

Red Line Trail Study



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01

Executive Summary

CapMetro

Introduction

The Red Line Trail Study, launched by CapMetro in February 2023, is a crucial step towards realizing a long-standing vision for the Red Line Trail in Central Texas. Originating in 2004 with CapMetro's voter-approved All Systems Go Plan, the Red Line Trail is envisioned as a 32-mile corridor that generally follows the Red Line commuter and freight rail corridor through Austin, Cedar Park, and Leander. For nearly two decades, regional partners have worked towards implementing this active transportation corridor that provides critical first and last mile connections to the regional transit system. The study aims to provide a consistent and clear path forward for delivering the trail with our partners in the region.

CapMetro approaches this study, and the Red Line Trail, with our commitment to multi-modal, environmentally responsible, transportation solutions for Central Texas. We recognize that the most beneficial role CapMetro can play in delivering the trail is by providing access to, and usage of, our existing right-of-way, where possible, to help facilitate the realization of this project for the region. While CapMetro owns the rail right-of-way; and would be glad to provide access for partners who focus on trail construction to build and maintain the trail segments, the agency cannot deliver this project for the community alone.

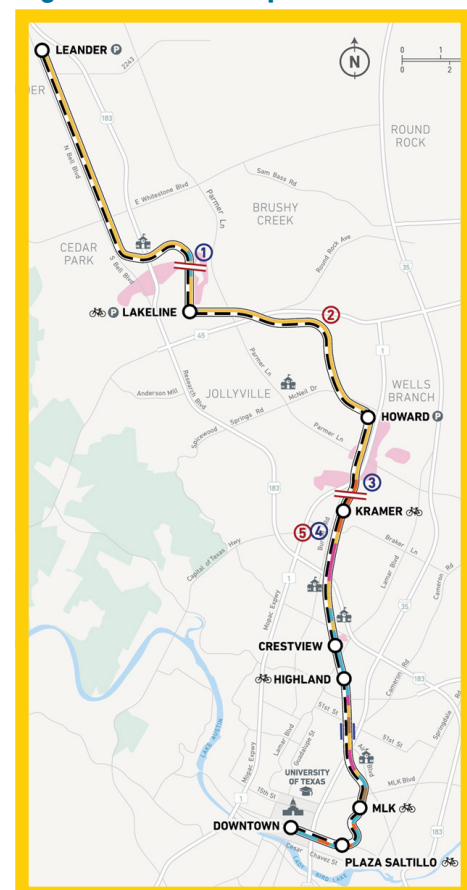
The study identifies feasible opportunities and recommendations for incorporating the Red Line Trail within CapMetro's rail right-of-way. It evaluates the corridor by analyzing each trail segment's opportunities and constraints. Additionally, the study outlines guidelines that support safe multimodal connectivity, and establishes processes that clarify how implementing partners can work closely with us to design, engineer and construct the trail.

The analysis identified that approximately 40% of the 32-mile corridor can safely accommodate the trail along with rail operations and future operational expansion of the rail without requiring variances. This includes segments totaling 13.07 miles, from south of MoPac/Walnut Creek Trail to Howard Station, West Palmer Lane to Lakeline Station, and Staked Plains Neighborhood to Leander Station.

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.

The opportunities outlined in the study serve as a guide for possibilities within the rail right-of-way and provide a critical path forward. The study is not meant to predict the final design or placement of a potential future trail. Regional partners will implement the vision, in collaboration with CapMetro. Timing and implementation of the trail depends on available funding, constructability, and the complexity of each segment. CapMetro will continue championing the Red Line Trail, through provision of rail right-of-way access and usage, and will work collaboratively with our implementing partners to deliver an integrated trail for the community. The following report summarizes the key efforts and findings from the Red Line Trail Study.

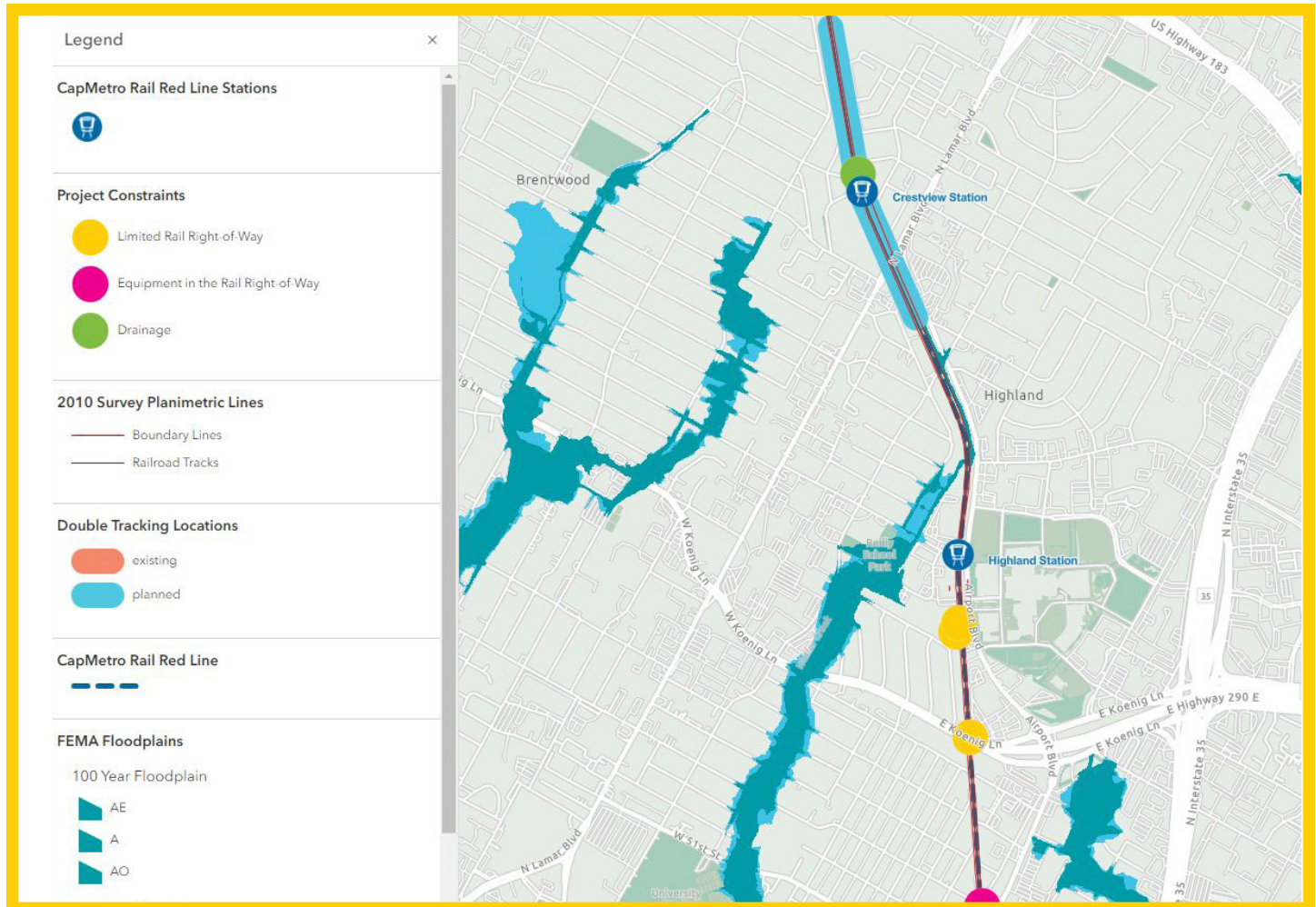
Figure 1: Route Map



Existing Conditions and Needs Assessment

Existing conditions along the Red Line corridor were documented and analyzed using data provided by governmental jurisdictions, including relevant policies, guidelines, and projects; development permitting websites for the cities of Austin, Cedar Park, and Leander; US Census data; existing GIS data; and a field review conducted in late May of 2023. The existing conditions analysis focused on rail assets, demographics, land use, environmental factors and transportation data. Detailed operating profiles, such as speed and curvature, as well as the most recent and available planimetric surveys, were compiled under this effort.

Figure 2: Zoomed-In View of CapMetro Rail Existing Conditions Map



From the analysis, preliminary opportunities and challenges were identified for siting the Red Line Trail within the rail right-of-way:

Opportunities

- **Adjacent Redevelopment:** Redevelopment is occurring at multiple locations along the corridor. This offers opportunities to secure recreational easements to site the trail along or closely adjacent to the corridor during the site permit process. These redevelopment areas will not have the same constraints as locations with existing infrastructure and may offer viable alternatives for the trail corridor. Additionally, areas that are being developed are likely to be denser and generate more use.
- **Positive Activity along the Rail Corridor:** Trail development along the corridor could reduce/eliminate some nuisance behavior such as dumping or trespassing on the rail. The trail could also provide access for maintenance and emergency response along the rail.
- **Trail Implementation Efficiency:** Sections of the right-of-way that can host a trail offer significant time and cost savings compared to the process of identifying a feasible route outside of the right-of-way.

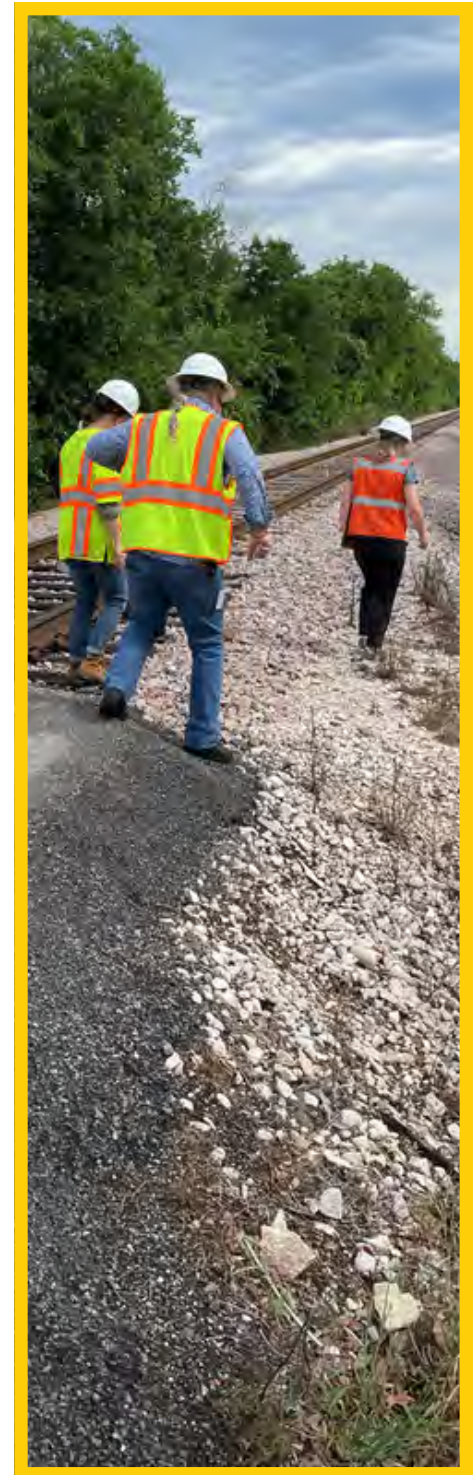
Challenges

- **Limited right-of-way:** Several sections along the Red Line have limited right-of-way widths, and the space along the rail must also accommodate operational, maintenance and equipment needs for the trains. Existing double tracking also restricts space for a trail within the right-of-way. CapMetro is currently planning four near-term double tracking projects and one siding track project. Additional double tracking projects are likely to occur in the future to improve service. Adding additional tracks to the railroad right-of-way limits the area available for trail construction.

Double tracking refers to the construction of two railway tracks, allowing trains to travel in both directions simultaneously. Double tracking provides efficiency and reliability of service. Double tracking reduces delay and provides reliability by not forcing trains to wait while passing. 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 limited resources and complexities with topography and right-of-way, there are main segments where double tracking is selected in the near future. These segments would substantially enhance and improve rail service along the corridor. While these targeted segments of double tracking are near term in nature, this study considers trail impacts to double tracking along the length of the entire corridor.

- **Signal houses:** Also called signal bungalows or signal shelters, these metal structures contain rail signaling equipment and are located at least 25 feet from the centerline of the nearest track. Per the TxDOT Manual on Uniform Traffic Control Devices, equipment housings (controller cabinets) should have a lateral offset of at least 30 feet from the edge of the highway, and where railroad and conditions allow, at least 25 feet from the nearest rail. Per CapMetro MetroRail Design Criteria (2021), all communications equipment devices and enclosures (including bungalows, cases, radiating cable, antennas, platform communication devices, and repeater housings) shall clear the dynamic clearance envelope, which is 8'6" from the center of track. The signal houses are sited frequently along the corridor and may be located within an otherwise ideal alignment for the trail. Signal houses are necessary for rail operation, so relocation would require the installation of a new bungalow before the conflicting bungalow is removed. There are also limited areas in which to relocate the structures and relocation is costly.

- **Drainage:** Managing stormwater runoff, channels, and streams around the rail corridor presents a challenge for siting the trail as well as designing for trail drainage. Existing infrastructure including ditches, concrete drainage swales, and culverts may be difficult and/or costly to accommodate in a trail design. Working with existing drainage patterns or altering the drainage pattern so that both the railroad and trail corridors have positive drainage will also be a challenge in certain areas. However, CapMetro along with support from the City of Austin have had some success in building trails with drainage structures that include capped culvert systems and cantilevered boardwalks. See McKalla Station example on [page 90](#).
- **Structures and Grade Separation:** The rail bed narrows where it crosses over significant creeks, canyons, and other features. Thus, the developable space within the corridor is limited, and accommodating the trail would require widening of structures such as bridges and drainage features.



- **Crossings:** Areas where the rail crosses a roadway are not always ideal for trail crossings and often occur midblock. While trains can rely on bells, lights, and gates, safe crossing for trail users may require additional infrastructure and treatments.

The [Existing Conditions Memo](#) and the [Existing Conditions Virtual Open House](#) offer more detail on the precise occurrences for factors. This thorough assessment resulted in a better understanding of the study area context and provides a foundation for future trail considerations.

Public Engagement

The study team conducted two phases of community engagement to share findings and learn more about desired trail uses and trail design preferences. These engagement phases were supported by the [Red Line Parkway Initiative](#), a nonprofit organization that unites partners and communities to successfully plan, fund, build, and activate the Red Line Trail. During this study, they successfully helped spread awareness and gather feedback through trail activation and outreach events.

In Fall of 2023, the study team created a [Virtual Open House on Existing Conditions](#) to interactively share the study's vision, timeline, existing conditions, and preliminary opportunities and constraints to be considered in the study. The community provided input through a survey, sharing valuable feedback regarding how they hoped to use any future trail, as well as the top destinations they wanted to reach. "Recreation" topped the list of desired trail uses, followed by "Connecting to Transit." The locations with the most responses included existing CapMetro Red Line stations (showing a desire to integrate the trail with other transit options) as well as major shopping/entertainment destinations. For more information, please see the [Virtual Open House #1 Engagement Results](#).

In Spring of 2024, a [second Virtual Open House](#) presented feasible opportunities and recommendations for a trail within the rail right-of-way. Built and presented with the ArcGIS StoryMaps online engagement platform, the open house provided an attractive way to learn more about the trail possibilities, along with new design guidelines and standard operating procedures that provide a clear path forward for implementation.

A multiple-choice survey was conducted to explore how much participants supported the specific cross sections and renderings throughout the corridor. Participants were also asked about their aesthetic preferences, the amenities they found most important to include throughout the trail, and the type of trail



they preferred. An average of 68% of participants strongly supported the proposed cross sections and design renderings, with the highest supported location being the portion of trail through Brushy Creek Recreation Park in the City of Cedar Park at 72%. This feedback aims to provide guidance as implementing partners continue designing and prioritizing segments of the future Red Line Trail. For more information, please see the [Virtual Open House #2 Engagement Results](#).

Trail Possibilities including Feasibility Tiers

CapMetro created and formalized Design Guidelines to establish uniform standards and preferences for trail design parameters, such as the setback distance between the trail and the track, and other operational considerations. CapMetro's preferred setback minimum is 25 feet from centerline based on key safety, operational, and maintenance concerns associated with freight and commuter rail, such as the train dynamic envelope, the speed and frequency of trains, the topography and sight lines along the corridor, and space needed in case of derailments. CapMetro also developed official [Standard Operating Procedures \(SOP\)](#) to provide processes for how implementing partners can coordinate with CapMetro on potential design variances, such as closer setback in areas with limited space. The SOP also clarifies how implementing partners can work closely with us to continue with design, engineering and construction of the trail.

Utilizing the [Design Guidelines](#), the study team created three tiers that reflect the feasibility and complexity of incorporating the Red Line Trail within CapMetro's rail right-of-way. A trail width range of 11 to 16 feet was used for determining spacing for the trail, based on local jurisdiction



standards and the potential for the trail's width to flex in response to site conditions or constraints¹. In areas with existing bicycle and pedestrian infrastructure, segments were still analyzed for potential relocation or expansion within the CapMetro rail right-of-way and assigned a feasibility tier.

The feasibility tiers are described in the table below. The results are 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.

¹ The preferred trail widths are based on local jurisdictional standards. The City of Austin trail width standards are context sensitive with a preference for dual track trails that separate pedestrians and cyclists where space permits. The standard minimum width for a shared use trail in the City of Austin is 12 feet, but trail width can be reduced to 10 feet in constrained areas and extended to 16 feet when space allows. In the City of Leander and City of Cedar Park, the standard trail width is 12 feet.

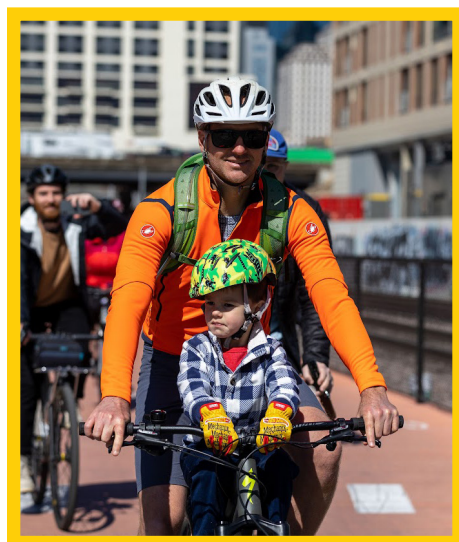


Table 1: Feasibility Tiers

FEASIBILITY TIER	CRITERIA
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 right-of-way (may assume relocation of existing track)** AND Is not eliminated by any other geological/physical constraint present in available data
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 right-of-way (may assume relocation of existing track)**
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.

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

**Setback will be measured from centerline of closest track to the closest edge of the trail (including trail installations, such as a fence)



Approximately 40% of the 32-mile corridor can safely accommodate the trail along with rail operations and potential expansion of the rail system in the future without requiring variances. This includes segments totaling 13.07 miles, specifically from south of MoPac/Walnut Creek Trail to Howard Station, West Palmer Lane to Lakeline Station, and Staked Plains 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 projects². The lack of Tier 2 segments was due to the increments of right-of-way width and how they corresponded with the CapMetro Guidelines.

² Given the limited resources and complexities of topography and right-of-way, double tracking is currently prioritized in the near-term at Howard Station (Adelphi Lane to McNeil Drive), Broadmoor Station (North of Kramer Lane to South of Gracy Farms), between Highland and Crestview Stations (Denson Drive to Morrow Street with current prioritization from Guadalupe to Morrow Street) and Plaza Saltillo Station (Onion Street to East 7th Street).

The remaining 60% of the corridor requires us to work closely with implementing partners to make necessary, location-specific adjustments in order to safely accommodate rail operations and bike and pedestrian access. It's important to note that through successful partnerships and collaboration, several segments of the Red Line Trail are open to the public today, totaling 5.7 miles. In areas with existing bicycle infrastructure, segments were still analyzed for potential relocation to, or expansion within, the rail right-of-way.

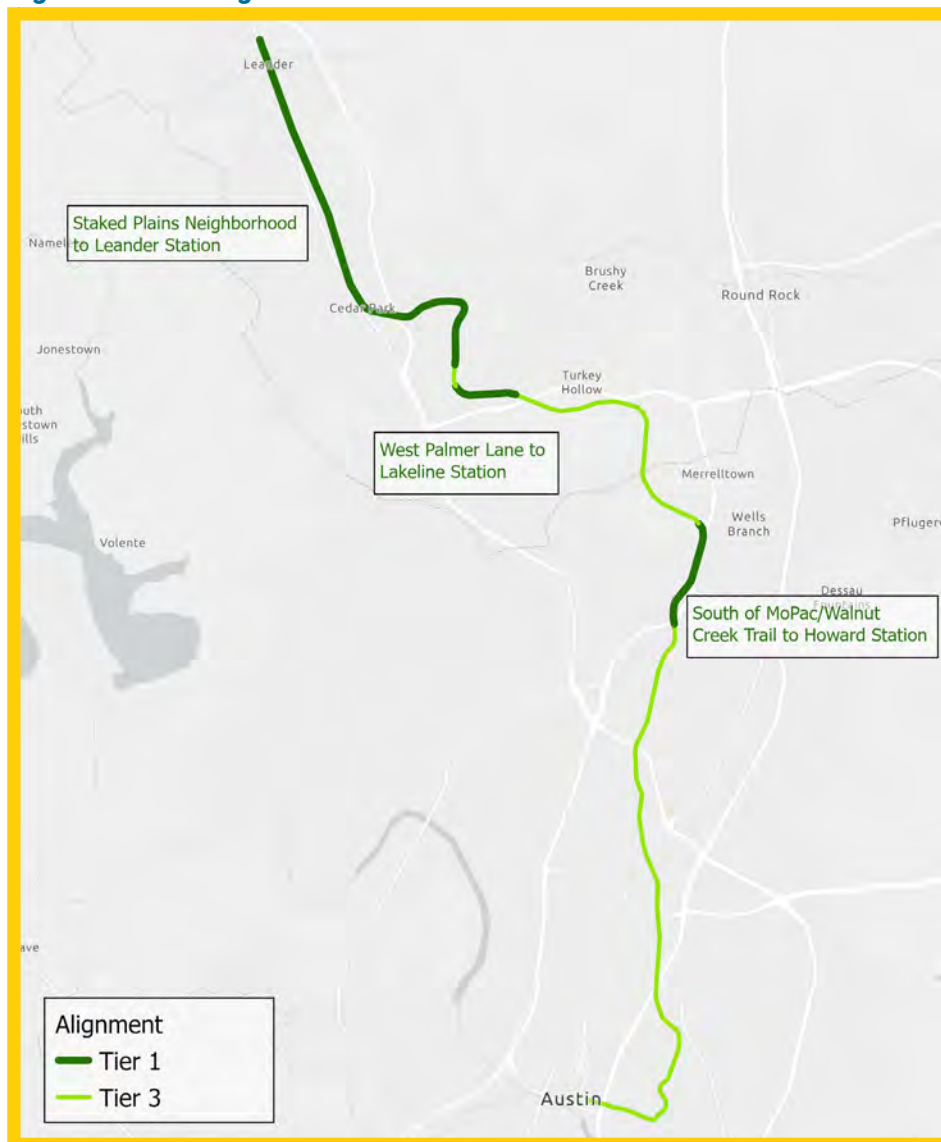
The following table provides a summary of the mileage and percentage of the study corridor according to the feasibility tier. For more details, please see the [Trail Alignment Possibilities Memo](#).

Table 2: Tier Feasibility

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%



Figure 3: Trail Alignment Possibilities



Trail Design Graphics

The study team created concept-level graphics and designs for the Red Line Trail based on various trail alignment scenarios. The concept graphics and designs are intended to illustrate what the trail may look and feel like based on CapMetro and jurisdictional guidelines. The goal of the graphics and concepts is to illustrate applied design guidelines, future and existing double tracking, and jurisdictional preferences for trail width and other trail design elements. Moving forward, the graphics and designs will aid discussions between CapMetro and the implementing partners, serve as an educational tool, and provide support for potential funding pursuits.

Locations were carefully selected to be representative of conditions that would occur throughout the corridor and depict points within Tier 1 segments of the corridor, apart from the McKalla Station cross section, which depicts a successfully completed section

of a trail along a Tier 3 segment. The side of the track where the trail is shown was selected to minimize new crossings and provide connectivity to stations; however, the side of the rail, along with other major and minor details, are preliminary in nature and subject to change with future planning, design and coordination with stakeholders such as the Lower Colorado River Authority and the Texas Department of Transportation.

Figure 4: Typical Tier 1 Segment Cross Section

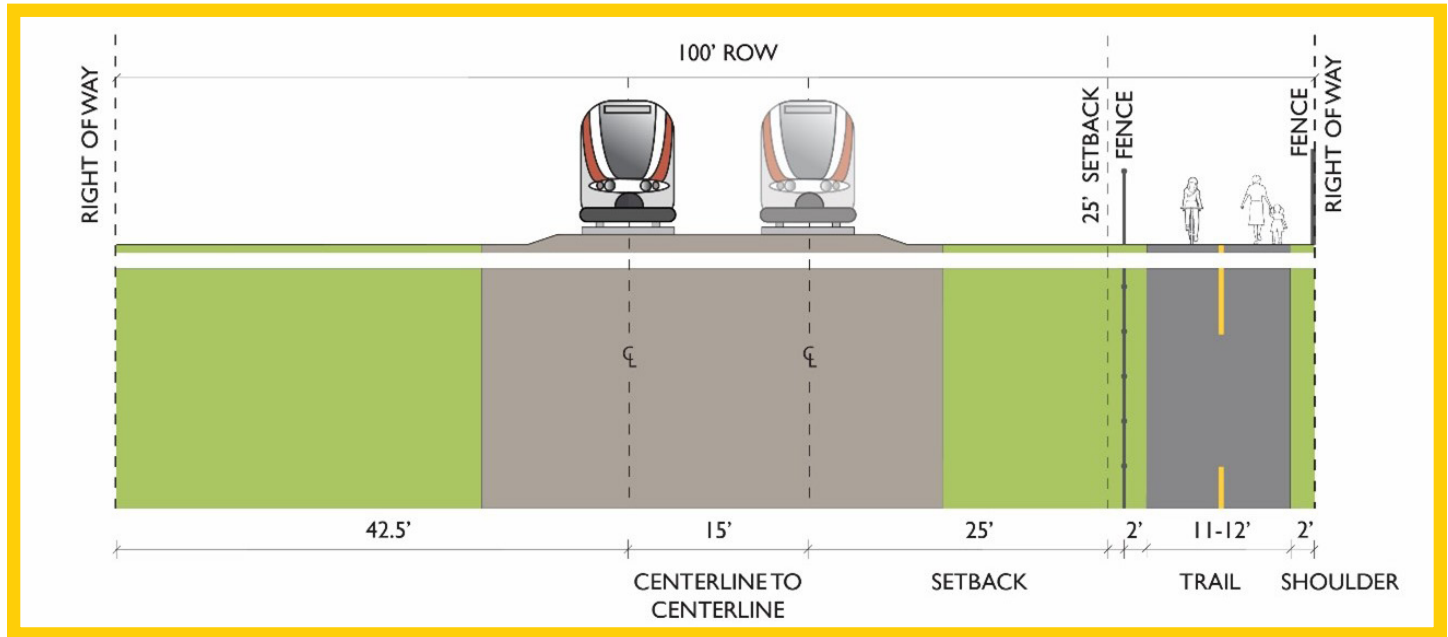


Figure 5: Visualization of a completed section



The Red Line route crosses many roadways with a range of widths and posted speed limits. Locations where the rail crosses a roadway, such as mid-block locations that lack traffic control, do not always have ideal conditions for creating safe pedestrian crossings. While trains can rely on bells, lights, and gates, additional crossing treatments and infrastructure may be necessary to create safe crossing conditions for trail users. A tailored effort in the design of the required trail-road crossings will be required to ensure the safety of trail and roadway users. This effort provides recommendations for potential treatments and safety feature options at potential crossings. The evaluation found that designers should consider multiple types of crossing treatments based on context, including jurisdictional standards and roadway volumes and speeds. An example workflow was created to guide planners and designers through the process of selecting the appropriate crossing type and related treatments.

Figure 6: Example Workflow

For more details, please see the [Trail Design Memo](#).

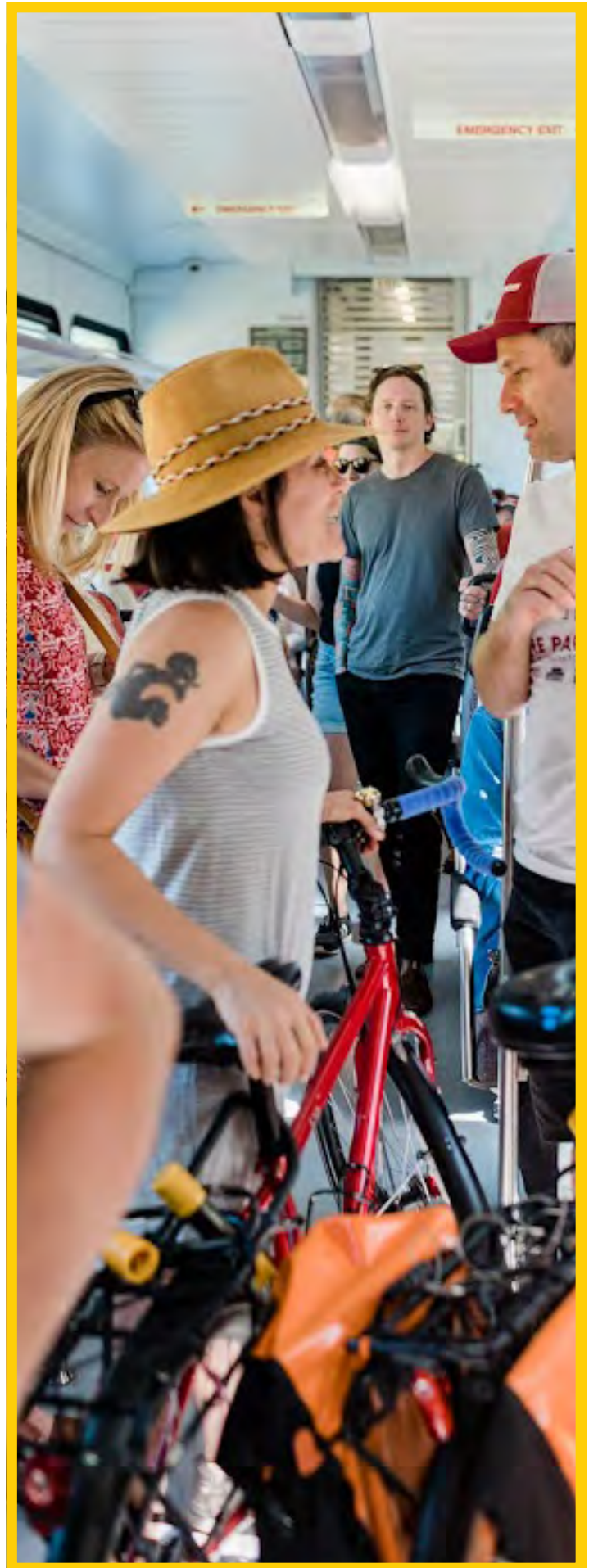


Segment Readiness Evaluation

A high-level evaluation of Tier 1 segments was conducted to provide context for which trail segments will be easier to design and construct along the Red Line corridor. This readiness evaluation is based on a high-level screening and uses a feasibility lens to aid in understanding predicted ease of trail design and construction. The evaluation is not a prioritization tool, but rather is intended to help jurisdictions understand the complexity around constructing various Tier 1 sections of the Red Line Trail.

Tier 1 segments were identified in the alignment analysis and together make up approximately 13.07 miles, which constitutes 40% of the Red Line corridor. Segments of rail right-of-way that are categorized as Tier 1 have sufficient width to meet CapMetro's preferred setback of 25 feet and are compatible with future or existing double tracking. Due to these advantages, Tier 1 segments are most ready for implementation and were examined in this evaluation to determine level of ease for design and construction. Segments in the Tier 3 category will require further collaboration with CapMetro as they have added complexity and do not meet CapMetro's preferred setback of 25 feet.

The seven Tier 1 segments were evaluated based on four criteria explored in the existing conditions and other phases of this study: intersections/crossings; connectivity to existing/planned facilities; constructability; and development opportunities. These criteria were developed based on established project goals, industry best practices, and available data. A score of 1 (low) to 4 (high) was given to each of the criteria for the Tier 1 segments. Scores were determined by analyzing aerial imagery, data collected from the existing conditions phase of the project and provided by governmental jurisdictions, and GIS layers on the study's interactive webmap. Criteria definitions and scoring metrics can be found in the [Segment Readiness Evaluation section](#) of the Recommendations report. A high-level cost opinion is included for each of the segments as a reference. These opinions utilized the order-of-magnitude cost estimates to apply symbolic cost ranges (\$-\$\$\$\$) to each segment. All costs are preliminary and subject to change with additional design, engineering, and drainage evaluations. Additional factors that may come to light in the future, such as opportunities for recreation easements, were not incorporated into this evaluation but should be considered and weighted into segment readiness as project planning progressed.



Planning Level Cost Estimates

Order-of-magnitude cost estimates were developed to help identify potential costs for segments of the Red Line Trail based on the conceptual design information provided in the study. These were tabulated based on the tier determined to be most appropriate along each corridor segment, and then projected out based on the lengths of the segments. The following table provides a summary of the planning-level cost estimates by category. More details are provided in the [Planning Level Cost Estimates section of the Recommendations report](#).

Table 3: Estimated Costs

Tier	Cost per mile (2024 \$)
Tier 1 (less constrained)	\$6,000,000
Tier 1 (less constrained) with Signal House Relocation	\$9,000,000
Tier 3 (more constrained, many unknowns)	\$12,000,000
Tier 3 (more constrained, many unknowns) with Signal House Relocations and Pedestrian Bridge	\$34,000,000

Funding Opportunities

The study team identified potential funding sources available to governmental entities and project partners to implement the proposed Red Line Trail. Funding is available for planning and construction of bicycle and pedestrian infrastructure projects. For instance, the Austin Mobility Bond Programs are a local method of funding numerous transportation projects, including the urban trails network. Grant funding for trail projects is typically administered by Federal agencies; however, it is recommended that project sponsors continue to monitor future funding offered locally such as through the Capital Area Metropolitan Planning Organization (CAMPO) or through other state sources offered through the Texas Department of Transportation (TxDOT). This can also include federal funds administered by state and local entities.

Overall, funding program availability on average ranges from \$700,000 to \$25 million with additional funding available through the Reconnecting Communities Pilot Grant Program. Red Line Trail project sponsors should continue to monitor funding availability and programs offered locally, regionally, and federally for long-term implementation.

Additionally, Red Line project partners may consider other funding opportunities that may become available in coordination with larger redevelopment opportunities. Fund sources such as Community Development Block Grants (CDBG), Tax Increment Financing (TIF), Tax Increment Reinvestment Zone (TIRZ), and Public Improvement Districts (PIDs) may be worth exploring as local funding opportunities to fund public infrastructure.



Red Line Trail Study Final Report

A summary of identified funding opportunities for the Red Line Trail are outlined below in Table 4. [Funding sources](#) identified include a description of the administering agency, project scope eligibilities, funding amount, and timeline for typical grant application and funding award.

Table 4: Summary of Red Line State and Federal Funding Opportunities

Funding Program	Grant Administrator	Funding Range for Projects Based Upon Historical Awards*	Key Considerations for Project Sponsors
Transportation Alternatives Set-Aside Program	Texas Department of Transportation (TxDOT)/ Capital Area Metropolitan Planning Organization (CAMPO)	\$1.0M - \$12.0M	Engage TxDOT and CAMPO for funding opportunities
National Recreational Trails Fund Grant Program	Texas Parks and Wildlife (TPWD)	\$300,000 - \$4.0M	Undersubscribed program.
Congestion Mitigation and Air Quality Improvement Program (CMAQ)	Texas Department of Transportation (TxDOT)	N/A at this time	Monitor air quality attainment changes
Reconnecting Communities Pilot Grant Program (RCP)	U.S. Department of Transportation (USDOT)	No minimum to \$100M	Recommend early engagement with local stakeholders to identify as key RCP project
Active Transportation Infrastructure Investment Program (ATIIP)	Federal Highway Administration (FHWA)	\$100,000 - \$15M (depending on project type)	May be best used for construction funds.
Rebuilding American Infrastructure with Sustainability and Equity (RAISE)	U.S. Department of Transportation (USDOT)	\$5M - \$25M	Similar to RCP, consider prioritizing as regional application for max competitiveness.
Safe Streets and Roads for All (SS4A) Program	U.S. Department of Transportation (USDOT)	\$100,000- \$25M (depending on project type)	Confirm alignment with city with jurisdiction Action Plan Priorities.
Community Project Funding (CPF)/Congressionally Directed Spending (CDS)	At the discretion of Congress (Annual Federal Appropriations Bill)	\$700,000 - \$5M	Engage Member of Congress prior to spring 2025/2026

*Funding ranges are presented for reference only based on historical awards. Consult the applicable funding guidance (i.e. NOFO) at time of application for detailed information on funding minimums and maximums.

Conclusion

The Red Line Trail Study serves as a key guide for feasible opportunities and recommendations for incorporating the Red Line Trail within CapMetro’s rail right-of-way. This study provides a consistent and clear path forward for Red Line Trail segments with guidelines and processes that support safe multimodal connectivity.

Regional partners will implement the vision, in collaboration with CapMetro, through preliminary engineering and design. The timing and implementation of the trail would depend on the funding available to construct the trail, and range by segment depending on the complexity that it presents. CapMetro will continue championing the Red Line Trail, through provision of rail right-of-way access and usage, and work collaboratively with our implementing partners to deliver an integrated trail for the community.





02

Trail Alignment Possibilities Memo

Prepared June 2024

CapMetro

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-foot 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
<p>Tier 1: Compatible with Future or Existing Double Tracking</p>	<ul style="list-style-type: none"> 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 	<p>100-foot ROW – Double Tracking 25-foot Setback</p>
<p>Tier 2: Meets CapMetro Preferred Setback</p>	<ul style="list-style-type: none"> 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)** 	<p>100-foot ROW 25-foot Setback</p>
<p>Tier 3: Does not meet CapMetro Preferred Setback</p>	<ul style="list-style-type: none"> 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. 	<p>70-foot ROW < 25-foot Setback</p>

* 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.

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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	<ul style="list-style-type: none"> • 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).

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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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • The Boggy Creek Trail provides existing bicycle infrastructure. • Provides station access to MLK Jr. Station.

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SEGMENT # AND EXTENTS	LENGTH (Miles)	FEASIBILITY TIER AND NOTES	CHALLENGES AND OPPORTUNITIES	
			<ul style="list-style-type: none"> Trains operate at 35 MPH. 	
7	MLK Jr. Station to Cherrywood Road	0.86	Tier 3 with Existing Bicycle Infrastructure	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 45 th St	0.42	Tier 3 with some Existing and Planned Infrastructure	<ul style="list-style-type: none"> 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 the City of Austin to include a safe, direct, and high quality Red Line Trail as an integral part of the Red Line rail crossing 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.

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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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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

SEGMENT # AND EXTENTS		LENGTH (Miles)	FEASIBILITY TIER AND NOTES	CHALLENGES AND OPPORTUNITIES
				<p>wetlands parallel to the rail.</p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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

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SEGMENT # AND EXTENTS		LENGTH (Miles)	FEASIBILITY TIER AND NOTES	CHALLENGES AND OPPORTUNITIES
	Facility to Q2 Stadium		Bicycle Infrastructure	<p>area.</p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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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SEGMENT # AND EXTENTS		LENGTH (Miles)	FEASIBILITY TIER AND NOTES	CHALLENGES AND OPPORTUNITIES
				<p>potential design.</p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Just southeast of Lakeline Station, single track switches to double tracking.
19	Lakeline Station	0.33	Tier 1 with some Existing	<ul style="list-style-type: none"> • There are plans for a second platform on the north side of the rail.

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SEGMENT # AND EXTENTS		LENGTH (Miles)	FEASIBILITY TIER AND NOTES	CHALLENGES AND OPPORTUNITIES
			Bicycle Infrastructure	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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

SEGMENT # AND EXTENTS		LENGTH (Miles)	FEASIBILITY TIER AND NOTES	CHALLENGES AND OPPORTUNITIES
				<p>sections.</p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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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SEGMENT # AND EXTENTS		LENGTH (Miles)	FEASIBILITY TIER AND NOTES	CHALLENGES AND OPPORTUNITIES
				<p>pedestrians.</p> <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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.



03

Trail Design Memorandum

Prepared June 2024

CapMetro

1. Introduction

The purpose of this memorandum is to describe and showcase concept-level graphics and designs that were developed for various trail alignment scenarios. The concept graphics and designs introduced in this memo are intended to illustrate what the trail may look and feel like based on CapMetro and jurisdictional guidelines. The goal of the graphics and concepts is to illustrate applied design guidelines, future and existing double tracking, and jurisdictional preferences for trail width and other trail design elements. The graphics and concepts were used to provide visual context during the [May 2024 Virtual Open House](#). Moving forward, the graphics and designs will aid discussions between CapMetro and the jurisdictions, serve as an educational tool, and provide support for potential funding pursuits. All graphics and designs included in this memorandum are conceptual and not intended as final designs.

2. Methodology

The Existing Conditions analysis and field visits were used to inform the development of the concepts and graphics included in this memo. Guidelines were another primary source of reference. As a part of the Red Line Trail Study, CapMetro formalized internal and external guidelines and processes needed for the design and construction of a trail within CapMetro ROW. The procedures and guidance can be found in the *CapMetro Design Guidelines for a Trail within the CapMetro Right-of-Way* and *Trail Projects within CapMetro Rail Right-of-Way Standard Operating Procedures*, which are available on [CapMetro's Rail ROW website](#). These documents served as primary resources for the development of the materials introduced in this memorandum. Major elements covered in each of the documents are listed below.

1. CapMetro Design Guidelines

- Provides uniform and consistent standards for rail-with-trail design, construction, and maintenance within CapMetro Rail ROW based on freight and commuter rail operational needs, the dynamic envelope, operating speeds, frequency of service, safety, and space needed for maintenance vehicles, equipment for both commuter and freight trains, potential derailments, and other unforeseen incidents.
- Covers minimum recommended parameters, such as setbacks, grade crossings, surfaces, utilities, landscaping, fencing, lighting, drainage, and access.
- References CapMetro, federal, and state minimum standards and general requirements.

2. Trail Projects within CapMetro Rail ROW Standard Operating Procedures (SOP)

- Created to guide external entities and internal CapMetro departments through the process of reviewing, authorizing, and coordinating the design and construction of a trail project within Rail ROW.
- Outlines critical information, responsibilities, and requirements.
- Details external entities' roles and processes for the application materials and coordination.
- Details CapMetro's internal roles and processes for review and coordination.

3. All Relevant Design Guidance

Several sources of local and national standards and guidelines were referenced during the development of the following concept designs and graphics. The following list, as well as standards and guidelines listed in the Relevant Guidelines section of the Existing Conditions Memorandum, should continue to be referred to during future phases of trail design development.

- CapMetro Design Guidelines for a Trail within the CapMetro Right-of-Way, 2024
- Trail Projects within CapMetro Rail Right-of-Way Standard Operating Procedures, 2024
- City of Austin Transportation Criteria Manual
- AASHTO Guide for the Development of Bicycle Facilities, 2012
- MUTCD 11th Edition, 2023
- TxDOT MUTCD (TMUTCD), effective 2014
- TxDOT Roadway Design Manual, 2022
- TxDOT Bicycle Accommodation Design Guidance, 2021
- City of Austin Urban Trails Plan, 2023
- FHWA Rails-with-Trails: Best Practices and Lessons Learned, 2021
- City of Leander Parks and Recreation Plan, 2019
- City of Cedar Park Trails Master Plan, 2010
- Lower Colorado River Authority (LCRA) Guidelines

3. Feasibility Tiers

As part of the Trail Alignment Possibilities task, the Toole Design Team analyzed the CapMetro Rail ROW to identify areas that could support a trail that meets CapMetro’s preferred setback distance of 25 feet. During the analysis, Toole Design identified three tiers to characterize the complexity and feasibility of constructing a trail within CapMetro ROW.

The three feasibility tiers were developed based on CapMetro’s guidelines (primarily based on preferred setback distances informed by train dynamic envelope, speed, and other operational needs), state and federal requirements, and double tracking considerations. A trail width range of 11 to 16 feet was used for determining spacing for the trail, based on local jurisdiction standards and the potential for the trail’s width to flex in response to site conditions or constraints¹. In areas with existing bicycle and pedestrian infrastructure, segments were still analyzed for potential relocation or expansion within the CapMetro Rail ROW and assigned a feasibility tier. The feasibility tiers are described in the table below for reference. For more detail on the Rail ROW analysis and methodology used, see the *Red Line Trail Study Right-of-Way Alignment Notes and Methodology* memorandum.

1 The preferred trail widths are based on local jurisdictional standards. The City of Austin trail width standards are context sensitive with a preference for dual track trails that separate pedestrians and cyclists where space permits. The standard minimum width for a shared use trail in the City of Austin is 12 feet, but trail width can be reduced to 10 feet in constrained areas and extended to 16 feet when space allows. In the City of Leander and the City of Cedar Park, the standard trail width is 12 feet.

Table 1. Feasibility Tier Definitions

FEASIBILITY TIER	CRITERIA
Tier 1: Compatible with Future or Existing Double Tracking	<ul style="list-style-type: none"> 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
Tier 2: Meets CapMetro Preferred Setback	<ul style="list-style-type: none"> 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)**
Tier 3: Does not meet CapMetro Preferred Setback	<ul style="list-style-type: none"> 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.

* 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

The right-of-way analysis found that none of the corridor segments met Tier 2 criteria. The lack of Tier 2 segments was due to the increments of ROW width and how they corresponded with the CapMetro Guidelines. The following table provides a summary of the mileage and percentage of the study corridor according to feasibility tier.

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%

4. Crossing Design

The Red Line route crosses many roadways with a range of widths and posted speed limits. Locations where the rail crosses a roadway, such as mid-block locations that lack traffic control, do not always have ideal conditions for creating safe pedestrian crossings. While trains can rely on bells, lights, and gates, additional crossing treatments and infrastructure may be necessary to create safe crossing conditions for trail users. A tailored effort in the design of the required trail-road crossings will be required to ensure the safety of trail and roadway users.

All at-grade trail-road crossings should follow basic safety principles, including crosswalks at a minimum 25-foot setback per CapMetro Design Guidelines. All trail-road crossings should, at a minimum, consider

high-visibility pavement markings and the appropriate warning signage as outlined in the MUTCD. All crosswalks, ramps, and trails must also follow ADA compliance and any standards set by the agency who owns the crossing roadway.

Designers should also consider multiple types of crossing treatments based on context, including jurisdictional standards and roadway volumes and speeds. For example, trail users could be redirected to an existing intersection that has crossing treatments if it is within a short distance (up to 350 feet), whereas other crossings may require more advance signalized treatments. The existence of roadside constraints such as utility poles and drainage areas may control which crossing types are most feasible. More details on trail-road crossings near railroad crossings can be found in the [Trail Crossings at Street Right-of-Way and Rail Tracks memo](#).

Mid-block crossings (such as at Whitestone Boulevard) will require coordination between Rail Signal and authorities having jurisdiction (AHJ), in this case TxDOT, to ensure crossing infrastructure does not impact or create confusion for drivers at the adjacent, existing rail-road crossing. Designers may refer to the existing crossings at I-35 in downtown Austin between the Downtown Stations and Plaza Saltillo Station.

The example trail crossing diagram below shows potential treatments that could be incorporated at applicable locations to provide a safe trail crossing adjacent to the rail. The diagram depicts safety feature options and their appropriate locations. Actual crossing designs will require coordination with CapMetro Rail Signal and TxDOT.

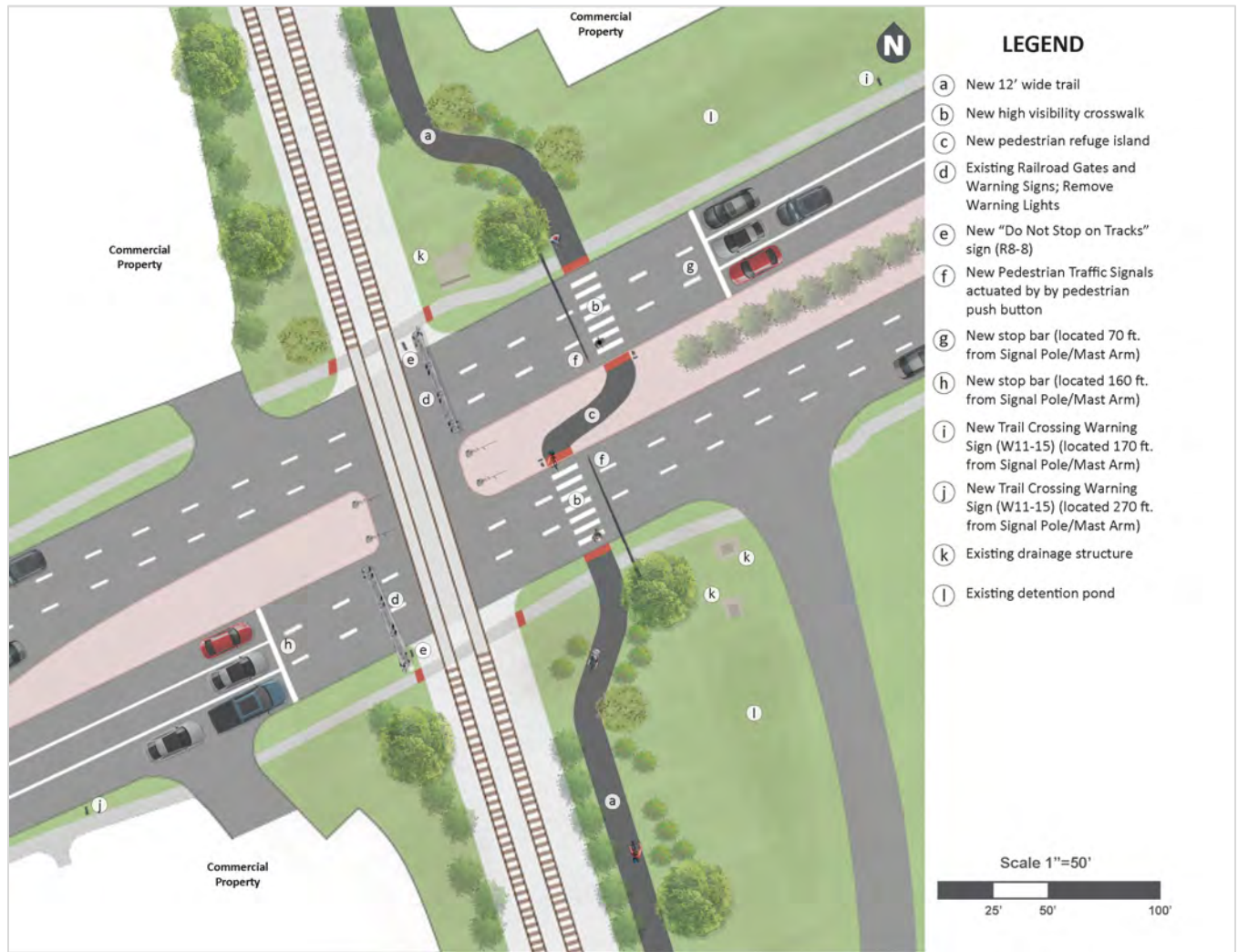


Figure 1. Example Trail Crossing Diagram (See Appendix A for full scale version)

5. Cross Sections and Graphics

Cross sections were developed to illustrate the relationship of space between the rail, trail, and adjacent features along the study corridor. Graphics were created to provide a sense of the trail experience from a user perspective and provide reference for future design work. Locations for both cross sections and graphics were carefully selected to be representative of conditions that would occur throughout the study corridor. All cross sections and graphics depict points within Tier 1 segments of the corridor, apart from the McKalla Station cross section, which depicts a successfully completed section of trail along a Tier 3 segment. Double tracking is shown in all cross sections in alignment with CapMetro’s long-term vision to provide double tracking along the entire corridor. Labels in the cross sections are provided to indicate whether the double tracking is existing or future. The side of the track where the trail is shown was selected to minimize new crossings and provide connectivity to stations, however, the side of the rail along with other major and minor details are preliminary in nature and subject to change with further planning, design, and coordination with stakeholders such as LCRA and TxDOT.

Full scale versions for the cross sections and graphics can be found in [Appendix A](#).

4. City of Leander: North of Crystal Falls Parkway

This cross section depicts the potential trail layout in Leander between Crystal Falls Parkway and E Sonny Drive. The CapMetro ROW is 90 feet wide in this location, which allows for the preferred setback distance of 25 feet (measured from centerline of closest track to closest edge of trail). This cross section shows how the trail could be routed adjacent to the back of commercial buildings, which is a common scenario along the Red Line corridor.



Figure 2. Aerial imagery of cross section location. Green line indicates Red Line Rail corridor. Yellow highlight shows cross section

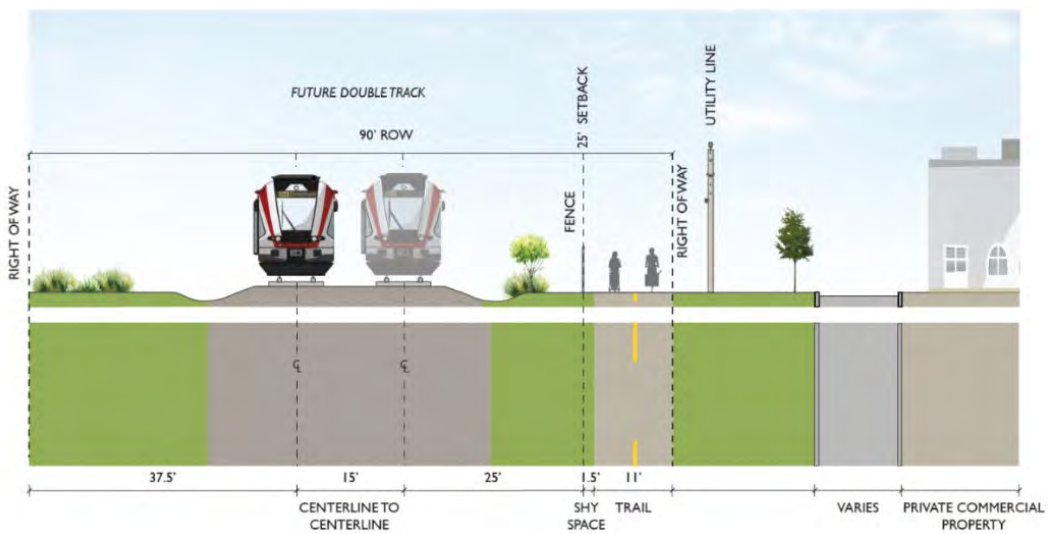


Figure 3. City of Leander: North of Crystal Falls Parkway

5. City of Leander: South of Crystal Falls Parkway

The following cross section depicts the potential trail layout in Leander between Block House Drive and Crystal Falls Parkway. The CapMetro ROW is 100 feet wide in this location, which allows for the preferred setback of 25 feet. This cross section shows how the trail could parallel residential backyards, which occurs over several stretches along the Red Line corridor. The specific section shown in the cross section is currently experiencing overgrowth of trees and understory vegetation within the CapMetro ROW. There is also a potential for a trail connection to the Horizon Park HOA park property near this cross section location.



Figure 4. Aerial imagery of cross section location. Green line indicates Red Line Rail corridor. Yellow highlight shows cross section

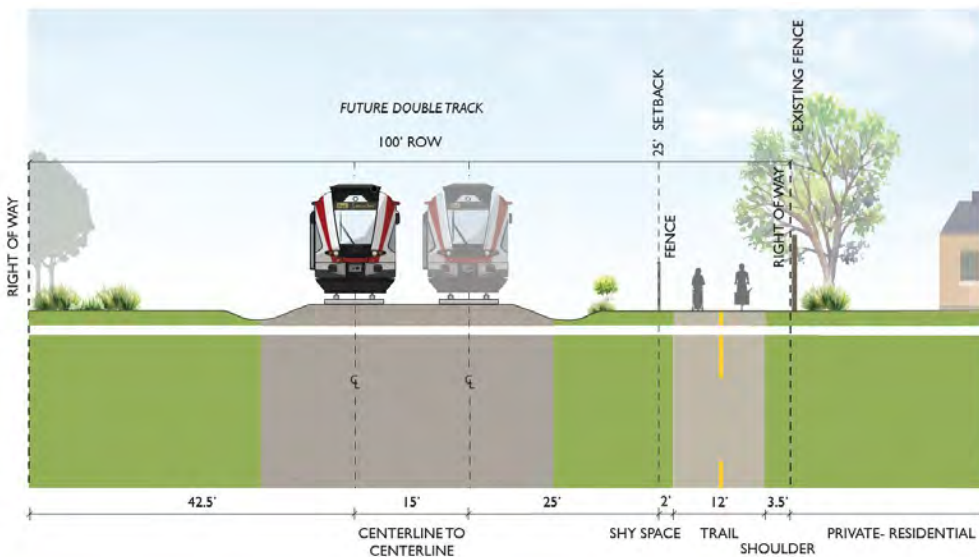


Figure 5. City of Leander: South of Crystal Falls Parkway

6. City of Cedar Park: East Whitestone Boulevard to East New Hope Drive

The cross section in Cedar Park between E Whitestone Boulevard and E New Hope Drive depicts the common scenario of the trail sharing space with a utility corridor. The Lower Colorado River Authority (LCRA) guidelines for utility corridors indicate that vegetation must be kept at 10 feet or lower in height within 30 feet of either side of the utility poles. Further coordination with LCRA will be necessary as planning and design progresses for sections of trail that would share space with utility corridors.

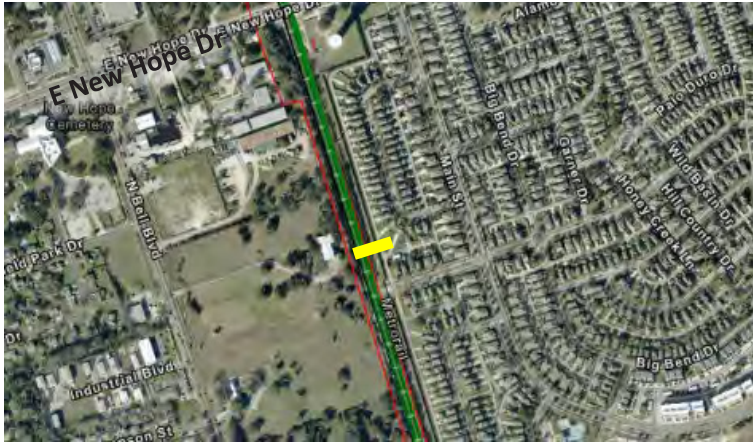


Figure 6. Aerial imagery of cross section location. Green line indicates Red Line Rail corridor. Yellow highlight shows cross section

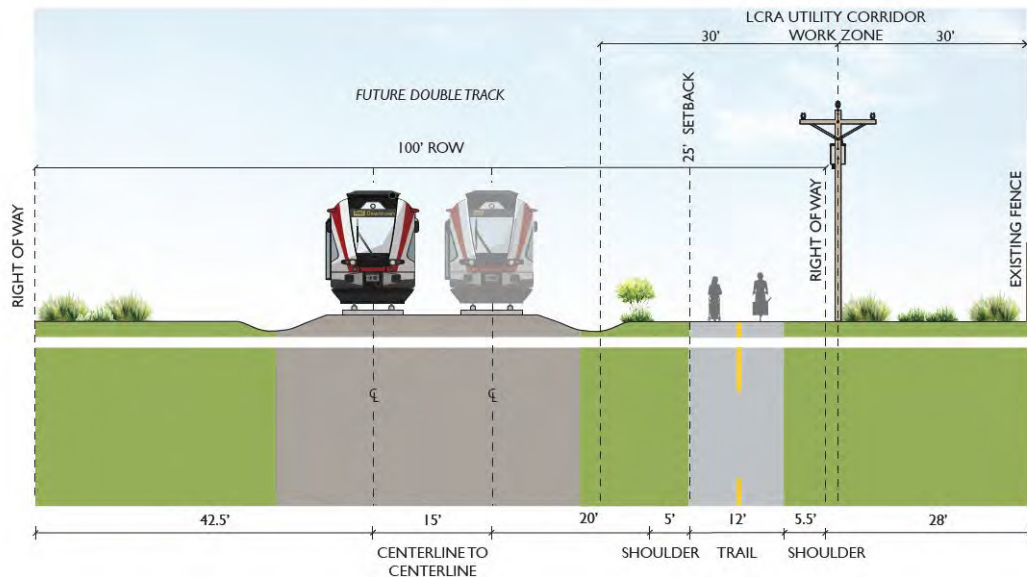


Figure 7. City of Cedar Park: E Whitestone Boulevard and E New Hope Drive

7. City of Cedar Park: US Route 183 Underpass

The perspective of the future Red Line Trail at the US 183 underpass depicts how the trail would be situated between the tracks and the overpass substructure. Structural pieces of the bridge may provide an opportunity for incorporating murals or other artwork along the trail pending coordination with TxDOT. The existing ditch would be maintained while the existing shorter chain-link fence would be upgraded to a taller welded wire mesh style fence with lockable gates every half-mile and “No Trespassing” warning signs (per CapMetro Guidelines) to provide separation between the trail and rail. Vegetation in the buffer between the rail and trail would be kept low to avoid impeding sightlines at the crossing located just left of this viewpoint.



Figure 8. US Route 183 Underpass at Brushy Creek 80.34

8. City of Cedar Park: Brushy Creek Recreation Park

The following graphic depicts what the trail might look like through Brushy Creek Recreation Park. The CapMetro ROW is 100 feet wide in this location, allowing for the preferred 25 feet setback. The Red Line Trail would likely see significant recreation use through this section with connections to athletic fields and the Brushy Creek Trail. Designers should consider how the trail can connect to the park to integrate the trail with other recreational offerings.



Figure 9. City of Cedar Park: Brushy Creek Recreation Park

9. City of Austin: South of Spectrum Drive

This cross section shows what the trail could look like south of Spectrum Drive in the City of Austin. This area shows how the trail could interface with the utility corridor as well as commercial properties. The trail may have opportunities to connect properties that host retail stores or offices. The CapMetro ROW is 100 feet wide in this location, allowing for the preferred setback of 25 feet.



Figure 10. Aerial imagery of cross section location. Green line indicates Red Line Rail corridor. Yellow highlight shows cross section

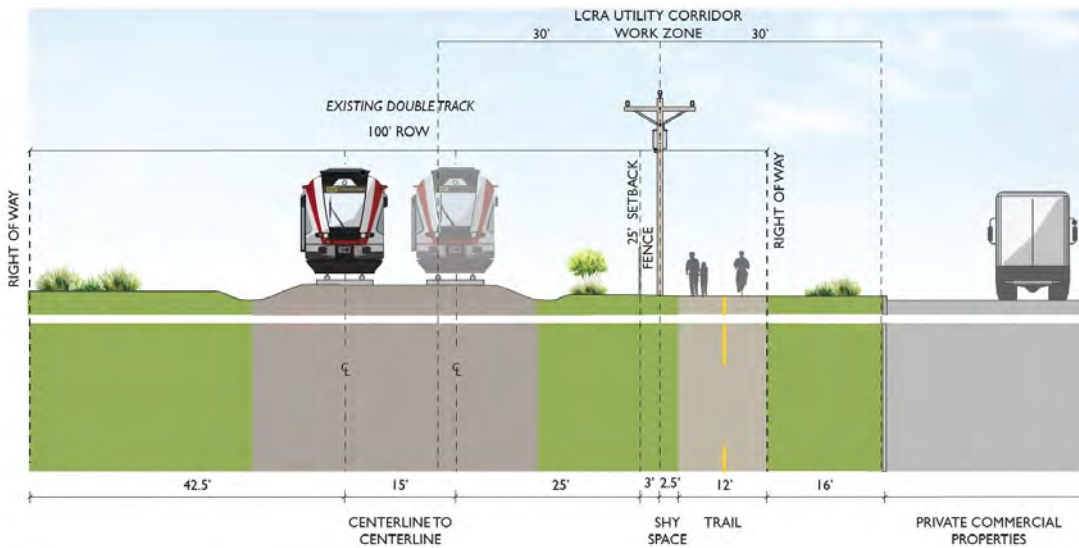


Figure 11. City of Austin: South of Spectrum Drive

10. City of Austin: Howard Station

The following cross section and graphic show how the existing trail facility at Howard Station could be widened to accommodate people biking and walking along the trail in addition to transit riders. The CapMetro ROW is 100 feet wide in this location, and trail widening could occur outside of the preferred 25-foot setback. The trail could provide direct station access allowing for easy connections to transit for trail users. Trail through-traffic is separated from people waiting, boarding, and exiting trains on the platform. Crosswalk markings or potentially dismount zones may be considered as ways to minimize conflicts between trail users and train passengers crossing the trail.



Figure 12. Aerial imagery of cross section location. Yellow highlight shows cross section

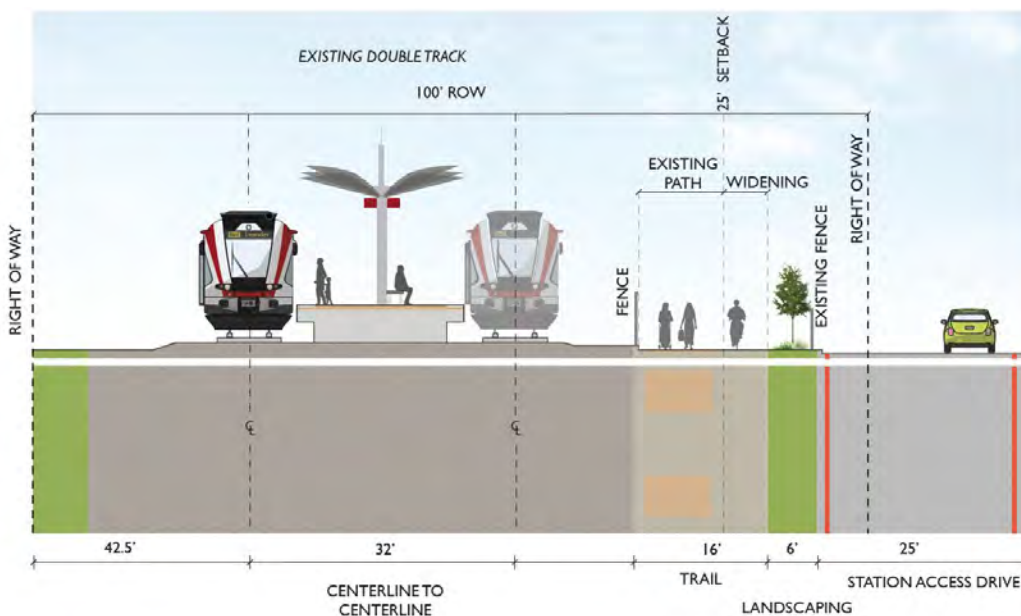


Figure 13. City of Austin: Howard Station Cross Section



Figure 14. City of Austin: Howard Station Perspective

11. City of Austin: Waters Park Road

The following cross section shows how the trail may look along Waters Park Road. In this section, the trail could function as both a rail-with-trail and a side path along the lower-volume road. Designers will need to consider how the trail can be designed to be compatible with roadway drainage. The CapMetro ROW is 100 feet wide in this area, allowing for the preferred 25 feet setback.



Figure 15. Aerial imagery of cross section location. Yellow highlight shows cross section

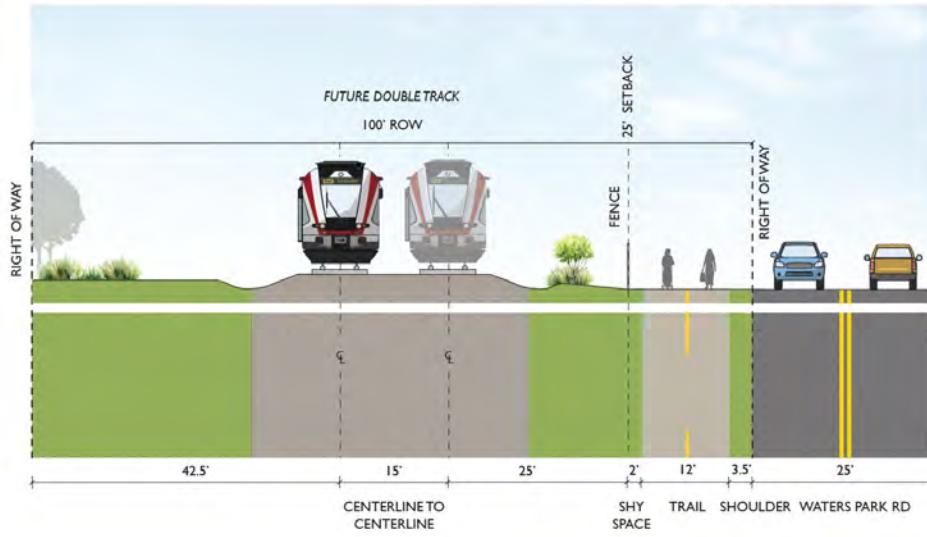


Figure 16. City of Austin: Waters Park Road

City of Austin: North of McKalla Station

The construction of McKalla Station demonstrates the potential complexities and necessary collaboration in constructing the trail within a Tier 3 area including constrained ROW, drainage and utility conflicts, and rail modifications. Due to those space limitations, CapMetro had to ask for a waiver to construct parts of the new drainage system inside the City of Austin’s public utility easement. A section of the trail also had to be reinforced with 10” thick concrete pavement to withstand additional loads, allowing Austin Energy to service the energy transmissions towers located along the trail. Constrained conditions also prompted variances from preferred setbacks. Close setbacks are

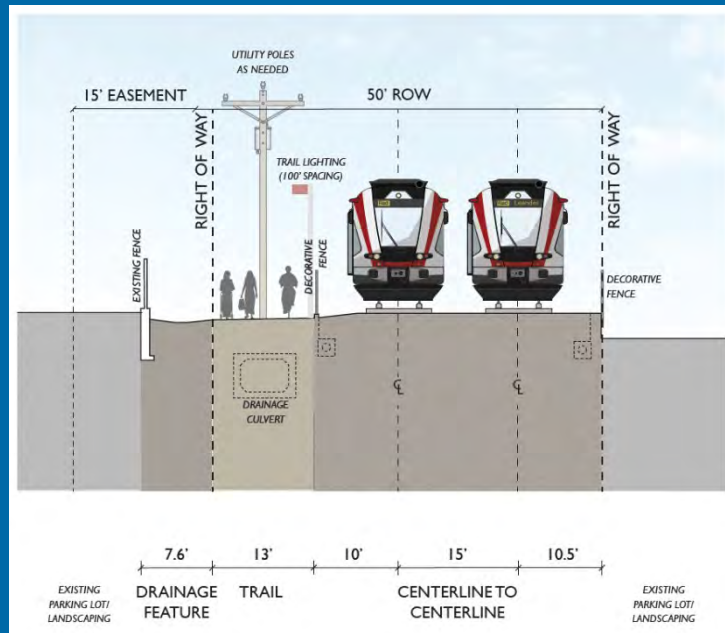


Figure 17. City of Austin: North of McKalla Station

approved on a case-by-case basis, since they can be a safety concern for freight trains along the corridor causing additional need for safety mitigation measures. The cost of replacing rail ties and track maintenance also rises in Tier 3 areas. As the space available for replacing ties decreases or if fencing presents an access barrier, it increases the costs and labor associated with replacing ties, making it more challenging with maintenance crews and equipment to reach the tracks.

6. Pilot Segment

The development of a pilot segment is intended to provide alternative perspectives on trail design and act as a first step in providing the coverage needed across the corridor while emphasizing the unique transit/trail interactions or alternatives that occur throughout the 3 tiers of feasibility. The design details of this scenario, described below, adhere to CapMetro’s Design Guidelines and their Standard Operating Procedures but are at a conceptual level of design based on available information and survey data. However, further design will require more recent survey and coordination with third party entities, specifically utility companies.

The nearly 1-mile pilot segment extends from East Whitestone Boulevard to East New Hope Drive between Lakeline Station and Leander Station in the City of Cedar Park. This segment exemplifies Tier 1 feasibility featuring a consistent 100-foot ROW, compatibility with future double tracking, and minimal geological and physical constraints. The preferred 25-foot minimum setback from the centerline of the nearest track should be achievable with occasional exceptions to avoid utility impacts. Design

considerations for the roadway crossings are detailed in additional Red Line Trail documents; a conceptual design is shown as part of the pilot segment. A full plan view of the pilot segment concept drawings can be found in [Appendix A](#).

7. Conclusion

The concept designs and graphics included in this memorandum are intended to serve as reference points for discussions between CapMetro and jurisdictions as planning for segments of the trail is initiated. Graphics will also be practical for communicating concepts and the general look and feel of the trail to the public. When using the drawings and graphics in future contexts, it will be important to continue to remind all parties of the conceptual nature of these materials, and that additional survey, design, and engagement will be required as the project moves forward.



04

Trail Design:

*Guidance on Trail Crossings at
Street Right-of-Way and Rail Tracks
Prepared June 2024*

Red Line Trail Study Trail Crossings at Street Right-of-Way and Rail Tracks

PREPARED BY:

AECOM

JUNE 2024

1. Purpose

This document is intended to provide guidance on the appropriate implementation of countermeasures related to the addition of an urban trail at existing street right-of-ways and railroad tracks. More specifically, this document was created to assist entities in lieu of CapMetro in the planning and design of trail-street and trail-rail crossings during implementation of an urban trail that runs generally parallel to the existing Red Line commuter rail.

2. Overview

The Red Line route contains many roadway crossings, with a range of widths and operating speeds, through multiple jurisdictions. While this document presents a general workflow, a more tailored effort in the design of the required trail-road crossings will be required primarily to ensure the safety of trail and roadway users. The guidance provided in this document follows information gathered from the *AASHTO Guide for the Development of Bicycle Facilities* (2012), the *MUTCD 11th Edition* (Dec. 2023), the *FHWA Rails with Trails Best Practices and Lessons Learned* report (May 2021), *CapMetro's Design Guidelines for a Trail Project within CapMetro Rail Right of Way* (Feb 26, 2024), and other published guides. All at-grade trail-road crossings should follow the basic safety principles outlined in these guides. References to specific sections in these documents can be found throughout this document, and links to these guides can be found at the end of this report.

For the implementation of a trail-rail crossing, there are unique requirements, standards, and policies. CapMetro has established guidelines with requirements including CapMetro policy, regulatory responsibility, approval process, design criteria and other important requirements for a trail crossing the railroad. For the most up-to-date requirements, please see *CapMetro's Design Guidelines for a Trail Project within CapMetro Rail Right of Way* (2024). The implementation of any new rail crossing is also subject to *CapMetro Rail Right of Way Standard Operating Procedures* (2024), involving a more tailored effort in the design and workflow.

3. General Requirements

Although each trail-road crossing should be treated on a case-by-case basis, the following is general guidance that should be applied to nearly all cases.

3.1 Crosswalk

All at-grade trail-road crossings will require a crosswalk with high-visibility pavement markings (MUTCD Fig. 3C-1). Green-colored pavement markings should be used in conjunction with traditional white markings to indicate to drivers the presence of bicyclists (MUTCD 9E).

3.2 Signage

Every crossing should include the appropriate signage as outlined in the MUTCD, including but not limited to 'Bike Xing' (W79) signs, 'Stop' (R1) signs, advance warning signs for trail and roadway users, bikeway directional signage, vehicular railroad crossing signs, and any treatment-specific signage. In places where a trail or sidewalk crosses a rail, at a minimum a flashing-light signal assembly (MUTCD Fig. 8E-7) should be installed, preferably with a pedestrian gate (MUTCD Fig. 8E-8). See *Figure 1*.

3.3 Setback

No formal consensus exists for the appropriate setback for trails near rails or crossings near rails. In general, a 10' offset from the centerline of the nearest track to the edge of the crosswalk is considered minimum per established criteria (FHWA 2021); however, CapMetro guidance recommends a minimum setback of at least 25' (2024). Crosswalks and trails should always be set outside of any railroad signal gates, which should fully cover the bicycle and pedestrian pathway. At an absolute minimum, any trail or crosswalk must lay outside of the train's dynamic envelope (MUTCD Fig. 8A-1). The location of the crosswalk relative to the rails will be determined by several factors discussed within this document, including the setbacks above and both median and roadside constraints. See *Section 3.2* for more information.

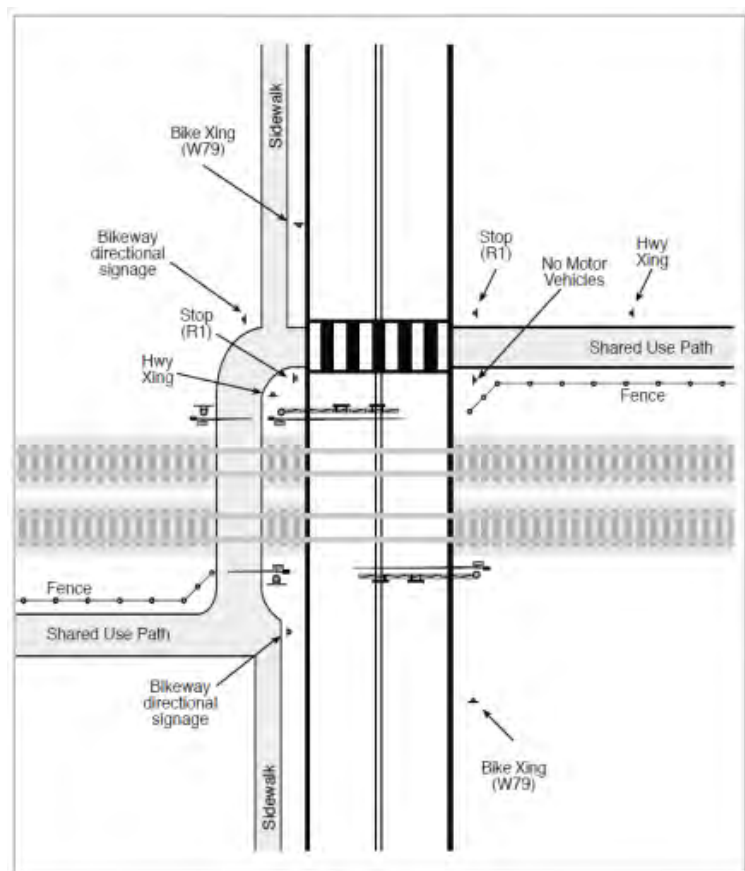


Figure 1: FHWA "Roadway and Track Crossing" (Rails with Trails 2021)

3.4 ADA & Other Standards

All crosswalks, ramps, and sidewalks should follow ADA compliance and any standards set by the agency who owns the crossing roadway. Specifically for the Red Line, this includes the cities of Austin, Cedar Park and Leander, TxDOT, CTRMA, Travis County, and Williamson County level streets with Red Line roadway crossings. All portions of design must also follow standards set by CapMetro report RWT-GDL 2.0 “Design Guidelines for a Trail Project within CapMetro Rail Right of Way.”

4. Types of Trail-Road Crossings Parallel to Rail

There are three general options for at-grade trail-road crossings near rails: rerouting users to an existing roadway intersection, unsignalized midblock crossings, and signalized midblock crossings.

4.1 Trail Crossings Near Existing Roadway Intersections

Trail-road crossings at high speed and/or high-volume roadways and located within 350’ of an existing signalized roadway intersection should reroute trail users to the intersection. However, in cases where trail users would be required to cross the tracks to reach the signalized intersection, this option is less preferable and would require additional treatments as discussed under the *Trail-Rail Crossings*. An example of a crossing near an intersection is shown in *Figure 2*. In locations where the sidewalk leading to the intersection and/or a crosswalk at the intersection do not currently exist, these assets must be installed, following ADA compliance and any local regulations. Pedestrians might be inclined to take shortcuts and avoid designated pedestrian crossings. This tendency should be taken into account when designing the crossing, with appropriate fencing and channelization provided to guide and protect users.

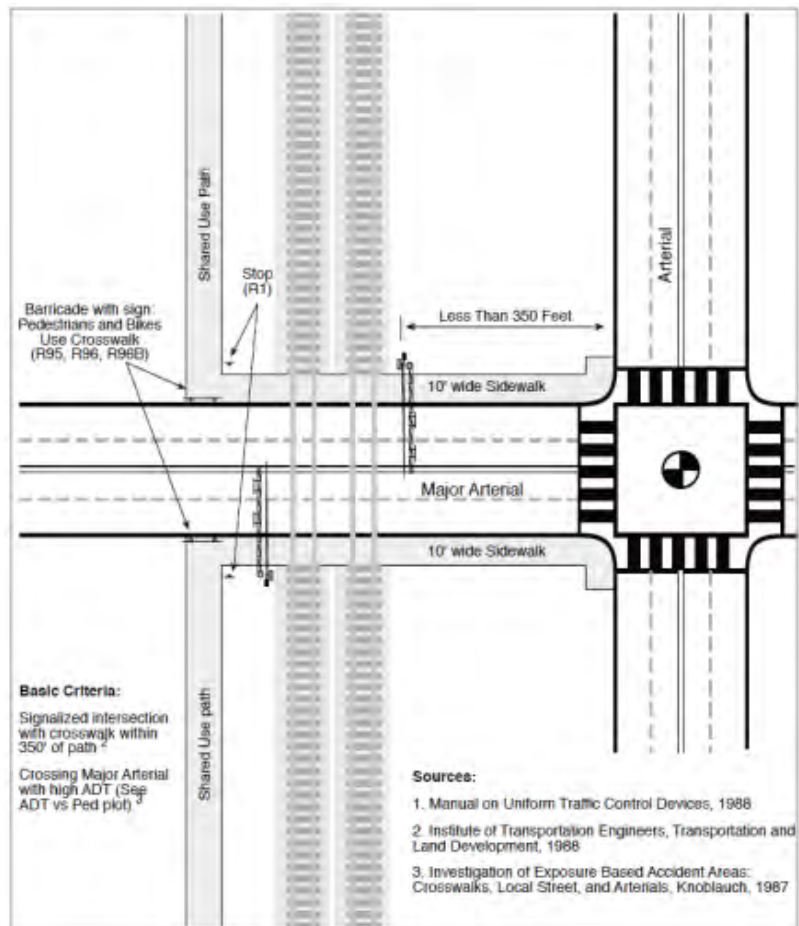


Figure 2: FHWA “Roadway Crossing Type 3 (Reroute Trail Users to Nearest Signalized Intersection)” (Rails with Trails 2021)

4.2 Unsignalized Midblock Trail-Road Crossings

For trail-road crossings located mid-block (a minimum 350' from nearest intersection), *an unsignalized crossing* may be employed in areas where sight lines are adequate and traffic volumes and operating speeds are low. Unsignalized crossings should follow all guidelines and standards previously described. For more specific treatments, refer to the crossing matrix in Table 1 of the FHWA *Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations* (2018) or the Crossing Matrix for Uncontrolled Crossings the CoA *Crossing Guidelines* (2012).

4.3 Signalized Midblock Trail-Road Crossings

At a trail-road crossing that is parallel to rail (no rail crossing), signalization may be determined by jurisdictional preference and standards. (See Figure 3). At signalized crossings, pedestrian push buttons should be placed on both sides of the crossing, and when activated should allow a user to cross both directions of traffic when possible. Additional push buttons may be installed in medians if a minimum 6' wide pedestrian refuge is installed. The push buttons will activate a signal phase for trail users to complete the crossing. It is recommended that the signalization remain independent of any existing signalization for the railroad crossing to ensure compliance and reduce confusion for drivers. Specifically, pedestrian hybrid beacons (PHBs) are not acceptable near rail crossings due to conflicting flashing signals and resulting driver confusion/non-compliance. For more specific treatments, refer to the crossing matrix in Table 1 of the FHWA *Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations* (2018) or the Crossing Matrix for Uncontrolled Crossings in the CoA *Crossing Guidelines* (2012).

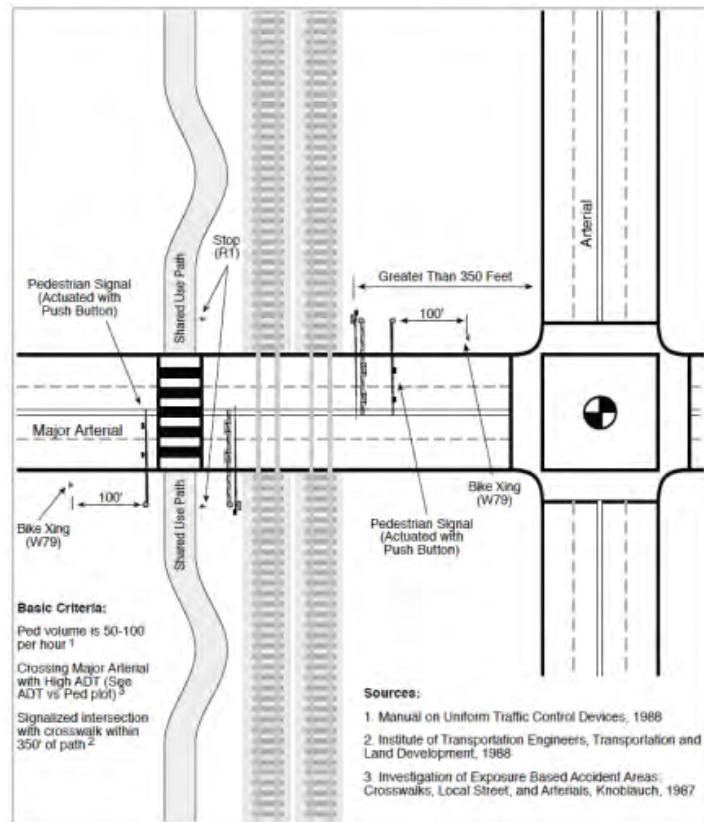


Figure 3: FHWA “Roadway Crossing Type 1 (Signalized Crossing)” (Rails with Trails 2021)

5. Trail-Rail Crossings

At some instances along the trail and at intersections, the trail may be required to cross over the rail. When this is required, it is always preferred that the trail use an existing rail crossing as opposed to an additional location. In all instances, grade-separation is preferred (CapMetro 2024). In instances where grade-separation is not feasible, the trail should cross the tracks as close to 90 degrees as possible, with a minimum crossing angle of 60 degrees to prevent bicycle tires from lodging in the flange of embedded track (FHWA 2021). Full signalization is required, should be integrated with railroad crossing equipment, and at a minimum should include lights and gates and where visibility is impaired, cantilevers. All installed warning devices must follow CapMetro guidance (2019). Pedestrian-trail grade crossing active warning devices must be installed 15' from the centerline of the nearest track, or at a minimum of 12' with a design deviation (CapMetro 2014).

6. Additional Considerations

6.1 Crossings with Existing Overhead Flashing-Light

Some railroad crossings have existing flashing-light signals installed on overhead structures as shown below. These signals are set to flash when a train is passing and *optionally* installed for increased visibility (MUTCD Section 8C-02). At crossings where signalization is warranted, traffic signals should be installed but do not take priority over railroad grade crossing equipment. See *Section 2.3* above for more information.



Figure 4: Existing overhead RR crossing structure at Red Line and E Whitestone Blvd (Source: Google Maps)

6.2 Roadside Constraints

Roadside constraints, including railroad equipment, are located within public or CapMetro ROW at many roadway crossing locations. This includes communication cabinets, utility poles, drainage ditches, and existing signal equipment and signage. Additionally, every at-grade rail crossing will have signals with intermediate signal houses approximately every 2 miles. Per MUTCD (2023), signal houses should have a clearance of at least 30 feet from the edge of the highway, and where conditions allow, at least 25 feet from the nearest rail. All of these constraints should be addressed on a case-by-case basis and will require a combination of strategies to avoid or relocate the constraints. Examples include adjusting the location of the crosswalk relative to the rail, trail transitions prior to the roadway crossing, and offset crosswalks (“Z” crossings). As these strategies are employed, avoiding ROW acquisition outside existing CapMetro ROW and public ROW should be prioritized.

6.3 Offset Crossings

In general, straight crossings are recommended where possible. Straight crossings promote a faster pedestrian crossing time and easier navigation for cyclists. However, “Z” crossings provide line of sight for both pedestrians and vehicles, enhancing pedestrian safety. A “Z” crossing may be considered where median or roadside constraints prevent a straight crossing or if enhanced pedestrian safety is a priority. When a “Z” crossing is used, special care should be taken in design to ensure high utilization and incorporation of elements that accommodate different types of bicycles. Elements ensuring relative ease of use for bicycles (wider curved openings and transitions instead of right angles) and compliance from pedestrians (vertical barriers such as planters) should be employed.

7. Example Workflow for Trail-Road Crossings

An example workflow is shown below. The workflow illustrated is intended to guide planners and designers through the process of selecting the appropriate crossing type and related treatments for a trail-road crossing. Each treatment will require the use of standards and criteria discussed in, but not limited to, this document. Specifically, if a trail-rail crossing is required, it is subject to CapMetro *Rail Right of Way Standard Operating Procedures* (2024). The workflow should be treated as a living document and modified accordingly as the design process progresses.



Sources

1. AASHTO *Guide for Development of Bicycle Facilities*, 2012 ([Link](#))
2. FHWA *Rails with Trails Best Practices and Lessons Learned* (Pg.70-74), May 2021 ([Link](#))
3. FHWA *Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations*, July 2018 ([link](#))
4. CoA *Crossing Guidelines*, Sept 2012 ([Link](#))
5. CoA *Transportation Criteria Manual* (Section 4, 5) ([Link](#))
6. MUTCD 11th Edition, December 2023 ([Link](#))
7. CapMetro *Design Guidelines for a Trail Project within CapMetro Rail Right of Way*, Feb 26, 2024
8. CapMetro *Rail Systems Highway-Rail Grade Crossing Design Criteria*, 2014
9. CapMetro *Railroad Grade Crossing Standard and Procedure*, 2019
10. CapMetro *Rail Right of Way Standard Operating Procedures*, 2024



05

Recommendations

Prepared August 2024

CapMetro

Segment Readiness Evaluation

A high-level evaluation of Tier 1 segments was conducted to provide context for which trail segments will be easier to design and construct along the Red Line corridor. This readiness evaluation is based on a high-level screening and uses a feasibility lens to aid in understanding predicted ease of trail design and construction. The evaluation is not a prioritization tool, but rather is intended to help jurisdictions understand the complexity around constructing various Tier 1 sections of the Red Line Trail.

Tier 1 segments were identified in the alignment analysis and together make up 13.07 miles of the Red Line corridor. Segments of ROW that are categorized as Tier 1 have sufficient width to meet CapMetro's preferred setback of 25 feet and are compatible with future or existing double tracking. Due to these advantages, Tier 1 segments are most ready for implementation and were examined in this evaluation to determine level of ease for design and construction. Segments in the Tier 3 category will require further collaboration with CapMetro as they have added complexity and do not meet CapMetro's preferred setback of 25 feet.

The seven Tier 1 segments were evaluated based on five criteria explored in the existing conditions and other phases of this study: intersections/crossings; connectivity to existing/planned facilities; constructability; and development opportunities. These criteria were developed based on established project goals, industry best practices, and available data. A score of 1 (low) to 4 (high) was given to each of the criteria for the Tier 1 segments. Scores were determined by analyzing aerial imagery, data collected from the existing conditions phase of the project and provided by governmental jurisdictions, and GIS layers on the study's interactive webmap. Criteria definitions and scoring metrics can be found in the Segment Readiness Evaluation Table that follows. A high-level cost opinion is included for each of the segments as a reference. Costs were calculated by multiplying the length of the segment by the Tier 1 cost per mile developed for the Red Line Trail Cost Estimate, and then assigned relative \$ values. All costs are preliminary and subject to change with additional design, engineering, and drainage evaluations. Additional factors that may come to light in the future, such as opportunities for recreation easements, were not incorporated into this evaluation but should be considered and weighted into segment readiness as project planning progressed.

The results of this evaluation should be used with consideration of CapMetro Design Guidelines and Standard Operating Procedures document, as well as funding and development opportunities that arise in each of the adjoining jurisdictions. Recreation easement opportunities may also be a consideration that could increase the readiness of trail segments.

Red Line Trail Study

Red Line Trail Study: Segment Readiness Evaluation

Ratings KEY

1 - Poor	2 - Fair	3 - Good	4 - Great
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Cost opinions are based on cost per mile for Tier 1 segments. See Red Line Trail Cost Estimate for more detail.

		CRITERIA & RATING SCORE				TOTAL	Cost Opinion	NOTES
Jurisdiction	Segment	Road-Trail Crossings	Connectivity to Existing/Planned Facilities	Constructability	Development Opportunities			
City of Austin	Segment 15 (2.28 miles) South of MoPac/Walnut Creek Trail to Howard Station	2 ; Two crossings of MoPac Expy frontage roads, each may require complex designs or alternative routing to the nearest signalized intersection (Park Bend Dr/Waters Park Rd). There are six road crossings in this segment.	4 ; Connects to Northern Walnut Creek Trail (4.4 miles; creating a total length of 6.68 miles together) and existing trail infrastructure at Howard Station.	1 ; Segments will require routing under two underpasses and construction of a minimum of four bridges.	3 ; Close proximity to two Destination Focus Areas (along Parmer Ln and the northbound MoPac Expy frontage road and The Market at Wells Branch).	10	\$\$\$	
	Segment 18 (0.96 miles) West Palmer Lane to Lakeline Station	3 ; Requires one crossing at W Parmer Ln, which is high volume/speed without a convenient alternative intersection nearby	1 ; No connections to existing or planned bike/ped infrastructure.	4 ; No noted bridges or other structural needs.	2 ; Possible connectivity opportunities to businesses/places of work along Spectrum Dr	10	\$\$	
	Segment 19 (0.33 miles) Lakeline Station	4 ; No crossings.	3 ; Segment is along existing trail infrastructure at Lakeline Station but may require some adaptation, like widening, to accommodate through trail use. Connects to sidewalk network through adjacent residential area.	4 ; No bridges or other structural needs noted from aerial. Potential to build upon/enhance existing infrastructure.	3 ; Opportunity to connect to adjacent residential and office areas.	14	\$	<i>This segment is along an existing section of wide sidewalk that connects to Lakeline Station</i>
	Segment 21 (1.15 miles) Retention Pond (Staked Plains Neighborhood) to Austin/Cedar Park City Boundary/ Upper Brushy Creek Trail	3 ; One crossing at Avery Ranch Blvd (4 lanes, 40 mph). No convenient adjacent intersection with crosswalks.	4 ; Opportunity to connect to Upper Brushy Creek Trail (7 miles; creating a total of 8.15 miles together) and other paths in the Brushy Creek Recreation Park. Connects to sidewalks along Avery Branch Rd.	3 ; New trail bridge over South Brushy Creek will be required.	2 ; Adjacent to Brushy Creek Recreation Park	12	\$\$	
City of Cedar Park	Segment 22 (5.2 miles) Austin/Cedar Park City Boundary to Cedar Park Northern Boundary/Upper Brushy Creek Trail	1 ; Several crossings (7), many of which will require more complex designs due to traffic volume and speeds.	3 ; Segment would connect to 183 side path (10 miles and 7 miles of sidewalk; creating a total length of 15.2 mile of trail together) and some sidewalk networks at road crossings.	1 ; Complex design work may be required around two rail spurs, two underpasses, and several drainage structures.	4 ; Close proximity to Bell District MUD, Block House MUD, and destination focus areas along E Whitestone Blvd and Bell Blvd.	9	\$\$\$\$	
City of Leander	Segment 23 (2.91 miles) Cedar Park Northern Boundary to Hero Way	2 ; Five crossings along this segment but most are at lower volume/speed roads and/or are close to controlled intersections.	2 ; Connection to existing sidewalk to Leander Station at Hero Way and sidewalk network at E Crystal Falls Pkwy.	2 ; Three drainage structures noted in aerial will require design work to accommodate.	4 ; Close proximity to destination focus area on the west side of 183, Horizon Lake residential development, and Tonkawa Park.	10	\$\$\$	
	Segment 24 (0.24 miles) Hero Way to Leander Station	4 ; No crossings.	2 ; Segment is along existing trail infrastructure at Leander Station; may require some adaptation, like widening, to accommodate through trail use.	4 ; No bridges or other structural needs noted from aerial. Potential to build upon/enhance existing infrastructure.	2 ; Opportunity to connect to destination focus area on the west side of 183.	12	\$	<i>This segment is along an existing section of wide sidewalk that connects to Leander Station</i>

Planning Level Cost Estimates

Order-of-magnitude cost estimates were developed to help identify potential costs for the Red Line Trail based on the conceptual design information provided in the study. The table below lists the baseline cost estimates for the three tiers of feasibility that were previously identified by the study team, where tier 1 consists of less constrained segments and tier 3 consists of more constrained segments (see ROW Alignment Notes and Methodology for more information). These were tabulated based on the tier determined to be most appropriate along each corridor segment, and then projected out based on the lengths of the segments.

Tier	Cost per mile (2024\$)
Tier 1 (less constrained)	\$ 6,000,000
Tier 1 (less constrained) with Signal House Relocation	\$ 9,000,000
Tier 3 (more constrained, many unknowns)	\$ 12,000,000
Tier 3 (more constrained, many unknowns) with Signal House Relocation and Pedestrian Bridge	\$ 34,000,000

The cost estimate includes all markups and contingencies and reflects base year 2024 dollars. These estimates are reflective of conceptual design and are subject to change/revision in the more detailed engineering and design stage. It should also be noted that relocation of a signal house would only be considered during existing CapMetro construction, such as planned double tracking projects, due to severe operational limits. Although road crossings were viewed as a complexity that decreased readiness in the evaluation matrix, places where trails intersect with roads have the positive effect of creating more access points and linking to on-street bicycle and pedestrian infrastructure. There is also an opportunity to provide a safe crossing when trails intersect with roadways. When prioritizing trail segments for construction, these positive aspects of crossings should also be weighed into decision making.

Funding for Implementation of the Red Line Trail

The purpose of this section is to identify potential funding sources available to governmental entities and project partners to implement the proposed Red Line Trail. Funding is available for planning and construction of bicycle and pedestrian infrastructure projects. For instance, [the Austin Mobility Bond Programs](#) are a local method of funding numerous transportation projects, including the urban trails network. Grant funding for trail projects is typically administered by Federal agencies; however, it is recommended that project sponsors continue to monitor future funding offered locally such as through

the Capital Area Metropolitan Planning Organization (CAMPO) or through other state sources offered through the Texas Department of Transportation (TxDOT).

Funding sources identified include a description of the administering agency, project scope eligibilities, funding amount, and timeline for typical grant application and funding award. Funding opportunities include the following as outlined in *Table 1*. Many of the funding programs identified in this report may include additional project eligibility types; however, this document focused on identified funds that would be specific to the Red Line Trail.

*Table 1. Summary of Red Line Trail State and Federal Funding Opportunities**

Funding Program	Grant Administrator
Transportation Alternatives Set-Aside Program	Texas Department of Transportation (TxDOT)/Capital Area Metropolitan Planning Organization (CAMPO)
National Recreational Trails Fund Grant Program	Texas Parks and Wildlife (TPWD)
Congestion Mitigation and Air Quality Improvement Program (CMAQ)	Texas Department of Transportation (TxDOT)
Reconnecting Communities Pilot Grant Program (RCP)	U.S. Department of Transportation (USDOT)
Active Transportation Infrastructure Investment Program (ATIIP)	Federal Highway Administration (FHWA)
Rebuilding American Infrastructure with Sustainability and Equity (RAISE)	U.S. Department of Transportation (USDOT)
Safe Streets and Roads for All (SS4A) Program	U.S. Department of Transportation (USDOT)
Community Project Funding (CPF)/Congressionally Directed Spending (CDS)	At the discretion of Congress (Congressional Funding Bill)

**Note funding opportunities may vary from year to year. It is recommended that Red Line Trail funding partners continue to monitor funding identified in this report as well as explore new funding opportunities that may continue to emerge.*

State of Texas Funding Opportunities

Federally funded, state distributed grants that are available to governmental entities include the Transportation Alternatives Set-Aside (TA) Program which funds bicyclist and pedestrian infrastructure and planning in Texas; the Recreational Trails Program (RTP) Grant for non-motorized and motorized trail construction, renovation, and acquisition; and the Congestion Mitigation and Air Quality Improvement (CMAQ) Program which is intended to fund transportation projects that improve air quality.

Transportation Alternatives Set-Aside Program

Grant Administrator: Texas Department of Transportation (TxDOT); TxDOT Public Transportation Division; Local Metropolitan Planning Organizations (MPOs).

GRANT DESCRIPTION:

The Transportation Alternatives Set-Aside Program (TA) is intended to fund bicyclist and pedestrian infrastructure and planning projects in Texas. While administered by TxDOT, this program is considered a federal reimbursement program for eligible activities as further described below. TxDOT identifies four project categories: Community-Based Projects, Large Scale Active Transportation Infrastructure, Active Transportation Network Enhancements, and Active Transportation Non-Infrastructure.

- *Community-Based Projects:* funds are for engineering and construction costs related to bicycle infrastructure improvements, shared use paths, sidewalk improvements, and infrastructure-related safety improvement projects for non-motorized transportation.
- *Large Scale Active Transportation Infrastructure:* funds are for engineering and construction costs related to bicycle infrastructure improvements, shared use paths, sidewalk improvements, infrastructure-related safety improvement projects for non-motorized transportation, and construction of boulevards and other roadways that are in the right-of-way of divided highways and improve bicycle, pedestrian, and transit-user access.
- *Active Transportation Network Enhancements:* funds are for light construction and installation projects that can be completed within one year after the award. They should have limited-to-no design and no right-of-way (ROW) acquisition.
- *Active Transportation Non-Infrastructure:* funds are for the development of planning documents to assist in developing non-motorized transportation networks.

ELIGIBLE APPLICANTS:

Eligible project sponsors include local governments including cities along the Red Line corridor, transit agencies (CapMetro), and MPO's with a population of 200,000 or more (CAMPO). Other sponsors include educational agencies and tribal governments and natural resource/public agencies.

ELIGIBLE PROJECTS:

Eligible activities are design, construction, development of active transportation planning documents, survey, environmental documentation, ROW acquisition, and preliminary engineering activities based on the four funding categories above. Projects are selected based on benefits to the state, potential to enhance the surface transportation system, funding availability, and subject to recommendation from the director of the division responsible for administering the program.

FUNDING TYPE & FUNDING AMOUNT:

TA funds are allocated for projects in two ways – one half of the funds are allocated through TxDOT and the other half of the available funds are sub-allocated to MPO's (i.e. CAMPO) based on urbanized area boundaries. According to CAMPO, TA projects are typically funded in consultation with TxDOT. Portions of Texas outside of urbanized areas but within MPO boundaries are eligible for both TxDOT direct TA funds and MPO TA funds. In short if a project traveled beyond the CAMPO boundaries into the greater Austin urbanized area, the project could receive TxDOT and CAMPO TA set aside funding. The Red Line Trail currently travels within the CAMPO boundaries in Williamson and Travis counties so would only be eligible from either TxDOT or CAMPO fund sources, but not both at this time.

Funding available under the TA program is typically available on a reimbursement basis after engineering and construction costs are incurred with the exception being the Active Transportation Non-Infrastructure sub program which is geared toward planning study implementation (**Table 2**). Project sponsors are required to contribute a 20 percent local match. As a federally funded program, administered by TxDOT, project sponsors are subject to federal requirements and require project sponsors to receive federal authorization of the project and a funding agreement. Project sponsors should coordinate with TxDOT for questions regarding reimbursement and other federal requirements through this program.

In 2023, TxDOT awarded over \$345 million in TA funding to 83 total projects. In the Austin District, as defined by TxDOT, there were 9 total awards totaling approximately \$30 million in funding. The smallest award was \$1.3 million and the largest award in Austin was \$11.3 million¹. Project types included shared use paths, sidewalk improvements, and trail corridor planning. CAMPO outlines projects funded by the TA program as part of its Transportation Improvement Program (TIP).

¹ 2023 TA Awarded Projects Story Map,
<https://storymaps.arcgis.com/stories/48203c8e0c06424e8498a0571a8f4431>

Table 2. TxDOT TA Program Funding Availability by Type and Project Cost

Grant Type	Funding Type	Target Project Cost Ranges*
Community-Based Projects	Reimbursement	\$250,000 to \$5 million in estimated construction and engineering costs
Large Scale Active Transportation Infrastructure	Reimbursement	\$5 million and \$25 million in estimated construction and engineering costs
Active Transportation Network Enhancements	Reimbursement	Minimum project cost is \$1 million
Active Transportation Non-Infrastructure	Project Planning	Minimum project award is \$100,000

*TxDOT may award projects with costs exceeding these targets depending on applications received and amounts requested.

TIMELINE:

The TA Program hosts a call for projects every other year since 2015 with the next funding availability in the 2025 fiscal year. Based on past awards, the two-step application process opens in the winter (December) with preliminary applications due two to three months after opening. Following successful completion of Step 1, a detailed application (Step 2) is solicited from project applicants after meeting with each applicant about their projects, and the second round ends mid-year, with awardees being announced three to four months later. An example of the 2023 TA call for projects timeline is shown in **Table 3**.

Table 3: TA Program Funding Timeline (2023)

Due Date	12/2022	1/2023	3/2023	6/2023	10/2023
Application activity	Call opens (Step 1)	Preliminary Application due	Project sponsors notified of their eligibility. If qualified, sponsors receive details on the grant application to proceed with Stage 2 registration	Detailed application due	Anticipated award distributed

References: [2023 TA Program Guide \(txdot.gov\)](https://www.txdot.gov/2023-ta-program-guide)

Recreational Trails Program (RTP) Grant

Grant Administrator: Texas Parks and Wildlife Department (TPWD), Federal Highway Administration (FHWA)

GRANT DESCRIPTION:

The Recreational Trails Program Grant is intended to fund recreational trail construction, renovation, and right-of-way (ROW) acquisition and can support both motorized and non-motorized trail projects. This program is federally funded but distributed through the TPWD. The FHWA funded program receives funding from a portion of federal gas taxes paid on fuel used in non-highway recreational vehicles.

ELIGIBLE APPLICANTS:

Eligible applicants include cities, counties, state agencies (including TPWD state parks and wildlife management areas), other governmental bodies, and not-for-profit organizations. Each proposal can only include one project sponsor; however, partnerships are encouraged.

ELIGIBLE PROJECTS:

Eligible project activities include the following:

- Construction of new recreational trails on private or public land,
- Restoration, rehabilitation, or resurfacing on existing trails,
- Development of trailheads or trailside facilities including features to facilitate disability access and usage on trails, educational signing to interpret natural or cultural resources,
- Environmental mitigation,
- Acquisition of trail corridors.

FUNDING TYPE & FUNDING AMOUNT:

Funding is a reimbursement-based grant program for up to 80% of the project cost with a maximum reimbursement of \$300,000 for non-motorized trail grants and \$500,000 for motorized trail grants. The sponsor must account for the other 20% in local funding.

In 2024, Texas counties received approximately \$4.5 million in RTP Grants. Central Texas counties, Travis, Williamson, and Hayes, received approximately \$1.2 million between five trail projects.

TIMELINE:

The deadline to apply for the National Recreational Trails Fund is February 1st of each year. For the 2024 call, the application was opened in September of 2023. The winners of the award were announced at the end of May each year.

References: [Recreational Trails Grants — Texas Parks & Wildlife Department](#), [Texas Recreation Trail Fund grant application \(agatesoftware.com\)](#), [News Release: May 24, 2024: Texas Parks and Wildlife Department Awards \\$4.5 Million in Recreational Trail Grants to Texas Communities - TPWD](#)

Congestion Mitigation and Air Quality Improvement (CMAQ) Program

Grant Administrator: TxDOT to MPOs (CAMPO)

GRANT DESCRIPTION:

The Congestion Mitigation and Air Quality Improvement (CMAQ) Program distributes funds to States for transportation projects designed to reduce traffic congestion and improve air quality, particularly in areas of the country that do not attain national air quality standards. CMAQ intends to support projects and investments that encourage alternatives to driving alone, improve traffic flow, and help urban areas meet air quality goals.

ELIGIBLE APPLICANTS:

CMAQ funds are distributed to the local MPO's, specifically CAMPO, and government entities are eligible to apply for planning and capital projects.

ELIGIBLE PROJECTS:

Each CMAQ project must meet three basic criteria: it must be a transportation project; it must be located in or benefit a nonattainment or maintenance area; and it must generate an emissions reduction. Many CMAQ projects also provide congestion reduction benefits and reduce greenhouse gas emissions. All CMAQ projects must come from a State Transportation Improvement Plan (STIP) or a Transportation Improvement Program (TIP) which indicates that the project (*i.e. the Red Line Trail*) is consistent with state and metropolitan long-range plans and is regionally significant.

CMAQ funds may be invested in:

All ozone, Carbon Monoxide (CO), and Particulate Matter (PM) nonattainment and maintenance areas, including former areas where the NAAQS has been revoked or the maintenance period has been satisfied.

Projects that significantly benefit a current or former nonattainment or maintenance area including bicycle and pedestrian facilities.

Note on Current Eligibility:

This funding source is geared toward regions that are in nonattainment or maintenance area designation. Currently, at time of this report, the CAMPO region is currently in attainment for air quality, so funding is not accessible at this time; however, it is recommended that as the Red Line Trail advances for funding to assess availability of CMAQ funds at that time.

FUNDING TYPE & FUNDING AMOUNT:

The Federal share for most CMAQ-eligible projects is 80 percent. Similar to other Federal-aid highway programs, CMAQ operates on a reimbursement basis, so funds are not provided until work is completed. As of time of preparing this report, the State of Texas receives funding allocations, however, no funding is available for the CAMPO region.

TIMELINE:

The timeline is determined by the state and is subject to the annual apportionment schedule. See note on funding availability and eligibility as outlined above.

References: [Bipartisan Infrastructure Law - Congestion Mitigation and Air Quality \(CMAQ\) Improvement Program Fact Sheet | Federal Highway Administration \(dot.gov\)](#), [Reference - CMAQ - Air Quality - Environment - FHWA \(dot.gov\)](#)

Federal Funding Opportunities

Federally administered grants that apply to the Red Line Trail project are the Reconnecting Communities Pilot Grant Program (RCP), the Active Transportation Infrastructure Investment Program (ATIIP), the Rebuilding America's Infrastructure with Sustainability and Equity (RAISE) Program, and the Safe Streets and Roads for All (SS4A) Program. The Federal Highway Administration maintains a [Pedestrian and Bicycle Funding Opportunities table](#), which should be monitored for the latest opportunities offered through US Department of Transportation Highway, Transit, and Safety Funds.

The RCP Program is a combination of two grant opportunities intended to fund infrastructure investments that increase opportunities for disadvantaged communities by removing and adding transportation facilities, such as multiuse paths. The ATIIP Program is intended to fund improvements of active transportation networks to increase safety and connectivity. The RAISE Program is intended to fund surface transportation projects, such as bike trail projects, with an intended significant local or regional impact and advance the priorities of safety, equity, and sustainability. The SS4A Program is intended to fund projects that improve roadway safety by reducing or eliminating roadway fatalities and serious injuries for all roadway users. These projects include increasing bike facilities.

Reconnecting Communities Pilot Grant Program

Grant Administrator: U.S. Department of Transportation (USDOT) and the Office of the Secretary of Transportation (OST)

GRANT DESCRIPTION:

The Reconnecting Communities Pilot Grant Program (RCP) is a combination of two major discretionary grants into one Notice of Funding Opportunity (NOFO). The USDOT offers three grant types under this program: *Capital Construction*, *Community Planning*, and *Regional Partnerships Challenge*. The program is intended to be used for projects that prioritize disadvantaged communities, aim to improve access to daily needs, foster equitable development and restoration, and reconnect communities by removing, retrofitting, or mitigating highways or other transportation facilities that create barriers to community connectivity.

Capital Construction: funding is for reconnecting-focused projects and smaller projects focused on reducing environmental harm and improving access in disadvantaged communities.

Community Planning: funding for planning activities to support future construction projects and allow for innovative community planning to address localized transportation challenges.

Regional Partnerships Challenge: funding is for all projects under the categories above but on a regional scale. Funding is to incentivize stronger partnerships between local governments, Tribal governments, MPOs/RPOs, State DOTs, and non-profit, private, and community partners to tackle persistent equitable access and mobility challenges, as well as greenhouse gas emissions reductions.

ELIGIBLE APPLICANTS:

Eligible applicants include a State or territory of the United States, a unit of local government, a political subdivision of a State, a Tribal government, a special purpose district or public authority with a transportation function, an MPO, or a non-profit that has entered into a partnership with an eligible entity and is applying for planning and capacity building activities in disadvantaged or underserved communities. Applicants must be the Facility Owner(s), or the Facility Owner must be a joint applicant with evidence of endorsement of the application.

ELIGIBLE PROJECTS:

Eligible Facilities are highways or other transportation facilities that create a barrier to community connectivity, including barriers to mobility, access, or economic development, due to high speeds, grade separations, or other design factors. DOT is taking a broad view of "other transportation facilities".

The RCP program is a highly competitive grant program, similar to the level of competitiveness to the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) program as further described in the section below. It is recommended that government entities interested in this program focus on gathering regional support (i.e. letter of support) from stakeholders and the public to cite in the application. Additionally, project applicants should consider planning for preparing funding applications well ahead of the NOFO release. A number of trail and complete streets projects were awarded during the FY 2023 grant period.

FUNDING TYPE & FUNDING AMOUNT:

The DOT awards 3-5 Regional Partnerships Challenge Grants. All grants awarded cover 80% of the total project cost with a 20% local match, unless the community is disadvantaged, where it can cover 100%. The grants that have a minimum or maximum award amount are listed in **Table 4**. If a minimum or maximum award amount is not listed, then the DOT will award an amount. USDOT allocated \$202 million in 2025 and \$205 million in 2026 for the RCP program.

Table 4: RCP Grant Types and Funding Ranges

Grant Type	Minimum award	Maximum Award
Neighborhoods Access and Equity Program	No minimum	No maximum
Reconnecting Communities Program: Capital Construction	\$5 million	\$100 million
Reconnecting Communities Program: Community Planning	No minimum	\$2 million

TIMELINE:

Assuming the timeline follows the 2023 model, applications will open mid-year and close at the end of fall 2024. Project awardees will likely be announced mid-year 2025.

References: [Reconnecting Communities and Neighborhoods Grant Program | US Department of Transportation](#), [Inflation Reduction Act - Neighborhood Access and Equity \(NAE\) Grant Program | Federal Highway Administration \(dot.gov\)](#), [RCP Program FY23 Fact Sheet.pdf \(transportation.gov\)](#)

Active Transportation Infrastructure Investment Program (ATIIP)

Grant Administrator: Federal Highway Administration (FHWA)

GRANT DESCRIPTION:

The Active Transportation Infrastructure Investment Program grants are intended to help improve the safety, efficiency, and reliability of active transportation networks and communities and improve connectivity between active transportation modes and public transportation through creating safe, accessible, and equitable pedestrian and bicycle network connectivity. The ATIIP grants are divided into two parts: Planning and Design Grants and Construction Grants.

ELIGIBLE APPLICANTS:

The following applicants are eligible for this grant: A local or regional governmental organization, including a MPO (CAMPO) or regional planning organization or council, a multicounty special district, state, a multistate group of governments, or a Native American Tribe.

ELIGIBLE PROJECTS:

Active transportation networks (connections within a community), active transportation spines (connections between communities, metropolitan regions, or States), and active transportation (mobility options powered by human energy) are eligible for these funds.

The FHWA expects ATIIP awards for planning and design grants to range between \$100,000 and an expected maximum of \$2,000,000. FHWA intends to award a minimum of \$7,500,000 in ATIIP funds for any given construction grant, and a maximum of \$15,000,000 in ATIIP funds for qualifying disadvantaged communities where the project has a 100% Federal share, or \$12,000,000 in ATIIP funds for all other construction grant applicants where the project has an 80% Federal share.

FUNDING TYPE & FUNDING AMOUNT:

The application for the FY 2023 Notice of Funding Opportunity (NOFO) is open as of March 2024 and closed in July 2024. Funding availability is subject to the Consolidated Appropriations Act with a total of \$45 million available. For the FY 2023 NOFO, FHWA has set aside \$3 million for planning and design grants. Of the available funding, at least 60% percent will be set aside for active transportation networks (30%) and active transportation spines (30%). Except for disadvantaged communities, all other applicants cannot receive a grant that exceeds 80% of the total project cost and must provide a 20% match of non-Federal funds.

TIMELINE:

The grant application was released March 19th, 2024, and the deadline has been extended from June 17th to July 17th, 2024. It is anticipated that the FY 2024 application period will open early spring 2025.

References: [ATIIP - Bicycle and Pedestrian Program - Environment - FHWA \(dot.gov\)](#), <https://grants.gov/search-results-detail/353043>

Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Program

Grant Administrator: Office of the Secretary, U.S. Department of Transportation (USDOT)

GRANT DESCRIPTION:

The RAISE Grant Program is intended to fund surface transportation projects that will have a significant local or regional impact and advance the priorities of safety, equity, climate and sustainability, workforce development, job quality, and wealth creation. The RAISE grant can only fund the surface transportation infrastructure elements of a project that may also include housing, employment opportunities, and economic development strategies. There are two categories of funding: Capital Project grants, and Planning Project grants.

ELIGIBLE PROJECTS:

Eligible Capital Projects include public transportation projects eligible under Chapter 53 of Title 49, U.S. code, intermodal projects whose component parts are an eligible project type, and any other surface transportation infrastructure project that the Secretary considers to be necessary to advance the goals of the program. If an applicant applies for public road and non-motorized projects that are not otherwise eligible, or if a project type is not described as explicitly eligible, then it should be explained in the application why the project is necessary to advance the goals of the program, and the Department will determine eligibility on a case-by-case basis.

Eligible Planning Projects are development of master plans, comprehensive plans, transportation corridor plans, and integrated economic development, land use, housing, and transportation plans, and planning activities related to the development of a multimodal freight corridor including those that seek to reduce conflicts with residential areas and with passenger and non-motorized traffic. Projects that include right-of-way acquisition are not eligible for the Planning Grants.

ELIGIBLE APPLICANTS:

Eligible applicants are a public authority with a transportation function, a transit agency, the States and the District of Columbia, any territory or possession of the United States, a unit of local government, a public agency or publicly chartered authority established by one or more States, a special purpose district, and a multi-State or multijurisdictional group.

FUNDING TYPE & FUNDING AMOUNT:

The minimum Capital Grant award is \$5 million in urban areas and \$1 million in rural areas. The maximum for both Capital and Planning grants is \$25 million. Federal cost share cannot exceed 80% of the projects total cost.

TIMELINE:

The FY 2025: RAISE Grant NOFO publication opens on October 15, 2024 and the application deadline is on January 13, 2025. The FY 2026: RAISE Grant NOFO publication opens on October 15, 2025 and the application deadline is on January 13, 2026.

References: [FY 2024 RAISE NOFO Amendment 1.pdf \(transportation.gov\)](#)

Safe Streets and Roads for All (SS4A) Program

Grant Administrator: U.S. Department of Transportation (USDOT)

GRANT DESCRIPTION:

The Safe Streets and Roads for All Grant Program is intended to fund projects that improve roadway safety by reducing or eliminating roadway fatalities and serious injuries through the development and implementation of a safety action plan to strengthen a community's approach to roadway safety for all users, including pedestrians, bicyclists, public transportation, personal conveyance, micromobility users, motorists, and commercial vehicle operators. The SS4A program has two grant types: Planning and Demonstration Grants and Implementation Grants.

ELIGIBLE PROJECTS:

Planning and Demonstration Grant: funds are for comprehensive safety action plans, supplemental safety planning, and/or safety demonstration activities.

Implementation Grant: funds are to implement strategies or projects that are consistent with an existing Action Plan and may also bundle funding requests for supplemental planning and demonstration activities that inform an Action Plan. (New roadway facilities exclusively for non-motorists (e.g. a shared use path) is an eligible activity if the primary purpose is safety related.)

ELIGIBLE APPLICANTS:

Eligible applicants are a MPO (CAMPO), a political subdivision of a State or territory, and a multijurisdictional group of entities described in any of the three types of entities mentioned (they must identify a lead applicant as the primary point of contact).

Eligible applicants must have a qualifying Action Plan to apply for an Implementation Grant and must also meet at least one of these conditions: have ownership and/or maintenance responsibilities over a roadway network, have safety responsibilities that affect roadways, or have agreement from the agency that has ownership and/or maintenance responsibilities for the roadway within the applicant's jurisdiction. A project to build off-road bicyclist and pedestrian facilities, including trails (i.e. the Red Line) would be eligible if the separation of mode users from the existing road network is identified in an existing, eligible Action Plan as a project to address a safety need².

Applicants may use existing Action Plans produced by other jurisdictions to apply for implementation if the projects and strategies in the application are included in the existing Action Plan.

² See additional eligibility considerations for Implementation Grants
<https://www.transportation.gov/grants/ss4a/implementation-grants#eligible-activities>

FUNDING TYPE & FUNDING AMOUNT:

Planning and Demonstration Grants: the minimum expected awards are \$100,000 and the maximum expected awards are \$10,000,000. The DOT expects larger award amounts for MPOs, multijurisdictional group applicants, or applicants with activities in large geographic areas.

Implementation Grants: the minimum expected awards are \$2,500,000 and the maximum expected awards are \$25,000,000. Federal share of the grant cannot exceed 80% of the total project cost

TIMELINE:

The 2024 planning timeline is shown in *Table 5*. Funding for Planning and Demonstration grants will be awarded on a first-come, first served basis. The NOFO for SS4F applications has two distinct funding rounds. As shown in *Table 5*, if an applicant is submitting for a Planning and Demonstration application there are three funding windows. For the 2024 cycle, priority applications were due in April 2024, however applications were continued to be accepted in May and August 2024, noting however awards in later deadlines are contingent on availability of remaining funds.

For projects submitting under the Implementation Grant portion of SS4R, the NOFO requires pre-application submissions (April 2024) to confirm the self-certification eligibility worksheet is completed³. After the pre-application submission, the final application is due approximately two months later (May 2024 for the 2024 cycle)

Table 5: SS4R Application Timeline (2024 NOFO)

Dates	02/21/2024	04/04/2024	04/17/2024	05/16/2024		08/29/2024
Application activity	SS4A FY2024 opens	1 st round Planning & Demonstration Grant application due	Implementation Grant Self-Certification Eligibility Worksheet Due	2 nd round Planning & Demonstration Grant application due	Implementation Grant application due	3 rd round Planning & Demonstration Grant application due

References: [Safe Streets and Roads for All \(SS4A\) Grant Program | US Department of Transportation](#), <https://www.grants.gov/search-results-detail/352510>, [Search Results Detail | Grants.gov](#)

³ Self Certification Worksheet Template, 2024 <https://www.transportation.gov/sites/dot.gov/files/2024-02/SS4A-FY24-Self-Certification-Worksheet.pdf>

Community Project Funding (CPF)/Congressionally Directed Spending (CDS)

Grant Administrator: Congressional Representative

DESCRIPTION:

Member designated projects are Congressionally-directed projects in which Congress takes a portion of the funding in a program and allocates among Members. Member designated projects can be used for any of the allowable uses in the specific program in which they are allocated including capital expenses or special initiatives. It is important to note that member designated projects are used for one-year funding in an annual appropriation with no guarantee of subsequent federal funds.

ELIGIBLE PROJECTS:

Projects may be submitted to Members of Congress for consideration of funding as long as the projects have a federal nexus and meet other requirements established by federal law, House Rules, and the Committee to ensure high-quality projects are requested and funding. Transportation related agencies include U.S.DOT transit infrastructure projects which are public transportation capital projects under chapter 53 of title 49 of the United States Code.

The best way to ensure project eligibility is for Members to select projects included on the Statewide Transportation Improvement Program (STIP) or the Transportation Improvement Program (TIP). Projects included on the STIP or TIP already have been certified as eligible for FHWA or FTA funding and do not require further verification of eligibility. For projects not on the STIP or TIP, the Committee will require additional documentation, including verification whether the project can be added to the STIP or TIP in a reasonable timeframe if the funding request is included in the legislation; whether the project is on a long-range transportation plan; and verification of eligibility for the proposed activity.

ELIGIBLE APPLICANTS:

Eligible applicants included specific State, locality, direct recipients, or congressional district. Project sponsors must submit interest to their Congress Member for consideration of funding. The Member then submits selected projects for further consideration by the House Committee on Appropriations.

FUNDING TYPE & FUNDING AMOUNT

Funding is allocated through a Congressional bill rather than through a statutory or administrative formula driven or competitive award process. All projects must meet relevant statutory and administrative criteria for funding through the grant program under which it's submitted. Project sponsors must be prepared to meet non-federal cost sharing requirements (*i.e. typically 20 percent local match to an 80 percent Federal ask*) and all other sub criteria associated with the funding allocation.

Between FY 2022 and FY 2025 the average award was between \$1.4 million and \$4.0 million. The number of projects awarded funding varies from year to year with anywhere between 10 and 15 projects selected as shown in **Table 6**.

*Table 6. CPF Funding Awards FY 2022 - FY 2025**

	FY 22	FY 23	FY 24	FY 25
Total Project Awards	10	15	12	11
Minimum Funding Awarded	\$701,000	\$825,000	\$932,000	\$1,400,000
Maximum Funding Awarded	\$2,475,000	\$5,000,000	\$10,270,000	\$5,000,000
Average Award	\$1,400,000	\$2,000,000	\$3,500,000	\$2,700,000

**Note project awards funding totals are rounded for comparison purposes.*

TIMELINE:

Project sponsors should submit their interest to their Congressional Representative. It is encouraged that interested parties maintain contact with their Congressional member offices as there can be quick turnaround times for submission projects once the Appropriations Committee releases guidelines for the next fiscal year. The rules governing these projects for Fiscal year 2026 and beyond, as part of the next Congress, will be determined in calendar year 2025 once the 119th Congress convenes.

Funding Considerations Summary

The summary of funding opportunities detailed in this report are outlined in Table 7. The Red Line Trail project sponsor and funding applicants should carefully review all NOFO's for key requirements including any federal grant requirements.

Overall, funding program availability on average ranges from \$700,000 to \$25 million with additional funding available through the RCP program. Red Line Trail project sponsors should continue to monitor funding availability and programs offered locally, regionally, and federally for long-term implementation.

Additionally, Red Line project partners may consider other funding opportunities that may become available in coordination with larger redevelopment opportunities. Fund sources such as Community Development Block Grants (CDBG), Tax Increment Financing (TIF), Tax Increment Reinvestment Zone (TIRZ), and Public Improvement Districts (PIDs) may be worth exploring as local funding opportunities to fund public infrastructure.

Table 7. Summary of Red Line State and Federal Funding Opportunities

Funding Program	Grant Administrator	Funding Range for Projects Based Upon Historical Awards*	Key Considerations for Project Sponsors
Transportation Alternatives Set-Aside Program	Texas Department of Transportation (TxDOT)/Capital Area Metropolitan Planning Organization (CAMPO)	\$1.0M - \$12.0M	Engage TxDOT and CAMPO for funding opportunities
National Recreational Trails Fund Grant Program	Texas Parks and Wildlife (TPWD)	\$300,000 - \$4.0M	Undersubscribed program.
Congestion Mitigation and Air Quality Improvement Program (CMAQ)	Texas Department of Transportation (TxDOT)	N/A at this time	Monitor air quality attainment changes
Reconnecting Communities Pilot Grant Program (RCP)	U.S. Department of Transportation (USDOT)	No minimum to \$100M	Recommend early engagement with local stakeholders to identify as key RCP project
Active Transportation Infrastructure Investment Program (ATIIP)	Federal Highway Administration (FHWA)	\$100,000 - \$15M (depending on project type)	May be best used for construction funds.
Rebuilding American Infrastructure with Sustainability and Equity (RAISE)	U.S. Department of Transportation (USDOT)	\$5M - \$25M	Similar to RCP, consider prioritizing as regional application for max competitiveness.
Safe Streets and Roads for All	U.S. Department of	\$100,000- \$25M	Confirm alignment with

Funding Program	Grant Administrator	Funding Range for Projects Based Upon Historical Awards*	Key Considerations for Project Sponsors
(SS4A) Program	Transportation (USDOT)	(depending on project type)	city with jurisdiction Action Plan Priorities.
Community Project Funding (CPF)/Congressional Directed Spending (CDS)	At the discretion of Congress (Annual Federal Appropriations Bill)	\$700,000 - \$5M	Engage Member of Congress prior to spring 2025/2026

**Funding ranges are presented for reference only based on historical awards. Consult the applicable funding guidance (i.e. NOFO) at time of application for detailed information on funding minimums and maximums.*

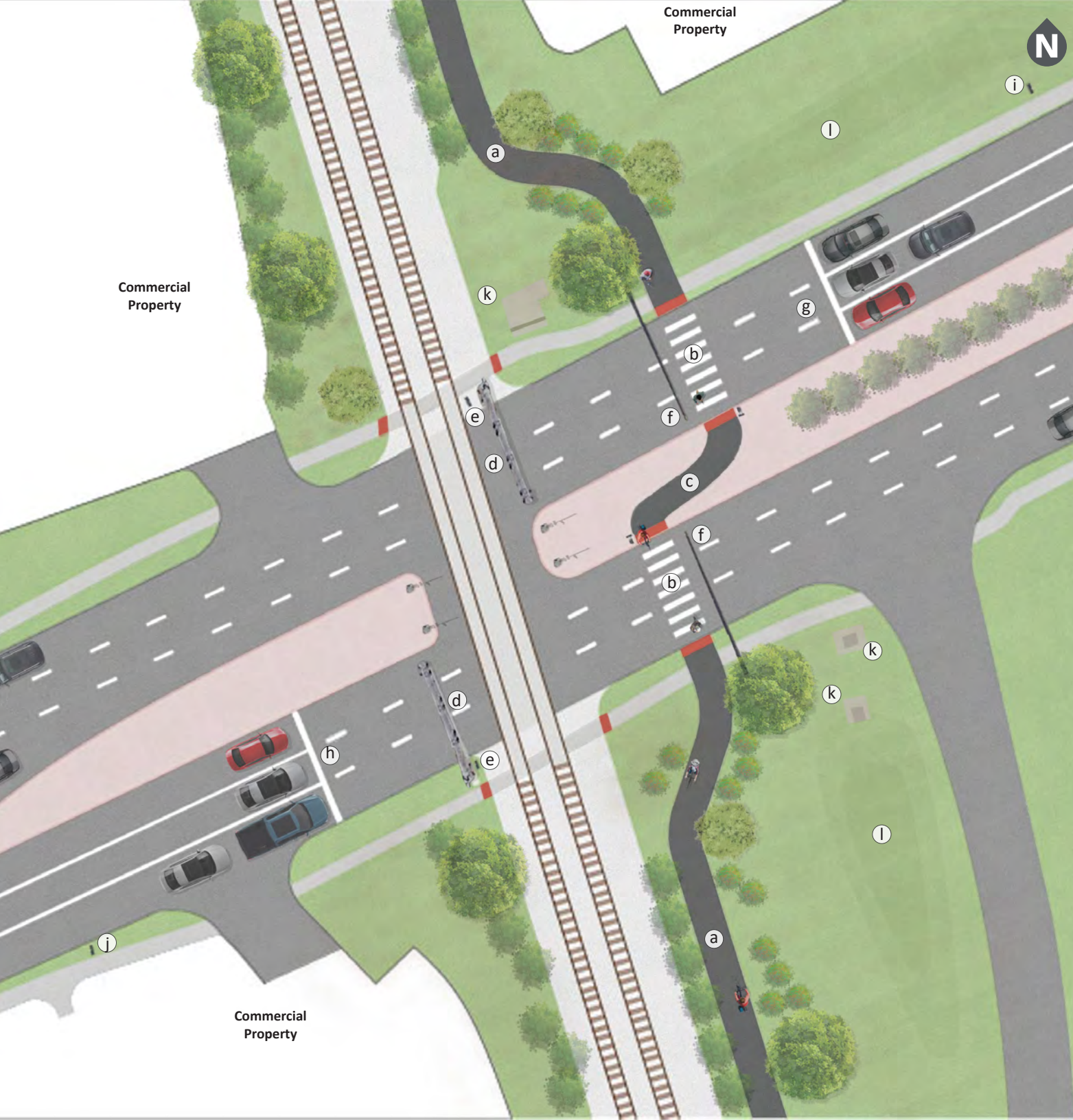


06

Appendix A:

*Full-Scale Cross Sections, Graphics
and Pilot Segment*

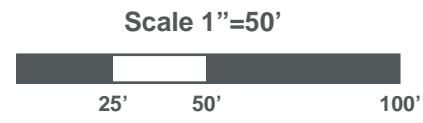
CapMetro



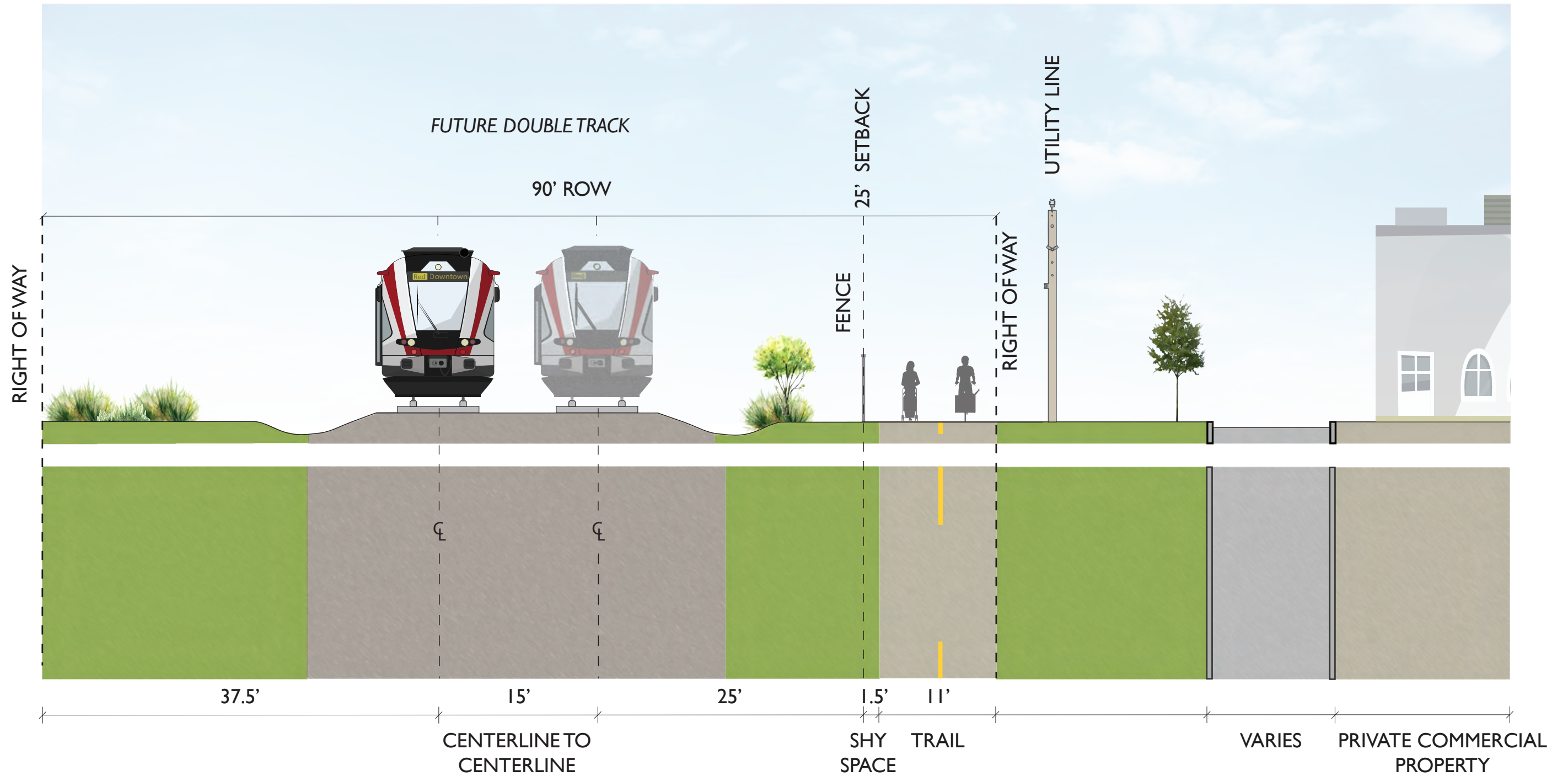
Example Trail Crossing Diagram

LEGEND

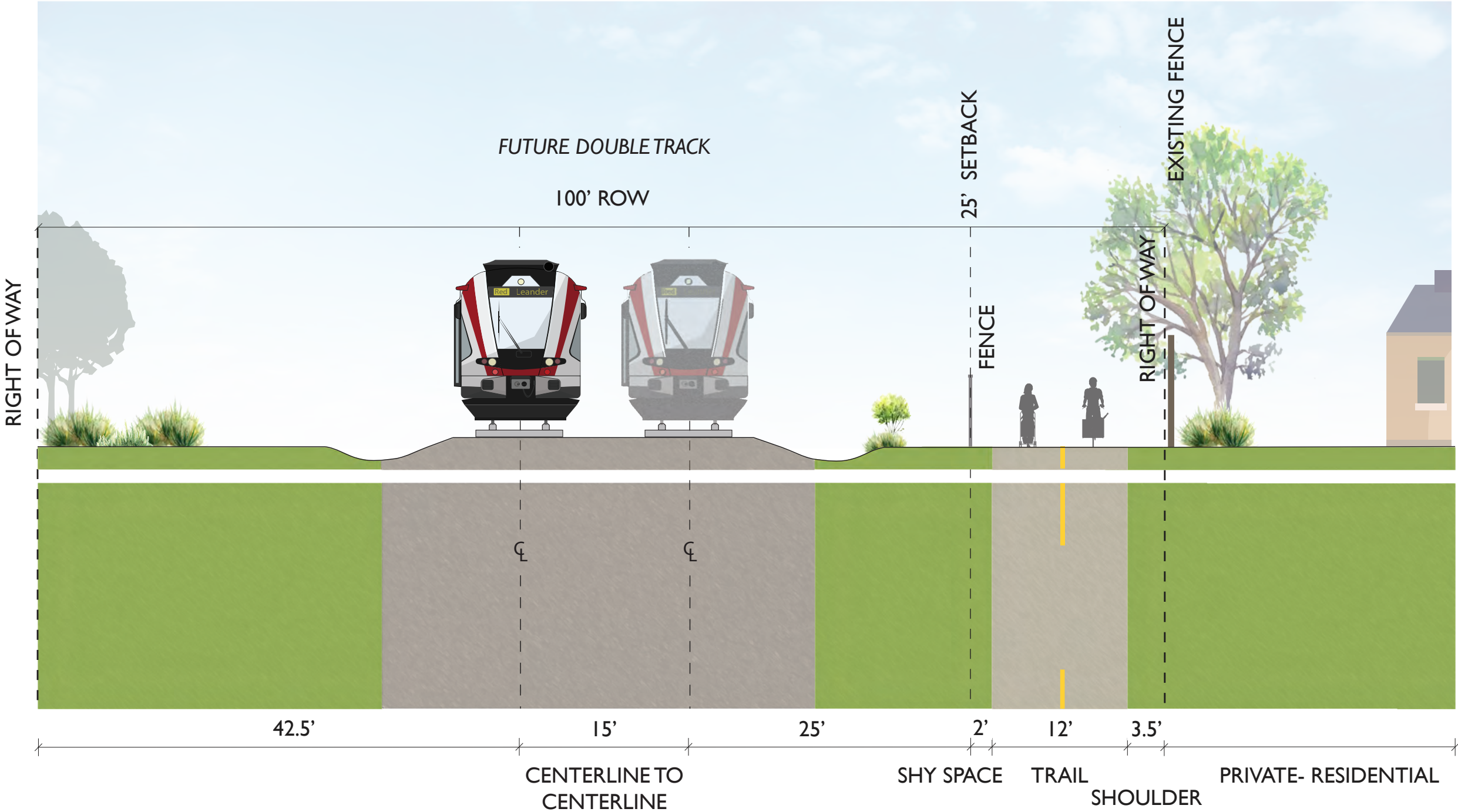
- (a) New 12' wide trail
- (b) New high visibility crosswalk
- (c) New pedestrian refuge island
- (d) Existing Railroad Gates and Warning Signs; Remove Warning Lights
- (e) New "Do Not Stop on Tracks" sign (R8-8)
- (f) New Pedestrian Traffic Signals actuated by by pedestrian push button
- (g) New stop bar (located 70 ft. from Signal Pole/Mast Arm)
- (h) New stop bar (located 160 ft. from Signal Pole/Mast Arm)
- (i) New Trail Crossing Warning Sign (W11-15) (located 170 ft. from Signal Pole/Mast Arm)
- (j) New Trail Crossing Warning Sign (W11-15) (located 270 ft. from Signal Pole/Mast Arm)
- (k) Existing drainage structure
- (l) Existing detention pond



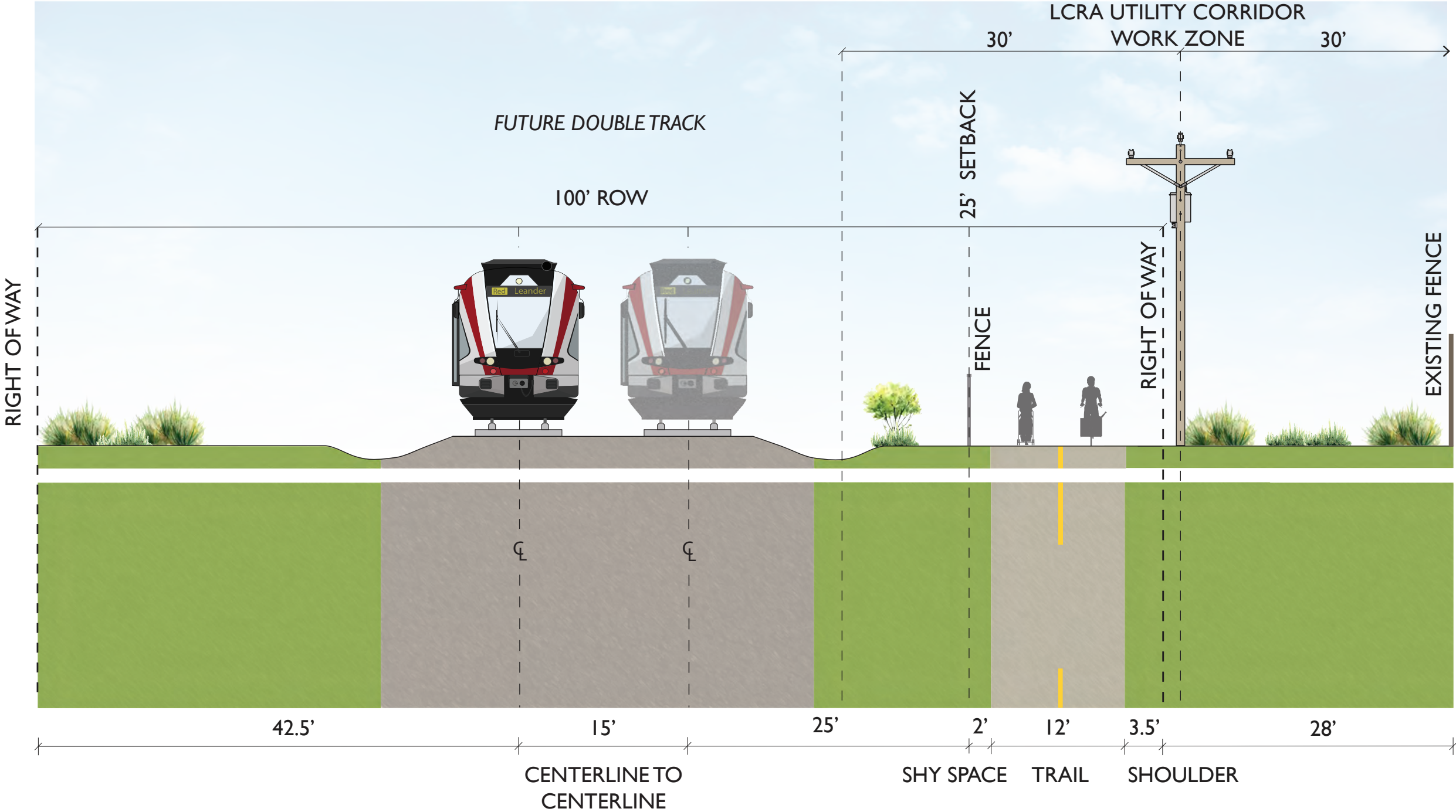
1. City of Leander: North of Crystal Falls Parkway



2. City of Leander: South of Crystal Falls Parkway



3. City of Cedar Park: East Whitestone Boulevard to East New Hope Drive



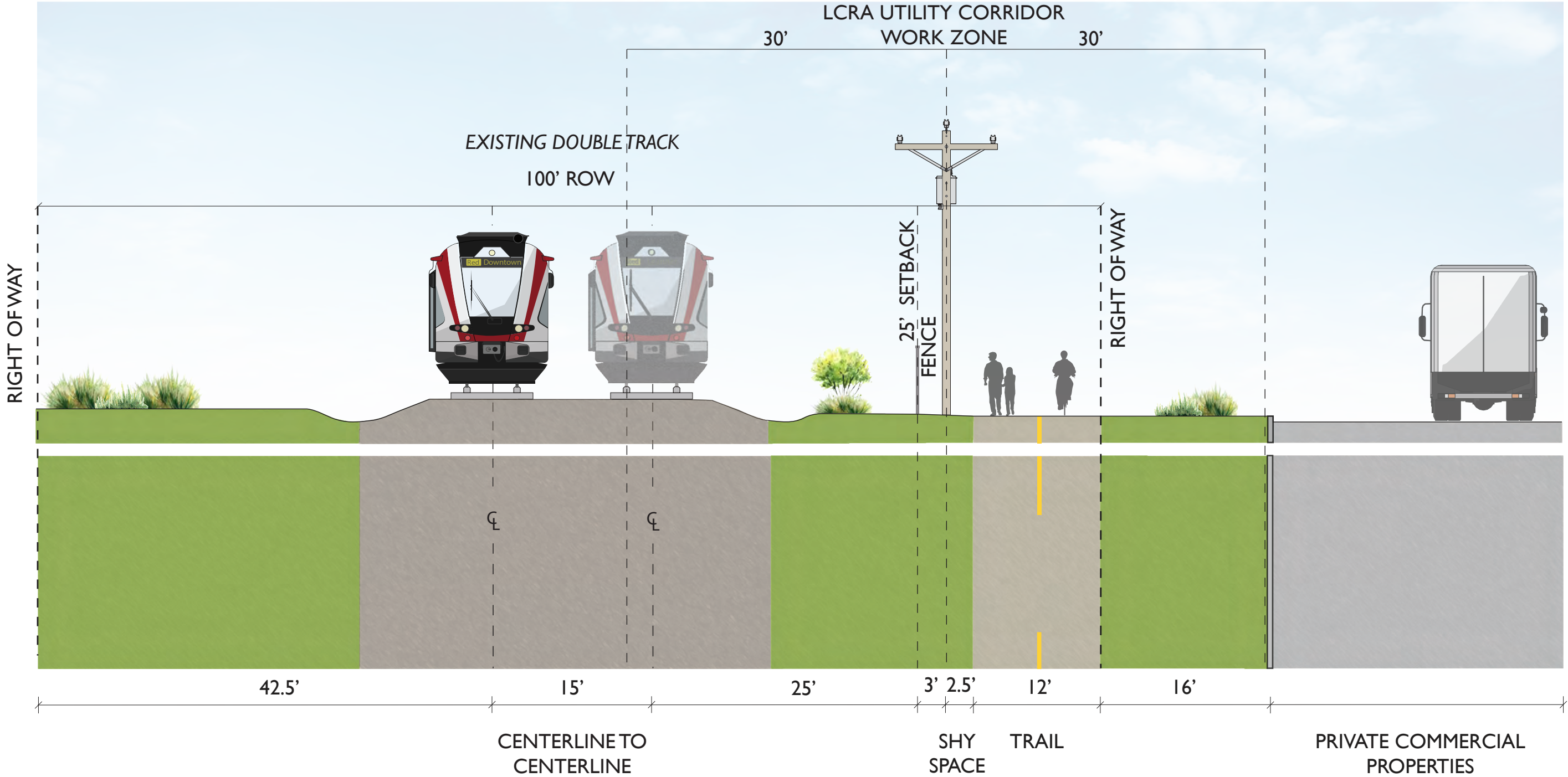
US Route 183 Underpass at Brushy Creek



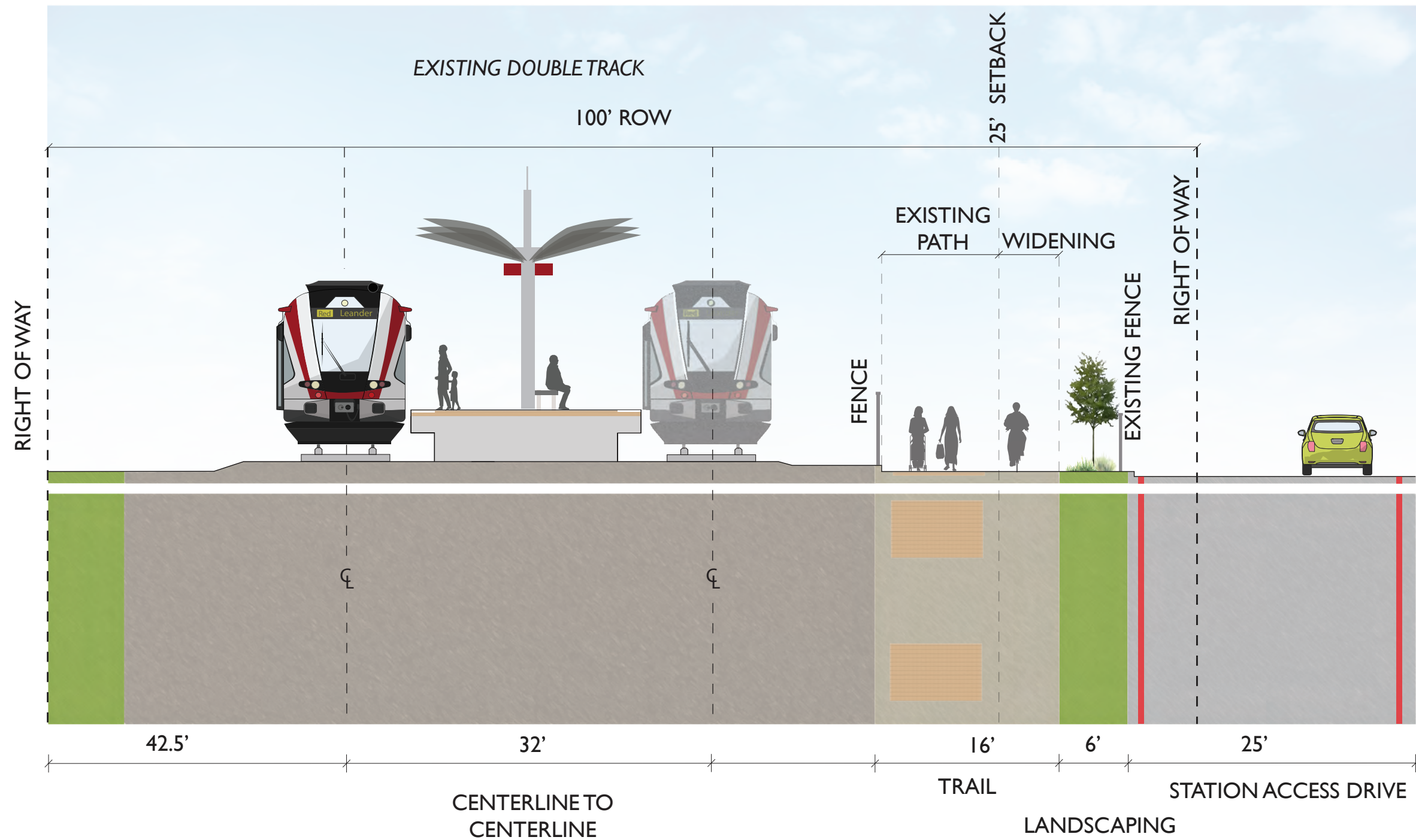
Brushy Creek Recreation Park



6. City of Austin: South of Spectrum Drive



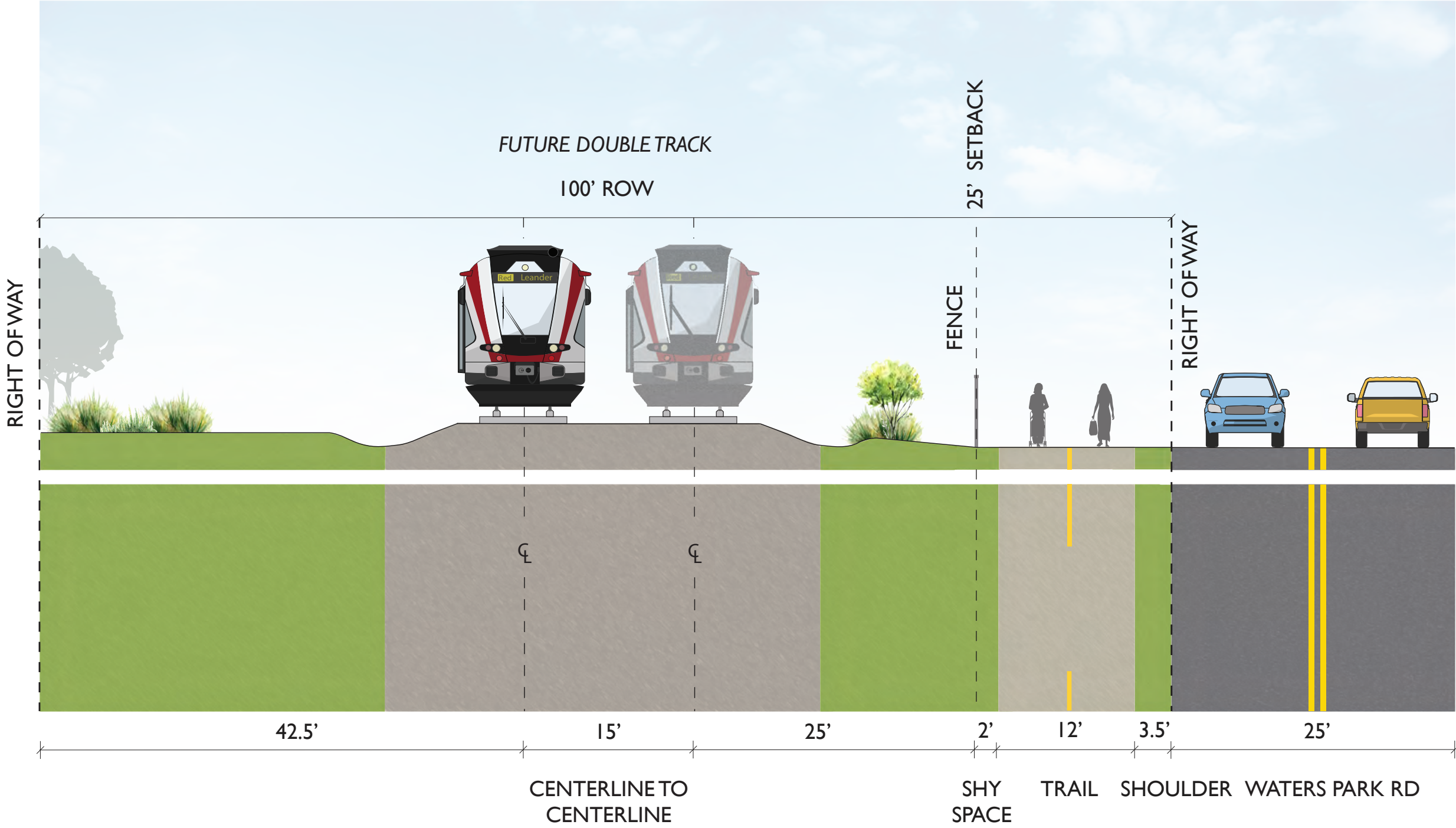
7. City of Austin: Howard Station



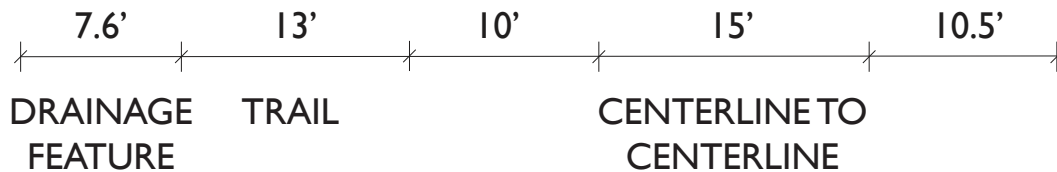
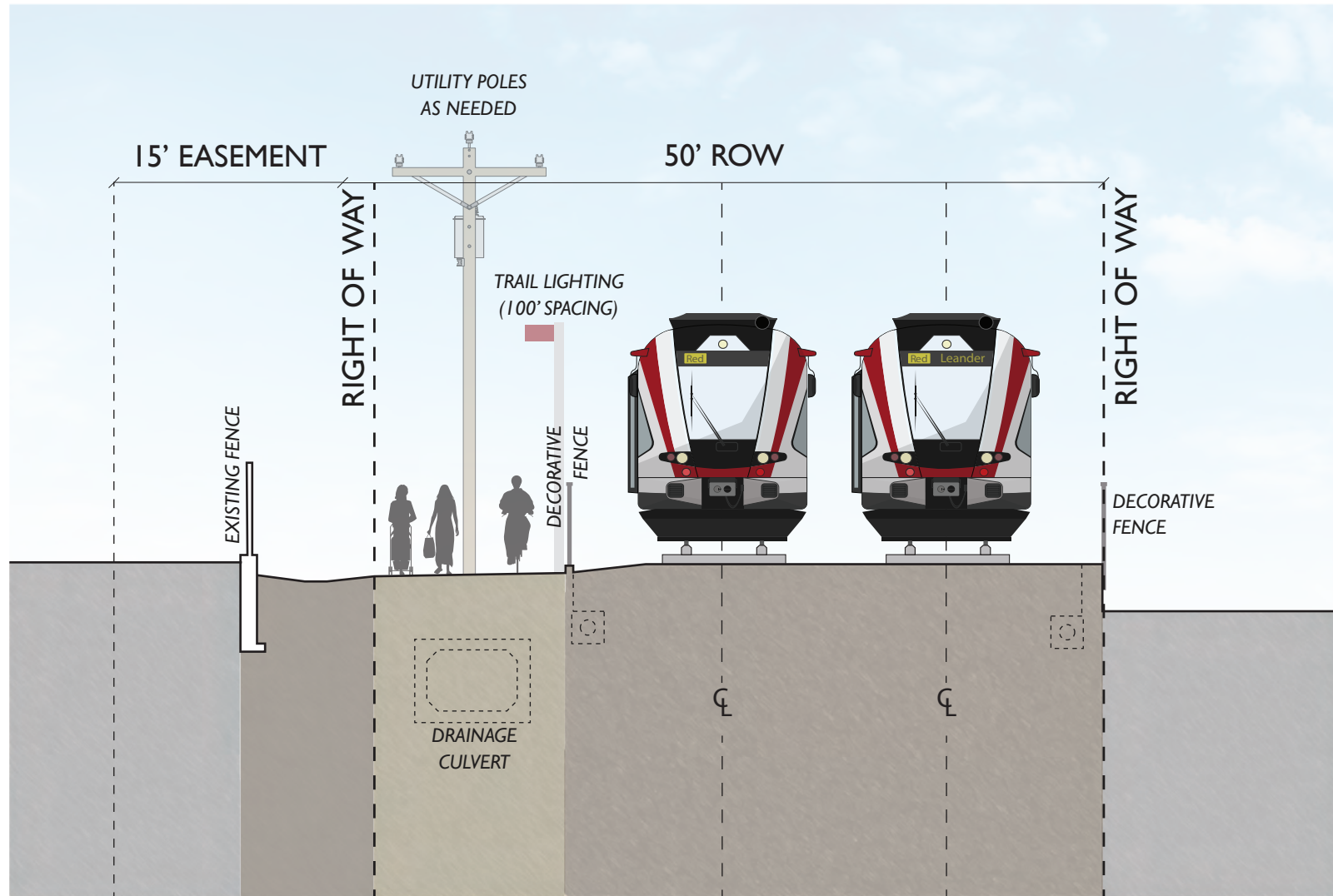
Howard Station



8. City of Austin: Waters Park Road

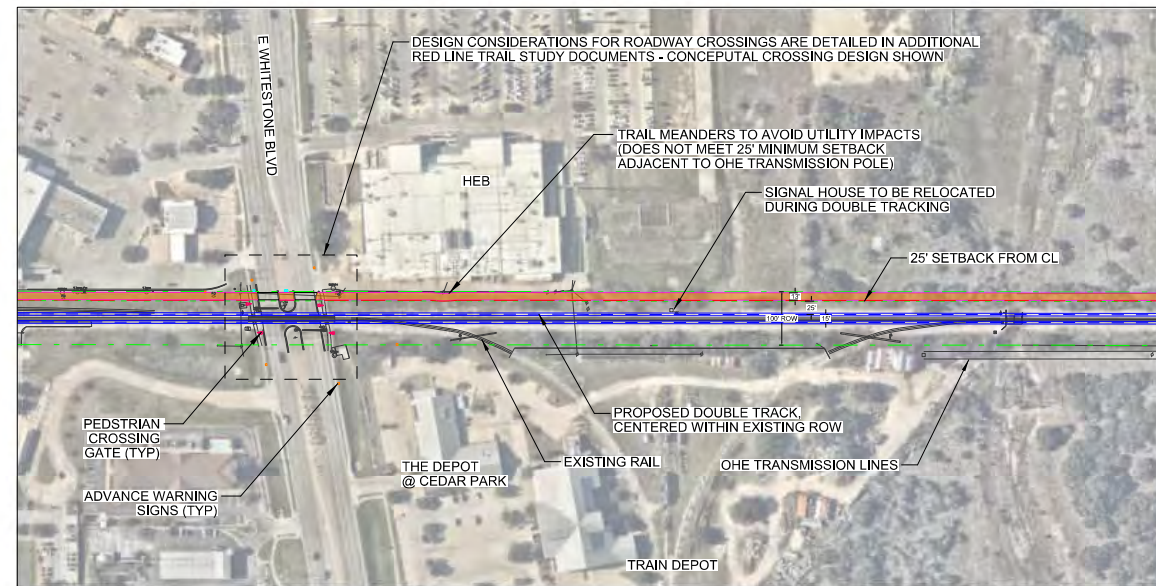


9. City of Austin: North of McKalla Station



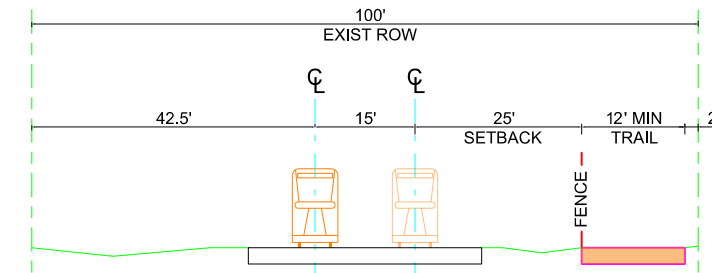


OVERALL PLAN VIEW
1"=30'



DETAILED VIEW
1"=10'

*SOUTH OF E WHITESTONE, TRAIL IS CONCEPTUALLY LOCATED TO THE WEST OF TRACKS FOR CONTINUITY - IF FUTURE TRAIL DESIGN IS LOCATED TO EAST, THE EXISTING PEDESTRIAN RAIL CROSSING AT E WHITESTONE SHALL BE DESIGNED WITH IMPROVEMENTS



TYPICAL SECTION
NOT TO SCALE

PLOT NUMBER: 10/10/2023 10:10:10 AM
DATE: 4/19/2024 10:10:10 AM

LEGEND

- EXISTING CAP METRO ROW
- RED LINE TRAIL
- PROPOSED FENCE
- FUTURE DOUBLE TRACKING

AECOM
13640 BRIARWICK DRIVE, SUITE 200
AUSTIN, TX 78729
TBP REG. NO. F-3580

CapMetro

SCALE	AS NOTED
DRAWN	
DESIGNED	
CHECKED	
IN CHARGE	
DATE	4/19/2024

CONTRACT SHEET No. 1 OF 1

RED LINE TRAIL STUDY
PILOT SEGMENT
E WHITESTONE BLVD TO NEW HOPE DR
OVERALL PLAN VIEW
DETAILED VIEW
TYPICAL SECTION

CONTRACT _____ DWG No. _____ REV _____

CapMetro
