CapMetro

Red Line Trail Study

Trail Alignment Possibilities

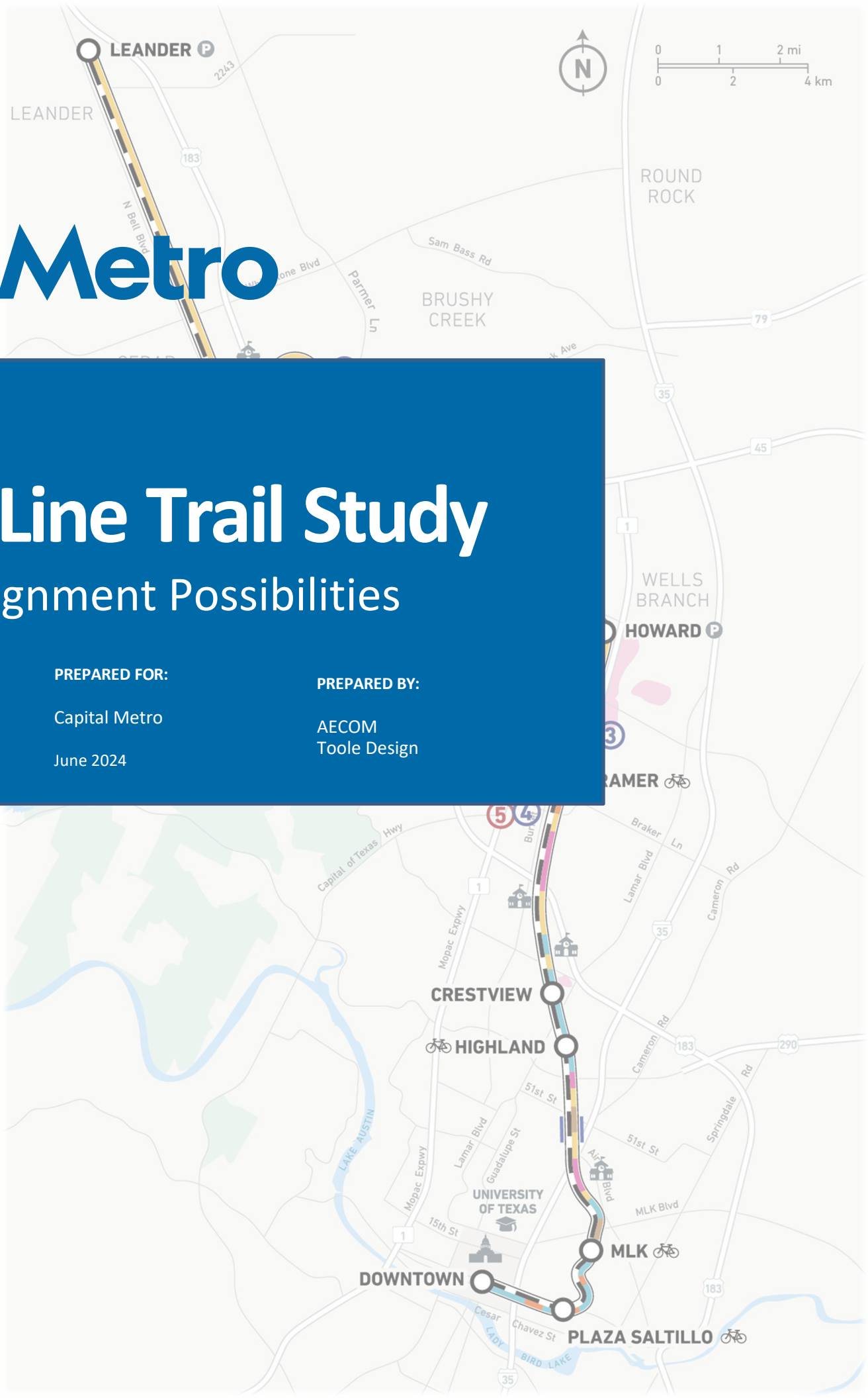
PREPARED FOR:

Capital Metro

June 2024

PREPARED BY:

AECOM
Toole Design



Trail Possibilities within the Rail Right-of-Way

June 2024

1.1 Introduction

The Red Line Trail Study is a planning level feasibility analysis of adding an urban trail within the CapMetro Rail right-of-way (ROW). This memo describes the approach developed to identify a draft alignment for the trail that meets CapMetro's guidelines, state and federal requirements, and double tracking considerations. It is not meant to predict the final design or placement of any potential future trail, as there are additional engineering requirements such as design, drainage, utility, survey work, and permitting that are necessary to identify a final alignment prior to construction.

A primary method for improving efficiency of service is to add secondary tracks. Double tracking reduces delay and provides reliability by allowing trains to pass one another rather than waiting. For every mile of double track added, travel time is reduced. Travel time reduction encourages more riders and allows for higher person carrying capacity of the rail. *Project Connect* incorporates the double tracking of the Red Line as a component of the broader regional transit improvements.

Given CapMetro's desire to provide double tracking, this document outlines segments of the Red Line where double tracking is selected for prioritization and where the introduction of an urban trail would not preclude double tracking. Given the limited resources and complexities of topography and ROW, double tracking is currently prioritized near Plaza Saltillo Station, Broadmoor Station, between Highland and Crestview Stations, and at Howard Station in the near-term. These segments account for areas with proposed additional double track, which would substantially enhance and improve rail service along the corridor. While these targeted segments of double tracking efforts are near term in nature, this study considers trail impacts to double tracking along the length of the entire corridor.

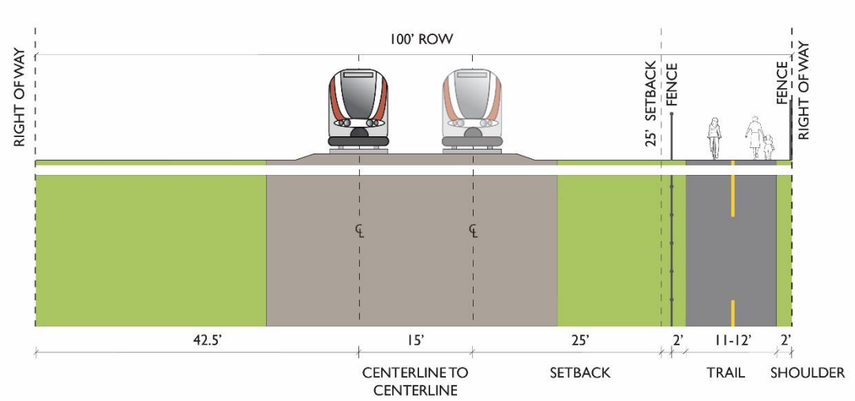
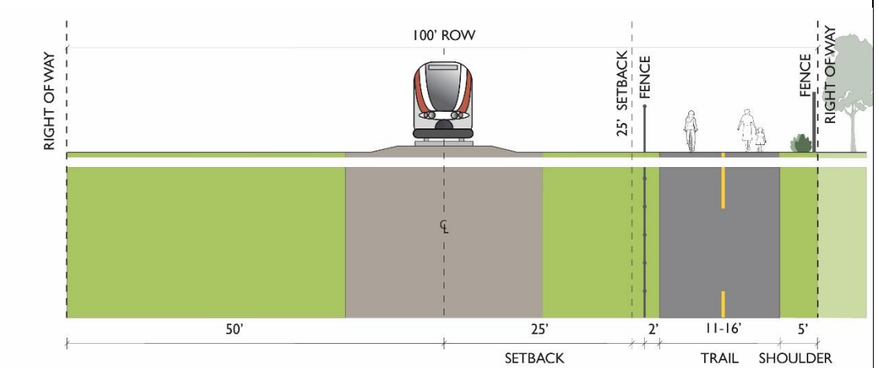
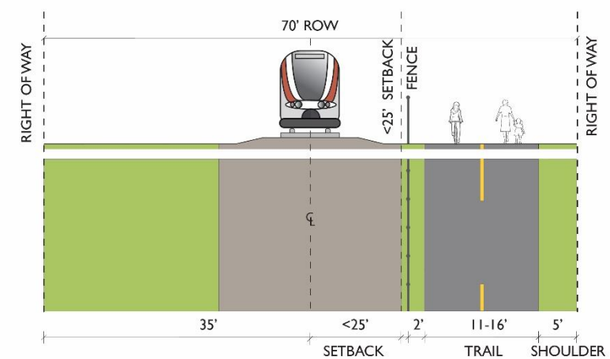
1.2 Data Sources

The following trail alignment feasibility notes and corresponding map were created primarily by referencing priority double tracking projects and CapMetro Red Line ROW lines that were digitized by AECOM for the Existing Conditions task. The majority of the ROW linework comes from a 2010 planimetric survey that was completed by McGray & McGray Land Surveyors, Inc. At 13 years old, the survey data has aged and has other limitations and discrepancies that are described in more detail in AECOM's *Data Gathering for Existing Conditions Memo* from June 2023.

Other data used in the trail alignment assessment includes a track centerline layer from CapMetro and a layer of relevant planned and existing trail facilities that was created for the public open house StoryMap based on projects and existing facilities identified in the Existing Conditions task. The Toole Design Team used this data along with aerial imagery, street view, and photos and notes from the project site visit in May 2023 to determine tiers of feasibility for fitting the trail within the CapMetro Red Line ROW. The ROW linework was created using Power InRoads software and then converted to a GIS shapefile. All measurements were done in QGIS software with the Measure Line tool.

1.3 Feasibility Categorization

Three tiers of feasibility were developed based on CapMetro's guidelines, state and federal requirements, double tracking considerations, and jurisdictional preferences for trail width. A trail width of 11- to 16-feet was assumed where possible. The City of Austin's standard trail width is 16 feet wide, while the standard is 12 feet in Cedar Park and Leander. The 11- to 16-feet range used in the analysis reflects the potential for the trail's width to flex in response to site conditions or constraints. CapMetro's guidelines define preferred setback distance between the trail and the track based on the train dynamic envelope, operating speeds, safety, and space needed for maintenance vehicles and equipment. The feasibility tiers are described in the table below and illustrated by the accompanying cross sections.

Feasibility Tiers:		Typical Cross Section
Tier 1: **Compatible with Future or Existing Double Tracking**	• Identified segment can meet CapMetro preferred setback of 25 feet* AND • Is compatible with **current or future double tracking** along the Red Line corridor. Future double tracking assumes 15 feet between centerlines of rails and double tracking centered within the ROW (may assume relocation of existing track)**AND • Is not eliminated by any other geological/physical constraint present in available data	**100-foot ROW – Double Tracking** **25-foot Setback** 
Tier 2: **Meets CapMetro Preferred Setback**	• Identified segment can meet CapMetro preferred setback of 25 feet* AND • Is compatible with **prioritized double tracking projects along the Red Line corridor but not future double tracking along the entire corridor**, assuming 15 feet between centerlines of rails and double tracking centered within the ROW (may assume relocation of existing track)**	**100-foot ROW** **25-foot Setback** 
Tier 3: **Does not meet CapMetro Preferred Setback**	• Identified segment **cannot meet** CapMetro preferred setback of 25 feet but may be physically feasible* • Due to constraints and safety considerations, requires further discussion and coordination with CapMetro to explore and determine context-sensitive options and variance possibilities through the SOP.	**70-foot ROW** **< 25-foot Setback** 

** Based on side with greater availability of unused ROW if tracks are not centered within the ROW*

***Setback will be measured from centerline of closest track*

1.4 Analysis Methodology

To facilitate the analysis, the Red Line corridor was first broken into shorter segments, generally by cross streets, to isolate characteristics that could affect the level of feasibility and/or to provide options for alternative on-street alignments. Examples of criteria that prompted segment breaks include a change in the ROW width or the start of an adjacent planned trail project. The segment breakdown also considers trail user access and consistency of experience.

Segments were first analyzed to see whether they could meet **Tier 1: Compatible with Future or Existing Double Tracking**. Aerial imagery, street view, and field notes from the May 2023 field review were used to determine whether any physical characteristics of the natural or built environment would preclude a trail from being built in the ROW. Examples of non-ROW-related physical constraints could be a rock outcropping or a significant building footprint that would prevent the construction of a trail. In order to determine whether the ROW could accommodate future double tracking (assumed to be centered within the ROW), the CapMetro-preferred setback of 25 feet, and a 11- 16-foot-wide trail, the full width of the ROW was measured. If the ROW was 100 feet or wider, the segment was determined to meet Tier 1 criteria. If the segment could not meet Tier 1 criteria, it was re-examined for Tier 2.

Segment evaluation for **Tier 2: Meets CapMetro Preferred Setback** feasibility criteria began with checking to see if the segment was along a prioritized double tracking project.[1] If the segment was within a prioritized double tracking project area and did not meet Tier 1 criteria it was determined to fall within **Tier 3. Does not meet CapMetro Preferred Setback**. If the segment was not along a prioritized double tracking project area, the centerline of the nearest rail to edge of right-of-way dimension was reviewed to see if it could accommodate a 25-foot setback and an 11-16-foot-wide trail (16 feet preferred in the City of Austin) with 2-5 feet of shoulder from the right-of-way line. A fence or vegetation separation with 2 feet of shy space from the trail would also need to be accommodated between the railroad and trail. If the centerline to right-of-way width did not accommodate the preferred setback, the segment was determined to fall within Tier 3. Does not meet CapMetro Preferred Setback. These segments may be physically feasible but do not meet CapMetro's design guidelines and would thus require further discussion and coordination between the jurisdiction and CapMetro.

1.5 Feasibility Category Breakdown

The table below provides a summary of the mileage and percentage of the study corridor according to feasibility tier. Approximately 40% of the 32-mile corridor can safely accommodate the trail along with rail operations and potential expansion of the rail system. This includes segments totaling 13.1 miles, from south of MoPac/Walnut Creek Trail to Howard Station, West Palmer Lane to Lakeline Station, and Staked Plains

[1] Prioritized double tracking project locations are at 1) Howard Station, 2) Plaza Saltillo Station, 3) between Highland and Crestview Stations, and 4) Broadmoor Station.

Neighborhood to Leander Station.

None of the corridor segments met Tier 2 criteria, which considered the flexibility of allowing a near-term trail as CapMetro gathers resources and funding for longer-term double tracking projects. The lack of Tier 2 segments was due to the increments of right-of-way width and how they corresponded with the CapMetro Guidelines.

The remaining 60% of the corridor requires close work with implementing partners to make location-specific adjustments that safely accommodate rail operations and bike and pedestrian access. Through similar partnerships, several segments on this portion of the Red Line Trail currently have existing bike infrastructure, totaling 5.7 miles. Those segments with existing bike infrastructure were analyzed for potential relocation to or expansion within the rail right-of-way.

FEASIBILITY TIER/STATUS	TOTAL LENGTH (MILES)	PERCENT OF STUDY CORRIDOR
Tier 1	13.07	40%
Tier 2	0	0%
Tier 3	19.44	60%
TOTAL	**32.51**	**100%**

1.6 Feasibility Notes by Segment

The notes below accompany the Interactive Map and record key information on the feasibility of each segment.

SEGMENT # AND EXTENTS		LENGTH (Miles)	FEASIBILITY TIER AND NOTES	CHALLENGES AND OPPORTUNITIES
1	Downtown Station to Onion Street	0.74	Tier 3 with Existing Bicycle Infrastructure	• The Lance Armstrong Bikeway provides existing bicycle infrastructure. • The rail is double tracked through this area. • Provides station access to Downtown Station. • Trains operate at a lower maximum speed (20 MPH – 30 MPH).

SEGMENT # AND EXTENTS		LENGTH (Miles)	FEASIBILITY TIER AND NOTES	CHALLENGES AND OPPORTUNITIES
2	Onion Street to Concho Street	0.12	Tier 3 with Planned Bicycle Infrastructure	• CapMetro and the City of Austin Transportation and Public Works Department (TPW) are partnering to design and construct bicycle, pedestrian, and rail transit intersection safety improvements along this segment. • Provides station access to Plaza Saltillo Station. • Trains operate at a lower maximum speed (20 MPH – 30 MPH).
3	Concho Street to Chicon Street	0.19	Tier 3 with Existing Bicycle Infrastructure	• The Lance Armstrong Bikeway provides existing bicycle infrastructure. • Trains operate at a lower maximum speed (20 MPH).
4	Chicon Street to Matamoros Street	0.30	Tier 3 with Planned Bicycle Infrastructure	• CapMetro and the City of Austin Transportation and Public Works Department (TPW) are partnering to design and construct bicycle, pedestrian, and rail transit intersection safety improvements along this segment. • Trains operate at 35 MPH.
5	Matamoros Street to Webberville Road	0.42	Tier 3 with Existing Bicycle Infrastructure	• CapMetro and the City of Austin Transportation and Public Works Department (TPW) are partnering to design and construct bicycle, pedestrian, and rail transit intersection safety improvements along this segment. • The EastLink Bikeway and Pedernales Street Bikeway provide existing bicycle infrastructure. • Trains operate at 35 MPH. • The rail is double tracked from approximately Robert T. Martinez Jr. Street to East 7th Street and East 13th Street to Manor Road.
6	Webberville Road to MLK Jr. Station	1.31	Tier 3 with Existing Bicycle Infrastructure	• The Boggy Creek Trail provides existing bicycle infrastructure. • Provides station access to MLK Jr. Station.

SEGMENT # AND EXTENTS		LENGTH (Miles)	FEASIBILITY TIER AND NOTES	CHALLENGES AND OPPORTUNITIES
				• Trains operate at 35 MPH.
7	MLK Jr. Station to Cherrywood Road	0.86	Tier 3 with Existing Bicycle Infrastructure	• The Alexander Avenue cycle track and Clarkson Avenue shared-use path provide existing bicycle infrastructure. • Trains operate at 30 MPH – 35 MPH.
8	Cherrywood Road to Wilshire Boulevard	0.51	Tier 3	• The rail right-of-way is narrow at 50 feet wide, and the train operates at a high-speed (50 MPH). There are residences and businesses abutting the right-of-way. • Clarkson Avenue is not continuous in this segment. Clarkson Avenue terminates at 38th ½ Street, prohibiting the opportunity to co-locate a trail straddling both CapMetro Rail and City of Austin. However, there is substantial redevelopment opportunity from 38th ½ Street to Wilshire Boulevard.
9	Wilshire Blvd to E 45th St	0.42	Tier 3 with some Existing and Planned Infrastructure	• The rail right-of-way is narrow at 50 feet wide, and the train operates at a high-speed (50 MPH). • The existing I-35 underpass is adjacent to a mall area that may be redeveloped in the future. There is existing coordination occurring with the Texas Department of Transportation between 43rd Street and Wilshire Boulevard for the bridge crossing over IH 35 as part of the expansion and roadway improvements of that corridor. CapMetro will work proactively with TXDOT and City of Austin to include a safe, direct, and high quality Red Line Trail as an integral part of the Red Line railcrossing of the I-35 project in this area. • There are some recent improvements to bike and pedestrian crossings along the sidewalk near the mall and to a bus stop, including a shared-use path on the northbound access road of IH-35 that connects to Wilshire Boulevard.

SEGMENT # AND EXTENTS		LENGTH (Miles)	FEASIBILITY TIER AND NOTES	CHALLENGES AND OPPORTUNITIES
10	East 45th Street to South of Highland Station	1.4	Tier 3 with Existing and Planned Bicycle Infrastructure	• The rail right-of-way is narrow at 50 feet wide, and the train operates at a high-speed (50 MPH). • The rail near Koenig Lane has steep slopes on both sides in a tight corridor. Just north, near Clayton Lane, a fence separates the rail corridor from the property along the west side. • There is significant redevelopment that offers opportunities for easements. Examples include the Dillard Circle Highline (5391 Dillard Circle) and the 501 (501 East Koenig Lane). • Clarkson Avenue and Airport Boulevard parallel most of the rail. The City of Austin is constructing a shared-use path along these streets as part of the Corridor Program.
11	South of Highland Station to Crestview Commons Retention Pond	1.23	Tier 3 with Existing Bicycle Infrastructure	• The rail right-of-way is narrow at 50 feet wide, and the train operates at a high-speed (50 MPH). • A key double tracking project is planned within this segment, from Denson Drive to Morrow Street (with current prioritization from Guadalupe to Morrow Street). • There is an existing shared-use path on both sides of Airport Boulevard, through initial construction by CapMetro and additional completion by the City of Austin Corridor Program.
12	Crestview Commons Retention Pond to North Operations and Maintenance Facility	2.29	Tier 3 with Planned Bicycle Infrastructure	• From Crestview Station to Burnet Middle School, the rail right-of-way is only 50 feet wide. Between Burnet Middle School to Polaris Avenue, the right-of-way varies between 50-to-100 feet. From Polaris Avenue to West Road, the right-of-way narrows to 50 feet wide. The CapMetro Rail operates 50-55 miles per hour through this segment. • There are concrete drainage structures near Crestview Station due to

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				wetlands parallel to the rail. • The corridor at Morrow Street has steep ditches on both sides of the rail. • Much of this segment has vegetation and fences along residential backyards. • The Rosetta double tracking project is planned for just south of the Morrow Street crossing. This area is extremely constrained and drainage is anticipated to be a significant challenge to the delivery of additional amenities within the Rail right-of-way. CapMetro will work with the City of Austin to consider the trail as part of the design of this project. • There are existing signal houses in close proximity to the rail. • The City of Austin Transportation and Public Works Department has initiated the process of seeking CapMetro review and guidance on the trail segment between Anderson Lane and Morrow Street. • Directly south of the CapMetro North Operations building is the 183 underpass and crossing of the service road at Research Boulevard. The drainage structures around this area would need to be adjusted or accommodated if the trail were to be in the rail right-of-way. • The City of Austin Transportation Public Works and Parks and Recreation Departments are currently pursuing a trail and recreation easements for a property south of the 183 underpass (2100 Polaris Avenue).
13	North Operations and Maintenance	0.89	Tier 3 with some Existing	• The right-of-way is 50 feet wide. The CapMetro Rail operates 55 miles per hour through this segment. The rail is double tracked through this

SEGMENT # AND EXTENTS		LENGTH (Miles)	FEASIBILITY TIER AND NOTES	CHALLENGES AND OPPORTUNITIES
	Facility to Q2 Stadium		Bicycle Infrastructure	area. • There is a city-owned parcel on the east side of the tracks parallel to the CapMetro North Operations and Maintenance Facility. • There are many industrial uses along this segment, especially near West Avenue. There are opportunities for significant redevelopment south of the rail spur. • From West Road to Q2 Stadium, there is an existing section of the Red Line Trail.
14	Q2 Stadium to South of MoPac Expressway/ Walnut Creek Trail	1.65	Tier 3 with Planned Bicycle Infrastructure	• From Q2 Stadium to the Northern Walnut Creek Trail, there is currently a shared-use path under design by the City of Austin. • Construction is in coordination with the future Uptown ATX development and Broadmoor Station. • The rail is double tracked from Q2 Stadium to Kramer Lane. North of Kramer Lane to South of Gracy Farms is a near-term double tracking project with prioritization.
15	South of MoPac/ Walnut Creek Trail to Howard Station	2.28	Tier 1	• The right-of-way is 100 feet wide with train speeds of 45 MPH. • Trail design would need to account for a rock outcropping and springs south of MoPac Blvd, and floodplain issues north of MoPac Blvd. • This segment includes a near-term double tracking project from Adelphi Street to McNeil Drive.
16	Howard Station to Howard Ln east of McNeil Dr	1.36	Tier 3 with Existing and Planned Bicycle Infrastructure	• There is an existing facility at Howard Station from an adjacent development. The study identified possibilities to expand this facility and created a cross-section and graphic rendering to demonstrate

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				potential design. • There is an approved Travis County Bond for part of the segment to install a shared-use path on the southside of Howard Lane (also known as McNeil Drive) from McNeil Road to McNeil-Merriltown Road. • Parts of the segment have three-to-four rail tracks for commuter rail and freight, leading into the Austin White Lime property.
17	Howard Ln east of McNeil Dr to West Palmer Lane	5.30	Tier 3	• This segment includes the Ganzert Lake property, which includes the Austin White Lime operations and Robinson Ranch. • The CapMetro rail right-of-way contains a service road which sees frequent use; the commuter rail, a freight rail, and a yard rail (used for storage). There are also power lines running along the corridor. The rail runs across a concrete double track bridge that has a high-water detector. • The northwest corner of the Austin White Lime property is a grassland area. • In addition to the adjacent land uses, it is a remote area with a lack of access to services in the event of emergency. There are destinations that are nearby (as the crow flies) but would be missed if the rail right-of-way were to be used. • To the north is the Brushy Creek Municipal Utility District.
18	West Palmer Lane to Lakeline Station	0.96	Tier 1	• Just southeast of Lakeline Station, single track switches to double tracking.
19	Lakeline Station	0.33	Tier 1 with some Existing	• There are plans for a second platform on the north side of the rail.

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			Bicycle Infrastructure	• A section of existing trail connects Lakeline Station to a new development just east of the station.
20	Lakeline Station to Retention Pond (Staked Plains Neighborhood)	0.45	Tier 3 with some Existing and Planned Bicycle Infrastructure	• The right-of-way is 100 feet wide with high train speeds (60 MPH) • The rail drifts from one side of the right-of-way to the other. • Just north of Lakeline Station, there is existing bicycle infrastructure from Dodge Cattle Drive to Lakeline Boulevard. At Lakeline Boulevard, there is planned expansion with integrated shared-use paths and multimodal infrastructure.
21	Retention Pond (Staked Plains Neighborhood) to Austin/Cedar Park City Boundary/ Upper Brushy Creek Trail	1.15	Tier 1 with some Existing Bicycle Infrastructure	• The right-of-way is 100 feet wide with high train speeds (50 MPH – 60 MPH) • There is existing bicycle infrastructure from Dodge Cattle Drive to Lakeline Boulevard.
22	Austin/Cedar Park City Boundary to Cedar Park Northern Boundary/Upper Brushy Creek Trail	5.2	Tier 1 with some Planned Bicycle Infrastructure	• The right-of-way is over 100 feet wide with high train speeds (60 MPH) • The Brushy Creek Trail has an at-grade crossing of the railroad by the underpasses of 183 and Brushy Creek Road. There is a drainage structure between the two overpasses and a spur track to a lumber yard just east of Brushy Creek Loop. • There are drainage structures and fencing along the railroad by Park Place Park. Routing the trail along the west side would not be ideal; this space is narrow, currently hosts a drainage ditch, and runs behind businesses. The option to route through the park would be challenging; it would not match up with the preferred side for other

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				sections. • The Bell District, a new mixed-use development, is planned with a shared-use path and trails throughout the development. • The crossing of Whitestone Boulevard is a challenge due to the speed of traffic and number of travel lanes. A concrete drain structure on the north side of Whitestone Boulevard would need to be worked around or reconfigured with trail construction. • A spur track and drainage structure are located north of the Whitestone Boulevard intersection. • There is existing double track from East Park Street to Discovery Boulevard.
23	Cedar Park Northern Boundary to Hero Way	2.91	Tier 1	• The right-of-way is over 100 feet wide until Country Glen Drive. From Country Glen Drive to Hero Way, the right-of-way is 75-to-100 feet wide. The train operates at a maximum operating speed of 60 MPH. • There is a change from double to single track in this area. • There is a drainage structure and ditch running parallel to the west side of the rail near the intersection of US 183 and Crystal Falls Parkway. • The segment experiences overgrowth of trees and understory vegetation within the rail right-of-way. • There is potential for a trail connection to the Horizon Park HOA park property near Crystal Falls Parkway. • The current railroad bridge south of Hero Way would not accommodate a trail due to its narrow width. It could potentially be reconstructed with separation to accommodate cyclists and pedestrians. • The crossing at Hero Way does not currently accommodate cyclists or

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				pedestrians. • Challenges outside of ROW width in this segment may include activity around siding and spur tracks and equipment parking (South Street/ Ranch Road 2233).
24	Hero Way to Leander Station	0.24	Tier 1	• The right-of-way is 75-to-100 feet wide. The train operates at a maximum operating speed of 60 MPH. • Leander Station has an existing sidewalk with a fence separation from the rail. Widening the sidewalk would require a retaining wall between the trail and the road (US 183) to cut into the slope and maintain a level trail surface. • The rail is double tracked through this area.