



HANCOCK EXPRESSWAY/ACADEMY BOULEVARD

Planning and Environmental Linkages, Study and Design



Hancock Expressway/
Academy Boulevard
Stakeholders Meeting

W E L C O M E



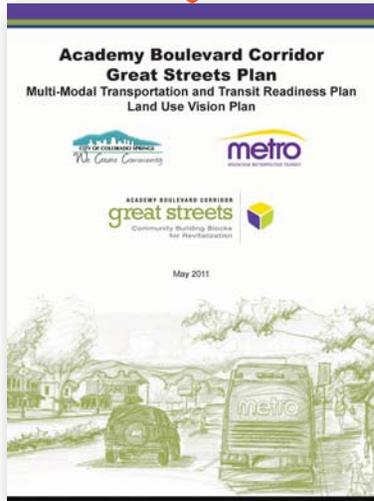
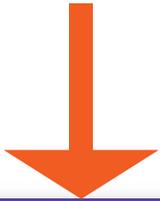
HANCOCK EXPRESSWAY/ACADEMY BOULEVARD

Planning and Environmental Linkages, Study and Design

Project Background



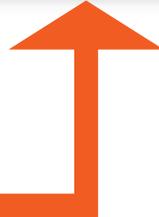
CDOT / City of Colorado Springs
Powers Swap



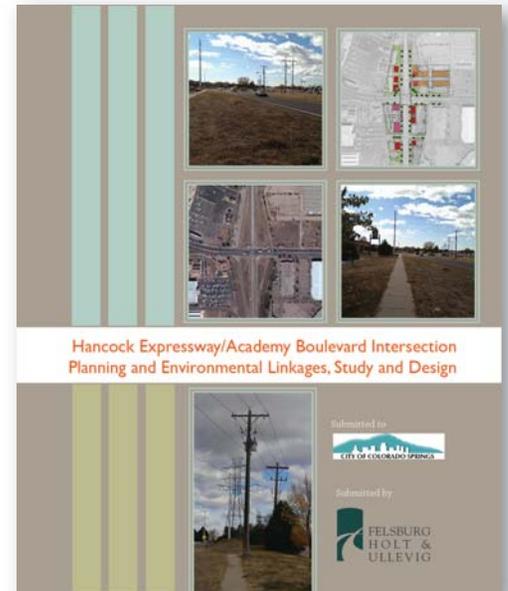
Great Streets Plan



Hancock / Academy Prototype



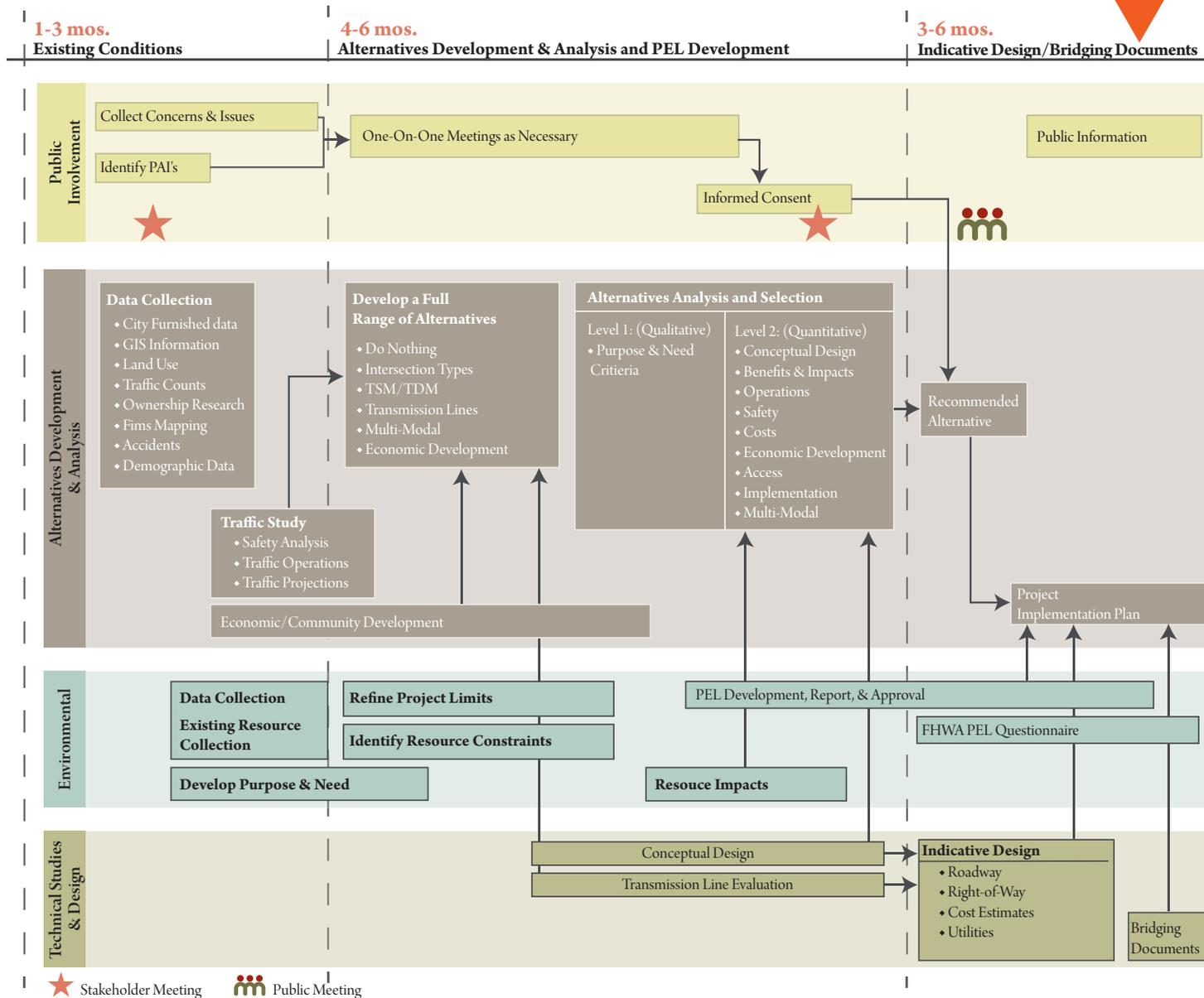
Hancock / Academy PEL



HANCOCK EXPRESSWAY/ACADEMY BOULEVARD

Planning and Environmental Linkages, Study and Design

Work Flow



HANCOCK EXPRESSWAY/ACADEMY BOULEVARD

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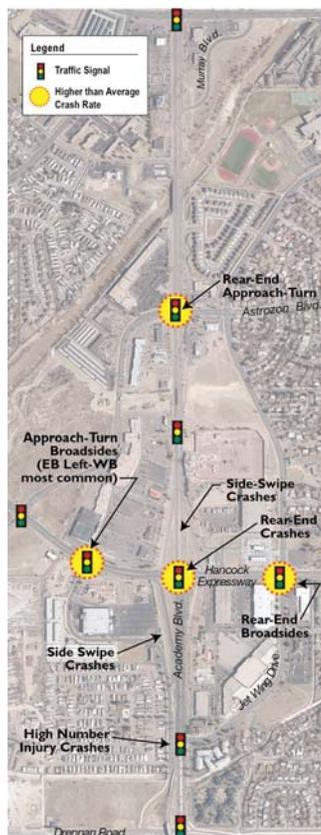
Safety

NEED: Higher than average crash rates concentrated around intersections.

Issue:

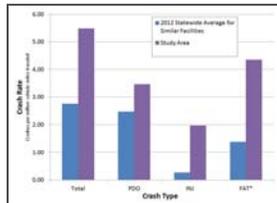
- > Study area crash rates much higher than expected compared to similar roadways with similar traffic volumes
 - The crash rate for all crashes is double the statewide average
 - The injury and fatality crashes are three to seven times higher than average

Intersection Crash Patterns



- > Many study area intersections have statistically poor safety performance
- > The predominant crash types are:
 - Side-swipe crashes which are concentrated near the existing ramp junctions on Academy Blvd. average
 - Rear-end crashes
 - Approach turn (left turn in front of a through vehicle)

Study Area Crash Rate Comparison to Statewide Averages



PDO - Property Damage Only
INJ - Injury Crashes
FAT - Fatal Crashes

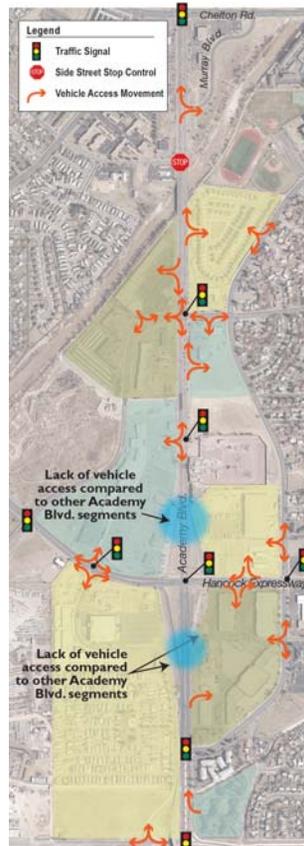
Vehicular Access

NEED: Lack of accessibility to adjacent land use from Academy Blvd.

Issue:

- > Compared to the rest of the study area Academy Blvd. north of and south of Hancock Expressway to the next traffic signal has very limited access.

Existing Access to Adjacent Parcels on Academy Blvd.



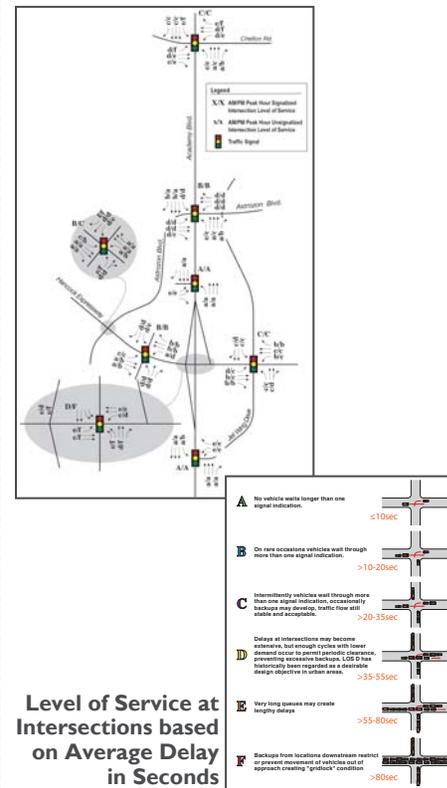
Vehicular Mobility & Congestion

NEED: Inadequate intersection geometry and congestion during peak hours

Issues:

- > Hancock/Academy intersection
 - Through movements over capacity
 - Left turn movements back up
 - Intersection serves many travel patterns
 - Fort Carson traffic
 - Typical commuter traffic on Hancock
 - High percentage of trucks due to nearby industrial area

Year 2035 Intersection Level of Service and Existing Intersection Lanes



Level of Service at Intersections Based on Average Delay in Seconds

Purpose and Need

Project Purpose

To provide a safer transportation system for the traveling public and pedestrians; and to improve multi-modal accessibility to the local community and businesses in the Hancock/Academy area, and contribute to the revitalization of this portion of the South Academy Corridor and its associated planning areas.

Project Need

- > Safety
- > Vehicle access to adjacent parcels
- > Multimodal accessibility
- > Vehicular mobility and congestion

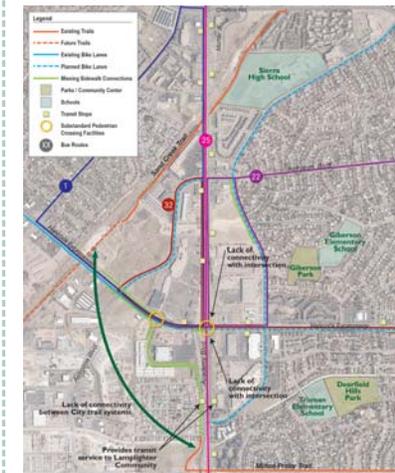
Multimodal Accessibility

NEED: Deficient pedestrian and bike facilities and lack of multimodal connectivity

Issue:

- > Sidewalk system gaps
- > Deficient pedestrian facilities at intersections
- > Academy Blvd. ramps are a constraint to pedestrian connectivity
- > Connecting existing Sand Creek and Milton Proby trails

Existing Bus Routes, Bus Stops and Missing Multimodal Facilities



HANCOCK EXPRESSWAY/ACADEMY BOULEVARD

Planning and Environmental Linkages, Study and Design

Alignments Retained

Recommendation: Retain for PEL Evaluation

Opportunities & Constraints

- Retains existing Academy Blvd. alignment
- Adds 3rd NB and SB through lanes to Academy Blvd.
- Removes at-grade diamond intersection ramps at Hancock/Academy intersection
- Provides pedestrian crosswalks at Hancock/Academy and Hancock/Boychuk intersections and improves pedestrian facilities
- Pedestrians cross 8 lanes at Academy Blvd.
- Lengthens turn lanes and creates safer vehicle turning movements
- Opens adjacent intersection quadrant areas for optional uses
 - Transmission lines constrain NW, NE, and SE quadrants
 - Gas pipelines constrain edges of each quadrant
- Allows for phased implementation of improvements
- Connects Milton Proby and Sand Creek Trails

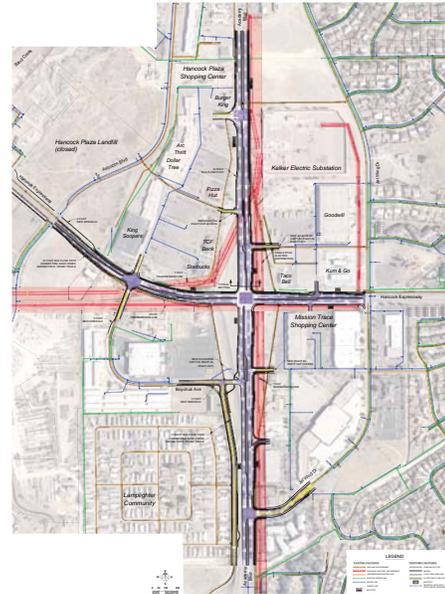
2040 Level of Service: **D**

Intersection Delay: **55 sec/veh**

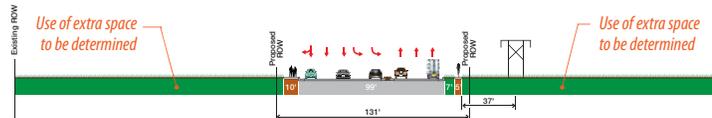
Stakeholder Comments

Favorable	Unfavorable
<ul style="list-style-type: none"> Provides best opportunity to improve access Could create beneficial impacts to adjacent businesses Potential for less cost and construction requirements than shifting to a new alignment More favored by businesses because it doesn't favor one side or the other unlike the shift alternatives Fewer utility impacts and improvements could be phased over time 	<ul style="list-style-type: none"> Concerned about width of Academy Blvd. pedestrian crossing Reduced opportunities for creating "Gateway" image

Existing Alignment



Cross Section Academy Boulevard (view north)



Recommendation: Retain for PEL Evaluation

Opportunities & Constraints

- Splits NB and SB Academy lanes into separate 3-lane alignments to enhance intersection operation
- Would reduce Academy speeds and removes at-grade diamond intersection ramps at Hancock/Academy intersection
- Provides pedestrian crosswalks at intersections, with an open area between split lanes
 - Pedestrians cross 4 lanes at west Academy intersection
 - Pedestrians cross 3 lanes at east Academy intersection
- Lengthens turn lanes and creates safer vehicle turning movements
- Opens an area between lanes for optional uses - constraints include:
 - Segmented parcels
 - Transmission lines and gas pipeline easements
- Constraints to phased implementation of improvements
- Connects Milton Proby and Sand Creek Trails

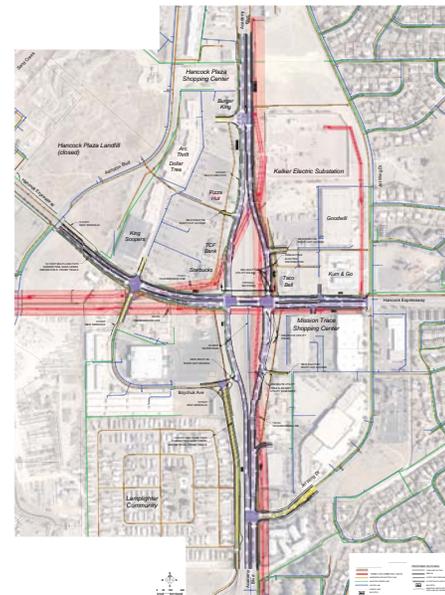
2040 Level of Service: **C**

Intersection Delay: **31 sec/vehicle**

Stakeholder Comments

Favorable	Unfavorable
<ul style="list-style-type: none"> Split maximizes intersection capacity Pedestrian and ADA advantages of crossing two smaller intersections. Improves transit accessibility for pedestrians Advantages to moving Academy Blvd. closer to business on both sides of Academy with improved visibility Open central area may allow for future BRT transfer center Open area provides opportunity to create a "gateway" to South Academy 	<ul style="list-style-type: none"> Split does not address the improved access needs for businesses Sight distance concerns due to short curves, requiring quick corrections Expense of moving transmission lines not warranted Open area may become a "no man's land" Concerns for cost and phasing of improvements

Split Intersection



Cross Section Academy Boulevard (view north)



HANCOCK EXPRESSWAY/ACADEMY BOULEVARD

Planning and Environmental Linkages, Study and Design

Alignments Not Retained

Recommendation: Not Recommended for PEL Evaluation

Opportunities & Constraints

- Shifts Academy Blvd. alignment to eastern edge of intersection, adjacent to businesses and community resources in NE and SE quadrants
- Would reduce Academy Blvd. speeds
- Adds 3rd NB and SB through lanes to Academy Blvd.
- Removes at-grade diamond intersection ramps at Hancock/Academy intersection
- Provides pedestrian crosswalks at Hancock/Academy and Hancock/Boychuk intersection and improves area pedestrian facilities
- Pedestrians cross 8-lanes at Academy Blvd.
- Lengthens turn lanes and creates safer vehicle turning movements
- Opens an area of development in the NW and SW quadrants
 - Constraints include segmented parcels
 - Transmission lines and gas pipeline easements
- Constraints to phased implementation of improvements
- Connects Milton Proby and Sand Creek Trails

2040 Level of Service: **D** Intersection Delay: **55 sec/veh**

Stakeholder Comments

Favorable	Unfavorable
	<ul style="list-style-type: none"> Concerns for cost and phasing of improvements Utility Impacts Impacts to east side businesses due to road and easement encroachments Reduces visibility for west side businesses Little additional benefit than staying on existing alignment

Cross Section Academy Boulevard (view north)

Shift East Alignment

Relocate transmission line pole

Recommendation: Not Recommended for PEL Evaluation

Opportunities & Constraints

- Retains existing Academy Blvd. alignment
- Adds 3rd NB and SB through lanes to Academy Blvd.
- Represents an innovative design concept by relocating left turns from Hancock Expressway to Jet Wing Dr. and Astrozon Blvd. to improve intersection operations
- Removes at-grade diamond intersection ramps at Hancock/Academy intersection
- Provides pedestrian crosswalks at Hancock/Academy and Hancock/Boychuk intersections and improves pedestrian facilities
- Pedestrians cross 8 lanes at Academy Blvd.
- Lengthens turn lanes and creates safer vehicle turning movements
- Opens adjacent intersection quadrant areas for optional uses
 - Transmission lines constrain NW, NE, and SE quadrants
 - Gas pipelines constrain edges of each quadrant
- Allows for phased implementation for improvements
- Connects Milton Proby and Sand Creek Trails

2040 Level of Service: **D** Intersection Delay: **45 sec/veh**

Stakeholder Comments

Favorable	Unfavorable
	<ul style="list-style-type: none"> Very confusing for drivers, difficult to adjust travel patterns, and would require a lot of "way finding" Removing left turns onto Academy and shifting traffic to Jet Wing and Astrozon would create a safety hazard The inability to make a left turn to Academy would divert traffic to secondary roads that are less maintained, or make it more difficult to locate businesses on Academy Quadrant would disrupt egress following church services to NB Academy

Cross Section Academy Boulevard (view north)

Quadrant Intersection

Recommendation: Not Recommended for PEL Evaluation

Opportunities & Constraints

- Shifts Academy Blvd. alignment to western edge of intersection, adjacent to businesses and community resources in NW and SW quadrants
- Would reduce Academy Blvd speeds
- Adds 3rd NB and SB through lanes to Academy Blvd.
- Removes at-grade diamond intersection ramps at Hancock/Academy intersection
- Provides pedestrian crosswalks at Hancock/Academy and Hancock/Boychuk intersections and improves area pedestrian facilities
- Pedestrians cross 8-lanes at Academy Blvd.
- Lengthens turn lanes and creates safer vehicle turning movements
- Opens an area of development in the NE and SE quadrants
 - Constraints include segmented parcels
 - Transmission lines and gas pipeline easements
- Constraints to phased implementation of improvements
- Connects Milton Proby and Sand Creek Trails

2040 Level of Service: **D** Intersection Delay: **55 sec/veh**

Stakeholder Comments

Favorable	Unfavorable
<ul style="list-style-type: none"> Shift to west would provide more visibility to business in SW quadrant Minimal impact to utilities 	<ul style="list-style-type: none"> Creates limited number of relatively small parcels between the utility easement and Academy, which were not viewed as substantial economic drivers Concerns for cost and phasing of improvements Impacts to businesses on west side

Cross Section Academy Boulevard (view north)

Shift West Alignment



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Alternative Access Options

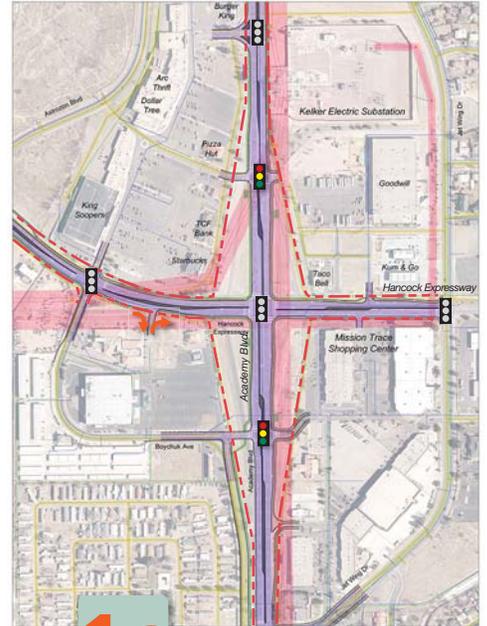
Existing Alignment



1a Restricted Access North & South



1b Restricted Access North & New Signalized South



1c New Signalized North & South

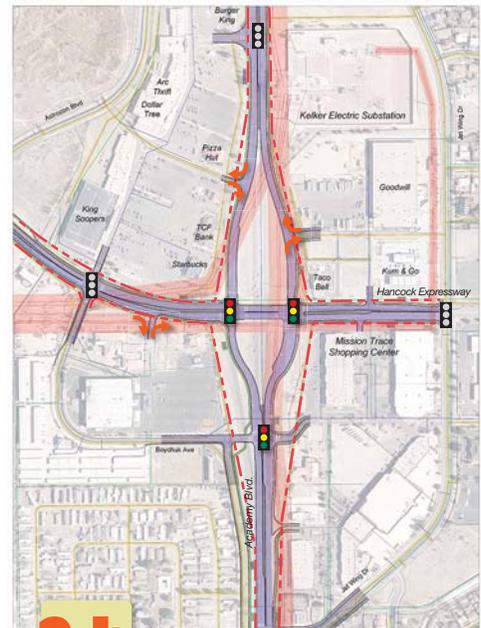
Split Alignment

Legend

- - - Right of Way Line
- Multiuse Path
- Existing Traffic Signal
- New Signalized Access
- New Right-In/Right-Out Access
- New 3/4 Access



2a Restricted Access North & South



2b Restricted Access North & New Signalized South

HANCOCK EXPRESSWAY/ACADEMY BOULEVARD

Planning and Environmental Linkages, Study and Design

Evaluation Matrix

Evaluation Categories		Evaluation Criteria	Evaluations	Hancock / Academy - Evaluation of 6-Lane Alternatives							
				Alternative 1 - Enhanced Existing Intersection			Alternative 2 - Split Intersection				
				1-a	1-b	1-c	2-a	2-b			
			No Action Alternative	    							
Purpose and Need Criteria	Vehicular Access	Access	Does the alternative improve access by adding new turn movements to adjacent parcels?	Evaluation	No new turn movements	10 new turn movements, all unsignalized	13 new turn movements at signalized intersection and at stop controlled intersections	16 new turn movements at two signalized intersections	8 new turn movements at stop controlled intersections	12 new turn movements at signalized intersection and at stop controlled intersection; however, new signalized access would require non-standard alignment design.	
			Rank	Does not meet P & N.	Hancock / Academy LOS: F	Hancock / Academy LOS: D	Hancock / Academy LOS: D	Hancock / Academy LOS: D	Hancock / Academy LOS: C	Hancock / Academy LOS: C	
	Vehicular Mobility and Congestion	Performance - Level of Service and Delay	Does the alternative provide at least a LOS D condition for the Hancock / Academy intersection?	Evaluation	Does not meet P & N.	Academy Corridor: 23 mph	Academy Corridor: 27 mph	Academy Corridor: 25 mph	Academy Corridor: 23 mph	Academy Corridor: 31 mph	Academy Corridor: 31 mph
			Rank	Does not meet P & N.	Academy Corridor: 23 mph	Academy Corridor: 27 mph	Academy Corridor: 25 mph	Academy Corridor: 23 mph	Academy Corridor: 31 mph	Academy Corridor: 31 mph	
	Multimodal Connectivity and Mobility	Pedestrian Environment	Does the alternative provide an acceptable pedestrian facilities score less than 4.25 and pedestrian LOS D or better?	Evaluation	Pedestrian Facilities Score: 4.33 Pedestrian LOS E	Pedestrian Facilities Score: 3.98 Pedestrian LOS D	Pedestrian Facilities Score: 3.94 Pedestrian LOS D	Pedestrian Facilities Score: 3.90 Pedestrian LOS D	Pedestrian Facilities Score: 3.85 Pedestrian LOS D	Pedestrian Facilities Score: 3.81 Pedestrian LOS D	
			Rank	Does not meet P & N.	Yes. The elimination of the ramps creates transit opportunities, including bus stop relocations and a queue jump/bypass lane.	Yes. The elimination of ramps and added signalized intersection create opportunities: bus stop relocations, queue jump bypass lanes, and a transit station.	Yes. The elimination of ramps and added signalized intersection at Boychuk create opportunities: bus stop relocations, queue jump bypass lanes, and a transit station.	The elimination of ramps would allow a reallocation of bus stops and queue jump/bypass lanes; however, the split alignment constrains transit planning.	Similar to Alternative 2-a.		
	Safety	Safety	Does the alternative meet City arterial design standards for curves and turn lane design?	Evaluation	No	Yes	Yes	Yes	Yes. 45 mph posted speed would be necessary due to the design speed of curves.	No. 30 mph design speed on modified alignments south of Hancock does not meet City standards.	
			Rank	Does not meet P & N.	Yes	Yes	Yes	Yes. 45 mph posted speed would be necessary due to the design speed of curves.	Does not meet P & N.		
	Project Goals	Community Development Enhancement	Does the alternative enhance community development by interconnecting with multimodal transportation facilities?	Evaluation	No	Limited. Interconnectivity across Academy between the intersection quadrants is not provided.	Yes. Connectivity enhanced with the proposed signal south of Hancock.	Yes. Area connectivity enhanced with new signals north and south of Hancock.	No. Interconnectivity across Academy between the intersection quadrants is not provided.	Conditional. Connectivity could only be achieved by modifying the split alignment with non-standard design.	
		Rank	Does not meet project goals.	Yes	Yes	Yes	No. Not feasible to provide vehicular access to land between the Academy alignments.	Same as Alternative 2a.			
Economic Development Opportunities		Does the alternative optimize use of excess right-of-way to promote economic development opportunities?	Evaluation	No accessibility improvements to businesses and communities, or opportunities to support future development.	Yes	Yes	Yes	No. Not feasible to provide vehicular access to land between the Academy alignments.	Same as Alternative 2a.		
Rank		Does not meet project goals.	Yes	Yes	Yes	No. Not feasible to provide vehicular access to land between the Academy alignments.	Does not meet project goals.	Does not meet project goals.			
Projects of Independent Utility (Phased Implementation)		Does the alternative lend itself to phasing, and still provide incremental improvements to access and operations?	Evaluation	Existing conditions would continue other than ongoing maintenance.	Yes. Phasing could include removal of ramps, access points, additional lanes on Academy, and multi-modal improvements.	Yes. Phasing could include removal of ramps, access points, additional lanes on Academy, and multi-modal improvements. Access enhancements south of Hancock to include stakeholder participation for improvements outside City right-of-way.	Yes. Phasing could include removal of ramps, added lanes on Academy, and multi-modal improvements. Access enhancements north and south of Hancock to include stakeholder participation for improvements outside City right-of-way.	No. All intersection and access point enhancements would have to be implemented as one project.	Same as Alternative 2-a.		
Rank		Does not meet project goals.	Yes. City may shift right-of-way to private ownership, and reduce City responsibility for maintenance.	Yes. City may shift right-of-way to private ownership, and reduce City responsibility for maintenance.	Yes. City may shift right-of-way to private ownership, and reduce City responsibility for maintenance.	Difficult to transfer right-of-way to private ownership, leaving the City responsible for maintenance.	Does not meet project goals.	Does not meet project goals.			
Right-of-Way		Does the alternative lend itself to shifting right-of-way ownership from the City to private entities?	Evaluation	City continues to own and maintain right-of-way.	Yes. City may shift right-of-way to private ownership, and reduce City responsibility for maintenance.	Yes. City may shift right-of-way to private ownership, and reduce City responsibility for maintenance.	Yes. City may shift right-of-way to private ownership, and reduce City responsibility for maintenance.	Difficult to transfer right-of-way to private ownership, leaving the City responsible for maintenance.	Same as Alternative 2-a.		
Rank		Does not meet project goals.	Yes. Projects could be implemented with minimal impacts to the environment and utilities.	Yes. Projects could be implemented with minimal impacts to the environment and utilities.	Yes. Projects could be implemented with minimal impacts to the environment and utilities.	Would require modification to overhead transmission lines. H-Frame poles would need relocation.	Does not meet project goals.	Does not meet project goals.			
Environmental Impacts and Utility Conflicts		Does alternative avoid or minimize environmental impacts, utility conflicts, and extensive mitigation?	Evaluation	Transportation network does not support socioeconomic accessibility requirements.	Yes. Projects could be implemented with minimal impacts to the environment and utilities.	Yes. Projects could be implemented with minimal impacts to the environment and utilities.	Yes. Projects could be implemented with minimal impacts to the environment and utilities.	Would require modification to overhead transmission lines. H-Frame poles would need relocation.	Similar to Alternative 2-a.		
Rank		Does not meet project goals.	Stakeholders agree that existing conditions do not meet the Purpose and Need and that safety, mobility, and multimodal access improvements are needed.	Yes. Stakeholder support for this alternative and its access scenario. Stakeholders voiced very few concerns.	Yes. Stakeholder support for this alternative and its access scenario. Some stakeholders favored signalized access on Academy south of Hancock.	Mixed. Provides opportunities for future access improvements, in balance with future development planning in the NE quadrant. Concerns regarding cut-through traffic.	Mixed. Stakeholder support for gateway opportunities and shorter intersection crossings for pedestrians. Concerns for maintenance of center area, lack of access, and the limitations for project phasing.	Same as Alternative 2-a.			
Stakeholder Comments	Was there stakeholder agreement and support for the alternative, and what were stakeholders' main comments?	Evaluation	Stakeholders agree that existing conditions do not meet the Purpose and Need and that safety, mobility, and multimodal access improvements are needed.	Yes. Stakeholder support for this alternative and its access scenario. Stakeholders voiced very few concerns.	Yes. Stakeholder support for this alternative and its access scenario. Some stakeholders favored signalized access on Academy south of Hancock.	Mixed. Provides opportunities for future access improvements, in balance with future development planning in the NE quadrant. Concerns regarding cut-through traffic.	Mixed. Stakeholder support for gateway opportunities and shorter intersection crossings for pedestrians. Concerns for maintenance of center area, lack of access, and the limitations for project phasing.	Same as Alternative 2-a.			
Rank	Does not meet project goals.	No Action Alternative retained for PEL evaluation, in compliance with NEPA			Retained as PEL Alternative	Recommended PEL Alternative - Initial Plan	Recommended PEL Alternative - Ultimate Plan	Retained as PEL Alternative	Alternative Eliminated Does not meet Purpose & Need		

	Alternative best meets criteria		Alternative ranks 3rd
	Alternative ranks 2nd		Alternative least able to meet criteria

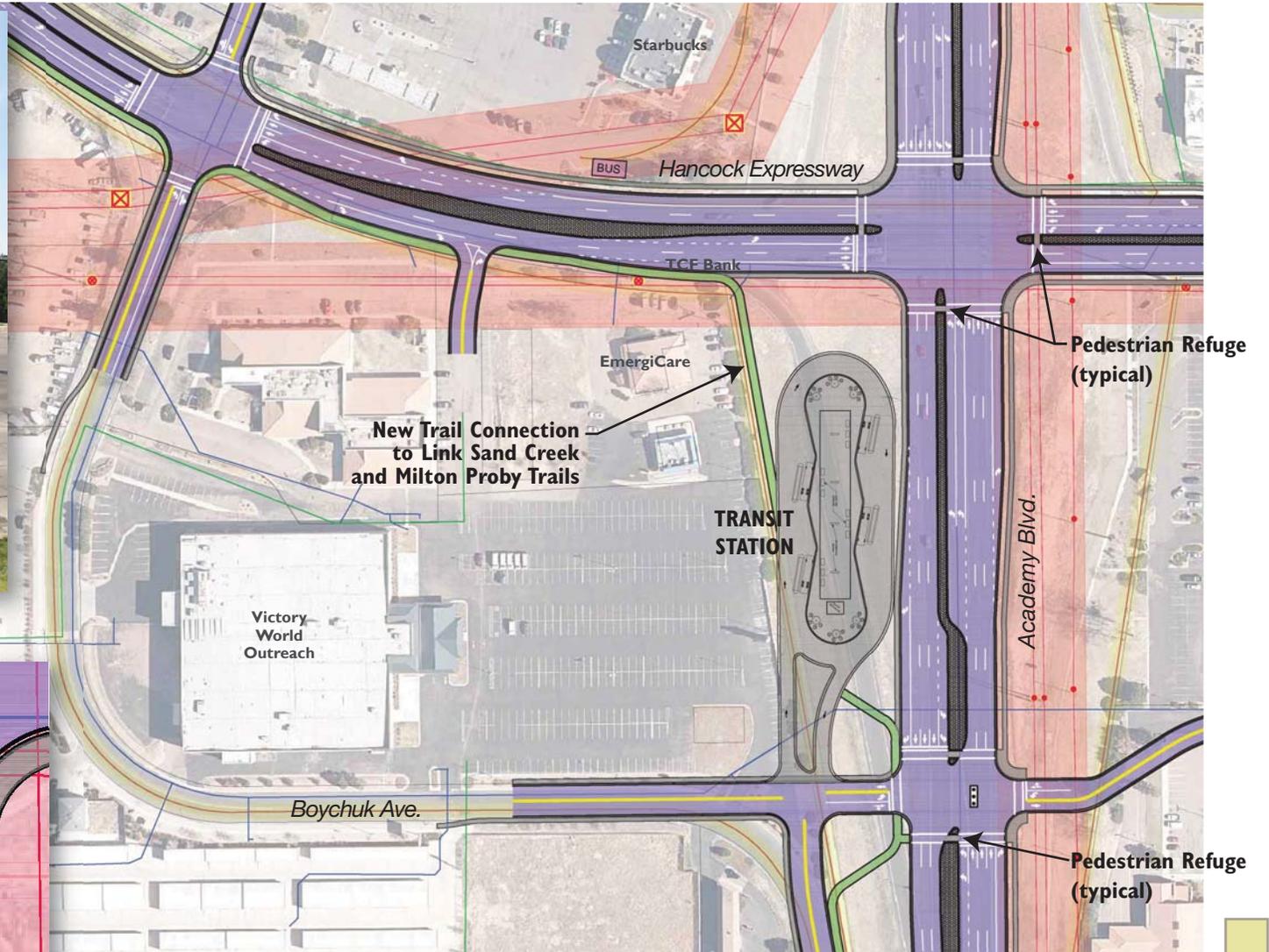


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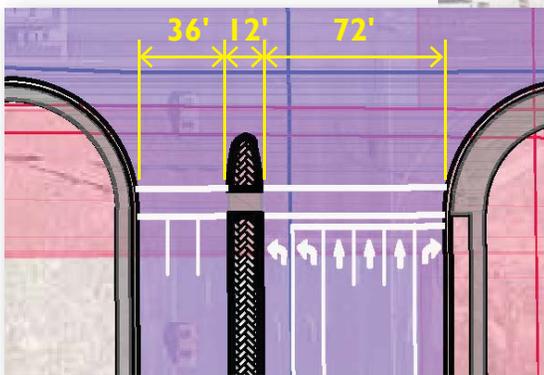
Planning and Environmental Linkages, Study and Design

Hancock/Academy Intersection

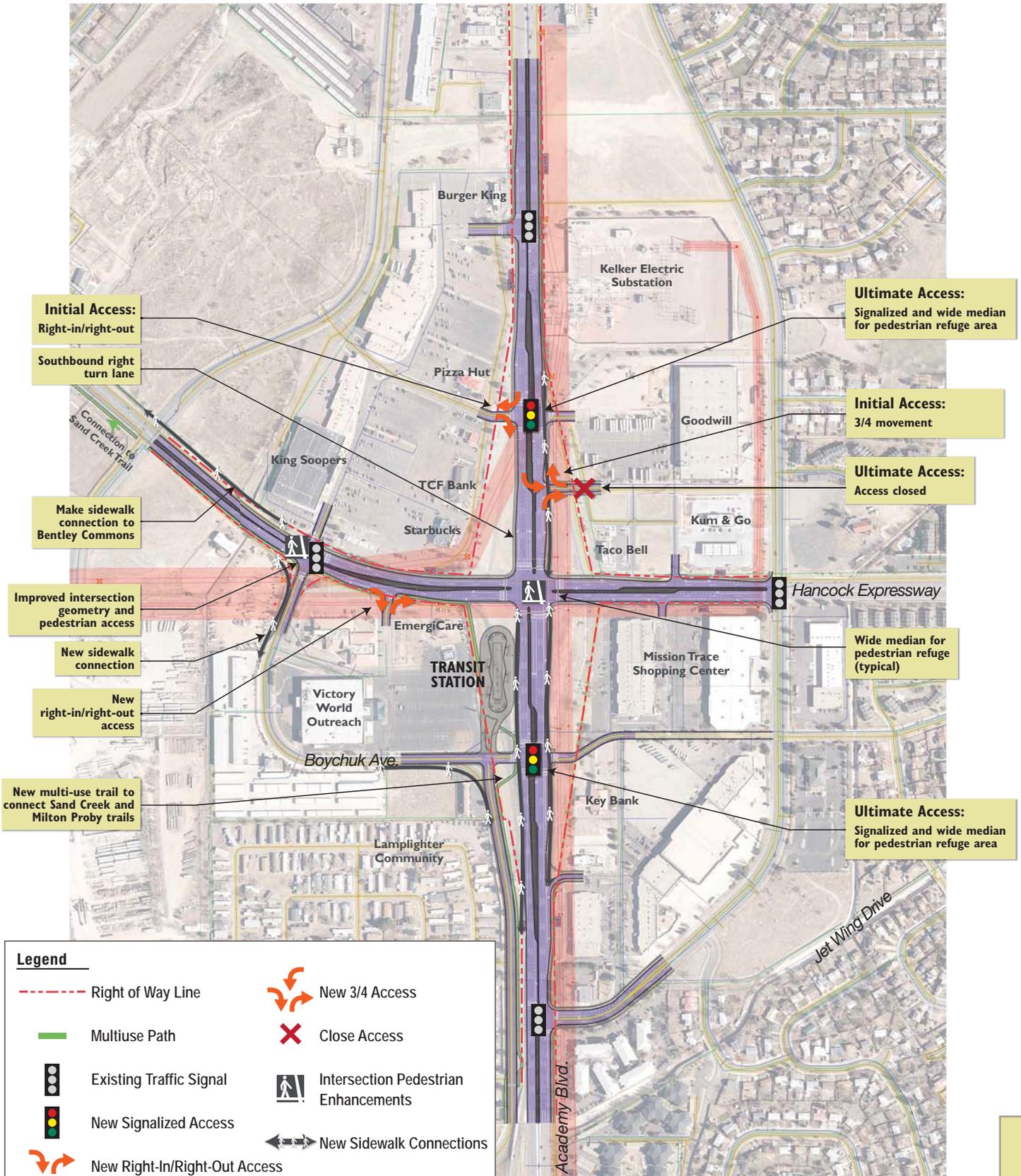
Example Pedestrian Refuge



Crosswalk Detail

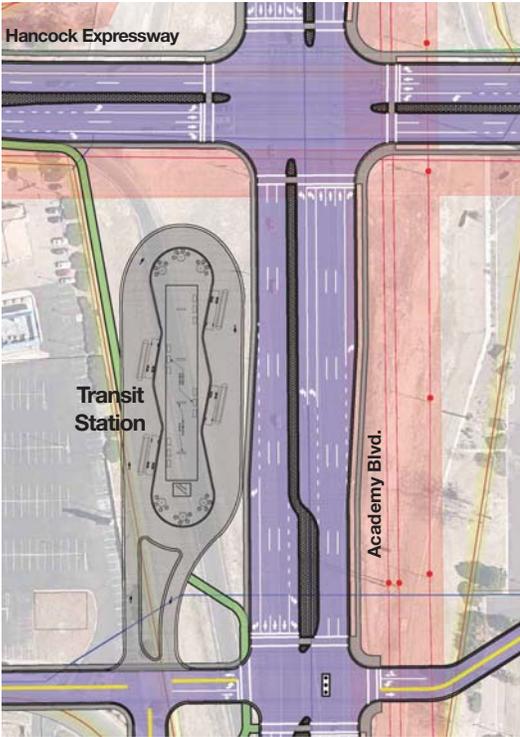


Recommended Alternative



Livability - Transit

New Transit Station in Southwest Corner



Example Station Areas



New Bus Routing with Station

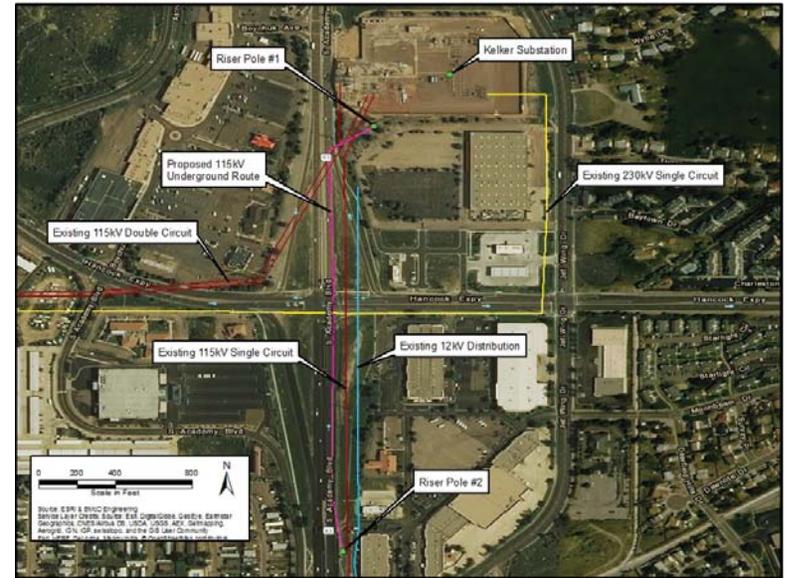
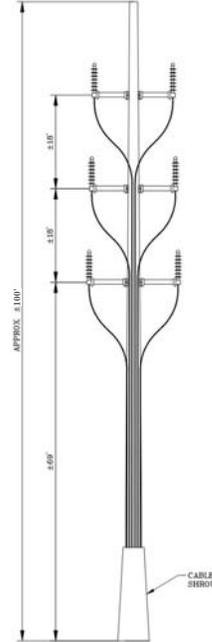


- Southwest quadrant provides good bus access
- Reduces out of direction bus travel
- Good pedestrian connectivity to station with new signaled access
- Supportive adjacent landowners

Utility Undergrounding

- **115- kV, single-circuit H-frame – likely candidate for undergrounding**
 1. Single circuit line
 2. Provides visual enhancement to the Hancock/Academy setting
 3. Provides development opportunities by eliminating existing easement
- **A 115kV, double circuit lattice tower line – not a likely candidate for undergrounding**
 1. Double circuit line more costly than undergrounding a single circuit line
 2. Does not provide significant new development opportunities in the northwest corner since underground would still require an easement through northwest quadrant of the intersection
 3. Required riser pole in the northwest corner would provide little visual advantage over the existing lattice tower, and would not enhance the Hancock/Academy setting
- **A 230kV, single circuit monopole line – not a likely candidate for undergrounding**
 1. Would not provide significant amounts of new right-of-way for redevelopment opportunities
 2. CSU typically does not install underground transmission circuits above 115kV
- **12kV distribution line – likely candidate for undergrounding**

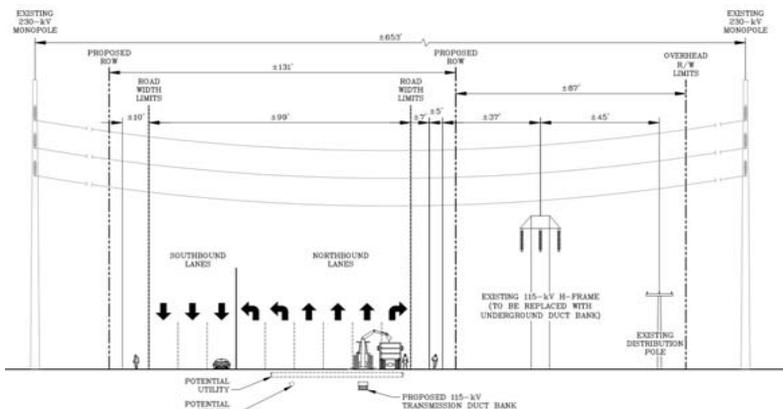
Typical Riser Pole



General Project Installation

An underground transmission duct bank is proposed to replace the existing 115-kV overhead, H-Frame, transmission power line to the east of Academy Boulevard. The general underground installation consists of a duct bank, which includes PVC conduits, 115-kV insulated cable, communication fiber, and necessary grounding cable, encased in concrete. The duct bank is routed to potentially two, riser pole structures where the circuit transitions from underground cable to overhead wire. This circuit ties into existing facilities at the Kelker Substation on the north and existing overhead structures to the south. The underground duct bank is proposed to be installed within the roadway limits of Academy Boulevard.

The high-level project cost is estimated at approximately \$3.5-5.5 million.



Typical Duct Bank Installation



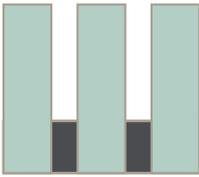


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Planning and Environmental Linkages, Study and Design

Conceptual Landscape Treatments





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Land Use Concepts

