

Transportation Outlook 2040 - Amendment #1

Project ID	Sponsor	Route/Facility	Description	Period	Cost	Action
3014	KDOT	I-435/State Ave. interchange	At I-435/State Avenue interchange in Wyandotte County, construction of a diverging diamond interchange	2015 to 2020	\$ 25,072,000	Add new project
3015	KDOT	I-70/I-435 interchange	At I-70/I-435 interchange in Wyandotte County, construction of flyover ramp from I-435 NB to I-70 WB and	2021 to 2030	\$ 77,000,000	Add new project
3009	MoDOT	I-435	Add auxiliary lane to I-435 from Parvin Rd to MO river bridge; reconstruct I-435/MO 210 interchange as diverging diamond	2015 to 2020	\$ 18,000,000	Update cost and move to constrained list

## KA-3228-02: I-435/State Avenue Interchange in Wyandotte County

Construction of a Diverging Diamond Interchange with Ramp Improvements

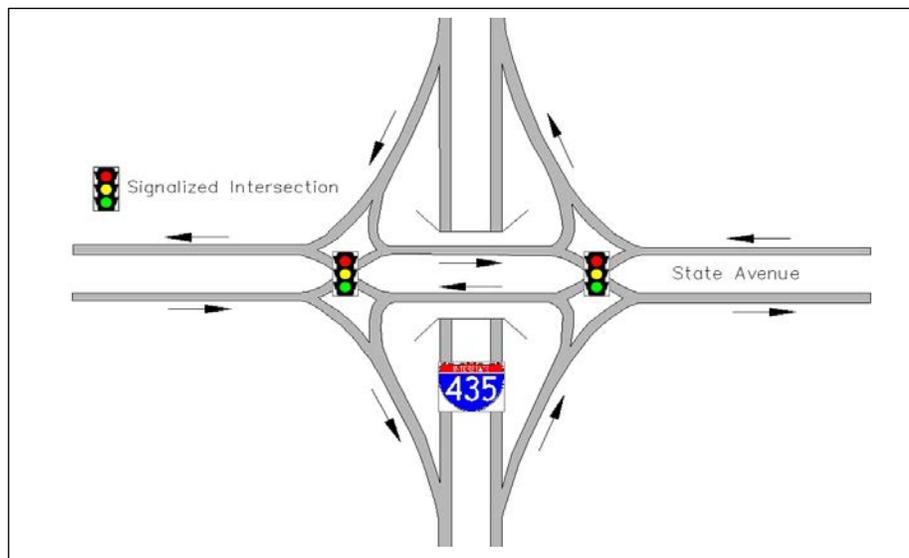
### I-435 NB to I-70 Flyover Interchange Improvements

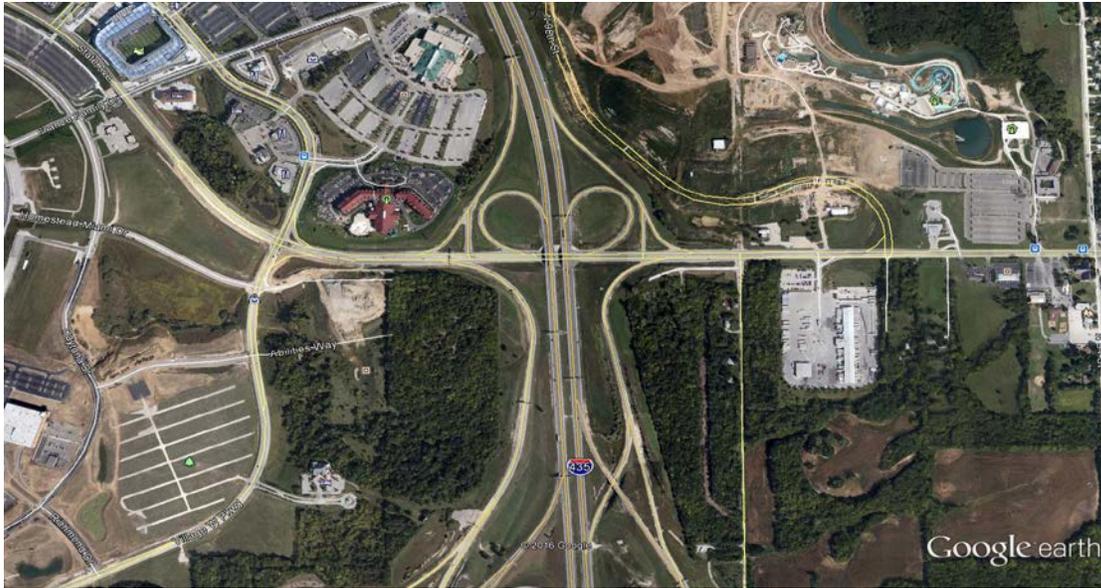
Construction of an I-70 flyover and other associated interchange improvements

#### Background

In 2010, the Kansas Department of Transportation (KDOT) and the Unified Government of Wyandotte County and Kansas City, Kansas (UG) retained the consulting firm, GBA, to complete a regional transportation master plan of traffic operations and geometric needs along the I-70 and I-435 corridors near the Village West region of western Wyandotte County. The goal of this study was to produce an area-wide projection of expected development impacts, review of area land uses, and prepare roadway improvement master plan concepts. Based upon the completed traffic projections and analyses; preliminary geometric design layouts; and estimates of total improvement project costs, a number of recommended improvements were determined. KDOT and the local governments can implement these concepts in order to create and maintain desirable levels of service and safety on I-70, on I-435, and at major interchanges and critical intersections within the transportation study area. In reference to this particular project, a number of improvement alternatives were analyzed for the I-435 & State Avenue Interchange including a Standard Diamond Interchange, Single Point Urban Interchange, and a Diverging Diamond Interchange.

The recommended improvement option at this location was determined to be the conversion of the existing partial cloverleaf interchange at I-435/State Avenue to a diverging diamond interchange, or DDI. This design concept is expected to improve the overall efficiency of the interchange and produces the lowest anticipated construction costs for the interchange area. The analysis shows that this improvement would yield significant improvement in safety, since no left turns must clear opposing traffic, and all movements have discrete lanes and most movements are controlled by traffic signals. A diverging diamond interchange has the traffic on the non-freeway road cross to the opposite side of the through roadway at the freeway underpass. Under this improvement scenario, the existing I-435 overpass bridges will be able to be maintained and used as part of the improvement, a significant cost savings. Also, this improvement also takes into consideration the current land uses and planned/future developments in the area.





In 2013, the Kansas Department of Transportation retained the consulting firm, TranSystems, to review the impacts of the Unified Governments proposed improvements to the State Avenue and Village West Parkway intersection on the I-435 and State Avenue interchange. The Unified Government completed a concept study report in 2013 to evaluate the recommended alternative from the regional master plan for the State Avenue and Village West Parkway intersection, a Single Point Urban Interchange. The report also identified concerns regarding operations of the Village West and I-435 interchanges in close proximity on State Avenue and potential issues with weaving movements on northbound I-435 if a DDI was constructed I-435 and State Avenue. KDOT's resulting study of the I-435 and State Avenue interchange evaluated additional interchange alternatives and the effects on the operation of the I-70 and I-435 interchange. The study agreed with the regional master plans recommendation of a DDI at I-435 and State Avenue and recommended a flyover for northbound I-435 to westbound I-70. The DDI was identified as the first phase and the flyover as the second phase.



**Amendment Details**

At this time, a Metropolitan Transportation Plan (MTP) amendment is being requested by KDOT in order to include the I425/ State Avenue DDI and the flyover for northbound I-435 to westbound I-70 projects on the constrained list of planned improvements. The first phase of the project is currently authorized for Preliminary Engineering which is planned to begin in May 2016. The total project costs for all work phases are estimated at \$24,145,001. This estimate should be used for planning purposes only. An additional consideration for this MTP amendment request is that KDOT will need to do a Break in Access Study for the projects. We are currently wrapping up the discovery phase report and beginning the survey. It will be next year before the Break in Access Study that includes the I-435/State Avenue interchange and the recommended a flyover for northbound I-435 to westbound I-70 is complete. Currently the I-435/State Avenue project has a possible letting date of July 2020 for the construction improvements. A possible letting date for the flyover project has yet to be determined.

KA-3228-02								
	Federal	Source	Year	State	Local	Total	AC Amount	AC Conversion Year~Source
PE	1080	ACNHP	2016	120	0	1200.0	1080	2022~NHPP
ROW	0	~	2019	400	0	400.0	0	~
Util	360	ACNHP	2020	40	0	400.0	360	2022~NHPP
Const/CE	20764.8	ACNHP	2020	2307.2	0	23072.0	20764.8	2022~NHPP
<b>Total</b>	22204.8			2867.2	0	25072.0	22204.8	

**Costs in the \$1,000's**

**Location:** I-435/State Avenue interchange, 0.5 miles north of I-70  
**Scope:** Construct a Diverging Diamond Interchange (DDI), including ramp improvements  
**Length:** 0.001  
**Note:** Project is authorized for PE Only. The total project cost, including all work phases, is estimated at \$25,072 K. This estimate should be used for planning purposes only. The PE work phase will utilize AC in the amount of \$1,080 K with conversion to NHPP in 2022.

The preliminary construction cost estimate for the I-435 NB to I-70 WB flyover is \$77 million. Refinement of construction cost estimates will follow the Break in Access Study.

## **I-435 and State Ave. DDI and I-70 Flyover Projects Connections to MARC's TO 2040 Policy Framework**

- These projects are supported by two studies conducted by a partnership between KDOT and the Unified Government of Wyandotte County/Kansas City, KS. The I-435 / I-70 / Village West Regional Transportation Study was completed in 2010 and the Village West Concept Study Report was completed in 2013.
- These projects are in response to locally driven roadway concerns and by planned future improvements to the local system. The locally driven improvement is at Village West Parkway and State Avenue where a single point urban interchange, or SPUI, is planned for construction. By continuing the planning and project development processes, both KDOT and the UG will be prepared for a coordinated and connected construction process in the future. Additionally, this partnership is expected to create efficiencies in cost, construction time, and impacts to traffic in the corridors.
- In terms of enhancing the economic vitality sense of place of the area, these improvements would serve the transportation needs of a growing and thriving activity center. KDOT anticipates these improvements being required to address the transportation system's needs that arise from the continued development within the Village West area. These are critical corridors where there is strong diversity of the current and proposed land uses and developments.
- In terms of the freight network, these projects feed into national trade corridors along I-35 and I-70 meanwhile connecting facilities that serve to connect local population centers and industries to outlying markets.
- These projects improve access to EJ tracts located in Wyandotte County.
- The area surrounding I-435/State Avenue interchange directly serves regional activity and employment centers such as Cerner, Schlitterbahn, Village West Shopping area, and Community America Ball Park, Kansas Speedway, and car dealerships. Many of these areas are located in connected, high density, walkable areas.
- Transit service operates in these corridors by way of KCATA. Service operates along State Avenue from Village West to Downtown KCMO as State Avenue Connex.
- Construction of the DDI would yield significant improvements in safety, since no left turns must clear opposing traffic and all movements have discrete lanes and most movements are controlled by traffic signals.
- The DDI concept will improve the overall efficiency of the interchange. Geometrics at this interchange are causing very poor operations on a daily basis during moderate to high traffic flow on some of the ramps. With continued development in the area, the peak period will become increasingly congested and the interchange is critical to the operation of the network.
- Improvements are expected to increase the capability of the system to handle significantly increased traffic volumes and off-peak congestion during major traffic events such as Sporting KC games at Children's Mercy Park, Kansas Speedway race events, and other entertainment schedules at venues in the area.

- It is expected that these improvements would yield more efficient traffic flow on both the mainline and ramps which would reduce congestion and help to mitigate the release of ozone precursor emissions. Additionally, the flyover alternative eliminates the weaves and greatly reduces mainline congestion through the primary interchange area.
- System preservation is a key goal of both MARC and KDOT and these projects are supportive of this goal. Relative to condition measures such as cracking, roughness, and performance, the roadway itself is currently in good condition. While the pavement is currently in good condition, it is expected that additional wear and tear from increased traffic volumes will increase the need for routine maintenance. It is important to remember that these two improvements are focused on multiple other goals and needs including the functionality and efficiency of the interchange.

Figure E.5b (ORIGINAL): Estimated Highway Revenues, Missouri side of region

Source	2015-2020	2021-2030	2031-2040	TOTAL
Federal	\$ 234,400,000	\$ 388,400,000	\$ 388,400,000	\$ 1,011,200,000
State	\$ 455,800,000	\$ 865,000,000	\$ 1,034,300,000	\$ 2,355,100,000
Local	\$ 2,074,900,000	\$ 4,140,600,000	\$ 5,177,600,000	\$ 11,393,100,000
Sub-allocated	\$ 122,200,000	\$ 206,000,000	\$ 206,000,000	\$ 534,200,000
	<b>\$ 2,887,300,000</b>	<b>\$ 5,600,000,000</b>	<b>\$ 6,806,300,000</b>	<b>\$ 15,293,600,000</b>

Figure E.5b (REVISED): Estimated Highway Revenues, Missouri side of region

Source	2015-2020	2021-2030	2031-2040	TOTAL
Federal	\$ 241,400,940	\$ 501,022,500	\$ 501,022,500	\$ 1,243,445,940
State	\$ 490,117,060	\$ 1,017,227,500	\$ 1,017,227,500	\$ 2,524,572,060
Local	\$ 2,074,900,000	\$ 4,140,600,000	\$ 5,177,600,000	\$ 11,393,100,000
Sub-allocated	\$ 122,200,000	\$ 206,000,000	\$ 206,000,000	\$ 534,200,000
	<b>\$ 2,928,618,000</b>	<b>\$ 5,864,850,000</b>	<b>\$ 6,901,850,000</b>	<b>\$ 15,695,318,000</b>

MoDOT state system funding:

	2015-2020
Original	\$ 690,200,000
Revised	\$ 731,518,000
Additional \$	<b>\$ 41,318,000</b>