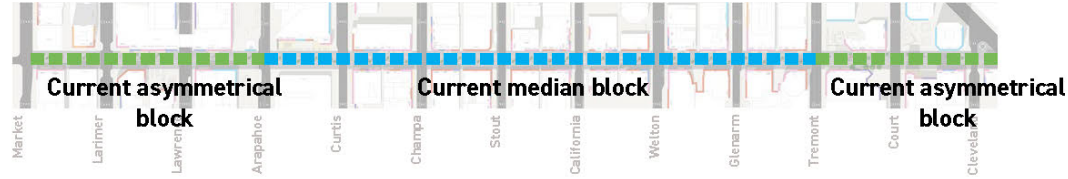
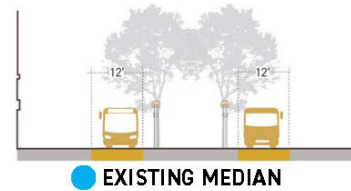
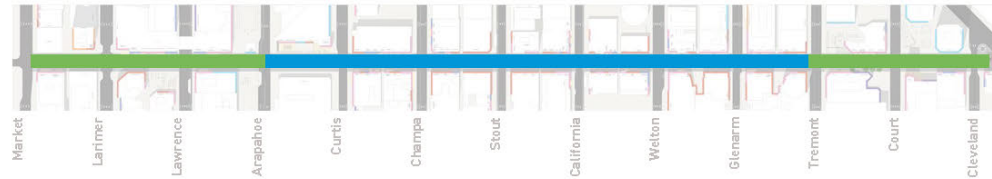


Proposed Alignments

NO-BUILD



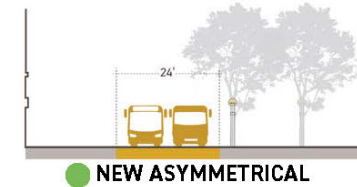
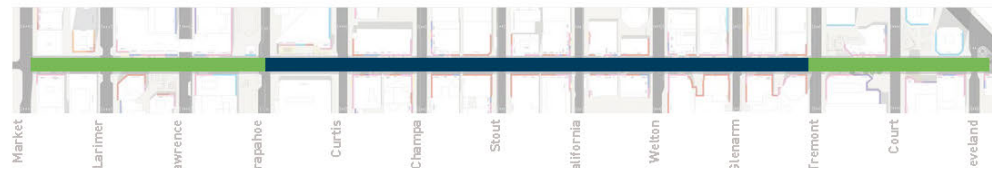
EXISTING MEDIAN & NEW ASYMMETRICAL



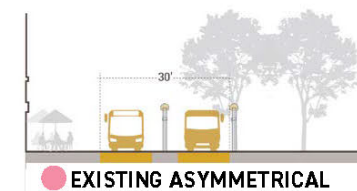
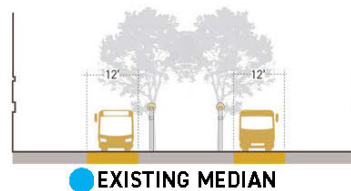
NEW CENTER RUNNING TRANSIT



NEW CENTER RUNNING TRANSIT & NEW ASYMMETRICAL



REBUILD REBUILD IN EXISTING CONFIGURATION AND PARTIAL REPAIR



Partial Repair includes:

- In transit lanes:** improve sub-base; clean, refinish, and reset pavers; upgrade subsurface utilities where needed
- In pedestrian areas:** refinish granite pavers, replace failed trees, address ADA deficiencies

Bulb outs for pedestrian crossings at intersections

Level 2 Alternatives Analysis

January 3, 2018

Category	Criteria	Alternatives					
		No Build	Median & New Asymmetrical	Center Running	Center and New Asymmetrical	Rebuild in Existing Configuration	Partial Repair
Economics & Cost							
Failing pavement system in constant need of repair	• Capital cost	NA	\$76M-\$137M depending on pavement material	\$76M-\$137M depending on pavement material	\$76M-\$137M depending on pavement material	\$76M-\$137M depending on pavement material	\$62M-\$88M
	• Annual transitway and sidewalk maintenance cost	\$1.2M	\$85,000-\$310,000 depending on pavement material	\$85,000-\$310,000 depending on pavement material	\$85,000-\$310,000 depending on pavement material	\$85,000-\$310,000 depending on pavement material	\$560,000
	• Future transitway replacement cost	NA	\$0-\$20M depending on pavement material	\$0-\$20M depending on pavement material	\$0-\$20M depending on pavement material	\$0-\$20M depending on pavement material	\$54M
	• 40-year investment	\$46.6M	\$99.8M-\$126.4M	\$99.8M-\$126.4M	\$99.8M-\$126.4M	\$99.8M-\$126.4M	\$138M-\$164M
Outdated infrastructure does not meet current ADA requirements and leads to poor tree health; lack of water quality treatment and modern fiber optic and communications utilities doesn't meet modern day needs	• Ability to address ADA deficiencies ¹	Not possible to address all ADA deficiencies	Not a discriminator: Can address all ADA deficiencies	Not a discriminator: Can address all ADA deficiencies	Not a discriminator: Can address all ADA deficiencies	Not a discriminator: Can address all ADA deficiencies	Not a discriminator: Can address all ADA deficiencies
	• Tree infrastructure is updated to modern standards.	Ranks poorly for tree health: No replacement of obsolete tree infrastructure (i.e. tree boxes and irrigation)	Ranks well for tree health: Installs modern tree planting infrastructure and new trees; conflicting utilities would be relocated.	Ranks well for tree health: Installs modern tree infrastructure and new trees; conflicting utilities would be relocated.	Ranks well for tree health: Installs modern tree infrastructure and new trees; conflicting utilities would be relocated.	Ranks well for tree health: Installs modern tree infrastructure and new trees; conflicting utilities would be relocated.	Ranks slightly better than No Build alternative: Replacement of missing and dead trees. No replacement of obsolete tree infrastructure (i.e., tree boxes and irrigation).
	• Water quality treatment is added to storm water drainage system.	No water quality improvements: No change in treatment of storm water runoff beyond maintenance	Improves water quality: Installs storm water quality treatment facilities, meeting City standards.	Improves water quality: Installs storm water quality treatment facilities, meeting City standards.	Improves water quality: Installs storm water quality treatment facilities, meeting City standards.	Improves water quality: Installs storm water quality treatment facilities, meeting City standards.	Improves water quality: Installs storm water quality treatment facilities, meeting City standards.

Alternatives Analysis and Environmental Clearance

Category	Criteria	Alternatives					
		No Build	Median & New Asymmetrical	Center Running	Center and New Asymmetrical	Rebuild in Existing Configuration	Partial Repair
		activities and normal Mall janitorial activities.					activities and normal Mall janitorial activities.
	<ul style="list-style-type: none"> Add fiber optic utility infrastructure and update/increase electric utility capabilities. 	No improvement: No fiber optic utilities for modern technology and inadequate electric power supply for programming needs.	Not a discriminator: Installs new fiber optic and upgraded electric utilities.	Not a discriminator: Installs new fiber optic and upgraded electric utilities.	Not a discriminator: Installs new fiber optic and upgraded electric utilities.	Not a discriminator: Installs new fiber optic and upgraded electric utilities.	Not a discriminator: Installs new fiber optic and upgraded electric utilities.
Safety & Security							
Poor delineation between undersized ² pedestrian walks and transit causes near misses between pedestrians and transit vehicles	<ul style="list-style-type: none"> Pedestrian overflow into transit lanes 	No change: Median blocks: 8' outer pedestrian walks remain undersized, resulting in pedestrian overflow into transit lanes. Asymmetrical blocks: 8' outer pedestrian walks on narrow side of block remain undersized, resulting in pedestrian overflow into transit lanes. 14' walkways on wide side of block accommodate pedestrians without overflow into transit lanes.	Ranks third: Median blocks: 8' outer pedestrian walks remain undersized, resulting in pedestrian overflow into transit lanes. New Asymmetrical blocks: 10' and 14' walkways on asymmetrical blocks accommodate pedestrians without overflow into transit lanes.	Ranks best: Center running blocks: 10' minimum pedestrian walks accommodate pedestrians without overflow into transit lanes.	Ranks second Best: Center running blocks: 10' minimum pedestrian walks accommodate pedestrians without overflow into transit lanes. New Asymmetrical blocks: 10' and 14' walkways on asymmetrical blocks accommodate pedestrians without overflow into transit lanes.	Same as No Build	Same as No Build
	<ul style="list-style-type: none"> Delineation between pedestrians and transit 	No change: Median blocks: Pedestrian walks remain directly adjacent to transit lane and do not meet guidance ³ for physical separation and delineation of pedestrian and vehicular areas.	Ranks third: Median blocks: Pedestrian walks remain directly adjacent to transit lane and do not meet guidance ³ for physical separation and delineation of pedestrian and vehicular areas.	Ranks best: Center running blocks: Pedestrian walks separated and delineated by tree/amenity zones as recommended by guidance. ³ Ability to shift pedestrian walks to store	Ranks second best: Center running blocks: Pedestrian walks separated and delineated by tree/amenity zones as recommended by guidance. ³ Ability to shift pedestrian walks to store	Same as No Build	Same as No Build

Category	Criteria	Alternatives					
		No Build	Median & New Asymmetrical	Center Running	Center and New Asymmetrical	Rebuild in Existing Configuration	Partial Repair
		<p>Asymmetrical blocks: Pedestrian walks separated and delineated by tree/amenity zones as recommended by guidance³ on wide side of block. Ability to shift pedestrian walk to store front on wide side of block to further separate pedestrians from transit.</p> <p>Pedestrian walks on narrow side of block remain directly adjacent to transit lane and do not meet guidance³ for physical separation and delineation of pedestrian and vehicular areas.</p> <p>4" curb of same appearance and material as pedestrian and transit surface is the only delineation between pedestrian and transit areas.</p>	<p>New Asymmetrical blocks: Pedestrian walks separated and delineated by tree/amenity zones as recommended by guidance⁵³ on wide side of block. Ability to shift pedestrian walk to store front on wide side of block to further separate pedestrians from transit.</p> <p>Pedestrian walks on narrow side of block remain directly adjacent to transit lane and do not meet guidance³ for physical separation and delineation of pedestrian and vehicular areas.</p> <p>Additional options for delineation between pedestrian and transit areas: Retain existing 4" curb; install higher curb between walks and transit; Barrier or bollards between walks and transit; shift pedestrian walks adjacent to store fronts; provide visual and/or tactile difference in materials between walks and transit; use technology to delineate walks and transit, such as colored lights.</p>	<p>fronts and further separate pedestrians from transit.</p> <p>Additional options for delineation between pedestrian and transit areas: Same options for delineation between pedestrian and transit areas as Median & New Asymmetrical Alternative.</p>	<p>fronts and further separate pedestrians from transit.</p> <p>New Asymmetrical blocks: Same as Median & New Asymmetrical alternative.</p> <p>Options for delineation between pedestrian and transit areas: Same options for delineation between pedestrian and transit areas as Median & New Asymmetrical Alternative.</p>		

Alternatives Analysis and Environmental Clearance

Category	Criteria	Alternatives					
		No Build	Median & New Asymmetrical	Center Running	Center and New Asymmetrical	Rebuild in Existing Configuration	Partial Repair
Higher crash numbers adjacent to median blocks (Arapahoe to Tremont)	<ul style="list-style-type: none"> Ability to address higher crash locations from Arapahoe to Tremont 	No change: Same street cross section and conflict/crossing points – median and asymmetrical geometrics remain. Same number of conflict points remain at each intersection and block, and same cross street width remains in place.	Moderate improvement to higher crash locations: Intersection bulb outs reduce cross street width at intersections, providing moderate safety benefit from reduced crossing distance and improved visibility/conspicuity for pedestrians. Same number of conflict points remain at each intersection and block.	Greatest improvement to higher crash locations: Intersection bulb outs reduce cross street width at intersections, providing moderate safety benefit from reduced crossing distance and improved visibility/conspicuity for pedestrians. Number of conflict points reduced at intersections and within blocks, in former median blocks.	Greatest improvement to higher crash locations: Intersection bulb outs reduce cross street width at intersections, providing moderate safety benefit from reduced crossing distance and improved visibility/conspicuity for pedestrians. Number of conflict points reduced at intersections and within blocks, in former median blocks.	Moderate improvement to higher crash locations: Intersection bulb outs reduce cross street width at intersections, providing moderate safety benefit from reduced crossing distance and improved visibility/conspicuity for pedestrians. Same number of conflict points remain at each intersection and block.	Moderate improvement to higher crash locations: Intersection bulb outs reduce cross street width at intersections, providing moderate safety benefit from reduced crossing distance and improved visibility/conspicuity for pedestrians. Same number of conflict points remain at each intersection and block.
Slick pavement surface causes pedestrian slips and falls, bus traction problems, compounded by snowy or icy conditions in winter	<ul style="list-style-type: none"> Pavement surface reduces “slip, trip and fall” risks 	No change: Slick granite surface would remain the same assuming no further modifications.	Not a discriminator: Pavement design options comprise granite pavers with a higher friction finish, unit pavers, precast concrete, and cast-in-place concrete.	Not a discriminator: Pavement design options comprise granite pavers with a higher friction finish, unit pavers, precast concrete, and cast-in-place concrete.	Not a discriminator: Pavement design options comprise granite pavers with a higher friction finish, unit pavers, precast concrete, and cast-in-place concrete.	Not a discriminator: Pavement design options comprise granite pavers with a higher friction finish, unit pavers, precast concrete, and cast-in-place concrete.	Ranks below other action alternatives: Granite pavers in transit lanes would be cleaned and refinished to improve surface friction.
Safety and security systems should be upgraded to current standards.	<ul style="list-style-type: none"> Ability to accommodate future technology for security best practices 	No improvements: No fiber optic utilities or updated electric power supply to meet future security technology needs.	Not a discriminator: Installs new fiber optic and upgraded electric utilities.	Not a discriminator: Installs new fiber optic and upgraded electric utilities.	Not a discriminator: Installs new fiber optic and upgraded electric utilities.	Not a discriminator: Installs new fiber optic and upgraded electric utilities.	Not a discriminator: Installs new fiber optic and upgraded electric utilities.
Mobility							
Regional transit mobility and connectivity and efficient transit operations							
Frequent maintenance disrupts transit operations, and will be	<ul style="list-style-type: none"> Maintenance effects on bus operations 	No change: Maintenance frequency continues to	Not a discriminator: Frequency of pavement maintenance impacts on bus operations substantially	Not a discriminator: Frequency of pavement maintenance impacts on bus operations substantially	Not a discriminator: Frequency of pavement maintenance impacts on bus operations substantially	Not a discriminator: Frequency of pavement maintenance impacts on bus operations substantially	Ranks below other action alternatives: Replacement of sub-base reduces

Alternatives Analysis and Environmental Clearance

Category	Criteria	Alternatives					
		No Build	Median & New Asymmetrical	Center Running	Center and New Asymmetrical	Rebuild in Existing Configuration	Partial Repair
more disruptive as ridership increases	efficiency and requirements	increase, slowing bus operations.	reduced from current conditions, under any pavement design option.	reduced from current conditions, under any pavement design option.	reduced from current conditions, under any pavement design option.	reduced from current conditions, under any pavement design option.	frequency of maintenance impacts on bus operations.
The demand for transit services is projected to increase to 70,000 riders/day in 2035	<ul style="list-style-type: none"> Provision of connectivity between Denver Union Station and Civic Center Station, and crossing bus and light rail routes in between 	No change: Maintains existing connection. Service expansion options comprise operating buses in tandem or procuring larger buses.	Same as No Build	Same as No Build	Same as No Build	Same as No Build	Same as No Build
	<ul style="list-style-type: none"> Accommodation of tandem and/or larger buses at bus stops 	Not a discriminator: Accommodates tandem and/or larger buses; no permanent elements (trees, lights) prevent bus boarding along length of block.	Not a discriminator: Accommodates tandem and/or larger buses; no permanent elements (trees, lights) prevent bus boarding along length of block.	Not a discriminator: Accommodates tandem and/or larger buses; no permanent elements (trees, lights) prevent bus boarding along length of block.	Not a discriminator: Accommodates tandem and/or larger buses; no permanent elements (trees, lights) prevent bus boarding along length of block.	Not a discriminator: Accommodates tandem and/or larger buses; no permanent elements (trees, lights) prevent bus boarding along length of block.	Not a discriminator: Accommodates tandem and/or larger buses; no permanent elements (trees, lights) prevent bus boarding along length of block.
Transit operations will become increasingly difficult as the volume of passengers and pedestrian use increases on the Mall	<ul style="list-style-type: none"> Effect on transit operations 	Not endorsed by RTD: Maintains slick surface, high maintenance frequency, and maneuvering between median and asymmetrical blocks.	Agreeable, but less preferred, by RTD: bus operators need to protect both the curb and median sides of the bus.	Most preferred by RTD: buses operate on continuous lane assignment throughout Mall and bus operators need to protect only the curb side of the bus. Eliminating the median improves the safety of bus operations.	Most preferred by RTD: buses operate on more continuous lane assignment throughout Mall and bus operators need to protect only the curb side of the bus. Eliminating the median improves the safety of bus operations.	Agreeable, but less preferred, by RTD: bus operators need to protect both the curb and median sides of the bus.	Agreeable, but less preferred, by RTD: bus operators need to protect both the curb and median sides of the bus.
During construction the efficiency of transit operations will be dramatically reduced	<ul style="list-style-type: none"> Minimum disruption during construction 	Lowest impact: limited to maintenance activities which vary by year.	Comparable to other action alternatives except Partial Repair: Major impact during the construction period; length of construction period varies depending on pavement design.	Comparable to other action alternatives except Partial Repair: Major impact during the construction period; length of construction period varies depending on pavement design.	Comparable to other action alternatives except Partial Repair: Major impact during the construction period; length of construction period varies depending on pavement design.	Comparable to other action alternatives except Partial Repair: Major impact during the construction period; length of construction period varies depending on pavement design.	Less impact than the other action alternatives: construction would occur primarily in the transit lanes and would have less disruption in the pedestrian

Alternatives Analysis and Environmental Clearance

Category	Criteria	Alternatives					
		No Build	Median & New Asymmetrical	Center Running	Center and New Asymmetrical	Rebuild in Existing Configuration	Partial Repair
							areas than the other action alternatives.
Pedestrian mobility							
<p>Sidewalks are undersized for pedestrian volumes⁴ and Pedestrian ROW Accessibility Guidelines⁵, which require 10' walks for passing.</p>	<ul style="list-style-type: none"> Pedestrian volumes and accessibility guidelines are accommodated 	<p>No change:</p> <p>Median blocks: Pedestrian volumes and accessibility guidelines not accommodated - 1,920 pedestrians/ hour on 8' walks next to patio/ gathering space.</p> <p>Asymmetrical blocks: Pedestrian volumes and accessibility guidelines not accommodated on narrow side of block – 1,920 pedestrians/ hour on 8' walks next to patio/ gathering space. Pedestrian volumes and accessibility guidelines are accommodated on wide side of block - 3,360 pedestrians/ hour on 14' walks, with additional space for pedestrians and/or amenities.</p>	<p>Minimal change from No Build:</p> <p>Median blocks: No change from No Build</p> <p>New Asymmetrical blocks: Pedestrian volumes and accessibility guidelines are accommodated - 2,400 pedestrians/ hour on 10' walks next to patio/ gathering space on narrow side of block; 3,360 pedestrians/ hour on 14' walks on wide side of block, with additional space for pedestrians and/or amenities.</p>	<p>Ranks second best:</p> <p>Center running blocks: Pedestrian volumes and accessibility guidelines are accommodated -2,400 pedestrians/ hour on 10' walks next to patio/ gathering space, with additional space for pedestrians and/or amenities.</p>	<p>Ranks best:</p> <p>Center running blocks: Pedestrian volumes and accessibility guidelines are accommodated - 2,400 pedestrians/ hour on 10' walks next to patio/ gathering space, with additional space for pedestrians and/or amenities.</p> <p>New Asymmetrical blocks: Pedestrian volumes and accessibility guidelines are accommodated - 2,400 pedestrians/ hour on 10' walks next to patio/ gathering space on narrow side of block; 3,360 pedestrians/ hour on 14' walks on wide side of block, with additional space for pedestrians and/or amenities.</p>	Same as No Build	Same as No Build
Public Use Functionality							
<p>Limited usability of divided public space on median blocks and narrow sides of asymmetrical blocks to</p>	<ul style="list-style-type: none"> Width for patio and gathering space 	<p>No change:</p> <p>Median Blocks: Walkways in outer pedestrian areas of median blocks are not wide</p>	<p>Ranks third:</p> <p>Median Blocks: Walkways in outer pedestrian areas of median blocks are not wide</p>	<p>Ranks best:</p> <p>Center Running Blocks: Walkways on both sides of blocks are wide enough for</p>	<p>Ranks second best:</p> <p>Center Running Blocks: Walkways on both sides of blocks are wide enough for</p>	Same as No Build	Same as No Build

Alternatives Analysis and Environmental Clearance

Category	Criteria	Alternatives					
		No Build	Median & New Asymmetrical	Center Running	Center and New Asymmetrical	Rebuild in Existing Configuration	Partial Repair
accommodate patio/gathering space ⁶ and pedestrian needs.		<p>enough to accommodate 9' patio/ gathering space and 10' pedestrian walk.</p> <p>Medians are not conducive to stationary gathering activities because they are too narrow, lack edges, and are surrounded by transit shuttles.⁷</p> <p>Asymmetrical Blocks: Walkways on narrow sides of asymmetrical blocks are not wide enough to accommodate 9' patio/ gathering space and 10' pedestrian walk.</p>	<p>enough to accommodate 9' patio/ gathering space and 10' pedestrian walk.</p> <p>Medians are not conducive to stationary gathering activities because they are too narrow, lack edges, and are surrounded by transit shuttles.⁷</p> <p>New Asymmetrical Blocks: Walkways on both sides of asymmetrical blocks are wide enough to accommodate 9' patio/ gathering space and 10' pedestrian walk, with additional space for amenities and/or pedestrians on wide side.</p>	<p>9' patio/ gathering space and 10' pedestrian walk, with additional space for amenities and/or pedestrians.</p>	<p>9' patio/ gathering space and 10' pedestrian walk, with additional space for amenities and/or pedestrians.</p> <p>New Asymmetrical Blocks: Walkways on both sides of asymmetrical blocks are wide enough to accommodate 9' patio/ gathering space and 10' pedestrian walk, with additional space for amenities and/or pedestrians on wide side.</p>		
Negative perception of safety and lack of natural surveillance inhibits positive public use of Mall.	<ul style="list-style-type: none"> Adherence to best practices for natural surveillance, activation, and positive public use of pedestrian and gathering areas. 	<p>No change: Median blocks have low public use and natural surveillance, increased negative behaviors (e.g., panhandling⁸), and decreased sense of safety due to size, physical separation from primary walkways, and frequent shuttle service on each side.</p> <p>Asymmetrical blocks can accommodate best practices for natural surveillance and</p>	<p>Same as No Build</p>	<p>Improved over No Build: Replaces public space in medians with consolidated public space adjacent to buildings, increasing natural surveillance and adhering to safety and security best practices.</p>	<p>Improved over No Build: Replaces public space in medians with consolidated public space adjacent to buildings, increasing natural surveillance and adhering to safety and security best practices.</p> <p>New Asymmetrical blocks can accommodate best practices for natural surveillance and accommodate positive public use and activities.</p>	<p>Same as No Build</p>	<p>Same as No Build</p>

Alternatives Analysis and Environmental Clearance

Category	Criteria	Alternatives					
		No Build	Median & New Asymmetrical	Center Running	Center and New Asymmetrical	Rebuild in Existing Configuration	Partial Repair
		accommodate positive public use and activities.					
Community and Environment							
Construction impacts	<ul style="list-style-type: none"> Construction impacts 	Lowest impact: limited to maintenance activities which vary by year.	Comparable to other action alternatives except Partial Repair: Major impact during the construction period; length of construction period varies depending on pavement design.	Comparable to other action alternatives except Partial Repair: Major impact during the construction period; length of construction period varies depending on pavement design.	Comparable to other action alternatives except Partial Repair: Major impact during the construction period; length of construction period varies depending on pavement design.	Comparable to other action alternatives except Partial Repair: Major impact during the construction period; length of construction period varies depending on pavement design.	Less impact than other action alternatives: construction would occur primarily in the transit lanes and would have less disruption in the pedestrian areas than the other action alternatives.
Environmental impacts	<ul style="list-style-type: none"> Historic resources impacts 	<p>Minimal change from existing conditions: The rate at which the Mall deteriorates from use would increase as ridership and pedestrian use increase.</p> <p>Ad hoc replacement of pavers would continue.</p>	<p>Impacts historic properties. More change than Rebuild in Existing Configuration and Partial Repair alternatives: Median blocks maintain historic design.</p> <p>New Asymmetrical blocks modify historic design; can accommodate existing pavement pattern and spatial relationships, with some adjustments.</p>	<p>Impacts historic properties. More change than Rebuild in Existing Configuration and Partial Repair alternatives: Center running design replaces both median and asymmetrical blocks. Ability to accommodate existing pavement pattern, with minor adjustments.</p>	<p>Impacts historic properties. More change than Rebuild in Existing Configuration and Partial Repair alternatives: Center running design replaces median blocks. Ability to accommodate existing pavement pattern, with minor adjustments.</p> <p>New Asymmetrical blocks modify historic design; can accommodate existing pavement pattern and spatial relationships, with some adjustments.</p>	<p>Impacts historic properties. Less change than all but the Partial Repair alternative: No change in spatial configuration or pavement pattern, but more change than Partial Repair alternative due to reconstruction of entire Mall.</p>	<p>Impacts historic properties. Least change from existing conditions: No change in spatial configuration or pavement pattern.</p>
	<ul style="list-style-type: none"> Socioeconomic impacts 	Minimal changes from existing conditions.	<p>Minimal changes to social, economic, and land use resources.</p> <p>Asymmetrical blocks perpetuate inequitable distribution of amenity</p>	<p>Potential benefits to social, economic, and land use resources due to higher public use, perception of safety, and equitable distribution of space.</p>	<p>Potential benefits to social, economic, and land use resources due to higher public use and perception of safety.</p>	<p>Minimal changes to social, economic, and land use resources.</p> <p>Asymmetrical blocks perpetuate inequitable distribution of amenity</p>	<p>Minimal changes to social, economic, visual, and land use resources.</p> <p>Asymmetrical blocks perpetuate inequitable distribution of amenity</p>

Alternatives Analysis and Environmental Clearance

Category	Criteria	Alternatives					
		No Build	Median & New Asymmetrical	Center Running	Center and New Asymmetrical	Rebuild in Existing Configuration	Partial Repair
			space and sidewalk capacity fronting businesses. Wide sides of block allow more space for walking and gathering than narrow sides, resulting in larger customer base adjacent to businesses on wide sides.	Center running blocks provide equitable distribution of pedestrian space and public amenities, including tree canopy and gathering space, providing benefits for economic vitality of businesses on both sides of the Mall.	Center running blocks provide equitable distribution of pedestrian space and public amenities, including tree canopy and gathering space, providing benefits for economic vitality of businesses on both sides of the Mall. Asymmetrical blocks perpetuate inequitable distribution of amenity space and sidewalk capacity fronting businesses. Wide sides of block allow more space for walking and gathering than narrow sides, resulting in larger customer base adjacent to businesses on wide sides.	space and sidewalk capacity fronting businesses. Wide sides of block allow more space for walking and gathering than narrow sides, resulting in larger customer base adjacent to businesses on wide sides.	space and sidewalk capacity fronting businesses. Wide sides of block allow more space for walking and gathering than narrow sides, resulting in larger customer base adjacent to businesses on wide sides.
	<ul style="list-style-type: none"> Natural resources impacts 	Minimal changes from existing conditions.	Not a discriminator: Replaces 400,000 square feet (sf) of hardscape, installs water quality treatment - benefit to water quality. No changes to other resources.	Not a discriminator: Replaces 400,000 square feet (sf) of hardscape, installs water quality treatment - benefit to water quality. No changes to other resources.	Not a discriminator: Replaces 400,000 square feet (sf) of hardscape, installs water quality treatment - benefit to water quality. No changes to other resources.	Not a discriminator: Replaces 400,000 square feet (sf) of hardscape, installs water quality treatment - benefit to water quality. No changes to other resources.	Not a discriminator: Replaces 400,000 square feet (sf) of hardscape, installs water quality treatment - benefit to water quality. No changes to other resources.
Public and agency support	<ul style="list-style-type: none"> Level of Agency Support 	Not supported: Not supported by CCD, RTD, or DDP.	Not strongly supported: Not strongly supported by CCD, RTD, or DDP.	Highest support: Strongly supported by CCD and DDP. Supported by RTD due to improved guideway geometry as compared to the other build alternatives.	Second highest support: Not as strongly supported by CCD or DDP when compared to the Center Running alternative. Supported by RTD due to improved guideway	Not supported: Not supported by CCD or DDP. Neutral support by RTD.	Not supported: Not supported by CCD, RTD, or DDP.

Alternatives Analysis and Environmental Clearance

Category	Criteria	Alternatives					
		No Build	Median & New Asymmetrical	Center Running	Center and New Asymmetrical	Rebuild in Existing Configuration	Partial Repair
					geometry as compared to the other build alternatives.		
	<ul style="list-style-type: none"> Level of Public Support as demonstrated at public meetings and hearings 	Minimal support	Minimal support	Strong support	Moderate support	Moderate support	Not presented during Level 1 screening; recommended alternative in 2010 16th Street Urban Design Plan
Ability to meet the project Purpose and Need	<ul style="list-style-type: none"> Satisfies the Project Purpose and Need 	Does not satisfy any Purpose and Need elements.	<p>Ranks third in fulfillment of the Purpose and Need.</p> <ul style="list-style-type: none"> Replaces failing infrastructure Improves pedestrian safety and mobility on asymmetrical blocks through wider sidewalks; does not physically separate pedestrian walk from transit lane on narrow side of asymmetrical block Supports future transit mobility Does not meet requirements for sidewalk and patio/gathering space width Does not adhere to best practices for natural surveillance and public activation on median blocks 	<p>Ranks first in fulfillment of the Purpose and Need.</p> <ul style="list-style-type: none"> Replaces failing infrastructure Improves pedestrian safety and mobility through wider sidewalks and separation of pedestrian walks from transit lanes Supports future transit mobility Meets requirements for adequate patio/gathering and sidewalk space Adheres to best practices for natural surveillance and public activation Provides flexibility for public use by allowing pedestrian walks to shift against building fronts to consolidate 	<p>Ranks second in fulfillment of the Purpose and Need.</p> <ul style="list-style-type: none"> Replaces failing infrastructure Improves pedestrian safety and mobility through wider sidewalks and separation of pedestrian walks from transit lanes on center running blocks and the wide side of new asymmetrical blocks; does not physically separate pedestrian walk from transit lane on narrow side of asymmetrical block Supports future transit mobility Meets requirements for adequate patio/gathering and sidewalk space Adheres to best practices for natural 	<p>Ranks fourth in fulfillment of the Purpose and Need.</p> <ul style="list-style-type: none"> Replaces failing infrastructure Does not improve pedestrian safety and mobility Supports future transit mobility Does not meet requirements for sidewalk and patio/gathering space width Does not adhere to best practices for natural surveillance and public activation on median blocks Does not provide flexibility for public use as well as the alternatives with center running blocks 	<p>Ranks last in fulfillment of the Purpose and Need.</p> <ul style="list-style-type: none"> Replaces failing infrastructure in the transit lanes, but not in other areas (i.e. pedestrian areas, and tree infrastructure) Does not improve pedestrian safety and mobility Supports future transit mobility Does not meet requirements for sidewalk and patio/gathering space width Does not adhere to best practices for natural surveillance and public activation on median blocks Does not provide flexibility for public use as well as the

Category	Criteria	Alternatives					
		No Build	Median & New Asymmetrical	Center Running	Center and New Asymmetrical	Rebuild in Existing Configuration	Partial Repair
			<ul style="list-style-type: none"> Does not provide flexibility for public use as well as the alternatives with center running blocks. 	gathering space under trees.	surveillance and public activation <ul style="list-style-type: none"> Provides flexibility for public use by allowing pedestrian walks to shift against building fronts to consolidate gathering space under trees on center running blocks and on wide sides of asymmetrical blocks. 		alternatives with center running blocks
Disposition		Carry forward as required by NEPA	Do not carry forward	Carry forward	Carry forward	Do not carry forward	Do not carry forward

Notes:

¹ ADA deficiencies and recommendations documented in MTC, A Discussion of Accessibility Issues for the 16th Street Mall Project, 2010.

² One foot of sidewalk width can comfortably carry 4 pedestrians/minute and 240 pedestrians/hour (Jan Gehl, *Cities for People*, Island Press, 2010). Existing 8-foot walks are too narrow for peak period pedestrian volumes (see footnote 5) and pedestrian right-of-way accessibility guidelines (see footnote 6), which recommend 10' walks for passing.

³ National Association of Transportation Officials (NACTO), *Transit Street Design Guide*, April 2016; and NACTO, *Urban Street Design Guide*, October 2013.

⁴ Existing (2015) midday peak pedestrian volumes are 3,000 pedestrians/hour Lawrence to Arapahoe (near DUS neighborhood) and 3,900 pedestrians/hour Welton to Glenarm (CBD neighborhood) (Gehl Studio, *Downtown Denver 16th Street Mall: Small Steps Towards Big Change*, February 2016). Future (2040) minimum midday peak pedestrian volumes estimated at 4,600 pedestrians/ hour in CBD and 4,000 pedestrians/hour in DUS neighborhood, based on existing peak hour pedestrian volumes growing at rate of forecasted employment growth from 2015-2040 of 32% in DUS neighborhood and 18% in CBD neighborhood (based on Denver Regional Council of Governments employment forecasts, 2017).

⁵ U.S. Access Board, *Draft Public Rights-Of-Way Accessibility Guidelines*, November 23, 2005.

⁶ The architectural standard for dining space recommends 300 square inches per diner. Common industry table sizes that meet this standard are 30" X 42" and 30" X 48" for four-person tables and 30" x 24" for two-person tables. The standard aisle width is 36" - 42". Using the smallest industry standards of 42"-wide four-top table, 36" aisle, and 24"-wide two-top table results in a patio width of 102" or 8.5' without a barrier railing, and 9' with a barrier railing. Additionally, patio permits currently issued by BID require 10' separation from transit lanes, resulting in 9' patios.

⁷ People prefer to gather at edges, and people inherently back away from fast moving objects (Jan Gehl, *Cities for People*, Island Press, 2010).

⁸ 88% of panhandling occurs on median blocks (Downtown Denver Business Improvement District Downtown Ambassadors, 16th Street Mall Panhandling Surveys, March 22 – August 29, 2015).