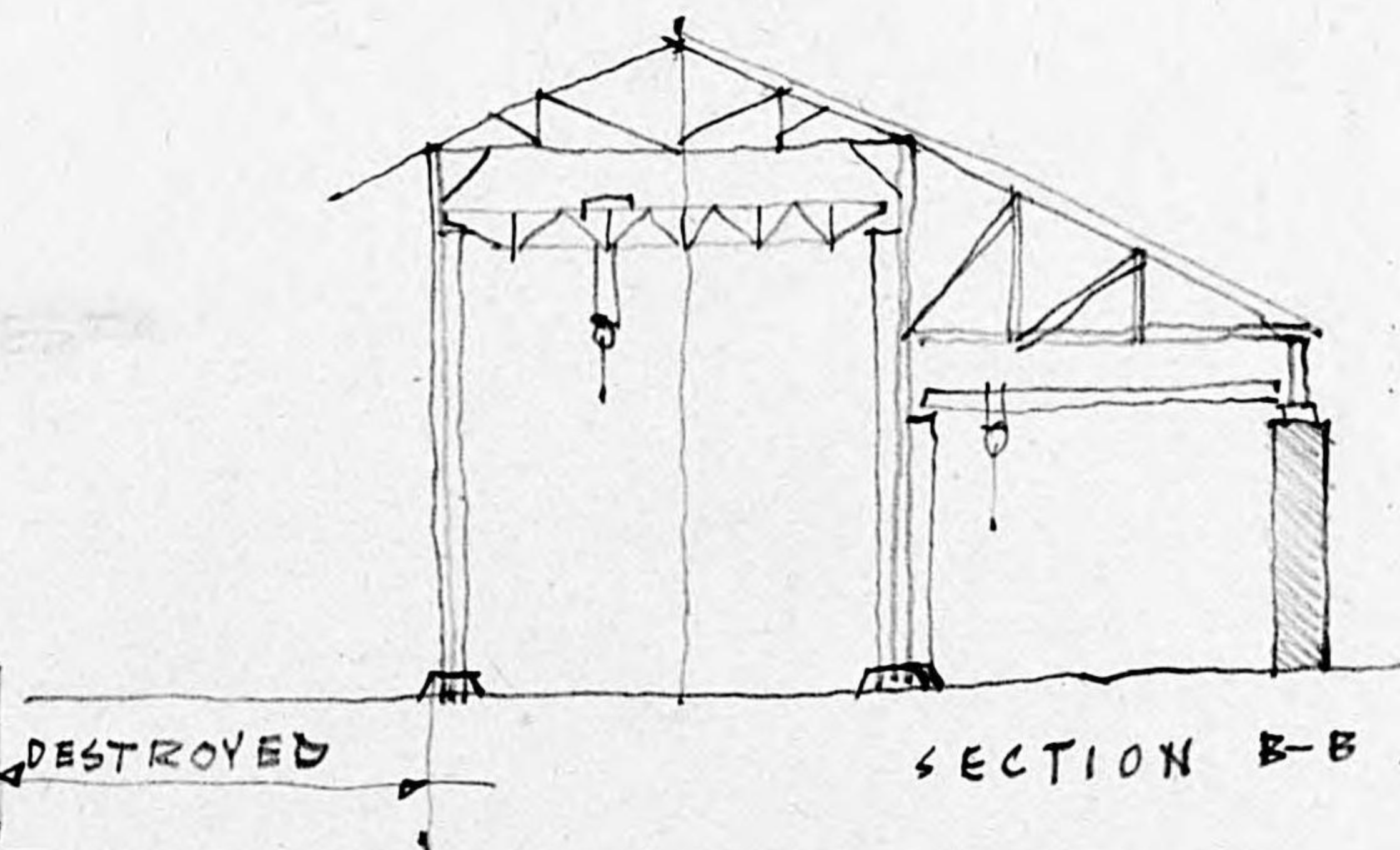
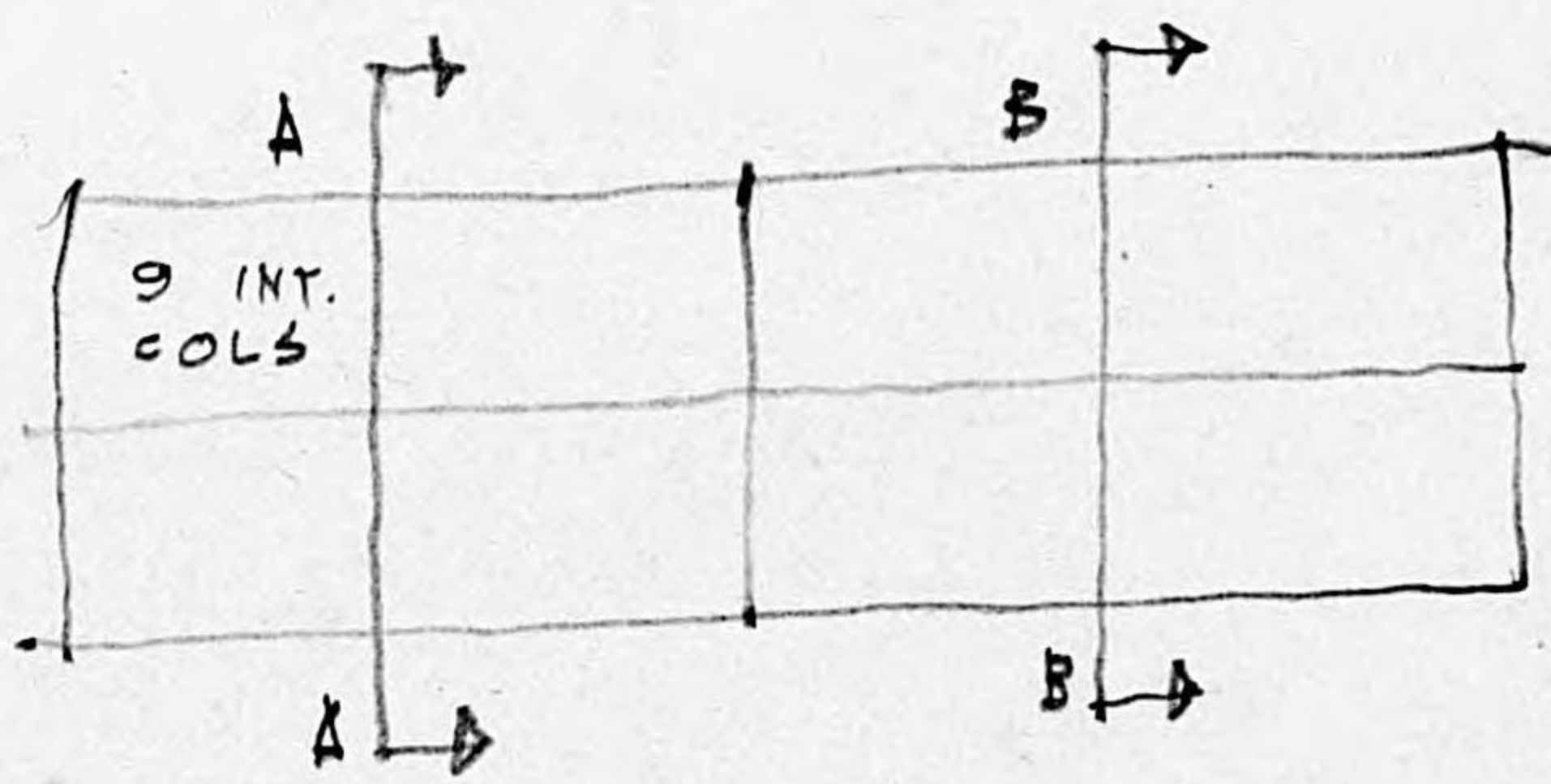
U. S. S. B. S.
DAMAGE ASSESMENT WORK SHEET

FUNCTION			NAME OF PLANT		
F O U N D R Y			TYPE OF INDUSTRY		
STRUCTURAL ANALYSIS	YEAR BUILT	ORIGINAL USE	REMARKS		
	FLOOR	TYPE	THICKNESS	CITY	TARGET NO.
	FLOOR	TYPE	THICKNESS	LAT.	LONG
	WALLS	TYPE	THICKNESS	AREA	BLDG. NO.
	ROOF MATERIAL	TYPE	THICKNESS	40	
	TRUSS	TYPE	SPAN	INTEL. SUBJECT NUMBER	
	CRANES NO.	TYPE	LOAD CAPACITY	DATE	
	MACHINERY REMOVED TO	REASON		PHOTOGRAPHY	
	REPAIRS AND CLEARANCES			INTERIOR	EXTERIOR
	NEW CONSTRUCTION			STRUCT. DETAIL	NO. OF EXPOSURES
TEAM					

DAMAGE ASSESMENT	DESTROYED
	STRUCTURAL DAMAGE
	SUPERFICIAL DAMAGE
	ROOF DISTURBANCE
	MINOR DAMAGE

GENERAL NOTES - SECTIONS - PLANS - ETC -

PLAN



BLDG. NUMBER

40

U. S. S. B. S.
DAMAGE ASSESMENT WORK SHEET

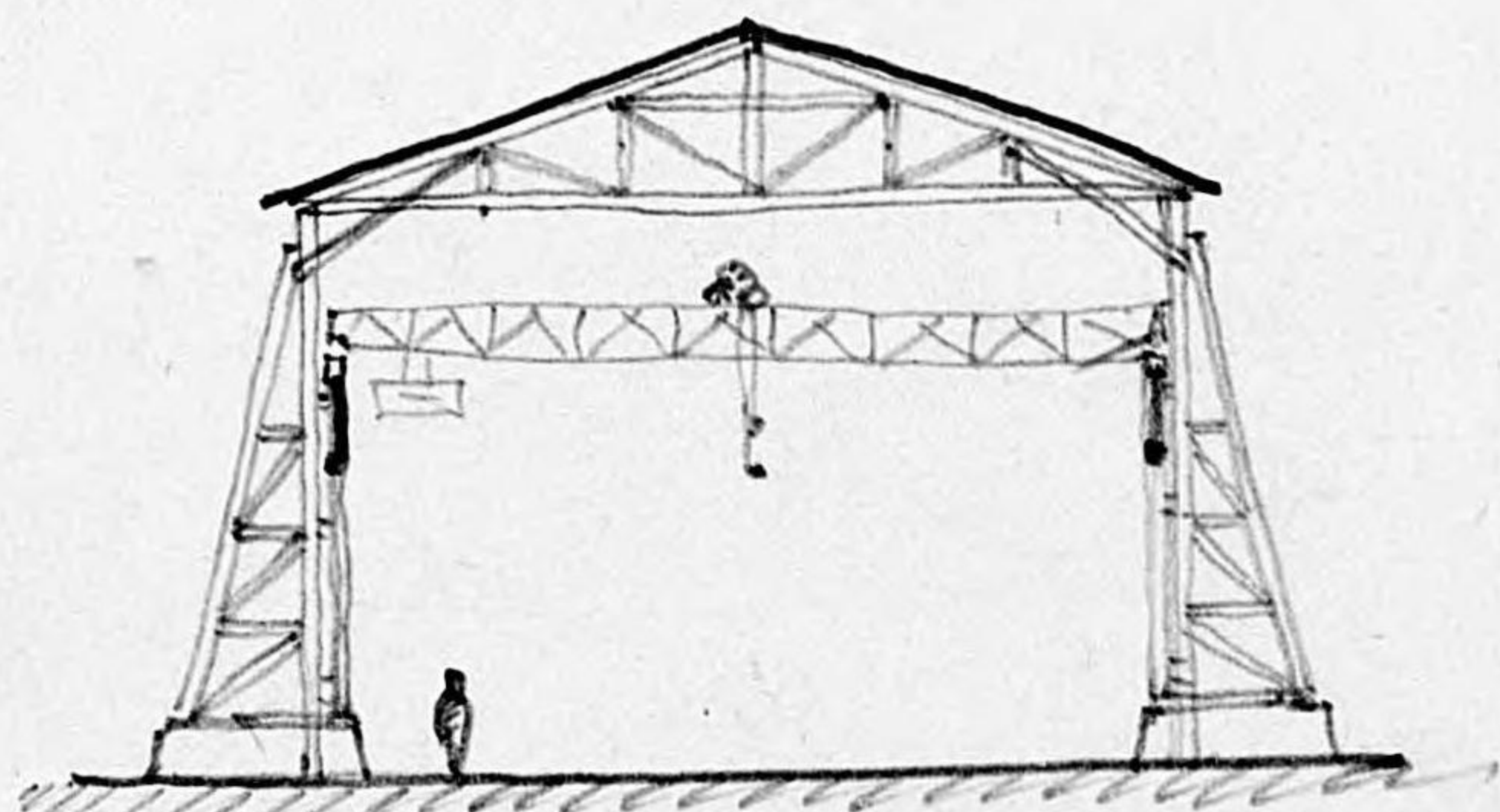
FUNCTION			
MACHINE SHOP			
STRUCTURAL ANALYSIS	YEAR BUILT	ORIGINAL USE	REMARKS
	FLOOR	TYPE	THICKNESS
	FLOOR	TYPE	THICKNESS
	WALLS	TYPE	THICKNESS
	ROOF MATERIAL	TYPE	THICKNESS
	TRUSS	TYPE	SPAN
	CRANES NO.	TYPE	LOAD CAPACITY
	MACHINERY REMOVED TO		REASON
	REPAIRS AND CLEARANCES		
	NEW CONSTRUCTION		

NAME OF PLANT		
TYPE OF INDUSTRY		
CITY	TARGET NO.	BLDG. NO.
LAT.	LONG	AREA
INTEL. SUBJECT NUMBER		DATE
PHOTOGRAPHY		
INTERIOR	EXTERIOR	
STRUCT. DETAIL	NO. OF EXPOSURES	
TEAM		

DAMAGE ASSESMENT	DESTROYED
	STRUCTURAL DAMAGE
	SUPERFICIAL DAMAGE
	ROOF DISTURBANCE
	MINOR DAMAGE

GENERAL NOTES - SECTIONS - PLANS - ETC -

BLDG. 43 - REMOVED OR DESTROYED.



SECTION OF BLDG 42

BLDG 41.

FL - DIRT
 WALLS - WOOD FRAME
 TRUSS - SIMPLE WOOD
 ROOF - CORR. ASBESTOS.
 BETWEEN 41 & 42 IS OLD COLLAPSED
 BLDG SIMILAR TO 41.

BLDG. NUMBER

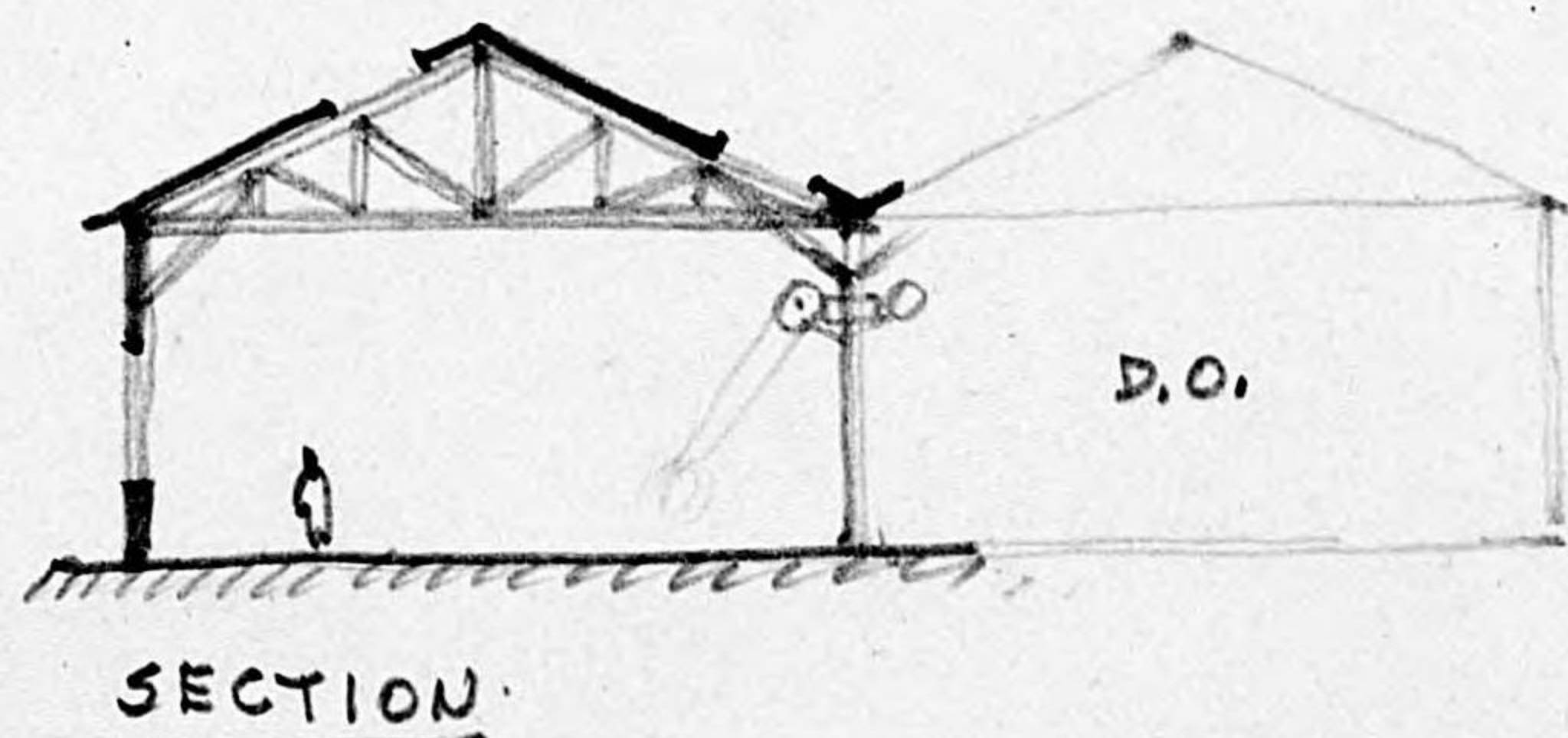
42

U. S. S. B. S.
DAMAGE ASSESMENT WORK SHEET

FUNCTION			NAME OF PLANT		
MACHINE SHOP			TYPE OF INDUSTRY		
STRUCTURAL ANALYSIS	YEAR BUILT	ORIGINAL USE	REMARKS		
	FLOOR	TYPE	THICKNESS		
		CONC	5"		
	FLOOR	TYPE	THICKNESS		
	WALLS	TYPE	THICKNESS	COVERED WITH PLASTER	
		CONC BELOW SILL OF WINDOW 5" FRAME OF WOOD ABOVE			
	ROOF MATERIAL	TYPE	THICKNESS		
		CORR. ASBESTOS OVER WOOD.			
	TRUSS	TYPE	SPAN		
		WOOD TRUSS (SEE DETAIL)			
CRANES NO.	TYPE	LOAD CAPACITY			
MACHINERY REMOVED TO		REASON			
REPAIRS AND CLEARANCES					
NEW CONSTRUCTION					
RECOVERED WITH SEA-WEED PANELS ON WALL					
			CITY	TARGET NO.	BLDG. NO.
			LAT.	LONG	AREA
					44
			INTEL. SUBJECT NUMBER		DATE
			PHOTOGRAPHY		
			INTERIOR	EXTERIOR	ROLL - NEG NUMBER
					PIC-AA-15:6
			STRUCT. DETAIL	NO. OF EXPOSURES	
			TEAM		

DAMAGE ASSESMENT	DESTROYED
	STRUCTURAL DAMAGE
	SUPERFICIAL DAMAGE
	ROOF DISTURBANCE
	MINOR DAMAGE

GENERAL NOTES - SECTIONS - PLANS - ETC -



BLDG. NUMBER

44

U. S. S. B. S.
DAMAGE ASSESMENT WORK SHEET

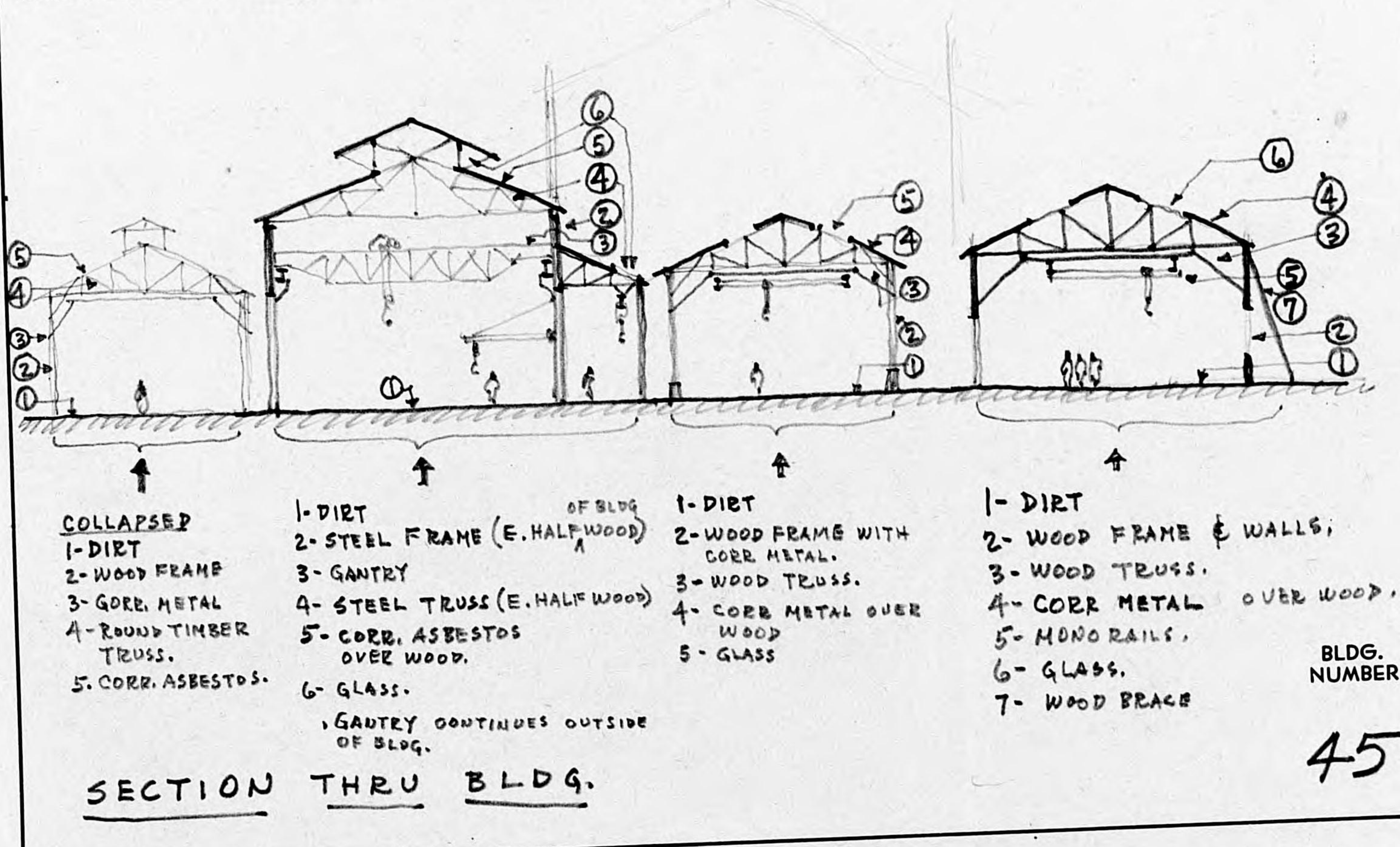
FUNCTION			
BOILER SHOP			
STRUCTURAL ANALYSIS	YEAR BUILT	ORIGINAL USE	REMARKS
	FLOOR	TYPE	THICKNESS
	FLOOR	TYPE	THICKNESS
	WALLS	TYPE	THICKNESS
	ROOF MATERIAL	TYPE	THICKNESS
	TRUSS	TYPE	SPAN
	CRANES NO.	TYPE	LOAD CAPACITY
	MACHINERY REMOVED TO		REASON
	REPAIRS AND CLEARANCES		
	NEW CONSTRUCTION		

NAME OF PLANT		
TYPE OF INDUSTRY		
CITY	TARGET NO.	BLDG. NO.
LAT.	LONG	AREA
INTEL. SUBJECT NUMBER		DATE
PHOTOGRAPHY		ROLL - NEG NUMBER
INTERIOR	EXTERIOR	PIC-AA-15:6
STRUCT. DETAIL	NO. OF EXPOSURES	
TEAM		

SEE BELOW

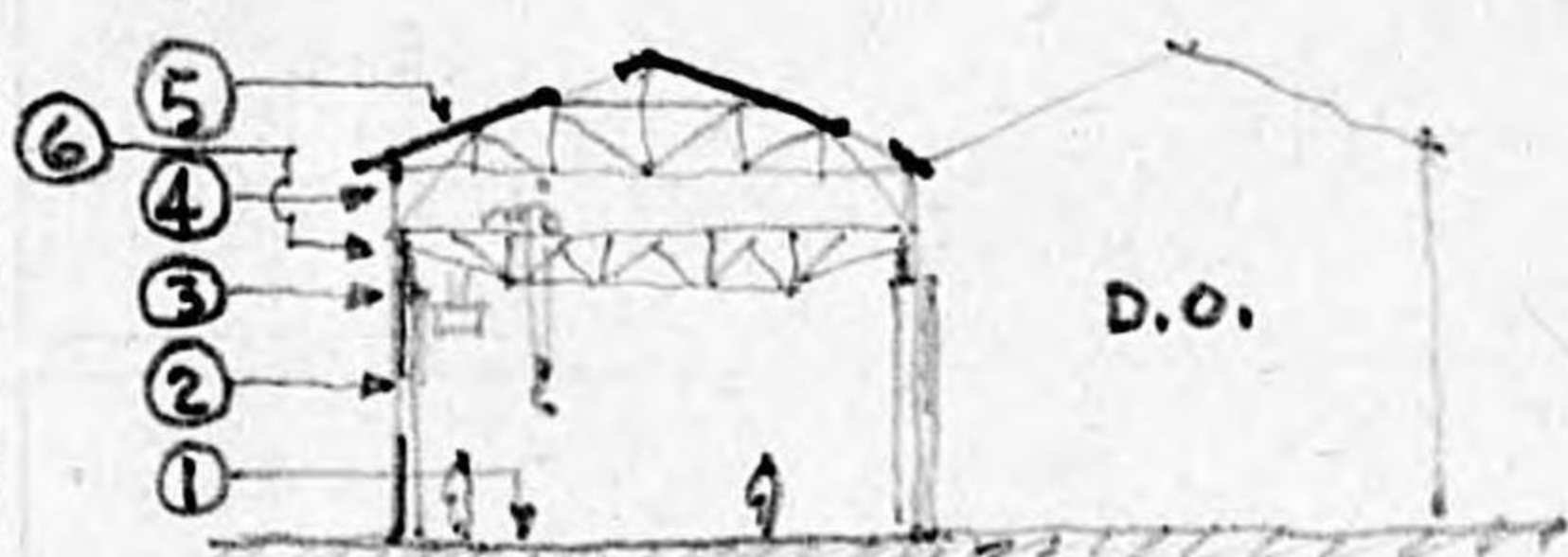
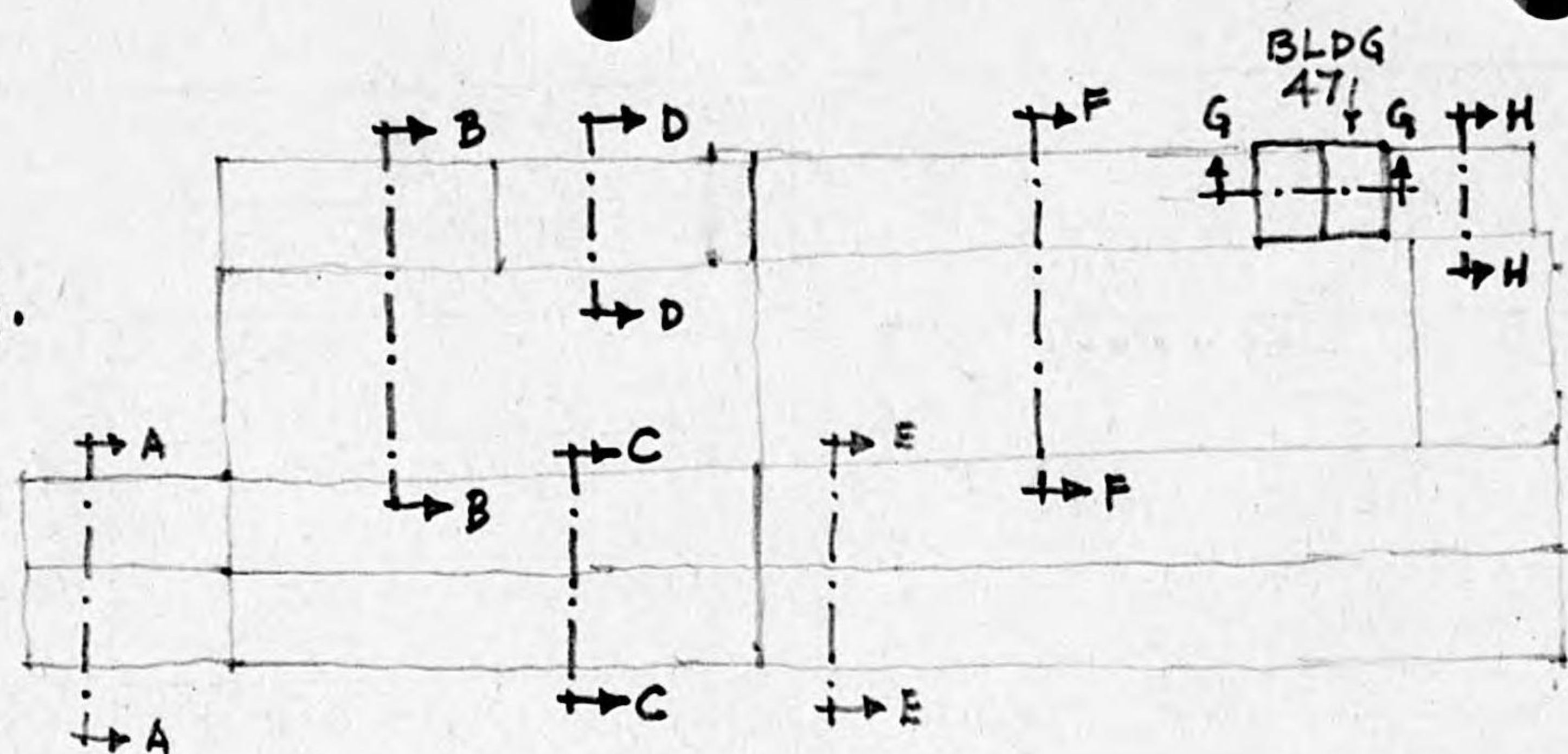
DAMAGE ASSESMENT	DESTROYED
	STRUCTURAL DAMAGE
	SUPERFICIAL DAMAGE
	ROOF DISTURBANCE
	MINOR DAMAGE

GENERAL NOTES - SECTIONS - PLANS - ETC -



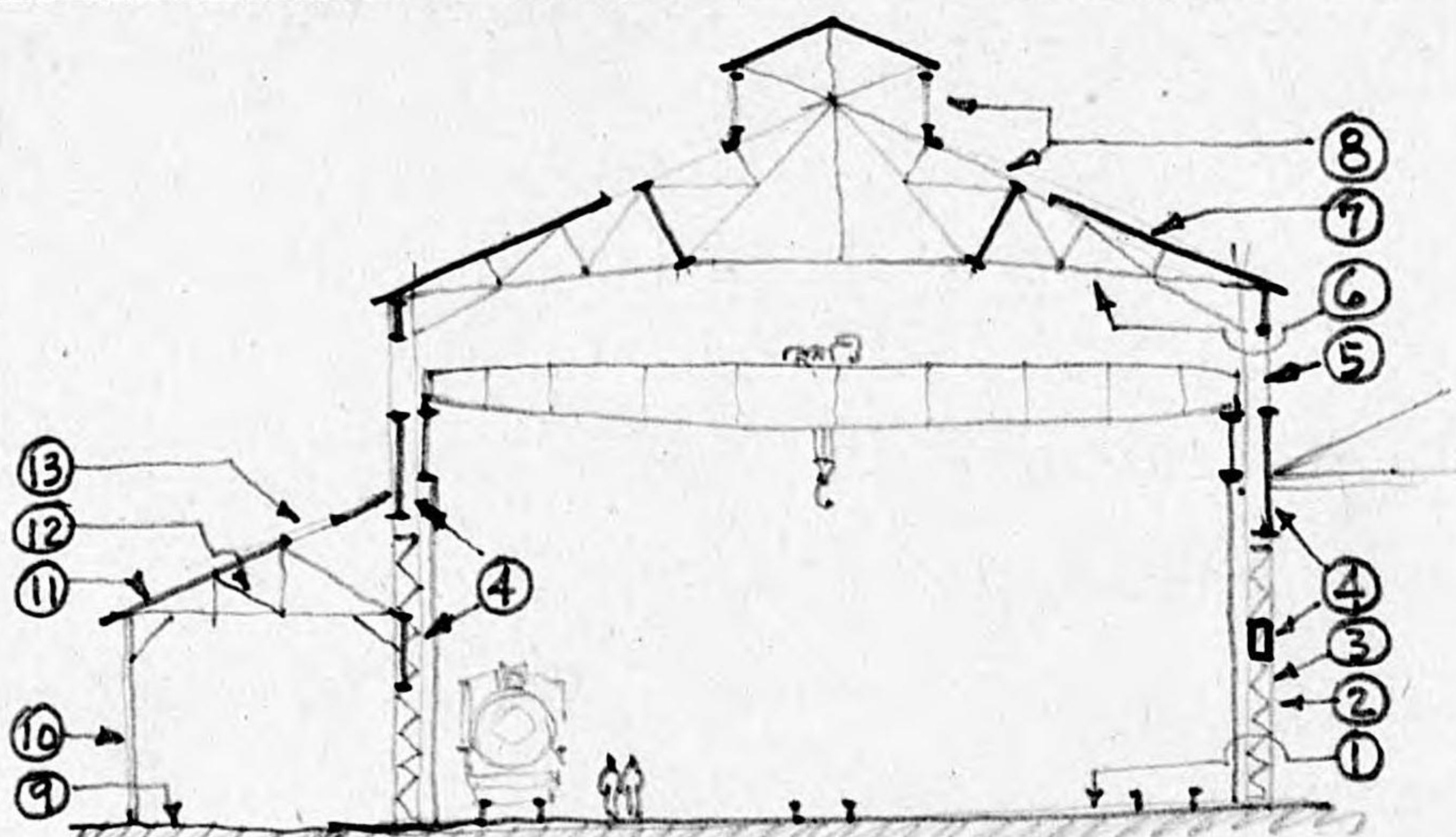
BLDG.
46

PLAN



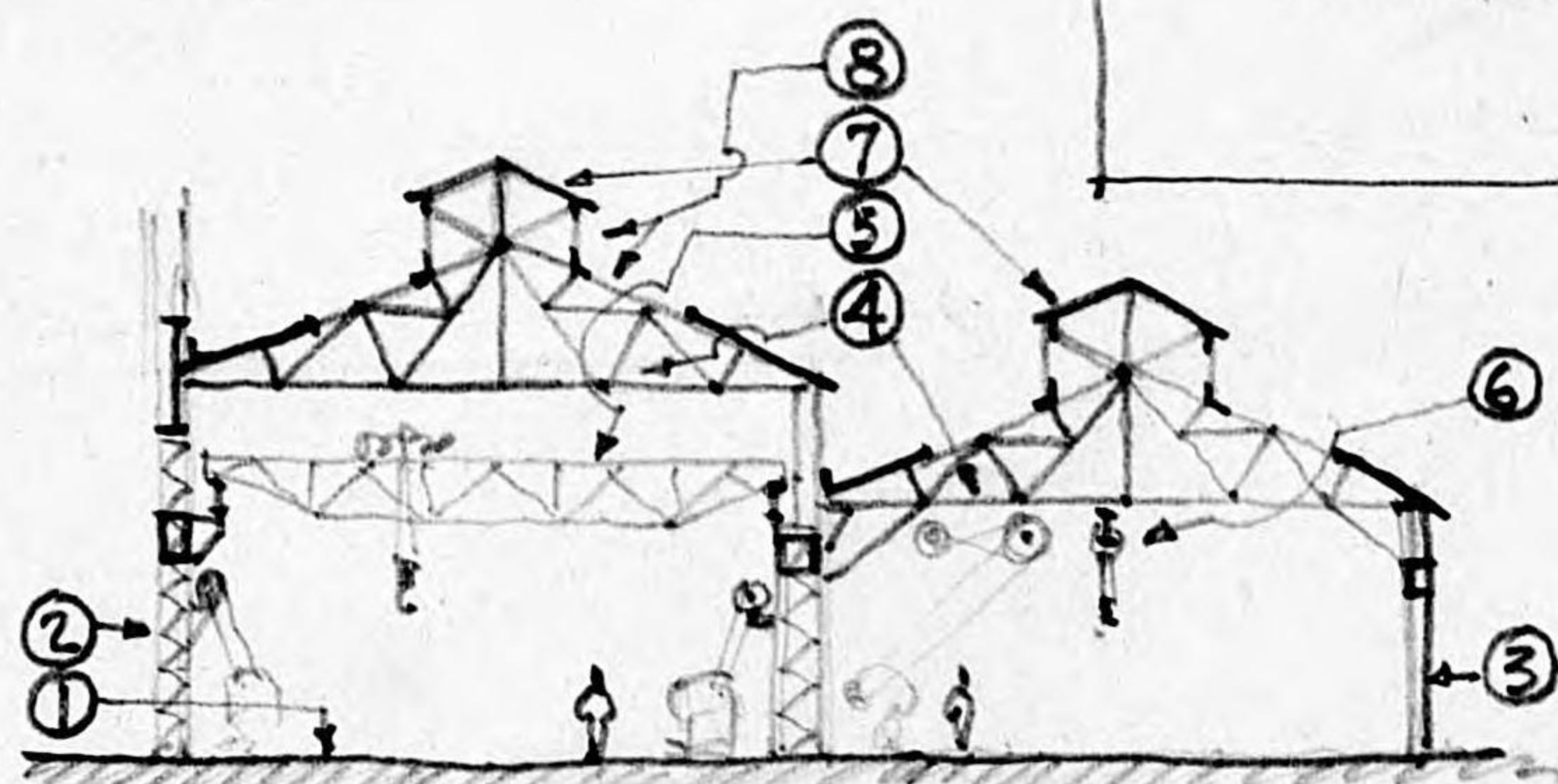
SECTION A-A

- 1- CONC.
- 2- CORR. METAL
- 3- WOOD FRAME & COLS.
- 4- WOOD TRUSS
- 5- CORR. ASBESTOS
- 6- GANTRY.



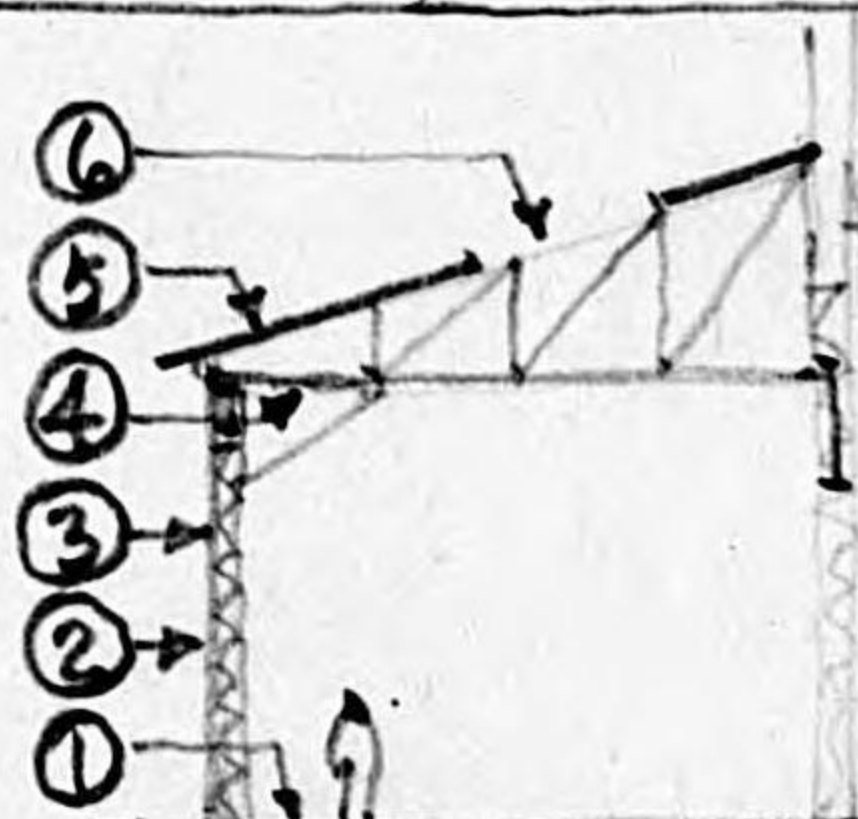
SECTION B-B & [F-F]

- 9- DIRT
- 10- WOOD POST
- 11- CORR. ASBESTOS ON WOOD
- 12- WOOD TRUSS.
- 13- GLASS
- 1- CONC. & WOOD BLOCK.
- 2- SIDE WALLS OPEN, FRONT WALLS CORR. METAL.
- 3- STEEL FRAME & COLS. (AT F-F R/C COLS & BEAMS)
- 4- STEEL TRUSSES RUNNING PARALLEL TO BLDG. (AT F-F R/C BEAMS)
- 5- 3 GANTRY CRANES ON SAME RAIL. (2-20TON & 1-30TON)
- 6- STEEL TRUSS.
- 7- CORR. ASBESTOS OVER WOOD.
- 8- GLASS.



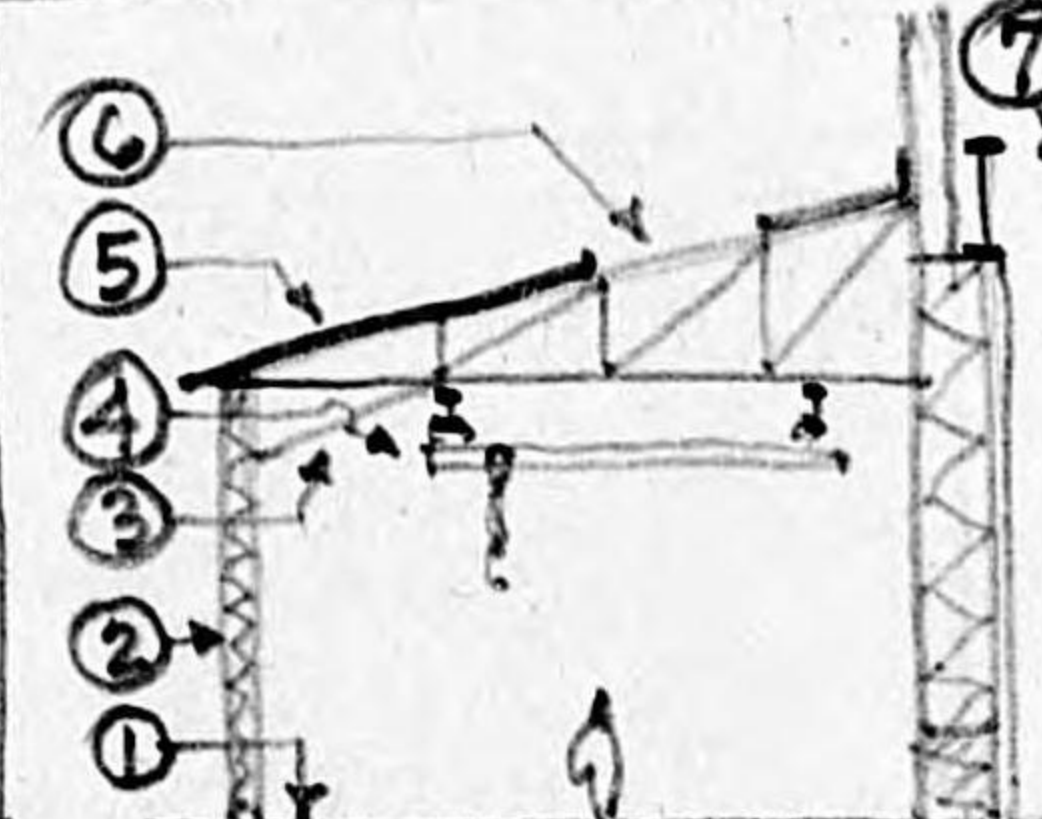
SECTION C-C. [E-E]

- 1- CONC, WOOD BLOCK & DIRT.
- 2- STEEL FRAME & COLS.
- 3- CORR. METAL. (AT E-E 4' CONC.)
- 4- STEEL TRUSS.
- 5- GANTRY
- 6- MONORAIL
- 7- CORR. ASBESTOS OVER WOOD. (AT E-E, CORR. METAL OVER WOOD)
- 8- GLASS.



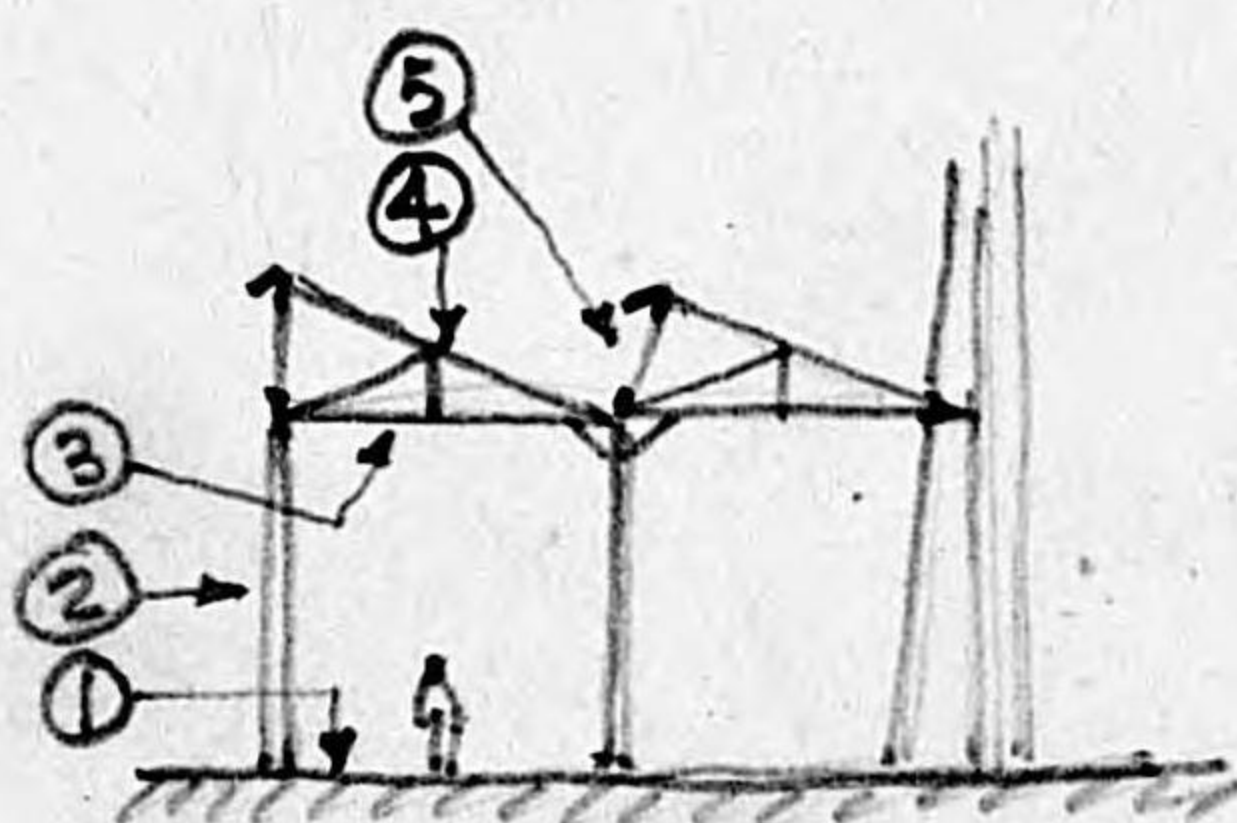
SECTION D-D.

- 1- DIRT
- 2- GLASS IN METAL FRAMES.
- 3- LIGHT LATTICE COLS.
- 4- " STEEL TRUSS.
- 5- CORR. ASBESTOS OVER WOOD.
- 6- GLASS.



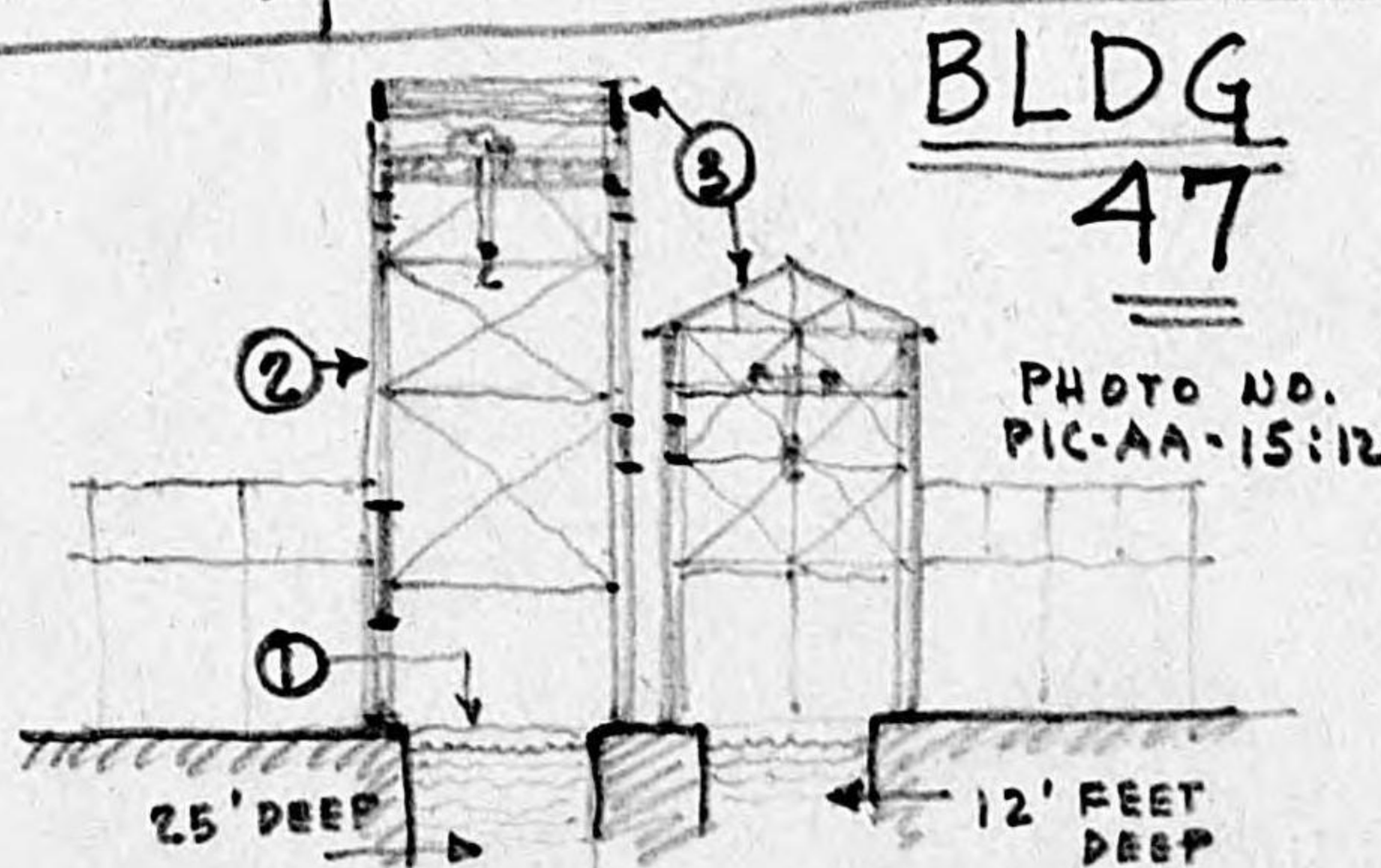
SECTION H-H

- 1- DIRT.
- 2- LATTICE COLS.
- 3- STEEL TRUSS.
- 4- MONO-RAILS
- 5- CORR. ASBESTOS OVER WOOD.
- 6- GLASS
- 7- SECTION AS B-B



SECTION AT F-F

- 1- DIRT & WOOD BLOCK.
- 2- STEEL FRAME & COL. CORR. METAL.
- 3- STEEL TRUSS.
- 4- CORR. METAL OVER WOOD.
- 5- GLASS.



SECTION G-G.

- 1- WATER
- 2- OPEN STEEL FRAME
- 3- CORR. ASBESTOS OVER WOOD.

BLDG
47

PHOTO NO.
PIC-AA-15:12

BLDG
46

46

U. S. S. B. S.
DAMAGE ASSESMENT WORK SHEET

FUNCTION			NAME OF PLANT		
TRACK SHOP					
STRUCTURAL ANALYSIS	YEAR BUILT	ORIGINAL USE	REMARKS		
	48b		48a		
	FLOOR TYPE THICKNESS				
	CONC. ON FILL	CONC. ON FILL.			
	FLOOR TYPE THICKNESS				
	WALLS TYPE THICKNESS				
	CORR. METAL ON WOOD FRAME	CORR. METAL ON STEEL FRAME.			
	ROOF MATERIAL TYPE THICKNESS				
	CORR. METAL	CORR. METAL			
	TRUSS TYPE SPAN				
WOOD (SEE SKETCH)	STEEL (SEE SKETCH)				
CRANES NO. TYPE LOAD CAPACITY					
3 MONO-RAILS	GANTRY				
MACHINERY REMOVED TO REASON					
REPAIRS AND CLEARANCES	CLEARANCE ON 1/2 OF 48b. REPAIRS ON 48a UNDERWAY.				
NEW CONSTRUCTION					
TYPE OF INDUSTRY			CITY	TARGET NO.	BLDG. NO.
					48
LAT. LONG AREA					
INTEL. SUBJECT NUMBER			DATE		
PHOTOGRAPHY					ROLL - NEG NUMBER
					PIC-AA-1613
INTERIOR		EXTERIOR			
		✓			
STRUCT. DETAIL		NO. OF EXPOSURES			
TEAM					

DAMAGE ASSESMENT	DESTROYED
	STRUCTURAL DAMAGE
	SUPERFICIAL DAMAGE
	ROOF DISTURBANCE
	MINOR DAMAGE

GENERAL NOTES - SECTIONS - PLANS - ETC -

ITEM 49- TURNTABLE - CONC. - NO VISIBLE DAMAGE.

BLDG 48a & b

SECTION

BLDG. NUMBER

48