

City of Littleton - Santa Fe & Mineral Alternatives Development
Preliminary Alternatives Evaluation Summary

EVALUATION CRITERION	AT-GRADE ALTERNATIVES						GRADE-SEPARATED ALTERNATIVES					
	No Action (Existing Intersection)	Expanded Traditional Intersection	Continuous Flow Intersection	Quadrant Intersection	Median U-Turn Intersection	Restricted Crossing U-Turn Intersection	Diamond Interchange	Diverging Diamond Interchange	Displaced Left Turn Interchange	Single Point Urban Interchange	Partial Cloverleaf Interchange	"Split Diamond" Interchange
Safety	Maintains all existing conflict points	Maintains all existing conflict points	Reduced left-turn conflict speeds	Reduced left-turn conflict speeds, spreads remaining conflict points between three intersections	Removes almost all left-turn conflicts, but adds U-turn conflict at turnaround points	Removes almost all left-turn conflicts, but adds U-turn conflict at turnaround points	Separates major traffic flow from interacting with minor street	Separates major traffic flow from interacting with minor street, reduces left-turn conflict speeds	Separates major traffic flow from interacting with minor street, reduces left-turn conflict speeds	Separates major traffic flow from interacting with minor street, requires very long clearance intervals	Eliminates most severe/highest-volume left-turn conflicts via loop ramps	Separates major traffic flow from interacting with minor street
Traffic Operations	Maintains existing signal phasing and geometry with increased traffic volumes and delays	Maintains existing signal phasing, offers only minor improvements to intersection operations	Improved traffic operations, especially where large left-turn volumes are present	Improved traffic operations, but requires longer travel distance for left-turning vehicles	Marginally increased capacity at main intersection, requires longer travel distance for left-turning vehicles	Marginally increased capacity at main intersection, requires longer travel distance for left-turning vehicles	Increases capacity over at-grade options, but requires multi-phased signals along minor street	Increases capacity and reduces number of phases required at minor street signals, provides free-flow turning movements	Reduces number of phases at each signal, significantly improving traffic operations	Requires exclusive left-turn phases along each approach, longer clearance times result in less green time per movement	Offers significantly increased capacity, multiple free-flow turning movements via slip/loop ramps	Increases capacity over at-grade options, but requires multi-phased signals along minor street
V/C Ratio AM/PM	2.2 / 1.9	1.9 / 1.6	1.3 / 1.4	1.2 / 1.1	1.8 / 1.7	2.0 / 2.5	1.1 / 1.1	1.1 / 1.3	1.0 / 1.3	0.9 / 1.3	0.9 / 0.6	1.1 / 1.1
Bicycles / Pedestrians	Maintains existing crossings and conflict points with turning vehicles	Maintains existing crossings and conflict points with turning vehicles	Requires multi-stage crossings, places pedestrians between adjacent traffic flows	Accommodates pedestrians at all locations, similar to three traditional intersections	Requires large median and two-stage pedestrian crossing	Requires large median and two-stage pedestrian crossing	Separates major traffic flow from interacting with bikes/peds, but requires multiple intersection crossings	Separates major traffic flow from interacting with bikes/peds, but requires crossings of free-flow ramps	Separates major traffic flow from interacting with bikes/peds, but requires multiple intersection crossings	Separates major traffic flow from interacting with bikes/peds, but results in long crossing distances	Separates major traffic flow from interacting with bikes/peds, but requires crossings of high-speed, free-flow ramps	Separates major traffic flow from interacting with bikes/peds, but requires multiple intersection crossings
Right-of-Way	No impacts	Minor right-of-way acquisition required to widen all approaches to three lanes	Requires relatively little right-of-way acquisition to accommodate crossover geometry and additional medians	Requires right-of-way acquisition in the selected quadrant	Need for a large median requires significant right-of-way acquisition along the main roadway	Need for a large median requires significant right-of-way acquisition along the main roadway	Relatively minimal right-of-way requirements compared to other interchanges if using the "tight diamond"	Significant right-of-way impacts to RTD lot and new development	Significant right-of-way impacts to RTD lot and new development	Relatively minimal right-of-way requirements, minor acquisitions required only to accommodate ramps	Requires the largest footprint, resulting in significant right-of-way impacts to all adjacent parcels	Relatively minimal right-of-way requirements, but requires additional right-of-way from new development compared to the traditional diamond
Stakeholder Impacts	Higher difficulty accessing local destinations due to failing intersection operations	Higher difficulty accessing local destinations due to poor intersection operations	Improved operations can lead to improved bus travel times, access to adjacent parcels with minimal impacts to RTD lot or new development	Improved operations can lead to improved bus travel times and local access, but routes traffic through RTD lot or new development	Marginally improved operations can lead to improved bus travel times and local access, but widening would remove spaces from RTD lot	Marginally improved operations can lead to improved bus travel times and local access, but widening would remove spaces from RTD lot	Improved operations would result in greatly increased bus travel times and faster access to any destination	Improved mobility, but would remove a large number of parking spaces from the adjacent RTD lot and land from new development	Improved mobility, but would remove a large number of parking spaces from the adjacent RTD lot and land from new development	Improved mobility would result in greatly increased bus travel times and faster access to any destination	Improved mobility, but would remove a large number of parking spaces from the adjacent RTD lot and land from new development	Improved operations would result in greatly increased bus travel times and faster access to any destination
RTD Parking # of Spots Lost	0	0	0	0 (SW) - 75 (NW)	~ 50	~ 50	~ 25	~ 250	~ 250	~ 50	300 +	~ 25
Constructability	No construction required	Construction behind bridge piers to accommodate roadway widening creates significant challenges	Some widening required at crossover points, but generally simple construction	Construction mostly occurs outside of existing roadway ROW	Requires significant roadway widening and installation of two new traffic signals	Requires significant roadway widening and installation of two new traffic signals	Long, multi-phased construction period, significant impacts to traffic	Long, multi-phased construction period, significant impacts to traffic	Long, multi-phased construction period, significant impacts to traffic	Long, multi-phased construction period, significant impacts to traffic	Long, multi-phased construction period, significant impacts to traffic	Long, multi-phased construction period, significant impacts to traffic
Costs	No cost	~ \$12 million	~ \$15 million	~ \$10 million	~ \$15 million	~ \$15 million	~ \$100 million	~ \$135 million	~ \$125 million	~ \$100 million	~ \$140 million	~ \$115 million
Adaptability for Future Phases	Continues to be adaptable to proposed changes in the future	Continues to be adaptable to proposed changes in the future	Installs multiple crossover points with specific infrastructure requirements, lower adaptability	Easily adaptable to future changes, and installs roadway connections useful for future travel patterns	Installs large median which may support grade separation, but also installs new signals, etc. which would be lost	Installs large median which may support grade separation, but also installs new signals, etc. which would be lost	N/A					