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IOWA STATE HIGHWAY COMMISSION

520 FREEWAY IN WEBSTER COUNTY

11-75511
2: R767

ROUTE LOCATION STUDY
OF
520 FREEWAY
IN
WEBSTER COUNTY

U.S. 169 EAST TO HAMILTON COUNTY LINE

DECEMBER 1968 REPORT

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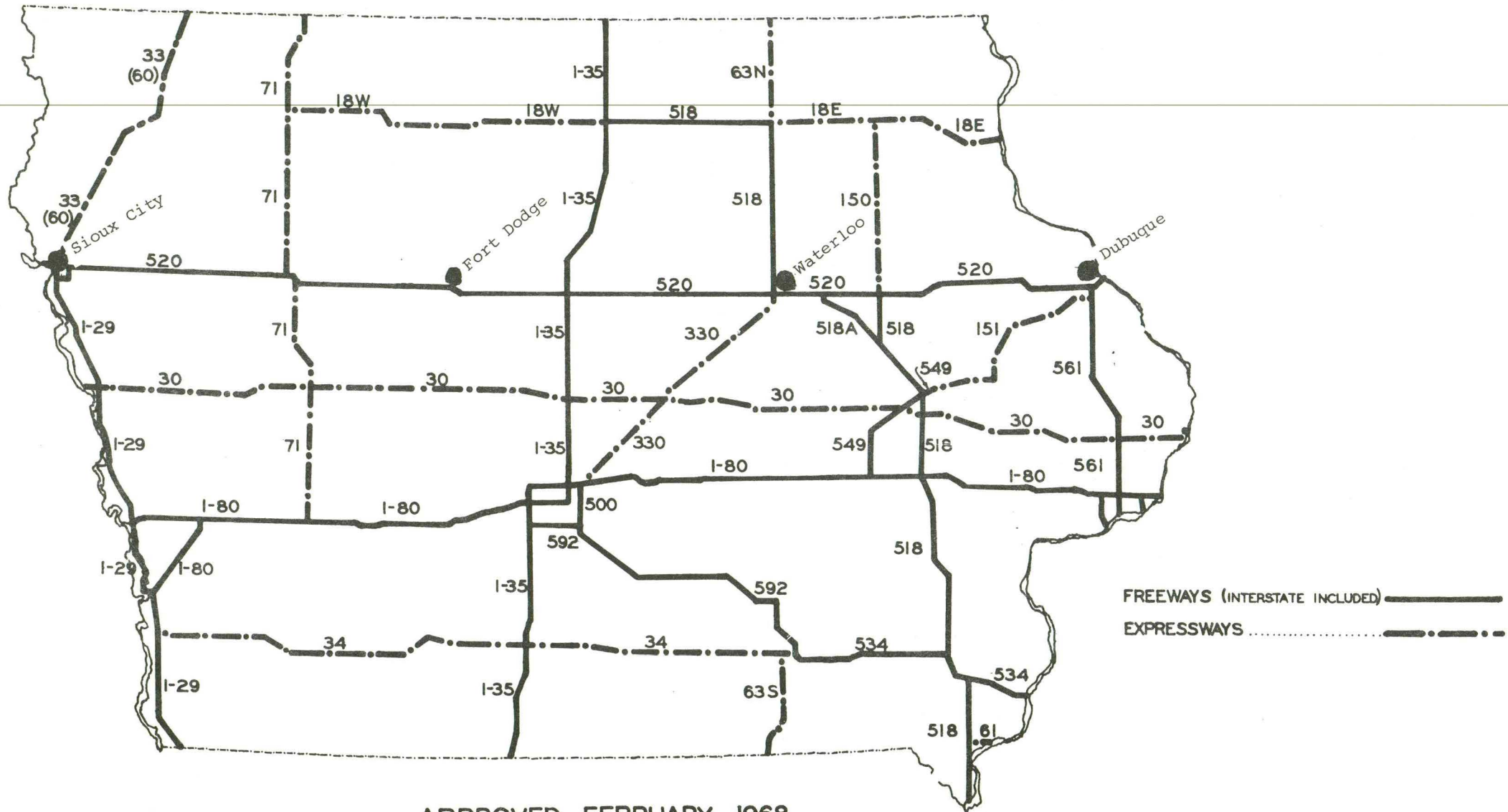
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IOWA'S PROPOSED NETWORK OF FREEWAYS AND EXPRESSWAYS



APPROVED FEBRUARY 1968

Figure 1

STUDY AREA

This comprehensive study of the 520 Freeway south of Fort Dodge has been prepared in order to evaluate the merits of two proposed corridors. The scope of this study includes examination of the 1963 and 1967 origin and destination traffic reports at Fort Dodge, road user study of the two corridors, and the economic effect of the Freeway location on the Fort Dodge area.

Results of the 1963 origin and destination traffic report are shown in Figures 2 and 3 for U.S. 20 traffic. Seventeen percent of the traffic approaching from the east on present U.S. 20 have a destination west of the Fort Dodge area. Thirty-five percent of the traffic from the west have a destination east

of the Fort Dodge area. It is apparent that the majority of U.S. 20 traffic has origin or destination in the Fort Dodge area. Preliminary traffic assignments on the 520 Freeway are based on this 1963 origin and destination study and have been expanded to obtain estimated 1972 and 1992 traffic. Since the 1967 origin and destination traffic report is not yet in final form, it is not possible to use traffic flow charts based on the 1967 field data. The traffic estimates used in this report will, however, be compared with the 1967 origin and destination traffic report and, if necessary, be revised accordingly.

For study purposes, the common points of the two corridors are the east end of the

become part of both the city street system
and the county secondary road system.

Planning and financing for the connection
might not be complete when the 520 Freeway

is constructed. Provisions can be provided
so the future connection can be accomplished
when financing is available and planning is
complete.

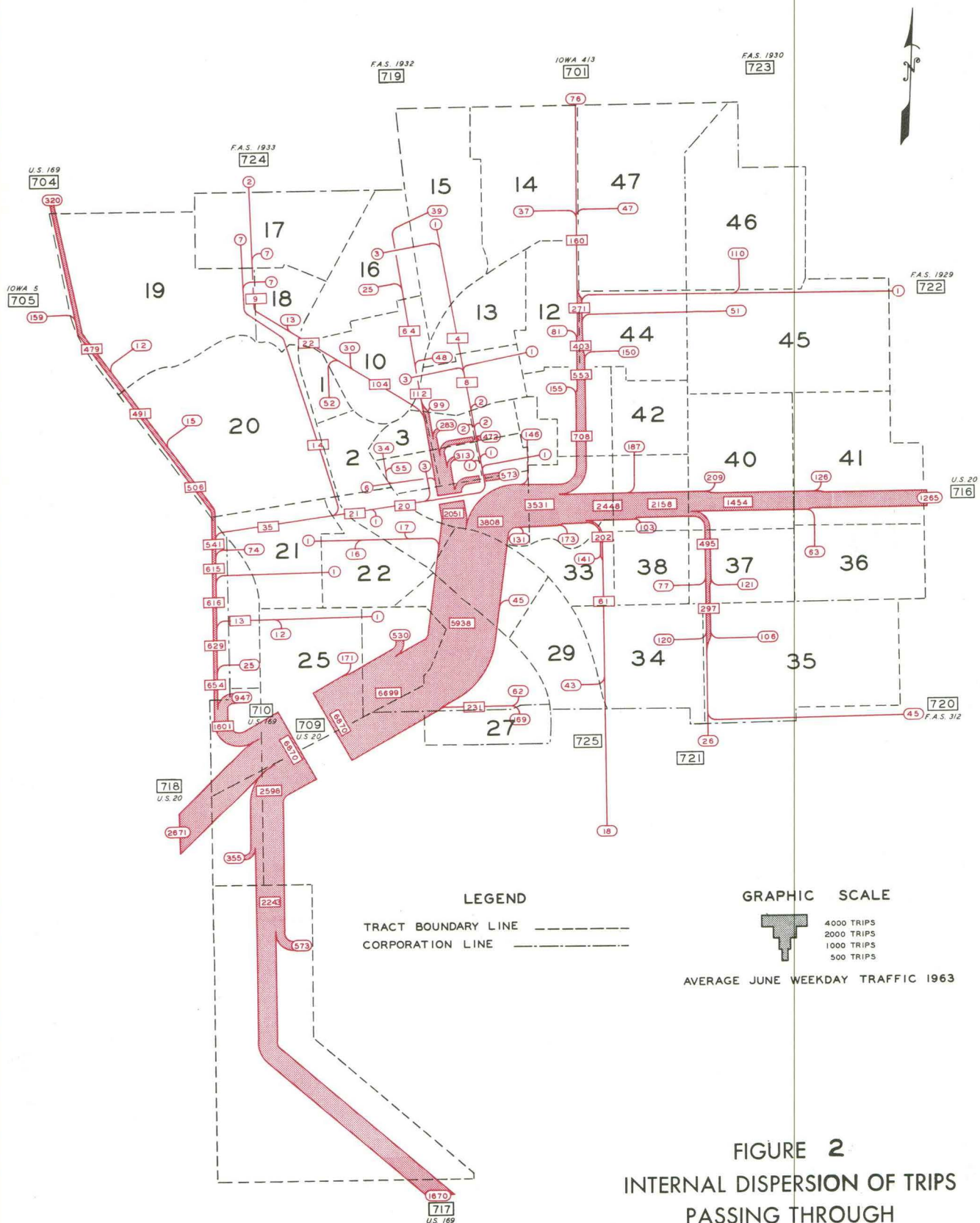


FIGURE 2
 INTERNAL DISPERSION OF TRIPS
 PASSING THROUGH
 STATION 709, U.S. 20, SOUTHWEST
 OF THE
 FORT DODGE STUDY AREA

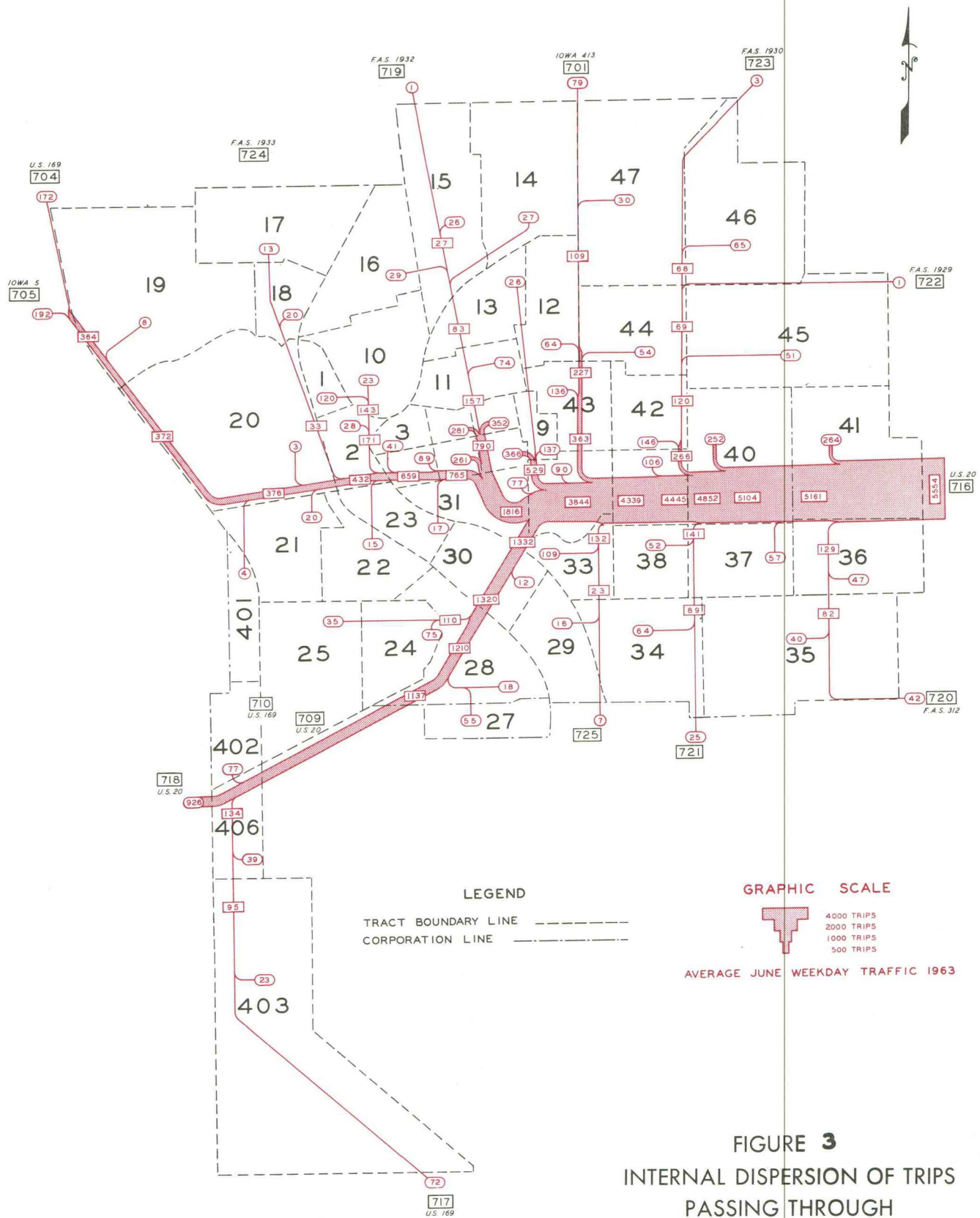


FIGURE 3
INTERNAL DISPERSION OF TRIPS
PASSING THROUGH
STATION 716, U.S. 20, EAST
OF THE
FORT DODGE STUDY AREA

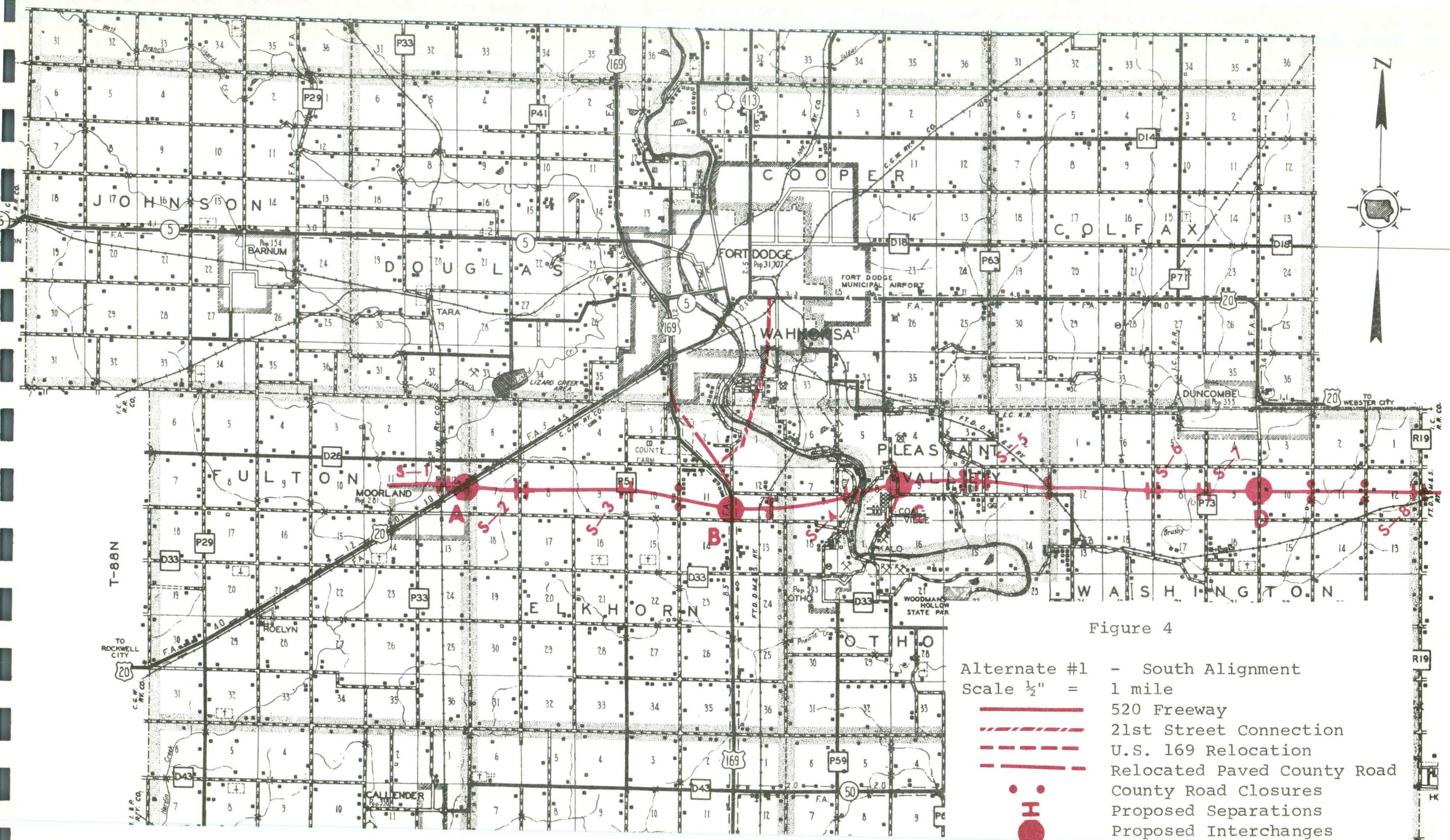









Figure 4

- Alternate #1 - South Alignment
- Scale $\frac{1}{2}$ " = 1 mile
-  520 Freeway
-  21st Street Connection
-  U.S. 169 Relocation
-  Relocated Paved County Road
-  County Road Closures
-  Proposed Separations
-  Proposed Interchanges

SOUTH ALTERNATE

The south alternate as shown in Figure 4 passes through cultivated farmland for the majority of its length. A diamond interchange is proposed for the connection with the relocated paved county road east of Coalville. The alignment then extends west crossing the Des Moines River Valley and the north-south county road west of the Des Moines River with dual structures and continues west on an alignment approximately $\frac{1}{4}$ mile north of the existing east-west county road. The Freeway then crosses the Fort Dodge, Des Moines, and Southern Railway with dual structures. A diamond interchange will be constructed at U.S. 169. Extending west from U.S. 169, the alignment will shift approximately $\frac{1}{4}$ mile north and

extend west on the half section line to the common point at the west end of the study area northwest of Moorland. A two quadrant interchange will be provided at U.S. 20 because of the Chicago Great Western Railroad east of U.S. 20. Dual structures will carry the Freeway over present U.S. 20 and the Chicago Great Western Railroad.

U.S. 169 will be relocated east of its present alignment bypassing the residential area $\frac{1}{2}$ mile south of the south corporate limits of Fort Dodge. This proposed relocation of U.S. 169 is shown in Figure 4. Also shown in Figure 4 is a possible 21st Street connection to Fort Dodge. This connection would provide traffic service to both the central business area and the shopping complex in east Fort Dodge.

Estimated costs of construction for the south alternate are shown in Table Number 1. The total length of the 520 Freeway mainline between common points is 10.15

miles. The Freeway estimated cost of construction is \$8,700,000. To construct relocated U.S. 169 from the 520 Freeway interchange north to the existing four lane paving just south of U.S. 20 would require 3.38 miles of reconstruction at a total cost of \$1,606,000. To construct the 21st Street connection from relocated U.S. 169 northeast across the Des Moines River and connect with U.S. 20 in Fort Dodge near 21st Street would require 3.35 miles of construction at a total estimated cost of \$2,278,000. 2.31 miles of this 21st Street connection would be

two lane paving from relocated U.S. 169 north to the south corporate limits of Fort Dodge with a two lane bridge across the Des Moines River. 1.04 miles would be constructed in the urban area of Fort Dodge to provide 53 foot back of curb to back of curb paving. The total estimated cost of the 520 Freeway, relocated U.S. 169, and the 21st Street connection would total to \$12,584,000.

Estimated traffic and turning movements are shown in Tables 2 through 6. Traffic shown on Table 2 is estimated for the total 29 mile 520 Freeway across Webster County. This traffic is estimated for 1972 average daily traffic. 1992 average daily traffic and 1992 design hour volumes are also shown. These estimates are based upon a complete system, that is, considering the proposed Interstate System, 520 Freeway, 21st Street

connection, and relocated U.S. 169 all complete.

The estimated 1972 average daily traffic for designated county road separations is also shown at the bottom of Table 2. The separa-

tion locations are shown in Figure 4 (S-1 through S-8). Turning movements are also shown in Tables 3, 4, 5, and 6 for the proposed interchanges with U.S. 20, U.S. 169, the paved relocated county road at Coalville and the county road south of Duncombe. These interchanges are lettered A, B, C, and D in Figure 4.

SOUTH ALTERNATE
ESTIMATED COST OF CONSTRUCTION
520 FREEWAY - WEBSTER CO. - NEAR FT. DODGE

LINE	LENGTH MI.	EARTHWORK	GRAVEL SUB-GRADE TREATMENT	PAVEMENT	R. O. W.	STRUCTURES	TOTAL
MAINLINE 520 FREEWAY	10.15	\$ 987,000	\$339,000	\$3,261,000	\$ 896,000	\$3,217,000	\$ 8,700,000
RELOCATED U. S. 169	3.38	\$ 212,000	\$ 91,000	\$ 596,000	\$ 292,000	\$ 415,000	\$ 1,606,000
21st STREET CONNECTION*	3.35	\$ 192,000	\$ 36,000	\$ 432,000	\$ 778,000	\$ 840,000	\$ 2,278,000
TOTAL SOUTH LINE ALTERNATE	16.88	\$1,391,000	\$466,000	\$4,289,000	\$1,966,000	\$4,472,000	\$12,584,000

*21st Street Connection: 2.31 miles rural from U. S. 169 north to Ft. Dodge (2 lanes) = \$1,445,000
1.04 miles urban in Ft. Dodge (53' b-b) = \$833,000

Table 1

HIGHWAY PLANNING SURVEYS DEPARTMENT
DESIGN DESIGNATION DATA SHEET

SOUTH ALTERNATE

County	Route No.	Project No.	Location	Sect. length	ADT	Est. 1972	Est. 1992	Est. 1992
					ADT	ADT	ADT	DHV
Calhoun - Webster	520 Freeway	*	From Interchange with Co. Rd. N65, in Calhoun Co. east to Interchange with Local Road, south of Duncombe in Webster Co.	29.0		4500	6800	770
			Conditions:					
			1. Proposed Interstate System Completed					
			2. Proposed 520 Freeway Completed					
			3. Proposed Extension of 21st Street South and Southwesterly to relocated U.S. 169 Completed					
Calhoun - Webster	520 Freeway	*	Separations Volumes					
			S-1			60		
			S-2			100		
			S-3			500		
			S-4			220		
			S-5			130		
			S-6			80		
			S-7			350		
			S-8			150		

Table 2



INDICATE NORTH BY ARROW

VEHICULAR TURNING MOVEMENTS SOUTH ALTERNATE

COUNTY Webster

Conditions:

1. Proposed Interstate System Completed
2. Proposed 520 Freeway Completed
3. Proposed Extension of 21st Street South and Southwesterly to Relocated U.S. 169 Completed.

LOCATION Interchange of
Proposed 520 Freeway and
U.S. 20
Point A

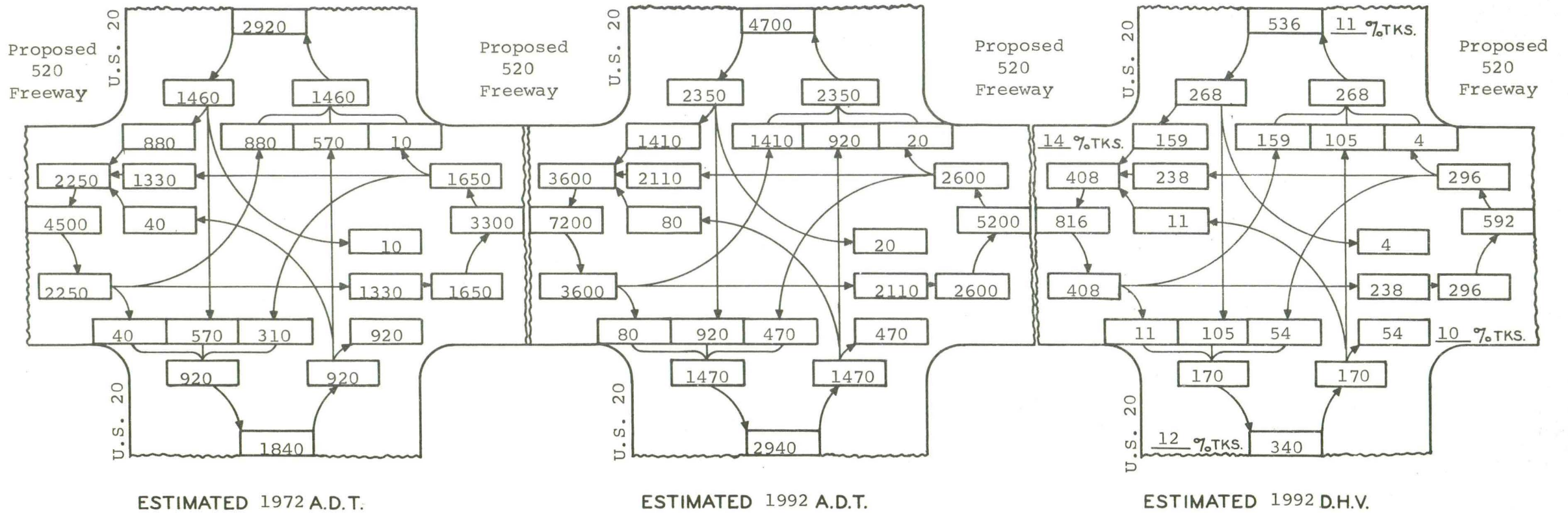


Table 3



INDICATE NORTH BY ARROW

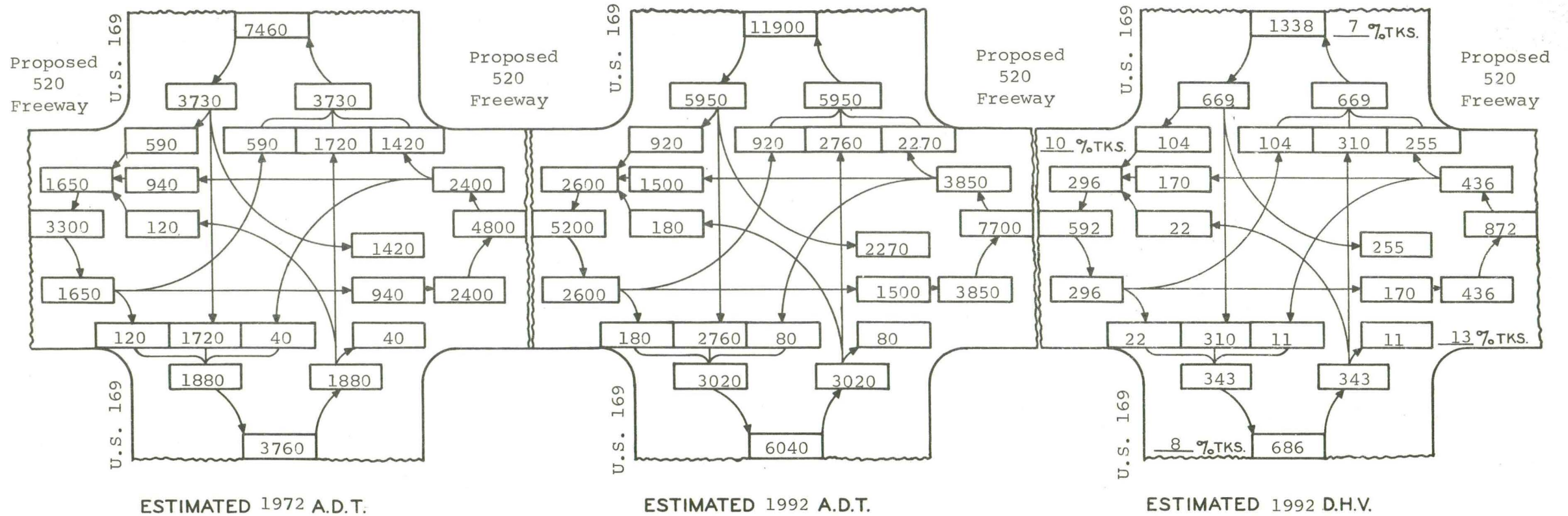
VEHICULAR TURNING MOVEMENTS SOUTH ALTERNATE

COUNTY Webster

LOCATION Interchange of
Proposed 520 and U.S. 169
Point B

Conditions:

1. Proposed Interstate System Completed
2. Proposed 520 Freeway Completed
3. Proposed Extension of 21st Street South and Southwesterly to Relocated U.S. 169 Completed.





INDICATE NORTH BY ARROW

VEHICULAR TURNING MOVEMENTS SOUTH ALTERNATE

COUNTY Webster

Conditions:

1. Proposed Interstate System Completed
2. Proposed 520 Freeway Completed
3. Proposed Extension of 21st Street South and Southwesterly to Relocated U.S. 169 Completed.

LOCATION Interchange of
Proposed 520 and Local Road
Point C

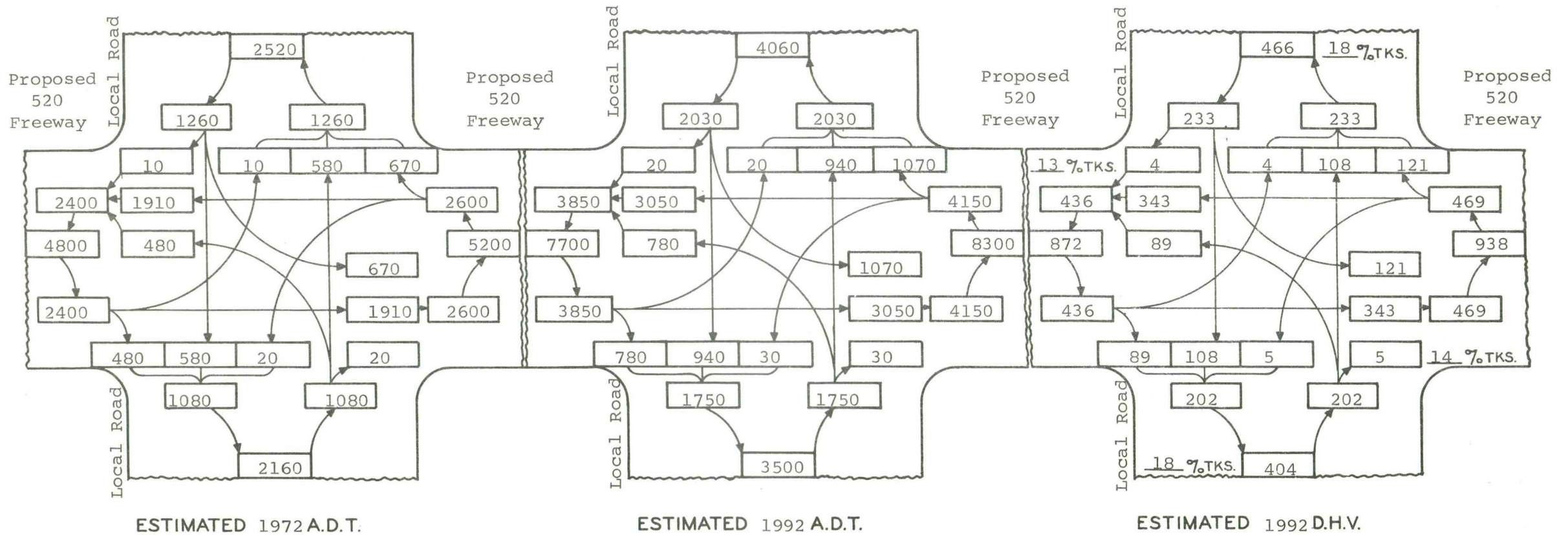


Table 5



INDICATE NORTH BY ARROW

VEHICULAR TURNING MOVEMENTS SOUTH ALTERNATE

COUNTY Webster

LOCATION Interchange of

Proposed 520 and Local Road
Point D

Conditions:

1. Proposed Interstate System Completed
2. Proposed 520 Freeway Completed
3. Proposed Extension of 21st Street South and Southwesterly to Relocated 169 Completed.

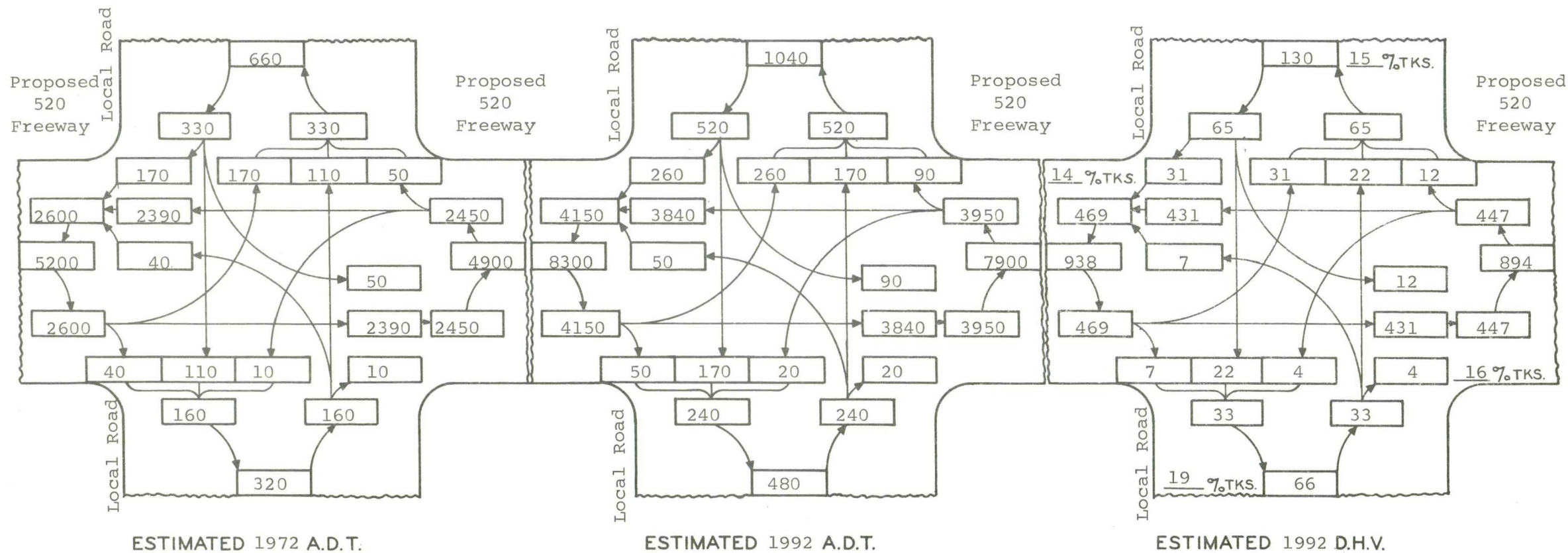


Table 6

NORTH ALTERNATE

The north alternate as shown in Figure 5, passes through both cultivated farm land on the west and through the gypsum quarries on the east. A diamond interchange is proposed for the connection with the relocated paved county road east of Coalville. The alignment then extends northwest on the higher terrain bordering the Des Moines River Valley. Dual structures separate the Freeway over the Fort Dodge, Des Moines, and Southern Railway. If the 21st Street connection is constructed, a diamond interchange would be provided on the 520 Freeway. A separation will be provided at the Chicago, Northwestern Railway on the east bank of the Des Moines River. Dual structures will then be provided for the Des

Moines River crossing. A diamond interchange will be constructed at U.S. 169. Extending west from U.S. 169 the 520 Freeway will pass over U.S. 20 and the Chicago Great Western Railroad east of U.S. 20. An interchange will not be provided at U.S. 20 since an interchange for U.S. 169 has already been provided just 1 mile east. This interchange is 3/4 mile south of the U.S. 20 - U.S. 169 intersection. The alignment will then extend west and southwest connecting again at the common point northwest of Moorland.

Estimated costs of construction are shown in Table 7. The total length of the 520 Freeway mainline on this north alternate between common points is 11.15 miles. The estimated

cost of construction is \$11,286,000. This cost includes special foundation treatment in the gypsum mine area. To provide four-lane paving on U.S. 169 from the 520 Freeway interchange north to the existing four-lane paving on U.S. 169 just south of U.S. 20 would require 0.75 mile of reconstruction at a total cost of \$210,000. To construct the 21st Street connection from the diamond interchange north and connect with U.S. 20 in Fort Dodge near 21st Street would require 2.14 miles of construction at a total estimated cost of \$1,820,000. The rural portion of this 21st Street connection, from the 520 Freeway interchange north to the south corporate limits of Fort Dodge, would provide 1.10 miles of four-lane paving with a depressed

median. The 1.04 mile urban section would provide 53 ft. back of curb to back of curb paving in the corporate limits of Fort Dodge. The total estimated cost of construction including the cost of the 520 Freeway, U.S. 169, and the 21st Street connection would total \$13,316,000.

Estimated traffic and turning movements are shown in Tables 8 through 12. Traffic on Table 8 is estimated for the total 29.8 mile 520 Freeway across Webster County. This traffic is estimated for 1972 average daily traffic. The 1992 average daily traffic and the 1992 design hour volumes are also shown. These estimates are based upon a complete system, that is, considering the proposed Interstate System, 520 Freeway, 21st Street

connection, and U.S. 169 all complete. The estimated 1972 average daily traffic at designated county road separations is also shown at the bottom of Table 8. The separations locations are shown in Figure 5 (S-9 through S-18). Turning movements are also shown in Tables 9, 10, 11, and 12 for the proposed interchanges with U.S. 169, 21st Street connection, the paved relocated county road at Coalville, and the county road south of Duncombe. These interchanges are lettered E, F, G, and H in Figure 5.

NORTH ALTERNATE
 ESTIMATED COST OF CONSTRUCTION
 520 FREEWAY - WEBSTER CO. - NEAR FT. DODGE

LINE	LENGTH MI.	EARTHWORK	GRAVEL SUB-GRADE TREATMENT	PAVEMENT	R.O.W.	STRUCTURES	TOTAL
U.S. 169	0.75	\$ 28,000	\$ 21,000	\$ 124,000	\$ 36,000	\$ 1,000	\$ 210,000
21st STREET CONNECTION	2.14	\$ 143,000	\$ 53,000	\$ 589,000	\$ 727,000	\$ 308,000	\$ 1,820,000
MAINLINE 520 FREEWAY	11.146	*\$2,455,000	\$372,000	\$2,850,000	\$1,496,000	\$4,113,000	\$11,286,000
TOTALS	14.036	\$2,626,000	\$446,000	\$3,563,000	\$2,259,000	\$4,422,000	\$13,316,000

*Includes \$1,919,000 for special foundation treatment in area of old gypsum mines. Also includes \$198,000 for rock excavation west side Des Moines River.

21st Street Connection: 1.10 miles rural from 520 Freeway north to Ft. Dodge (4-Lanes with depressed median) = \$987,000

1.04 miles urban in Ft. Dodge (53' b-b) = \$833,000

Table 7

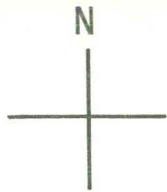
HIGHWAY PLANNING SURVEYS DEPARTMENT
DESIGN DESIGNATION DATA SHEET

520 Freeway

NORTH ALTERNATE

County	Route No.	Project No.	Location	Sect. Length	ADT	Est. 1972 ADT	Est. 1992 ADT	Est. 1992 DHV
Calhoun - Webster	520	*	From Interchange with Co. Rd. N65, in Calhoun Co. east to Interchange with Local Road, South of Duncombe in Webster Co.	29.8		4800	7700	870
	Freeway							
			Conditions:					
			1. Proposed Interstate System Completed					
			2. Proposed 520 Freeway Completed					
Calhoun - Webster	520	*	Separations Volumes					
	Freeway							
			S-9			60		
			S-10			130		
			S-11			120		
			S-12			2400		
			S-13			180		
			S-14			130		
			S-15			130		
			S-16			80		
			S-17			350		
			S-18			150		

Table 8



INDICATE NORTH BY ARROW

VEHICULAR TURNING MOVEMENTS NORTH ALTERNATE

COUNTY Webster

Conditions:

1. Proposed Interstate System Completed
2. Proposed 520 Freeway Completed
3. Proposed 21st Street Connection South and Southwesterly to the Proposed 520 Freeway Completed.

LOCATION Interchange of

Proposed 520 and U.S. 169
Point E

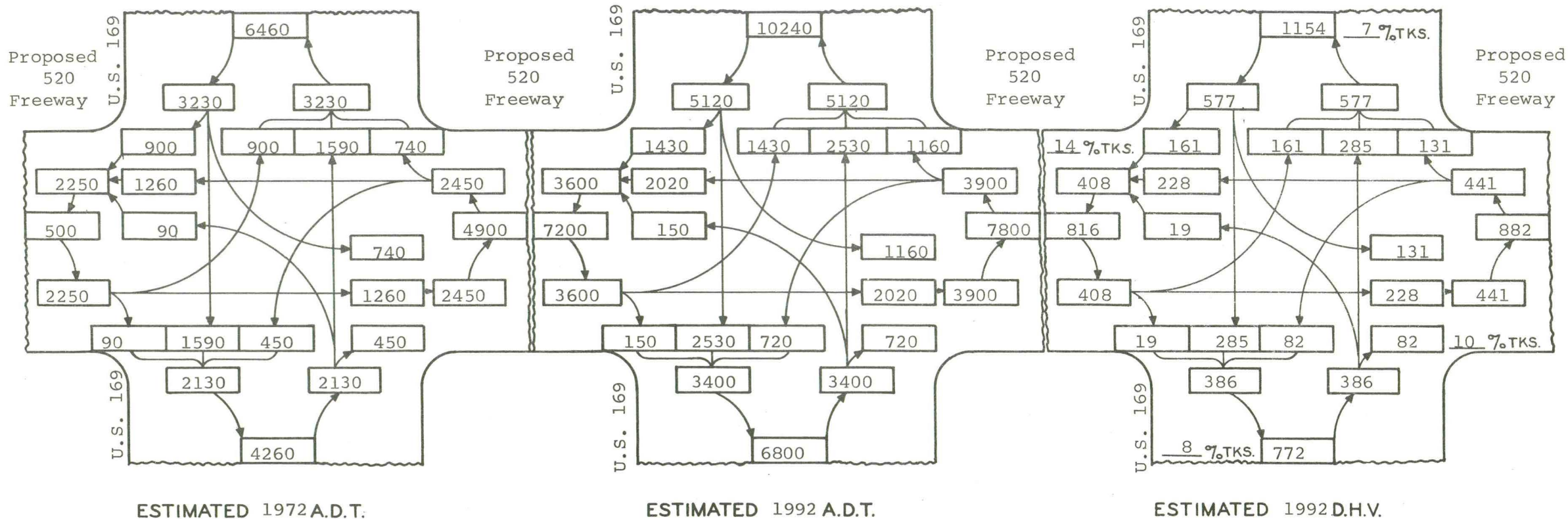
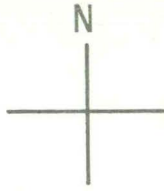


Table 9



INDICATE NORTH BY ARROW

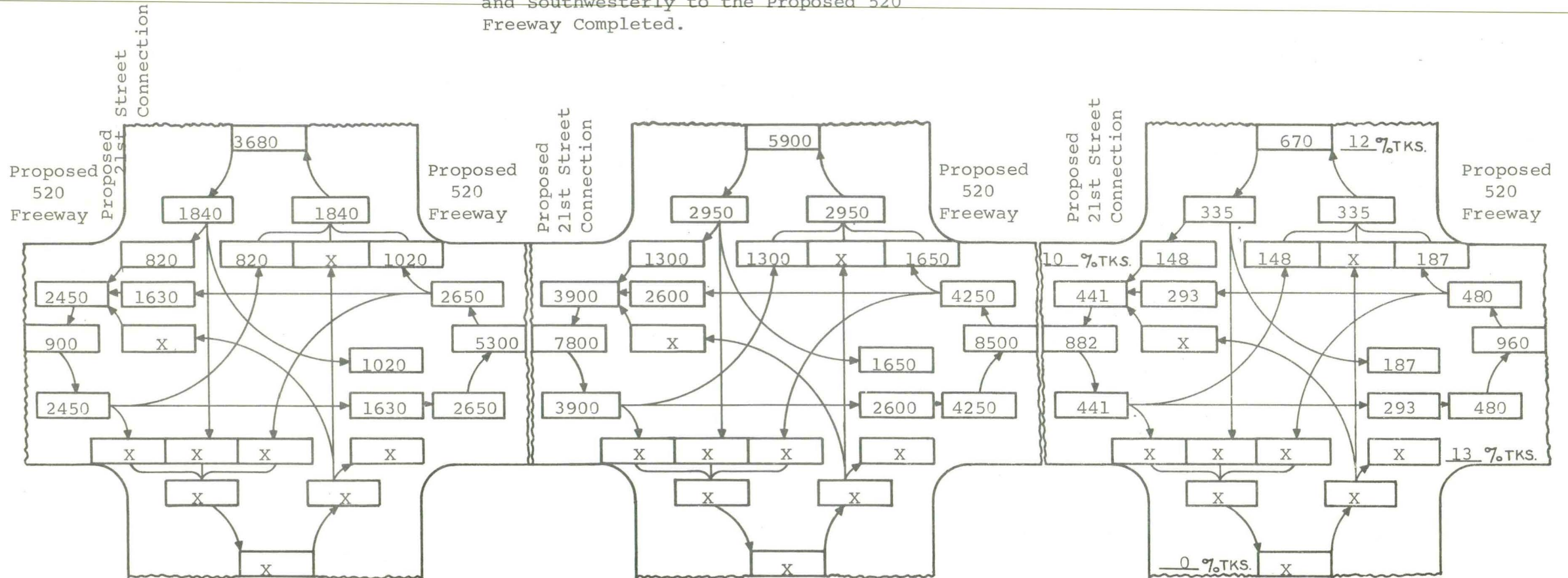
VEHICULAR TURNING MOVEMENTS NORTH ALTERNATE

COUNTY Webster

Conditions:

1. Proposed Interstate System Completed
2. Proposed 520 Freeway Completed
3. Proposed 21st Street Connection South and Southwesterly to the Proposed 520 Freeway Completed.

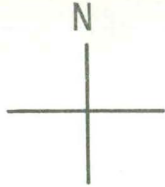
LOCATION Interchange of
Proposed 520 and 21st Street
Extension
Point F



ESTIMATED 1972 A.D.T.

ESTIMATED 1992 A.D.T.

ESTIMATED 1992 D.H.V.



INDICATE NORTH BY ARROW

VEHICULAR TURNING MOVEMENTS NORTH ALTERNATE

COUNTY Webster

LOCATION Interchange of
Proposed 520 and Local Road
Point G

Conditions:

1. Proposed Interstate System Completed
2. Proposed 520 Freeway Completed
3. Proposed 21st Street Connection South and Southwesterly to the Proposed 520 Freeway Completed.

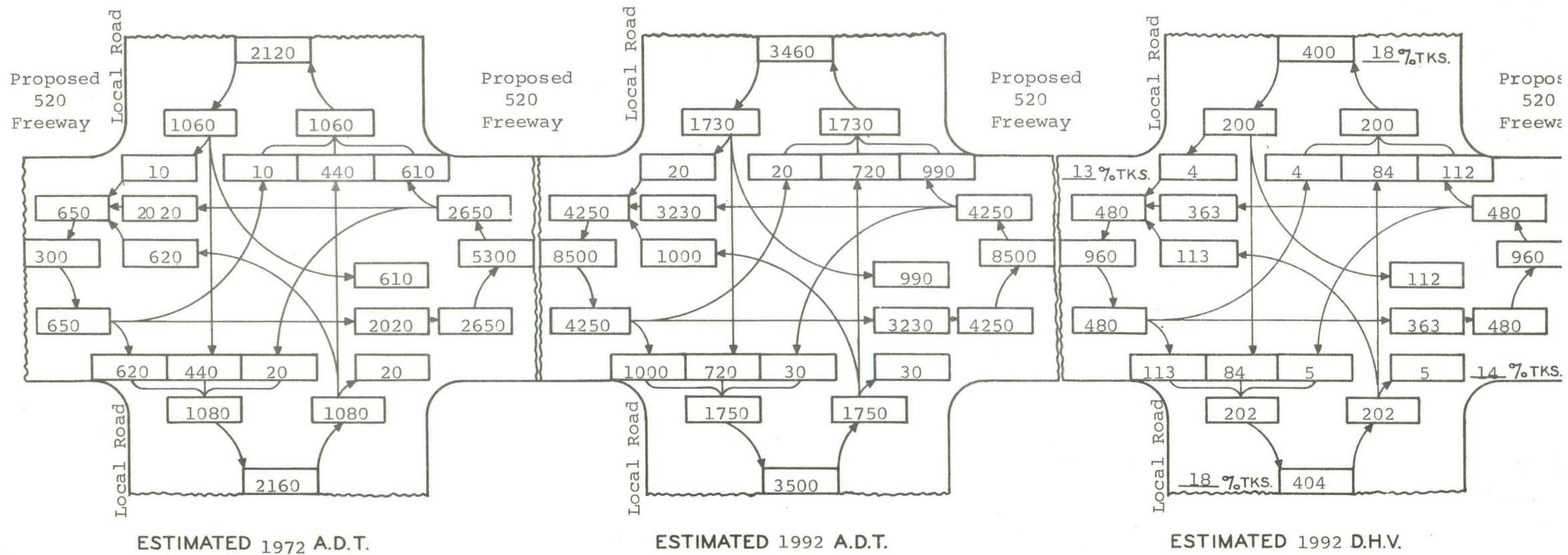
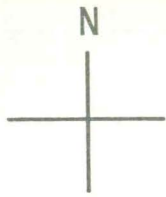


Table 11



INDICATE NORTH BY ARROW

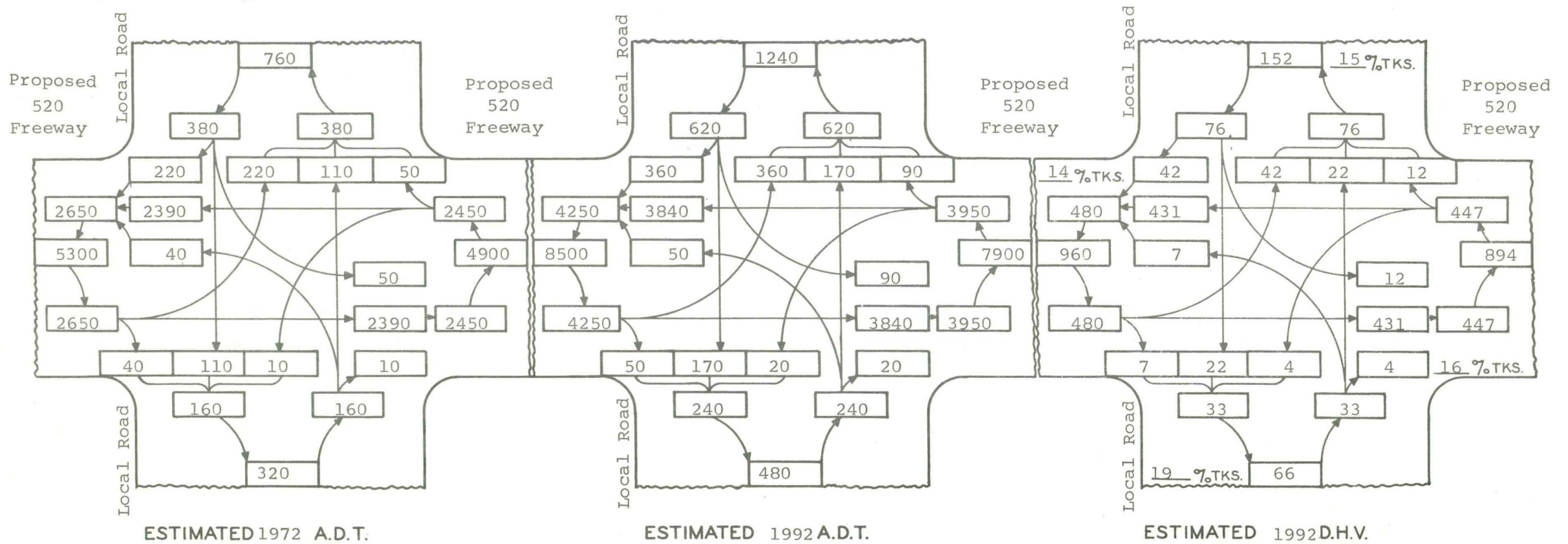
VEHICULAR TURNING MOVEMENTS NORTH ALTERNATE

COUNTY Webster

LOCATION Interchange of
Proposed 520 and Local Road
Point H

Conditions:

1. Proposed Interstate System Completed
2. Proposed 520 Freeway Completed
3. Proposed 21st Street Connection South and Southwesterly to the Proposed 520 Freeway Completed.



ROAD USER ANALYSIS

A road user study of the two alternate alignments for the 520 Freeway was made using the procedures established by the American Association of State Highway Officials in the report on Road User Benefit Analyses for Highway Improvements. The results of this study are shown in Table 13. As can be seen from the tabulation, the North Alternate would save the road user an estimated \$116,000 annually, as compared to the South Alternate. The annual construction costs, however, for the North Alternate are \$109,000 more than for the South Alternate.

To calculate a benefit ratio, it is

proper to use the alternate with the lowest annual construction and maintenance costs as the basic condition. Using the data listed in Table 13 and considering the South Alternate as a base, a benefit ratio of 1.06 was calculated. This benefit ratio means that each additional dollar spent to construct the North Alternate, in excess of the total cost of the South Alternate, will return \$1.06 in savings to the road user traveling the North Alternate. The result of this study, because the benefit ratio is extremely close to 1 does not indicate a clear-cut basis for a decision favoring either Alternate.

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ROAD USER STUDY SUMMARY

ALTERNATE	ANNUAL ROAD USER COST	ANNUAL CONSTRUCTION AND MAINTENANCE COSTS
SOUTH ALTERNATE	\$18,254,000	\$1,076,000
NORTH ALTERNATE	\$18,138,000	\$1,185,000

Table 13

ECONOMIC STUDY

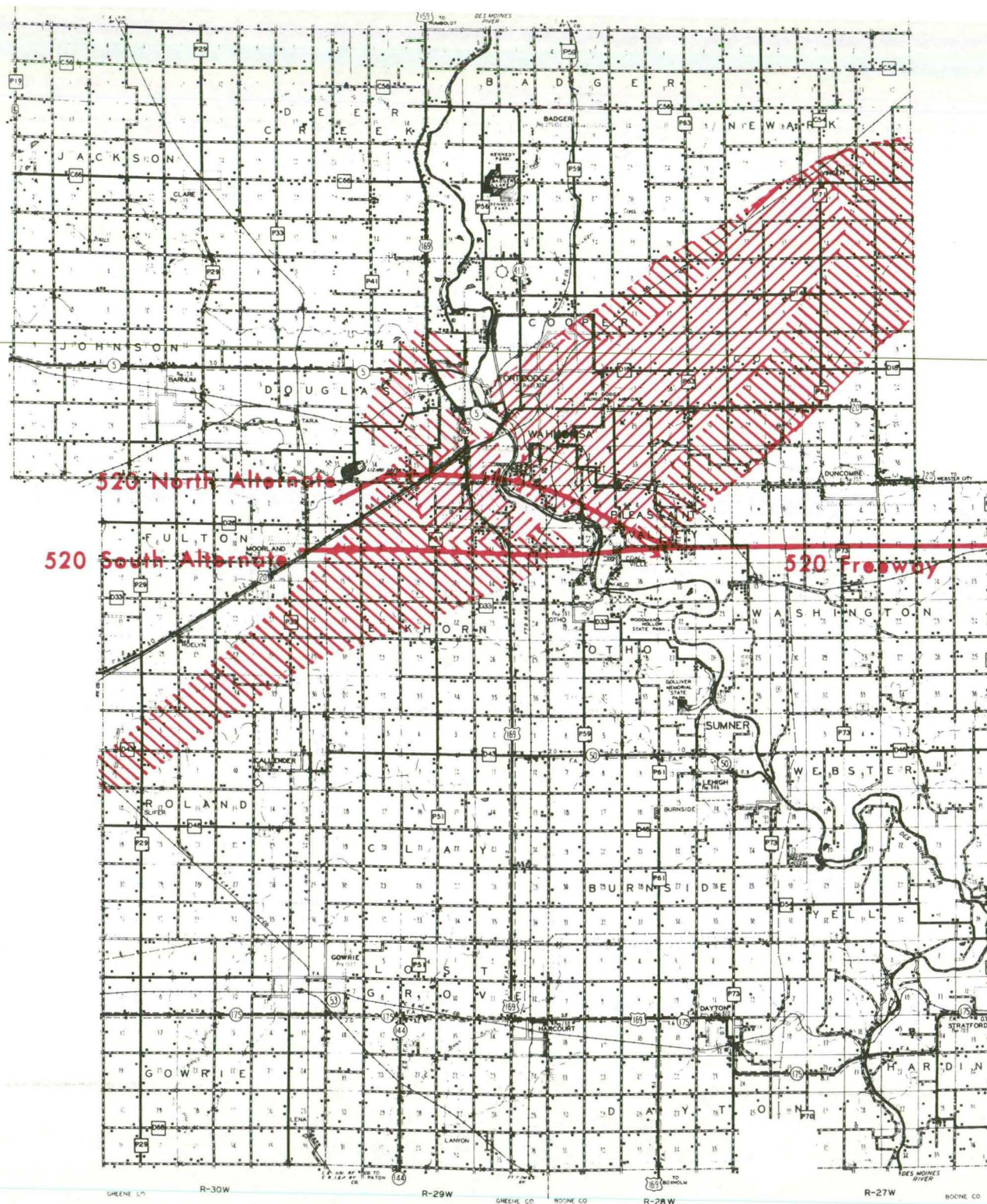
To evaluate the relative economic impact of the two alternate 520 Freeway corridors in the Fort Dodge area, a study was made of the relevant economic variables. Data was gathered from the Webster County Treasurer's Office, Iowa State University Farm Production Economics Division, Iowa Department of Mines and Minerals, U.S. Department of Commerce, U.S. Geological Survey, aerial photographs and ground reconnaissance of the area. The north alternate through the study area will require approximately 420 acres of total right-of-way. Approximately 110 acres are presently under cultivation. Most of the remaining right-of-way passes through the active and inactive gypsum mining area south and southeast of

Fort Dodge (See Figure 6). The land in this mining area is considered non-agricultural land for the purpose of this study.

The south alternate will require approximately 395 acres of total right-of-way. Approximately 285 acres are presently under cultivation. This cultivated agricultural land is equally divided in corn and beans with only a very small acreage in oats and hay. This ratio is assumed for tillable land throughout the study.


Records in the Webster County Treasurer's Office in 1968 indicated that good agricultural land in the study area had an average assessed value (final adjusted taxable value) of \$70 per acre. Non-agricultural lands along the

Figure 6



Legend:

 Permian

 Area of Permian in which gypsum is known to occur

Scale $\frac{1}{4}$ " = 1 mile

Source:

U.S. Geological Survey
Bulletin No. 223 Pl. XII

Des Moines River and other streams had an average assessed value of \$35 per acre. The land in the north alternate owned by the Gypsum Companies was assessed at an average of \$10 per acre. The estimated total assessed valuation, then, was: north alternate \$12,000; south alternate \$24,000. The impact on the county tax rolls would not be great in either case (0.03 percent north alternate and 0.06 percent south alternate of the total assessed value of rural land and buildings).

Estimation of future agricultural production is, at best, speculative. Estimates for this study are based on present average yields and on projected yield increases supplied by the U.S.D.A.'s Farm Production Economics Division at Iowa State University.

The present annual yield was assumed to be 98 bushels per acre for corn and 31 bushels for soybeans. Soybean yields have shown no upward trend in the past several years, so none was assumed in this study. Two estimates of future corn yields were made: one showed an average yield increasing at the rate of two bushels per acre per year for 20 years and then remaining constant, the other showed average yield increasing at the same rate to a maximum of 200 bushels per acre. Present prices were used (summer 1968) in valuing the production.

Total estimated value of agricultural production in the study area for the next 80 years is:

North alternate - \$1.1 - \$1.4 million
South alternate - \$2.9 - \$3.6 million

Average difference in production per year over 80 years is \$22,000 to \$28,000.

Offsetting this difference in agricultural production is the gypsum deposits in the north alternate. The U.S. Gypsum Company has estimated that these deposits might occur under 25 to 30 acres of proposed right-of-way and could possibly involve 750,000 tons of gypsum rock. This would equal about 2 to 3 years production for one gypsum mill in the area (Table 14). The value of this crude gypsum would be about \$3 million at present prices and would generate wages of approximately \$4.5 million in the gypsum mills. Since the north alternate already passes through a section of mined-out area, the possibility exists for offsetting part of this loss by allowing the gypsum company to mine the mineral within the right-of-way corridor

prior to construction. The value of this cooperative agreement would need to consider the additional special foundation costs that would result.

A unique advantage offered by the north alternate is the opportunity for restoration of the mined-out area. This land could be restored to economic utility and esthetic appeal by the presence of a highway. Enlightened management policy of the important gypsum industry, in cooperation with the state and local government agencies, could use this major highway facility to attract the capital necessary to restore economic and esthetic values to this waste area. In this way the objective of the 1967 Iowa Legislature as expressed in Senate File 279 and House File 281 relating to rehabilitation of land used

in strip mining could be realized in this location. This progressive step could serve as a model for similar areas throughout the state.

The economic impact seems, therefore, to be slightly greater on the north alternate. The difference would be at most about \$3 million over a period of 80 years. This figure, however, is insignificant in comparison with the total income for the area, which would amount to well over \$5 billion for that period, without considering any growth. (Table 15).

Table 14

GYPSUM PRODUCTION IN WEBSTER COUNTY - TONS

Firm	1964	1965	1966	1967
Bestwell Gypsum Co. (G-P)	247,446	254,640	228,345	224,425
Celotex Corp.	136,010	67,561	126,280	140,000
National Gypsum Co.	267,000	299,423	284,424	294,553
U.S. Gypsum Co.	395,328	400,000	418,183	357,273
Totals	1,045,784	1,021,624	1,057,232	1,034,251

Source: Iowa Department of Mines and Minerals

Table 15

Business in Webster County¹ (1966)

<u>Type of Business</u>	<u>Employees</u> ²	<u>Average Payroll (\$1000)</u> ³
Agricultural Services	90	24
Contract Construction	730	269
Manufacturing	4,526	2,370
Food and Kindred Prod.	1,726	1,156
Gypsum Products ⁴	875	445
Other Manufacturing	1,925	759
Transportation and Public Utilities	685	296
Wholesale Trade	1,047	505
Retail Trade	3,131	840
Finance, Insurance, and Real Estate	663	244
Services	2,706	728
Other	96	68
Total	13,674	5,344

¹Excludes railroad employees and self-employed persons

²Number of employees, mid-March pay period

³Monthly average (Jan.-Mar.) taxable payrolls

⁴Does not include data for mining of gypsum, which was withheld.

Source: U.S. Dept. of Commerce: County Business Patterns, 1966

SUMMARY

It is apparent from the study that each alternate has its attributes, and in each case are offset to some degree by adverse cost or other economic factors. Comparing initial construction costs found in Tables 1 and 7, the north alternate will cost \$731,000 more than the south alternate. Offsetting this higher initial construction cost is the \$116,000 annual savings to the road user traveling the north alternate compared to the south alternate.

Tables 1 and 7 indicate that the north alternate mainline is 1 mile longer than the south alternate mainline, thus causing an additional one mile of travel for the through-motorist. However, the majority of east-west

traffic as shown in Figures 2 and 3 has origin or destination in the Fort Dodge area. Therefore, since the south alternate is further from Fort Dodge this results in out-of-distance travel for the major traffic movement to Fort Dodge and requires over double the length of connecting facilities (6.73 miles for the south alternate versus 2.89 miles for the north alternate). This increased mileage for the major traffic desire results in higher annual road user costs for the south alternate.

Traffic projections as listed in Tables 2 and 8 clearly show that future traffic projections for the north alternate exceed by more than 13% in the 1992 design year

those for the south alternate. This increased usage further reflects the additional traffic service the north alternate will provide to the Fort Dodge area. The north alternate also has a greater impact on reducing traffic volumes on present U.S. 20. Traffic continuing to use U.S. 20 east of Fort Dodge after the north alternate is constructed, is estimated to be 23% lower than the residual traffic if the south alternate is constructed.

Right-of-way for the north alternate would utilize lower assessed valuation land and thereby reduce by 50% the impact on the county tax rolls, as shown on Page 33 of the Economic Study. The Economic Study also points out that the estimated value of agricultural production for south alternate right-of-way is more than $2\frac{1}{2}$ times as great as the north alternate

right-of-way. Offsetting this difference in value of agricultural production, then, is the value of the gypsum deposits in the north alternate right-of-way. The possibility of offsetting this gypsum loss does exist by allowing the mineral to be removed prior to construction.

Looking west beyond the Fort Dodge study area a problem occurs in crossing the CRI & P Ry. and the ICRR southwest of Knierim. The present railroad crossing separation is less than one-half mile from the proposed Freeway crossing, thus requiring extremely high fills and costly structures. This, combined with possible soil problems in this wet area make it desirable to locate the Freeway north of Knierim. An alignment north of Knierim would also be within one-half mile of the paved county road system connecting the towns of Knierim, Barnum, Tara

and Manson. This paved county road would continue to serve local traffic while providing access to the freeway interchanges.

The north alternate will provide a straight east-west alignment to pass north of Knierim as shown in the June 1968 Iowa Freeway System Report. The south alternate would have to be shifted north 1 mile or accept the higher costs of construction that will result in the area south of Knierim.

RECOMMENDED CORRIDOR

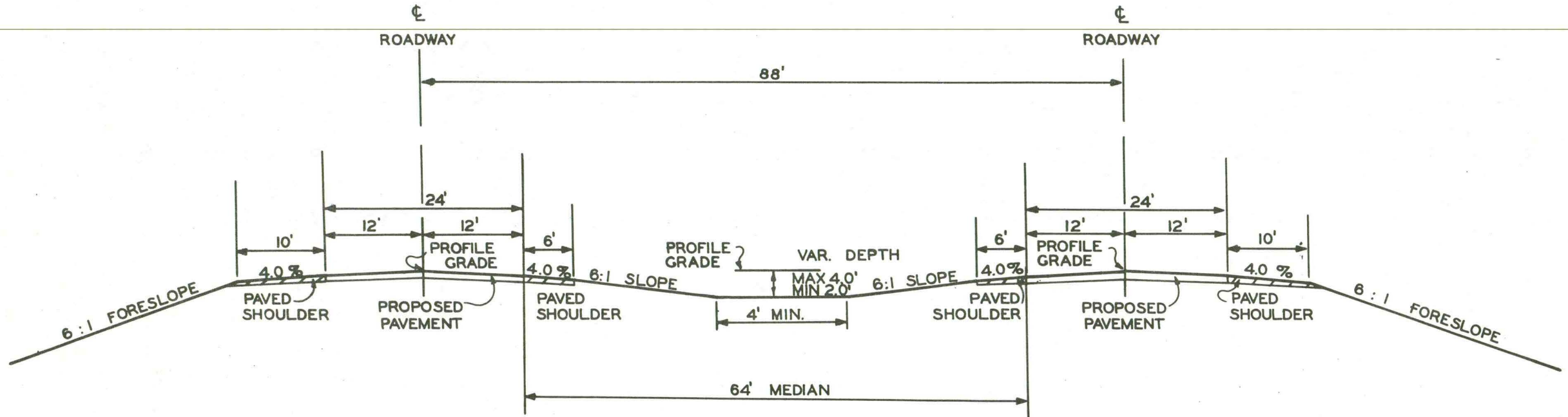
After careful evaluation it becomes apparent in studying the two alignments of the proposed 520 Freeway that if the gypsum mines and deposits were not present in the north alternate, the advantages of the north alternate far exceed those of the south alternate. It is recognized that the gypsum deposits within the right-of-way could be quite valuable, however, this at best is speculative since exact right-of-way needs have not been established and borings taken therein. Present use of land needed for right-of-way in the gypsum area now appears to offer only a short term worth, since after the gypsum is mined, waste land void of future production value is all that remains.

It is the recommendation of the Iowa State

Highway Commission that the north alternate be selected as the route offering the most traffic service both now and in the future to the Fort Dodge Area and the State of Iowa, and this corridor be presented at the public hearing.

IOWA FREEWAY SYSTEM

TYPICAL CROSS SECTION FOR 64' MEDIAN



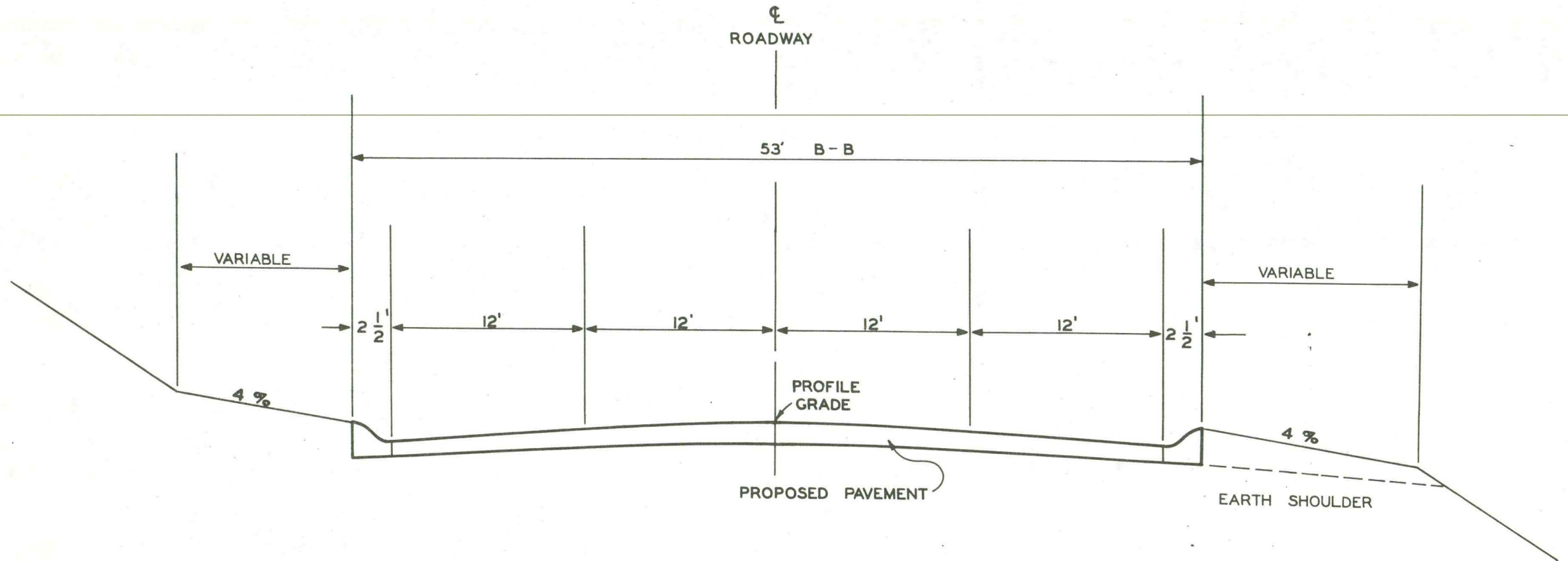
LOCATION

1. FREEWAY 520 MAINLINE.
2. U.S. 169 RELOCATION.
3. 21ST ST. CONNECTION, NORTH ALTERNATE FROM 520 FREEWAY NORTH TO S.C.L. FORT DODGE.

NOTE:

- 6:1 FORESLOPE WHEN FILL IS 0' TO 5'.
- 4:1 FORESLOPE WHEN FILL IS 6' TO 15'.
- 3:1 FORESLOPE WHEN FILL IS OVER 15'.

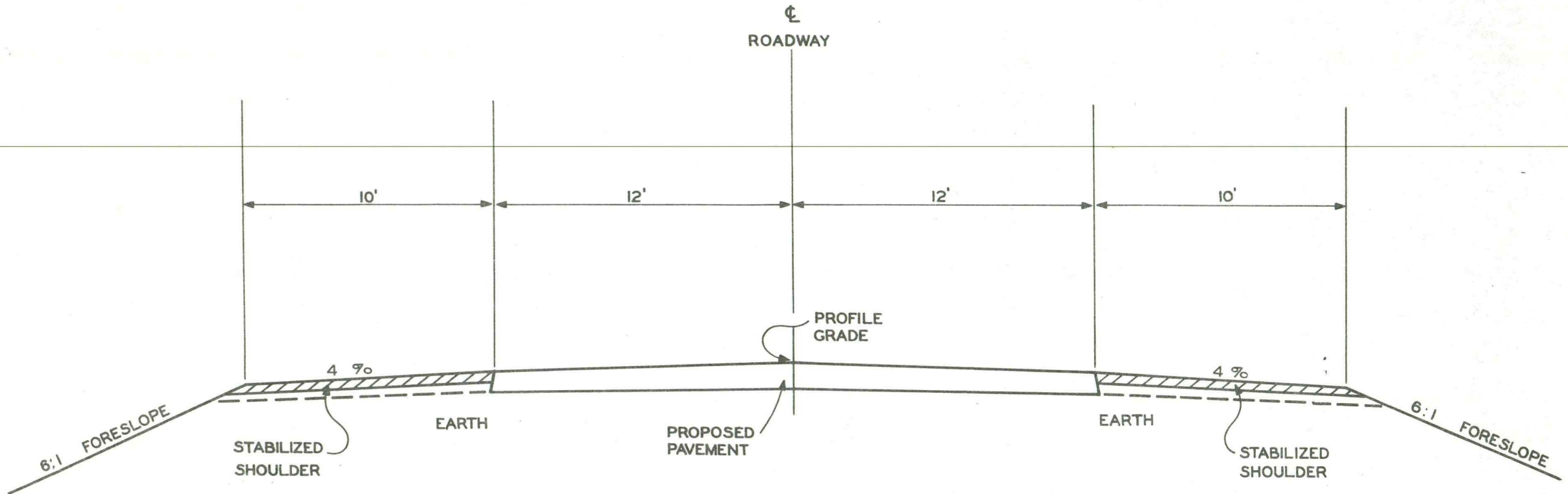
TYPICAL CROSS SECTION FOR 53' B-B URBAN HIGHWAY



LOCATION

21ST ST. CONNECTION FROM S.C.L.
FORT DODGE NORTH TO U.S. 20.

TYPICAL CROSS SECTION FOR 24' HIGHWAY



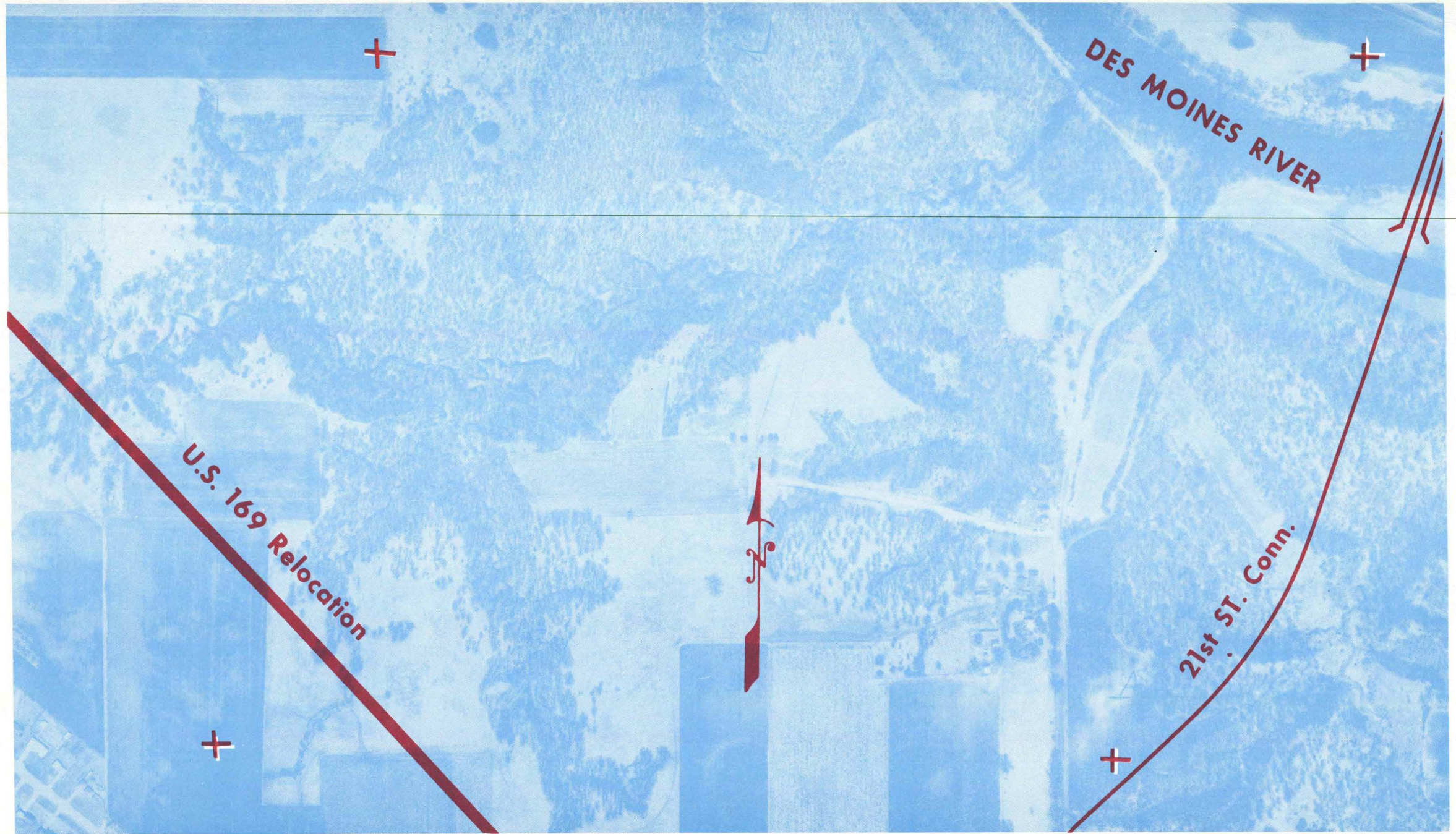
LOCATION

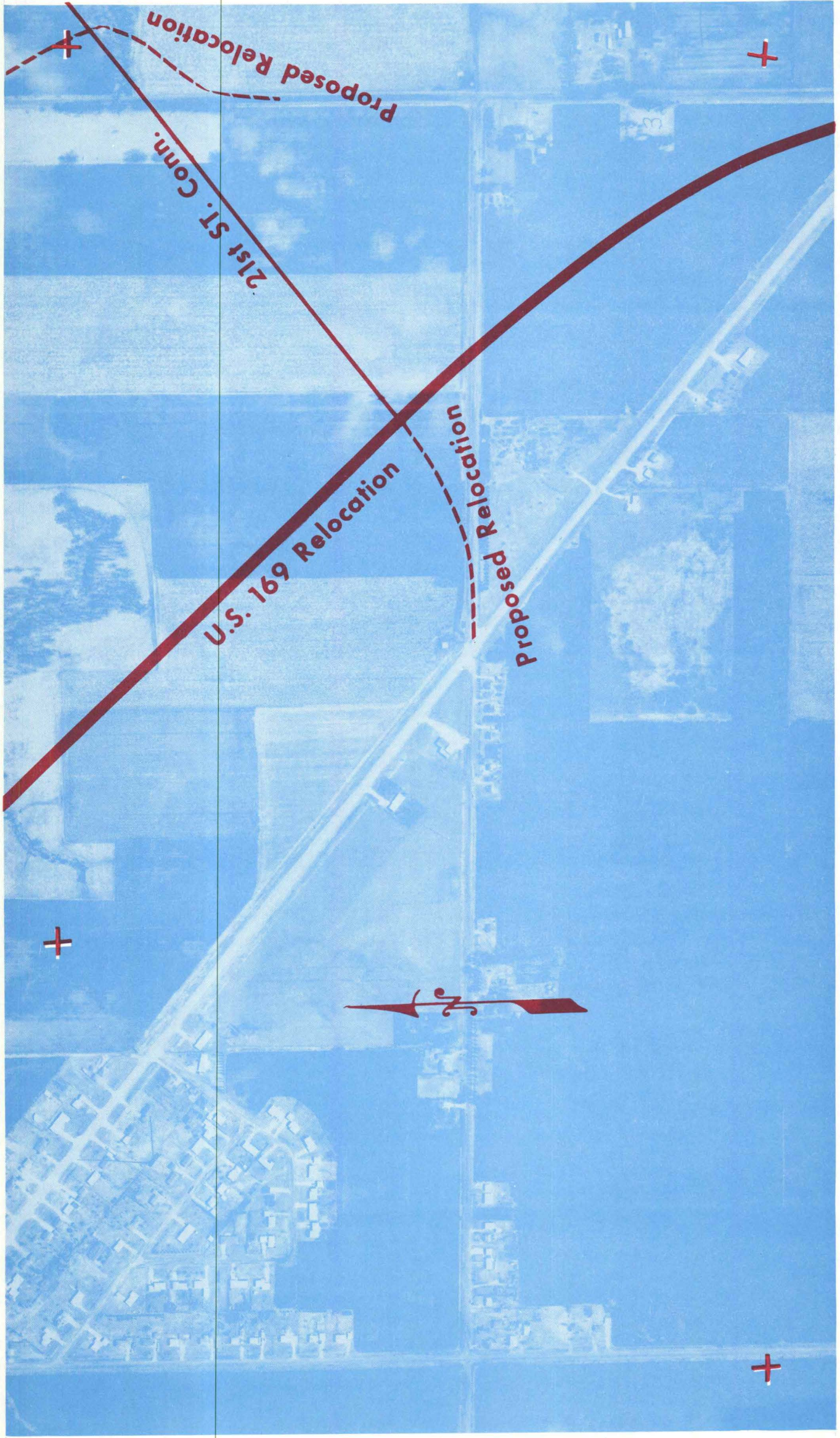
21 ST CONNECTION, SOUTH ALTERNATE, FROM 520
 FREEWAY NORTH TO S.C.L. FORT DODGE

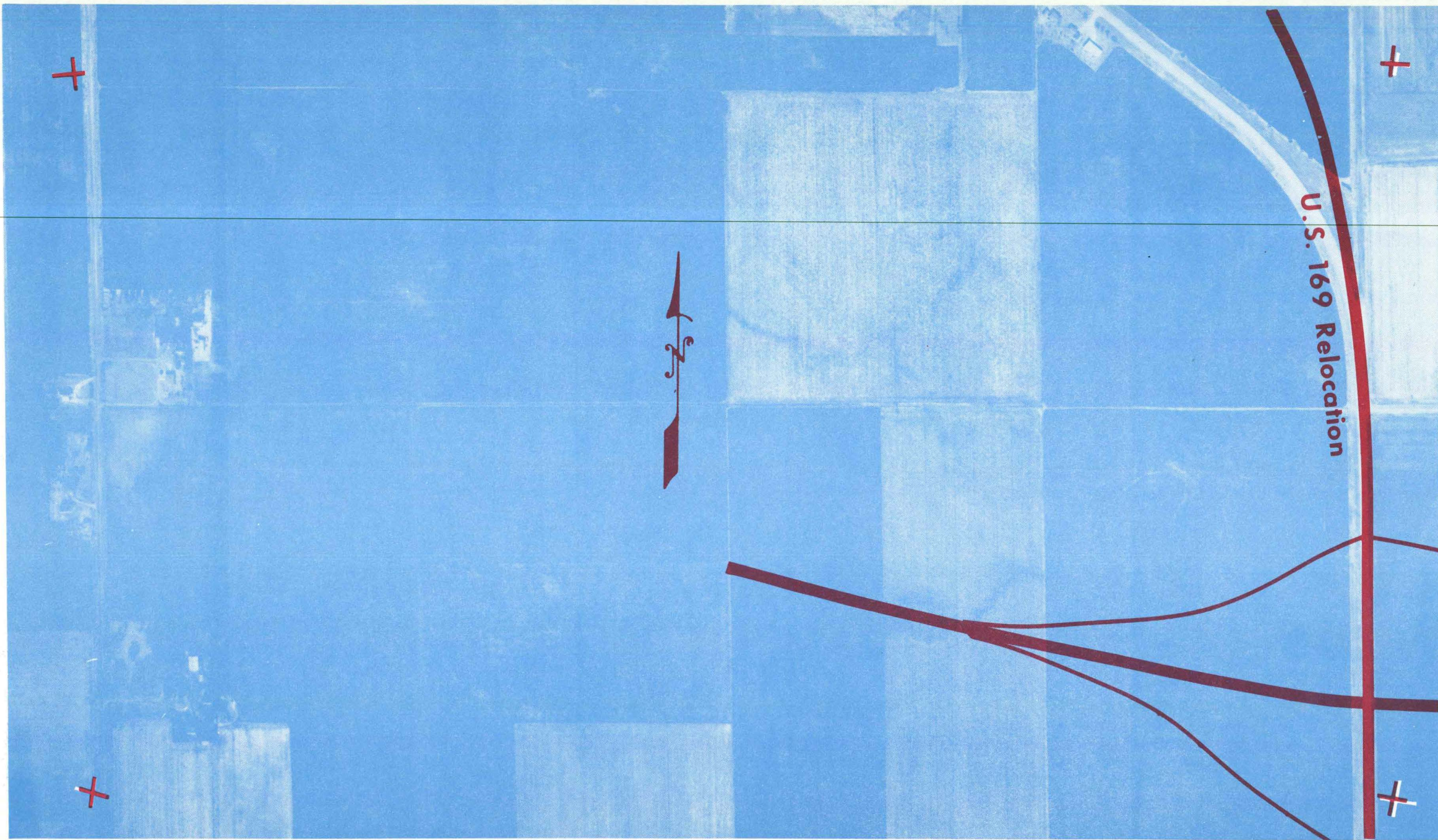
NOTE:

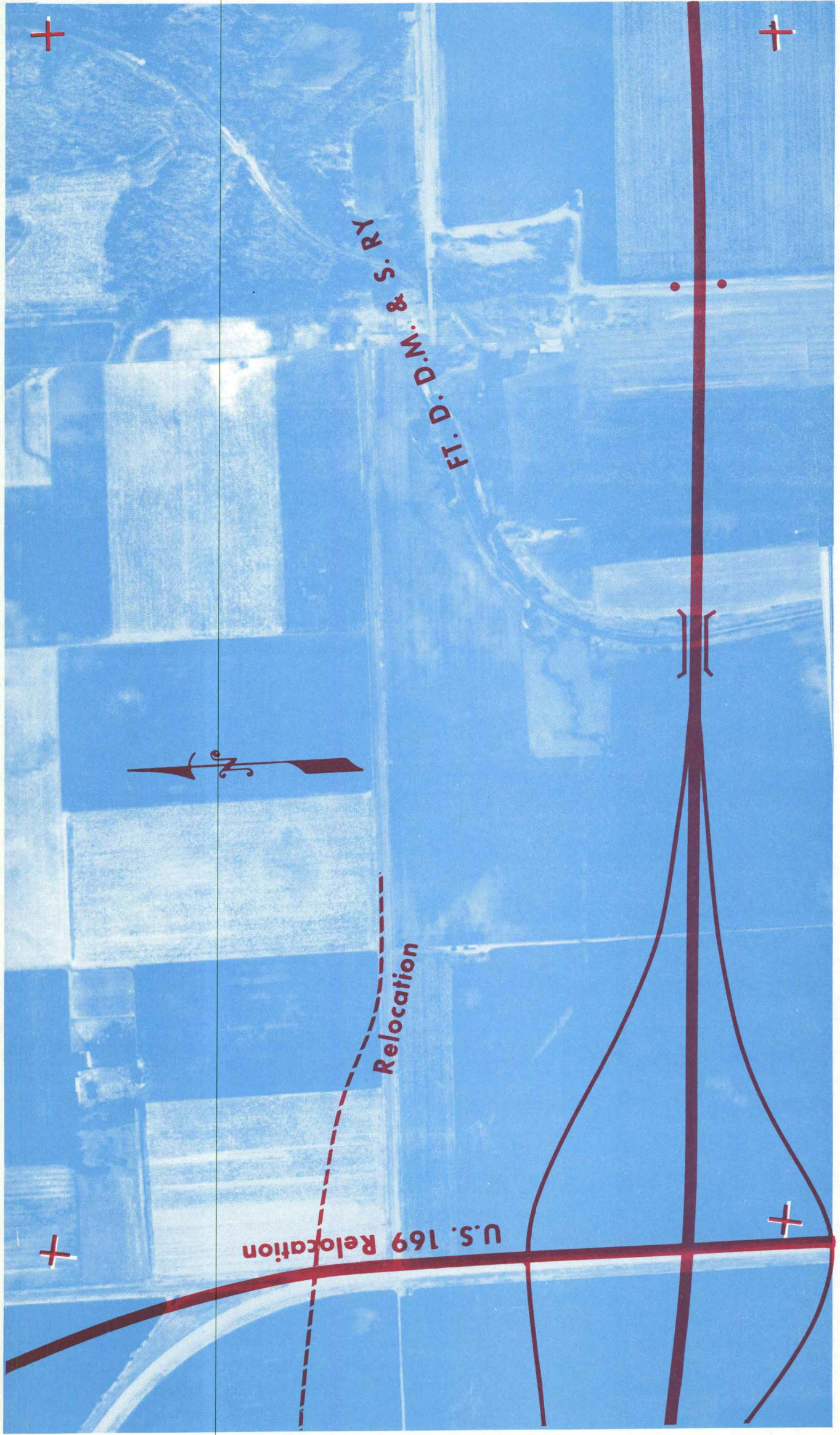
- 6:1 FORESLOPE WHEN FILL IS 0' TO 5'
- 4:1 FORESLOPE WHEN FILL IS 6' TO 15'
- 3:1 FORESLOPE WHEN FILL IS OVER 15'

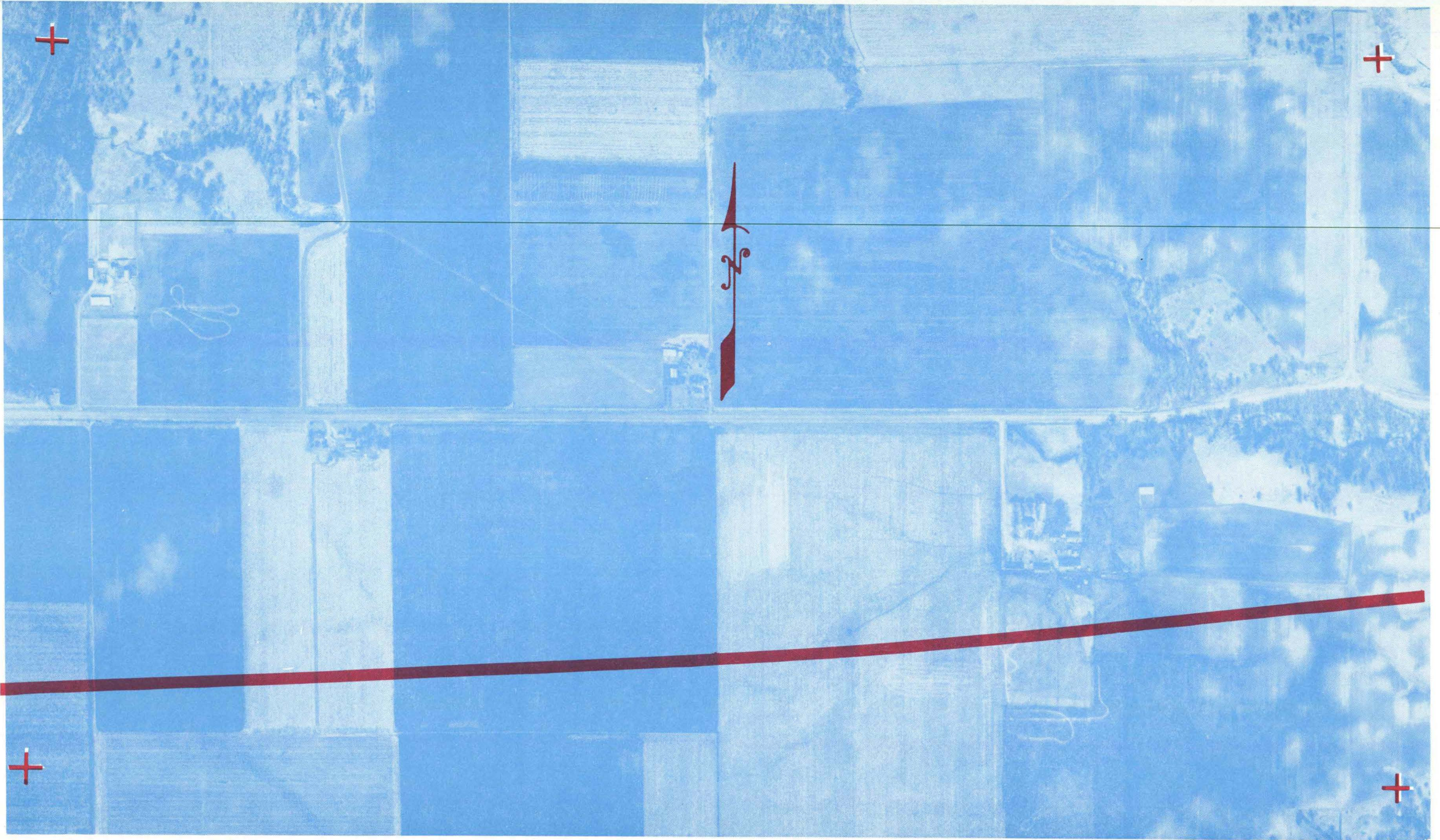


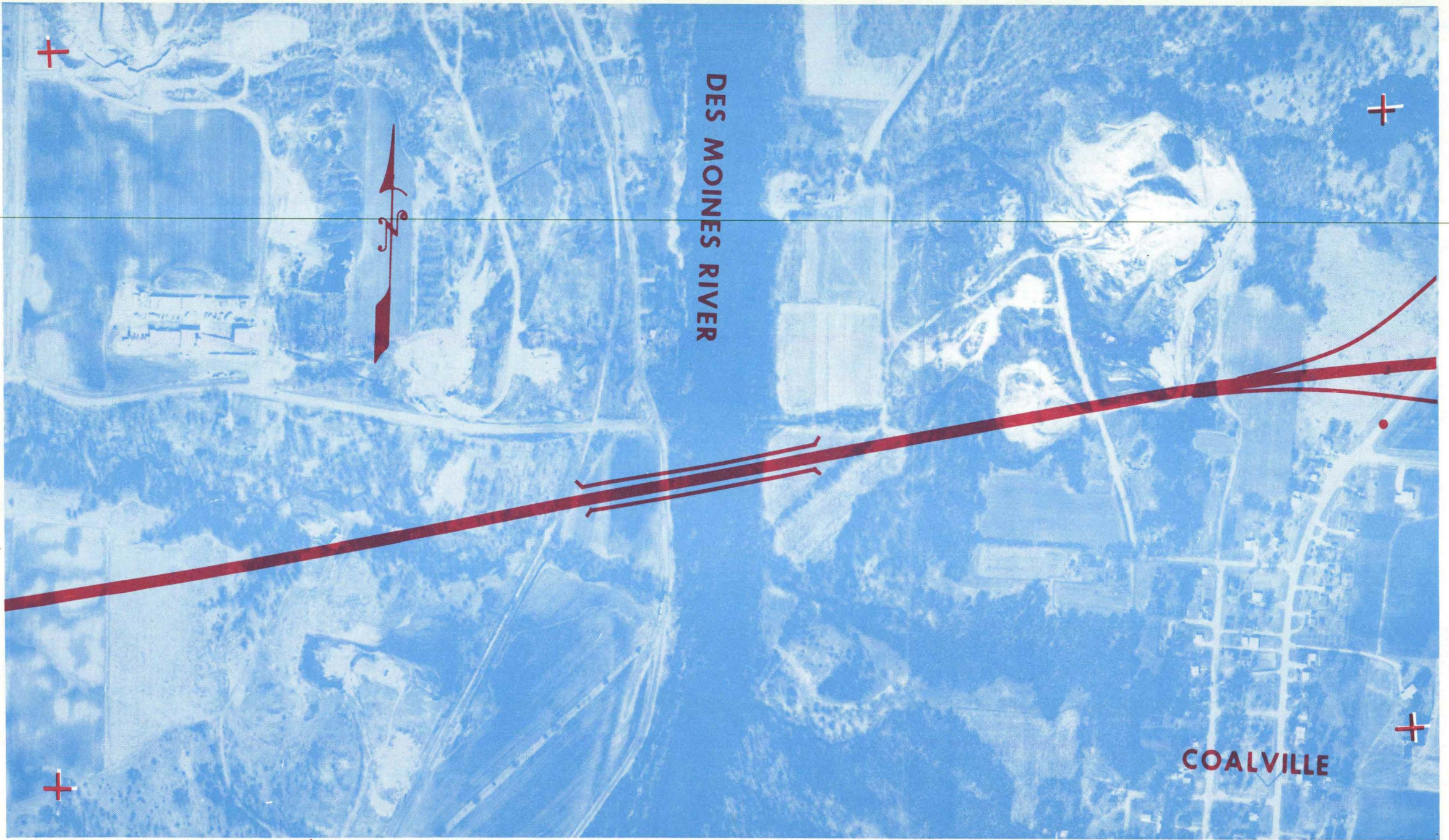


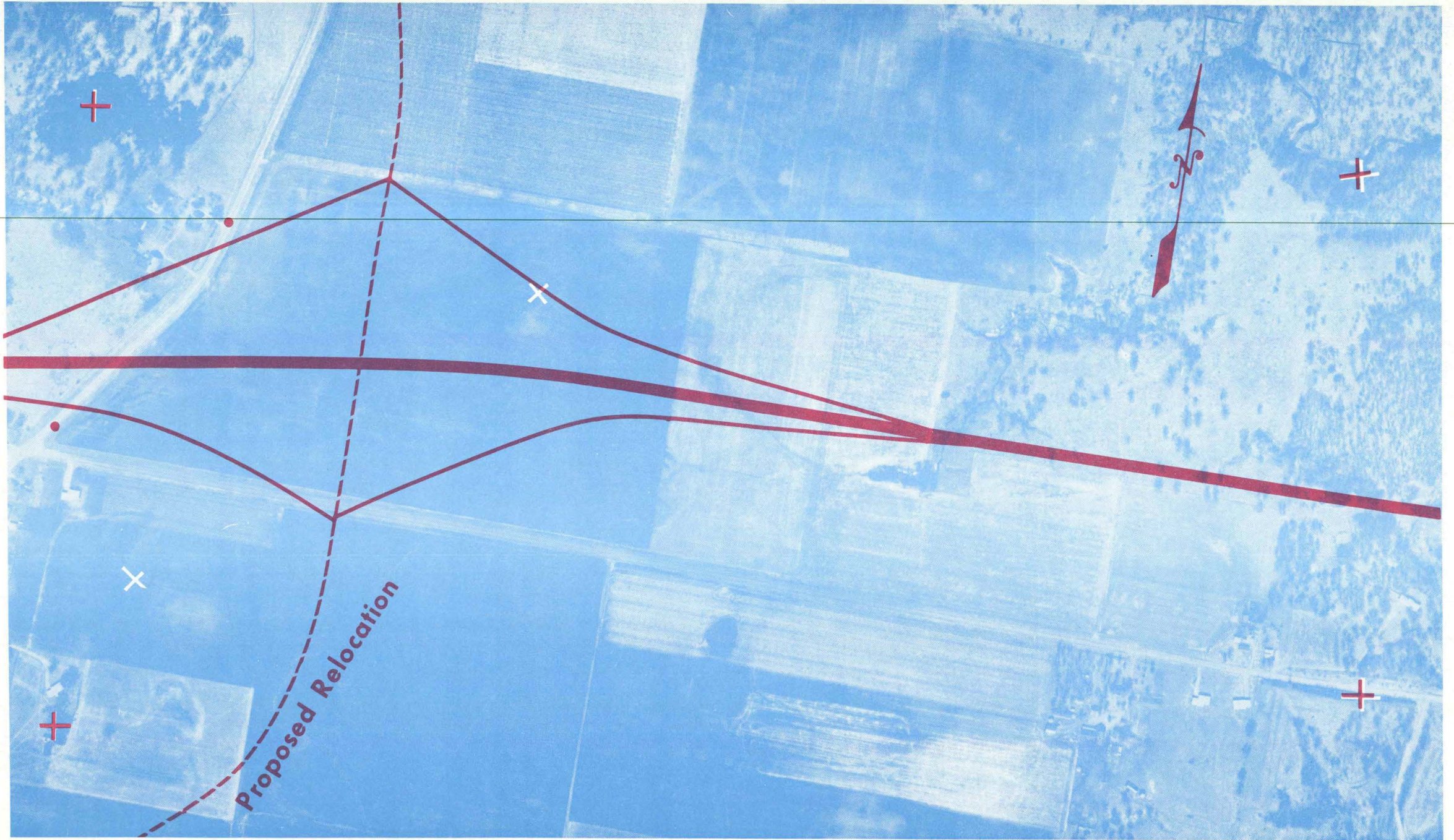


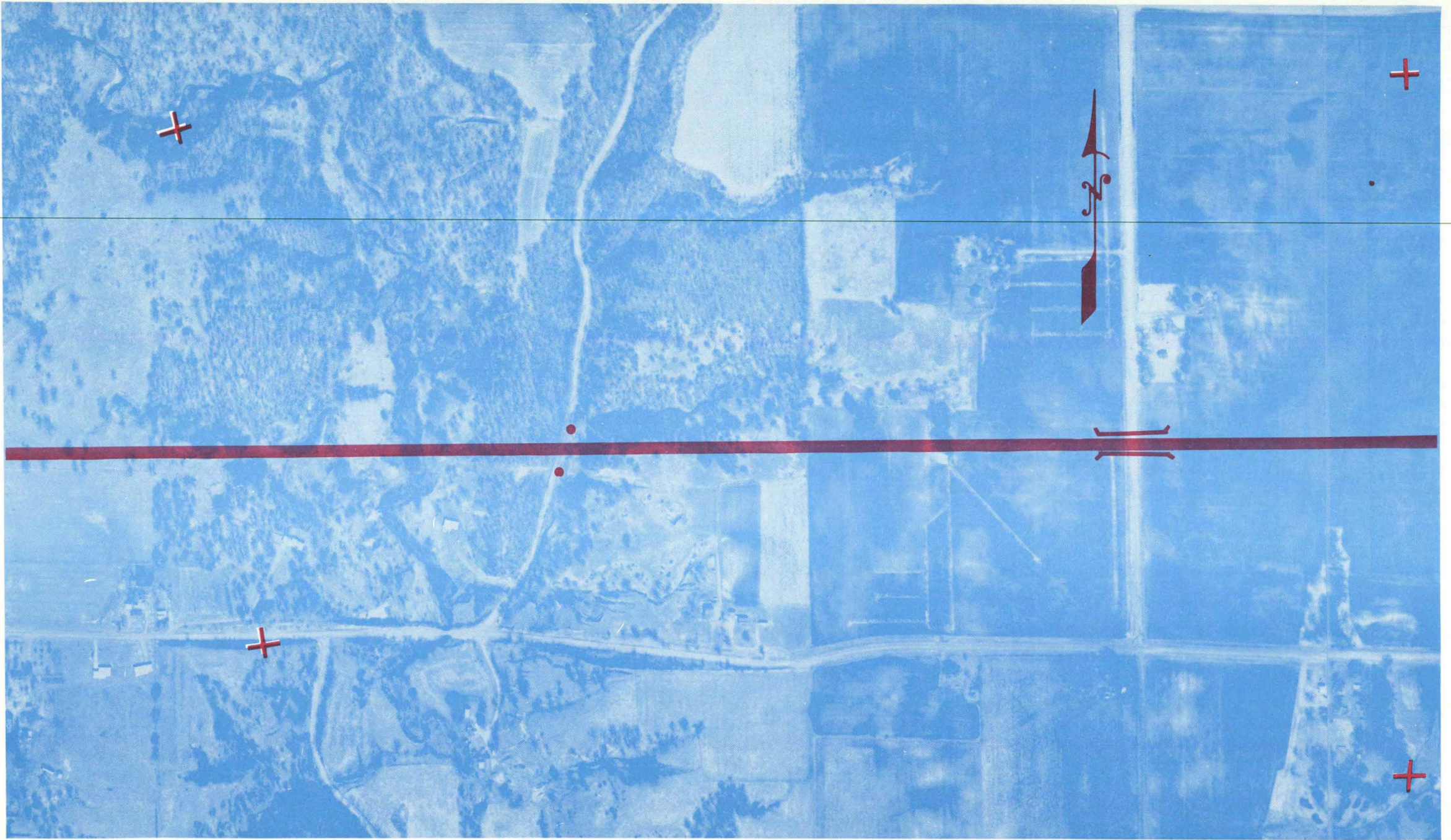


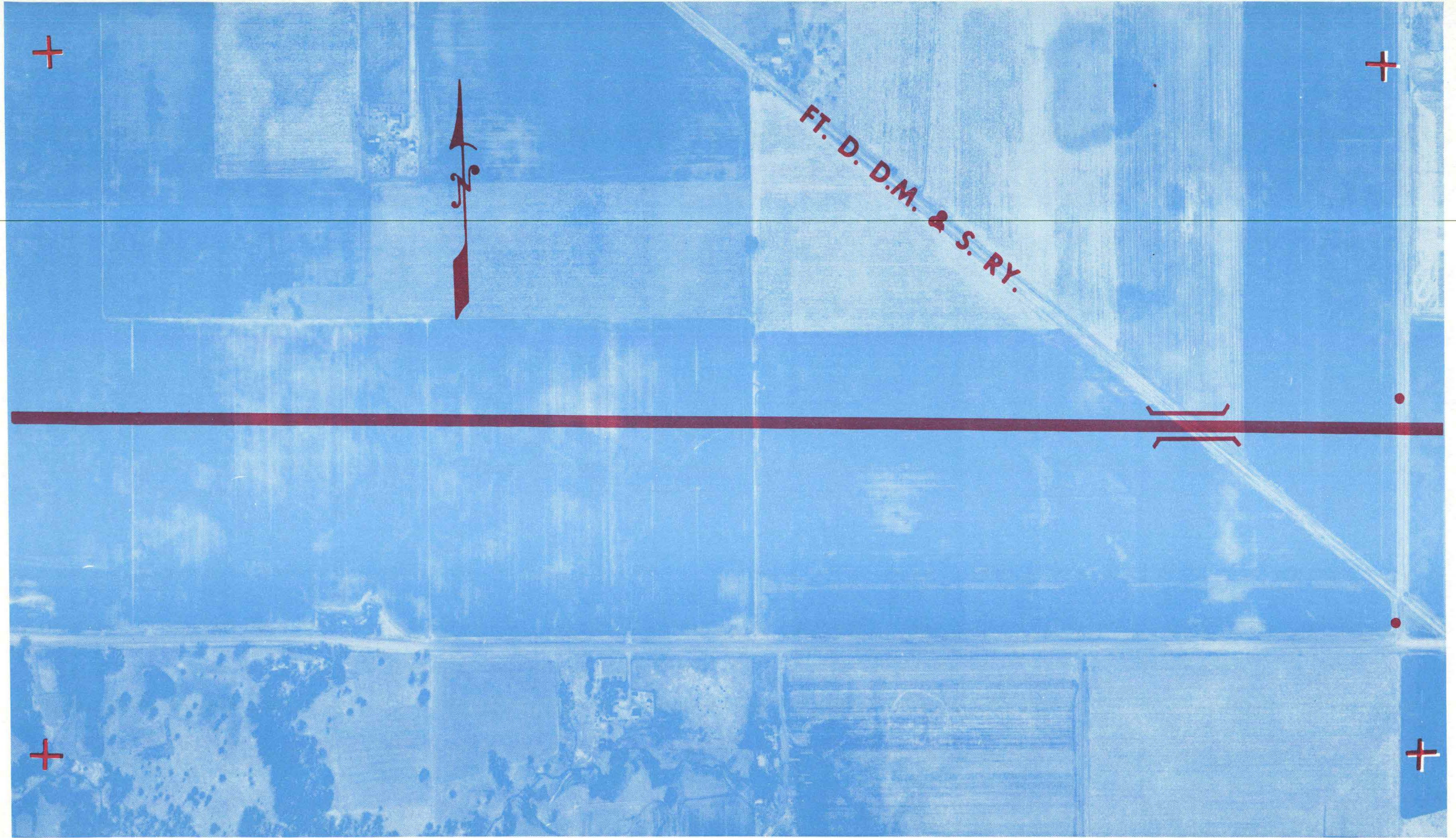


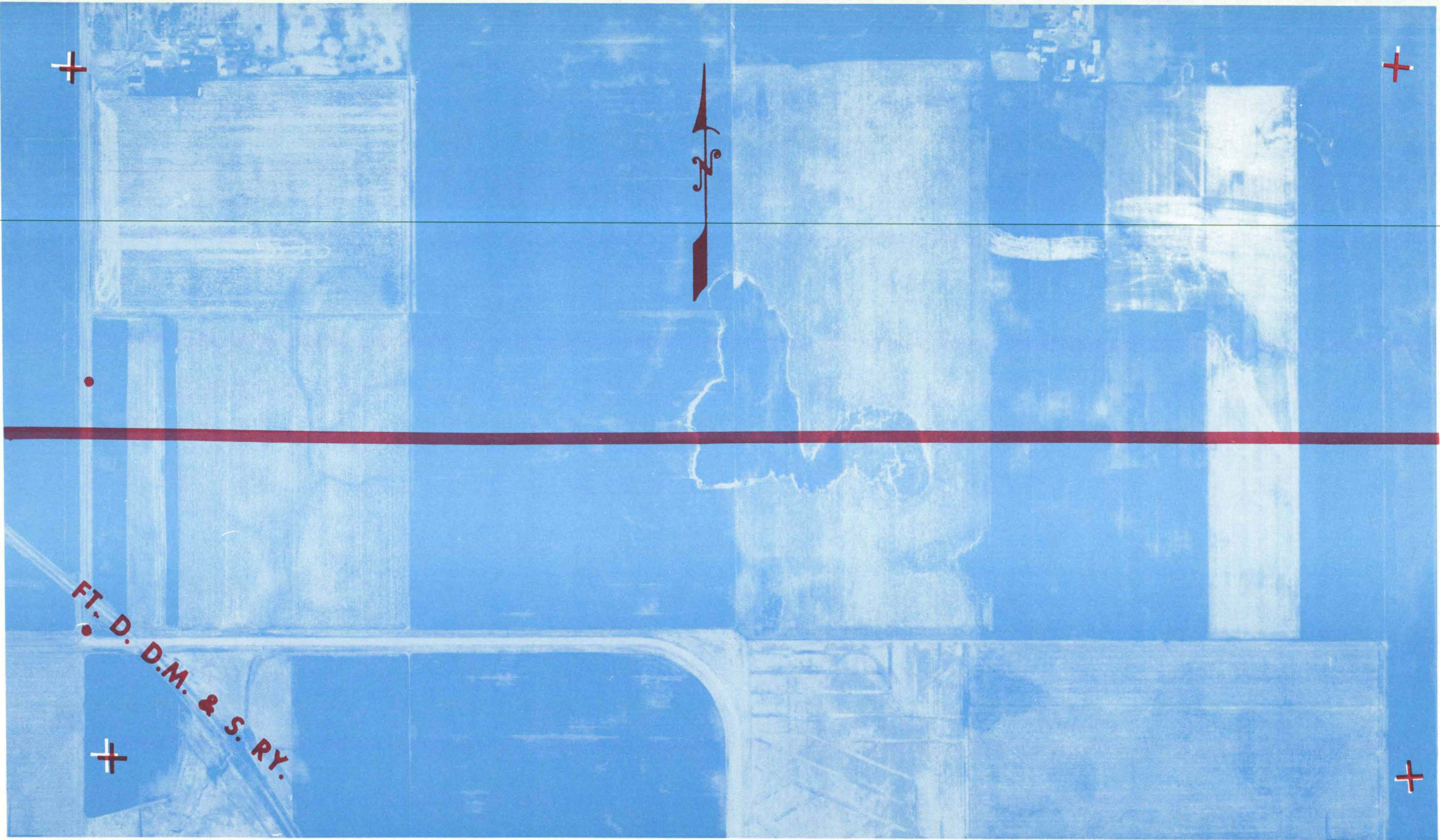


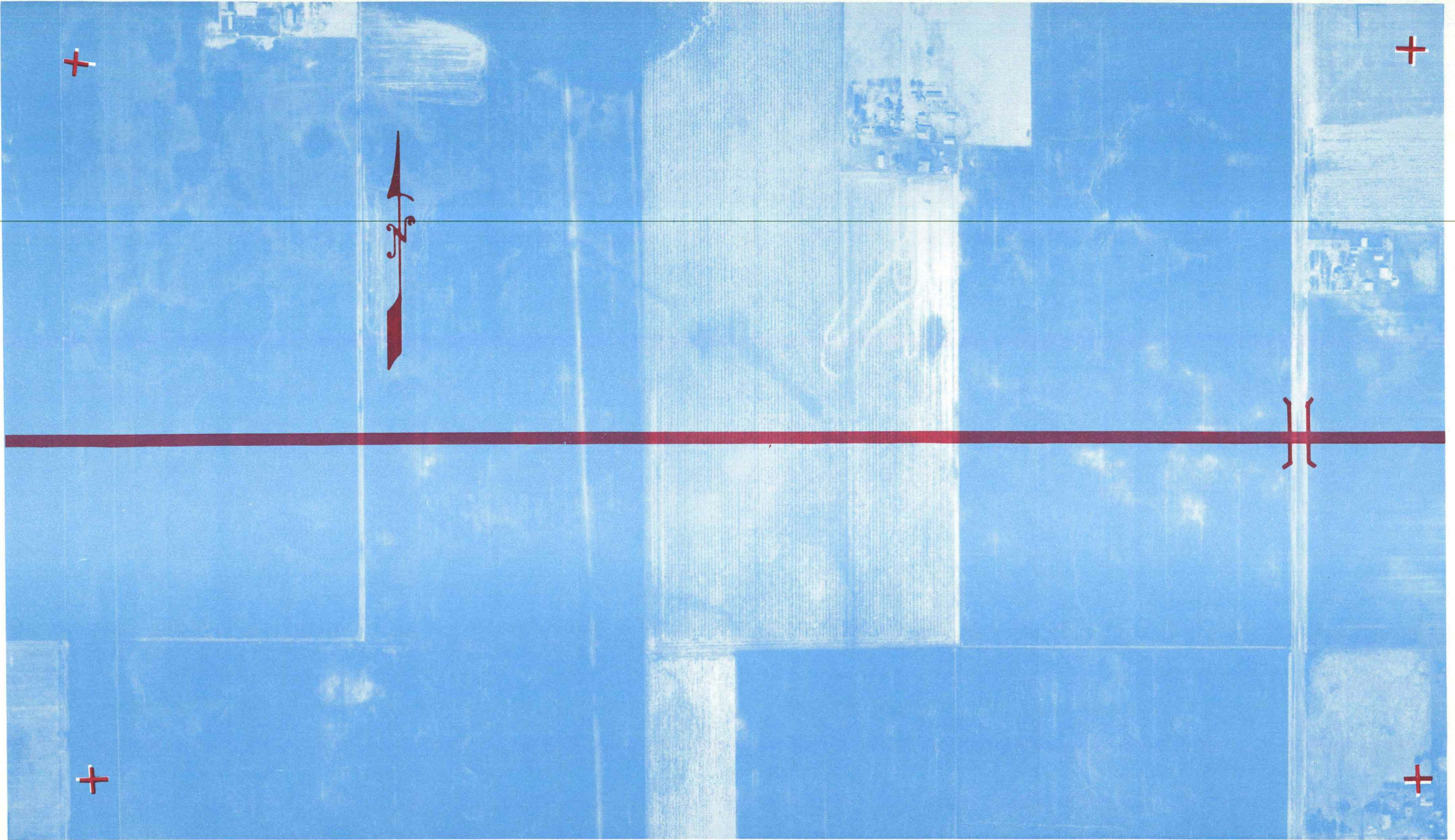


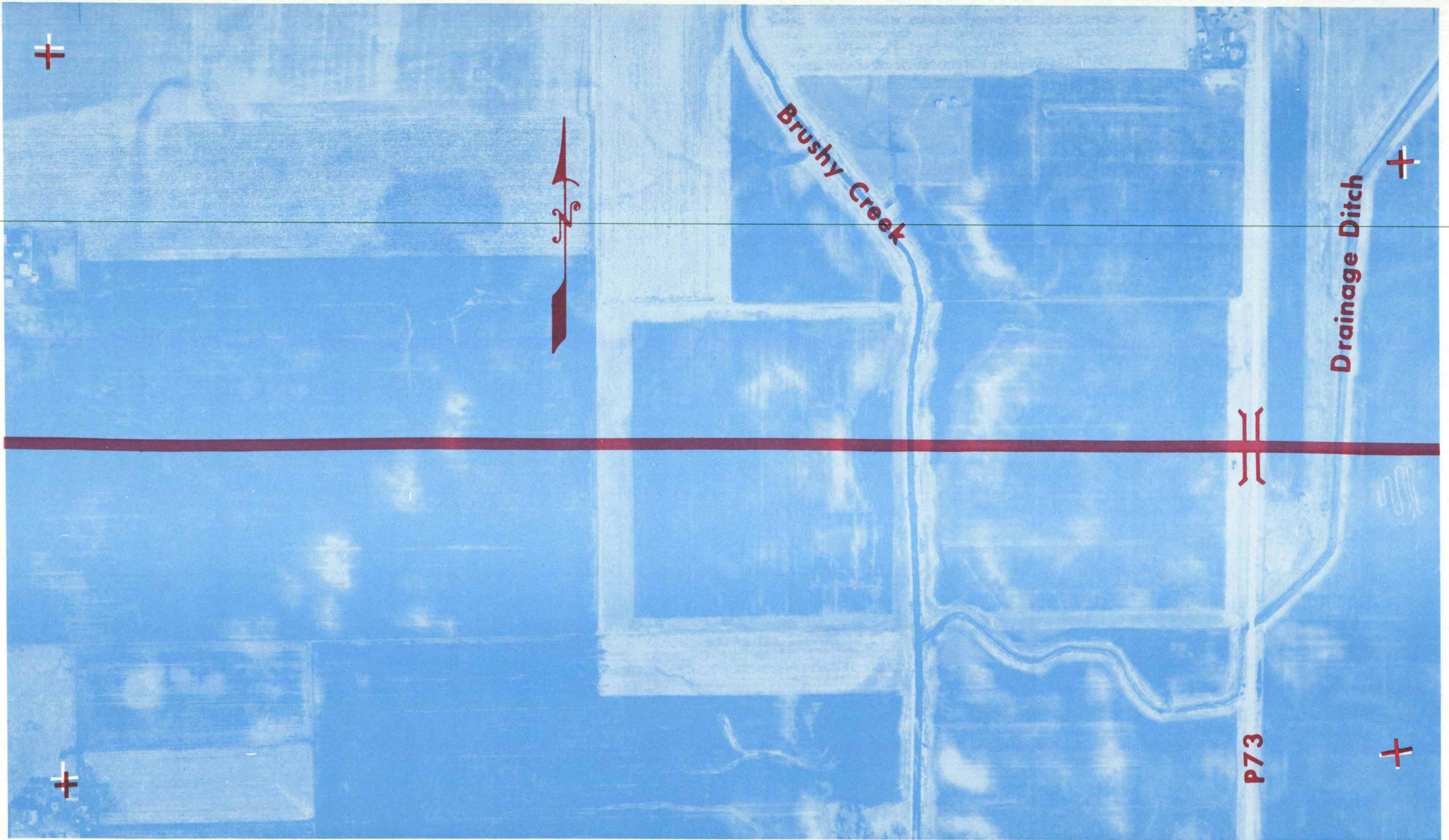


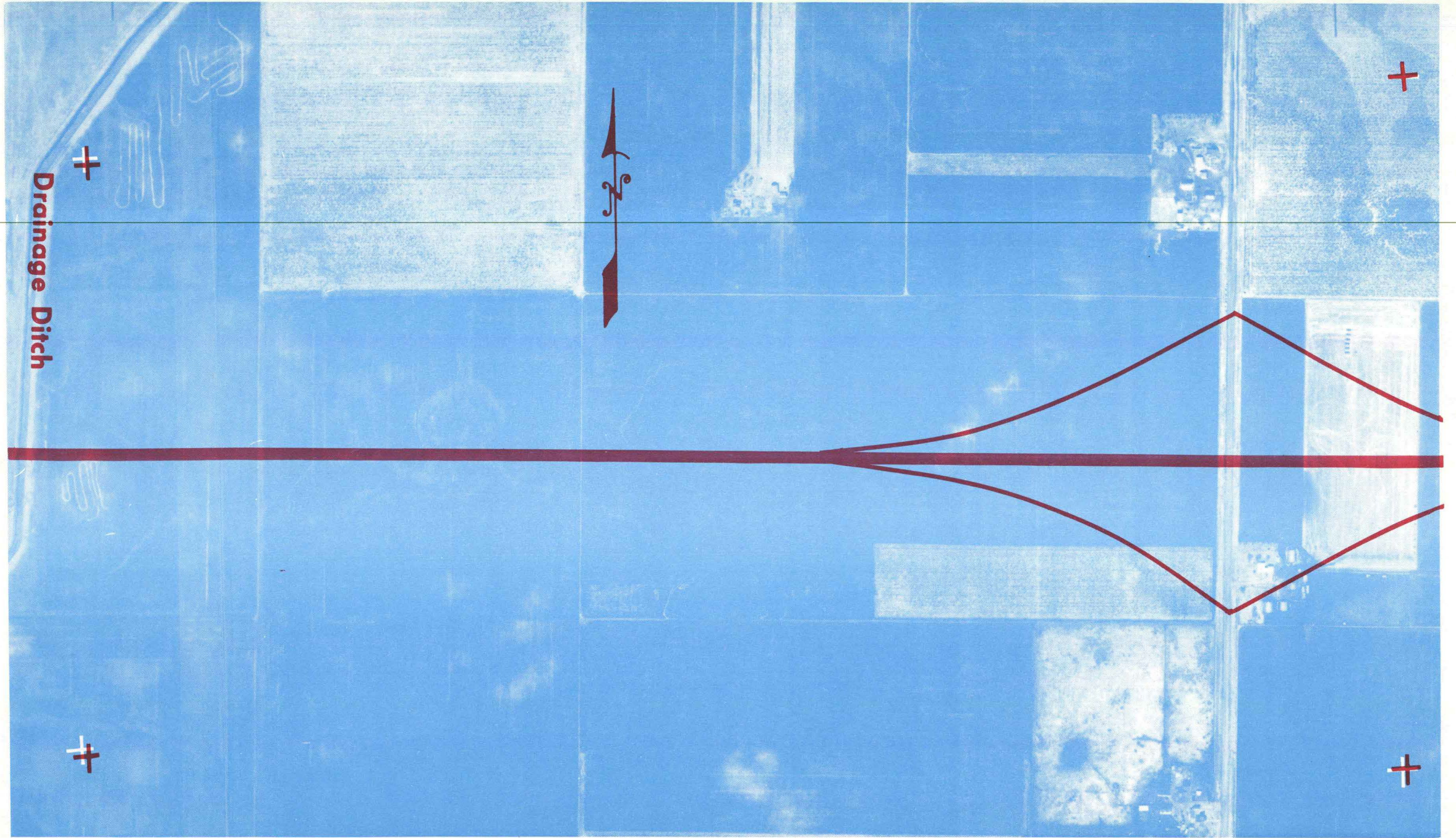


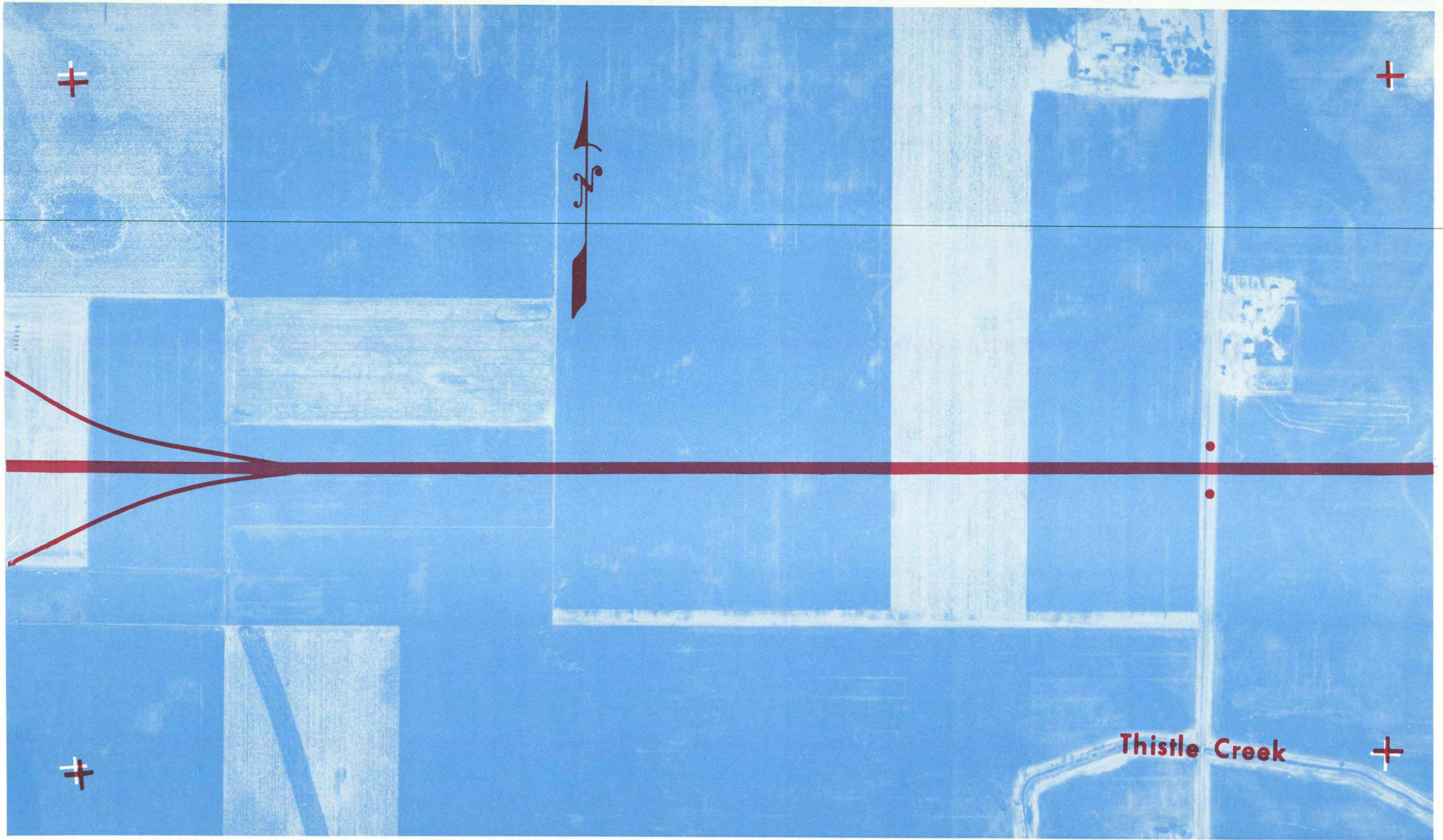


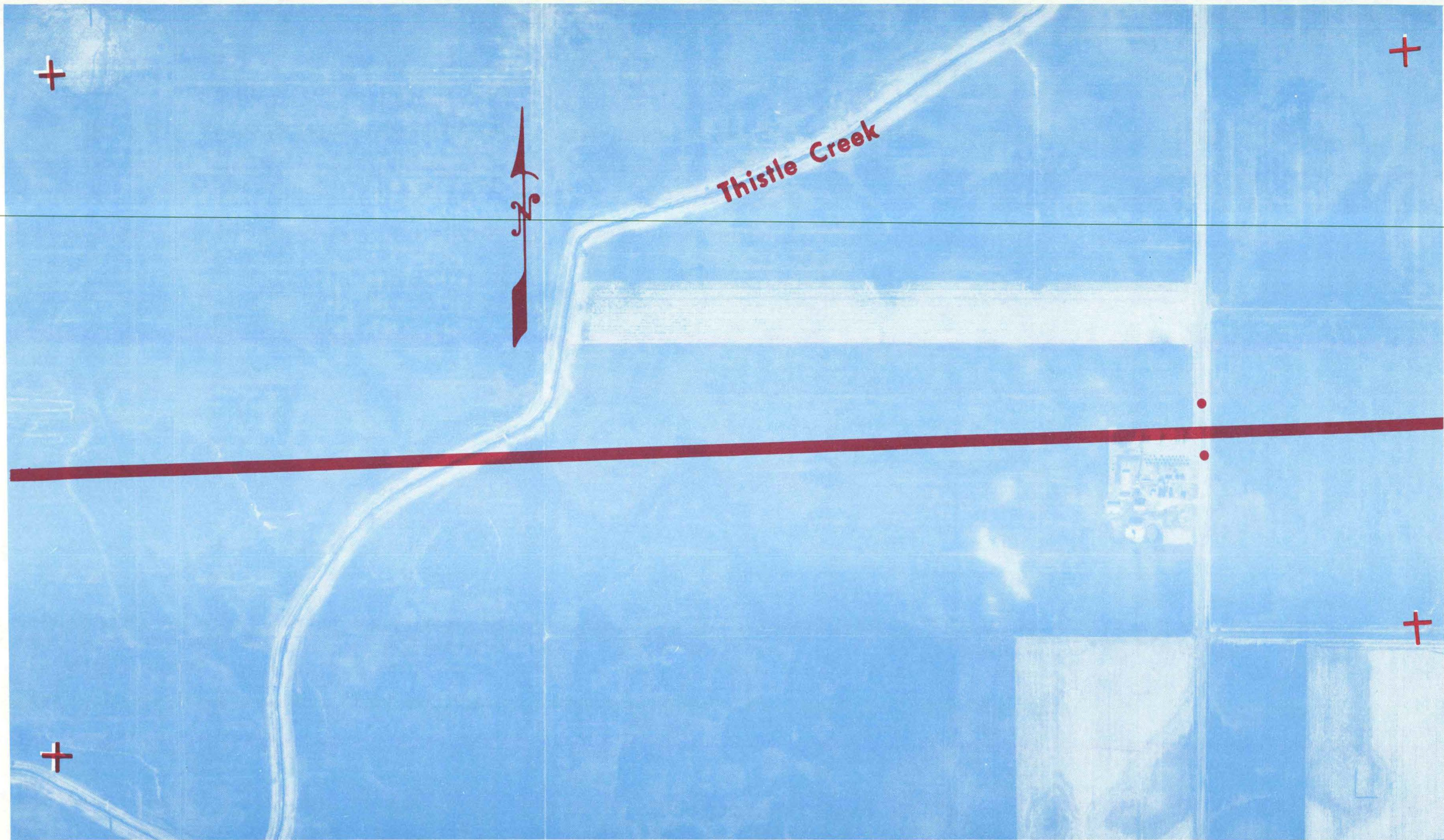


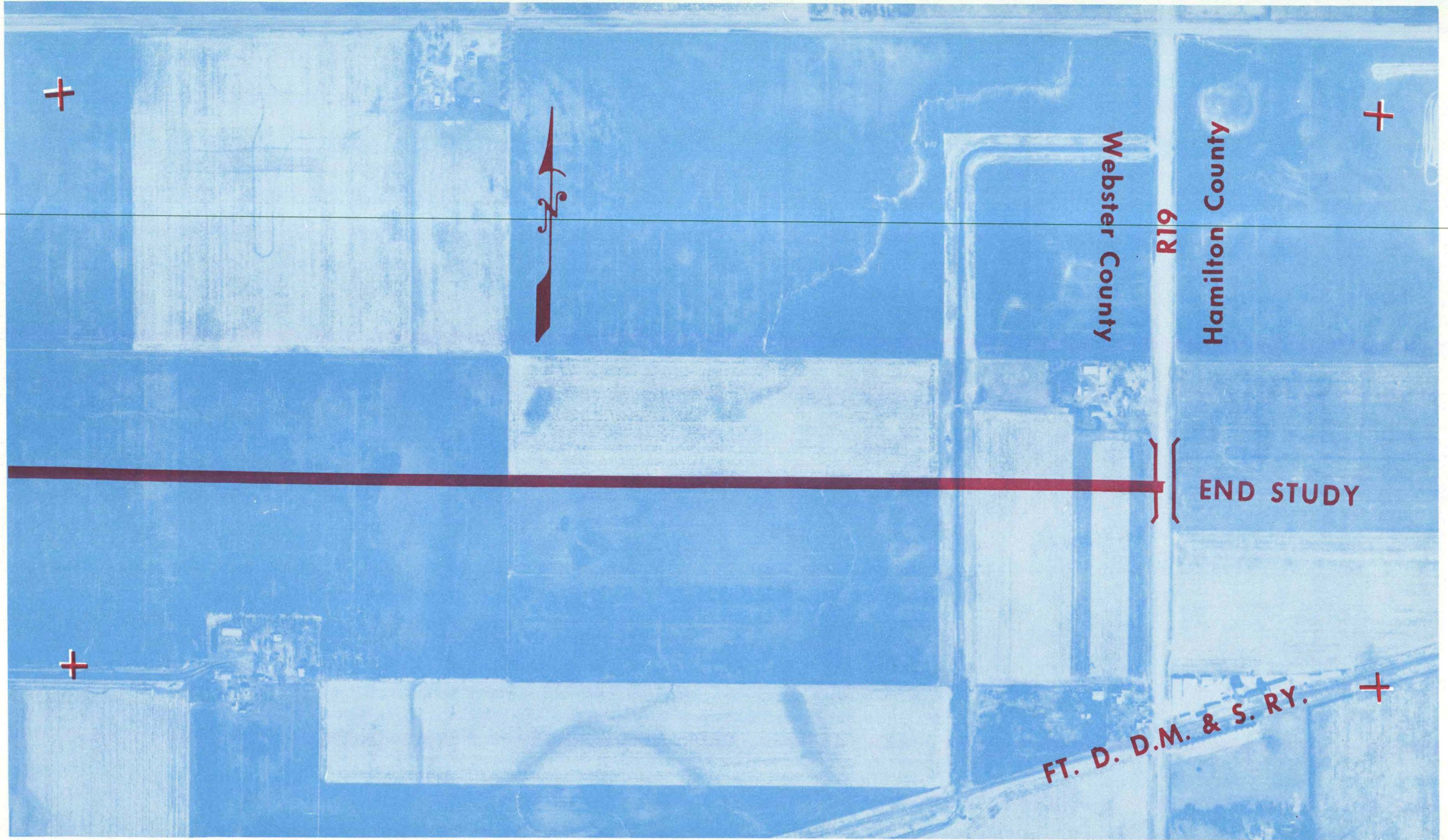


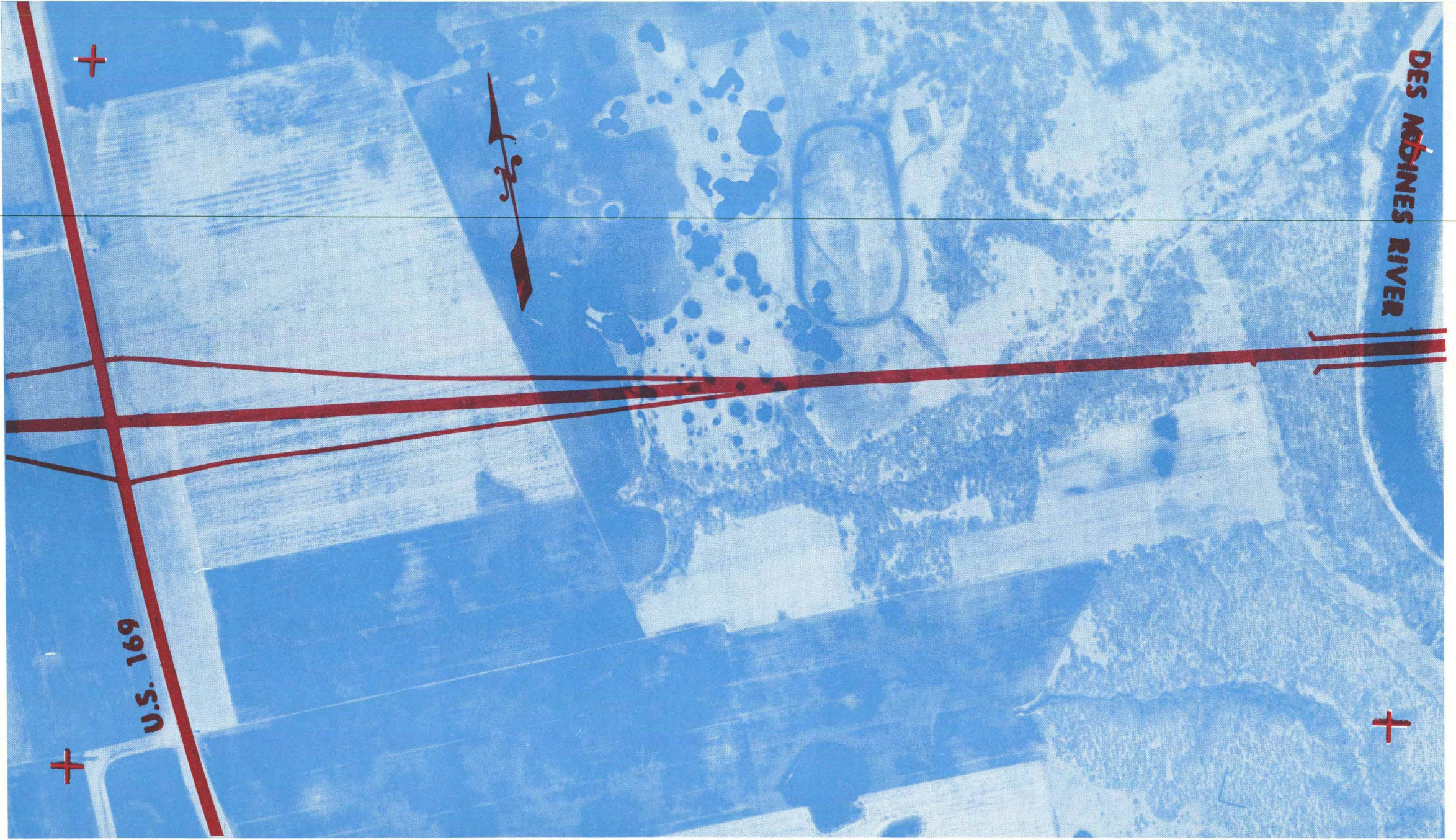


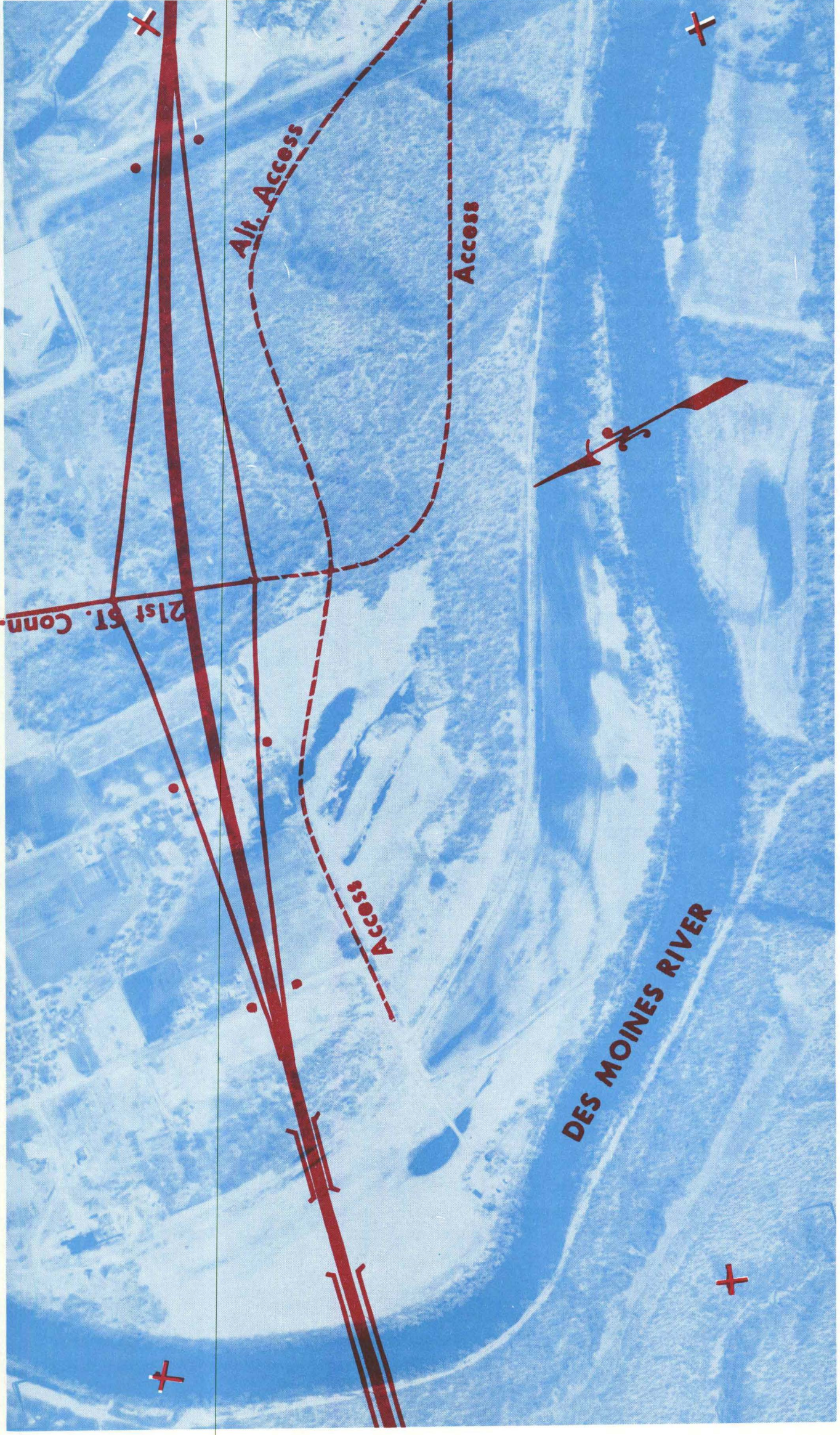


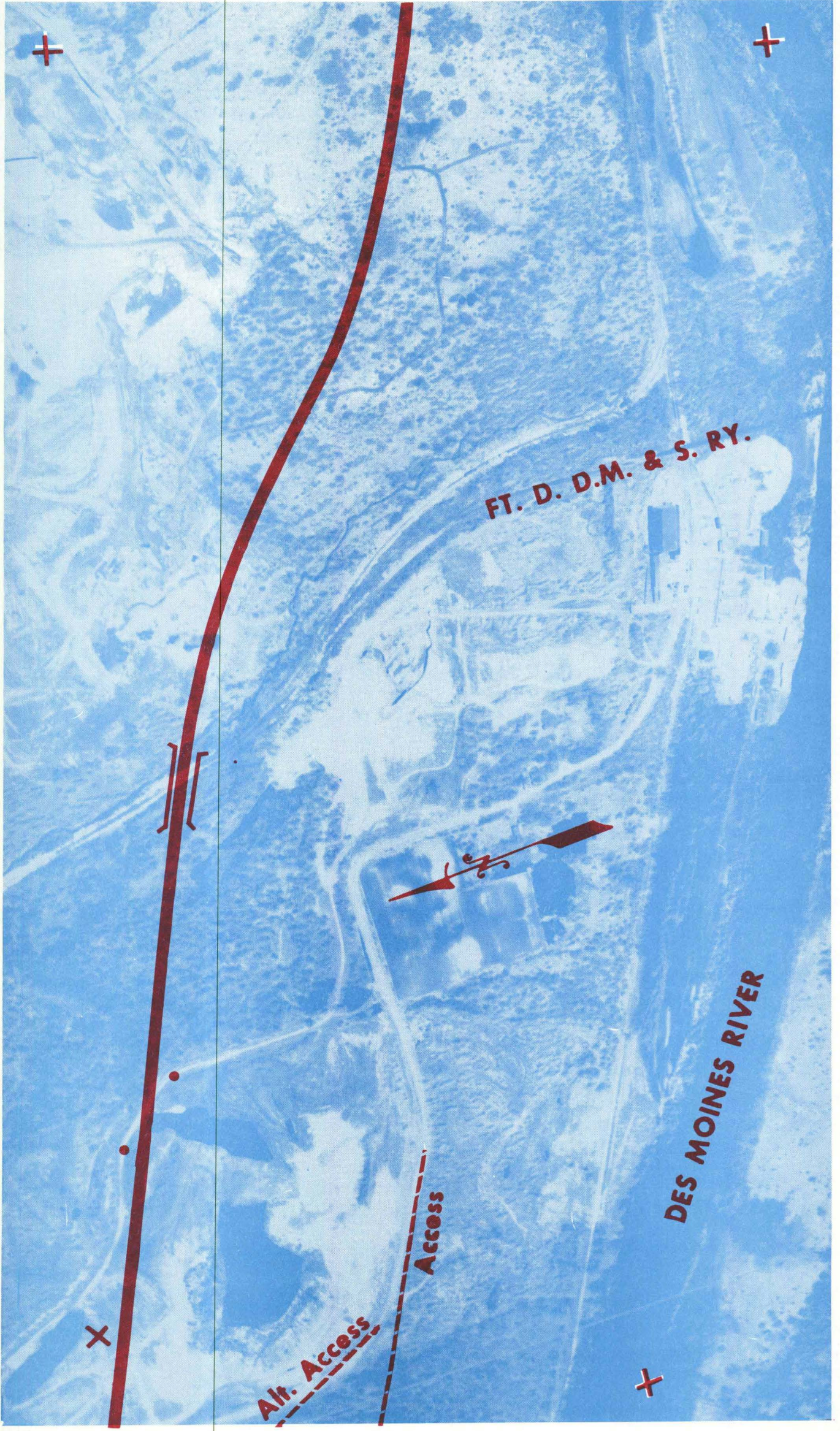


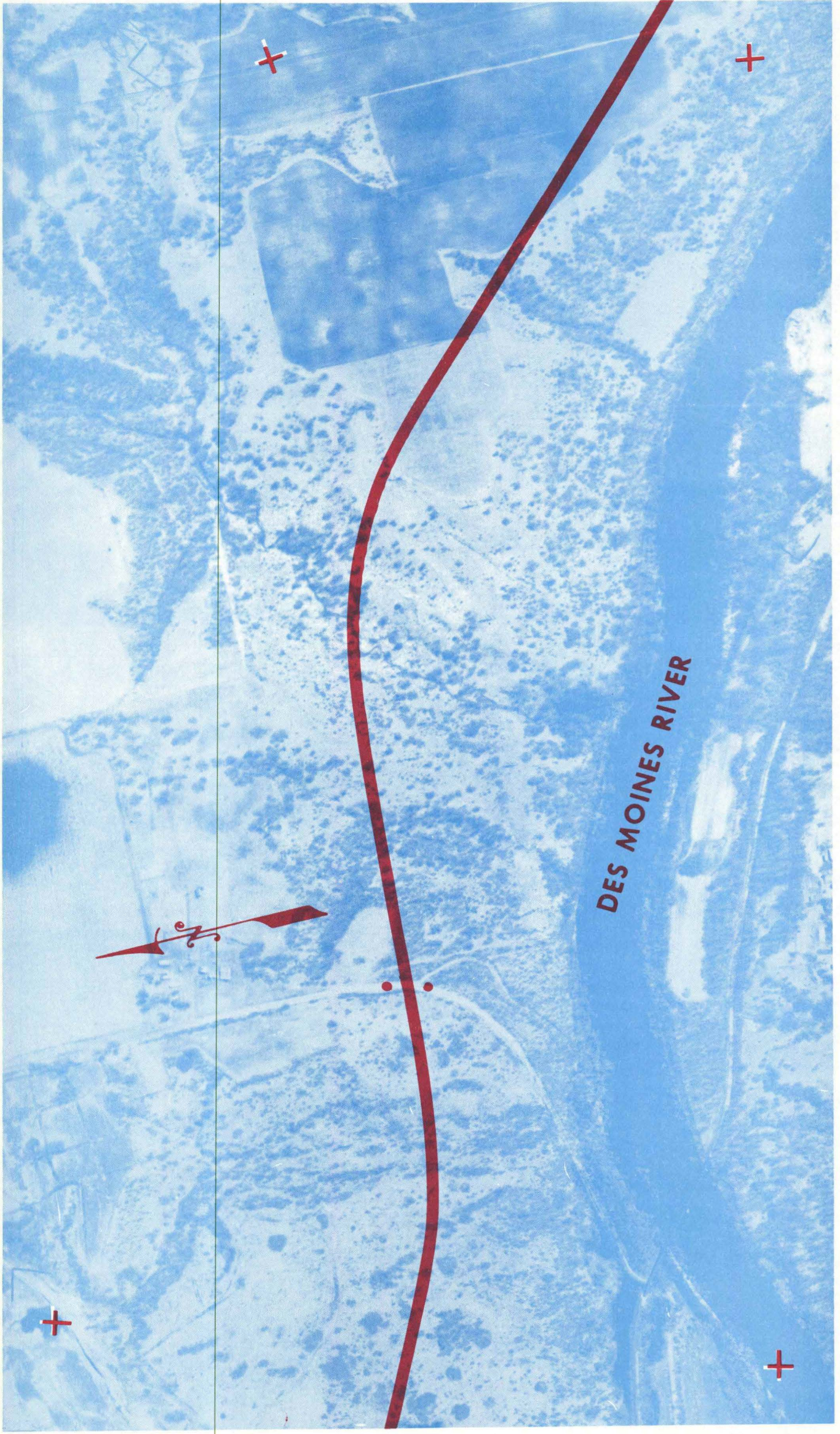


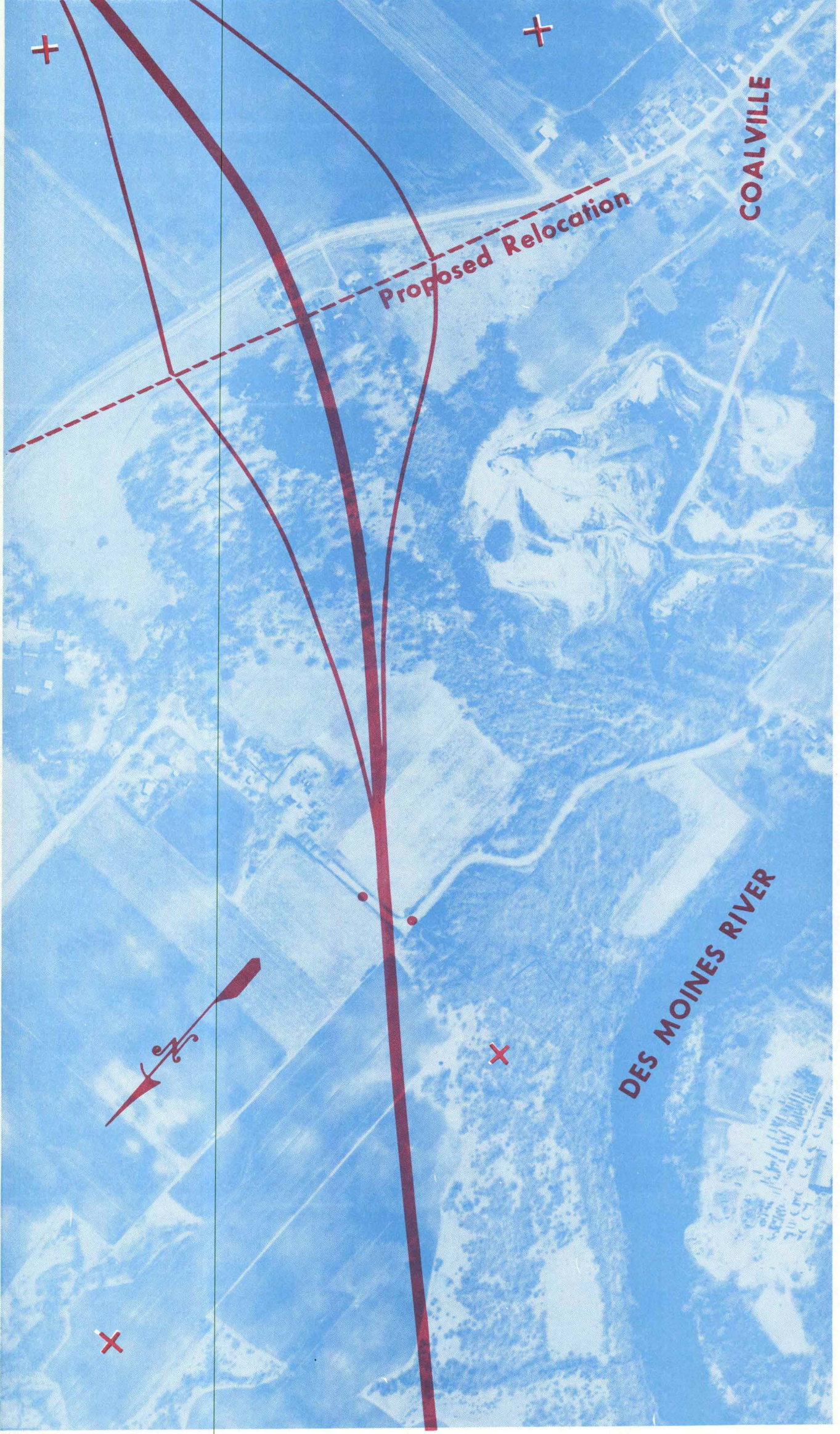


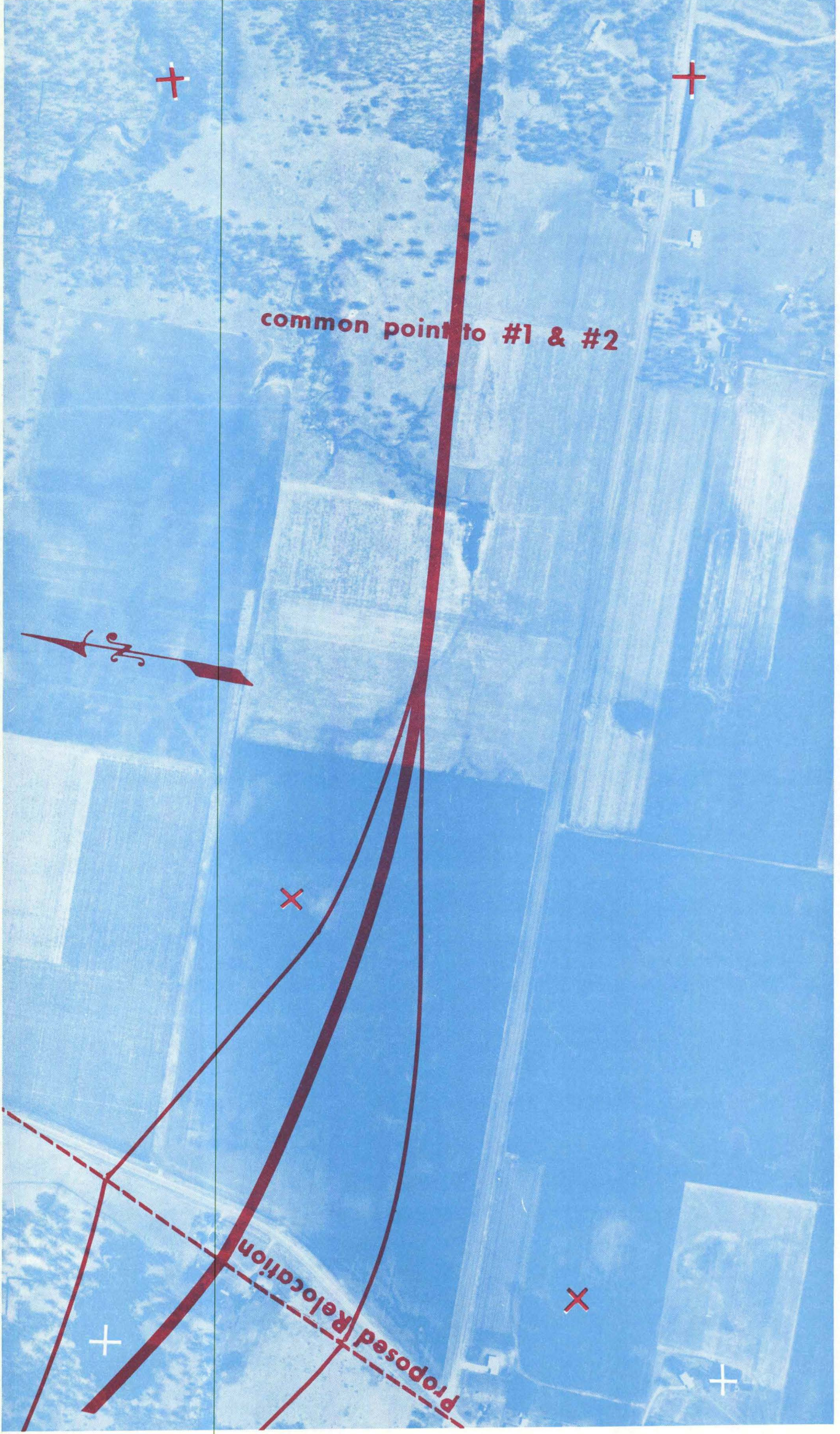


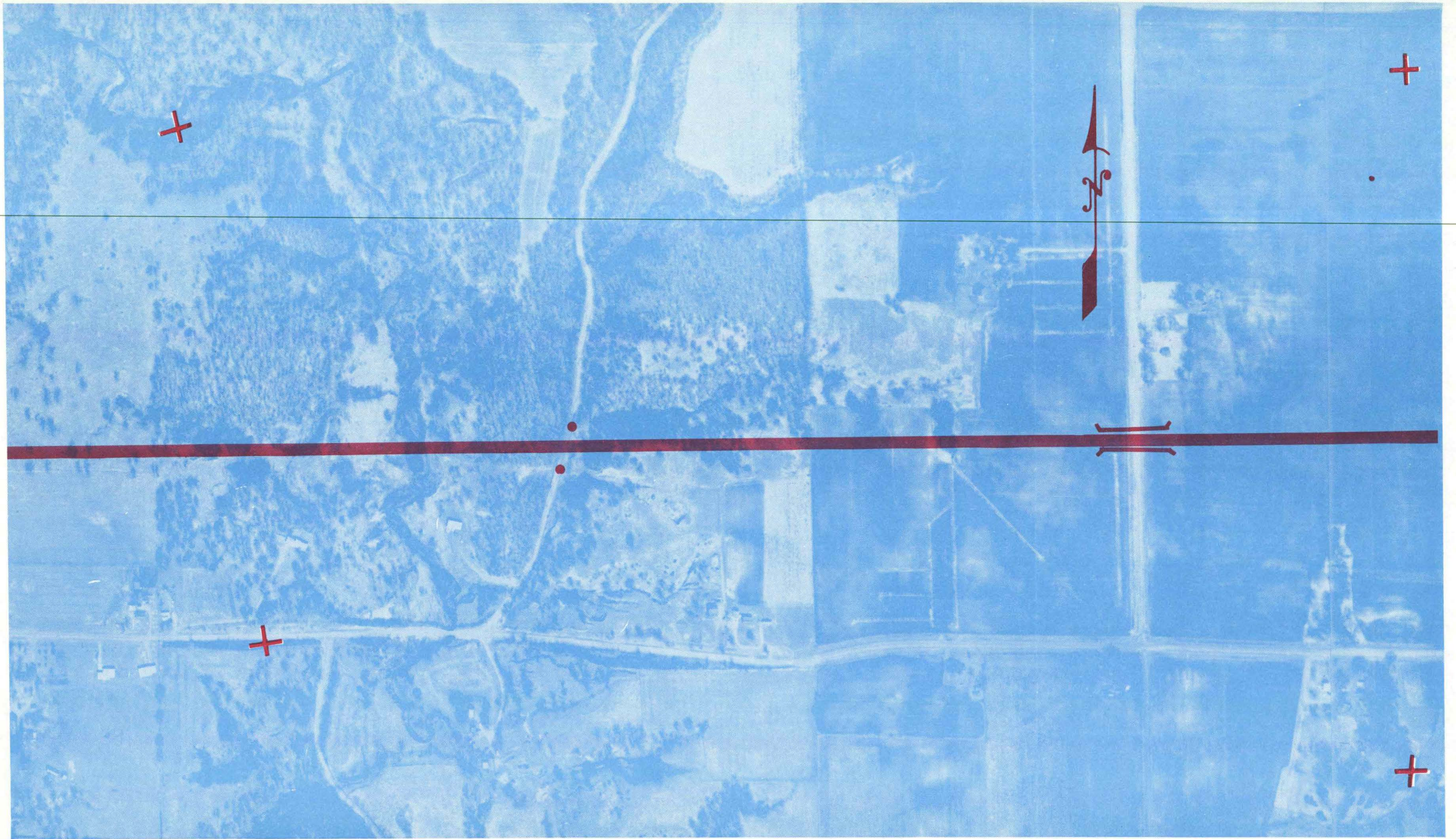


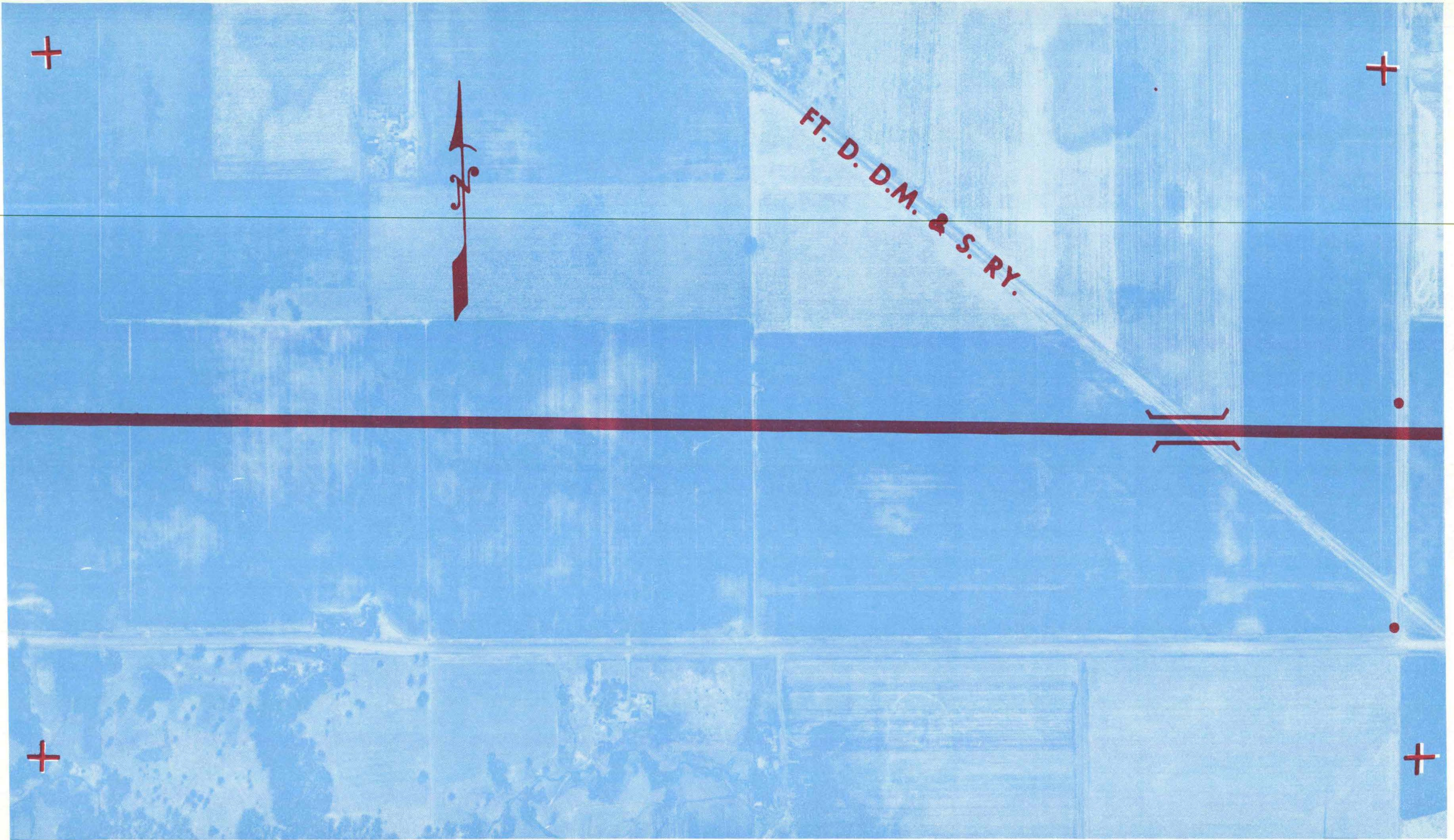


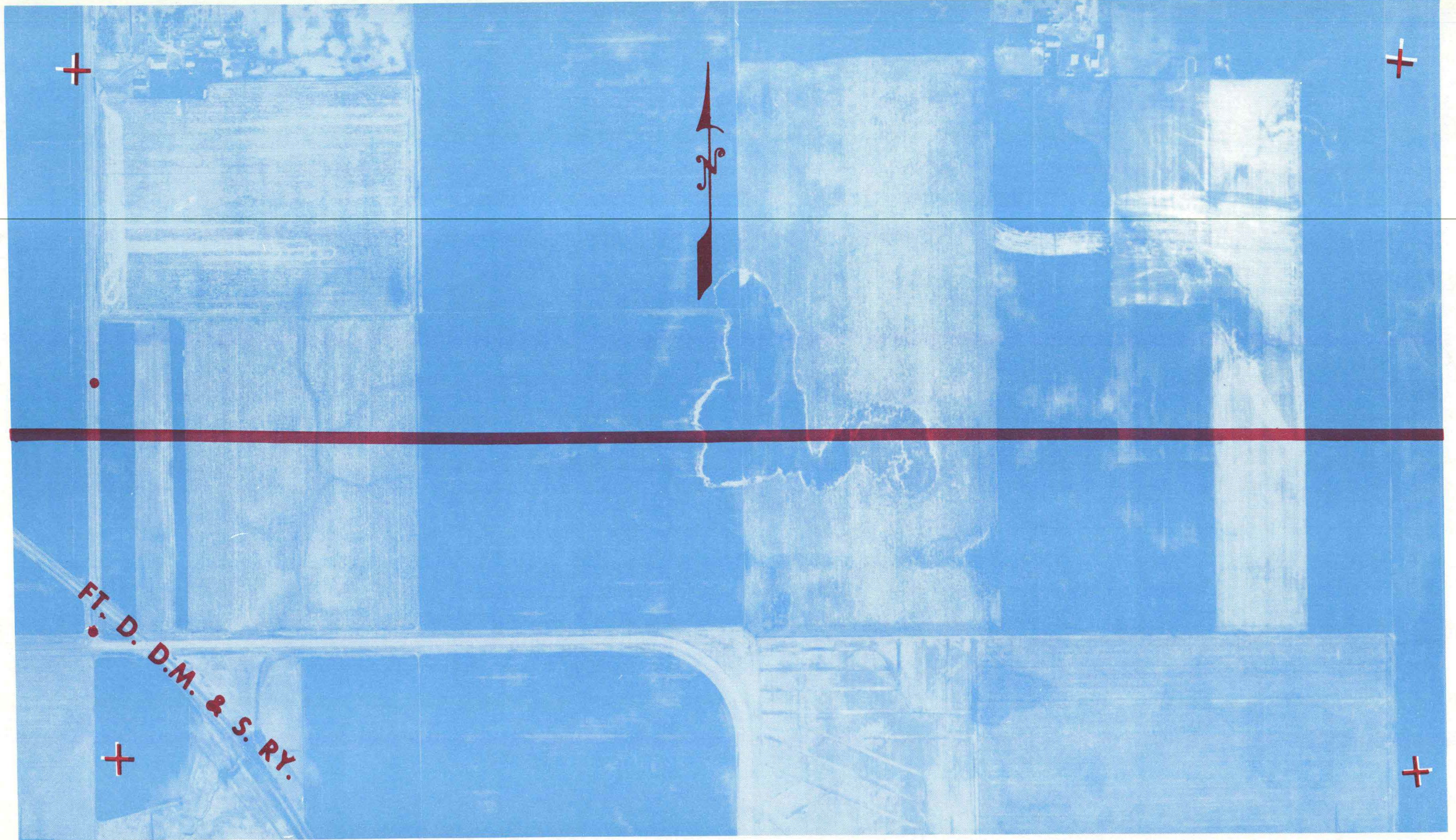


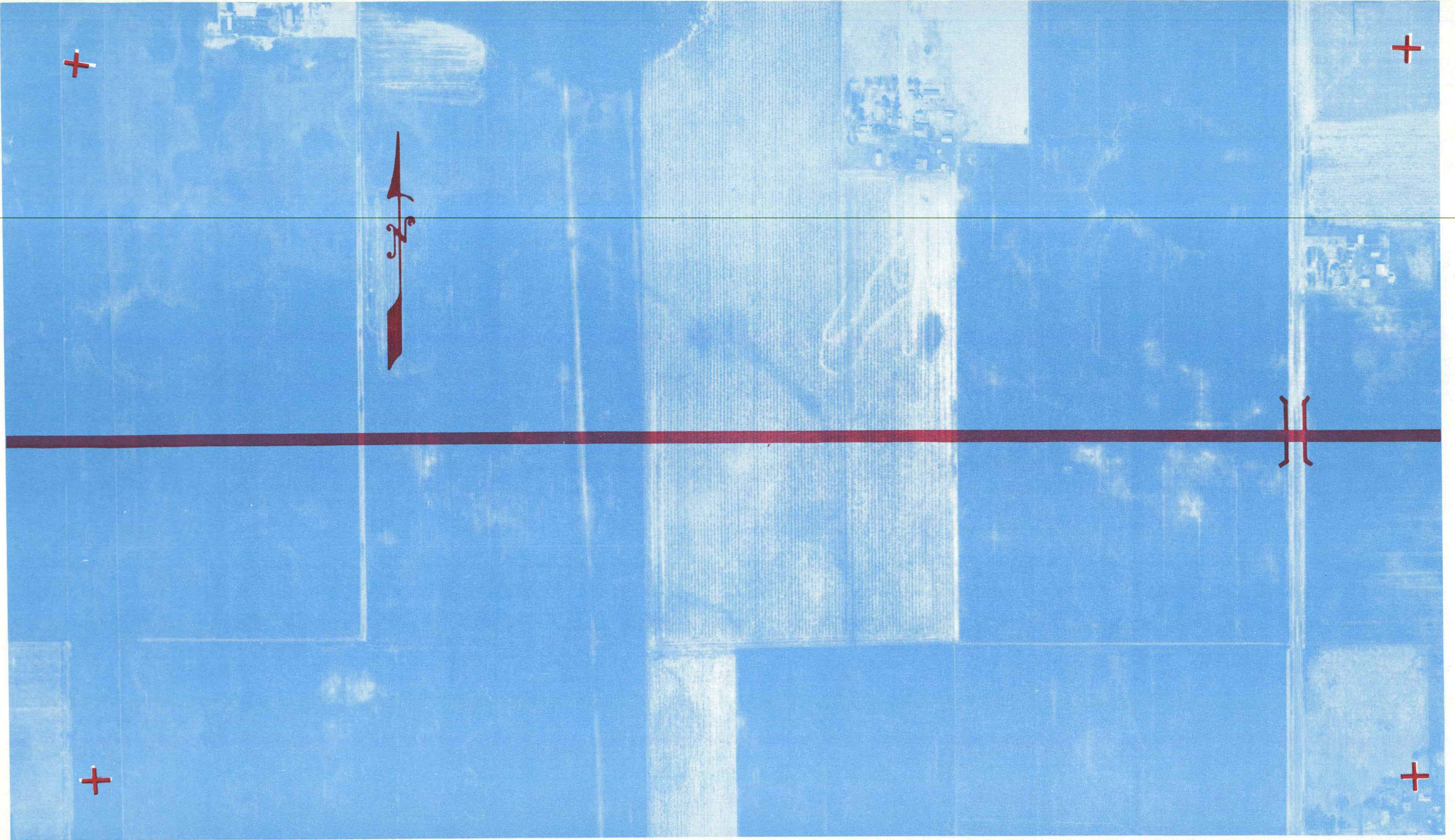


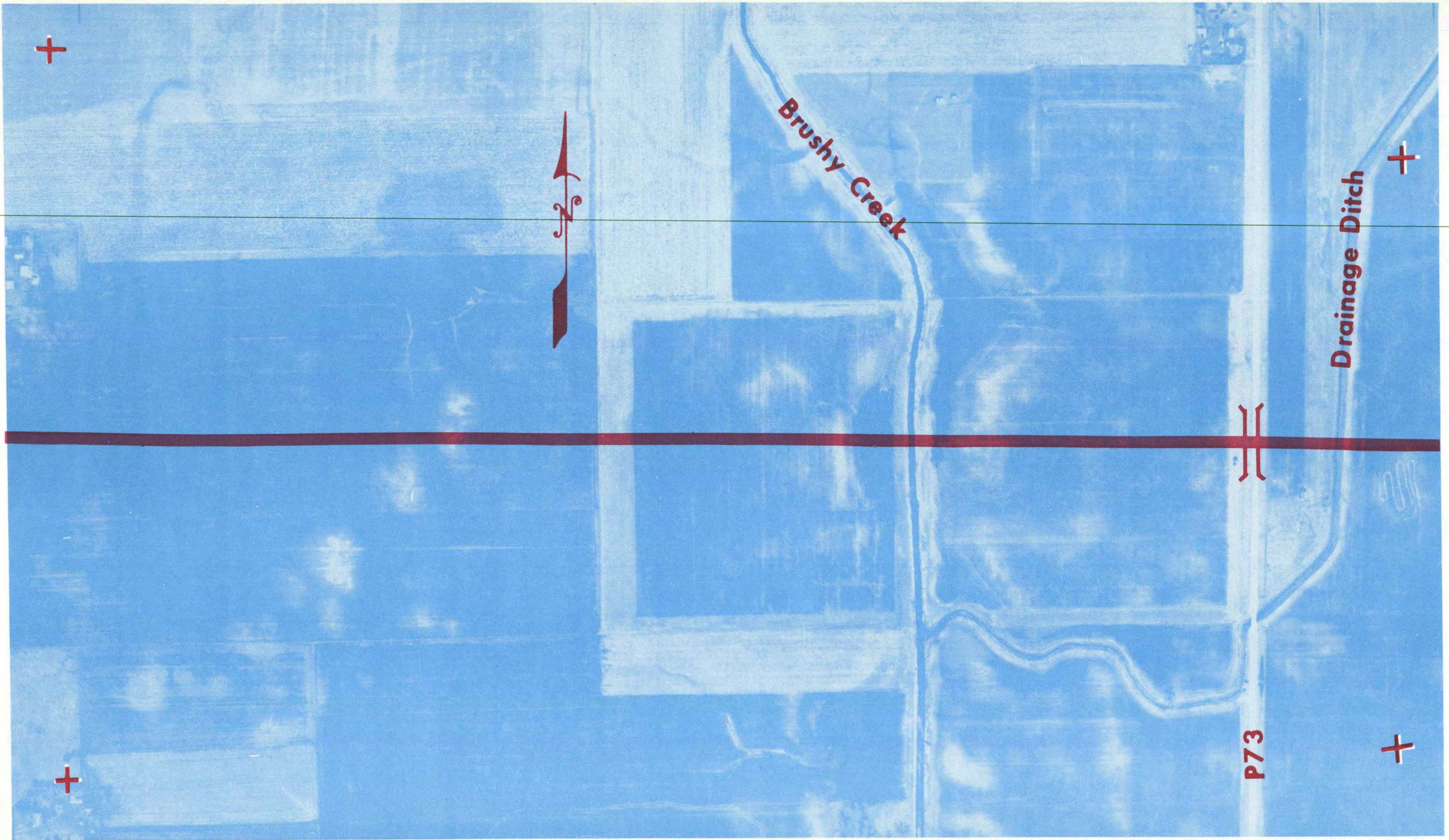


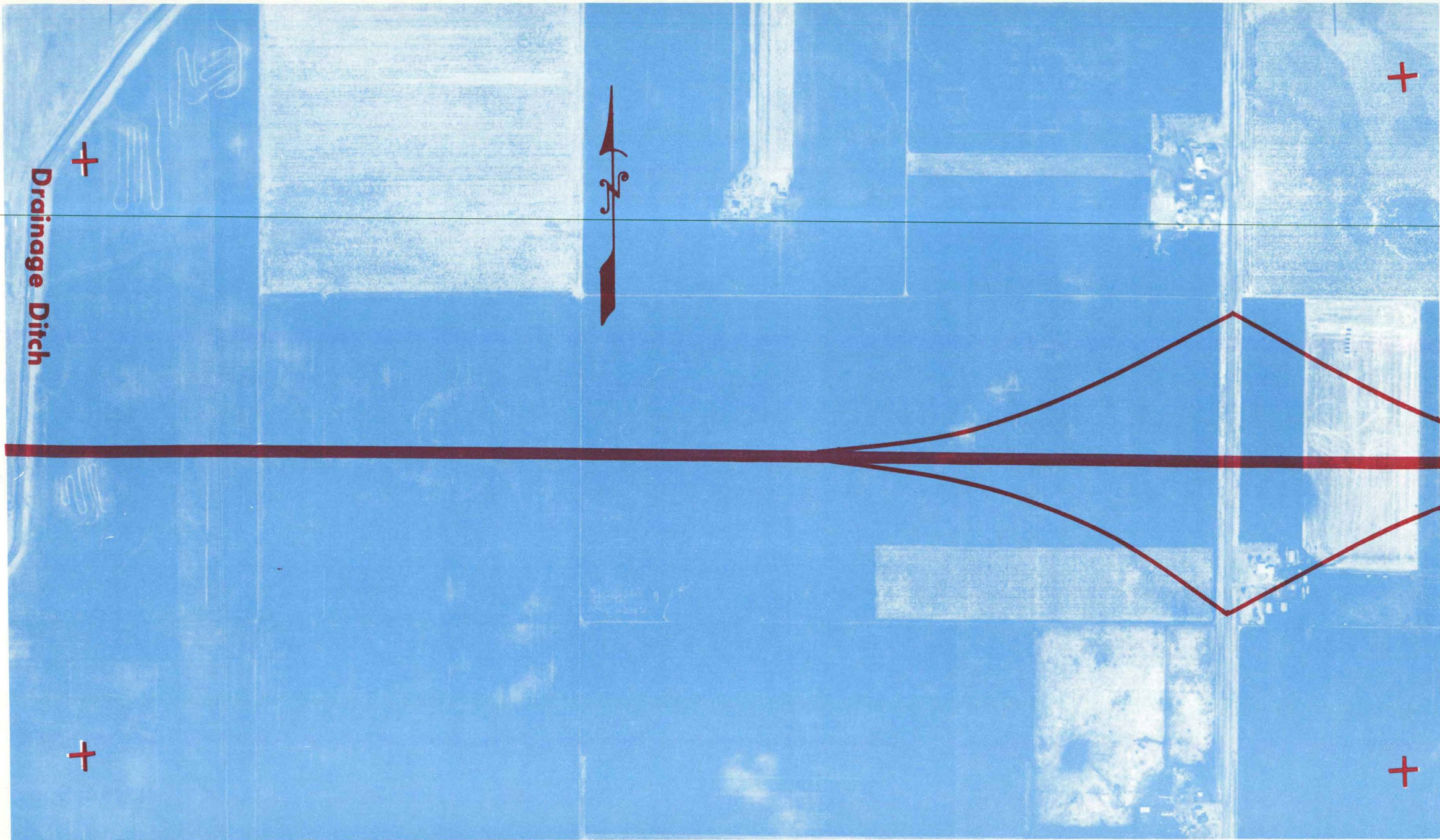


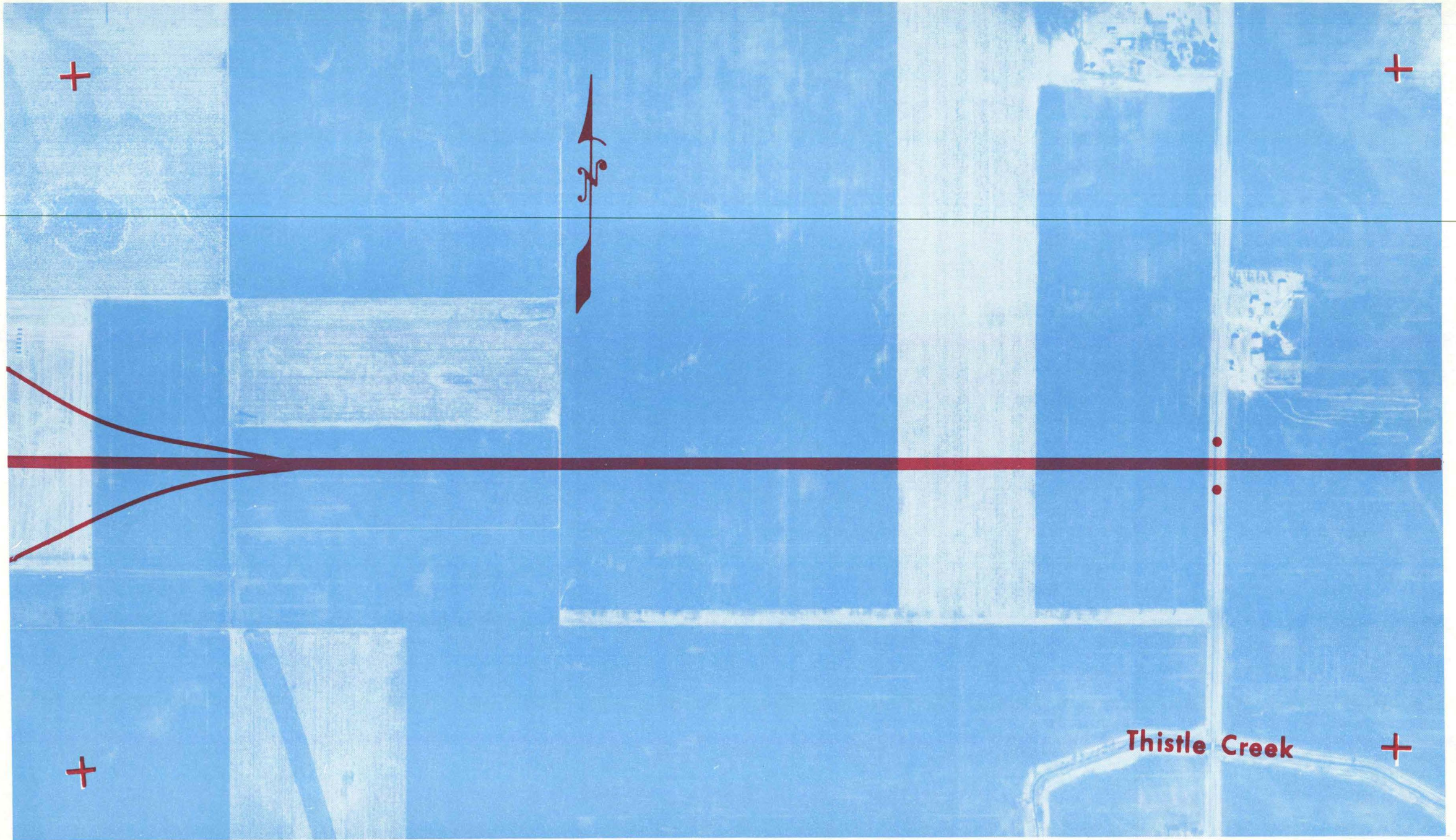


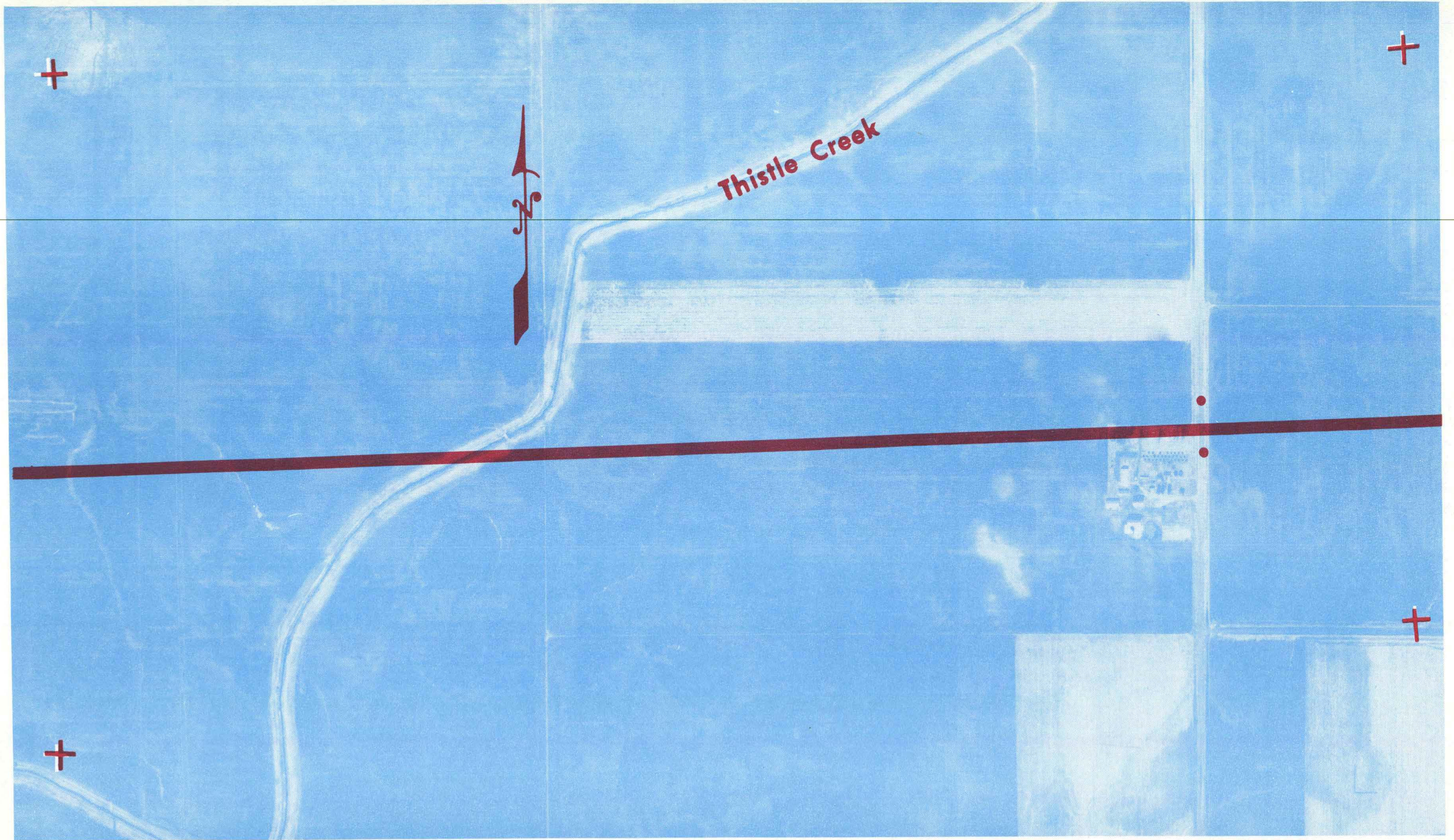


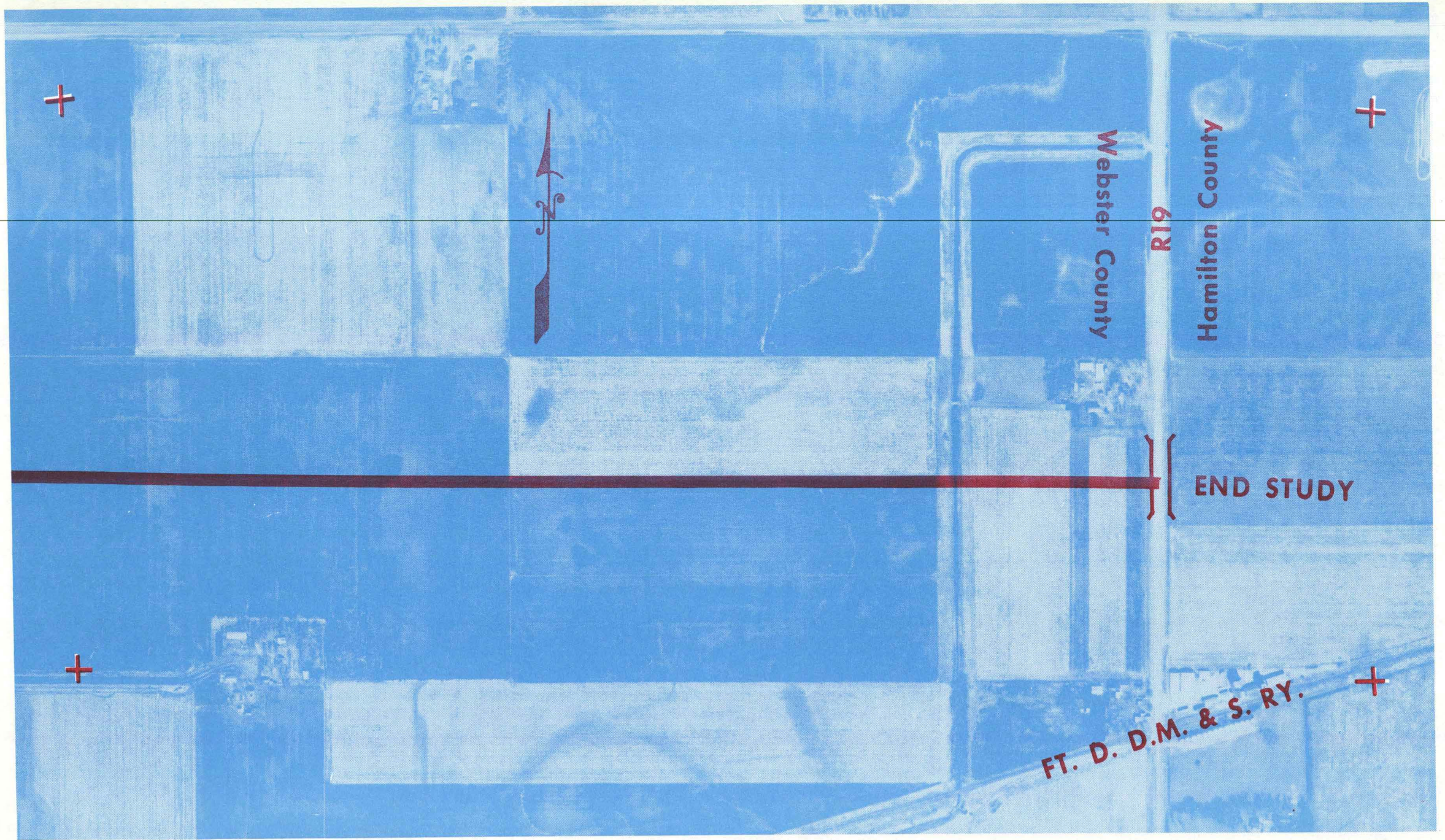












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