

Characteristic	Partial Cloverleaf	Divergent Diamond Interchange (DDI)
<p>Compliance with North I-25 ROD Ability to fit within the footprint of the Preferred Alternative identified in the North I-25 Record of Decision without requiring substantial reevaluation of environmental impacts.</p>	<p>The partial cloverleaf is included in Phase 1 of the Preferred Alternative selected in the N I-25 ROD. When this interchange is funded and in final engineering design, a NEPA Document ReEvaluation (CDOT Form 1399) will be required because the project is proceeding to the next major approval. It is unlikely with this alternative that there will be any substantial changes in the social, economic, or environmental impacts of the Preferred Alternative that would substantially impact the quality of the human, socio-economic, or natural environment; therefore, the ROD will likely remain valid.</p> <p>A System Level Study (Directive 1601) and an Interstate Access Request (IAR) with CDOT and FHWA approval will be required prior to implementation.</p>	<p>When this interchange is funded and in final engineering design, a NEPA Document ReEvaluation (CDOT Form 1399) will be required for this interchange. If the ROD is determined to be no longer valid or more information is required based on the NEPA Document ReEvaluation because of a change in the Preferred Alternative to this type of interchange, additional documentation (Supplemental Environmental Impact Statement or revised ROD) would be required. Based on the conceptual engineering design, the DDI interchange does not appear to have substantial additional impacts on the quality of the human, socio-economic, or natural environment. Additional public involvement and agency coordination would be required.</p> <p>A System Level Study (Directive 1601) and an Interstate Access Request (IAR) with CDOT and FHWA approval will be required prior to implementation.</p>
<p>Traffic Operations Ability to adequately serve the 2035 peak hour projected traffic volumes.</p>	<p>Free right turn movements are allowed onto the ramps, but left turns off the ramps are signal controlled.</p> <p>Configuration necessitates additional lanes on bridge to accommodate 2035 travel demands.</p> <p>Through movements (from ramp to ramp) are accommodated, which is a useful tool to divert traffic during incident management on the mainline.</p> <p>Ramp terminal intersections projected to operate at LOS B or better during PM peak hour with 2035 forecasts.</p> <p>Nearest signalized intersections (Huron and Washington) projected to operate at acceptable LOS.</p> <p>Frontage Road connection to SH 7 would be eliminated. The existing frontage road would be relocated to connect to 168th Avenue.</p> <p>Approximately 690 feet of stacking distance between SB ramp terminal intersection and locally proposed Palisades Parkway intersection; 50th percentile queue length of 375 feet (95th percentile queue length of 425 feet) for EB approach to interchange.</p>	<p>Both free left and free right turn movements are allowed at ramps.</p> <p>Operates with two-phase signals and shorter cycle lengths.</p> <p>Configuration allows for accommodation of 2035 travel demands without additional lanes on bridge.</p> <p>U-turns from the highway are accommodated well, but through movements (from ramp to ramp) are not accommodated.</p> <p>Better functionality during power outages.</p> <p>Cross-over intersections projected to operate at LOS C during PM peak hour with 2035 forecasts.</p> <p>Nearest signalized intersections (Huron and Washington) projected to operate at acceptable LOS.</p> <p>Frontage Road connection to SH 7 would be eliminated. The existing frontage road would be relocated to connect to 168th Avenue.</p> <p>Approximately 880 feet of stacking distance between SB ramp terminal intersection and locally proposed Palisades Parkway intersection; average queue length of 175 feet (maximum queue length of 600 feet) for EB approach to interchange.</p>
<p>Transit Accommodations Ability to efficiently accommodate bus service along SH7 and on I-25, as well as the connection between these services.</p>	<p>Regional bus service (along I-25) could use ramps with bus pull outs on south side of SH 7. Regional buses could incur delays at signalized ramp terminal intersections.</p> <p>Connections between local bus service (along SH 7) and regional bus service could be accommodated at the park-n-Ride(s) or via pedestrian connections from SH 7 to the regional bus stop south of SH 7.</p> <p>A future park-n-Ride could be accommodated in southwest quadrant of interchange; loop ramp limits size of potential park-n-Ride in southeast quadrant of interchange.</p> <p>Conceptual design could accommodate future (post-2035) hard shoulder running for buses with lane and median reconfigurations.</p>	<p>Conceptual design includes bus-only pull outs for regional buses (along I-25 corridor) to stop south of SH 7 with pedestrian connections under ramps. Regional buses would not be routed through the ramp terminal intersections, but would instead proceed directly back onto the highway from the pull out.</p> <p>Connections between local bus service (along SH 7) and regional bus service could be accommodated at the park-n-Ride(s) or via pedestrian connections from SH 7 to the regional bus stop south of SH 7.</p> <p>A future park-n-Ride could be accommodated in the southwest and/or southeast quadrant of interchange.</p> <p>Conceptual design does not accommodate future (post-2035) hard shoulder running for buses, and would require further widening of the bridge.</p>
<p>Pedestrian/Bicycle Accommodations Provision for safe and efficient movement of pedestrians and bicyclists through the interchange.</p>	<p>Pedestrians would be accommodated on a traditional sidewalk (consistent with expectations). There would be 2 crossings at signalized intersections and 4 uncontrolled crossings at ramps.</p> <p>Bicyclists would be accommodated on either bike lanes or on a wide sidewalk on either side of the bridge.</p> <p>Pedestrian connections between local and regional transit should be designed to be as easy and direct as possible; configuration to be determined in later project development phases.</p>	<p>Pedestrians would be accommodated in the middle of structure (which is barrier protected but is unexpected for pedestrians). There would be 2 crossings at signalized intersections (vehicles are approaching from an unexpected direction) and 4 uncontrolled crossings at ramps.</p> <p>Bicyclists would be accommodated on the wide barrier protected walkway in the center of the structure for the length between the cross-over intersections. Bike lanes could be provided in this segment, but they would be placed between the travel lane and the center barrier, an unexpected position.</p> <p>An option (more expensive) would be to accommodate both pedestrians and bicyclists on separate bridge structures over I-25 on either side of the SH 7 bridge.</p> <p>Pedestrian connections between local and regional transit should be designed to be as easy and direct as possible; configuration to be determined in later project development phases.</p>



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Safety Reduction of conflict points and the ability to meet driver expectations.	This interchange concept has 20 vehicular conflict points (8 crossing conflicts, 4 merging conflicts, and 8 diverging conflicts). Speeds tend to be higher for through movements. There is a potential for wrong way entry to ramps.	This interchange concept has only 14 vehicular conflict points (2 crossing conflicts, 6 merging conflicts, 6 diverging conflicts). Speeds tend to be slower, and traffic calming features can be included. Wrong way entry to ramps is very difficult. History at US's first DDI in Springfield, MO (compared to pre-construction diamond interchange) has shown overall crash rates down 46% in first year. Left turn right angle crashes were down 72%. (Minimum of three years of crash data needed to fully assess safety benefits.) Design is critical to eliminate driver confusion.
Use of Existing Infrastructure Ability to make maximum use of existing infrastructure, particularly the bridge. Ability to eventually replace the bridge without redesigning the entire interchange.	The structure over I-25 would have to be widened significantly. With the design concept shown in the North I-25 EIS, this widening would be up to 72 feet to accommodate a wide median. By reducing the median, this width could be reduced. The existing structure could be utilized for an interim condition if the median is eliminated in this condition. The widening could then be done when the bridge needs to be reconstructed for either physical condition reasons or traffic operations reasons. All of the ramps in this alternative would require reconstruction.	The existing structure over I-25 would be required to be widened up to approximately 13 feet to accommodate the center shared use path and 3 travel lanes in each direction. The existing structure could be utilized in an interim condition that would include a middle pedestrian sidewalk and 2 travel lanes in each direction until traffic demands warrant a third travel lane in each direction. The existing ramp infrastructure could not be utilized effectively in an interim scenario because the turning movements at SH7 would be very tight. All of the ramps in this alternative would require reconstruction.
Right-of-Way Acquisition Minimize the acquisition of property for right-of-way and its associated cost.	Approximately 11.2 acres of ROW would be required, with substantial amounts required in the loop ramp quadrants (northwest and southeast).	Approximately 3.0 acres of ROW would be required, which would mainly impact the southwest and the southeast quadrants.
Compatibility with Local Land Uses Minimize impacts on existing land uses and provide opportunities for potential future development.	The partial cloverleaf interchange will require the acquisition of property mainly from the northwest and southeast quadrants of the existing interchange. These lands are currently vacant, but future land use for these quadrants consists of high density mixed-use and commercial land use. The partial cloverleaf interchange will reduce the available land for future development.	This concept will also require acquisition of property for right-of-way, although to a much lesser extent. The acquisitions necessary would be relatively narrow strips of land in the southeast and southwest quadrants. While these properties are currently undeveloped, future land uses call for commercial uses in these quadrants.
Cost Estimated construction cost to implement the alternative.	\$25.2 Million	\$13.2 Million
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Constructability Ability to phase the improvement in such a way that impacts to the travelling public and adjacent property owners are minimized.	The SB and NB off ramps would have to be constructed first so that these new ramps could be utilized for traffic while the loop ramps (which will require removal of the existing ramps) are constructed. Traffic could utilize the existing left turns on SH 7 along with the existing ramps until the proposed northwest and southeast ramps are constructed. This may require two closely spaced signalized intersections on SH 7 on both the west and east sides of I-25 during this construction phase.	The proposed ramps would be in close proximity to the existing ramps, which should allow for easier transitions to occur from the existing to the proposed ramps. The challenge of this alternative would be the phased construction of the improvements within SH 7, particularly at the ramp terminals where the DDI crossovers occur. Switching traffic to the DDI configuration should be completed as late in the construction process as possible. After this switch is made, the last aspect to be constructed would be the final median improvements within SH 7.