Thoroughfare Plan

City of Gahanna, Ohio

August 29, 2001

EMH&T INC.
CONSULTING ENGINEERS & SURVEYORS

EXHIBIT A

CITY OF GAHANNA
THOROUGHFARE PLAN

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August 29, 2001

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Introduction

The City of Gahanna has commissioned this Thoroughfare Plan as a means of planning to meet the transportation infrastructure needs of the community over the next two decades. Since the last transportation plan, nearly ten years ago, Gahanna and surrounding areas have witnessed significant development and substantial infrastructure investment. The continuing popularity of Gahanna and the northeastern Franklin County area, together with the availability of developable land, indicates that the City transportation system will continue to have new traffic demand placed upon it for the foreseeable future.

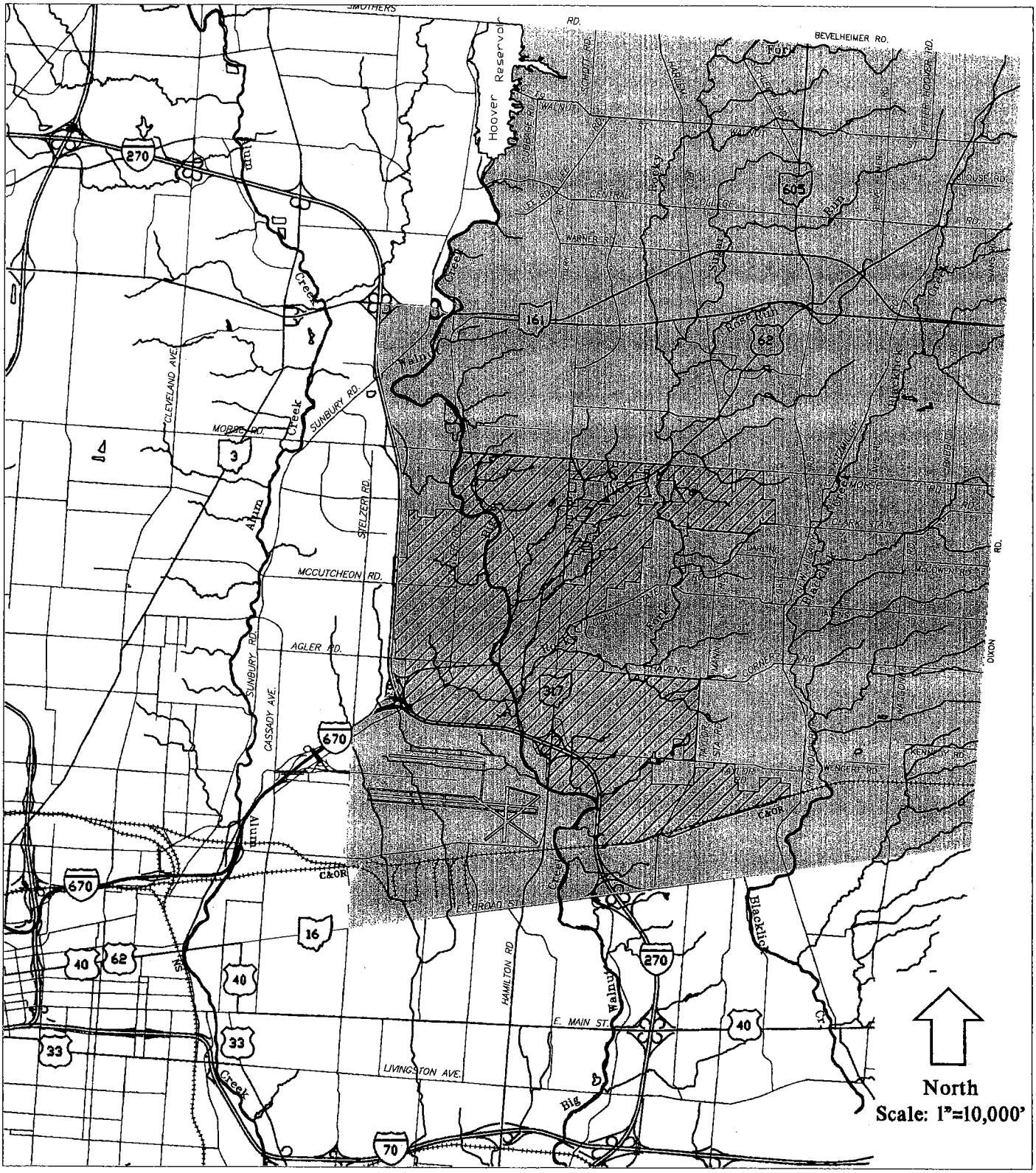
Gahanna is a Columbus suburb located along the I-270 outer belt. The City shares a common boundary with Columbus at Gahanna's western and northern edges, and is adjacent to the Village of New Albany, and Jefferson Township. Port Columbus International Airport is situated just west of the City of Gahanna near the interchange of SR 317 and I-270. By virtue of its location, the Gahanna arterial system carries a significant amount of through traffic bound for the freeway system or Columbus from outlying areas.

The Gahanna Thoroughfare Plan was designed to account for growth outside the City as well as within City limits. Current and planned commercial and residential growth within Gahanna and the surrounding communities presents a significant challenge to City staff as they consider future transportation needs for planning purposes. This Thoroughfare Plan was conceived to identify and designate a hierarchy of functional streets within the study area, and define a framework of arterial and collector streets capable of serving the land uses currently being contemplated. This plan is intended to guide City staff as they make decisions about what improvements will be most beneficial to the City street network and the community as a whole.

Existing Area Conditions

A site location map showing the study area and its relationship to the surrounding community has been shown as Figure 1. The study area shown is larger than the current City boundaries and represents an appropriate zone of influence where land use changes are likely to impact the area street system. A more detailed view of the City of Gahanna with its corporation limits defined has been included as Figure 2.

The existing thoroughfares serving Gahanna include Hamilton Road as the primary north/south arterial and U.S. Route 62 as the primary east/west arterial. Hamilton Road interchanges with I-270 at the southern City limits and indirectly interchanges with SR-161 north of Gahanna. U.S. 62 interchanges with I-670 and I-270 on the west side of Gahanna and connects to the Village of New Albany northeast of the City. Morse Road is an east/west arterial on the north side of Gahanna that connects the north end of Gahanna and New Albany to Interstate 270.



Legend

- Study Area
- Gahanna Corporation

Figure 1
Study Area Location Map

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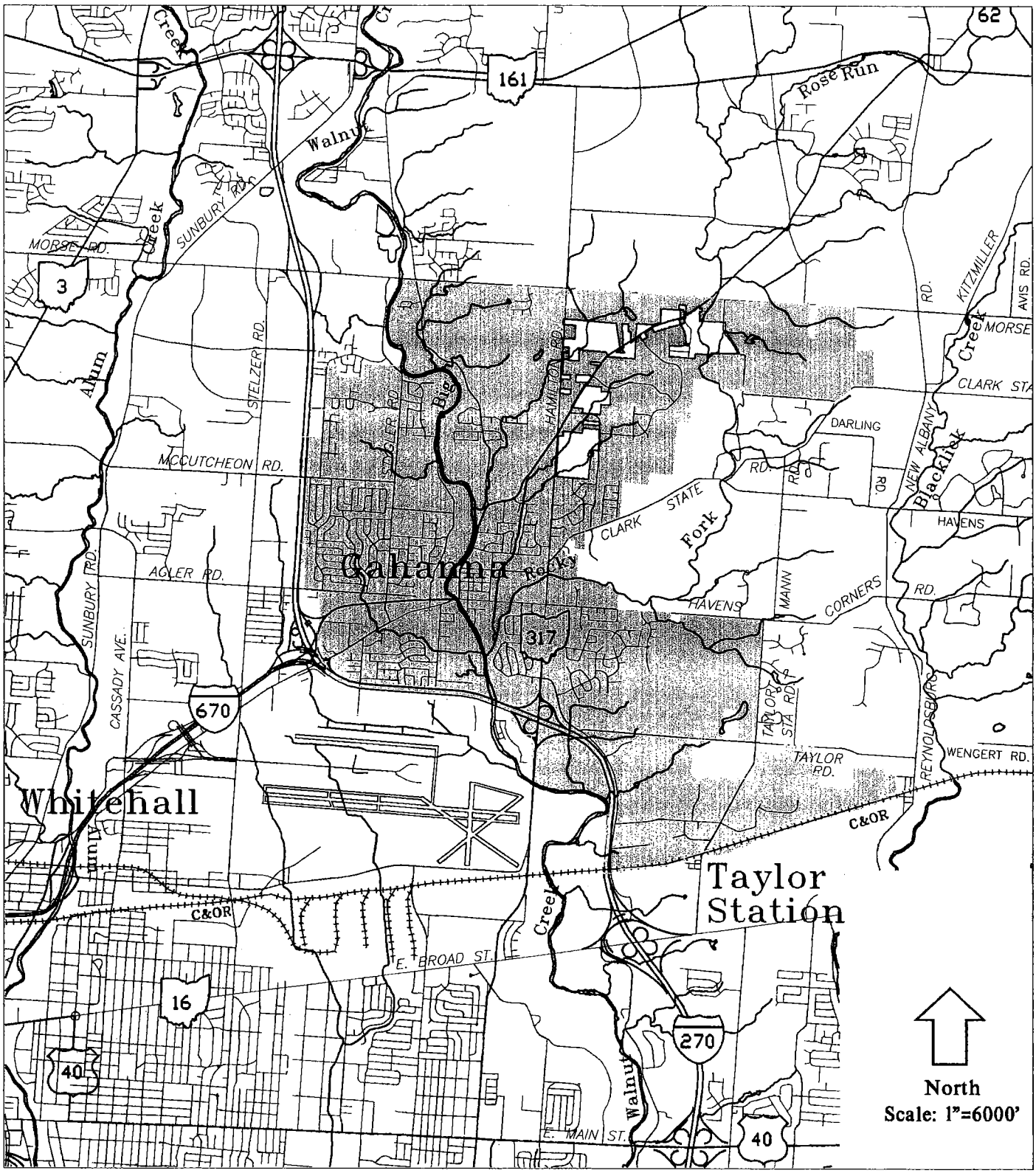

Legend

Gahanna

Figure 2
Study Area Jurisdictional Map

Development in the area has historically progressed from the freeway system outward. Accordingly there are portions of southern and western Gahanna that are largely developed and served by stable, multi-lane roadways. Other portions of the northern and eastern parts of the study area have remained somewhat rural in character or have recently developed with more dense land uses. Those areas typically are served by minimal roadway infrastructure that is often impacted by changes in land use.

The area known as "old Gahanna" is situated east of the Big Walnut Creek between Granville Street and Carpenter Road. This portion of the City is characterized by a grid street pattern, minimal building setbacks, and on-street parking in some areas. Land uses are a mixture of commercial, generally located along the arterial streets, and single family and multi-family residential, typically located in the interior of the district. The City has recently developed some of the floodway of Big Walnut Creek into a pedestrian attraction and plans to add more features and development in the creek side area.

Future Area Conditions

The City of Gahanna is expected to sustain significant growth in population and employment during next 20 years. The population within the existing corporate limits of the City is expected to rise by more than 7,600 people by the year 2020. Employment within the existing corporate limits is expected to increase by more than 8,200 jobs. Just as significant, population and employment within the study area is expected to increase similar to that inside the City limits.

The entire study area, which includes portions of Jefferson Township, New Albany, and the City of Columbus, is similarly anticipated to grow, generating traffic that impacts the Gahanna street system. The entire study area, including the City of Gahanna, is forecast to employ over 98,000 people by the year 2020. More than 131,000 people are expected to reside in the study area by that time. Much of the growth that does not occur within the limits of Gahanna is expected to focus on the New Albany and Jefferson Township areas north and east of the City.

While other routes are available, much of the traffic generated in locations north and east of the City will continue to utilize City streets to access the interstate system and other destinations. As part of the Thoroughfare Plan process, the Mid-Ohio Regional Planning Commission updated its transportation model for the entire study area to reflect the traffic generated by the anticipated build out of the area. Two land use forecasts were made, permitting one model to reflect average densities, and another to project more conservative, higher density development. Those land use forecasts formed the basis for the traffic projections that underlie the Thoroughfare Plan.

Along with the land use and traffic forecasts, the actual street network formed the foundation of the modeling for the Thoroughfare Plan. In general, the roadway system model included all of the significant existing facilities in the study area. Planned improvements, such as the realignment of Hamilton Road to interchange directly with SR 161 were included in the model base condition.

All improvements included in the Transportation Improvement Plan (TIP) maintained by the MORPC were reflected in the model base condition. These projects are considered to be top priorities capable of being constructed within the next five years.

Some network modifications were identified by City of Gahanna staff and EMH&T as a part of the thoroughfare planning process. These modifications were conceived to add flexibility to the street network as a practical matter and are not directly tied to the analytical work presented herein. They include completing the planned connections within the Morse Road/Hamilton Road/US 62 "triangle", and extending Tech Center Drive west over Interstate 270 to connect with Hamilton Road just south of I-270.

Traffic Forecast

The Mid-Ohio Regional Planning Commission (MORPC) prepared the long range traffic forecast for the Thoroughfare Plan. The MORPC serves as the federally designated metropolitan planning organization for Franklin and Delaware Counties and some adjacent townships. In that role the MORPC maintains several databases for the planning area, including land use, subdivision activities, building permits, traffic counts, and thoroughfare plan classifications. On five year cycles the MORPC undertakes a comprehensive land use inventory of the planning area.

The product of the periodic land use inventory is a detailed data set that includes housing, employment, floor area, and acreage for land uses. The geography of the land use inventory is at a very local level. The most current land use inventory data available was collected in 1995, and defines over 25 Traffic Analysis Zones within the City of Gahanna and immediately adjacent to the City. For the Thoroughfare Plan effort, the Traffic Analysis Zone structure was further refined into smaller geographic areas so that the entire study area, including portions of Jefferson Township, New Albany, northeastern Columbus and Franklin County contains over 100 zones.

A Traffic Analysis Zone map and land use tables prepared by the MORPC have been included in Appendix A. The land use tables show the inventory of land uses documented in 1995 as well as the forecast of build out in each zone by the year 2020. Two future land use scenarios were prepared for travel demand modeling, one representing a realistic build out of the area by the year 2020 and one representing a higher, worst case scenario. Land use forecasts were based, in part, on long range plans adopted by local communities and reflects known development information obtained from recent traffic impact studies, local agency staff, and similar sources.

The local community plans referenced in developing the land use forecasts included the Rocky Fork/Blacklick Accord, Plain Township Comprehensive Plan, New Albany Strategic Plan, New Albany Business Campus Impact Study, and the Hamilton Road Triangle Area Study. Land use forecasts for the City of Gahanna were reviewed by City staff for compliance with the planning and zoning goals of the Council and administration. Once the land use forecasts were completed, trip tables were prepared with an estimate of the number of vehicle trips generated in each of the

Traffic Analysis Zones for the various design year scenarios. Following review and approval of the trip tables, the trip generation and other information was loaded into the travel demand model maintained by the MORPC.

The MORPC travel demand model is the TranPlan software that performs traffic assignment from each of the Traffic Analysis Zones to the surrounding street network. The model was developed for a base condition and also to reflect alternative street networks to be considered as part of the Thoroughfare Plan. The 2020 Average Daily Traffic volumes forecast by the demand model are presented in Figures 3 and 4. Case A refers to the existing street network with no additions or improvements. Case B consists of the planned Tech Center Drive extension street network. Case C refers to the future (2020) street network with the Morse Road/Hamilton Road/US 62 triangle development. Traffic volumes have been shown for both standard density and high-density land use assumptions.

Future Roadway Operations

The level of service of a roadway is a qualitative measure describing operational conditions within a traffic stream, generally described by factors including speed, travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. Six levels of service have been defined and are designated as level of service (LOS) A, which represents the best operating conditions, through LOS F, which represents saturated conditions, substantial delay and significant queuing. An urban arterial is normally designed to provide adequate capacity to serve expected peak traffic volumes at LOS D in the design year. It is possible for actual traffic volumes to exceed capacity; however, conditions rapidly deteriorate as traffic volumes increase with long delays and significantly reduced average travel speeds.

A roadway is generally considered to have exceeded its capacity when it reaches the threshold volume between LOS D and LOS E. Table 1 illustrates the LOS D/E threshold for various lane configurations.

Table 1 : LOS D/E Threshold Levels

Number of Lanes	LOS D/E Threshold (ADT)
2	12,000
3	15,000
5	35,000
7	50,000

These volumes are not intended to predict capacity or levels of service at individual intersections on a given roadway. They are used to estimate capacity thresholds on roadways where the number of through lanes controls the analysis.

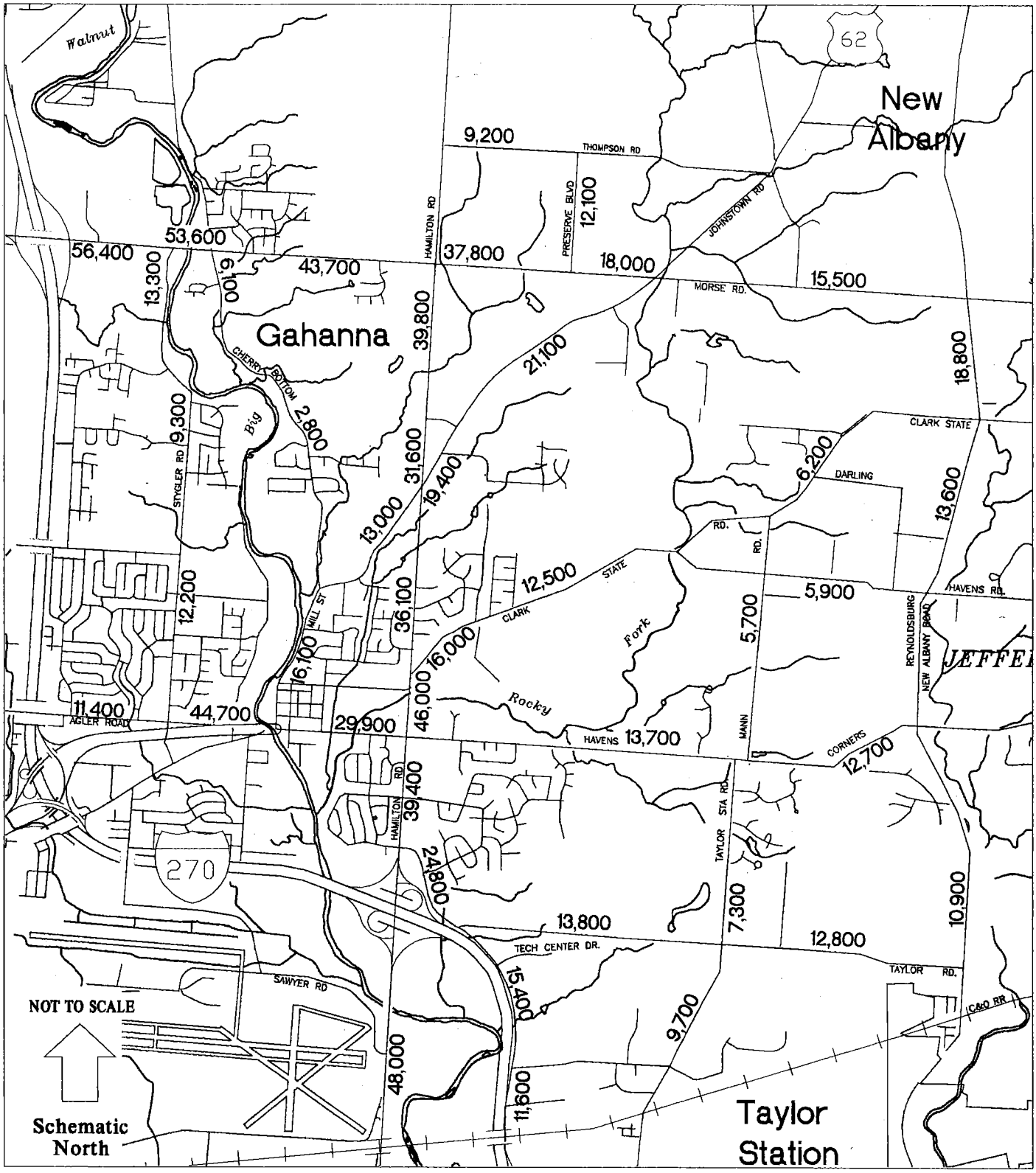

Figure 3a
2020 Average Daily Traffic Volumes
(Standard Land Use)

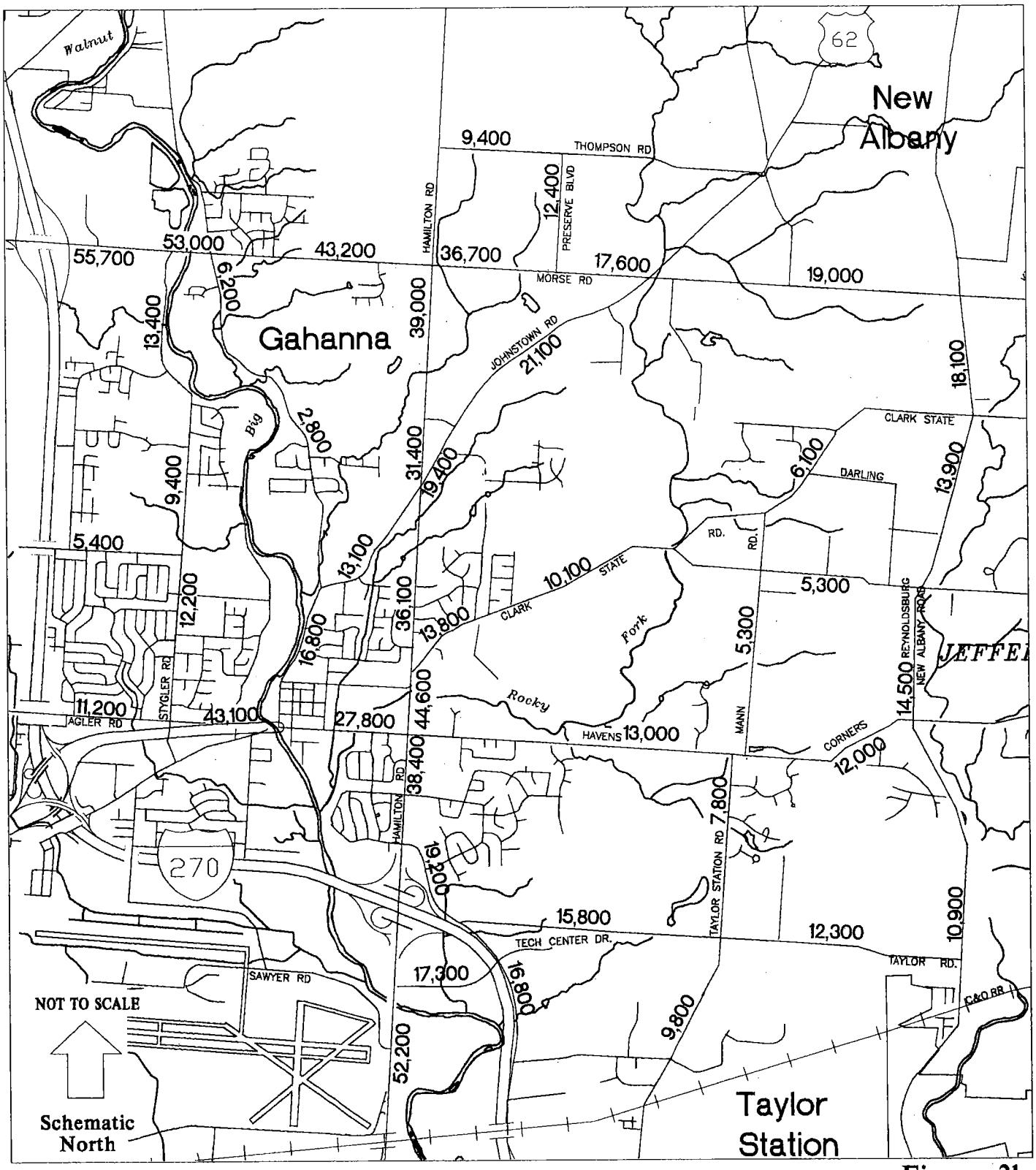

Figure 3b

2020 Average Daily Traffic Volumes
(With Techcenter Drive - Standard Land Use)

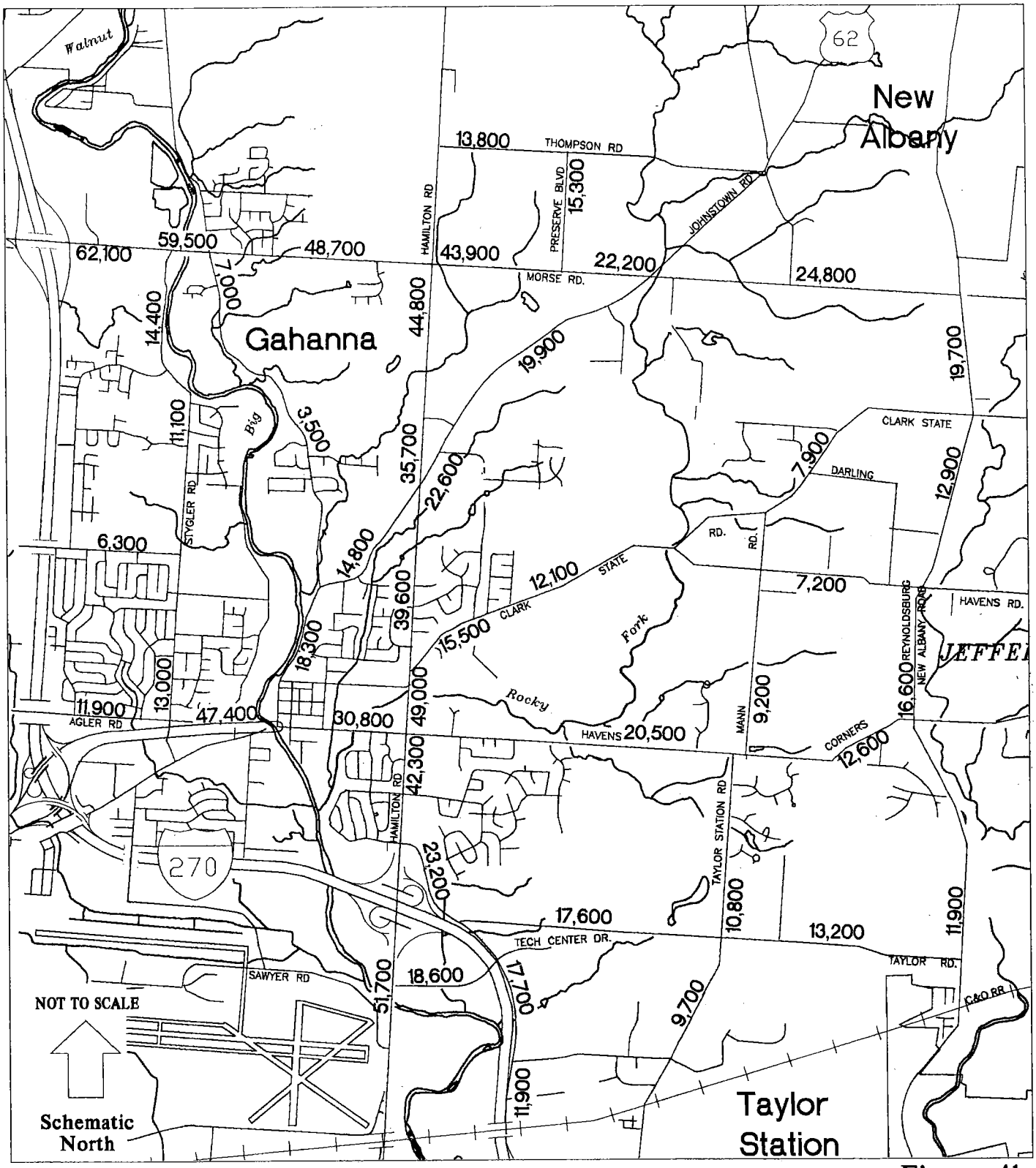

Figure 4b

2020 Average Daily Traffic Volumes
(With Techcenter Drive - High Land Use)

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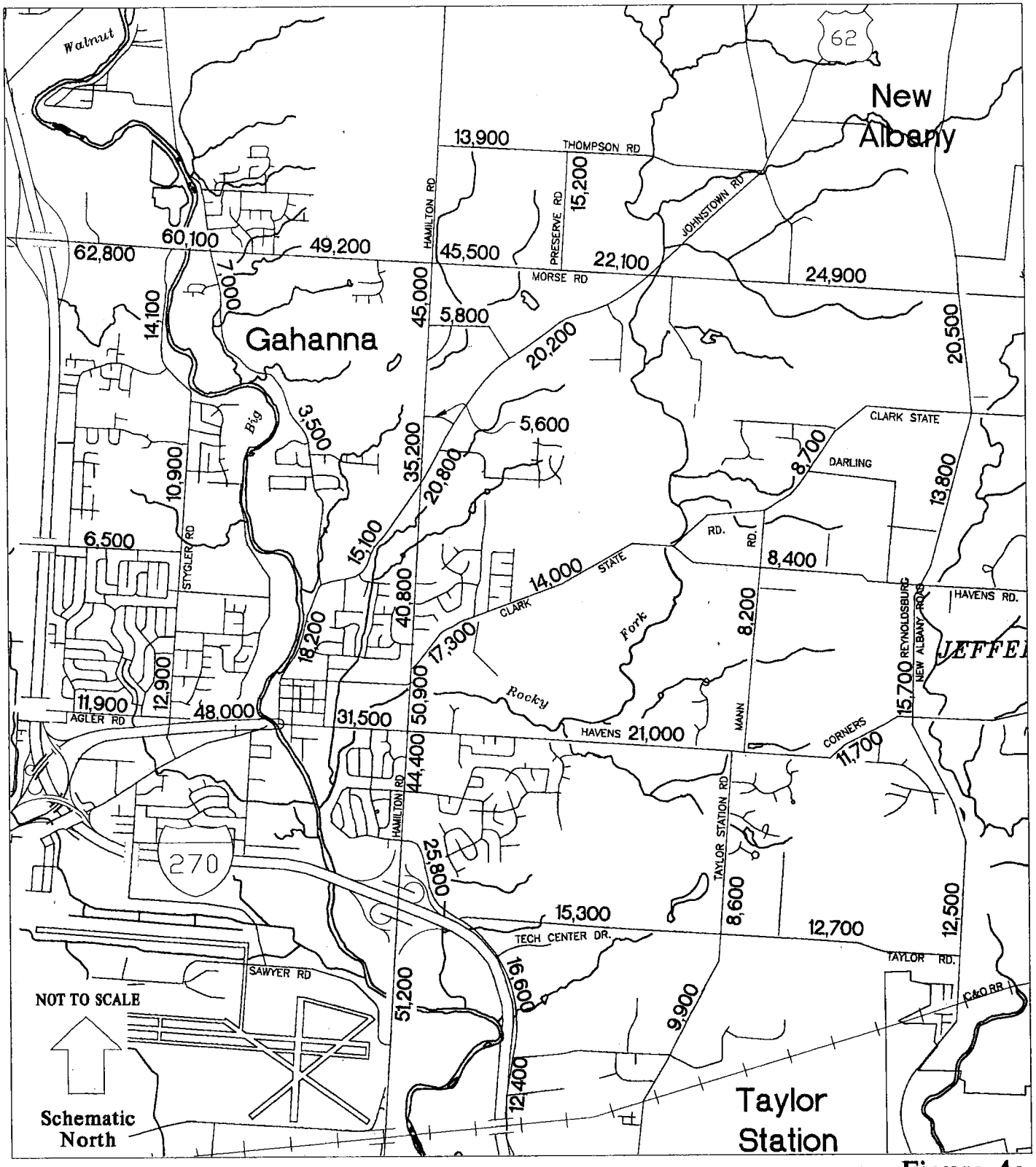

Figure 4c

2020 Average Daily Traffic Volumes
(With Triangle Roads- High Land Use)

The traffic volumes forecast by the travel demand model and shown in Figures 3 and 4 have been compared to the capacity thresholds established in Table 1. A section of roadway on which the forecasted traffic volume exceeds the maximum volume sustainable on the number of lanes available would have a volume to capacity (v/c) ratio greater than 1.0, indicating a deficient link. For example, a two lane street with a daily volume of 14,000 vehicles would have a v/c ratio of 1.17 because 14,000 vehicles per day is more than the 12,000 vehicles that a two lane street can accommodate. Unless that street is improved by the design year, drivers can expect to experience congestion and delay, particularly during peak periods.

Table 2 below shows the v/c ratio for selected roadway links, for both standard and high land use scenarios, in the design year. As shown, some of the existing streets serving Gahanna are expected to function adequately upon full buildout of the study area, indicated by a v/c ratio less than 1.0 in the table. Deficient links are expected to occur on some arterials if no improvements are implemented.

Table 2 : 2020 V/C Ratios on Existing Street Network

Roadway	From	To	LOS D/E Capacity (ADT)	Projected 2020 ADT Volume (Std Land Use)	2020 V/C Ratio (SLU)	Projected 2020 ADT Volume (High Land Use)	2020 V/C Ratio (HLU)
Morrison Rd	Claycraft Rd	Taylor Rd	12,000	15,400	1.28	16,300	1.36
Morrison Rd	Taylor Rd	Hamilton Rd	12,000	24,800	2.07	25,300	2.11
Hamilton Rd	Morrison Rd	Havens Corners Rd	35,000	39,400	1.13	45,100	1.29
Hamilton Rd	Havens Corners Rd	Clark State Rd	35,000	46,000	1.31	51,200	1.46
Hamilton Rd	Clark State Rd	Johnstown Rd	12,000	36,100	3.01	40,200	3.35
Hamilton Rd	Johnstown Rd	Morse Rd	12,000	31,600	2.63	36,200	3.02
Taylor Rd	Morrison Rd	Taylor Station Rd	12,000	13,800	1.15	15,000	1.25
Taylor Rd	Taylor Station Rd	Reyoldsburg-NA Rd	12,000	12,800	1.07	12,000	1.00
Agler Rd	I-270	Stygler Rd	12,000	11,400	0.95	11,800	0.98
US 62	Stygler Rd	Mill St	35,000	44,700	1.28	47,700	1.36
Granville St	Mill St	Hamilton Rd	35,000	29,900	0.85	30,500	0.87
Havens Corners Rd	Hamilton Rd	Taylor Station Rd	12,000	13,700	1.14	20,600	1.72
Havens Corners Rd	Taylor Station Rd	Reyoldsburg-NA Rd	12,000	12,700	1.06	12,500	1.04
Stygler Rd N.	Agler Rd	McCutcheon Rd	15,000	12,200	0.81	13,100	0.87
Stygler Rd N.	McCutcheon Rd	Morse Rd	15,000	13,300	0.89	14,200	0.95
Mill St	Granville St	Johnstown Rd	15,000	16,100	1.07	18,200	1.21
Cherry Bottom Rd	Johnstown Rd	Morse Rd	12,000	6,100	0.51	7,200	0.60
Johnstown Rd	Cherry Bottom Rd	Hamilton Rd	12,000	13,000	1.08	15,000	1.25
Johnstown Rd	Hamilton Rd	Morse Rd	12,000	21,100	1.76	23,000	1.92
Clark State Rd	Hamilton Rd	Havens Rd	12,000	16,000	1.33	17,800	1.48
Clark State Rd	Havens Rd	Reyoldsburg-NA Rd	12,000	6,200	0.52	8,000	0.67
Morse Rd	I-270 E. Ramp	Stygler Rd	35,000	56,400	1.61	62,000	1.77
Morse Rd	Cherry Bottom Rd	Hamilton Rd	35,000	43,700	1.25	46,200	1.32
Morse Rd	Hamilton Rd	Johnstown Rd	12,000	37,800	3.15	44,100	3.68
Morse Rd	Johnstown Rd	Reyoldsburg-NA Rd	12,000	15,500	1.29	24,500	2.04

Deficient links identified in Table 2 have been shown on Figure 5. Capacity-deficient roadway links were established for the Case B, and Case C roadway scenarios in the same manner they

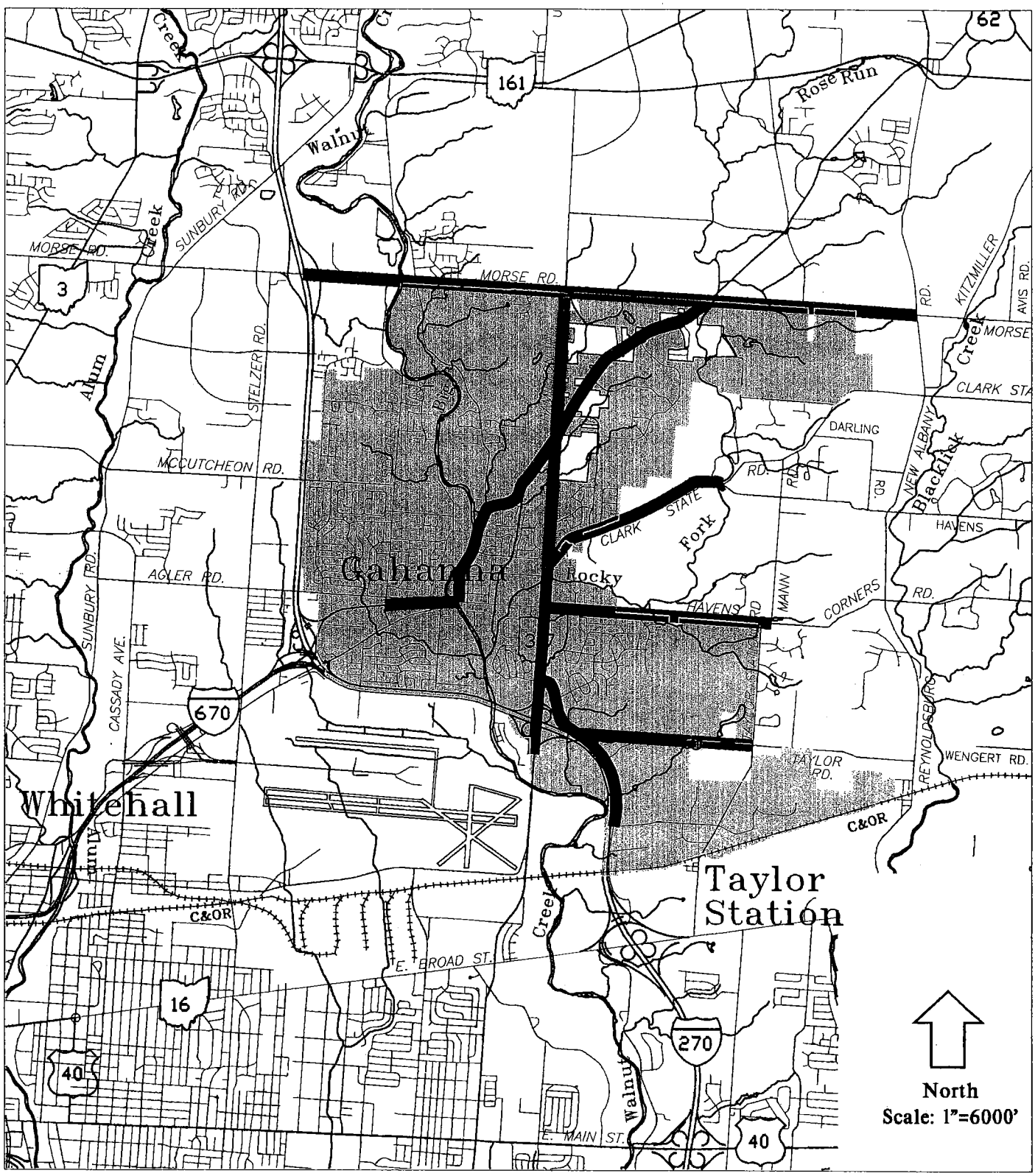

Figure 5
Capacity Deficient Links
(Standard Land Use)

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were determined for the Case A roadway scenario. The ADT volumes for Cases B and C were used to determine v/c ratios on each of the existing roads within the study area. Links with a volume to capacity ratio greater than 1.0 were considered deficient. Each roadway link and its corresponding v/c ratio have been presented in Table 3 for Case B and Case C scenarios. Table 3 has been included in Appendix B at the back of this report.

Hamilton Road-Triangle Area Roadways

The Case B roadway network includes all of the streets modeled for the basic design year condition plus an additional network of roadways located in the triangle formed by the intersections of Hamilton Road, Morse Road, and U.S. 62. This additional network of roadways consists of a connection between Hamilton Road and U.S. 62 located south of Morse Road and service roads that consolidate access in the Hamilton Road corridor. Beecher Road is an existing facility that connects Hamilton Road to U.S. 62 closer to the southern end of the triangle than the proposed connection. The east-west connection between Hamilton Road and U.S. 62 is the most difficult to provide as it involves the cost of crossing a water course and involves a number of property owners.

The east-west connection is expected to carry the maximum volume of traffic at its western end adjacent to Hamilton Road. The design year volume there was forecast as 5,600 vehicles per day. This reduced to 4,500 vehicles per day at the eastern end of the connector. The main beneficiary of this reduction is Beecher Road which is expected to carry 8,100 vehicles per day near Hamilton Road without the Triangle Area Roadways but only 3,700 vehicles per day with the additional network. No significant benefit to the Triangle Area Roadway network was evidenced on Morse Road, Hamilton Road, and U.S. 62 beyond a localized reduction in volumes in the links between Beecher Road and the east-west connector.

Techcenter Drive Extension

Techcenter Drive currently forms a tee intersection at Morrison Road and extends east from there. A western extension of Techcenter Drive has been proposed that would bridge I-270 and connect Morrison Road to Hamilton Road south of the existing I-270/Hamilton Road intersection. The travel demand model for the base design year condition was run without the proposed connection between Morrison Road and Hamilton Road, and an additional run was performed with the connection included in the network. Significant benefits to network operations are predicted to result from the construction of Techcenter Drive.

Traffic currently generated in the industrial area located east of Morrison Road and south of Taylor Road primarily uses the Hamilton Road/Morrison Road intersection to access I-270. Current day operations at that intersection are capacity constrained leading to long delays and safety issues during peak hours. This situation is expected to be exacerbated in the design year as

a result of normal traffic volume growth as well as ongoing development in the Taylor Road corridor.

By providing at least an equally convenient route to the interchange, the Techcenter Drive extension provided significant relief to the Hamilton Road/Morrison Road intersection when the extension was included in the demand model. The daily volume on Morrison Road dropped more than 27 percent in the design year due to the presence of the Techcenter Drive extension in the model network. While volumes south of the interchange on Hamilton Road rose as a result of the Techcenter Drive extension, the increase was less significant at approximately 5%.

The Techcenter Drive extension itself is expected to carry over 17,000 vehicles per day in the design year. A five lane typical section is recommended for this volume which will result in a favorable v/c ratio well under 1.0. Since the design year volume forecast is near the low end of the range of volumes that can be accommodated on a five lane typical section, consideration should be given to staging the construction to provide a three lane section initially with provisions for adding two lanes in the future.

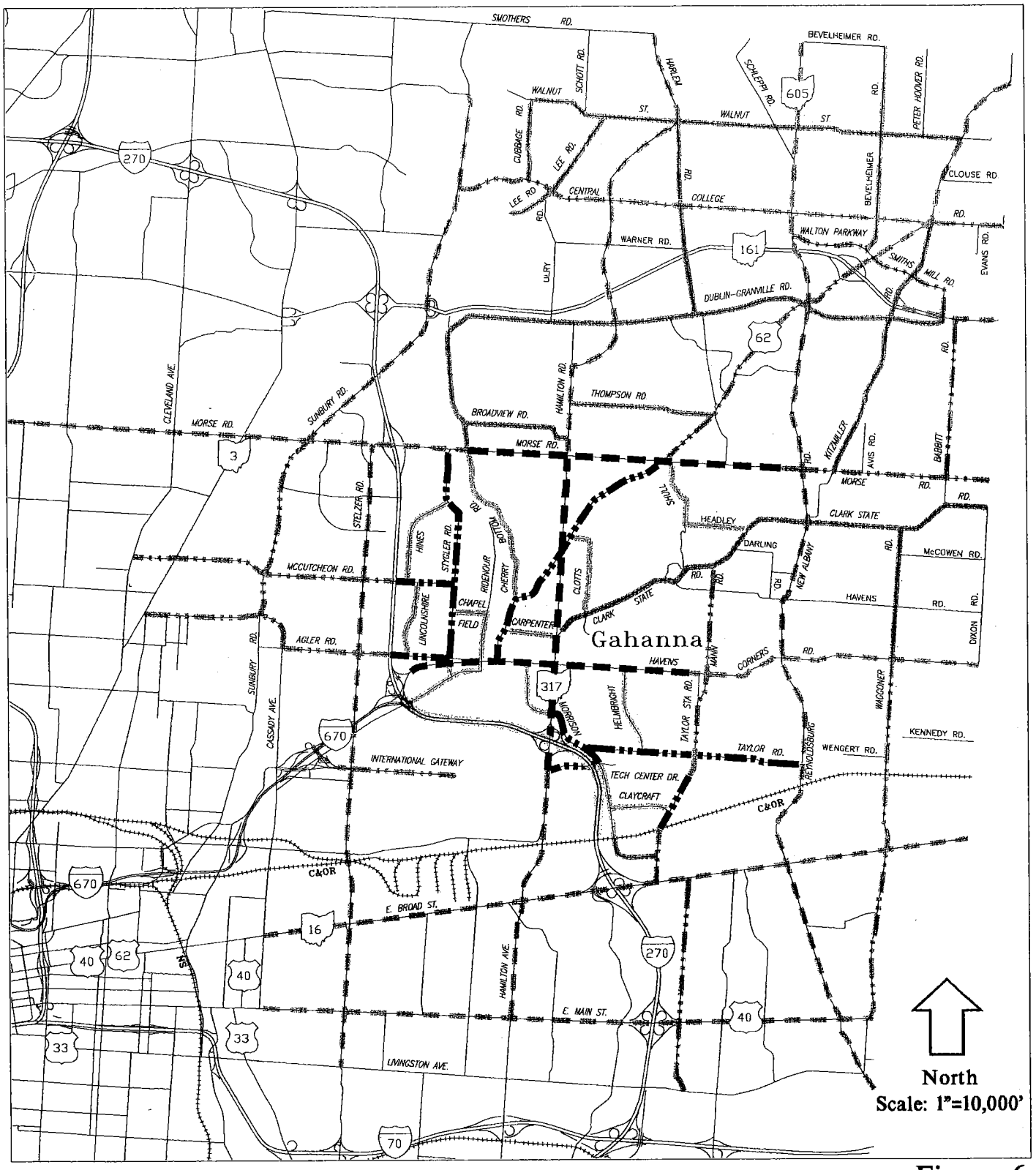
Thoroughfare Plan

The Gahanna Thoroughfare Plan is a classification of streets to identify the importance of each street within the street network and prioritize improvements to existing and future streets. The street classifications include freeways, principal arterials, minor arterials, collectors, and local streets. Classification of the Gahanna street network is based on the criteria detailed in Table 4.

Table 4 : Characteristics of Functional Street Classifications

	Freeway	Principal Arterial	Minor Arterial	Collector	Local
Traffic and Land Service	Continuous flow for regional and interstate travel. Access at interchanges only	Priority on movement of thru traffic. Some access permitted with controls	Minimal interference with thru traffic. Frequent access.	Traffic movement and land access equal.	Priority on access. Use by thru traffic discouraged.
Avg. Trip Length	Over 3 miles	Over 1 mile	Over 1 mile	Under 1 mile	Under ½ mile
Speed Limit	50-65 mph	35-45 mph	35-45 mph	25-35 mph	25 mph
Spacing	1-3 miles	1 mile	1 mile	½ - 1 mile	As required
Typical ADT	50,000-100,000	25,000-50,000	15,000-35,000	2,000-15,000	100-2,000

The Gahanna Thoroughfare Plan has been shown on Figure 6. The non-local classification of existing and proposed roads within the Gahanna area has been presented in Table 5.



Legend

Gahanna	Adjacent Jurisdiction
Freeway	
Principal Arterial	
Minor Arterial	
Collector	

Figure 6
Gahanna Thoroughfare Plan

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Table 5 : Gahanna Road Classifications

Freeway	Principal Arterial	Minor Arterial	Collector
I-270	US 62 West of Mill St.	US 62 East of Granville St	Carpenter Road
I-670	Granville Street	Agler Road	Cherry Bottom Road
	Hamilton Road	Mann Road	Clark State Road
	Havens Corners Road	McCutcheon Road	Claycraft Road
	Morse Road	Morrison Rd (N of Taylor)	Clotts Road
		Stygler Road	Flint Ridge Drive
		Taylor Station Road	Helmbright Road
		Taylor Road	Headley Road
			Hines Road
			Lincolnshire Road
			Morrison Rd (S of Taylor)
			Ridenour Road
			Shull Road
			Johnstown Rd (W. of 62)
			Wendler Boulevard

Basic design elements for each street classification have been shown in Table 6 below. These design elements include the recommended number of lanes, pavement width, curb and gutter width, tree lawn width, and minimum right-of-way width.

Table 6 : Basic Design Elements for Functional Street Classifications

Functional Classification	Number of Lanes	Pavement Width (f/c to f/c)	Tree Lawn (f/c to walk)	Minimum R/W Width Required
Principal Arterial	7	92'	9'	120' *
	5	72'	9'	100'
Minor Arterial	5	64'	13'	100' *
	3	40'	15'	80'
Collector				
	3	36'	7'	60'
	2	32'	13'	60'
Local	2	32'	9'	60'
	2	26'	11'	50'

f/c = face of curb

*=Not provided for in codified ordinances § 1109.02

Principal arterial dimensions include 12-foot lanes and the ODOT-required 4-foot curbed shoulder for speeds over 40 mph with design exception. Minor arterial dimensions do not include the 4-foot curbed shoulder but do reflect 2.5 foot curb and gutter in addition to the 12-foot wide travel

lanes. Collector, and local street dimensions do not include the 4-foot curbed shoulder and include a 1.5 foot wide curb and gutter as part of the 12-foot wide travel lane. The widths given in Table 6 do not include additional pavement or right-of-way needed if parking lanes or medians are desired. The minimum right-of-way given above is adequate in mid-block sections for a given roadway classification; however, additional right-of-way may be required at some intersections for turn lanes and other geometric considerations, including right-of-way needed to ensure adequate turning radii.

Access Management

Access standards are an important design element of thoroughfares, in addition to the right-of-way width and typical-section characteristics shown in Table 6. Access management policies can be effective in preserving the capacity of existing pavements and in developing the full capacity potential of improved roadways. The criteria below should be considered when reviewing site plan proposals that include access to thoroughfare streets and as part of the design process for thoroughfare improvements. The suggested criteria is aspirational and should be considered together with the physical constraints of the site, the type of development proposed, and other factors.

For Principal Arterial and Minor Arterial facilities, non-residential, unsignalized curb cuts should be located at least 500 feet from unsignalized intersections and at least 750 feet from signalized intersections. Future curb cuts should align with existing or planned curb cuts on the opposite side of the street to the extent possible. If unsignalized curb cuts are to be offset from curb cuts on the opposite side of the arterial, the offset should be at least 200 feet if offset to the left and 400 feet if offset to the right. Right turn in/right turn out curb cuts should be located at least 300 feet from adjacent intersections.

For Collector facilities, non-residential, unsignalized curb cuts should be located at least 500 feet from unsignalized and signalized intersections. Future curb cuts should align with existing or planned curb cuts on the opposite side of the street to the extent possible. If unsignalized curb cuts are to be offset from curb cuts on the opposite side of the arterial, the offset should be at least 150 feet if offset to the left and 300 feet if offset to the right. Right turn in/right turn out curb cuts should be located at least 200 feet from adjacent intersections

Adjacent curb cuts should be considered unsignalized intersections for the purpose of these criteria. All distances given above should be measured center to center of driveways and intersections. The criteria is appropriate for a 45 mph design speed on arterials and a 35 mph design speed on collectors. Actual field conditions may warrant other criteria. Traffic signals placed along arterials or collectors should be spaced 1250 feet apart measured center to center of intersections, unless a traffic engineering study demonstrates that different signal spacing will enhance coordination and improve the overall operation of the corridor.

Traffic Crash Locations

As a part of the Thoroughfare Planning process, traffic crash records were obtained and reviewed in order to determine the intersections, currently located in the City, having the highest number of traffic crashes. Data was obtained from the Ohio Department of Public Safety for the years 1996 through 1998. The top ten crash sites in Gahanna were:

Intersection	Crashes
1. Hamilton Road/Morrison Road	65
2. Hamilton Road/Granville Street	41
3. Hamilton Road/Rocky Fork Boulevard	37
4. U.S. 62/Stygler Road	35
5. U.S. 62/Ridenour Road	31
6. Stygler Road/Agler Road	31
7. Mill Street/Granville Street	26
8. Granville Street/East Lincoln Circle	22
9. Hamilton Road/Clark State Road	21
10. Granville Street/High Street	20

Not unexpectedly, the highest crash frequencies occur on streets with higher volumes of traffic. Detailed study of these locations should include a comparison of the number of crashes to the volume of traffic entering the intersection. In this manner a crash rate may be determined permitting the comparison of intersections to each other.

Conclusions and Recommendations

Many of the existing thoroughfares in established areas of the City of Gahanna have sufficient capacity to serve the projected design year traffic load. Streets such as Stygler Road, Cherry Bottom Road and Granville Street are not expected to require additional lane capacity before the year 2020. Other facilities are expected to be severely capacity deficient before the design year is reached unless they are widened and improved. The most seriously compromised roadways are:

Hamilton Road from Clark State Road to Morse Road
Morrison Road from Taylor Road to Hamilton Road
Morse Road from Hamilton Road to Johnstown Road

Planning should proceed to widen these facilities or, in the case of Morrison Road, provide the alternate Techcenter Drive. The Techcenter Drive project was found to provide significant relief to the currently congested Hamilton Road/Morrison Road intersection. Construction of Techcenter Drive is recommended.

Other roadways are expected to be at, or slightly over, their vehicle carrying capacity by the design year. These facilities should be monitored to ensure that actual traffic volume growth tracks the projections. Improvements may be required to some of these streets but operations may be preserved for an extended period with effective management techniques like signal coordination, access management, etc. Roadways at risk include:

Hamilton Road from Morrison Road to Clark State Road
Taylor Road from Morrison Road to Mann Road
U.S. 62 from Stygler Road to Mill Street
Havens Corners Road from Hamilton Road to Taylor Station Road
Johnstown Road from Hamilton Road to Morse Road

The City's traffic counting program should monitor volumes on the streets listed above, and at high crash locations on a regular basis.

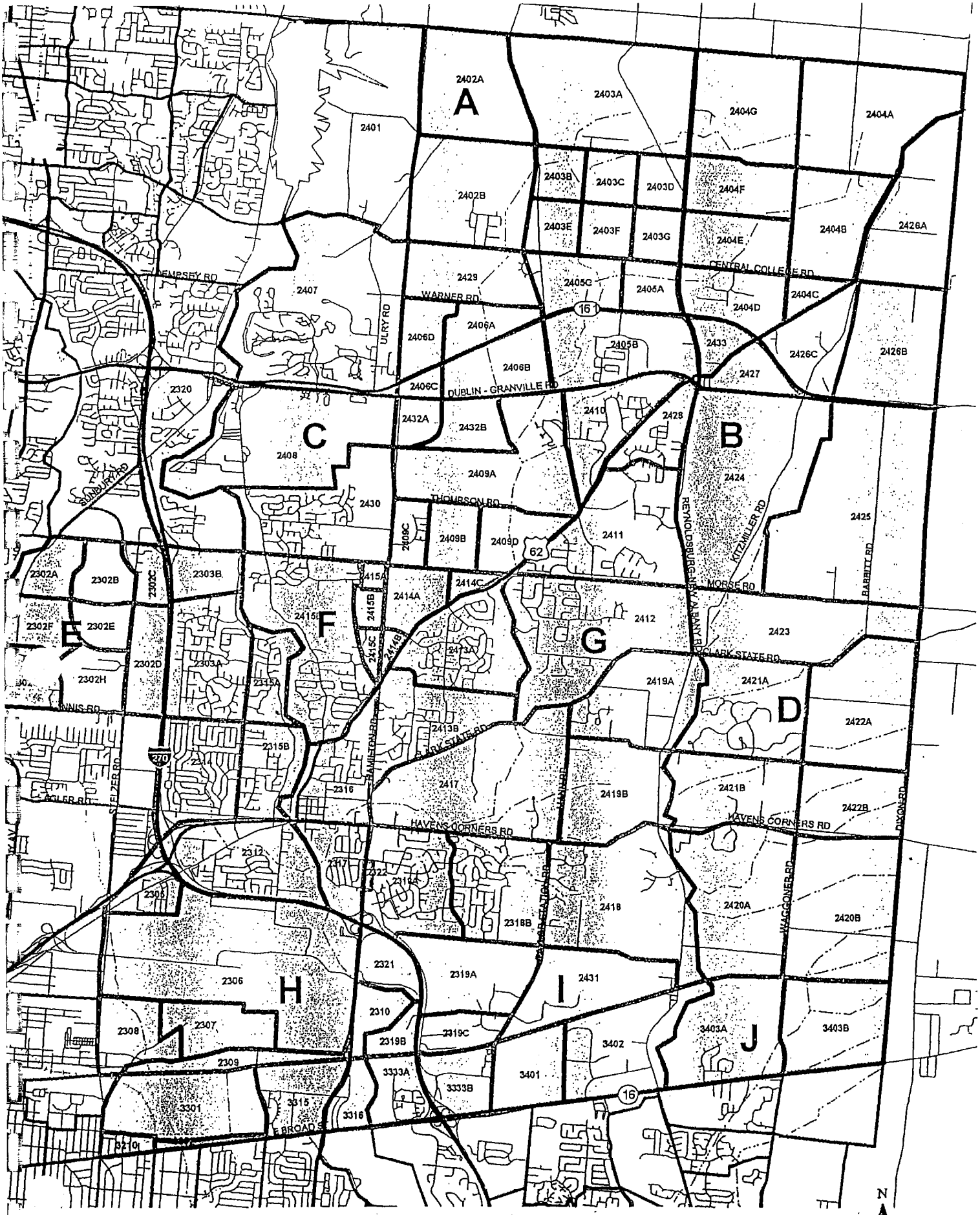
As roadways are improved, consideration should be given to organizing access, aligning intersections and driveways, and using collector facilities such as has been recommended in the Triangle Area study. Intersections with existing alignment deficiencies include:

Havens Corners Road/Taylor Station Road/Mann Road
(align Mann Road with Taylor Station Road)
Taylor Station Road/Claycraft Road/Research Road
(align Claycraft Road with Research Road)
Morse Road/U.S. 62
(skew angle)

The recommendations of the Triangle Area study should be implemented with respect to consolidating access to Hamilton Road, Morse Road and U.S. 62. The use of service roads to eliminate left turn movements at unsignalized locations is expected to help preserve through traffic capacity on these important arterials. The direct connection between Hamilton Road and U.S. 62 was found to be of limited benefit and additional analysis of the costs and benefits associated with providing this link should precede design and construction of the facility.

With these primary improvements, the Gahanna thoroughfare system can be expected to support the growth and development of the City through the year 2020. The Thoroughfare Plan itself should be periodically updated within that time to account for any changes in the road network or land use in the study area.

Appendix A
MORPC Land Use Data



Gahanna Study Sub Areas

N

0 2000 4000 8000 Feet

formation shown on this map is compiles from various
es available to us which we believe to be reliable.
w/projects/gahanna May 2000

Gahanna Thoroughfare Plan
Future Land Use Scenarios

Background
Two future land use scenarios were prepared for travel demand modelling in conjunction with developing a Thoroughfare Plan for the city of Gahanna. The scenarios are both for year 2020, with one being a realistic 2020 year forecasts, and the other being a "high" or "worst case scenario" forecast.

The land use data was prepared for the northeast quadrant of Franklin County, from Broad Street on the south to the county line on the north, and from I-270 (bumped out to include Easton) on the west to the county line on the east.

The land use was prepared at the traffic analysis zone (TAZ) level. The amount of recent and proposed development in the area required us to make a significant modification to the TAZ structure and existing land use data sets. The study area includes 107 TAZ.

Method and Assumptions
Data tables showing our base year data (1995) and the two forecast years aggregated into sub-areas by TAZ are included as Tables 4-7. Below is a brief discussion of the sub-areas and assumptions used in preparing the forecasts.

All forecasts are based on long range land use plans adopted by local communities and known development information collected from traffic impact studies, newspaper articles and city staff. A list of the planning documents used in preparing these forecasts appears in Table 1.

Table 1: Planning Documents Referral Lis

Plan	Planning Agency
Rocky Fork /Blacklick Accord	Columbus, New AlbanyP
Plain Township Comprehensive Plan	Plain Township
New Albany Strategicc Plan	New Albany
New Albany Business Campus Impact Study	New Albany
Gahanna Triangle Plan	Gahanna

Sub-Areas
In an effort to more coherently describe the forecasts and the assumptions used in their development, the study area was subdivided into ten sub-areas. A map displaying the sub-area and the TAZ boundaries appears as Figure 1.

Sub-Area A: Northern Plain Township
This sub-area is at the northern edge of the study area and includes the northern portion of Plain Township. The south eastern piece of the township was lumped with the sub-area representing Jefferson Township because of its continuity with that sub-area. Sub-

area A is projected to remain low density residential in nature. The difference between the future scenarios rests with the amount of development, not the type of development.

Sub-Area B: New Albany

Sub-area B includes the area covered in the New Albany Strategic Plan. This includes the New Albany Business Campus north of the New-Albany expressway. It also includes the Abercrombie and Fitch campus northeast of the expressway. The area south of the expressway is primarily residential. Commercial retail uses are clustered in the central part of the sub-area, around the village center and towards the north of the village in the areas around the interchanges around the expressway. Future land use projections in this sub-area are similar based on what New Albany proposes for the village.

Sub-Area C: Northeast Columbus' Hamilton Road Corridor

Sub-area is C includes the area that is located within the city of Columbus in the northwest portion of the study area. This area includes developments around Little Turtle, and the rapidly developing areas immediately west of New Albany and north of Gahanna, including the Hamilton Road corridor. A substantial amount of new retail development is occurring near Hamilton and Morse Roads, and the 2020 projections include a lot of new retail development in this area. In addition, large new retail uses are projected southeast of SR 161 and Hamilton. While the area west of Hamilton Road already has residential development, the area to the east is just beginning to develop. The difference between the 2020 scenarios assumes similar land use types, but the high scenario includes higher concentrations of development on the east side Hamilton Road. Both scenarios include the assumption that the area west of Hamilton Road will reach nearly complete development by 2020.

Sub-Area D: West Jefferson Township and south Plain Township

This sub-area includes the portion of the sub-area east of Blacklick Creek between SR 161 and the rail line on the south. This area is projected to develop at low density residential with little commercial or industrial development. Similar to the variations between the future scenarios in the other sub-areas, the difference lies not in the type of development, but the amount of development. Both future scenarios assume primarily low-density residential growth.

Sub-Area E: Easton

Easton is well underway and planned for the type and amount of development. The unknown of Easton is the area to the east of Stelzer Road and north Easton Way, and the difference between the scenarios lies in the amount of development in this area. Both scenarios include the assumption that planned retail and residential development will be built, although there is no "mall". Rather, the high scenario assumes new office space east of Stelzer Road and north of Easton Way.

Sub-Area F: Gahanna

This sub-area includes most of the city of Gahanna, except for the industrial area south of Taylor Road. The future assumptions for this sub-area include those used in the Gahanna Triangle Study, with the triangle reaching full development by 2020. The difference between the scenarios lies primarily in the triangle area, with slightly higher retail uses projected for the higher scenario, and higher residential development in the area east of US 62. Population is projected to reach between 38,000 and 42,000 people.

Sub-Area G: Western Jefferson Township
This sub-area includes the area between the current Gahanna eastern boundary and Blacklick Creek. This area is expected to experience development pressures, however, the development is expected to occur as low density residential. The difference between the scenarios rests with the amount of development, with the high scenario having double that of the 2020 projection.

Sub-Area H: Port Columbus
This sub-area lies inside I-270 and includes Port Columbus International Airport and the industrial corridor along Broad Street and Fifth Avenue. Both future scenarios assume that Port Columbus International Airport will continue to be in its current location and will attract relatively aggressive industrial development to the area. Reuse of the McDonnell-Douglas manufacturing site as warehousing and distribution is assumed. The DCSC distribution center is assumed to continue to be operational at this site in the future, and some new industrial/office uses are projected along Fifth Avenue and Stelzer Road

Sub-Area I: Gahanna Industrial Area
This sub-area includes both the industrial area of Gahanna located south of Taylor Road. The future scenarios vary in the amount of development projected for the area east of Taylor Road and north of the rail lines. The 2020 forecast assumes an additional 500,000 square feet of industrial use in this area, where the high forecast assumes a nearly complete build-out of an additional 1.5 million square feet.

Sub-Area J: Columbus Far East Broad Street Corridor
Sub-Area J includes the southeastern portion of the study area between the rail lines and Broad Street that is east of I-270. This area is primarily industrial between the outerbelt and Blacklick Creek, and rapidly developing in medium residential uses east of the creek. The future scenarios assume similar amounts of industrial development, but differ in the amount of residential development projected for the eastern edge of the sub-area.

A summary of the land uses for the scenarios is included in tables 2 and 3.

Table 2: Population Housing and Employment by Sub-Area

Table 2.1 Population, Housing and Employment by Sub-Area: 1995, 2020, 2020 High Scenario

	Population			Housing			Jobs		
Sub-Area	1995	2020	2020 High	1995	2020	2020 High	1995	2020	2020 High
A	1,417	6,904	13,908	490	2,666	5,350	9	13	13
B	3,668	20,206	20,944	1,403	7,732	8,012	112	18,926	18,951
C	10,363	36,288	40,946	5,032	14,195	16,540	936	10,892	14,081
D	1,985	7,755	11,201	706	2,850	4,125	98	425	425
E	665	2,014	2,801	241	895	1,245	4,075	8,464	15,309
F	30,561	38,091	42,044	10,887	13,843	15,251	6,535	17,107	18,057
G	2,615	2,778	13,556	1,006	2,600	5,200	420	1,039	1,039
H	2,394	2,474	2,474	1,169	1,415	1,415	15,537	23,376	23,376
I	169	187	187	67	72	72	1,715	6,177	7,177
J	478	6,998	7,548	292	2,750	2,950	7,656	9,240	9,269
	54,315	123,695	155,609	21,293	49,018	60,160	37,093	95,659	107,697

Table 2.2 Change In Population, Housing and Employment by Sub-Area: 1995-2020, 2020- 2020 High Scenario

	Population		Housing		Jobs	
Sub-Area	95-20	20-20 High	95-20	20-20 High	95-20	20-20 High
A	5,487	7,004	2,176	2,684	4	0
B	16,538	738	6,329	280	18,814	25
C	25,925	4,658	9,163	2,345	9,956	3,189
D	5,770	3,446	2,144	1,275	327	0
E	1,349	787	654	350	4,389	6,845
F	7,530	3,953	2,956	1,408	10,572	950
G	163	10,778	1,594	2,600	619	0
H	80	0	246	0	7,839	0
I	18	0	5	0	4,462	1,000
J	6,520	550	2,458	200	1,584	29
	69,380	31,914	27,725	11,142	58,566	12,038

Table 2.3 Percent Change in Population, Housing and Employment by Sub-Area: 1995-2020, 2020- 2020 High Scenario

	Population		Housing		Jobs	
Sub-Area	Pct 95-20	Pct 20-20 High	Pct 95-20	Pct 20-20 High	Pct 95-20	Pct 20-20 High
A	387%	101%	444%	101%	44%	0%
B	451%	4%	451%	4%	16798%	0%
C	250%	13%	182%	17%	1064%	29%
D	291%	44%	304%	45%	334%	0%
E	203%	39%	271%	39%	108%	81%
F	25%	10%	27%	10%	162%	6%
G	6%	388%	158%	100%	147%	0%
H	3%	0%	21%	0%	50%	0%
I	11%	0%	7%	0%	260%	16%
J	1364%	8%	842%	7%	21%	0%
	128%	26%	130%	23%	158%	13%

Table 3: Industrial, Retail and Office Floor Space (square feet) by Sub-Area

Table 3.1 Industrial, Retail and Office Square Feet by Sub-Area: 1995, 2020, 2020 High Scenario

	Industrial Sq Ft			Retail Sq Ft			Office Sq Ft		
Sub-Area	1995	2020	2020 High	1995	2020	2020 High	1995	2020	2020 High
A	6,000	0	0	0	6,000	6,000	0	0	0
B	1,000	1,650,000	1,650,000	41,574	1,187,500	1,212,500	6,600	5,601,600	5,596,600
C	2,000	0	300,000	237,028	2,384,000	2,924,000	46,110	1,619,000	1,659,000
D	10,000	60,000	60,000	24,700	112,500	112,500	0	0	0
E	1,000,000	1,000,000	1,000,000	133,174	1,950,000	2,170,000	600,000	820,000	2,650,000
F	3,924,775	3,918,000	4,168,000	562,510	1,588,750	1,648,750	210,618	941,793	1,116,793
G	33,650	600,000	600,000	87,875	115,950	115,950	26,074	25,000	25,000
H	10,611,566	11,156,500	11,156,500	782,803	870,900	870,900	142,704	586,000	586,000
I	962,325	3,050,525	4,050,525	136,700	264,000	264,000	78,777	400,000	400,000
J	1,145,666	2,119,200	2,130,000	230,344	339,000	339,000	80,855	168,000	168,000
	17,696,982	23,554,225	25,115,025	2,236,708	8,818,600	9,663,600	1,191,738	10,161,393	12,201,393

Table 3.2 Change in Industrial, Retail and Office Square Feet by Sub-Area: 1995-2020, 2020- 2020 High Scenario

	Industrial Sq Ft		Retail Sq Ft		Office Sq Ft	
Sub-Area	95-20	20-20 High	95-20	20-20 High	95-20	20-20 High
A	-6,000	0	6,000	0	0	0
B	1,649,000	0	1,145,926	25,000	5,595,000	-5,000
C	-2,000	300,000	2,146,972	540,000	1,572,890	40,000
D	50,000	0	87,800	0	0	0
E	0	0	1,816,826	220,000	220,000	1,830,000
F	-6,775	250,000	1,026,240	60,000	731,175	175,000
G	566,350	0	28,075	0	-1,074	0
H	544,934	0	88,097	0	443,296	0
I	2,088,200	1,000,000	127,300	0	321,223	0
J	973,534	10,800	108,656	0	87,145	0
	5,857,243	1,560,800	6,581,892	845,000	8,969,655	2,040,000

Table 3.3 Percent Change in Industrial, Retail and Office Square Feet by Sub-Area: 1995-2020, 2020- 2020 High Scenario

	Industrial Sq Ft		Retail Sq Ft		Office Sq Ft	
Sub-Area	Pct 95-20	Pct 20- 20 High	Pct 95-20	Pct 20- 20 High	Pct 95-20	Pct 20- 20 High
A	-100%	N/A	N/A	0%	N/A	N/A
B	164900%	0%	2756%	2%	84773%	0%
C	-100%	N/A	906%	23%	3411%	2%
D	500%	0%	355%	0%	N/A	N/A
E	0%	0%	1364%	11%	37%	223%
F	0%	6%	182%	4%	347%	19%
G	1683%	0%	32%	0%	-4%	0%
H	5%	0%	11%	0%	311%	0%
I	217%	33%	93%	0%	408%	0%
J	85%	1%	47%	0%	108%	0%
	33%	7%	294%	10%	753%	20%

Appendix B
2020 V/C Ratios on Future Street Networks

2020 Gahanna Thoroughfare Plan

20000200.01

2020 V/C Ratios on Case B Street Network (With Triangle Roads)

Roadway	From	To	LOS D/E Capacity (ADT)	Projected 2020 ADT Volume (Std Land Use)	2020 V/C Ratio (SLU)	Projected 2020 ADT Volume (High Land Use)	2020 V/C Ratio (HLU)
Morrison Rd	Claycraft Rd	Taylor Rd	12,000	15,000	1.25	15,000	1.25
Morrison Rd	Taylor Rd	Hamilton Rd	12,000	23,400	1.95	26,200	2.18
Hamilton Rd	Morrison Rd	Havens Corners Rd	35,000	40,700	1.16	45,000	1.29
Hamilton Rd	Havens Corners Rd	Clark State Rd	35,000	45,100	1.29	50,300	1.44
Hamilton Rd	Clark State Rd	Johnstown Rd	12,000	35,000	2.92	39000	3.25
Hamilton Rd	Johnstown Rd	Morse Rd	12,000	38,700	3.23	43,300	3.61
Taylor Rd	Morrison Rd	Mann Rd	12,000	15,600	1.30	17,500	1.46
Taylor Rd	Mann Rd	Reyoldsburg-NA Rd	12,000	11,500	0.96	14,700	1.23
Agler Rd	I-270	Stygler Rd	12,000	10,500	0.88	11,200	0.93
US 62	Stygler Rd	Mill St	35,000	42,900	1.23	46,800	1.34
Granville St	Mill St	Hamilton Rd	35,000	27,500	0.79	29,900	0.85
Havens Corners Rd	Hamilton Rd	Taylor Station Rd	12,000	17,800	1.48	21,300	1.78
Havens Corners Rd	Taylor Station Rd	Reyoldsburg-NA Rd	12,000	11,100	0.93	12,100	1.01
Stygler Rd N.	Agler Rd	McCutcheon Rd	15,000	11,800	0.79	13,500	0.90
Stygler Rd N.	McCutcheon Rd	Morse Rd	15,000	13,200	0.88	14,700	0.98
Mill St	Granville St	Johnstown Rd	15,000	16,600	1.11	18,200	1.21
Cherry Bottom Rd	Johnstown Rd	Morse Rd	12,000	5,700	0.48	6,900	0.58
Johnstown Rd	Cherry Bottom Rd	Hamilton Rd	12,000	13,800	1.15	15,200	1.27
Johnstown Rd	Hamilton Rd	Morse Rd	12,000	19,200	1.60	21,400	1.78
Clark State Rd	Hamilton Rd	Havens Rd	12,000	13,800	1.15	16,400	1.37
Clark State Rd	Havens Rd	Reyoldsburg-NA Rd	12,000	6,300	0.53	8,400	0.70
Morse Rd	I-270 E. Ramp	Stygler Rd	35,000	56,000	1.60	61,900	1.77
Morse Rd	Cherry Bottom Rd	Hamilton Rd	35,000	42,500	1.21	48,100	1.37
Morse Rd	Hamilton Rd	Johnstown Rd	12,000	38,600	3.22	44,000	3.67
Morse Rd	Johnstown Rd	Reyoldsburg-NA Rd	12,000	18,700	1.56	22,500	1.88

2020 Gahanna Thoroughfare Plan

20000200.01

2020 V/C Ratios on Case C Street Network (With Tech Center Drive)

Roadway	From	To	LOS D/E Capacity (ADT)	Projected 2020 ADT Volume (Std Land Use)	2020 V/C Ratio (SLU)	Projected 2020 ADT Volume (High Land Use)	2020 V/C Ratio (HLU)
Morrison Rd	Claycraft Rd	Taylor Rd	12,000	15,200	1.27	17,600	1.47
Morrison Rd	Taylor Rd	Hamilton Rd	12,000	10,700	0.89	12,800	1.07
Hamilton Rd	Morrison Rd	Havens Corners Rd	35,000	41,400	1.18	45,000	1.29
Hamilton Rd	Havens Corners Rd	Clark State Rd	35,000	46,700	1.33	51,400	1.47
Hamilton Rd	Clark State Rd	Johnstown Rd	12,000	35,900	2.99	40100	3.34
Hamilton Rd	Johnstown Rd	Morse Rd	12,000	39,200	3.27	44,100	3.68
Taylor Rd	Morrison Rd	Mann Rd	12,000	16,000	1.33	18,500	1.54
Taylor Rd	Mann Rd	Reyoldsburg-NA Rd	12,000	12,100	1.01	13,500	1.13
Agler Rd	I-270	Stygler Rd	12,000	10,300	0.86	11,100	0.93
US 62	Stygler Rd	Mill St	35,000	41,100	1.17	45,600	1.30
Granville St	Mill St	Hamilton Rd	35,000	25,800	0.74	28,600	0.82
Havens Corners Rd	Hamilton Rd	Taylor Station Rd	12,000	17,100	1.43	20,800	1.73
Havens Corners Rd	Taylor Station Rd	Reyoldsburg-NA Rd	12,000	11,400	0.95	12,400	1.03
Stygler Rd N.	Agler Rd	McCutcheon Rd	15,000	12,100	0.81	13,600	0.91
Stygler Rd N.	McCutcheon Rd	Morse Rd	15,000	13,200	0.88	14,700	0.98
Mill St	Granville St	Johnstown Rd	15,000	16,700	1.11	18,400	1.23
Cherry Bottom Rd	Johnstown Rd	Morse Rd	12,000	5,600	0.47	7,000	0.58
Johnstown Rd	Cherry Bottom Rd	Hamilton Rd	12,000	13,600	1.13	15,400	1.28
Johnstown Rd	Hamilton Rd	Morse Rd	12,000	19,300	1.61	22,200	1.85
Clark State Rd	Hamilton Rd	Havens Rd	12,000	15,000	1.25	17,300	1.44
Clark State Rd	Havens Rd	Reyoldsburg-NA Rd	12,000	6,600	0.55	8,800	0.73
Morse Rd	I-270 E. Ramp	Stygler Rd	35,000	55,100	1.57	61,600	1.76
Morse Rd	Cherry Bottom Rd	Hamilton Rd	35,000	41,600	1.19	48,300	1.38
Morse Rd	Hamilton Rd	Johnstown Rd	12,000	37,100	3.09	42,700	3.56
Morse Rd	Johnstown Rd	Reyoldsburg-NA Rd	12,000	18,300	1.53	22,500	1.88