

*Denver Union Station*

# Wayfinding Report

FINAL

September 2024

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# Executive Summary

## Connecting the Vision

Denver Union Station has a long history in the city and region. From its opening in 1881, it has been both a landmark and an important point of arrival and departure in the city.

The current facility was described in the 2004 Denver Union Station Master Plan as a, "multimodal transportation hub of international significance, and a prominent and distinctive gateway to Downtown Denver and the region." To achieve this, investment and commitment was required from a wide range of people, companies, and agencies.

The result of this huge investment is some individually impressive facilities. Denver Union Station (DUS) is well-managed, with effective services operating regular schedules. However, the development process, which transformed the original vision for a single underground complex into a campus of modal facilities, has resulted in challenges to customer perception and navigation. Awareness of this problem is the origin of this wayfinding study.

RTD commissioned the study to outline a wayfinding strategy and recommend actions. The study includes desk research, site assessment, a signage audit, and meetings with RTD management and frontline staff. The information gathered in the research provides the basis for a set of central observations about the problems of wayfinding at DUS:

- Problems related to the physical legibility of DUS. In simple terms, DUS is hard to imagine because it consists of three major modal facilities and related services spread across several city blocks both above and below ground that are indirectly connected by various paths;

- Problems related to how modal facilities and services are described. Inconsistencies in terminology, the organization of directions, and types of information create a disjointed and confusing experience.
- Problems related to the design of information. The graphic layout, the size and location of screens, and the heavy use of text combine to reduce the intuitiveness of information.

The study takes these observations and translates them into a plan consisting of four major strategies.

- Strategy #1 Identification
- Strategy #2 Orientation
- Strategy #3 Navigation
- Strategy #4 Information Design

These strategies outline ideas, examples, and proposals for a simpler more structured wayfinding experience at DUS. They include both quick wins and larger concepts for development in future phases of work.

The plan also identifies that improvement at DUS cannot easily be separated from wider regional-scale considerations. Recommendations for reviewing naming and coding of facilities and services, and for creating a regional transit wayfinding standard both imply network wide change.

The final recommendations in the report describe options to build the case for developing the plan and strategies. The proposed next step is a pilot of information design intended to identify public and stakeholder support for the required investment of resources.





# Section 1. Introduction to Wayfinding

- 1.1 What is 'Wayfinding'?
- 1.2 The Value of Wayfinding
- 1.3 Code and Best Practice References





# 1.1 What is 'Wayfinding'?

At its simplest level, wayfinding is the process of 'finding your way' to a destination. While on the move, we are constantly, and often subconsciously, confirming our location and orientation using physical cues and information. We also recall memories from previous journeys to help us understand the environment we are in. Wayfinding information in the form of maps, signs, markings, landmarks, and digital devices all contribute to this process.

Unfortunately, wayfinding information often falls short of what people need. This means that for people who are new to an area, place, or mode of transportation, wayfinding can be a difficult or even an anxious process. These types of challenges can quickly lead to a bad experience that can form negative opinions and deter someone from trying again.

The consistent planning and design of wayfinding information is particularly important for transit. Strategies to increase ridership must overcome the barriers of unfamiliarity with outwardly complex schedules, fares and practices for using different modes.

Wayfinding is especially vital for journeys that include several stages and transfers between services. While smartphone trip planning and mapping apps provide many people with some of this information, they are not available to all and can't yet support all the specific complexities of an individual journey.

There remains an important and expected role for transit systems to provide physical information including identity signage, directions, trip planning, and service information.

## Principles

The consistency, continuity and reliability of wayfinding information builds user confidence and, as a result, improves their experience of transit. To achieve these qualities, wayfinding designers apply principles derived from combining established graphic design practices with knowledge gained from cognitive science.

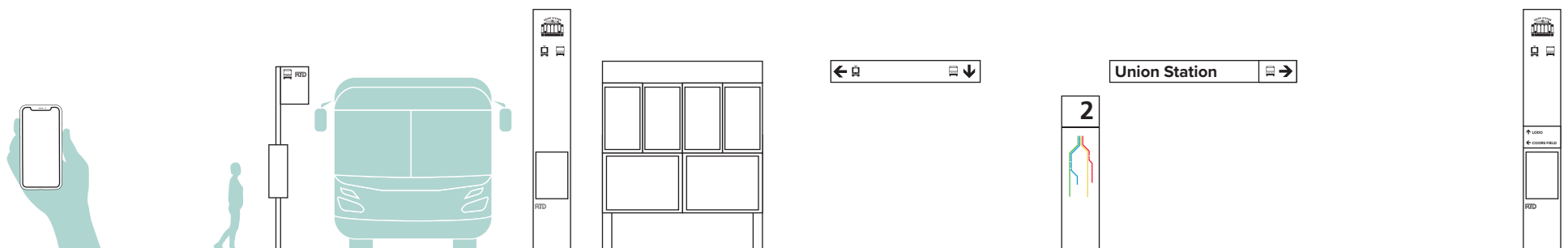
A useful overview of these core principles was produced by Mark A. Foltz<sup>1</sup> at MIT.

1. Create an identity at each location, different from all others.
2. Use landmarks to provide orientation cues and memorable locations.
3. Create well-structured paths.
4. Create regions of differing visual character.

5. Don't give the user too many choices in navigation.
6. Use survey views (give navigators a vista or map).
7. Provide signs at decision points to help wayfinding decisions.
8. Use sight lines to show what's ahead.

In this list, design principles 1-4 cover designing to emphasize concepts of physical legibility, principle 5 deals with managing information load and content hierarchies, while principles 6-8 concern designing to match our inherent preferences for consuming information.

<sup>1</sup> Designing Navigable Information Spaces, Mark A. Foltz, MIT, June 1998



TRIP  
PLANNING

FIRST MILE

ARRIVAL &  
ORIENTATION

NAVIGATION

SERVICE  
INFORMATION

DEPARTING

# 1.2 The Value of Wayfinding

The work to create and implement wayfinding standards can be significant. This is particularly the case when retrofitted to an existing place. To justify the associated effort and cost, it is important to understand the potential benefits.

The return on investment in wayfinding for transit can be considered in three dimensions: the policy case, the customer experience case, and the economic case.

## POLICY CASE

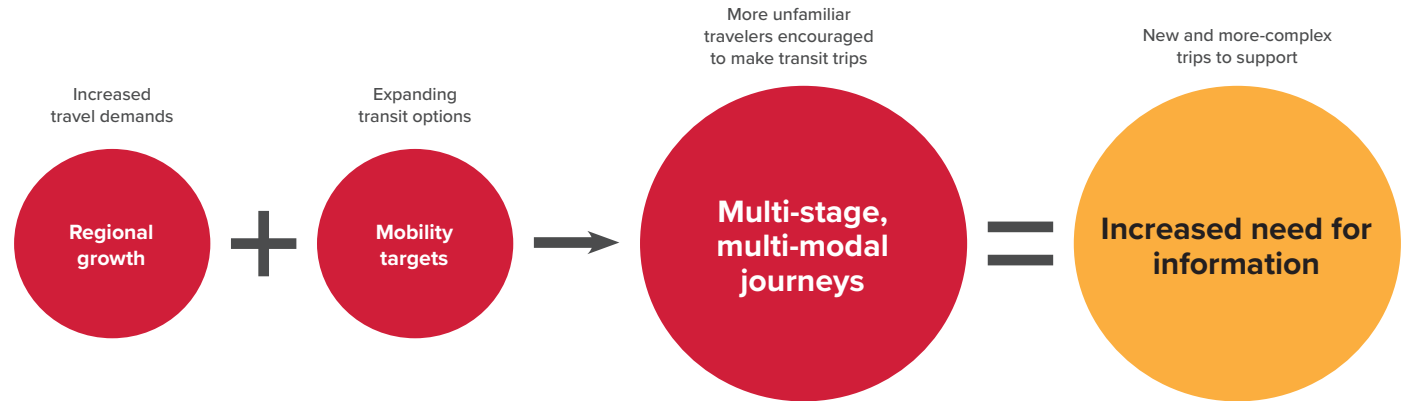
For transit, ridership growth is critical to sustainable services and a common aim. One barrier to growth is that new and unfamiliar riders require wayfinding information to gain the knowledge and confidence to try transit. This is even more important if their journey is multi-stage or multi-modal as often the case in growing cities. Logically, the more consistent, continuous and reliable this information is the greater the benefit in reducing a barrier to growth.

## CUSTOMER EXPERIENCE CASE

Customer experience is a driver of choice in competition with other options. Wayfinding has been found to have an outsized role in customer's perception of what they need and expect from transit.

Surprisingly, studies<sup>1</sup> have found evidence that information is more important than other more top-of-mind aspects of what is considered to drive choice. More important than safety or price.

While improving customer experience represents a range of service related concepts, wayfinding is tangible, relatively



The above logic argument is for how better transit information and wayfinding supports broader aims described in the 2040 Metro Vision, Reimagine RTD strategy, and current RTD Strategic Plan. In essence, policies aimed at shifting travel to transit and managing population growth will create more varied journey patterns and as a result, more complex journey planning needs that require support.

Factors Influencing Transit Ridership	
Bus Information	22.1%
On-Street information	10.9%
Customer service	5.5%
Cleanliness	4.3%
General attitude	3.5%
Station Safety	3.2%
Personal Safety	3.1%
Reduced fare	2.6%

Summary table from a 2000 Canadian study (reference 1).

cost-effective compared to tactics such as fare incentives or infrastructure investment, and importantly, quick to deliver.

## ECONOMIC CASE

There is no direct benefit cost calculation for wayfinding because of the individual constraints on individual behavior. However, there are specific instances where a positive return on investment have been demonstrated.

The most common of these relate to the personal value of time saved by simplifying transfers. Various studies have observed that personal value of time is higher in transfers between or waiting for transit services than while on the vehicle.

Information that reduces the perceived time penalties, for example by providing real time arrival screens, or simplifying navigation between services, can be translated into monetary savings. A study by Transport for

London on a pilot wayfinding project at Bond Street Station found a 6 to 9¢ saving per journey<sup>2</sup>.

Other studies<sup>3</sup> have also proposed that wayfinding could promote modal shift from driving alone to transit. Estimating this effect has been monetized in a few larger wayfinding business cases by considering traffic congestion, emissions, and access to services. Some evidence does exist to support this hypothesis. Post-implementation studies in Toronto<sup>4</sup> suggest that systematic city wayfinding projects are a contributory factor in increased walking.

1 Factor Analysis for the Study of Determinants of Public Transit Ridership, Sharfuddin, Syed, Ata M Khan- Journal of Public Transportation Vol. 3, No. 3, 2000

2 Legible London Yellow Book, Transport for London, 2007

3 Time-cost penalty: ATRF 2013 Proceedings, Douglas N. and Jones M, 2013

4 [https://www.tcat.ca/wp-content/uploads/2014/11/1430\\_FionaChapman\\_JonathanTong.pdf](https://www.tcat.ca/wp-content/uploads/2014/11/1430_FionaChapman_JonathanTong.pdf)



# 1.3 Code and Best Practice References

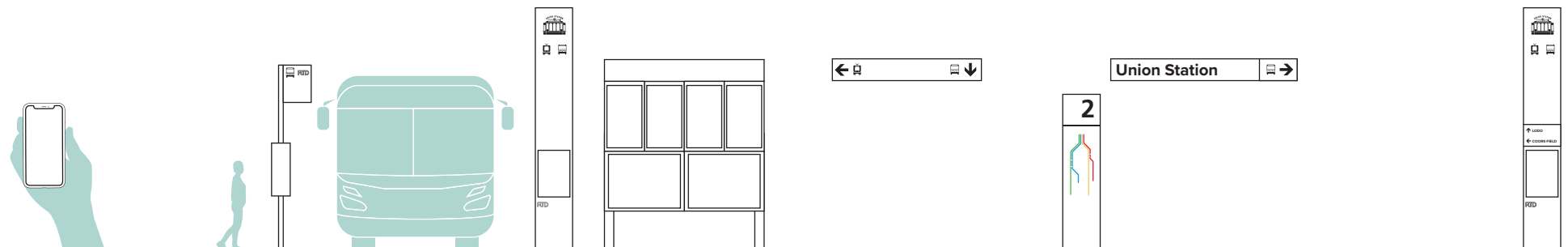
## Wayfinding Standards

For wayfinding to be applied consistently across networks or places, a set of standards is normally produced that describes and specifies a family of information types, the graphic identity and style, industrial design specifications, and how the system is planned and located.

Much of this work is defined by site, service, and user specific needs, however, design is also regulated and guided by a range of research and advisory bodies including:

- Transportation Research Board (TRB)
- National Association of City Transportation Officials (NACTO)
- Americans with Disabilities Act (ADA)
- Title VI, Civil Rights Act of 1964
- Web Content Accessibility Guidelines (WCAG)

Guidance that refers to this stage of the journey					
TRB NACTO WCAG	TRB NACTO	TRB NACTO WCAG	TRB	TRB NACTO	-
Regulations that refer to this stage of the journey					
-	ADA	ADA Title VI	ADA Title VI	ADA Title VI	ADA Title VI



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PLANNING**

**FIRST MILE**

**ARRIVAL &  
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**NAVIGATION**

**SERVICE  
INFORMATION**

**DEPARTING**

# 1.3 Code and Best Practice References: TCRP & ACRP

TCRP, ACRP and TRB synthesis reports inform policy and practices in transit and other areas of transportation. The following is a snapshot of influential guidance.

## Wayfinding System

While specifically developed for airport wayfinding ACRP Report 52 Wayfinding and Signing Guidelines for Airport Terminals and Landside, promotes systems analysis as part of developing wayfinding strategies. This widely transferable guidance includes the 3-steps to a strategy:

**Step One:** Buy-In from stakeholders about the importance of wayfinding to customers

**Step Two:** Adopt a wayfinding philosophy for customer experience such as zonal planning

**Step Three:** Logic developing route and destination hierarchies and the associated decision points over text instructions.

## Information Planning

TCRP Report 12 Guidelines for Transit Facility Signing and Graphics, advises use of the trip segment model to plan information. This model acknowledges the procedural nature of transit use and that the transit stage is just part of a chain with connections and transfers.

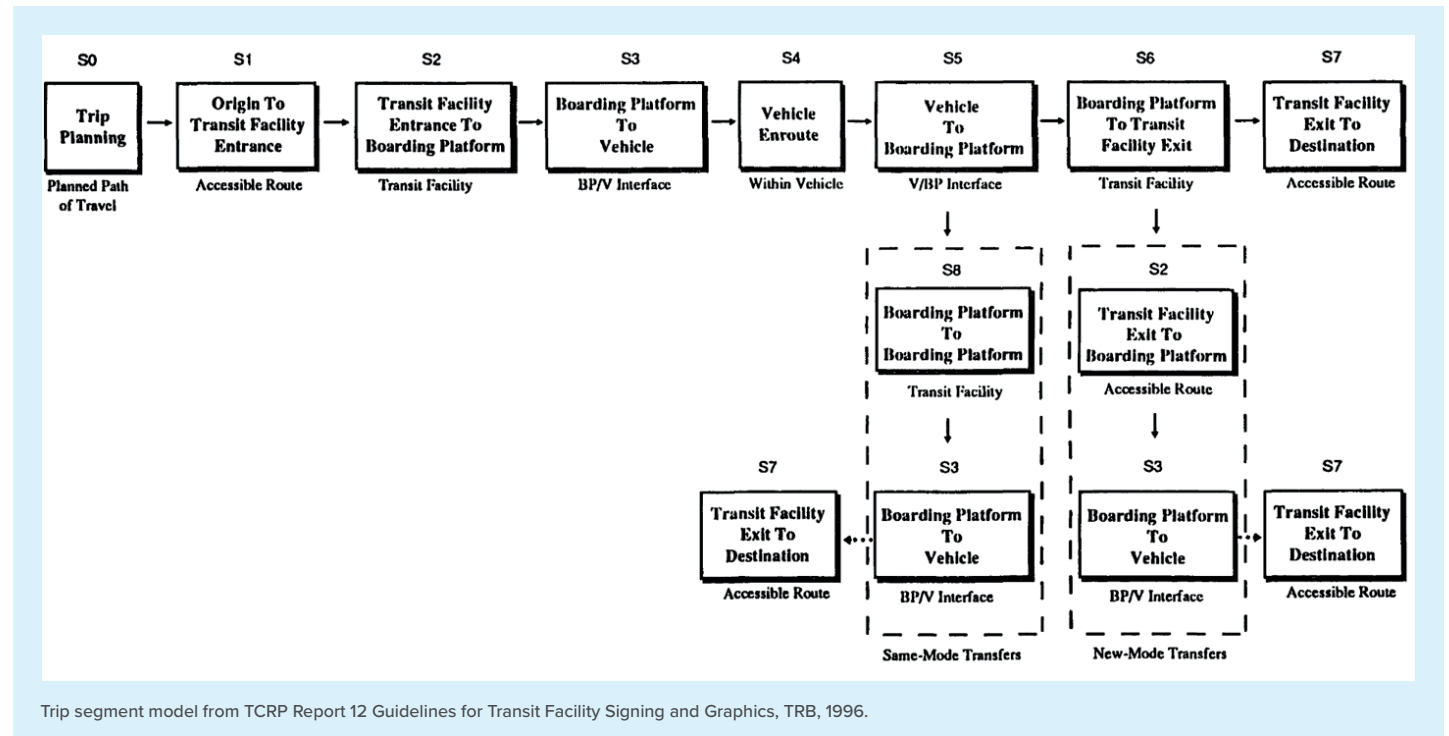
Report 12 goes on to recommend diligent information planning to understand customer movement, human factors, decision points and environmental context before the designer considers sign content.

## Design Details

TCRP Report 92 Strategies for Improved Traveler Information, which reported on innovations such as digital, revealed survey information that highlighted the importance for detail related to personal needs. Maps, diagrams, real-time information help customers answer the most critical question for ridership growth, 'How can I get from here to there?'

TCRP Report 12 makes similar points and highlights the need to develop a message hierarchy to structure movement, the importance of identity to indicate individual services as part of a network, and the essential value to transit use of supporting transfer between and beyond transit.

TCRP Web only document 59 Using Pictograms to Make Transit Easier to Navigate for Customers with Communication Barriers, raises an important point about the value of pictograms for communication especially in emergency situations but cautions the introduction of new icons and encourages simple text support to improve comprehension.



Trip segment model from TCRP Report 12 Guidelines for Transit Facility Signing and Graphics, TRB, 1996.



## 1.3 Code and Best Practice References: NACTO

The NACTO Transit Street Design Guide includes principles that are applicable to all transit wayfinding scenarios.

### Wayfinding System

NACTO guidance suggests that clear and simple information makes the system more attractive and improves rider satisfaction and alerting people to transit-accessible destinations enables them to make more informed decisions about their travel options.

### Information Planning

NACTO recommends a suite of elements including:

- Stop names
- Route identification
- Network and system maps
- Schedules and system information
- Stop location identification

In addition, the guidance covers placement and information structure. Important principles from the guidance includes minimizing sign clutter and disclosing information progressively.

The guidance also promotes the value of wayfinding at transit transfer points to avoid delay and consideration of visual representations such as maps and diagrams over text instructions.

### Design Details

There are multiple examples given in NACTO guidance for the form that each wayfinding element may take, for example system information includes strip maps, fixed schedules, full system maps and transfer maps.

Much of the 'critical' guidance given relates to readability – the guide describes how signs should be located so that they are clearly visible, and that the legibility of information is of paramount importance. It is recommended that certain sign types adhere to ADA guidelines to make sure that they are easy to read for all customers.

Further guidance relates to the use and application of brand within the transit wayfinding space. A "strong, unified brand" is described as a critical part of the efficacy of transit systems, that guide users through the entire trip and make systems legible.

The guide describes how strong branding reinforces user confidence – the use of consistent design elements, such as logos, colors and fonts, reinforces visibility and can enable transit stops to serve as landmarks in the local environment.



# 1.3 Code and Best Practice References: ADA

The ADA sets out guidelines for the design and application of information to ensure that it is inclusive and supports customers with diverse needs equally.

## Wayfinding System

These standards apply to any agency that provides services to the public and compliance is therefore mandatory across the network.

## Information Planning

ADA guidelines focus primarily on the legibility of graphics and do not advise on how to plan content.

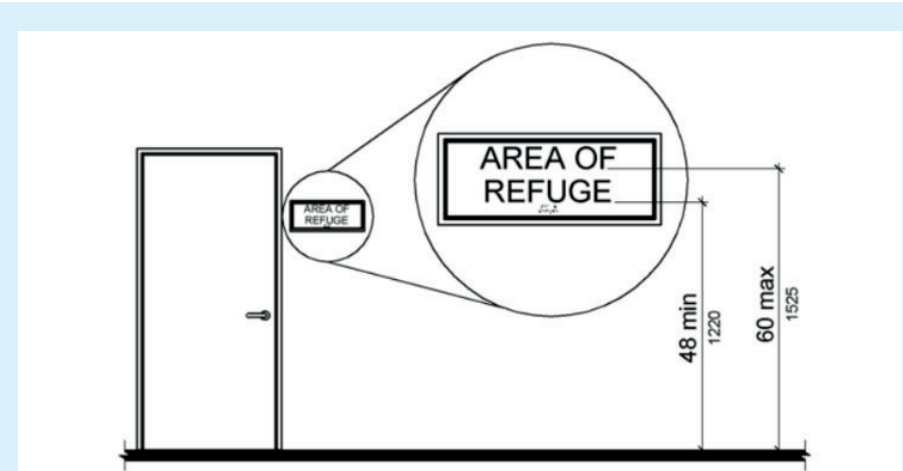
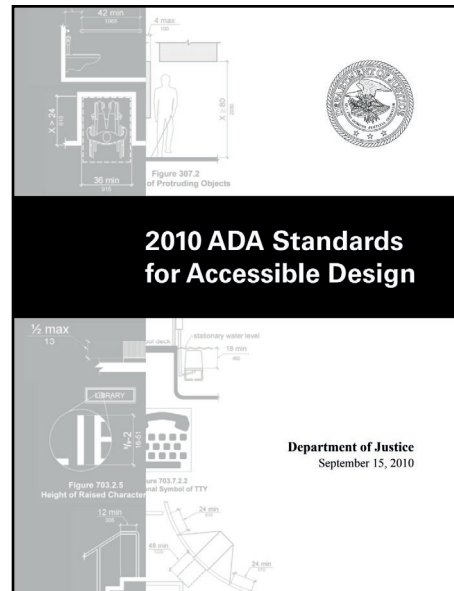
The ADA guidelines, provide reasonably specific instruction about the placement of signage elements, including placement height and offset from architectural features such as doors. It is worth noting that placement guidelines only apply to signs that identify permanent rooms, which may be of limited use in complex transit environments where there are many directional and information based signs.

While this guidance clarifies a few aspects that people may need to consider when planning wayfinding, it does not provide guidance about how to structure information in a way that supports decision sequencing or progressive disclosure.

## Design Details

The design requirements specified in the ADA guidelines are detailed and incorporate guidance on the use of type, including font, height, spacing and proportions, and of other graphic elements such as pictograms. The guidance outlined extends to the use of braille, as well as to tactile characters and specifies the need to use non-glare finishes and the importance of creating as much contrast as possible between type and the background it sits on.

ADA does not provide guidance on design elements other than type/pictograms.



**Figure 703.4.1**  
**Height of Tactile Characters Above Finish Floor or Ground**

**Table 703.5.5 Visual Character Height**

Height to Finish Floor or Ground From Baseline of Character	Horizontal Viewing Distance	Minimum Character Height
40 inches (1015 mm) to less than or equal to 70 inches (1780 mm)	less than 72 inches (1830 mm)	5/8 inch (16 mm)
	72 inches (1830 mm) and greater	5/8 inch (16 mm), plus 1/8 inch (3.2 mm) per foot (305 mm) of viewing distance above 72 inches (1830 mm)
Greater than 70 inches (1780 mm) to less than or equal to 120 inches (3050 mm)	less than 180 inches (4570 mm)	2 inches (51 mm)
	180 inches (4570 mm) and greater	2 inches (51 mm), plus 1/8 inch (3.2 mm) per foot (305 mm) of viewing distance above 180 inches (4570 mm)
greater than 120 inches (3050 mm)	less than 21 feet (6400 mm)	3 inches (75 mm)
	21 feet (6400 mm) and greater	3 inches (75 mm), plus 1/8 inch (3.2 mm) per foot (305 mm) of viewing distance above 21 feet (6400 mm)

Key figured from ADA standards that provide guidance on wayfinding system development.



## 1.3 Code and Best Practice References: WCAG

The Web Content Accessibility Guidelines (WCAG) are part of a series of web accessibility guidelines published by the Web Accessibility Initiative of the World Wide Web Consortium, the main international standards organization for the Internet.

### Wayfinding System

WCAG is the universally accepted set of technical standards. As the global standard, many laws, including the Americans with Disabilities Act reference conformance with WCAG.

### Information Planning

WCAG provide a framework for ensuring digital accessibility, which can be applied to transit wayfinding design to make navigation accessible for all users, including those with disabilities. WCAG principles ensure that wayfinding systems are perceivable, operable, understandable, and robust.

### Design Details

Perceivable aspects include clear, high-contrast signage and auditory announcements for visually impaired individuals.

Operable features involve ensuring that physical and digital wayfinding aids can be easily used, such as by providing tactile maps and accessible web interfaces.

Understandable design is achieved through simple, consistent information and symbols that are easily comprehended.

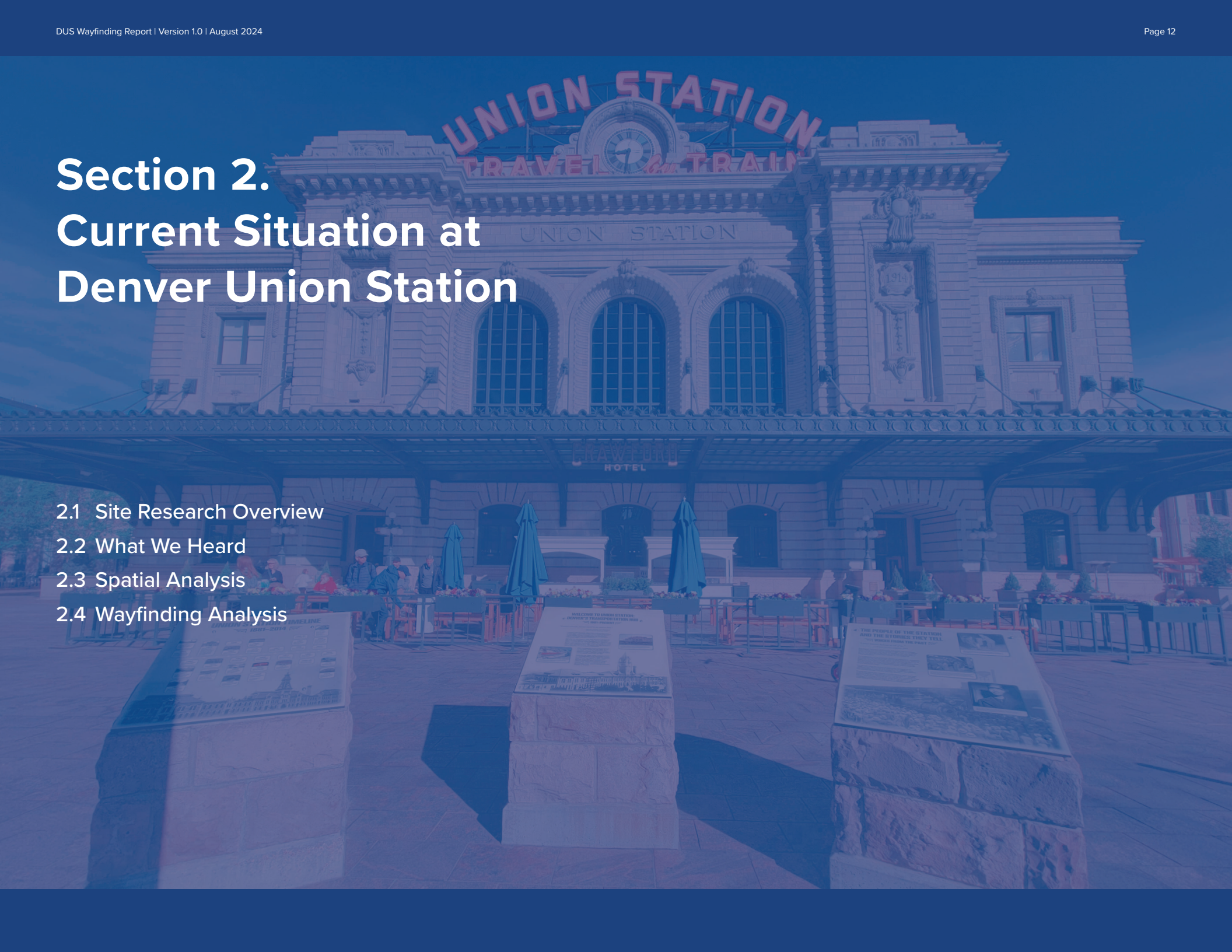
Robust systems ensure compatibility with a wide range of assistive technologies, such as screen readers and mobile accessibility features.

The image displays two screenshots of the Adobe Color tool's Accessibility Tools panel, demonstrating a color contrast check for WCAG 2.1 Level AA. The tool interface includes a 'Color Wheel', 'Extract Theme', 'Extract Gradient', and 'Accessibility Tools' tabs. The 'Accessibility Tools' tab is active, showing 'Tools' (Contrast Checker), 'WCAG 2.1 Level' (AA), and an 'Import Colors' button. The 'Text Color' is set to #FFFFFF and the 'Background Color' is set to #54C0E8. The 'Contrast Ratio' is displayed as 2.08:1, which is marked as failing (red X icon). Below the main interface, a 'Preview' section shows three examples: 'Regular Text' (A high color contrast makes anything easier to read) with a red 'Fail' for 12pt and below; 'Large Text' (A high color contrast makes anything easier to read) with a red 'Fail' for 14pt and above / 14pt bold and above; and 'Graphic Components' (A high color contrast makes anything easier to read) with a red 'Fail' for icons and actionable graphics. The bottom screenshot shows the same setup but with the 'Text Color' changed to #000000, resulting in a 'Contrast Ratio' of 10.08:1, which is marked as passing (green checkmark icon). The 'Preview' section now shows 'Pass' for all three categories: 'Regular Text' (Pass for 12pt and below), 'Large Text' (Pass for 14pt and above / 14pt bold and above), and 'Graphic Components' (Pass for icons and actionable graphics).

Color contrast check of A line blue background with white text and black text using WCAG 2.1 standard for contrast in Adobe Color tool.

# Section 2. Current Situation at Denver Union Station

- 2.1 Site Research Overview
- 2.2 What We Heard
- 2.3 Spatial Analysis
- 2.4 Wayfinding Analysis





## 2.1 Site Research Overview

Research for this project included a period on site at DUS allowing the consultant team to review existing information, observe customers using the facilities, and to speak to staff about customer needs and operations.

The observations are divided into two categories, staff engagement and site analysis. Meetings with frontline staff who interact with customers every day is a highly effective way to understand their challenges and information needs. This is supplemented by a more analytical assessment of the site by the wayfinding consultant team who have specific technical experience.

### Consultant team

Adrian Bell, Planning Director  
Skylar Hayden, Senior Designer  
Shu Yin Lai, Junior Designer

### Lead staff

Alicia Leitgeb, Project lead, Planning  
Bill Sirois, Planning

### Consulted staff

Garfield Martinez, Bus Operations  
Jenea Covington, Bus Operations  
John Albo, Bus Operations  
Michelle Sims, Bus Operations  
Raymond Wagner, Bus Operations  
Tim Lucero, Bus Operations  
Ignacio Correa-Ortiz, Capital Programs  
Keith Hall, Capital Programs  
Patrick Stanley, Capital Programs  
Dani McLean, Civil Rights  
Adrian Mabry, Communications  
Amerie Gagliardi, Communications  
Steven Brier, Communications  
Luke Sinclair, Rail Operations  
Michael Millage, Rail Operations  
Dan Merritt, Service Development  
Maux Sullivan, Service Development  
Sam Lewis, Service Development  
Tegan Rice, Service Development  
Broderick Fowler, Transit Police  
Chance Fitzgerald, Transit Police  
Christopher Daiker, Transit Police  
Michael Arroyo, Transit Police  
Misa Peterson, Transit Police



## 2.2 What We Heard

### Staff Engagement

Customer service staff in the bus concourse, with the operations team, and with police revealed fundamental challenges that customers face finding their way around DUS.

These questions broadly fall into one of three categories:

#### 1 PHYSICAL ARRANGEMENT OF DUS

Questions that asked for directions to the light rail station, to specific tracks or bus gates, and other facilities such as restrooms, often appear to be as much related to the distribution across a large site as they are to a lack of clarity in how information gives directions. Staff also noted that people frequently seemed unclear on where they were in relation to facilities at DUS or the wider area. These problems are compounded by unintuitive track and bus gate numbering and confusing destination descriptions. The ability to self-locate and orientate are fundamental to wayfinding.

#### 2 UNDERSTANDING THE SERVICES

Some questions referenced misunderstandings about service terminology, codes or other service attributes. These included not understanding the variations in how Denver Union is used in the titles of different facilities, not appreciating the technical differences between light and commuter rail, and confusion related to service names or codes. Problems also exist concerning the clarity and consistency of how service changes are communicated to customers.



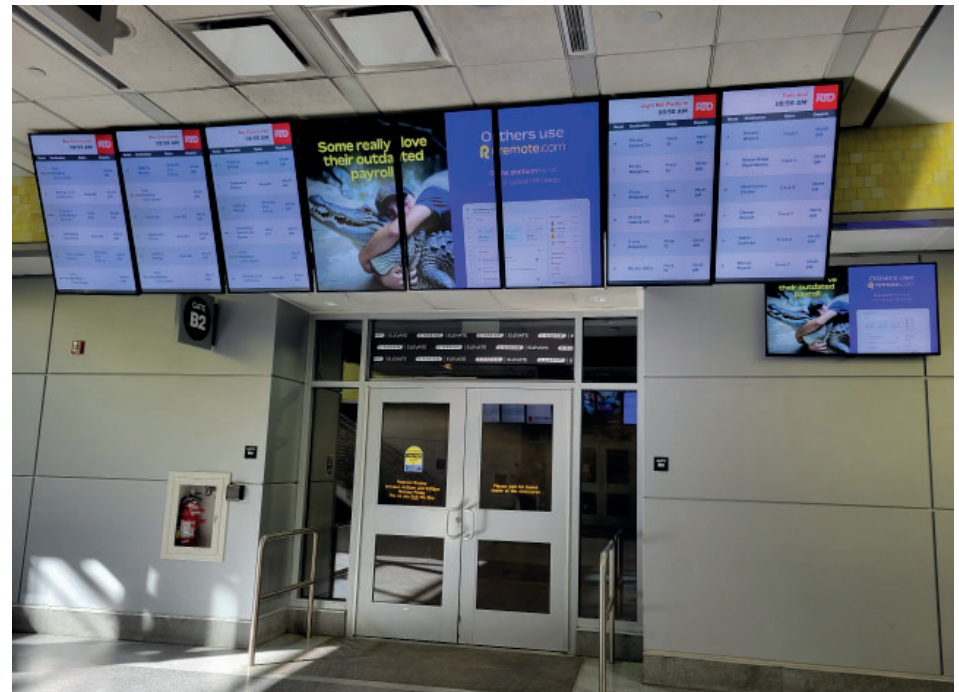
### 3 DESIGN OF INFORMATION

Problems arise from misreading, misunderstanding, or not seeing customer information. Some of these problems can be traced to the graphic design or clarity of messaging on signs as well as their visibility. Examples include the unclear use of arrows, too much information at one point, and counter-intuitive directions.

Other examples related to screens include competition for attention with advertising, small sizes of screens or text, and difficult locations to see or to use comfortably.

While all staff interviewed were happy to answer these types of customer questions, and felt that doing so was part of their role, they observed that this can take up many hours each day.

If better information could reduce the most repetitive questions, staff observed that they could attend to other aspects of their jobs. Some questions are so common that staff went as far as creating their own information and all staff had ideas for improvement (listed in the appendix).



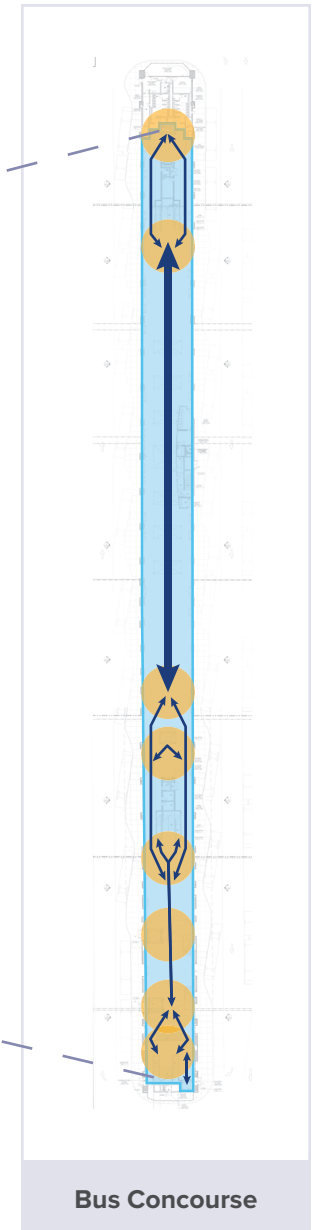
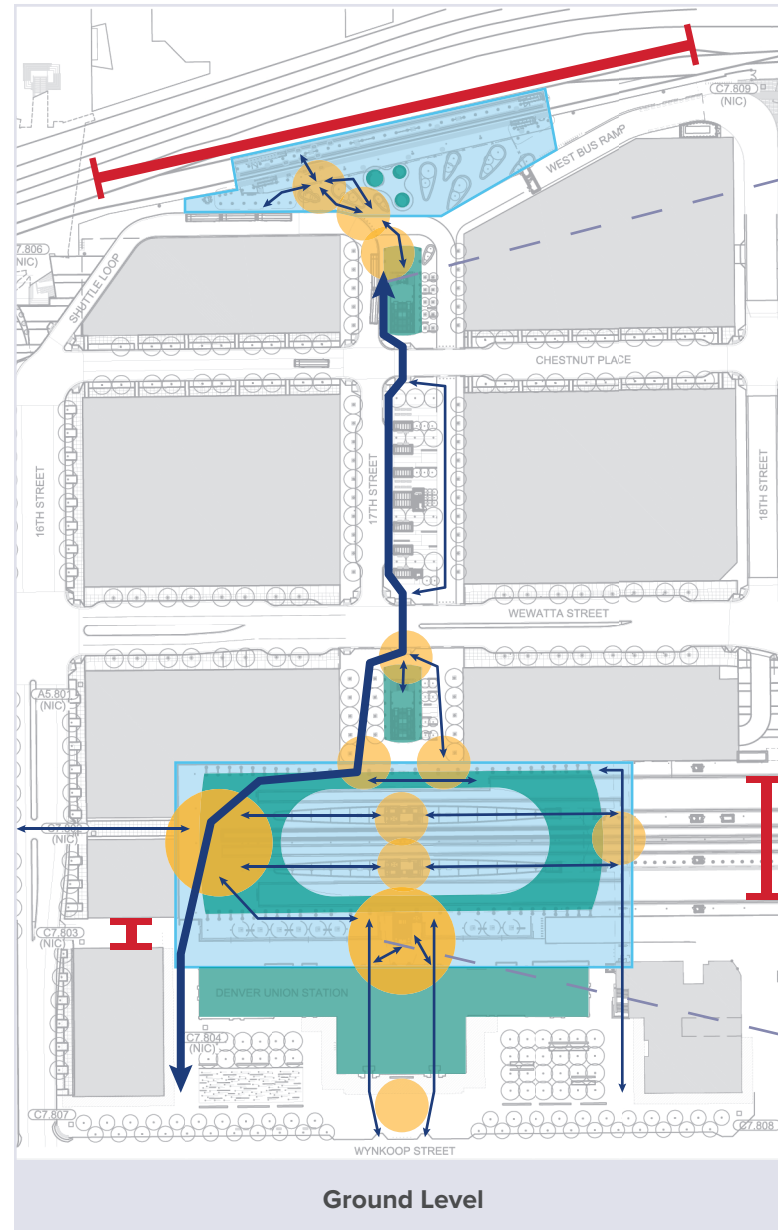
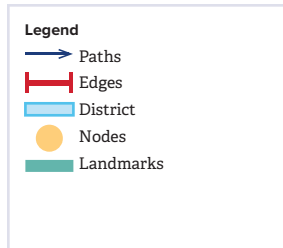


## 2.3 Spatial Analysis

### Site Legibility

In addition to engaging with staff on customer needs, the consultant team visited DUS and observed visitors to assess its physical legibility. Physical legibility is a determinant of how easy it is to read or imagine a place. In simple terms, the easier a place is to hold in your mind, the easier it is to navigate. One way to analyze legibility in this sense, is to consider five symbolic factors proposed by Kevin Lynch<sup>1</sup>.

<sup>1</sup> The Image of the City, Lynch K. MIT, 1960



In his book 'The Image of the City', Lynch argued that a legible city, was one that utilized patterns of recognizable symbols, that are at once easily identifiable and grouped logically. Lynch defined the elements that make up these symbols as paths, edges, districts, nodes and landmarks.

## 2.3 Spatial Analysis



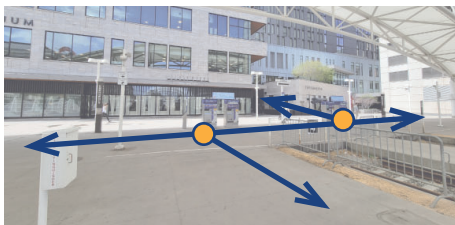
### PATHS

The facility is dissected by city streets and other routes both at and below street level that offer many options for entry to, exit from, and transfer between services in the area. The lack of any obvious hierarchy to these paths allows people to be confused by the options. It is notable, for instance, that the pedestrian bridge over the new train hall, which provides a dedicated path from Wynkoop Plaza to the train tracks, appears little used while a relatively narrow access to the side of the original station building in the southwest corner is a heavily used desire line due to its alignment with the end of the rail tracks.



### EDGES

DUS generally faces the city to the southwest, at the end of the tracks, and southeast, through the original station building. Permeable edges are formed here to 16th Street and Wynkoop Street with several sidewalk and walkways providing a threshold between the city and transit facility. There is also a hard edge formed by the railway tracks to the northwest, that separate the site from the riverside. On the northeast side of the site, Wewatta Street and Chestnut Place form the only paths through to the Ballpark District, this creates a perceived edge of the site effectively along 17th Street at most times except game day when crowds walk through this side of the site. These edges, combined with the origin of travel in the surrounding city, appear to focus significant pedestrian activity on the south-western corner of DUS.



### DISTRICTS

The DUS was master planned as a transit interchange integrated within transit-oriented development. For various reasons, not all the services could be co-located as per the original vision, leading to the effective creation of a transit district covering several city blocks.

According to Lynch, for a district to be perceived when wayfinding, it needs to present the observer with a common character that can be easily categorized. This character is homogeneous, taken from its use or function, texture, space, form, building types, inhabitants or typography.

DUS achieves this in part, the train facilities including the original station building and neighboring new train hall identify this area clearly as a station, but the bus concourse and light rail station are separated by grade and city streets respectively which break the homogeneity of the full interchange and requires the visitor to create a mental map that relates these disparate areas together spatially. This is easy with experience, but not instantly intuitive.

### NODES

A node is formed where paths cross. Nodes are important in space syntax because they punctuate journeys forming memorable points. Wynkoop Plaza, outside the original station building, is a good example of a node at DUS. Within the facility however it is less easy to identify strong nodes. There are certainly points where paths cross, between the original station building and bus concourse pavilion, at the ends of the tracks in the new train hall, at the corner of Wewatta and 17th Streets, and between the light rail station and 16th St Free MallRide stop, but these are transient spaces that lack definition or focal points. While people were observed stopping at these points to orientate themselves, they lacked identity and information to support the decision points formed there.

### LANDMARKS

The original station building is a landmark of importance to city-wide heritage. It represents a near-instantly recognizable image of a transit facility, emphasized by the iconic 'Travel by Train' signage. However, it is not now a major functional part of DUS, so more of a gateway than a destination for most transit passengers. By comparison the new train hall is an architectural statement that forms a landmark highly related to the function it serves protecting tracks from the weather. The light rail station is a relatively low building height with limited wayfinding value as a landmark, but the nearby venting structures do provide the height and uniqueness to act as physical landmarks although they are not obviously linked to transit for wayfinding.

# 2.4 Wayfinding Analysis

## Customer Journeys

The site analysis also considered how transit customers experienced the facility as part of their journey. Customers who travel from, arrive at, or transfer within DUS will follow a sequence of trip segments typical to all transit use. At each segment customers have increasingly detailed wayfinding questions until they reach their destination. Knowing this, it is possible to plan wayfinding so that information is progressively disclosed meaning they see only what they need at each point in the journey.

During the site assessment it was noted that existing information types, locations and content did not follow a planned progression. Specific observations include:

### ARRIVAL & ORIENTATION

The identity of the area as a transit facility is not clearly visible from all primary accesses. Coupled with the open plaza design of the train hall, this can create the situation where people were observed walking onto platforms and then backtracking presumably because they had not encountered trip planning, schedule, or ticketing information and so expected it to be trackside.

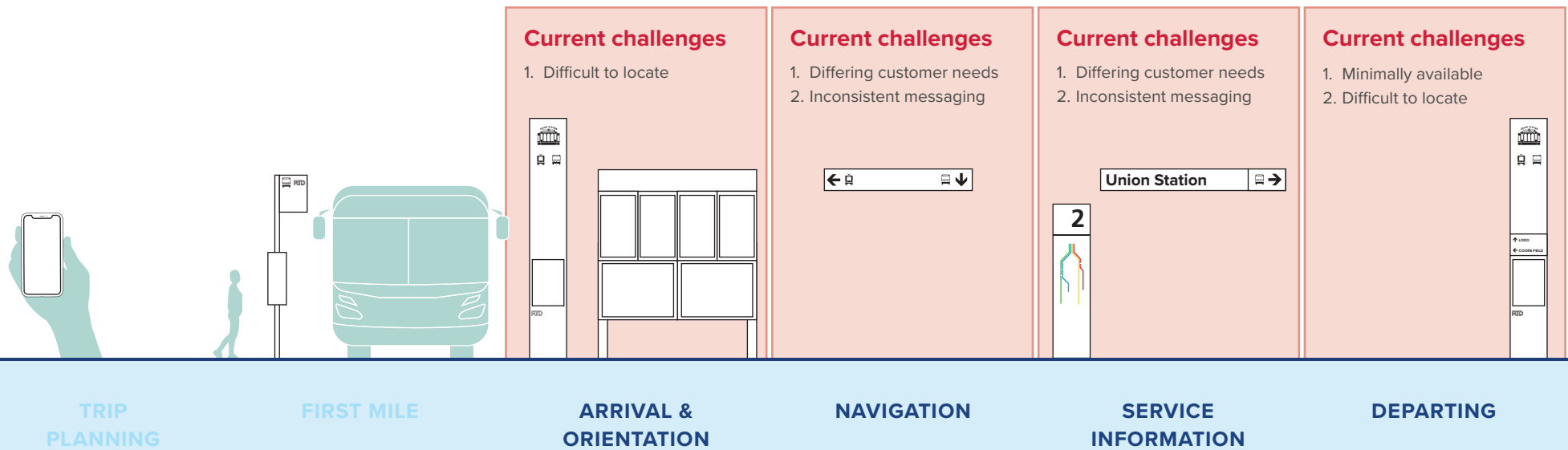
### NAVIGATION & SERVICE INFORMATION

DUS is planned as an integrated multi-modal facility, but the commuter rail, light rail, and, bus service facilities have their own trip segment process for use. In addition, this process differs for some operators within each modal facility. In some instances, for example Amtrak, Bustang and Greyhound, the customer may be required to leave the modal facility for ticketing or inquiries before returning to board. Understanding the different facility processes and operator systems places a high demand on unfamiliar customers and visitors that implies a need for repeated and specific information when entering DUS.

### DEPARTING

Arriving passengers exit modal facilities directly to the street with little or easily missed information about transfer or onward journey connections. Trip segment models are normally linked to desire line maps that ensure information is placed at decision points. At DUS, some information placement appears to be dictated more by land ownership and space availability than a movement plan.

An audit of sign types conducted during the site assessment provides a basis for a future detailed plan for progressive disclosure in sign messaging, sign type locations relative to decision points, and opportunities to reduce signs that are misplaced in the journey sequence, incorrect or outdated.



## 2.4 Wayfinding Analysis

### Zonal Model

Applying the idea of trip segments to DUS visually it is possible to see the overlap between the modal facilities.

In this simplified drawing, typical zones for transit facilities have been sketched on to a surface level plan of the area. This includes the overhead pedestrian walkway and sub-level bus concourse for illustration purposes.

A few observations arise from this exercise:

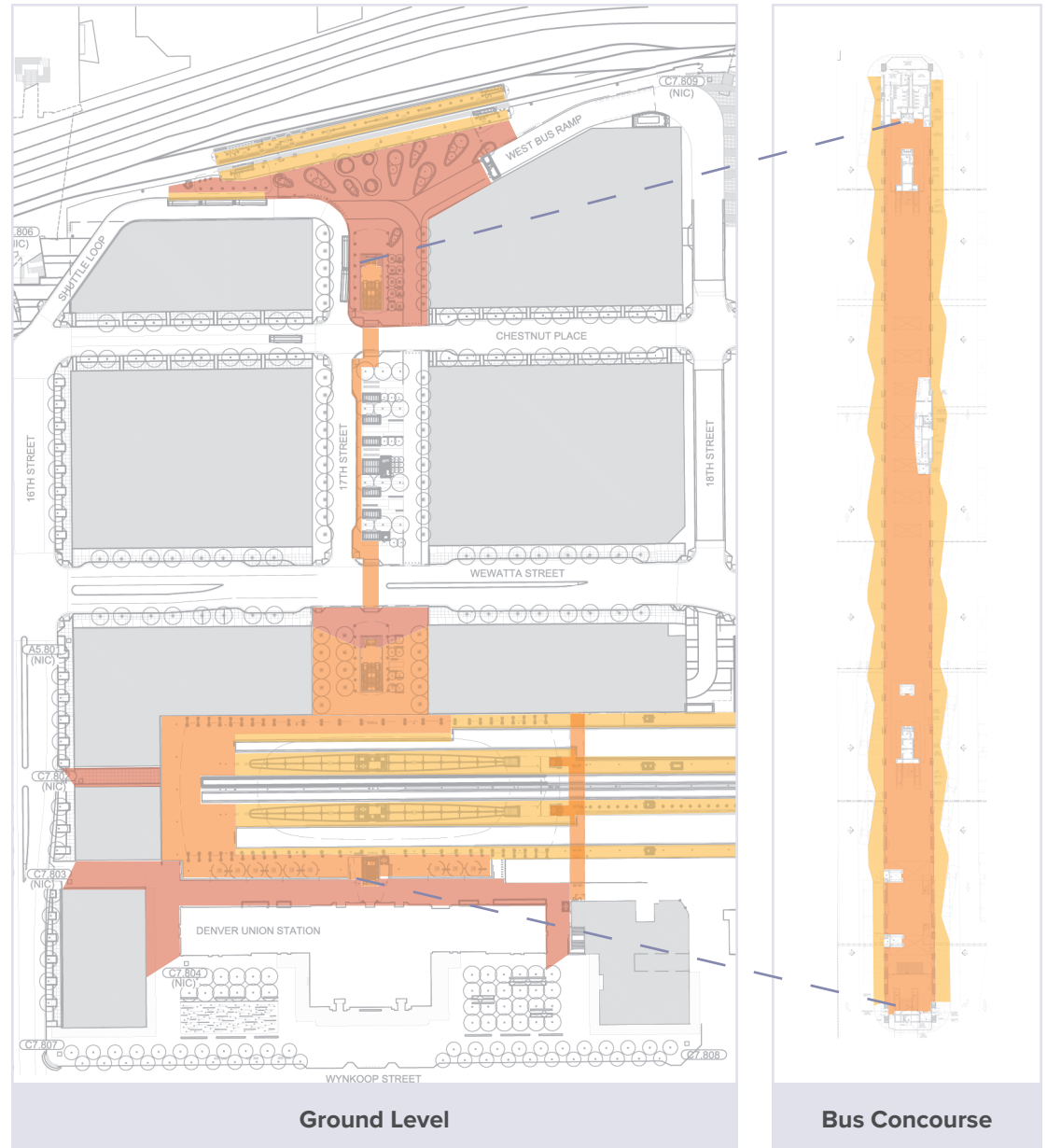
- The open plan design of transit facilities removes clear boundaries between unpaid and paid fare areas. For visitors, this will be different to the more traditional trip segments and could cause some doubt about where they are allowed to be.
- As the modal facilities are not integrated into a single building, customers must leave and enter facilities when transferring. This adds complication to the process increased by the rules for different modes and for non-RTD services
- At present, 'paid circulation' areas only exist on vehicles, however, if plans to harden facilities at the station introduce fare paid areas within the bus concourse this will change. Introducing a fare line and paid circulation area may be expected to increase the complexity for customers to understand DUS as a single interchange and in practical terms to complete transfers to buses from other modes.

**Legend (indicative zonal plan)**

- Transit facility approach
- Unpaid circulation
- Platform/ bus bay

**Typical zones not present**

- Paid circulation
- Fare Threshold





# 2.4 Wayfinding Analysis

## The Role of Digital

The site analysis also provided opportunities to observe customers using information. While behaviors are influenced by what is available, and it can be difficult to observe someone glancing at a sign, there is little doubt that the smartphone is a default device especially for people who are uncertain where to go.

Multimodal journeys involve a series of interconnected steps, or stages, that can be combined in various ways and can involve multiple route and mode changes.

In the past decade the reliance on digital tools to piece together disparate data to make sense of how journeys can be made using public transit has had a profound effect on how people think about getting around.

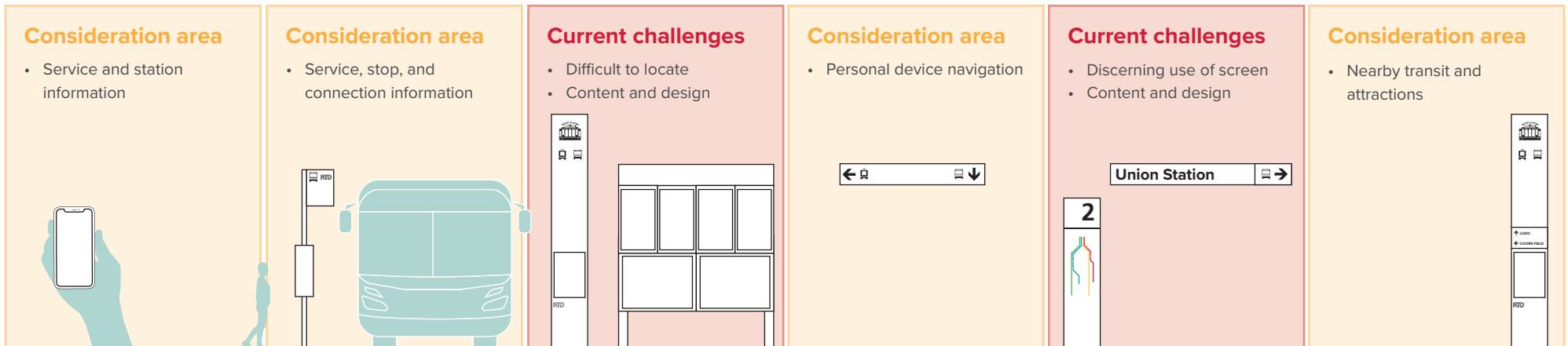
At DUS there are apparent difficulties with the effectiveness of screens including:

- Advertising that shares departure screens and can mislead a customer when ads are showing instead of transit content.
- A lack of true real time arrival data in favor of schedule time data. This no longer meets modern expectations of digital information.
- Poorly designed screen information including small text and awkward tabular designs.
- Some screens dedicated for certain uses and some out of use much of the time.
- Screens located in difficult to see positions, or away from decision points.

### QR Codes

An unexpected outcome of the COVID-19 pandemic together with ongoing advances in phone processing has been the re-emergence of QR codes. While the technology has been around since the early 1990's QR codes now appear on all sorts of communications providing links to further details, real time updates, and marketing.

Navilens is a form of QR code that when read by an app on a smartphone, can provide audible information about directions, service information. The large, colorful code is designed to be visible to smartphone cameras at distance reducing the need to know exactly where the code is located.



TRIP PLANNING

FIRST MILE

ARRIVAL & ORIENTATION

NAVIGATION

SERVICE INFORMATION

DEPARTING

## 2.4 Wayfinding Analysis

### Insights

The insight from the observations is that there are potentially three different scales of intervention to improve successful wayfinding. While DUS has specific challenges as a complex and busy interchange over a relatively large city site, it is also part of a wider network. Placing customer needs at the center of recommendations, it is important to consider how wayfinding improvements at DUS coordinate with improving transit experience across the RTD system.

#### LEVEL 1 GRAPHICS

- Font
- Icons
- Colors
- Materials

At the smallest scale, a set of graphic design standards, linked to existing RTD brand guidance, would be useful to provide good practice on the layout of signs, maps and screens. This would help to ensure customer-facing information is more legible, accessible and inclusive.



#### LEVEL 2 CONTENT

- Naming
- Addressing
- Message hierarchy
- Location

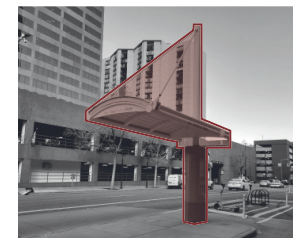
Linked to graphic design, but at an infrastructure level, planning guidelines would structure and rationalize what information is placed where in customer trip segments and how physical legibility could be enhanced at DUS. Planning guidelines would require more significant investment but also have a larger beneficial impact on solving some of the challenges customers face in navigating DUS.



#### LEVEL 3 STANDARD

- Consistent experience across the network
- Designs for all situations

At the highest level, these standards and guidelines could be expanded to consider the entire transit system. This would ensure that customer wayfinding is consistent and easy across all RTD services and facilities to help reduce the barrier of not understanding transit as an option among target markets for ridership growth. A change at this level would likely impact the RTD brand guidelines to coordinate identity and information standards regionally.



# Section 3. Wayfinding Plan

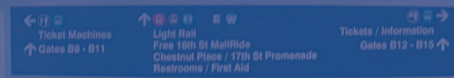
## 3.1 Overall Approach

Strategy#1 Identification

Strategy#2 Orientation

Strategy#3 Navigation

Strategy#4 Information Design



## 3.1 Overall Approach

### Purpose

While this study was commissioned to understand wayfinding improvements at DUS, the observations and insights suggest some wider, network implications.

The following strategies are intended to outline a plan for customer wayfinding that addresses the unique challenges of DUS, but also sets standards that could be applied to across the transit system.

**Strategy #1 Identification**

**Strategy #2 Orientation**

**Strategy #3 Navigation**

**Strategy #4 Information Standards**

The observations and strategies also incorporate examples of good practice and successes from other jurisdictions. These are intended to illustrate the strategies and to address areas of specific interest to RTD including:

- The benefits gained from improved transit wayfinding
- High quality graphic and mapping design
- How separated facilities have been connected by information
- How wayfinding/ legibility can be improved without signs
- Successful uses of pictograms and multilingual messaging
- Integration of digital assistive technologies with physical information



# Strategy#1 Identification

## Understanding DUS

The identity of DUS is neither as obvious nor consistent as it could be. The issues of identity exist across different scales.

1. At the largest scale, observation suggests people struggle to understand DUS as an integrated interchange. Addressing this may require a significant change. Two possible approaches are:

a) A major project to improve the physical legibility of the site. Areas for a study to consider, from the site assessment, could include:

- Strengthening the character and edges of DUS as a district. For example, by creating thresholds or gateways and use of unique materials and art that express the area's primary function.
- Establishing a naming hierarchy for destinations. For example, reconsidering named Pavilions in favor of marking them as entrances to the bus concourse.
- Prioritizing wayfinding along the connecting paths. For example by coordinating with the city to enhance wayfinding and urban design along 17th Street and to protect views of the transit landmarks at either end.

b) A sensitive review of what parts are called Denver Union. Considerations for this would include the potential impact on comprehension and wayfinding of separating the train hall and bus concourse from the LRT station and MallRide turnaround. This may, for example, lead to a recommendation to rename the LRT station.

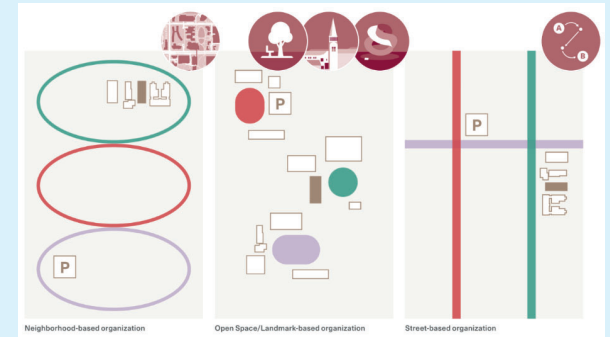
2. At the more local scale, DUS is a gateway to Denver but could provide visitors a more coherent welcome and sense of place. Tackling this may be possible by collaborating with the City to integrate DUS wayfinding into a planned city pedestrian system. Actions would include sharing destination and directional hierarchies, and coordinating designs for pedestrian signage at the edges of DUS.
3. Finally, at the level of detailed design, the station brand, and even its name, varies across different information initiatives and sign owners. To achieve improvement, it would be advantageous to audit all information that references Denver Union Station and replace or remove any that are not complete names, not accurate, or not aligned to current RTD brand guidelines. This may require some liaison with operators who share space on the site, but would overcome a small but significant issue of potential confusion for people looking for basic consistency.

Images top left (clockwise): two views to landmarks along the main path 17th St; station ID sign at crosswalk along 17th St which does not provide directions or a map to provide station or nearby area information; two styles and ways of directing to the light rail station and services at the end of 17th st.

## Spatial Organization

Environmental psychologists explore the relationship between humans and the external world. This work has discovered that we use our evolved skills including pattern recognition to perceive the arrangement of places in three different ways. This spatial organization theory is being used to help the University of Denver to improve its campus wayfinding (illustrated below).

Applying this knowledge to DUS, could support either strengthening DUS as a single place with destination facilities connected by stronger paths, or splitting DUS into two places (rail/ bus and LRT) each with destinations and connected by stronger paths.





# Strategy#1 Identification — References

## Connected by Information

As part of its plans to support sustainable growth, the Seattle Department of Transportation has an ambitious plan to make the city one of the most walkable in America. City wayfinding is one of the actions in its plans.

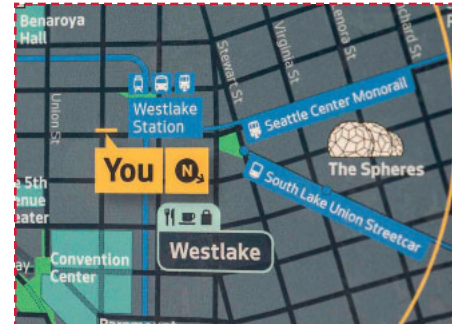
Seattle has evolved and grown over many decades. Urban sprawl, periods of commercial development, and investment in infrastructure have complicated walking. The city is large, hilly, and popular destinations seem far apart although they often are not.

A city wayfinding project started in 2017 aimed to address these challenges through intelligent information design.

Through a scoping study, five objectives were agreed related to design and feasibility. The first objective was to, *"Help build people's mental maps by communicating the character of neighborhoods, explaining the effects of topography and the shoreline, orientating people arriving by different modes, and supporting other efforts to provide interpretative information."*

The best way to influence these cognitive legibility challenges was to use maps to re-describe the city visually.

Map kiosks formed the core element of a solution for the City of Seattle which is being implemented now. The maps are not only carefully designed to be intuitive to use but also based on decisions about the content and placement intended to reconnect the city for walking.



Seamless Seattle pilot map (top middle) and underlying route hierarchy (above).  
 The hierarchy prioritizes routes for the planning sign type locations only.  
 Primary routes (yellow) are strategic routes that connect places, groups of attractions and arrival points. Secondary routes (blue) are supplementary routes between places, i.e. they offer alternative routes or connect groups of attractions to the primary route network. Tertiary routes (dashed brown) link single attractions or destinations to the primary or secondary route network.

### The Hills of Seattle

Seattle is a hilly city. Streets steeper than wheelchair ramps have been marked on this map with the chevron symbol .

**Passageways**

Downtown has a number of passageways and cut-throughs allowing pedestrians to avoid steep hills.

**Using Transit**

**ORCA Card**

To travel in the region by bus, streetcar, Link Light Rail, Seattle Center Monorail, water taxi, ferry, or Sounder buy an ORCA card at a Link Light Rail station, or at retail location marked with the ORCA icon .

**Transit GO App**

The Transit GO mobile app lets you quickly buy bus, streetcar, Link Light Rail, water taxi, Sounder, and Seattle Center Monorail tickets on your phone to get where you need to go without having to pay cash.

Walking, cycling and transit times indicated on the map are approximate. Times are an indication of how long a journey may take but this will vary depending on individual walking speed or the time of day a journey is undertaken.

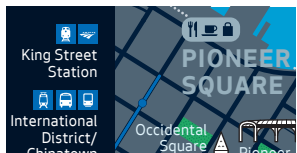
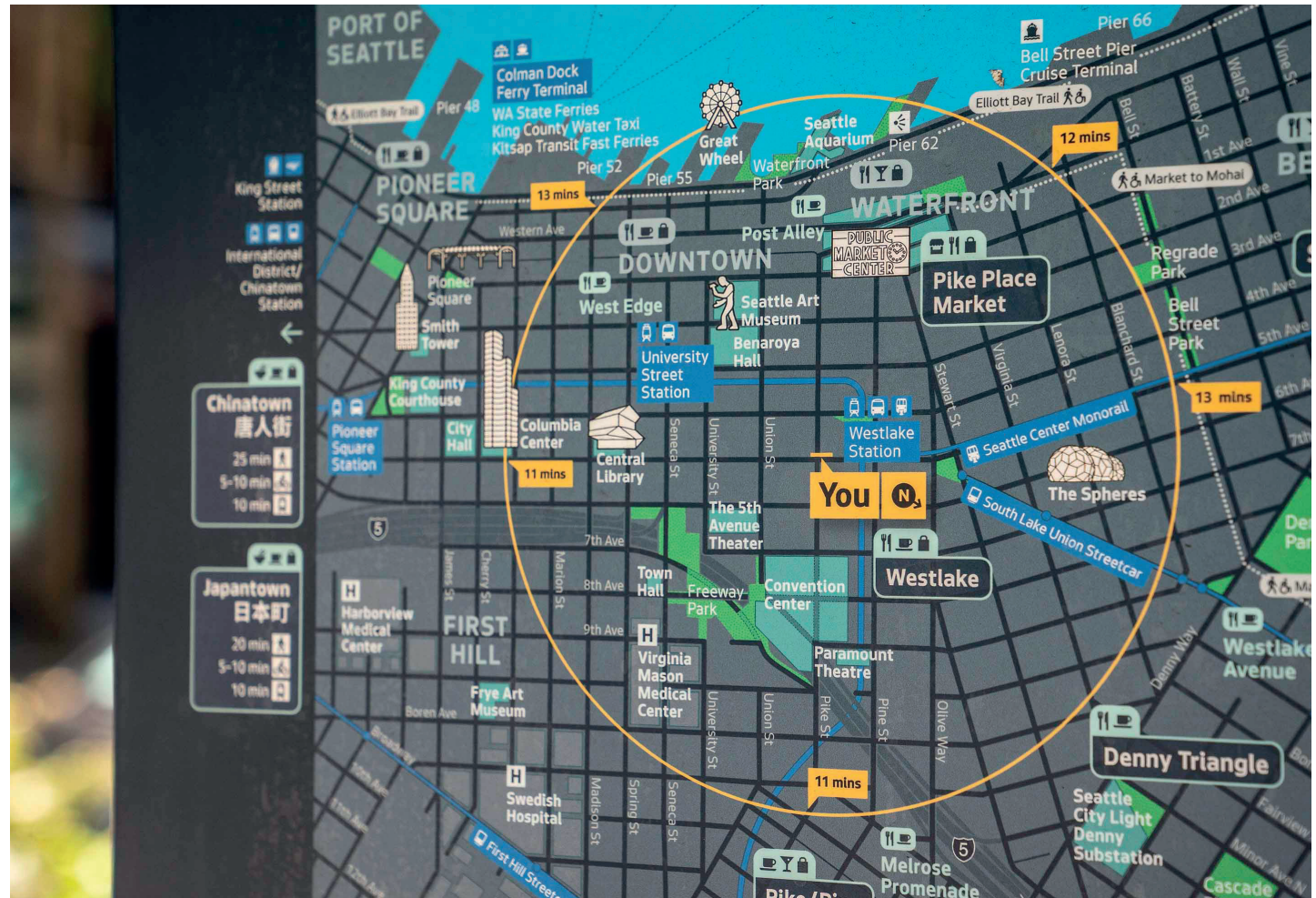


# Strategy#1 Identification — References

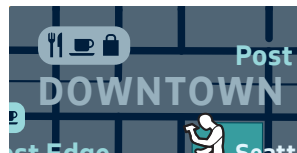
Important aspects of the planning and design of the city maps include:

- A destination hierarchy that uses a structure of recognizable districts, local neighborhoods, and landmarks to form a walkable concept of the city.
- Illustration of landmarks and 'head-up' rather than north up maps to support the transition from maps to navigation in reality.
- Use of walk times and gradients on information to encourage walking and inform decisions based on personal abilities.
- A path hierarchy to provide a reliable network that connects places but does not fill the city with signs. The network is criteria-based and not shown but used as a tool to locate information at intuitive decision points.

The Seamless Seattle project, as it has become known, supports other actions initiated by the city to improve experience and walkability. It has however, rapidly been recognized as reconnecting formally disparate centers such as Pike Place Market, Pioneers Square and King Street station.



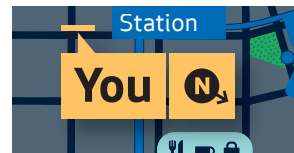
Pioneer Square and King Street Station labels



Example of a neighborhood label.



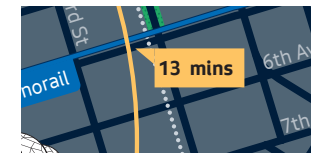
Example of a district label.



Sign location label and north arrow, indicating the "heads-up" orientation.



Example of a landmark label.



Example of walking time label.



# Strategy#2 Orientation

## Information Hubs

While information about services and the facility exists across DUS, it is not all together in the places where people on their journeys tend to make decisions. This idea of grouping trip planning and service information was referenced in staff engagement. The locations of these 'information hubs' would be derived from detailed trip segment planning and would likely correspond to the 'nodes' identified in the site assessment.

Experience from other jurisdictions indicates that these hubs could include facility, service and system maps, real time departure screens, schedule information, fare information, TVMs, and customer help points. Some of these pieces of information exist at DUS and could be reused such as TVMs, some could be updated or improved graphically such as the facility map, and some may need more development such as real time departure screens that require data coordination and possibly new hardware.

### TransLink — Plan Your Trip

In preparation for the 2010 Winter Olympics TransLink in Vancouver, BC wanted to ensure international visitors used transit rather than drive. To help them navigate the multi-modal transit system, high quality maps were created that provided a network level view, a services from here view, and a local connections view. These were co-located with TVMs and other customer information to provide a single point for journey planning.

**↑69%**

The percentage increase in respondents' rating of their ability to find transit connections for their journey after installation of new wayfinding.



## Train Hall Departure Board

In addition to information hubs, a more aspirational opportunity exists to unify the sense of DUS as a single interchange by installing a departures board in the new train hall. The intent would be to create a focal point in the redeveloped facility that moves the center of gravity away from the heritage building to a point where waiting passengers could see all services. Departure information, like at an airport, could contain walking times to the relevant track of gate supported by directional signs and maps. It would also create an easily described meeting point for visitors which can be a challenge today.

Departure boards are traditional features of train termini. Not only do they provide a central point to wait, they give a sense of the choreography of activity at the facility. Image: Kings Cross Station, London, UK

A departures board would represent a significant technical and architectural project beyond other elements of a wayfinding improvement plan. An architectural team may be best suited to designing it with sensitivity both to the train canopy and surrounding buildings and space.





# Strategy#2 Orientation — References

## Better Transit Map Design

Maps and diagrams are familiar tools used to explain transit services to customers. However, they are often derived from operational planning rather than designed for the ease of customer understanding.

Typical problems encountered by users include use of jargon and technical terms for services, vehicle systems and stopping patterns that few understand, over-complicated coding and representation of services reflecting operational facts rather than the core information needed by users, and assumptions about customer information needs without solid evidence.

High quality transit maps and information put the user's needs ahead of operational preferences and technical terminology. Placing the 'you are here' literally, in the center of service maps diagrams, graphical simplification of routes, care for contrast and legibility, and reducing schedules and text wherever possible, all ensure the transit option is less intimidating, more accessible, and more useful.

An example of this is shown on the right in the form of a bus 'spider map' (Design by Applied for Metrolinx). Spider maps were devised by Transport for London in the early 2000's to illustrate how to select the correct stop for bus journeys from a specific location which is located in the center of the diagram.

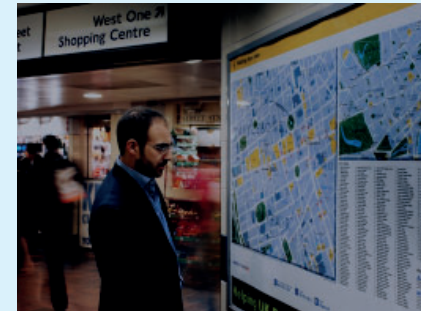
Some automation of these maps is possible, and increasingly so with technology, but they remain complex and require human design skills to balance the complexity with clarity of presentation.

### Quality Maps Work

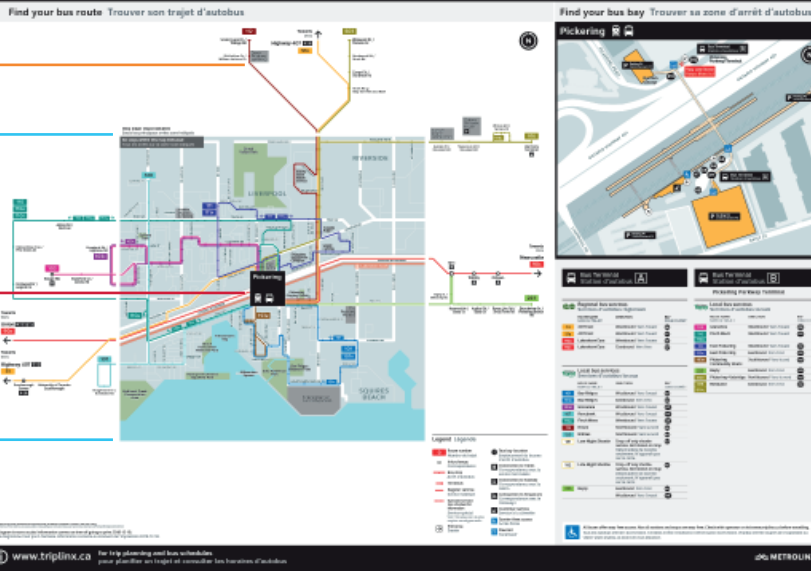
Extensive testing by Transport for London found that maps drawn using researched understanding of how we navigate such as walk times and landmarks, improved opinions of central London mapping as good or excellent from

**54% before to 94% after**  
the new maps were installed.

Source: Legible London: Evaluation 2013/14, Transport for London, 2014



### Buses from Pickering Station Autobus depuis la gare de Pickering



Route extent beyond nearby area

Nearby area

"You are here" station map reference

Detailed station map

## Strategy#2 Orientation — References

### Head Up vs North Up

Many people find maps a challenge. One of the bigger challenges is trying to orientate yourself to the direction of the map, especially if it is a fixed object in the street.

North-up maps are a very strong convention created by the history of printed charts. But there is considerable evidence that when used as signs or while actively traveling, maps are much easier to use if they are oriented to the direction of travel or 'head up'.

Head up maps reduce the cognitive load by removing the need for the viewer to mentally turn the image from north up to their line of sight. The most obvious example of this is the default display on most in-car GPS screens. This provides a safety benefit to driving where there are so many stimuli, but also reduces the challenge for anyone using maps while on the move.

Head up approach works well with detailed, local mapping in situations where the user can reference that detail to their immediate surroundings such as prominent buildings or streets. As the scale zooms out further, Head up maps become harder to reference to their surroundings. This leads to a tipping point where a local map becomes a scale and image that most people are used to experiencing in a conventional North up orientation. For this reason, planning scale maps of a city, region or transit network, would be drawn North up.





# Strategy#3 Navigation

## Simplified Movement

Reference has been made in Strategy #1 and #2 to destination hierarchies and pathways in relation to understanding DUS as a place. This strategy explores the issues of navigation at the more detailed level of connected directions and consistent terminology.

The objective of improving connectivity for a transit facility is to reduce the perceived and actual time spent in getting to, from or between services. This is important because the personal value of time spent waiting or transferring is considerably greater than that we experience while traveling. In simple terms, time seems to drag when we are not on a vehicle.

Current wayfinding at DUS falls short of what it could provide customers. The root cause for this seems to be the lack of a movement plan and related wayfinding logic to efficiently explain the physical complexity of facilities and the disjointed network of connecting pathways. The result is a patchwork of well-intentioned signage initiatives that don't work together.

Resolving this requires a prioritized set of destinations, a hierarchy of movement across the facility, and a simplification of naming and coding. A careful process of mapping out customer journeys, the questions they typically need to answer at each trip segment, and identifying the physical point of these decisions should not only improve navigation but should also reduce sign clutter.

## Names and Codes

A common observation from staff and from the site assessment was how often people misunderstand directions at DUS. Their observations suggest that terminology is often part of customer confusion.

To some extent technical names and codes are inevitable in transit. Any customer must learn the names of services, how to read schedules, and how to interpret service maps. This can be made easier by using more intuitive terms, minimizing text in favor of simple pictures, allowing for repetition, and by being rigorous about consistency.

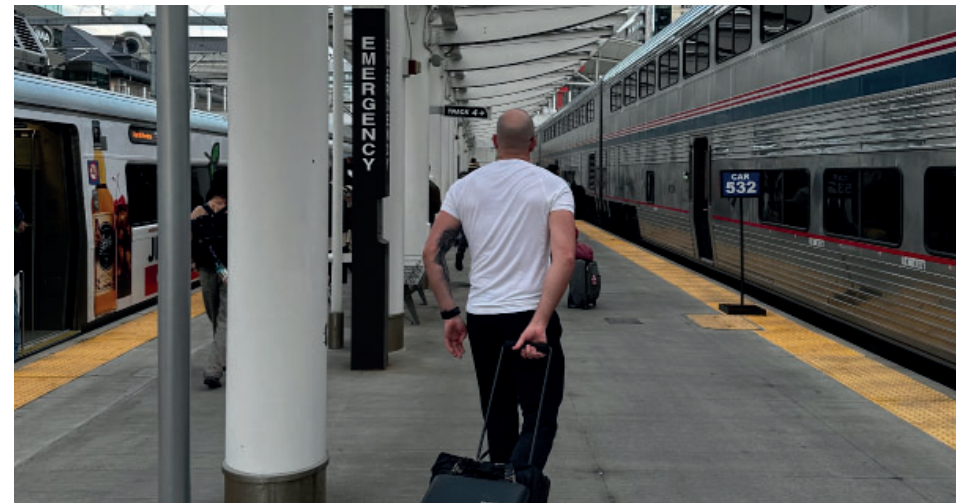
Changes of name or code need careful review as the impacts can ripple out. For instance, changing the name of the light rail station (Strategy #1) will require network-wide updates and communication to the public. By contrast removing the name of the Pavilions to allow more simple directions to the Bus Concourse may be an easy win.

Coding could also be usefully reviewed. Track numbering at DUS contains two missing numbers intended for expansion that are no longer needed. Also, the light rail station is perhaps too far from the train hall to make sequential track numbering intuitive.

Bus bays are given an alphanumeric code B1 to B22. While the B stands for 'Bus', it implies there are 'A' bays somewhere else. Options to investigate include letter codes for bus bays and using 'A' bays codes for surface stops, including the 16th St MallRide.



Directions within the bus concourse are particularly challenging to understand. If progressive disclosure was applied and information about different modes were separated, a lot of this messaging could be simplified to 'Up for Trains'.



Leaving Track 1 from the airport link where there are no 'Exit to city' directions.



# Strategy#3 Navigation — References

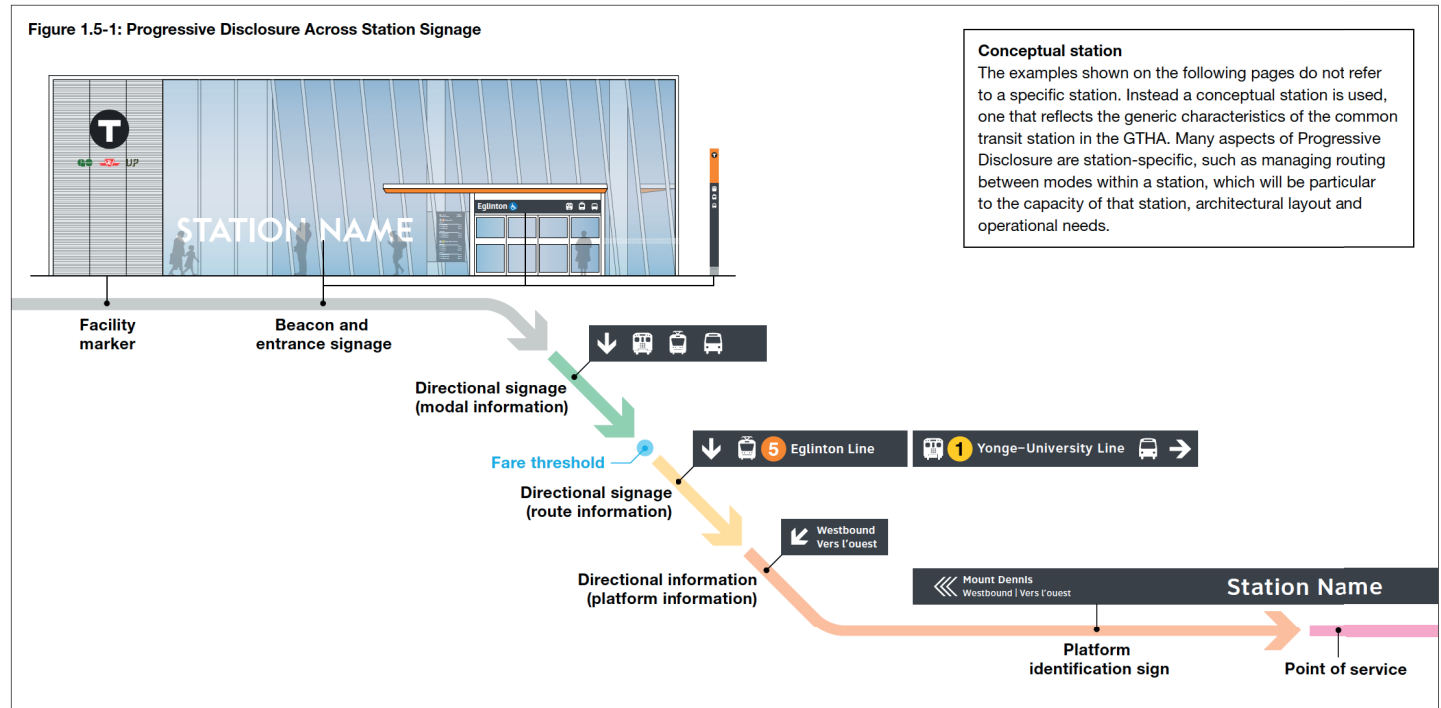
## Decision Sequence

The regional transit wayfinding standard for Metrolinx, the regional authority for the Greater Toronto and Hamilton Area of Ontario, set out to describe a harmonized way to present transit information to customers. Covering heavy rail, light rail, bus rapid transit, buses and last-mile connections across ten different operational jurisdictions, a structured approach to planning information was essential.

To explain the need for movement plans, destination hierarchies, and common terminology, a guidance document was prepared that supported a comprehensive graphic and industrial design standard.

Contained in the planning guidance are illustrations of typical customer decision sequences and the progressive disclosure of directions that helped to communicate the benefits to customer experience of simplicity and consistency.

Figure 1.5-1: Progressive Disclosure Across Station Signage



**Conceptual station**  
The examples shown on the following pages do not refer to a specific station. Instead a conceptual station is used, one that reflects the generic characteristics of the common transit station in the GTHA. Many aspects of Progressive Disclosure are station-specific, such as managing routing between modes within a station, which will be particular to the capacity of that station, architectural layout and operational needs.



## Strategy#3 Navigation — References

### Wayfinding Without Signs

While apps, signs and maps are the first thoughts when thinking about wayfinding tools, navigation is largely linked to our ability to recognize patterns and follow multi-sensory cues. We can use these instincts to improve physical legibility and connections without installing posts and signs.

At DUS, a particular challenge is the distribution of modal facilities across an active part of the city. This fact requires balancing the potential benefit of improved physical signage for transit customers, and the needs and character of other uses in the area. In addition, signs, maps and screens represent capital as well as long term maintenance and operational costs.

These factors highlight the potential value of using multi-sensory wayfinding as to augment or reduce signage at DUS and particularly for connecting modal facilities.

Urban and architectural design, lighting, landscaping, graphics and art have all been used as legibility treatments to support multi-sensory wayfinding in different settings.

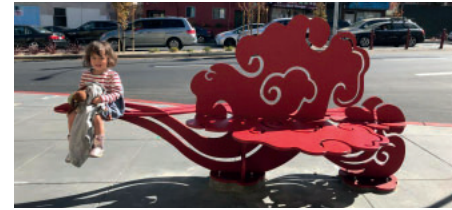


### SURFACES

Application of a contrasting color of material or directionality in the surface texture of paving can provide a visual or touch cue that we recognize and follow instinctively. Some airports use carpeting and tiling to guide people to check-in and security. More literal options include applying thermoplastic or paint to surfaces. These treatments can provide directions, interest or lines to follow. With increasing use of mobile devices that cause people to look down, these surface treatments can be especially useful but effectiveness can be limited by snow, wear, and crowds.

An example of this is the " Magic Carpet Murals" in Charlotte, NC on the Rail Trail, which were designed with an artist duo and the surrounding community.

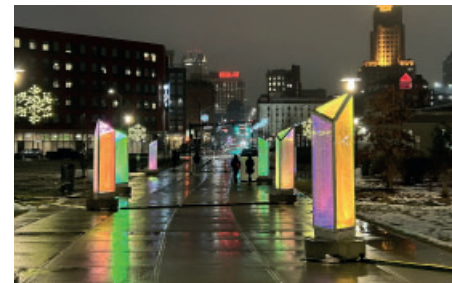
Image: [landdesign.com/project/rail-trail-framework-plan/](https://landdesign.com/project/rail-trail-framework-plan/)



### FURNISHINGS

The use of distinctive street furniture can define a path or a district. The use of dragons and other cultural references in the street furniture of Chinatowns nationwide are examples. Street furniture can also provide breadcrumbs to follow in a similar fashion to surface treatment lines. An example of this is "Auspicious Clouds" by Michael Arcega, of cloud-shaped benches in San Francisco, CA.

Image: Professor Michael Arcega



### LIGHTING

Lighting falls within furnishings but adds impact at night as well as providing opportunities for color or even projected messaging and art to add impact and journey memory. Lit paths draw use after dark while projection has been used to make pedestrian tunnels more appealing. An example is 'Prismatica,' by RAW Design installed for a light festival in Providence, RI.

Image: <https://providencedailydose.com/2024/01/26/lumina-weekend-activations/>



### LANDSCAPE

The use of distinctive plants along a route can help define the line of travel without the harder aspect of furnishings and signs. Planting can also provide multi-sensory trails with smell. A limitation of planting is seasonality which must be considered in the selection of plants.



### PUBLIC ART

Public art can provide landmarks to head for, punctuation to mark decision points, and more general visual interest to strengthen district character, paths or edges. There is no limit to art but it can be costly to commission and maintain. An example is "Male/Female" sculpture in Baltimore, MD, outside of Pennsylvania Station.

Image: borofsky.com



# Strategy#4 Information Design

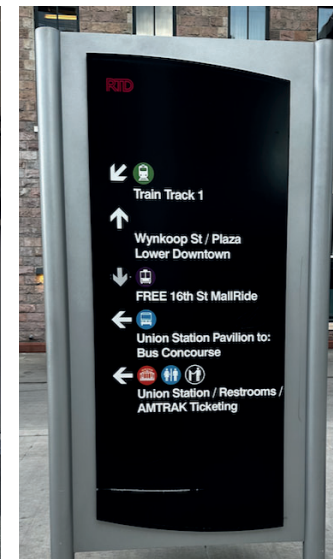
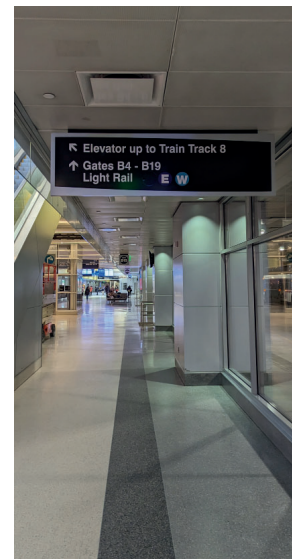
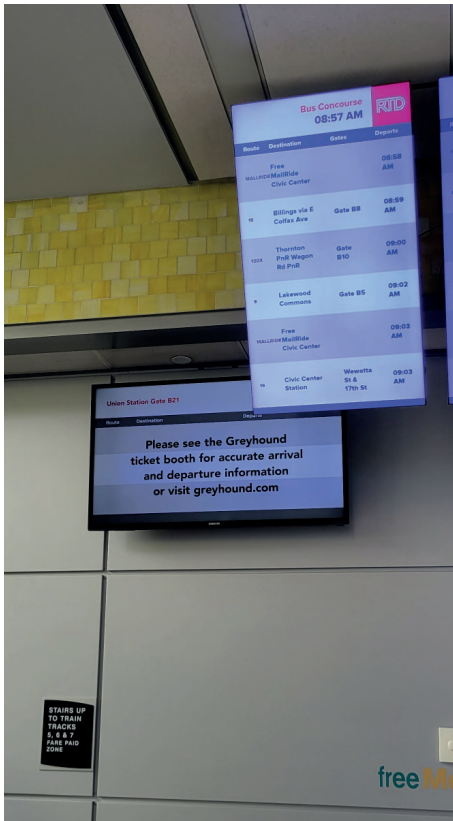
## Current Issues

Staff identified some specific challenges, including:

- Customers mistaking the bus concourse service desk icon for the restroom
- Customers missing information due to poorly sited signs, small screens and small typesizes

Existing directional signs at DUS contain several issues related to messaging:

1. Union Station is used inconsistently, in some cases for the whole facility and others for the historic building. Union Station Transit Center and Union Station Pavilion add to the potential for confusion.
2. There is a lack of hierarchy to the destinations indicated. Some, like the Pavilions and 17th St Promenade are not true destinations but links to destinations.
3. Directions 'to' via another place must be used carefully as the direction can easily be misread as suggesting for example, that train tracks are located in bus concourse.
4. Icons should be closely associated with descriptive text to be meaningful. Icons generally appear above text directions on signs, creating uncertainty of what the icons relate to.
5. Commuter and light rail train line codes should not appear on static directional signs to allow for operational flexibility and long-term maintenance of signage.
6. Not all kiosk signs provide locations in the header. This is helpful for self-location.





# Strategy#4 Information Design — References

## Missing Sign Types

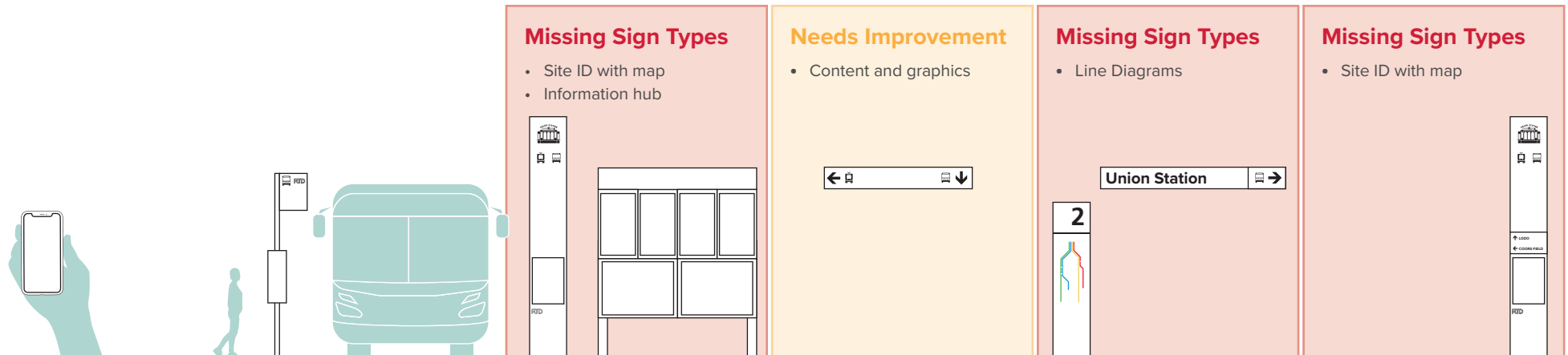
Nearly all existing signs are different forms of directional signs with the main purpose of helping users to navigate the site. Missing sign types would be dedicated to clearly stating arrival to the site, orienting to the various sub-segments of the site, service information such as line diagrams, and signs which help users as they transition from the site into the surrounding neighborhoods of Denver.

## Improving Graphics

Many of the existing signs are located where customers appear to need them and provide ample space for the required messaging. What is needed is to refine the messaging both the text and the graphics.

Aspects that should be reconsidered are:

- Order and aligning directions
- Arrow conventions — not behind and how to indicate ahead above and below ground or near vertical accesses
- Use of commas and forward slashes to divide
- Use of icons and text/pictograms and multilingual messaging
- Screen formats — small type poor column spacing
- Maps — design good practices



TRIP  
PLANNING

FIRST MILE

ARRIVAL &  
ORIENTATION

NAVIGATION

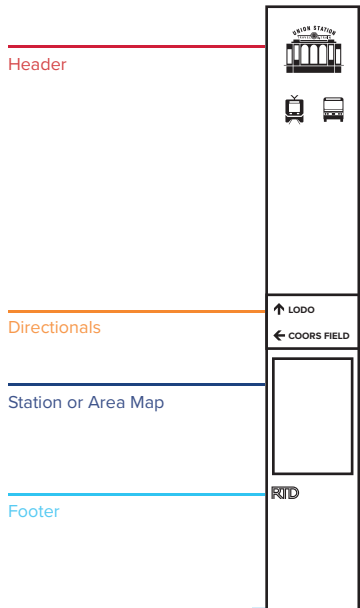
SERVICE  
INFORMATION

DEPARTING

# Strategy#4 Information Design — References

## New Sign Types and Elements

While the exact messaging and refinement of graphics will need to be defined in piloting, initially framing of some of the core identified missing sign types can be specified already. Below are concept drawings of these missing sign types, elements, and which journey stage they relate to.



## HEADER

This portion of sign types have two main purposes:

1. Visual beacon from long-distances
2. Confirmation of the location you currently are (e.g. Track 2 or Denver Union Station)

## DIRECTIONALS

Directionals have a single function which is: to clearly and concisely guide customers towards the next decision point. When these are placed appropriately and with minimal information, they create a network of touchpoints that provide customers confidence at every turn or throughout long pathways.

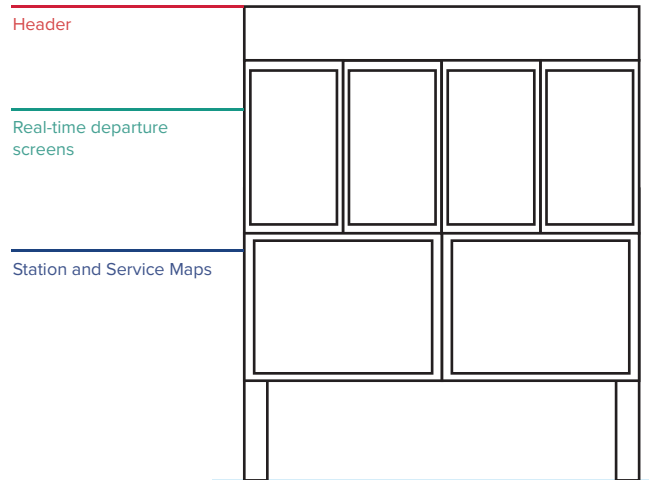
## MAPS AND DIAGRAMS

Each map or diagram type are designed to answer a few questions really well instead of having a few maps or diagrams that try to do too much at once and end up not performing very well. Of the map and diagrams types below typically fulfill the following purposes:

**Station maps** clarify the boundaries of the site, highlight sub-segments, identify where each service and key amenities are located, and provide just enough surrounding context to orient oneself to the surrounding area.

**Area maps** prioritize highlighting surrounding destinations (e.g. Coors Field and Commons Park) and identify street names as well as areas of activity (e.g. Larimer Square).

**Route line diagrams** are removed from the realities of physical geography and prioritize lists of stations which are easy to scan and are paired with indications of key transit connections.

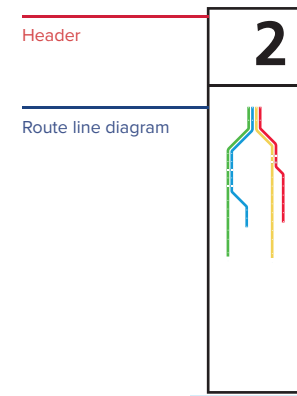


## REAL-TIME DEPARTURE SCREENS

While these often carry a higher initial price than a traditional fabricated or printed sign, they provide a benefit to customers which is only matched by personal devices. These answer the vital questions of, "what services are running right now?" and "when is the next vehicle leaving?". An immediate and freely available answer to these questions can make the difference between making a connection or not at large transit sites.

## FOOTER

Somewhat of a signature at the bottom of signs or maps, these elements fulfill an important role the same as a signature on a letter, they tell customers who is providing this information. Especially useful for sites with multiple agencies, this area can communicate, "we are all working together" while also signally which agencies information can be found within that sign.



# Section 4. Next Steps

4.1 Estimates

4.2 Proposal





## 4.1 Estimates

### Priorities

The study has revealed that the challenges faced by customers using Denver Union Station probably stem from a related set of issues ranging from the complex arrangement of the site, through to sign designs that do not meet best practices. In addition, some identified opportunities for improvement, such as naming and coding and information design standards, have implications across the regional transit network.

The range and scale of the potential improvements will require investment over a period of time. A case for investment may come from demonstrating improvements to existing customer satisfaction and to potential ridership.

To inform this, the table illustrates broad assessments of capital and revenue costs, the time, consultation, and complexity of effort to achieve, and scale of user benefits for the proposals discussed in the strategies.

At this early stage the table is purely indicative and each proposal will require more detailed development to validate the assessment. It is also important to recognize that many of the proposals are interdependent or additive in nature. For instance, implementing an overarching regional wayfinding standard would be expected to include the more specific proposal for implementing regional terminology.

PROPOSAL	COST	EFFORT	USER BENEFITS
<b>IDENTIFICATION</b>			
Strengthening the character and edges of DUS as a district	\$\$\$	+++	😊😊
Establishing a naming hierarchy for destinations	\$	++	😊😊😊
Prioritizing wayfinding along the connecting paths	\$\$	++	😊😊
Separating the transit destinations, including renaming the LRT station	\$	+++	😊😊
Integrate DUS wayfinding into the planned city pedestrian system	\$\$	+++	😊😊😊
Audit all information that references Denver Union Station	\$	+	😊
<b>ORIENTATION</b>			
Create information hubs	\$\$	++	😊😊😊
Train hall departure board	\$\$\$	+++	😊😊😊
<b>NAVIGATION</b>			
DUS movement plan	\$	+	-
Implement new DUS directional content	\$\$	++	😊😊😊
Regional terminology	\$	+	-
Implement regional terminology	\$\$\$	+++	😊😊
<b>INFORMATION DESIGN</b>			
Regional wayfinding design standard	\$	+	-
Regional transit brand update	\$	+	-
Regional wayfinding planning guidance	\$	+	-
Implement regional design standard	\$\$\$	+++	😊😊😊

## 4.2 Proposal

### Demonstration Project

There is general consensus among RTD staff about the problems with wayfinding at DUS, but it is the customer who would immediately experience the benefits of improvement.

A low-cost, potentially high impact way to quantify these benefits could come from commissioning a small scale pilot and public research exercise. An obvious target would be to redesign and test some examples of DUS directional signs and facility maps to best practice standards.

This exercise could be undertaken on site, with temporary materials used to cover existing sign messaging or to mock up new sign types as envisioned by the information hub proposal. Baseline attitudes and reactions to new designs could be tested and compared by any combination of intercept surveys, focus groups, and online surveys.

Communication of the initiative and pilot could include some more visionary designs and illustrations of larger scale ideas, if these are supported in principle.

The cost of a pilot and public evaluation would depend largely on the materials used for temporary displays and the scale and complexity of public survey work. Outsourced design and fabrication may range from \$10,000-\$20,000, while outsourced evaluation, could range from \$20,000 for a few days of on-site surveys to over \$50,000 for facilitation of focus groups.

Examples of different scales and complexities of prototype design testing using temporary materials and mock ups for public evaluation to inform design development and generate business cases for wayfinding.



# 4.2 Proposal

## Directional Concept

The idea of redesigning a few examples of directional signage at DUS could not only demonstrate clearer messaging and more intuitive design to customers, it could also develop a structure of addressing at the facility.

The illustrations provide ideas on how this could be achieved based on wayfinding principles. If this were developed, important considerations should include preferences for security and operations, access routing for people with disabilities, and the needs of people who are not proficient in English.

Illustrative example of possible new information structure that introduces a stronger hierarchy and connection between messaging. Kiosk type signs would 'stack' these directions.



### Priority 1

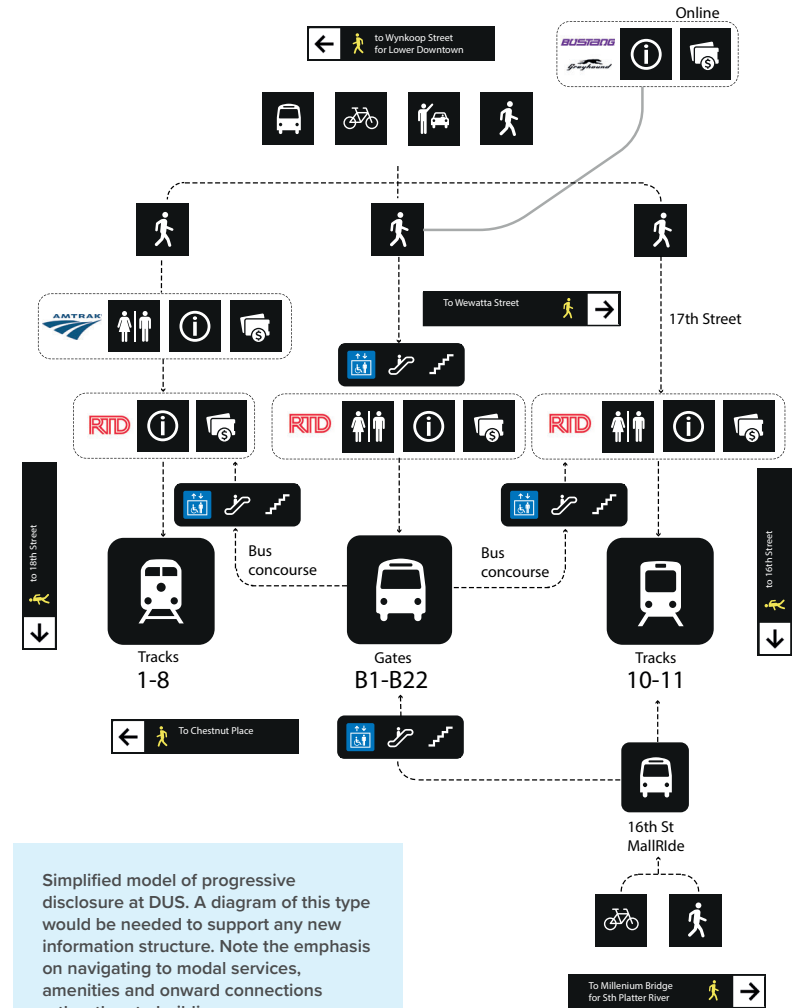
Transit services are prioritized as the first item 'attached' to the directional arrows, since these are the primary function of the transit facility. Icons are linked to the message.

### Priority 2

Amenities are next (e.g. restrooms, customer service), since they are within the transit facility but lower priority than the transit services).

### Priority 3

Street / exit names are last because they are the last part of the user journey with respect to the facility. Proper nouns (either a street or destination name) are preceded by 'to' in order to highlight that they are exit directions.



Simplified model of progressive disclosure at DUS. A diagram of this type would be needed to support any new information structure. Note the emphasis on navigating to modal services, amenities and onward connections rather than to buildings.



## 4.2 Proposal

### Sketching What is Possible

Many core concepts can be quickly mocked-up and tested with the public without large investment in a new system.

An example of this would be refacing some existing directionals and addition temporary new ones in large-scale vinyl at a few key areas on site, such as when you exit the heritage building.

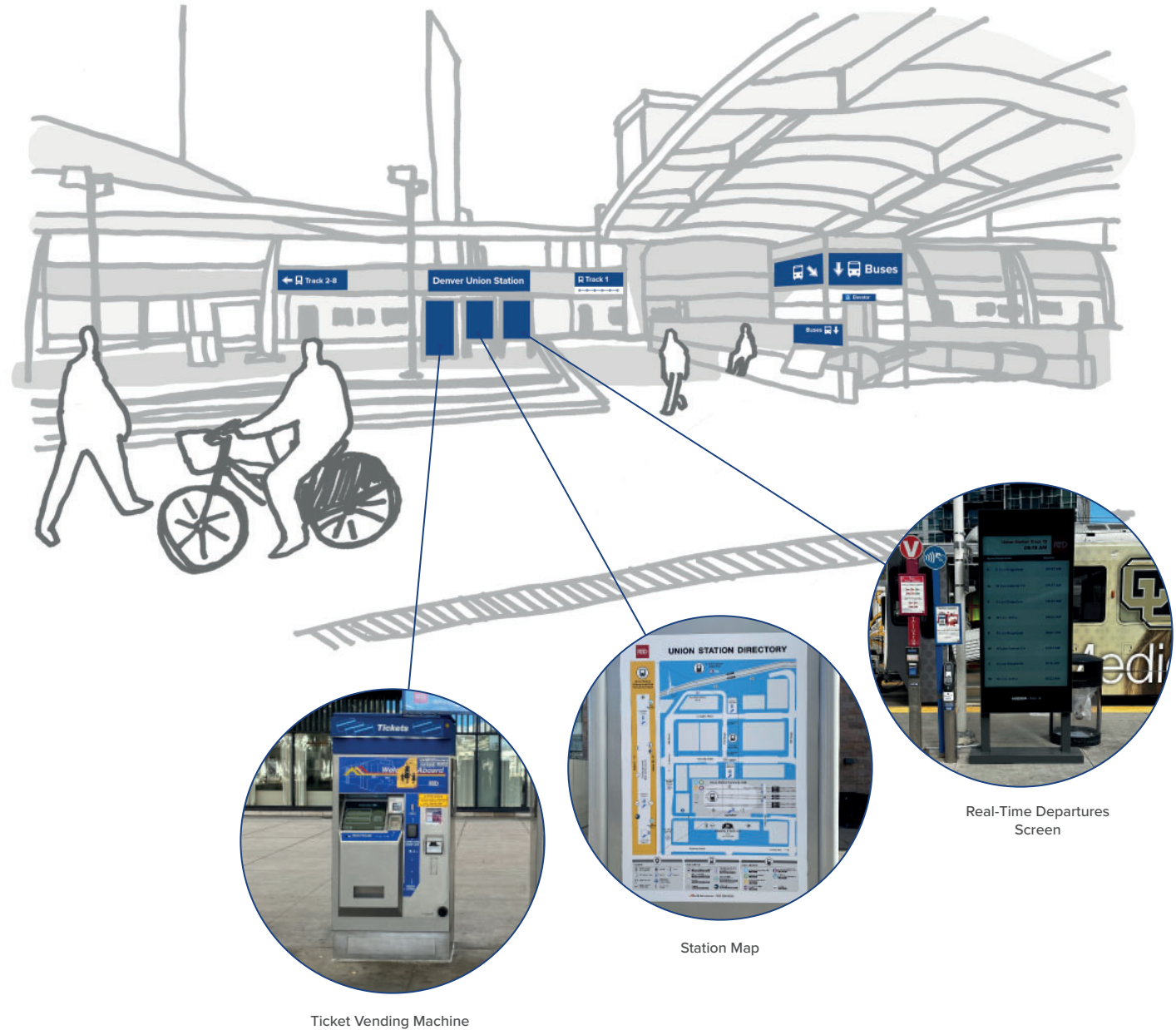
Providing clear directions as to where the bus concourse is, and at a large-scale will also help provide guidance to customers walking around the edge of the building.

Clearly noting that customers are facing Track 1 but need to navigate to the left in order to access the remaining tracks will quickly orient customers to the larger pieces of the site. The scale of these directionals and identification signs clearly marks the large sub-segments of the site. Designs can achieve a large scale due to the limited messaging, which is also providing a quick read to customers.

For a more detailed investigation of the site and the service locations, there need to be clearly identifiable site map and real-time information.

Mocking up and testing these kinds of designs will allow customers to provide feedback on:

- Identifying segments of the site by mode
- Directing to tracks and bays instead of individual services
- Effectiveness of reduced messaging
- Explores if light rail station needs to be named separately or if improving wayfinding is enough to reinforce connection to the Union Station district



# Section 5. Appendices

## 5.1 Staff Ideas



## 5.1 Staff Ideas

Ideas for improving wayfinding collected from frontline customer service and security staff at DUS during the consultant site visit.

### Train Hall

- Make track numbers bigger
- Add line diagrams to tracks
- Add service maps near TVMs
- Add facility maps
- Make bus concourse entrance pavilions much clearer
- Make route to light rail more obvious
- Add/ install larger departure board(s)
- Avoid new elements in concessionaire area (\$\$) or heritage building

### Bus Concourse

- A handout map of the DUS
- Add QR code for MyRide app ads
- Increase the brightness and text size of VMS at gates
- Make gate numbers bigger and easier to see
- Make accessible routes (elevators) clearer
- Provide information in Spanish or with more universal symbols
- Clearer arrow directions
- Improving seating locations relative to gates
- Better explanation of Bustang and Greyhound ticketing

### Other/General

- Consider options for alignment with language access needs as part of Title VI
- Strengthen bus to rail connections
- Digital doesn't replace paper for some
- Increase prominence of 16th St MallRide service
- Organize service disruption information
- Facility hardening for security may change access
- RTD sign shop has capability but needs resources
- Stronger sign design (dislodged directions)
- Update old information about light rail