


Design Guidelines for a Trail Project within CapMetro Rail Right of Way		CapMetro RWT-GDL 2.0
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Approved By:	 <small>Muriel Friday (Feb 26, 2024 15:13 CST)</small> VP, Rail Operations	
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1.0 INTRODUCTION

1.1 Purpose

- 1.1.1 Capital Metropolitan Transportation Authority (CapMetro) has developed Design Guidelines for a Trail Project within CapMetro Rail Right of Way to provide uniform and consistent standards for Rail-with-Trail design, construction and maintenance on the commuter and/or freight railroad right-of-way. CapMetro staff worked together in preparing and finalizing these guidelines. The proposed guidelines are intended to provide minimum standards and general requirements for the design, construction and maintenance of Rail-with-Trail in a manner compatible with safe operation of railroad corridors and with the rail capacity expansions envisioned for most corridors.
- 1.1.2 When a Rail-with-Trail is considered for joint use in an operating right-of-way, it should be considered in the context of the important priority role of a safe, maintainable rail transportation and freight corridor. Rail-with-Trail may affect CapMetro’s ability to provide commuter rail transportation and its obligation to the freight railroads under the Purchase and Sale and Shared Use agreements. However, Rail-with-Trail could be a community asset and when designed properly it can benefit CapMetro, and the communities where they are located. Rail-with-Trail can reduce nuisance problems, trespassing, dumping and vandalism; reduce illegal track crossings through channelization of pedestrians and bicyclists to grade-separated or other designated crossings; increase public awareness of the important service commuter and freight rail provide; improve access to transit and transit stations; increase community aesthetics and provide alternative transportation options. These guidelines seek to balance CapMetro’s and Member Agencies’ mandate to provide safe and efficient transportation to the public and the ability to meet interstate freight obligations.
- 1.1.3 CapMetro is the designated track owner of MetroRail and Austin Western Railroad, railroad system under the [Code of Federal Regulations \(CFR\), Title 49 “Transportation”, Subtitle B “Other Regulations Relating To Transportation”, Chapter II “Federal Railroad Administration, Department of Transportation”, part 213 “Track Safety Standards”, Section 5 “Responsibility of Compliance” \(49 CFR 213.5\)](#). As per part 213, CapMetro is required to provide minimum safety requirements for operation and maintenance of railroad tracks that are part of the general railroad system of transportation. The minimum requirements include roadbed, track geometry, track structure, track related devices and inspection. These guidelines are meant to be consistent with these requirements.

1.2 Scope

These guidelines apply to the CapMetro operated and maintained right-of-way. These guidelines do not apply to right-of-way fully owned by the Union Pacific Railroad, where CapMetro has entered into joint use agreements to operate CapMetro Rail service.

1.3 Definitions

- 1.3.1 **Public Agency** - the federal government and any agencies, departments or subdivisions thereof; the State of Texas; and any county, city, city and county district, public authority, joint powers agency, municipal corporation, or any other political subdivision or public corporation therein, requesting and sponsoring the Rail-with-Trail project.
- 1.3.2 **Rail-with-Trail** - a marked or established shared use path used by bicyclists, pedestrians, wheelchair users, joggers and other non-motorized users that is located on or directly adjacent to an active railroad corridor.
- 1.3.3 **Setback** - the distance between the centerline of the nearest railroad track (existing or planned) and the closest edge of the Rail-with-Trail.
- 1.3.4 **Centerline of Track** - an imaginary line midpoint between the track rails that conforms to the geometry of that track. The centerline is officially 28.25" from inside of rail. Centerline often is used in reference to the nearest track to a rail-with-trail when discussing such issues as setback and separation.

1.4 Referenced Standards

Rail-with-Trail will also comply with the current editions of the following referenced standards:

- 1.4.1 [The U.S. Department of Transportation, Federal Highway Administration, "Manual on Uniform Traffic Control Devices \(MUTCD\)"](#)
- 1.4.2 [The Texas Department of Transportation \(TxDOT\), "Manual on Uniform Traffic Control Devices \(MUTCD\)"](#)
- 1.4.3 [The Texas Department of Transportation \(TxDOT\), "TxDOT Bicycle Accommodation Design Guidance"](#)
- 1.4.4 [The Texas Department of Transportation \(TxDOT\), "Roadway Design Manual" \(Section 4, Bicycle Facilities\)](#)
- 1.4.5 [State of Texas Statutes, Transportation Code, Title 5 - Railroads, Subtitle Z - Miscellaneous Provisions, Chapter 191 "Structures and Materials Near Railroad or Railway"](#)

1.5 Other References

The following reports, which can provide valuable information on the planning, design, maintenance, and operation of the Rails-with-Trails will be referred to in the development, construction and operation of Rail-with-Trail:

- 1.5.1 [The U.S. Department of Transportation, Federal Railroad Administration, “Rails-with-Trails: Lessons Learned”](#)
- 1.5.2 [The American Association of State Highway & Transportation Officials \(AASHTO\), “Guide for Development of Bicycle Facilities”](#)
- 1.5.3 [The American Railway Engineering and Maintenance-of-Way Association \(AREMA\), “Manual for Railway Engineering”](#)
- 1.5.4 [The U.S. Department of Transportation, Federal Highway Administration, “National Bicycle and Walking Study – Current Planning Guidelines and Design Standards Being Used by State and Local Agencies for Bicycle and Pedestrian Facilities”](#)

2.0 REAL ESTATE REQUIREMENTS

2.1 Existing Facilities

- 2.1.1 The Public Agency should design the project in a manner that avoids any displacement of existing billboards, bus stops, leases and licenses on the right-of-way. If CapMetro agrees that the displacement is unavoidable, the Public Agency will coordinate proper disposition, including associated costs to be incurred by the Public Agency, with CapMetro and in accordance to the applicable conditions contained in the existing real estate agreements.

2.2 Proposed Agreement

- 2.2.1 Public Agency shall obtain a license agreement for the Rail-with-Trail from CapMetro whose right-of-way is directly affected by the project. The license agreement will include requirements, terms and conditions related to indemnification, license fees and compensations, assumption of risk and waiver, insurance, tests and inspections, maintenance and repair, breach, abandonment, reimbursement, construction, relocation, payments, hazardous/toxic materials, compliance with laws, etc. The Public Agency will contact CapMetro to request all information related to the real estate agreement. CapMetro will be the sole authority on the fees and compensations due from the Public Agency for the rights granted.
- 2.2.2 License agreement will also include requirements that provide for the removal and modification of the Rail-with-Trail to meet CapMetro’s mission to provide passenger rail transportation and their obligations to the freight railroads to provide rail freight service. At the request of CapMetro the Public Agency will remove, relocate, or modify, at its own expense, the Rail-with-Trail to accommodate additional track or tracks or other railroad related facilities in the right-of-way.

2.3 Permits

Public Agency will obtain and comply with any and all approvals, permits, licenses and other authorizations required by applicable laws, regulations, rules and ordinances for Rail- with-Trail project within the right-of-way.

3.0 PLANNING

3.1 Feasibility Study

Public Agency shall undertake a comprehensive feasibility analysis of the project. The feasibility study should describe the setting, the relationship to local planning documents, need for the project, land ownership, railroad activity present or future, and other information necessary to determine the feasibility. As a part of the feasibility study, environmental concerns, survey work, and location and ownership of impacted utilities should be analyzed pursuant to local, State, and Federal laws. The Public Agency is responsible for evaluating land titles and the potential deed restrictions within them. The Public Agency should, early in the process; involve affected stakeholders such as freight railroads, utility companies, law enforcement officials, adjacent landowners, Rail-with-Trail user groups, transportation, public transit, park and recreation departments. The feasibility study should include viable alternatives to any Rail- with-Trail that are proposed within an active right-of-way. The Public Agency is encouraged to identify and evaluate multiple alternative alignments, including at least one that is not on the railroad right-of-way. The feasibility study shall be subject to review and approval by CapMetro.

3.2 Safety Plan

Public Agency shall develop a public safety plan that includes engineering, maintenance standards, trespassing and crime prevention strategy; appropriate damage resistant construction materials; landscaping; provide secure access areas, barrier systems, video monitoring; coordinated and responsive patrol service, designating and enforcing rules and regulations; employing crime prevention strategies, such as education, informal signage, incident management; provide the fire and police department with map(s) of the system detailing access points and implementation schedule. The safety plan shall be subject to review and approval by CapMetro.

4.0 DESIGN

4.1 Submittal

After review and approval of the feasibility report and safety plan by CapMetro, the Public Agency shall submit a set of design drawings to CapMetro for review and approval. Any and all changes or modifications during the design and construction that affect the rail right-of- way shall also be submitted to CapMetro for review and approval.

4.2 Design Standards

- 4.2.1 Rail-with-Trail widths, clearances, sight distances, signs, markings, drainage grates, manhole covers etc. will be selected as per [TxDOT Bicycle Accommodation Design Guidance](#). [TxMUTCD](#) guidelines will also be referred to in the selection of signs, markings and signals.
- 4.2.2 If the Rail-with-Trail project creates an adverse impact at a grade crossing that did not previously exist, the Rail-with-Trail project will include mitigation as part of the design. The Rail-with-Trail design should acknowledge any future rail and highway improvements; and safety requirements, including but not limited to, turning radius for design vehicles, preemption timing, street profiles and rail and traffic signals at grade crossings. The Public Agency will work with CapMetro and the regulatory agency so as not to hamper or preclude such improvements and requirements.

4.3 Clearances

- 4.3.1 Rail-with-Trail shall be designed along the outer edges of the right-of-way adjacent to the property line, to the extent feasible.
- 4.3.2 Rail-with-Trail will be designed so as to maximize the Setback between the center line of the nearest track (existing or future) and the closest edge of the Rail-with- Trail to the extent feasible. The Setback clearance will take into consideration the type, speed and frequency of trains; separation technique, topography; sight distances; and CapMetro's maintenance requirements.
- 4.3.3 The recommended minimum Setbacks is 25 feet.
- 4.3.4 To not preclude future operational plans, the Rail-with-Trail shall accommodate space for double tracking along the 32-mile Red Line commuter rail corridor. The Public Agency shall consult with CapMetro regarding double tracking plans, designs and timelines. CapMetro reserves the right to repurpose ROW for double tracking and other rail infrastructure and improvements, pending available funding.
- 4.3.5 It may not be possible to provide recommended minimum Setbacks at certain points. While a railroad right-of-way may be sufficiently wide, the tracks may be within a narrow cut or fill section or adjacent to bluffs making placement of Rail-with-Trail very difficult. Safety will not be compromised at such points. Additional barriers, vertical separation or other methods will be employed.

4.4 Grade Crossings

- 4.4.1 CapMetro has established grade crossing guidelines. These guidelines have requirements for safe construction and maintenance of grade crossings and include CapMetro policy, regulatory responsibility, approval process, design criteria and other important requirements. Rail-with-Trail design and construction should meet the requirements shown on these guidelines.
- 4.4.2 Per the CapMetro Railroad Grade Crossing Standard and Procedure (2019), CapMetro will utilize grade-separated crossings as the preferred method for any roadway above two lanes of traffic. Where grade separation is not feasible, full signalization must be provided, which may include but is not limited to lights, gates and, where visibility is impaired, cantilevers. If a new grade crossing is required, a concerted effort will be made by the applicant to consolidate vehicular traffic from existing crossings to the new grade crossing.
- 4.4.3 Per the CapMetro Rail Systems Highway-Rail Grade Crossing Design Criteria (2014), pedestrian-rail grade crossing active warning devices shall be installed 15 feet from the centerline of the track, as measured from the center of the mast at new or existing crossings. A design deviation may be required for active warning devices installed less than 15 feet, but in no case, shall an active warning device be installed less than 12 feet from the centerline of the track.
- 4.4.4 Per the CapMetro Rail Systems Highway-Rail Grade Crossing Design Criteria (2014), any new highway-rail grade crossings are strongly discouraged by not only CapMetro but by TxDOT, the FRA and other State and Federal Agencies. New crossings typically require the

closure of one or more nearby existing highway-rail grade crossings.

- 4.4.5 Per the CapMetro Rail Systems Highway-Rail Grade Crossing Design Criteria (2014), pedestrian-rail grade crossings should be evaluated using the 10-minute walk rule to determine if a crossing has, or has the potential for, pedestrian activity. The rule is based upon research conclusions that pedestrians will walk ten minutes to reach their destination. This equates to a one-third to one-half mile walk. Therefore, if the crossing is located within this radius of schools, hospitals, substantial pedestrian generators or other facilities, then the Crossing Designer should consider pedestrian traffic features over the crossing.
- 4.4.6 The preference is to cross the track as close to 90 degrees as possible for visibility.
- 4.4.7 Any Public Agency trails, paths, or sidewalks will connect to CapMetro provided panels at rail crossings (existing). If rail panels are needed, the Public Agency will coordinate with CapMetro's Rail O&M contractor for design, cost, and installation of rail panel(s). The Public Agency will pay for the cost of pre-cast rail panel material and installation.

4.5 Surface

If the Rail-with-Trail is the only access for CapMetro and emergency response vehicles, the Rail-with-Trail surface and bridges will be designed and constructed to accommodate heavy railroad trucks and equipment, capable of carrying at least 60,000 pounds. When access for CapMetro and emergency response vehicles is available from an existing street, the Rail-with-Trail will be designed and constructed with curb ramps and pavement surface to accommodate heavy railroad trucks and equipment at pre-selected access points only. Choice of Rail-with-Trail pavement material and depth of sub-base, base and pavement will be determined by the Public Agency based on sound engineering design and judgment. Per the CapMetro Rail Systems Highway-Rail Grade Crossing Design Criteria (2014), preference is for a smooth, easily traversed surface that does not impede individuals with disabilities, strollers or carts, incorporated into the adjacent sidewalk topography.

4.6 Utilities

- 4.6.1 Public Agency will locate the existing CapMetro signal and track facilities on their plans during the design phase at Public Agency costs and expenses. The project should be designed to avoid any relocation of the existing CapMetro facilities. Relocation will only be considered during existing CapMetro construction, such as planned double tracking projects, due to severe operational impacts.
- 4.6.2 To not to interfere with current operations, the Red Line Trail must be out of the equipment footprint. Every at-grade crossing will have signals with intermediate signal houses about every 2 miles. 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. This requirement includes clearance for enclosure doors in any open, intermediate, or closed position. All house doors shall face away from the track.

- 4.6.3 After the acceptance of plans by CapMetro, the Public Agency will submit and obtain written approval of design drawings from telecommunications, fiber optic, gas, oil or other companies that have prior use of the right-of-way under easement or license agreements. The design and construction of the Rail-with-Trail may affect the existing utilities and may require the Rail-with-Trail to be changed to accommodate utilities.
- 4.6.4 The Public Agency should notify the appropriate regional notification center Texas Call Before You Dig #811, railway companies, and utility companies prior to performing any excavation close to any underground pipeline, conduit, duct, wire, or other structure.

4.7 Landscaping

Landscaping will meet the requirements included in “Landscaping Design Guidelines” published by CapMetro.

4.8 Fencing

- 4.8.1 If there is no existing fence, the Public Agency, at its sole cost and expense, will install welded wire mesh fencing as per CapMetro Engineering Standard. The fence will be located at the edge of the Rail-with-Trail to allow proper right-of-way access for equipment and maintenance needs. Exceptions may be granted by CapMetro, if the Rail-with-Trail design includes mitigation measures that include best practices to ensure safe trail use and rail operations, as per Section 8.0 of these guidelines. If the Rail-with-Trail is within CapMetro Rail right-of-way, exceptions to the fencing requirements will not be granted. Public Agency will install lockable gates every half-mile having CapMetro locks to access the right-of-way for maintenance purposes at locations provided by CapMetro. Public Agency should install “No Trespassing” warning signs as per CapMetro Engineering Standard.
- 4.8.2 Per the [TxDOT MUTCD](#), the height of the fence within 150 feet of at-grade crossings will be four (4) feet. The height of the fence in the balance of the right-of-way will be at least six (6) feet.

4.9 Lighting

Public Agency should provide lighting for the Rail-with-Trail if required by the local, state or federal guidelines, rules and regulations. Installation and ongoing maintenance for lighting for the Rail-with-Trail shall be the responsibility of the Public Agency and they shall abide by CapMetro rules when working within CapMetro Rail right-of-way.

4.10 Drainage

- 4.10.1 Public Agency, at its sole cost and expense, will provide and maintain suitable facilities for draining the Rail-with-Trail area and will not permit storm and irrigation water to flow or collect upon the right-of-way. The Public Agency should not have the sole responsibility to correct any existing drainage deficiencies on the right-of-way, however, the Public Agency will not make the conditions any worse than existing prior to the Rail-with Trail construction on the right-of-way.
- 4.10.2 The Rail-with-Trail and the area located between the Rail-with-Trail and the nearest railroad track should be graded to flow over the curb and onto the street, when the railroad track is at

the higher elevation than the surrounding ground and the street. When the railroad track is at a lower elevation than the surrounding ground and the street, a flat bottom swale (ditch) properly sized and flowing towards an existing or proposed stormwater facilities, such as inlet, underground pipe, swale, creek, wash or channel will be constructed.

- 4.10.3 Mounding of earth on the right-of-way may be permitted only if it will not adversely affect access, railroad maintenance activities, visibility and drainage on the right-of-way. The Public Agency should submit drawings showing the existing and proposed contour elevations to CapMetro. The final contour elevations will be approved solely by CapMetro. If allowed, imported soil will meet the CapMetro's specifications for clean backfill material.

4.11 Access

- 4.11.1 CapMetro must be able to readily access, inspect, repair and maintain drainage systems, bridges, tie and track replacement, tunnel and trestle, signal and communications equipment and grade crossing equipment from existing roadways. Utility companies must be able to readily access their facilities for maintenance and operation purposes.
- 4.11.2 The use of motorized vehicles is prohibited on the Rail-with-Trail, except for authorized emergency and maintenance vehicles including CapMetro and CapMetro Contractor maintenance vehicles. Appropriate signage will be placed at all entrances to the trail designating restricted use not foreseen in the design of the Rail-with- Trail.
- 4.11.3 The Rail-with-Trail shall be subject to and subordinate to the rights of all current and future tenants and licensees of CapMetro, including the rights of reasonable access over the Rail-with-Trail project.

5.0 CONSTRUCTION

- 5.0.1 Public Agency shall comply with the rules and regulations contained in the current editions of the following CapMetro documents during the construction of the project: Request of Right of Way License agreement (CapMetro Form RE-1), Request for Railroad Right of Way Permit (CapMetro Form RE-3), Roadway Worker In Charge (RWIC) Request (CapMetro Form RE-7).
- 5.0.2 CapMetro will not allow any approved parties to cause or permit any hazardous materials to be brought upon, stored, used, generated, or treated on or about the right-of-way. The Public Agency will not bring in or use any imported soil unless it has been tested.

6.0 MAINTENANCE

- 6.0.1 The Public Agency must assume responsibility for trail maintenance, liability and safety of trail users.
- 6.0.2 Public Agency shall maintain the Rail-with-Trail, fence, gates, signs, landscaping, and any other improvements that are part of the licensed Rail-with-Trail project area, in good order and condition to the satisfaction of CapMetro, at its own cost and expense.
- 6.0.3 Public Agency shall notify CapMetro five (5) working days in advance of any construction or maintenance activity that will occur within the right-of-way. Public Agency shall be

responsible to reimburse CapMetro the actual cost and expense incurred by CapMetro for all services and work performed in connection with the project including a computed surcharge representing CapMetro's costs for administration and management.

- 6.0.4 Public Agency will ensure that warning signs, which explain the importance of staying on authorized Rail-with-Trail only, and off railroad property, are prominently displayed and regularly maintained. CapMetro will rely on the Public Agency to enforce trespassing and vandalism laws. Public Agency Police will provide patrols, respond as needed and issue citations and warnings as appropriate.

7.0 EXCEPTIONS

- 8.0.1 Topography, environment, right-of-way widths, obstructions, utilities etc., may make it difficult to follow all the requirements of these guidelines. In order to strike a balance between CapMetro and Member Agencies' mandate to provide safe and efficient transportation to the public and the ability to meet interstate freight obligations and aesthetic benefits offered by the Rail-with-Trail, CapMetro may grant deviations or variances from these guidelines provided that the project as a whole is consistent with the overall intent of the guidelines.
- 8.0.2 The Public Agency will prepare an engineering report showing in precise details the changes and deviations and provide support for their position.

7.1 Minor Deviations

The CapMetro Vice President of Rail Operations may permit minor deviations from these guidelines. Minor deviations, which would be considered, are as follows:

- 7.1.1 Vertical separation between the tracks and the Rail-with-Trail, which could enhance safety and railroad operations, maintenance and construction issues and activities.
- 7.1.2 Locations where a minor deviation granted for a short segment or segments of the Rail-with-Trail would enable successful development of a lengthier segment of the Rail-with-Trail in accordance with these guidelines.
- 7.1.3 Circumstances where short or minor deviations from the guidelines would produce significant benefits for the Rail-with-Trail.
- 7.1.4 Other approved measures, which could enhance safety and railroad operations, maintenance and construction issues and activities.

7.2 Major Deviations

CapMetro Chief Executive Officer concurrence on a case-by-case basis may permit major deviations consistent with the overall intent of these Guidelines. Major deviations are those that require the entire Rail-with-Trail to deviate from the most important safety and rail related requirements of these guidelines.

Document Review and Revision History

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V1.0	Original Version	August 30, 2023
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END OF DOCUMENT