

Lynn Young

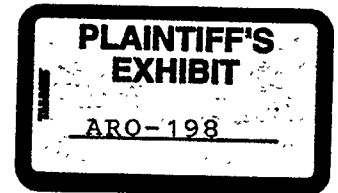
KAISER ENGINEERS, INC.
MIDDLETOWN, OHIO

FINAL PROJECT REPORT
ARMCO STEEL CORPORATION

SITE DEVELOPMENT - STEPS I, II, & III

PROJECT NO. 7112

NOVEMBER 3, 1969



Distribution:

Armco

R. F. Boschert
V. J. Curtis
T. R. Foley
A. M. Greco
C. G. Kramer
D. C. Osborne
P. R. Smith
J. M. Thomas

Prepared by:

D. C. Anderson
D. C. Anderson

11/24/69
Date

Kaiser

D. C. Anderson
D. A. Daly
V. L. Frankson
B. P. Franceschi
R. C. Hulseman
S. G. Imherr
E. D. Lowell
D. R. McSparrin
R. J. Wolf
Central File

Approved:

S. G. Imherr
S. G. Imherr

11/24/69
Date

KAISER ENGINEERS, INC.
MIDDLETOWN, OHIO

FINAL PROJECT REPORT

ARMCO STEEL CORPORATION

SITE DEVELOPMENT - STEPS I, II, & III

PROJECT NO. 7112

CONTENTS

- Project Summary
 - General Description
 - Project Authorization
 - Project Personnel
 - Project Progress
- Project Schedule
- Final Summary Cost and Comparison
- General Arrangement Drawings & Photographs

FINAL PROJECT REPORT

SITE DEVELOPMENT - STEPS I, II, & III

PROJECT NO. 7112

1.0 GENERAL DESCRIPTION

This project was concerned with the entire scope of Site Development work for the Middletown Expansion Program. Step I dealt primarily with preparation of the site in the South Area where the new Hot Strip Mill is located. A final report has been submitted covering this step of the work. See Final Project Report for South Area Site Development, Project 7112-1.

The general scope of work accomplished by project 7112 Steps II and III was as follows:

- (1) Demolition, removal and relocation of existing facilities in the Steelmaking Area.
- (2) Site development of the Steelmaking Area.
- (3) Grading for roadways, railroads, ditches and surface drainage in the South and Steelmaking Areas.
- (4) Storm drainage system including all sewers and culverts in the South and Steelmaking Areas.

- (5) Paving of roads and parking lots in the South and Steelmaking Areas.
- (6) Yard lighting in the South and Steelmaking Areas.
- (7) Two (2) permanent guard houses. One in the South Area at Oxford State Road. The other is located at Lefferson Road near Highland Street.

As a result of the earthwork study conducted as a part of this project, the floor elevation of 107.50 was established for the Basic Oxygen Plant and Continuous Casting Facilities.

A more detailed description of this project may be found in Engineering Report 7112 - Steps I, II, and III, dated June 1, 1967.

2.0 PROJECT AUTHORIZATION

An Engineering Report for 7112 - Step II was issued September 24, 1965 and the "Request for Appropriation" was submitted September 24, 1965. Armco Corporate Management approved the request for \$4,696,000 on December 28, 1965. On June 1, 1967, a final Engineering Report, 7112 - Steps I, II, and III, was issued combining the previous reports and included the final stage of Site Development, Step III. Armco management approved the consolidated appropriation request of \$7,706,200 on July 25, 1967.

3.0 PROJECT PERSONNEL

Armco Program Engineers	-	Mr. T. R. Foley
	-	Mr. J. M. Thomas
Armco Project Engineer	-	Mr. R. F. Boschert
Armco Project Engineer - Electrical	-	Mr. J. J. Delaney
Kaiser Project Engineers	-	Mr. R. C. Hulseman
	-	Mr. D. E. Ernst
	-	Mr. D. C. Anderson

4.0 PROJECT PROGRESS

Feasibility studies and scoping drawings for 7112 - Step II were started in mid-1965, and completed with the issuance of the engineering report September 24, 1965. The 7112 - Step III scoping information was completed with the issuance of the consolidated 7112 - Steps I, II, and III report June 1, 1967. The "Requests for Appropriation" were approved as outlined in Section 2.0.

Detail design for Step II began in August, 1965. All steps of the 7112 site development design program were completed in January, 1968. A total of 168 drawings and five (5) sets of specifications were issued for construction for Steps I, II, and III of this project.

Stripping and grubbing of the Steelmaking Area site was started in November, 1965. The South Area storm sewers and drainage system was started by Kaiser Engineers in March of 1966.

Earth and slag embankment in the steelmaking area was completed to approximate design grade during the first quarter of 1967. Completion of this work provided a working grade for the Basic Oxygen Shop, Continuous Casting, Mold

Yard, Stripper Building, Trackwork, Roads and other miscellaneous facilities located within the Steelmaking area.

Several subcontracts were awarded in connection with Step II and III of this project. The following is a list of the major subcontracts:

<u>S/C Number</u>	<u>Type of Work</u>	<u>Subcontractor</u>
7112-1965 -2084	Roadway Paving	Armrel Construction Co.
7112-1730	Roadway Paving	John R. Jurgensen Co.
7112-1768	Roadway Paving	Triasco Corporation
7112-1109	Slag Removal and Embankment	W. L. Harper Construction Company
7112-1629	Storm Sewers - Steelmaking Area	Delta Pipeline Construction
7112-1667	Yard Lighting	Westinghouse Electric
7112-2276	Lefferson Road Guard House	S K Construction Co.
7112-1077	Fencing	Davis & Siehl

The final completion inspection of the Steelmaking Area was held on August 6, 1969. The final inspection of the South Area was held August 13, 1969.

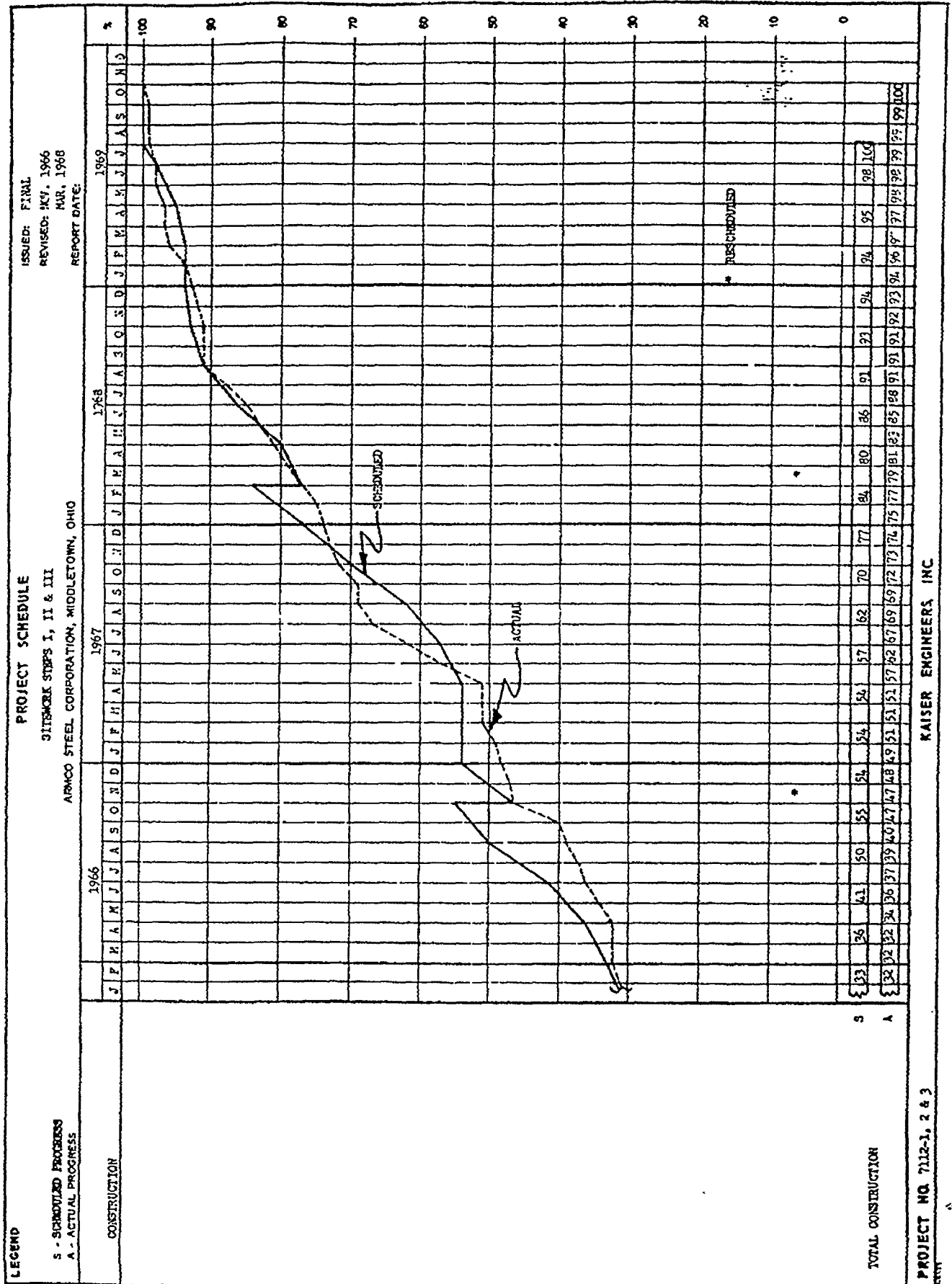
Punch list items, clean up, and additional work items extended the final completion date to the end of October, 1969.

5.0 PROJECT SCHEDULE

The schedule outlining the theoretical and actual project progress is attached. This schedule shows the combined progress for all steps of the site development work.

AKE-003234

*** DENOTES RESCHEDULE**



6.0 FINAL COST & COMPARISON TO ENGINEERING REPORT
BUDGET

Appropriations

The following is the chronological history of appropriations for the Site Development Project from the inception of Phase I to the present:

September 30, 1964	\$ 10,000
January 13, 1965	1,816,000
September 24, 1965	4,696,000
June 16, 1967	1,184,200
February 9, 1968	150,000
May 20, 1968	<u>(679,296)</u>
	\$7,176,904

Costs

The final costs of the project shows an underrun of \$1,049,823, reflecting a savings of \$352,430 in direct costs, \$30,393 in indirect costs, and the entire contingency of \$667,000.

A summary of final costs as compared to the engineering report budget follows.

Costs

<u>Project Section</u>	<u>Description</u>	<u>Budget Estimate</u>	<u>Estimate at Completion</u>	<u>(Over) Under Budget</u>
101	Demolition	3,500	3,476	24
102	Remove & Salvage	20,000	20,000	-
103	Clearing & Grubbing	25,000	25,000	-
104	Seal Exist. Wells & Cisterns	600	600	
105	Earthwork	653,600	653,563	37
106	Slag	821,000	820,927	73
107	Culverts	48,400	48,332	68
110	Perimeter Fencing	50,900	50,818	82
111	Gen. Site Clear. -So. Area	559,400	687,450	(128,050)
112	Roadways - South Area	313,300	282,206	31,094
113	Parking Lots - South Area	77,700	35,856	41,844
115	Coil Conv. Overpass Bridge	47,700	42,218	5,482
116	Fencing - South Area	14,200	7,885	6,315
117	Culverts - South Area	70,300	53,708	16,592
118	Storm Sewers - South Area	1,405,100	1,172,029	233,071
119	Yard Light - South Area	139,700	118,880	20,820
120	Park. Lot at No. 2 O. H.	9,100	9,064	36
131	Traffic Signal - South Area	5,000	8,762	(3,762)
151	Demolition & Removal	89,400	85,763	3,637
152	Alter Middletown Sewer	17,000	2,774	14,226
153	Gen. Site Clear. - SM Area	800,700	743,349	57,351
154	Culverts - S. M. Area	272,000	233,041	38,959
155	Storm Sewers - S. M. Area	424,400	356,887	67,513
156	Clean Out & Fill Exist. Oil Ponds	22,500	20,377	2,123
161	Refuse Dump Roadways	2,800	2,743	57
163	Oil Recovery Area	17,700	17,437	263
172	Roadways - S. M. Area	158,800	189,046	(30,246)
173	Parking Lots - S. M. Area	37,600	10,463	27,137
176	Fencing - S. M. Area	9,200	17,055	(7,855)
179	Yard Lighting - S. M. Area	138,700	125,038	13,662
180	Yard Light. Crawford St. Ent.	-	26,118	(26,118)
181	Traffic Signal - S. M. Area	6,800	-	6,800
201	Interplant Signs	-	1,787	(1,787)
202	Flag Pole at New Guard House	-	881	(881)
203	Guard House - So. Area	17,400	65,874	(48,474)
252	Fabricating Shop	172,100	172,073	27
253	Guard House - S. M. Area	9,300	17,600	(8,300)
880	Elect. Sub Ovhd & Fee	23,000	2,390	20,610
		\$6,483,900	\$6,131,470	\$352,430

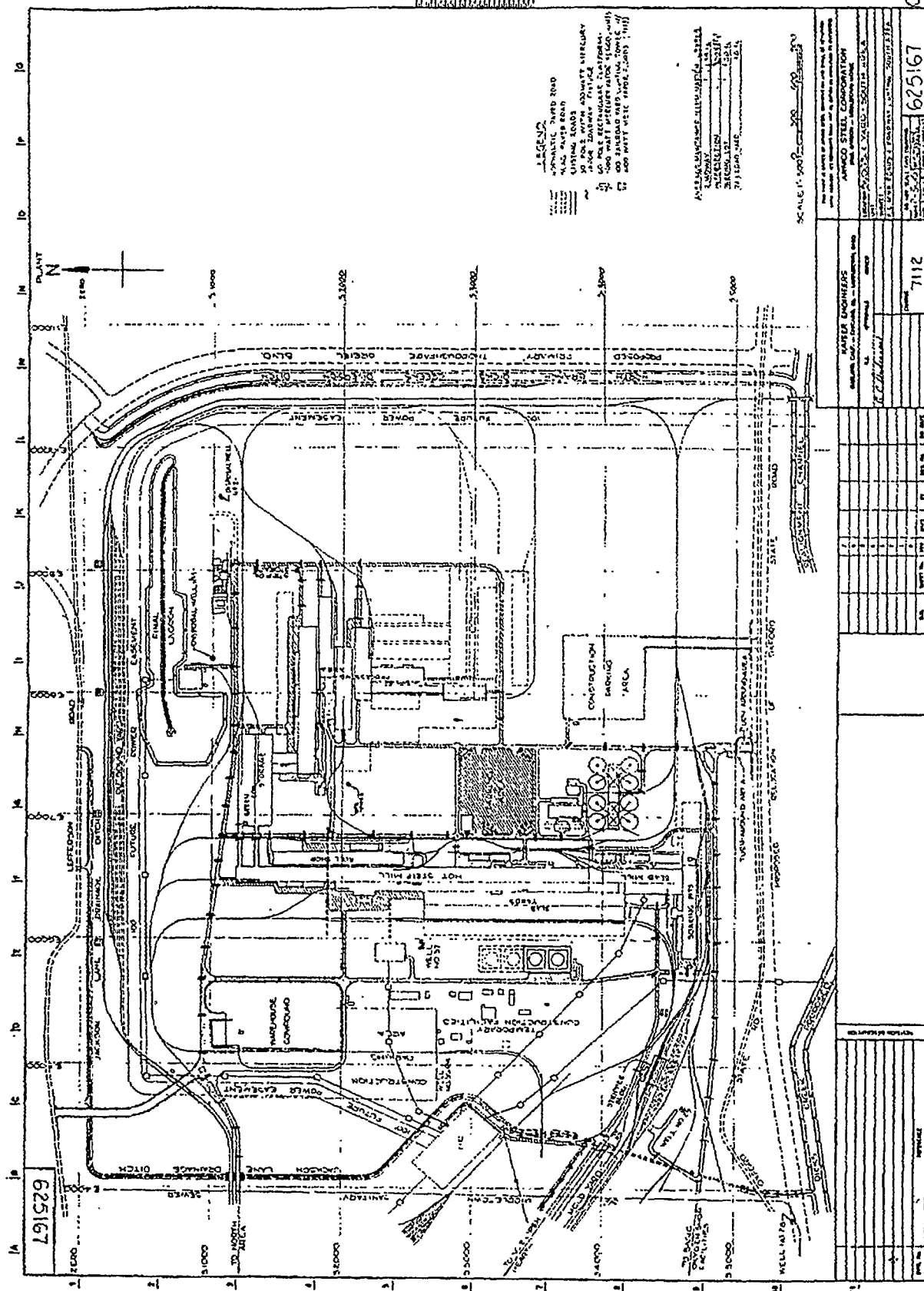
Costs (continued)

<u>Project Section</u>	<u>Description</u>	<u>Budget Estimate</u>	<u>Estimate at Completion</u>	<u>(Over) Under Budget</u>
910	Construction Overhead	183,500	172,913	10,587
940	Engineering & Staff	371,800	351,994	19,806
970	Contingency	667,000	-	667,000
Total Design & Construction		\$7,706,200	\$6,656,377	\$1,049,823

7.0 GENERAL ARRANGEMENT DRAWINGS & PHOTOGRAPHS

The following project general arrangement drawings are attached:

625167	Roads and Roadway Lighting South Area
625168	Roads and Roadway Lighting Steelmaking Area
625169	Roads and Roadway Lighting Steelmaking Area
625171	Storm Sewers South Area
625170	Storm Sewers Steelmaking Area



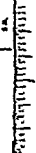




PHOTO NO. 1 - SOUTH AREA LOOKING SOUTHEAST, SHOWING INITIAL STAGES
OF SITEWORK AND HOT STRIP MILL CONSTRUCTION, JUNE 1965.

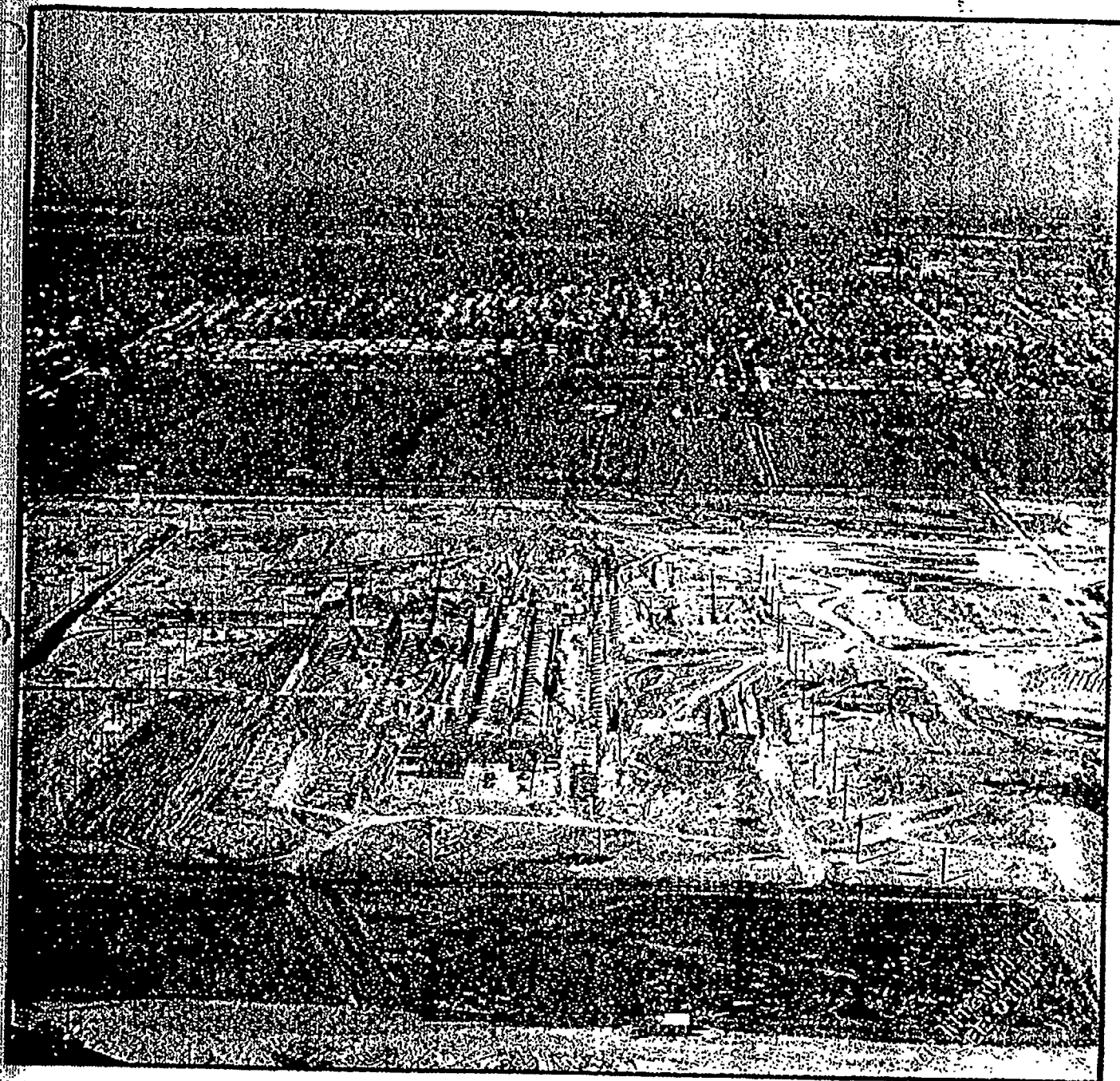


PHOTO NO. 2 - AERIAL VIEW LOOKING NORTH, SHOWING INITIAL CONSTRUCTION STAGES OF THE HOT STRIP MILL AND ROUGH GRADING OF THE SOUTH AREA, OCTOBER 1965.

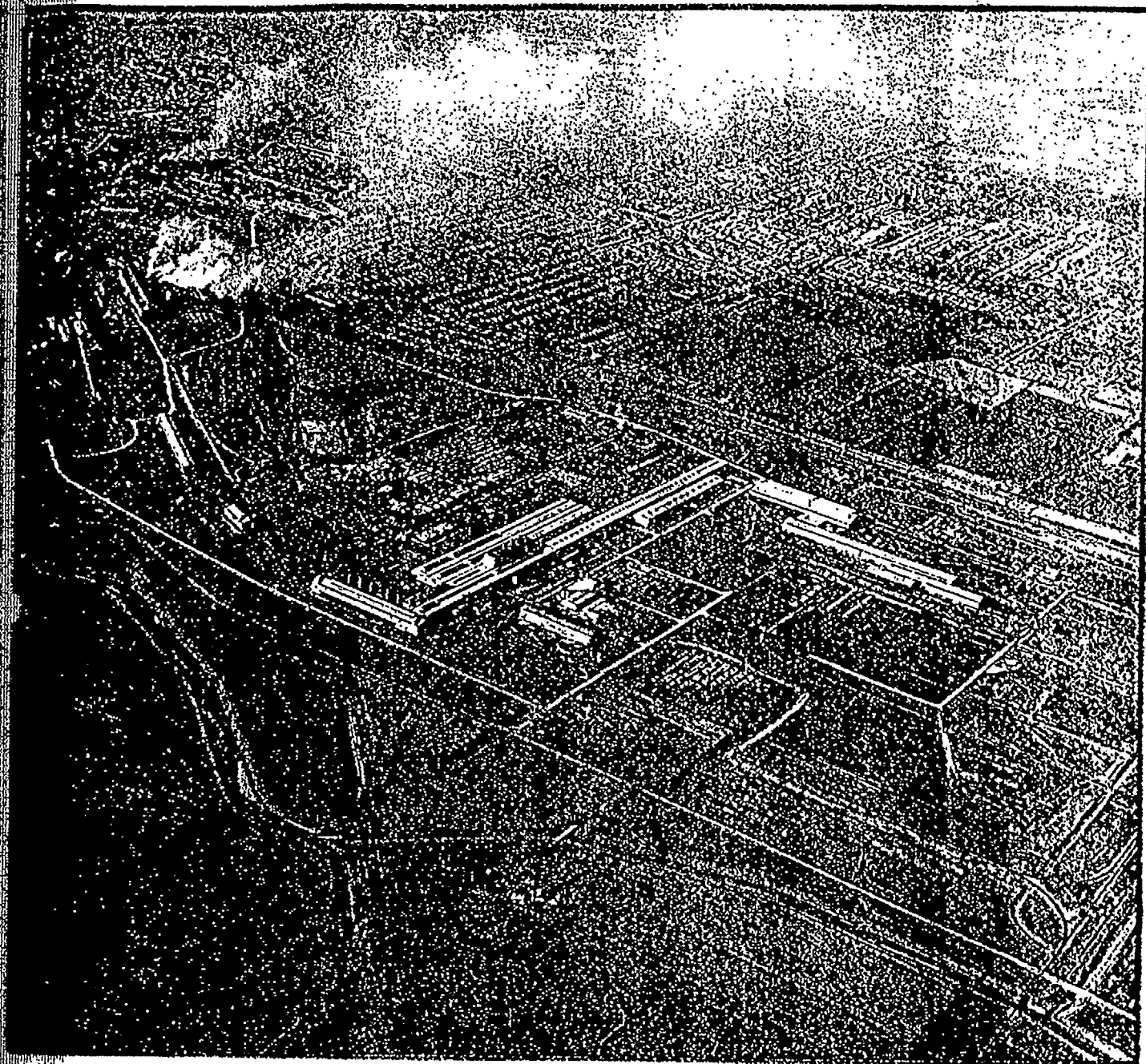


PHOTO NO. 3 - AERIAL VIEW LOOKING NORTHWEST, SHOWING THE SOUTH AND STEELMAKING AREA SITES. THE ROADS, DRAINAGE, AND SITEWORK ARE IN THE FINAL STAGE OF CONSTRUCTION, FEBRUARY 1969.



PHOTO NO. 4 - AERIAL VIEW LOOKING NORTHEAST, SHOWING THE STEELMAKING
AREA PRIOR TO SITE DEVELOPMENT, MARCH 1966.

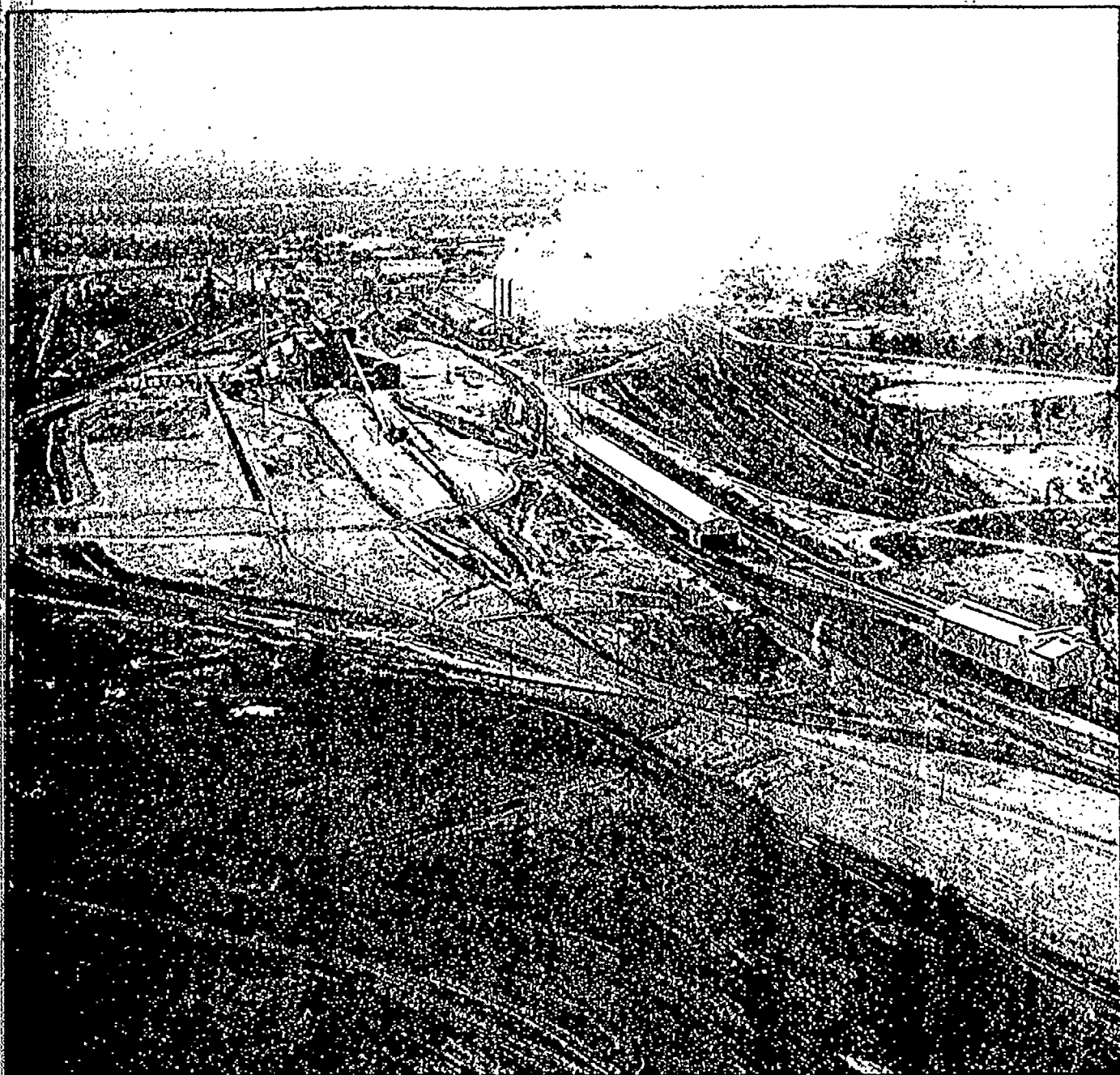


PHOTO NO. 5 - AERIAL VIEW LOOKING NORTHEAST, SHOWING STEELMAKING
AREA SITE IN THE FINAL STAGE OF CONSTRUCTION.