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FINAL NEGATIVE DECLARATION

For

U.S. 151
Linn and Jones Counties

From Iowa 13 Easterly
to Iowa 1

Project Numbers
F-151-3
F-151-4

Prepared By
Iowa Department of Transportation
Planning and Research Division
Office of Project Planning

In Cooperation With
U.S. Department of Transportation
Federal Highway Administration

June, 1978

**FINAL
NEGATIVE DECLARATION**

U.S. 151

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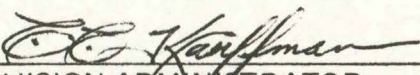
In accordance with the provisions of the Federal Aid Highway Program Manual, Volume 7, Chapter 7, Section 2, Environmental Impact and Related Statements, dated December 30, 1974, the following negative declaration is presented as an environmental assessment of proposed Federal Aid Projects F-151-3 and F-151-4 in Linn and Jones Counties.

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Adopted By Federal Highway Administration

FOR 

DIVISION ADMINISTRATOR
FEDERAL HIGHWAY ADMINISTRATION

5-30-78

DATE

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SUMMARY OF STATEMENT

Project Description

The proposed project involves the improvement of an approximate twelve-mile segment of U.S. 151 in Linn and Jones Counties from Iowa 13 to Iowa 1 (Figure 1). Proposed construction for this project commences east of Iowa 13 to permit relocation of the Iowa 13/U.S. 151 intersection as part of the future Marion Bypass project to the west. This proposed project extends easterly for about ten miles to just beyond the junction of Iowa 1 in Jones County. The proposed construction provides for a four-lane divided highway which would generally follow the present alignment of U.S. 151. This statement also studies a bypass to the south of the town of Springville.

Alternatives

Two construction alternates were developed for this project. Alternate 1 proposed a four-lane divided facility with Class III access control, and followed the general alignment of U.S. 151 throughout the entire project area. The typical cross section for the rural portion of this four-lane divided facility provided for a median 64 feet wide with the actual median width to be determined in the final design stage. As the project proceeded through the town of Springville, a four-lane divided roadway with a 16-foot raised median was proposed. Left-turn storage lanes would have been constructed at access points as needed throughout the project.

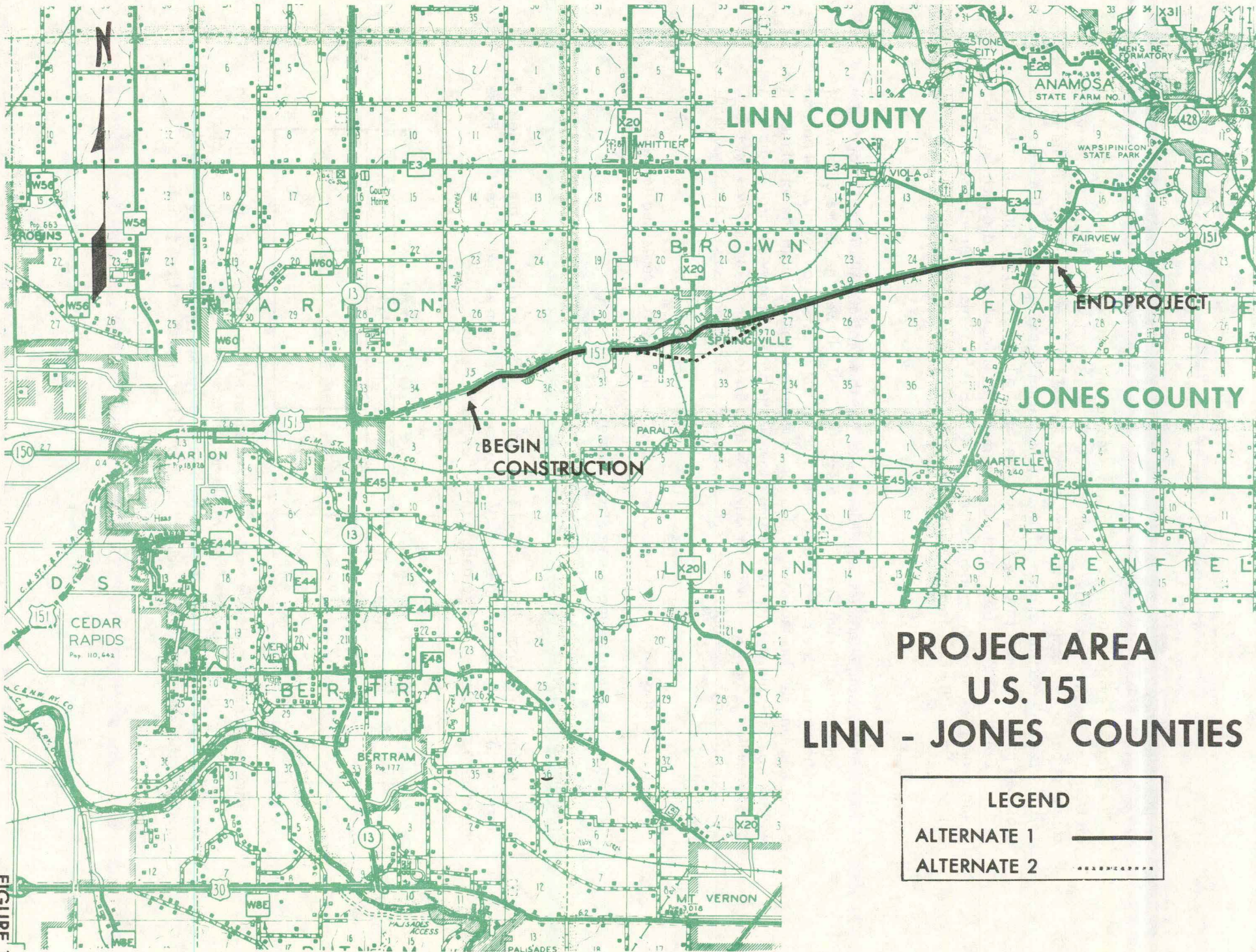
Alternate 2 also proposed a four-lane divided facility 88-foot centerline to centerline following the proposed Alternate 1 alignment except for a bypass to the south of Springville. This alternate would have Class III access control.

Probable Environmental Impacts

The major environmental impacts of the proposed project would be in the diversion of farmland to transportation use and the displacement of homes and individuals. These impacts are summarized by alternate in the following tabulation:

Alternate	Additional Right-of-Way Required	Displacement		
		Homes	Mobile Homes	Businesses
1	135 acres	20	19	1
2	221 acres	10	19	0

Design year noise levels were calculated for seven noise sensitive sites. It is anticipated that future traffic related noise levels would not differ significantly from those expected for the Do-Nothing Alternate. For the Alternate 2 proposal (the Springville Bypass) it is predicted that the design noise level of 70dBA would be exceeded at one farmstead.



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FIGURE 1

PROJECT AREA U.S. 151 LINN - JONES COUNTIES

LEGEND	
ALTERNATE 1	—————
ALTERNATE 2

The alignments of the two proposed construction alternates cross three streams. These streams, however, are not major drainage areas and no long-term or significant impacts are anticipated.

Recommendation

After careful evaluation and study, it is the opinion of the Iowa Department of Transportation that Alternate 2, which includes the bypass to the south of Springville, would be of greatest benefit to the traveling public. This alternate would displace the fewest number of individuals and businesses and would be less costly than the other construction alternate.

The "Do-Nothing" Alternate would not be consistent with the goal of providing safe and efficient transportation in the U.S. 151 corridor. The critical sufficiency rating, higher-than-average accident rate, and high traffic volumes on this segment of 151 substantiate the need for an improvement.

SECTION I. DESCRIPTION OF THE PROPOSED ACTION AND THE SOCIAL, ECONOMIC, AND ENVIRONMENTAL CONTEXT

The Need for the Project

Iowa's highways must annually accommodate increasing volumes of vehicular traffic. To keep this traffic flowing smoothly, efficiently, and safely, the Iowa DOT is responsible for a comprehensive and continuing effort to upgrade and improve the existing network of Interstate and Primary Highways. Achieving this goal of a modern highway system is a necessary element in our state's economic and social structure.

The purpose of this negative declaration is to assess both adverse and beneficial impacts of the proposed improvement of the section of U.S. 151 from approximately two miles east of the junction of Iowa 13 at Marion in Linn County easterly approximately 10 miles to just beyond the junction of Iowa 1 in Jones County. The proposed project location is shown in Figure 1.

Analysis of the need for the project will be accomplished through a discussion of present conditions on U.S. 151. Factors considered in the discussion include a brief history of the existing highway, functional classification and access control, sufficiency ratings, present traffic, and an accident history along the route. The project area's relationship to Iowa's Interstate System and other Primary Roads is shown in Figure 2.

History of Existing Facility

U.S. 151 in the project area was originally paved 18 feet wide in 1929. This 18-foot paving was widened or reconstructed to a width of 24 feet in 1961. The widened sections of pavement were resurfaced in 1964.

Functional Classification and Access Control

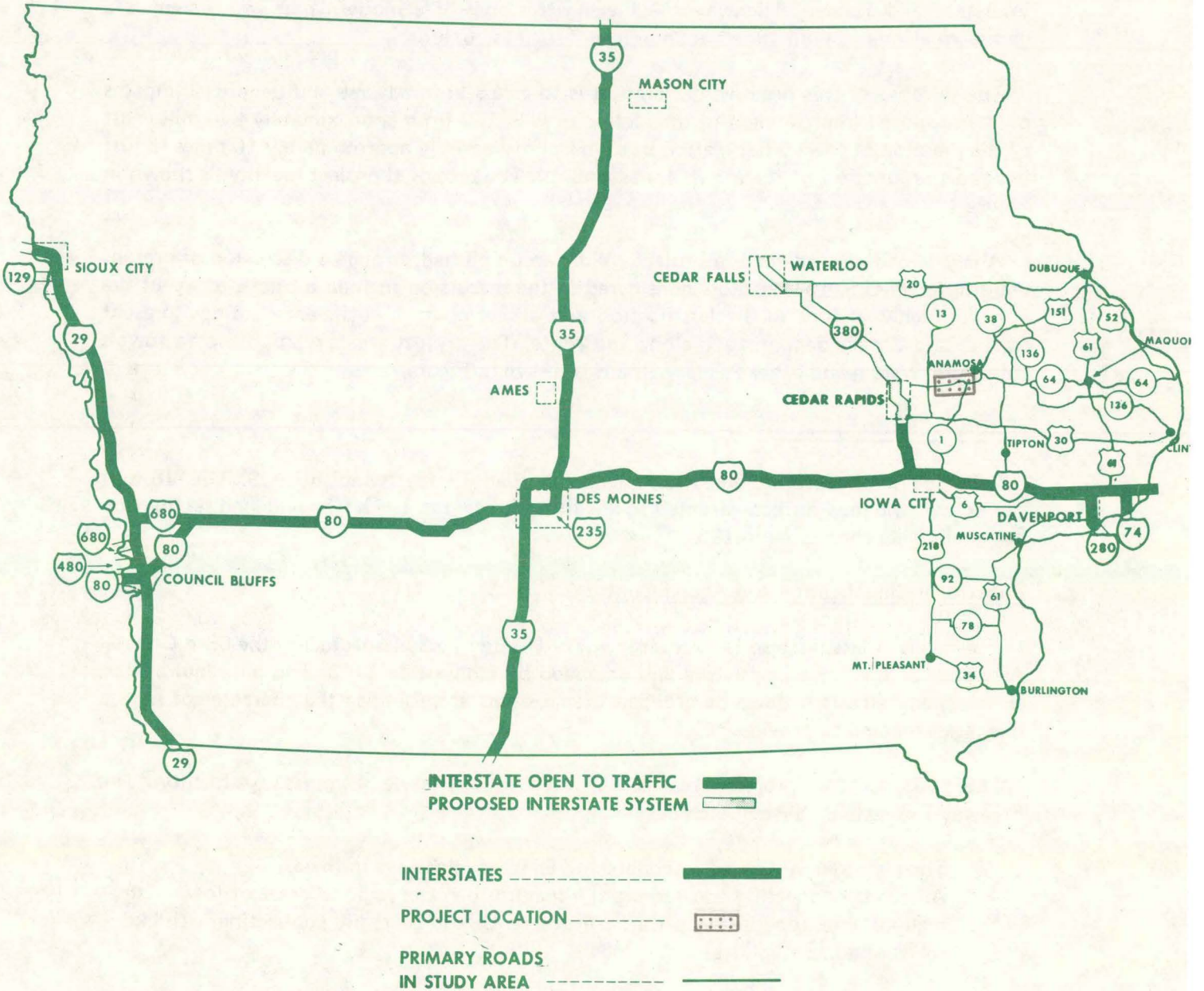
Functional Classification is a requirement of House File 394 enacted by the 63rd General Assembly of the Iowa Legislature and amended by House File 1103. The bill requires that all roads and streets in Iowa be grouped into systems according to the character of service they are expected to provide.

U.S. 151 in the project area is classified as a Freeway-Expressway facility. The Freeway-Expressway System includes:

1. The National System of Interstate and Defense Highways in Iowa.
2. All roads connecting and serving the major urban and regional areas of Iowa with high volume, long distance traffic movements, and generally connecting with like roads of adjacent states.

U.S. 151 presently has Class IV Access Control. This type of access gives through traffic and land service traffic equal consideration.

IOWA'S INTERSTATE SYSTEM AND OTHER PRIMARY ROADS IN THE PROJECT AREA



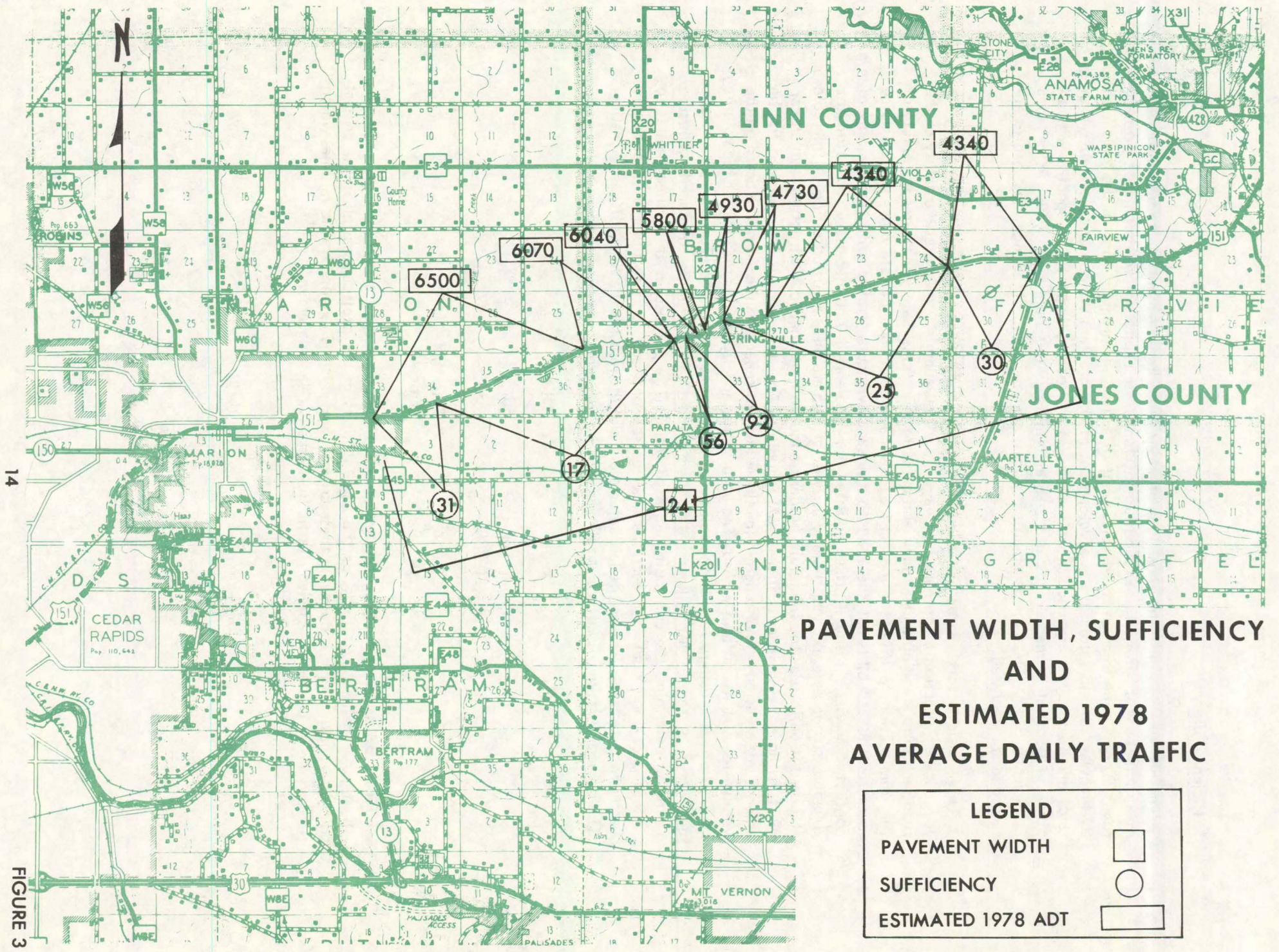
Sufficiency Study

The highway administrator must look at a long-range improvement program to insure the maximum benefits from the expenditure of funds for capital improvements on primary roads. This is done through the development of a five-year program. One of the tools used by highway administrators in the development of this program is a numerical system which rates the adequacy of a particular section of primary road in its proper perspective with all other sections of primary roads in the State. In Iowa this numerical system is called a Sufficiency Study. Data on pavements, bridges, alignment and other highway features are recorded and analyzed.

Three basic factors -- structural adequacy, safety, and service are considered in rating the adequacy of a section of primary highway. Structural adequacy measures the ability of the road section to stand up under traffic and climatic conditions. Safety measures the ability of the road section to offer the motorist a reasonable assurance of safe movement. Service measures the capability of the road to transport vehicular traffic with a minimum of conflict. The basic rating is then adjusted for intolerability, if necessary, based on the tolerable standards approach, thereby arriving at a tolerability adjusted rating. A tolerable standard is defined as the minimum prudent condition, geometric or structural, which can exist without being in critical need of upgrading. An adjustment is then applied to the tolerability adjusted rating to determine the volume to capacity adjusted rating based on the volume to capacity ratio of a road. The volume to capacity ratio is the ratio of the volume of traffic that is using a road to the volume of traffic that it would be expected to carry at a given level of service. An adjustment is then applied to the volume to capacity adjusted rating to determine the continuity adjusted rating. The purpose of this adjustment is to reflect poor individual road sections interspersed between long sections of appreciably better road sections. This is the last adjustment and the result is the final sufficiency rating. The numerical rating groups are as follows:

Points	Rating
90-100	Excellent
80- 89	Good
65- 79	Fair
50- 64	Tolerable
0- 49	Critical

Figure 3 lists the sufficiency ratings for U.S. 151 in the project area. As can be seen from the figure, sufficiency ratings for the rural sections in the project area fall in the critical range. A major factor influencing these critical ratings is the existing traffic volumes which exceed design guides for efficient traffic flow on a two-lane pavement.



PAVEMENT WIDTH, SUFFICIENCY AND ESTIMATED 1978 AVERAGE DAILY TRAFFIC

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FIGURE 3

Present Traffic

The estimated 1978 Average Daily Traffic (ADT) on U.S. 151 is illustrated by section in Figure 3. These traffic volumes were developed considering existing conditions only. The average 1978 ADT for the entire project area is 5390 vehicles per day with 11 percent truck traffic.

Accident Analysis

The latest Iowa Department of Public Safety traffic accident information reveals that a total of 157 reportable accidents occurred on U.S. 151 in the project area during the five-year period 1971-1975, seven of them being fatal accidents. These accidents are recorded by year and type in Table 1. Figure 4 shows the approximate location and type of accident.

The 1975 statewide accident rate for rural primary highways in Iowa was 169 accidents per 100 million vehicle miles (HMVM) of travel. The average rural rate for U.S. 151 in the project area for the years 1971 through 1975 was 188 accidents/HMVM, 11 percent higher than the 1975 statewide accident rate.

TABLE 1
REPORTABLE ACCIDENTS

Year	Property Damage	Personal Injury	Fatal	Total
1971	23	9	2	34
1972	21	12	3	36
1973	25	7	1	33
1974	20	10	0	30
1975	13	10	1	24
Total	102	48	7	157

Summary of Need

It becomes apparent, after reviewing present conditions on U.S. 151, that this facility is not providing safe and efficient traffic service at this time. The critical sufficiency ratings for this section of road substantiate this statement.

Existing traffic volumes are a major contributing factor to the inadequacy of this facility. The present high volume of traffic being confined to two lanes greatly reduces the capability of this section of U.S. 151 to provide safe and efficient transportation service. As traffic volumes increase in the project area, driving conditions will continue to deteriorate.

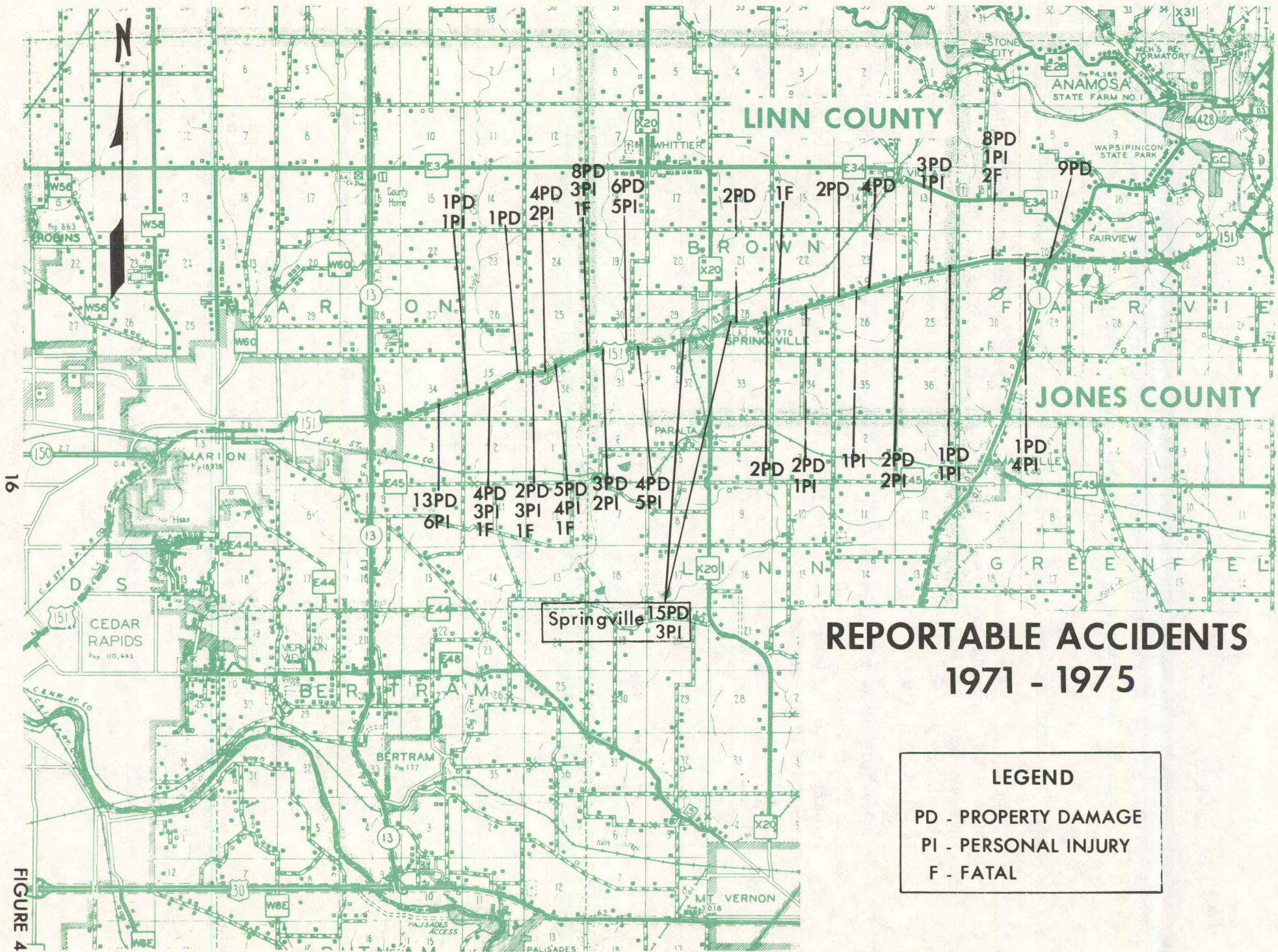


FIGURE 4

The functional importance of this route is another factor which substantiates the need for improvement. U.S. 151 is designated as part of the State Arterial Highway System (Figure 5). This system includes routes which connect major urban and regional areas, serve long distance traffic movements and connect with similar routes in adjacent states.

A four-lane divided highway as proposed in this report would serve this purpose. This type of facility would provide a safer traffic flow by separating eastbound and westbound traffic. The construction of two additional lanes would also alleviate the existing friction between local and through traffic.

The Natural Environment of the Corridor

Linn County is drained by two large streams that carry drainage water southeastward toward the Mississippi River. The Wapsipinicon River drains the northeast corner of the county including a small portion of the project area and the southwestern one-third of Jones County. The Cedar River is the principal stream with tributaries which drain the remainder of Linn County, including most of the project area. The topography of the county is generally gently rolling with slopes of two to 15 percent. The most extreme relief areas are found along the two principal streams.

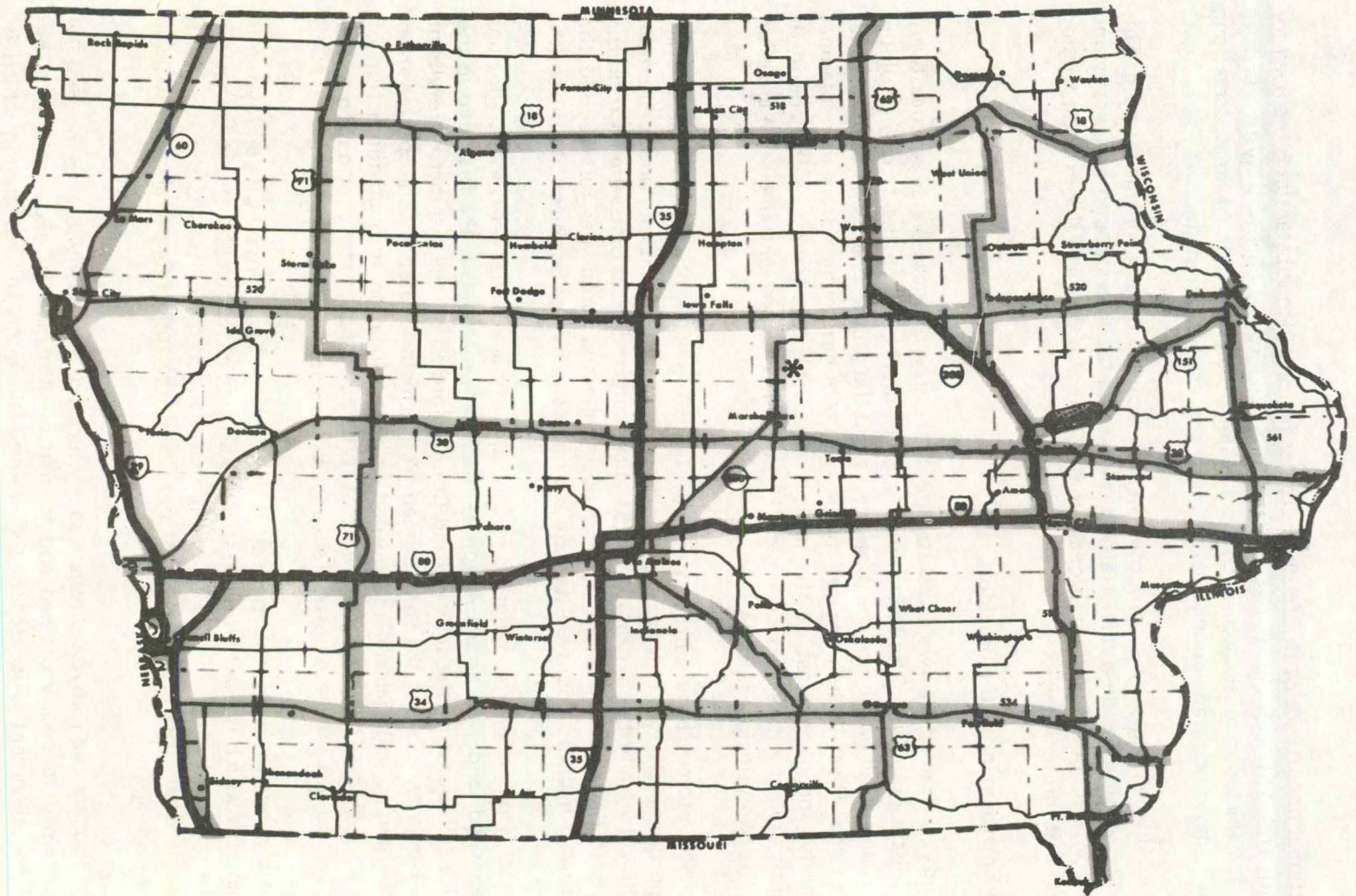
The proposed project begins in Section 34, Township 84N, Range 6W, on existing alignment approximately two miles east of the junction with Iowa 13; and, under Alternate 2, would follow generally the existing U.S. 151 alignment. It crosses Crab Apple Creek, Big Creek, and East Big Creek near the City of Springville and terminates just beyond the junction of Iowa 1 in Jones County. Alternate 2 proposes to bypass Springville to the south.

The principal geologic parent materials in Linn County are glacial drift, loess, alluvium and wind deposited sand. The accumulation of the parent materials is the first step in the formation of a soil. Some of the soils in Linn County formed on the weathering results of the bedrock. However, most of the soils formed from a material that was transported from the site of the parent material and redeposited at a new location through the action of glacial ice, water, wind and gravity. The soils that formed in sandy material or have material at a depth of two to three feet are possible sites for borrow for road construction.





Approximately one-third of the project is located in the Kenyon-Clyde-Floyd soil association, an area which is nearly level to strongly sloping in topography and soils that are moderately to poorly drained formed in loamy material and glacial till. As the alignment crosses Crabapple Creek, Big Creek, and East Big Creek, the topography is also nearly level to moderately sloping.

The project touches the Kenyon-Dinsdale soils which are also nearly level to moderately sloping, well drained to poorly drained and formed in silty material and glacial till. The remainder of the alignment is located in the Waukee-Dickinson soil association which is nearly level to moderately sloping, well-drained to excessively drained soils, formed in loamy material underlain by sand.

STATE ARTERIAL HIGHWAY SYSTEM



LEGEND

-  2/4-LANE
-  OTHER ARTERIALS
-  TOTAL
-  PROJECT AREA

* Location to be determined

STATE ARTERIALS
PROJECT AREA
FIGURE 5

The predicted average yields of corn, soybeans and alfalfa under a high level of management in the different soils of the project area vary from 63 to 125 bushels of corn, 24 to 47 bushels of soybeans and 2.6 to 5.1 tons of alfalfa per acre.

Iowa's climate is characterized by marked seasonal variations. The six warm months of the year are affected by the prevailing moist southerly air to produce a maximum summer rainfall. The prevailing northwesterly flow of dry air in winter causes this season to be cold and relatively dry. The average annual temperatures range from 46 degrees in the northern counties to 52 degrees in the southern counties. The annual precipitation averages approximately 31 inches per year for the state, ranging from 23 inches in the extreme northwest to about 34 inches in the east central to southeast.

Principal water aquifers can be divided into two categories on the basis of their recharge and water yielding characteristics. In one category are the highly productive alluvial and shallow carbonate rock aquifers directly underlying and in hydrological connection with principal streams. Most of the water withdrawn from these aquifers is induced surface water. These alluvial and buried valley deposits are important sources of moderate to large water supplies but are restricted in occurrence to river valleys and preglacial drainage lines.

In the second category are the deep, highly productive artesian aquifers in Iowa that are a considerable distance from recharge sources. These deeply buried aquifers act as conduits carrying water from outcrop areas miles or hundreds of miles to the area of natural or artificial discharge. The principal artesian aquifer in the area would be the Jordan aquifer. This category will not be affected by the project or other local activities.

Alternates Considered

Two construction alternates which would utilize the existing right-of-way of U.S. 151 were developed for this project. Both proposals begin at a point approximately two miles east of the junction of Iowa 13 in Linn County and extend easterly for about ten miles to just beyond the junction of Iowa 1 in Jones County. Typical cross sections of the proposed construction and detailed alignments of the proposed alternates are shown in the Appendix to this statement.

Alternate 1 proposed a four-lane divided facility with Class III access control, giving through traffic primary consideration. This alternate followed the general alignment of U.S. 151 throughout the entire project area. The typical cross section for the rural portion of this four-lane divided facility provided for a roadway spanning 88-foot centerline to centerline. The present roadway would be reconstructed and utilized for westbound traffic. A new 24-foot pavement would be constructed for eastbound traffic. The proposed improvement through Springville provided for a four-lane divided roadway with a 16-foot raised median. Left-turn storage lanes would be constructed at access points as needed throughout the project.

Alternate 2, the recommended alignment, proposed a four-lane divided facility 88-foot centerline to centerline which followed the identical alignment of Alternate 1 with the

exception of a bypass to the south of Springville. Existing U.S. 151 through Springville would serve as an access road. This alternate would have Class III access control and would utilize the existing U.S. 151 roadway where proper design standards can be met.

A comparison of these alternative design concepts is presented in Table 2. All data in this table is based on preliminary estimates.

TABLE 2
ALTERNATES COMPARISON

Alternate	Length	Cost	Additional Acres of Right of Way	Displacement		
				Homes	Mobile Homes	Businesses
1	9.90 mi.	\$7,805,000	135 acres	20	19	1
2	9.99 mi.	7,634,000	221 acres	10	19	0

The estimated 1982 and 2002 Average Daily Traffic (ADT) for the proposed alternates is illustrated by section in Figures 6 and 7. The estimated 1982 ADT for the entire length of Alternate 1, present alignment, is 6230 vehicles per day (VPD) and is anticipated to increase to 9100 VPD by the year 2002. The average 1982 and 2002 traffic volumes for Alternate 2, the bypass south of Springville, are 6140 and 8980 VPD respectively.

The Do Nothing Alternate provides for present conditions to remain unchanged. The obvious need for improvement of this route eliminates further consideration of this alternative. This fact is substantiated by the critical sufficiency rating and high accident rate for this section of U.S. 151. This is due primarily to the high volume of traffic presently using the route which exceeds design guides for a safe and efficient traffic flow on a two-lane facility.

The proposed improvement is listed in the current Five-Year Iowa Transportation Improvement Program for right-of-way acquisition in 1982. The remainder of the project is listed under "Cost to Complete Programmed Projects (Beyond 1983)".

Social, Economic and Environmental Study

Regional and Community Growth/Economic Factors

Linn County, located in east central Iowa, covers approximately 720 square miles of rolling Iowa countryside. A blend of this scenic wooded countryside, rich farmland, and the economic strength of a major urban area such as Cedar Rapids-Marion collectively depict this thriving segment of the state.

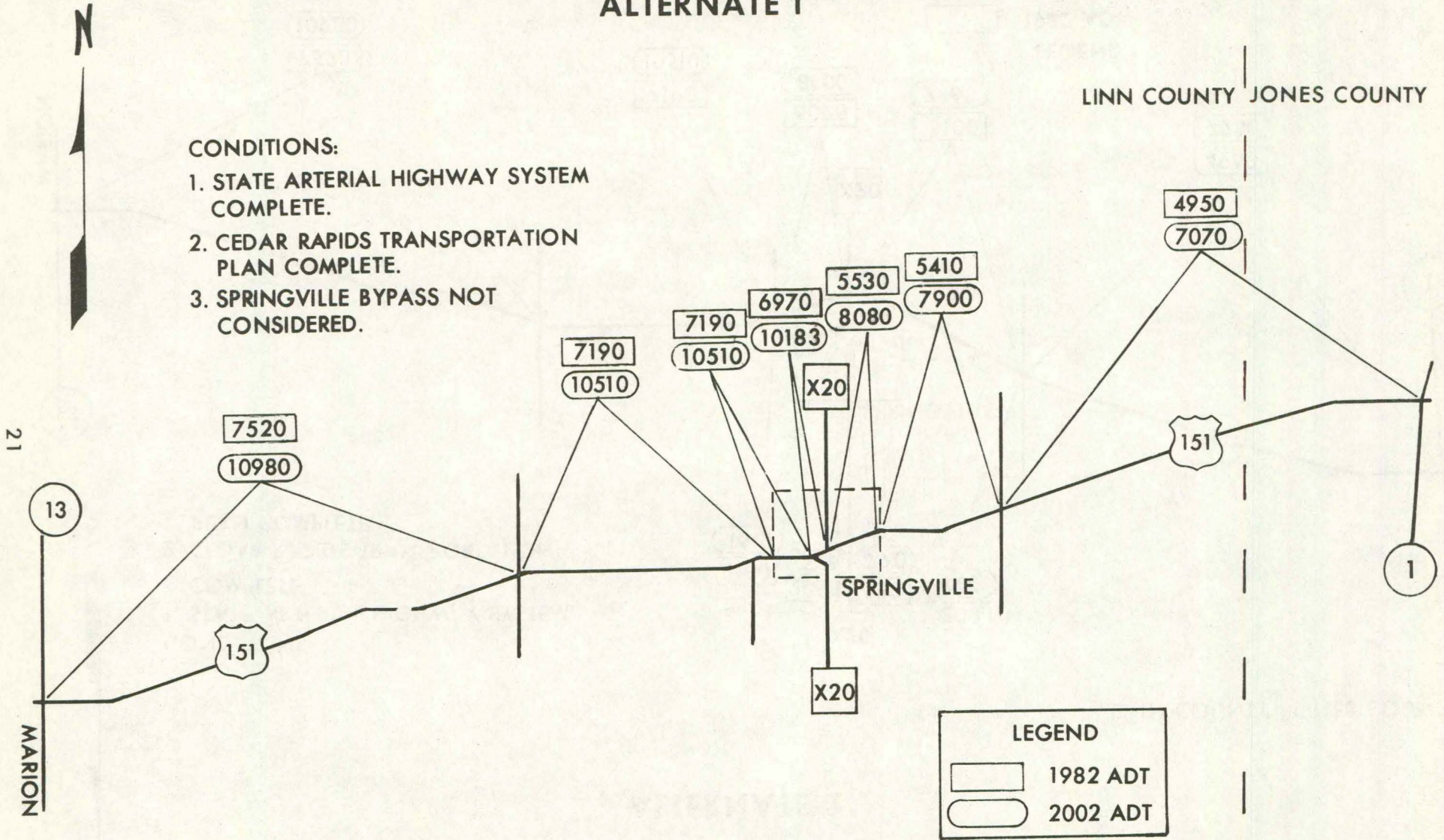
Agriculture and its related services constitute the economic base of Jones County. Basic industries are oriented toward raising livestock and crops, supplying goods and services to

ESTIMATED 1982 AND 2002 AVERAGE DAILY TRAFFIC ALTERNATE 1

LINN COUNTY | JONES COUNTY

CONDITIONS:

1. STATE ARTERIAL HIGHWAY SYSTEM COMPLETE.
2. CEDAR RAPIDS TRANSPORTATION PLAN COMPLETE.
3. SPRINGVILLE BYPASS NOT CONSIDERED.



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MARION

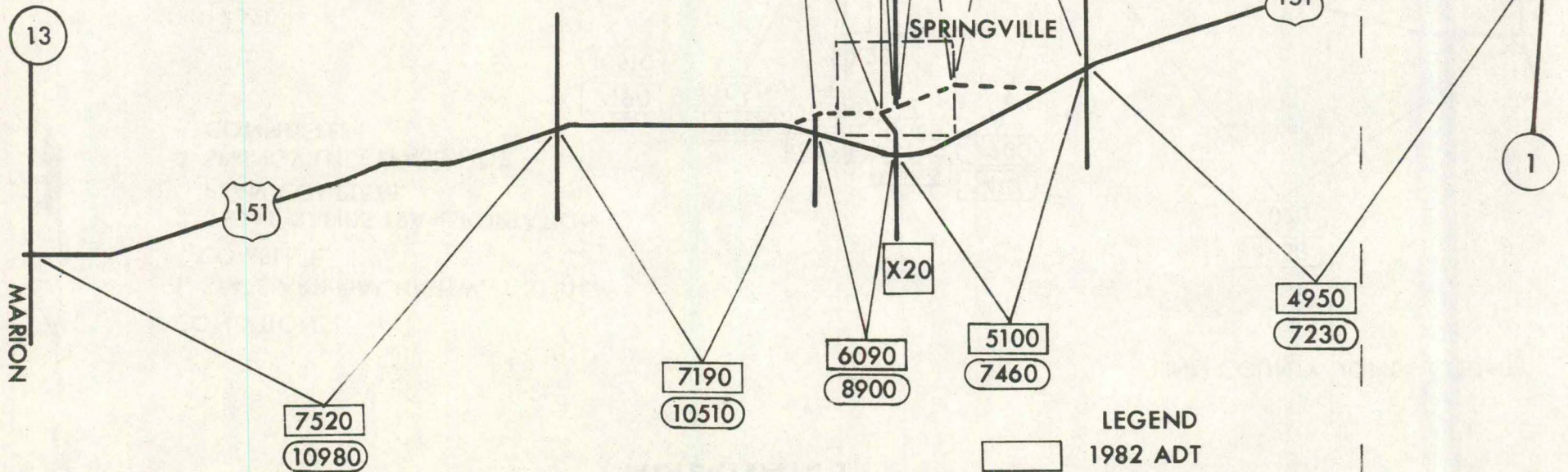
FIGURE 6

ESTIMATED 1982 AND 2002 AVERAGE DAILY TRAFFIC AND ESTIMATED RESIDUAL TRAFFIC ALTERNATE 2

LINN COUNTY | JONES COUNTY

- CONDITIONS:**
1. STATE ARTERIAL HIGHWAY SYSTEM COMPLETE.
 2. CEDAR RAPIDS TRANSPORTATION PLAN COMPLETE.

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- LEGEND**
- 1982 ADT
 - 2002 ADT
 - 1982 RESIDUAL TRAFFIC
 - 2002 RESIDUAL TRAFFIC

FIGURE 7

farms and processing agricultural products. Although the county's farm population has declined steadily, the economic dependence upon farming has not lessened. While fewer people are involved today in agriculture than were 20 years ago, agriculture continues to function as a stable economic element for Jones County.

The U.S. 151 study corridor extends from approximately two miles east of the junction of Iowa 13 through the Springville area and continues about ten miles easterly to just beyond the junction of Iowa 1 southwest of Anamosa. Approximately 90 percent of the project area lies within Linn County, with about the last one and one-half miles extending into Jones County. The study area is primarily agricultural; however, its location in proximity to the Cedar Rapids/Marion Metropolitan area, which is the center of economic activity for Linn County and adjacent areas, makes it a somewhat transitory zone between rural and urban environments.

Although a major highway improvement, such as is proposed on U.S. 151 in the study area, can serve as a catalyst to growth, this would not be an unfamiliar trend in the corridor communities which have experienced substantial growth in the past ten to fifteen years; this probable beneficial impact would, therefore, most likely be compatible with community expectations and existing patterns of development.

Cedar Rapids is Iowa's second largest city with a 19.2% growth in population between 1960 and 1970 and a current (October, 1976) estimated population of 112,000. The population of Marion nearly doubled during the same 1960-1970 span of time. The Bureau of the Census reported the population of Marion to be 10,882 in 1960 and 18,028 in 1970. That growth trend appears to have leveled off, however, in recent years with a current (April, 1977) estimated population of 18,190 for Marion. Springville's population grew from 785 in 1960 to 970 in 1970, an increase of 185 people or 23.5%. The population of Linn County overall reflects the same growth pattern as that experienced by Cedar Rapids and Springville; the county's 1960 population was 136,899 and increased 19% by 1970 to reach 163,213. The current county population (April, 1977) is estimated at 170,000.

The rapid population growth of Marion during the 1960-70 time period parallels the flourishing commercial-industrial growth of the Cedar Rapids/Marion area. Also reflected in this growth is the nation-wide trend of people establishing residence on the outskirts of a large metropolitan area or in smaller surrounding communities such as Springville. A current estimate of Springville's population was not available at this writing; however, it would be safe to assume that a substantial rate of growth has been maintained in keeping with these trends.

Cedar Rapids/Marion is an area possessing tremendous industrial diversification. According to the 1977-78 Directory of Iowa Manufacturers, there are over 200 manufacturers and processors in the two cities combined. Six of the firms, all located in Cedar Rapids, employ over 1000 workers each. They are Collins Divisions, Rockwell International, electronics and radio equipment; FMC Corp., Crane & Excavation Div., cranes

and excavators; Harnischfeger Corporation, hydraulic truck cranes, backhoes and excavators; Lefebure Corporation, steel security equipment, drive-up banking systems, alarm systems, camera and closed circuit TV; Quaker Oats Co., grain products, cereals, dog food; Wilson Foods Corp., meat processing. Many of these manufacturers depend completely on trucks for transportation of their products and materials. The proposed improvement of U.S. 151 would have a beneficial impact on these industries, particularly following the proposal to bypass Springville.

Springville is a small farming community, primarily dependent upon its agri-related income. The Cedar Rapids/Marion Metropolitan area provides employment for a majority of the working residents, as well as serving as its major trade center. From observations made on field exams, Springville is primarily a community of middle income levels.

This small community has its own school system, a sanitary sewer system and sewage treatment plant adequate to serve a population of 1500, and has its own privately owned Springville Water Company. Because of its location and its community facilities and services, Springville has excellent potential for steady growth in the next decade.

The proposed bypass of Springville, Alternate 2, could have both adverse and beneficial impacts on the community. Adversely, any highway-oriented businesses such as gas stations and possibly restaurants, could suffer financial losses as a result of a bypass. Benefits to a community bypassed by a major highway include a probable substantial decrease in traffic noise and improved air quality as a result of decreased traffic volumes. A bypass also provides increased safety for residents of the community, pedestrians and drivers alike; and greater efficiency is realized by through traffic in not having to decelerate for municipal speed limits.

Land use throughout the study area is primarily agricultural outside the community of Springville. Land use change would consist primarily of taking minimal row crop acreage and pasture land for highway use. It is not anticipated that any new traffic patterns would be generated, since the project follows generally existing alignment (with the exception of the bypass proposal). The area would remain agricultural upon completion of the project, with local farmers benefiting greatly from improved accessibility to markets for their farm products.

According to the 1972 Statistical Profile of Iowa 1.5% of the population of Linn County is non-white. Combining this relatively low figure with the fact that field reviews disclosed no evidence of any involvement with minorities, it is not anticipated that this project would be in conflict with the provisions of Title VI of the Civil Rights Act of 1964. Field reviews also indicated that no elderly or handicapped persons within the project corridor would be adversely affected.

Relocation of Individuals & Families Impacts

In purchasing the required right-of-way for highway improvement projects, it is sometimes necessary to displace people, businesses and/or farms. To reduce the hardships

which might be caused by these displacements, eligible families, and businesses would receive compensation through acquisition payments and through a comprehensive relocation assistance program.

Acquisition payments are based on the property's fair market value as determined through an appraisal guided by current sales and prices. The payments are made specifically for the home, farm or business buildings, and for property such as land, fences, wells and trees. In cases of partial acquisition, payment is based on a comparison of the fair market value before and after acquisition.

The relocation assistance program supplements acquisition payments in order to assure that those persons who are displaced do not suffer disproportionate economic stress in the process of moving and acquiring replacement housing. Supplemental payments for moving expenses are offered to any individual, family, business, farm operation or non-profit organization that is required to move as a result of the highway project. Supplemental housing payments are offered in the amount necessary, which when added to the acquisition payment, will enable the resident to acquire a decent, safe and sanitary replacement dwelling. If a home is vacant the owner would not qualify for relocation payments as this program applies to occupants.

Both tenants and owners qualify for relocation assistance by meeting minimum residence requirements. Any individual or family who has owned and occupied or rented a dwelling for at least 90 days before the start of negotiations may be eligible to receive payments for residential moving expenses, closing costs incurred in purchasing another dwelling and, possibly, a replacement housing payment. Any individual or family that has owned and occupied their own home for at least 180 days before the start of negotiations may be eligible for additional compensation to offset increased interest payments on a replacement dwelling.

Programmed replacement housing as a "last resort" is provided for under Section 206 of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. This Act stipulates that if the local agency determines it is in the public interest to proceed with the construction of the Federal-Aid project and it cannot do so because of an inadequate supply of comparable replacement housing, then it may, as a last resort, provide the necessary housing by use of funds authorized for the highway projects.

The exact number of homes and businesses to be displaced by this project would not be determined until design plans have been finalized. At this stage of project development, however, preliminary estimates have been compiled for use in evaluating this socio-economic impact.

Alternate 1 which generally follows present alignment, with the proposed four-lane facility traversing the town of Springville, would affect eight homes in the rural area (all in Linn County) and an additional 12 homes within Springville. An estimated 55 people would be involved if this total of 20 homes were acquired. A mobile home park located

approximately one mile west of Springville on the south side of U.S. 151 also lies within the additional right-of-way which would be needed for Alternate 1. Nineteen mobile homes would be affected; however, the degree of impact upon these residents is lessened somewhat by the mobility of these units. Qualifying occupants of these mobile homes, whether owners or renters, would be eligible for assistance as provided by the Iowa DOT's Relocation Assistance Advisory Program. In addition to the residences noted, Alternate 1 also proposed to acquire a gas station located on the north side of the highway in Springville.

Alternate 2, the recommended alignment, eliminates the impact on property owners in Springville. The rural takings for Alternate 2 would include a total of 10 homes. An estimated 28 individuals would be affected by the acquisition of permanent residences. The occupants of the nineteen mobile homes would be involved also, but with a somewhat lesser degree of impact as previously discussed. There would be no effect on businesses with this proposal.

The total estimated acreage of right-of-way required for the two alternates proposed included 135 acres for Alternate 1 (129 acres in Linn County and six acres in Jones County) and 221 acres for Alternate 2 (215 acres in Linn County and six acres in Jones County).

Public Facilities and Services

Efficient and convenient accessibility to public facilities and services must be a major consideration in highway planning. Maintaining this ease of access requires extensive foresight in the coordination of highway improvement proposals with the services, activities, and development of the Community's religious, health, educational and welfare facilities. A complete review of all possible resulting effects of an improvement proposal is essential in initially establishing the need for a project as well as selecting the alternate that will best provide the desired service.

The residents of the study area generally rely on the Cedar Rapids-Marion metropolitan area and/or Linn County for their major public facilities and services. Some residents located near the easterly project extremities would possibly utilize facilities more readily available and convenient to them in Anamosa. Services available in Springville include a volunteer fire department, churches, Elementary and Jr./Sr. High School facilities, bus lines and the Chicago, Milwaukee, St. Paul and Pacific Railroad. Two major hospitals, both located in Cedar Rapids, serve the Cedar Rapids-Marion area.

The effectiveness of public health facilities depends primarily upon their serviceability, a feature which modern highways have enhanced in recent years. Highways have not only made health centers accessible to the general public, but have also made it possible for mobile care units to reach surrounding areas in an emergency. Time in these instances is a vital factor and modern highways greatly reduce the time distance between areas.

The proposed four-laning of U.S. 151 in this area would greatly improve the safety and efficiency of all emergency vehicles, providing a wider, safer roadway with improved sight distance and maneuverability.

Few public services have been more profoundly affected by improved highway transportation than that of public education. Modern highways have accelerated the trend toward consolidation of schools into districts, contributing indirectly to better equipped classrooms with a proportionately higher attendance.

Three school districts involved in the study area include Linn-Mar Community, Springville Community and Anamosa Community. College facilities located in Cedar Rapids include Coe and Mt. Mercy, both four-year liberal arts schools, and Kirkwood Community College, the Area X vocational-technical school serving Cedar Rapids and the immediate seven-county area. Though all three of these college facilities serve a wide-spread area, Kirkwood offers 45 career programs and maintains a high volume registration in adult education classes. Upon completion of the proposed improvement community college students will experience safer, more efficient trips; and school busses transporting children to and from the area's elementary and jr./sr. high schools will have the benefit of a wider roadway with improved sight-distance. The proposed four-lane divided facility also offers safer stopping for busses on the roadway.

Aesthetics and Other Values

Integrating a well designed highway facility into the landscape is an important principle in modern-day attempts to protect our environment. The aesthetic qualities of an effective highway design include lines which flow with the terrain. The effect should serve to please the viewer as well as to enhance the scene. Highways designed with aesthetic principles in mind make driving more pleasurable and improve the appearance of the road for those living within its view.

U.S. 151 throughout the project crosses rolling, rural land with prospering farmsteads situated along the highway. Evergreen windbreaks are seen in many of the farmyards. The route passes through the main street of the town of Springville, as well as crossing Crab Apple Creek, East Big Creek, and Big Creek, all in the vicinity of Springville.

Changes in aesthetics through the corridor would consist of enhancement both "from the road" and "of the road." The proposed additional two lanes with wide grassy median and gently sloping ditches would give a fresh and modern appearance to U.S. 151. The alignment would remain generally the same with the exception of the Springville bypass proposal. West of Springville proposed minor changes in horizontal and vertical alignment would improve geometrics through this area and help blend the additional two lanes through existing curves. Grasses, legumes and other erosion control plantings would enhance aesthetic values and help perpetuate rural quality along U.S. 151.

Multiple use of space in the highway right-of-way involves integrating facilities into the environment so that the effect is both useful and aesthetically pleasing. In urban areas this concept is utilized to maximize use of land and space. Examples of this include utility companies sharing right-of-way with the highway; telephone cables buried in the ground, and electrical power lines carried above the ground. Frequently, sewer, water and gas mains run along the highway underground.

Multiple use of space for the improvement of U.S. 151 includes electric transmission and telephone lines. Since the project generally follows existing alignment, no foreseeable problems involving utilities are anticipated. If relocation of any city utilities or public utilities in the rural areas would be necessary due to the project, these would be negotiated during the final design and construction stages to insure uninterrupted service to the public.

SECTION II. LAND USE PLANNING

Though this project lies in primarily a rural setting, it will serve a much larger area including the Cedar Rapids-Marion metropolitan area to the west, Anamosa in Jones County to the northeast, and many small surrounding communities. This total area contains a myriad of activities, each of which requires space to exist and function. Residential, business, manufacturing, recreation, transportation facilities, etc., all have a spatial representation - all use land. These activities not only require space, but they also have their own locational requirements. Thus, manufacturing seeks good transportation facilities, businesses want ease of access to their trade areas, residences need "pleasant surroundings," and so on.

The U.S. 151 project area is located primarily in Linn County with the remaining easterly 1.8+ miles lying in Jones County. Future land use for both Linn and Jones Counties in general is anticipated to experience little change other than expansion of incorporated areas. Jones County currently has no zoning while Linn County, on the other hand, does have existing zoning regulations. The proposed project is consistent with the Regional Transportation Plan developed by the Linn County Regional Planning Commission.

Other than the Alternate 2 proposal of bypassing Springville to the south, this proposed four-laning of U.S. 151 would not likely generate any significant changes in the currently prevalent agricultural land use of the study area. The additional right of way required would take, for the most part, agricultural land. This land use change should, however, be compensated for in the new completed highway which would provide a safe and efficient transportation facility for the public in general, particularly the individual farmer in the area in transporting his products to market.

SECTION III. PROBABLE IMPACT OF PROPOSED ACTION ON THE ENVIRONMENT

Natural, Ecological or Scenic Resources Impact

A highway improvement project such as U.S. 151 can affect substantially the natural, ecological and scenic resources available in an area. Some of these resources must be irreversibly committed. Steps taken to minimize possible environmental harm and the effects which can be felt as a result of highway improvements are outlined here.

Management of Right-of-Way for Wildlife Habitat

Studies have shown that with proper planting and management highway rights-of-way make excellent nesting habitat. Because of the installation of permanent erosion control measures, a statewide policy of limited and selective spraying, restricted mowing and continuous maintenance, highway rights-of-way in Iowa constitute a source of stable, managed wildlife habitat of high quality. This habitat becomes more and more valuable as woodlots and fence rows in Iowa are being obliterated under the pressures of increasingly intense cultivation.

The Iowa DOT does not mow any established highway right-of-way until after July 1. This policy was instituted to insure that nesting habitat within the right-of-way was not disturbed during the peak nesting period. After July 1, the DOT restricts mowing to medians and to cutting a single swath along foreslopes. Backslopes and ditch bottoms are left in their natural state.

Blanket spraying of right-of-way is not practiced. The use of herbicides is limited to the control of noxious weeds. The growth of such weeds is discouraged by the dominating cover of native grasses. When spraying is necessitated, the herbicide is applied in an emulsion form to minimize drift.

Research sponsored by the Iowa DOT has shown that planting of mixtures of native prairie habitat in roadsides should provide quality feeding and nesting grounds and cover for a variety of small animals and birds. Further research and development of ways to increase the productivity of habitat in the right-of-way and of better management of right-of-way habitat should be encouraged and not dismissed out-of-hand without a thorough investigation of its potential for sustaining wildlife populations.

The Do-Nothing proposal would have no effect on existing conservation practices nor on wildlife habitat. The anticipated traffic increase on the present highway - present condition would, however, encumber traffic mobility. While Alternate 1 or 2 would take some wildlife habitat, especially on the bypass route (Alternate 2), either of these alternates would provide an improved transportation facility for local as well as through traffic.

Recreational and Scenic Areas Protection

The Cedar Rapids-Marion metropolitan area contains 62 parks covering approximately 2600 acres with facilities for greatly diversified recreational opportunities.

The community of Springville has one small one and one-half acre park located in the downtown area with a small lake and playground. There are two other one-half acre parks, one of which has picnic tables. In addition, a large (several acres) playfield is located near the school.

By virtue of its location, Springville's citizens also have within easy driving distance the Wapsipinicon, Palisades-Kepler, and Lake McBride State Parks, as well as the Coralville Reservoir to the south.

None of the recreation areas mentioned here are located within the immediate project area and would therefore not be directly affected by the proposed improvements. The upgrading of U.S. 151 would, however, provide a safer, more efficient transportation facility for area residents traveling to and from these areas.

Effects on Agricultural Lands

By memorandum of August 30, 1976, the President's Council on Environmental Quality (CEQ) has set forth procedures to be followed by federal agencies in analyzing the impacts of their proposed projects on "Prime and Unique Farmland" in environmental statements. Consequently, the Federal Highway Administration indicated that highway agencies must initiate early coordination with the USDA through the State Conservation Service offices to request their assistance in identifying these highly productive lands as they relate to proposed highway projects. Correspondence pertaining to early coordination with the USDA is included under Section VIII. Comments and and Coordination.

Prime farmland is land best suited for producing food, feed, forage, fiber, and oilseed crops, and also available for these uses. (The land could be cropland, pasture land, range land, forest land, or other land but not urban buildup land or water.) It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops economically when treated and managed according to modern farming methods.

Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to produce sustained high quality and/or high yields of a specific crop when treated and managed according to modern farming methods. Examples of such crops are citrus, olives, cranberries, fruit, and vegetables.

The following table illustrates the impact of the proposed construction alternates on these lands. Soil survey maps provided by the Jones County and Linn County Soil

Conservation Districts were utilized in calculating the percentage of prime farmland included in the additional right-of-way needs. No unique farmland would be affected by the proposed construction.

TABLE 3

IMPACT ON PRIME FARMLAND

Alternate	Additional ROW Required	Prime Farmland Required	Percentage of Prime Farmland
1	135 acres	116 acres	86%
2	221 acres	194 acres	88%

As the data in the table indicates, a high percentage of the additional right-of-way required for the proposed project is considered prime farmland. This impact must, however, be weighed against the benefits of the proposed improvement. These include the added safety of a wider facility with improved access, a reduction in traffic congestion, and a reduction in travel time which increase the opportunities for employment and health care. In addition, the primary industry of Iowa, agriculture, benefits from an improved highway system. Nearly all of Iowa's agricultural products are moved at some point over primary highways. An improved highway network reduces overall transportation costs and expands market opportunity to the individual farmer.

Effect on Energy Resources

There should be no effect on natural energy resources within the study area as a result of this proposed U.S. 151 improvement project.

The proposed design features of the project, which include a four-lane facility, left-turn storage lanes and a smoother driving surface, should all permit the driver to maintain a more constant speed of travel with reduced braking required, and a subsequent reduction in gasoline consumption.

Regulation of Outdoor Advertising

The Iowa General Assembly has enacted legislation that has brought Iowa into conformity with the Federal laws relating to control of outdoor advertising. The legislation defines what types of outdoor advertising will be permitted within visibility of the roadway of primary and Interstate highways in Iowa, restricts their location and spacing, sets standards for size and lighting, and provides for the removal of those signs which fail to comply with these regulations. Compensation is provided in those instances where action by the Iowa Department of Transportation, such as new highway construction, necessitates removal of those signs lawfully in existence at the time the legislation went into effect.

It also establishes a permit system whereby all owners of signs regulated by the provisions of this legislation except for signs specifically exempted (such as signs advertising the sale or lease of property on which they are located or advertising activities conducted on the property on which they are located, official traffic control devices or public service information signs) are required to make application for a permit and pay a fee for the privilege of display to the Iowa Department of Transportation. These permits will facilitate the Iowa Department of Transportation in monitoring the location and erection of outdoor advertising devices. Monies from the fees collected will be deposited in a highway beautification fund.

Air Quality

Air quality impacts of the U.S. 151 improvement are expected to be less than significant. This contention is based on the anticipated moderate U.S. 151 traffic volumes, the modern design and increased capacity of the proposed facility and the favorable meteorology of eastern Iowa, all of which discourage the accumulation of high concentrations of motor vehicle emissions. In its "Guidelines for Review of Federally-Funded Highway Projects" (1974), Iowa's Department of Environmental Quality (DEQ) has established cutoff traffic volumes based on highway location and design and expected vehicle operating speed for the highway project under consideration. If anticipated peak critical year (year of highest pollution potential) traffic volumes exceed the established cutoff volumes a detailed air quality analysis is required for review by DEQ. If the peak critical year volumes are below those specified in the "Guidelines", the project is of no immediate concern to DEQ because of its very minor air quality impacts; and the highway improvement is considered consistent with Iowa's State Implementation Plan (SIP) for maintenance of the National Ambient Air Quality Standards. The following table compares the predicted 1983 (year of project completion) traffic volumes to DEQ's critical cutoff volumes.

TABLE 4

APPLICATION OF DEQ GUIDELINES

Operating Speed	DEQ Cutoff Volumes*		Estimated Peak Ia. 151 Volumes (1983)	
	1 hour	8 hour	1 hour	8 hour
35 mph	3900	22690	1530	6140
55 mph	5600	32580		

*Table III, DEQ Guidelines

The information in the table indicates that the air pollution potential of traffic operating on completed U.S. 151 is low. Peak traffic volumes on the rural sections (55 mph) would be expected to have a very minor impact upon air quality within the corridor. Choosing to improve the existing route through Springville rather than the bypass would have exposed a

greater number of people to automotive emissions due to increased human activity in this developed area. This impact would not be expected to be of significant magnitude to threaten the health and welfare of adjacent residents.

Short term air quality impacts would be expected during the construction period. Contractors would be required to properly equip and maintain motorized construction machinery to minimize emissions. Additionally, adherence to Iowa's "Rules and Regulations Relating to Air Pollution Control" (DEQ, 1973), which includes limitations on fugitive dust, will be required.

Noise Study

(See Appendix.)

Water Quality Impacts

Existing Water Quality

The ground waters of the Cedar River area are generally suitable for supplemental irrigation, municipal and industrial use. The softening of the water and removal of iron may be required when used for municipal or industrial purposes. The available quality data for the Cedar River Basin in Linn County indicates some areas of degraded water quality. Water quality data is not available for the streams of the project area. They are Crabapple Creek, Big Creek and East Big Creek.

Dissolved oxygen, biochemical oxygen demand and ammonia concentrations in the Cedar River have been influenced by point source discharges for many years. This will probably be true of the quality of Big Creek water as it serves as a discharge point for the trickling filter sewage wastes from the City of Springville and the Carlton Mobile Home Court lagoon.

There are no noticeable aesthetic degradations of the creeks as a result of this point source effluent nor are significant negative results expected from the proposed project. The project will require a second bridge at each of the two crossings. The necessity of 404 bridge permits authorizing the construction will be determined as the design of the bridges are developed.

Impact of Proposed Action on Stream Water Due to Deicing Chemicals

As a result of the project, the road surface area of U.S. 151 will be twice the area of the existing surface; therefore, it should receive twice the amount of chemicals usually applied to the existing roadway. It is assumed, therefore, that the roadway surface drainage should carry twice the amount of residues from deicing chemicals.

Research conducted in Cerro Gordo County, Iowa, examined the water of Bailey Creek upstream and downstream from dual bridges on I-35 before and after completion of the

roadway. The chloride content upstream and downstream during construction showed no difference. During a period of 18 months after completion and opening to traffic, the chloride content of downstream water resulted in 1.3 parts per million more than the upstream sample. This appears to be an insignificant increase in chloride content due to the use of deicing chemicals.

Accumulated research indicates that the dilution of deicing chemicals by a flowing stream greatly minimizes the effect this chemical may have on the environment and the water life of the stream. Considering the many sources of contaminants, the residues originating from the deicing chemicals applied after the completion of the proposed project should not have a significant effect on the water quality of Crabapple Creek, East Big Creek and Big Creek.

The measures developed to minimize the impact of deicing chemicals in Iowa places the emphasis on the minimum rate applied to achieve maximum results as well as reducing the amount of chemical and adding abrasives.

Impact of Proposed Action on Wetlands

There are no wetlands or marshes in the project area which will be disturbed by the proposed construction.

Flood Hazard Evaluation

There is no study available of the occurrence of floods on the creeks of the project area. The existing bridges on Big Creek and Crabapple Creek were constructed in 1961 with a design discharge of 6000c.f.s.; there are no reports of any inadequacy of the design. The bridges to be constructed as a part of the proposed project will accommodate additional design standards adequate to allow the flow of the waters of the respective drainage areas.

Construction Impacts

Adverse effects resulting from highway construction work are normally short-term impacts and are unavoidable in accomplishing certain phases of a project.

Noise and air pollution created by highway construction work are partially the result of the sound levels and exhaust emissions typical of heavy diesel machinery and airpowered tools used in the work. In a rural project area such as U.S. 151 in Linn and Jones Counties these effects are not as noticeable as they would be in a major metropolitan area. However, following the Alternate 1 proposal through Springville, homes and businesses located directly adjacent to the roadway would readily realize the increased noise levels, ground vibrations, and exhaust emissions during the work progress.

The stir of dust in the atmosphere as a result of construction projects can vary in intensity, depending in part on weather conditions. Extremely dry soil and excessive temperatures add to the adversity of the problem; however, weather conditions are an uncontrollable factor in roadway construction. Dust can create adverse conditions in the study area in two ways--in the area immediately adjacent to the roadway during the grading phase of the construction work, and also in outlying areas as a result of excessive use of county graveled roads as detour routes where the construction requires closing of the highway route. The latter should not be a problem on this U.S. 151 project since construction work will, for the most part, be accomplished with traffic maintained.

The state's "Rules and Regulations Relating to Air Pollution Control" require that measures be taken to prevent particulate matter in quantities sufficient to create a nuisance from becoming airborne. Fugitive dust precautions include application of suitable materials such as asphalt, oil, water or chemicals to areas giving rise to airborne dust. Installation and use of containment or control equipment to enclose or limit the emissions resulting from the handling and transfer of dusty materials such as aggregates are required. Open-bodied vehicles transporting materials likely to give rise to airborne dusts must be covered at all times when in motion.

Contamination of surface water by sedimentation is a major threat to water quality as a result of highway construction projects. Though this problem might not be as readily apparent to local residents as are traffic detours, the resulting effect is a potential hazard to the ecology of the area. Excavation practices expose large areas of soil to any and all weather conditions. Temporary erosion control procedures enlisted in these instances include berm construction, terraces, dikes, dams, sediment basins, mulching sideslopes, mats and rye or sand grass seedings. It is often difficult, however, to eliminate erosion during extreme weather conditions, i.e., heavy rains or high winds. The possibility of pollution heightens as the project approaches a waterway. The effects of sedimentation are crucial to the biology of a stream. These effects are a result of increased turbulence within the stream waters, inhibiting the passage of sunlight. This turbulence in high concentrations in strong currents results in severe damage to plant and animal life. These possible effects are in addition to the aesthetic degradation of the stream's appearance.

Shoulders and backslopes would be seeded and mulched as excavation proceeds at the recommendation of the project engineer. Various species of vegetation are planted to control wind and water erosion as well as to provide wildlife habitat and an attractive right-of-way. Roadside plantings are not only aesthetically pleasing but they can also have a positive impact on highway safety. Properly placed, they can indicate changes in highway alignment and provide traffic guidance for danger areas such as bridge abutments, culvert headwalls, or other structures near the edge of the pavement.

These plantings provide many deep-rooted plants which stabilize the soil with their fibrous root system and protect it from wind erosion and raindrop impact by virtue of their complete vegetative cover. Increasing usage of native prairie species in right-of-way plantings has begun with a large variety of plants included in this group. As they are perennials and

most so-called weed species are annuals, the native prairie plants are extremely competitive once they become established. The great variety of species in this group provides many forms and colors, reduces the likelihood of destruction by a single disease, reduces the need for maintenance since neither mowing nor blanket spraying is needed for weed control, and provides a continuous and dependable wildlife cover and food source. Also, once established, these plantings continue to enhance soil fertility without chemical additives. Legumes also increase soil fertility by their contribution to the soil's usable nitrogen content.

Temporary pollution control may include work outside the right-of-way where such work is necessary as a result of construction needs; i.e., borrow pits, haul roads, and equipment storage sites. These erosion control techniques are not specifically enumerated in the contract, but may or may not be initiated at the project engineer's discretion. Iowa's new conservancy law (Iowa Code S227) stipulates that no land should be made to lose more than five tons per acre per year of topsoil. This law is extended to transportation construction and operation.

In the construction of projects in rural areas field tile drainage lines through farm fields must be maintained. This can be accomplished by passing the interrupted tile line beneath the highway right-of-way through appropriate piping where possible or discharging the interrupted tile line into the highway drainage ditches at the side of the right-of-way. This policy applies to field tiled drainage only and does not include sanitary sewer lines from septic disposal systems. Proper erosion control measures will also be implemented at these locations to avoid excessive siltation.

Unavoidable construction impacts are dealt with in the most ecologically feasible and yet economical manner to minimize adverse effects. The project proposes to provide a safer and more efficient transportation facility for local residents and through traffic alike.

SECTION IV. PROBABLE ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

A major unavoidable impact of the proposed U.S. 151 project is the diversion of agricultural land to transportation use. Iowa's most valuable natural resource is its highly productive soil. The economy of Iowa has traditionally been based on its high agricultural production.

Building transportation facilities very often requires from people some of the things they value highly--their homes, businesses or farms. The Iowa Department of Transportation pays just compensation to homeowners on the basis of the "fair market value" of the properties; homeowners sometimes dispute this price because it does not reflect the intangible sentimental values that they have come to attach to their properties. Upsetting established housing is inconvenient, time consuming and can sometimes cause traumatic experiences particularly to children and the elderly.

Air pollution from the project falls into two general categories--temporary and long-term. The temporary factors are mostly in the form of dust and smoke during periods of construction and emissions from construction machinery. The extent of this temporary air pollution is extremely hard to predict.

In areas that must be cleared before grading, much of the solid waste may be burned or buried in the fill. The extent of burning is largely left to the discretion of the contractor. However, the Iowa Air Pollution Control Commission has established the statewide requirement that the disposal by open burning of landscape waste originating on the premises and produced in clearing, grubbing and construction operations is allowed provided that such burning is limited to areas located at least one-fourth mile from any inhabited buildings. In addition, contractors must respect any local ordinances relating to open burning.

The noise environment in which we live is made up of a complex combination of noise sources, operational conditions, geography, building construction factors and personal attitudes. Traffic noise is a major contributor to the noise environment. Vehicle noise sources stem mainly from two areas of the vehicle, namely the engine and the tire-roadway interface. Present research and technology are contributing to the reduction of noise emission from vehicles, especially trucks. However, noise will always be an inherent factor of vehicles and with increased numbers there will be a proportionate increase in noise. Modern highway designs are a factor in reducing inherent noise levels. The highway profile, accompanying landscaping, speed and access control all play a part in this reduction.

SECTION V. THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Man's relationship with his environment is complex. It consists not only of relationships with the physical world and plant and animal species, but also of a wide range of social relationships.

The primary objective of planned development is to ensure that short-term uses of the environment do not conflict with long-term productivity. This relationship must be carefully evaluated during the planning process. Initially, the environment of the corridor would be disturbed by the short-term effects of construction. These include the noise, dust and exhaust emissions from the operation of heavy construction equipment, an increased potential for soil erosion and the temporary disruption of local traffic patterns.

On a broader scale, the existing environment would be altered by the reshaping of the landscape and by the removal of natural features such as vegetation. As a result, some wildlife habitat would be destroyed and certain man-made features removed. The most significant long-term adverse impacts would be in the removal of agricultural land from production and the displacement of people. The loss of agricultural land would be minimal, however, with agriculture remaining the predominant land use in the study area.

These foreseen uses of the existing environment must be weighed against the anticipated long-term benefits in justifying a project of this scope. In the development of the proposed U.S. 151 construction alternates, a certain amount of farmland would be converted from agricultural purposes to a transportation system that would yield important benefits other than food for human and livestock consumption. These long-term benefits include the added safety of an improved roadway and a controlled access facility, a reduction of traffic congestion, and increased convenience for the individual and commercial highway traveler.

Aside from traffic considerations, a wide range of public benefits would be derived from the improved accessibility provided by these alternates. By reducing travel time the improvement would increase the opportunities for employment, health care and cultural events for residents in the study area.

Generally, the upgrading of U.S. 151 would increase the attractiveness of the study area to prospective residents and employers. The proposed project would coincide with the transportation and economic policies of the East Central Iowa Association of Regional Planning Commissions, providing more efficient, effective and safer travel in the area. This improvement is also in accord with the comprehensive plans, goals and objectives for the area by the Linn County Regional Planning Commission, contributing to economic and community development and promoting safer and more expeditious movement of persons and goods within the area.

SECTION VI. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Investment in a highway project such as the U.S. 151 facility would involve a long-term and, in some instances, irreversible commitment of resources. Thus it is important that each construction decision take into consideration that resource elements have several possible alternative uses and may be in short supply. Such a commitment of elements to a highway project must, therefore, represent a judicious allocation of resources.

Resources that would be committed in the construction of the project are: Space - This includes the surface, subsurface and air space. In some areas there are multiple use possibilities for space over, under and around a highway project. The most common example of this multiple use of space in a rural area is the management of wildlife habitat in the unused portions of right-of-way. This type of usage would be developed throughout the project area.

Existing Land and Vegetation - In the construction of most highways the existing shape and ecosystems of the land must be altered to provide for the design of the transportation facility. Yet, it is desirable to keep this alteration to a minimum - as a highway that blends with the surrounding terrain is not only more attractive but most often is more economical to build. Therefore, conservation of the landscape through which the highway passes would be viewed as a priority, along with engineering and socio-economic considerations, in order to ensure the efficient use of natural resources.

Aside from these considerations, a basic alteration would be the diversion of land that is presently used as cropland, floodplain, and pastureland to a highway facility.

The removal of trees, grasses and forbs that accompanies this land diversion would also displace some wildlife. The success of these trade-offs would depend mainly on whether the anticipated benefits derived from the facility exceed the adverse impacts of land diversion. A major benefit that would be provided by the proposed project is that an adequate, safe and efficient transportation facility would generally improve access within the region--which in other instances has resulted in a wide range of economic benefits for the surrounding communities.*

Construction Materials - These include cement, sand, gravel, asphalt, steel, aluminum and other products typical of large scale construction. In all probability, these elements would be permanently committed. If the highway should be removed in the future, some of these metals could be recycled and the aggregate used for other purposes. Any reuse of construction materials would depend on needs and economics at the time.

Construction Equipment and Motor Fuels - Wear and tear on heavy equipment, and motor fuels and lubricants used during construction are irreversible commitments. The quantities of these products currently being expended on a project of this scale are becoming more significant in relation to national use and declining availability. In view of

*Economic and Social Effects of Highways, U.S. Department of Transportation, Federal Highway Administration; Washington, D.C.; 1972; pgs. 5-13

this, responsible utilization of these resources must be emphasized. However, these resources are considered to be beneficially employed in a responsible long-term investment.

Staff-Hours - One of the more obvious inputs to a highway project is the human effort invested. Highways are the direct result of all the staff-hours spent in programming, planning, design and construction. This commitment is also irreversible.

Future Commitments - By constructing a section of road, a commitment of future public expenditures is made. These expenditures are chiefly for law enforcement and maintenance.

SECTION VII. IMPACTS ON PROPERTIES AND SITES OF HISTORIC AND CULTURAL SIGNIFICANCE

"Cultural resources are sites, structures, objects, and districts significant in history, architecture, archaeology, or culture." (Wright, 1974, p.x.i.)

In order to protect those features of our environment which remind us of our cultural heritage, the Iowa Department of Transportation has developed a program for the systematic identification of cultural resources which may be affected by proposed highway improvement projects. The program is designed to provide for early identification and evaluation of these effects in order to insure that project location and design decisions are made in an informed manner. Steps in the program, in their normal order or occurrence, include: (1) early contact and coordination with the Office of the State Archaeologist (OSA) and the State Historic Preservation Officer (SHPO) at the time of project A-95 Review; (2) survey and report preparation activity by the Iowa DOT staff Cultural Resources Specialist for historic and architectural resources; (3) archaeological survey and report preparation by OSA's Highway Surveys Archaeologist; (4) submission of a combined Cultural Resources Survey Report to the SHPO for review and comment; and (5) written response by the SHPO based upon his review of the report. Every effort is made to complete this sequence and obtain a written response from the SHPO for inclusion in the Negative Declaration.

For the Iowa 151 project, highlights of the Cultural Resources Survey Report (Primary Roads: Project Completion Report, Vol. 1, no. 61, 1978) regarding history, architecture and archaeology are presented in the following sections. The response by the State Historic Preservation Officer is found in SECTION VIII. COMMENTS AND COORDINATION.

National Register Sites

At the present time no sites located within the project corridor are listed in the National Register of Historic Places.

Historical/Architectural Assessment

As a result of a field survey of the project corridor and historical research, two properties possessing potential architectural and/or historical importance were found to be located within the Alternate 2 corridor. These are the Gibson-Roberts house and barn (HS1), and the James Casteel barn (HS2). (Plates 4 and 5.) The project as proposed will have no impact on either of these properties. A brief description of these sites, along with their locations, is provided below.

Site HS1: Gibson - Roberts house and barn (SE 1/4, NW 1/4, Section 35, T84N, R6W). Built about 1860, the house is an L-shaped, two-story vernacular style farm house. The house is probably one of the oldest dwellings along U.S. 151, between Dubuque and Cedar Rapids.

Site HS2: James Casteel barn (NW1/4, NW 1/4, Section 36, T84N, R6W). The barn is an interpretation of the New England type bank barn, reflecting the cultural link between the area's early pioneers and their previous place of residence in the eastern United States.

Archaeological Assessment

As a result of the archaeological field survey of the project corridor, no sites or other features were located.

Determination of Effect

The proposed project involves the upgrading of the existing two-lane facility to four-lane divided standards. The recommended alignment, Alternate 2, also involves the construction of a bypass to the south of Springville. In the vicinity of the Gibson-Roberts house and barn the additional lanes will be added to the south of the existing highway pavement. The James Casteel barn is located approximately 150 feet north of the existing pavement and therefore will be a substantial distance from any construction activity.

SECTION VIII. COMMENTS AND COORDINATION

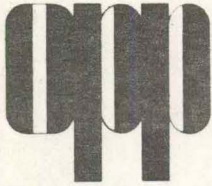
The proposed improvement of this segment of U.S. 151 in Linn and Jones Counties was first reflected in the 1971 Primary Road Construction Program under "Critical Needs Not Programmed". The 1977 Iowa Transportation Improvement Program reflects that this section of U.S. 151 is scheduled for right-of-way purchase in 1982. The remainder of the project costs are listed under "Cost to Complete Programmed Projects (Beyond 1983)".

This section is divided in two parts identified as A and B.

Part A: The Draft Negative Declaration was made available on January 31, 1978. Part A consists of letters of early coordination received from the reviewing agencies.

Part B: A corridor public hearing for this project was held on March 21, 1978, in Springville, Iowa. Part B includes a summary of comments received at the hearing and a summary of the contents of letters received within the specified time period after the hearing.

Part A: Letters of early coordination received from the reviewing agencies.



STATE OF IOWA

Office for Planning and Programming

523 East 12th Street, Des Moines, Iowa 50319 Telephone 515/281-3711

ROBERT D. RAY
Governor

ROBERT F. TYSON
Director

STATE CLEARINGHOUSE

PROJECT NOTIFICATION AND REVIEW SIGNOFF

Date Received: August 17, 1977 State Application Identifier: 780464
Review Completed: September 21, 1977

APPLICANT PROJECT TITLE:
US 151, Linn-Jones Co's, F-151-3, F-151-4, Primary Roads

APPLICANT AGENCY: Department of Transportation Ames, Iowa 50010
Address Highway Division Robert L. Humphrey
800 Lincoln Way Project Planning Engineer

FEDERAL PROGRAM TITLE, AGENCY Highway Research Planning and Construction
AND CATALOG NUMBER: Department of Transportation
Federal Highway Administration
Catalog No. 20.205

AMOUNT OF FUNDS REQUESTED: Federal Funds - \$ 7,319,200
State Funds - 3,136,800 TOTAL FUNDS - \$ 10,456,000

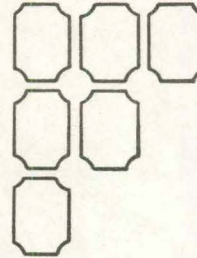
PROJECT DESCRIPTION:
The purpose of the project is to upgrade the present two-lane roadway to a four-lane divided facility with improved vertical and horizontal geometrics. The project is located from Marion in Linn County east to the junction of Iowa 1 in Jones County.

The State Clearinghouse makes the following disposition concerning this application:

- No Comment Necessary. The application must be submitted as received by the Clearinghouse with this form attached as evidence that the required review has been performed.
- Comments are Attached. The application must be submitted with this form plus the attached comments as evidence that the required review has been performed.

STATE CLEARINGHOUSE COMMENTS:

R. James Wallace
Federal Funds Coordinator



east central iowa

association of regional planning commissions

332 east washington iowa city, iowa 52240 (319) 354-2328

October 3, 1977

SUBJECT: East Central Clearinghouse PNRS Signoff

PROJECT TITLE: U.S. 151, F-151-3, F-151-4

APPLICANT AGENCY: Iowa Department of Transportation

DATE RECEIVED: 8-31-77 DATE COMPLETED: 9-29-77

This is to advise you that the East Central Iowa Association of Regional Planning Commissions has completed its review of the subject application in accordance with the provisions of OMB Circular A-95.

At their meeting on September 29, 1977, the East Central Board recommended the above proposal for federal funding consideration based on the following findings:

1. The proposal takes into consideration planned transportation service patterns and is consistent with the Iowa Trans Plan 77 and the Linn County Regional Transportation Plan.
2. The proposal is non-duplicative and will provide for more effective, efficient, and safer travel.
3. The comments of the Linn County Regional Planning Commission are recommended for your consideration.
4. It is recommended that the drainage section be carefully designed and follow IDEQ recommendations with respect to non-point source pollution (208).

Sincerely,

Janet Fraser
Janet Fraser
Vice-Chairperson

rh
Enclosure: LCRPC Comments
CC: LCRPC
State Clearinghouse

Jones County Board
IDOT-District 6

50



LINN COUNTY REGIONAL PLANNING COMMISSION

6th Floor - City Hall - Cedar Rapids, Iowa - 52401 - 319 398-5041

September 26, 1977

Mr. Robert L. Humphrey
Project Planning Engineer
Iowa Dept. of Transportation
Ames, Iowa 50010

Dear Mr. Humphrey:

Subject: A-95 Review of IDOT Application to FHWA for
Project F-151-3 and F-151-4, Reconstruction of
U.S. 151 from Marion easterly to junction of
Iowa #1

This is to advise you that the subject application has been reviewed by the Executive Committee of the Linn County Regional Planning Commission in their metropolitan review capacity.

At their meeting of September 21, 1977, the Executive Committee approved the subject application based on the following findings:

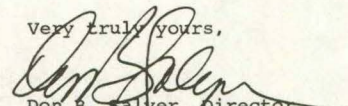
1. It is in accord with the comprehensive plans, goals and objectives for this area - particularly the Regional Transportation Plan.
2. It will not unnecessarily duplicate existing facilities.
3. It will contribute to economic and community development.
4. It will promote safer and more expeditious movement of persons and goods within the area.

The approval by the Executive Committee was given subject to the following conditions:

1. We recommend that the Iowa DOT select access locations that will least disrupt the agricultural activity surrounding the project site, but at the same time will provide sufficient access to farmers and their farming operations.

2. We recommend that the community of Springville be informed of the project and encouraged to forward its comments and recommendations.
3. We recommend that when acquiring property the Iowa DOT purchase the minimum amount of right-of-way needed for a four-lane facility in order to reduce any hardship that this improvement might present to landowners in the project area.
4. We concur with the Transportation Technical Advisory Committee report noting that the western terminus of this project must coincide with the eastern terminus of the Marion By-Pass/U.S. 151 project and that the eastern terminus include adequate intersectional movements with Iowa #1.
5. We request that the RPC be given the opportunity to review this project as design progresses.

Very truly yours,



Don E. Salver, Director
Planning and Redevelopment
Linn County Regional Planning Commission

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Anamosa, Iowa 52205

10/14/77

Harry S. Budd
Project Engineer
Iowa DOT
800 Lincoln Way
Ames, Iowa

Dear Sir:

Concerning the determination of prime farmland along the proposed right-of-way for improvements on Hiway 151 in Jones County, prime farmland will be involved. In fact, the entire 1.4 mile segment (24 acres of right-of-way) is considered prime farmland under current USDA designations. The proposed right-of-way area is presently being used for intensive row crop production.

Sincerely,

David Gibney
District Conservationist

DG:ra

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

693 Federal Building, Des Moines, Iowa 50309

November 11, 1977

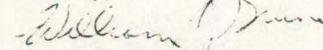
Mr. Harry S. Budd
Project Engineer
Department of Transportation
Highway Division
800 Lincoln Way
Ames, Iowa 50010

Dear Mr. Budd:

We have received your letter of November 2, 1977, concerning right-of-way requirements and prime farmland requirements for the proposed improvement of U.S. 151 in Linn County and we concur with your acreage calculations for the right-of-way.

We are concerned about any loss of prime farmland and, therefore, urge careful consideration before your final determination on project alignment.

Sincerely,



William J. Brune
State Conservationist

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United States Department of the Interior

NATIONAL PARK SERVICE

MIDWEST REGION
1709 JACKSON STREET
OMAHA, NEBRASKA 68102

FEB 22 1978

IN REPLY REFER TO:

L7621 MWR DCL

Project Planning Engineer
Department of Transportation
Planning and Research Division
800 Lincoln Way
Ames, Iowa 50010

Dear Sir:

Thank you for your notice concerning the following proposed project:

F-14-5, Marshall County, Iowa 14; F-151-3 & F-151-4, Linn-Jones Counties,
US 151; I-380-7(3)287-01-06, I-380-7(6)292-01-10, Benton-Buchanan Counties;
BRF-561-4(2)-38-31, Dubuque County

No established or studied units of the National Park System or properties under study or designated as National Historic, Natural, or Environmental Educational Landmarks appear to be adversely affected by the proposal.

Accordingly, we have no objections to the performance of the proposed work provided that the following checked conditions are satisfactorily resolved.

1. We suggest that you consult the State Historic Preservation Officer for information concerning historic or other cultural values including properties entered or potentially eligible for the National Register of Historic Places as it may be influenced by the proposed construction.
2. As one of the concerns of the National Park Service is archeological studies, we feel that some thought should be given to archeological resources in project planning. As the proposal develops, we will be concerned that action is taken or proposed to determine whether archeological resources are present in the construction area.
3. Other Comments:

Sincerely yours,

Merrill D. Beal

Merrill D. Beal
Regional Director

DIVISION OF HISTORIC PRESERVATION
IOWA STATE HISTORICAL DEPARTMENT

June 7, 1978

ADRIAN D. ANDERSON, DIRECTOR
STATE HISTORIC PRESERVATION OFFICER

Mr. Robert L. Humphrey
Iowa Department of Transportation
Highway Division
826 Lincoln Way
Ames, Iowa 50010

Re: F-151-3, F-151-4, Highway reconstruction in Linn and Jones Counties, Iowa.

Dear Mr. Humphrey:

Based on the information provided,

1. we find the above proposed project to have no effect upon known historic or other cultural resources and therefore we recommend approval. However, if construction work uncovers an item or items that may be of historic, archaeological, or architectural interest or if important new historical data comes to light in the project area, the work should be delayed sufficient time to notify our office and to allow the significance of the discovery to be determined.
2. on structures proposed for rehabilitation, removal or demolition in your letter of our records show no sites with historic values that we think would be effected in the project area. However, if the proposed work discovers an item or items that may be of historic or archaeological interest or if important new historical data comes to light about properties in the project area, the work should be delayed sufficient time to notify our office so that the significance of the discovery can be determined.
3. and the report: F-151-3 and F-151-4, Road Improvement, Linn & Jones Cos. by John Hotopp and Emilie Lawrence and Michael Lipsman, May, 1978, we find this project to have no effect upon historic or cultural resources and therefore, we recommend approval. However, if construction work uncovers an item or items that may be of historic or archaeological interest or if important new historical data comes to light in the project area, the work should be delayed sufficient time to notify our office and to allow the significance of the discovery to be determined.

Your assistance and cooperation in completing the review of the proposed project is greatly appreciated.

Sincerely,

Adrian D. Anderson

Adrian D. Anderson, Director
State Historic Preservation Officer

cc: John Hotopp, Highway Archaeologist

26 EAST MARKET STREET . IOWA CITY, IOWA 52240
TELEPHONE (319) 353-4186/353-6949

Part B: A summary of the comments received at the March 21, 1978, public hearing and letters received within the specified time period after the hearing. The entire transcript of this public hearing is available at the Planning and Research Division of the Iowa DOT and the Iowa Division Office of FHWA.

On March 21, 1978, a corridor public hearing was held in Springville, Iowa, on the proposed location of U.S. 151 in Linn and Jones Counties, as described in the Draft Environmental Impact Statement. The hearing was attended by 90 people and lasted two hours and thirty-seven minutes. The following is a summary of comments and statements made at the public hearing:

- Several area residents asked which properties would be affected under each alternate.
- The procedure used in selecting an alternate was outlined for interested persons.
- The Springville Planning and Zoning Commission requested that pertinent material be sent to them as it becomes available.
- Concern was expressed for the safety of school children crossing the highway in Springville.
- Several citizens requested additional access to their properties.
- Several comments were made regarding the acquisition process, and the time frame involved.
- Two business owners asked about relocation assistance and compensation.
- Concern was expressed regarding the future maintenance of existing 151 with the Alternate 2 bypass.
- Several residents asked about the possible effects of a bypass on the town of Springville.

Between March 21, 1978, the date of the corridor public hearing and 12:00 Noon, March 31, 1978, 25 letters were received from members of the public. Of these, 20 supported the project (16 in favor of Alternate 2), four were opposed to the project due to loss of homes, and 1 was a request for information.

APPENDIX

**PROJECT NOISE STUDY
U.S. 151
Linn-Jones Counties**

Project Description

The proposed project on U.S. 151 begins approximately two miles east of Iowa 13 in Linn County and extends easterly 10 miles to terminate just beyond the junction of Iowa 1 in Jones County. The preliminary design of the improvement proposes the construction of two additional lanes to augment the existing 24-foot width highway facility. The directional lanes of travel would be separated by a 52-foot depressed median in the rural area. Only one construction alternate was intensively evaluated for the majority of the project's length. Two alternatives, however, were studied in the area of Springville; Alternate 1 proposed the widening of U.S. 151 through Springville, and Alternate 2 considered a south bypass of the town.

The following noise study will describe the existing noise environment; predict the future traffic related noise levels and impacts occurring at noise sensitive sites; evaluate the alternatives studied (including the Do-Nothing Alternate); and, recommend, if necessary and feasible, the incorporation of noise abatement measures into the final design of the project.

Land Use

Land use along the project corridor is largely employed for the production of row crops. The majority of the noise sensitive sites in the rural portion of the project are farmsteads. A notable exception to such land use is the presence of a 40-unit mobile home park located west of Springville.

In the town of Springville, 35 homes and seven commercially oriented structures lay adjacent to existing U.S. 151. The existing residential setback averages 30 feet from the edge of pavement.

Highway Noise Fundamentals

Before assessing the noise impact of this project upon the environment, an overview of noise, its measurement, composition, effect, prediction, and control is warranted. If further elaboration is required, reference to the manual, Fundamentals and Abatement of Highway Traffic Noise, (Bolt, Beranek, and Newman, U.S. Department of Transportation, 1970), should provide a more detailed explanation of the highway traffic noise problem.

Measurement: Just as "feet" are used to measure distance, and "degrees" are used to measure temperature, "decibels" are used to measure sound intensity. Decibels (dB) are logarithmic units which serve as a reference to sound pressure. The reference point, (OdB), is the level upon which noise is measured.

Frequency: The normal frequency range of hearing for most people extends from a low frequency of 20 Hertz to a high frequency of 10,000 to 15,000 Hertz. A given sound can be divided into frequency components. For example, it can be determined how much of the noise is low, middle, or high frequency.

Weighting Networks: Sound level meters have the capability of filtering out certain frequency ranges. The A-scale weighting circuit is normally used because it approximates the frequency response to the average young human ear. Studies have revealed that when people make relative judgements of the "loudness" or "annoyance" of a noise, their evaluations most closely correspond to the A-scale levels of those noises.

Traffic Noise: Vehicles generate noise during their operations over roadways as a result of engine and exhaust, tire-roadway interaction, brakes, air disturbance and chassis and load vibration. The total sound varies, depending upon the number of vehicles, vehicle types, the operating speed, and the physical design of the road.

Effect of Noise: The degree of disturbance or annoyance due to unwanted noise depends essentially upon three things:

1. The level and type of the intruding noise.
2. The level of background noise present before the new noise source is introduced.
3. The nature of the working or living activity (land use) of the people occupying the area where the noise is heard.

Prediction: Research conducted by the National Cooperative Highway Research Program has established a method by which highway noise may be predicted. The parameters incorporated into the analysis are: design hour traffic volumes, percentage of trucks, speed, distance from the highway to the noise receiver, and the design features of the roadway. Comparison of the predicted value to the existing ambient noise level indicates the probable noise impact of the project upon the location selected for analysis.

Noise abatement: There are two methods by which highway noise may be reduced: (1) better muffler systems and other vehicle noise controls; and (2) highway noise control design features. The first technique is an area that must be treated by industrial modifications or legislative restrictions or guidelines. However, the incorporation of noise abatement design techniques is a method which can be employed, where needed, by the state highway departments. If the proposed highway project has a severe noise impact upon the environment, and alignment changes are neither feasible nor prudent, noise abatement procedures should be investigated.

Existing Noise Environment

The existing noise environment within the project corridor is largely determined by traffic activity on U.S. 151. Existing traffic volumes on the highway range from 4200 vehicles per day to 6000 vehicles per day. Vehicle classification traffic counts indicate that

the heavy duty truck percent (GVW greater than 10,000 pounds) is from 8% to 10%. The terrain traversed by U.S. 151 may be characterized as "flat to rolling". Excessive gradients do not, therefore, affect the operational characteristics and noise levels emanating from the vehicles.

Six noise sensitive sites have been selected for analysis to represent the land use adjacent to U.S. 151. The existing L10 noise levels at the rural sites range from 45dBA to 71dBA (refer to Table 1A). In Springville, the highest existing L10 noise level is 78dBA. The lower operating speed through Springville together with the proximity of the homes to U.S. 151 contribute to raise the noise levels above the Design Noise Level of 70dBA.

Predicted Noise Levels

The design year noise levels predicted to occur at the six (6) noise sensitive sites are summarized in Table 1A. Also listed in Table 1A are the predicted L10 noise levels for the Do-Nothing Alternate. Each of the noise sites was selected for analysis because it represents unique spatial characteristics in relation to the proposed improvement of U.S. 151. Generalized 70dBA contour lines have been calculated and are shown on the aerial photographic plates; the location of the seven sites is also depicted on the aerial photographs. The Sites evaluated are described below.

Site 1: This site is representative of four farmsteads which would be similarly affected by the proposed project. The two additional lanes of travel would be located away from these residences; thus, noise impacts would be minimized. The design year and do-nothing noise levels are predicted at 69dBA. This represents a 2dBA increase above the 67dBA existing noise level.

Site 2: The three farmsteads represented by this site are located approximately 50 feet farther away from the centerline of U.S. 151 than are those homes represented by Site 1. The predicted L10 noise level of 68dBA reflects a 2dBA increase above existing conditions.

Site 3: Approximately 40 mobile homes presently occupy this trailer park located west of Springville. It is estimated that 19 of the units would be affected by the project and would therefore have to be moved. The remaining mobile homes would be located as close as 115 feet to the two additional lanes of travel. The existing and predicted noise levels at the first row of mobile homes are 71dBA and 72dBA respectively. If no improvement were made to U.S. 151, it is estimated that the design year noise level would be 73dBA.

Site 4: This site represents the two homes which would be exposed to highway traffic noise if the U.S. 151 Bypass of Springville is constructed. The existing noise level at these residences is 45dBA. The predicted design year noise level is 71dBA.

Site 5: Thirty-nine structures presently abut the U.S. 151 right-of-way in Springville. The existing L10 noise level at the closest residence is 78dBA. If the present route is improved to four lanes (Alternate 1), the remaining land use would be exposed to L10 noise levels as high as 82dBA. Should the bypass be constructed, the traffic diversion to that facility would cause a drop in the noise level along existing U.S. 151 to 70dBA.

Site 6: Lower traffic volumes prevail on U.S. 151 east of Springville; however, the percentage of heavy duty trucks is high enough to generate existing noise levels which approach the Design Noise Level of 70dBA. This site represents eight (8) farmsteads located as near as 85 feet to the highway. Existing and predicted L10 noise levels are 70dBA and 73dBA, respectively.

TABLE 1A

SUMMARY OF NOISE STUDY DATA

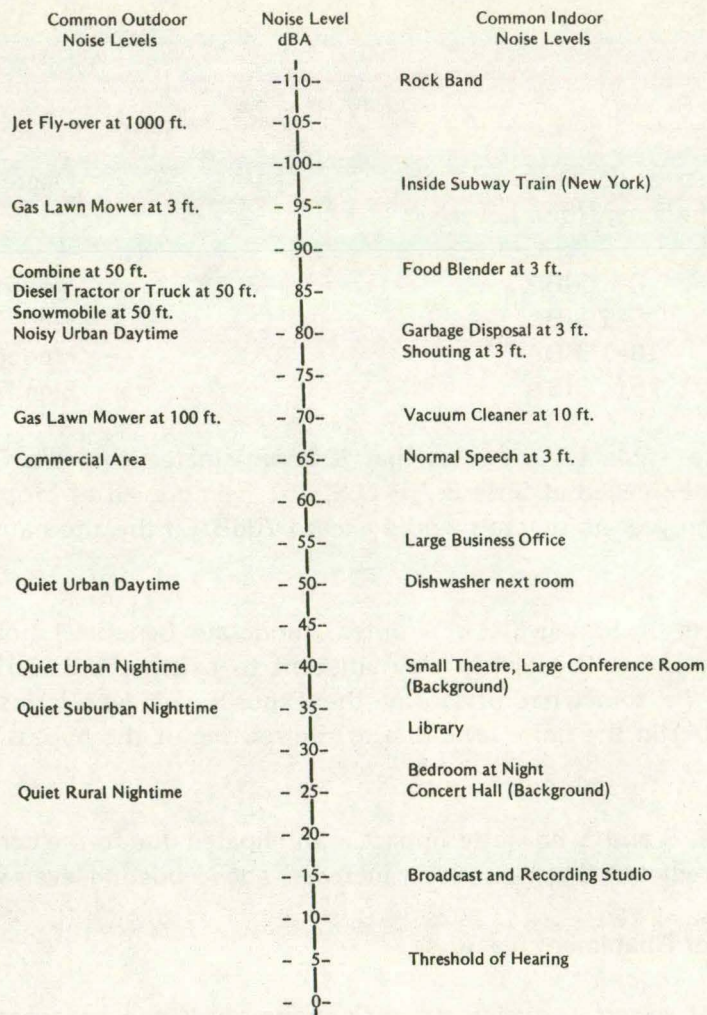
Site No.	Dwellings Represented By Site	Distance to 1. Proposed US 151	Existing L10 Noise Level	Design Year Noise Level	Do-Nothing Noise Level
1	4	235 feet	67dBA	69dBA	69dBA
2	3	330 feet	66dBA	68dBA	68dBA
3	21	160 feet	71dBA	72dBA	73dBA
4	2	160 feet	45dBA	71dBA	45dBA
5	39	55 feet	78dBA	(Alt.1) 82dBA (Alt. 2) 70dBA	83dBA
6	8	125 feet	70dBA	73dBA	74dBA

1. Distance represents centerline of roadway to sensitive site.

Noise Impact Assessment

Two criteria are utilized to assess a highway project's impact upon noise sensitive land uses. The first criterion is the Design Noise Levels for certain land use categories (see Figure 1A). These levels were established by the Federal Highway Administration and represent the maximum desirable noise levels to be experienced at building exteriors.

The second criterion measures the project's effect on the human's subjective response to noise level increases above existing conditions. Table 2A, below, equates the noise increase to the degree of impacts.



COMMON INDOOR AND OUTDOOR NOISE LEVELS
 Adapted from: Bolt Beranek and Newman Inc.,
Fundamentals and Abatement of Highway Traffic Noise, 1973

DESIGN NOISE LEVEL/LAND USE RELATIONSHIPS

Land Use Category	Design Noise Level - L10	Description of Land Use Category
A	60 dBA (Exterior)	Tracts of lands in which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose. Such areas could include amphitheatres, particular parks or portions of parks, or open spaces which are dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet.
B	70 dBA (Exterior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, picnic areas, recreation areas, playgrounds, active sports areas, and parks
C	75 dBA (Exterior)	Developed lands, properties or activities not included in categories A and B above.
D	-----	For requirements on undeveloped lands see paragraphs 5a(5) and (6), this PPM.
E	55 dBA (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums.

Source: Federal-Aid Highway Program Manual 7-7-3

FIGURE 1A

TABLE 2A

Increase or Decrease from Existing Noise Level	Degree of Impact
0- 5dBA	No Impact
5- 10dBA	Some Impact
10- 15dBA	Moderate Impact
15+ dBA	Significant Impact

Reference to Table 1A indicates that it is anticipated that the Design Noise Level of 70dBA will be exceeded at Sites 3-7 if U.S. 151 is improved as proposed. For Sites 3, 5, 6 and 7 the design year noise levels would exceed 70dBA if the alternative of "doing nothing" were adopted.

If the bypass of Springville is adopted, moderate beneficial noise impacts would be realized at those dwellings which lay adjacent to existing U.S. 151 through town. This benefit would be somewhat offset by the exposure of two farmsteads to a significant increase (26dBA) in the noise level due to the routing of the bypass in proximity to those structures.

At Sites 1, 2, 3 and 5 no noise impact is anticipated due to the construction of U.S. 151 because it is predicted that noise level increases above existing levels will not exceed 2dBA.

Consideration of Abatement Measures

Reduction of excessive highway traffic noise levels can be accomplished through the construction of barriers or earth berms. Installation of such abatement measures between the highway and the noise receptor effectively reduce traffic noise levels. Noise level reductions ranging from 5-15dBA are achievable; a reduction of 10dBA is equivalent to a halving of the loudness of sound.

The construction of noise barriers is not accomplished, however, without considerable cost. Current cost figures for a concrete panel barrier are running from \$75 to \$100. Additionally, the feasibility of erecting barriers is limited to those roadways which offer control of access. Where access is unlimited, driveways or county road connections would require a gap or break in the barrier. In order to provide cost effective noise reduction the barrier must remain unbroken, providing a continuous surface to reflect, diffract or absorb traffic noise. A barrier is not feasible, for example, at Site 4 because the access afforded to the county road would break the continuity of the wall and compromise its effectiveness.

The only area where noise abatement could realistically be considered for this project is at Site 3, the mobile home park. It is estimated that a 1050-foot barrier of 12 feet in height would reduce the traffic noise by 6dBA. Sufficient right-of-way is not available to construct an earth berm. The cost of constructing a barrier at this location is estimated at \$85,000.

Only nine (9) mobile homes would realize the direct benefit of the noise reduction; the remainder of the units would be partially or fully shielded by the trailers abutting the U.S. 151 right-of-way. The cost of \$9400 per unit to reduce traffic noise is considered excessive; therefore, it is not recommended that a barrier be constructed at this location.

Summary

Based on an analysis of existing and future noise levels, it is concluded that the proposed project will have no effect at four of the six sites evaluated and will "significantly" effect the noise environment at Site 4. If the bypass of Springville is adopted, beneficial noise impacts will be realized due to the diversion of traffic. The construction of noise abatement measures is not recommended.

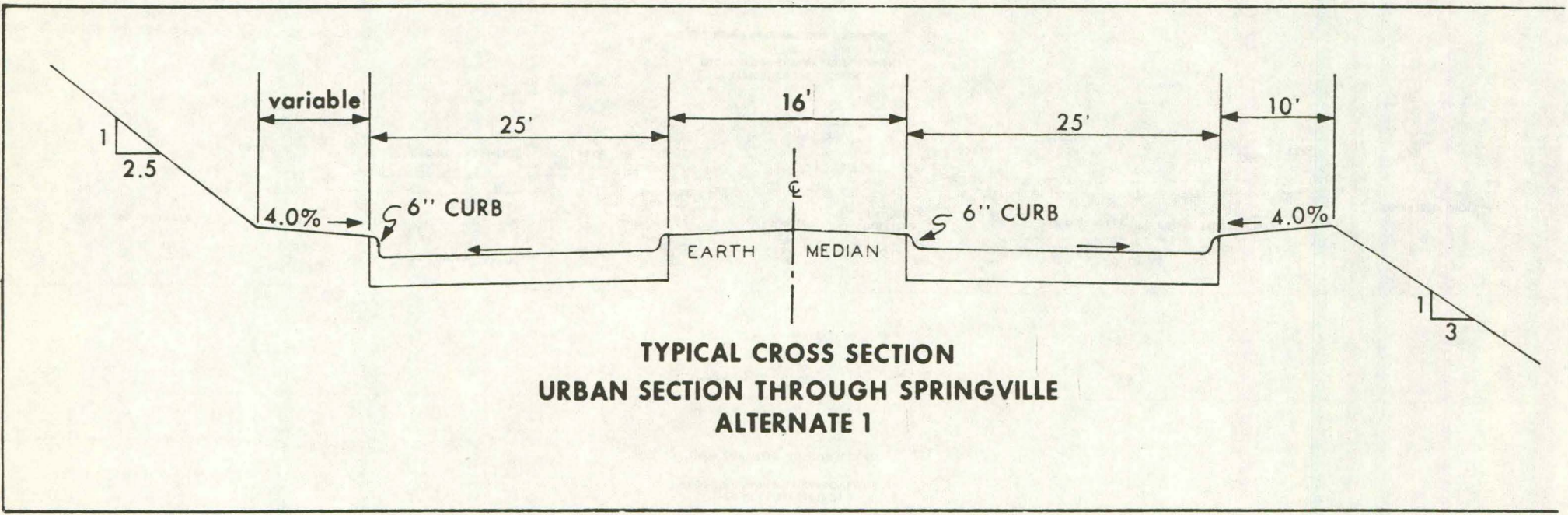
Construction Noise Impacts

During construction, the structures represented by the noise sensitive site would experience temporary increased noise levels. Although such noise intrusions would be relatively short in duration, it would cause additional disturbance to adjacent property owners. Heavy machinery associated with construction would be the main noise source. Such machinery will be required by specification to be outfitted with a muffler of the type recommended by the manufacturer.

Coordination with Local Officials

A copy of the U.S. 151 project noise study will be provided to the Eastern Iowa Association of Regional Planning Commissions. This information will aid in assuring that future land use development will consider the anticipated U.S. 151 noise levels. A copy of the publication, *The Audible Landscape: A Manual for Highway Noise and Land Use* (FHWA, 1974) will be furnished to the regional planning agency to aid in this effort.

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**TYPICAL CROSS SECTION
URBAN SECTION THROUGH SPRINGVILLE
ALTERNATE 1**

*NOTE: ALL TYPICAL DIMENSIONS ARE SUBJECT TO CHANGE DURING FINAL DESIGN

FIGURE 2A

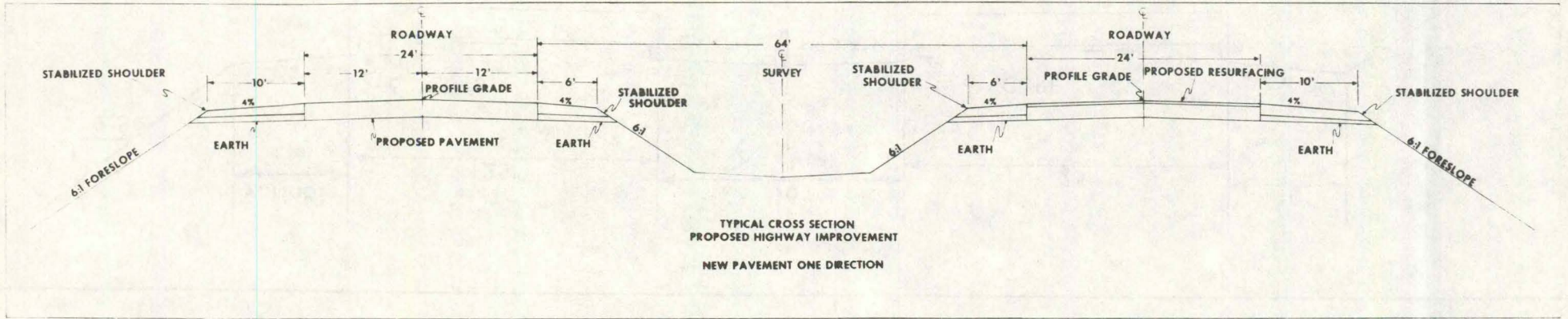
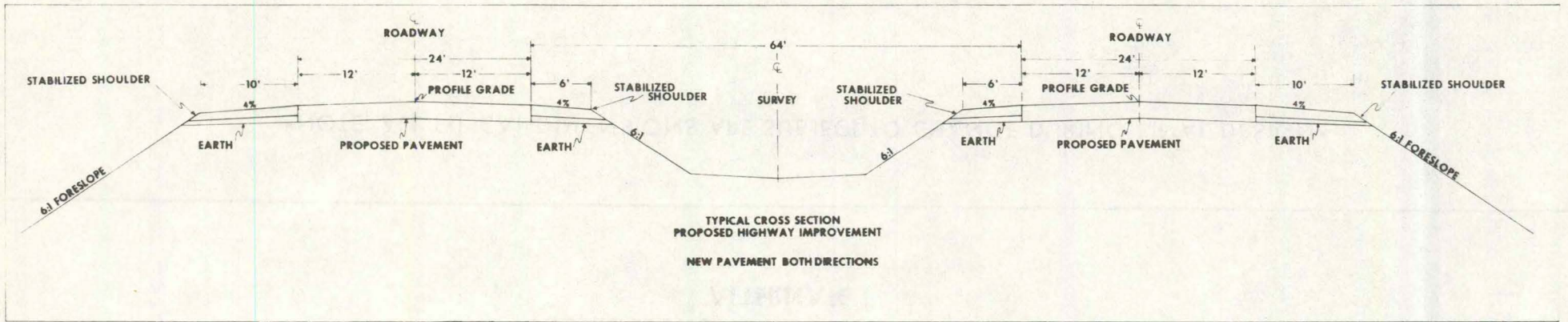
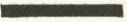






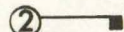
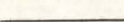
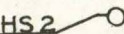


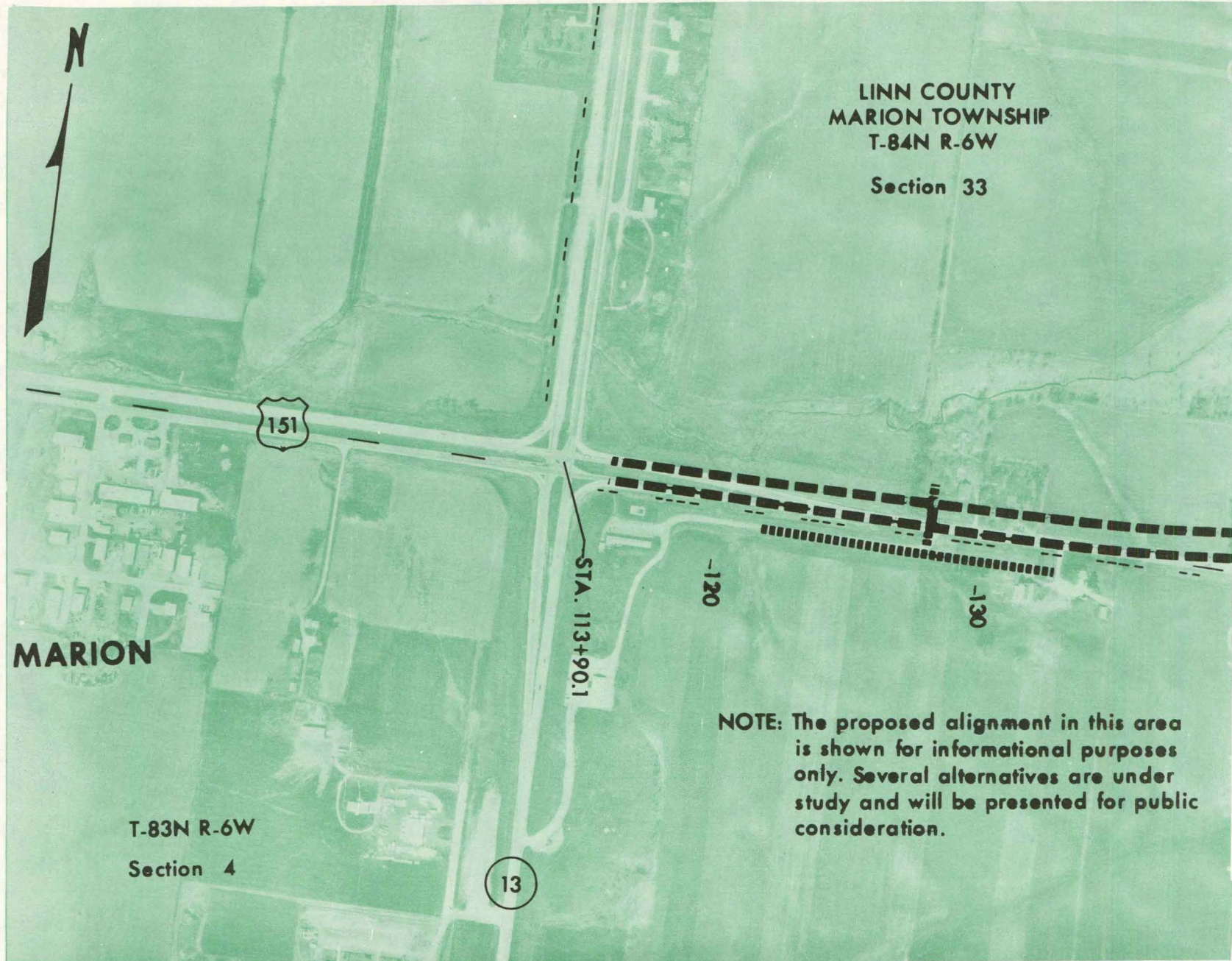
FIGURE 3A

AERIAL PHOTOGRAPHIC PLATES

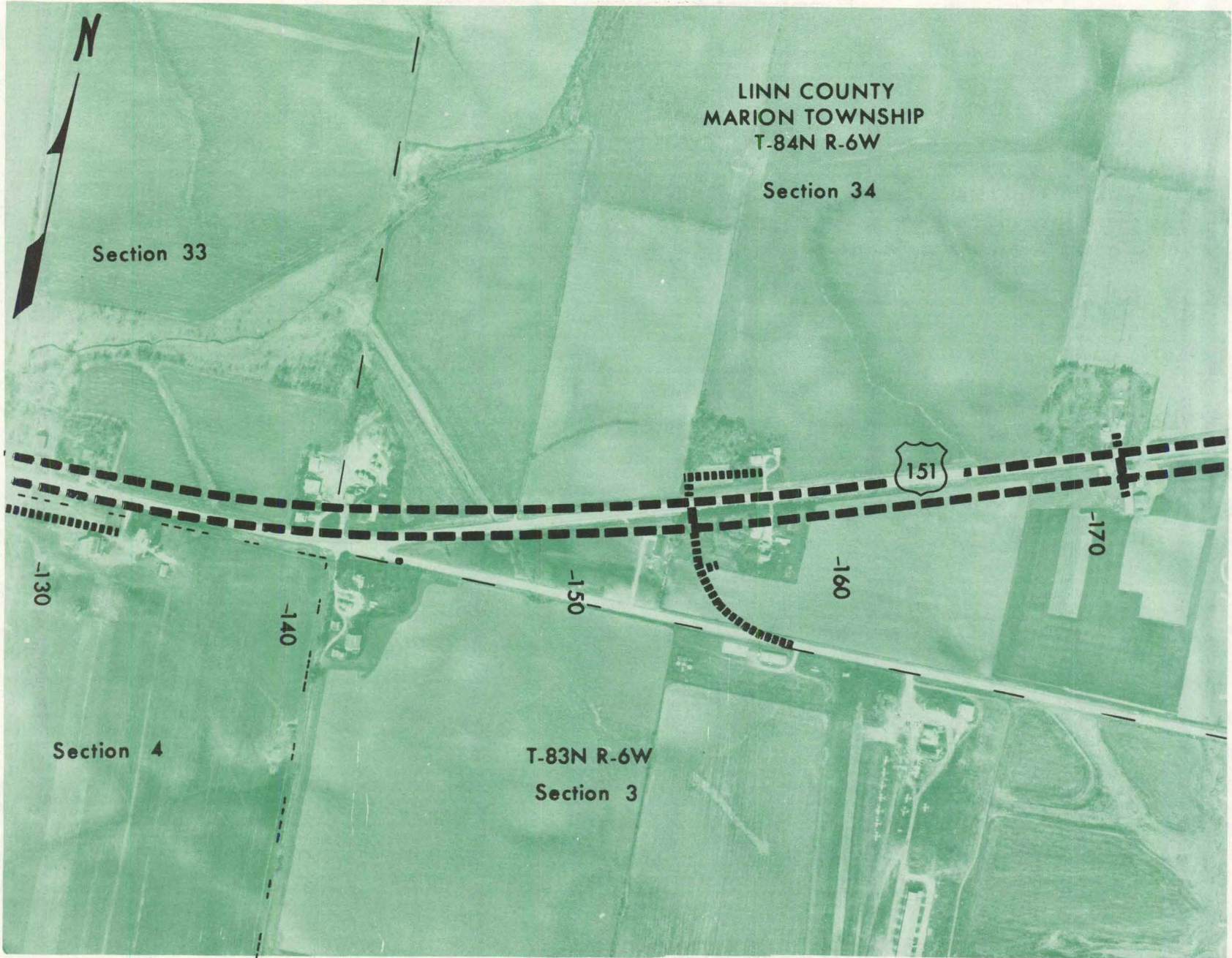
LEGEND

	NEW PAVEMENT
	IMPROVEMENT OF EXISTING ROADWAY
	POSSIBLE ALIGNMENT US 151 MARION BYPASS
	SERVICE ROADS AND SIDE ROAD CONNECTIONS
	ROAD CLOSURES
	SECTION LINES
	CORPORATION LINES
	NOISE SITES
	70 dBA L10 NOISE CONTOUR FOR YEAR 2002
	POTENTIAL HISTORIC SITES

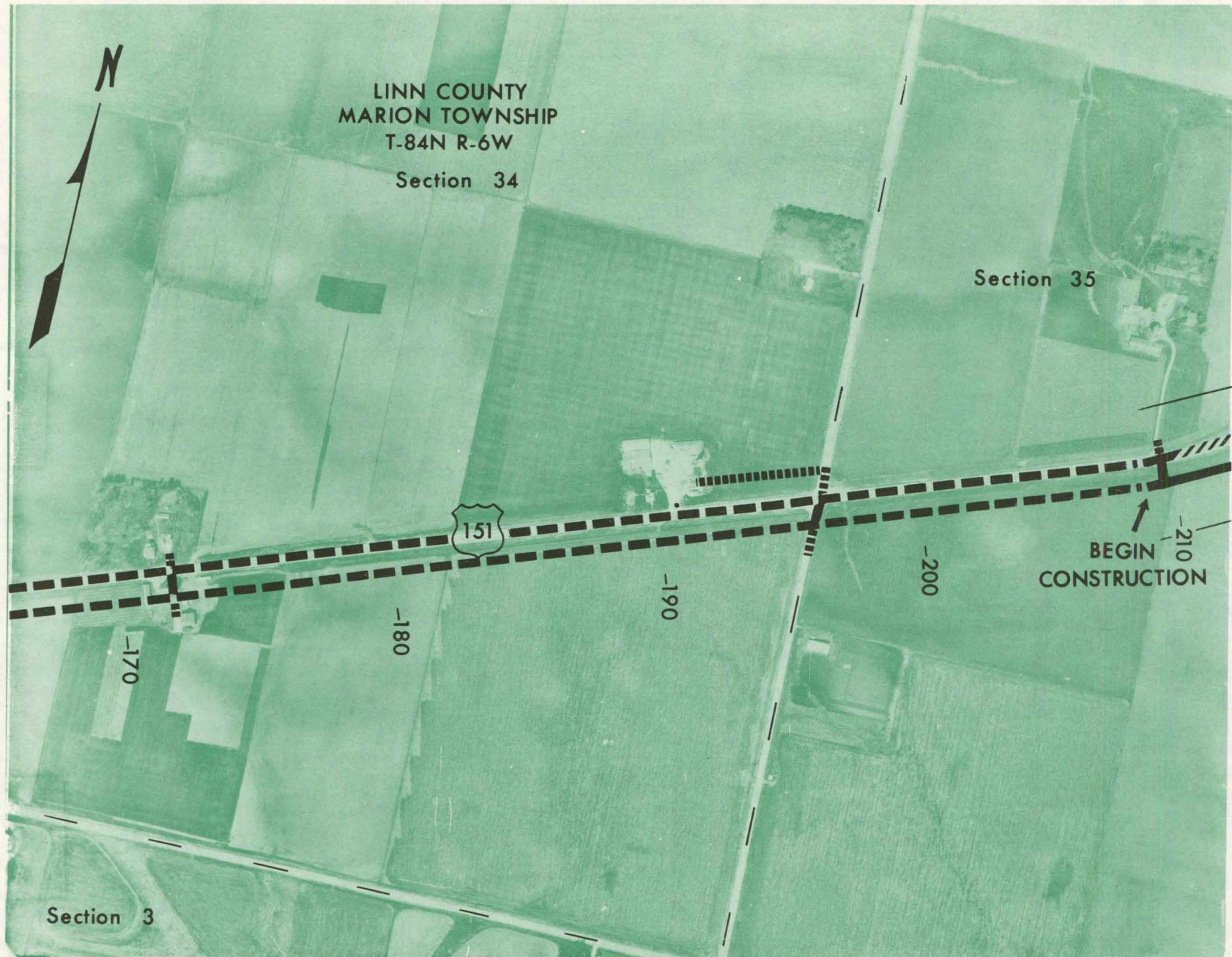
Note: The above symbols represent approximate locations and are not to scale.



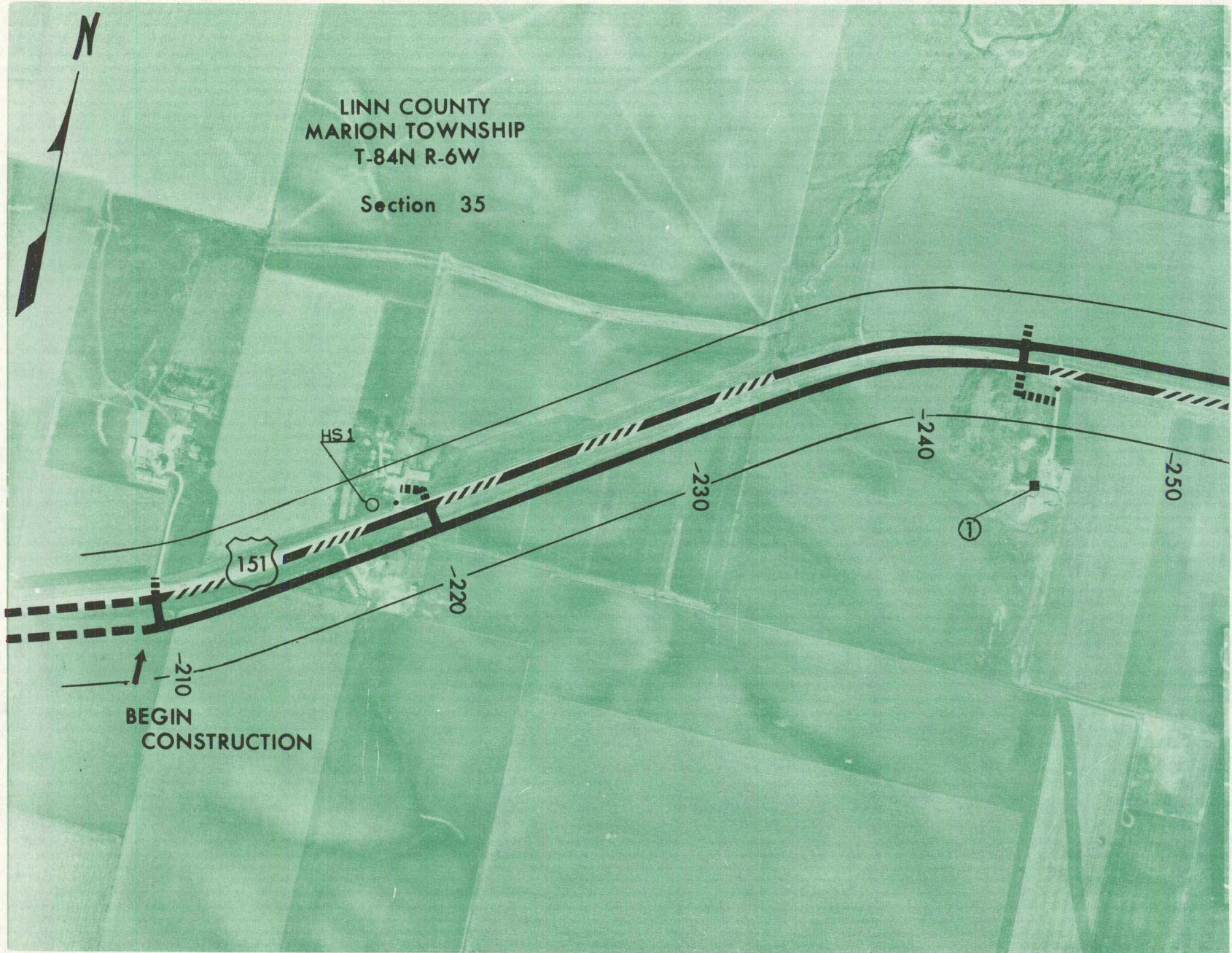
SCALE: 1in. = 500ft. PLATE 1



SCALE: 1in. = 500ft. PLATE 2



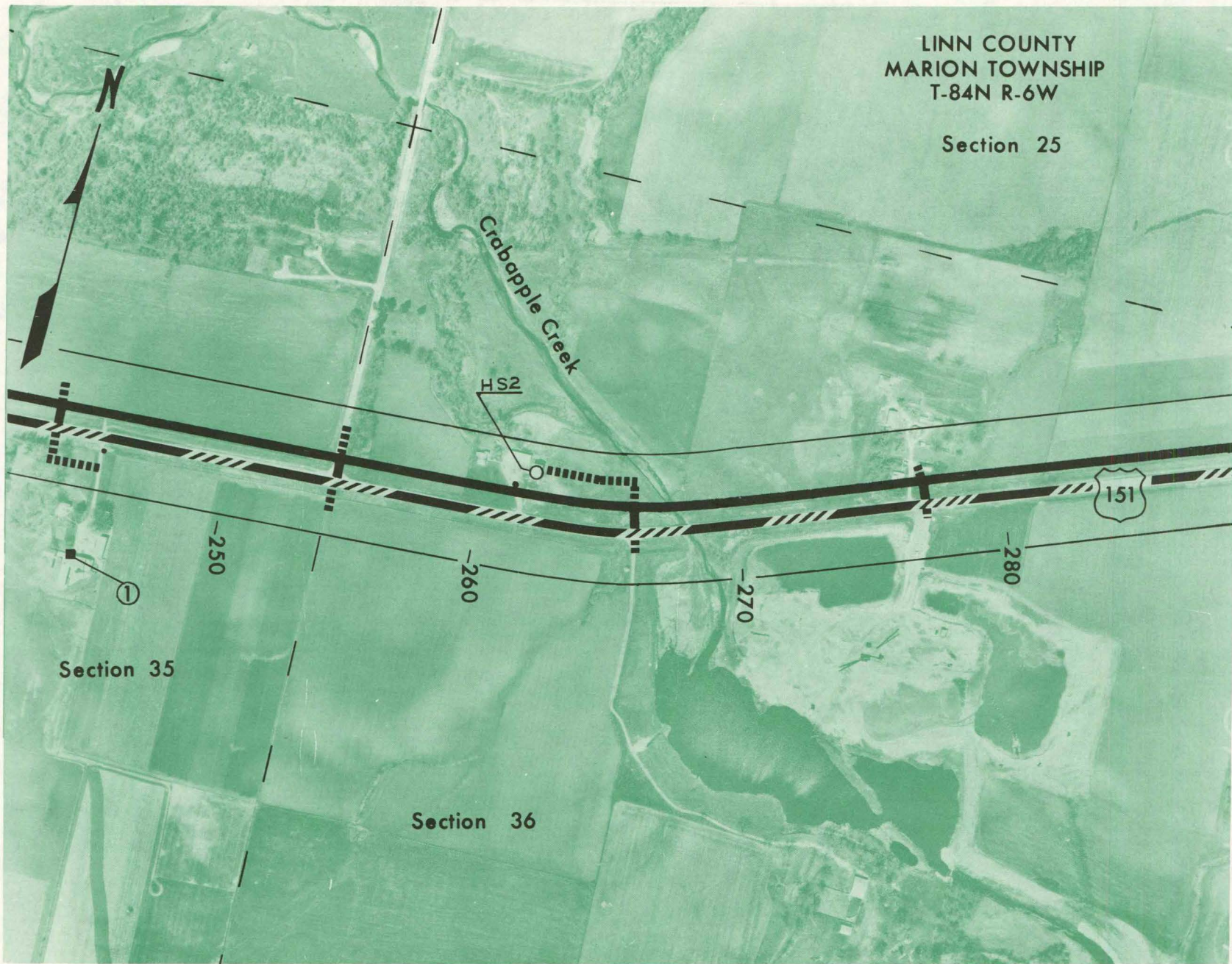
SCALE: 1in. = 500ft. PLATE 3



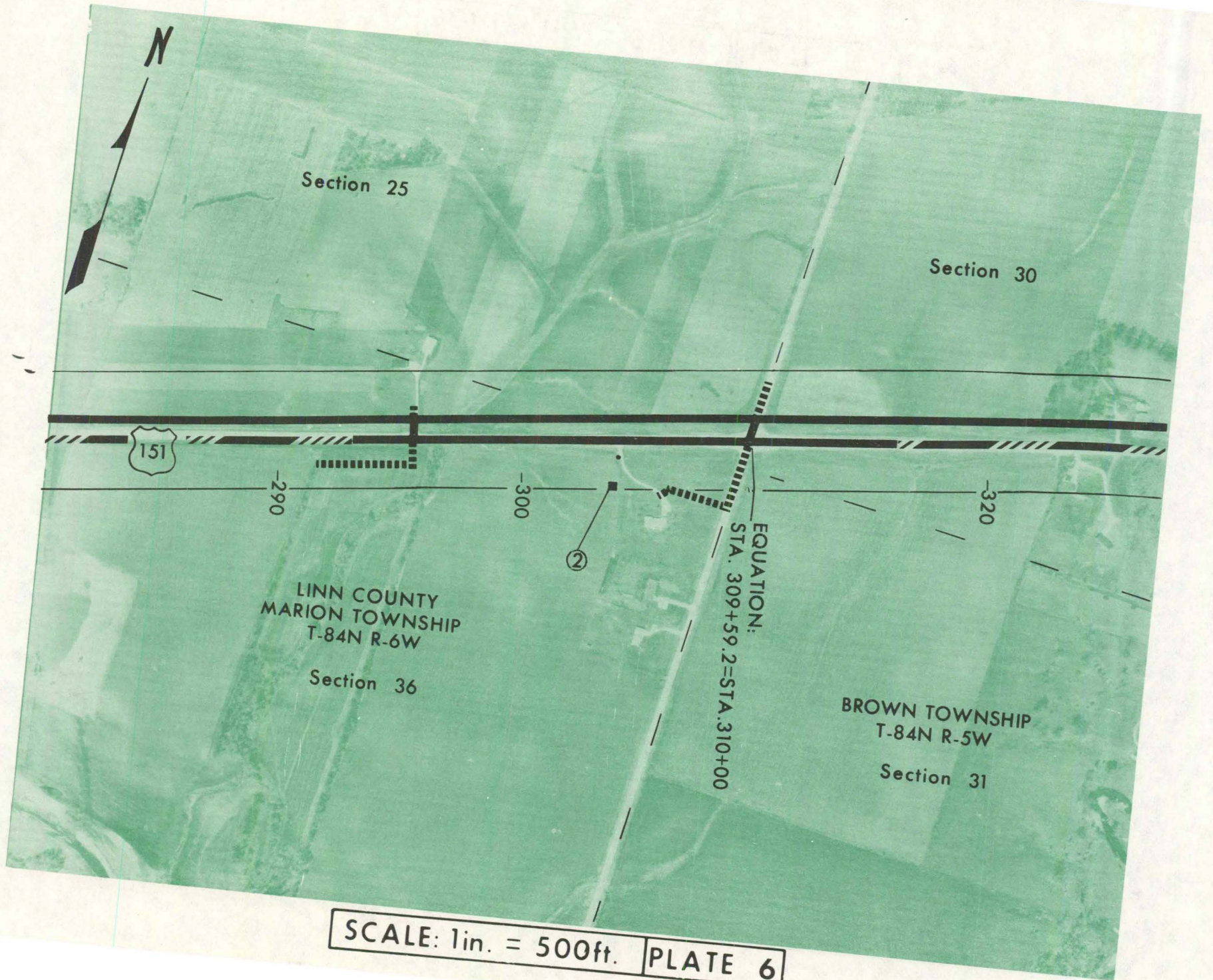
SCALE: 1in. = 500ft. PLATE 4

LINN COUNTY
MARION TOWNSHIP
T-84N R-6W

Section 25

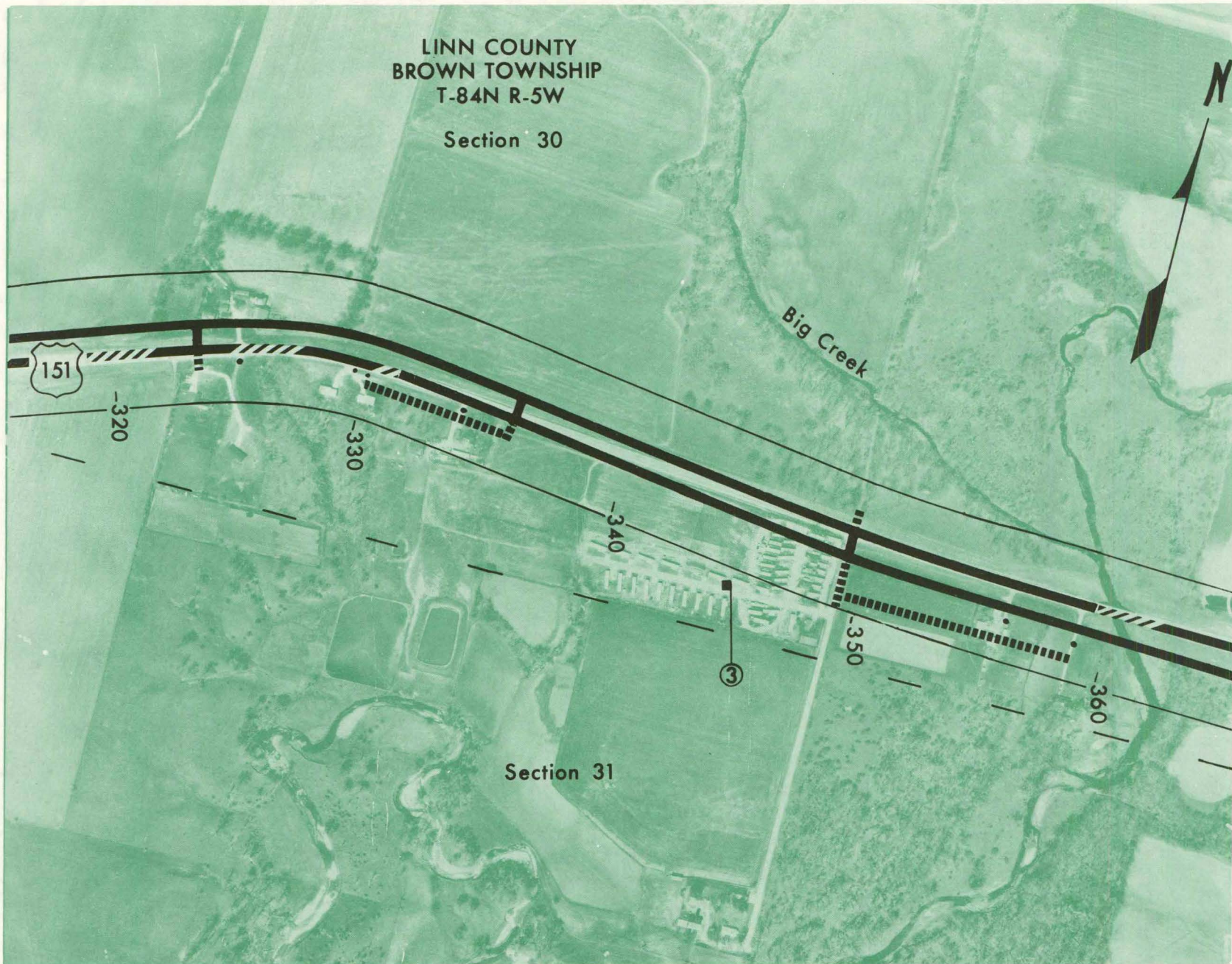


SCALE: 1in. = 500ft. PLATE 5

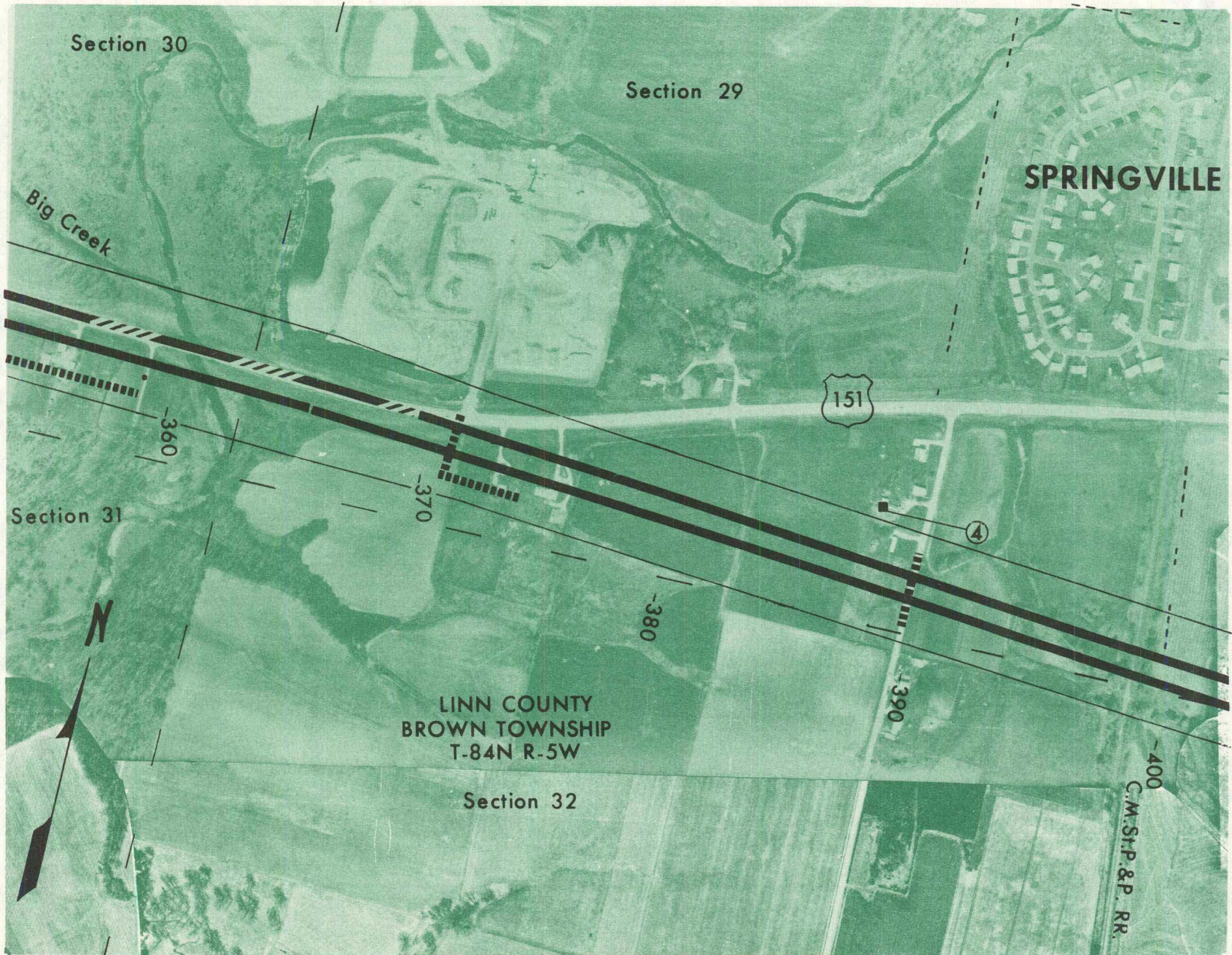


SCALE: 1in. = 500ft. PLATE 6

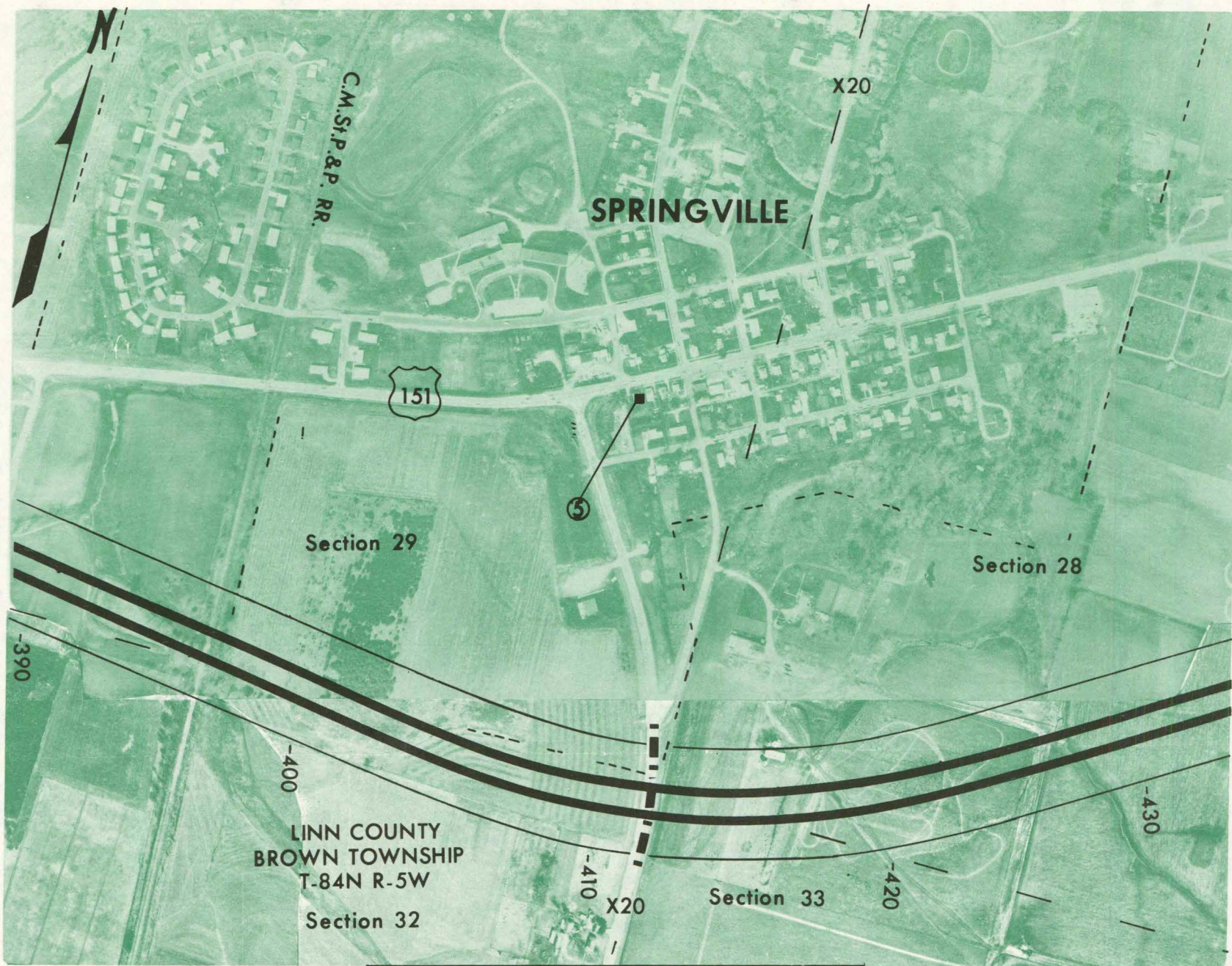
LINN COUNTY
BROWN TOWNSHIP
T-84N R-5W
Section 30



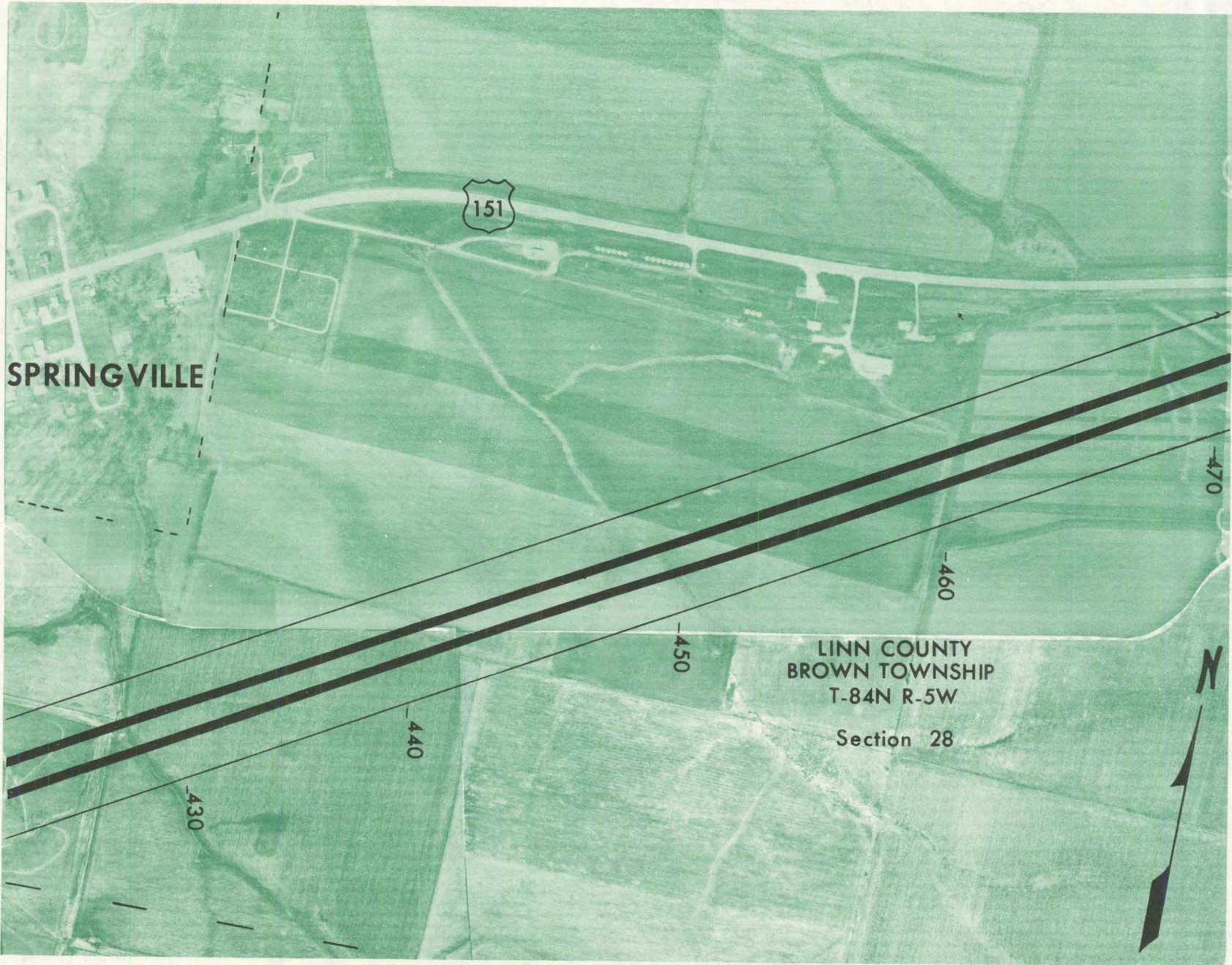
SCALE: 1in. = 500ft. | PLATE 7



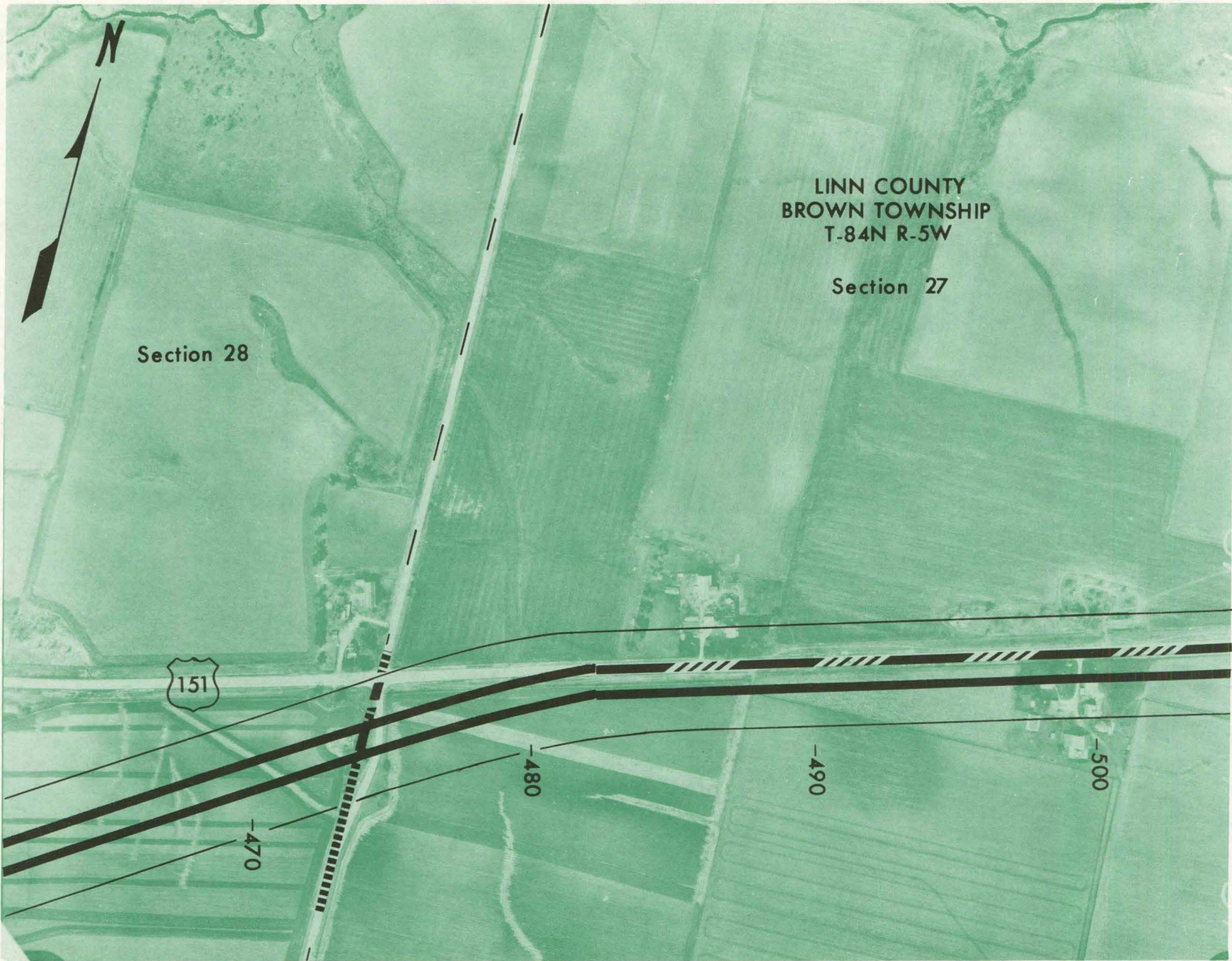
SCALE: 1in. = 500ft. | PLATE 8



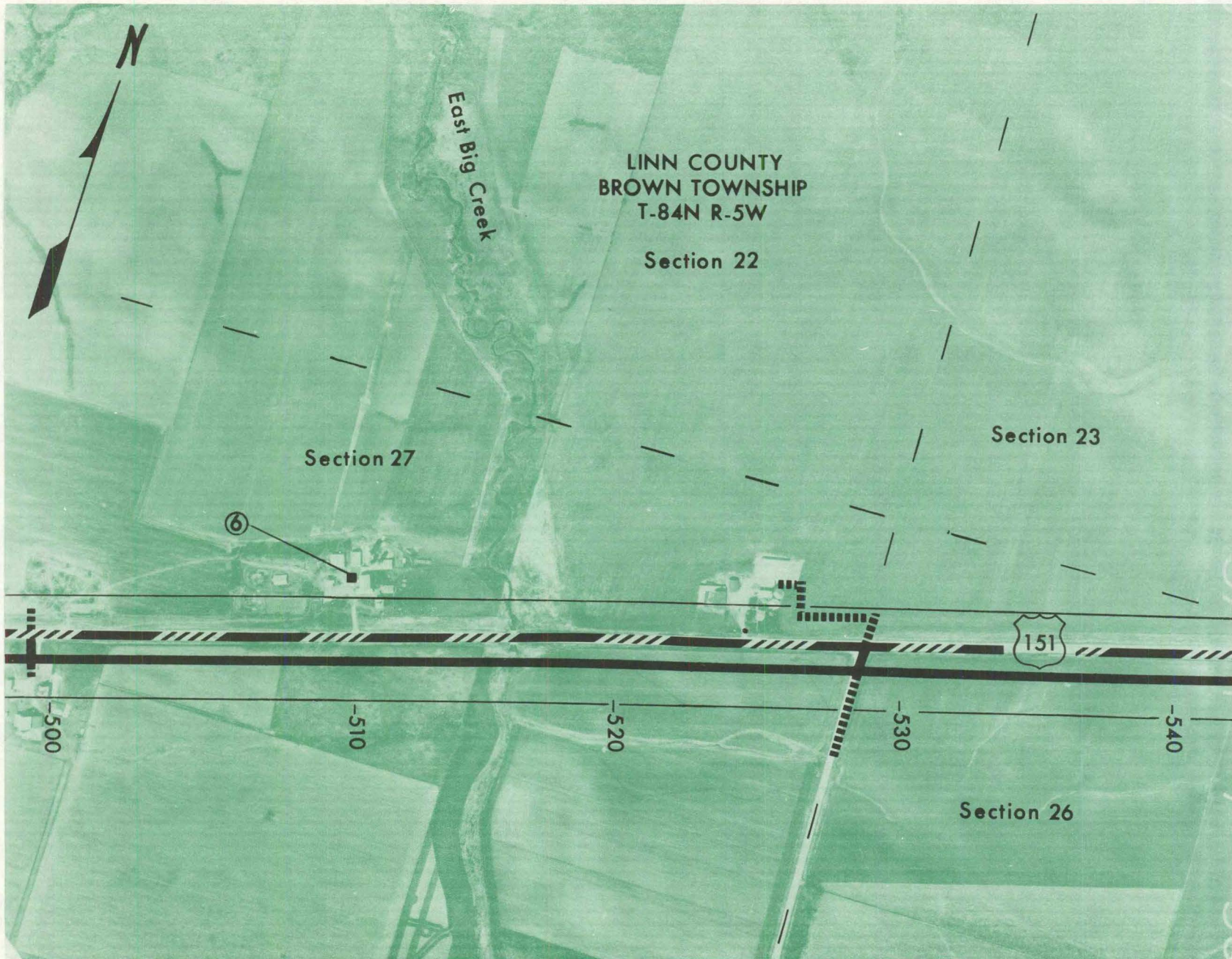
SCALE: 1in. = 500ft. PLATE 9



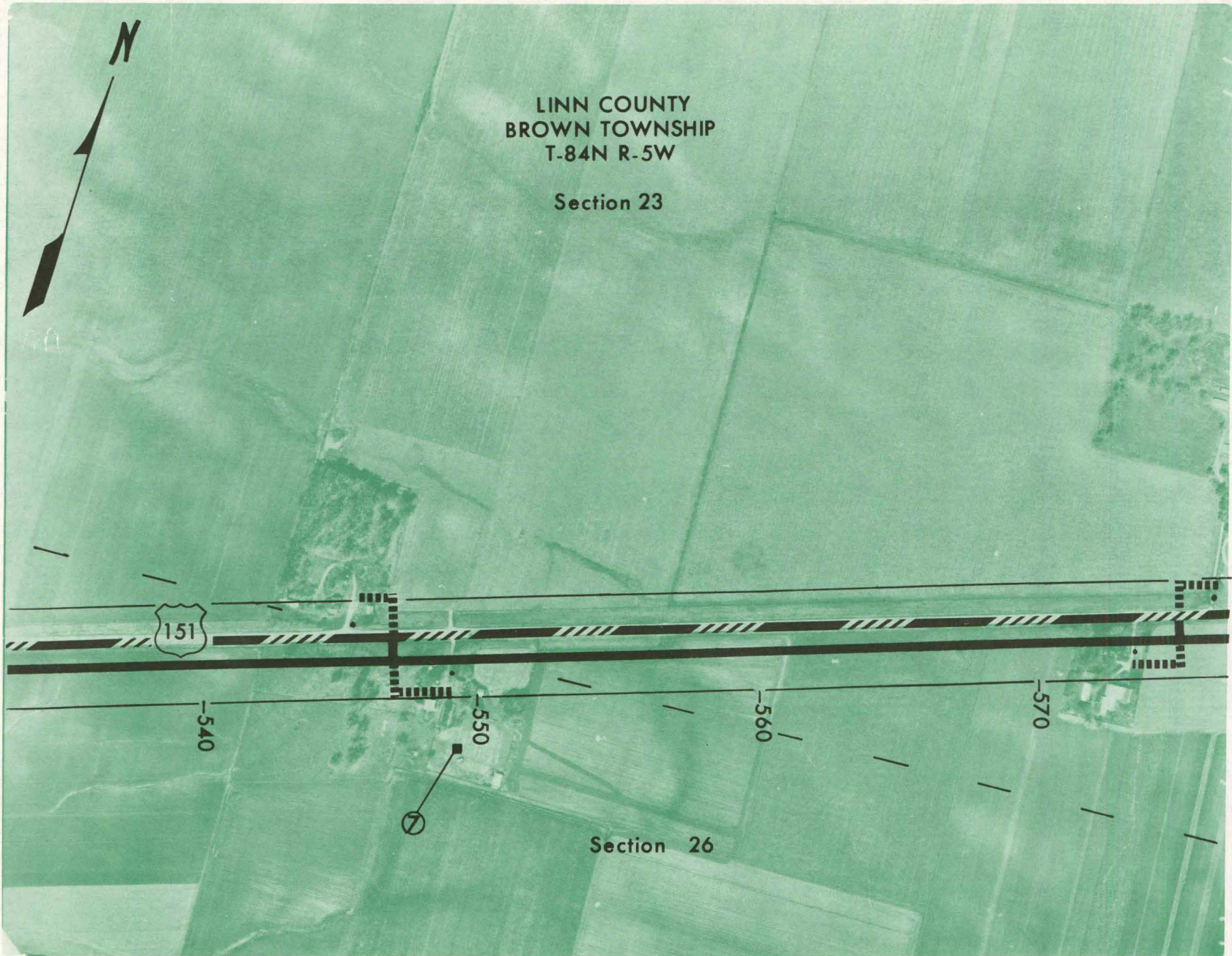
SCALE: 1in. = 500ft. PLATE 10



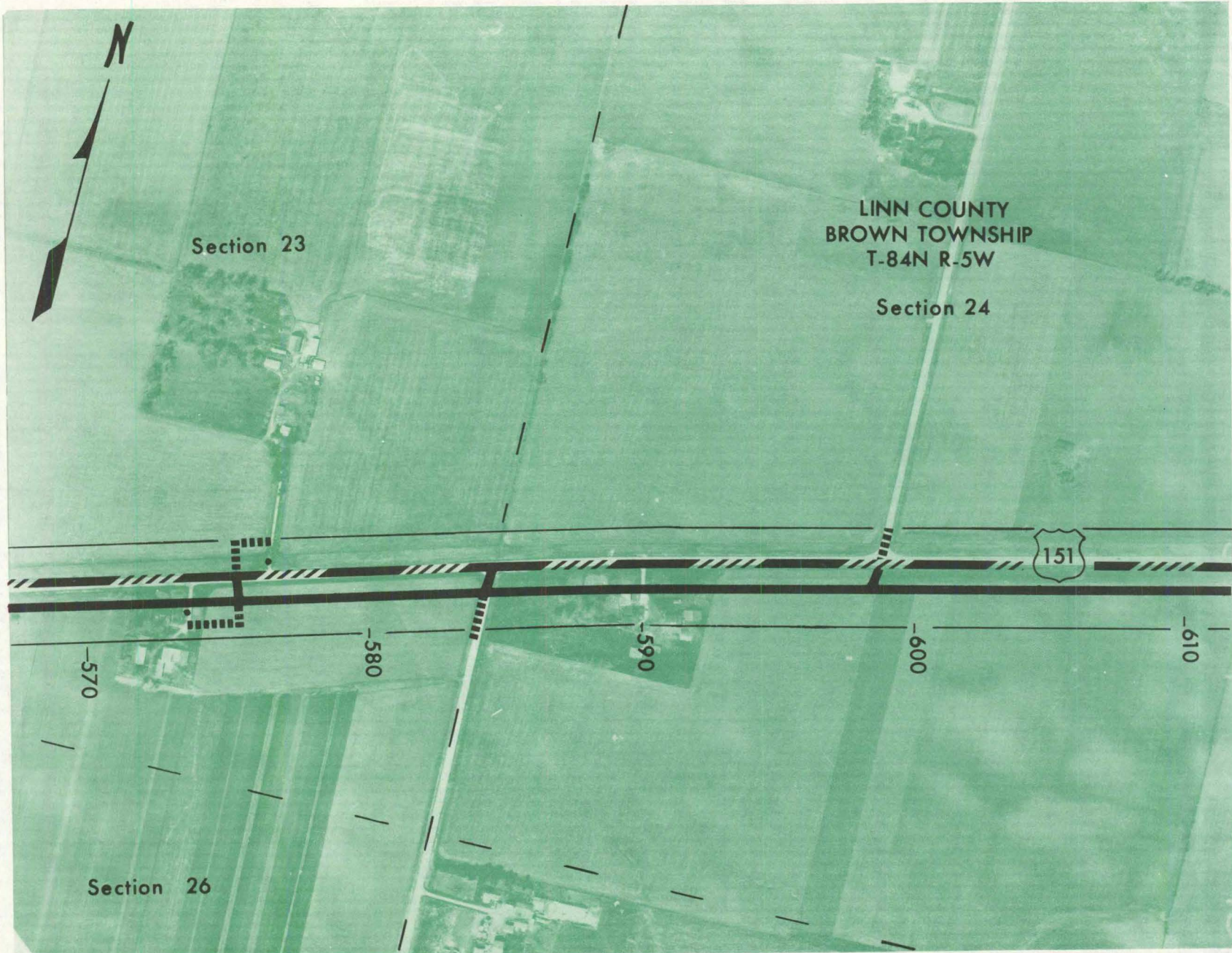
SCALE: 1in. = 500ft. PLATE 11



SCALE: 1in. = 500ft. PLATE 12



SCALE: 1in. = 500ft. PLATE 13



Section 23

LINN COUNTY
BROWN TOWNSHIP
T-84N R-5W
Section 24

Section 26

151

-570

-580

-590

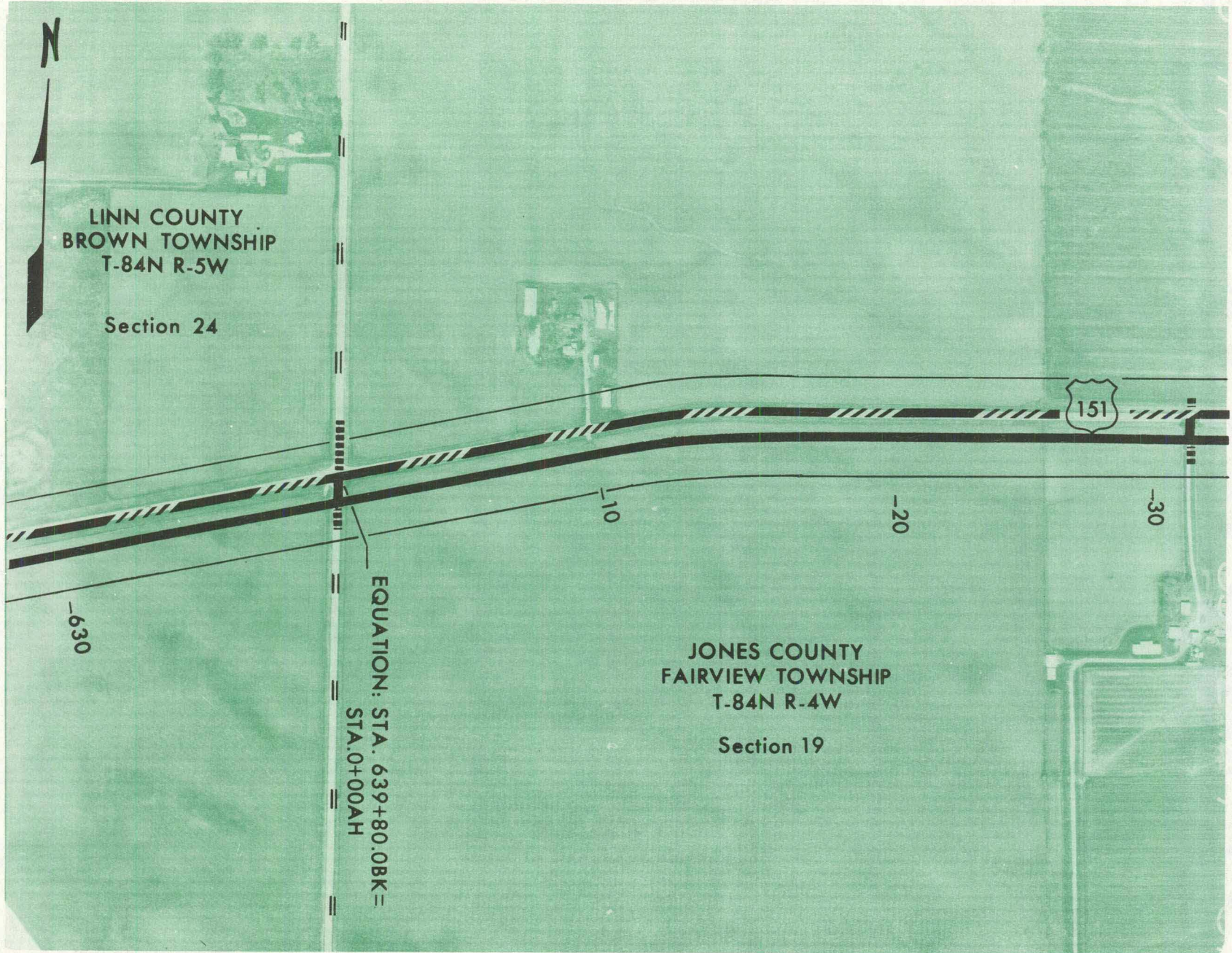
-600

-610

SCALE: 1in. = 500ft. PLATE 14



SCALE: 1in. = 500ft. PLATE 15



LINN COUNTY
BROWN TOWNSHIP
T-84N R-5W

Section 24

JONES COUNTY
FAIRVIEW TOWNSHIP
T-84N R-4W

Section 19



-630

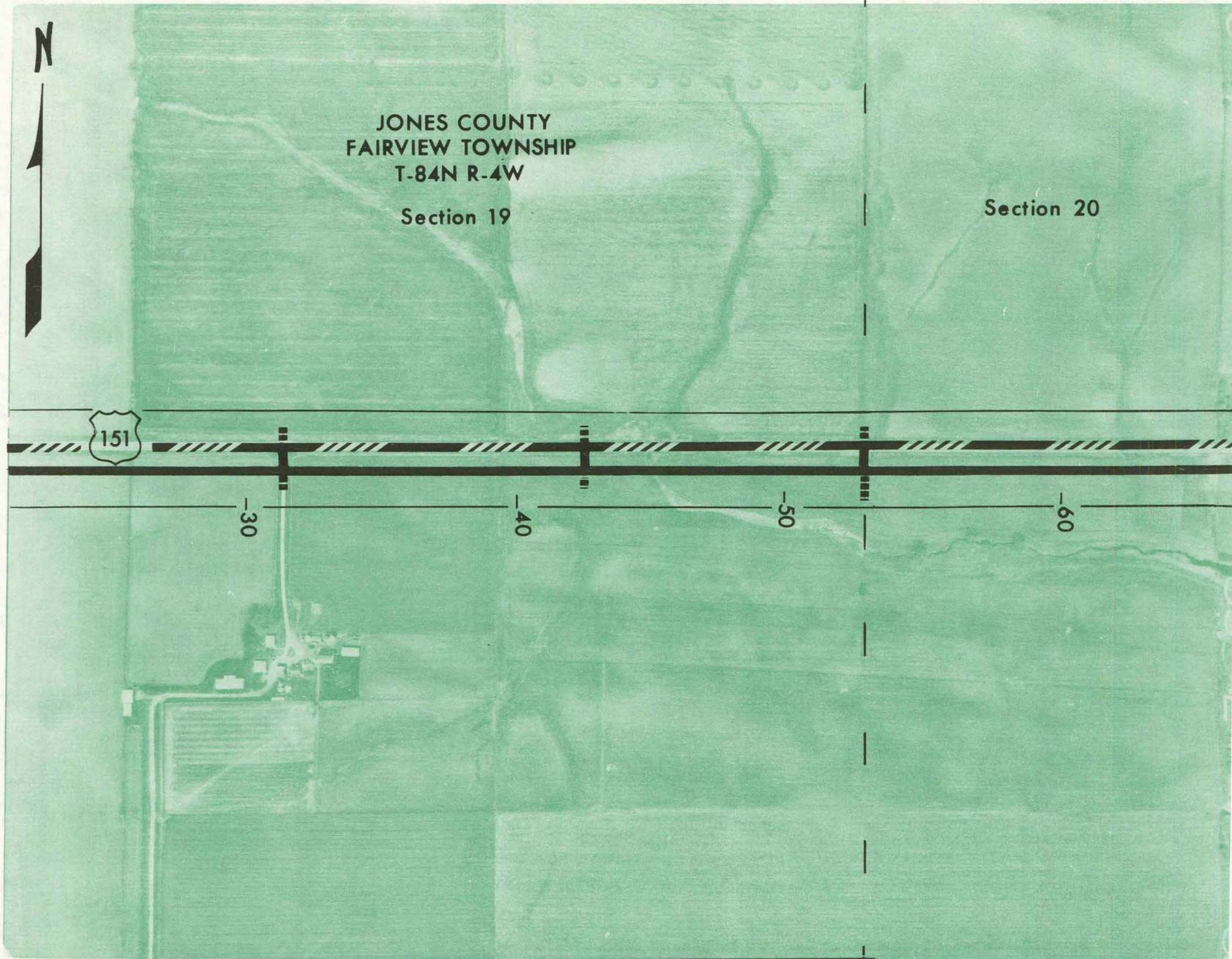
-10

-20

-30

EQUATION: STA. 639+80.0BK =
STA. 0+00AH

SCALE: 1in. = 500ft. PLATE 16

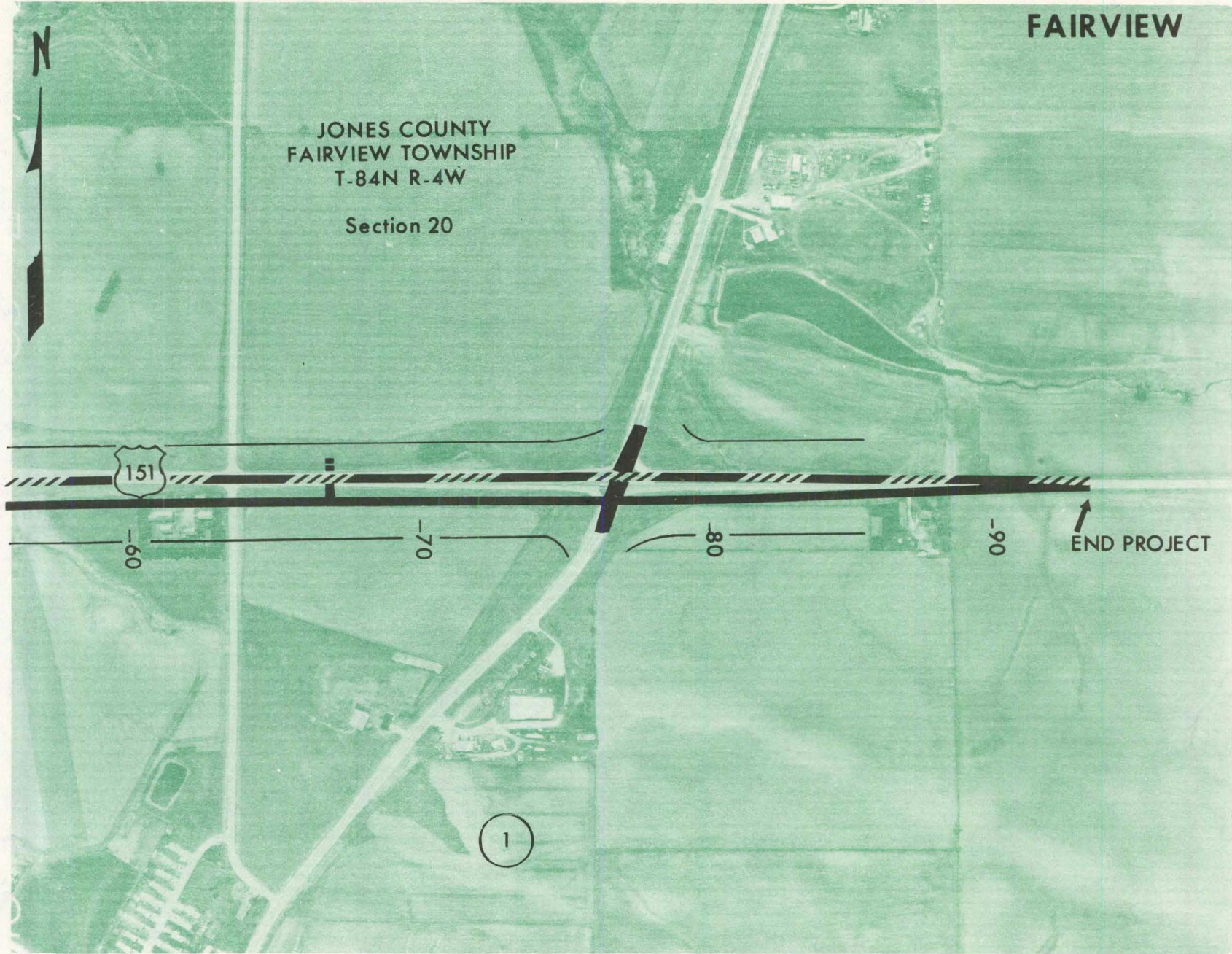


SCALE: 1in. = 500ft. PLATE 17

FAIRVIEW

JONES COUNTY
FAIRVIEW TOWNSHIP
T-84N R-4W

Section 20



SCALE: 1in. = 500ft. PLATE 18

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