

# LEVEL 2B EVALUATION



# Santa Fe PEL C-470 to I-25

## LEVEL 2B EVALUATION CRITERIA

The following evaluation criteria were developed to compare how well each theme in Level 2B evaluation meets the Purpose and Need and goals of the project. The performance measures are a mix of qualitative and quantitative assessment, and are based on the criteria and the data available at this stage of development.

Category	Level 2B	
	Criteria	Performance Measure
Safety	Crash Rate	Anticipated annual crash rate per million vehicles based on geometric changes and estimated throughput
Operational Performance	2040 Vehicle Hours Traveled (VHT) in AM and PM peak hours	Corridor VHT from Synchro model of 2040 peak hours
	Overall Corridor Delay	Cumulative intersection delay (hours) from Synchro model of peak hours Percentage of additional traffic volume carried along corridor over No Action
	Volume Throughput	Estimated throughput (vehicles/day) for segments along corridor, based on lanes, classification, and intersections
	Access Operational Impacts	Number and location of direct access points on Santa Fe Drive
Multimodal Connections	Pedestrian/Bicyclist Comfort and Safety	Multimodal facility characteristics and interaction with vehicular traffic, considering elements like: <ul style="list-style-type: none"> <li>Exposure based on intersection types, crossing width</li> <li>Location of parallel facilities (e.g. buffer from vehicular traffic)</li> <li>Driveways to cross along Santa Fe</li> </ul>
	Pedestrian and Bicyclist Crossings	Number and type of pedestrian/bicyclist crossings across Santa Fe (grade separated or at-grade) and spacing/frequency of crossing opportunities
	Pedestrian/Bicyclist Traveling Experience	Type of improvement with amount and quality of multimodal elements, including added facilities off of Santa Fe
	Optimized Transit Use	Number and type of improvements for different modes at stations and bus stops

**23143 Santa Fe PEL (C-470 to I-25)**  
**LEVEL 2B EVALUATION CRITERIA**  
 2 of 2

Category	Level 2B	
	Criteria	Performance Measure
Community / Quality of Life	Property Impacts	Properties and ROW that may be impacted based on conceptual layout
	Property Access Modifications	Number of property direct accesses removed Real and perceived difficulty to access area businesses
	Support of Local and Regional Planning and Policy Efforts	Noted consistencies and inconsistencies with agency policies - informed by Level 2A input from agencies for options in corridor
	General Public Sentiment	Summary of public input on themes and elements from second outreach event
Environmental Resources	Potential Impacts on Environmental Resources	Qualitative and/or quantitative assessment of notable benefits and/or impacts to differentiating environmental resources, as applicable: <ul style="list-style-type: none"> <li>▪ Air Quality</li> <li>▪ Wetlands and other Waters of the U.S.</li> <li>▪ Noise</li> <li>▪ Floodplains</li> </ul>
	Potential Impacts on Social and Built Environment	Qualitative and/or quantitative assessment of notable benefits and/or impacts to differentiating environmental resources, as applicable: <ul style="list-style-type: none"> <li>▪ Socioeconomic resources (including Environmental Justice)</li> <li>▪ Hazardous materials</li> <li>▪ Historic resources</li> <li>▪ Recreational resources</li> <li>▪ Visual/aesthetics</li> </ul>
Constructability	Ease of Implementation	Assessment of implementation requirements and/or construction complexity (e.g., permitting, approvals, construction traffic control) with notable elements
	Ability to Implement with Standalone Projects	Assessment of ability to construct with separate fundable construction projects

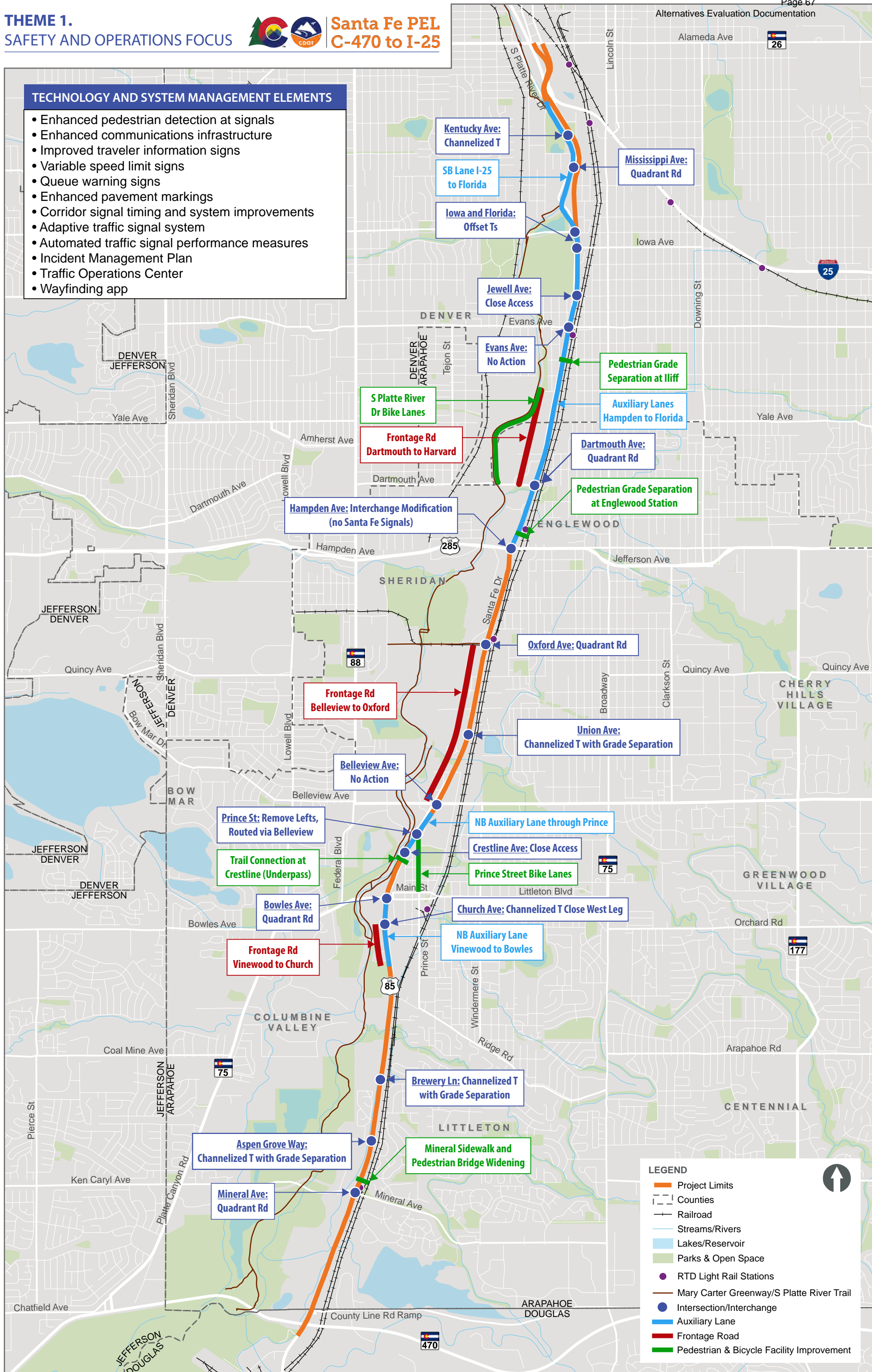
**THEME 1.**  
SAFETY AND OPERATIONS FOCUS



**Santa Fe PEL**  
**C-470 to I-25**

**TECHNOLOGY AND SYSTEM MANAGEMENT ELEMENTS**

- Enhanced pedestrian detection at signals
- Enhanced communications infrastructure
- Improved traveler information signs
- Variable speed limit signs
- Queue warning signs
- Enhanced pavement markings
- Corridor signal timing and system improvements
- Adaptive traffic signal system
- Automated traffic signal performance measures
- Incident Management Plan
- Traffic Operations Center
- Wayfinding app



**LEGEND**

- Project Limits
- Counties
- Railroad
- Streams/Rivers
- Lakes/Reservoir
- Parks & Open Space
- RTD Light Rail Stations
- Mary Carter Greenway/S Platte River Trail
- Intersection/Interchange
- Auxiliary Lane
- Frontage Road
- Pedestrian & Bicycle Facility Improvement



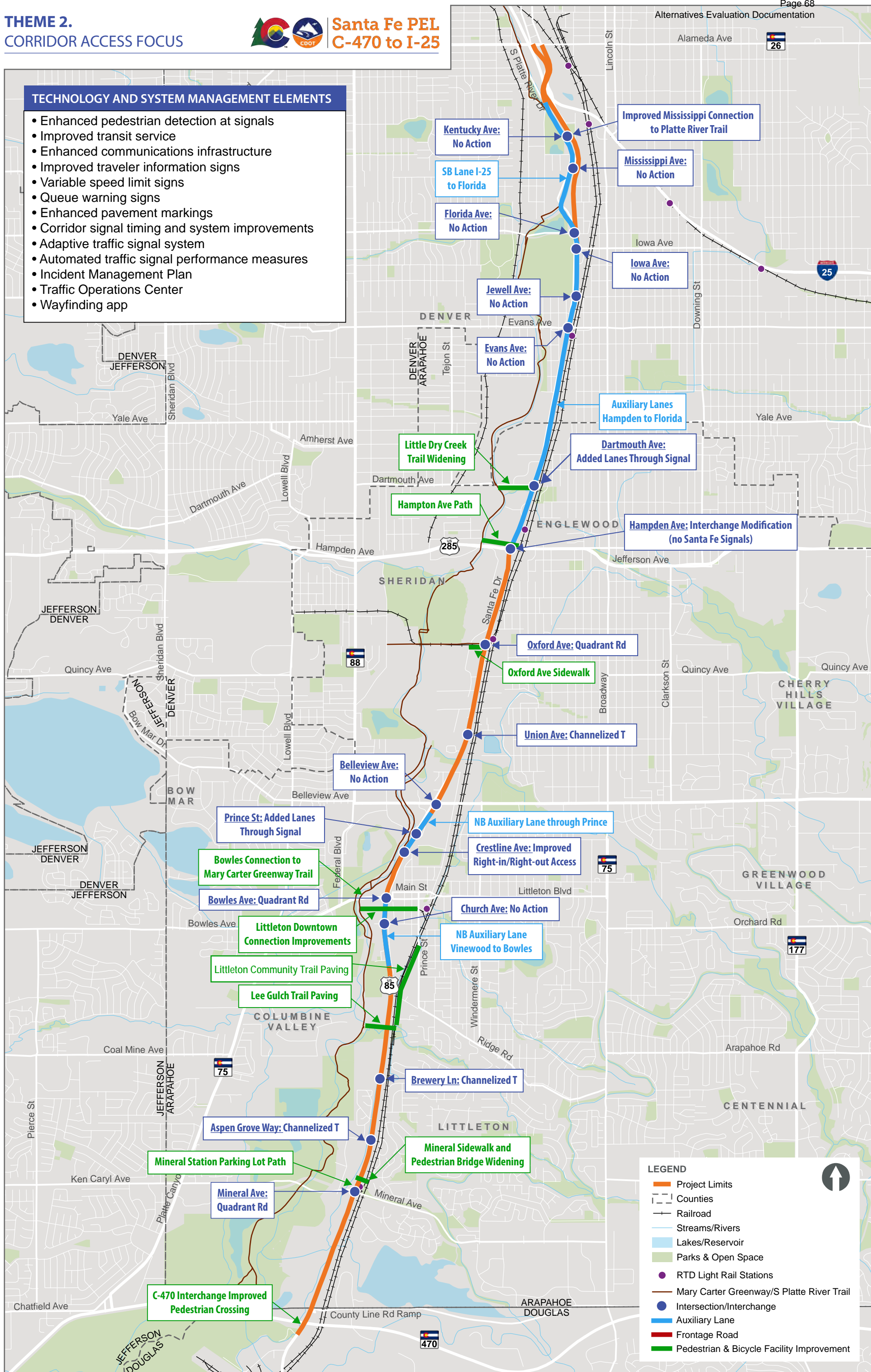
# THEME 2. CORRIDOR ACCESS FOCUS



## Santa Fe PEL C-470 to I-25

### TECHNOLOGY AND SYSTEM MANAGEMENT ELEMENTS

- Enhanced pedestrian detection at signals
- Improved transit service
- Enhanced communications infrastructure
- Improved traveler information signs
- Variable speed limit signs
- Queue warning signs
- Enhanced pavement markings
- Corridor signal timing and system improvements
- Adaptive traffic signal system
- Automated traffic signal performance measures
- Incident Management Plan
- Traffic Operations Center
- Wayfinding app



**LEGEND**

- Project Limits
- Counties
- Railroad
- Streams/Rivers
- Lakes/Reservoir
- Parks & Open Space
- RTD Light Rail Stations
- Mary Carter Greenway/S Platte River Trail
- Intersection/Interchange
- Auxiliary Lane
- Frontage Road
- Pedestrian & Bicycle Facility Improvement



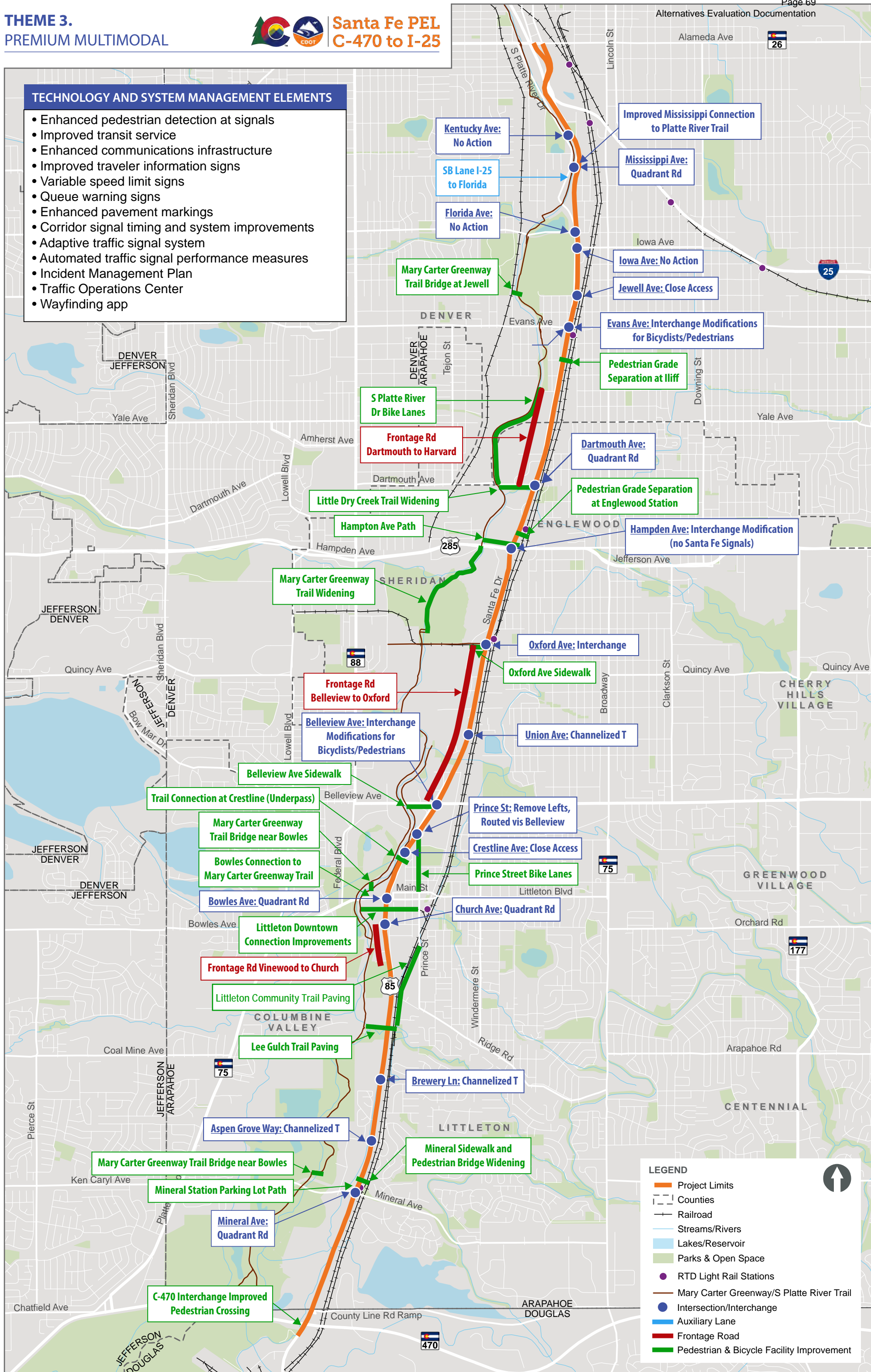
### THEME 3. PREMIUM MULTIMODAL



### Santa Fe PEL C-470 to I-25

#### TECHNOLOGY AND SYSTEM MANAGEMENT ELEMENTS

- Enhanced pedestrian detection at signals
- Improved transit service
- Enhanced communications infrastructure
- Improved traveler information signs
- Variable speed limit signs
- Queue warning signs
- Enhanced pavement markings
- Corridor signal timing and system improvements
- Adaptive traffic signal system
- Automated traffic signal performance measures
- Incident Management Plan
- Traffic Operations Center
- Wayfinding app



**LEGEND**

- Project Limits
- Counties
- Railroad
- Streams/Rivers
- Lakes/Reservoir
- Parks & Open Space
- RTD Light Rail Stations
- Mary Carter Greenway/S Platte River Trail
- Intersection/Interchange
- Auxiliary Lane
- Frontage Road
- Pedestrian & Bicycle Facility Improvement



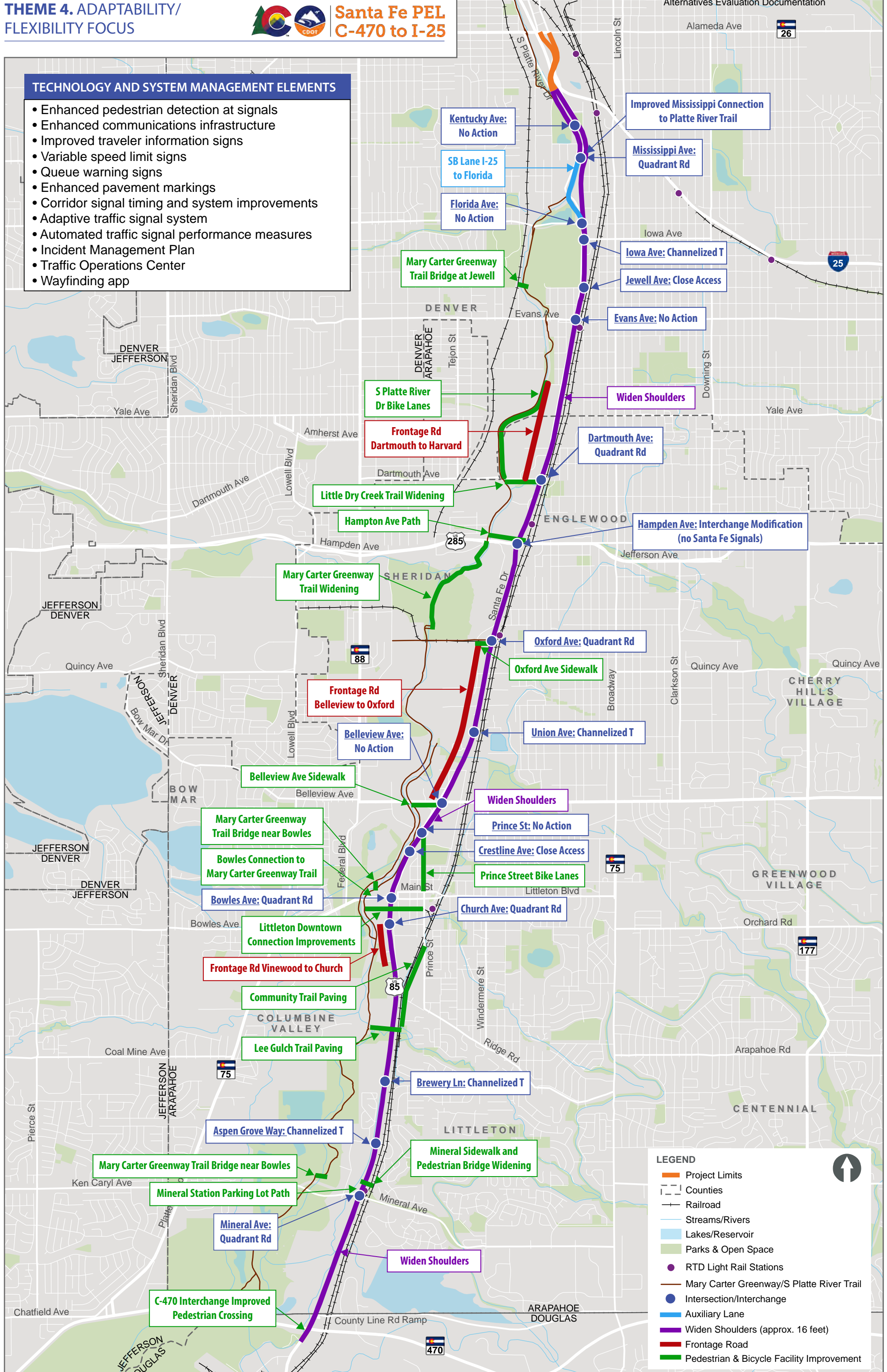
# THEME 4. ADAPTABILITY/ FLEXIBILITY FOCUS



## Santa Fe PEL C-470 to I-25

### TECHNOLOGY AND SYSTEM MANAGEMENT ELEMENTS

- Enhanced pedestrian detection at signals
- Enhanced communications infrastructure
- Improved traveler information signs
- Variable speed limit signs
- Queue warning signs
- Enhanced pavement markings
- Corridor signal timing and system improvements
- Adaptive traffic signal system
- Automated traffic signal performance measures
- Incident Management Plan
- Traffic Operations Center
- Wayfinding app



July 20, 2021

**MEMORANDUM**

To: Wendy Wallach, HDR

Cc: Jason Longsdorf and Zachary Bentzler, HDR

From: Arleen Taniwaki, ArLand Land Use Economics

Project: Santa Fe PEL Land Use Level 2

As part of the Santa Fe PEL level 2 evaluation, ArLand Land Use Economics was asked to quickly examine improvements grouped under Themes 1 and 3 for their potential land use implications. ArLand had provided the existing land use conditions for the project. The Level 2 analysis was conducted at a very high level. A separate analysis is being conducted to determine property acquisition impacts.

- Theme 1: Safety and Operations Focus
- Theme 3: Multimodal Focus

While more detailed notes can be found on the following pages, general thoughts are outlined below:

- *Access Closures:* In both Theme 1 and Theme 3, Jewell Avenue in Denver and Crestline Avenue in Littleton would be closed. Closures would not appear to have significant land use implications in both areas.
- *Frontage Roads:* in general, these have been proposed in areas where there are likely to be property and business acquisitions. Policy documents in many of these areas support area redevelopment and revitalization with the potential gradual transition of some of the existing area businesses to other business types.
- *Quadrant Roads:* Mixed review on land use impacts. The quadrant, because of its potential overall footprint, has a bigger potential impact on land use form than other options.
  - *Quadrant Road near Mississippi:* In more urbanized environments like Denver with a strong desire towards higher density and multimodal options, quadrant roads, while dispersing traffic, also potentially expand the vehicular environment and may make it more difficult in the future to transition to a more walkable, urban environment. The Mississippi / Santa Fe area is a particularly challenging example. While the City’s station area plan calls for pedestrian improvements along Mississippi, the developer’s plan also calls for pedestrian bridges spanning Santa Fe in order to encourage I-25 Broadway Station Area access from neighborhoods to the west of Santa Fe.



- *Quadrant Roads in Suburban Environments:* (ie in Littleton at Mineral, and potentially at Bowles and Church Avenue around Arapahoe Community College and the Dish Network campus) appear to work. There are pluses and minuses with the proposed Quadrant Road near Mineral. It's easier to install an improvement in a greenfield environment and the City appears to support it. However, the potential challenge is that it may impede the potentials of developing a community (employment or residential) that is walkable and takes advantage of station proximity.
- *Quadrant Roads in Existing Industrial Areas:* Quadrant roads can be built around an existing land use. For some land use types, it may not be an issue (ie some highway oriented commercial and industrial). For others, it could impede future development potentials. Unfortunately, there is not much local experience with these roads to analyze. Existing industrial areas with potential proposed quadrant roads include Oxford and Dartmouth Avenues.
- *Channelized Ts:* Areas where channelized T's are recommended include major destinations along Santa Fe including Aspen Grove and Brewery Lane. They don't appear to have significant land use implications.
- *Auxilliary Lane:* While some auxiliary lanes may require land acquisition (this analysis is ongoing), in general, the auxiliary lanes would adjoin the travel lanes and would not appear to have larger land use implications.
- *Multimodal Improvements:* This includes bike lanes, pedestrian grade separations, trail connections, sidewalk and pedestrian bridge widenings. In general, these are modest improvements that help with walkability and placemaking with positive land use and community benefits. These types of improvements are all supported in communities' policy documents.

Theme 1. Safety and Operations Focus

Improvement	Source	Conformance with Land Use (current and desired) High, Medium, Low	Note:
Kentucky Avenue: Channelized T	Alameda Station Area Plan and Broadway Station IMP	High	Kentucky to be a primary entrance to redevelopment area
SB Lane I-25 to Florida	Broadway Station IMP	High	Assume adjacent to travelling lane; no change to land uses IMP calls for ped improvements along Mississippi in order to enable west side neighborhoods to access station. May not be as conducive to desired walkable urban environment. IMP also calls for ped bridges (to be installed by developer) crossing Santa Fe.
Mississippi Avenue Quadrant Road		Medium	
Iowa and Florida Offset Ts		High	
Jewell Avenue: Close Access		High	
Evans Avenue: No Action		No Change	
Ped Grade Separation at Iliff		High	Assume no land acquisition needed and therefore no change to land uses
Auxiliary Lanes: Hampden to Fla		High	
S Platte River Drive bike lanes	Englewood Comp Plan	High	No impact on land uses
Frontage Road Dartmouth to Harvard	Englewood Comp Plan	Medium/High	City plans call for redevelopment
Ped Grade Separation at Englewood Station	Englewood Next Steps?	High	
Hampden Avenue Interchange Mod		Depends	No Santa Fe signals; redeveloping area on NEC; shuld be configured to help retain focus on and access to commercial mixed use development
Oxford Avenue: Quadrant Road	Sheridan Comp Plan	Medium	Compatible with land use plans in terms of broader land use. Plans also call for area redevelopment.
Frontage Road: Belleview to Oxford	Sheridan Comp Plan	Medium/High	City plans call for redevelopment
Union Avenue: Channelized T with grade separation		High	
Belleview Avenue: No action		No Change	
Prince St: remove lefts, routed through Belleview	Littleton Transportation Plan and Comp Plan	Medium/High - removal of lefts would likely upset businesses; but may open up other opportunities	Dangerous intersection with vehicular, bike and ped crashes. Commercial establishments on corner oriented to Santa Fe traffic that would potentially object to removal of lefts. Not sure that routing through Belleview would help the businesses. Future land use plan calls for corridor-mixed use in this area.
Crestline Avenue: Close Access		Medium/High	Grouped with above comment
NB Auxiliary lane through Prince		High	
Trail connection at Crestline Underpass	Littleton Transpo Plan	High	Not specifically identified in plan but meets overall plan's goals and objectives
Prince Street bike lanes	Littleton Transportation Plan and Comp Plan	High	Transpo Plan specifically calls for this
Church Avenue: Channelized T Close West Leg		High	
Frontage Road: Vinewood to Church		Medium/High	Area designated as Commercial Mixed Use.
NB Auxiliary Lane: Vinewood to Bowles		High	
Brewery Lane: Channelized T with Grade Separation		High	Access to major destination
Aspen Grove Way: Channelized T with Grade Separation		High	Access to major destinatin
Mineral Sidewalk and Ped Bridge Widening		High	Would help bolster LRT
Mineral Avenue: Quadrant Road		Medium	City supports; could impact potential future area commercial design and development. Potentially less ped oriented which could be important given proximity to LRT station

Theme 3. Multimodal Focus

Improvement	Source	Conformance with Land Use (current and desired) High, Medium, Low	Note:
Kentucky Avenue: No Action	Alameda Station Area Plan; Broadway Station IMP	No Change	Although Kentucky to be a primary entrance to redevelopment area
Improved Mississippi Connection to Platte River Trail	Broadway Station IMP	High	Improved connections desirable
SB Lane I-25 to Florida: Auxiliary Lane		High	Assume no land acquisition needed and therefore no change to land uses
Mississippi Avenue Quadrant Road	Broadway Station IMP	Medium	Likely to be located in industrial area. IMP calls for ped improvements along Mississippi in order to enable west side neighborhoods to access station. May not be as conducive to desired walkable urban environment.
Florida Avenue: No Action		No Change	
Iowa Avenue: No Action		No Change	
Jewell Avenue: Close Access		High	
Mary Carter Greenway Trail Bridge at Jewell		High	Improved connections desirable
Evans Ave: interchange Mods for Bikes / Peds		High	Improved connections desirable
Ped Grade Separation at Iliff		High	Improved connections desirable
S Platte River Drive bike lanes	Englewood Comp Plan	High	Improved connections desirable
Frontage Road Dartmouth to Harvard	Englewood Comp Plan	High	City plans call for redevelopment
Dartmouth Avenue Quadrant Road	Englewood Comp Plan	High	City plans call for redevelopment
Little Dry Creek Trail Widening		High	Improved connections desirable
Ped Grade Separation at Englewood Station	Englewood Next Steps	High	Improved connections desirable
Hampden Avenue Path		High	Improved connections desirable
Mary Carter Greenway Trail Widening		High	Improved connections desirable
Oxford Avenue: Quadrant Road	Sheridan Comp Plan	Medium	Compatible with land use plans in terms of broader land use. Plans also call for area redevelopment. Improvements may serve to "cut off" parts of redeveloping area from each other.
Oxford Avenue Sidewalk	Englewood Next Steps	High	
Frontage Road: Belleview to Oxford	Sheridan Comp Plan	Medium/High	City plans call for redevelopment
Belleview Avenue: Interchange Mods for Bikes/Peds		High	
Union Avenue: Channelized T		High	
Belleview Avenue sidewalk		High	Improved connections desirable
Trail connection at Crestline Underpass	Littleton Transpo Plan	High	Not specifically identified in plan but meets overall plan's goals and objectives
Prince St: remove lefts, routed through Belleview	Littleton Transportation Plan and Comp Plan	Medium/High - removal of lefts would likely upset businesses; but may open up other opportunities	Dangerous intersection with vehicular, bike and ped crashes. Commercial establishments on corner oriented to Santa Fe traffic that would potentially object to removal of lefts. Not sure that routing through Belleview would help the businesses. Future land use plan calls for corridor-mixed use in this area.
Crestline Avenue: Close Access		Medium/High	Grouped with above comment
Prince Street bike lanes	Littleton Transportation Plan and Comp Plan	High	Transpo Plan specifically calls for this
Mary Carter Greenway Trail Bridge near Bowles		High	Improved connections desirable
Bowles Connection to Mary Carter Greenway Trail		High	Improved connections desirable
Bowles Avenue Quadrant Road		Medium	Campus; would appear to work although further investigation needed
Church Avenue Quadrant Road		Medium	Campus; would appear to work although further investigation needed



Littleton Downtown Connection Improvements		High	Improved connections desirable
Frontage Road: Vinewood to Church		High	Area designated as Commercial Mixed Use. Would likely result in acquisitions and changes in business mixes; however, would probably be ok with jurisdiction
Community Trail Paving		High	Improved connections desirable
Lee Gulch Trail Paving		High	Improved connections desirable
Brewery Lane: Channelized T		High	Access to major destination
Aspen Grove Way: Channelized T		High	Access to major destination
Mineral Sidewalk and Ped Bridge Widening		High	Would help bolster LRT
Mary Carter Greenway Trail Bridge near Bowles		High	Improved connections desirable
Mineral Station Parking Lot Path		High	Improved connections desirable
Mineral Avenue: Quadrant Road		Medium	City supports; could impact potential future area commercial design and development. Potentially less ped oriented which could be important given proximity to LRT station
C470 Improved Ped Crossing		High	Improved connections desirable

DRAFT



## LEVEL 2B EVALUATION SUMMARY

Category	Evaluation Criteria	No Action	Theme 1 Safety and Operations Focus	Theme 2 Corridor Access Focus	Theme 3 Multimodal Focus	Theme 4 Adaptability/Flexibility	Evaluation Summary
Safety	Crash Rate (crashes per million vehicle miles of travel)	2.94 crashes per million vehicle miles of travel 1.6% increase vs Existing	2.82 crashes per million vehicle miles of travel 2.5% decrease vs Existing	2.90 crashes per million vehicle miles of travel 0.1% decrease vs Existing	2.87 crashes per million vehicle miles of travel 1.0% decrease vs Existing	2.86 crashes per million vehicle miles of travel 1.3% decrease vs Existing	<ul style="list-style-type: none"> <li>All themes show a reduction in crash rate over Existing condition</li> <li>Theme 1 has highest reduction and Theme 2 has substantially less crash reduction than other themes</li> </ul>
	2040 Vehicle Hours Traveled (VHT) in AM and PM peak hours	AM VHT = 2,370 Hours PM VHT = 2,760 Hours	Total AM VHT = 1,760 Hours Total PM VHT = 1,910 Hours	Total AM VHT = 2,130 Hours Total PM VHT = 2,610 Hours	Total AM VHT = 1,870 Hours Total PM VHT = 2,290 Hours	Total AM VHT = 1,820 Hours Total PM VHT = 2,240 Hours	<ul style="list-style-type: none"> <li>All themes have reduced travel time over No Action condition</li> <li>Theme 1 has lowest travel time and Theme 2 has highest travel time of other themes</li> </ul>
Operational Performance	Overall Corridor Delay	Total AM Delay = 1,340 Hours Total PM Delay = 1,690 Hours	Total AM Delay = 640 Hours Total PM Delay = 750 Hours +16% flexibility versus No Action	Total AM Delay = 990 Hours Total PM Delay = 1,450 Hours +9% flexibility versus No Action	Total AM Delay = 750 Hours Total PM Delay = 1,130 Hours +10% flexibility versus No Action	Total AM Delay = 700 Hours Total PM Delay = 1,090 Hours +11% flexibility versus No Action	<ul style="list-style-type: none"> <li>All themes have reduced delay over No Action condition</li> <li>Theme 1 has largest reduction in delay</li> <li>Theme 2 has substantially less reduction in delay than other themes</li> <li>Themes 2, 3, &amp; 4 have similar capacity flexibility</li> </ul>
	Volume Throughput	S of Vinewood St = 62,400 vpd N of Church Ave = 62,600 vpd N of Belleview Ave = 85,200 vpd N of Dartmouth Ave = 96,400 vpd N of Florida Ave = 108,900 vpd	S of Vinewood St = 67,600 vpd N of Church Ave = 76,100 vpd N of Belleview Ave = 93,600 vpd N of Dartmouth Ave = 114,900 vpd N of Florida Ave = 114,900 vpd	S of Vinewood St = 65,500 vpd N of Church Ave = 73,300 vpd N of Belleview Ave = 93,600 vpd N of Dartmouth Ave = 110,500 vpd N of Florida Ave = 113,800 vpd	S of Vinewood St = 65,500 vpd N of Church Ave = 65,500 vpd N of Belleview Ave = 93,600 vpd N of Dartmouth Ave = 103,300 vpd N of Florida Ave = 114,900 vpd	S of Vinewood St = 65,500 vpd N of Church Ave = 65,500 vpd N of Belleview Ave = 93,600 vpd N of Dartmouth Ave = 103,300 vpd N of Florida Ave = 114,900 vpd	<ul style="list-style-type: none"> <li>All themes have increased volume throughput over No Action condition</li> <li>Themes 1 &amp; 2 have largest increase in middle sections of corridor</li> </ul>
	Access Operational Impacts	Driveways on Santa Fe create operational issues and crash patterns in areas of congestion adjacent to major intersections 16 driveways on west side through lane Brewery Ln-Church 4 driveways on west side auxiliary lane Chenango-Union 7 driveways on west side auxiliary lane Dartmouth-Harvard 13 driveways on west side through lane north of Florida 11 driveways on east side through lane north of Florida	Reduced number of driveways on Santa Fe improves operations and safety in areas adjacent to major intersections 12 driveways on west side through lane Brewery Ln-Church No driveways on west side auxiliary lane Chenango-Union No driveways on west side auxiliary lane Dartmouth-Harvard 10 driveways on west side through lane north of Florida 8 driveways on east side through lane north of Florida	Driveways on Santa Fe create operational issues and crash patterns in areas adjacent to major intersections 16 driveways on west side through lane Brewery Ln-Church 4 driveways on west side auxiliary lane Chenango-Union 7 driveways on west side auxiliary lane Dartmouth-Harvard 13 driveways on west side through lane north of Florida 11 driveways on east side through lane north of Florida	Reduced number of driveways on Santa Fe improves operations and safety in areas adjacent to major intersections 12 driveways on west side through lane Brewery Ln-Church 3 driveways on west side auxiliary lane Chenango-Union No driveways on west side auxiliary lane Dartmouth-Harvard 10 driveways on west side through lane north of Florida 11 driveways on east side through lane north of Florida	Reduced number of driveways on Santa Fe improves operations and safety in areas adjacent to major intersections 12 driveways on west side through lane Brewery Ln-Church 3 driveways on west side auxiliary lane Chenango-Union No driveways on west side auxiliary lane Dartmouth-Harvard 10 driveways on west side through lane north of Florida 11 driveways on east side through lane north of Florida	<ul style="list-style-type: none"> <li>Themes 1, 3, &amp; 4 reduce operational impacts from direct driveway access over No Action condition</li> <li>Theme 1 has the most operational benefits with the least number of direct driveway accesses</li> <li>Theme 2 provides the least operational benefits of the action themes with the highest number of direct access driveways</li> </ul>

Category	Evaluation Criteria	No Action	Theme 1 Safety and Operations Focus	Theme 2 Corridor Access Focus	Theme 3 Multimodal Focus	Theme 4 Adaptability/Flexibility	Evaluation Summary
<b>Multimodal Connections</b>	Pedestrian / Bicyclist Comfort and Safety	Sidewalks available with the S Platte River Trail/Mary Carter Greenway Trail as a parallel facility for bicyclists. Minimal cross street connections for bicyclists with uncomfortable at-grade crossings.	Closing legs of intersections improves comfort and safety in reducing exposure. Grade separated crossings and additional facilities for bicyclists improve comfort.	Improved existing facilities and new facilities for pedestrians. Additional lanes make crossing width longer for pedestrians and thus less comfortable, but quadrant roads reduce crossing width at multiple intersections.	Notable improved comfort and safety along corridor with interchange improvements, closed access, frontage roads with bike/pedestrian facilities, and added facilities off Santa Fe provide an overall more comfortable experience.	Widened shoulders provide greater buffer to vehicles but longer crossing width for pedestrians at intersections.	<ul style="list-style-type: none"> <li>Theme 3 provides the greatest improvement in pedestrian/bicyclist comfort and safety due to the separation from vehicles</li> </ul>
	Pedestrian and Bicyclist Crossings	17 crossings 6 grade separated crossings Average crossing spacing is every 0.62 miles	17 crossings 8 grade separated crossings 3 crossings removed Average crossing spacing is every 0.62 miles	18 crossings 6 grade separated crossings Average crossing spacing is every 0.59 miles	20 crossings 8 grade separated crossings Average crossing spacing is every 0.54 miles	18 crossings 6 grade separated crossings Average crossing spacing is every 0.59 miles	<ul style="list-style-type: none"> <li>Theme 3 provides the highest number of pedestrian/bicyclist crossings of Santa Fe and the shortest spacing between crossings</li> <li>Theme 1 provides same number and spacing of crossings as No Action, with 2 additional grade separated crossings</li> </ul>
	Pedestrian / Bicyclist Traveling Experience	Pedestrian/bicyclist improvements limited to I-25 and Alameda	New pedestrian sidewalks on cross streets New bike lanes on Prince St and S Platte River Dr	New pedestrian sidewalks on cross streets Trail bridge widening and trail paving	New pedestrian sidewalks on cross streets and along Santa Fe New bike lanes on Prince St, S Platte River Dr and Oxford Ave Additional trail bridges, trail bridge widening, trail paving, and new path along major cross streets	New pedestrian sidewalks on cross streets New bike lanes on Prince St, S Platte River Dr and Oxford Ave Additional trail bridges, trail bridge widening, and trail paving	<ul style="list-style-type: none"> <li>Theme 3 provides the most added separated facilities for pedestrians and bicyclists</li> </ul>
	Optimized Transit Use	Improved access for vehicles to Mineral Station with improvements at Santa Fe/Mineral intersection	6 projects at 4 stations Vehicle improvements: Mineral Station Pedestrian/bicyclist improvements: Evans Station, Englewood Station, and Littleton Station	5 projects at 3 stations All mode improvements: Mineral Station Pedestrian/bicyclist improvements: Littleton Station Ped improvements: Oxford Station	8 projects at 5 stations All mode improvements: Mineral Station Pedestrian/bicyclist improvements: Littleton Station, Oxford Station, Evans Station, and Englewood Station	7 projects at 5 stations All mode improvements: Mineral Station Pedestrian/bicyclist improvements: Littleton Station, Oxford Station, Evans Station, and Englewood Station	<ul style="list-style-type: none"> <li>All Themes provide improved access to transit stations.</li> <li>Theme 3 provides the most projects improving station access</li> <li>Themes 3 and 4 provides improvements at the most stations</li> </ul>
<b>Community / Quality of Life</b>	Property Impacts	No impacts	260 – 275 parcels impacted 25 – 30 acres of ROW	135 - 150 parcels impacted 15 – 20 acres of ROW	250 – 265 parcels impacted 23 – 28 acres of ROW	310 – 325 parcels impacted 27 – 35 acres of ROW	<ul style="list-style-type: none"> <li>Theme 2 impacts 50% less parcels and 35% less ROW than other Action Themes because it does not include frontage roads.</li> <li>Theme 4 impacts the most parcels and ROW with additional pavement widening along the corridor.</li> </ul>
	Property Access Modifications	No property access changes	21 direct driveway accesses removed in areas adjacent to major intersections Access provided via frontage roads with minor out-of-direction travel Closure of Crestline and Jewell intersections and turn restrictions at Prince modify access to adjacent areas	No property access changes	15 direct driveway accesses removed in areas adjacent to major intersections Access provided via frontage roads with minor out-of-direction travel Closure of Crestline and Jewell access and turn restrictions at Prince modify access to adjacent areas	15 direct driveway accesses removed in areas adjacent to major intersections Access provided via frontage roads with minor out-of-direction travel Closure of Crestline and Jewell intersections modifies access to adjacent areas	<ul style="list-style-type: none"> <li>Theme 2 has the least property access modifications</li> <li>Themes 1 and 3 impact the most direct accesses with access relocation and intersection closures and turn restrictions</li> </ul>



Category	Evaluation Criteria	No Action	Theme 1 Safety and Operations Focus	Theme 2 Corridor Access Focus	Theme 3 Multimodal Focus	Theme 4 Adaptability/Flexibility	Evaluation Summary
<b>Community / Quality of Life</b>	Support of Local and Regional Planning and Policy Efforts	Current roadway would preserve access points, but no real benefits, beyond minor planned projects and does not address current and future bottlenecks and safety issues due to congestion	Auxiliary lanes address current congestion issues at bottlenecks Frontage roads support economic goals with improved connectivity if integrated with land uses, but property impact concerns Intersection improvements reduce conflicts and improve traffic flow on Santa Fe, but concern with freeway feel of channelized T with grade separations and impacts to local streets with intersection turn restrictions Pedestrian/bicyclist grade separations provide major multimodal improvements	Auxiliary lanes address current congestion issues at bottlenecks Intersection improvements reduce conflicts and improve traffic flow on Santa Fe, but concern with impacts to local streets with turn restrictions Sidewalk and trail improvements provide improved access and connectivity and encourage transit use	Frontage roads support economic goals with improved connectivity if integrated with land uses, but property impact concerns Intersection improvements improve traffic flow on Santa Fe, but concern with impacts to local streets with turn restrictions and added signals on Santa Fe with multiple quadrant road intersections Pedestrian/bicyclist grade separations provide major multimodal improvements Sidewalk and trail improvements provide improved access and connectivity and encourage transit use Regional trail improvements increase multimodal capacity	Frontage roads support economic goals with improved access and connectivity if integrated with land uses, but concerns with property impacts Intersection improvements improve traffic flow on Santa Fe, but concern with added signals on Santa Fe with multiple quadrant road intersections Sidewalk and trail improvements provide improved access and connectivity and encourage transit use	<ul style="list-style-type: none"> <li>All themes generally consistent with local and regional planning</li> <li>Theme 1 concern with freeway feel of channelized T with grade separations and impacts to local streets with intersection turn restrictions</li> <li>Strong support for multimodal elements in Theme 3</li> </ul>
	General Public Sentiment	Negative General public sentiment negative due to need for vehicular and/or multimodal improvements	Most Favorite Action Theme Public input generally positive for improved operations and safety with reduced congestion, but with concerns for higher speeds and additional lanes Noted to combine with Theme 3 multimodal projects for balanced improvements	Public input generally positive for reduced congestion, but also negative about not meeting the needs of the corridor with enough operational and multimodal improvements	Least and Most Favorite Action Theme Public input generally positive for multimodal improvements, but also least favorite with priority for operational improvements to reduce vehicular congestion	Public input generally neutral with agreement for planning for future, but concern about higher speeds with wider shoulders and not meeting the needs of the corridor with enough operational and multimodal improvements	<ul style="list-style-type: none"> <li>Theme 1 most favorable action theme with strong support to combine with Theme 3 multimodal projects</li> <li>Themes 2 and 4 generally neutral public sentiment about not meeting the corridor needs</li> </ul>
<b>Environmental Resources</b>	Potential Environmental Resource Impacts	<ul style="list-style-type: none"> <li>Air Quality - Least congestion relief</li> <li>Wetlands – No impacts</li> <li>Noise – No impacts</li> <li>Floodplains – No impacts</li> </ul>	<ul style="list-style-type: none"> <li>Air Quality - Most congestion relief</li> <li>Wetlands – Approx. 3 acres</li> <li>Noise - Greatest potential for noise impacts due to quadrant roads, frontage roads and partial grade separation</li> <li>Floodplains – Approx. 48 acres</li> </ul>	<ul style="list-style-type: none"> <li>Air Quality - More congestion relief than No Action, but least relief of Themes</li> <li>Wetlands – Approx. 0.7 acres</li> <li>Noise - Least potential for noise impacts due to lack of frontage roads and grade separation</li> <li>Floodplains – Approx. 38 acres</li> </ul>	<ul style="list-style-type: none"> <li>Air Quality - Greater congestion relief than No Action and similar to Theme 4; includes most multimodal improvements</li> <li>Wetlands – Approx. 3 acres</li> <li>Noise - Similar noise impacts to Theme 4, with quadrant roads and frontage roads, but no grade separation</li> <li>Floodplains – Approx. 37 acres</li> </ul>	<ul style="list-style-type: none"> <li>Air Quality - Greater congestion relief than No Action and similar to Theme 3; includes most multimodal improvements</li> <li>Wetlands – Approx. 3.5 acres</li> <li>Noise - Similar noise impacts to Theme 3, with quadrant roads and frontage roads, but no grade separation</li> <li>Floodplains – Approx. 55 acres</li> </ul>	<ul style="list-style-type: none"> <li>Air Quality – Theme 1 provides the most congestion relief; Theme 2 provides least congestion relief</li> <li>Wetlands – Theme 2 has the lowest level of impacts on wetlands; Other themes have similar impacts.</li> <li>Noise – Theme 1 has greatest potential for noise impacts; Theme 2 has least potential for noise impacts</li> <li>Floodplains – Impacts are similar, many of floodplain impacts occur in existing conditions footprint</li> </ul>
	Potential Social and Built Environment Impacts	No impacts	<ul style="list-style-type: none"> <li>Socioeconomic – 260-275 impacted parcels with 25-30 acres</li> <li>Hazardous Materials – 57 potential sites</li> <li>Historic Resources – 57 properties &amp; 2 districts</li> <li>Recreation Resources – 14.5 acres &amp; 5,500 LF; 10 impacted parks (notable impacts: Hudson Gardens, Oxbow Point, Mary Carter Greenway); 17 paths/trails with temporary impacts/long-term benefits; 3 impacted 6(f) properties (notable impacts: Vanderbilt Park)</li> <li>Visual/Aesthetics – Grade separations at 3 intersections.</li> </ul>	<ul style="list-style-type: none"> <li>Socioeconomic – 130-150 impacted parcels with 15-20 acres</li> <li>Hazardous Materials – 44 potential sites</li> <li>Historic Resources – 27 properties &amp; no districts</li> <li>Recreation Resources – 12.5 acres &amp; 13,000 LF; 10 impacted parks (notable impacts: Hudson Gardens); 26 paths/trails with temporary impacts/long-term benefits; 4 impacted 6(f) properties (notable impacts: Vanderbilt Park)</li> <li>Visual/Aesthetics – Minor impacts with no grade separations</li> </ul>	<ul style="list-style-type: none"> <li>Socioeconomic – 250-265 impacted parcels with 23-28 acres</li> <li>Hazardous Materials – 54 potential sites</li> <li>Historic Resources – 61 properties &amp; 2 districts</li> <li>Recreation Resources – 18.5 acres &amp; 26,000 LF; 14 impacted parks (notable impacts: Hudson Gardens, Oxbow Point, Mary Carter Greenway); 25 paths/trails with temporary impacts/long-term benefits; 4 impacted 6(f) properties (notable impacts: Vanderbilt Park)</li> <li>Visual/Aesthetics – Minor impacts with no grade separations</li> </ul>	<ul style="list-style-type: none"> <li>Socioeconomic – 310-325 impacted parcels with 27-35 acres</li> <li>Hazardous Materials – 68 potential sites</li> <li>Historic Resources – 66 properties &amp; 2 districts</li> <li>Recreation Resources – 24 acres &amp; 27,000 LF; 18 impacted parks (notable impacts: Hudson Gardens, Oxbow Point, Mary Carter Greenway); 25 paths/trails with temporary impacts/long-term benefits; 6 impacted 6(f) properties (notable impacts: Vanderbilt Park)</li> <li>Visual/Aesthetics – Minor impacts with no grade separations</li> </ul>	<ul style="list-style-type: none"> <li>Socioeconomic – Theme 4 has the highest number of parcels impacted; Theme 2 has the lowest number of parcels and acres impacted</li> <li>Hazardous Materials – Theme 4 has potential exposure to the highest number of sites; Theme 2 has potential exposure to the fewest number of sites</li> <li>Historic Resources – Theme 4 impacts the highest number of historic resources; Theme 2 impacts the fewest number of historic resources</li> <li>Recreation Resources – Theme 2 has the fewest acres of impacts and fewest notable impacts.</li> <li>Visual/Aesthetics – Only Theme 1 includes grade separations</li> </ul>

Category	Evaluation Criteria	No Action	Theme 1 Safety and Operations Focus	Theme 2 Corridor Access Focus	Theme 3 Multimodal Focus	Theme 4 Adaptability/Flexibility	Evaluation Summary
Constructability	Ease of Implementation	N/A	<p>Frontage roads utilize existing roadways when possible, but requires coordination</p> <p>SB Santa Fe structure with Channelized Ts create additional construction complexity and impacts for ROW and site modifications</p> <p>Intersection turn restrictions are relatively simple to construct but require coordination for access modifications</p> <p>Pedestrian/bicyclist grade separations have moderate design complexities with connections and Santa Fe construction</p>	<p>Relatively minor intersection and roadway construction with typical construction and ROW impacts within existing corridor area</p> <p>Trail/sidewalk improvements relatively easy construction with minimal approval process required</p>	<p>Frontage roads utilize existing roadways when possible, but require coordination</p> <p>Relatively minor intersection and roadway construction with typical construction and ROW impacts within existing corridor area</p> <p>Intersection turn restrictions are relatively simple to construct but require coordination for access modifications</p> <p>Pedestrian/bicyclist grade separations have moderate design complexities with connections and Santa Fe construction</p> <p>Multimodal facilities are relatively easy to construct with minimal process required</p>	<p>Widened shoulders in areas without other construction increases construction and ROW impacts and cost</p> <p>Frontage roads utilize existing roadways when possible, but require coordination</p> <p>Relatively minor intersection and roadway construction but with moderate construction and ROW impacts along corridor length</p> <p>Multimodal facility improvements are relatively easy to construct with minimal approval process required</p>	<ul style="list-style-type: none"> <li>• Theme 2 is easiest to implement with least property impacts, no frontage roads, and typical construction without grade separations</li> <li>• Themes 1, 3, &amp; 4 have similar levels of moderate design complexities and additional ROW and construction impacts</li> </ul>
	Ability to Implement with Standalone Projects	N/A	<p>Frontage roads may be constructed as separate projects with operational benefits and relatively small investment</p> <p>Intersections and auxiliary lanes may be constructed as separate projects with operational benefits and relatively moderate investment, funded with local grant programs</p> <p>Pedestrian/bicyclist grade separations may be constructed as separate projects with multimodal benefits and relatively small investment, funded with local grant programs</p>	<p>Intersections and auxiliary lanes may be constructed as separate projects with operational benefits and relatively moderate investment, funded with local grant programs</p> <p>Trail/sidewalk improvements may be completed as separate projects with multimodal benefits and relatively small investment, funded with local grant programs</p>	<p>Frontage road and driveway closures may be constructed as separate projects with operational benefits and relatively small investment</p> <p>Intersections may be constructed as separate projects with operational benefits and relatively moderate investment, funded with local grant programs</p> <p>Pedestrian/bicyclist grade separations and multimodal facility improvements may be constructed as separate projects with multimodal benefits and relatively small investment, funded with local grant programs</p>	<p>Frontage roads may be constructed as separate projects with operational benefits and relatively small investment</p> <p>Widened shoulders and intersections may be constructed as separate projects with operational benefits and relatively moderate investment, funded with local grant programs</p> <p>Multimodal facility improvements may be constructed as separate projects with multimodal benefits and relatively small investment, funded with local grant programs</p>	<ul style="list-style-type: none"> <li>• All themes have good opportunities for construction of improvements as separate or bundled projects with operational benefits and investments within the 10-year planning horizon</li> </ul>
RESULT General Recommended Elements		<ul style="list-style-type: none"> <li>• Programmed projects currently in progress along the corridor</li> <li>• C-470 Interchange Improved Pedestrian Crossing</li> <li>• County Line Intersection Improvements</li> <li>• Mineral Ave Quadrant Rd</li> <li>• Kentucky Ave Bridge and Signal</li> <li>• Remain as exists (future improvements past 10-year plan):</li> <li>• Belleview Ave Interchange</li> <li>• Evans Ave Interchange</li> </ul>	<ul style="list-style-type: none"> <li>• Santa Fe mainline: Preserve/procure ROW for future potential cross-sections with additional lanes and/or multimodal elements</li> <li>• Santa Fe auxiliary lanes</li> <li>• Frontage roads and access consolidation</li> <li>• Channelized T and Quadrant Road intersections; improved signal timing</li> <li>• Closure and turn restrictions at intersections</li> <li>• Pedestrian/bicyclist grade separations</li> </ul>	<ul style="list-style-type: none"> <li>• Santa Fe mainline: Preserve/procure ROW for future potential cross-sections with additional lanes and/or multimodal elements</li> <li>• Santa Fe auxiliary lanes</li> <li>• Frontage roads and access consolidation</li> <li>• Channelized T and Quadrant Road intersections; improved signal timing</li> <li>• Pedestrian/bicyclist grade separations</li> <li>• Trail improvements – paving, widening, and new connections</li> </ul>	<ul style="list-style-type: none"> <li>• Santa Fe auxiliary lanes</li> <li>• Frontage roads and access consolidation</li> <li>• Channelized T and Quadrant Road intersections; improved signal timing</li> <li>• Closure and turn restrictions at intersections</li> <li>• Pedestrian/bicyclist grade separations</li> <li>• Trail improvements – paving, widening, and new connections</li> <li>• New sidewalk and bike lanes</li> </ul>	<ul style="list-style-type: none"> <li>• Santa Fe auxiliary lanes</li> <li>• Frontage roads and access consolidation</li> <li>• Channelized T and Quadrant Road intersections; improved signal timing</li> <li>• Trail improvements – paving, widening, and new connections</li> <li>• New sidewalk and bike lanes</li> </ul>	
NOTES (eg. Elements Not Recommended)			<ul style="list-style-type: none"> <li>• SB auxiliary lane Dartmouth to Evans not recommended due to capacity increase</li> <li>• NB auxiliary lane through Evans recommended as future action due to additional processes related to greenhouse gas evaluations</li> <li>• Channelized T intersections with grade separation not recommended due to added impacts and cost</li> <li>• Belleview Ave and Evans Ave interchange modifications for pedestrians/bicyclists recommended as future action</li> <li>• Quadrant Road at Dartmouth not recommended due to Environmental Justice impacts</li> <li>• Offset T at Florida and Iowa not recommended due to property impacts</li> <li>• SE Quadrant Road at Mississippi not recommended due to short distance between intersections – recommended as future action</li> </ul>	<ul style="list-style-type: none"> <li>• SB auxiliary lane Dartmouth to Evans not recommended due to capacity increase</li> <li>• NB auxiliary lane through Evans recommended as future action due to additional processes related to greenhouse gas evaluations</li> <li>• Belleview Ave and Evans Ave interchange modifications for pedestrians/bicyclists recommended as future action</li> </ul>	<ul style="list-style-type: none"> <li>• Quadrant Road at Church not recommended due to property impacts with minimal benefit</li> <li>• Belleview Ave and Evans Ave interchange modifications for pedestrians/bicyclists recommended as future action</li> <li>• Quadrant Road at Dartmouth not recommended due to Environmental Justice impacts</li> <li>• SE Quadrant Road at Mississippi not recommended due to short distance between intersections – recommended as future action</li> </ul>	<ul style="list-style-type: none"> <li>• Widened shoulders along full corridor not recommended due to property impacts and cost, but areas of auxiliary lanes and intersection improvements may consider widened shoulders</li> <li>• Quadrant Road at Church not recommended due to property impacts with minimal benefit</li> <li>• Belleview Ave and Evans Ave interchange modifications for pedestrians/bicyclists recommended as future action</li> <li>• Quadrant Road at Dartmouth not recommended due to Environmental Justice impacts</li> <li>• SE Quadrant Road at Mississippi not recommended due to short distance between intersections – recommended as future action</li> </ul>	