

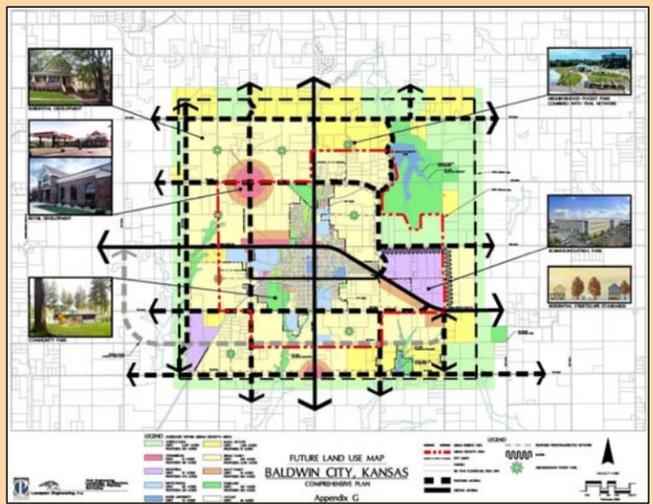
Future Land Use Maps

Study Area Plans

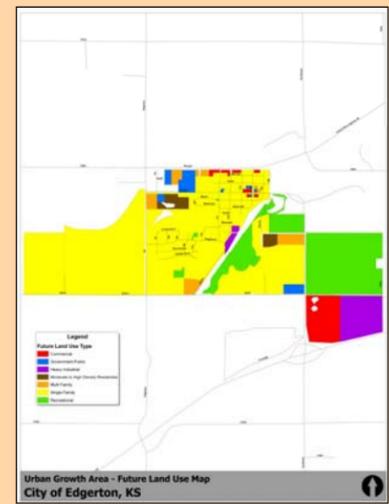
During the first phase of the planning process, the study team assembled and reviewed adopted comprehensive, land use and policy plans, and other development plans. These plans were used as a basis of the Foundation of Facts, and served as a baseline for calculating residential and non-residential demand.



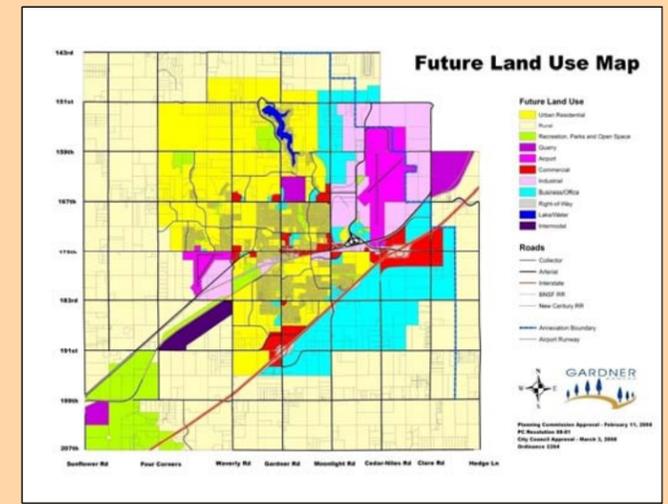
Baldwin City



Edgerton



Gardner



US-56 Characteristics By Zone

Character
The character of the US-56 Corridor varies from Rural-Agricultural to Suburban to Town Center to Industrial/Heavy Business. This poster shows how character can relate to uses, transportation and access.

Rural-Agricultural Zone	Suburban Zone	Town Center Zone	Industrial/Heavy Business Zone																																																																																																																								
<ul style="list-style-type: none"> Uses: Natural, agricultural, low-impact recreation, agricultural related business Density: Very low: 1 unit per 20-40 acres Primary Users: Private vehicles, farm-related vehicles 	<ul style="list-style-type: none"> Uses: Low density residential, civic and institutional uses, community commercial, and highway and auto-oriented uses Density: low: 1 unit per 3 - 5 acres up to around 3 units per acre Primary Users: Private vehicles 	<ul style="list-style-type: none"> Uses: Medium & high density residential, office and retail uses with good walking access Density: medium to high: generally 5 units per acre or greater Primary Users: Private vehicles, business serving vehicles, pedestrians, bicyclists 	<ul style="list-style-type: none"> Uses: Intense industrial and warehousing uses Density: 10 acres or greater Primary Users: Trucks, private vehicles 																																																																																																																								
<p>Transportation Characteristics</p> <table border="1"> <tr><td>Rightway Configuration</td><td>Suburban</td><td>✓</td></tr> <tr><td>Shoulders</td><td>Shoulders</td><td>✓</td></tr> <tr><td>On-street Parking</td><td>On-street Parking</td><td>✓</td></tr> <tr><td>Drainage</td><td>Open ditch</td><td>✓</td></tr> <tr><td>Speeds</td><td>30 to 35 mph</td><td>✓</td></tr> <tr><td>Daily Traffic Volumes</td><td>Less than 5,000</td><td>✓</td></tr> <tr><td>Access points per mile</td><td>Less than 20</td><td>✓</td></tr> <tr><td>Congestion Measure (pedestrian)</td><td>Density</td><td>✓</td></tr> <tr><td>Intersection Control</td><td>Side Street STOP</td><td>✓</td></tr> <tr><td>Pedestrian Treatment</td><td>None</td><td>✓</td></tr> </table>	Rightway Configuration	Suburban	✓	Shoulders	Shoulders	✓	On-street Parking	On-street Parking	✓	Drainage	Open ditch	✓	Speeds	30 to 35 mph	✓	Daily Traffic Volumes	Less than 5,000	✓	Access points per mile	Less than 20	✓	Congestion Measure (pedestrian)	Density	✓	Intersection Control	Side Street STOP	✓	Pedestrian Treatment	None	✓	<p>Transportation Characteristics</p> <table border="1"> <tr><td>Rightway Configuration</td><td>Suburban</td><td>✓</td></tr> <tr><td>Shoulders</td><td>Shoulders</td><td>✓</td></tr> <tr><td>On-street Parking</td><td>On-street Parking</td><td>✓</td></tr> <tr><td>Drainage</td><td>Open ditch</td><td>✓</td></tr> <tr><td>Speeds</td><td>30 to 35 mph</td><td>✓</td></tr> <tr><td>Daily Traffic Volumes</td><td>Less than 5,000</td><td>✓</td></tr> <tr><td>Access points per mile</td><td>Less than 20</td><td>✓</td></tr> <tr><td>Congestion Measure (pedestrian)</td><td>Density</td><td>✓</td></tr> <tr><td>Intersection Control</td><td>Side Street STOP</td><td>✓</td></tr> <tr><td>Pedestrian Treatment</td><td>None</td><td>✓</td></tr> </table>	Rightway Configuration	Suburban	✓	Shoulders	Shoulders	✓	On-street Parking	On-street Parking	✓	Drainage	Open ditch	✓	Speeds	30 to 35 mph	✓	Daily Traffic Volumes	Less than 5,000	✓	Access points per mile	Less than 20	✓	Congestion Measure (pedestrian)	Density	✓	Intersection Control	Side Street STOP	✓	Pedestrian Treatment	None	✓	<p>Transportation Characteristics</p> <table border="1"> <tr><td>Rightway Configuration</td><td>Suburban</td><td>✓</td></tr> <tr><td>Shoulders</td><td>Shoulders</td><td>✓</td></tr> <tr><td>On-street Parking</td><td>On-street Parking</td><td>✓</td></tr> <tr><td>Drainage</td><td>Open ditch</td><td>✓</td></tr> <tr><td>Speeds</td><td>30 to 35 mph</td><td>✓</td></tr> <tr><td>Daily Traffic Volumes</td><td>Less than 5,000</td><td>✓</td></tr> <tr><td>Access points per mile</td><td>Less than 20</td><td>✓</td></tr> <tr><td>Congestion Measure (pedestrian)</td><td>Density</td><td>✓</td></tr> <tr><td>Intersection Control</td><td>Side Street STOP</td><td>✓</td></tr> <tr><td>Pedestrian Treatment</td><td>None</td><td>✓</td></tr> </table>	Rightway Configuration	Suburban	✓	Shoulders	Shoulders	✓	On-street Parking	On-street Parking	✓	Drainage	Open ditch	✓	Speeds	30 to 35 mph	✓	Daily Traffic Volumes	Less than 5,000	✓	Access points per mile	Less than 20	✓	Congestion Measure (pedestrian)	Density	✓	Intersection Control	Side Street STOP	✓	Pedestrian Treatment	None	✓	<p>Transportation Characteristics</p> <table border="1"> <tr><td>Rightway Configuration</td><td>Suburban</td><td>✓</td></tr> <tr><td>Shoulders</td><td>Shoulders</td><td>✓</td></tr> <tr><td>On-street Parking</td><td>On-street Parking</td><td>✓</td></tr> <tr><td>Drainage</td><td>Open ditch</td><td>✓</td></tr> <tr><td>Speeds</td><td>30 to 35 mph</td><td>✓</td></tr> <tr><td>Daily Traffic Volumes</td><td>Less than 5,000</td><td>✓</td></tr> <tr><td>Access points per mile</td><td>Less than 20</td><td>✓</td></tr> <tr><td>Congestion Measure (pedestrian)</td><td>Density</td><td>✓</td></tr> <tr><td>Intersection Control</td><td>Side Street STOP</td><td>✓</td></tr> <tr><td>Pedestrian Treatment</td><td>None</td><td>✓</td></tr> </table>	Rightway Configuration	Suburban	✓	Shoulders	Shoulders	✓	On-street Parking	On-street Parking	✓	Drainage	Open ditch	✓	Speeds	30 to 35 mph	✓	Daily Traffic Volumes	Less than 5,000	✓	Access points per mile	Less than 20	✓	Congestion Measure (pedestrian)	Density	✓	Intersection Control	Side Street STOP	✓	Pedestrian Treatment	None	✓
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Corridor Character

The US-56 Corridor is diverse. It includes stretches of rural and agricultural uses, major parks, and natural areas. Most corridor residents live in the communities of Baldwin City, Edgerton, and Gardner where there are local shopping opportunities, services, and such significant institutions as Baker University.

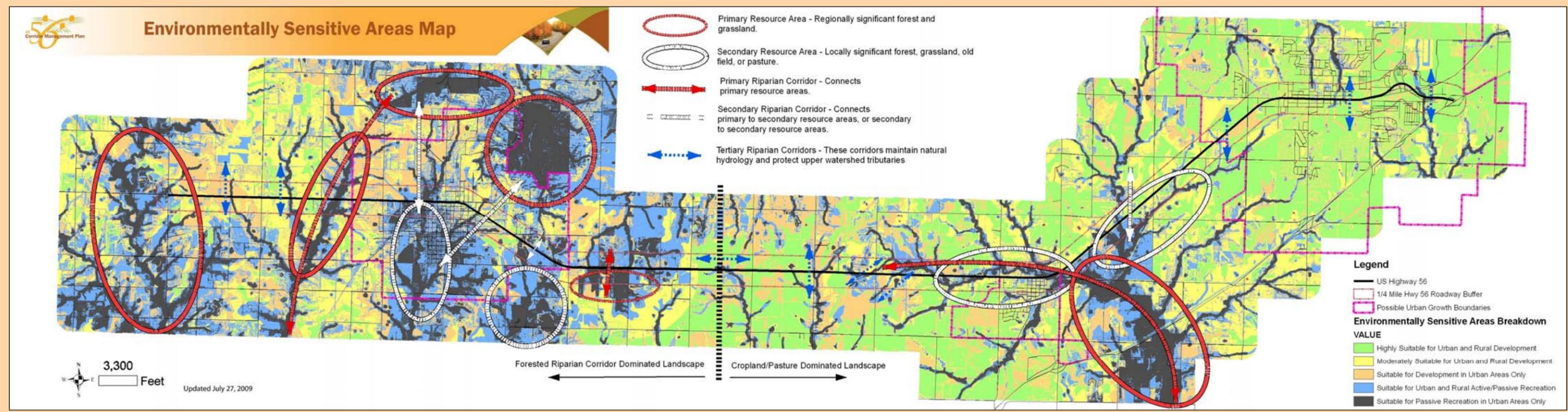
Major existing and proposed industrial uses are located throughout the corridor, particularly in areas well-served by interstates, rail and air.

At the first Workshop, Stakeholders helped identify four major "zones" along US-56. They include:

- **Rural-Agricultural Zone.** Natural, agricultural, low-impact recreation uses
- **Suburban Zone.** Residential, civic, commercial, highway and auto-oriented uses
- **Town Center Zone.** Residential, office and retail uses with good walking access
- **Industrial Zone.** Industrial, warehousing, major office uses

Stakeholders also discussed where the different zones begin and end, based on future development as shown in the adopted Comprehensive Plans.





Environmental Sensitivity for Land Use Forecasts

The corridor study area has significant streams, floodplains, wetlands, and regionally and locally significant forest and grasslands. Identifying these sensitive areas when reviewing potential future development helps to protect valuable recreation areas, protect water quality, reduce flooding, and provide wildlife habitat.

Key GIS data was assigned weights producing a graphic classification of land ranging from "Highly Suitable for Urban and Rural Development" (shown above in green) to "Suitable Only for Passive Recreation" (shown above in dark grey). Weighted data included soil classifications, hydrology, land cover, slopes, land use, and habitat.

Land Capacity vs. Developable Land

The capacity of land is a measure of how much future development the undeveloped lands can accommodate. Not all of the undeveloped areas, however, are open to development due to environmental constraints and natural resources. Accounting for land that is not already developed and not environmentally sensitive is the basis for determining what areas are deemed developable.

Developable Acreage Within Each City's Growth Boundary

Baldwin City	<ul style="list-style-type: none"> 1,700 net acres of developable land remain (3,700 acres are developed/sensitive)
Edgerton	<ul style="list-style-type: none"> 800 net acres of developable land remain (600 acres are developed/sensitive)
Gardner	<ul style="list-style-type: none"> 4,900 net acres of developable land remain (4,600 acres are developed/sensitive) Note: 40-50% of Gardner's growth boundary is not within the Study Area and therefore not included

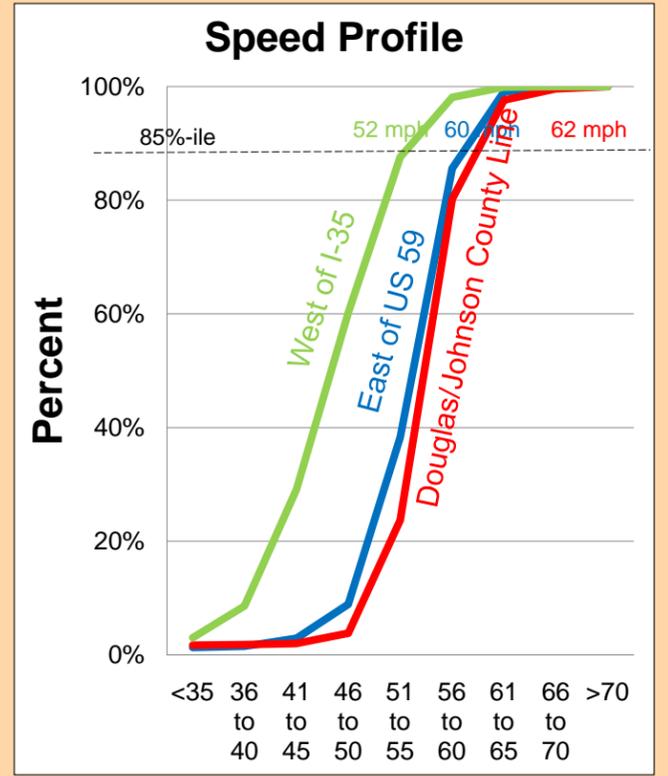
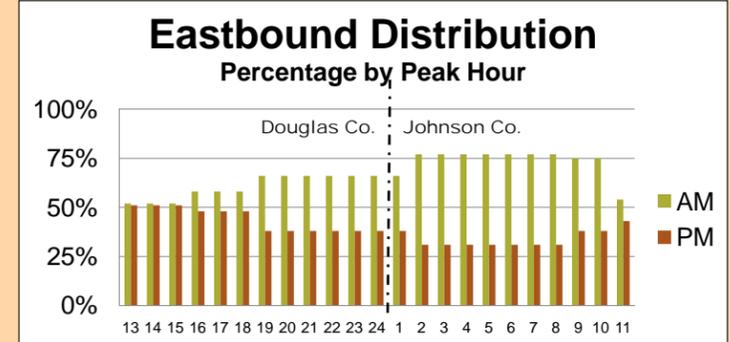
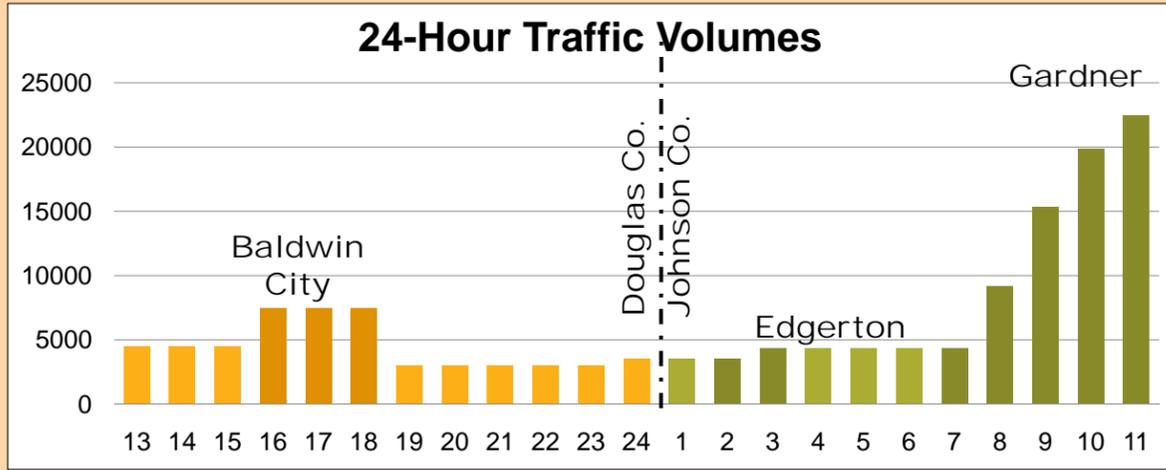


Traffic Volumes (2009)

Traffic volumes have a significant spread along the corridor, ranging from a low of 3,400 vehicles per day (vpd) (between Baldwin City and Edgerton) to over 22,400 vpd in Gardner near the I-35 interchange. Peak hour traffic volumes mimic the daily pattern along the corridor including the increase of traffic volumes within city limits.

The AM and PM total volumes are nearly identical (PM is slightly higher), yet the distribution by direction along the majority of the corridor indicates an eastbound bias in the AM and the reverse direction (westbound) in the PM. However, west of Baldwin City, the directional distribution is equally split. Truck percentages range from 5% to 7% of all traffic representing between 200 and 830 truck per day.

Traffic speeds have also been collected and indicate an 85th percentile speed to be more consistent with the recent posted speed increase to 60 mph.



Traffic Safety

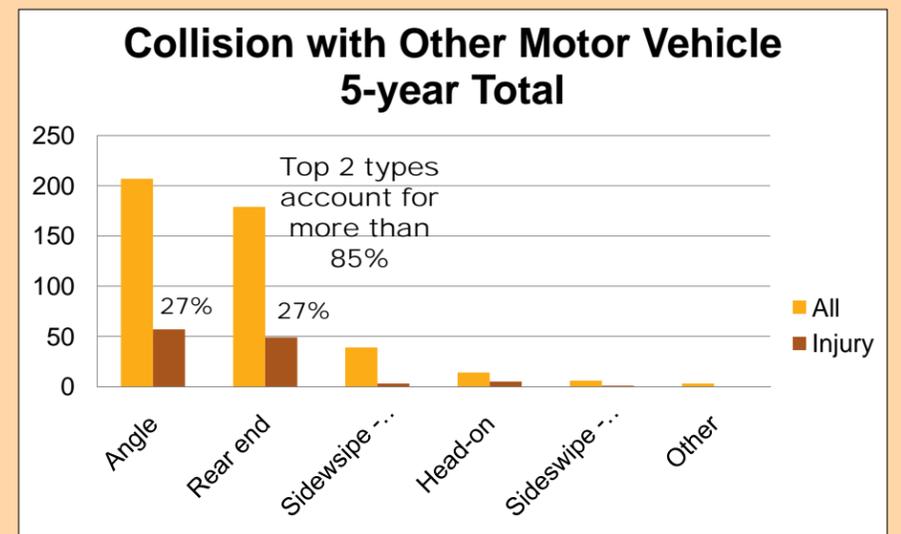
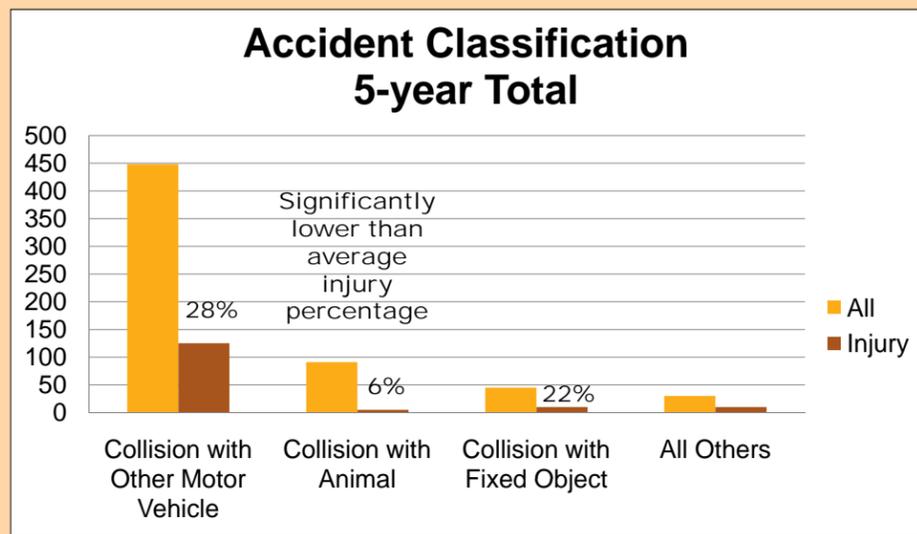
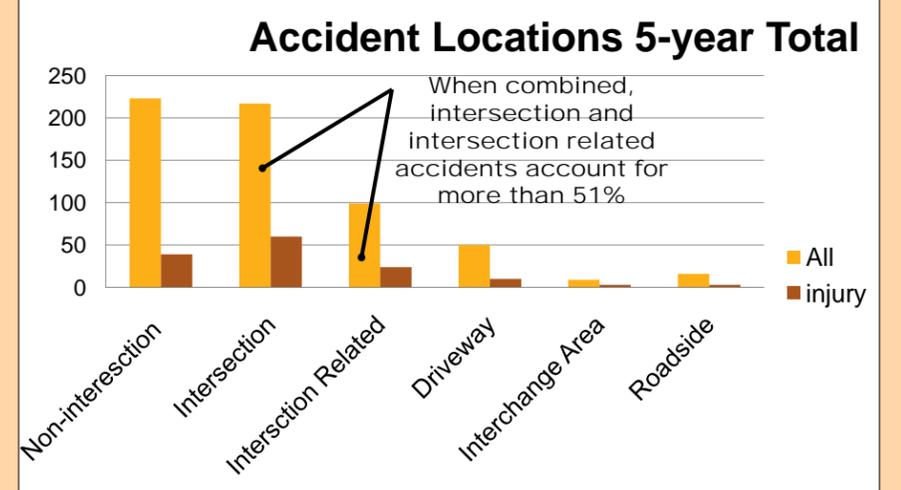
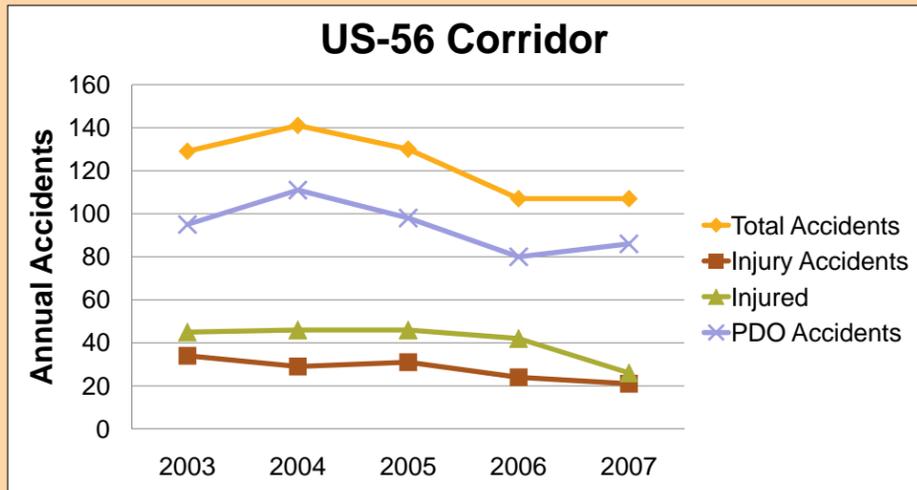
Three Locations Account for 44% of Intersection Crashes

A ranking of crashes at intersections indicates a pattern of crashes at three locations along U.S. 56. The top three locations include Moonlight Road (Gardner), U.S.-59, and 6th Street (Baldwin City). Fortunately the number of crashes has been decreasing for a total of 30 crashes at these three locations in 2003 to just six (6) in 2007.

The predominant type of accident is angle accidents at 80%. The percentage of injury accidents vary by location, with the U.S. 59 junction having a high percentage of injuries, including two fatalities in 2006.

Three Fatal Crashes Occur In One Year (2006)

A total of five (5) fatal crashes occurred over the five year period. Three of the five fatal accidents occurred in 2006. Two of these occurred at the junction of US-59. Four of the fatal accidents were with "other motor vehicles", of which three were angle accidents and the other a rear-end collision. Two of the four "other motor vehicles" occurred at intersections while the other two were classified as intersection related. Causes cited for these fatal crashes included: "traveling too fast", "exceeding posted speed", "failure to yield", and "improper turn".



Physical Conditions

BRIDGE CONDITIONS

There are a total of twelve (12) bridges along the 22-mile long corridor. The majority of bridges cross natural features such as creeks, while only five bridges cross over roads or railroads. The longest bridges over natural features are 112 feet long, while the majority (5) are less than 40 feet. The two longest bridges, over 400 feet in length, carry US-56 in the eastbound and westbound directions over I-35.

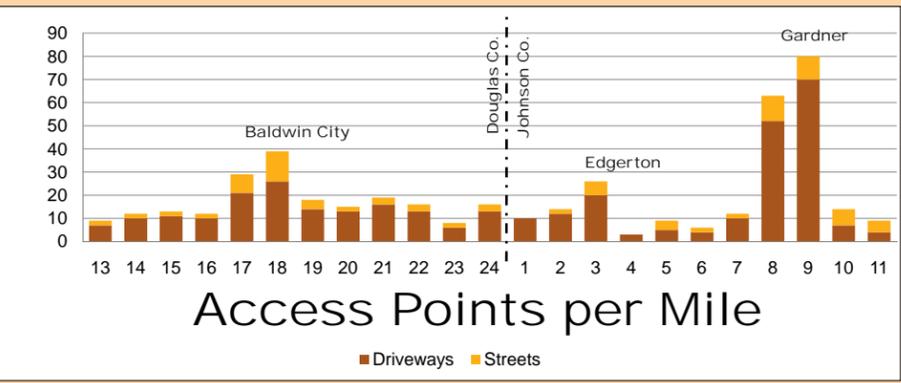
Only four of the bridges are greater than 50 years old, the remainder being less than 25 years old. The age of the bridges is reflected in their sufficiency index. Two bridges have a sufficiency index less than 50, while half have a sufficiency index greater than 90. The two with less than 50 are identified for replacement, while a third bridge is identified for rehabilitation. All three bridge are located in Douglas County.



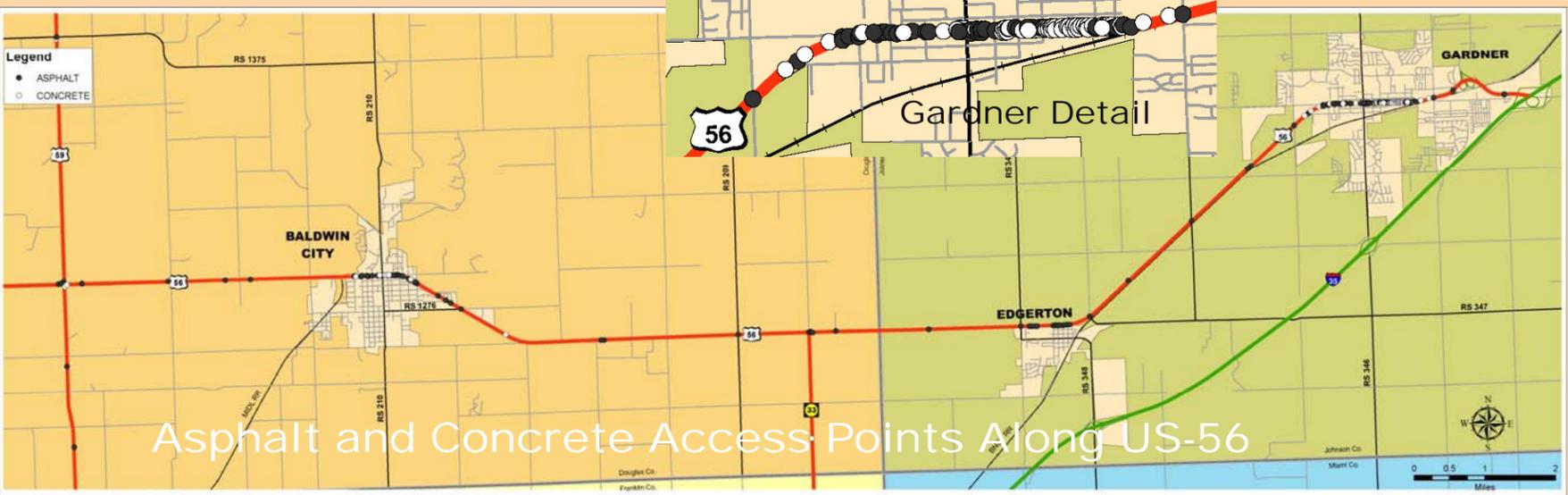
PAVEMENT CONDITIONS

In general, the overall pavement condition along the US-56 roadway is in acceptable conditions. The majority of the roadway (> 80%) consists of composite materials while the remainder varies between bituminous (1 mile) and concrete pavement (approximately 3 miles). As is seen above, shoulders are narrow and terrain is often rolling.

Several different assessments of the pavement reinforce the overall acceptable conditions rating. In terms of roughness, only 3 miles are rated "tolerable", one of those miles being the bituminous pavement and the other two miles essentially within Baldwin City. Approximately 5 miles have been identified as crack seal candidates, all in Douglas County. From a pavement performance assessment, only 6 miles are rated as "tolerable", all in Johnson County.



Access Management



Using KDOT's data set of access points, a rate of access points per mile rate was calculated that shows a range from 8 to over 60 access points per mile in the chart above. As could be expected, access points rates increase in the city limits where traffic volumes increase, speed slows and commercial activity increases. Public street access points are also shown.

How do these rates compare to accepted practice? Are there access point rate "standards" that should be applied?

Comparative access point rates vary based upon rural high-speed characteristics as well as low- to moderate-speed suburban/urban characteristics. In rural areas, a guideline of 8 to 10 access points per mile is suggested. This is achieved along much of Douglas and Johnson County. Rural areas can exceed this threshold and occurs when where six 5-acre residential parcels each have with direct access to US-56.

For urbanized areas, a guideline of 20 to 30 access points per mile is suggested. On a mile basis both Baldwin City and Edgerton are within or below this threshold. However in the City of Gardner, essentially Waverly through Moonlight, the access point rate per mile are more than double the guideline rates.

Access point rates aren't the only means to assess access conditions. Other aspects such as maintaining the functional area of intersections is important as well as the spacing of traffic signals. Yet access point rates do offer a sense of the task ahead if the intent is to bring access point rates into a desired range. Techniques such as removal or consolidation of access points can result in a reduction of rates.

Operating Conditions

HIGHWAY SEGMENTS

Two-Lane Highway segments are evaluated primarily by the ability for drivers to pass and travel at their preferred speed. The rural highway segments, from US-59 to Baldwin City, from Baldwin City to Edgerton, and from Edgerton to Gardner, all operate today with acceptable conditions, albeit the segment from Edgerton to Gardner is beginning to approach the thresholds of acceptable conditions due to the heavy directional split of traffic (eastbound in the morning and westbound in the evening).

INTERSECTIONS

In communities, traffic operating conditions are measured by the amount of delay experienced by drivers at intersections. For signalized intersections an average delay is calculated for all drivers while for stop-controlled intersections delay is calculated for movements that must yield to other traffic, such as a side-street approach or a left-turn off of US-56.

With the improvements currently under construction at Moonlight and US-56, all of the intersections operate with acceptable conditions today.

