

## 4. EXISTING AND FUTURE CONDITIONS

### 4.1. Population

Census data indicates that the Part A study area includes 70,000 residents and more than 60,000 jobs. The balance of jobs and housing helps to maintain the vibrant nature of Uptown. Many of the study area Traffic Analysis Zones (TAZs) maintain a jobs/housing balance internally, while a couple of TAZs are predominantly oriented towards employment (University of Cincinnati and Hospitals). The population of the study area overall has been declining since reaching its peak in the mid 20<sup>th</sup> century. The population decline is expected to continue through the 2030 plan year with a forecast decline in overall population of approximately 12% between 2000 and 2030.

### 4.2. Employment

Uptown is the largest concentration of employment within the metropolitan region outside of Cincinnati's central business district. With over 60,000 jobs, the economic activity within the overall Part A study area is a major contributor to the City of Cincinnati's economy and tax base. Employment is primarily attributable to several major institutions including, but not limited to, the following:

The University of Cincinnati	Environmental Protection Agency
The Health Alliance of Greater Cincinnati	Cincinnati Public Schools
Tri-Health	Xavier University
Children's Hospital Medical Center	The Department of Veterans Affairs
Deaconess Hospital	

Employment is expected to modestly increase through the 2030 plan year. Much of this employment growth is attributable to the aforementioned institution and related ancillary support clusters of business in the medical and research fields. See the Part A Existing and Future Conditions Report for additional information.

### 4.3. Land Use

The current land uses for the Part B study area have been ascertained from land use code designations assigned to individual parcels by the Hamilton County Auditors office along with limited field observation. There is a diverse mix of land uses from north to south within the study area. There are enclaves of both single and multifamily residential uses as well as areas of commercial, office, and light industrial enterprises. Industrial businesses are clustered along the former Conrail railroad right of way that bisects the Part B study area. Some of these properties have been adapted to alternate uses over the 30 years since the railroad suspended operations.

There is also a significant proportion of vacant and under-utilized property. The home ownership rate within the overall Part A study area is well below national averages. The Uptown Consortium among other entities has embarked on efforts to provide new and rehabilitated housing stock for a variety of demographic sectors and prices.

At selected locations within the study area, existing rights of way exceed that needed to accommodate the mainline or interchange ramps that would comply with current roadway design standards. This is particularly evident in the vicinity of Victory Parkway where a full interchange was planned but not constructed. Ramp ME from Montgomery Road to southbound I-71 is much longer and circuitous than necessary and could be potentially redesigned to allow for excess right of way to be returned to the private sector or public ownership for other uses.

See Figure 3 in Appendix C for the distribution of land uses within the Part B Study Area.

All development must comply with the standards, criteria, and procedures of the Cincinnati Zoning Code. The zoning code, §CMC (1400-1451), was most recently revised in January 2004. This update was the first comprehensive update of the code since 1963 predating the construction of I-71. The update was intended, in part, to provide land use regulations that recognized the urbanized nature of the City with its mixed uses and smaller lot sizes.

The zoning classifications within the Part B Study area generally reflect the existing land uses with a mix of residential, commercial, and industrial zones. Over half of the study area is zoned for residential uses. It is expected that with new interstate access that a change to commercial/office zoning will occur to the residual parcels likely to be redeveloped.

See Figure 4 in Appendix C for Cincinnati Zoning Classifications within the Part B Study Area.

#### **4.4. Economic Development**

The Uptown study area, when taken as a whole, is economically depressed when compared with the City of Cincinnati or the metropolitan region. Most of the parcels adjacent to I-71 were former industrial enterprises that have declined during the latter half of the 20<sup>th</sup> century. They were largely dependent on the Pennsylvania Railroad for transportation at the time of their original development. The railroad was abandoned during the 1970s and much of the former industrial property is currently underutilized or vacant. Dislocation of residents and disruption of the neighborhoods due to the construction of I-71 had a detrimental effect on the vitality of the adjacent area.

Most of the Uptown area was federally designated as an enterprise zone for targeted community redevelopment efforts in 1997. The City of Cincinnati has established several district-wide TIF Districts within the study area with the intent of funding infrastructure improvements to serve the potential redevelopment, (see Section 9).

During the past 5 years, several community urban redevelopment corporations have been formed with support of major Uptown institutions to spur a variety of mixed-use redevelopment. This study has identified over 25 major economic development projects in the study area with new housing and employment opportunities. Cincinnati Children's



Hospital Medical Center and the University of Cincinnati have been designated as recipients of the Governor's Third Frontier funding to promote research and technology transfer. These activities would be directly served by improvements to access with I-71. Additionally, vacant or under-utilized parcels located between Reading Road and Gilbert Avenue would become significantly more attractive to prospective developers for commercial and residential redevelopment.

The University of Cincinnati and the major healthcare institutions have established the Uptown Consortium to coordinate and foster a wide variety of economic development initiatives in the study area. The Consortium has recently begun a feasibility study for a major research campus to be located in the study area. The lack of direct full service interstate access to serve the desired high-density redevelopment of the study area is viewed as a limiting factor on the scale and desirability of potential development. The I-71 corridor has experienced significant redevelopment at its interchanges throughout its entire length in Hamilton County except those within the Uptown study area.

There is a significant portion of the Uptown area's driver population that is not comprised of regular commuters or residents. These drivers consist of visitors, customers, tourists, patients, and other transient populations that patronize the University of Cincinnati, the various hospitals, Cincinnati Zoo & Botanical Garden, and neighborhood business districts. For the institutions and neighborhood business districts to remain competitive on a regional level, interstate access must be perceived to be at least adequate when compared to suburban locations with higher visibility and more direct egress.

### 4.5. Regional Travel Patterns

The daytime population of the Uptown area is more than twice the permanent population. A basic screen line evaluation of 2005 Average Weekday Daily Traffic indicates that there are approximately 300,000 daily vehicle trips into and out of the study area. With six operating emergency rooms in the Uptown area, there were over 13,000 trips to emergency facilities in 2003. Uptown is located on a rolling plateau at an elevation some two to four hundred feet higher than adjacent neighborhoods to the south, east, and west. The rolling topography inhibits connectivity to the surrounding neighborhoods and in particular with the central business district.

Regional access to the north and south is provided by Interstates I-71 and I-75 located at the east and west extents of the study area. There are no regional east-west facilities serving the study area. The lack of regional transportation facilities serving the heart of the study area results in the use of local street network by commuters to reach destinations noted above.

See Part A Existing and Future Conditions Report for additional information concerning regional travel patterns to and from the Uptown area.

**4.6. Existing Plans and Projects**

**4.6.1. OKI Plans and Projects**

**4.6.1.1. OKI 2030 Long Range Transportation Plan**

OKI, as the regional Metropolitan Planning Organization (MPO), is responsible for maintaining and updating the region’s long range transportation plan. The current long range transportation plan, most recently updated in 2004, serves as a guide documenting the transportation needs of the metropolitan region through the year 2030.

Goals of the plan are as follows:

- Improve travel safety
- Improve accessibility and mobility options for people and goods
- Protect and enhance the environment
- Enhance the integration and connectivity of the transportation system
- Promote efficient system management and operation
- Emphasize the preservation of the existing transportation system
- Support economic vitality

The plan identifies both general and specific needs for mitigating congestion and improving air quality while meeting fiscal constraints of expected funding.

The following are recommended projects to add capacity to the roadway network within the study area that are incorporated into the fiscally constrained long-range plan.

**Table 3: OKI 2030 LRTP Fiscally Constrained Projects**

<b>No.</b>	<b>Location</b>	<b>Description</b>	<b>Cost Millions \$</b>
631	IR 71 I-471 to Reading Road	Restrict I-471 northbound from Reading Road exit; evaluate freeway mgmt system & eliminate left entrance/exits.	2.0
636	IR 75 Interchanges at Hopple, I-74, and Mitchell Avenue	Upgrade interchanges	101.0
692	IR 71 ML King Dr.	New interchange	35.0
698	Western Hills Viaduct	Western Hills Viaduct Access modification	13.3

The following projects have been identified as long range needs within the study area but are not incorporated into the fiscally constrained long range plan. In addition to the projects in Table 4, implementation of light rail transit service is recommended in corridors within the study area.

**Table 4: OKI 2030 Transportation Plan Additional Projects**

Facility	Location	Description	Cost Millions \$
Cincinnati Zoo	Vine Street	Parking & Transit	2.0
Dana Avenue	Victory Parkway to IR-71	Add 2 lanes	19.0
Uptown/Downtown Connector	TBD	Street Car as defined in Regional Rail Plan	61.0
Vine Street	Nixon Street to Erkenbrecher Avenue	Add 1 lane	4.0

### 4.6.1.2. OKI Transportation Improvement Plan

The OKI Transportation Improvement Plan (TIP) is a short range (4 years) plan updated on a 2-year cycle with ongoing amendments as needed. It provides a listing, by county, of all federally assisted highway and transit improvements that are contemplated by municipal, county, or state governments or transit authorities and is fiscally constrained to meet expected sources of transportation funding.

The *OKI FY 2006-2009 TIP* is a compilation of highway and transit projects in the Ohio, Kentucky, and Indiana portions of the OKI region that are scheduled to receive state and/or federal funding. The document was adopted by the OKI Executive Committee on April 14, 2005. There are five roadway projects included in the *OKI FY 2006-2009 TIP*.

**Table 5: OKI FY 2006 - 2009 TIP**

No.	Facility	Location	Description	Estimated Cost (\$)
78010	Gilbert Ave.	Between Eden Park Drive and E. McMillan Street	Streetscape	\$844,000
24485	M.L. King	Woodside Place to Vine Street	Reconstruction/Rehabilitation and Intersection Improvement	\$6,240,000
77706	Vine Street	Bridge over Vine Street from Erkenbrecher to the Zoo's parking lot.	Pedestrian Bridge	\$1,100,000
76257	IR-75	From 0.1 mile N of Harrison Ave. to 0.1 miles S of Paddock Road	Study the corridor for access improvements. Work includes major rehabilitation of pavement.	\$159,460,000
24954	IR-71	I-71 over Eden Park Drive	Paint Structural Steel Bridge No. HAM 71-0243	\$1,428,000

## **4.6.2. ODOT Plans and Projects**

### **4.6.2.1. HAM 75 2.30 Mill Creek Expressway**

This preliminary engineering project is evaluating capacity enhancements to the I-75 mainline from the Western Hills Viaduct to Paddock Road at the western border of the Uptown area. The project also includes the development of recommended alternatives for the reconstruction of the I-75 Interchanges serving Uptown located at Hopple Street, I-74/Central Parkway, and Mitchell Avenue.

Two significant issues regarding I-75 access remain to be resolved as of June 2006.

The intersection of Hopple/ML King Drive/Central Parkway is planned to be grade separated as part of this project.

Local access to Central Parkway (US-27/127) from I-74 may not be maintained in the future, thus redirecting this traffic flow north to Mitchell Avenue or south to Hopple Street.

The project is currently in Step 6 of the ODOT Major Project Development Process. The current phase of the project is scheduled for completion in late 2006 when preferred alternatives are advanced for the mainline and interchanges.

### **4.6.2.2. HAM 71/75 0.000.22 Brent Spence Bridge**

This project is evaluating capacity and safety enhancements to I-71/75 from the Western Hills Viaduct (Harrison Avenue) south to Kyles Lane in Kenton County, Kentucky. This includes the potential replacement or rehabilitation of the Brent Spence Bridge carrying I-71/75 over the Ohio River.

Alternatives for modification of the I-75 interchange serving Harrison Avenue would provide new direct access from I-75 to Central Parkway and McMillan Street. If such access is provided in the future, it may alter the current distribution of traffic flow in the Uptown Study area south of ML King Drive. The project is currently in Step 4 of the ODOT Major Project Development Process; it is anticipated that a preferred alternative for the interchange will be determined in late 2007.

### **4.6.2.3. Miscellaneous Maintenance Projects**

Besides the two major preliminary engineering studies for I-75 in the Uptown area, there are a number of smaller maintenance projects included in the ODOT District 8 work plan including the re-paving of US 42 (Reading Road) and US-22 (Gilbert Avenue) within the City of Cincinnati.

Additionally the superstructure of Bridge HAM 71-0243 which carries I-71 over Eden Park Drive and Florence Avenue will be painted at an estimated cost of \$1.5 Million.

### 4.6.3. Community Plans and Projects

- Community Tax Increment Financing Districts
- The Clifton Heights Urban Renewal Plan
- Evanston 5-Points Urban Renewal Plan
- Corryville/University Village Urban Renewal Plan
- Avondale Vision Plan 2005
- Burnet Avenue Urban Renewal Plan
- Keystone Parke

### 4.6.4. Institutional Plans

- Uptown Crossings
- Uptown Consortium Strategic Opportunity Plan
- Uptown Consortium Research Park
- University of Cincinnati Campus Masterplan
- SORTA MetroMoves Plan

## 4.7. Roadway Network

### ***Interstate-71:***

I-71 within the study area extends from SLM 2.0 (Liberty Street) to 6.0 (Dana Avenue).

The number of travel lanes on I-71 varies from three to five with numerous entrance and exit ramps. There is a center median barrier wall throughout the entire study area. Roadway lighting is provided throughout the study area.

The typical cross sections for the northbound and southbound directions are more fully described below:

### ***Northbound:***

At the southern end of the study area, I-71 is three lanes in both directions. There are three successive entrance ramps on the right: I-471, Gilbert Avenue, and Reading Road. Between the I-471 entrance and the Gilbert Avenue entrance, a left hand exit provided for I-71 northbound access to Reading Road northbound, or Dorchester Avenue. At the Gilbert Avenue entrance ramp, a fourth lane is added and at the Reading Road entrance ramp, a fifth lane is added and continues up hill to a location north of WH Taft Road where the section begins to taper back to a four lane section. A single lane entrance ramp from a partial interchange at McMillan Street enters on the right between WH Taft Road and Oak Street, which continues the fifth lane as an acceleration lane to a point south of ML King Drive. A single lane exit is located at Duck Creek Road with the fifth lane added again as a deceleration lane at a point north of Victory Parkway. North of this exit, the section remains 4 lanes to the north end of the study area.

***Southbound:***

At Dana Avenue, I-71 is four lanes wide and remains so throughout the study area until reaching the two lane exit ramp to Reading Road and Gilbert Avenue where there is a lane drop to three lanes which are maintained south of the I-471 exit. There are two single lane entrance ramps from Dana Avenue and Montgomery Road; the latter entrance ramp is approximately 4,300 feet in length and follows a circuitous route originally intended to allow for braiding of a southbound exit ramp to Victory Parkway, which was not constructed. The other ramps include a single lane exit to WH Taft Road where a fifth lane for deceleration is added beginning at ML King Drive and an entrance from Reading Road/Florence Avenue.

**4.7.1. Geometric Design Exceptions**

Geometric design exceptions on I-71 are minor and reflect changes in the AASHTO geometric design standards over the last 30 years, which have increased shoulder widths as well as horizontal and vertical clearances.

The ramps at most of the interchanges do not meet design criteria for several features including reduced vertical and horizontal curve lengths with associated reduced stopping sight distances; narrow travel lane and/or shoulder widths; steep grades; and substandard vertical clearances. There is one interchange with a left hand exit ramp (I-71 northbound to Reading Road/Dorchester Avenue Ramp RC). See Table 6, I-71 Design Exceptions for additional information.

**Table 6: I-71 Design Exceptions**

<b>Curve Widening</b>			
<b>Milepoint</b>	<b>Length (mi)</b>	<b>Required Widening (ft)</b>	<b>Existing Widening (ft)</b>
1.93	0.14	2.00	0.00
2.27	0.14	2.00	0.00
2.61	0.02	2.00	0.00
3.15	0.09	2.00	0.00
3.70	0.28	2.50	0.00
4.70	0.16	4.00	0.00
5.77	0.31	2.00	0.00

<b>Shoulder Width</b>			
	<b>Milepoint</b>	<b>Required width (ft)</b>	<b>Existing width (ft)</b>
<b>Right Shoulder</b>	Entire Project	12'	10' or less
<b>Median Shoulder</b>	Entire Project	12'	10' or less

<b>Stopping Sight Distance</b>			
<b>Milepoint</b>	<b>Length (mi)</b>	<b>Required SSD</b>	<b>Existing SSD</b>
4.70 Northbound	0.08	495'	454'

<b>Spiral Requirement for Horizontal Curves</b>			
<b>Milepoint</b>	<b>Length (mi)</b>		
1.93	0.15	Indicates locations where spiral curve is required, but is not present. Requirement is for new alignment or substantial modification to existing alignment.	
2.19	0.18		
2.54	0.13		
2.93	0.12		
3.69	0.28		

Source: ODOT L&D Manual, Volume 1 Roadway Design, as of July 2005

### 4.7.2. Pavement Condition Ratings

The pavement of I-71 within the study area was originally placed in the early 1970s with a portland cement concrete and overlaid with asphalt during a 1995-1996 general rehabilitation project.

The pavement conditions on I-71 within the study area are good to very good. Pavement Condition Ratings (PCR) for I-71 have been provided by the Ohio Department of Transportation as shown in Table 7: ODOT Pavement Condition Ratings

According to ODOT Pavement Standards, a PCR below 65 is deficient, a rating between 75 and 90 is good and a rating above 90 is very good. See Figure 14 of Appendix C for the pavement history of I-71.

**Table 7: ODOT Pavement Condition Ratings**

Nif ID	Log Begin	Log End	Length	Direction	No Lanes	PCR	PCR Date
SHAMIR00071**C	1.51	1.99	0.48	DOWN	6	95	12/17/03
SHAMIR00071**C	1.99	2.19	0.2	DOWN	6	95	12/17/03
SHAMIR00071**C	2.19	2.33	0.14	DOWN	6	95	12/17/03
SHAMIR00071**C	2.33	2.75	0.42	DOWN	8	95	12/17/03
SHAMIR00071**C	2.75	2.93	0.18	DOWN	9	95	12/17/03
SHAMIR00071**C	2.93	3.2	0.27	DOWN	9	95	12/17/03
SHAMIR00071**C	3.2	3.33	0.13	DOWN	9	95	12/17/03
SHAMIR00071**C	3.33	3.39	0.06	DOWN	9	95	12/17/03
SHAMIR00071**C	3.39	3.81	0.42	DOWN	8	95	12/17/03
SHAMIR00071**C	3.81	5.27	1.46	DOWN	8	95	12/17/03
SHAMIR00071**C	5.27	6.18	0.91	DOWN	8	96	12/17/03
SHAMIR00071**C	1.51	1.99	0.48	UP	6	93	12/17/03
SHAMIR00071**C	1.99	2.19	0.2	UP	6	93	12/17/03
SHAMIR00071**C	2.19	2.33	0.14	UP	6	93	12/17/03
SHAMIR00071**C	2.33	2.75	0.42	UP	8	93	12/17/03
SHAMIR00071**C	2.75	2.93	0.18	UP	9	90	12/17/03
SHAMIR00071**C	2.93	3.2	0.27	UP	9	90	12/17/03
SHAMIR00071**C	3.2	3.33	0.13	UP	9	90	12/17/03
SHAMIR00071**C	3.33	3.39	0.06	UP	9	90	12/17/03
SHAMIR00071**C	3.39	3.81	0.42	UP	8	90	12/17/03
SHAMIR00071**C	3.81	5.27	1.46	UP	8	91	12/17/03
SHAMIR00071**C	5.27	6.18	0.91	UP	8	96	12/17/03

As of October 22, 2004 from the Ohio Department of Transportation

Directions: Up = Northbound

Down = Southbound

### 4.7.3. Bridge Rating Reports

All I-71 bridges are regularly inspected by ODOT in accordance with Section ORC 5501.47, and with the Code of Federal Regulations, Part 650.307. These state and federal requirements provide for regular and systematic inspection of bridges on, under, or over public highways and streets in the interest of public safety and protection of the public investment in such structures.

These requirements establish the areas of responsibility of various authorities regarding inventory requirements, frequency of inspection, qualifications of inspectors, and recording of inspections. ODOT has provided bridge inspection reports for the I-71 bridge structures between Liberty Street and Dana Avenue. The bridges are generally steel rolled beams or plate girders on reinforced concrete substructures. Most bridges are supported on steel H pile foundations.

The mainline bridges carrying I-71 over Eden Park Drive, Florence Avenue, and Reading Road are scheduled to have the steel superstructure repainted in the next 4 years. The general appraisal bridge ratings for the study area are provided in Table 8. The general appraisal ratings are an overall indicator of the bridge's condition on a scale from 1 to 10 with 10 being best.

**Table 8: Bridge General Appraisal Ratings**

Structure File Number	County	Route	Straight Line Mileage	Special Designation	Feature Intersected	Year Built	General Appraisal	Inspected Date	Deck Area (Square Feet)	Total Number of Spans	Maximum Span Length (Feet)	Overall Length (Feet)	Inspection Responsibility
3106659	HAM	71	1.97	W	US 22 to I-71	1976	8	11/26/2003	14,280	3	118	280	State
3106667	HAM	71	1.97		US 22 to I-71 NB	1969	8	11/26/2003	22,800	3	118	285	State
3106683	HAM	71	2.07		NB I-471 to Liberty Street	1976	8	11/26/2003	26,320	3	119	329	State
3106721	HAM	71	2.26		Elsinore Place	1970	7	11/19/2003	17,143	3	89	217	State
3106756	HAM	71	2.33		US 42 to I-71 NB	1970	7	11/19/2003	13,140	3	141	365	State
3106780	HAM	71	2.48	L	US 42; Eden Park Entrance	1970	7	11/17/2003	37,750	7	143	755	State
3106802	HAM	71	2.48	R	Eden Park Entrance; Florence Avenue	1970	5	11/17/2003	94,956	13	134	1158	State
3114236	HAM	71	2.94		McGregor Avenue	1972	7	11/17/2003	15,650	3	106	313	State
3114260	HAM	71	3.20		McMillan Street	1972	8	11/13/2003	12,648	3	90	204	State
3114295	HAM	71	3.22	E	Relief	1972	8	11/13/2003	4,640	3	60	160	State
3114325	HAM	71	3.32		William Howard Taft Road	1972	7	11/13/2003	19,372	4	123	334	State
3114368	HAM	71	3.44		Oak Street	1972	7	11/13/2003	16,306	3	110	263	State
3114392	HAM	71	3.67		Lincoln Avenue	1972	8	11/13/2003	14,580	3	91	243	State
3114422	HAM	71	3.81		Martin Luther King Jr. Dr.	1972	7	11/12/2003	57,974	8	104	707	State
3114481	HAM	71	4.03		Fredonia Avenue	1972	7	11/12/2003	15,138	2	131	261	State
3114538	HAM	71	4.27		Blair Avenue	1972	7	12/8/2003	46,980	10	119	810	State
3114562	HAM	71	4.50		Victory Parkway	1972	5	11/10/2003	32,708	2	111	221	State
3114600	HAM	71	5.05		Woodburn Avenue	1972	7	11/10/2003	18,560	4	99	320	State
3114643	HAM	71	5.51		Trimble Avenue	1972	7	11/10/2003	10,962	2	92	189	State

This list does not include abandoned railroad bridge structures nor Lincoln Avenue or McMillan Street Structures inspected by the City of Cincinnati

See Figures 15 and 16 of Appendix C for maps illustrating the locations of bridges with vertical clearance less than the current 16' - 6" standard.

Two city bridges in the study area, McMillan Street over Reading Road and Lincoln Avenue over the former railroad right of way both received a general appraisal rating of 7 during 2004-2005.

The Lincoln Avenue bridge is scheduled for a new concrete deck overlay during the next 4 years.

#### 4.7.4. Signage

A comprehensive review of existing signage and wayfinding has been undertaken for the entire Part A study area.

Uptown is bounded on the west by I-75 and the east by I-71. Both interstates serve primarily as north-south transportation corridors with several partial-access interchanges serving Uptown. Additionally, I-74, which terminates at I-75 and Central Parkway at the western edge of Uptown, provides a transportation corridor to Western Hamilton County. Terminating at I-71 south of Uptown, I-471 provides the primary access to Uptown from Campbell County and Eastern Hamilton County.

Currently, there is no directional signage on either I-74 or I-471 for Uptown or specific Uptown destinations. Advance information should be provided to motorists so they can plan their route. For example, the Zoo would prefer that motorists coming in from the West, on



I-74, take I-75 north to the Mitchell exit. This information must be posted on I-74 with enough advance notice to allow drivers to position themselves in the correct lane.

There is some directional signage on Interstates 75 and 71 but some adjustments to the existing signage could improve current conditions. There is no directional signage for northbound I-75 between the Ohio River and the Hopple Street Interchange or for northbound I-71 between the Ohio River and the Montgomery Road/Duck Creek Interchange.

During field review of the existing signage on I-71, it was noted that there are several signs in the southbound direction between Montgomery Road and Dorchester Street that are out of sequential order. Some of the current signage was erected after the last general rehabilitation of this portion of I-71 in 1995/96. This was primarily done to assist motorists with ongoing work during the reconstruction of Fort Washington Way during 1999-2001.

Signs on the southbound exit to US-42 Reading Road/Gilbert Avenue refer to the Stadium/Coliseum on the riverfront and are outdated at this time. New directional signage for the riverfront and central business district appear to be needed.

Hospital trailblazing signs "D9-2" are inadequate to direct motorists to their respective designations given that six major hospitals are located within the study area. Members of the IP have expressed concern over the adequacy of the hospital guide signs at the I-71 exits and on the arterial network. Signing for hospitals is regulated by the Ohio Manual of Uniform Traffic Control Devices (OMUTCD) Section 2D.44 for surface streets, and OMUTCD Section 2E.51 for freeways and expressways. Section 200 of the ODOT Traffic Engineering Manual does not allow for the name of the individual hospitals to be included with trailblazing sign, but it does appear that consideration should be given to the unique concentration of hospitals in the study area.

Similarly, the interstate trail blazing signage directing motorists to and from interstate access points appears to be incomplete and misleading.

### ***Lytle Tunnel Hazardous Cargo Ban***

There are two regulator warning signs located along I-71 southbound in the study area that say the following "Tunnel Ahead - Hazardous Cargo Laws Enforced" This signage was erected in response to a City of Cincinnati request following a tanker truck fire in the Lytle Tunnel in 1992. However there are no portions of I-71 in Hamilton County that are included in the National Hazardous Materials Route Registry and no formal documentation of the hazardous cargo ban is included with the Public Utilities Commission of Ohio or the Federal Motor Carrier Safety Administration (FMCSA).

This is an issue of regional impact beyond the Uptown Transportation Study but three items have relevance to the Uptown Study.

- Should the current signage be maintained, eliminated, or replaced with signage in accordance with the current OMUTCD?
- If hazardous cargo is prohibited in the Lytle Tunnel will it have any significant impact on the classification of traffic volumes on I-71 within the study area?
- Should signage for alternative routes be established assuming hazardous cargo is prohibited in Lytle Tunnel and what effect might this diverted truck traffic have on current and future traffic patterns?

#### **4.7.5. US-42**

US-42/Reading Road is the primary arterial road within the Part B Study area. Reading Road has a typical cross-section of 4 to 6 lanes with a directional bifurcation between Elsinore Place and Dorchester Avenue. It generally parallels I-71 from Liberty Street to Victory Parkway where it makes a turn to the north-west. Within the study area, US-42 starts at milepost 2 near Liberty Street and ends at milepost 5 near Rockdale Avenue. The average daily traffic (ADT) on US-42 varies from 18,000 to 36,000 with the heaviest volumes being between Liberty Street northward to its intersection with Burnet Avenue. This segment of US-42 experiences congestion in the peak hours. Intersections at Liberty, WH Taft Road, and ML King Drive are also operating at capacity with an LOS of D or worse. Reading Road is home to Avondale's neighborhood commercial district and serves as the primary gateway to the Uptown area for travelers to and from the south, including I-471.

#### **4.7.6. US-22/SR3**

US-22/Gilbert Avenue/Montgomery Road is a four-lane arterial road with a pavement width of 56 to 70 feet. Within the study area, US-22 begins at milepost 1.7 where Gilbert Avenue crosses under I-71 to the east and proceeds to milepost 4.50 where Montgomery Road passes back over I-71 to the west. It serves as a primary north south arterial paralleling I-71 throughout most of its length. The City of Cincinnati is currently in the design phase for a major streetscape project for the portion of Gilbert Avenue from Eden Park Drive to McMillan Street.

The ADT on US-22 ranges from 10,000 to 15,000 a day (about half of US-42). It is also home to Peebles Corner Historic District and Walnut Hills' historic neighborhood commercial district.

#### **4.7.7. Local Roadway Network**

Significant arterials include ML King Drive, WH Taft Road, Burnet Avenue, McMillan Street, Dana Avenue, Vine Street, and Clifton Avenue. These arterials serve as the primary distributors of traffic to and from I-71. Each one of them experiences congestion in the peak periods at selected locations.



## **4.8. Traffic Analysis**

Traffic analysis was conducted for I-71 and local street intersections within the Part B study area. I-71 has been divided into mainline segments (both north and southbound) and interchange ramp merge and diverge points (both north and southbound). The analysis determined AM and PM design hour volumes and LOS for existing (2005) and future conditions (2030 E+C). See Appendix D for additional information.

The arterial network in the overall Part A Uptown study area has been evaluated as well. A total of 67 signalized intersections are located within the overall Part A study area. The City of Cincinnati owns and maintains all traffic signals within the study area. Synchro LOS analysis was conducted for each of the signalized intersections within the Part A study area.

### **4.8.1. Traffic Volume Data**

Field counts were undertaken in 2005 to obtain current traffic volume information for the I-71 mainline, interchange ramps, cross streets, and adjacent arterials.

#### **4.8.1.1. Traffic Counts**

Existing traffic volume data was obtained from a variety of sources to insure adequate and current coverage for the project study area. OKI, ODOT, and the project consulting team conducted traffic counts during the period from May to July 2005.

Please see Figure 17 of Appendix C for the locations of the field traffic counts. The counting program for each of the respective parties is described as follows:

#### **4.8.1.2. Consultant Counts**

The project consulting team conducted 7 day, 24-hour volume counts at 33 locations during November 2004. These field counts were concentrated on the urban arterial network between I-75 and I-71 but also include Reading Road (US-42) and cross streets immediately west of I-71.

The consulting team subsequently conducted 24-hour counts at approximately 28 locations concentrated at the I-71 interchanges and along parallel arterials and cross streets during May 2005. These counts were conducted at locations where neither ODOT nor OKI had scheduled any counts. Included in this counting program were the Reading Road/Gilbert Ave interchange ramps where relevant data was not available. This counting program did not include vehicle classification data.

#### **4.8.1.3. OKI Traffic Counts**

During the spring of 2005, OKI initiated a comprehensive program to update its traffic count database. OKI retained a consultant to collect 24-hour vehicle counts (by 15-minute intervals and by direction) for a variety of locations throughout Hamilton County. This program included approximately 25 locations within the Uptown Transportation study area to provide data at locations where current information was not available and where counts are not conducted regularly by ODOT or local agencies. These counts also include vehicle

classification data. Please see Figure 17 of Appendix C for OKI count locations. Of particular importance are 24-hour volume counts for the I-71 mainline conducted at three locations within the project study area.

#### **4.8.1.4. ODOT Traffic Counts**

The ODOT Office of Technical Services as part of its annual statewide Traffic Survey Report was requested to conduct its planned 48-hour vehicle counts within the Uptown Study area to coincide with the other field counting being undertaken by OKI and the project consultant team and to complete the field work prior to the end of the University of Cincinnati's academic year.

ODOT conducted 48-hour volume counts at approximately 21 locations within the Uptown Transportation Study area including six at selected interchange ramps on I-71. The majority of the counts were done during May-August 2005. Some of the counts, particularly on the arterials, may not account for any seasonal influence due to the University of Cincinnati or Xavier University.

#### **4.8.1.5. Advanced Regional Traffic Interactive Management and Information System**

In an effort to obtain long term I-71 count information to identify the seasonal variation in volumes that may be attributed to the University of Cincinnati and Xavier University within the study area, the consultant team requested traffic volume data from the automatic traffic recorder stations along I-71 within the study area that are managed by the Advanced Regional Traffic Interactive Management and Information System (ARTIMIS), jointly operated by ODOT and Kentucky Transportation Cabinet (KYTC). This data also allowed for the determination of typical free flow speeds on I-71 throughout the study area for use in the Highway Capacity Software (HCS) analysis of basic freeway segment level of service.

Specifically, the data that was provided to the consultant team came from Cambridge Systematics, Inc. who has been retained by the Texas Transportation Institute to produce the FHWA sponsored annual Mobility Monitoring Report. The data sets utilized include ARTIMIS automatic traffic recorder (ATR) information from 2002 and 2004.

#### **4.8.1.6. Intersection Turning Movement Counts**

Project turning movement traffic counts were conducted at 15 intersections within the Part B study area during October 2005 while the University of Cincinnati and Xavier University (as well as other educational institutions) were in session. This information was needed as input into the existing level of service for ramp terminals at grade intersections as well as other major intersections within the Part B Study area.



### 4.8.2. Adjustment Methodology

#### 4.8.2.1. Traffic Volume Data

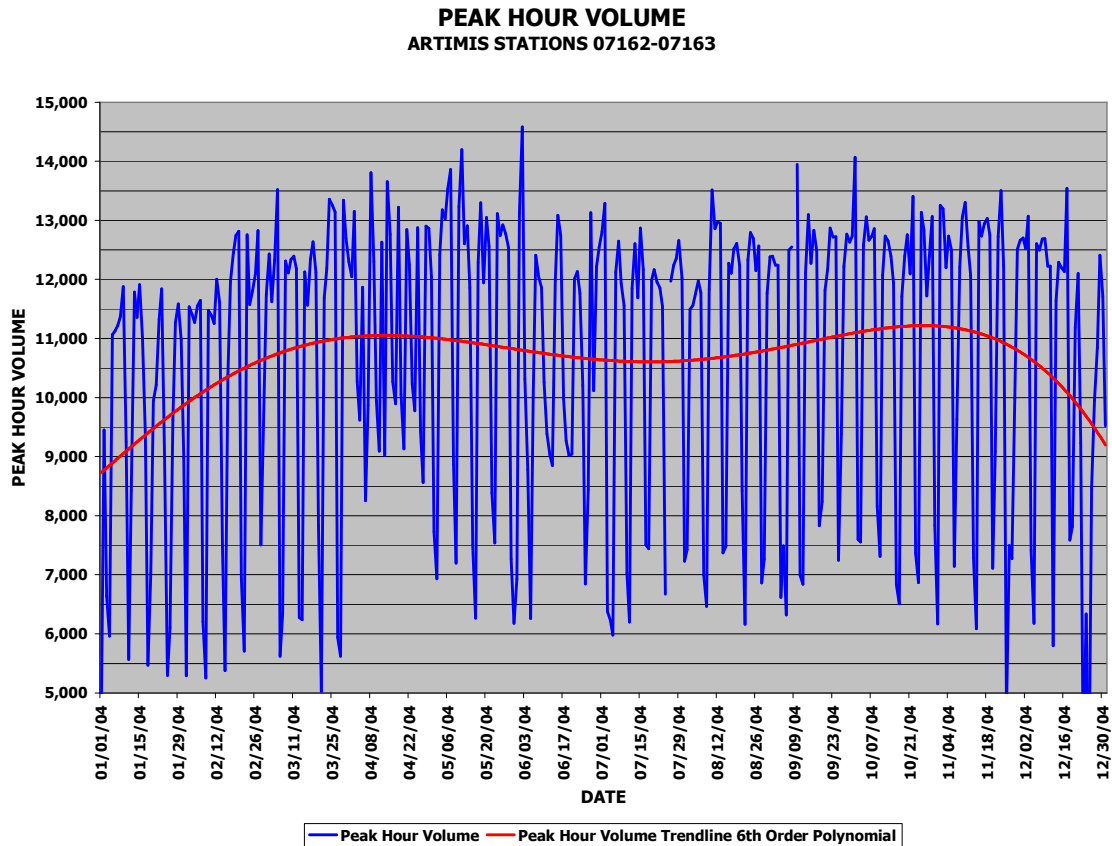
##### *Day of the week*

Project specific traffic volume counts were conducted on Tuesdays through Thursdays. Day of the week adjustment factors were not applied due to the influence of the major institutions in the study area and the varying work shifts and class schedules.

##### *Monthly*

Monthly seasonal adjustment factors were not applied to any of the volume counts due to the influence of the major institutions in the study area (i.e., University of Cincinnati, Cincinnati Public Schools, and Xavier University). Review of monthly average daily volumes taken from the ARTIMIS ATR stations within the Part B study area during May, July, and October of 2004 did not exhibit significant variation from month to month overall. Additionally, evaluation of ARTIMIS stations 62 and 63 used to derive a design hourly volume factor shows a slight peaking of volumes in the spring and fall coinciding with the University of Cincinnati's Academic year. See Chart 1 for additional details. This variation of volumes on I-71 does not follow the typical summer peak pattern in statewide adjustment factors. The highest volumes occur during the University of Cincinnati's fall quarter in October.

**Chart 1: 2004 ARTIMIS Hourly Volumes**



### 4.8.2.2. Design Hour Factor

A 30th highest hour factor was developed for I-71 volumes within the Part B Study area using hourly count data for the entire 2004 calendar year from a pair of directional ARTIMIS ATR stations located just north of Blair Avenue at SLM 4.20. These stations were chosen since they are in the same highway segments as a 48-hour field count conducted by OKI's traffic counting consultant during July 2005.

The peak hour volumes were balanced north and south based on the adjusted peak hour volumes from this OKI field count. From the 2004 data, the peak hour volume for each weekday, excluding holidays, was identified and the average weekday peak hour volume for the entire year was calculated for that location. The ARTIMIS count data was also used to determine the 30th highest hour volume at this location on I-71. The 30th highest hour adjustment factor was calculated for the ATR pair. This factor is simply the 120th highest hourly volume (by 15-minute increments) divided by the average weekday volume. This factor was determined to be 1.112. This methodology was reviewed and approved by the ODOT Office of Technical Services in December 2005.

### 4.9. 2005 Level of Service (LOS)

As described above, the raw traffic volume count information was used to balance the segment and ramp daily totals in the north and south bound directions. These balanced totals were crosschecked with the respective project counts, historic count information, and ARTIMIS ATR volume averages by the respective station location.

Levels of service were determined for freeway segments, interchange ramp merge and diverge points, and signalized intersections within the study area using HCS, version HCS2000TM, Version 4.1d. While new versions of this software have become available for use during the course of the study, this version has been used throughout to maintain consistency in the methodology so comparisons of conceptual access improvements can be made on an equitable basis. See Appendices D and E.

#### 4.9.1. Basic Freeway Segments

The following tables present the results of the 2005 existing condition analyses performed on the mainline segments of I-71. The interstate is generally operating at a satisfactory level of service overall. Southbound I-71 from Dana Avenue to the WH Taft Road exit is nearing its capacity in the AM Peak Hour. See Figures 18 to 20 of Appendix C for maps illustrating the 2005 LOS for I-71. Segments with unacceptable LOS are shown in grey in the table.

**Table 9: 2005 LOS Northbound Basic Freeway Segments**

Basic Freeway Segments		Length mi	Design Hourly Volume	Density pc/mi/ln	LOS	AM/PM
From	To					
NA	South of I-471 NB Entrance SLM 1.90	NA	2,996	17.6	B	AM
I-471 NB Entrance SLM 1.90	Ramp GD US-22 NB (Gilbert Ave.) Ent.	0.3	4,598	27.2	D	AM
Ramp GD US-22 NB (Gilbert Ave.) Ent.	Ramp RC US 42 NB (Reading Rd.) Exit	0.2	4,800	21.4	C	AM
Ramp RC US 42 NB (Reading Rd.) Exit	Ramp RD US 42 NB (Reading Rd.) Ent.	0.2	3,778	18.6	C	PM
Ramp RD US 42 NB (Reading Rd.) Ent.	Ramp TC McMillan St. Entrance	1.0	4,676	18.6	C	PM
Ramp TC McMillan St. Entrance	Ramp MF Duck Creek Rd. Exit	1.1	5,980	27.5	D	PM
Ramp MF Duck Creek Rd. Exit	Ramp DC Dana Ave. Ent.	1.5	5,016	22.3	C	PM
Ramp DC Dana Ave. Ent.	NA	0.3	5,805	21.4	C	PM

Source: Adjusted 2005 Field Traffic Counts: (Ohio Department of Transportation, Ohio-Kentucky-Indiana Regional Council of Governments, Edwards & Kelcey Inc.), Level of Service Analysis: Highway Capacity Software (HCS™) Version 4.1d by URS Corp.

**Table 10: 2005 LOS Southbound Basic Freeway Segments**

Basic Freeway Segments		Length mi	Design Hourly Volume	Density pc/mi/ln	LOS	AM/PM
From	To					
I-71 SB North of Ramp DE Dana Ave.	Ramp DE Dana Ave. Exit	NA	6,468	29.4	D	AM
Ramp DE Dana Ave. Exit	Ramp DB WB Dana Ave. Entrance	0.3	5,584	27.2	D	AM
Ramp DB WB Dana Ave. Entrance	Ramp ME US-22 Montgomery Rd. Entrance	1.0	6,018	27	D	AM
Ramp ME US-22 Montgomery Rd. Entrance	Ramp TH WH Taft Rd. Exit	1.5	6,413	31.4	D	AM
Ramp TH WH Taft Rd. Exit	Ramp RA SB US-42 Reading Rd. Exit	0.9	4,596	20.3	C	AM
Ramp RA SB US-42 Reading Rd. Exit	Ramp RF US-42 Reading Rd. Entrance	1.1	3,695	23.8	C	AM
Ramp RF US-42 Reading Rd. Entrance	I-471 SB Exit	0.5	3,866	26.4	D	AM
South of I-471 Exit	NA	NA	2,971	19.4	C	AM

Source: Adjusted 2005 Field Traffic Counts: (Ohio Department of Transportation, Ohio-Kentucky-Indiana Regional Council of Governments, Edwards & Kelcey Inc.), Level of Service Analysis: Highway Capacity Software (HCS™) Version 4.1d by URS Corp.

LOS = Level of Service

mi = miles

Density is measured in passenger cars per mile per lane

### 4.9.2. Ramp Junctions

The following tables illustrate the 2005 LOS for the ramp merge or diverge movements within the study area. North and south bound are summarized separately. The exit ramp at WH Taft Road is currently operating at a failing level of service. Likewise, the exit ramp to I-471 southbound from I-71 southbound is also failing. It should be noted that the volumes from the north are heaviest at the Taft/McMillan interchange and from the south at the Reading Road interchange. These two sets of ramps are the primary gateways to the Uptown area. The inbound traffic (approaching Uptown) is highest in the AM peak and outbound (leaving Uptown) in the PM peak as would be expected.

**Table 11: 2005 LOS Northbound Ramp Junctions**

Ramp Location	Junction type	Design Hourly Volume	Density pc/mi/ln	LOS	AM/PM
<b>I-471 NB Entrance SLM 1.90</b>	<b>Merge</b>	<b>1,632</b>	<b>27.7</b>	<b>C</b>	<b>AM</b>
<b>Ramp GD US-22 NB (Gilbert Ave.) Entrance</b>	<b>Merge</b>	<b>674</b>	<b>30.0</b>	<b>D</b>	<b>PM</b>
<b>Ramp RC US 42 NB (Reading Rd.) Exit</b>	<b>Diverge</b>	<b>1,750</b>	<b>30.1</b>	<b>D</b>	<b>AM</b>
<b>Ramp RD US 42 NB (Reading Rd.) Entrance</b>	<b>Merge</b>	<b>898</b>	<b>24.9</b>	<b>C</b>	<b>PM</b>
<b>Ramp TC McMillan St. Entrance</b>	<b>Merge</b>	<b>1,303</b>	<b>28.4</b>	<b>D</b>	<b>PM</b>
<b>Ramp MF Duck Creek Rd. Exit</b>	<b>Diverge</b>	<b>964</b>	<b>31.7</b>	<b>D</b>	<b>PM</b>
<b>Ramp DC Dana Ave. Entrance</b>	<b>Merge</b>	<b>1,053</b>	<b>21.5</b>	<b>C</b>	<b>AM</b>

Source: Adjusted 2005 Field Traffic Counts: (Ohio Department of Transportation, Ohio-Kentucky-Indiana Regional Council of Governments, Edwards & Kelcey Inc.), Level of Service Analysis: Highway Capacity Software (HCS™) Version 4.1d by URS Corp.

**Table 12: 2005 LOS Southbound Ramp Junctions**

Ramp Location	Junction Type	Design Hourly Volume	Density	LOS	AM/PM
<b>Ramp DE Dana Ave. Exit</b>	<b>Diverge</b>	<b>960</b>	<b>27.9</b>	<b>C</b>	<b>PM</b>
<b>Ramp DB WB Dana Ave. Entrance</b>	<b>Merge</b>	<b>434</b>	<b>33</b>	<b>D</b>	<b>AM</b>
<b>Ramp ME US-22 Montgomery Rd. Entrance</b>	<b>Merge</b>	<b>437</b>	<b>23.5</b>	<b>C</b>	<b>PM</b>
<b>Ramp TH WH Taft Rd. Exit</b>	<b>Diverge</b>	<b>1,817</b>	<b>35.4</b>	<b>F</b>	<b>AM</b>
<b>Ramp RA SB US-42 Reading Rd. Exit</b>	<b>Diverge</b>	<b>900</b>	<b>20.1</b>	<b>C</b>	<b>AM</b>
<b>Ramp RF US-42 Reading Rd. Entrance</b>	<b>Merge</b>	<b>316</b>	<b>27.8</b>	<b>C</b>	<b>PM</b>
<b>I-471 Exit</b>	<b>Diverge</b>	<b>1,769</b>	<b>35.2</b>	<b>F</b>	<b>PM</b>

Source: Adjusted 2005 Field Traffic Counts: (Ohio Department of Transportation, Ohio-Kentucky-Indiana Regional Council of Governments, Edwards & Kelcey Inc.), Level of Service Analysis: Highway Capacity Software (HCS™) Version 4.1d by URS Corp.

LOS = Level of Service

mi = miles

Density is measured in passenger cars per mile per lane

### 4.9.3. Intersections

The following table illustrates the level of service for at-grade local intersections within the Part B Study area. Additional signalized intersections were analyzed for the overall Part A Study Area. Most intersections are currently operating at an acceptable overall level of service. It does appear that the intersection of Liberty Street and Reading Road (which also includes the terminal for ramps to and from I-471) is operating under constrained conditions and is operating at LOS of D overall. This has been validated by observations of congestion and queuing in the left turn lanes in the PM peak hours. The intersection of Reading Road and WH Taft Road and Reading Road and ML King Drive are also failing overall. Analysis of these two intersections is documented in the Part A Existing and Future Conditions report.

**Table 13: 2005 LOS At Grade Intersections**

Intersection	Time Period	Eastbound		Westbound		Northbound		Southbound		Overall	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
#1 Liberty & Reading	AM	50.6	D	41.4	D	24.8	C	31.5	C	36.3	D
	PM	46.3	D	69.6	E	52.9	D	37.6	D	44.9	D
#2 Eden Park & Reading	AM	25.5	C	34.6	C	12.3	B	5.4	A	12.9	B
	PM	24.7	C	23.5	C	11.6	B	7.8	A	12.0	B
#3 Kinsey/Morgan & Reading	AM	42.2	D	46.1	D	2.0	A	1.6	A	2.8	A
	PM	25.3	C	35.4	D	3.0	A	4.0	A	5.0	A
#4 Eden Park & Gilbert	AM	22.2	C	9.8	A	10.3	B	11.1	B	12.3	B
	PM	21.2	C	8.9	A	12.7	B	11.5	B	13.7	B
#5 Gilbert & McMillan	AM	10.4	B	NA	NA	15.4	B	8.0	A	10.7	B
	PM	13.0	B	NA	NA	16.1	B	7.9	A	12.4	B
#6 Gilbert & Taft	AM	NA	NA	13.8	B	5.9	A	12.7	B	11.2	B
	PM	NA	NA	14.3	B	6.2	A	12.5	B	10.9	B
#7 Gilbert & Lincoln	AM	11.2	B	11.8	B	3.8	A	3.9	A	5.0	A
	PM	10.0	A	6.7	A	8.1	A	7.4	A	8.4	A
#8 Gilbert & M.L. King	AM	4.8	A	5.7	A	12.2	B	10.8	B	7.5	A
	PM	9.3	A	5.9	A	13.3	B	9.3	A	9.8	A
#9 Rockdale & Victory Parkway	AM	15.6	B	NA	NA	3.5	A	3.7	A	5.1	A
	PM	12.2	B	NA	NA	5.8	A	5.3	A	6.9	A
#10 Duck Creek & Montgomery	AM	NA	NA	10.1	B	5.1	A	4.8	A	6.8	A
	PM	NA	NA	13.6	B	12.6	B	4.2	A	9.6	A
#11 Dana & Montgomery	AM	13.4	B	23.3	C	36.4	D	40.7	D	28.2	C
	PM	22.1	C	31.1	C	48.0	D	80.3	F	45.1	D
#12 Gilbert & Victory Parkway	AM	5.0	A	14.6	B	11.9	B	15.0	B	11.9	B
	PM	7.5	A	14.4	B	12.9	B	14.5	B	11.2	B
#13 Dana & Victory Parkway	AM	24.0	C	9.1	A	15.9	B	21.6	C	16.6	B
	PM	33.1	C	10.1	B	25.9	C	21.4	C	21.8	C
#14 Elsinore & Reading	AM	NA	NA	34.9	C	5.4	A	1.6	A	4.5	A
	PM	NA	NA	34.5	C	8.7	A	2.6	A	8.0	A
#15 Elsinore & Gilbert	AM	9.0	A	7.1	A	6.6	A	7.3	A	7.6	A
	PM	10.1	B	7.2	A	6.8	A	7.6	A	8.0	A
#16 Dana & Duck Creek	AM	8.8	A	7.5	A	21.1	C	NA	NA	10.1	B
	PM	6.7	A	5.6	A	23.1	C	NA	NA	8.4	A

NA "Intersection does not include this movement"

### 4.9.4. 2030 Level of Service

#### 4.9.4.1. OKI Regional Travel Demand Model Forecasts

OKI currently utilizes a nested-logic 4-step travel demand model that is run with Citilabs Tranplan software. Version 6.3 of the OKI Regional Travel Demand Model was run with the 2000 Existing network in the 2005 plan year to derive 2005 daily volume assignments for the network links representing I-71 and its interchanges.

The Existing and Committed network was then run in the 2030 plan year to derive forecasted 2030 daily volume assignments for the network links representing I-71 and its interchanges. The respective links were then adjusted as described in Section 4.9.4.2 to arrive at an adjusted 2030 ADT assignment.

A review of OKI's social-economic database for the TAZ's in the Uptown area, forecast an overall reduction in population and minimal employment growth in the Uptown area during the project design year time horizon. The IP expressed the desire to propose alternative social-economic input values for certain TAZ's based upon current and planned commercial, institutional, and residential development as described in Section 3.5 of Appendix C. In response, OKI revised its socio-economic input files to more closely match the population and employment forecasted for the specific TAZ's. Overall, this revision has not reversed

the forecast population decline but has lessened the loss and has increased the overall level of employment gain in the 2030 plan year.

The travel demand model forecast used in the 2030 LOS below reflects these revised socio-economic inputs.

#### **4.9.4.2. Travel Demand Model Volume Adjustment**

The balanced 2005 base year hourly volumes for the respective mainline segments and ramps were adjusted as follows to arrive at an hourly ADT which then could be used to arrive at a design hourly volume (DHV) for the appropriate HCS analysis for the 2030 plan year.

The base counts are adjusted using the mean of the Ratio and Difference methods described in NCHRP 255 Chapter 4. This method adjusts the 2030 model assignment by adding the mean of the difference between the 2005 model assignment and its respective field volume count and the ratio of the 2005 model assignment and its respective field volume count. The difference and ratio are added to, and multiplied against, the 2030 model assignment and averaged to arrive at an adjusted 2030 hourly volume.

#### **4.9.4.3. Basic Freeway Segments**

The following tables present the results of the 2030 forecast LOS analysis performed on the mainline segments of I-71. The interstate volumes are expected to increase approximately 17% overall between 2005 and 2030. The level of service generally degrades from C to D or D to E due to the expected increase in mainline volumes in the plan year. The heaviest northbound volumes are entering Uptown between I-471 and the Reading Road exit in the AM peak and leaving Uptown between the McMillan Street entrance and Dana Avenue in the PM peak. Similarly, in the southbound direction, the heaviest volumes are entering Uptown between Dana Avenue and the WH Taft Road Exit in the AM peak and leaving Uptown between the Reading Road entrance and I-471 in the PM peak.

**Table 14: 2030 LOS Northbound Basic Freeway Segments**

Basic Freeway Segments		Length mi	Design Hourly Volume	Density pc/mi/ln	LOS	AM/PM
From	To					
NA	South of I-471 NB Entrance SLM 1.90	NA	3,693	21.7	C	AM
I-471 NB Entrance SLM 1.90	Ramp GD US-22 NB (Gilbert Ave.) Ent.	0.3	5,664	36.6	E	AM
Ramp GD US-22 NB (Gilbert Ave.) Ent.	Ramp RC US 42 NB (Reading Rd.) Exit	0.2	5,879	26.3	D	AM
Ramp RC US 42 NB (Reading Rd.) Exit	Ramp RD US 42 NB (Reading Rd.) Ent.	0.2	4,465	22.0	C	PM
Ramp RD US 42 NB (Reading Rd.) Ent.	Ramp TC McMillan St. Entrance	1.0	5,677	22.6	C	PM
Ramp TC McMillan St. Entrance	Ramp MF Duck Creek Rd. Exit	1.1	7,044	35.6	E	PM
Ramp MF Duck Creek Rd. Exit	Ramp DC Dana Ave. Ent.	1.5	6,137	27.6	D	PM
Ramp DC Dana Ave. Ent.	North of Ramp DC Dana Ave. Ent.	0.3	7,183	26.5	D	PM

Source: Adjusted 2030 Peak Hour Volumes Ohio-Kentucky-Indiana Regional Council of Governments Regional Travel Demand Model Version 6.3. Level of Service Analysis: Highway Capacity Software (HCS™) Version 4.1d by URS Corp.

**Table 15: 2030 LOS Southbound Basic Freeway Segments**

Basic Freeway Segments		Length mi	Design Hourly Volume	Density pc/mi/ln	LOS	AM/PM
From	To					
I-71 SB North of Ramp DE Dana Ave.	Ramp DE Dana Ave. Exit	NA	7,675	38.5	E	AM
Ramp DE Dana Ave. Exit	Ramp DB WB Dana Ave. Entrance	0.3	6,639	30.4	D	AM
Ramp DB WB Dana Ave. Entrance	Ramp ME US-22 Montgomery Rd. Entrance	1.0	7,079	33.4	D	AM
Ramp ME US-22 Montgomery Rd. Entrance	Ramp TH WH Taft Rd. Exit	1.5	7,419	38.4	E	AM
Ramp TH WH Taft Rd. Exit	Ramp RA SB US-42 Reading Rd. Exit	0.9	5,406	23.8	C	AM
Ramp RA SB US-42 Reading Rd. Exit	Ramp RF US-42 Reading Rd. Entrance	1.1	4,379	28.2	D	AM
Ramp RF US-42 Reading Rd. Entrance	I-471 SB Exit	0.5	4,911	33.6	D	PM
South of I-471 Exit	NA	NA	3,612	23.5	C	AM

Source: Adjusted 2030 Peak Hour Volumes Ohio-Kentucky-Indiana Regional Council of Governments Regional Travel Demand Model Version 6.3. Level of Service Analysis: Highway Capacity Software (HCS™) Version 4.1d by URS Corp.

LOS = Level of Service  
mi = miles  
Density is measured in passenger cars per mile per lane

### 4.9.4.4. Ramp Junctions

The following tables illustrate the 2030 Level of Service for the ramp merge or diverge movements within the study area. North and south bound are summarized separately. In 2030, both ramps at the Taft/McMillan interchanges will be operating at a failing level of service as will the I-471 entrance/exit. The Reading Road exit from I-71 northbound and the Dana Avenue entrance from I-71 southbound will also degrade to a failing LOS. The latter may be attributed in part to the impact of the planned office development in the vicinity and is based on the current ramp geometry. The Dana Avenue Interchange may be modified prior to the 2030 plan year. The other ramps with LOS E and F indicate that access to and from Uptown will experience increasingly higher levels of congestion.

**Table 16: 2030 LOS Northbound Ramp Junctions**

Ramp Location	Junction type	Design Hourly Volume	Density pc/mi/ln	LOS	AM/PM
I-471 NB Entrance SLM 1.90	Merge	1,971	34.3	F	AM
Ramp GD US-22 NB (Gilbert Ave.) Entrance	Merge	709	30.0	D	PM
Ramp RC US 42 NB (Reading Rd.) Exit	Diverge	1,896	35.7	F	AM
Ramp RD US 42 NB (Reading Rd.) Entrance	Merge	1,001	25.2	C	PM
Ramp TC McMillan St. Entrance	Merge	1,366	33.0	F	PM
Ramp MF Duck Creek Rd. Exit	Diverge	907	36.0	E	PM
Ramp DC Dana Ave. Entrance	Merge	1,046	31.3	D	PM

Source: Adjusted 2030 Peak Hour Volumes Ohio-Kentucky-Indiana Regional Council of Governments Regional Travel Demand Model Version 6.3. Level of Service Analysis: Highway Capacity Software (HCS™) Version 4.1d by URS Corp.

**Table 17: 2030 LOS Southbound Ramp Junctions**

Ramp Location	Junction Type	Design Hourly Volume	Density	LOS	AM/PM
Ramp DE Dana Ave. Exit	Diverge	1,037	30.4	D	PM
Ramp DB WB Dana Ave. Entrance	Merge	441	38.7	F	AM
Ramp ME US-22 Montgomery Rd. Entrance	Merge	346	25.4	C	PM
Ramp TH WH Taft Rd. Exit	Diverge	2,013	40.6	F	AM
Ramp RA SB US-42 Reading Rd. Exit	Diverge	1,027	8.1	A	AM
Ramp RF US-42 Reading Rd. Entrance	Merge	772	35.2	E	PM
I-471 Exit	Diverge	1,949	41	F	PM

Source: Adjusted 2030 Peak Hour Volumes Ohio-Kentucky-Indiana Regional Council of Governments Regional Travel Demand Model Version 6.3. Level of Service Analysis: Highway Capacity Software (HCS™) Version 4.1d by URS Corp.

LOS = Level of Service

mi = miles

Density is measured in passenger cars per mile per lane

### 4.9.4.5. Intersections

The 2030 level of service for at grade local intersections within the Part B Study area has not been analyzed to date. Additional signalized intersections were analyzed for the overall Part A Study Area. With the exception of Reading Road's intersections with Liberty Street, WH Taft Road, and ML King Drive, the at grade intersections are currently operating at an

acceptable overall LOS with sufficient capacity for additional volume growth. It is felt that the intersections will generally operate satisfactory in the 2030 plan year. The aforementioned intersections on Reading Road have been analyzed as part of the analysis of signal operations for the overall Part A Study area. Additional analysis of the intersections will be required for future evaluation of potential I-71 access improvement alternatives.

#### **4.10. Accident Analysis**

Crash data has been obtained for the years 2001-2004 from ODOT's Office of System Analysis for I-71, US-22 Gilbert Avenue, and US-42 Reading Road. Additionally, a database query of 2001-2004 crash data from the Ohio Department of Public Safety for locations within the City of Cincinnati provided crash data for those accidents coded by street house number that were not captured in the ODOT records. This includes the interstate, state routes, and local street network within the study area.

The incident database from the Greater Cincinnati ARTIMIS was also obtained for I-71 within the Part B Study area. This latter database includes all incidents on I-71 for the years 2001-2003 and includes accidents and other incidents which may have impacted traffic operations.

##### **4.10.1. ODOT Congestion Rankings**

ODOT recognizes the linkage between congestion and safety; therefore, each year ODOT studies and addresses congested locations, which are identified by calculating a roadway's volume to capacity ratio (V/C). This calculation compares the volume of traffic with the capacity (number of lanes) of the roadway to handle it. Roadway sections with V/C ratios greater than 1.0 are considered congested and added to the work plan and sections with V/C ratios between 0.9 and 1.0 are added if they are outside of Columbus, Cincinnati, and Cleveland. None of the segments within the study area are included in the top 200 listing within the State of Ohio.

ODOT's Congestion Management System data from 2004 indicates that I-71 within the study area will operate at an LOS of D/E in 2030. The V/C ratio indicates that the highest density on I-71 will occur in the vicinity of the Reading Road Interchange and north of the Taft/McMillan interchange. This agrees with the 2005 LOS analysis in Section 4.9.1, Table 9.

##### **4.10.2. Interstate-71**

A total of 528 accidents were recorded on I-71 during 2002-2004 within the study area. Of all accidents on I-71 during this period, 124 of the 528 occurred on the access ramps with the highest number located on the exit ramp from southbound I-71 to WH Taft Road. A total of 302 accidents occurred northbound and 226 southbound.

The overall composite crash rate for I-71 is 0.75 per million vehicle miles which is slightly lower than the ODOT average for an urban interstate at 1.36. Based upon the review of available accident data, it appears that I-71, in general, is not a significant concern in terms of highway safety.

**4.10.2.1. ODOT Highway Safety Program (HSP)**

***High Crash Locations***

ODOT identifies and studies the top 200 non-freeway locations and the top 50 freeway locations statewide for crashes on an annual basis. These locations are chosen based on crash rate (crashes per volume of traffic), frequency (number of crashes), density (crashes per length of road), severity, and other analytical factors. There are no segments located entirely within the study area that are included in the 2005 freeway listing. However, there is one segment included in the 2004 freeway listing (2002-2004 Accident Data). This location is between milepost 4.5 and 5.0. (between Montgomery Road and Victory Parkway) and ranked 26<sup>th</sup> on a statewide basis. However, the total number of crashes within this half mile segment included on the HSP list is 81 and an in-depth project review of crash data reduced this number to 61.

***Hotspots***

The following description of the ODOT Hot Spot Listing is taken from the ODOT Office of Systems Analysis and Program Management.

“Hot Spot locations are based on total number of crashes in an area regardless of traffic volume or other factors. Hot Spot locations are determined by dividing the roadways of the state into two mile sections and summing the number of crashes in each section over a three year period. The total number of crashes in each two mile section is then compared to predetermined crash thresholds to determine whether a Safety Hot Spot exists. Currently to be a Safety Hot Spot, the thresholds are defined as any freeway or non freeway section with 250 or more crashes.”

There is one segment from milepost 4.0 to 6.0 (Victory Parkway to Dana Avenue) included in the ODOT Hot Spot List for 2004 and 2005. For 2005, this segment was ranked 84<sup>th</sup> in the state with a total of 345 crashes (2003-2005). The adjusted total for this segment based on review of the individual OH-1 Reports is 238 for the 2002-2004 period.

The higher total of accidents in this segment appears to be attributable to some degree to the ramp merge/diverge at Montgomery and Duck Creek Roads combined with a reverse curve in the mainline at this location. This portion of the interstate does not generally experience a high level of congestion.

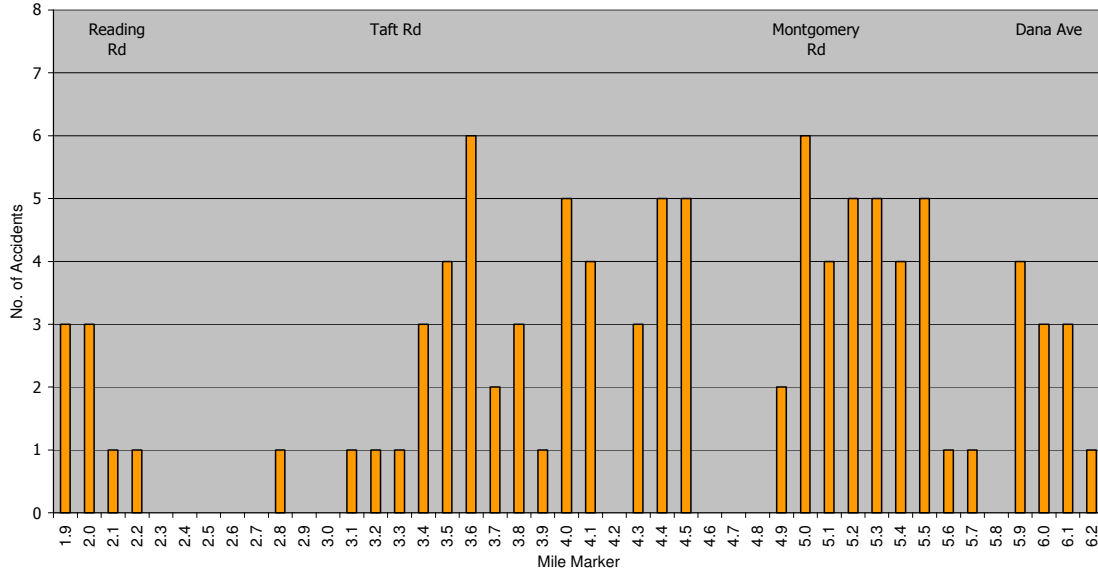
**4.10.2.2. Ohio Department of Public Safety Crash Data**

As can be seen in Charts 2 and 3, the accidents are typically clustered near the merge/diverge points of the respective interchange access ramps. There is a higher total in the curving section of the mainline in both directions north of Victory Parkway and in the vicinity of the Reading Road Interchange. See Figures 24 through 26 of Appendix C for a map illustrating the distribution of accidents within the study area.

Approximately 40% of all mainline crashes are rear-end type accidents and following too closely is the highest contributing factor towards all accidents. These accidents are an indicator of congestion within the study area. As congestion is forecast to increase by 2030, the total numbers of accidents would also be expected to increase.

### Chart 2: I-71 Northbound Rear-End Crashes

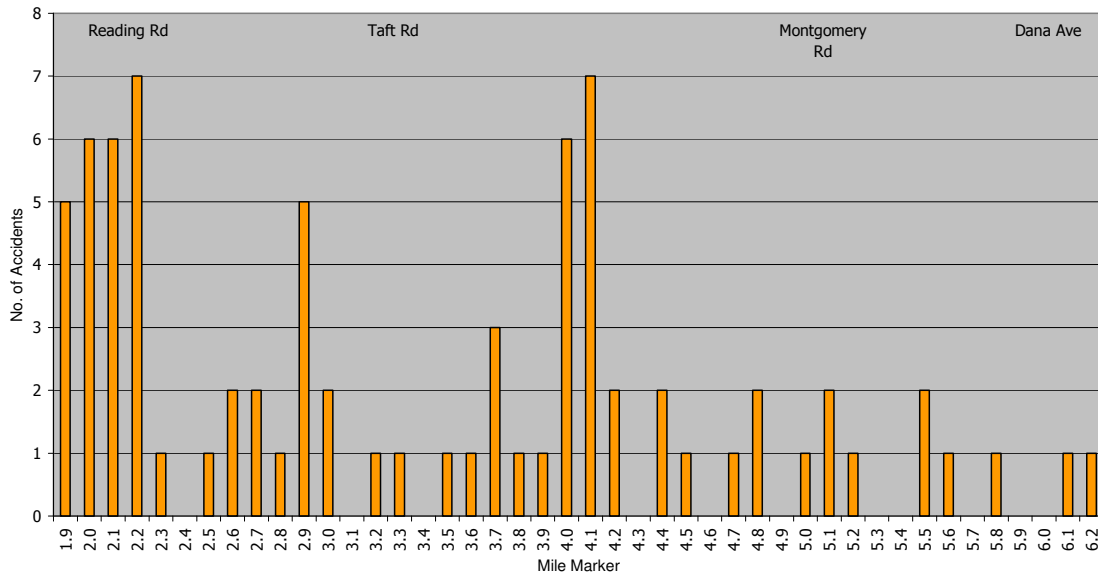
I-71 N.B. Mainline Rear-End Accidents  
2002-2004



### Chart 3: I-71

#### Southbound Rear-End Crashes

I-71 S.B. Mainline Rear-End Accidents  
2002-2004



For the distribution of accidents on the respective ramps please see the following table.

**Table 18: I-71 Ramp Accidents 2002 - 2004**

NORTHBOUND	
LOCATION	NUMBER
RAMP GG EXIT TO LIBERTY ST.	2
ENTRANCE FROM I-471	7
ENTRANCE US-22 GILBERT AVE.	2
RAMP RC EXIT TO READING RD.	9
ENTRANCE FROM US-42 READING RD	14
ENTRANCE FROM RAMP TC MCMILLAN ST.	3
EXIT TO DUCK CREEK RD.	11
TOTAL	48

SOUTHBOUND	
LOCATION	NUMBER
RAMP GH I-471 ENTRANCE FROM LIBERTY ST.	0
EXIT TO I-471	4
ENTRANCE FROM US-42 READING RD	10
EXIT READING/GILBERT	13
EXIT TO WH TAFT	19
ENTRANCE FROM RAMP TC MONTGOMERY RD.	8
ENTRANCE FROM DANA AVE.	1
TOTAL	55

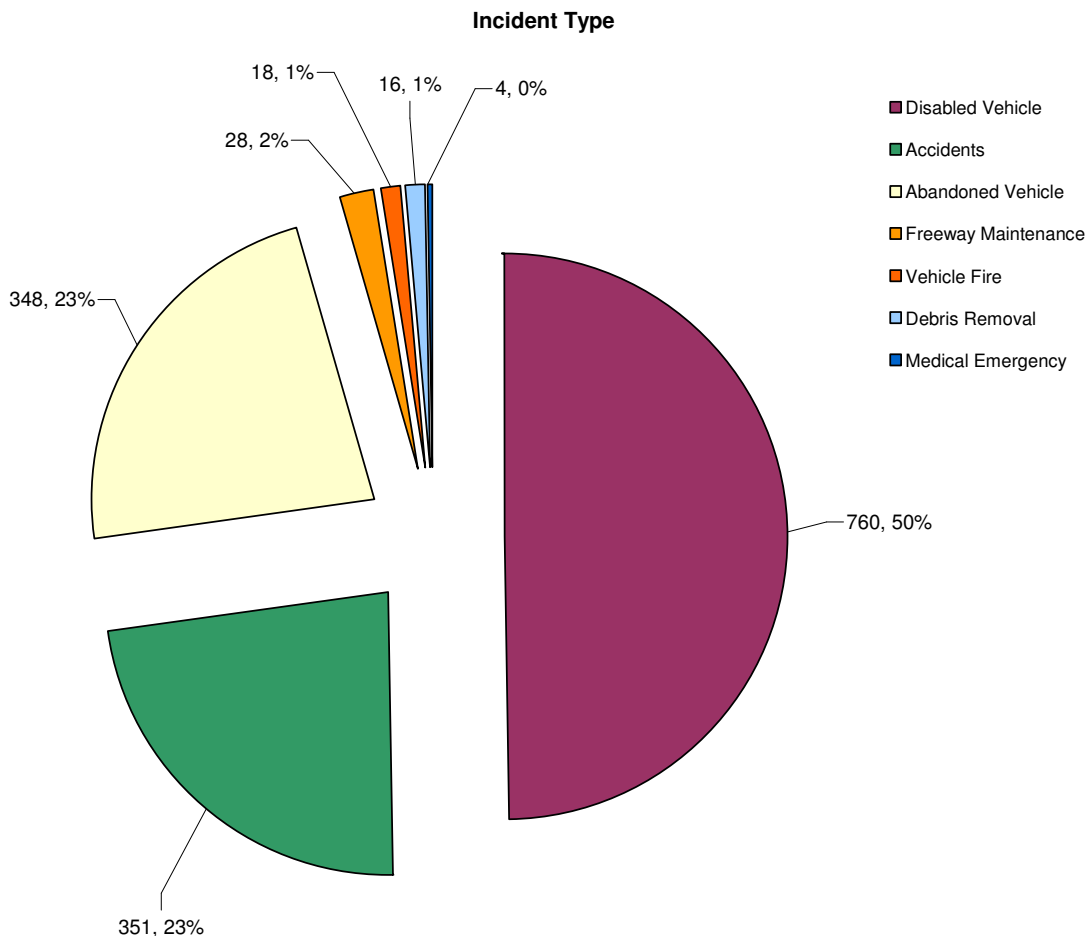
TOTAL BOTH DIRECTIONS	103
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### 4.10.2.3. ARTIMIS Incident Data

The Greater Cincinnati ARTIMIS system includes closed circuit television cameras, loop detectors, and microwave automatic traffic recorders. These facilities allow the roadway to be remotely monitored allowing emergency responder and law enforcement agencies to quickly respond to any incidents which may have an adverse impact on traffic flow.

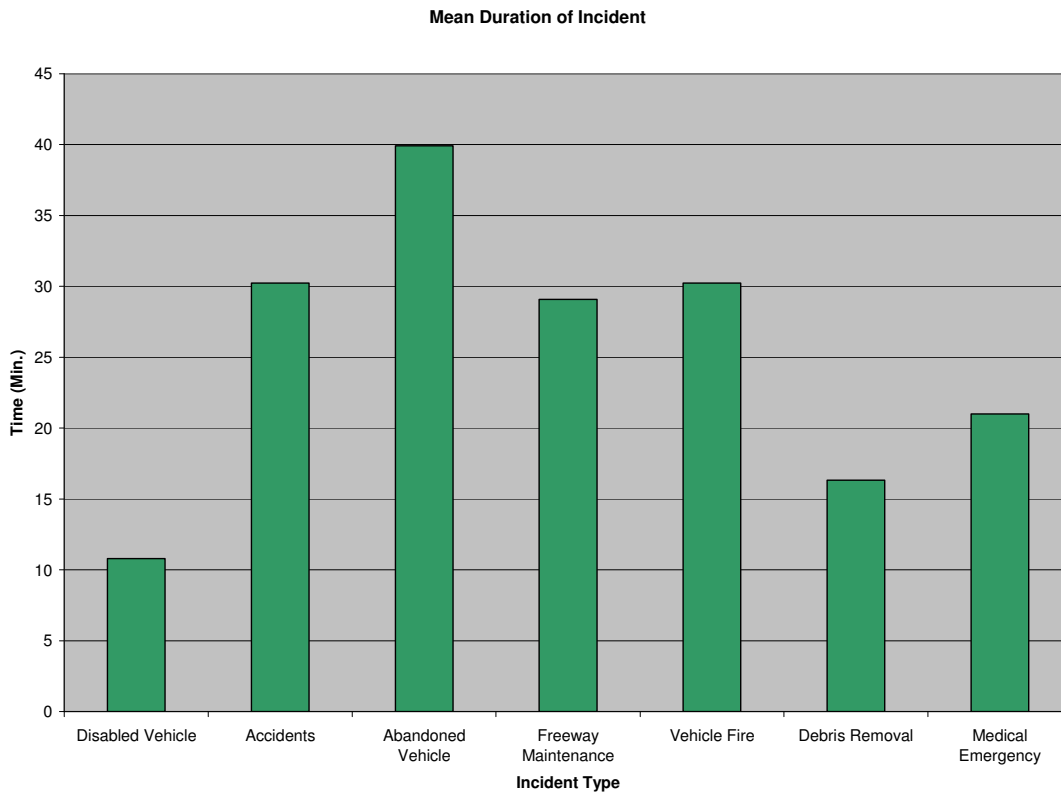
A summary of the ARTIMIS incident type for the years 2001-2003 is shown in Charts 4. A total of 1,525 incidents were recorded during the three year period. The majority of incidents were related to disabled or abandoned vehicles.

**Chart 4: ARTIMIS Incident Type 2001-2003**



The average duration by incident type is shown in Chart 5 with the abandoned vehicle time the longest. Generally, abandoned or disabled vehicles did not block any traffic lanes and did not significantly impair traffic flow.

**Chart 5: ARTIMIS Incident Duration by Type 2001-2003**



**4.10.3. US-42 (Reading Road)**

A total of 1,023 accidents were recorded for US-42 (Reading Road) within the study area between milepost 1.8 and 5.8 (Liberty Street to Rockdale Avenue). This included 4 fatalities and 223 injuries. The majority of accidents are located at three locations (near ML King Drive, WH Taft Road, and north of McGregor Street), see Table 19.

US-42 is not included on ODOT’s high crash location list or its hotspot safety list. Based on the numbers of accidents, it appears that it should be included on both lists although a formal analysis of the segment in accordance with ODOT’s HSP methodology was not undertaken. Again this issue is related to the fact that most crash reports for US-42 are coded by house number and not milepost, which ODOT has historically not included in its HSP databases.

Accidents were segregated by mid-block and intersection locations and the accident rates compared with City of Cincinnati average crash rates. Overall, accident rates for US-42 are



on par with City averages with an 8.5 vs. City average of 7.0 crashes per million vehicle miles traveled per mile although some segments operate with an accident rate up to twice the City averages at Liberty, ML King Drive and near Rockdale Avenue.

See Table 19, US-42 Mid-block Accident Rates, and Table 20, US-42 Intersection Accident Rates, for the details of the accident rates on US-42.

**Table 19: US 42 Mid-block Accident Rates**

Reading Road (US-42) Intersection With:	Number of Crashes	Number of Years in Study	Average Daily Traffic In Study Section	Traffic Count Station	Section Length (Miles)	Mid Block Calculated Accident Rate	City Wide Average Accident Rates
Liberty Street	25	4	24,073	10331	0.15	11.7	7.0
Elsinore Place	32	4	21,124	9	0.37	2.8	7.0
Dorchester Avenue/Eden Park Drive	105	4	24,373	70	0.33	3.5	7.0
McGregor Avenue	23	4	24,173	70	0.17	3.8	7.0
Morgan Street/Kinsey Avenue	14	4	18,330	32	0.11	4.9	7.0
Burnet Avenue	26	4	18,330	32	0.19	5.2	7.0
William Howard Taft Road	27	4	22,000	23	0.14	3.3	7.0
Oak Street	18	4	22,000	23	0.18	3.0	7.0
University Avenue/Lincoln Avenue	50	4	24,000	23	0.15	11.7	7.0
Martin Luther King Drive	46	4	25,020	27	0.19	6.7	7.0
Hickman Avenue	19	4	25,020	27	0.08	6.6	7.0
Ridgeway Avenue	35	4	25,020	27	0.23	4.3	7.0
Blair Avenue	17	4	25,020	27	0.13	10.1	7.0
Prospect Place	24	4	25,020	27	0.13	5.3	7.0
Rockdale Avenue/Forest Avenue							
Totals	559						

Source: Query of Ohio Department of Public Safety Accident Records 2001-2004 within City of Cincinnati and coded as a non-intersection accident. ADT taken from project specific traffic counts within segment or adjacent segments.



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**Table 20: US 42 Intersection Accident Rates**

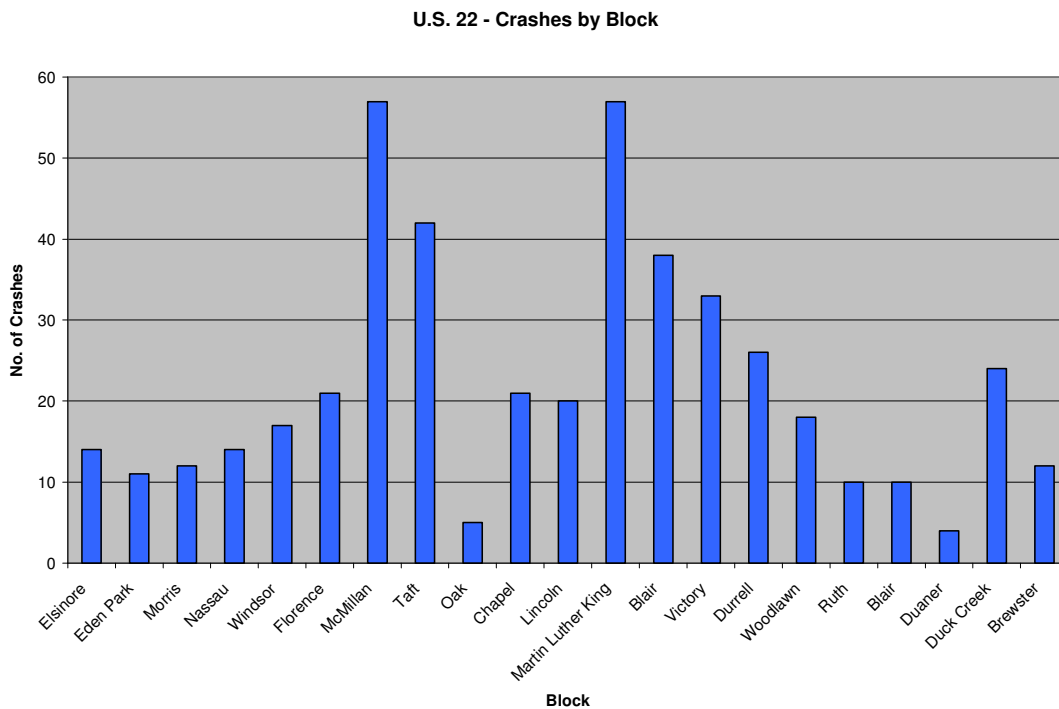
Reading Road (US-42) Intersection With:	Number of Crashes	Number of Years in Study	Intersection ADT	Intersection Calculated Accident Rate	City Wide Average Accident Rates
Liberty Street	32	4	41,440	0.5	2.0
Elsinore Place	66	4	32,050	1.4	2.0
Dorchester Avenue/Eden Park Drive	41	4	33,960	0.8	2.0
McGregor Avenue	24	4	28,951	0.6	1.5
Morgan Street/Kinsey Avenue	18	4	26,060	0.5	1.5
Burnet Avenue	24	4	13,180	1.2	2.0
William Howard Taft Road	69	4	33,660	1.4	2.0
Oak Street	14	4	17,480	0.5	2.0
University Avenue/Lincoln Avenue	44	4	23,500	1.3	1.5
Martin Luther King Drive	88	4	40,560	1.5	2.0
Hickman Avenue	20	4	26,114	0.5	1.0
Ridgeway Avenue	2	4	27,429	0.0	1.5
Blair Avenue	31	4	20,560	1.0	1.5
Prospect Place	2	4	26,020	0.1	1.5
Rockdale Avenue/Forest Avenue	72	4	26,400	1.9	2.0
<b>Total</b>	<b>547</b>				

Source: Query of Ohio Department of Public Safety Accident Records 2001-2004 within City of Cincinnati and coded as an intersection accident. ADT taken from adjacent roadway segments or project specific intersection turning movement counts. Peak hour intersection totals were factored by 10.0 to arrive at estimated ADT for intersection.

### 4.10.4. US-22 (Gilbert Avenue/Montgomery Road)

A total of 483 accidents were recorded on US-22 (Gilbert Avenue/Montgomery Road) between Elsinore Place and Dana Avenue during 2002-2004. Approximately 20% of those accidents caused injuries. No fatalities were recorded. See Chart 6 for the distribution of accidents by block. The accident rates on US-22 are less than city wide averages for arterials.

**Chart 6: US-22 Crashes by Block**



### 4.10.5. Other Streets

There are several arterial segments with crash rate exceeding the City of Cincinnati's average.

#### ***Dana Avenue***

A total of 491 accidents were recorded on Dana Avenue between Victory Parkway and Duck Creek Road during 2002-2004. This includes the segment at the Dana Avenue Interchange with I-71. Nearly a quarter of the recorded accidents occurred in the vicinity of the ramp terminal intersections on Dana Avenue. An in-depth analysis of the crashes in this vicinity was not undertaken. A major new office development is planned in this area along with potential modifications to the Dana Avenue Interchange.

### ***Duck Creek Road***

A total of 87 accidents were recorded on Duck Creek Road between Montgomery Road and Dana Avenue. Of these, 16 were coded as intersection accidents. The largest concentration of accidents was located between Crane Avenue and Dana Avenue at the northern portion of the segment. It does not appear that a significant concentration of accidents is attributable to the exit ramp from northbound I-71.

## **4.11. Multimodal Alternatives**

### **4.11.1. Bike and Pedestrian Network**

Sidewalks are provided on both sides of all arterial and local streets within the study area. Most signalized intersections include protected pedestrian phasing and crosswalks.

Responsibility for constructing and maintaining sidewalk space is shared by property owners and the City in accordance with CMC §721. Abutting property owners are responsible for maintaining the sidewalk space and keeping it free from nuisance. The City Engineer is responsible for supervising sidewalk construction, reconstruction, or repair.

City capital funding is used to repair walks at intersections, bus stops, and abutting property controlled by general fund City agencies. Capital funding is also used to construct curb ramps to improve accessibility.

There is a single signed bicycle route running east-west in the Part B Study Area along Lincoln Avenue. Preferred bicycle routes also include Gilbert Avenue (US-22), ML King Drive, Oak Street, Reading Road, and WH Taft Road. These routes generally have multiple lanes and less severe vertical grades to accommodate bicycle travel but are not explicitly signed as such.

See Part A, Existing and Future Conditions report for additional information.

### **4.11.2. SORTA Metro Transit Service**

The Southwest Ohio Regional Transit Authority provides regional public transit service, Metro, in the Uptown Study area. Both Gilbert Avenue (US-22) and Reading Road (US-42) are major bus corridors serving multiple routes. Additionally, several limited stop express routes utilize I-71 for travel to and from the Central Business District and suburban destinations.

East-west bus routes also make use of McMillan Street, WH Taft Road, Lincoln Avenue, Montgomery Road, Trimble Avenue, and ML King Drive.

Peebles Corner (Gilbert Avenue and McMillan Street) at the eastern edge of the Part B Study Area is a major bus transfer location.

**4.11.3. SORTA Rail Right of Way**

The Southwest Ohio Regional Transit Authority purchased several parcels of abandoned former Conrail railroad rights of way within the study area during 1995 with the intent that it could be utilized for potential mass transit service. Subsequent studies recommended use of portions of the right of way for light rail transit service. It should be noted that the SORTA owned parcels are discontinuous over the length of the study area.

The former railroad alignment also utilized two railroad structures over I-71, bridges HAM 71-0231 and HAM-71-0392, respectively. While both of these structures are owned by ODOT and maintained by the City of Cincinnati, their use for future transit services is a consideration for their future disposition.

The former railroad alignment also includes two masonry railroad tunnels located east of I-71 at Oak and McMillan Streets. The tunnels are owned and maintained by the City of Cincinnati.

No railroad activity is present at this time within the study area.

**4.11.4. Institutional Shuttles**

Local shuttle bus services are currently operated by the University of Cincinnati and Cincinnati Children’s Hospital Medical Center (CHMC) within the Part B Study Area.

The University of Cincinnati shuttle links the East and West Main Campuses with the College of Applied Science located off of Victory Parkway east of I-71.

The CHMC Shuttle operates between the main hospital campus (located off Burnet Avenue north of Albert Sabin Way) and the CHMC Oak Campus along Winslow Avenue as well as to other remote office locations at the 660 Lincoln Building east of I-71, to offices on Vernon Place, and several surface lots in the vicinity. Their use is designed to transport employees from remote parking locations to/from office and medical locations.

The shuttles themselves are parked in a surface lot located east of Winslow Avenue.