

**CLA SR 235
Corridor Management Study
PID 89423**



Clark County – Springfield Transportation
Coordinating Committee (TCC)
Ohio Department of Transportation, District 7

Tran Systems

October 24, 2012

Corridor Management Study

CLA SR 235

From Montgomery County Line to US 40

Prepared For:



CLARK COUNTY-SPRINGFIELD
TRANSPORTATION COORDINATING COMMITTEE



Prepared by:



October 24, 2012

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EXECUTIVE SUMMARY

The Clark County-Springfield Transportation Coordinating Committee (CCSTCC), in conjunction with the Ohio Department of Transportation (ODOT), has retained TranSystems Corporation to conduct a corridor management study along a portion of SR 235 in Clark County. The purpose of this planning study is to (1) address known safety and access concerns, particularly within the Park Layne area where a high number of drives are present and (2) to identify improvements that will result in a safe traversable corridor for motor vehicles, pedestrians and bicyclists.

The limits of the study area are from the Montgomery County line to the US 40 intersection, a distance of roughly two miles. A total of 57 driveway access points are present within the study area, which are on average 200 feet apart. This is considerably less than the minimum 360-foot ODOT recommendation. In the 0.67-mile section from Hartley Avenue to the church just south of Dalton Drive the average spacing is less than 150 feet due to nearly 30 driveways. Twenty one of these driveways reside on the west side of SR 235. Currently, there are two crosswalks within the study area, one at Styer Road and one at Gerlaugh Road. The overall study area contains very limited crossing points for pedestrians making the area unsafe for pedestrians and bicyclists.

The CCSTCC supplied TranSystems with CAM-tool worksheets and OH-1 crash reports for the period 2007-2010. The crash locations were plotted on aerial photography. Intersection and segment crashes were summarized in tabular form by type, severity, road condition and time of day. A total of 117 crashes (87 intersection-related and 30 segment-related) occurred in the four-year period (2007-2010). About 65 percent of the total crashes were rear-end or angle type. A total of six fatalities were recorded in the study area – three of which were pedestrians attempting to cross SR 235.

A number of existing studies and other pertinent data were made available for reference over the course of this planning study. TranSystems was provided with a year 2010 intersection turning movement count at SR 235 and Hocker Avenue. Additional traffic counts were taken at various locations in August 2011. Year 2035 future traffic volumes were determined by applying a background traffic growth rate to the existing traffic volumes combined with projections for specific development projects within or nearby the study corridor.

Capacity analyses were performed using the Highway Capacity Manual 2000 methodologies. Synchro 7 software was used for both the stop-sign control and traffic signal analyses. All study intersections operate at acceptable levels or service (LOS C or better) in the existing condition. Capacity analyses were also performed for the study intersections using 2035 traffic volumes. This exercise found that the study intersections will all operate at LOS D or better during both the peak hours with existing traffic control and lane usage.

An environmental summary was conducted to support the CCSTCC for the SR 235 corridor planning study. The purpose of the environmental summary is to address any issues that may arise with Cultural Resources, Ecological Resources, Hazardous Materials, Noise Implications, and Environmental Justice. For the purpose of this research, the study area represents a roughly 1,000' wide corridor along SR 235. While TranSystems noticed some sites that may require further investigation, there were no items that would require the project to be canceled or necessitate an alternative solution to that proposed herein.

The first public open house was held on September 28, 2011, from 6:00 to 8:00 PM at Park Layne Elementary School. The purpose of this meeting was to introduce the public to the study and to obtain their initial comments on the perceived deficiencies in the study area. A formal presentation was given by the CCSTCC and TranSystems during the open house, which explained the background of the study, identified problems along the corridor, and

general concepts to fix these problems. Following the presentation, attendees were divided into small groups where they were asked to share their concerns regarding the study area and suggest potential solutions for these areas of concern. Exhibits and handouts explaining the purpose and need for the study were available at the meeting and were also available on the CCSTCC's website after the meeting. The study team received eight comments during the first meeting's public involvement period.

Following the first public meeting, various intersection treatments and access management strategies were considered for the SR 235 corridor from Dille Road to south of Dalton Drive. Several concepts were prepared which included, but were not limited to, medians, roundabouts, u-turns, and jug handles. These concepts were presented to the public at the second open house.

The second public open house was held on April 18, 2012, from 6:00 to 7:30 PM at Park Layne Elementary School. The purpose of this meeting was to give members of the public the opportunity to view the proposed safety and access management improvement concepts for the corridor, ask questions about them, and share their feedback. A formal presentation was also given which discussed proposed improvement concepts in detail. A video showing the existing conditions at several access points along SR 235 was also shown during the formal presentation. The study team received nine comments during the second meeting's public involvement period.

The second public meeting resulted in public opposition to the installation of a raised median for fear that it would adversely impact the businesses located in the Park Layne area. Given these concerns and the high cost associated with constructing the improvement concepts shared with the public, a scaled back concept (Concept 3A) was developed to focus on pedestrian safety, driveway consolidation and other corridor enhancements that would support the purpose and need for the improvements.

A final recommended concept was prepared with the following highlights (see **Figure 15** in report):

1. Access Management: Consolidation of driveways on the west side of SR 235 was identified with an emphasis between Dille Road and Gerlaugh Road.
2. Construct two midblock crossings -- one near Hocker Avenue and one near Hartley Avenue -- to better accommodate pedestrians crossing SR 235.
3. Construct sidewalk along the west side on SR 235 from the proposed Dollar General site to Dalton Drive.
4. Construct a multi-use path on the east side of SR 235 between Dille Road and Dalton Drive.
5. Reconstruct traffic signal at Styer Drive intersection with full pedestrian features.
6. Install corridor lighting from Dille Road to Gerlaugh Road.
7. McAdams Drive access point consolidation: McAdams will be converted to a cul-de-sac north and south of Styer Road, and south of Hartley Avenue. The two existing driveways between Hocker Avenue and Styer Drive will be closed and replaced with a single access point.
8. Hocker Avenue access to SR 235 will be removed and consolidated with McAdams Drive, thereby utilizing a common access drive as identified in item #7 above.

The estimated cost of the proposed improvements is \$3 million in year 2018 dollars.

ODOT implemented a restriping and minor widening project at the SR 235 and US 40 intersection to better accommodate left turning traffic. No other capacity altering improvements were required in conjunction with the recommended improvements within Park Layne. With respect to the existing safety problems, the provisions identified above will serve as countermeasures. Specifically, the mid-block crosswalks and upgrade of the Styer Drive traffic signal installation will provide marked locations designated for the purpose of facilitating pedestrians crossing SR 235. Sidewalk and multi-use path provisions will connect these crossing locations to create a system of travel for pedestrians and bicyclists. Corridor lighting will address night time visibility concerns for motor vehicles and pedestrians. Lastly, the consolidation of driveways will reduce the occurrence of angle and rear end crashes on the corridor.

1.0 INTRODUCTION

1.1 BACKGROUND AND PURPOSE & NEED

The Clark County-Springfield Transportation Coordinating Committee (CCSTCC), in conjunction with the Ohio Department of Transportation (ODOT), has retained TranSystems Corporation to conduct a corridor management study along a portion of SR 235 in Clark County. The purpose of this planning study is to (1) address known safety and access concerns, particularly within the Park Layne area where an exceptionally high number of drives are present and (2) to identify improvements that will result in a safe traversable corridor for motor vehicles, pedestrians and bicyclists.

1.2 LIMITS OF THE STUDY AREA

The limits of the study area are from the Montgomery County line, south of Gerlaugh Road to the US 40 intersection to the north, a distance of roughly two miles. The approximate limits of the study area are shown in **Figure 1**. In terms of connectivity to the transportation network, SR 235 has an interchange with Interstate 70 approximately 0.8 miles south of the southern limit for this planning study. SR 235 runs north-south while Interstate 70 and US 40 service traffic entering and exiting the study area from the east and west.

2.0 EXISTING (2011) CONDITIONS

2.1 EXISTING ROADWAY & PEDESTRIAN ACCOMMODATIONS

The functional classification of SR 235 is *Urban Collector* in the project area. The functional classification map for Clark County is contained in **Appendix A**. SR 235 in the project area, also known as South Dayton Lakeview Road, has two 12-foot lanes plus 8-foot shoulders on either side. A two-way 12-foot center turn lane is present from Dille Road to Dalton Drive. The speed limit on SR 235 varies between 45 MPH and 55 MPH. It changes between Dille Road and Bellefontaine Road with the section to the south being posted at 45 MPH and the northern segment being 55 MPH. A designated school zone is present along the frontage of Park Layne Elementary School north of Hartley Avenue and encompassing the Dille Road intersection at SR 235. The intersections of Gerlaugh Road, Styer Drive and US 40 are under signal control. The lane usage and traffic control at the key intersections in the study area are also shown in **Figure 1**.

Currently, there are two crosswalks within the study area, one at Styer Drive and one at Gerlaugh Road. No other crosswalks, pedestrian signals or signs exist in the area. No pedestrian pathways or sidewalks are present along SR 235. A sidewalk extends from the north end of McAdams Drive, north of Hartley Avenue, to Park Layne Elementary School; however, this walkway does not run alongside SR 235.

McAdams Drive is a 25 MPH frontage road that runs parallel to SR 235 from Hocker Avenue to just north of Hartley Avenue. The close proximity of McAdams Drive to SR 235 creates spacing issues which lead to vehicular backups and undesirable pedestrian conditions where driveways and cross streets intersect.

Clark County Auditor's mapping and GIS shape files were used to obtain additional existing information such as right-of-way and roadway centerlines. Utility companies were contacted to obtain existing (Level D) information, which was incorporated into a base map for the study area. Information on existing utilities is included in **Appendix A**.



Figure 1 Study Area

A number of prior studies have been performed within the study area and have been referenced for this study along with other sources of technical information as listed below:

- CLA-235-0.78 SR 235 & Hocker Avenue Signal Warrant Analysis (2010)
- Local Safety Hot Spots for Clark County (2011)
- Abbreviated Safety Study – CLA US 40 & SR 235 (2010)
- HSP Safety Study: Clark County SR 235 – Park Layne Safety Study (2010)
- Tecumseh Trail Phase 3 Final Feasibility Study (2010)
- Preliminary Site Plan – Proposed 10,000 square-foot Dollar General (2011)
- CLA-40/235 Intersection Realignment Plans (2010)

The intersection of US 40 & SR 235 has since been realigned (in 2012) by changing the through/left and right turn lanes on US 40 to provide dedicated left turn lanes and through/right lanes in the eastbound and westbound directions on US 40.

2.2 TECUMSEH TRAIL

The Tecumseh Trail is a shared use trail that runs from Lake Avenue to State Route 235 in the City of New Carlisle. The trail is a north/south transportation corridor through the City that connects two parks and is approximately 1.75 miles long. The Tecumseh Trail Phase 2 extension project would extend the trail approximately 0.7 miles from its current termini at SR 235 to the former YMCA building south of New Carlisle. Phase 2 is currently under construction and scheduled for completion in October/November 2012. A feasibility study was completed in 2010 to analyze Phase 3 of the trail which would extend further south to Raynor Park in Park Layne. One of the recommended alignments followed SR 235 into Park Layne which included the current corridor under study.

2.3 RED FLAG SUMMARY

An environmental summary was conducted to support the Clark County-Springfield Transportation Coordinating Committee (CCSTCC) for the SR 235 corridor planning study in Clark County. Rather than undertake a comprehensive red flag summary during this preliminary planning phase, the emphasis was placed on the environmental portion of ODOT's red flag summary. The purpose of this task was to identify environmental considerations that may arise with Cultural Resources, Ecological Resources, Hazardous Materials, Noise Implications, and Environmental Justice. The environmental red flag summary report is contained in **Appendix A**. In summary, while TranSystems noticed some sites that may require further investigation, there were no items that would require the project to be canceled or necessitate an alternative solution to that proposed herein. A summary of the key disciplines follows below.

Cultural Resources

In October 2011, a cultural resources literature review was conducted at the Ohio Historic Preservation Office (OHPO). The purpose of the secondary source review (Red Flag Summary) was to identify previously recorded cultural resources with the study area. For the purpose of this research, the study area represents a roughly 1,000' wide corridor along SR 235. There are no previously listed structures on the NRHP within the study corridor.

Additionally, there are no sites previously recorded in the Ohio Historic Inventory (OHI). During field investigations, the property at 523 South Dayton Lakeview Road (SR 235) appears to be eligible for the National Register of Historic Places. The two story brick structure is known throughout the community as being the two room school house for the area. The auditor website and the current owner state that the structure was built in 1870.



There are two archaeological sites that have been previously recorded in the project area. 33-CL-0565 is located at the southeastern corner of US 40 and SR 235. The second archaeological site is 33-CL-0566 located within the same field as 33-CL-0565 directly behind the property located at 190 South Dayton Lakeview Road. These are both unnamed sites. Also of note is the Mennonite Cemetery located within the study corridor. The cemetery is located at the northwestern edge of the Mennonite Church property at 1885 Dayton Lakeview Road. It is unknown how old or how long the graveyard was in use and/or if it is still in use today.

Ecological Resources

An Ecological Red Flag Survey was conducted for the SR 235 study area per ODOT'S Environmental Process Manual Section 104.2. During the survey, three streams were noted. The property located at 570 South Dayton Lakeview Road had a stream and culvert on its property. The second stream is located behind McDonalds and the Sunoco gas station flowing south until merging with the third stream north of the SR 235 and Gerlaugh Road intersection. There is a private residential property located off of Gerlaugh Road which has a pond on the property, directly adjacent to the southeastern terminus of the study area. The National Wetland Inventory (NWI) map does not indicate any wetlands within the study corridor. The area north of the project area is a FEMA designated floodplain.

Hazardous Materials/Environmental Site Assessment

According to the Envirofacts Database and the Bureau of Underground Storage Tank Regulation (BUSTR), five facilities are located within the study area:

- 1625 South Dayton Lakeview Road - Speedway
- 1951 South Dayton Lakeview Road - Advantage Car and Credit
- 2131 South Dayton Lakeview Road -Sunoco Station
- 3330 South Dayton Lakeview Road - True Value Hardware
- 680 McAdams Street - formerly BP Oil, currently Auto Sales

Noise and Environmental Justice

According to the USEPA Enviromapper there are no sensitive environmental justice areas. The parameters searched for the study area include: percent below poverty level, per capita income, percent minority, and population density by block. In addition, there seem to be no noise related concerns.

2.4 TRAFFIC COUNTS

TranSystems was provided with recent count data, which were supplemented by additional traffic counts performed as part of this study. Available counts included a year 2010 intersection turning movement count at SR 235 and Hocker Avenue as well as 24-hour counts that were taken in 2010 at multiple locations on SR 235 within the study area. The summary of the Average Daily Traffic (ADT), 85th percentile speeds and truck percentage is provided in **Table 1**. The reports are contained in **Appendix B**.

Table 1 Summary of 2010 Average Daily Traffic (ADT)

Route	Location	Date of Count Mon-YR	NB Lane			SB Lane			Total ADT	Truck %
			Total Volume	Trucks	85% Speed (mph)	Total Volume	Trucks	85% Speed (mph)		
CLA-235-0.39	800' N of Gerlaugh	May-10	7,003	235	49.92	6,891	261	49.90	13,894	4%
CLA-235-0.50	1400' N of Gerlaugh	Apr-10	6,800	231	49.42	7,053	244	49.85	13,853	3%
CLA-235-0.70	425' S of Hocker	Apr-10	6,777	203	42.11	7,037	262	49.34	13,814	3%
CLA-235-0.86	425' N of Hocker	Apr-10	5,779	196	39.96	6,552	240	44.47	12,331	4%
CLA-235-1.12	60' N of Dale Ridge	Apr-10	6,820	207	42.88	6,997	213	41.75	13,817	3%
CLA-235-1.32	0.2 Mile S of Dille Rd	May-10	6,856	195	45.45	7,002	247	50.87	13,858	3%
CLA-235-1.46	300' S of Dille Rd	May-10	6,615	203	47.23	6,963	251	50.98	13,578	3%

Dynotec, as a subconsultant to TranSystems, performed turning movement counts and intersection inventories at various locations within the study corridor. Turning movement counts were performed in August 2011 for three distinct time periods – 7:00 – 9:00 AM, 11:00 AM – 1:00 PM and 4:00 – 6:00 PM, using standard 15-minute intervals. The intersection of McAdams Drive at Styer Drive was counted for the 7:00 – 9:00 AM, 12:00 – 1:00 PM and 5:00 – 6:00 PM time periods to assess traffic activity on this parallel frontage road on the east side of SR 235. The counts were performed for the following intersections:

SR 235 at:

- US 40/W. National Road (Signalized) – 6 hour count
- Dille Road (Stop control) – 6 hour count
- Dale-Ridge Road (Stop control) – 6 hour count
- Styer Drive (Signalized) – 6 hour count
- Hartley Ave (Stop control) – 6 hour count
- Dalton Drive (Stop control) – 6 hour count
- Gerlaugh Road (Signalized) – 6 hour count

McAdams Drive at:

- Styer Drive (Stop control) – 4 hour count

In addition to the above, the Clark County Engineer's Office performed a peak hour turning movement count (1 hour AM and 1 hour PM) for the SR 235 and Bellefontaine Road intersection in February 2012. **Appendix B** contains the count data for the entire study area as referenced above. **Figures 2** and **3** show the existing (2011) AM and PM peak hour volumes at the study intersections. Traffic volumes were balanced where necessary.

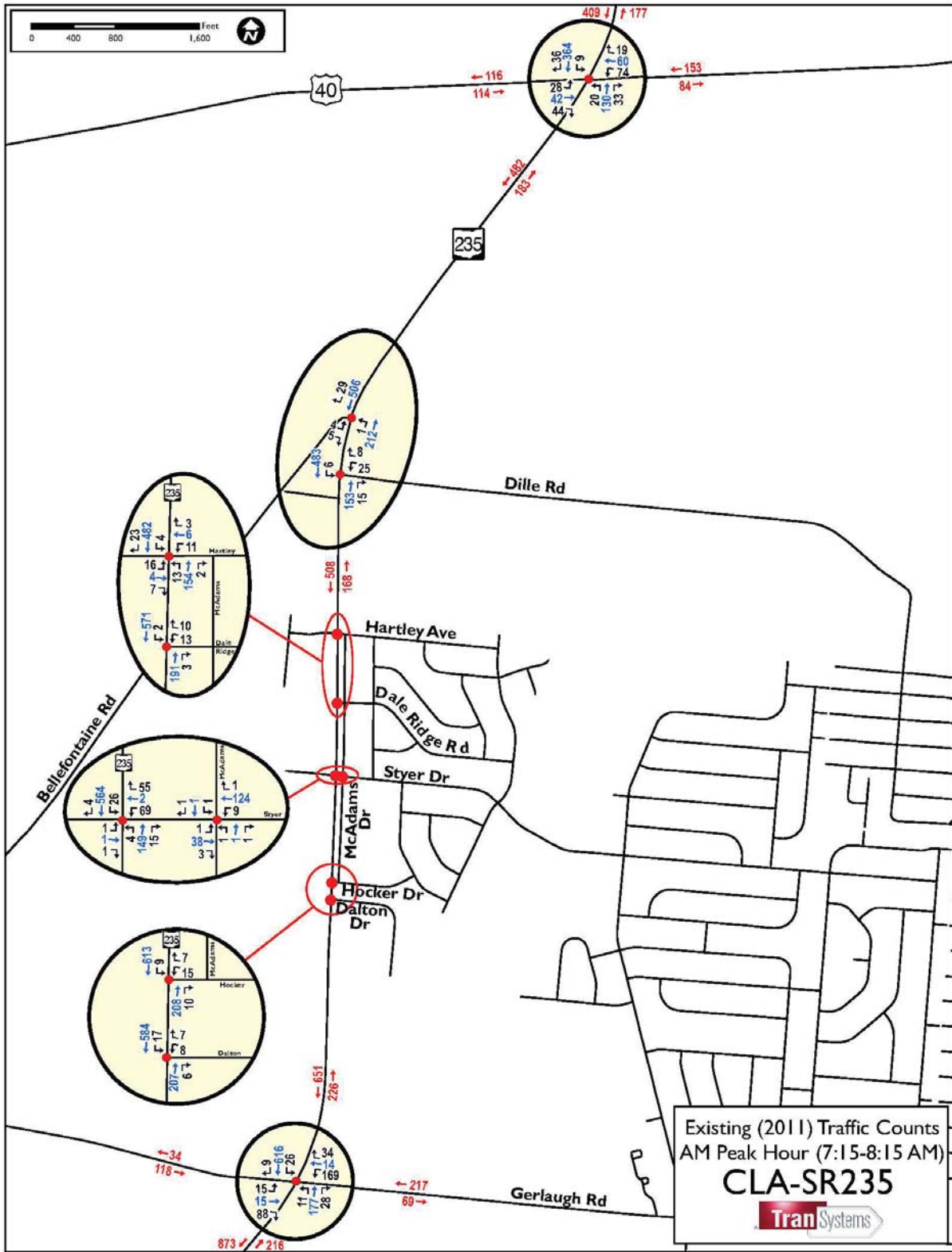


Figure 2 Existing (2011) AM Peak Hour Traffic Volumes

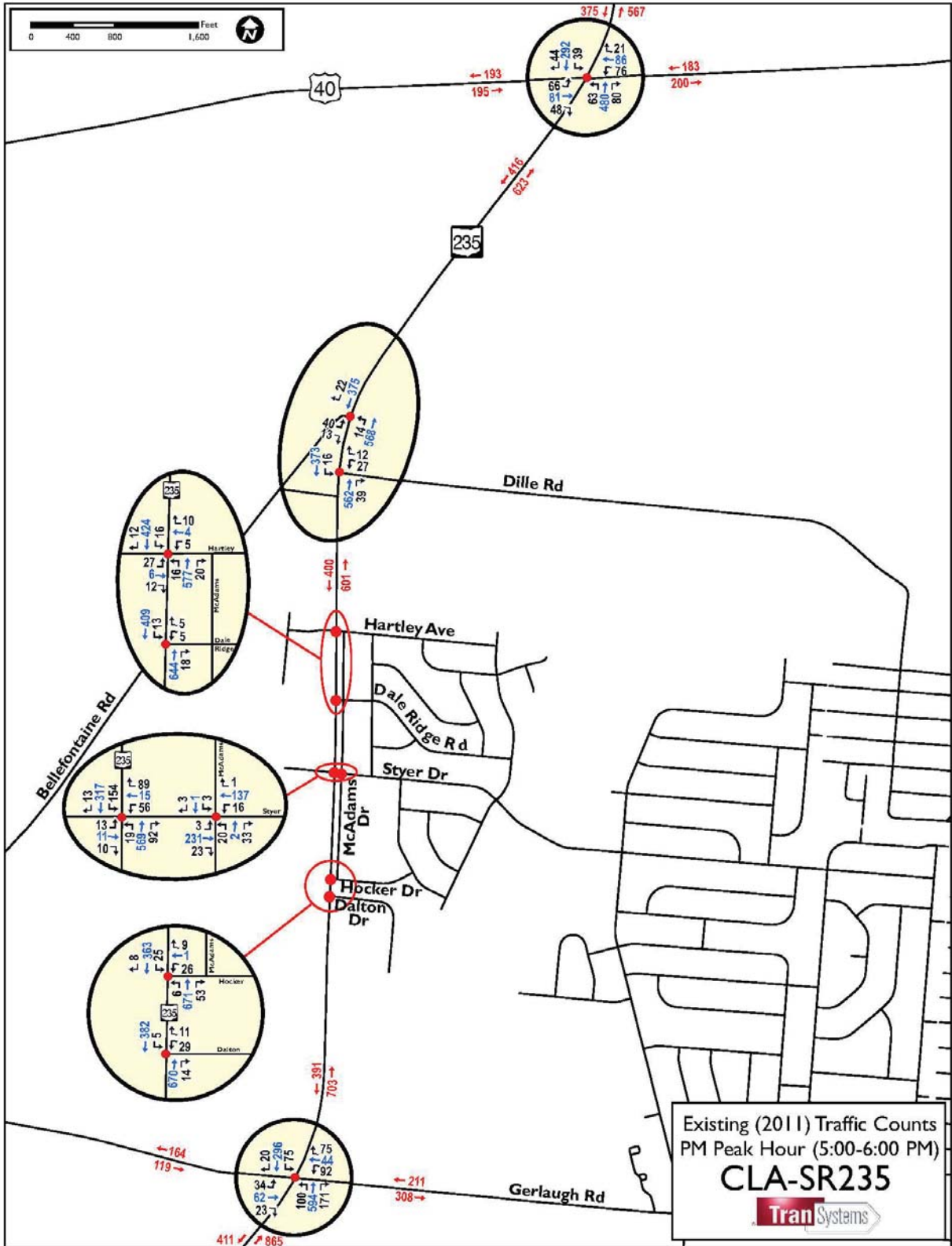


Figure 3 Existing (2011) PM Peak Hour Traffic Volumes

Video data was also collected by ODOT on SR 235 south of Styer Drive near the McDonald's entrance and along McAdams Drive in the vicinity of Hocker Avenue. The recording was made from 6:00 AM to 6:00 PM during October 2011. The Hocker/McAdams intersection and the adjacent Mel-O-Dee Restaurant access driveway (shown at right) were observed and determined to be the site of many dangerous traffic maneuvers. Summary count data from ODOT's video for SR 235 near Hocker Avenue and the McDonald's entrance are contained in **Appendix B**.



2.5 CRASH ANALYSES

Clark County Springfield Transportation Coordinating Committee (CCSTCC) supplied TranSystems with CAM-tool worksheets and OH-1 crash reports for the four-year period 2007-2010. The data was summarized on aerial photography and is shown in **Figure 4**. Table summarizing the crashes at intersections and on roadway segments by type, severity, road condition and time of day is contained in **Appendix C**.

A total of 117 crashes (87 intersection related and 30 segment related) occurred in the four-year period (2007-2010). About 65 percent of the total crashes were rear-end or angle type while 36 were injury crashes. There were a total of six fatalities recorded in the study area, three of which were pedestrians attempting to cross SR 235. Details on the crash data can be found in **Appendix C**. Also, to reinforce the documented concerns over safety, while outside the analyzed set of crash data, another fatal crash occurred on September 11, 2012, between an eastbound vehicle exiting McDonald's and a vehicle traveling southbound on SR 235.

Intersection crash rates in crashes per million entering vehicles (MEV) were computed at the study intersections. **Table 2** shows these crash rates. The mean plus one standard deviation computes to 0.87. The SR 235/US 40 and SR 235/Gerlaugh Road intersections have a crash rate higher than the mean plus standard deviation rate.

Table 2 Intersection Crash Rates

Intersections	Crash Rate per MEV
SR 235 & US 40	1.04
SR 235 & Bellefontaine	0.24
SR 235 & Dille Road	0.10
SR 235 & Hartley Ave	0.23
SR 235 & Styer Rd	0.55
SR 235 & Hocker Ave	0.32
SR 235 & Dalton Dr	0.14
SR 235 & Gerlaugh Road	1.12
MEAN	0.47
STANDARD DEVIATION	0.40
MEAN + STND DEV	0.87



Figure 4 Summary of 2007-2010 Crash Data

Segment crash rates (crashes per million vehicle-miles of travel (MVMT) were computed for SR 235 based on the four years of crash data. The crash rate on SR 235 was divided into segments as shown in **Table 3**. The segment of SR 235 between Styer Drive and Dalton Drive has a crash rate of 1.96 crashes MVMT, which is higher than the mean plus standard deviation rate of 1.61 crashes per MVMT. The crash rate for this segment is also higher than the statewide average of 1.09 for a two-lane urban collector. It should be noted that the crash rate computed for SR 235 is based on 2007-2010 crash data and the ODOT statewide average used for comparison is for the three year period 2008-2010. The crash rate computations and the statewide averages can be found in **Appendix C**. Possible causes for the high crash rate on SR 235 between Styer Drive and Dalton Drive are multiple driveways along SR 235 with no turning restrictions and with virtually no pedestrian accommodations. The *Park Layne Safety Study* referenced earlier in the report suggested installation of a concrete median between Styer Drive and Hocker Avenue of as Medium-Long Term/Higher Cost countermeasure in addition to several short term improvements which included crosswalks, pedestrian signals and roadway lighting among others.

Table 3 Segment Crash Rates

Segments	Crash Rate per MVMT
SR 235 Between US 40 & Bellefontaine	0.95
SR 235 Between Bellefontaine & Hartley	0.81
SR 235 Between Hartley & Styer	1.04
SR 235 Between Styer & Dalton	1.96
SR 235 Between Dalton & Gerlaugh	0.34
MEAN	1.02
STANDARD DEVIATION	0.59
MEAN + STND DEV	1.61

In the 2011 Clark County Local Safety Hot Spots document, SR 235 at Styer Drive was ranked as the #2 rural hot spot, SR 235 at Hocker Avenue was ranked as the #6 rural hot spot, SR 235 at Gerlaugh Road was ranked as the #9 rural hot spot, SR 235 at US 40 was ranked as the #10 rural hot spot, and SR 235 at Hartley Avenue was ranked as the #32 rural hot spot in the County. For reference, the complete documentation of the hot spot listing can be found at the following web address: <http://www.clarktcc.com/crashes.htm>

2.6 ACCESS MANAGEMENT

Based on the ODOT District 7 Access Inventory, SR 235 is a Category 3 roadway. The minimum spacing based on ODOT’s State Highway Access Management Manual for a Category 3 roadway is 495’ for 55 mph and 360’ for 45 mph. The speed limit on SR 235 is 45 mph and changes to 55 mph just north of Dille Road. **Table 4** shows the number of driveways for various segments along SR 235. It then compares the average spacing between driveways with the ODOT minimum driveway spacing.

A total of 57 driveway access points are present within the study area, which are on average 200 feet apart; this is considerably less than the minimum 360 feet ODOT recommendation within the 45 MPH posted speed limit zone. The highest segment crash rate for SR 235 between Styer Drive and Dalton Drive (discussed in the previous section) can be attributed in part to these closely spaced commercial driveways, particularly on the west side of SR 235.

Table 4 Average Driveway Spacing along SR 235

SR 235 Segment	Segment Length (feet)	Number of Driveways	Average Spacing between Driveways (Feet)	ODOT Minimum Driveway Spacing* (feet)
US 40 to Bellefontaine	3900	16	244	495
Bellefontaine to Dille	565	3	188	360
Dille to Hartley	1500	4	375	360
Hartley to Dale Ridge	670	5	134	360
Dale Ridge to Styer	700	5	140	360
Styer to Hocker	1015	9	113	360
Hocker to Dalton	171	2	86	360
Dalton to Gerlaugh	2738	13	211	360
Study Area Totals	11,259 (2.1 mi)	57	198	360/495

*Minimum Spacing based on ODOT Access Management for Category 3 Roadway (SR 235) is 495’ for 55 mph and 360’ for 45 mph.

2.7 CAPACITY ANALYSES

Capacity analyses were performed using the Highway Capacity Manual 2000 methodologies. Synchro 7 software was used for the stop-sign control and signal analyses.

The standard criterion used to define quality of traffic flow is “level of service” (LOS). This is a qualitative assessment of factors such as speed, volume, geometry, delays, and ease of maneuvering. Six level of service grades represent the possible operating conditions; these levels range from LOS A, representing the best operating condition, to LOS F, representing the worst. The LOS criteria for TWSC (Two-Way Stop Controlled Intersections) and signalized intersections are shown in **Table 5**. Typically, a roadway component is seen as acceptable if the corresponding level of service is LOS D or better. The Synchro LOS reports are contained in **Appendix D**. The summary of the capacity analysis findings is shown in **Table 6**.

Table 5 LOS Criteria for Intersections

LOS*	Control Delay (Seconds per Vehicle)	
	Unsignalized	Signalized
A	0 - 10	0 - 10
B	> 10 -15	> 10 -20
C	> 15 - 25	> 20 - 35
D	> 25 - 35	> 35 - 55
E	> 35 - 50	> 55 - 80
F	> 50	> 80

Table 6 LOS Summary: Existing Condition

Intersection #	Intersection	Intersection Control	Approach	Geometry	2011 AM			2011 PM		
					Delay (Seconds)	LOS	VC*	Delay (Seconds)	LOS	VC*
1	SR 235 & US 40**	Signal	Eastbound	L, TR	11.6	B	0.26	18.9	B	0.47
			Westbound	L, TR	11.8	B	0.29	18.6	B	0.39
			Northbound	L, T, R	8.4	A	0.23	9.5	A	0.60
			Southbound	L, TR	14.4	B	0.72	9.3	A	0.46
			Intersection				12.3	B	0.54	12.0
2	SR 235 & Dille Rd	Dille under Stop Control	Westbound	LR	11.4	B	0.06	13.6	B	0.09
			Northbound	T, R	NA	NA	NA	NA	NA	NA
			Southbound	L, T	7.6 [L]	A	0.32	9.0 [L]	A	0.24
3	SR 235 & Hartley Ave	Hartley under Stop Control	Eastbound	LTR	12.8	B	0.06	15.8	C	0.13
			Westbound	LTR	12.6	B	0.04	14.4	B	0.05
			Northbound	L, TR	8.6 [L]	A	0.10	8.4 [L]	A	0.39
			Southbound	L, TR	7.6 [L]	A	0.33	9.0 [L]	A	0.28
4	SR 235 & Dale Ridge Rd	Dale Ridge under Stop Control	Westbound	LR	11.3	B	0.04	13.7	B	0.03
			Northbound	TR	NA	NA	NA	NA	NA	NA
			Southbound	L, T	7.7 [L]	A	0.37	9.5 [L]	A	0.27
5	SR 235 & Styer Rd	Signal	Eastbound	LTR	15.3	B	0.01	25.6	C	0.19
			Westbound	L, TR	16.6	B	0.31	28.6	C	0.56
			Northbound	L, TR	7.0	A	0.21	13.5	B	0.73
			Southbound	L, TR	12.0	B	0.72	6.8	A	0.44
			Intersection				11.7	B	0.59	13.2
6	Styer Rd & McAdams Dr	McAdams under Stop Control	Eastbound	LTR	0.0	A	0.00	0.1	A	0.00
			Westbound	L, TR	7.3 [L]	A	0.08	7.8 [L]	A	0.09
			Northbound	LTR	9.8	A	0.00	11.2	B	0.09
			Southbound	LTR	9.0	A	0.00	11.0	B	0.01
7	SR 235 & Hocker Rd	Hocker under Stop Control	Westbound	LR	12.1	B	0.05	15.1	C	0.10
			Northbound	TR	NA	NA	NA	NA	NA	NA
			Southbound	L, T	7.7 [L]	A	0.40	9.5 [L]	A	0.24
8	SR 235 & Dalton Dr	Dalton under Stop Control	Westbound	LR	11.4	B	0.03	14.9	B	0.11
			Northbound	TR	NA	NA	NA	NA	NA	NA
			Southbound	L, T	7.7 [L]	A	0.38	9.3 [L]	A	0.25
9	SR 235 & Gerlaugh Rd	Signal	Eastbound	LTR	17.4	B	0.31	26.8	C	0.58
			Westbound	L, TR	18.6	B	0.51	25.2	C	0.53
			Northbound	L, T, R	10.3	B	0.24	11.1	B	0.69
			Southbound	L, TR	19.0	B	0.81	8.4	A	0.37
			Intersection				17.2	B	0.62	13.5

* Highest V/C

** The capacity analyses are based on the improved lane configurations on US 40 as implemented by ODOT in 2012

As can be seen from table 6 on the previous page, all the study intersections operate at acceptable levels of service (LOS C or better) with present day traffic. This suggests that the current safety problems within the study corridor are not the result of traffic congestion or excessive travel delays.

3.0 FUTURE (2035) CONDITIONS

3.1 2035 TRAFFIC VOLUMES

Future traffic volumes for a study horizon year of 2035 were determined based on general growth in existing traffic volumes along with traffic generated by specific development projects that will impact the study intersections.

Background Growth: A linear growth rate of 0.5 percent per year was applied to current (2011) traffic volumes for 24 years (growth factor of 1.12) to obtain general background growth for year 2035. The growth rate was provided by ODOT and the correspondence is provided in **Appendix E**. The traffic volumes at the study intersections with just the growth are also contained in this appendix.

Background Development: In addition to the general growth, three nearby properties were identified as potential sites for future land developments. **Figure 5** shows the location of these properties along with the developable area.

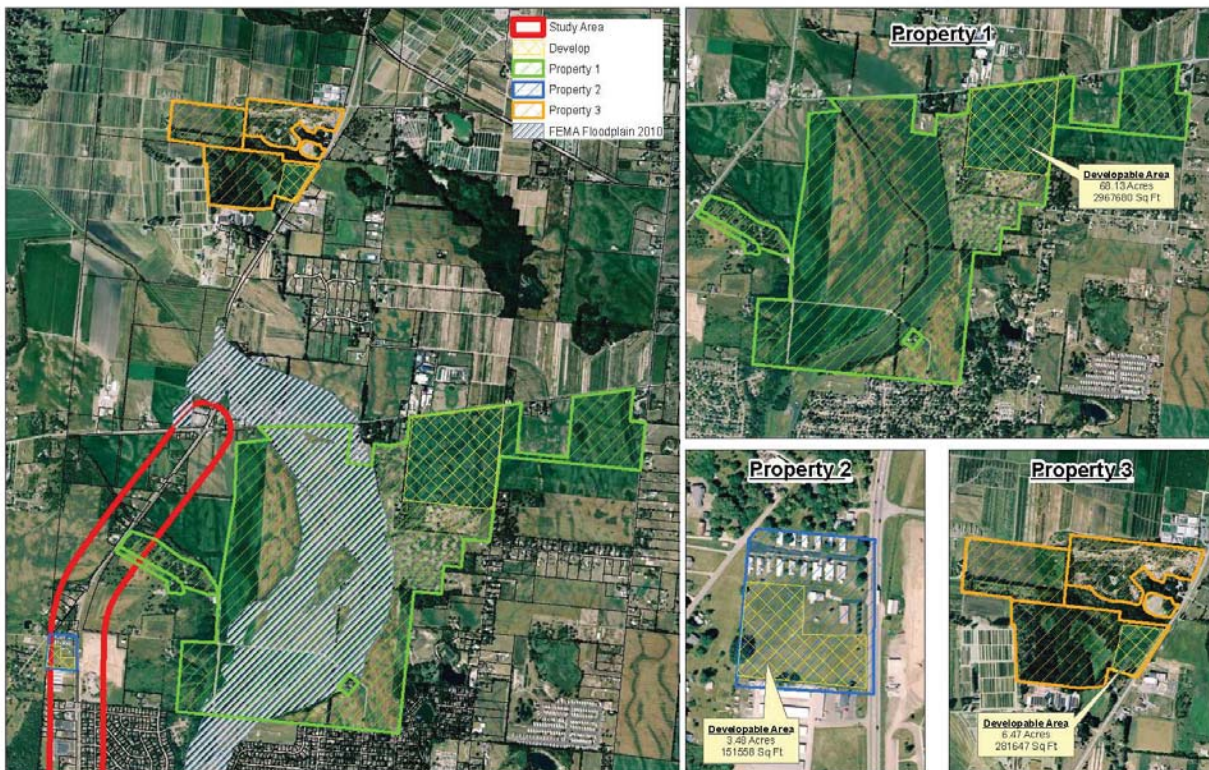


Figure 5 Background Developments

Based on the developable area, the following were assumed for the three properties shown in the above figure.

- Property 1 – 220 dwelling units of Single Family homes & 320,000 square feet (SF) of Shopping Center.
- Property 2 – Dollar General Store.

- Property 3 – 150,000 SF of office space and 131,000 SF of Shopping Center.

Table 7 provides the trip generation summary for each property for the AM and PM peak hours. The trip generation was based on the Institute of Transportation Engineers (ITE) Trip Generation Manual. Details on the trip generation are provided in **Appendix E**. The total trips from these three properties were assigned to the roadway network based on the directional distribution shown in the far right column of **Table 7**. The assignment of the traffic at the study intersections can be found in **Appendix E**.

Table 7 Trip Generation for Background Developments

Property	Description	Size	Variable	AM Peak Hour			PM Peak Hour			% of Trips To/From SR 235 S of US 40
				New Trips	Enter	Exit	New Trips	Enter	Exit	
Property 1	Residential - Single Family	220	Dwelling Units	165	41	124	178	112	66	30%
	Shopping Center	320	1000 SF	256	156	100	630	309	321	
	Property 1 Total	Total Trips ->		421	197	224	808	421	387	
Property 2	Dollar General Store	15	1000 SF	14	10	5	62	31	31	100%
Property 3	Office	150	1000 SF	233	205	28	212	36	176	35%
	Shopping Center	131	1000 SF	105	64	41	306	150	156	
	Property 3 Total	Total Trips ->		337	269	69	519	186	332	
Total New Trips by Background Projects				773	476	297	1,389	638	751	

Horizon year 2035 traffic volumes shown in **Figures 6** and **7** were determined by adding traffic generated by the background developments to the 2035 background traffic volumes (current traffic volumes and growth for 24 years).

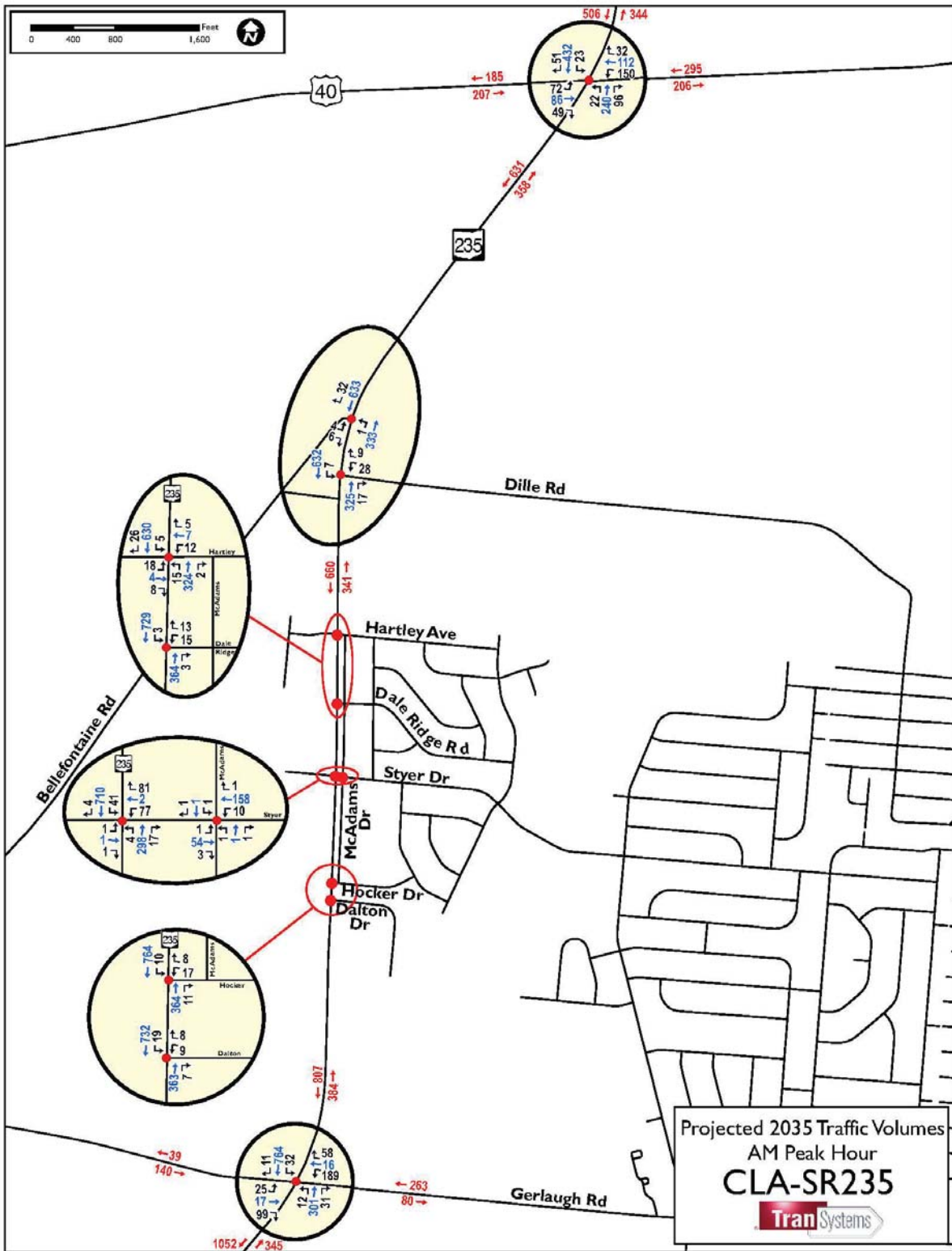


Figure 6 2035 AM Peak Hour Traffic Volumes

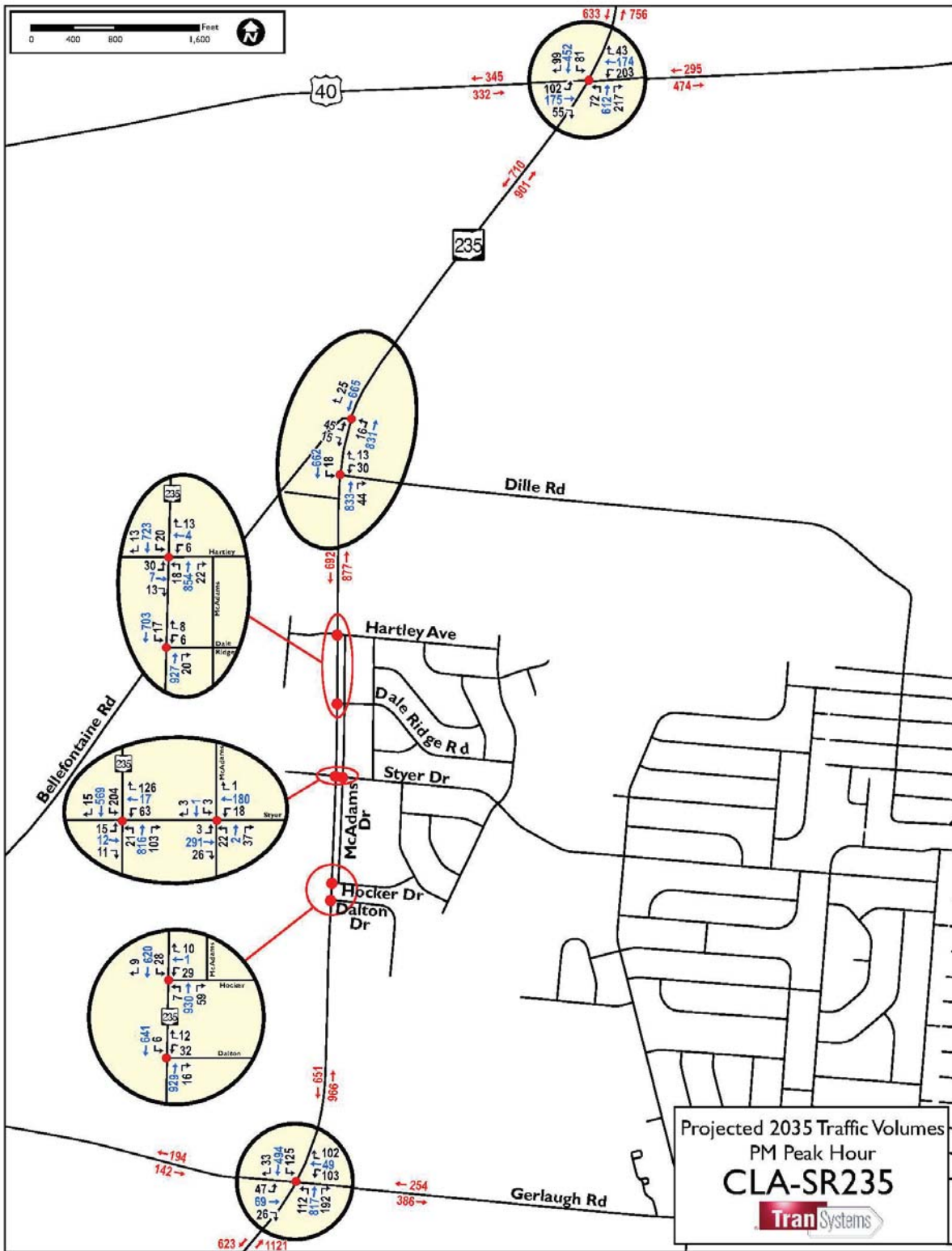


Figure 7 2035 PM Peak Hour Traffic Volumes

3.2 CAPACITY ANALYSES

Capacity analyses were performed for the study intersections using 2035 traffic volumes. **Table 8** summarizes the results of the Synchro analyses. In summary, the study intersections will all operate at LOS D or better during both the peak hours. This suggests that no changes to the type of traffic control are necessary from a travel delay or intersection operations standpoint. It also further reinforces the conclusion from the year 2011 analyses that congestion is not a contributing factor to the documented safety problems on the corridor.

Table 8 2035 Level of Service Summary

Intersection #	Intersection	Intersection Control	Approach	Geometry	2035 AM			2035 PM		
					Delay (Seconds)	LOS	V/C*	Delay (Seconds)	LOS	V/C*
1	SR 235 & US 40**	Signal	Eastbound	L, TR	15.3	B	0.30	21.9	C	0.46
			Westbound	L, TR	16.2	B	0.48	29.2	C	0.78
			Northbound	L, T, R	11.0	B	0.36	23.4	C	0.84
			Southbound	L, TR	16.7	B	0.73	22.6	C	0.78
			Intersection		14.9	B	0.61	24.0	C	0.78
2	SR 235 & Dille Rd	Dille under Stop Control	Westbound	LR	13.3	B	0.09	18.9	C	0.16
			Northbound	T, R	NA	NA	NA	NA	NA	NA
			Southbound	L, T	8.1 [L]	A	0.41	10.2 [L]	B	0.43
3	SR 235 & Hartley Ave	Hartley under Stop Control	Eastbound	LTR	15.4	B	0.09	25.4	D	0.24
			Westbound	LTR	14.8	C	0.07	20.3	C	0.10
			Northbound	L, TR	9.2 [L]	A	0.21	9.6 [L]	A	0.57
			Southbound	L, TR	8.0 [L]	A	0.43	10.2 [L]	B	0.48
4	SR 235 & Dale Ridge Rd	Dale Ridge under Stop Control	Westbound	LR	13.0	B	0.07	20.9	C	0.06
			Northbound	TR	NA	NA	NA	NA	NA	NA
			Southbound	L, T	8.1 [L]	A	0.48	12.8 [L]	B	0.46
5	SR 235 & Styer Rd	Signal	Eastbound	LTR	18.2	B	0.01	34.0	C	0.19
			Westbound	L, TR	20.3	C	0.38	40.6	D	0.66
			Northbound	L, TR	7.9	A	0.37	36.4	D	0.96
			Southbound	L, TR	13.8	B	0.80	19.1	B	0.84
			Intersection		13.2	B	0.61	29.9	C	0.90
6	Styer Rd & McAdams Dr	McAdams under Stop Control	Eastbound	LTR	0.0	A	0.00	0.1	A	0.00
			Westbound	L, TR	7.4 [L]	A	0.10	8.0 [L]	A	0.12
			Northbound	LTR	10.2	B	0.00	12.2	B	0.12
			Southbound	LTR	9.2	A	0.00	12.0	B	0.01
7	SR 235 & Hocker Rd	Hocker under Stop Control	Westbound	LR	14.6	B	0.07	21.4	C	0.16
			Northbound	TR	NA	NA	NA	NA	NA	NA
			Southbound	L, T	8.2 [L]	A	0.48	11.0 [L]	B	0.41
8	SR 235 & Dalton Dr	Dalton under Stop Control	Westbound	LR	13.5	B	0.04	20.9	C	0.18
			Northbound	TR	NA	NA	NA	NA	NA	NA
			Southbound	L, T	8.2 [L]	A	0.49	10.5 [L]	B	0.42
9	SR 235 & Gerlaugh Rd	Signal	Eastbound	LTR	22.5	C	0.38	34.4	C	0.62
			Westbound	L, TR	27.2	C	0.68	32.1	C	0.57
			Northbound	L, T, R	11.9	B	0.37	18.5	B	0.87
			Southbound	L, TR	25.5	C	0.90	12.9	B	0.61
			Intersection		22.5	C	0.81	19.4	B	0.79

* Highest V/C

** The capacity analyses are based on the improved lane configurations on US 40 as implemented by ODOT in 2012

4.0 ALTERNATIVES EVALUATIONS

Various intersection treatments and access management strategies were considered for the SR 235 corridor. Due to driveway density, land development and other considerations, the focus of these strategies was in the Park Layne area from approximately Dille Road to approximately 1000 feet south of Dalton Drive.



This was further supported through an initial evaluation of technical data, recent and planned improvements along the corridor, feedback from the project stakeholder group and input from the community through the public involvement meeting process. To elaborate on these considerations, Clark County recently completed an intersection improvement project at the SR 235/Gerlaugh Road intersection, which added a left turn lane on the east leg of Gerlaugh Road and provided pedestrian crossing features on the south leg of SR 235. In addition, ODOT had already prepared construction plans for the upgrade of US 40 at SR 235. These

improvements, which consisted of minor widening and restriping on US 40 to provide dedicated left turn lanes, were implemented in 2012. Since Gerlaugh Road and US 40 essentially formed the southern and northern termini of the study, the focus was largely on the developed area located between these intersections.

In addition, a stakeholder group was formed with representatives from ODOT District 7, law enforcement and local governments to discuss known safety problems and to provide regular input throughout the planning process. Two public involvement meetings were held to solicit input from the public. Meeting #1 focused on current areas of concern and deficiency for the corridor. Meeting #2 focused on obtaining comments on the proposed mitigation measures from the stakeholder team. Public involvement is further discussed later in this report. **Appendix F** contains copies of the sign-in sheets from the stakeholder meetings.

The feedback received from the stakeholders and general public provided insight into the areas of concern and suggestions on possible remedies. The key factors that were considered were – safety, access management, bicycle/pedestrian accommodations, streetscape enhancements and future economic development opportunities. Several conceptual alternatives were prepared which included medians, roundabouts, u-turns, jug handles and modifications to the function and connectivity of McAdams Drive. Some of the benefits of these features are:

- A median provided along the SR 235 would eliminate left turns to and from the driveways along the corridor.
- The roundabouts would give motorists the ability to make a legal u-turn and provide indirect full access to all the existing uses. The geometry of the roundabouts would also reduce the approach speeds on SR 235, and the number of conflict points at intersections. Side street traffic can enter the roundabout safely by yielding to the traffic in the circulatory roadway (coming from left) which is at a much lower speed. Due to the low side street volumes, intersections that are presently under stop sign control are not expected to meet the requirements to install a traffic signal.
- In concepts where roundabouts were not present, U-turns and jug handles provided opportunity to make legal u-turns.
- Restrictions along McAdams Drive would reduce conflict points, improve spacing and storage at intersections along SR 235 and discourage its use as a through roadway.

Traffic volumes were adjusted at study intersections where necessary and capacity analyses were performed to determine the footprint of the roundabouts or signalized intersections. The design criteria used is contained in **Appendix G**. The three primary concepts initially developed and presented to the public for comment are discussed briefly below.

Concept 1

This concept includes a raised median along SR 235 from south of Dille Road to just south of Dalton Drive. Median breaks will be provided at Hartley Avenue, Styer Drive, and Dalton Drive. Jug handles will be added at the northern and southern ends of the corridor to provide turn-around locations to access areas within the limits of the median. The intersection at Styer Drive will be signalized and will accommodate U-turns; the jug handles may be signalized based on future traffic levels. Hocker Avenue will be redirected along McAdams Drive in conjunction with consolidating access points on the east side of SR 235. McAdams Drive north-south connectivity will be disrupted to improve safety. A northbound left turn lane will be added on SR 235 at the Bellefontaine Road intersection. The east side of SR 235 will have a multi-use path for use by pedestrians and bicyclists. **Figure 8** shows this concept.

Concept 2

This concept (as shown in **Figure 9**) is nearly the same as Concept 1 except median breaks for u-turns will be provided in place of the jug handles. U-turn areas will be added at the northern and southern ends of the corridor as well as at the signalized Styer Drive intersection; these will provide turn-around locations to access areas within the limits of the median.

Concept 3

This concept builds on Concept 2 by providing u-turn areas at the northern and southern limits of the raised median; however, roundabouts will be added along SR 235 at the intersections with Hartley Avenue, Styer Drive, and Dalton Drive. Portions of SR 235 may require widening for an additional through lane based on future traffic levels. SR 235 is shown with two through lanes in the northbound and southbound direction, something that may be necessary to accommodate future traffic demands with roundabout intersection control. This concept is shown in **Figure 10**.

Backage Road

This concept includes a backage road running parallel to SR 235 on the west side of the roadway. This would provide the potential for new development to occur along the backage road. The backage road would tie into Coachill Lane to the north (near Hartley Avenue) and run south, tying into the existing SR 235/Dalton Drive intersection. While this concept would not directly alter access along SR 235, it may shift some local trips onto the backage road. An additional backage road with land development potential would extend Dalton Drive to the south, tying into SR 235 from the east. This concept could be built in conjunction with any of the three SR 235 concepts, or be constructed in a standalone manner without a raised median or other improvements. **Figure 11** shows the two backage road concepts.

The concepts shown in **Figures 9-11** along with the associated typical sections (A-A, B-B & C-C) referenced on these drawings are provided in **Appendix F** under the subsection titled *Open House 2*.

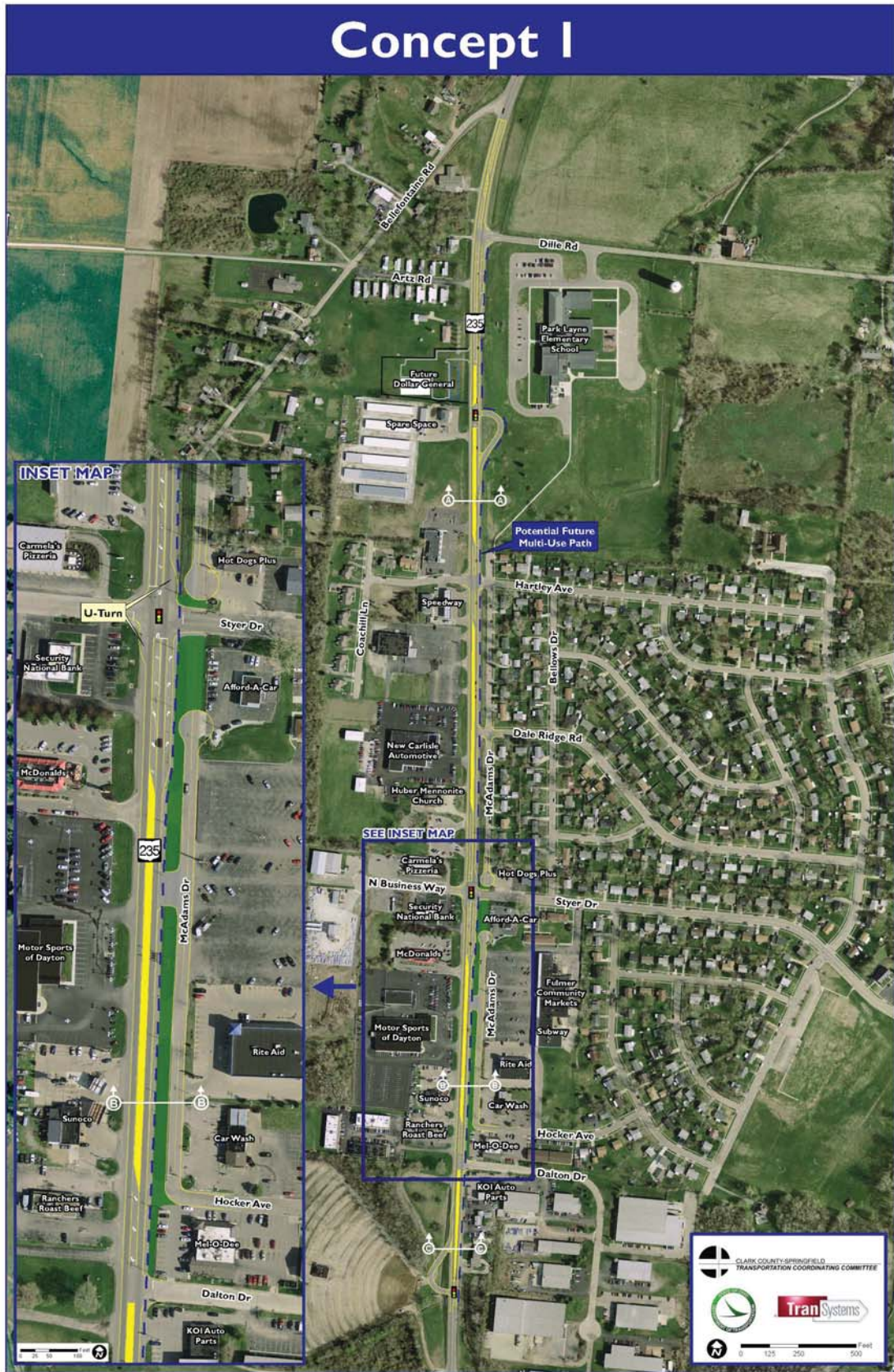


Figure 8 SR 235 Corridor Concept 1

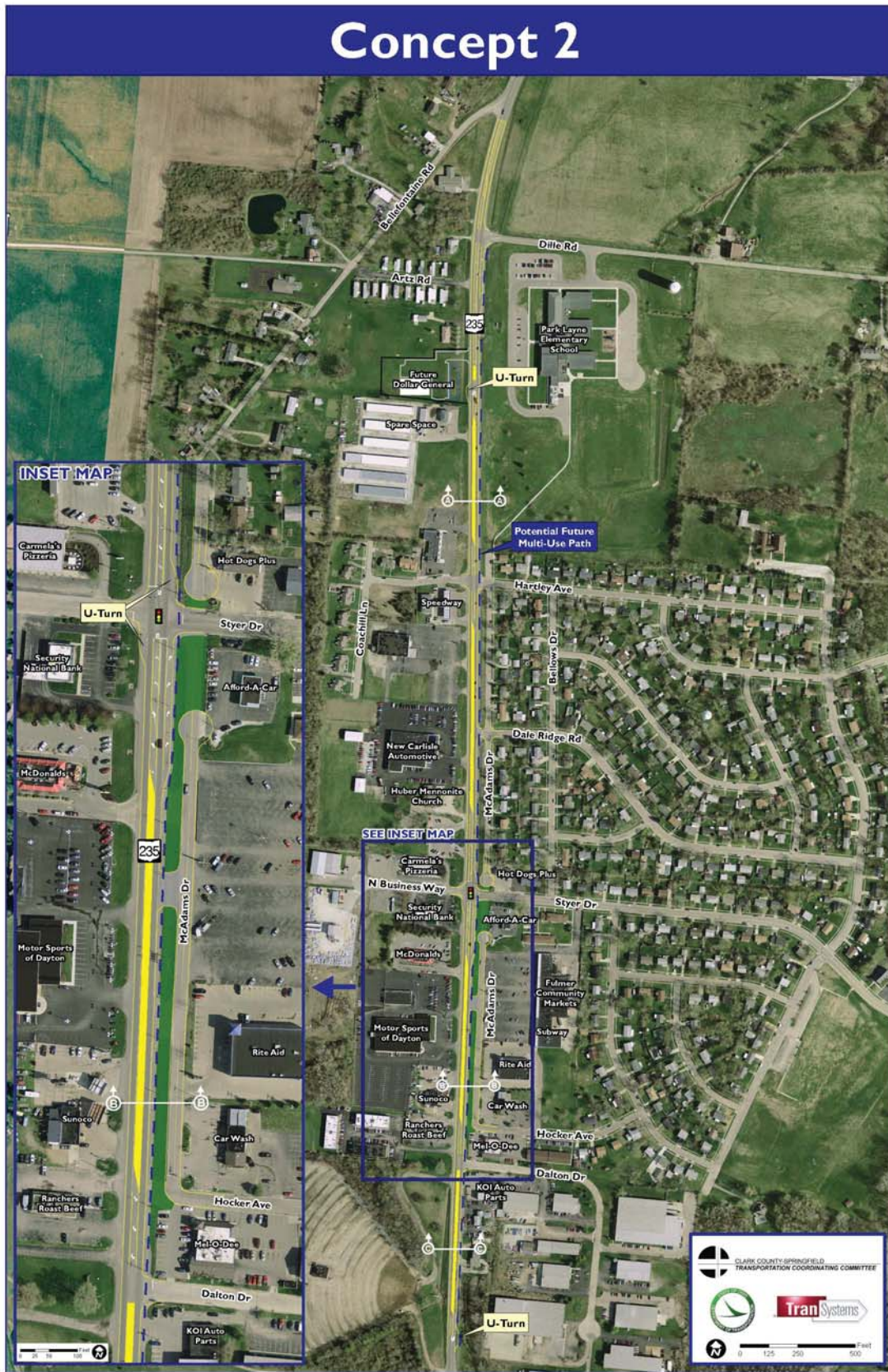


Figure 9 SR 235 Corridor Concept 2

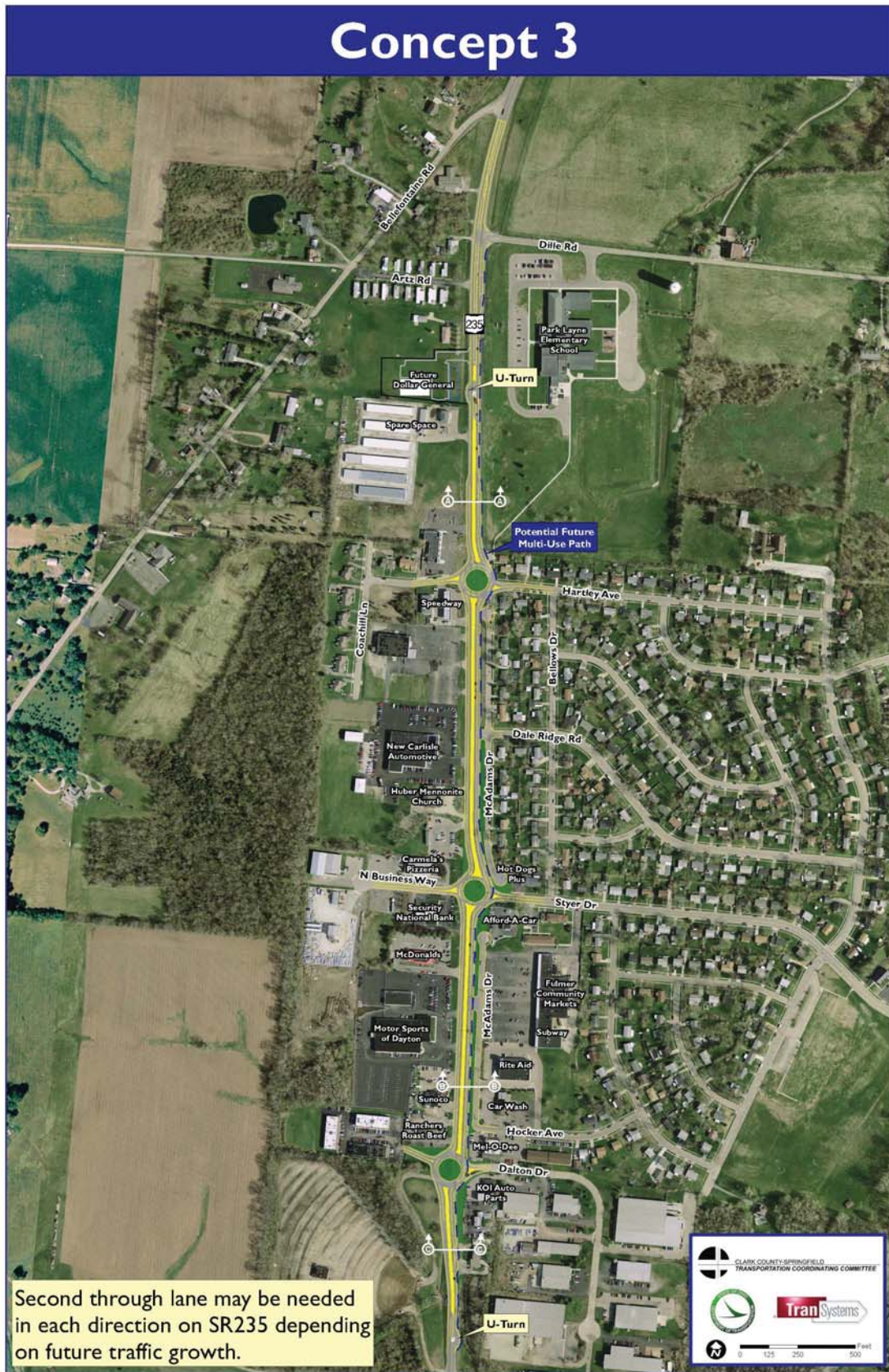


Figure 10 SR 235 Corridor Concept 3

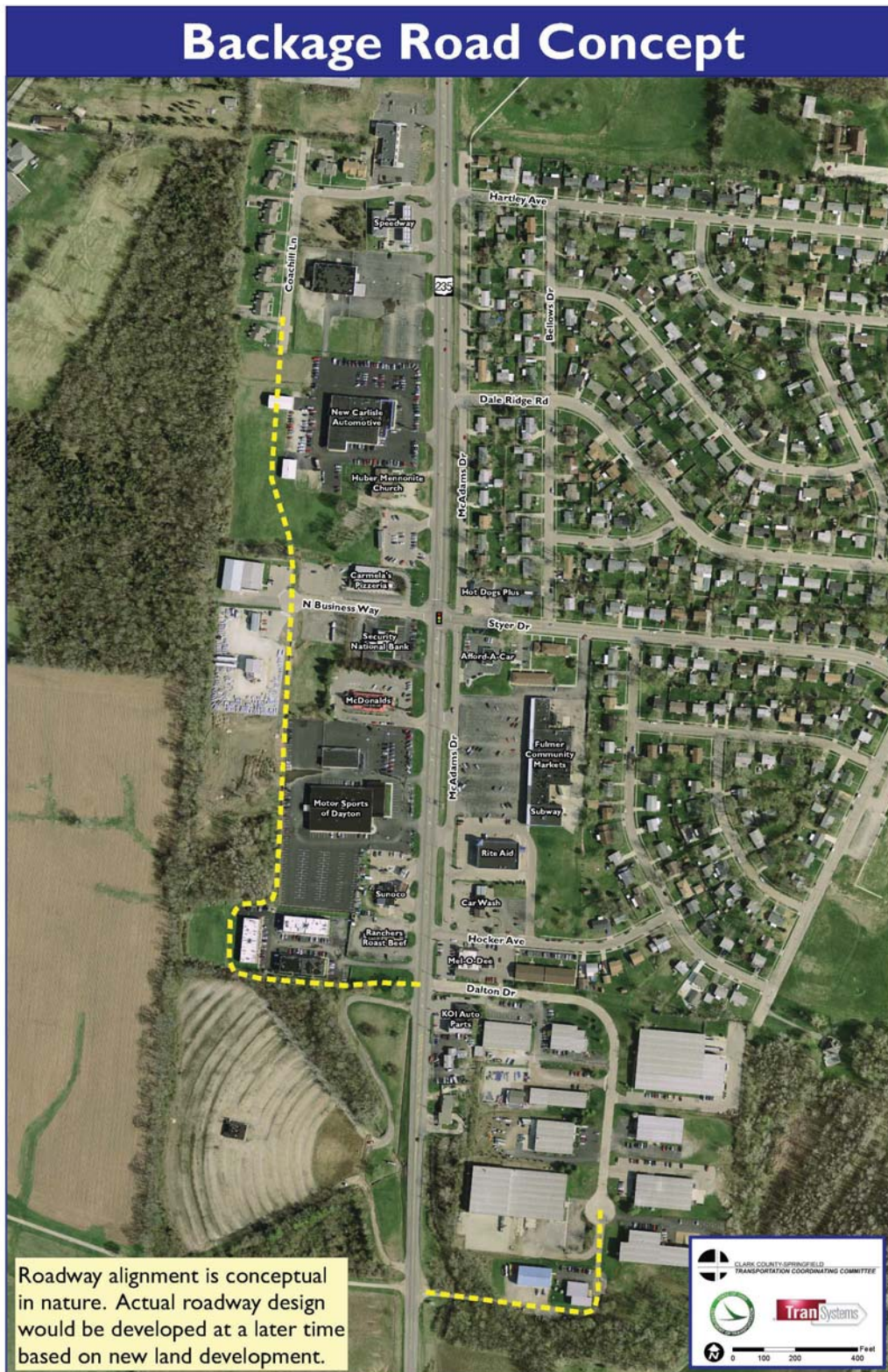


Figure 11 Backage Road Concept

5.0 OPEN HOUSE & PUBLIC INVOLVEMENT

5.1 OPEN HOUSE 1 & PUBLIC INVOLVEMENT

A full summary of the open houses along with the materials from the meetings (including sign-in sheets, handouts, presentations, display boards, and comments received) are contained in **Appendix F**.

The first public open house was held on September 28, 2011, from 6:00 to 8:00 PM at Park Layne Elementary School. The purpose of this meeting was to introduce the public to the study and to obtain their initial comments on the perceived deficiencies in the study area. Sign-in sheets from the meeting listed 38 people as being in attendance. Members of the public could attend at any time during the open house hours to browse exhibits at their leisure and ask questions. A formal presentation was given by the CCSTCC and TranSystems during the open house, which explained the background of the study, identified problems along the corridor, and general concepts to fix these problems. Following the meeting, attendees were divided into small groups where they were asked to share their concerns regarding the study area and suggest potential solutions for these areas of concern. Exhibits and handouts explaining the purpose and need for the study were available at the meeting and were also available on the CCSTCC's website after the meeting. The study team received comments from eight people during the public involvement period. The main concerns raised at the open house and through written comments were the need for crosswalks at main intersections, lack of pedestrian signals, need for better and safer pedestrian and bicycling facilities, more defined sidewalks or pathways along SR 235, need for street lighting, consolidation of drives at Hocker Avenue, reduced speed limit along SR 235 and modification of the traffic signal at Styer Drive.

5.2 OPEN HOUSE 2 & PUBLIC INVOLVEMENT

The conceptual alternatives discussed in Section 4.0 were presented to the public at the second open house, held on April 18, 2012, from 6:00 to 7:30 PM at Park Layne Elementary School. The purpose of this meeting was to give members of the public the opportunity to view the proposed safety and access management improvement concepts for the corridor, ask questions about them, and share their feedback. Sign-in sheets from the meeting listed 41 people as being in attendance. Members of the public could attend at any time during the open house hours to browse exhibits at their leisure and ask questions; a formal presentation was also given at 6:30 PM which discussed proposed improvement concepts in detail. A video showing the existing conditions at several access points along SR 235 was shown during the formal presentation. The video content was assembled from ODOT's video recording on SR 235.

In addition a VISSIM simulation model was prepared for the SR 235 corridor for the three concepts. The animation for these conceptual alternatives was played continuously on a TV during the open house. A screen shot from each of the concepts is shown in **Figures 12, 13 and 14**. Exhibits and handouts presenting the proposed improvements for the corridor were available at the meeting as well as on the CCSTCC's website following the meeting. The study team received comments from nine people during the public involvement period. Materials from the second open house can be found in **Appendix F**. Some of the general comments were as follows: (1) adding the center median will hinder access to businesses along SR 235 and will cause a problem for emergency vehicles, (2) adding traffic signals throughout the corridor will be beneficial, (3) roundabouts are dangerous and/or confusing and should not be added along SR 235, (4) providing designated U-turns areas will create more problems in the corridor, (5) the speed limit in the study area should be lowered, (6) pedestrian safety (crosswalks, lighting, signage) is not adequately addressed in the concepts, and (7) a better alternative would be to widen SR 235 through the area.



Figure 12 VISSIM Simulation Model Video Screen Shot – Concept 1

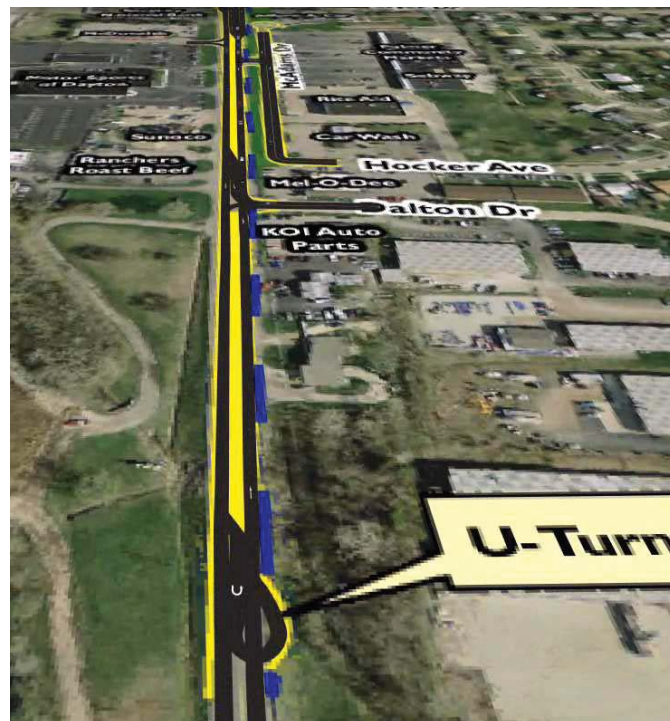


Figure 13 VISSIM Simulation Model Video Screen Shot – Concept 2



Figure 14 VISSIM Simulation Model Video Screen Shot – Concept 3

6.0 PREFERRED ALTERNATIVE

The second public meeting resulted in public opposition to the installation of a raised median for fear that it would adversely impact the businesses located in the Park Layne area. Given these concerns and the high cost associated with constructing the improvement concepts shared with the public, a scaled back concept (Concept 3A) was developed to focus on pedestrian safety, driveway consolidation and other corridor enhancements that would support the purpose and need for the improvements. The goal with Concept 3A was to arrive at a solution that can be implemented in the near term with a proportionately lower cost of construction versus the longer term, higher cost options originally developed. The package road concepts were not advanced largely because the cost for their design and construction would be the responsibility of Bethel Township. Advancement of this option is likely to be undertaken only if developer funding is secured in the future.

A final recommended concept was prepared with the following highlights (shown in the **Figure 15**):

1. Access management: Consolidation of driveways on the west side of SR 235 was identified with an emphasis between Dille Road and Gerlaugh Road.
2. Construct two mid-block crossings -- one near Hocker Avenue and one near Hartley Avenue -- to better accommodate pedestrians crossing SR 235. The mid-block crossings would include a raised median within the current two-way left turn lane to allow for a two-staged crossing. The Z-crosswalk configuration, similar to that shown in the graphic below (courtesy of walkinginfo.org), would be implemented at each of the mid-



Figure 15 SR 235 Corridor Preferred Concept 3A

block crossing locations. The benefit of this configuration is that a “Z” crossing, as it passes through the refuge island in the middle of the roadway, requires pedestrians to face on-coming vehicles thereby creating a safer walking condition. **Appendix G** contains research and documentation relative to this topic.



3. Construct sidewalk along the west side of SR 235 from the proposed Dollar General site to Dalton Drive.
4. Construct a multi-use path on the east side of SR 235 between Dille Road and Dalton Drive.
5. Reconstruct traffic signal at Styer Drive intersection with full pedestrian features including countdown pedestrian heads.
6. Install corridor roadway lighting from Dille Road to Gerlaugh Road.
7. McAdams Drive access point consolidation: McAdams will be converted to a cul-de-sac north and south of Styer Road, and south of Hartley Avenue. The two existing driveways between Hocker Avenue and Styer Drive will be closed and replaced with a single access point.
8. Hocker Avenue access to SR 235 will be removed and consolidated with McAdams Drive, thereby utilizing a common access drive as identified in item #7 above. Capacity analyses for the McAdams intersection with SR 235 (Traffic from Hocker Rd was also assumed at McAdams) indicated that good levels of service (LOS D or better) are achieved at this intersection. However, a northbound right turn lane is warranted (based on ODOT charts) on SR 235 at the McAdams Drive for the PM peak hour. This is something to consider when Hocker Avenue traffic is rerouted to McAdams. The addition of a turn lane is not required as a result of satisfying the warrant criteria. If rear-end accidents occur as a result of northbound traffic slowing to make a right turn onto McAdams Drive at the sole designated access between Styer Drive and Dalton Drive, addition of the turn lane would be a worthwhile mitigation measure.
9. While certain more costly and intrusive design elements from the original concepts were not recommended as part of the preferred alternative, prior studies performed by ODOT include references to longer-term corrective measures that are not outlined herein as part of Concept 3A.

Typical sections for the proposed changes to SR 235 are included in **Appendix G**. Note that the centerline for SR 235 is shown off-center due to the widening that was performed to add the center turn lane. Right-of-way plans obtained following the development of the initial typical sections yielded this revision. Because the right-of-way for SR

235 abuts that of McAdams Drive in Bethel Township, the placement of the multi-use path, roadway lighting and sign supports at the mid-block pedestrian crossings can be modified from what is shown herein during the engineering design process. The typical sections show the light poles and sign supports outside the clear zone. If these are installed using breakaway supports, their location can be within the clear zone for SR 235. Similarly, the sidewalk on the west side of SR 235 was shown outside the clear zone, behind the placement of the light poles and sign supports. In contrast, the multi-use path is reversed where the path is within the clear zone and in front of the light poles and sign supports. The intent of this visual illustration is to provide CCSTCC with some options for consideration in the placement of certain features. The mid-block crossing has been illustrated to include enhanced signage through the use of a solar-powered rapid flashing beacon to improve visibility. Activation is performed by pressing a pushbutton on either side of SR 235. A supplemental pushbutton can also be installed in the center median area.

A cost estimate for the preferred alternative is provided in **Appendix G**. The total cost of the preferred alternative is \$3 million in year 2018 dollars. This does not include the cost of right-of-way acquisition; however, based on the available information, additional right-of-way is not anticipated to accommodate the installation of a sidewalk, multi-use path or roadway lighting. An agreement between ODOT and Bethel Township may be needed in certain locations, such as along McAdams Drive, depending on the placement of certain features and their maintenance.

6.1 MAINTENANCE OF TRAFFIC

Some of the highlights of the preferred alternative include constructing a sidewalk on west side of SR 235 and a shared use path of east side of SR 235, modifying frontage road access and operations including cul-de-sacs for access management, and providing mid-block crossings for pedestrians. While the purpose of this planning study is to outline measures to address known safety and access problems within the corridor, implementation of these improvements must be undertaken in a manner which preserves access to the residences and businesses within the SR 235 travel corridor while also maintaining through traffic on SR 235 itself as it is a thoroughfare connecting with Interstate 70 to the south and US 40 to the north. Therefore, a few considerations for maintaining traffic during construction have been identified below. It is recognized that only a minimal amount of work will be done in the roadway meaning traffic can be maintained during construction activities.

Access to local properties shall be maintained at all times by use of the existing pavement and temporary pavement.

All signs, sign supports, cones, drums, flaggers and incidentals shall be furnished, erected, and removed by the contractor in accordance with the most recent revision, current edition of the Ohio Manual of Uniform Traffic Control Devices (OMUTCD). Interference with vehicular traffic shall be kept to a minimum at all times.

All work and devices shall be in accordance with item 614 and other applicable portions of the ODOT specifications, as well as OMUTCD. Payment for all labor, equipment and materials shall be included in the lump sum contract price for item 614 maintaining traffic, unless itemized in the plans.

Sequence of Construction:

1. Maintain Traffic on SR 235 and all side roads by use of existing pavement.
2. Construct the proposed sidewalk and proposed driveways on the west side of SR 235 using the work beyond shoulder figure TA-1 of the OMUTCD.
3. Construct the following on the east side of SR 235:

- a. Construct the shared used path and proposed driveway using the work beyond shoulder figure TA-1 of the OMUTCD.
 - b. Construct the cul-de-sacs on McAdams Drive using figure TA-1.
 - c. Construct the intersection of SR 235 and Hocker Avenue by closing this intersection as per MT-101.60 and detouring traffic.
4. Construct the pedestrian mid-block crossing one at a time by maintaining one lane of traffic in each direction on SR 235 and closing the two-way left turn lane in those two areas using standard drawing MT-95.60.
 5. Construct the signal at the intersection of SR 235 and Styer Drive.
 6. Finish grading, adding traffic control, and all miscellaneous work and open road to traffic.



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