# A STUDY OF THE ECONOMIC IMPACT OF INTERSTATE HIGHWAY 45 ON CONROE, TEXAS

by

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# Acknowledgments

# Foreword

In October, 1957, the U. S. Bureau of Public Roads and the Texas Highway Department authorized the Texas Transportation Institute to conduct studies of the economic impact of the Interstate Highway System on local areas in Texas. The authorization provided for joint financial support by the U. S. Bureau of Public Roads and the Texas Highway Department.

The purpose of the studies was to measure the effects that construction of a segment of the Interstate Highway System has on local areas and communities by analyzing the changes in land value, land use, business activity, travel patterns, and other general community developments.

The study of the Conroe area is one of nine studies conducted under the project agreement. Intensive "before and after" studies have been completed and reports published for eight other areas—Austin, Temple, Rockwall, Waxahachie, Merkel, Houston, Huntsville, and Chambers County.

With the publication of this report and the distribution of the requested number of copies to the sponsors, all obligations under the project agreement have been fulfilled.

The opinions, findings, and conclusions expressed in this report are those of the author and not necessarily those of the Bureau of Public Roads.

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# Summary of Findings

The economic effects of the new by-pass route (IH 45) on the Conroe study area were measured and analyzed in terms of changes in land values, land uses, business activities, travel patterns, and general community development.

These findings are summarized as follows:

1. IH 45 increased study area land values considerably.

   a. Unimproved acreage values increased more than values of improved acreage.

   b. Unimproved subdivided lot values increased to a greater extent than values of improved lots.

   c. Abutting acreage values increased significantly more than nonabutting values.

   d. Abutting and nonabutting values on the east (Conroe) side of IH 45 were influenced considerably more than those on the west side.

   e. IH 45 had a greater influence on the values of land abutting its east side than USH 75 had on the values of land abutting its west side.

2. IH 45 has had a significant positive influence on land use changes.

   a. The predominant land use was agricultural in the before period versus land held for future use in the after period.

   b. Several new residential subdivisions have been built up very near IH 45, especially on the west side.

   c. Five commercial tracts abut IH 45.

3. IH 45 influenced business activity considerably.

   a. There was a net increase of 18 firms located along USH 75 and five new establishments along IH 45.

   b. The operators of most businesses said that relief from the traffic problem was by far the most important advantage of IH 45 by-passing Conroe. Loss of gross sales by traffic serving businesses was considered the most important disadvantage.

   c. Although construction of IH 45 caused a considerable decline in the gross sales of USH 75 traffic serving businesses, the new facility may have encouraged the significant increase in the sales of nontraffic serving businesses.

   d. Business activity on the Conroe by-pass (IH 45) is not as extensive in the three years just after opening of the facility as has occurred in other areas of this study.

4. IH 45 significantly changed the travel pattern of highway users. Essentially, the majority of the through traffic, including trucks, was successfully routed around Conroe. Now, the USH 75 business route is used primarily by local residents.

5. Conroe and Montgomery County, of which the study area is a part, have made considerable progress in economic growth since the construction of IH 45.

6. Supporting data in the Appendix present other land value, land use-land value, and business activity analyses not directly referred to in main body of the report.

# Introduction

## *Conroe and IH 45*

Conroe, having a 1960 population of 9,192, is located in the rolling, forested plains area of Southeast Texas, 39 miles north of Houston. It is the county seat of Montgomery County, which is 84 percent forested.

The economy of the city and county depends heavily on oil and timber production. Most of the firms located in and near Conroe use these raw materials to manufacture finished products. Agricultural production occupies only a minor role in the economies of Conroe and Montgomery County. Livestock farming is the most important agricultural enterprise in the county.

In recent years Montgomery County has become an important recreational area. Lake developments along streams among the pine trees have attracted many Houston residents. Many out-of-town people have purchased "lots" fronting on these lakes and have constructed cabins. Several large rural subdivisions have been developed in the county. Two beautiful golf courses were established in connection with these subdivisions. One is located north of Conroe, and the other one is south of the city. There are boy and girl scout camps located near Conroe.

The construction of IH 45 from Houston to Conroe has reduced the travel time between these cities to only 45 minutes. This faster route has encouraged residents of Houston to take recreational weekend excursions to the Montgomery lake developments. Also, many Houston workers now reside in Conroe or other parts of the county and commute by way of IH 45. Between Conroe and Houston, IH 45 was formerly USH 75, which still exists as a separate route three miles south of Conroe to 10 miles south of Madisonville. In portions of this section, IH 45 is as much as three miles from USH 75.

USH 75, connecting with IH 45 north and south of town, has become the business route in Conroe. Another highway which serves as a part of the transportation system of Conroe is SH 105, connecting Navasota on the west and Beaumont on the east. Conroe is also served by three farm-to-market roads: FM 1314, FM 1484, and FM 2854.

Conroe and Montgomery County are served by two railroads, an east-west facility and a north-south facility. It also has a municipal airport, which was formerly an air strip developed by the United States Government for use during World War II and which has recently been improved by the City of Conroe. Although no scheduled flights are available, the airport is used extensively by owners of private planes and government agencies which use small planes in the area.

The purchase of right-of-way for the by-pass around Conroe began in 1958. Upon completion of such purchase, construction began and was finished by the end of 1962. The by-pass skirted the west side of Conroe, missing most of the built-up residential area.

Although a 300-foot right-of-way was acquired for IH 45, the highway design constructed does not have continuous frontage roads along portions of the by-pass.

Some sections have continuous frontage roads on both sides. Others have only one continuous frontage road on either the west side or the east side. Still another has no continuous frontage roads. Even where there are frontage roads, access is denied. This situation possibly explains why no commercial development had occurred along the by-pass until only recently.

## *Purpose of Study*

The purpose of the over-all study is to determine the economic effects of a limited access facility of the Interstate Highway System on selected local areas. This particular area involves a town with a population of about 10,000 and is located near a major urban center. The results of such a study may be used in anticipating the economic effects that portions of the Interstate System will have upon their comparable local areas.

For the over-all study, the principal objectives were as follows:

1. To determine land value changes in each area and relate these changes to the proximity of the new highway.

2. To determine land use changes in each area and relate these changes to the proximity of the new highway.

3. To determine the effects of the new highway on over-all business activity in each area.

4. To determine the effects of the new highway on general travel habits within each area.

5. To determine other economic changes which might indicate the general development of each area.

## *Method of Study*

The primary methodology employed throughout this study is the "before" and "after" construction period comparative technique. The right-of-way purchase and construction dates dictate the beginning and ending of the construction period, which separates the before and after periods.

For a determination of highway influence on land values, both a study area and a control area were selected. Their location with respect to the new highway and Conroe is shown in Figure 1.

### *Study and Control Areas*

The study and control areas selected for the land value study were as comparable as could be found around Conroe. Attention was centered around their before period characteristics. Both areas had comparable land uses and transportation facilities. Distances to the central business district and the quality and type of improvements were quite similar.

Being composed of approximately 20,300 acres, the study area is somewhat larger than the control area. In the after period, the former has IH 45 passing through its entire length, a distance of seven miles. The width of the study area averages about four miles. Its east
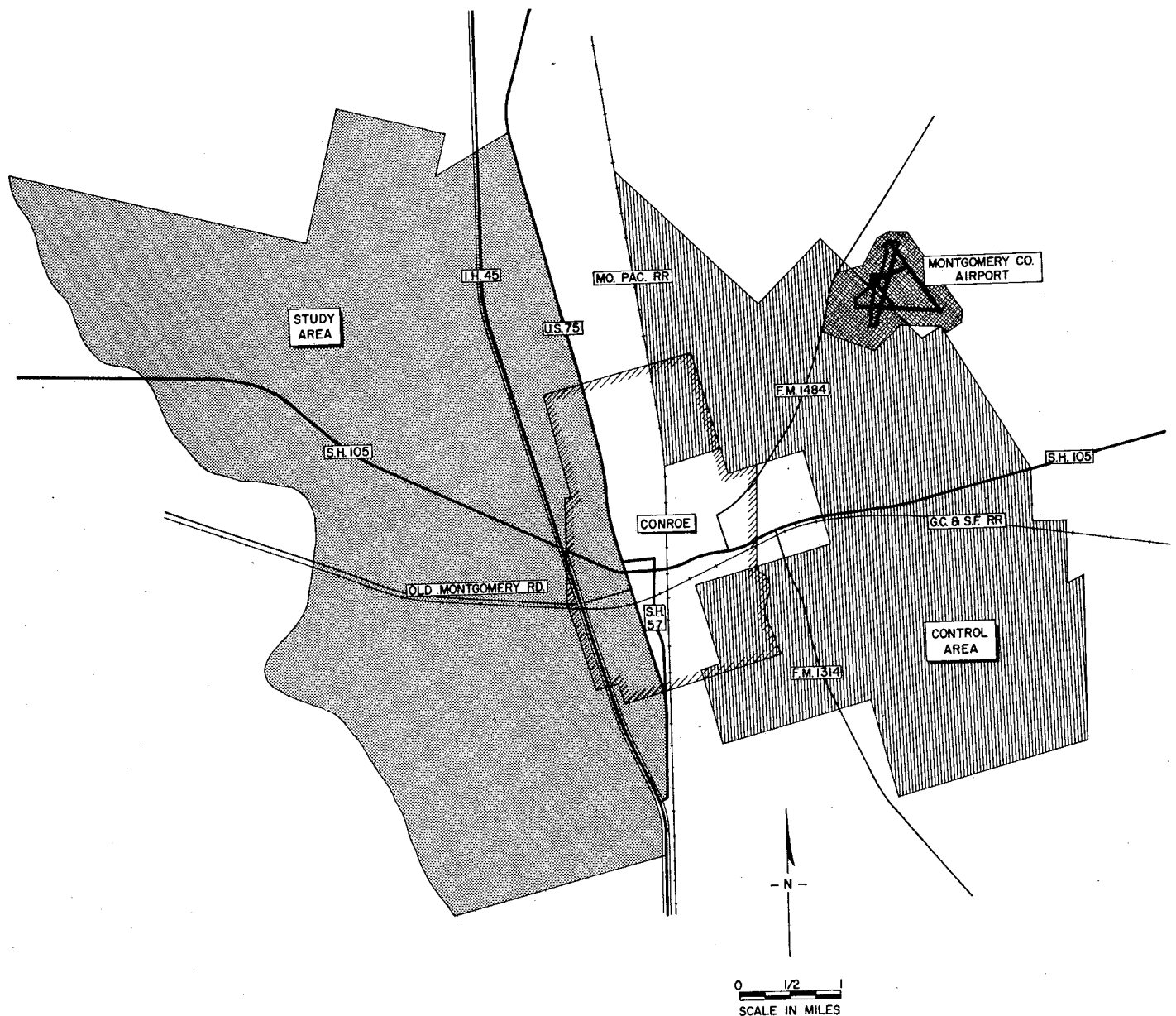
Figure 1. A map showing the relationship of the study and control areas to Conroe and the transportation facilities in 1965.

boundary is USH 75 and its west boundary is the San Jacinto River.

The above land value study area is large enough to study the IH 45 influence on land use changes without studying a separate control area. To do this, the study area nonabutting properties are considered as a control area to abutting properties.

To control the IH 45 influence on business activity along it and USH 75, gross sale data from two nearby counties (with no Interstate System) having comparable populations and gross sales to Montgomery County were used with the latter county and the State of Texas for comparative purposes.

*Time Periods*

The time periods used differ for the land value, land use, and business activity analyses. For the land

value analysis, the periods used are as follows: before period, 1952-58; during construction period, 1959-62; after period, 1963-65. The construction period includes the years in which the IH 45 right of way was purchased in the study area.

For the land use analysis, the before study year is 1958, the last year before right of way acquisition. The after study year is 1965, the last year permitted under the research project.

For the business activity analysis, the before study year is 1962, the last year before IH 45 was completed. The after study year is 1965, again, the last year permitted under the research study.

*Source of Data*

The land value data were collected from the records of Conroe Independent School District Tax Department

and the deed records of Montgomery County Courthouse. Only valid land sale transactions were considered for study. All trades, family transactions, transfers by sheriff's sales, etc., were eliminated during the search of the deed records. Also, sales whose consideration could not be determined were eliminated, except to locate them on the map.

The land use data were collected by making detailed inspections of the study area and by interviewing local residents and realtors who were familiar with the area. Also, U. S. Department of Agriculture aerial photographs helped some in determining the before period use.

The business activity data were collected by a personal interview of each business located along the old U. S. Highway 75 route through town and the new IH 45 route around town. Also, data on Montgomery County, two comparable counties, and the whole state were collected from the "Survey of Buying Power" published by Sales Management Magazine.

General traffic pattern data were collected from the Texas Highway Department.

General community development data were collected from the City of Conroe, local financial institutions, the Sales Management Magazine's "Survey of Buying Power," the University of Texas' "Survey of Current Business," the "Texas Almanac," and the Dallas Morning News.

*Statistical Treatment*

Some of the land sale prices were determined by the amount of U. S. Government Internal Revenue Stamps affixed on the deed. In such cases, each $.55 stamp represents $500 of consideration, except for the final $.55 stamp which would represent a value from one to 500 dollars. To eliminate bias, a mid-point value of $250 was added to the sales price established by the other stamps.

The land sale prices were deflated into constant dollars by using the U. S. Department of Commerce's Consumer Price Index (see schedule in Appendix).

The price per unit (acre or square foot) arrays of property sales were averaged by period in order to make the before and after period comparisons. The period mean averages of the study area versus control area were tested for significant differences by using appropriate statistical tests. The results of these tests are reported in the footnotes of the tables, and the terms and formulas used are explained in the Appendix.

Texas A&M University's Data Processing Center was used in analyzing the land sales and business activity data.

*Definitions*

Each property was assigned a before and after land use designation based on the following definitions:

1. Timberland—tract used primarily for growing pine or other trees used in pulpwood and lumber production.

2. Agricultural—tract used primarily for agricultural purposes by an owner who depends upon farming for a livelihood. The minimum size is 10 acres, except for intensive type farming.

3. Held for future use—tract generally considered to be held for future use rather than for its utility at present even though farmed or grazed or used for other purposes during the interim period.

4. Rural residential—tract outside the city limits and improved with an occupiable house used primarily as a residence. The maximum size is 15 acres.

5. Urban residential—tract subdivided into lots, most of which are improved with occupiable houses.

6. Commercial traffic serving—tract improved with a commercial business which derives more than 50 percent of its income from serving traffic.

7. Commercial nontraffic serving—tract improved with a commercial business which derives less than 50 percent of its income from traffic.

8. Industrial—tract used for manufacturing, product storage, and surface facilities of pipelines.

9. Institutional-municipal—tract used for school, park, hospital, church, or other public function.

# Land Value Influences of IH 45

The land value influences of IH 45 are reflected in the analysis of 2,337 sale prices (898 from acreage land and 1,439 from subdivided land). Table 1 shows the annual number of these improved and unimproved sales by area.

## Study Area

The following presentation shows the analysis of highway impact on acreage land values separate from subdivision land values. A further breakdown presents the analysis on an improved and unimproved basis. Corresponding to the latter division, selected characteristics of the property sale data are presented in Table 2.

### Acreage Land

Table 3 presents the period analysis of unimproved acreage land prices for the study and control areas. These data indicate that the highway influence on such land was insignificant. In the before period, the average price per acre was quite comparable between the study and control areas. Since the new highway was the principal physical change between the two areas during the after period, the divergence in land values between areas seems definitely attributable to such an improvement.

Table 4, representing the analysis of improved tract sale prices, supports the above conclusion. The before period sale prices were also quite comparable between areas. As was expected, the probable highway influence (measured as percent of the study area before period price) for improved properties was less than that for unimproved properties. However, when measured on a dollars per acre basis, the influence was greater in the latter case. Because unimproved tracts can readily change into higher uses, their values are more responsive to changing surroundings than similarly situated improved tracts.

### Subdivided Land

Subdivided land values were also enhanced by the construction of IH 45 through the study area. Table 5 shows the analysis of unimproved subdivided tract sale prices. The probable highway influence on land values was considerably more for unimproved tracts than for improved tracts. The reason cited in the prior section applies here too. This fact is seen when values in Table 5 are compared with those in Table 6. In both cases, the before period prices of both areas are comparable, and so the conclusions are very dependable as was in the case of the acreage analysis.

## Table 1
### LAND SALES TRANSACTIONS USED IN ANALYZING LAND VALUES IN THE CONROE STUDY AND CONTROL AREAS (1952-65)

| Period of Study | Year | Number of Sales Transactions | | | | Grand Total |
| | | Unimproved | | Improved | | |
| | | Acreage | Subdivision | Acreage | Subdivision | |
|---|---|---|---|---|---|---|
| **Study Area** | | | | | | |
| Before Period | 1952 | 11 | 22 | 4 | 24 | 61 |
| (1952-58) | 1953 | 13 | 2 | 5 | 29 | 49 |
| | 1954 | 16 | 9 | 9 | 25 | 59 |
| | 1955 | 23 | 11 | 7 | 44 | 85 |
| | 1956 | 21 | 10 | 10 | 21 | 62 |
| | 1957 | 15 | 16 | 2 | 29 | 62 |
| | 1958 | 11 | 10 | 12 | 35 | 68 |
| During Period | 1959 | 33 | 19 | 6 | 19 | 77 |
| (1959-62) | 1960 | 27 | 12 | 7 | 26 | 72 |
| | 1961 | 12 | 15 | 4 | 25 | 56 |
| | 1962 | 23 | 16 | 7 | 29 | 75 |
| After Period | 1963 | 32 | 23 | 10 | 56 | 121 |
| (1963-65) | 1964 | 16 | 25 | 6 | 75 | 122 |
| | 1965 | 21 | 105 | 12 | 112 | 250 |
| Subtotal | | 274 | 295 | 101 | 549 | 1,219 |
| **Control Area** | | | | | | |
| Before Period | 1952 | 24 | 7 | 6 | 12 | 49 |
| (1952-58) | 1953 | 24 | 2 | 8 | 4 | 38 |
| | 1954 | 32 | 12 | 12 | 9 | 65 |
| | 1955 | 33 | 20 | 8 | 15 | 76 |
| | 1956 | 33 | 21 | 7 | 12 | 73 |
| | 1957 | 35 | 16 | 9 | 13 | 73 |
| | 1958 | 25 | 11 | 10 | 12 | 58 |
| During Period | 1959 | 29 | 23 | 10 | 24 | 86 |
| (1959-62) | 1960 | 34 | 21 | 16 | 16 | 87 |
| | 1961 | 26 | 41 | 7 | 26 | 100 |
| | 1962 | 23 | 29 | 16 | 25 | 93 |
| After Period | 1963 | 26 | 27 | 13 | 45 | 111 |
| (1963-65) | 1964 | 18 | 22 | 6 | 57 | 103 |
| | 1965 | 24 | 23 | 9 | 50 | 106 |
| Subtotal | | 386 | 275 | 137 | 320 | 1,118 |
| Grand Total | | 660 | 570 | 238 | 869 | 2,337 |

Table 2

PROPERTY SALE DATA CHARACTERISTICS OF THE STUDY AREA VERSUS THE CONTROL AREA, CONROE, TEXAS, BY PERIOD[1]

| Characteristic | Before Period | | After Period | |
|---|---|---|---|---|
| | Study Area | Control Area | Study Area | Control Area |
| Acreage Sales | | | | |
| Unimproved | | | | |
| Year of Sale (In Code No.) | 55.1 | 55.1 | 63.8 | 64.0 |
| Size of Tract (In Acres) | 13.8 | 14.9 | 40.9 | 13.4 |
| Sale Price (In Dollars) | 4,186 | 3,392 | 40,394 | 6,210 |
| Improved | | | | |
| Year of Sale (In Code No.) | 55.4 | 55.1 | 64.1 | 63.9 |
| Size of Tract (In Acres) | .9 | 1.0 | .8 | 12.6 |
| Sale Price (In Dollars) | 5,794 | 6,217 | 11,992 | 14,355 |
| Subdivided Sales | | | | |
| Unimproved | | | | |
| Year of Sale (In Code No.) | 54.9 | 55.6 | 64.5 | 63.9 |
| Size of Tract (In Sq. Ft.) | 20,604 | 18,557 | 14,184 | 20,008 |
| Sale Price (In Dollars) | 1,697 | 1,998 | 2,650 | 1,786 |
| Improved | | | | |
| Year of Sale (In Code No.) | 55.1 | 55.3 | 64.2 | 64.0 |
| Size of Tract (In Sq. Ft.) | 11,078 | 13,480 | 12,918 | 14.885 |
| Sale Price (In Dollars) | 8,517 | 9,985 | 15,751 | 15,120 |

[1]The data are arithmetic means. In the case of the code number for year of sale, the last two digits of the year, say 1952, were averaged.

It is significant to note the large increase in the number of subdivided land sales which occurred the last year of study. Several new subdivisions were opened in 1964 and 1965.

The above analysis shows that land values increase rapidly in an area where the potential for much higher uses has been enhanced by construction of a new transportation facility.

## Proximity to IH 45

When the tracts sold were further divided into those abutting IH 45 and those not abutting this facility, more

Table 3

PRICES OF UNIMPROVED ACREAGE TRACTS LOCATED IN THE STUDY AND CONTROL AREAS, CONROE, TEXAS, IN CONSTANT DOLLARS (1947-49 = 100)

| Period | Study Area | | Control Area | | Difference Between Areas | Percent of Study Area Before Period Price |
|---|---|---|---|---|---|---|
| | Price Per Acre[1] | Standard Deviation | Price Per Acre[1] | Standard Deviation | | |
| Before Period (1952-58) | $ 739(110) | $ 760 | $ 793(206) | $ 785 | $ 54[2] | |
| During Period (1959-62) | 758 (95) | 771 | 930(112) | 1,036 | 172 | |
| After Period (1963-65) | 1,345 (69) | 1,570 | 698 (68) | 823 | 647[3] | |
| Change Between Periods | | | | | | |
| Before and During | | | | | | |
| Dollars | $ 19 | | $ 137 | | $118 | |
| Percent | 3% | | 17% | | 14% | |
| During and After | | | | | | |
| Dollars | $ 587 | | $ −232 | | $819 | |
| Percent | 77% | | − 25% | | 102% | |
| Before and After | | | | | | |
| Dollars | $ 606 | | $ − 95 | | $701 | 95%[4] |
| Percent | 82% | | − 12% | | 94%[5] | |
| Probable Highway Influence | | | | | | |
| Percent | 95%[6] | | | | | |
| Dollars | $ 702[7] | | | | | |

[1]The number of transactions is shown in parentheses.
[2]The Standard Error (S.E.) is $91. Using a probability level of 95 percent, this value is not significant. T is equal to .59.
[3]The S.E. is $214. Using a probability level of 95 percent, this value is significant. T is equal to 3.02.
[4]Assuming that the property prices in both areas increased in value the same dollar-wise in the absence of a new road improvement, the between period dollar differences would be zero. However, the study area prices changed by a greater amount. The net dollar difference is expressed as a percent of the study area's before period price.
[5]Same assumption as Footnote 4, except based on percent changes between areas.
[6]Average of Footnotes 4 and 5 percentages.
[7]Footnote 6 percentage multiplied by the study area's before period price.

Table 4

PRICES OF IMPROVED ACREAGE TRACTS LOCATED IN THE STUDY AND CONTROL AREAS, CONROE, TEXAS, IN CONSTANT DOLLARS (1947-49 = 100)

| Period | Study Area | | Control Area | | Difference Between Areas | Percent of Study Area Before Period Price |
|---|---|---|---|---|---|---|
| | Price Per Acre[1] | Standard Deviation | Price Per Acre[1] | Standard Deviation | | |
| Before Period (1952-58) | $ 9,182(49) | $ 8,476 | $ 7,603(60) | $5,585 | $1,579[2] | |
| During Period (1959-62) | 9,699(24) | 7,041 | 7,478(49) | 5,721 | 2,221 | |
| After Period (1963-65) | 14,228(28) | 12,667 | 10,131(28) | 9,562 | 4,097[3] | |
| Change Between Periods | | | | | | |
| Before and During | | | | | | |
| Dollars | $ 517 | | $ −125 | | $ 642 | |
| Percent | 6% | | − 2% | | 8% | |
| During and After | | | | | | |
| Dollars | $ 4,529 | | $ 2,653 | | $1,876 | |
| Percent | 47% | | 26% | | 21% | |
| Before and After | | | | | | |
| Dollars | $ 5,046 | | $ 2,528 | | $2,518 | 27% |
| Percent | 35% | | 33% | | 2% | |
| Probable Highway Influence[4] | | | | | | |
| Percent | 15% | | | | | |
| Dollars | $ 1,377 | | | | | |

[1]The number of transactions is shown in parentheses.
[2]The S.E. is $1,410. Using a probability level of 95 percent, this value is not significant. T is equal to 1.12.
[3]The S.E. is $2,160. Using a probability level of 95 percent, this value is not significant. t is equal to 1.90.
[4]See Footnotes 4, 5, 6, and 7 under Table 3 for an explanation.

evidence was revealed to indicate the extent of positive influence of the highway on land values. Some of the sale data characteristics of abutting and nonabutting properties, as shown in Table 7, became different between periods, partially due to construction of the new highway.

Table 8 presents the analysis of the prices of unimproved acreage tracts. Abutting properties received a much greater highway influence than did nonabutting properties, both dollar-wise and percentage-wise. Again,

the before period mean prices of abutting and nonabutting properties were highly comparable.

According to Tables 9 and 10 both abutting and nonabutting properties on the east side of IH 45 received a much greater highway influence on land values than did those on the west side. This analysis reflects Conroe's influence on land values near the new facility.

A further comparison of the data in Table 10 with tabular data in the Appendix shows that IH 45 had a greater positive influence on land values of properties

Table 5

PRICES OF UNIMPROVED SUBDIVIDED TRACTS LOCATED IN THE STUDY AND CONTROL AREAS, CONROE, TEXAS, IN CONSTANT DOLLARS (1947-49 = 100)

| Period | Study Area | | Control Area | | Difference Between Areas | Percent of Study Area Before Period Price |
|---|---|---|---|---|---|---|
| | Price Per Square Foot[1] | Standard Deviation | Price Per Square Foot[1] | Standard Deviation | | |
| Before Period (1952-58) | $.0971 (80) | $.0705 | $ .1180 (89) | $.0874 | $.0209[2] | |
| During Period (1959-62) | .1408 (62) | .1139 | .0810(114) | .0686 | .0598 | |
| After Period (1963-65) | .1823(153) | .2090 | .0783 (72) | .0589 | .1040[3] | |
| Change Between Periods | | | | | | |
| Before and During | | | | | | |
| Dollars | $.0437 | | $−.0370 | | $.0807 | |
| Percent | 45% | | − 31% | | 76% | |
| During and After | | | | | | |
| Dollars | $.0415 | | $−.0027 | | $.0442 | |
| Percent | 29% | | − 3% | | 32% | |
| Before and After | | | | | | |
| Dollars | $.0852 | | $−.0397 | | $.1249 | 129% |
| Percent | 88% | | − 34% | | 122% | |
| Probable Highway Influence[4] | | | | | | |
| Percent | 126% | | | | | |
| Dollars | $.1223 | | | | | |

[1]The number of transactions is shown in parentheses.
[2]The S.E. is $.0122. Using a probability level of 95 percent, this value is not significant. T is equal to 1.71.
[3]The S.E. is $.0183. Using a probability level of 95 percent, this value is significant. t is equal to 5.68.
[4]See Footnotes 4, 5, 6, and 7 under Table 3 for an explanation.

## Table 6
### PRICES OF IMPROVED SUBDIVIDED TRACTS LOCATED IN THE STUDY AND CONTROL AREAS, CONROE, TEXAS, IN CONSTANT DOLLARS (1947-49 = 100)

| Period | Study Area | | Control Area | | Difference Between Areas | Percent of Study Area Before Period Price |
| | Price Per Square Foot[1] | Standard Deviation | Price Per Square Foot[1] | Standard Deviation | | |
|---|---|---|---|---|---|---|
| Before Period (1952-58) | $ .7307(207) | $.2549 | $.7423 (77) | $.4040 | $.0116[2] | |
| During Period (1959-62) | .7985 (99) | .7779 | .7980 (91) | .5584 | .0005 | |
| After Period (1963-65) | 1.0352(243) | .4338 | .9885(152) | .4950 | .0467[3] | |
| Change Between Periods | | | | | | |
| Before and During | | | | | | |
| Dollars | $ .0678 | | $.0557 | | $.0121 | |
| Percent | 9% | | 8% | | 1% | |
| During and After | | | | | | |
| Dollars | $ .2367 | | $.1905 | | $.0462 | |
| Percent | 30% | | 24% | | 6% | |
| Before and After | | | | | | |
| Dollars | $ .3045 | | $.2462 | | $.0583 | |
| Percent | 42% | | 33% | | 9% | 8% |
| Probable Highway Influence[4] | | | | | | |
| Percent | 9% | | | | | |
| Dollars | $ .0658 | | | | | |

[1]The number of transactions is shown in parentheses.
[2]The S.E. is $.0493. Using a probability level of 95 percent, this value is not significant.  T is equal to .24.
[3]The S.E. is $.0498. Using a probability level of 95 percent, this value is not significant.   t is equal to .94
[4]See Footnotes 4, 5, 6, and 7 under Table 3 for an explanation.

abutting its east side than USH 75 had on land values of properties abutting its west side. Properties abutting the west side of IH 45 failed to increase in value as much as properties abutting USH 75. The latter facility has become Conroe's principal thoroughfare.

All the data presented strongly support the conclusion that IH 45 enhanced the value of the various types of property in the study area. The facility's influence on the value of abutting property was much more pronounced than on the value of nonabutting property. This occurrence shows that properties in a more favorable location with respect to the new Interstate System command a higher value than those less favorably located. Yet, the influence of such a facility reaches beyond the abutting properties.

## Table 7
### SALE DATA CHARACTERISTIC OF STUDY AREA ACREAGE, ABUTTING VERSUS NONABUTTING IH 45, CONROE, TEXAS, BY PERIOD[1]

| Characteristic | Before Period | | After Period | |
| | Abutting | Nonabutting | Abutting | Nonabutting |
|---|---|---|---|---|
| Unimproved | | | | |
| Year of Sale (In Code No.)[2] | 54.4(13) | 55.2(97) | 64.8(12) | 63.6(57) |
| Size of Tract (In Acres) | 13.5(13) | 13.9(97) | 98.7(12) | 28.7(57) |
| Sale Price (In Dollars) | 5,425(13) | 4,019(97) | 120,120(12) | 23,609(57) |
| Before Land Use (In Code No.)[3] | 4.0(13) | 3.8(97) | 3.3(12) | 3.4(57) |
| After Land Use (In Code No.)[3] | 4.8(13) | 4.7(97) | 4.4(12) | 4.5(57) |
| Frontage on Road (In Feet) | 215(13) | 392(96) | 1,227 (9) | 371(56) |
| Depth (In Feet) | 420(13) | 979(96) | 1,550 (9) | 1,190(56) |
| Improved | | | | |
| Year of Sale (In Code No.)[2] | 55.5 (8) | 55.4(41) | 64.7 (3) | 64.0(25) |
| Size of Tract (In Acres) | .5 (8) | .9(41) | .6 (3) | .8(25) |
| Sale Price (In Dollars) | 3,679 (8) | 6,207(41) | 7,917 (3) | 12,481(25) |
| Before Land Use (In Code No.)[3] | 5.3 (8) | 5.9(41) | 5.0 (3) | 6.0(25) |
| After Land Use (In Code No.)[3] | 4.5 (8) | 5.9(41) | 5.0 (3) | 6.1(25) |
| Frontage on Road (In Feet) | 76 (8) | 105(41) | 133 (3) | 109(25) |
| Depth (In Feet) | 277 (8) | 219(41) | 360 (3) | 282(25) |

[1]The data are arithmetic means and the numbers in parentheses are the number of sales.
[2]The year code is the last two digits of the years involved.
[3]As the land use code numbers get larger, this signifies a higher land use.

## Table 8

### PRICES OF UNIMPROVED ACREAGE TRACTS ABUTTING AND NONABUTTING IH 45 IN THE STUDY AREA COMPARED TO THE CONTROL AREA, CONROE, TEXAS, IN CONSTANT DOLLARS (1947-49 = 100)

| Period | Price Per Acre[1] | | | Difference Between Areas | | | Percent of Respective Parts of Study Area's Before Period Price | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Study Area Abutting | Study Area Nonabutting | Control Area | Abutting Vs Nonabutting | Abutting Vs Control | Nonabutting Vs Control | Abutting | Nonabutting |
| Before Period (1952-58)[2] | $ 749(13) | $ 738(97) | $ 793(206) | $ 11 | $ 44 | $ 55 | | |
| During Period (1959-62) | 1,657 (7) | 686(88) | 930(112) | 971 | 727 | 244 | | |
| After Period (1963-65)[3] | 2,571(12) | 1,087(57) | 698 (68) | 1,484 | 1,873 | 389 | | |
| Change Between Periods | | | | | | | | |
| Before and During | | | | | | | | |
| Dollars | $ 908 | $ −52 | $ 137 | $ 960 | $ 771 | $189 | | |
| Percent | 121% | − 7% | 17% | 128% | 104% | 24% | | |
| During and After | | | | | | | | |
| Dollars | $ 914 | $ 401 | $ −232 | $ 513 | $1,146 | $633 | | |
| Percent | 55% | 58% | − 25% | 3% | 80% | 93% | | |
| Before and After | | | | | | | | |
| Dollars | $1,822 | $ 349 | $ − 95 | $1,473 | $1,917 | $444 | 256% | 59% |
| Percent | 243% | 47% | − 12% | 196% | 255% | 59% | | |
| Probable Highway Influence[4] | | | | | | | | |
| Percent | 256% | 59% | | | | | | |
| Dollars | $1,917 | $ 444 | | | | | | |

[1]The number of transactions is shown in parentheses.

[2]For abutting versus nonabutting, S.E. is $99. Using a probability level of 95 percent, this value is not significant. t is equal to .11. For abutting versus control, S.E. is $1,499. Using a probability level of 95 percent, this value is not significant. t is equal to .03. For nonabutting versus control, S.E. is $96. Using a probability level of 95 percent, this value is not significant. T is equal to .57.

[3]For abutting versus nonabutting, S.E. is $36. Using a probability level of 95 percent, this value is significant. t is equal to 41.80. For abutting versus control, S.E. is $97. Using a probability level of 95 percent, this value is significant. t is equal to 19.30. For nonabutting versus control, S.E. is $177. Using a probability level of 95 percent, this value is significant. T is equal to 2.20.

[4]See Footnotes 4, 5, 6, and 7, under Table 3 for an explanation.


## Table 9

### PRICES OF UNIMPROVED ACREAGE TRACTS ABUTTING AND NONABUTTING THE WEST SIDE OF IH 45 IN THE STUDY AREA COMPARED TO THE CONTROL AREA, CONROE, TEXAS, IN CONSTANT DOLLARS (1947-49 = 100)

| Period | Price Per Acre[1] | | | Difference Between Areas | | | Percent of Respective Parts of Study Area's Before Period Price | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Study Area Abutting | Study Area Nonabutting | Control Area | Abutting Vs Nonabutting | Abutting Vs Control | Nonabutting Vs Control | Abutting | Nonabutting |
| Before Period (1952-58)[2] | $ 1,231(6) | $ 497(61) | $ 793(206) | $734 | $ 438 | $296 | | |
| During Period (1959-62) | 500(2) | 436(66) | 930(112) | 64 | 430 | 494 | | |
| After Period (1963-65)[3] | 1,658(5) | 684(40) | 698 (68) | 974 | 960 | 14 | | |
| Change Between Periods | | | | | | | | |
| Before and During | | | | | | | | |
| Dollars | $ −731 | $ −61 | $ 137 | $670 | $ 868 | $198 | | |
| Percent | − 59% | −12% | 17% | 47% | 76% | 29% | | |
| During and After | | | | | | | | |
| Dollars | $ 1,158 | $ 248 | $ −232 | $910 | $1,390 | $480 | | |
| Percent | 232% | 57% | − 25% | 175% | 257% | 82% | | |
| Before and After | | | | | | | | |
| Dollars | $ 427 | $ 187 | $ − 95 | $240 | $ 522 | $282 | 42% | 57% |
| Percent | 35% | 38% | − 12% | −3% | 47% | 50% | | |
| Probable Highway Influence[4] | | | | | | | | |
| Percent | 45% | 54% | | | | | | |
| Dollars | $ 554 | $ 268 | | | | | | |

[1]The number of transactions is shown in parentheses.

[2]For abutting versus nonabutting, S.E. is $47. Using a probability level of 95 percent, this value is significant. t is equal to 15.60. For abutting versus control, S.E. is $30. Using a probability level of 95 percent, this value is significant. t is equal to 14.6. For nonabutting versus control, S.E. is $59. Using a probability level of 95 percent, this value is significant. T is equal to 5.01.

[3]For abutting versus nonabutting, S.E. is $118. Using a probability level of 95 percent, this value is significant. t is equal to 8.25. For abutting versus control, S.E. is $31. Using a probability level of 95 percent, this value is significant. t is equal to 30.00. For nonabutting versus control, S.E. is $102. Using a probability level of 95 percent, this value is not significant. T is equal to .13.

[4]See Footnotes 4, 5, 6, and 7, under Table 3 for an explanation.

## Table 10
### PRICES OF UNIMPROVED ACREAGE TRACTS ABUTTING AND NONABUTTING THE EAST SIDE OF IH 45 IN THE STUDY AREA COMPARED TO THE CONTROL AREA, CONROE, TEXAS, IN CONSTANT DOLLARS
#### (1947-49 = 100)

| Period | Price Per Acre[1] | | | Difference Between Areas | | | Percent of Respective Parts of Study Area's Before Period Price | |
| | Study Area Abutting | Study Area Nonabutting | Control Area | Abutting Vs Non-abutting | Abutting Vs Control | Non-abutting Vs Control | Abutting | Non-abutting |
|---|---|---|---|---|---|---|---|---|
| Before Period (1952-58)[2] | $ 337(7) | $1,145(36) | $ 793(206) | $ 808 | $ 456 | $ 352 | | |
| During Period (1959-62) | 2,119(5) | 1,438(22) | 930(112) | 681 | 1,189 | 508 | | |
| After Period (1963-65)[3] | 3,223(7) | 2,036(17) | 698 (68) | 1,187 | 2,525 | 1,338 | | |
| **Change Between Periods** | | | | | | | | |
| Before and During | | | | | | | | |
| Dollars | $1,782 | $ 293 | $ 137 | $1,489 | $1,645 | $ 156 | | |
| Percent | 529% | $ 26% | 17% | 503% | 512% | 9% | | |
| During Period | | | | | | | | |
| Dollars | $1,104 | $ 598 | $−232 | $ 506 | $1,336 | $ 830 | | |
| Percent | 52% | 42% | − 25% | 10% | 27% | 67% | | |
| Before and After | | | | | | | | |
| Dollars | $2,886 | $ 891 | $− 95 | $1,995 | $2,981 | $ 986 | 885% | 86% |
| Percent | 856% | 78% | − 12% | 778% | 868% | 90% | | |
| **Probable Highway Influence[4]** | | | | | | | | |
| Percent | 877% | 88% | | | | | | |
| Dollars | $2,955 | $1,008 | | | | | | |

[1]The number of transactions is shown in parentheses.

[2]For abutting versus nonabutting, S.E. is $62. Using a probability level of 95 percent, this value is significant. t is equal to 13.03. For abutting versus control, S.E. is $22. Using a probability level of 95 percent, this value is significant. t is equal to 20.73. For nonabutting versus control, S.E. is $79. Using a probability level of 95 percent, this value is significant. T is equal to 4.46.

[3]For abutting versus nonabutting, S.E. is $333. Using a probability level of 95 percent, this value is significant. t is equal to 2.43. For abutting versus control, S.E. is $153. Using a probability level of 95 percent, the value is significant. t is equal to 16.50. For nonabutting versus control, S.E. is $140. Using a probability level of 95 percent, this value is significant. t is equal to 9.56.

[4]See Footnotes 4, 5, 6, and 7, under Table 3 for an explanation.

# Land Use Influences of IH 45

The new IH 45 has had a significant influence on land use changes in the Conroe study area. Such changes are discussed, first, on an over-all study area basis and, second, on a proximity to the highway basis.

## Study Area

Figure 2 is a 1958 aerial photograph which shows the general land use in the Conroe study area just prior to the construction of IH 45. Figure 3A identifies the specific land uses as of 1958. Since that time, many changes in land use have occurred in the study area. Figure 3B shows what changes have occurred during the 1959-65 period. By viewing Figure 3B as an overlay to Figure 3A, one can see the original uses of those tracts which did change to other uses.
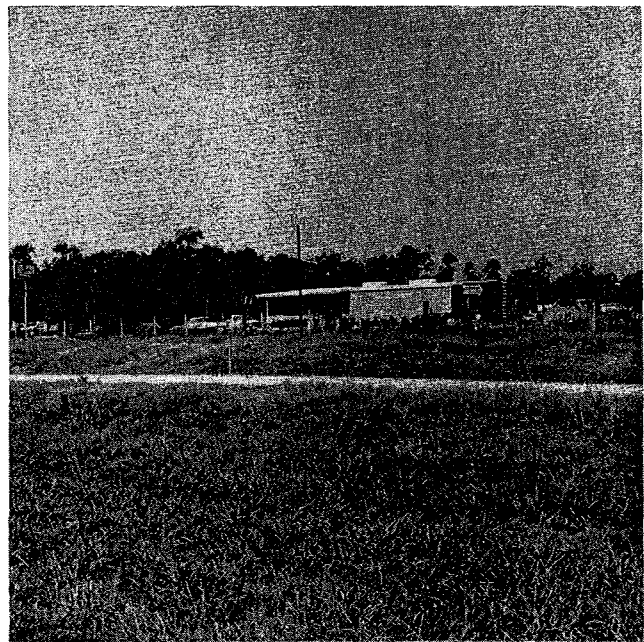
Table 11 shows the total acreage of study area land that was in various uses as of 1958 and 1965. The predominant land use was agricultural in 1958 and land held for future use in 1965.

The only types of land use showing a decline in acreage were timberland and agricultural land. All other types had an increase of at least 10 percent in acreage between the two years studied. The largest gain, in terms of acreage, was in land held for future use. Most of this acreage was formerly timberland or agricultural land.

The bulk of the land changing use was localized in three different areas: near IH 45; near the City of Conroe; and near the proposed Conroe Lake site situated on the San Jacinto River. In the case of the last, at least two tracts have already been purchased for the basin area of the lake. Speculators have subsequently purchased several large tracts near the lake site and plan to sell off smaller tracts for homesites.



One of the IH 45 commercial tracts, formerly in agricultural use.

Speculative land buying has also occurred near IH 45. Some of these tracts have been developed into residential subdivisions, one several miles north of Conroe.

Near Conroe, residential development east and west of the new highway has been extensive. Such development has been so extensive on the west side of Conroe, that the new high school was located in that area west of IH 45.

## Proximity to IH 45

From Figures 3A and 3B, the changes in land use of abutting properties can be noted. Assuming that the before period tracts were bisected by IH 45 in the same manner as they were in the after period, the number of abutting tracts in various uses for each period is shown in Table 12.

### Table 11
### THE QUANTITY OF STUDY AREA LAND IN VARIOUS USES AS OF 1958 AND 1965

| Type of Land Use | Quantity of Land 1958 | 1965 | Change Between Years Quantity | Percent |
|---|---|---|---|---|
| | (Acres) | (Acres) | (Acres) | (%) |
| Timberland | 4,672 | 2,904 | −1,768 | − 38 |
| Agricultural Land | 9,678 | 6,025 | −3,653 | − 38 |
| Municipal-Institutional Land | 1,743 | 1,921 | + 178 | + 10 |
| Land Held for Future Use | 3,087 | 7,356 | +4,269 | + 139 |
| Rural Residential Land | 424 | 582 | + 158 | + 37 |
| Urban Residential Land | 570 | 928 | + 358 | + 63 |
| Industrial Land | 57 | 73 | + 16 | + 28 |
| Commercial Traffic Serving Land | 62 | 69 | + 7 | + 11 |
| Commercial Nontraffic Serving Land | 7 | 115 | + 108 | +1543 |
| IH 45 Right of Way Land | 0 | 327 | + 327 | NA |
| Total Land in Study Area | 20,300 | 20,300 | | |

### Table 12
### THE NUMBER OF STUDY AREA PROPERTIES ABUTTING IH 45 IN 1958 AND 1965

| Type of Land Use | Number of Abutting Properties 1958[1] | 1965 |
|---|---|---|
| Timberland | 25 | 3 |
| Agricultural | 15 | 7 |
| Institutional-Municipal | 6 | 8 |
| Held for Future Use | 43 | 58 |
| Rural Residential | 5 | 6 |
| Urban Residential | 6 | 6 |
| Commercial | 0 | 5 |
| Total Number of Properties | 100 | 93 |

[1]The new highway was assumed to be there in 1958.

Figure 2. A 1958 aerial photograph of the Conroe study area.
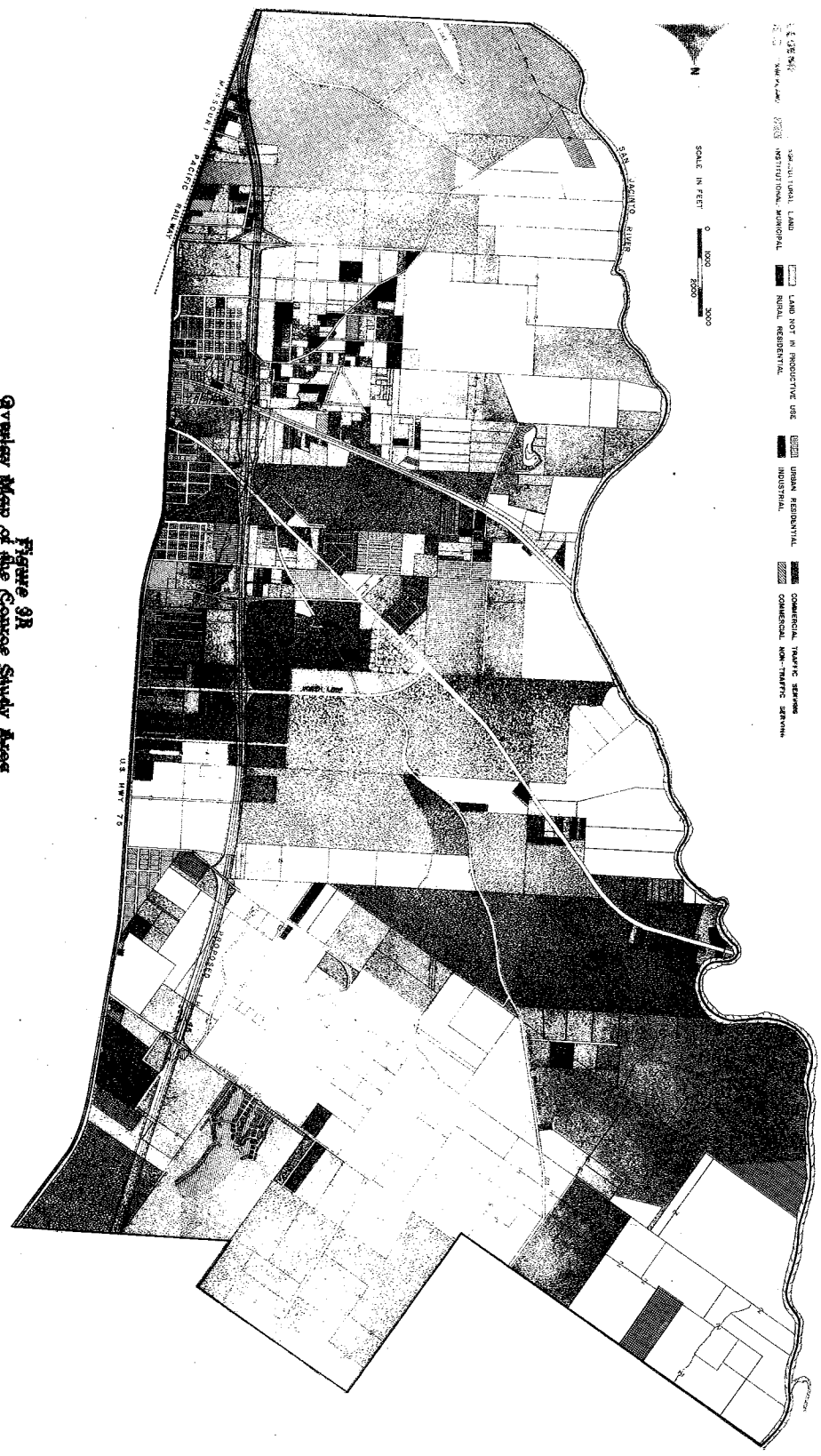
**Figure 9B**
**Aerial Map of the Conroe Study Area**
**Showing Land Use Changes in the Period 1959-65,**
**During and After Construction of IH 45**

LAND USE

AGRICULTURAL LAND
INSTITUTIONAL-MUNICIPAL
LAND NOT IN PRODUCTIVE USE
RURAL RESIDENTIAL
URBAN RESIDENTIAL
INDUSTRIAL
COMMERCIAL TRAFFIC SERVING
COMMERCIAL NON-TRAFFIC SERVING

SCALE IN FEET
0   1000   2000   3000

N

SOUTHERN PACIFIC RAIL WAY
SAN JACINTO RIVER
U.S. HWY 75

**LEGEND:**

| | |
|---|---|
| ☐ AGRICULTURAL LAND | ▨ LAND NOT IN PRODUCTIVE USE |
| ▦ TIMBERLAND | ▦ INSTITUTIONAL-MUNICIPAL |
| | ■ RURAL RESIDENTIAL |
| ▦ URBAN RESIDENTIAL | ■ COMMERCIAL TRAFFIC SERVING |
| ■ INDUSTRIAL | ▨ COMMERCIAL NON-TRAFFIC SERVING |

SCALE IN FEET  0  1000  2000  3000

SAN JACINTO RIVER

MISSOURI PACIFIC RAILWAY

CONROE-LINE BRANCH RD.

PROPOSED L.N.

U.S. HWY 75

Figure 3A
A Base Map of the Conroe Study Area
Showing Land Use as of 1958

Conroe's new high school facilities were constructed in the study area.





A golf course and swimming pool, built around a new residential subdivision, are located less than one half mile from IH 45.

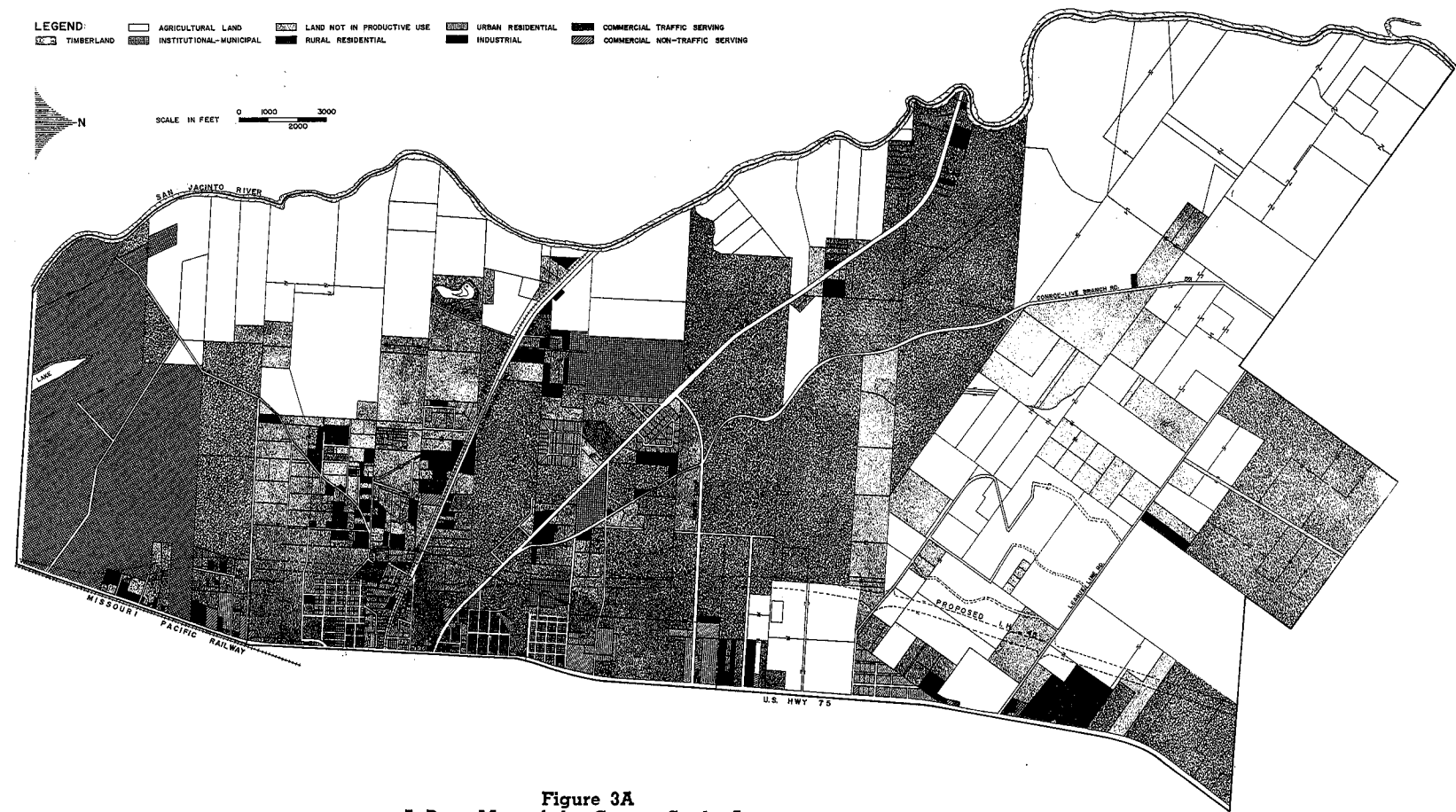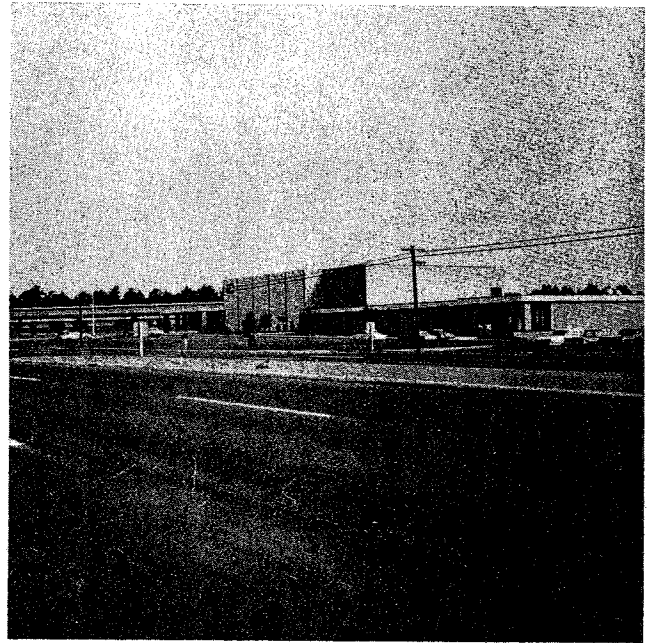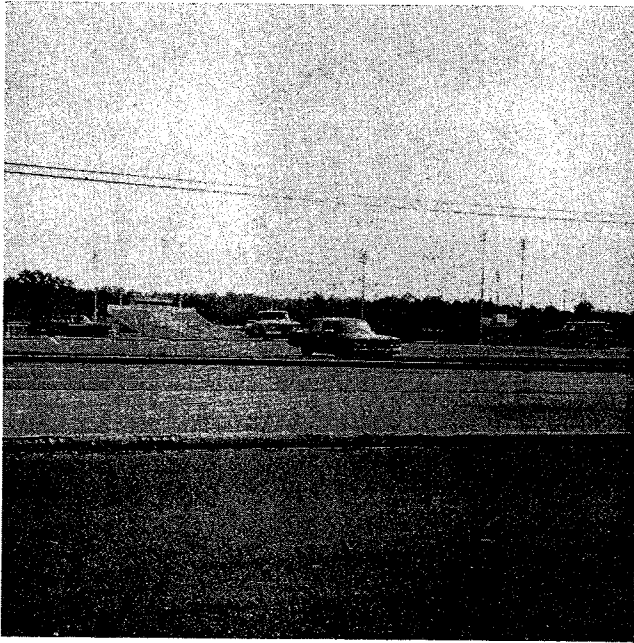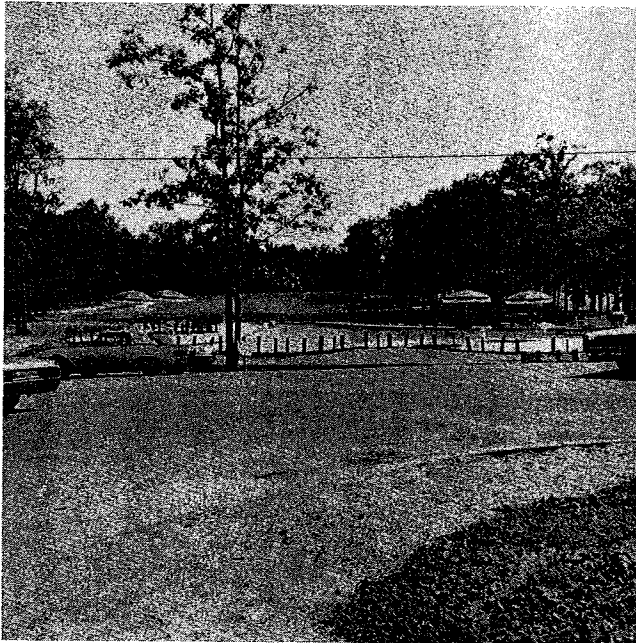There was a considerable decrease in the number of abutting properties in timberland and agricultural uses. By far, most of these tracts changed to land held for future use. Another important change in abutting land use was that of five commercial tracts. Three of these are located at IH 45 interchanges.

Two new residential subdivisions are virtually abutting IH 45. A new apartment house is abutting one of the interchanges.

Thus, it appears that IH 45 was a principal cause of the changes in abutting land uses. Even so, the highway influence in the Conroe study area has not been as pronounced as it has been in other areas, perhaps, be-

cause of the denial of access to the existing service roads. For example, the highway influence on land values and land use was considerably greater in the Huntsville study area. The latter area has continuous service roads on both sides of the through lanes.

In spite of disadvantages of denial of access and no service roads on some sections, the Conroe by-pass has influenced land to change into higher uses, especially in the case of property abutting or near the facility. Had IH 45 not been located in the study area, it is doubtful that many tracts would have changed to higher uses so quickly. Because, in the before period, some of these same tracts were not readily accessible by road.

Timberland



Agricultural Land
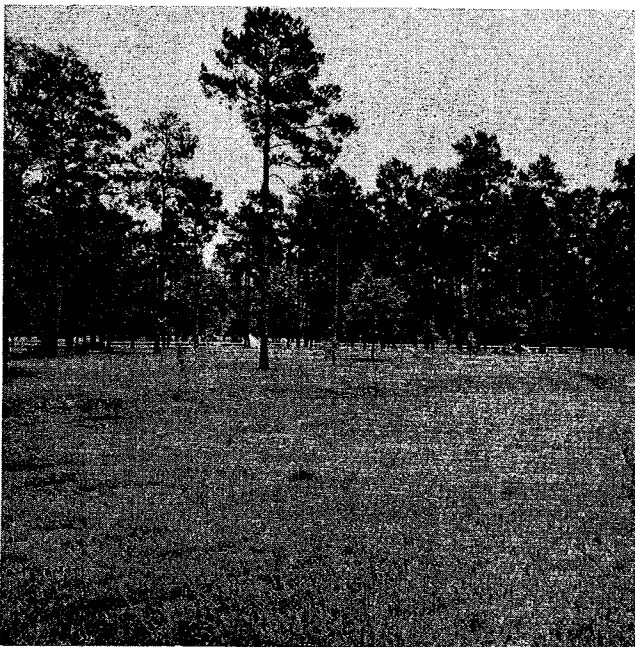


City Park
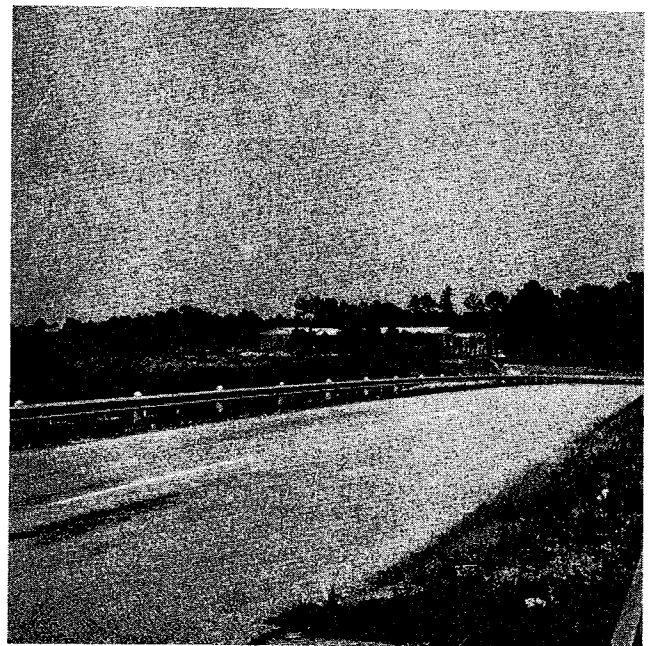


Apartment Houses

Land in various uses along IH 45 in 1965.

# Business Activity Influence of IH 45

The analysis of IH 45's business activity influence was based on all retail businesses located along the old route USH 75 and IH 45 by-pass. Table 13 shows the number of retail and nonretail firms which were located along these two routes in 1962 and 1965.

The number of new businesses locating along both routes totaled 34, of which 13 are retail. Only 11 of the old 1962 firms closed before 1965, two being nonretail. With a net increase of 23 firms between 1962 and 1965, it is reasonable to conclude that the level of business activity has quickened along the combined routes. The removal of "through" highway traffic, much of which was trucks, has made the old route USH 75 Conroe segment more suitable for commercial development. Many new nonretail firms and such retail businesses as grocery and service firms have chosen the old route in preference to the new route.

Table 14 shows the advantages and disadvantages, as mentioned by operators of the retail businesses, of the IH 45 by-pass. Relief of traffic problems was considered by far the most important advantage to operators of businesses abutting the old route. This opinion was even voiced by many operators of traffic serving businesses who experienced a loss in gross sales. The primary disadvantage expressed was that the new by-pass hurt individual businesses, especially the traffic serving type.

The average monthly rent for retail establishments along the old route increased from $136 to $171 between 1962 and 1965. This increase reflects a growing demand for existing buildings along the old route. The increase in rental rates is in keeping with the large gain in real estate values along the old route USH 75 after the construction of IH 45.

### Table 14
ADVANTAGES AND DISADVANTAGES OF THE IH 45 BY-PASS AS REPORTED BY OWNERS OF RETAIL BUSINESSES STUDIED

| Item | Traffic Serving | Nontraffic Serving | Total |
|------|:---:|:---:|:---:|
| **Advantages of By-pass** | | | |
| Relieved Traffic Problem | 22 | 24 | 46 |
| Helped Personal Business | 4 | 10 | 14 |
| Helped All Businesses | 3 | 4 | 7 |
| Helped All Except Traffic Serving | 9 | 3 | 12 |
| Helped Population to Increase | 4 | 5 | 9 |
| Increase Property Evaluation | 0 | 2 | 2 |
| Made Travel to Houston More Conducive | 3 | 0 | 3 |
| Others | 1 | 3 | 4 |
| **Disadvantages of By-pass** | | | |
| Failed to Relieve Traffic Problem | 0 | 1 | 1 |
| Hurt Personal Business | 16 | 3 | 19 |
| Hurt All Businesses | 9 | 2 | 11 |
| Hurt Only Traffic Serving | 0 | 8 | 8 |
| Others | 3 | 7 | 10 |

The average hours per week in which the study businesses remained open declined by six-tenths of an hour between 1962 and 1965. Amazingly enough, traffic serving businesses' hours open declined only half of this amount. Their hours open were expected to decline more than nontraffic serving businesses to compensate for a decline in highway customers.

Table 15 presents the comparison of changes in the total gross dollar sales of businesses located along the

### Table 13
NUMBER OF COMMERCIAL BUSINESSES LOCATED ALONG USH 75 AND IH 45 IN CONROE, TEXAS DURING 1962 AND/OR 1965

| Type of Business | USH 75 Businesses Open 1962 & 1965 | USH 75 Businesses Closed Before 1965 | Opened After 1962 | IH 45 Businesses Open By 1965 | Total Businesses Open in 1965 |
|------|:---:|:---:|:---:|:---:|:---:|
| **Retail Firms** | | | | | |
| Traffic Serving | | | | | |
| Service Stations | 16 | 3 | 0 | 1 | 17 |
| Food Services | 18 | 1 | 2 | 0 | 20 |
| Motel | 4 | 0 | 0 | 0 | 4 |
| Total | 38 | 4 | 2 | 1 | 41 |
| Nontraffic Serving | | | | | |
| Grocery Stores | 8 | 1 | 1 | 0 | 9 |
| Services | 24 | 1 | 1 | 1 | 26 |
| Miscellaneous | 14 | 3 | 8 | 2 | 24 |
| Total | 46 | 5 | 10 | 3 | 59 |
| **Nonretail Firms** | | | | | |
| Real Estate | 3 | 0 | 6 | 0 | 9 |
| Contractors | 5 | 1 | 4 | 1 | 10 |
| Miscellaneous | 6 | 1 | 7 | 0 | 13 |
| Total | 14 | 2 | 17 | 1 | 32 |
| Grand Total | 98 | 11 | 29 | 5 | 132 |
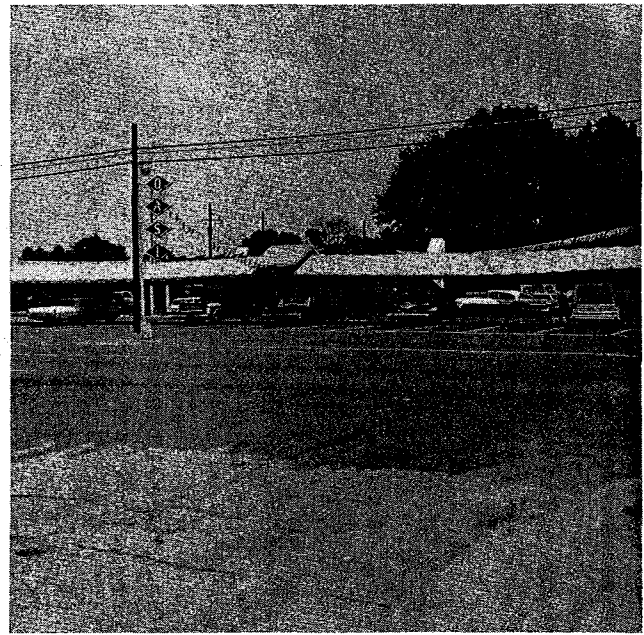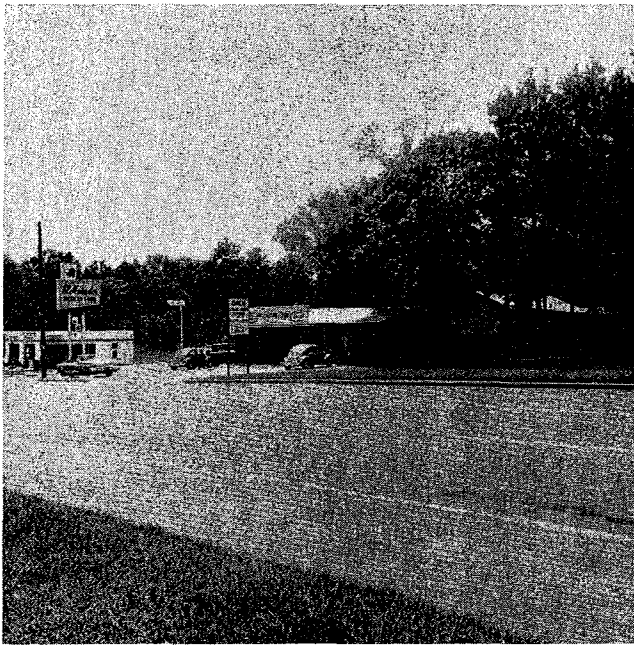
New traffic serving businesses along USH 75 in Conroe.

Table 15

GROSS RETAIL SALES OF BUSINESSES LOCATED ALONG STUDY ROUTES VERSUS MONTGOMERY COUNTY, CONTROL COUNTIES AND TEXAS BUSINESSES REPORTED BY SALES MANAGEMENT MAGAZINE'S "SURVEY OF BUYING POWER," 1962 AND 1965

| Group of Businesses | Gross Dollar Sales[1] | | Change Between 1962 & 1965 | |
| | 1962 | 1965 | Dollars | Percent |
|---|---|---|---|---|
| | (000) | (000) | | |
| Study Routes | $ 6,081 | $ 6,832 | $ 751 | 12% |
| Montgomery County | 24,239 | 27,862 | 3,623 | 15 |
| Liberty County | 33,601 | 40,034 | 6,433 | 19 |
| Angelina County | 38,999 | 47,061 | 8,062 | 21 |
| Texas | 12,450,898 | 14,628,228 | 2,177,330 | 17 |

[1]The sales of noncooperating study businesses were estimated by using the average sales of like firms for the appropriate year of missing information.

study routes versus those of businesses in Montgomery County, control counties, and Texas. The 12 percent increase experienced by the combined study firms is several percentage points below that of the control counties (with no Interstate System) and the State of Texas. However, the Montgomery County increase is only two percentage points below that of the state.

The analysis of gross dollar sale changes by route and type of business is continued below.

### Old Route USH 75 Businesses

Of the old route USH 75 retail businesses, 84 operated during both study years. Actual gross sales were collected from 58 of these firms. Table 16 shows the gross sale analysis of the 58 firms, 26 being traffic serving and 32 being nontraffic serving. Together, these groups of businesses showed a fair increase in sales. The average sales per firm increased nearly $6,000 between 1962 and 1965.

Table 16

GROSS SALES OF OLD ROUTE USH 75 BUSINESSES OPERATING BOTH STUDY YEARS, 1962 AND 1965, CONROE, TEXAS

| Type of Business | Number of Businesses | Gross Dollar Sales[1] | | Change Between 1962 and 1965 | |
| | | 1962 | 1965 | Dollars | Percent |
|---|---|---|---|---|---|
| **Traffic Serving** | | | | | |
| Service Stations | 10 | $1,073,740 | $ 969,908 | — 103,832 | —10% |
| Food Services | 12 | 566,727 | 487,011 | — 79,716 | —14 |
| Motels | 4 | 113,509 | 132,949 | 19,440 | 17 |
| Total | 26 | $1,753,976 | $1,589,868 | —164,108 | — 9% |
| **Nontraffic Serving** | | | | | |
| Grocery Stores | 7 | $1,127,581 | $1,198,855 | 71,274 | 6% |
| Services | 17 | 541,617 | 975,368 | 433,751 | 80 |
| Miscellaneous | 8 | 341,266 | 331,914 | — 9,352 | — 3 |
| Total | 32 | $2,010,464 | $2,506,137 | 495,673 | 25% |
| Grand Total | 58 | $3,764,440 | $4,096,005 | 331,565 | 9% |
| Average Per Firm | | 64,904 | 70,621 | 5,717 | 9% |
| Standard Deviation | | 89,463 | 94,487 | NA | NA |

[1]This table contains only actual gross sales.

New nontraffic serving businesses along USH 75 in Conroe.

*Traffic Serving*

As a group, the sales of the 26 traffic serving businesses declined. As Table 16 shows, service stations and food service establishments experienced a decrease, while motels experienced an increase. The motels were expected to lose more business due to the new by-pass than were the other two types. Service stations and eating establishments have a much better chance to capture more local business. Other studies in this series revealed the opposite results for motels. However, Conroe has a nice community owned motor hotel which still attracts a large number of highway customers.

The gross sales of two new firms were not enough to offset the sales loss by the above businesses and the three closed businesses. Also, when the estimated gross sales of noncooperating firms are combined with the actual sales of all cooperating old and new firms, traffic serving businesses experienced an over-all decline of 25 percent. Such a decline in sales represents an extensive loss to this group of businesses.

*Nontraffic Serving*

According to Table 16, the actual sales of the 32 nontraffic serving firms increased a considerable amount between 1962 and 1965. Only the miscellaneous group experienced a decline in sales.

When the sales of other firms (noncooperative, old closed, and new) are combined with those of the above

### Table 17
### GROSS SALES OF STUDY AREA TRAFFIC SERVING BUSINESSES IN CONROE, TEXAS, 1962 AND 1965

| Type of Business | Number of Businesses | | Gross Dollar Sales | | Change Between 1962 & 1965 | |
|---|---|---|---|---|---|---|
| | 1962 | 1965 | 1962 | 1965 | Dollars | Percent |
| Service Stations | 19 | 17 | $2,341,391 | $1,877,243 | $ −464,148 | −20% |
| Food Services | 19 | 20 | 1,055,119 | 896,950 | −158,169 | −15 |
| Motels | 4 | 4 | 113,509 | 132,949 | 19,440 | 17 |
| Grand Total | 42 | 41 | $3,510,019 | $2,907,142 | $ −602,877 | −17% |
| Average Per Firm | | | $ 83,572 | $ 70,906 | $ − 12,666 | −15% |

### Table 18
### GROSS SALES OF STUDY AREA NONTRAFFIC SERVING BUSINESSES IN CONROE, TEXAS, 1962 AND 1965

| Type of Business | Number of Businesses | | Gross Dollar Sales | | Change Between 1962 & 1965 | |
|---|---|---|---|---|---|---|
| | 1962 | 1965 | 1962 | 1965 | Dollars | Percent |
| Grocery Stores | 9 | 9 | $1,317,479 | $1,327,848 | $ 10,369 | 1% |
| Services | 24 | 25 | 740,801 | 1,208,329 | 467,528 | 63 |
| Miscellaneous | 14 | 20 | 512,458 | 1,388,336 | 875,878 | 171 |
| Grand Total | 47 | 54 | $2,570,738 | $3,924,513 | $1,353,775 | 53% |
| Average Per Firm | | | $ 54,697 | $ 72,676 | $ 17,979 | 33% |
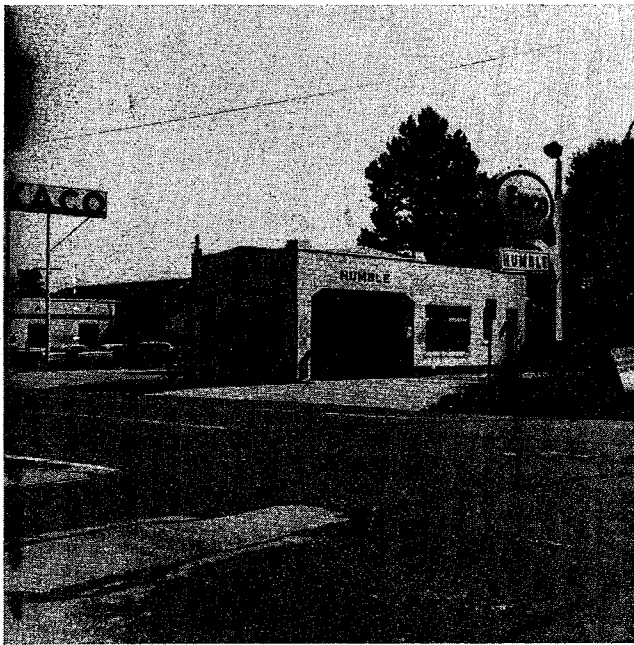
Service Station
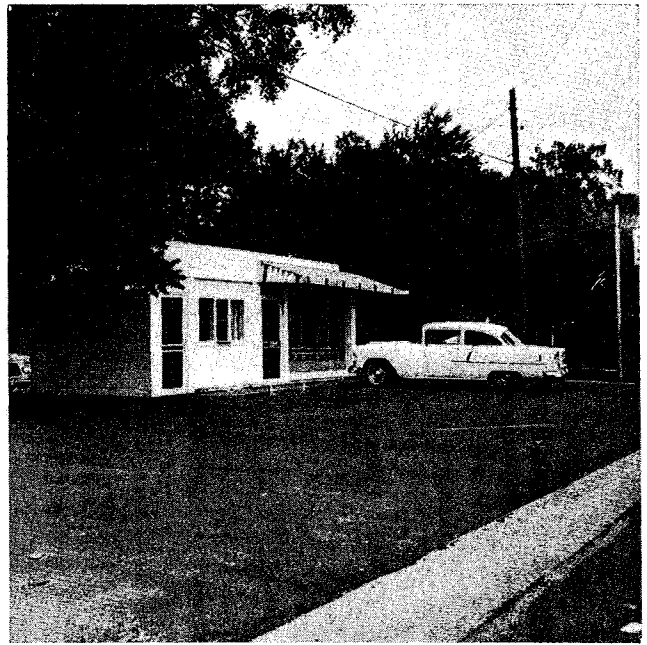


Cafe



Service Station
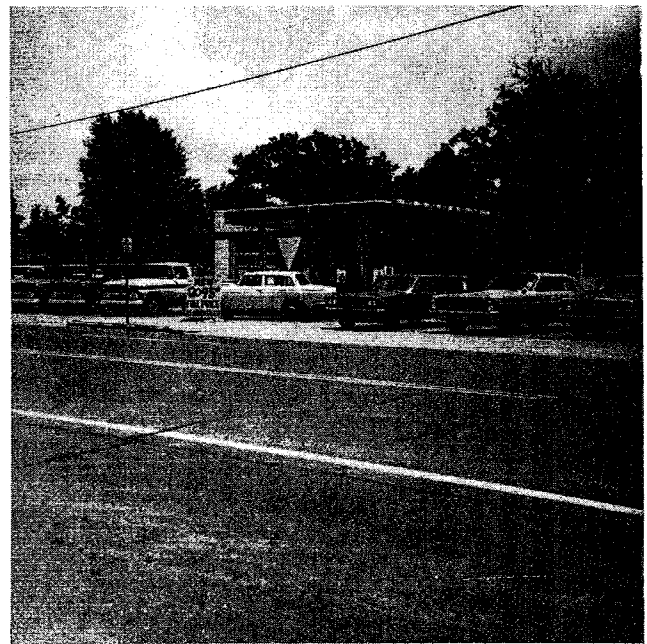


Service Station

The traffic serving businesses along USH 75 which closed after opening the IH 45 by-pass.

group, the over-all percentage increase for the nontraffic serving group is 43 percent. The primary reason for this percentage being larger than that of Table 16 is the volume of 10 new firms which offset the loss in volume from five closed firms.

The exceptional gain in gross sales of the nontraffic serving firms, is positive evidence that the old route is an excellent location for such businesses. Removal of the "through" traffic has made the above route more desirable for the nontraffic serving firms.

When the actual and estimated gross sales of traffic and nontraffic serving firms are combined, the old route

experienced an over-all five percent increase. This gain is considerably below the Montgomery County, the control counties, and the State of Texas gains for the same period. The loss of traffic serving business, due to the new by-pass, is the reason for the poor performance of the old route businesses.

## New Route IH 45 Businesses

By the end of 1965 (three years after opening of IH 45), only five commercial firms had been located along the by-pass route. As mentioned earlier, the limited commercial development along IH 45 around Conroe
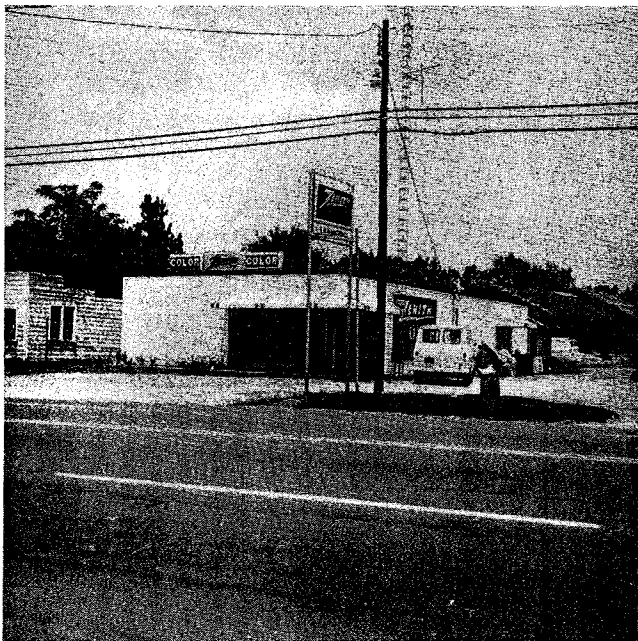
TV Sales and Repair
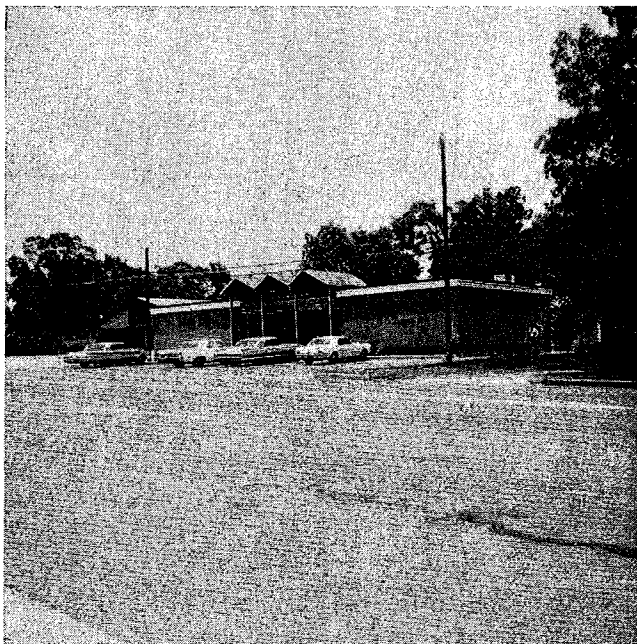

Garage


Shoes and Clothing Store
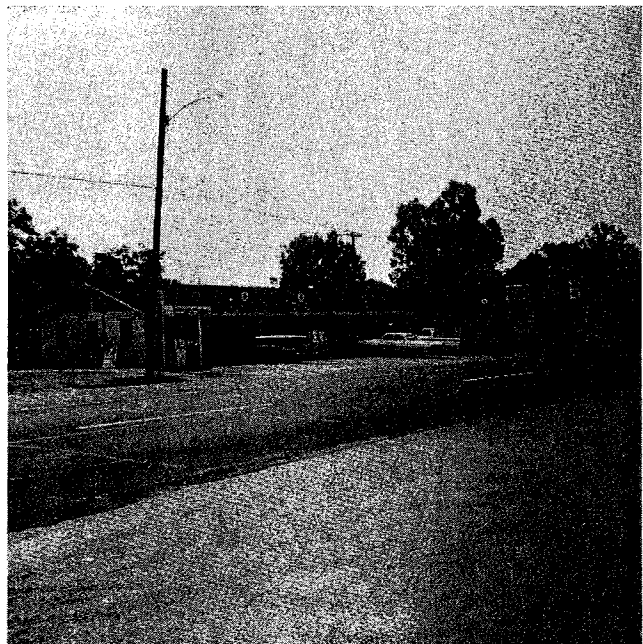

Drive-In Grocery

New nontraffic serving businesses along USH 75 in Conroe.

was partially due to abutting properties not having access rights to the facility, especially at the interchanges.

One of the five firms was opened only a very short time in 1965 and was closed during the interview. Another firm is nonretail. Therefore, only three firms, one traffic serving and two nontraffic serving, were interviewed for specific information.

With so few new route firms in operation during 1965, the gross sales of these firms are combined with the sales of the old route firms.

*Traffic Serving*

Incorporating the gross sales of the one service station on IH 45 with the total sales of traffic serving firms on old USH 75, as is done in Table 17, reveals an over-all gross sale decrease of 17 percent. Thus, the combined volume decrease for both routes is eight percent less than that for the old route only.

The owner of the IH 45 service station also owns an old route station. He indicated that he is pleased with the performance of both stations, and that he has
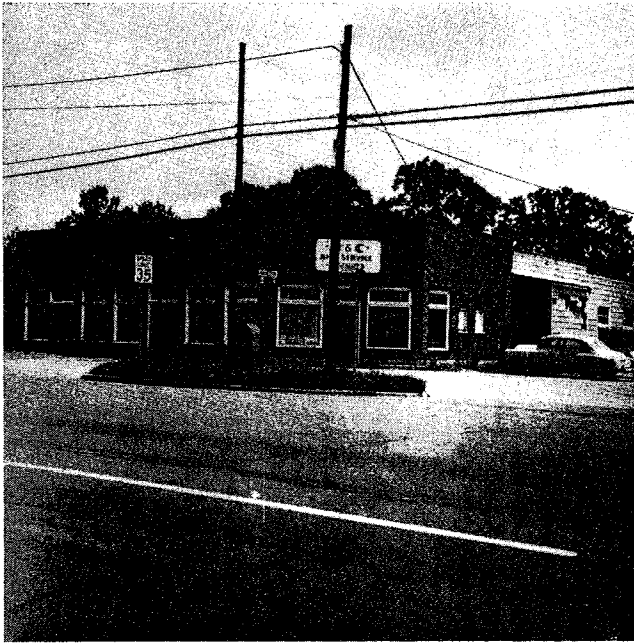
Laundry
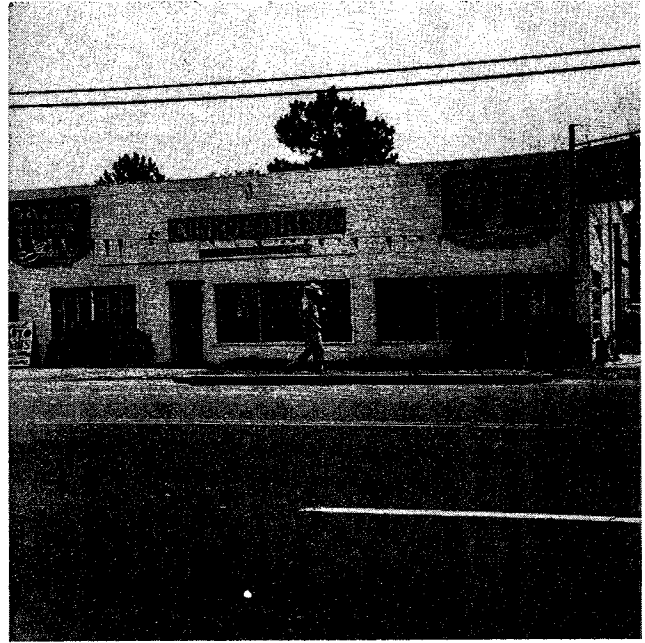

Tire Company
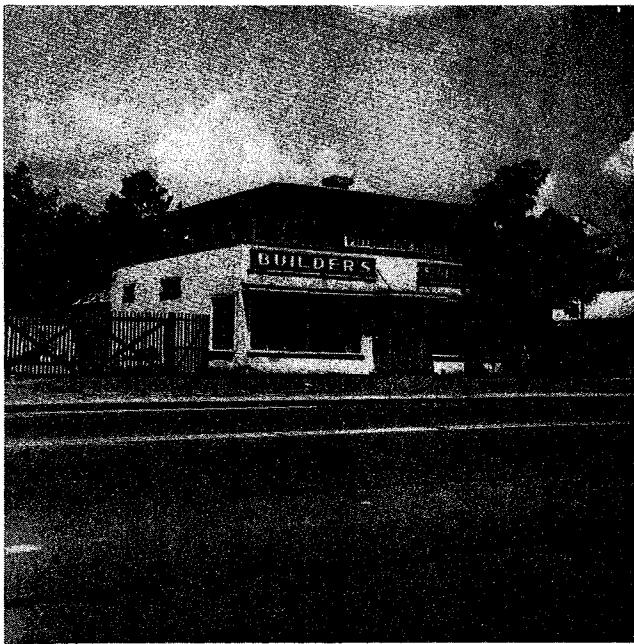

Lumberyard
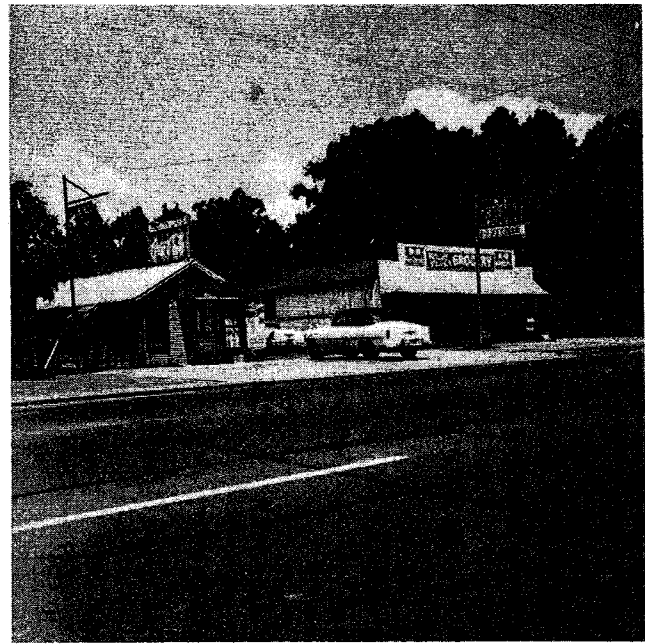

Drive-In Grocery

Closed nontraffic serving businesses located along USH 75 in Conroe.

much more business with the two stations than he received at the one old route location.

In view of all the above facts, one must conclude that the new IH 45 by-pass did have a significant negative effect on the old route (USH 75) service stations and food service establishments. In the past three years, owners of the old route firms in Conroe have not made significant adjustments, such as location of businesses on IH 45, in order to overcome their losses in sales attributed to the new by-pass. In other areas studied, adjustments were made more rapidly. A greater number of traffic serving firms were established on the bypass to recapture lost business.

*Nontraffic Serving*

Incorporating the gross sales of the two nontraffic serving firms on IH 45 with the total sales of all similar old route firms, as is done in Table 18, reveals an overall gross sale increase of 53 percent. This increase is 10 percent higher than that experienced by all old route businesses alone.

Insurance and Real Estate
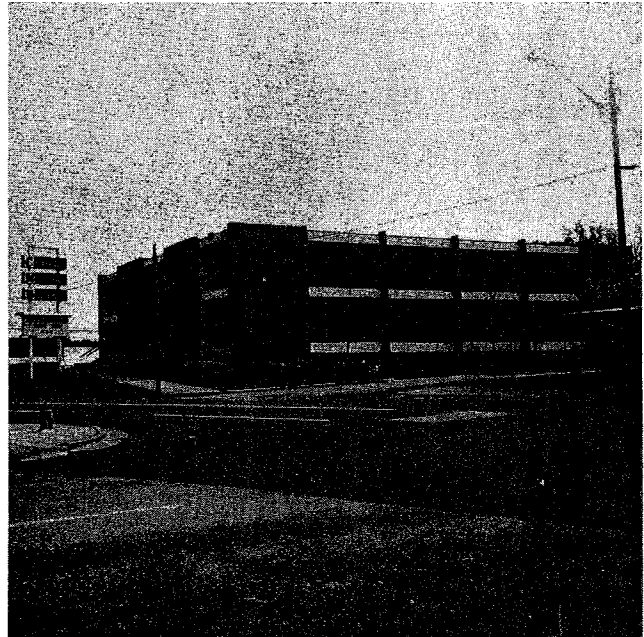


Bank
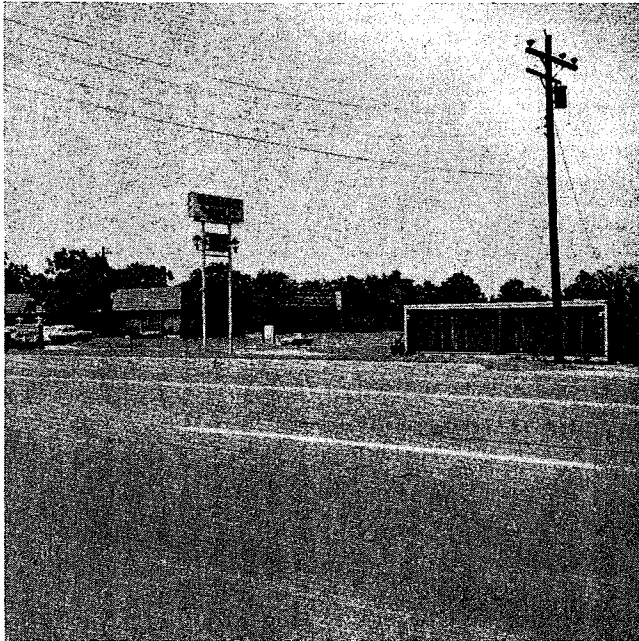


Medical and Insurance
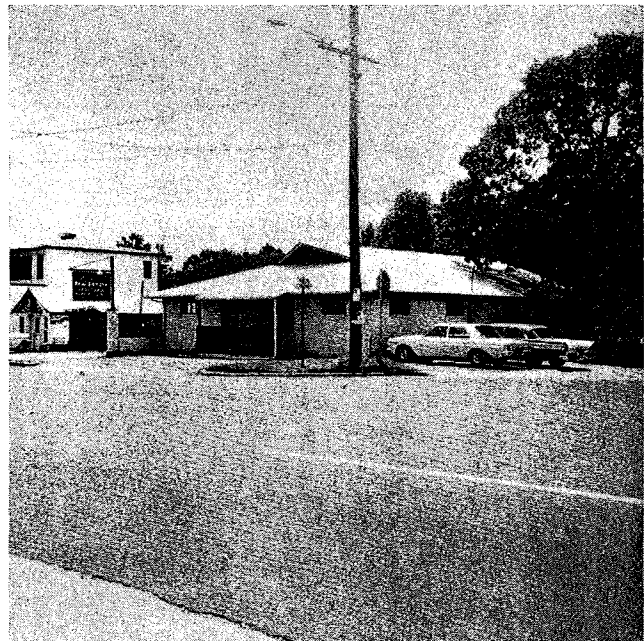


Real Estate and Insurance

New nonretail businesses located along USH 75 in Conroe.

The owners of the new route firms were pleased with their gross volumes. Both had operated elsewhere in the City of Conroe, one on the old route, prior to moving to IH 45. One stated that he had almost doubled his gross sales and attributed part of the increase to the new location.

Therefore, one can safely conclude that the IH 45 by-pass produced no harmful effects on nontraffic serving firms located on either route. But, considering old and new route traffic and nontraffic firms as a whole, the modest gross sale increase of 12 percent between 1962 and 1965 indicates that IH 45 did depress the gross sales of old route businesses. The location of a greater number of traffic serving firms along the IH 45 by-pass would probably wipe out much of the loss of highway business experienced by the old route firms.

Garage
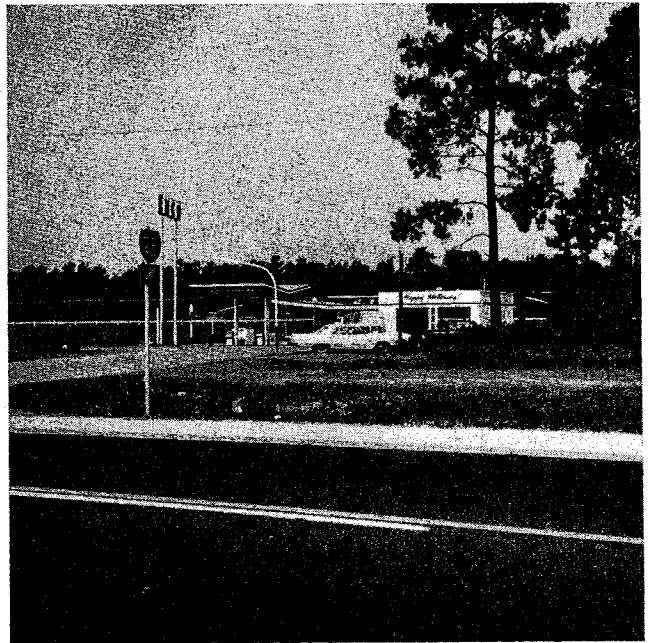

Service Station
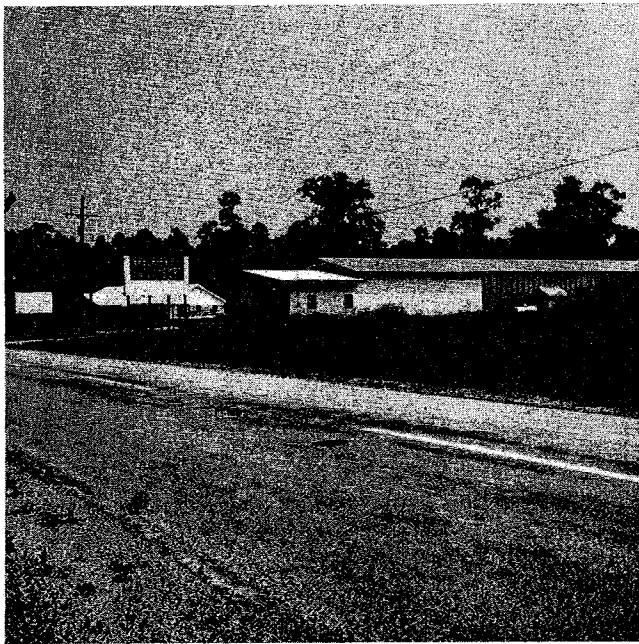

Home Builders


Marine Supplies

New businesses located along IH 45 by-pass in the study area.
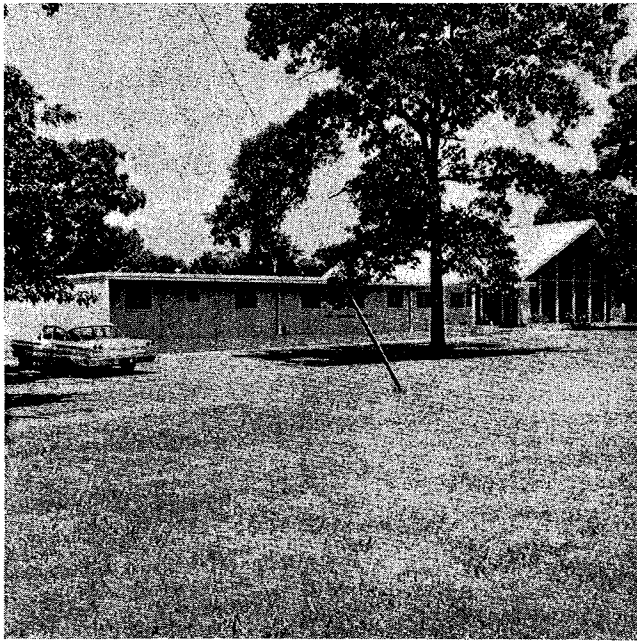
Church
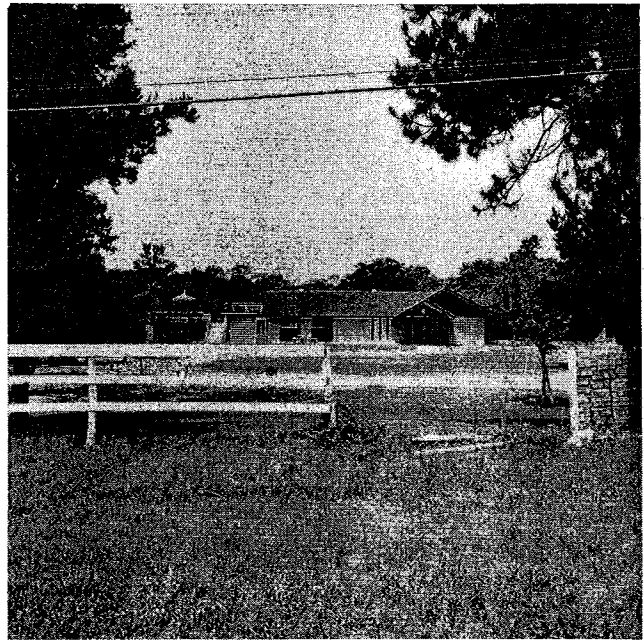


Club
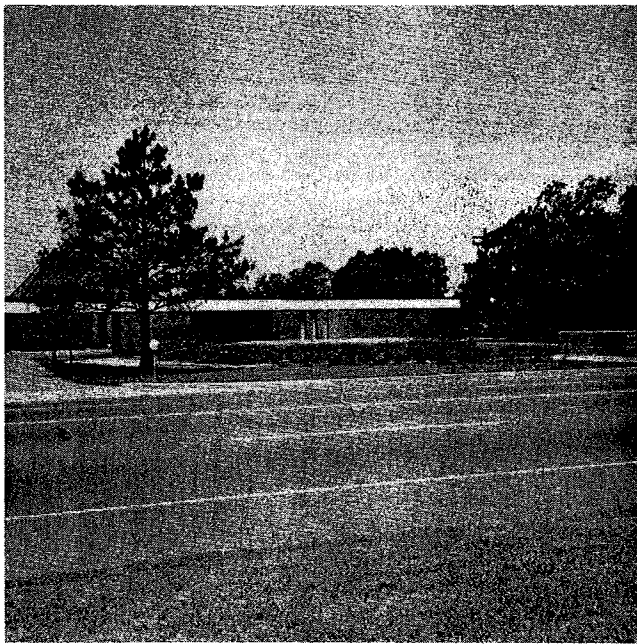


Funeral Home



Nursing Home

New nonretail businesses and church located along USH 75 in Conroe.

Heating and Airconditioning


Welding and Machine


Electric Wiring
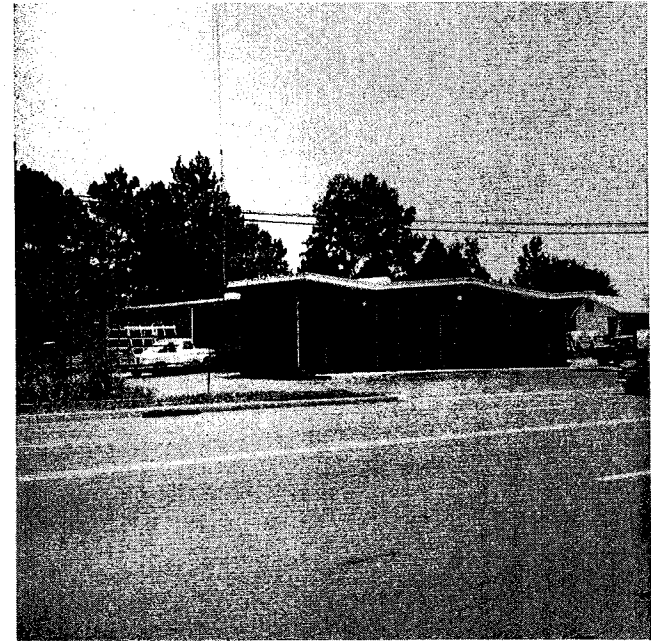

Glass Installation

New buildings along USH 75 in Conroe which house various contracting businesses.

# Travel Patterns

The effect of IH 45 on travel patterns of local and highway travelers should be reflected to some extent in the traffic counts taken by the Texas Highway Department.

Table 19 shows the 1962 and 1965 average daily traffic volumes for all highways serving Conroe.

### Old Route USH 75

As was indicated earlier, the old route (USH 75) carried all the north and south bound highway traffic through Conroe until late in 1962. At that time, according to Table 19, almost 9,000 vehicles traveled into and out of Conroe by way of USH 75.

Immediately after the opening of IH 45, the average daily traffic volume on USH 75 decreased by about 5,000 vehicles. This was a 56 percent decline. Such a change in traffic volume signaled that the old route was no longer used primarily by through traffic. It is now essentially a local traffic artery. Obviously, the highway planners intended such to occur.

The 1965 average daily traffic volume on USH 75 has increased only about 700 vehicles or 18 percent over the 1963 average. Thus, the 1965 traffic volume is still almost 50 percent under the 1962 (pre by-pass) volume, and so USH 75 has remained essentially a local traffic facility. Growth of the town has likely accounted for most of the gradual increase in traffic volume on the old route.

### New Route IH 45

Table 19 also shows the 1965 average daily traffic volume for IH 45. This volume is some 1,500 vehicles more than traveled on the old route in 1962 and about 5,700 vehicles more than traveled the old route in 1965. Since 1963, traffic volume on the new route has increased 25 percent north of SH 105, and 44 percent south of SH 105. This is a greater increase that what occurred on the old route for the same period. Thus, it is reasonable to assume that most of those vehicles are using IH 45 for something other than local reasons.

When combined, the traffic volume of both routes (USH 75 and IH 45) has increased about 70 percent between 1962 and 1965. A growth in both local and highway traffic is the reason for such an increase.

### SH 105

State Highway 105 serves Conroe from the east and west. Between 1962 and 1965 there has been an increased use of this facility, especially on the west side where it intersects IH 45.

In terms of number of vehicles, the increase in traffic on SH 105 is not very significant, with less than a 2,000 vehicle increase. However, this increased traffic is funneled through the central business district of Conroe, creating more traffic problems. The planned SH 105 by-pass will relieve such problems in the near future. Incidentally, the people of Conroe voted bond money for another by-pass.

It can be concluded that the greatest single change in the travel patterns of Conroe resulted from construction of the IH 45 by-pass which removed most of the through traffic from the central business district. To use an expression coined by businessmen and city officials of Conroe, without IH 45 it would be "utter chaos" if the present volume of both routes had to use the old route through town.

#### Table 19
#### AVERAGE DAILY TRAFFIC VOLUMES ALONG ALL HIGHWAYS SERVING CONROE, TEXAS, 1962 AND 1965[1]

| Route and Location | ADT Volumes | | Change Between 1962 and 1965 | |
|---|---|---|---|---|
| | 1962 | 1965 | Number | Percent |
| **Old Route USH 75** | | | | |
| North of Conroe | 8,990 | 4,810 | − 4,180 | −46% |
| South of Conroe | 8,990 | 4,640 | − 4,350 | −48 |
| **New Route IH 45** | | | | |
| North of Conroe | | 9,500 | + 9,500 | NA |
| South of Conroe | | 11,520 | +11,520 | NA |
| **Combined Routes** | | | | |
| North of Conroe | 8,990 | 14,310 | 5,320 | +59% |
| South of Conroe | 8,990 | 16,160 | 7,170 | +80 |
| **SH 105** | | | | |
| East of Conroe | 2,400 | 3,180 | 780 | 33% |
| West of Conroe | 2,700 | 4,660 | 1,960 | 73 |

[1]The average daily traffic volumes were obtained from the Texas Highway Department.

# General Community Development of Conroe

Certain economic data collected from secondary sources give some indication of the extent of the general economic development of Conroe and Montgomery County. Although the extent of the economic influence of IH 45 will never be known, a reasonable assumption is that such a highway improvement has encouraged the city's and county's population growth, building construction, and the money flow.

Many families, employed at Houston's Jetero Intercontinental Airport, have moved to Conroe and Montgomery County in the past two years. This airport is 25 miles south of Conroe, by way of IH 45. Members of the above families commute to work on the new highway. No doubt, IH 45 has made living in Conroe and Montgomery County more attractive than did the old USH 75.

Also, as mentioned previously, many Houston residents have moved into Conroe and Montgomery County since the construction of IH 45. Conroe officials say that a large number of these people still have jobs in metropolitan Houston.

Still other Houston residents have come into Montgomery County and purchased tracts of land in the county's 38 lake developments. These families commute to these places on holidays and weekends, by way of IH 45.

Figure 4 shows the performance of selected economic indicators for the City of Conroe. Table 20 shows the performance of an expanded list of economic indicators for Montgomery County. By studying the two together, one can see that some of the indicators show a noticeable upturn since construction of IH 45. For instance, building permit values, bank deposits and school enrollment made greater annual increases (see Figure 4). Had all the county's new residents moved into Conroe, the city's water customers and tax valua-
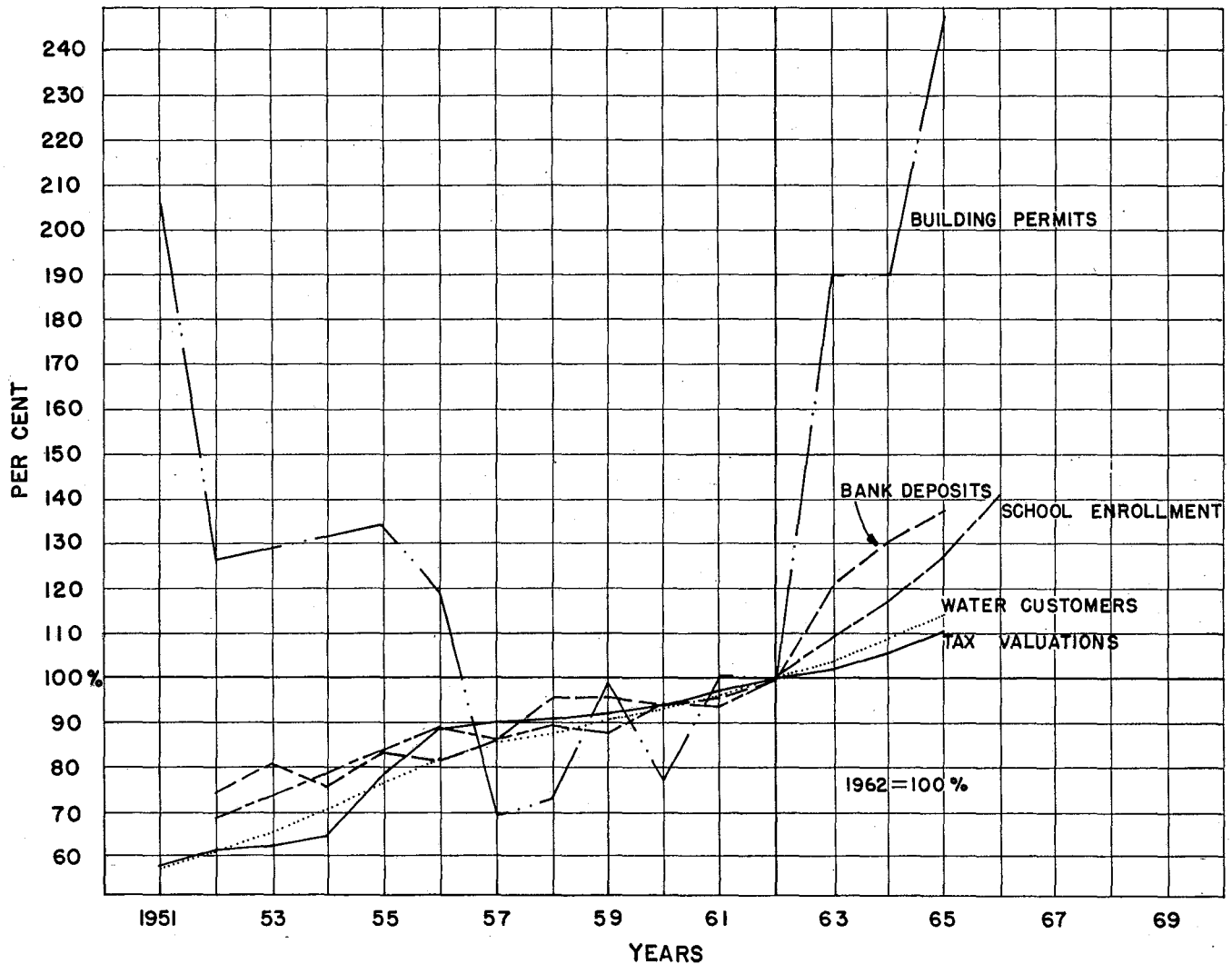


Figure 4. Performance of selected indicators of economic development in Conroe, Texas, 1951-66.

tions would have experienced greater percentage gains. Table 20 shows that the rural population grew faster than the urban population.

The total population, total retail sales, bank deposits, motor vehicles registered, and total building permits increased at a greater rate for Montgomery County than for the State of Texas. On the other hand, the urban population, per capita income, total labor force and value of minerals produced failed to perform as well in Montgomery County as in the State of Texas.

A significant fact was that the number of Montgomery County's unemployed persons experienced a greater percentage decline than that of the State of Texas. This fact occurred in spite of the decrease in the number employed by manufacturing firms. However, there was a slight increase in nonmanufacture employment. But the indications are that increasing numbers of the Montgomery County labor force are employed elsewhere, thus lowering the number of persons unemployed.

Since 1962, four industries have located within Montgomery County. They manufacture valves, concrete pipes, fence posts and commercial printing. One of these firms has national distribution for its product. They employ approximately 50 persons. In addition, Jefferson Chemical Plant, one of Conroe's largest industries, increased its productive capacity to a considerable extent.

While IH 45 was being constructed around Conroe, six other industries were established in or near the city, one of which is Jefferson Chemical Company. Together these firms employ approximately 300 persons.

The above data indicate that Conroe and Montgomery have made considerable progress in economic growth since construction began on IH 45. The new highway has definitely made a contribution to this economic growth.

### Table 20
### PERFORMANCE OF SELECTED INDICATORS OF ECONOMIC DEVELOPMENT IN MONTGOMERY COUNTY AND TEXAS, 1962-65

| Indicator | Percent Change Between 1962 and 1965 | |
| | Montgomery County | Texas |
| --- | --- | --- |
| Total Population[1] | 12% | 4% |
| Urban Population[1] | 2 | 8 |
| Per Capita Income[1] | 4 | 7 |
| Total Retail Sales[1] | 22 | 17 |
| Bank Deposits | 32 | 19 |
| Total Labor Force | — 4 | 6 |
| Unemployed | — 17 | —10 |
| Manufacturing | — 21 | 5 |
| Nonmanufacturing | 2 | —11 |
| Value of Minerals Produced | — 5 | .4 |
| Motor Vehicles Registered | 17 | 10 |
| School Enrollment[2] | 27 | |
| Total Assessed Valuations[3] | 11 | |
| Total Water Customers[3] | 10 | |
| Total Building Permits[3] | 144 | 19 |
| Residential | 48 | 19 |
| Commercial | 53 | 5 |
| Industrial | 41 | 54 |
| Church & Public | 239 | 42 |
| Alterations & Additions | 434 | 10 |

[1]From Sales Management Magazine's "Survey of Buying Power."

[2]From Conroe Independent School District.

[3]From City of Conroe and the University of Texas' "Texas Business Review." All other data came from the Texas Almanac.

# Appendix

## Terms and Formulas Used in Making Statistical Tests On Land Value Data

In the footnotes of the land value tables, certain statistical data are presented to aid the reader in further evaluating the land value information given in the tables. By using the appropriate large and small sample formulas, the standard errors of the difference between various pairs of means (study versus control areas) were computed and shown in the footnotes under each table. These standard errors were used in formulas deriving T and Student's t values. The quantity T, or Student's t, is the deviation of the difference between two sample means from the mean of the population, expressed in units of the standard error of the difference between the means. The only difference between T and Student's t values is that the latter has an adjustment for sample sizes with under 30 observations. Finally, the required confidence level for these T or t values to be significant is shown. The larger the observed value of T or t, the less the chance that its value is due to chance only. For example, if the observed value of T is 1.96 (based on sample means with each having 30 or more observations) at a 95 percent probability level, the interpretation is that a value of T this large would likely occur only five times out of a hundred and could not be due to chance alone.

An explanation of the formulas used in determining the standard error of difference between two means and the T or t values is presented below.

1. For pairs of samples, each of which is made up of 30 or more observations, the formula used for computing the standard error of the difference between the means of these two samples is given by,

$$S_d = \sqrt{\frac{\sigma_1^2}{N_1} + \frac{\sigma_2^2}{N_2}}$$

where $\sigma_1$ and $\sigma_2$ are the standard deviations of the populations of means from which sample means 1 and 2 come respectively. With the two $\sigma$'s not known, the corresponding sample standard deviations were used. $N_1$ and $N_2$ are the number of observations that make up samples 1 and 2 respectively. In determining whether the differences between the means of samples 1 and 2 deviates significantly at a certain confidence level, a T value is computed by the formula $T = D/S_d$ where D is the difference between the means of samples 1 and 2, and $S_d$ is the standard error given above. It is assumed that samples 1 and 2 come from normal populations with the same means.

2. For a pair of samples consisting of less than 30 observations, the standard error of the difference between the means of these two samples is given by,

$$S_d = \sqrt{\frac{\sigma_1^2 + \sigma_2^2}{N_1 + N_2 - 2}}$$

where $\sigma_1$ and $\sigma_2$ are the standard deviations of the populations of means from which sample means 1 and 2 come respectively. With the two $\sigma$'s not known, we substituted for them the standard deviations of the corresponding samples. $N_1$ and $N_2$ are the number of observations that make up samples 1 and 2 respectively. In determining whether the difference between the means of samples 1 and 2 deviates significantly at a certain confidence level, a T value is computed by using Student's t and is given by,

$$t = S_d \sqrt{\frac{D}{\frac{N_1 + N_2}{N_1 \times N_2}}}$$

where D is the difference between the means of samples 1 and 2, and $S_d$ is the standard error given above. It is assumed that samples 1 and 2 come from normal populations with the means.

### CONSUMER PRICE INDEX

Below is a listing of the Consumer Price Index and its reciprocal for each year involved. The base was 1947-49 = 100.

| Year | Index | Reciprocal |
|------|-------|------------|
| 1944 | 75.2 | 1.330 |
| 1945 | 76.9 | 1.300 |
| 1946 | 83.4 | 1.200 |
| 1947 | 95.5 | 1.047 |
| 1948 | 102.8 | 0.973 |
| 1949 | 101.8 | 0.982 |
| 1950 | 102.8 | 0.973 |
| 1951 | 111.0 | 0.901 |
| 1952 | 113.5 | 0.881 |
| 1953 | 114.4 | 0.874 |
| 1954 | 114.8 | 0.871 |
| 1955 | 114.5 | 0.873 |
| 1956 | 116.2 | 0.861 |
| 1957 | 120.2 | 0.832 |
| 1958 | 123.5 | 0.810 |
| 1959 | 124.6 | 0.803 |
| 1960 | 126.5 | 0.791 |
| 1961 | 127.9 | 0.782 |
| 1962 | 129.3 | 0.773 |
| 1963 | 131.0 | 0.764 |
| 1964 | 132.6 | 0.754 |
| 1965 | 134.4 | 0.744 |

# Supporting Tables

Table 21

PRICES OF IMPROVED ACREAGE TRACTS NONABUTTING IH 45 IN THE STUDY AREA COMPARED TO THE CONTROL AREA, CONROE, TEXAS IN CONSTANT DOLLARS (1947-49 = 100)

| Period | Study Area-Nonabutting | | Control Area | | Difference Between Areas | Percent of Study Area Nonabutting Before Period Price |
|---|---|---|---|---|---|---|
| | Price Per Acre[1] | Standard Deviation | Price Per Acre[1] | Standard Deviation | | |
| Before Period (1952-58) | $ 9,587(41) | $ 8,878 | $ 7,603(60) | $5,585 | $1,984[2] | |
| During Period (1959-62) | 9,205(23) | 6,761 | 7,478(49) | 5,721 | 1,727 | |
| After Period (1963-65) | 13,782(25) | 12,390 | 10,131(28) | 9,562 | 3,651[3] | |
| Change Between Periods | | | | | | |
| Before and During | | | | | | |
| Dollars | $ −382 | | $ −125 | | $ 257 | |
| Percent | − 4% | | − 2% | | 2% | |
| During and After | | | | | | |
| Dollars | $4,577 | | $ 2,653 | | $1,924 | |
| Percent | 50% | | 35% | | 15% | |
| Before and After | | | | | | |
| Dollars | $4,195 | | $ 2,528 | | $1,667 | 17% |
| Percent | 44% | | 33% | | 11% | |
| Probable Highway Influence[4] | | | | | | |
| Percent | 14% | | | | | |
| Dollars | $ 1,342 | | | | | |

[1]The number of transactions is shown in parentheses.
[2]The S.E. is $1,563. Using a probability level of 95 percent, this value is not significant. T is equal to 1.27.
[3]The S.E. is $2,192. Using a probability level of 95 percent, this value is not significant. t is equal to 1.67.
[4]See Footnotes 4, 5, 6, and 7 under Table 3 for an explanation.


Table 22

PRICES OF UNIMPROVED ACREAGE TRACTS ABUTTING AND NONABUTTING USH 75 IN THE STUDY AREA COMPARED TO THE CONTROL AREA, CONROE, TEXAS, IN CONSTANT DOLLARS (1947-49 = 100)

| Period | Price Per Acre[1] | | | Difference Between Areas | | | Percent of Respective Parts of Study Area's Before Period Price | |
|---|---|---|---|---|---|---|---|---|
| | Study Area Abutting | Study Area Nonabutting | Control Area | Abutting Vs Non-abutting | Abutting Vs Control | Non-abutting Vs Control | Abutting | Non-abutting |
| Before Period (1952-58)[2] | $1,147(10) | $ 698(100) | $ 793(206) | $ 449 | $ 353 | $ 95 | | |
| During Period (1959-62) | 1,707(10) | 646 (85) | 930(112) | 1,061 | 777 | 284 | | |
| After Period (1963-65)[3] | 3,995 (3) | 1,225 (66) | 698 (68) | 2,770 | 3,297 | 527 | | |
| Change Between Periods | | | | | | | | |
| Before and During | | | | | | | | |
| Dollars | $ 560 | $ −52 | $ 137 | $ 612 | $ 423 | $ −189 | | |
| Percent | 49% | − 7% | 17 | 56% | 32% | − 24% | | |
| During and After | | | | | | | | |
| Dollars | $2,288 | $ 579 | $ −232 | $1,709 | $2,520 | $ 811 | | |
| Percent | 134% | 83% | 25% | 51% | 159% | 108% | | |
| Before and After | | | | | | | | |
| Dollars | $2,828 | $ 525 | $ − 95 | $2,303 | $2,923 | $ 620 | 255% | 89% |
| Percent | 248% | 76% | − 12% | 172% | 260% | 88% | | |
| Probable Highway Influence[4] | | | | | | | | |
| Percent | 258% | 89% | | | | | | |
| Dollars | $2,959 | $ 621 | | | | | | |

[1]The number of transactions is shown in parentheses.
[2]For abutting versus nonabutting, S.E. is $38. Using a probability level of 95 percent, this value is significant. t is equal to 11.80. For abutting versus control, S.E. is $27. Using a probability level of 95 percent, this value is significant. t is equal to 13.30. For nonabutting versus control, S.E. is $61. Using a probability level of 95 percent, this value is not significant. T is equal to 1.55.
[3]For abutting versus nonabutting, S.E. is $180. Using a probability level of 95 percent, this value is significant. t is equal to 15.40. For abutting versus control, S.E. is $178. Using a probability level of 95 percent, this value is significant. t is equal to 18.50. For nonabutting versus control, S.E. is $145. Using a probability level of 95 percent, this value is significant. T is equal to 3.63.
[4]See Footnotes 4, 5, 6, and 7 under Table 3 for an explanation.

## Table 23
### PRICES OF IMPROVED ACREAGE TRACTS ABUTTING AND NONABUTTING USH 75 IN THE STUDY AREA COMPARED TO THE CONTROL AREA, CONROE, TEXAS, IN CONSTANT DOLLARS (1947-49 = 100)

| Period | Price Per Acre[1] | | | Difference Between Areas | | | Percent of Respective Parts of Study Area's Before Period Price | |
| | Study Area Abutting | Study Area Nonabutting | Control Area | Abutting Vs Nonabutting | Abutting Vs Control | Non-abutting Vs Control | Abutting | Non-abutting |
|---|---|---|---|---|---|---|---|---|
| Before Period (1952-58)[2] | $ 12,859(15) | $ 7,559(34) | $ 7,603(60) | $ 5,300 | $ 5,256 | $ 48 | | |
| During Period (1959-62) | 11,664 (9) | 8,519(15) | 7,478(49) | 3,145 | 4,186 | 1,041 | | |
| After Period (1963-65)[3] | 18,777 (8) | 12,408(20) | 10,131(28) | 6,369 | 8,646 | 2,277 | | |
| Changes Between Periods | | | | | | | | |
| Before and During | | | | | | | | |
| Dollars | $ −1,195 | $ 960 | $ −125 | $ −2,155 | $ −1,070 | $1,085 | | |
| Percent | − 9% | 13% | − 2% | − 22% | − 7% | 15% | | |
| During and After | | | | | | | | |
| Dollars | $ 7,113 | $ 3,889 | $ 2,653 | $ 3,224 | $ 4,460 | $1,236 | | |
| Percent | 61% | 46% | 35% | 15% | 26% | 11% | | |
| Before and After | | | | | | | | |
| Dollars | $ 5,918 | $ 4,849 | $ 2,528 | $ 1,069 | $ 3,390 | $2,321 | 26% | 31% |
| Percent | 46% | 64% | 33% | − 18% | 13% | 31% | | |
| Probable Highway Influence[4] | | | | | | | | |
| Percent | 20% | 31% | | | | | | |
| Dollars | $ 2,572 | $ 2,343 | | | | | | |

[1]The number of transactions is shown in parentheses.

[2]For abutting versus nonabutting, S.E. is $503. Using a probability level of 95 percent, this value is significant. t is equal to 10.53. For abutting versus control, S.E. is $428. Using a probability level of 95 percent, this value is significant. t is equal to 12.28. For nonabutting versus control, S.E. is $888. Using probability of 95 percent, this value is not significant. T is equal to .05.

[3]For abutting versus nonabutting, S.E. is $1,396. Using a probability level of 95 percent, this value is significant. t is equal to 4.56. For abutting versus control, S.E. is $1,020. Using a probability level of 95 percent, this value is significant. t is equal to 8.47. For nonabutting versus control, S.E. is $672. Using a probability level of 95 percent, this value is significant. t is equal to 33.88.

[4]See Footnotes 4, 5, 6, and 7 under Table 3 for an explanation.


## Table 24
### PRICES OF IMPROVED ACREAGE TRACTS ON THE EAST SIDE AND WEST SIDE OF IH 45 IN THE STUDY AREA COMPARED TO THE CONTROL AREA, CONROE, TEXAS, IN CONSTANT DOLLARS (1947-49 = 100)

| Period | Price Per Acre[1] | | | Difference Between Areas | | | Percent of Respective Parts of Study Area's Before Period Price | |
| | West Side | East Side | Control | East Vs West | West Vs Control | East Vs Control | West Side | East Side |
|---|---|---|---|---|---|---|---|---|
| Before Period (1952-58)[2] | $ 5,425(17) | $11,177(32) | $ 7,603(60) | $ 5,752 | $2,178 | $3,574 | | |
| During Period (1959-62) | 4,533 (4) | 10,732(20) | 7,478(49) | 6,199 | 2,945 | 3,254 | | |
| After Period (1963-65)[3] | 8,843(13) | 18,894(15) | 10,131(28) | 10,051 | 1,288 | 8,763 | | |
| Change Between Periods | | | | | | | | |
| Before and Construction | | | | | | | | |
| Dollars | $ −892 | $ −445 | $ −125 | $ 447 | $ 767 | $ 320 | | |
| Percent | − 16% | − 4% | − 2% | 12% | 14% | 2% | | |
| Construction and After | | | | | | | | |
| Dollars | $ 4,310 | $ 8,162 | $ 2,653 | $ 3,852 | $1,657 | $5,509 | | |
| Percent | 95% | 76% | 35% | 19% | 60% | 41% | | |
| Before and After | | | | | | | | |
| Dollars | $ 3,418 | $ 7,717 | $ 2,528 | $ 4,299 | $ 890 | $5,189 | 16% | 46% |
| Percent | 63% | 69% | 33% | 6% | 30% | 36% | | |
| Probable Highway Influence[4] | | | | | | | | |
| Percent | 23% | 41% | | | | | | |
| Dollars | $ 1,248 | $ 5,030 | | | | | | |

[1]The number of transactions is shown in parentheses.

[2]For west side versus east side, S.E. is $499. Using a probability level of 95 percent, this value is significant. t is equal to 11.50. For west side versus control, S.E. is $237. Using a probability level of 95 percent, this value is significant. t is equal to 9.20. For east side versus control, S.E. is $1,836. Using a probability level of 95 percent, this value is significant. T is equal to 1.95.

[3]For west side versus east side, S.E. is $800. Using a probability level of 95 percent, this value is significant. t is equal to 12.60. For west side versus control, S.E. is $710. Using a probability level of 95 percent, this value is not significant. t is equal to 1.81. For east side versus control, S.E. is $828. Using a probability level of 95 percent, this value is significant. t is equal to 10.60.

[4]See Footnotes 4, 5, 6, and 7 under Table 3 for an explanation.

**Table 25**

PRICES OF UNIMPROVED ACREAGE TRACTS ON THE EAST SIDE AND WEST SIDE OF IH 45 IN THE STUDY AREA COMPARED TO THE CONTROL AREA, CONROE, TEXAS, IN CONSTANT DOLLARS (1947-49 = 100)

| Period | Price Per Acre[1] | | | Difference Between Areas | | | Percent of Respective Parts of Study Area's Before Period Price | |
| | West Side | East Side | Control | East Vs West | West Vs Control | East Vs Control | West Side | East Side |
|---|---|---|---|---|---|---|---|---|
| Before Period (1952-58)[2] | $ 563(67) | $1,014(43) | 793(206) | $ 451 | $230 | $ 221 | | |
| Construction Period (1959-62) | 438(68) | 1,564(27) | 930(112) | 1,126 | 492 | 634 | | |
| After Period (1963-65)[3] | 792(45) | 2,382(24) | 698 (68) | 1,590 | 94 | 1,684 | | |
| Change Between Periods | | | | | | | | |
| Before and Construction | | | | | | | | |
| Dollars | $ −125 | $ 550 | $ 137 | $ 675 | $262 | $ 413 | | |
| Percent | − 22% | 54% | 17% | 76% | 39% | − 37% | | |
| Construction and After | | | | | | | | |
| Dollars | $ 354 | $ 818 | $ −232 | $ 464 | $586 | $ 1,050 | | |
| Percent | 81% | 52% | − 25% | − 29% | 106% | 77% | | |
| Before and After | | | | | | | | |
| Dollars | $ 229 | $1,368 | $ − 95 | $ 1,139 | $324 | $ 1,463 | 58% | 144% |
| Percent | 41% | 135% | − 12% | 94% | 53% | 147% | | |
| Probable Highway Influence[4] | | | | | | | | |
| Percent | 56% | 146% | | | | | | |
| Dollars | $ 315 | $1,480 | | | | | | |

[1]The number of transactions is shown in parentheses.

[2]For west side versus east side, S.E. is $156. Using a probability level of 95 percent, this value is significant. T is equal to 2.89. For west side versus control, S.E. is $91. Using a probability level of 95 percent, this value is significant. T is equal to 2.53. For east side versus control, S.E. is $148. Using a probability level of 95 percent, this value is not significant. T is equal to 1.50.

[3]For west side versus east side, S.E. is $68. Using a probability level of 95 percent, this value is significant. t is equal to 23.00. For west side versus control, S.E. is $158. Using a probability level of 95 percent, this value is not significant. T is equal to .59. For east side versus control, S.E. is $56. Using a probability level of 95 percent, this value is significant. t is equal to 31.00.

[4]See Footnotes 4, 5, 6, and 7 under Table 3 for an explanation.

**Table 26**

PRICES OF ACREAGE TRACTS IN THE STUDY AREA ACCORDING TO LAND USE CHANGES BEFORE AND AFTER SALE, BY PERIODS, IN CONSTANT DOLLARS (1947-49 = 100)

| Land Use Change[2] | Price Per Acre[1] | | | Percent Change Between Before & After Period |
| | Before Period | During Period | After Period | |
|---|---|---|---|---|
| Agricultural to Held for Future Use | $ 58 (4) | $ 402(10) | $ 445 (6) | 667% |
| Held for Future Use to Held for Future Use | 654(50) | 671(43) | 1,274(42) | 95 |
| Held for Future Use to Rural Residential | 611(24) | 678(17) | 1,285 (3) | 110 |
| Held for Future Use to Urban Residential | 1,512(10) | 1,304(12) | 2,165 (2) | 43 |
| Held for Future Use to Commercial Nontraffic | 1,126 (5) | 1,514 (4) | 3,187 (4) | 183 |
| Rural Residential to Rural Residential | 7,501(22) | 9,835(11) | 11,067(15) | 48 |
| Urban Residential to Urban Residential | 8,533(17) | 10,001 (9) | 16,886 (6) | 97 |

[1]The number of transactions is shown in parentheses.

[2]This table shows only those land use change categories which had two or more sales in the before and after periods.

Table 27

NUMBER EMPLOYEES AND HOURS OPEN OF RETAIL FIRMS IN THE CONROE BUSINESS STUDY AREA,
1962 VERSUS 1965

| Item | Quantity[1] | | Change Between Years | |
| --- | --- | --- | --- | --- |
| | 1962 | 1965 | Quantity | Percent |
| Traffic Serving | | | | |
| Full-time Employees | 4.8(40) | 4.4(37) | — .4 | — 8% |
| Part-time Employees | .8(39) | .6(37) | — .2 | —25 |
| Hours Per Week Open | 16.6(40) | 16.3(38) | — .3 | — 2 |
| Nontraffic Serving | | | | |
| Monthly Rent | 136(18) | 171(12) | 35 | 26% |
| Full-time Employees | 3.8(41) | 3.7(44) | — .1 | — 3 |
| Part-time Employees | .6(28) | .8(32) | .2 | 25 |
| Hours Per Week Open | 11.4(42) | 11.0(47) | — .4 | — 4 |
| All Businesses | | | | |
| Monthly Rent | 136(18) | 171(12) | 35 | 26% |
| Full-time Employees | 4.3(81) | 4.0(81) | — .3 | — 7 |
| Part-time Employees | .7(67) | .7(69) | 0 | NA |
| Hours Per Week Open | 14.0(82) | 13.4(85) | — .6 | — 4 |

[1]Average quantity based on the number of firms in parentheses.