

# Austin Light Rail: Austin Transit Partnership

DEC. 12, 2024

# ENGINEERING AND ARCHITECTURAL DESIGN



3<sup>rd</sup> Party Coordination



Design & Project-wide  
Requirements In  
Development

# DESIGN READINESS



## Utilities

- Utility Rules Of Practice (UROP)
- Mapping
- Conflicts and relocations
- Betterments

Water Utility Agreements (MUAs) Status and Next Steps

Partnership	Agreement Type	Agreement Purpose	Priority	Status	Final Agreement Needed?	Anticipated Timeline for Execution / Agreement	Execution (Actual)	ATP Lead	ATP Change	FORM Lead
COA/CMA	Joint Powers Agreement	- Defines high-level responsibilities, include assignment of parties, project sponsor	1	COMPLETE	Entry into Project Development	TBD				
COA	Utility Rules of Practice (UROP)	- Specifies definition of City utility conflicts and requirements for relocation	1	COMPLETE	DEE	TBD	Jun-23	John B.	John R.	John S.
COA	Utility Rules of Practice (UROP) Revision 1	- Revises Requirements for Relocation (Revised Utility Area Zone and Utility Review Zone) from current UROP	1	IN PROGRESS	CHCA/ Utilities Contract NTP (September 2024)	Feb-24		John R.	John R./John L.	George K./Sean B.
COA	Right of Way Use / Condemnation Authority	- Allows ATP to Use City ROW - Allows Use of City condemnation authority for eminent domain	1	IN PROGRESS	ROO Intro to Engineering (August 2023)	Apr-23		John R.	Alex G.	Lisa C.
COA	Design & Construction	- Defines design, review, and cost responsibilities during design - COA agreement includes City-owned utilities (Austin Water, Austin Energy) in addition to various City departments	1	IN PROGRESS	Entry to Engineering	Sep-23		John R.	Allen L.	Sean B.
COA	Transit Signal Priority (TSP) Commitment Letter	- Provides commitment to City and ATP working together on implementation of TSP - Supports ATP's mode assumptions, provides assistance to ATP that TSP will be implemented	1	COMPLETE	7/17/2024	Jun-24	Jul-24	Deion L./Allen L.	Amy G.	Sean B.
COA	Betterments Amendment to Design & Construction Agreement	- Defines specific betterments to be incorporated into project	2	NOT STARTED	Final Design of advance utility package (if applicable) OR Final UT design	Jun-23		John R.	Allen L.	Sean B.
COA	Operations & Maintenance	- Defines O&M and related cost responsibilities after start of revenue service	1	NOT STARTED	Completion of construction of advance utility package	Dec-23		John R.	John R.	Sean B.
CMA	Operations & Maintenance	- Defines O&M and related cost responsibilities after start of revenue service	1	NOT STARTED	Completion of Construction	TBD		John R.	John R.	Sean B.
HOOP	State/District Letter of Authority - Clear Channel II (35' Clearing)	- Allows construction by ATP within HOOP ROW	3	NOT STARTED	PPSA	Jan-24		Lindsay W.	John R.	Sean B.
HOOP	State/District Letter of Authority - 35' Clearing	- Allows construction by ATP within HOOP ROW	3	NOT STARTED	PPSA	Jan-24		Lindsay W.	John R.	Sean B.
HOOP	Multiple Use Agreement	- Defines operations and maintenance responsibilities of LRT infrastructure installed within HOOP ROW	3	NOT STARTED	Completion of Construction	TBD		John R.	John R.	Sean B.
HOOP	Water Utility Agreements, with individual work orders	- Defines responsibilities, cost and payment for utility relocation design and construction	1	IN PROGRESS	Final design of advance utility	Jun-23		John R.	John R.	George K./Sean B.



## Permitting & Ordinances

- Light Rail permitting manual
- Code and Criteria working groups



## Agreements

- City of Austin: ROW, Design & Construction
- Operations & Maintenance
- TxDOT ROW
- Private utilities

**Austin Transit Partnership**  
Austin Light Rail  
Utility Rules of Practice Revision 01

Austin, TX  
September 13, 2024

DATE: September 13, 2024  
PROJECT: Austin Light Rail  
TO: Lindsay Wood, Executive V, Construction, Austin Transit; Jessica Brasher, Mobility & Management Service Dept; Robert Goode, Assistant City Engineer; Ghazlene Badawi, Executive Director; Jorge Morales, Director; Bob Kahn, General Manager; Richard Mendoza, Director, Department; Steve Ralls, Houston, District; Greg Canally, Executive Director; Liane Conte, Chief of Staff, Management Services Dept; John Rhoads, Senior Vice President, Austin Transit Partnership;  
FROM: Jennifer Simmons, Manager, Office, Management Services  
SUBJECT: Utility Rules of Practice Rev 01

Voters in Austin approved Proposition A, a \$7.1 billion bond issue in November 2020. The referendum marked a milestone in Austin's history as it provided the financial support for a high-capacity transit solution. This solution is essential to meeting the needs of all modes of transportation.

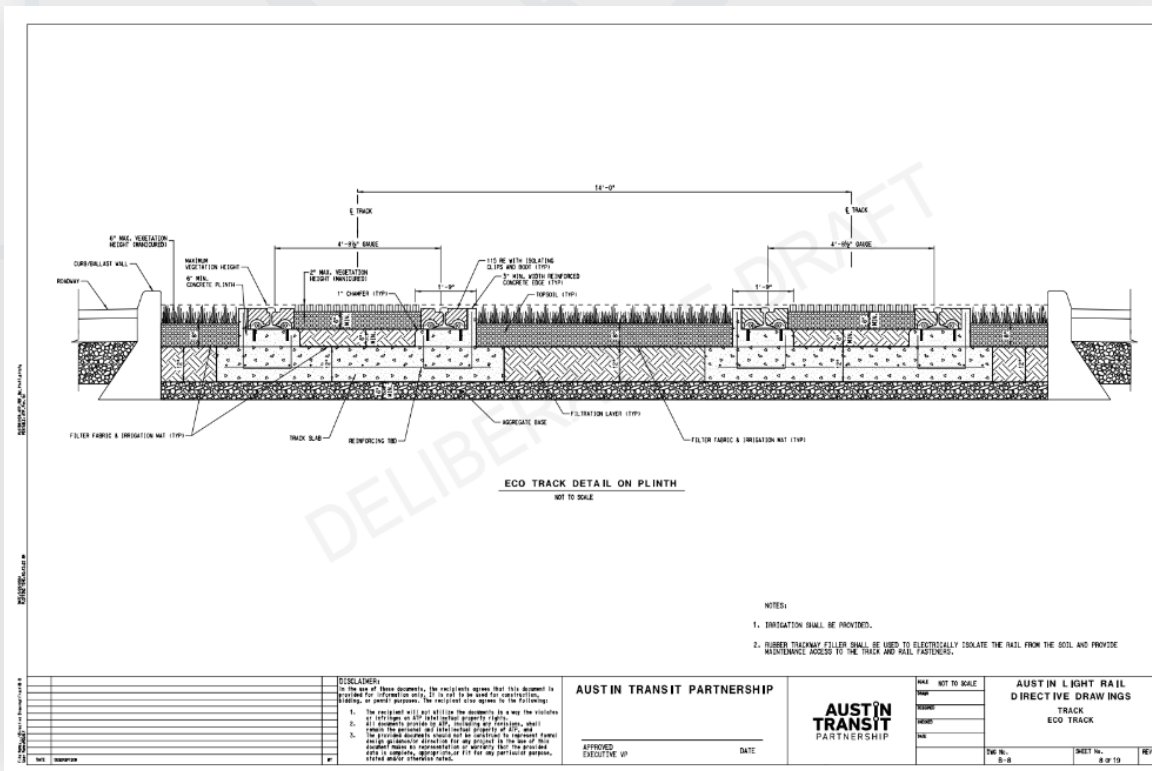
Austin City Council and Capital Metropolitan Transit Authority (ATP) as a local government have entered into a Joint Powers Agreement (JPA) with the City of Austin to provide financial support. A Joint Powers Agreement approved by each of the three entities that state:

The Parties commit to working on the methodology for analyzing, reviewing, and approving Light Rail.

December 2024 | 9

# DESIGN AND PROJECT-WIDE REQUIREMENTS IN DEVELOPMENT

## Design Criteria, Standards and Specifications



**AUSTIN TRANSIT PARTNERSHIP**

**Austin Transit Partnership**  
Austin Light Rail  
*CADD Standards Manual*

Austin, TX  
June 2024

AUSTIN LIGHT RAIL  
DIRECTIVE DRAWINGS  
TRACK  
ECO TRACK

DWG NO. 81-18 SHEET NO. 81-19 REV

Austin Light Rail Design Criteria Manual  
Chapter 4 - Civil and Infrastructure

**AUSTIN TRANSIT PARTNERSHIP**

4 Civil and Infrastructure

4.1 Introduction

The civil/infrastructure design criteria shall provide guidelines for design elements associated with the city-maintained streets (city jurisdiction), Texas Department of Transportation (TxDOT) maintained roads (TxDOT jurisdiction) and privately maintained streets.

4.2 Codes and Standards

Unless specifically noted otherwise in these criteria, the latest edition of the code, regulation, and standard that is applicable at the time the design is initiated shall be used. Designer shall meet with agencies to determine jurisdiction of each facility. The Basis of Design shall list standards applied to each jurisdiction's roadways. Should a conflict between codes or ordinances and these criteria be found, the more stringent requirement shall govern. In any case, Austin Transit Partnership (ATP) should be notified in writing of any conflicts discovered. If a new edition or amendment to a code, regulation, or standard is issued before the design is completed, the design shall conform to the new requirement(s) to the extent practical or required by the agency enforcing the code, regulation, or standard changed, and as agreed to by ATP.

4.2.1 Federal

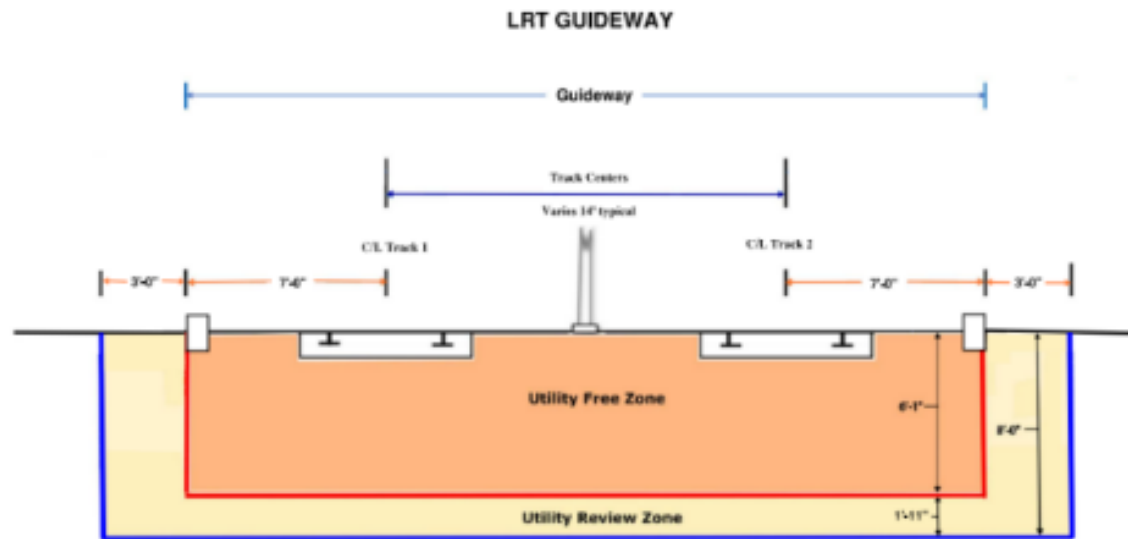
The following federal standards, codes, regulations, and guidelines are applicable:

- Americans with Disabilities Act (ADA), 49 CFR, Part 37, Transportation Services for Individuals with Disabilities
- 2010 ADA Standards for Accessible Design, Department of Justice
- ADA Access Guidelines for Buildings and Facilities (<http://www.access-board.gov/guidelines-and-standards/buildings-and-sites/about-the-ada-standards/ada-standards>)
- Public Right-of-Way Accessibility Guidelines (PROWAG), US Access Board
- Hydraulic Design of Highway Culverts, HDS 05, Federal Highway Administration (FHWA)
- Hydraulic Design of Energy Dissipators for Culverts and Channels, *Hydraulic Engineering Circular* (HEC) 14, FHWA, Evaluating Scour at Bridges, HEC 18, FHWA
- Bridge Deck Drainage Systems, HEC 21, FHWA
- Urban Drainage Design Manual, HEC 22, FHWA
- Railroad-Highway Grade Crossing Handbook, Report No. FHWA-TS-86-215

# DESIGN AND PROJECT-WIDE REQUIREMENTS IN DEVELOPMENT

## Utility Rules of Practice (UROP)

Figure 2: Typical LRT Guideway Cross-Section

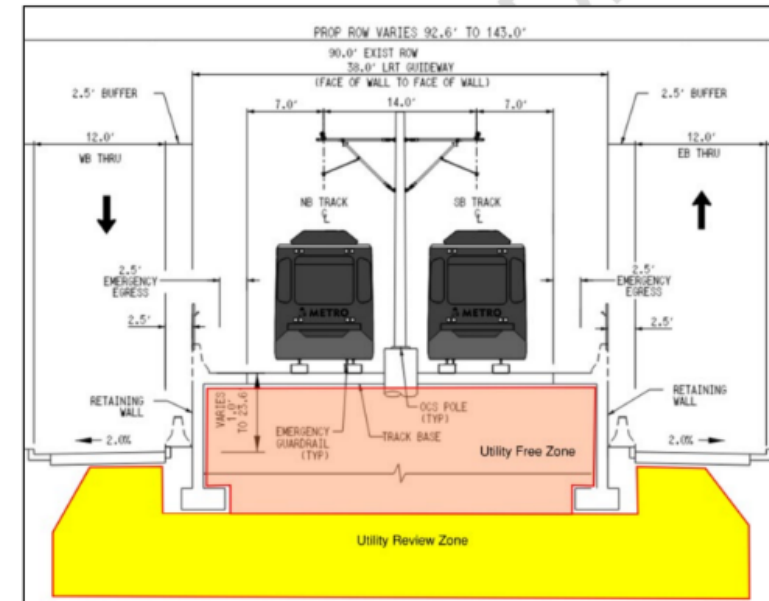


### 3.3.2 Retaining Wall (Fill)

Structures that are constructed within the right-of-way or in easements will present challenges for utilities adjacent to those structures. Design of structures to be constructed in the right-of-way and in easements is governed by Section 13 of the Transportation Criteria Manual. The impacts of constructing retaining walls structures adjacent to utilities will be reviewed on a case-by-case basis.

**NOTE:** All parallel utilities located under the guideway will need to be relocated in these sections. Perpendicular utility crossings under the retaining wall section will be reviewed on a case-by-case basis to determine if they need to be relocated. Utility Review Zone is defined by the retaining wall design. Parallel utilities outside the retaining wall section will be reviewed on a case-by-case basis depending on the retaining wall design.

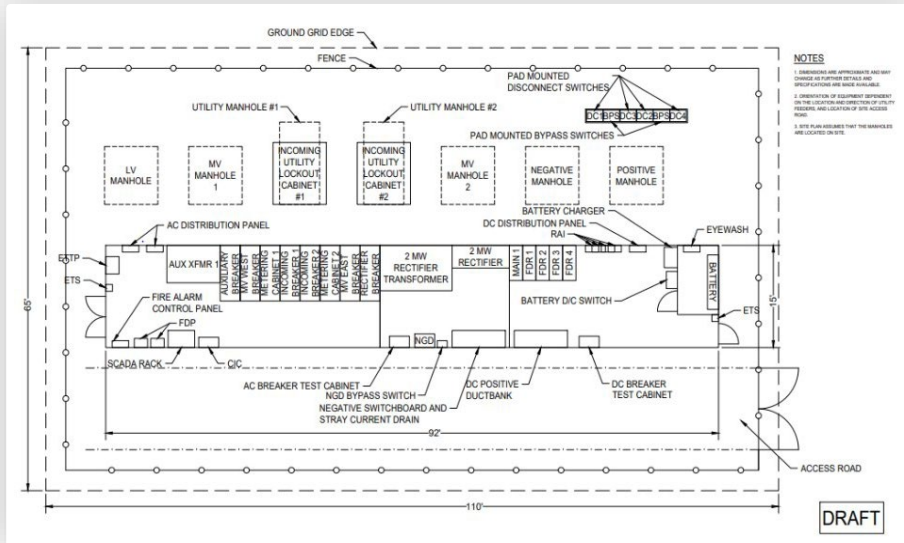
Figure 6: Retaining Wall Fill Cross-Section



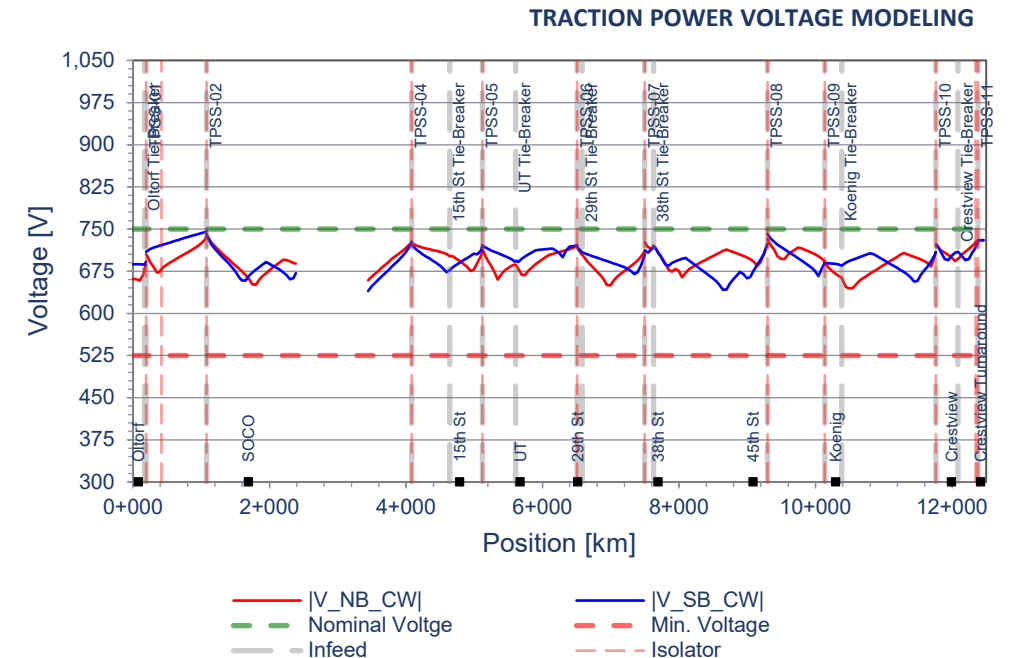
# DESIGN AND PROJECT-WIDE REQUIREMENTS IN DEVELOPMENT

## Power Distribution & Rail Systems

- Power modeling to determine power needs and resiliency
- Coordinate with Austin Energy on power supply points
- Preliminary locations of system infrastructure



TYPICAL LAYOUT OF A TRACTION POWER SUBSTATION



# DESIGN AND PROJECT-WIDE REQUIREMENTS IN DEVELOPMENT

## Light Rail Vehicles

### Key Considerations

- Customer experience & community input
- Operational and Maintenance needs
- Commercial Terms and State of the Industry
- Cost and Schedule

Industry Review Scheduled For Spring 2025

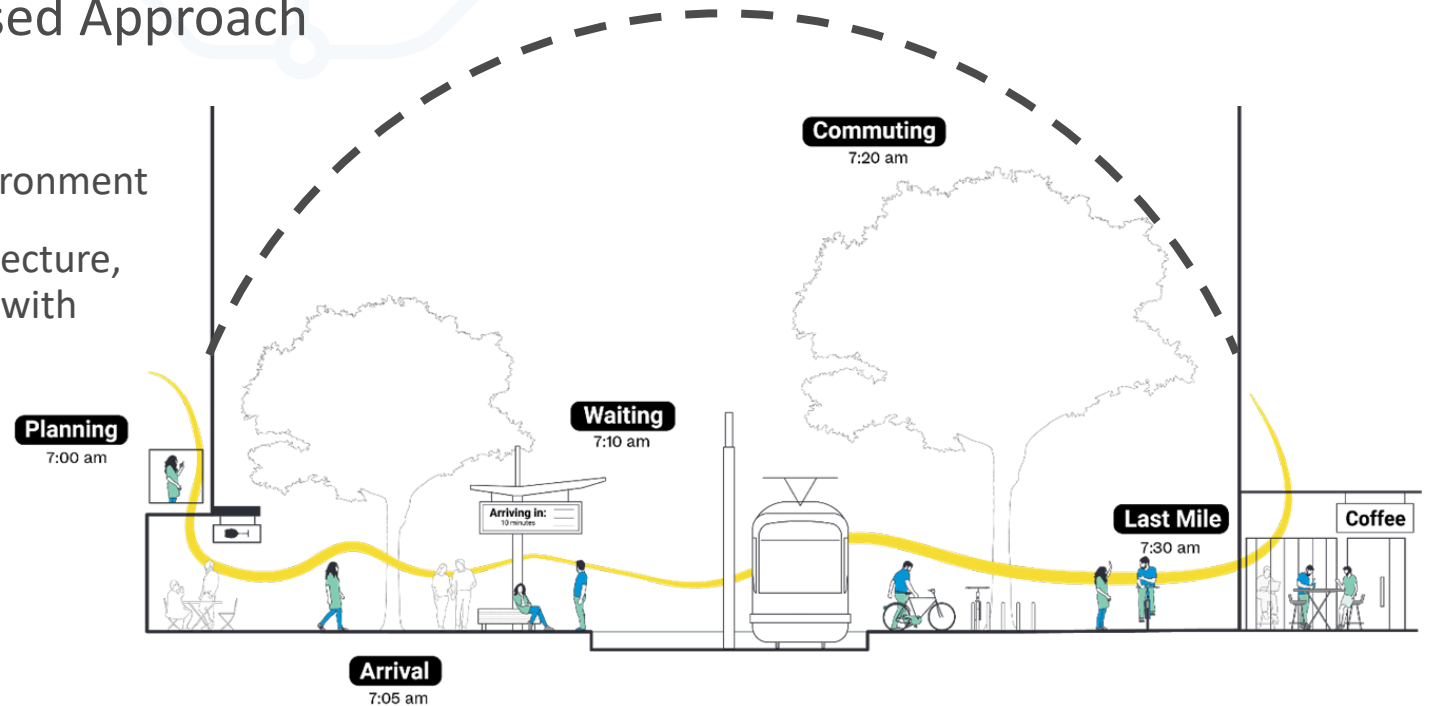


# DESIGN AND PROJECT-WIDE REQUIREMENTS IN DEVELOPMENT

## Architecture and Urban Design Guidelines

### A People-centered, Performance-based Approach

- Focus on the user experience of the transit environment
- Multi-disciplinary and holistic: integrating architecture, urban design, landscape, and wayfinding needs with engineering
- Addresses key criteria at multiple scales:
  - System-wide
  - Neighborhood
  - Station Area
  - Station Platform





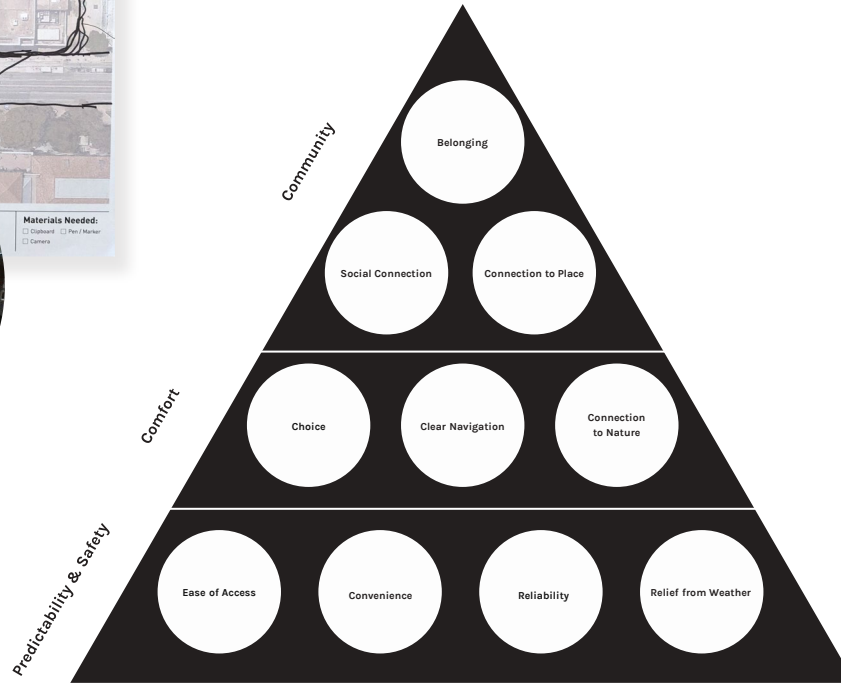
# DESIGN AND PROJECT-WIDE REQUIREMENTS IN DEVELOPMENT

## Architecture and Urban Design Guidelines

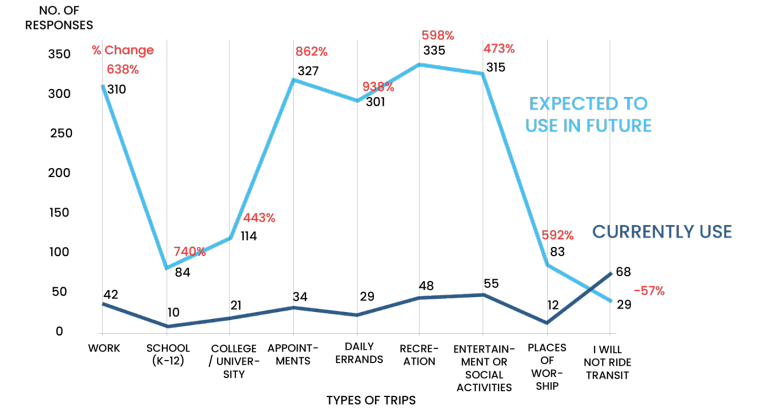
Informed by Research and Community



Behavioral and Place-Based Research



User Needs Evaluation



Community Dialogue

# DESIGN AND PROJECT-WIDE REQUIREMENTS IN DEVELOPMENT

## Architecture and Urban Design Guidelines

### Five Framing Concepts for Design

- Light Rail as a Greenway
- Stations Anchor Neighborhood Hubs
- Consistent and Site-Specific
- Intuitive and Comfortable for Everyone
- Resilient and Cost-Effective

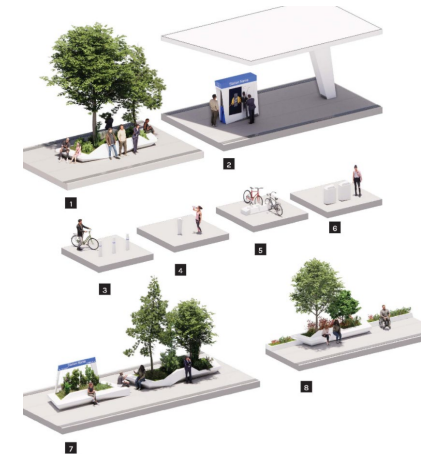
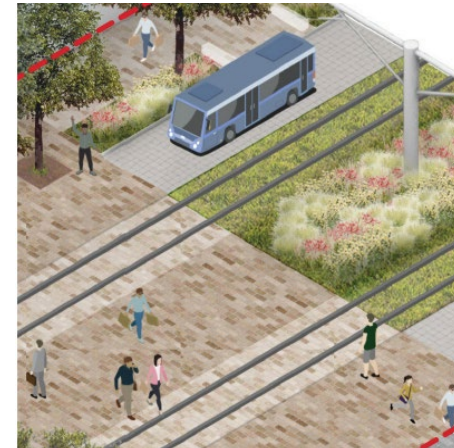


Multi-functional use of poles for lighting and signage

Visible Real-time Information

Visible station architecture to indicate the platform location

Trees and Poles establish a boundary between pedestrians and trains



# DESIGN AND PROJECT-WIDE REQUIREMENTS IN DEVELOPMENT

## Sustainability Criteria and Guidelines


- Links to Third-Party Rating Systems
- Provides a crosswalk for design development
- Sets Baseline Sustainability Criteria
- Supports tracking and reporting
- Provides a flexible toolkit

### Structure of the Guidelines

The *Guidelines* cover the following topics, which are generally aligned with the Sustainability Vision Plan Action Areas:

<b>1</b>	<b>Green Building and Infrastructure</b>	<b>2</b>	<b>Environmental Resilience and Sustainability Management</b>
<b>3</b>	<b>Water and Natural World</b>	<b>4</b>	<b>Zero Waste and Natural Resource Management</b>
<b>5</b>	<b>Energy Conservation, Efficiency, and Renewables</b>	<b>6</b>	<b>Sustainable Electric Equipment and Zero-Emission Fleet</b>
<b>7</b>	<b>Active Transportation</b>	<b>8</b>	<b>Equity, Accessibility, Human Health, and Social Sustainability</b>

AUSTIN LIGHT RAIL SUSTAINABILITY CRITERIA AND GUIDELINES | Chapter D: Sustainability Guidelines



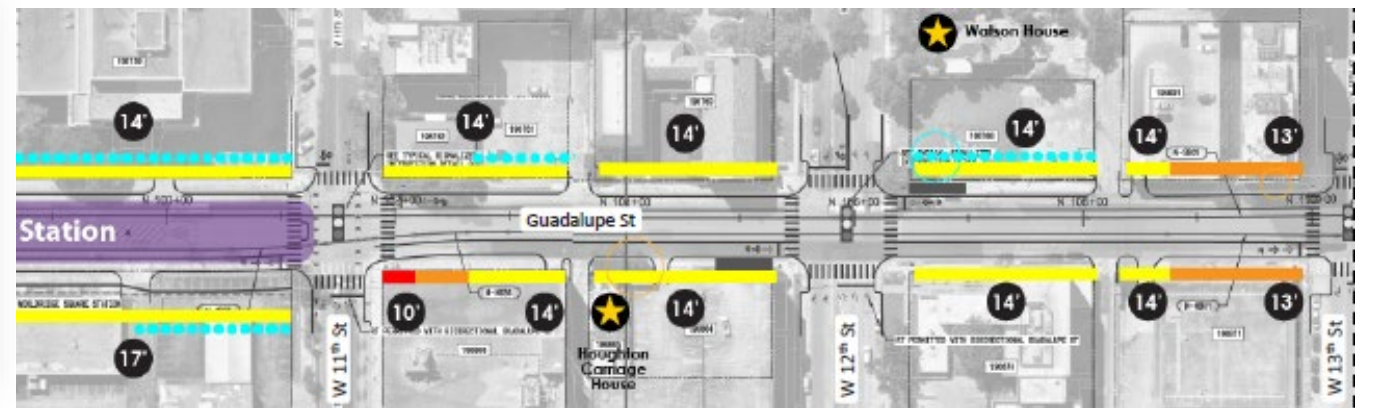
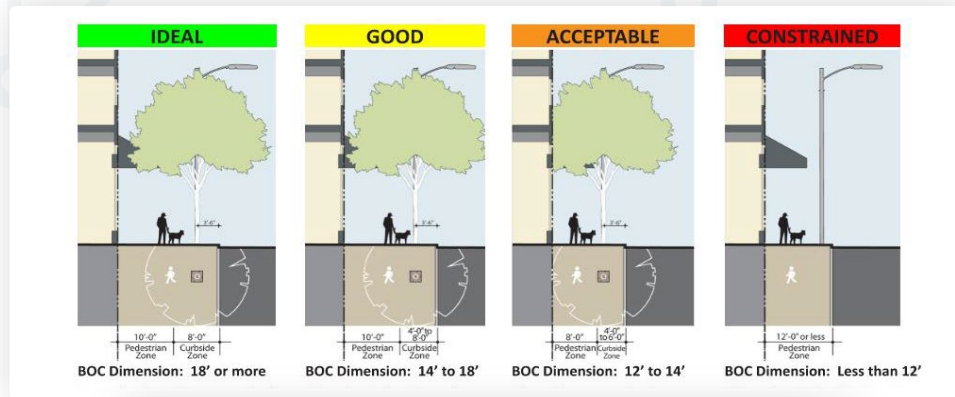

The image displays a grid of 12 detailed guideline pages, each corresponding to a section in the main structure. Each page includes a title, a sub-section, and a 'Related Benefits' icon grid. The pages are:

- 1. Green Building and Infrastructure**: 1.1. Include Integrated Project Goals and Testing
- 2. Environmental Resilience and Sustainability Management**: 2.1. Plan for Operations and Maintenance
- 3. Water and Natural World**: 3.1. Select Drought-Resilient and Water Efficient
- 4. Zero Waste and Natural Resource Management**: 4.1. Provide Recycling, Collection, Storage, and Composting Facilities
- 5. Energy Conservation, Efficiency, and Renewables**: 5.1. Design for Energy Efficiency
- 6. Sustainable Electric Equipment and Zero-Emission Fleet**: 6.1. Use Electric Equipment and Appliances
- 7. Active Transportation**: 7.1. Utilize Inclusive Design
- 8. Equity, Accessibility, Human Health, and Social Sustainability**: 8.1. Provide Economic Benefits and Other Incentives

# DESIGN AND PROJECT-WIDE REQUIREMENTS IN DEVELOPMENT

## Mobility Integration and Back of Curb Prioritization Guide

- Assists future Design and Engineering teams
- Refines key regulatory frameworks
- Informs future adjacent development, both public and private



### LEGEND

#### BACK-OF-CURB (BOC) CONDITION

- - Indicates segment with a BOC width less than 12'-0"
- - Indicates segment with a BOC width greater than or equal to 12'-0" but less than 14'-0"
- - Indicates segment with a BOC width greater than or equal to 14'-0" but less than 18'-0"
- - Indicates segment with a BOC width greater than or equal to 18'-0"
- - Indicates adjacent parcel with no improvements that would preclude expanding BOC facilities beyond the ROW line
- - Property with Approved Site Development Permit
- - LRT Station
- ↩ - Dedicated Left Turns

#### BOC Condition

- Ideal: 18' or more
- Good: 14' to 18'
- Acceptable: 12' to 14'
- Constrained: Less than 12'

- # Dimension from Face-of-Curb to Existing or Proposed ROW
- ↕ Section Cut
- LRT Station
- ★ Historic Landmark

- Adjacent parcel with no improvements that would preclude expanding BOC facilities beyond the ROW
- Property with Approved Site Development Permit

#### Existing Trees - Chance of Preservation

- - 30%
- - 60%
- - 90%

EXAMPLE: DOWNTOWN SEGMENT

# DESIGN AND PROJECT-WIDE REQUIREMENTS IN DEVELOPMENT

## Comprehensive Tree Manual

- Provides a comprehensive approach to both existing and new trees, in alignment with Code/Criteria

### ON-GRADE SYSTEM | CONCRETE PAVEMENT | SCM-1

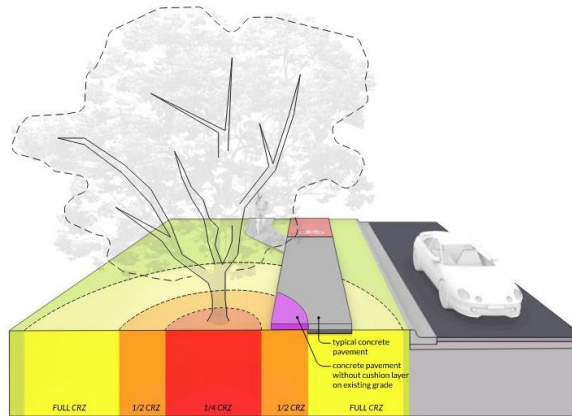
#### DESCRIPTION

In suitable areas with minimal grade change, this modified version of a standard concrete sidewalk omits subgrade layers traditionally found in concrete sidewalk construction and instead proposes the concrete slab to rest directly on existing grade.

This small modification does not disturb the existing grade or soil below, but instead builds on top of the existing grade within the allowable excavation depth limits set by the City of Austin code (maximum of 4" cut or fill ECM 3.5.2.A.1).

#### PRE-CONSTRUCTION REQUIREMENTS

- Confirmation of soil stability for area of special construction
- City Arborist review and approval for construction within critical root zone of protected/heritage tree species
- Tree Preservation and Protection measures per ECM 3.5.2
- Canopy conflicts and pruning (if necessary) should be assessed in conjunction with the COA Arborist for required pathway clearances.
- Collaboration for modification of COA Standard Detail for sidewalk with Public Works official.



#### BENEFITS

- No disturbance to existing grade and root system
- Minimal modification to standard sidewalk construction
- Does not require the use of heavy equipment to be installed



	Outside CRZ	Full CRZ	Half CRZ	Quarter CRZ
<b>ON-GRADE SYSTEM</b>				
concrete pavement traditional	Ref. COA Standard Detail No. 4325-1	<ul style="list-style-type: none"> <li>50% or less of the total CRZ is preserved at natural grade, with natural ground cover</li> <li>entirety of Half CRZ must be protected, w/ exception that cut/ fill of 4" or less is allowed</li> <li>No cut/ fill within Quarter CRZ</li> </ul>	not allowed	not allowed
concrete pavement less than 4" excavation			SCM-1	not allowed
pervious pavement less than 4" excavation			SCM-2	not allowed
<b>SUSPENDED SYSTEM</b>				
concrete pier and beam			SCM-3	not allowed
helical piers			SCM-4	not allowed
pin pier			SCM-5	not allowed
grating				SCM-6

- Not Applicable
- Allowed (per COA Code Standards)
- Allowed (under specific conditions)
- Approvable by COA Arborist (see SCM guideline reference)
- Not allowed

# 2025 LOOK AHEAD



## Advancing Project Development

- Environmental Clearance Obtained
- On-board Delivery Partner
- Preliminary Engineering
- 3<sup>rd</sup> Party Agreements, including Utility Agreements and Design & Construction Agreement



## Preparing for Construction

- Permitting and ordinance amendments
- Issue final design / construction solicitations
- Issue light rail vehicle solicitation
- Implement Project Management Information System
- Develop Business Assistance Program
- Develop Public Art Program

THANK YOU