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Off Campus Furniture Retail Development

Dan E. White
Western Michigan University, dwhite@craworld.com

Richard D. McCarthy
Western Michigan University

Christopher T. Cowgill
Western Michigan University

WESTERN MICHIGAN UNIVERSITY

The Carl and Winifred Lee Honors College

THE CARL AND WINIFRED LEE HONORS COLLEGE

CERTIFICATE OF ORAL EXAMINATION

Dan White, having been admitted to the Carl and Winifred Lee Honors College in Fall 2003, successfully presented the Lee Honors College Thesis on April 18, 2006.

The title of the paper is:

"Proposed Department Store Development"

Dr. Sherif Yehia, Civil & Construction Engineering

Dr. Jun-Seok Oh, Civil & Construction Engineering

1903 W. Michigan Ave.
PHONE: (269) 387-3230 FAX: (269) 387-3903

TRAFFIC IMPACT STUDY
RETAIL DEVELOPMENT

Dan E. White
Richard D. McCarthy
Christopher T. Cowgill

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Scope of Report

The Traffic Impact study required by the City of Portage, Kalamazoo County, Michigan for the proposed site development of a 57,500 sq. ft. furniture store at 5110 S. Westnedge Avenue will focuses on the area surrounding the site.

Description of Project

A 57,500 sq. ft. retail store is being proposed for development at 5110 S. Westnedge Avenue. The store will specialize in the sale of furniture and will operate between the hours of 9:00 am to 8:00 pm. Construction for the site is proposed to begin in the summer of 2006 and opening in 2007. The building will be constructed with reinforced concrete and will be constructed in accordance to the City of Portage Building Code.

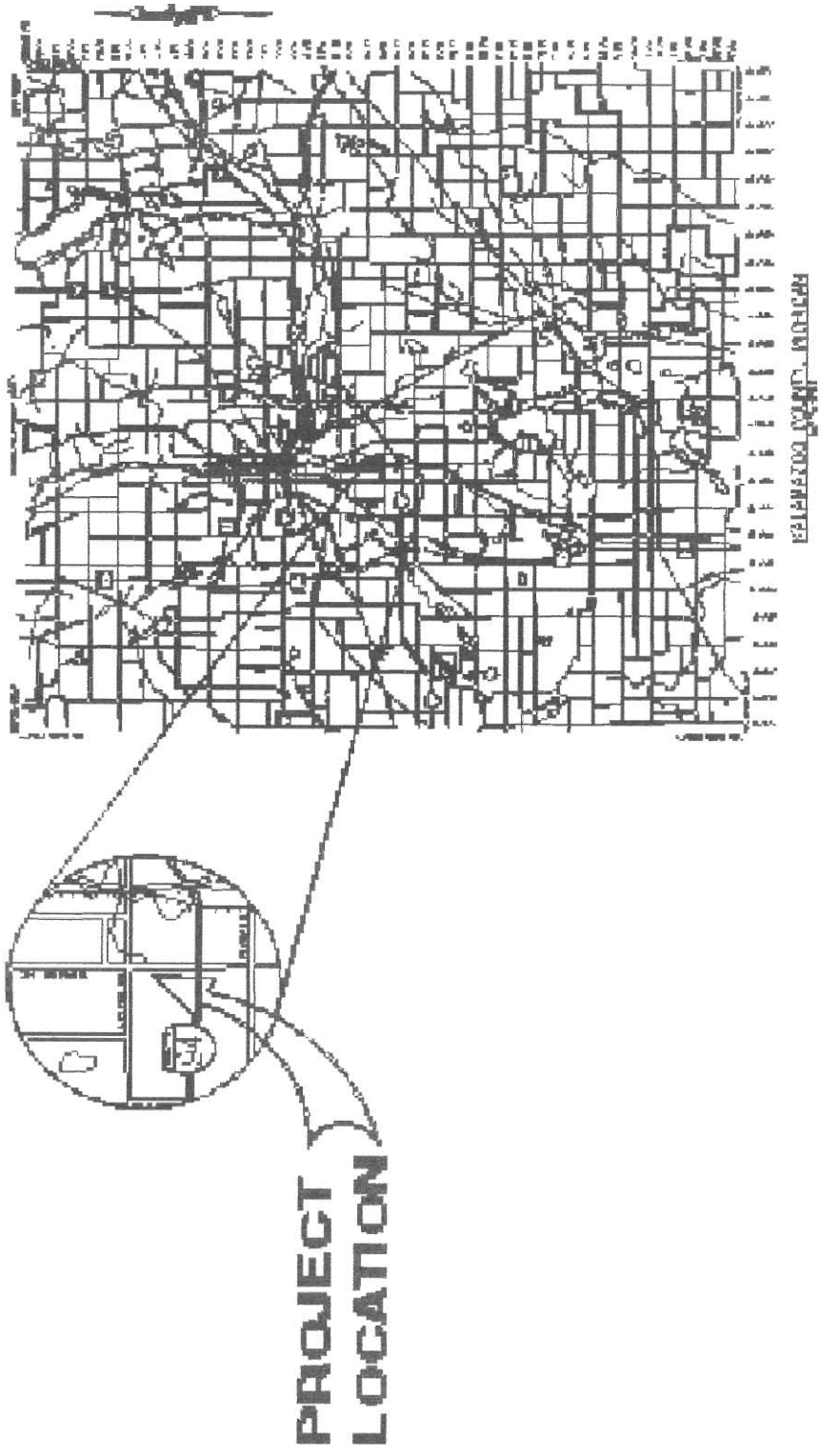
Limits of Study

The study will analyze the surrounding areas traffic conditions in their current, background and opening day traffic conditions with the emphasis of the analysis being on the intersection capacities of the surrounding critical intersections. Accident history along with geometric road design will also be looked at. This study will include summaries of each critical intersection analyzed along with the traffic volumes and turn counts at each respected time. Recommendations will also be provided if necessary or feasible.

Methodology of the Analysis

Current traffic software along with ITE Trip Generation Manual will be used in analyzing the traffic conditions. Traffic counts will be gathered from prior analysis of the area. Software to be used will be SYNCHRO 6 along with HCS 2000 highway capacity software.

Figure 1



I. Current Roadway and Traffic Conditions

Current traffic conditions were analyzed in the surrounding area of 5110 South Westnedge Avenue to analyze the effects of the proposed site development.

A. LOCATION AND LAND USE

The proposed site development is directly east of Lowe's bordering Westnedge Avenue, south of Kilgore Road and North of Marketplace Avenue in the City of Portage, Michigan.

Site access is proposed off Kilgore Road and off Marketplace Avenue along with southbound Westnedge traffic being able to access as well. All site accesses will route traffic to Lowe's Driveway that connects with Westnedge Avenue. Traffic entering off Kilgore will travel south to Lowe's drive then will enter the site. Marketplace traffic will enter the site off West Fork Crossing to Lowe's drive.

Land uses in the area mainly consist of commercial development.

B. ROADWAY CHARACTERISTICS

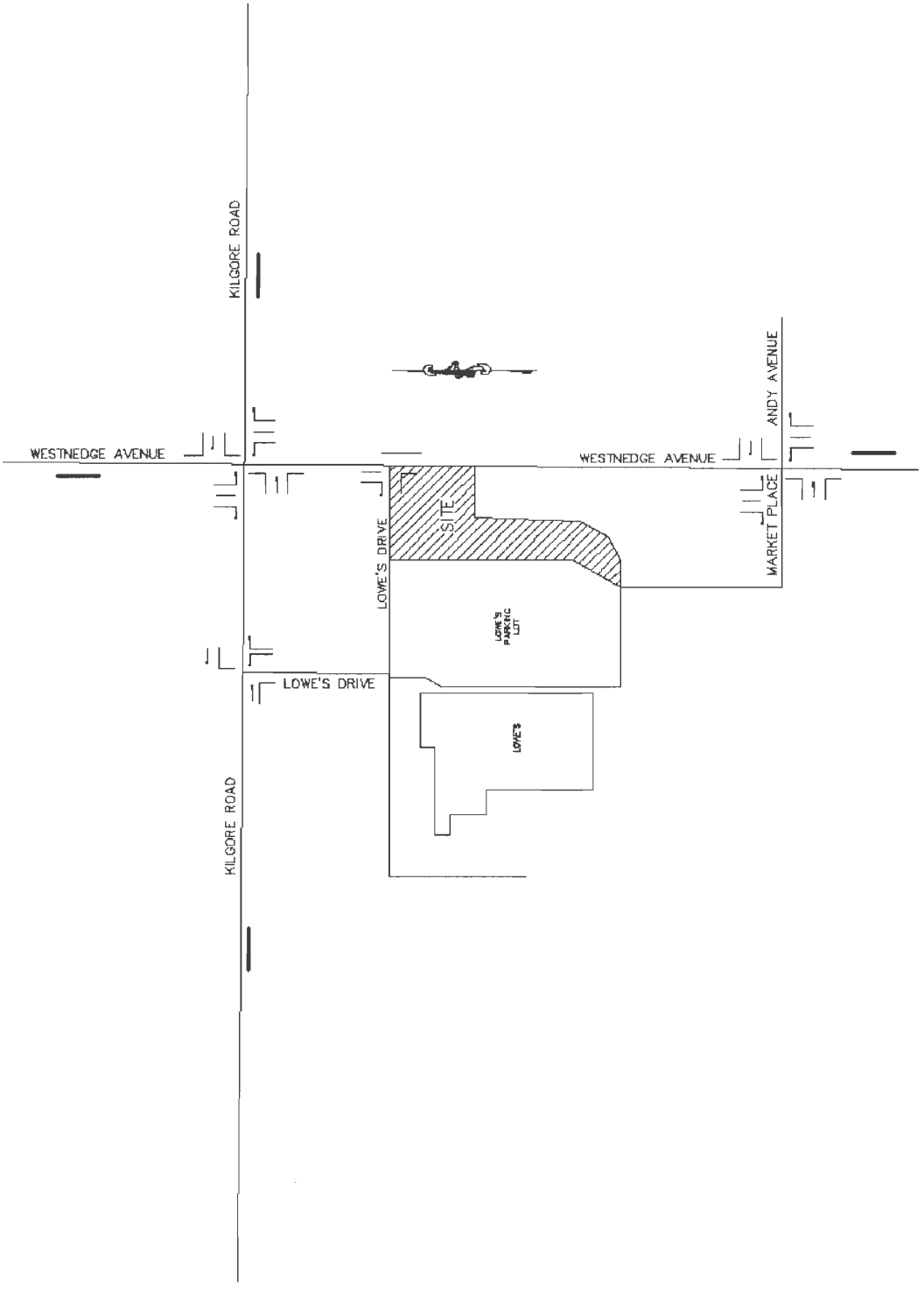
Kilgore Road – Kilgore Road currently exists as rolling terrain roadway with unsignalized intersections controlling intersections west of Westnedge Avenue. The intersection of Kilgore and Westnedge is controlled with a fully actuated turn signal. For eastbound Kilgore traffic, there are two through lanes and one left hand turn lane. Kilgore Road has five lanes west of Westnedge Avenue and drops to three lanes closer to Oakland. Kilgore Avenue is 1000 feet from the east-west site boundary. Kilgore has a 35 mph posted speed limit.

Westnedge Avenue – Westnedge Avenue currently has five lanes with a center left-turn lane stretching the entire way. Westnedge-Kilgore intersection is a controlled with a fully actuated signal, and has protected left hand turn phases for all left hand turn movements. Westnedge is the eastern site boundary for the proposed development. Westnedge currently has a 35 mph posted speed limit.

Market Place– Market Place is west of Westnedge, the street currently exists as a three-lane roadway with a right and left turn lanes at Westnedge Avenue westbound. Eastbound traffic has two lanes with one lane being for left turns. The intersection of Marketplace and Westnedge is controlled with a fully actuated turn signal. With Westnedge traffic having protected left hand turn phases. Market place is 550 feet south of the proposed site developments southern boundary. Market place has a 25 mph posted speed limit.

The Existing transportation system can be seen in Figure 2.

Existing Traffic System – Figure 2



C. TRAFFIC VOLUMES

Traffic counts were conducted by CESO on Friday, October 11, 2002 and on Saturday, October 12, 2002 at the following intersections:

- Kilgore Road & Lowe's Driveway
- Kilgore Road & Westnedge Avenue

Other traffic counts used in the analysis were received from Dr. Jun-Seok Oh, CCE 4300 fall 2005 class.

- Marketplace and Westnedge
- Lowe's Drive and Westnedge

Weekday P.M. peak hour traffic volumes occurred between 4:15 P.M. and 5:15 P.M. and the Saturday P.M. peak hour was between 3:00 P.M. and 4:00 P.M.

Current traffic peak hour traffic volumes are shown in Figures 3 and 4.

D. ANALYSIS OF CURRENT TRAFFIC CONDITIONS

Analyses of current weekday and Saturday peak hour traffic conditions shown in Figures 3 and 4 were used to complete intersection capacity analysis. Current (Year 2006) traffic volumes were calculated by increasing 2002 traffic volumes by a two percent yearly growth factor applied to all volumes. This factor was derived from the increasing traffic that has occurred within the study area. All calculations were performed using HCS2000 and SYNCHRO 9 traffic data.

Intersections are described according to their corresponding Level of Service (LOS). Level of Services can range from LOS "A" to LOS "F." A LOS "A" is an ideal condition with few traffic delays, where LOS "F" will have extreme delays with large approach delays. The LOS in signalized intersections corresponds to the average delay per vehicle. Cycle lengths and green times also affect delay.

In unsignalized intersections, the Level of Service details are only computed using average delay per vehicle. Total delay is defined as the time it takes a vehicle to go from last in line in a queue to first in line. Level of Service and their appropriate delays are shown in Tables (1 and 2).

The critical intersections analyzed for all traffic conditions are:

- Market Place & Westnedge
- Kilgore & Westnedge
- Kilgore & Lowe's Drive
- Lowe's Exit Drive & Westnedge

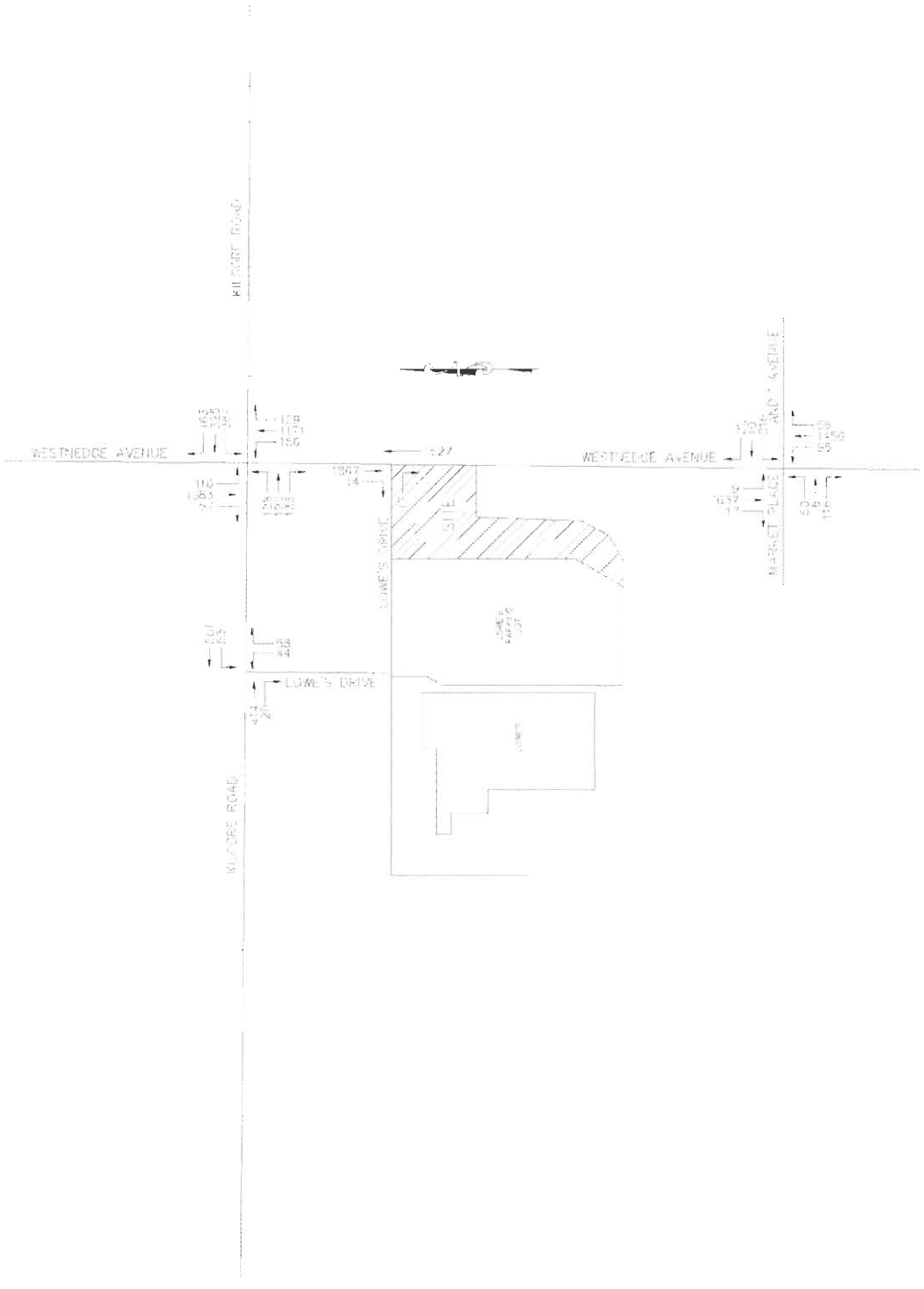
Summary reports can be seen in tables 3 and 4 for current weekday and Saturday peak hour traffic volumes.

Level of Service Summary

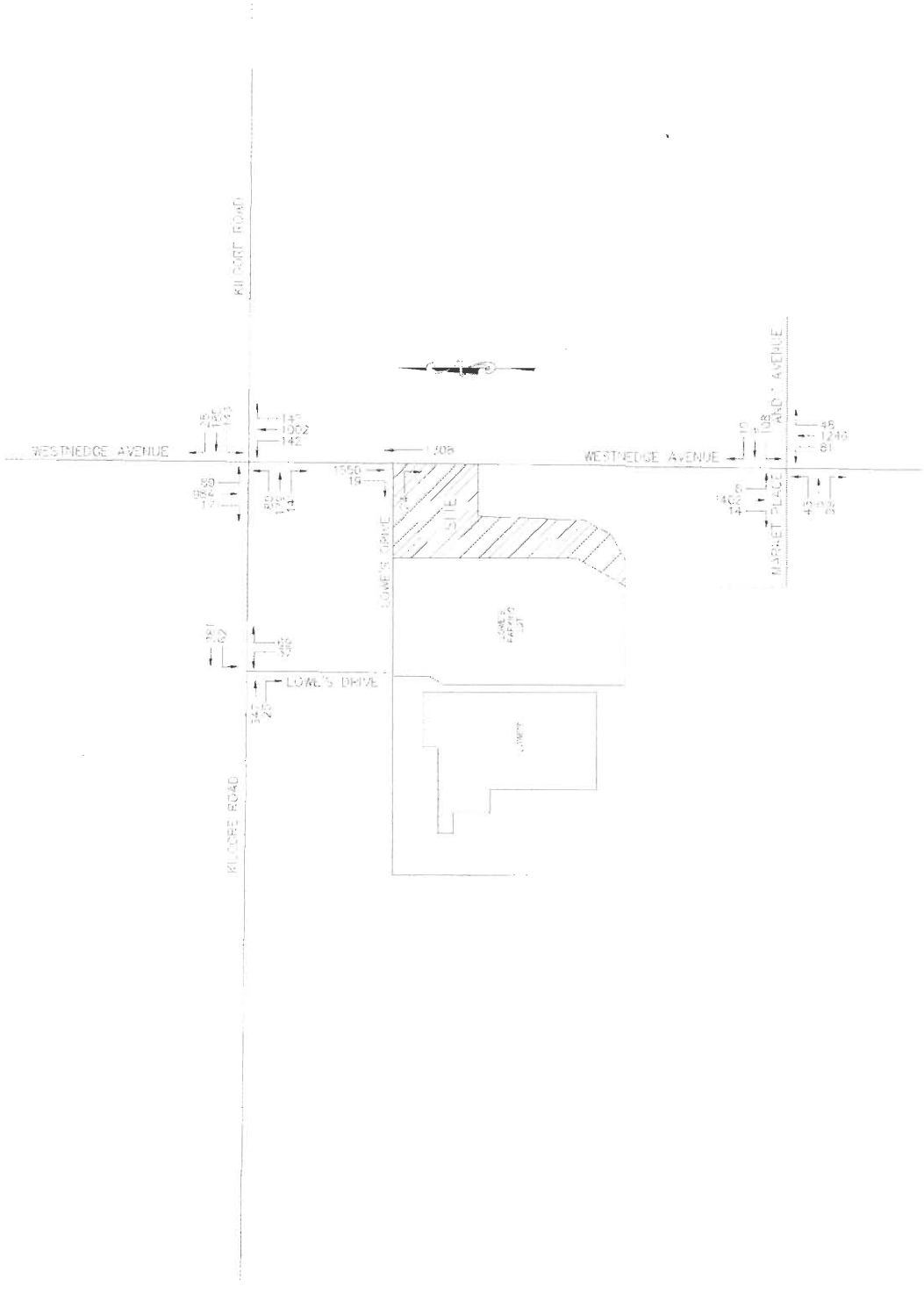
Table 1		
Level of Service Criteria (unsignalized intersections)		
Level of Service	**Delay per Vehicle (sec.)**	**Effects**
A	less than 10	Little to no delay
B	Between 10 and 15	Short Delays
C	Between 15 and 25	Average Delays
D	Between 25 and 35	Long Delays
E	Between 35 and 50	Real Long Delays
F	Larger than 50.0	Hardly any movement

Table 2		
Level of Service Criteria (signalized intersections)		
Level of Service	**Delay per Vehicle (sec.)**	**Effects**
A	less than 10	Most vehicles don't stop
B	Between 10 and 20	Few vehicles stop
C	Between 20 and 35	Vehicles stop but many pass through
D	Between 35 and 55	Most vehicles stop. Individual cycle failures are noticeable
E	Between 55 and 80	Limit of acceptable delay
F	Larger than 80.0	Unacceptable delay

Current Weekday Peak Hour Traffic Volumes - Figure 3



Current Saturday Peak Hour Traffic Volumes - Figure 4



Week Day Peak Hour Traffic Conditions - Current (2006)				
Table 3				
Signalized Intersections				
Market Place & Westnedge	Approach Direction	Approach Delay (sec)	LOS	
	Eastbound	41.6	D	Intersection LOS
	Westbound	113.3	F	B
	Northbound	17.5	B	Intersection Delay (sec)
	Southbound	2.8	A	18.5
Westnedge & Kilgore				
	Eastbound	51.5	D	Intersection LOS
	Westbound	56.7	E	E
	Northbound	38.7	D	Intersection Delay (sec)
	Southbound	76.1	E	57.2
Unsignalized Intersections				
Kilgore & Lowe's Drive	Approach Direction	Approach Delay (sec)	LOS	Intersection LOS
	Westbound Left	8.5	A	C
	Northbound Left	26.2	D	Intersection Delay (sec)
	Northbound Right	10.1	B	17.0
Westnedge & Lowe's Exit Drive				
	Eastbound Right	11.7	B	

Saturday Peak Hour Traffic Conditions - Current (2006)				
Table 4				
Signalized Intersections				
Market Place & Westnedge	Approach Direction	Approach Delay (sec)	LOS	
	Eastbound	26.7	C	Intersection LOS
	Westbound	29.3	C	B
	Northbound	23.7	C	Intersection Delay (sec)
	Southbound	10.3	B	18.1
Westnedge & Kilgore				
	Eastbound	49.9	D	Intersection LOS
	Westbound	37.4	D	D
	Northbound	44.0	D	Intersection Delay (sec)
	Southbound	56.6	E	47.4
Unsignalized Intersections				
Kilgore & Lowe's Drive	Approach Direction	Approach Delay (sec)	LOS	Intersection LOS
	Westbound Left	8.3	A	B
	Northbound Left	16.5	C	Intersection Delay (sec)
	Northbound Right	9.9	A	12.3
Westnedge & Lowe's Exit Drive				
	Eastbound Right	11.0	B	

The current (Year 2006) capacity analyses HCS summary sheets are contained in Appendix A.

II. Forecast of Background (Year 2007) Traffic

A. BACKGROUND (YEAR 2007) TRAFFIC VOLUMES

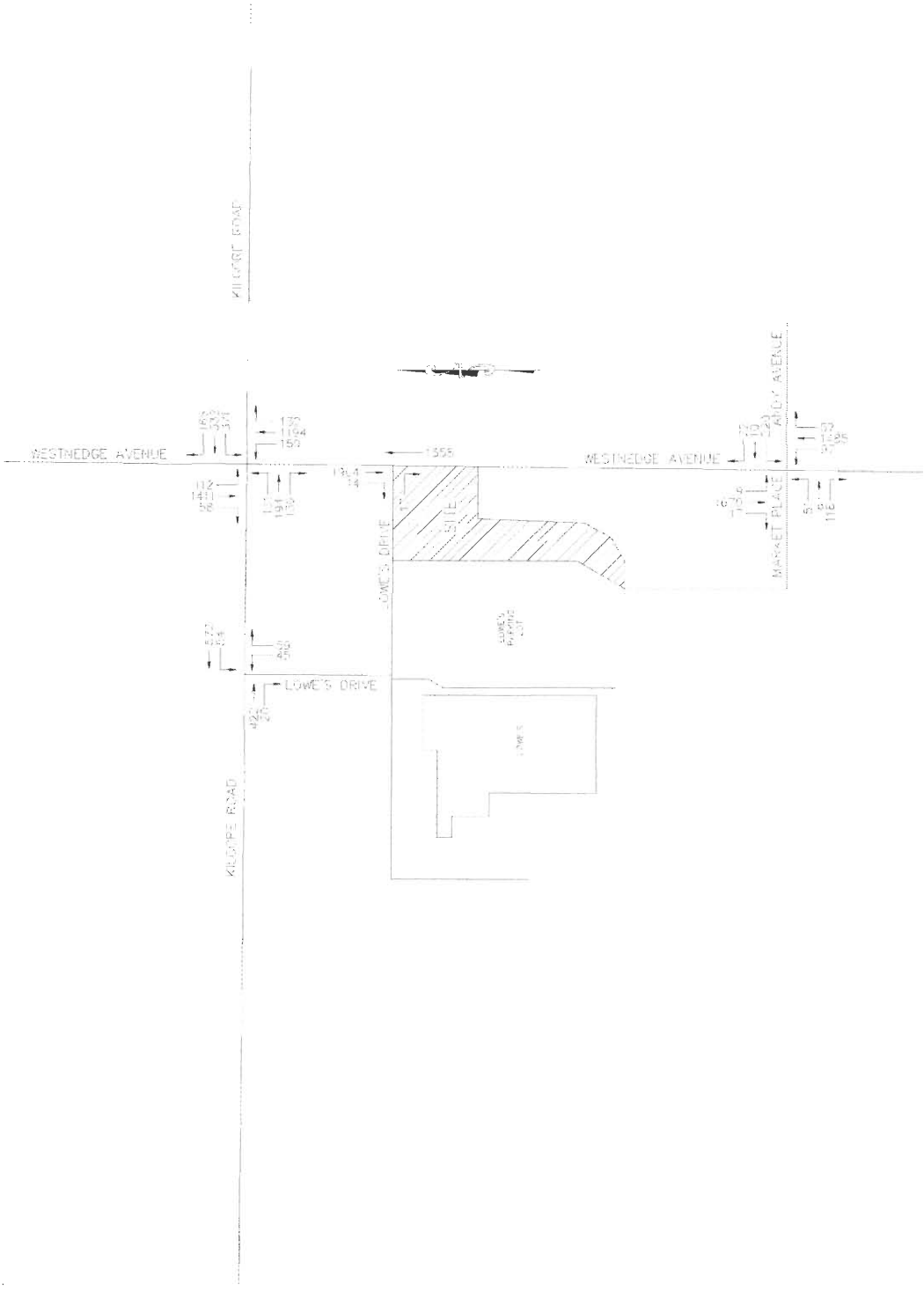
Background (Year 2007) traffic volumes were calculated by increasing current (2006) traffic volumes (Figures 3 and 4) by a two percent growth factor. This factor was derived from the increasing traffic that has occurred within the study area. The background (Year 2007) Weekday and Saturday P.M. peak hour traffic volumes are shown on Figures 5 and 6.

B. BACKGROUND (YEAR 2007) CAPACITY ANALYSIS

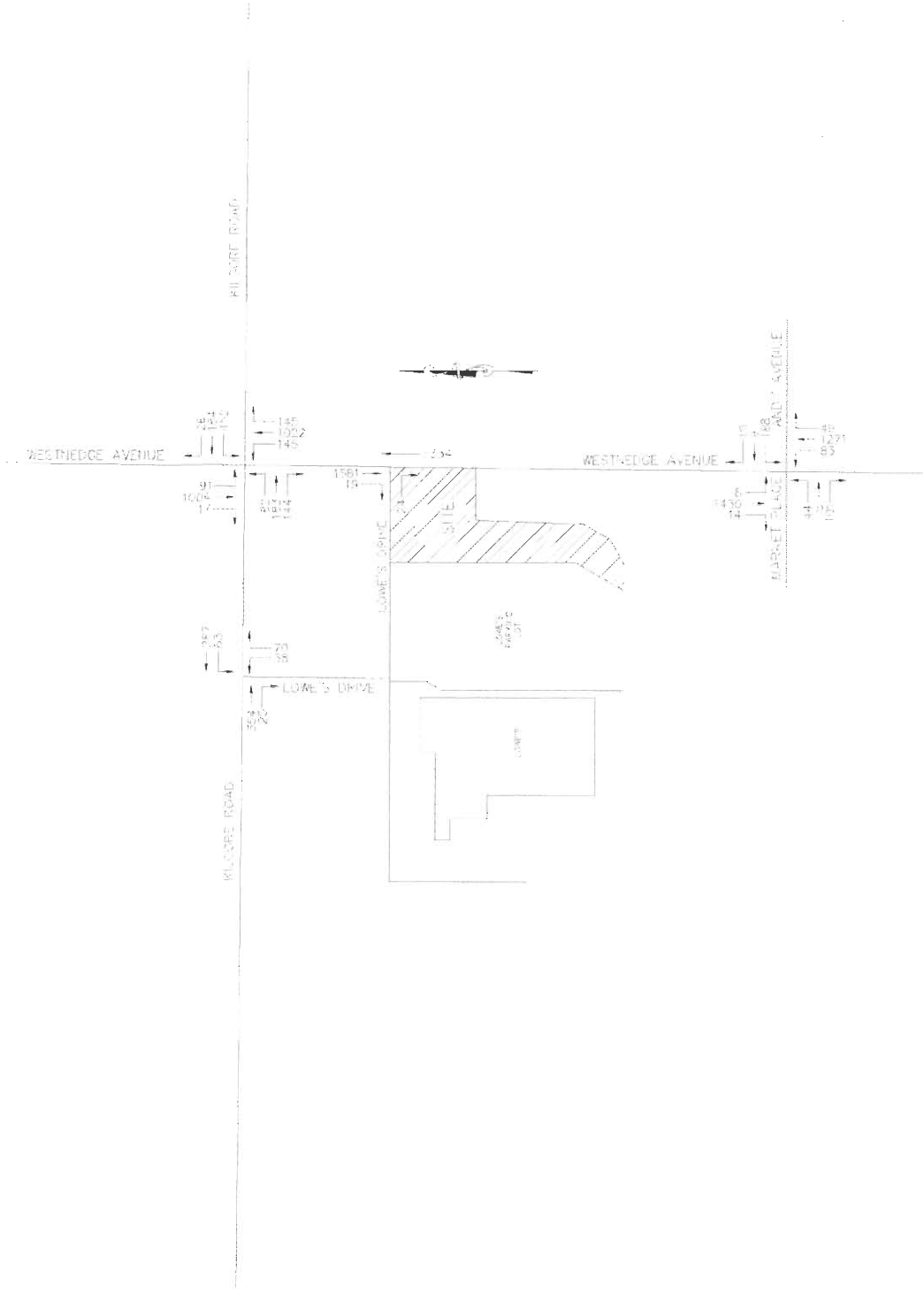
Using background (Year 2007) traffic volumes intersection capacity analysis was done at the four critical intersections affecting the proposed site development. Summary reports can be seen in tables 5 and 6 for background weekday and Saturday peak hour traffic volumes.

The Background (Year 2007) capacity analyses HCS summary sheets are contained in Appendix B.

Weekday Background Traffic Volumes - Figure 5



Saturday Background Traffic Volumes - Figure 6



Week Day Peak Hour Traffic Conditions - Background (2007)				
Table 5				
Signalized Intersections				
Market Place & Westnedge	Approach Direction	Approach Delay (sec)	LOS	
	Eastbound	35	D	Intersection LOS
	Westbound	54.8	D	C
	Northbound	32.6	C	Intersection Delay (sec)
	Southbound	8.2	A	23.2
Westnedge & Kilgore				
	Eastbound	63	E	Intersection LOS
	Westbound	70.6	E	E
	Northbound	32.4	C	Intersection Delay (sec)
	Southbound	71.3	E	56.6
Unsignalized Intersections				
Kilgore & Lowe's Drive	Approach Direction	Approach Delay (sec)	LOS	Intersection LOS
	Westbound Left	8.5	A	C
	Northbound Left	26.9	D	Intersection Delay (sec)
	Northbound Right	10.2	B	17.3
Westnedge & Lowe's Exit Drive				
	Eastbound Right	12.1	B	

Saturday Peak Hour Traffic Conditions - Background (2007)				
Table 6				
Signalized Intersections				
Market Place & Westnedge	Approach Direction	Approach Delay (sec)	LOS	
	Eastbound	34.7	C	Intersection LOS
	Westbound	47.8	D	B
	Northbound	22.1	C	Intersection Delay (sec)
	Southbound	9.2	A	18.4
Westnedge & Kilgore				
	Eastbound	60.1	E	Intersection LOS
	Westbound	53.2	D	D
	Northbound	57.8	E	Intersection Delay (sec)
	Southbound	43.4	D	52.4
Unsignalized Intersections				
Kilgore & Lowe's Drive	Approach Direction	Approach Delay (sec)	LOS	Intersection LOS
	Westbound Left	8.3	A	B
	Northbound Left	16.5	C	Intersection Delay (sec)
	Northbound Right	10	A	12.3
Westnedge & Lowe's Exit Drive				
	Eastbound Right	11	B	

The Background (Year 2007) capacity analyses HCS summary sheets are contained in Appendix B.

III. Forecast of Opening Day (2007) Traffic

Opening Day traffic volumes were calculated by adding the Development traffic volumes to the background peak hour traffic volumes (Figures 6 and 7). In order to analyze the impact of site-generated traffic volumes on the site access system and on the surrounding roads, capacity analyses were conducted at the key study intersections and site driveways.

A. 5110 S. WESTNEDGE AVENUE DEVELOPMENT GENERATED TRAFFIC VOLUMES

Studies of similar developments throughout North America have shown that the amount of traffic generated will be related to some unit of activity (i.e. number of employees, gross floor area). In addition, site traffic fluctuates substantially on different days and hours throughout the year. Therefore, peak hourly volumes are a good estimate to add to the developments traffic volumes. If site access is adequate at peak hour, it will serve as a good model for the opening day conditions.

Gross Floor Area was used for analysis purposes in the opening day traffic counts. Using the average trip-generation rates given in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 7th Edition, the inbound and outbound trips for the proposed development were calculated and added to the background peak hour volumes to get opening day traffic volumes.

Institute of Transportation Engineers (ITE) Trip Generation Manual, 7th Edition also gives pass by trips. Pass by trips are trips made into a site as intermediate stops along the route a driver is traveling. These trips are unplanned and create no diversion from another roadway. In the case of the proposed furniture store development pass by trips were neglected as they would not change the traffic volumes greatly and would not affect the intersection capacity analysis. This was assumed because trips to a furniture store are generally preconceived and people in general do not swing in and purchase a piece of furniture. In addition, the current traffic volumes are high enough on the surrounding area that it discourages motorist from getting off their desired path.

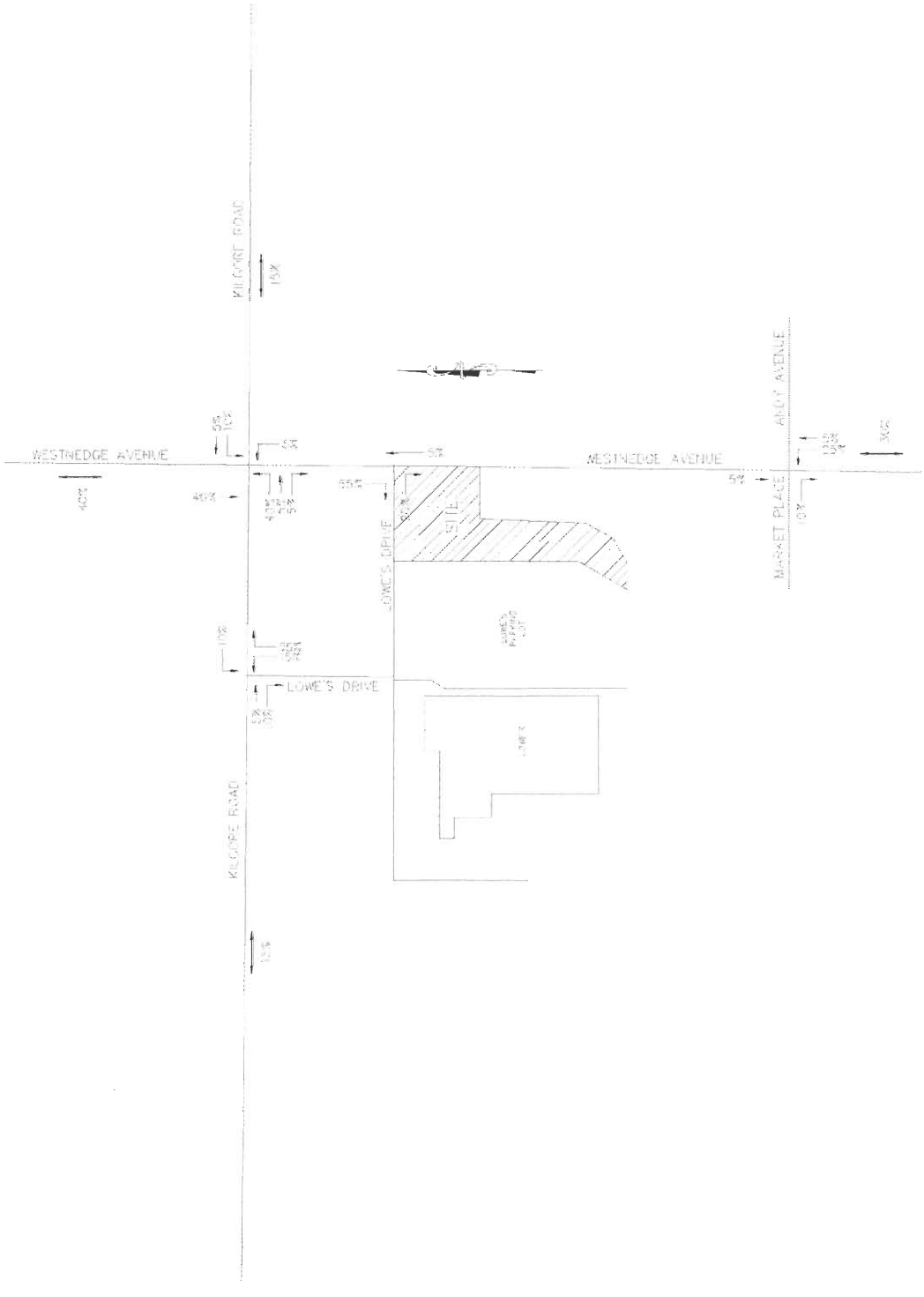
B. DIRECTIONAL DISTRIBUTION OF DEVELOPMENT GENERATED TRAFFIC VOLUMES

The directional distribution of site-generated traffic is related to several variables. The assumptions used to estimate the direction and way traffic will enter and exit the site is based on many conditions. Typically, drivers will chose the quickest safest direction to their next destination. This includes using traffic signals to turn left and traveling the shortest distance. Within that, existing traffic considerations are taken into account. With this proposed development, drivers will most likely turn left at signalized intersections and chose to turn right at unsignalized intersections since the traffic volumes are large on both Kilgore and Westnedge. The percentage of drivers that chose each alternative was taken from CESO, Inc's traffic report and is summarized in Table 7 and shown in Figures 7.

Directional Distribution For Opening Day Traffic

Table 7		
Intersection		
Westnedge & Market Place	% Of Vehicles	Number of Vehicles
NBTL	25%	8
SBT	5%	2
EBTL	10%	3
Westnedge & Lowe's Drive		
NBT	5%	2
SBTR	55%	17
EBTR	20%	6
Westnedge & Kilgore		
NBTL	5%	2
SBT	40%	12
WBTL	10%	5
EBTL	40%	12
EBTR	5%	2
Kilgore & Lowe's		
WBTL	5%	2
EBT	5%	2
EBTR	10%	3
NBTR	55%	17
NBTL	15%	5

Directional Distribution (%) - Figure 7



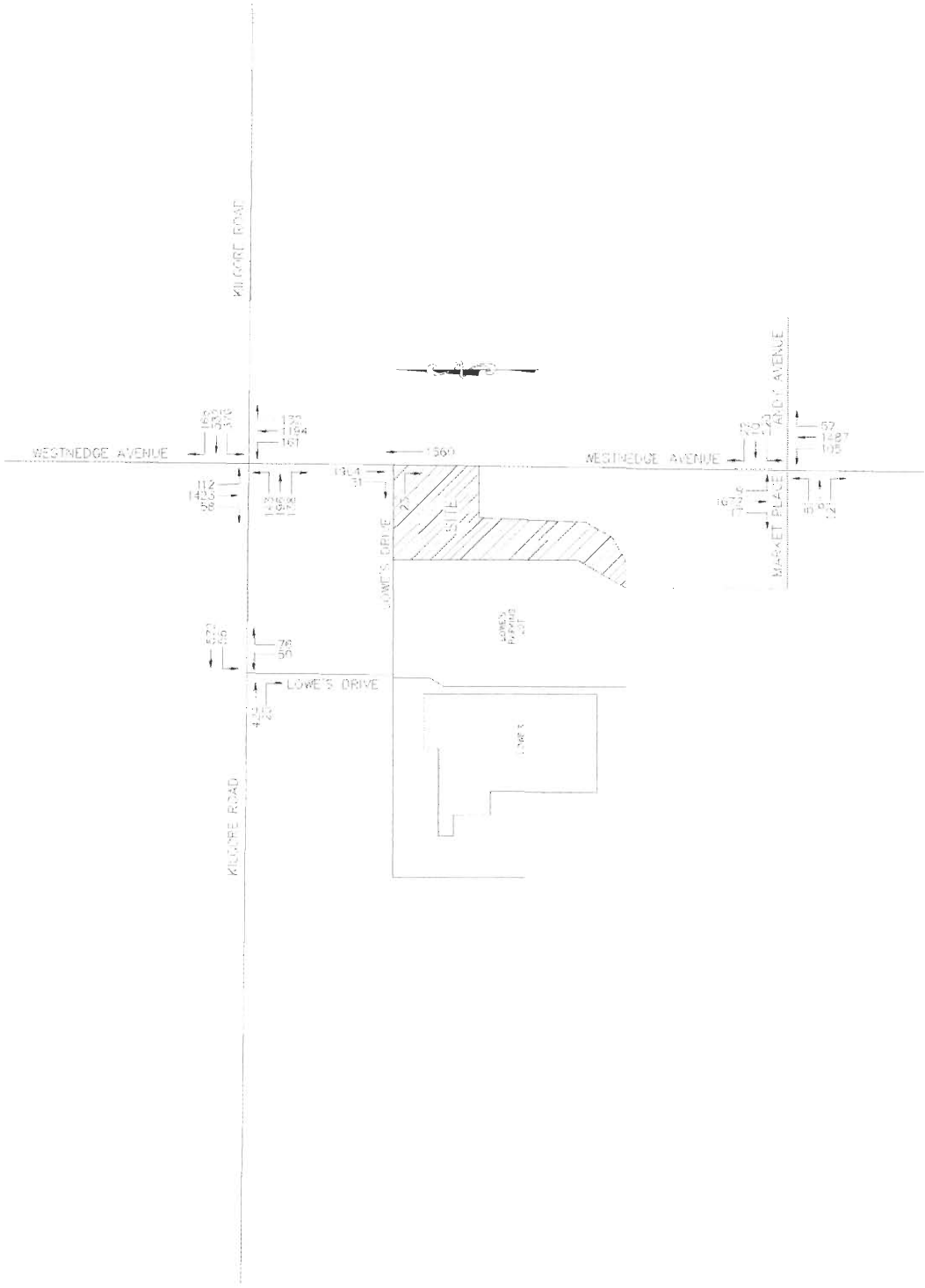
C. OPENING DAY (YEAR 2007) TRAFFIC VOLUMES

Directional distribution traffic volumes shown in Table 7 were added to the background weekday and Saturday peak hour traffic volumes (Figures 5 and 6) to create the Opening day traffic volumes shown in Figures 8 and 9.

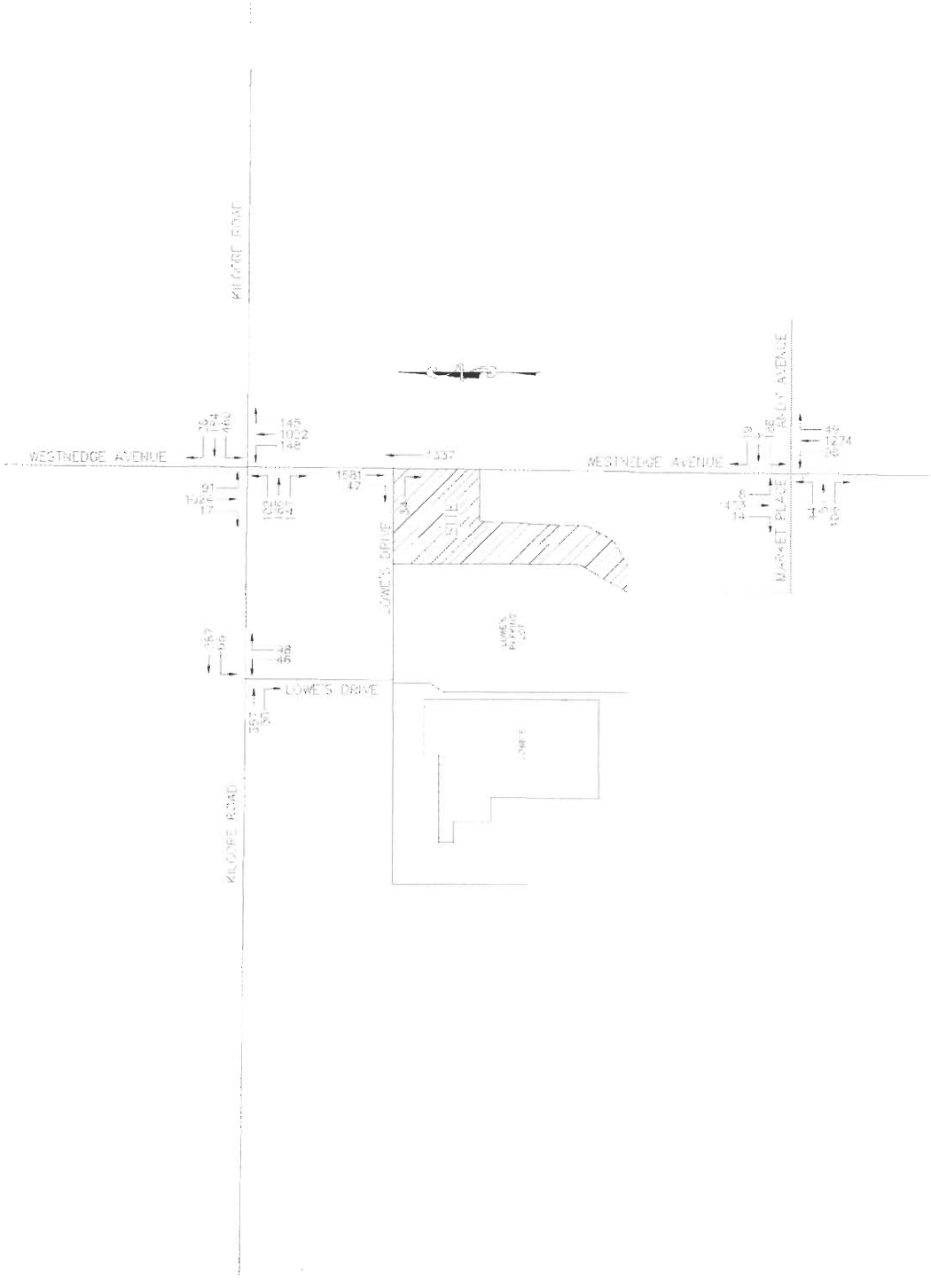
D. OPENING DAY (YEAR 2007) CAPACITY ANALYSIS

Using the 2007 weekday and Saturday peak hour opening day traffic volumes illustrated on Figures 8 and 9, intersection capacity analysis was done for chosen intersections. Tables 8 and 9 summarize the Opening Day weekday and Saturday peak hour traffic conditions.

Weekday Opening Day Traffic Volumes – Figure 8



Saturday Opening Day Traffic Volumes – Figure 9



Week Day Peak Hour Traffic Conditions - Opening Day (2007)				
Table 8				
Signalized Intersections				
Market Place & Westnedge	Approach Direction	Approach Delay (sec)	LOS	
	Eastbound	34.6	C	Intersection LOS
	Westbound	56.4	E	C
	Northbound	33.2	C	Intersection Delay (sec)
	Southbound	8.8	A	23.6
Westnedge & Kilgore				
	Eastbound	59.4	E	Intersection LOS
	Westbound	56.7	E	D
	Northbound	60.3	E	Intersection Delay (sec)
	Southbound	44.9	D	54.4
Unsignalized Intersections				
Kilgore & Lowe's Drive	Approach Direction	Approach Delay (sec)	LOS	Intersection LOS
	Westbound Left	8.5	A	C
	Northbound Left	28.1	D	Intersection Delay (sec)
	Northbound Right	10.3	B	17.4
Westnedge & Lowe's Exit Drive				
	Eastbound Right	11.2	B	

Saturday Peak Hour Traffic Conditions - Opening Day (2007)				
Table 9				
Signalized Intersections				
Market Place & Westnedge	Approach Direction	Approach Delay (sec)	LOS	
	Eastbound	34.6	D	Intersection LOS
	Westbound	47.4	D	B
	Northbound	22.8	C	Intersection Delay (sec)
	Southbound	10.3	B	19.2
Westnedge & Kilgore				
	Eastbound	64.3	E	Intersection LOS
	Westbound	75.3	E	E
	Northbound	32.8	C	Intersection Delay (sec)
	Southbound	73.8	E	58.7
Unsignalized Intersections				
Kilgore & Lowe's Drive	Approach Direction	Approach Delay (sec)	LOS	Intersection LOS
	Westbound Left	8.4	A	B
	Northbound Left	17.2	C	Intersection Delay (sec)
	Northbound Right	10.2	B	12.4
Westnedge & Lowe's Exit Drive				
	Eastbound Right	12.2	B	

The opening day (Year 2007) capacity summary sheets are contained in Appendix C.

IV. Accident History

Accident History for the Westnedge & Kilgore intersection was obtained from CESO, Inc report that obtained the information from the City of Portage and from the City of Kalamazoo. The Accident history summary report can be seen in Table 10.

Kilgore Westnedge Accident History Summary					
Table 10					
Year 2000					
Approach Direction	Total	Head On-Lt	Angle Str	Rear End	Other
E	3		1	1	1
N	2			1	
S	3			2	1
W	0	1			
Total	8	1	1	4	2
Year 2001					
Approach Direction	Total	Head On-Lt	Angle Str	Rear End	Other
E					
N	6			3	3
S	4	2		2	
W	1				1
Total	11	2		5	4
Year 2002					
Approach Direction	Total	Head On-Lt	Angle Str	Rear End	Other
E	5			3	2
N	5			4	1
S	15			14	1
W					
Total	25			21	4
Year 2003					
Approach Direction	Total	Head On-Lt	Angle Str	Rear End	Other
E	1		1		
N					
S	2			1	1
W	1				1
Total	4		1	1	2

V. Traffic Summary and Suggestions

Based on the results of the analysis of Current (year 2006), Background (year 2007) and Opening Day (year 2007), the following summaries and suggestions have been made.

A. SUMMARY OF TRAFFIC CONDITIONS

Currently the intersection of Westnedge and Kilgore is the only intersection that has a failing Level of Service. It has a LOS of E with an intersection delay of 57.2 seconds on weekday peak and LOS D with a 47.4-second delay on Saturday peak hour. The westbound and southbound traffic both have LOS E. These intersections currently have large delays due to both streets having large traffic volumes.

The background traffic had similar results with Kilgore and Westnedge being the only intersection with a high LOS. Market and Westnedge intersection increased its LOS to C, but it still is operating smoothly with small delays for westbound and eastbound traffic.

With opening day traffic added to the peak hour volumes Kilgore and Westnedge continued to have a failing LOS. All directions yielded a LOS of E at one time or the other. Weekday traffic had three failing LOS and Saturday also having three failing LOS. The intersection delay was 58.7 seconds on weekday and 54.4 on Saturday. These are the limit of acceptable delay but still restrict the flow of traffic.

With the addition of the opening day traffic to the current conditions, the intersection delay had a small increase. The problem is that the entire intersection has delays that are at the limit of acceptance. This shows that the proposed site will not affect the current traffic conditions as they are near failure currently.

The accident history report only showed signs of trouble in 2002 with twenty-five accidents, with twenty-one of them being rear-end accidents in the southbound direction. The accident data was not consistent enough to make any design suggestions as the other three years only had minimal accidents at the Kilgore – Westnedge intersection. Rear-end accidents were the most common with most accidents occurring on southbound Westnedge.

B. SUGGESTIONS FOR IMPROVEMENTS

Since the traffic volumes are so high on Westnedge and Kilgore changes to the traffic structure will be very difficult. Space limitations also hinder any geometric design changes as this area is already developed and it just is not feasible to add lanes to Westnedge and Kilgore. By increasing the length of storage lanes, the level of service also showed no improvements. The critical intersections continued to have failing LOS of E.

With the high volume of traffic already traveling on Westnedge and Kilgore there is not a quick simple fix to improve the conditions. It will take major changes to gain any major improvements to the areas roadway capacity, and small changes will only be temporary fixes as the Westnedge area continues to grow. The small amount of traffic that the proposed development will add will not break an already congested roadway system.

APPENDIX A

CURRENT TRAFFIC CONDITIONS
HCS DETAILED REPOTS

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	
Agency/Co.	*Cowgill and Associates*
Date Performed	*11/17/2005*
Analysis Time Period	*Weekday Peak Hour*

Site Information

Intersection	*Kilgore Lowes*
Jurisdiction	
Analysis Year	*Curent(2006)*

Project Description *Proposed Furniture Store Developement*

East/West Street: *Kilgore* | North/South Street: *Lowes*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*0*	*414*	*20*	*53*	*561*	*0*
Peak-hour factor, PHF	*1.00*	*0.92*	*0.92*	*0.92*	*0.92*	*1.00*
Hourly Flow Rate (veh/h)	*0*	*449*	*21*	*57*	*609*	*0*
Proportion of heavy vehicles, P_{HV}	*0*	--	--	*2*	--	--
Median type	*Undivided*					
RT Channelized?			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*1*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*1*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*44*	*0*	*58*	*0*	*0*	*0*
Peak-hour factor, PHF	*0.92*	*1.00*	*0.92*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate (veh/h)	*47*	*0*	*63*	*0*	*0*	*0*
Proportion of heavy vehicles, P_{HV}	*2*	*0*	*2*	*0*	*0*	*0*
Percent grade (%)		*0*			*0*	
Flared approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized?			*0*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Control Delay, Queue Length, Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
Volume, v (vph)		*57*	*47*		*63*			
Capacity, c_m (vph)		*1088*	*216*		*767*			
v/c ratio		*0.05*	*0.22*		*0.08*			
Queue length (95%)		*0.17*	*0.80*		*0.27*			
Control Delay (s/veh)		*8.5*	*26.2*		*10.1*			

LOS		A	D		B			
Approach delay (s/veh)	–	–	17.0					
Approach LOS	–	–	C					

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	
Agency/Co.	*Cowgill and Associates*
Date Performed	*11/17/2005*
Analysis Time Period	*Saturday Peak Hour*

Site Information

Intersection	*Kilgore Lowes*
Jurisdiction	
Analysis Year	*Curent(2006)*

Project Description *Proposed Furniture Store Developement*

East/West Street: *Kilgore* | North/South Street: *Lowes*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*0*	*347*	*25*	*62*	*281*	*0*
Peak-hour factor, PHF	*1.00*	*0.92*	*0.92*	*0.92*	*0.92*	*1.00*
Hourly Flow Rate (veh/h)	*0*	*377*	*27*	*67*	*305*	*0*
Proportion of heavy vehicles, P_{HV}	*0*	--	--	*2*	--	--
Median type	*Undivided*					
RT Channelized?			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*1*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*1*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*37*	*0*	*69*	*0*	*0*	*0*
Peak-hour factor, PHF	*0.92*	*1.00*	*0.92*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate (veh/h)	*40*	*0*	*74*	*0*	*0*	*0*
Proportion of heavy vehicles, P_{HV}	*2*	*0*	*2*	*0*	*0*	*0*
Percent grade (%)		*0*			*0*	
Flared approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized?			*0*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Control Delay, Queue Length, Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
Volume, v (vph)		*67*	*40*		*74*			
Capacity, c_m (vph)		*1151*	*350*		*805*			
v/c ratio		*0.06*	*0.11*		*0.09*			
Queue length (95%)		*0.19*	*0.38*		*0.30*			
Control Delay (s/veh)		*8.3*	*16.6*		*9.9*			

LOS		A	C		A			
Approach delay (s/veh)	–	–	12.3					
Approach LOS	–	–	B					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst		Intersection	*Westnedge Ave. & Lowes*
Agency/Co.	*Cowgill and Associates*	Jurisdiction	
Date Performed	*11/17/2005*	Analysis Year	*Current (2006)*
Analysis Time Period	*Weekday Peak Hour*		
Project Description	*Proposed Furniture Store Developement*		
East/West Street:	*Lowes Dr.*	North/South Street:	*Westnedge Avenue*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*1527*	*0*	*0*	*1867*	*14*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*1.00*	*1.00*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*1659*	*0*	*0*	*2029*	*15*
Percent Heavy Vehicles	*2*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*0*	*2*	*1*
Configuration		*T*			*T*	*R*
Upstream Signal		*1*			*1*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*0*	*0*	*17*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*0.92*	*1.00*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*0*	*0*	*18*
Percent Heavy Vehicles	*0*	*0*	*0*	*2*	*0*	*2*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*1*
Configuration						*R*

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration								*R*
v (vph)								*18*
C (m) (vph)								*553*
v/c								*0.03*
95% queue length								*0.10*
Control Delay								*11.7*
LOS								*B*
Approach Delay	–	–				*11.7*		
Approach LOS	–	–				*B*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst		Intersection	*Westnedge Ave. & Lowes*
Agency/Co.	*Cowgill and Associates*	Jurisdiction	
Date Performed	*11/17/2005*	Analysis Year	*Current (2006)*
Analysis Time Period	*Saturday Peak Hour*		
Project Description	*Proposed Department Store Developement*		
East/West Street:	*Lowes*	North/South Street:	*Westnedge*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*1308*	*0*	*0*	*1550*	*19*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*1.00*	*1.00*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*1421*	*0*	*0*	*1684*	*20*
Percent Heavy Vehicles	*2*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*0*	*2*	*1*
Configuration		*T*			*T*	*R*
Upstream Signal		*1*			*1*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*0*	*0*	*24*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*0.92*	*1.00*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*0*	*0*	*26*
Percent Heavy Vehicles	*0*	*0*	*0*	*2*	*0*	*2*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*1*
Configuration						*R*

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration								*R*
v (vph)								*26*
C (m) (vph)								*630*
v/c								*0.04*
95% queue length								*0.13*
Control Delay								*11.0*
LOS								*B*
Approach Delay	–	–				*11.0*		
Approach LOS	–	–				*B*		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst		Intersection	Kilgore Westnedge
Agency or Co.	Cowgill and Associates	Area Type	All other areas
Date Performed	04/10/2006	Jurisdiction	
Time Period	Weekday Peak Hour	Analysis Year	Curent(2006)
		Project ID	Proposed Furniture Store Developement

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	2	0	1	1	1	1	2	0	1	2	0
Lane group	L	TR		L	T	R	L	TR		L	TR	
Volume, V (vph)	128	190	133	364	325	163	156	1171	129	110	1383	57
% Heavy vehicles, %HV	2	2	2	2	2	2	2	2	2	2	2	2
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Pretimed (P) or actuated (A)	A	A	A	A	A	A	A	P	P	A	P	P
Start-up lost time, l_1	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Extension of effective green, e	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Arrival type, AT	3	3		3	3	3	4	5		3	3	
Unit extension, UE	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Filtering/metering, I	1.000	1.000		1.000	1.000	1.000	0.577	0.577		1.000	1.000	
Initial unmet demand, Q_b	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Ped / Bike / RTOR volumes	0	0	120	0	0	133	0	0	7	0	0	3
Lane width	12.0	12.0		12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0		0	0	0	0	0		0	0	
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EB Only	WB Only	03	04	SB Only	Thru & RT	NB Only	08
Timing	G = 11.4	G = 25.6	G =	G =	G = 7.0	G = 33.0	G = 8.0	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y = 5	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 110.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	139	221		396	353	33	170	1406		120	1562	
Lane group capacity, c	200	395		428	451	383	145	1491		129	1472	
v/c ratio, X	0.69	0.56		0.93	0.78	0.09	1.17	0.94		0.93	1.06	

Total green ratio, g/C	0.11	0.11		0.24	0.24	0.24	0.08	0.43		0.07	0.42	
Uniform delay, d_1	47.0	46.2		40.7	39.0	32.3	50.5	30.2		50.7	32.0	
Progression factor, PF	1.000	1.000		1.000	1.000	1.000	1.000	0.503		1.000	1.000	
Delay calibration, k	0.26	0.16		0.44	0.33	0.11	0.50	0.50		0.45	0.50	
Incremental delay, d_2	10.0	1.8		26.0	8.7	0.1	111.5	8.6		58.1	41.6	
Initial queue delay, d_3												
Control delay	57.0	48.0		66.7	47.7	32.4	162.0	23.8		108.9	73.6	
Lane group LOS	E	D		E	D	C	F	C		F	E	
Approach delay	51.5			56.7			38.7			76.1		
Approach LOS	D			E			D			E		
Intersection delay	57.2			X_c = 0.99			Intersection LOS			E		

HCS2000™ Version 4.1d

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst		Intersection	Market Place & Westnedge Ave.
Agency or Co.	Cowgill and Associates	Area Type	All other areas
Date Performed	04/11/2006	Jurisdiction	
Time Period	Weekday Peak	Analysis Year	Current (2006)
		Project ID	

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	1	1	0	1	1	1	2	0	1	2	0
Lane group		LT	R		LT	R	L	TR		L	TR	
Volume, V (vph)	50	6	116	216	10	22	95	1456	56	9	1637	17
% Heavy vehicles, %HV	2	2	2	2	2	2	2	0	4	20	0	15
Peak-hour factor, PHF	0.82	0.60	0.78	0.89	0.83	0.60	0.78	0.95	0.65	0.60	0.95	0.67
Pretimed (P) or actuated (A)	A	A	A	P	P	P	A	A	A	A	A	A
Start-up lost time, l_1		2.0	2.0		2.0	2.0	2.0	2.0		2.0	2.0	
Extension of effective green, e		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Arrival type, AT		3	3		3	3	3	3		4	6	
Unit extension, UE		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Filtering/metering, I		1.000	1.000		1.000	1.000	1.000	1.000		0.090	0.090	
Initial unmet demand, Q_b		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Ped / Bike / RTOR volumes	0	0	116	0	0	0	0	0	3	0	0	0
Lane width		11.0	11.0		11.0	11.0	11.0	13.0		11.0	13.0	
Parking / Grade / Parking	N	-1	N	N	1	N	N	1	N	N	-1	N
Parking maneuvers, N_m												
Buses stopping, N_B		0	0		0	0	0	0		0	0	
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EW Perm	02	03	04	NB Only	Thru & RT	SB Only	08
Timing	G = 23.0	G =	G =	G =	G = 9.7	G = 54.1	G = 3.2	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y = 5	Y = 5	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 110.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v		71	0		255	37	122	1615		15	1748	
Lane group capacity, c		136	336		236	332	166	2333		56	2148	
v/c ratio, X		0.52	0.00		1.08	0.11	0.73	0.69		0.27	0.81	

Total green ratio, g/C		0.22	0.22		0.22	0.22	0.10	0.63		0.04	0.58	
Uniform delay, d_1		37.9	33.6		43.0	34.5	48.3	13.1		51.4	18.6	
Progression factor, PF		1.000	1.000		1.000	1.000	1.000	1.000		1.000	0.118	
Delay calibration, k		0.13	0.11		0.50	0.50	0.29	0.26		0.11	0.35	
Incremental delay, d_2		3.6	0.0		81.6	0.7	15.6	0.9		0.2	0.2	
Initial queue delay, d_3												
Control delay		41.6	33.6		124.6	35.1	63.9	14.0		51.6	2.4	
Lane group LOS		D	C		F	D	E	B		D	A	
Approach delay	41.6			113.3			17.5			2.8		
Approach LOS	D			F			B			A		
Intersection delay	18.5			X_c = 0.87			Intersection LOS			B		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst		Intersection	Westnedge Kilgore
Agency or Co.	Cowgill and Associates	Area Type	All other areas
Date Performed	04/10/2006	Jurisdiction	
Time Period	Saturday Peak Hour	Analysis Year	Curent(2006)
		Project ID	Proposed Furniture Store Developement

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	2	0	1	1	1	1	2	0	1	2	0
Lane group	L	TR		L	T	R	L	TR		L	TR	
Volume, V (vph)	80	179	141	443	180	25	142	1002	142	89	984	17
% Heavy vehicles, %HV	2	2	2	2	2	2	2	2	2	2	2	2
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Pretimed (P) or actuated (A)	A	A	A	A	A	A	A	P	P	A	P	P
Start-up lost time, l_1	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Extension of effective green, e	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Arrival type, AT	3	3		3	3	3	4	5		3	3	
Unit extension, UE	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Filtering/metering, I	1.000	1.000		1.000	1.000	1.000	0.710	0.710		1.000	1.000	
Initial unmet demand, Q_b	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Ped / Bike / RTOR volumes	0	0	134	0	0	17	0	0	10	0	0	1
Lane width	12.0	12.0		12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0		0	0	0	0	0		0	0	
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EB Only	WB Only	03	04	SB Only	Thru & RT	NB Only	08
Timing	G = 9.8	G = 35.9	G =	G =	G = 5.3	G = 25.0	G = 9.0	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y = 5	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 110.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	87	203		482	196	9	154	1232		97	1087	
Lane group capacity, c	174	345		594	625	531	161	1265		101	1165	
v/c ratio, X	0.50	0.59		0.81	0.31	0.02	0.96	0.97		0.96	0.93	

Total green ratio, g/C	0.10	0.10		0.34	0.34	0.34	0.09	0.36		0.06	0.33	
Uniform delay, d_1	47.0	47.5		33.4	27.1	24.4	49.8	34.5		51.7	35.7	
Progression factor, PF	1.000	1.000		1.000	1.000	1.000	1.000	0.619		1.000	1.000	
Delay calibration, k	0.11	0.18		0.35	0.11	0.11	0.47	0.50		0.47	0.50	
Incremental delay, d_2	2.3	2.6		8.4	0.3	0.0	47.5	16.0		76.6	14.5	
Initial queue delay, d_3												
Control delay	49.3	50.1		41.8	27.4	24.4	97.3	37.3		128.3	50.2	
Lane group LOS	D	D		D	C	C	F	D		F	D	
Approach delay	49.9			37.4			44.0			56.6		
Approach LOS	D			D			D			E		
Intersection delay	47.4			X_c = 0.86			Intersection LOS			D		

HCS2000™ DETAILED REPORT

General Information		***Site Information***	
Analyst		Intersection	*Market Place & Westnedge Ave.*
Agency or Co.	*Cowill and Associates*	Area Type	*All other areas*
Date Performed	*04/11/2006*	Jurisdiction	
Time Period	*5:00 pm*	Analysis Year	*Current (2006)*
		Project ID	

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	*0*	*1*	*1*	*1*	*1*	*1*	*1*	*2*	*0*	*1*	*2*	*0*
Lane group		*LT*	*R*	*L*	*LT*	*R*	*L*	*TR*		*L*	*TR*	
Volume, V (vph)	*43*	*5*	*99*	*188*	*9*	*19*	*81*	*1246*	*48*	*8*	*1402*	*14*
% Heavy vehicles, %HV	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*0*	*4*	*20*	*0*	*15*
Peak-hour factor, PHF	*0.82*	*0.60*	*0.78*	*0.89*	*0.83*	*0.60*	*0.78*	*0.95*	*0.65*	*0.60*	*0.95*	*0.67*
Pretimed (P) or actuated (A)	*A*	*A*	*A*	*P*	*P*	*P*	*A*	*A*	*A*	*A*	*A*	*A*
Start-up lost time, l_1		*2.0*	*2.0*	*2.0*	*2.0*							

APPENDIX B

BACKGROUND TRAFFIC CONDITIONS
HCS DETAILED REPOTS

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	
Agency/Co.	*Cowgill and Associates*
Date Performed	*11/17/2005*
Analysis Time Period	*Saturday Peak Hour*

Site Information

Intersection	*Kilgore Lowes*
Jurisdiction	
Analysis Year	*Background (2007)*

Project Description *Proposed Furniture Store Developement*

East/West Street: *Kilgore* | North/South Street: *Lowes*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*0*	*354*	*25*	*63*	*287*	*0*
Peak-hour factor, PHF	*1.00*	*0.92*	*0.92*	*0.92*	*0.92*	*1.00*
Hourly Flow Rate (veh/h)	*0*	*384*	*27*	*68*	*311*	*0*
Proportion of heavy vehicles, P_{HV}	*0*	--	--	*2*	--	--
Median type	*Undivided*					
RT Channelized?			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*1*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*1*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*38*	*0*	*70*	*0*	*0*	*0*
Peak-hour factor, PHF	*0.92*	*1.00*	*0.92*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate (veh/h)	*41*	*0*	*76*	*0*	*0*	*0*
Proportion of heavy vehicles, P_{HV}	*2*	*0*	*2*	*0*	*0*	*0*
Percent grade (%)		*0*			*0*	
Flared approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized?			*0*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Control Delay, Queue Length, Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
Volume, v (vph)		*68*	*41*		*76*			
Capacity, c_m (vph)		*1144*	*353*		*800*			
v/c ratio		*0.06*	*0.12*		*0.09*			
Queue length (95%)		*0.19*	*0.39*		*0.31*			
Control Delay (s/veh)		*8.3*	*16.5*		*10.0*			

LOS		A	C		A			
Approach delay (s/veh)	–	–	12.3					
Approach LOS	–	–	B					

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	
Agency/Co.	*Cowgill and Associates*
Date Performed	*11/17/2005*
Analysis Time Period	*5:00 pm*

Site Information

Intersection	*Kilgore Lowes*
Jurisdiction	
Analysis Year	*Background (2007)*

Project Description *Proposed Furniture Store Developement*

East/West Street: *Kilgore* | North/South Street: *Lowes*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*0*	*422*	*20*	*54*	*572*	*0*
Peak-hour factor, PHF	*1.00*	*0.92*	*0.92*	*0.92*	*0.92*	*1.00*
Hourly Flow Rate (veh/h)	*0*	*458*	*21*	*58*	*621*	*0*
Proportion of heavy vehicles, P_{HV}	*0*	--	--	*2*	--	--
Median type	*Undivided*					
RT Channelized?			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*1*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*1*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*45*	*0*	*59*	*0*	*0*	*0*
Peak-hour factor, PHF	*0.92*	*1.00*	*0.92*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate (veh/h)	*48*	*0*	*64*	*0*	*0*	*0*
Proportion of heavy vehicles, P_{HV}	*2*	*0*	*2*	*0*	*0*	*0*
Percent grade (%)		*0*			*0*	
Flared approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized?			*0*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Control Delay, Queue Length, Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
Volume, v (vph)		*58*	*48*		*64*			
Capacity, c_m (vph)		*1080*	*212*		*761*			
v/c ratio		*0.05*	*0.23*		*0.08*			
Queue length (95%)		*0.17*	*0.84*		*0.27*			
Control Delay (s/veh)		*8.5*	*26.9*		*10.2*			

LOS		A	D		B			
Approach delay (s/veh)	–	–	17.3					
Approach LOS	–	–	C					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst		Intersection	*Westnedge Ave. & Lowes*
Agency/Co.	*Cowgill and Associates*	Jurisdiction	
Date Performed	*11/17/2005*	Analysis Year	*Background (2007)*
Analysis Time Period	*Weekday Peak Hour*		
Project Description	*Proposed Furniture Store Developement*		
East/West Street: *Lowes*		North/South Street: *Westnedge*	
Intersection Orientation: *North-South*		Study Period (hrs): *0.25*	

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*1558*	*0*	*0*	*1904*	*14*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*1.00*	*1.00*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*1693*	*0*	*0*	*2069*	*15*
Percent Heavy Vehicles	*2*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*0*	*2*	*1*
Configuration		*T*			*T*	*R*
Upstream Signal		*1*			*1*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*0*	*0*	*17*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*0.92*	*1.00*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*0*	*0*	*18*
Percent Heavy Vehicles	*0*	*0*	*0*	*2*	*0*	*2*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*1*
Configuration						

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst		Intersection	*Westnedge Ave. & Lowes*
Agency/Co.	*Cowgill and Associates*	Jurisdiction	
Date Performed	*11/17/2005*	Analysis Year	*Background (2007)*
Analysis Time Period	*Saturday Peak Hour*		
Project Description	*Proposed Furniture Store Developement*		
East/West Street: *Lowes*		North/South Street: *Westnedge*	
Intersection Orientation: *North-South*		Study Period (hrs): *0.25*	

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*1334*	*0*	*0*	*1581*	*19*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*1.00*	*1.00*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*1449*	*0*	*0*	*1718*	*20*
Percent Heavy Vehicles	*2*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*0*	*2*	*1*
Configuration		*T*			*T*	*R*
Upstream Signal		*1*			*1*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*0*	*0*	*24*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*0.92*	*1.00*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*0*	*0*	*26*
Percent Heavy Vehicles	*0*	*0*	*0*	*2*	*0*	*2*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*1*
Configuration						*R*

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration								*R*
v (vph)								*26*
C (m) (vph)								*631*
v/c								*0.04*
95% queue length								*0.13*
Control Delay								*11.0*
LOS								*B*
Approach Delay	–	–				*11.0*		
Approach LOS	–	–				*B*		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst		Intersection	Andy Ave. & Westnedge Ave.
Agency or Co.		Area Type	All other areas
Date Performed	04/11/2006	Jurisdiction	
Time Period	5:00 pm	Analysis Year	Baseline
		Project ID	

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	1	1	0	1	1	1	2	0	1	2	0
Lane group		LT	R		LT	R	L	TR		L	TR	
Volume, V (vph)	44	5	106	188	9	19	96	1274	49	8	1433	14
% Heavy vehicles, %HV	2	2	2	2	2	2	2	0	4	20	0	15
Peak-hour factor, PHF	0.82	0.60	0.78	0.89	0.83	0.60	0.78	0.95	0.65	0.60	0.95	0.67
Pretimed (P) or actuated (A)	A	A	A	P	P	P	A	A	A	A	A	A
Start-up lost time, l_1		2.0	2.0		2.0	2.0	2.0	2.0		2.0	2.0	
Extension of effective green, e		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Arrival type, AT		3	3		3	3	3	3		4	5	
Unit extension, UE		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Filtering/metering, I		1.000	1.000		1.000	1.000	1.000	1.000		0.472	0.472	
Initial unmet demand, Q_b		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Ped / Bike / RTOR volumes	0	0	96	0	0	0	0	0	3	0	0	0
Lane width		11.0	11.0		11.0	11.0	11.0	13.0		11.0	13.0	
Parking / Grade / Parking	N	-1	N	N	1	N	N	1	N	N	-1	N
Parking maneuvers, N_m												
Buses stopping, N_B		0	0		0	0	0	0		0	0	
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EW Perm	02	03	04	NB Only	Thru & RT	SB Only	08
Timing	G = 37.1	G =	G =	G =	G = 13.1	G = 56.6	G = 3.2	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y = 5	Y = 5	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 130.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v		62	13		222	32	123	1412		13	1529	
Lane group capacity, c		299	451		341	446	185	2141		47	1890	
v/c ratio, X		0.21	0.03		0.65	0.07	0.66	0.66		0.28	0.81	

Total green ratio, g/C		0.29	0.29		0.29	0.29	0.11	0.58		0.03	0.51	
Uniform delay, d_1		34.6	32.8		40.1	33.2	55.7	18.4		61.4	26.8	
Progression factor, PF		1.000	1.000		1.000	1.000	1.000	1.000		1.000	0.317	
Delay calibration, k		0.11	0.11		0.50	0.50	0.24	0.23		0.11	0.35	
Incremental delay, d_2		0.3	0.0		9.3	0.3	8.7	0.8		1.5	1.3	
Initial queue delay, d_3												
Control delay		34.9	32.8		49.4	33.5	64.4	19.2		62.9	9.8	
Lane group LOS		C	C		D	C	E	B		E	A	
Approach delay	34.6			47.4			22.8			10.3		
Approach LOS	C			D			C			B		
Intersection delay	19.2			X_c = 0.74			Intersection LOS			B		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst		Intersection	*Westnedge Kilgore*
Agency or Co.	*Cowgill and Associates*	Area Type	*All other areas*
Date Performed	*04/10/2006*	Jurisdiction	
Time Period	*Saturday Peak Hour*	Analysis Year	*Background (2007)*
		Project ID	*Proposed Furniture Store Developement*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	*1*	*2*	*0*	*1*	*1*	*1*	*1*	*2*	*0*	*1*	*2*	*0*
Lane group	*L*	*TR*		*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Volume, V (vph)	*82*	*183*	*144*	*452*	*184*	*26*	*145*	*1022*	*145*	*91*	*1004*	*17*
% Heavy vehicles, %HV	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*
Peak-hour factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Pretimed (P) or actuated (A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*P*	*P*	*A*	*P*	*P*
Start-up lost time, l_1	*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Extension of effective green, e	*3.0*	*3.0*		*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*	
Arrival type, AT	*3*	*3*		*3*	*3*	*3*	*4*	*4*		*3*	*3*	
Unit extension, UE	*3.0*	*3.0*		*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*	
Filtering/metering, I	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*0.745*	*0.745*		*1.000*	*1.000*	
Initial unmet demand, Q_b	*0.0*	*0.0*		*0.0*	*0.0*	*0.0*	*0.0*	*0.0*		*0.0*	*0.0*	
Ped / Bike / RTOR volumes	*0*	*0*	*114*	*0*	*0*	*19*	*0*	*0*	*8*	*0*	*0*	*1*
Lane width	*12.0*	*12.0*		*12.0*	*12.0*	*12.0*	*12.0*	*12.0*		*12.0*	*12.0*	
Parking / Grade / Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking maneuvers, N_m												
Buses stopping, N_B	*0*	*0*		*0*	*0*	*0*	*0*	*0*		*0*	*0*	
Min. time for pedestrians, G_p	*3.2*			*3.2*			*3.2*			*3.2*		

Phasing	EB Only	WB Only	03	04	Thru & RT	Excl. Left	07	08
Timing	G = *12.1*	G = *39.1*	G =	G =	G = *49.3*	G = *9.5*	G =	G =
	Y = *5*	Y = *5*	Y =	Y =	Y = *5*	Y = *5*	Y =	Y =
Duration of Analysis, T = *0.25*						Cycle Length, C = *130.0*		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	*89*	*232*		*491*	*200*	*8*	*158*	*1260*		*99*	*1108*	
Lane group capacity, c	*178*	*349*		*546*	*575*	*488*	*143*	*1345*		*143*	*1366*	
v/c ratio, X	*0.50*	*0.66*		*0.90*	*0.35*	*0.02*	*1.10*	*0.94*		*0.69*	*0.81*	

Total green ratio, g/C	0.10	0.10		0.31	0.31	0.31	0.08	0.39		0.08	0.39	
Uniform delay, d_1	55.3	56.3		43.0	34.8	31.2	59.8	38.3		58.2	35.6	
Progression factor, PF	1.000	1.000		1.000	1.000	1.000	1.000	0.908		1.000	1.000	
Delay calibration, k	0.11	0.24		0.42	0.11	0.11	0.50	0.50		0.26	0.50	
Incremental delay, d_2	2.2	4.7		17.8	0.4	0.0	95.9	10.7		13.4	5.3	
Initial queue delay, d_3												
Control delay	57.6	61.1		60.8	35.2	31.3	155.6	45.5		71.6	40.9	
Lane group LOS	E	E		E	D	C	F	D		E	D	
Approach delay	60.1			53.2			57.8			43.4		
Approach LOS	E			D			E			D		
Intersection delay	52.4			X_C = 0.91			Intersection LOS			D		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst		Intersection	*Westnedge Kilgore*
Agency or Co.	*Cowgill and Associates*	Area Type	*All other areas*
Date Performed	*04/10/2006*	Jurisdiction	
Time Period	*Weekday Peak Hour*	Analysis Year	*Background (2007)*
		Project ID	*Proposed Furniture Store Developement*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	*1*	*2*	*0*	*1*	*1*	*1*	*1*	*2*	*0*	*1*	*2*	*0*
Lane group	*L*	*TR*		*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Volume, V (vph)	*131*	*194*	*136*	*371*	*332*	*166*	*159*	*1194*	*132*	*112*	*1411*	*58*
% Heavy vehicles, %HV	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*
Peak-hour factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Pretimed (P) or actuated (A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*P*	*P*	*A*	*P*	*P*
Start-up lost time, l_1	*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Extension of effective green, e	*3.0*	*3.0*		*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*	
Arrival type, AT	*3*	*3*		*3*	*3*	*3*	*4*	*5*		*3*	*3*	
Unit extension, UE	*3.0*	*3.0*		*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*	
Filtering/metering, I	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*0.604*	*0.604*		*1.000*	*1.000*	
Initial unmet demand, Q_b	*0.0*	*0.0*		*0.0*	*0.0*	*0.0*	*0.0*	*0.0*		*0.0*	*0.0*	
Ped / Bike / RTOR volumes	*0*	*0*	*99*	*0*	*0*	*136*	*0*	*0*	*7*	*0*	*0*	*2*
Lane width	*12.0*	*12.0*		*12.0*	*12.0*	*12.0*	*12.0*	*12.0*		*12.0*	*12.0*	
Parking / Grade / Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking maneuvers, N_m												
Buses stopping, N_B	*0*	*0*		*0*	*0*	*0*	*0*	*0*		*0*	*0*	
Min. time for pedestrians, G_p	*3.2*			*3.2*			*3.2*			*3.2*		

Phasing	EB Only	WB Only	03	04	SB Only	Thru & RT	NB Only	08
Timing	G = *13.3*	G = *29.7*	G =	G =	G = *9.0*	G = *42.0*	G = *11.0*	G =
	Y = *5*	Y = *5*	Y =	Y =	Y = *5*	Y = *5*	Y = *5*	Y =
Duration of Analysis, T = *0.25*						Cycle Length, C = *130.0*		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	*142*	*251*		*403*	*361*	*33*	*173*	*1434*		*122*	*1595*	
Lane group capacity, c	*195*	*380*		*418*	*440*	*374*	*163*	*1583*		*136*	*1543*	
v/c ratio, X	*0.73*	*0.66*		*0.96*	*0.82*	*0.09*	*1.06*	*0.91*		*0.90*	*1.03*	

Total green ratio, g/C	0.11	0.11		0.24	0.24	0.24	0.09	0.45		0.08	0.44	
Uniform delay, d_1	56.0	55.5		49.1	47.0	38.7	59.0	32.9		59.5	36.5	
Progression factor, PF	1.000	1.000		1.000	1.000	1.000	1.000	0.446		1.000	1.000	
Delay calibration, k	0.29	0.24		0.47	0.36	0.11	0.50	0.50		0.42	0.50	
Incremental delay, d_2	12.9	4.2		34.7	11.7	0.1	71.9	5.8		47.7	32.1	
Initial queue delay, d_3												
Control delay	68.9	59.7		83.8	58.8	38.8	130.9	20.5		107.2	68.6	
Lane group LOS	E	E		F	E	D	F	C		F	E	
Approach delay	63.0			70.6			32.4			71.3		
Approach LOS	E			E			C			E		
Intersection delay	56.6			X_c = 0.98			Intersection LOS			E		

HCS2000™ DETAILED REPORT

General Information		***Site Information***	
Analyst		Intersection	*Andy Ave. & Westnedge Ave.*
Agency or Co.		Area Type	*All other areas*
Date Performed	*04/11/2006*	Jurisdiction	
Time Period	*5:00 pm*	Analysis Year	*Baseline*
		Project ID	

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	*0*	*1*	*1*	*0*	*1*	*1*	*1*	*2*	*0*	*1*	*2*	*0*
Lane group		*LT*	*R*		*LT*	*R*	*L*	*TR*		*L*	*TR*	
Volume, V (vph)	*44*	*5*	*106*	*188*	*9*	*19*	*96*	*1274*	*49*	*8*	*1433*	*14*
% Heavy vehicles, %HV	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*0*	*4*	*20*	*0*	*15*
Peak-hour factor, PHF	*0.82*	*0.60*	*0.78*	*0.89*	*0.83*	*0.60*	*0.78*	*0.95*	*0.65*	*0.60*	*0.95*	*0.67*
Pretimed (P) or actuated (A)	*A*	*A*	*A*	*P*	*P*	*P*	*A*	*A*	*A*	*A*	*A*	*A*
Start-up lost time, l_1		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Extension of effective green, e		*3.0*										

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst		Intersection	Market Place & Westnedge Ave.
Agency or Co.	Cowgill and Associates	Area Type	All other areas
Date Performed	04/11/2006	Jurisdiction	
Time Period	Weekday Peak	Analysis Year	Backgroun (2007)
		Project ID	Proposed Furniture Store Developement

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	1	1	0	1	1	1	2	0	1	2	0
Lane group		LT	R		LT	R	L	TR		L	TR	
Volume, V (vph)	51	6	118	220	10	22	97	1485	57	9	1670	17
% Heavy vehicles, %HV	2	2	2	2	2	2	2	0	4	20	0	15
Peak-hour factor, PHF	0.82	0.60	0.78	0.89	0.83	0.60	0.78	0.95	0.65	0.60	0.95	0.67
Pretimed (P) or actuated (A)	A	A	A	P	P	P	A	A	A	A	A	A
Start-up lost time, l_1		2.0	2.0		2.0	2.0	2.0	2.0		2.0	2.0	
Extension of effective green, e		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Arrival type, AT		3	3		3	3	3	3		4	5	
Unit extension, UE		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Filtering/metering, I		1.000	1.000		1.000	1.000	1.000	1.000		0.233	0.233	
Initial unmet demand, Q_b		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Ped / Bike / RTOR volumes	0	0	105	0	0	0	0	0	3	0	0	0
Lane width		11.0	11.0		11.0	11.0	11.0	13.0		11.0	13.0	
Parking / Grade / Parking	N	-1	N	N	1	N	N	1	N	N	-1	N
Parking maneuvers, N_m												
Buses stopping, N_B		0	0		0	0	0	0		0	0	
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EW Perm	02	03	04	NB Only	Thru & RT	SB Only	08
Timing	G = 37.5	G =	G =	G =	G = 9.0	G = 57.1	G = 6.4	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y = 5	Y = 5	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 130.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v		72	17		259	37	124	1646		15	1783	
Lane group capacity, c		265	455		334	451	131	2039		83	1996	
		0.27	0.04		0.78	0.08	0.95	0.81		0.18	0.89	

v/c ratio, X												
Total green ratio, g/C		0.30	0.30		0.30	0.30	0.08	0.55		0.06	0.53	
Uniform delay, d_1		35.0	32.6		41.8	33.0	59.7	23.3		58.4	26.9	
Progression factor, PF		1.000	1.000		1.000	1.000	1.000	1.000		1.000	0.234	
Delay calibration, k		0.11	0.11		0.50	0.50	0.46	0.35		0.11	0.42	
Incremental delay, d_2		0.6	0.0		16.1	0.4	62.2	2.5		0.2	1.4	
Initial queue delay, d_3												
Control delay		35.6	32.6		57.9	33.4	121.9	25.9		58.7	7.7	
Lane group LOS		D	C		E	C	F	C		E	A	
Approach delay		35.0			54.8			32.6			8.2	
Approach LOS		D			D			C			A	
Intersection delay		23.2			X_c = 0.86			Intersection LOS			C	

APPENDIX C

OPENING DAY TRAFFIC CONDITIONS
HCS DETAILED REPOTS

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	
Agency/Co.	*Cowgill and Associates*
Date Performed	*11/17/2005*
Analysis Time Period	*5:00 pm*

Site Information

Intersection	*Kilgore Lowes*
Jurisdiction	
Analysis Year	*Opening Day (2007)*

Project Description *Proposed Furniture Store*

East/West Street: *Kilgore* | North/South Street: *Lowes Drive*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*0*	*357*	*30*	*66*	*287*	*0*
Peak-hour factor, PHF	*1.00*	*0.92*	*0.92*	*0.92*	*0.92*	*1.00*
Hourly Flow Rate (veh/h)	*0*	*388*	*32*	*71*	*311*	*0*
Proportion of heavy vehicles, P_{HV}	*0*	--	--	*2*	--	--
Median type	*Undivided*					
RT Channelized?			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*1*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*1*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*46*	*0*	*98*	*0*	*0*	*0*
Peak-hour factor, PHF	*0.92*	*1.00*	*0.92*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate (veh/h)	*49*	*0*	*106*	*0*	*0*	*0*
Proportion of heavy vehicles, P_{HV}	*2*	*0*	*2*	*0*	*0*	*0*
Percent grade (%)		*0*			*0*	
Flared approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized?			*0*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Control Delay, Queue Length, Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
Volume, v (vph)		*71*	*49*		*106*			
Capacity, c_m (vph)		*1136*	*345*		*796*			
v/c ratio		*0.06*	*0.14*		*0.13*			
Queue length (95%)		*0.20*	*0.49*		*0.46*			
Control Delay (s/veh)		*8.4*	*17.2*		*10.2*			

LOS		A	C		B			
Approach delay (s/veh)	–	–	12.4					
Approach LOS	–	–	B					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst		Intersection	*Westnedge Ave. & Lowes*
Agency/Co.	*Cowgill and Associates*	Jurisdiction	
Date Performed	*11/17/2005*	Analysis Year	*Opening Day (2007)*
Analysis Time Period	*Saturday Peak Hour*		
Project Description	*Proposed Furniture Store Developement*		
East/West Street:	*Lowes Drive*	North/South Street:	*Westnedge*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*1337*	*0*	*0*	*1581*	*47*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*1.00*	*1.00*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*1453*	*0*	*0*	*1718*	*51*
Percent Heavy Vehicles	*2*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*0*	*2*	*1*
Configuration		*T*			*T*	*R*
Upstream Signal		*1*			*1*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*0*	*0*	*34*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*0.92*	*1.00*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*0*	*0*	*36*
Percent Heavy Vehicles	*0*	*0*	*0*	*2*	*0*	*2*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*1*
Configuration						*R*

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration								*R*
v (vph)								*36*
C (m) (vph)								*615*
v/c								*0.06*
95% queue length								*0.19*
Control Delay								*11.2*
LOS								*B*
Approach Delay	–	–				*11.2*		
Approach LOS	–	–				*B*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst		Intersection	*Westnedge Ave. & Lowes*
Agency/Co.	*Cowgill and Associates*	Jurisdiction	
Date Performed	*11/17/2005*	Analysis Year	*Opening Day (2007)*
Analysis Time Period	*Weekday Peak Hour*		

Project Description	*Proposed Furniture Store Developement*
East/West Street: *Lowes*	North/South Street: *Westnedge*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*1560*	*0*	*0*	*1904*	*31*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*1.00*	*1.00*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*1695*	*0*	*0*	*2069*	*33*
Percent Heavy Vehicles	*2*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*0*	*2*	

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	
Agency/Co.	*Cowgill and Associates*
Date Performed	*11/17/2005*
Analysis Time Period	*Weekday Peak Hour*

Site Information

Intersection	*Kilgore Lowes*
Jurisdiction	
Analysis Year	*Opening day (2007)*

Project Description *Proposed Furniture Store*

East/West Street: *Kilgore* | North/South Street: *Lowes Drive*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*0*	*424*	*23*	*56*	*572*	*0*
Peak-hour factor, PHF	*1.00*	*0.92*	*0.92*	*0.92*	*0.92*	*1.00*
Hourly Flow Rate (veh/h)	*0*	*460*	*24*	*60*	*621*	*0*
Proportion of heavy vehicles, P_{HV}	*0*	--	--	*2*	--	--
Median type	*Undivided*					
RT Channelized?			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*1*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*1*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*50*	*0*	*76*	*0*	*0*	*0*
Peak-hour factor, PHF	*0.92*	*1.00*	*0.92*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate (veh/h)	*54*	*0*	*82*	*0*	*0*	*0*
Proportion of heavy vehicles, P_{HV}	*2*	*0*	*2*	*0*	*0*	*0*
Percent grade (%)		*0*			*0*	
Flared approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized?			*0*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Control Delay, Queue Length, Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
Volume, v (vph)		*60*	*54*		*82*			
Capacity, c_m (vph)		*1075*	*209*		*759*			
v/c ratio		*0.06*	*0.26*		*0.11*			
Queue length (95%)		*0.18*	*0.99*		*0.36*			
Control Delay (s/veh)		*8.5*	*28.1*		*10.3*			

LOS		A	D		B			
Approach delay (s/veh)	–	–	17.4					
Approach LOS	–	–	C					

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst		Intersection	*Market and Westnedge*
Agency or Co.	*Cowgill and Associates*	Area Type	*All other areas*
Date Performed	*04/11/2006*	Jurisdiction	
Time Period	*Saturday Peak Hour*	Analysis Year	*Opening day (2007)*
		Project ID	*Proposed Furniture Store Developement*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	1	1	0	1	1	1	2	0	1	2	0
Lane group		LT	R		LT	R	L	TR		L	TR	
Volume, V (vph)	44	5	106	188	9	19	96	1274	49	8	1433	14
% Heavy vehicles, %HV	2	2	2	2	2	2	2	0	4	20	0	15
Peak-hour factor, PHF	0.82	0.60	0.78	0.89	0.83	0.60	0.78	0.95	0.65	0.60	0.95	0.67
Pretimed (P) or actuated (A)	A	A	A	P	P	P	A	A	A	A	A	A
Start-up lost time, l_1		2.0	2.0		2.0	2.0	2.0	2.0		2.0	2.0	
Extension of effective green, e		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Arrival type, AT		3	3		3	3	3	3		4	5	
Unit extension, UE		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Filtering/metering, I		1.000	1.000		1.000	1.000	1.000	1.000		0.472	0.472	
Initial unmet demand, Q_b		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Ped / Bike / RTOR volumes	0	0	96	0	0	0	0	0	3	0	0	0
Lane width		11.0	11.0		11.0	11.0	11.0	13.0		11.0	13.0	
Parking / Grade / Parking	N	-1	N	N	1	N	N	1	N	N	-1	N
Parking maneuvers, N_m												
Buses stopping, N_B		0	0		0	0	0	0		0	0	
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EW Perm	02	03	04	NB Only	Thru & RT	SB Only	08
Timing	G = 37.1	G =	G =	G =	G = 13.1	G = 56.6	G = 3.2	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y = 5	Y = 5	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 130.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v		62	13		222	32	123	1412		13	1529	
Lane group capacity, c		299	451		341	446	185	2141		47	1890	
v/c ratio, X		0.21	0.03		0.65	0.07	0.66	0.66		0.28	0.81	

Total green ratio, g/C		0.29	0.29		0.29	0.29	0.11	0.58		0.03	0.51	
Uniform delay, d_1		34.6	32.8		40.1	33.2	55.7	18.4		61.4	26.8	
Progression factor, PF		1.000	1.000		1.000	1.000	1.000	1.000		1.000	0.317	
Delay calibration, k		0.11	0.11		0.50	0.50	0.24	0.23		0.11	0.35	
Incremental delay, d_2		0.3	0.0		9.3	0.3	8.7	0.8		1.5	1.3	
Initial queue delay, d_3												
Control delay		34.9	32.8		49.4	33.5	64.4	19.2		62.9	9.8	
Lane group LOS		C	C		D	C	E	B		E	A	
Approach delay	34.6			47.4			22.8			10.3		
Approach LOS	C			D			C			B		
Intersection delay	19.2			X_C = 0.74			Intersection LOS			B		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst		Intersection	*Market and Westnedge*
Agency or Co.	*Cowgill and Associates*	Area Type	*All other areas*
Date Performed	*04/11/2006*	Jurisdiction	
Time Period	*Weekday Peak Hour*	Analysis Year	*Opening day (2007)*
		Project ID	*Proposed Furniture store developement*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	*0*	*1*	*1*	*0*	*1*	*1*	*1*	*2*	*0*	*1*	*2*	*0*
Lane group		*LT*	*R*		*LT*	*R*	*L*	*TR*		*L*	*TR*	
Volume, V (vph)	*51*	*6*	*121*	*220*	*10*	*22*	*105*	*1487*	*57*	*9*	*1672*	*17*
% Heavy vehicles, %HV	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*0*	*4*	*20*	*0*	*15*
Peak-hour factor, PHF	*0.82*	*0.60*	*0.78*	*0.89*	*0.83*	*0.60*	*0.78*	*0.95*	*0.65*	*0.60*	*0.95*	*0.67*
Pretimed (P) or actuated (A)	*A*	*A*	*A*	*P*	*P*	*P*	*A*	*A*	*A*	*A*	*A*	*A*
Start-up lost time, l_1		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Extension of effective green, e		*3.0*	*3.0*		*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*	
Arrival type, AT		*3*	*3*		*3*	*3*	*3*	*3*		*4*	*5*	
Unit extension, UE		*3.0*	*3.0*		*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*	
Filtering/metering, I		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*		*0.090*	*0.090*	
Initial unmet demand, Q_b		*0.0*	*0.0*		*0.0*	*0.0*	*0.0*	*0.0*		*0.0*	*0.0*	
Ped / Bike / RTOR volumes	*0*	*0*	*108*	*0*	*0*	*22*	*0*	*0*	*3*	*0*	*0*	*0*
Lane width		*11.0*	*11.0*		*11.0*	*11.0*	*11.0*	*13.0*		*11.0*	*13.0*	
Parking / Grade / Parking	*N*	*-1*	*N*	*N*	*1*	*N*	*N*	*1*	*N*	*N*	*-1*	*N*
Parking maneuvers, N_m												
Buses stopping, N_B		*0*	*0*		*0*	*0*	*0*	*0*		*0*	*0*	
Min. time for pedestrians, G_p	*3.2*			*3.2*			*3.2*			*3.2*		

Phasing	EW Perm	02	03	04	NB Only	Thru & RT	SB Only	08
Timing	G = *38.0*	G =	G =	G =	G = *10.0*	G = *55.6*	G = *6.4*	G =
	Y = *5*	Y =	Y =	Y =	Y = *5*	Y = *5*	Y = *5*	Y =
Duration of Analysis, T = *0.25*						Cycle Length, C = *130.0*		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v		*72*	*17*		*259*	*0*	*135*	*1648*		*15*	*1785*	
Lane group capacity, c		*272*	*461*		*339*	*457*	*144*	*2025*		*83*	*1953*	
v/c ratio, X		*0.26*	*0.04*		*0.76*	*0.00*	*0.94*	*0.81*		*0.18*	*0.91*	

Total green ratio, g/C		0.30	0.30		0.30	0.30	0.08	0.55		0.06	0.52	
Uniform delay, d_1		34.6	32.2		41.3	31.8	59.2	23.8		58.4	28.3	
Progression factor, PF		1.000	1.000		1.000	1.000	1.000	1.000		1.000	0.269	
Delay calibration, k		0.11	0.11		0.50	0.50	0.45	0.35		0.11	0.43	
Incremental delay, d_2		0.5	0.0		15.1	0.0	56.3	2.7		0.1	0.7	
Initial queue delay, d_3												
Control delay		35.1	32.2		56.4	31.8	115.5	26.4		58.5	8.4	
Lane group LOS		D	C		E	C	F	C		E	A	
Approach delay	34.6			56.4			33.2			8.8		
Approach LOS	C			E			C			A		
Intersection delay	23.6			X_C = 0.87			Intersection LOS			C		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst		Intersection	*Westnedge Kilgore*
Agency or Co.	*Cowgill and Associates*	Area Type	*All other areas*
Date Performed	*04/10/2006*	Jurisdiction	
Time Period	*Weekday Peak hour*	Analysis Year	*Opening day (2007)*
		Project ID	*Proposed Furniture Store*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	*1*	*2*	*0*	*1*	*1*	*1*	*1*	*2*	*0*	*1*	*2*	*0*
Lane group	*L*	*TR*		*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Volume, V (vph)	*143*	*196*	*138*	*376*	*332*	*166*	*161*	*1194*	*132*	*112*	*1423*	*58*
% Heavy vehicles, %HV	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*
Peak-hour factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Pretimed (P) or actuated (A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*P*	*P*	*A*	*P*	*P*
Start-up lost time, l_1	*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Extension of effective green, e	*3.0*	*3.0*		*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*	
Arrival type, AT	*3*	*3*		*3*	*3*	*3*	*4*	*5*		*3*	*3*	
Unit extension, UE	*3.0*	*3.0*		*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*	
Filtering/metering, I	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*0.596*	*0.596*		*1.000*	*1.000*	
Initial unmet demand, Q_b	*0.0*	*0.0*		*0.0*	*0.0*	*0.0*	*0.0*	*0.0*		*0.0*	*0.0*	
Ped / Bike / RTOR volumes	*0*	*0*	*101*	*0*	*0*	*137*	*0*	*0*	*7*	*0*	*0*	*2*
Lane width	*12.0*	*12.0*		*12.0*	*12.0*	*12.0*	*12.0*	*12.0*		*12.0*	*12.0*	
Parking / Grade / Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking maneuvers, N_m												
Buses stopping, N_B	*0*	*0*		*0*	*0*	*0*	*0*	*0*		*0*	*0*	
Min. time for pedestrians, G_p	*3.2*			*3.2*			*3.2*			*3.2*		

Phasing	EB Only	WB Only	03	04	SB Only	Thru & RT	NB Only	08
Timing	G = *13.7*	G = *29.3*	G =	G =	G = *9.0*	G = *42.0*	G = *11.0*	G =
	Y = *5*	Y = *5*	Y =	Y =	Y = *5*	Y = *5*	Y = *5*	Y =
Duration of Analysis, T = *0.25*						Cycle Length, C = *130.0*		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	*155*	*253*		*409*	*361*	*32*	*175*	*1434*		*122*	*1608*	
Lane group capacity, c	*200*	*391*		*413*	*434*	*369*	*163*	*1583*		*136*	*1543*	
v/c ratio, X	*0.77*	*0.65*		*0.99*	*0.83*	*0.09*	*1.07*	*0.91*		*0.90*	*1.04*	
	0.11	*0.11*		*0.23*	*0.23*	*0.23*	*0.09*	*0.45*		*0.08*	*0.44*	

Total green ratio, g/C												
Uniform delay, d_1	56.0	55.2		49.7	47.4	39.0	59.0	32.9		59.5	36.5	
Progression factor, PF	1.000	1.000		1.000	1.000	1.000	1.000	0.446		1.000	1.000	
Delay calibration, k	0.32	0.22		0.49	0.37	0.11	0.50	0.50		0.42	0.50	
Incremental delay, d_2	17.2	3.7		41.6	12.9	0.1	75.4	5.7		47.7	34.7	
Initial queue delay, d_3												
Control delay	73.2	58.9		91.3	60.3	39.1	134.4	20.4		107.2	71.2	
Lane group LOS	E	E		F	E	D	F	C		F	E	
Approach delay	64.3			75.3			32.8			73.8		
Approach LOS	E			E			C			E		
Intersection delay	58.7			X_C = 1.00			Intersection LOS			E		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst		Intersection	*Westnedge Kilgore*
Agency or Co.	*Cowgill and Associates*	Area Type	*All other areas*
Date Performed	*04/10/2006*	Jurisdiction	
Time Period	*Saturday Peak Hour*	Analysis Year	*Opening Day (2007)*
		Project ID	*Proposed Furniture Store*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	2	0	1	1	1	1	2	0	1	2	0
Lane group	L	TR		L	T	R	L	TR		L	TR	
Volume, V (vph)	102	186	147	460	184	26	148	1022	145	91	1024	17
% Heavy vehicles, %HV	2	2	2	2	2	2	2	2	2	2	2	2
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Pretimed (P) or actuated (A)	A	A	A	A	A	A	A	P	P	A	P	P
Start-up lost time, l_1	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Extension of effective green, e	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Arrival type, AT	3	3		3	3	3	4	4		3	3	
Unit extension, UE	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Filtering/metering, I	1.000	1.000		1.000	1.000	1.000	0.742	0.742		1.000	1.000	
Initial unmet demand, Q_b	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Ped / Bike / RTOR volumes	0	0	113	0	0	19	0	0	8	0	0	1
Lane width	12.0	12.0		12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0		0	0	0	0	0		0	0	
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EB Only	WB Only	03	04	Thru & RT	Excl. Left	07	08
Timing	G = 13.0	G = 38.7	G =	G =	G = 48.8	G = 9.5	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 130.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	111	239		500	200	8	161	1260		99	1130	
Lane group capacity, c	191	372		541	569	483	143	1332		143	1353	
v/c ratio, X	0.58	0.64		0.92	0.35	0.02	1.13	0.95		0.69	0.84	
	0.11	0.11		0.31	0.31	0.31	0.08	0.38		0.08	0.38	

Total green ratio, g/C												
Uniform delay, d_1	55.2	55.6		43.7	35.1	31.5	59.8	38.8		58.2	36.4	
Progression factor, PF	1.000	1.000		1.000	1.000	1.000	1.000	0.912		1.000	1.000	
Delay calibration, k	0.17	0.22		0.44	0.11	0.11	0.50	0.50		0.26	0.50	
Incremental delay, d_2	4.4	3.8		21.8	0.4	0.0	102.7	11.8		13.4	6.2	
Initial queue delay, d_3												
Control delay	59.6	59.4		65.5	35.5	31.5	162.5	47.2		71.6	42.6	
Lane group LOS	E	E		E	D	C	F	D		E	D	
Approach delay	59.4			56.7			60.3			44.9		
Approach LOS	E			E			E			D		
Intersection delay	54.4			X_c = 0.92			Intersection LOS			D		

HCS2000™ DETAILED REPORT

General Information		***Site Information***	
Analyst		Intersection	*Kilgore & Westnedge*
Agency or Co.		Area Type	*All other areas*
Date Performed	*04/13/2006*	Jurisdiction	
Time Period	*5:00 pm*	Analysis Year	*Baseline*
		Project ID	

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	*1*	*2*	*1*	*1*	*2*	*0*	*1*	*3*	*0*	*1*	*3*	*0*
Lane group	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*		*L*	*TR*	
Volume, V (vph)	*143*	*196*	*138*	*376*	*332*	*166*	*161*	*1194*	*132*	*112*	*1423*	*58*
% Heavy vehicles, %HV	*2*											