



# 16th Street



# Urban Design Plan

concept design report  
16th street plan phasell

Denver, Colorado  
November 2010



# 16th Street



# Project Partners

CITY AND COUNTY OF DENVER  
 REGIONAL TRANSPORTATION DISTRICT  
 DOWNTOWN DENVER PARTNERSHIP  
 DOWNTOWN DENVER BUSINESS IMPROVEMENT DISTRICT

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intro

# Introduction

Introduction

# 16th Street Urban Design

## overview

### The Legacy

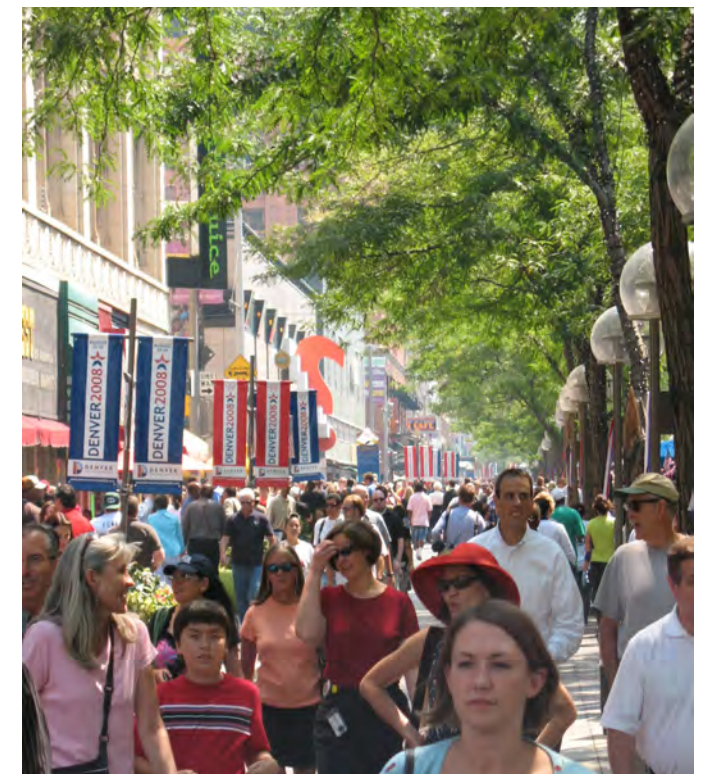
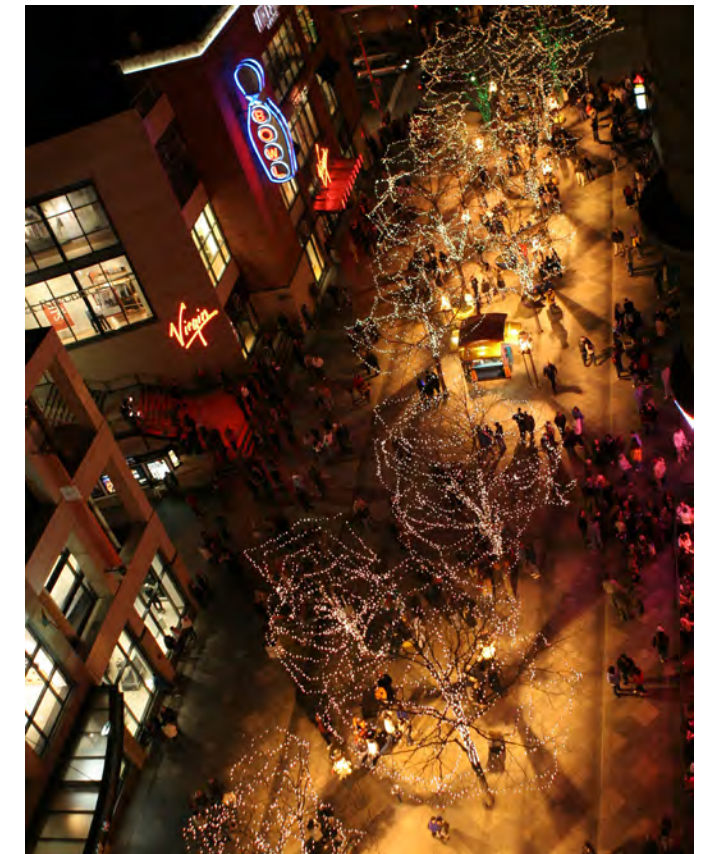
The 16th Street Mall opened in 1982 and has been the centerpiece of Downtown Denver ever since. The Mall dramatically revitalized 16th Street, which was the premiere retail destination in the Rocky Mountain Region since the 1890s, but had begun to lose some of its luster starting in the 1960s. Designed by the internationally renowned architecture firm of I.M. Pei and Partners after almost a decade of civic discussion and planning, the original 13-block Mall and bus transfer stations at either end were built in two years at a cost of \$76 million. The Mall was extended three blocks into Lower Downtown (LoDo) in 1992, and an additional four blocks into the Central Platte Valley in 2001, and is now over a mile long.

### Downtown: 1980-2010

In the late 1970s and early 1980s, an energy boom sent Denver's fortunes skyrocketing and similarly affected real estate downtown. Developers constructed skyscrapers on parking lots, but the later collapse of the energy boom in the 1980s led to increased office vacancy, retail decline and the departure of department stores from downtown.

Following the adoption of the 1986 Downtown Area Plan, several projects changed the shape of downtown Denver. The Lower Downtown district was revitalized with the addition of Coors Field, Denver's Downtown baseball stadium; the Adam's Mark Hotel expanded to occupy the full blocks on 16th between Tremont Place and Cleveland Place; and the Denver Pavilions opened along the 16th Street Mall in 1998, replacing two blocks of surface parking with retail and entertainment. Vacant department stores were renovated to mixed use buildings and sidewalk cafes began to emerge.

Throughout the 1990s, the 16th Street Mall witnessed dramatic changes in design, operations and adjacent land uses. In 1994, the Mall expanded into the LoDo district. A charter for the Mall Management District (established when the Mall opened in 1982) ended in 1992 but was replaced by a newly formed maintenance entity, the Downtown Denver Business Improvement District (BID). Charged with similar responsibilities, the BID continued to provide clean and safe services to the Mall and eventually expanded its work to include other downtown streets.





# Emerging Concerns

## The Changing Mall

The three decades since the 16th Street Mall was designed have been marked by substantial changes in the buildings, businesses and activities that frame the Mall. Wear and tear on this much loved place has been considerable. One particular cause for concern has been the deterioration of paving in the transitways. Replacement of granite paving with concrete was offered as an economical solution to this chronic problem, but released a storm of protest from the community. The BID undertook a technical assessment of paving alternatives and decided to variously renovate, re-set and replace the granite paving. Other concerns identified were: Americans with Disabilities Act (ADA) compliance, clutter of non-original elements in the median, fountains that don't meet current health standards and a compromised lighting system.

## Community Response

The message from the community at large was loud and clear: the polychrome granite paving of the Mall is a signature piece for the City and that design legacy should be upheld. But what of the other features of the Mall: the landmark light fixtures (some of which had been damaged and removed, while the remainder had been refitted with more efficient equipment but no longer fulfilled the designer's intent)? What of the trees, many of which had perished? What of the street furniture that had changed color and had various pieces added? What of the medians whose use had changed and the usefulness of which was now in question? Clearly it was time for a coordinated response to all of these questions – which is the purpose of the urban design plan that follows.

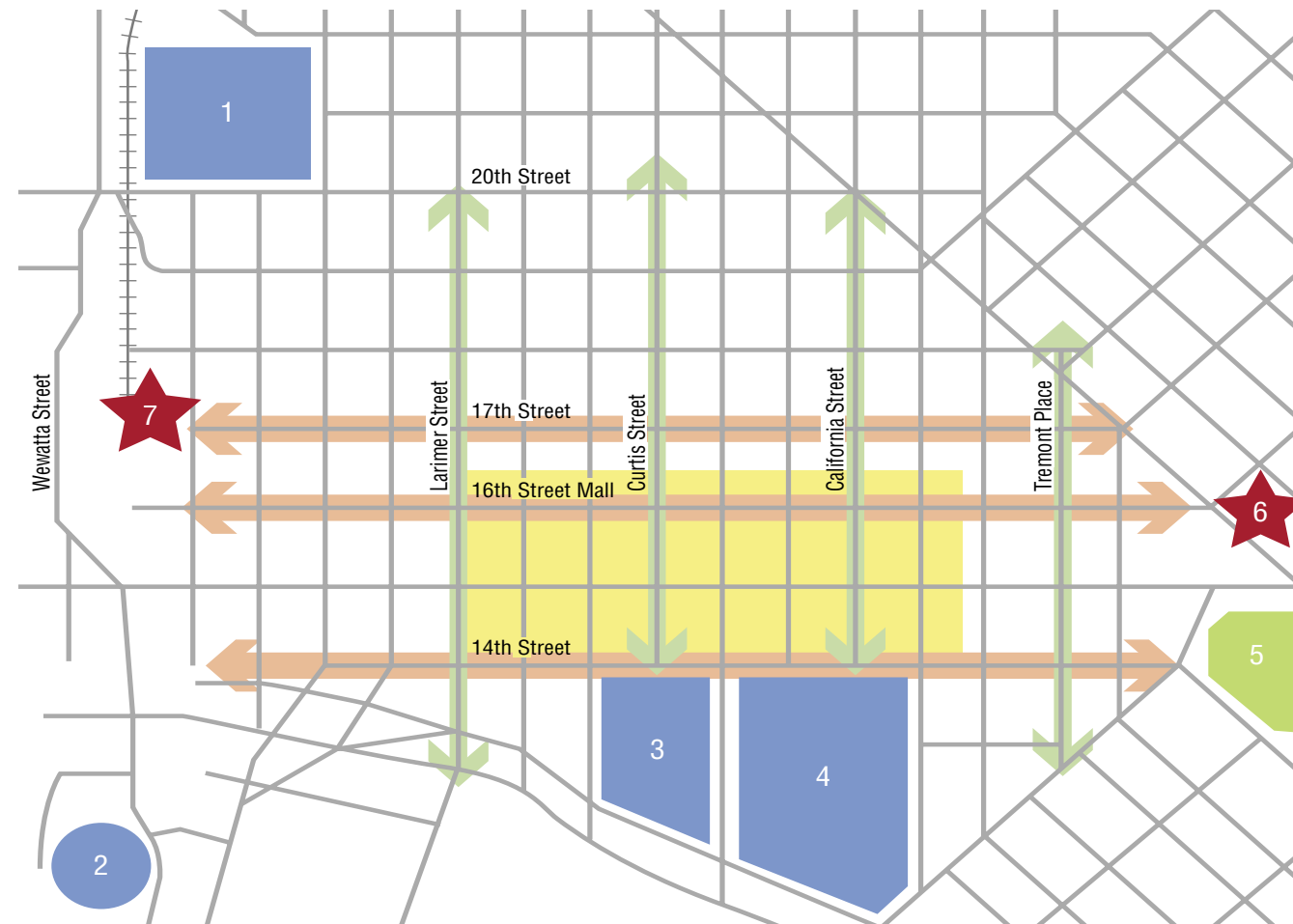
## ULI Study

### Findings

In May 2008 an advisory services panel of the Urban Land Institute convened to provide an objective assessment of the 16th Street Mall and its environs. Their report, *16th Street Mall, Denver, Colorado, Building on Success, May 11-16, 2008*, includes a number of recommendations that directly address the future of this special street:

- Generally the Mall's design works well and is very successful.
- Honor the original I.M. Pei – "Swiss Watch" precision design.

- Save granite pavers and trees if at all possible.
- Keep the median, but clear it of clutter.
- Consider reducing width of sidewalk cafes if more pedestrian space is necessary to avoid conflicts with shuttles.
- Technical issues in transitways – freeze-thaw issue seems to be biggest problem.
- Promote LEED/sustainability practices in all reconstruction efforts.
- Improve Mall terminations (especially Civic Center Station).
- City should take responsibility for its most loved outdoor realm. The place is too important for the Business Improvement District to fully manage.
- Reinforce cross-connections and transit to adjacent neighborhoods.
- Encourage diversity of spaces to promote a variety of retail.
- Named streets have great opportunity for lower rent retail spaces and can give Downtown critical mass of retail space.
- All downtown streets need to be more pedestrian-friendly.
- Plant as many trees as possible everywhere
- Convert one-way streets to two-way. Two-way movements are essential for pedestrian vitality and retail viability.
- Streets should be arranged as part of a system with a clear hierarchy and need to connect to the network of parks and open spaces.
- Create a comprehensive system of design standards, guidelines, and development review.



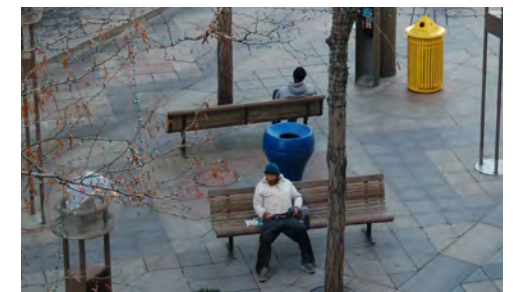
"Great Streets" network and the urban village - from the May 2008 ULI study

### Key

- 1 Coors Field
- 2 Pepsi Center
- 3 Denver Center for the Performing Arts
- 4 Colorado Convention Center

- 5 Civic Center Park
- 6 Civic Center Station
- 7 Union Station

- Major Street
- Neighborhood Street
- Urban Village
- Major Venue



### Growing Concerns

- Wear and tear of pavement and furnishings
- Real or perceived social issues
- Declining retail vitality and inconsistent street level presentation

# Downtown Area Plans

## Downtown Plan 1986

The Downtown Area Plan characterized 16th Street Mall as the spine of Downtown Denver, building an organized set of policies and initiatives around it. Design standards and guidelines were offered for infill development in the respected historic districts that make up the core of the city. This plan was powerful in its apparent simplicity and is responsible for two decades of coordinated developments and public improvements. The Plan also suggested sweeping economic revitalization of Lower Downtown, a major retail center covering several blocks on the southeast end of the 16th Street Mall, and ambitious mixed-use development in the Central Platte Valley.

## Downtown Plan 2007

The 2007 Denver Downtown Area Plan (DAP) builds on the 1986 Plan by providing an updated vision and set of Downtown goals and recommendations. While much of the vision as conveyed in the 1986 plan remains valid, many conditions had changed dramatically during the

intervening 20 years. The DAP provides a sound policy basis for citywide decision-making and strengthening Downtown's role as the heart of the region. Both public and private agencies will use the 2007 DAP in the coming years to guide decisions and actions that affect the form and function of Downtown.

### RELEVANT RECOMMENDATIONS

The 2007 Downtown Area Plan makes several specific recommendations regarding the 16th Street Mall:

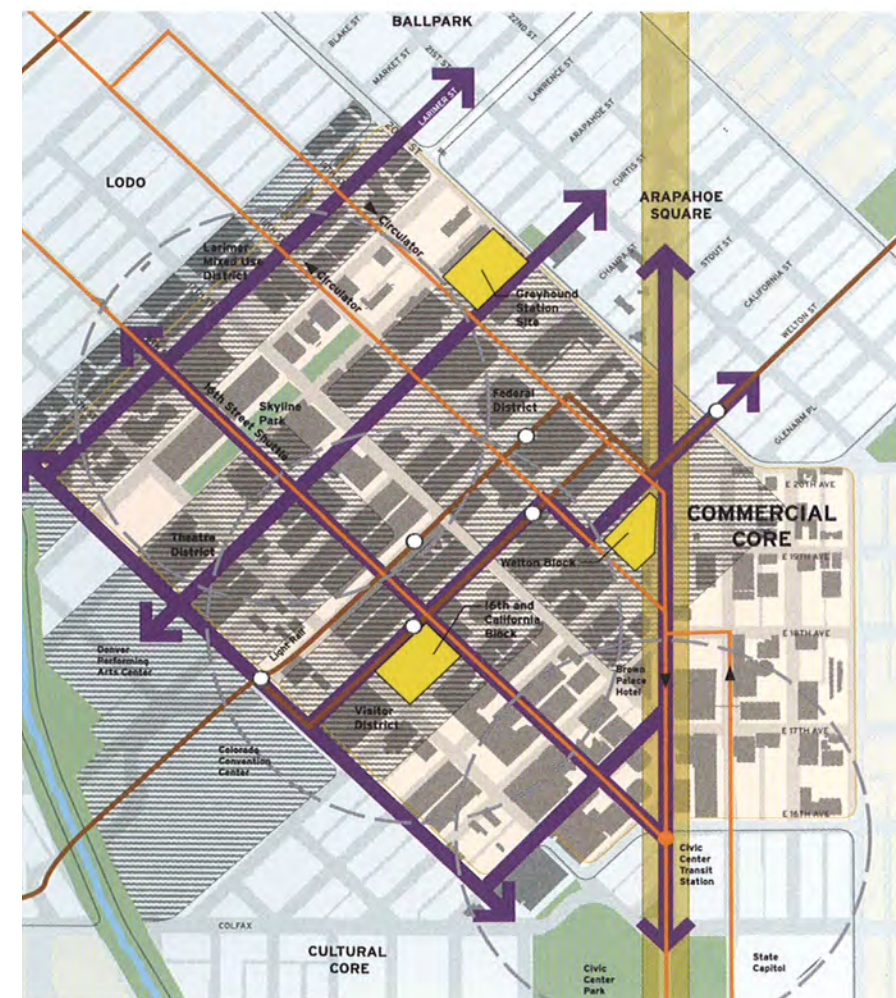
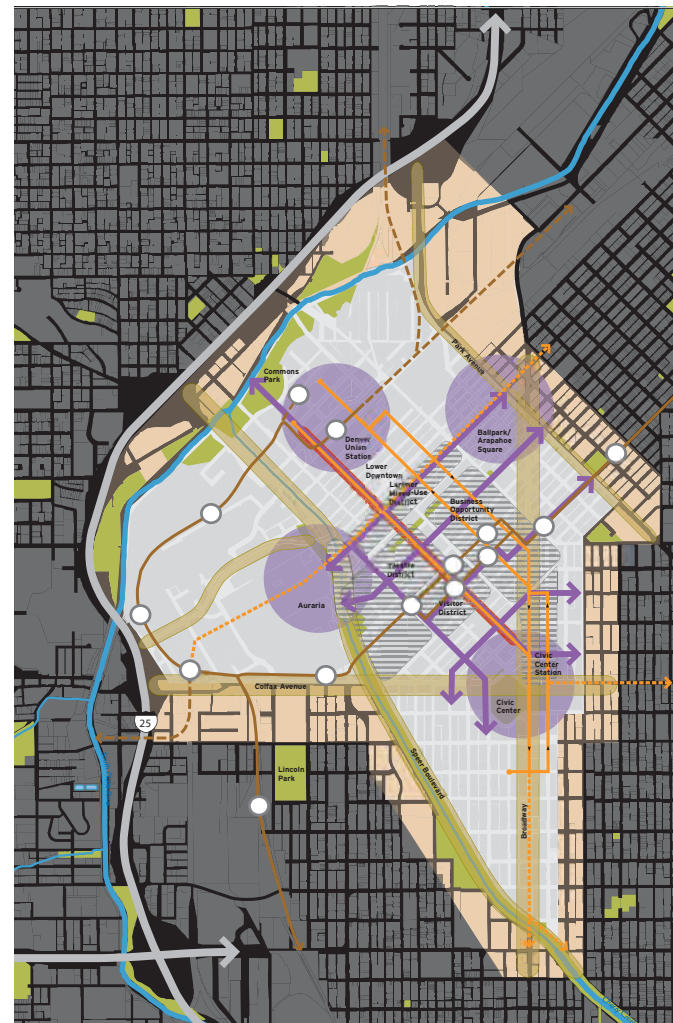
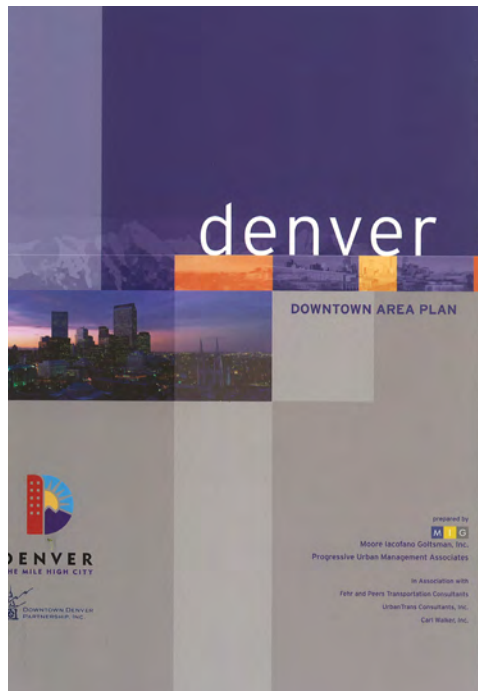
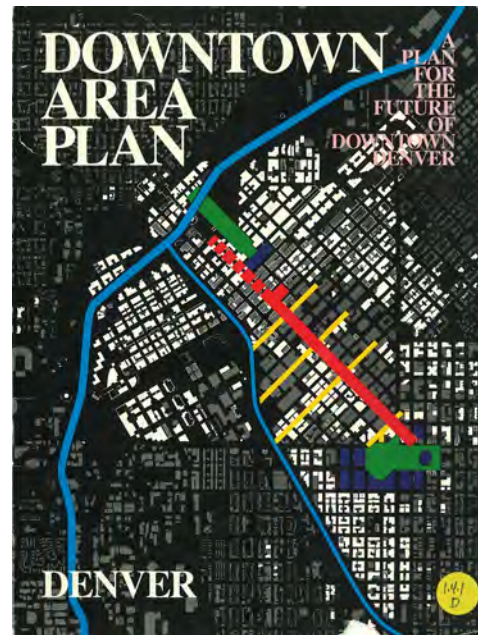
1. Create and enhance recognized sub-districts along the Mall, including Theatre and Visitor districts.
2. Create and implement a Mall activities strategy.
3. Develop a balanced retail strategy that includes entertainment, dining and specialty retailers.
4. Conduct a study of Mall infrastructure to assess needs and reconstruct to meet the goals of sustainability, usability and respect for the existing design.
5. Re-evaluate 16th Street Mall transit service in light of the Downtown Circulator frequency, operation, and technology.

In addition, the Plan outlines several other initiatives that impact urban form, land uses and activity including:

1. Establishing the Downtown Circulator as a complement to the Mall shuttle.
2. Strengthening pedestrian connections along Larimer, Curtis, California and Tremont streets.
3. Revising existing zoning and urban design guidelines to reinforce district identity, improve ground floor activity and enhance design quality.

### OPPORTUNITY SITES

Development or redevelopment of key opportunity sites identified in the DAP was considered essential to creating a dynamic, connected and walkable Downtown Denver. Two main criteria defined the selection of opportunity sites. First, each site was chosen for its strategic location and potential to shape new development and catalyze additional development in the surrounding areas. Second, these sites were usually either vacant or underutilized parcels, or possessed building forms that would deter adjacent development.



Development or redevelopment of these key opportunity sites is essential to creating a dynamic, connected and walkable Downtown Denver.

### Commercial Core Strategy

#### Legend

- LRT Stop
- LRT Line
- Proposed FasTracks Rail Line
- Intra-Downtown Transit
- Opportunity Site
- Grand Boulevard
- ▨ Special District
- Priority Pedestrian Connection
- 1/4-mile Radius Around Key Node/Transit Hub
- Neighborhood-Serving Retail

## Downtown Multimodal Access Plan



The Downtown Multimodal Access Plan (DMAP), completed in December 2005, followed parallel city and regional planning efforts. The primary goal of DMAP was an integrated plan for vehicular, freight, pedestrian, bicycle and transit access into and throughout Downtown Denver over the next 20-25 years.

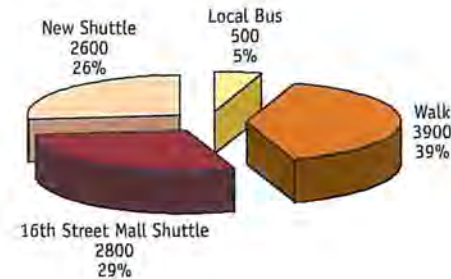
### DMAP HIGHLIGHTS

- 25% of all people coming into and out of Downtown in the peak hours are using some form of transit.
- 16th Street Mall is the cornerstone of the transit system, serving approximately 60,000 passengers daily.
- Based on future transit demands, a new shuttle system is needed to complement the 16th Street Mall shuttle and local bus network. This new circulator shuttle is recommended for 18th/19th and Lincoln/Broadway corridors, linking the Civic Center with Denver Union Station.

Relevant goals for the Downtown street system: complement development by serving pedestrian generators and destinations with enhanced pedestrian facilities; reinforce unique characteristics of Downtown's physical form; complement high-capacity transit services with enhancements that benefit both pedestrians and transit users with seamless connectivity.

The 2025 peak hour person trips in and out of downtown are forecast to increase by 42% and will require the existing transportation system to be managed as a multimodal system to maximize efficiency. Analyses indicated that this can be accomplished through a series of improvements that do not require additional lanes but maintain the predominantly one-way/three-lane, circulation system. (Four-lane streets are candidates for narrowing to provide minimum standard sidewalk widths).

With the completion of TREX and FasTracks, transit ridership is forecast to increase by 129 percent when compared to existing ridership. Much of this increased ridership will be destined for Denver Union Station. 2025 forecasts indicate that approximately 16,000 people will be traveling to Denver Union Station in the peak hour. Of these people, 39 percent will have destinations outside of Downtown and will transfer to other transit routes. The remaining 61 percent will have destinations within Downtown. The adjacent pie chart illustrates how the people with Downtown destinations will complete the last leg of their trip. Based on the demand for transit within downtown, a new shuttle system is needed to complement the 16<sup>th</sup> Street Mall shuttle and the local bus network.



Downtown transit network 2025

## Downtown Denver's Pedestrian Priority Zone



## An Implementation Framework

Denver City Council passed Proclamation No. 59, Fall 2008, which included the permanent designation of Downtown Denver as a "Pedestrian Priority Zone".

The Downtown Denver Partnership initiated the Pedestrian Priority Zone Work Group in December 2008 and charged the group with identifying and defining an implementation/action plan that could include programs, policy initiatives and/or physical installations that will encourage a pedestrian-friendly Downtown. This plan is organized into four sections: Introduction, Systems, Framework and Implementation.

### PEDESTRIAN HIERARCHY FRAMEWORK

- **Transformative Streets:** premiere public spaces and marquee features (16th Street Mall, Arapahoe at Skyline Park, Wykoop)
- **Transformative/Priority Intersections along 16th Street:** Broadway, Court, Tremont, Glenarm, California, Stout, Curtis, Arapahoe, Lawrence, Larimer, Wazee, Wynkoop
- **Equity Streets:** majority of Downtown street network; balance diverse mobility needs (Cleveland, Welton, Champa, Lawrence, Market, Blake)
- **Priority Streets:** provide the highest level of comfort, security for all pedestrian activity (Court, Tremont, Glenarm, California, Stout, Curtis, Larimer, Wazee, Wewatta)
- **Components:** intersections, sidewalks, public spaces, land use, and architecture

# 16th Street Plan

## Project Initiation

Following the recommendations of the ULI Panel in May 2008, the Regional Transit District (RTD), the City and County of Denver Public Works (the City), Downtown Denver Partnership (DDP) and Downtown Denver Business Improvement District (BID) agreed to share funding of a planning process for 16th Street Mall that would address rehabilitation of the pavement, upgrading and renovation of other design elements, evaluation of the physical design for the next 25-year horizon, economic development and management. The project was named the 16th Street Plan and officially started in April of 2008 with the appointment of a Steering Committee and Technical Committee. The Steering Committee is made up of leaders from the four partner agencies, as well as interest groups, community groups and citizens. The Technical Committee includes technical leaders from the partner agencies and other relevant agencies concerned with downtown streets, public spaces and transportation operations.

The first order of business for the Steering Committee was a Statement of Intent and set of Guiding Principles all agreed to. They are as follows:

### Statement of Intent

The 16th Street Plan Steering Committee intends to review the physical condition of the Mall and determine a course of action that respects the importance of the original Mall design, including its purpose, general layout and building materials. The Committee's goal is to make recommendations for the Mall's future that address the following points in the Downtown Area Plan:

1. Create and enhance recognized sub-districts along the Mall;
2. Conduct a study of Mall infrastructure to assess its needs and to make recommendations to meet the goals of sustainability, usability and respect for the existing design;
3. Re-evaluate 16th Street Mall transit service in light of the Downtown Circulator frequency, operation and technology.

### Guiding Principles

We, the 16th Street Plan Steering Committee, hereby commit to the following guiding principles when determining the long-term vision for the Mall:

1. The 16th Street Mall was designed to function as a pedestrian-transit mall and will continue as a pedestrian-transit mall in the future.
2. The 16th Street Mall has historically served as the commercial main street in Denver and will continue to serve as a key catalyst for economic development in Downtown, both along 16th Street and along the streets perpendicular and adjacent to it.
3. The 16th Street Mall, nationally recognized for the quality of its design and craftsmanship, is one of Denver's legacies and it is, therefore, deserving of respectful treatment as it is rehabilitated for its next generation of use.
4. The 16th Street Mall must be sustainable economically, operationally and ecologically – and, therefore, its long-term plan must be flexible in order to accommodate evolutions in infrastructure, communication and transit technology over the next 25 years.
5. The 16th Street Mall is the most widely recognized feature of Downtown Denver and the Rocky Mountain region, contributing greatly to the sense of place: it is the centerpiece of Downtown, it is one of Denver's primary civic spaces and it must continue to be so in the future.
6. The 16th Street Mall's pedestrian experience is the highest priority when considering other design and operational features, including but not limited to transit, streetscaping, programming and special events.

A first phase request for proposals, named the Technical Assessment and Rehabilitation Study, was drafted and issued in October of 2008. The scope called for a technical evaluation of potential pavement renovation strategies, an initial assessment of utilities, above-grade design elements for ADA compliance and alternative transit technologies. That work was completed in October of 2009 by Matrix/ EDAW AECOM/Atkinson-Noland & Associates, Inc./RMH Group.

In September of 2009, the RTD, the City, BID and DDP issued a request for proposals for a second phase, *16th Street Plan - Phase II, Urban Design Plan*, the focus of this report. The scope description included analysis and recommendations of the Mall's urban design configuration, overall design themes, existing lighting, trees, furnishings, fountains and intersections. The geographic area includes the original Mall from Broadway to Market

streets, the Lower Downtown segment from Market to Wynkoop streets and the proposed Denver Union Station segment from Wynkoop to the Millennium Bridge. Planning work commenced November, 2009.

The following are major milestones of the 11 – month effort:

*November 9, 2010:* Project commences  
*November 2009:* Field Observation and Focus Group Interviews

*December 2-3, 2010:* Design Team Charette #1 in Denver; development of 3 concept options  
*December 9, 2009:* Public Meeting #1; results of analysis and interviews, statement of findings

*January 2010:* Continued analysis

*February 3-4, 2010:* Design Team Charette #2 in Denver; refinement of 3 concept options  
*February 4, 2010:* Public Meeting #2; discussion of options  
*February 24-25:* Public Workshops; discussion of options; further clarification of findings and assumptions leading to options

*March 2010:* forensic reports on ADA, fountains, furnishings submitted

*April 6, 2010:* Public Meeting #3; presentation of full block plans with each option  
*April 2010:* On-line public surveys created; 2 additional design options identified

*May 12, 2010:* Public Meeting #4; review of options; public comment  
*May-June 2010:* Meetings with Stakeholders, Public Surveys collected; forensic report on lighting submitted

*July 9, 2010:* Public Feedback on options due

*August 15, 2010:* Steering Committee provides recommendation on design options to consultant team  
*August 25, 2010:* Public Meeting #5: results of Steering Committee recommendation presented to the public

*November 2010:* Final 16th Street Urban Design Plan Phase II available to the public

## phase one: technical assessment and rehabilitation study

### Assumptions

The Phase I team developed the rehabilitation alternatives with the following assumptions in mind:

- Fixing the pavers is the primary concern;
- The paving system will remain granite;
- The Mall's cross section will not change;
- This rehabilitation study addresses the portion of the Mall from Broadway to Market Street

### Paver System Recommendations

Recommended alternatives for the pavers include the following four scenarios:

- **No Build:** No rehabilitation - continue with current repair methods;
- **Minimal Repair:** Grind out joints, pack grout into voids, repoint paver joints;
- **Repair in Place:** Resurface pavers in place - inject setting bed voids with fluid grout, remove and replace paver joint mortar with epoxy or other surface seal;
- **Remove and Rebuild:** Remove pavers and existing setting material, resurface bottom of pavers and flip, new setting bed (possible with mechanical anchors), and paver joints (possible with epoxy or other surface seal).

The preferred paver rehabilitation alternative was a combination of two above mentioned options: Minimal Repair for the pedestrian rights-of-way (sidewalks and medians), and Remove and Rebuild for the transitway.

### Infrastructure Recommendations

#### WATER

- Irrigation: repair leaking backflows and upgrade irrigation at tree pits as necessary by tree condition. (i.e. continue with current BID maintenance.)
- Deck Hydrants: Repair and replace as necessary to bring all deck hydrants up to proper functionality.

#### STORM SEWER

Modify inlets to accommodate cleaning as necessary for environmental compliance.

#### SANITARY SEWER

No changes necessary as the existing sanitary systems satisfy the Denver Sanitary Sewer Master Plan.

#### ELECTRICAL

- Power Outlets: Upgrade to 200 amp service and replace pit receptacles, conduit and wiring infrastructure. Abandon original existing lines in place.
- Light Fixtures: Explore options for upgrading light fixtures to address ADA compliance, high replacement cost, poor energy efficiency, insufficient light levels that fail to meet the original lighting goals.

#### MANHOLES

Many manhole collars have deteriorated and need to be replaced, and concrete inlay covers should be replaced with granite inlay covers to match paving design.

### Urban Design Recommendations

#### TREES

Replant missing trees, replacing failed oaks with alternative species as necessary.

#### PLANTERS AND TRASH RECEPTACLES

Relocate, refinish and repaint or replace planters and trash receptacles as necessary for access and mobility consistent with ADA compliance.

#### FOUNTAINS

Redesign and upgrade mall fountains with water efficient technology.

#### OTHER URBAN DESIGN ELEMENTS

Upgrade and relocate as necessary; specific design and site locations to be determined.

### Alternate Transit Technologies Recommendations

The current operating plan accommodates one shuttle every 75 seconds or 48 shuttles per hour in the peak hour. This equates to 4,300-5,300 passengers per hour or approximately 50,000 riders per day.

Based on 2030 forecasts with Fastracks and DUS in place, the plan anticipates a demand of 14,000 riders per hour in the peak hour. This means the Mall shuttle would have to increase to 72 shuttles per hour to handle 6,600-8,000 riders per peak hour with the remainder needing to be accommodated with new circulator shuttle service on 18th/19th.



#### RUBBER TIRE BUS - RECOMMENDED OPTION

The current vehicle type, operating system and bus way are the optimum combination for 16th Street Mall. This recommendation is based on the evaluations conducted relative to the following transit technologies:

#### LIGHT RAIL

LRT cannot turn around at the Mall ends; would require overhead electrical infrastructure; would have to operate at less frequent headways and wider spaced stops; would require some utility relocations; and would be limited in the ability to do limited crossovers during repairs and special events. Not recommended.

#### ELECTRIFIED STREET CAR

Similar to Light Rail. Not recommended.

#### RUBBER TIRE STREET CAR (TROLLEY)

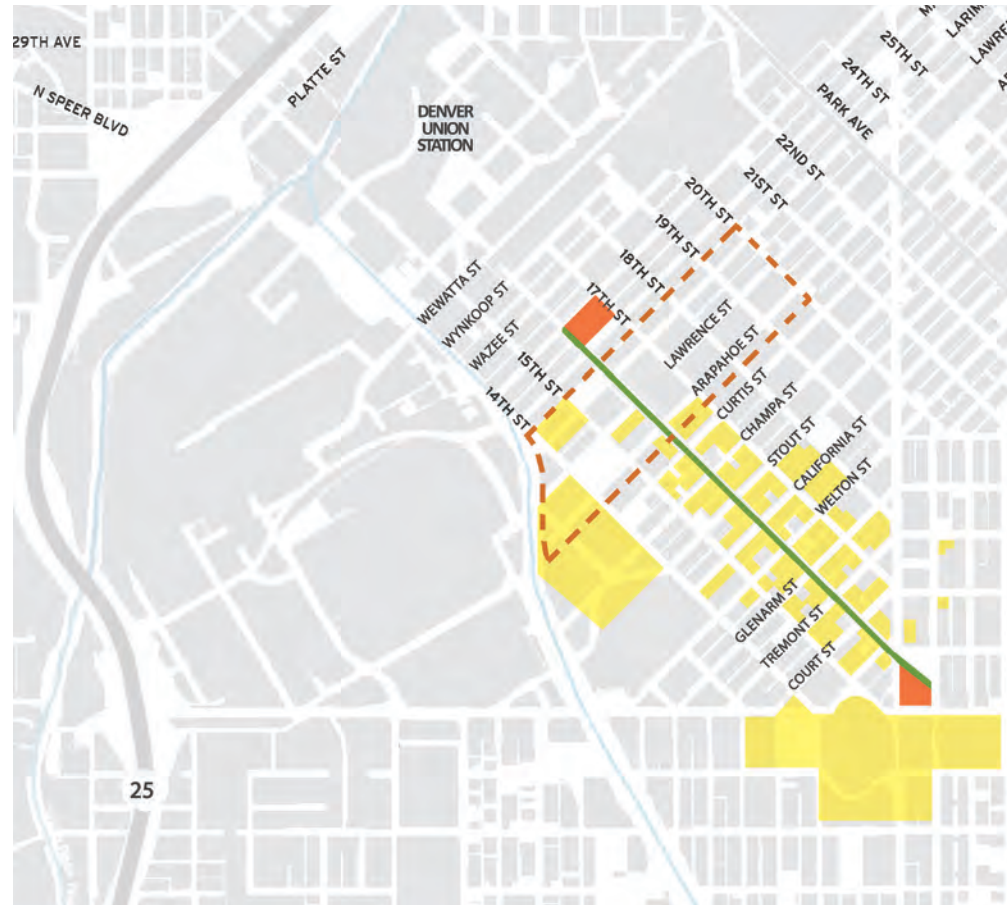
This technology has higher proportion of seated to standing passengers than the current Mall shuttle and thus would require longer boarding times and reduced passenger capacity on the Mall. Not recommended.

#### MONORAIL/PEOPLE MOVERS

Monorails requires a grade separated guideway which would have significant impact the pedestrian environment and landscaping on the Mall; it is also the most expensive alternative by a wide margin. Not recommended.

# Downtown Denver and 16th Street Mall

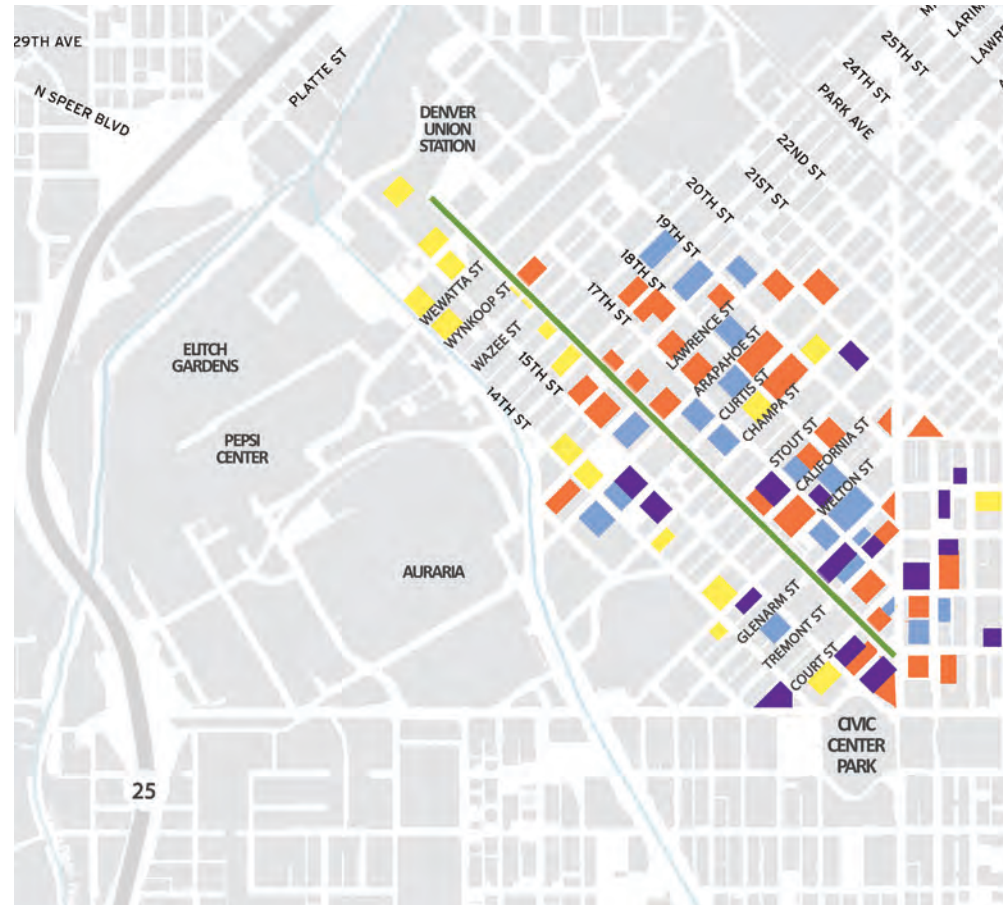
*historic perspective*



## Downtown Planning in the 1970's

- - - skyline urban renewal project area
- downtown development areas
- ■ 16th Street Transitway Mall and terminal stations

The Transitway Mall Plan 1977, showing the 16th Street Mall and terminal stations and the Skyline Urban Renewal Area. Note the concentration of identified development in all areas on the Mall.



## Office Growth 1970-2010

- before 1970
- 1970-1980
- 1980-1990
- 1990-2000 (none)
- 2000-2010
- 16th Street Transitway Mall

Growth of office space pre-1970 – 2010; note the concentration of office space along 17th and 18th streets and near Broadway and Lincoln and the lack of office space south of 16th.



## Department Store Closures 1960-2010

- closed before 1960
- closed 1960-1970
- closed 1970-1980
- closed 1980-1990
- closed 1990-2000
- 16th Street Transitway Mall

Downtown as regional retail center: note 12 local and regional department stores before 1960 (none remaining today), all along 16th Street. Several of these store's buildings were converted into mixed-use developments in the 1990s.



16th Street in the mid-1970's, prior to construction of the Transitway Mall



Barcelona's La Rambla with its median, was a design inspiration for 16th Street Mall



Downtown office growth 1970-2010



Department stores on 16th street in the 1950's

historic perspective



Downtown Historic Districts

- current downtown historic districts
- transit stations
- 16th Street Transitway Mall

The emergence of historic preservation districts in Downtown Denver in the 1980s; this marked a shift away from urban renewal clearance of existing buildings and the emergence of vital, mixed use districts.



The Lower Downtown Historic District



A VISION: DOWNTOWN OF THE FUTURE

The 1986 Downtown Plan envisioned a greater downtown area connected to the surrounding areas and called for increased density, mixed use development of the original rail yards in the Central Platte Valley, new major open space along the South Platte River, an intermodal transit center and the extension of 16th Street as a pedestrian spine to the South Platte River.



Downtown Retail Centers

- denver pavillions (completed in 1998)
- tabor center (completed in 1985)
- writer square (completed in 1981)
- larimer square (landmarked 1971)
- 16th Street Transitway Mall

The emergence of specialty retail and entertainment complexes followed national trends in downtown retailing over the last 25 years. Note the proximity to 16th Street Mall.



Tabor Center



The Pavillions

historic perspective



Downtown Transit Network

- transit stations
- commuter rail lines (planned)
- light rail
- regional bus routes
- downtown circulator (planned)
- 16th Street Transitway Mall

Downtown Transit Network after buildout of Fastracks includes: Denver Union Station as the hub for major transit lines, the 16th Street Shuttle and the Downtown Circulator Shuttle on 18th and 19th streets.



Downtown Convention and Sports Entertainment

- colorado convention center
- coors field
- pepsi center
- elitch gardens
- hotels
- 14th street ("ambassador street")
- connecting corridors
- 16th Street Transitway Mall

Downtown convention and sports entertainment: the Colorado Convention Center and most hotels, as well as Coors Field and Pepsi Center are linked by transit and pedestrian connections to 16th Street Mall.



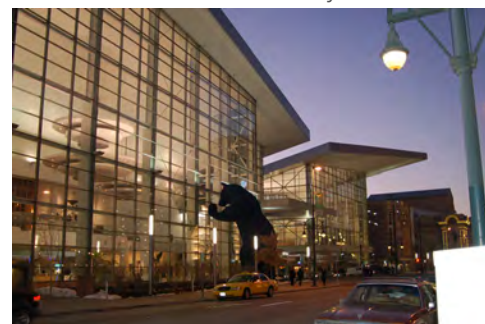
Downtown Culture and Arts

- public library
- performing arts venue
- museums
- institute of higher education
- connecting corridors
- 16th Street Transitway Mall

Downtown Arts and Culture: higher education, performing and visual arts and the library are linked by transit and pedestrian connections to 16th Street Mall.



Light Rail on California Street



The Colorado Convention Center



Coors Field



The Denver Art Museum

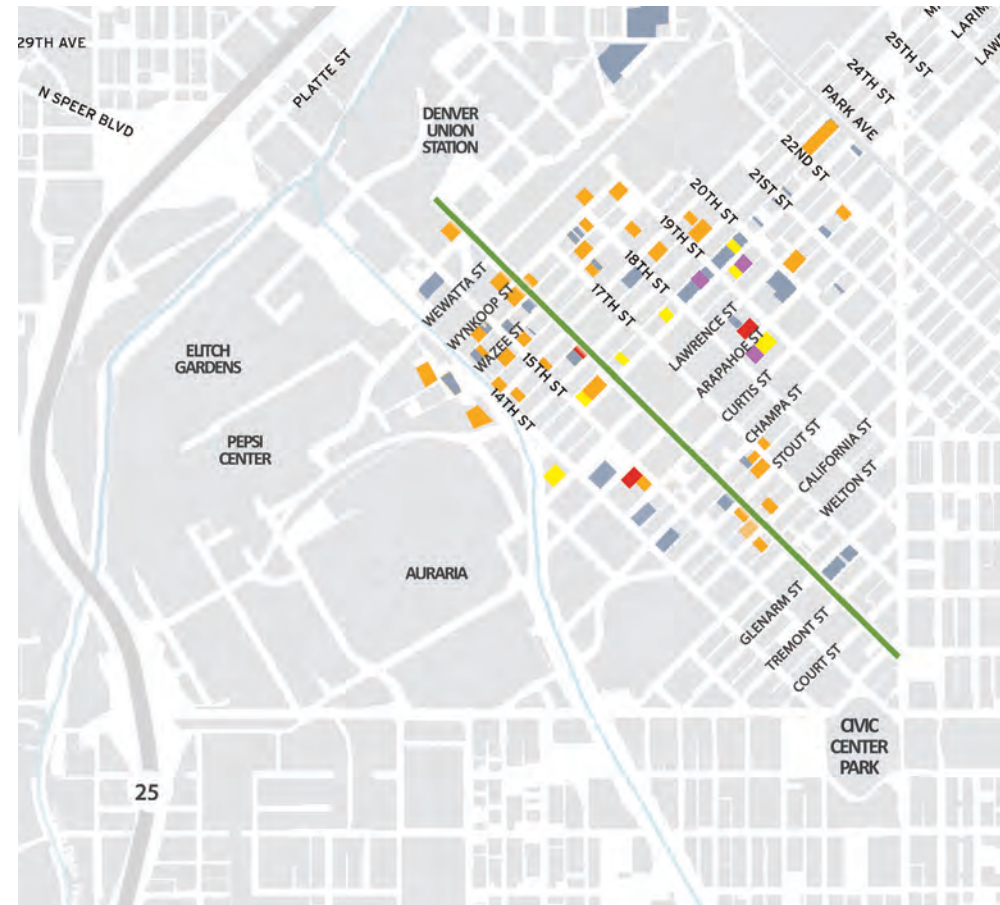




**Downtown Enhanced Streets**

- — — current enhanced streets
- - - proposed enhanced streets
- 16th Street Mall

Downtown Enhanced Streets: shows the extent of a planned pedestrian precinct between 14th to 20th and Wynkoop to Lincoln.



**Downtown Housing Growth 1970-2010**

- before 1970
- 1970-1980
- 1980-1990
- 1990-2000
- 2000-2010
- 16th Street Transitway Mall

Downtown Housing: shows the growth of urban housing; note the concentration in Lower Downtown within 3 blocks of 16th Street Mall.

**Observations**

Over the life of 16th Street Mall, Downtown Denver has evolved in a number of significant ways:

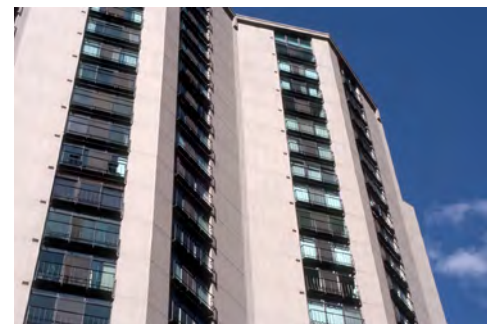
It has seen upward and downward cycles in commercial real estate but has remained the largest office and employment node in the metro area. 16th Street plays an important role in serving this high density core with a very viable mobility choice.

Consistent with other US cities, Denver's retail mix has changed from general department store merchandise to specialty centers mixed with restaurant and entertainment uses. 16th Street Mall, with the best pedestrian environment in Downtown, is the location of choice for most remaining retail and the greatest concentration of restaurants with outdoor seating.

Tourism and entertainment have expanded with museums, concert halls, arenas and stadiums, bringing in more visitors and residents to Downtown, helping to partially offset the loss of merchandise. 16th street Mall is the top tourist destination for the metro area and continues to be a must-see destination for most visitors.

As light rail, commuter rail, bus, shuttle and potentially streetcar services expand in Downtown Denver, the feasible area of walking will expand so that no destination within the greater Downtown is more than a 15-20 minute walk/ride trip from any other point in Downtown. 16th Street, with its free shuttle system, is at the heart of that pedestrian/transit network. As urban housing expands, downtown residents will depend even more on the Mall shuttle for their intra-downtown trips, eliminating the need for short car trips and meeting the long range goals for transportation management.

In summary, 16th Street Mall remains very viable and is perhaps an even more critical component in Downtown Denver's commercial, cultural and civic life today. It is therefore ever more important to preserve, renovate and revitalize this investment.



# The Transitway/Mall: 1977

*historic perspective*

## Overview

In 1977, I. M. Pei and Partners in association with Hanna-Olin submitted the design report describing improvements subsequently known as The 16th Street Mall. There were three project goals:

1. To lessen traffic congestion in the downtown;
2. To provide more efficient bus service to city and suburban neighborhoods; and
3. To create a new pedestrian environment in downtown – a place for people.

The project would transform 16th Street between Broadway and Larimer into a tree-lined pedestrian precinct. 'Electric shuttle cars' – the only vehicles allowed on the Mall – would carry passengers to and from transfer facilities located at each end. Express commuter buses would enter the transfer facilities at below-street concourses where riders would transfer to transitway vehicles waiting at ground level. Shuttles would leave the terminals every 70 seconds, stopping at each block along 16th Street. The report continued:

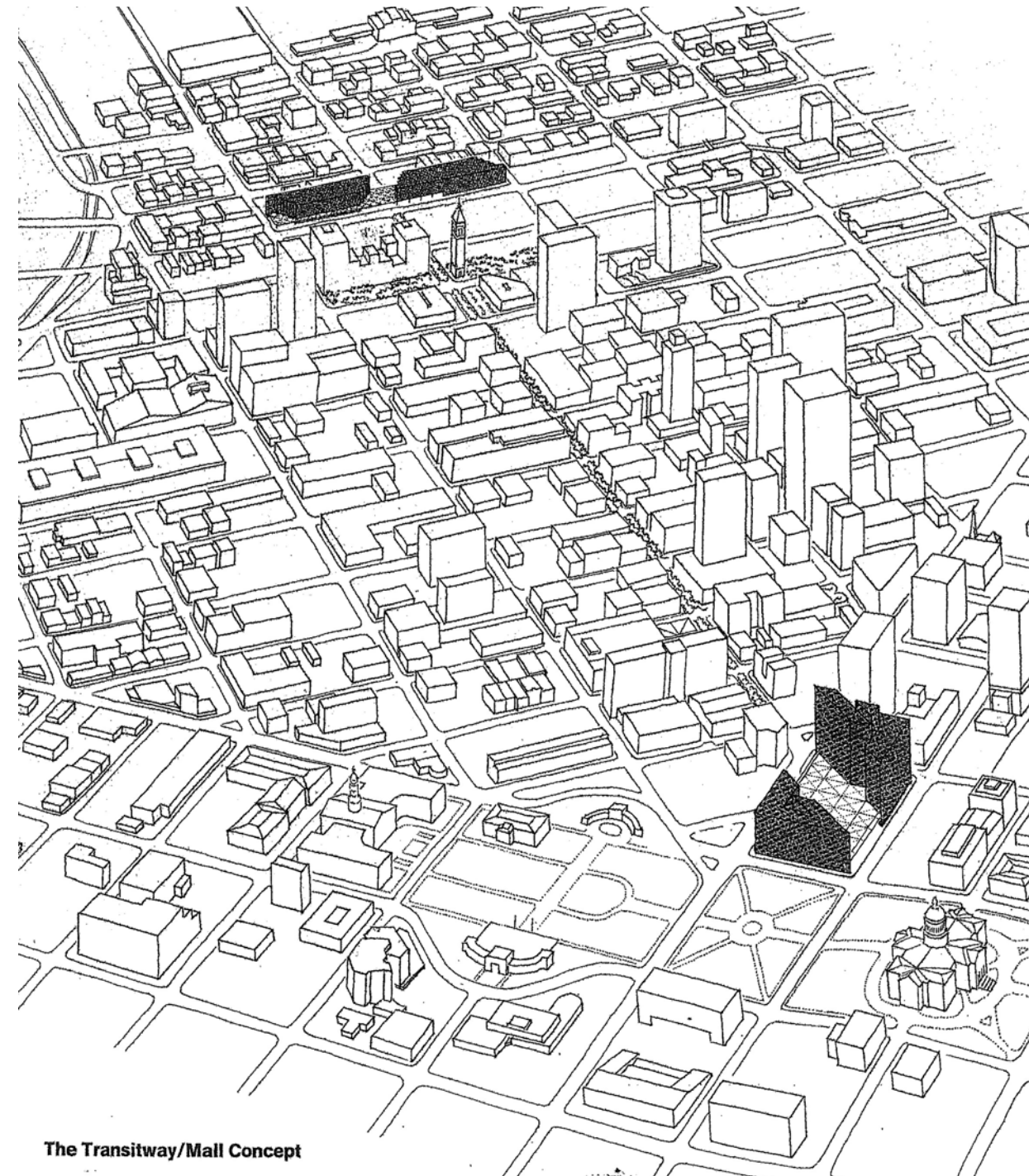
'By intercepting express buses at the edges of the retail-office core, there will be fewer buses on downtown streets and therefore substantially less traffic congestion' Also commuter buses will be able to get in and out of downtown much faster enabling them to make additional productive trips during rush hour.

Basic elements of the 16th Street urban design concept include:

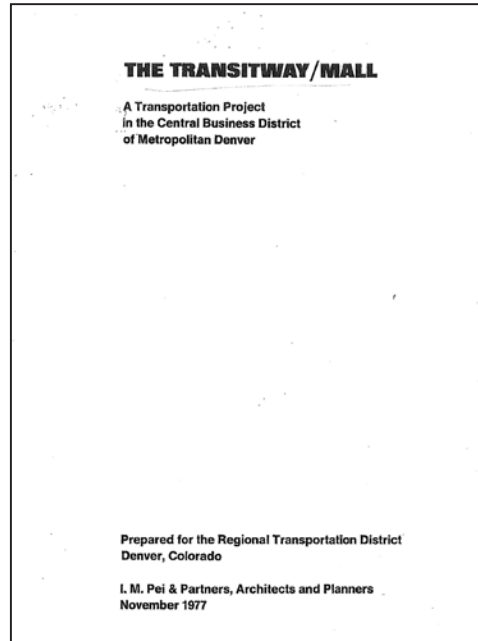
- A double row of mature honey locust trees flanking the 22-foot wide promenade in the center of the street;
- Two 10-foot wide transitway paths on either side of the central zone;
- Widened sidewalks along the storefronts;
- Patterned paving over the entire street surface in varying tones of muted grays and red;
- A combination light fixture creating a variety of light levels at dusk, during the evening, and for late night security;
- Shelters, benches, fountains as well as places for displays. Sidewalk cafés, and special events.

This basic arrangement is modified on the end blocks of the mall. Here, the transitway paths come together and are flanked by a single row of trees offset to open the street to views of the mountains and D&F Tower at one end, and the Capitol dome at the other.'

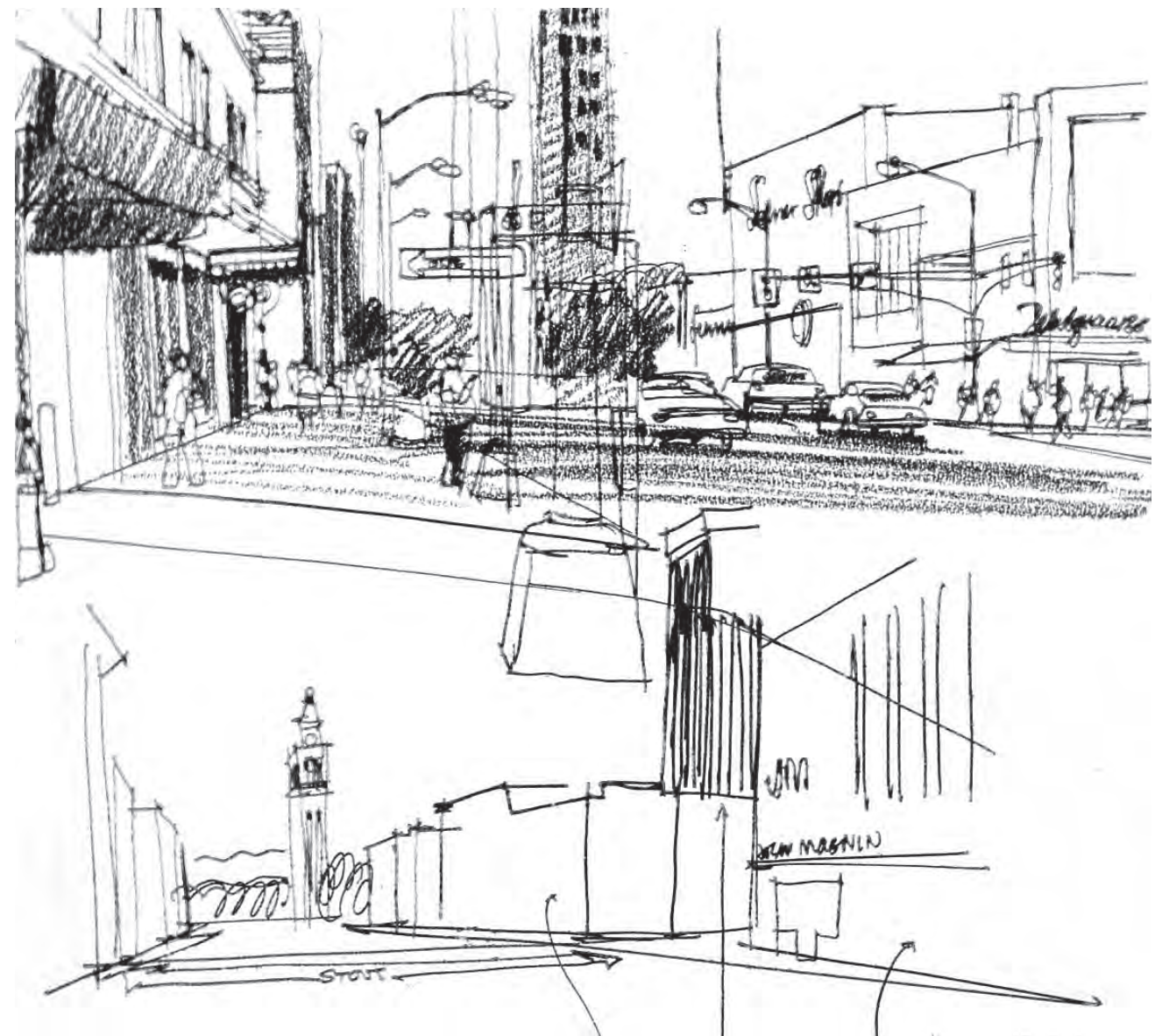
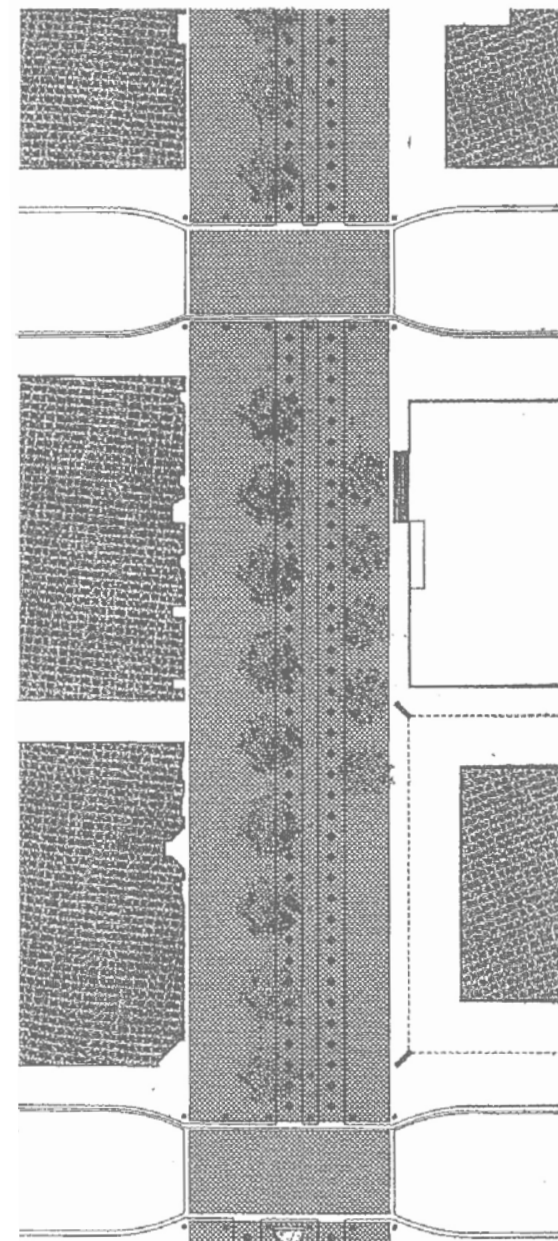
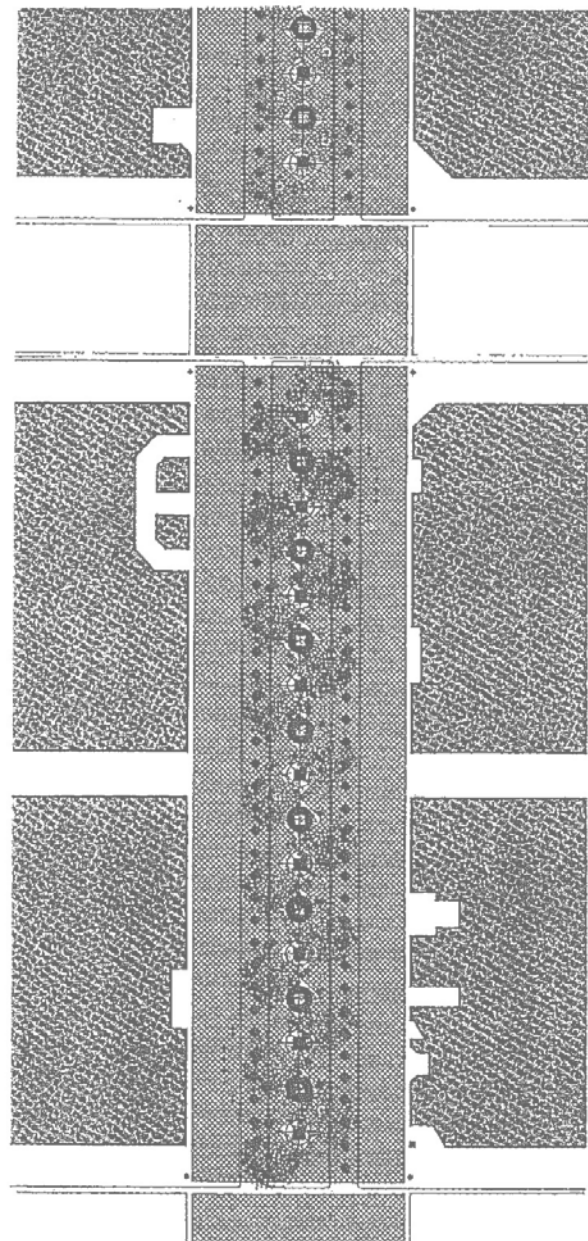
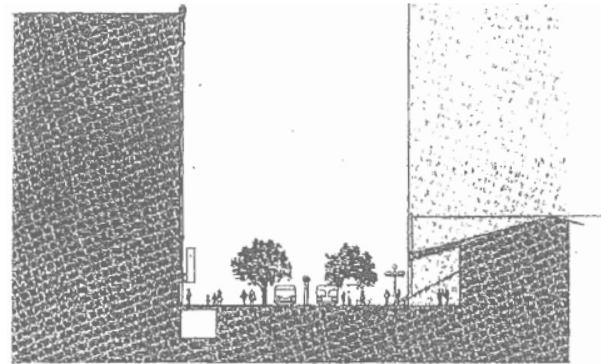
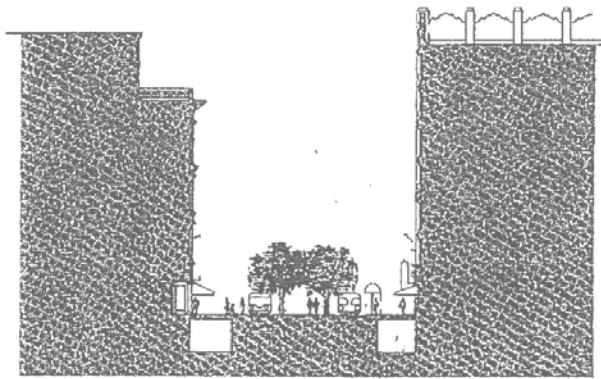
The report went on to elaborate the design concept, noting that three disparate aspects of the street must be addressed: functional, environmental and formal. It characterized the challenge of the design concept 'to create a unifying theme and common identity for the street while protecting its distinctive personality'.



The Transitway/Mall Concept



Barcelona's Ramblas was the original inspiration for the Pei/Olin design team



Typical symmetrical/median block and section

Typical asymmetrical block and section (later revised to trees on wide sidewalks only)

Early sketch studies of 16th by Laurie Olin, exploring vistas to the State Capitol and D & F Tower



Original steel and hardwood bench



Original fiberglass, modernist planter in grey color



Original fiberglass trash receptacle in modernist, tapered shape, and grey color



The mall in the mid-1980s



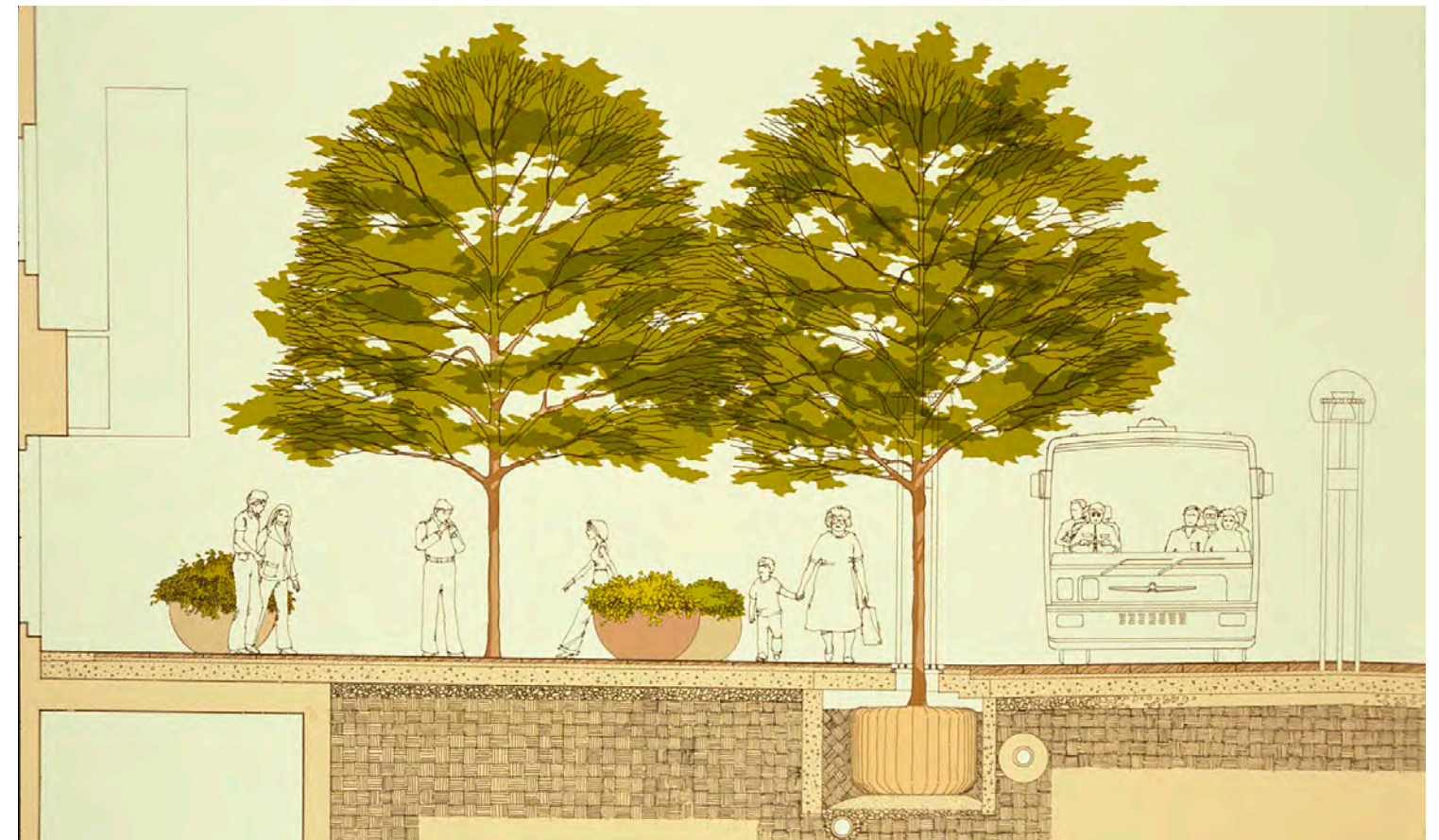
The original 3-color granite paving during installation



The original fountain basins with granite pedestal seats



The original symmetrical/median block paving pattern inspired by the western diamondback rattle snake skin



The original precast tree vaults

## Lighting

In his introduction to the 1977 lighting report, Howard Brandston noted that unlike street lighting, 'Mall requirements are for humans as pedestrians. Lighting for Malls must respond to the way walking humans see and move. Psychological comfort and satisfaction, as well as physical safety, must be achieved.' He went on to analyze the specific illumination needs of Mall users.

### COLOR

Brandston determined that in contrast with the orange light from high pressure sodium that would be used in most Denver streets, 'Sixteenth Street will be lit by full spectrum sources which produce a color rendition as close to that of daylight as possible, though much lower in intensity'. To provide a transition between colors, it was proposed that cross streets between 15th and 17th Streets 'be relit with high efficiency, high color-rendering sources in new sharp cut-off fixtures.' This would expand the area of influence of the Mall and would reduce glare.

### BRIGHTNESS

Lighting levels would be modulated for variety, liveliness and function, generally using reflected light rather than direct illumination. Significantly, the report states: 'Storefronts, using normal display lighting and graphics will be the brightest elements, forming an inviting, interesting and psychologically comfortable closure to the Mall'.

### SPACING

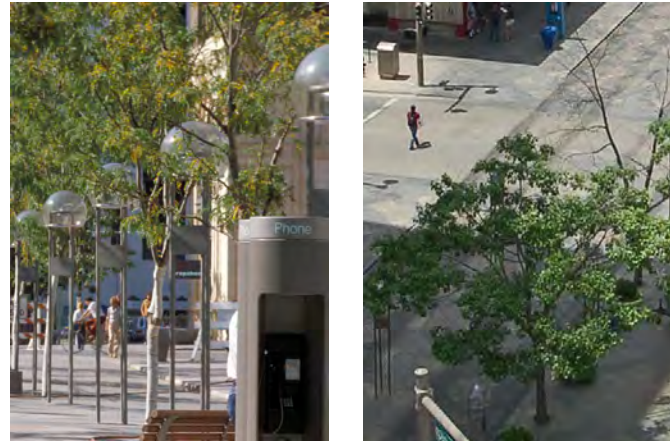
Light fixtures would line both sides of the central walkway, spaced 32' apart as they alternate with trees on a 16' grid. Placing them close to the transitways would illuminate the sides of buses as they approach, warning pedestrians. End blocks of the Mall would be less bright because storefronts are less prevalent. Here, a double row of luminaires would continue the same spacing as the center blocks.

### PAVEMENT MARKER LIGHTS

The center line of each transitway was to be traced by a series of embedded marker lights. These lines of blue lights were to be continued across intersections, a reminder of frequent shuttle vehicles crossing.

### ALLEYS & SECURITY

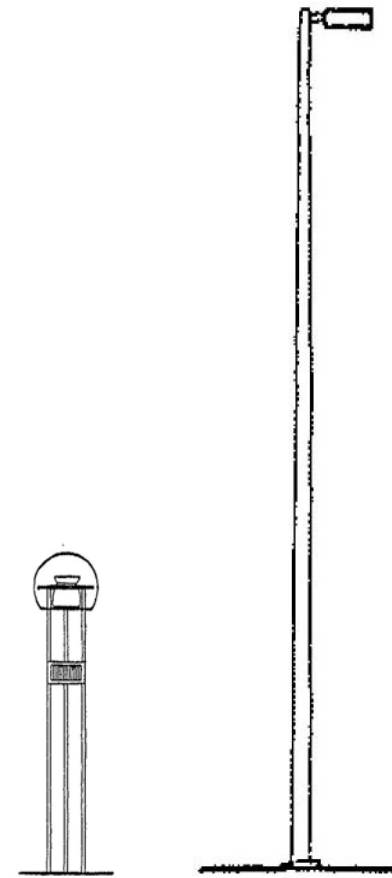
Mid-block alleys interrupt the continuity of illuminated storefronts, appearing as dark slots which may make Mall users feel unsafe. '...alley entrance walls from



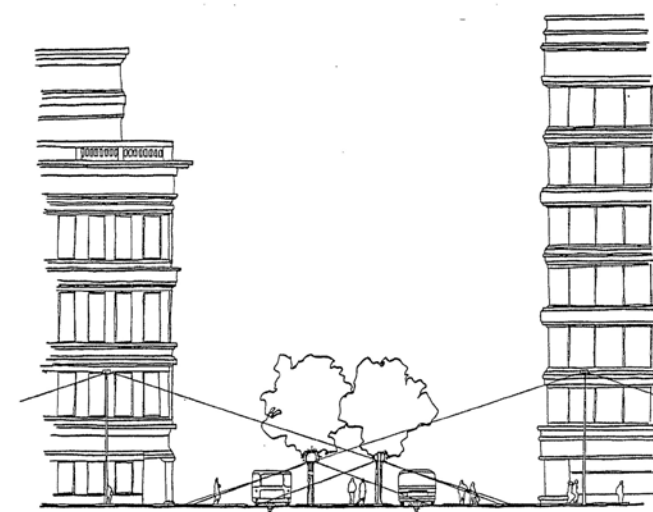
16th Street will be lit by simple, exterior wall-washing fixtures...to about the same brightness as building fronts.'

### DAYLIGHT CONSIDERATIONS

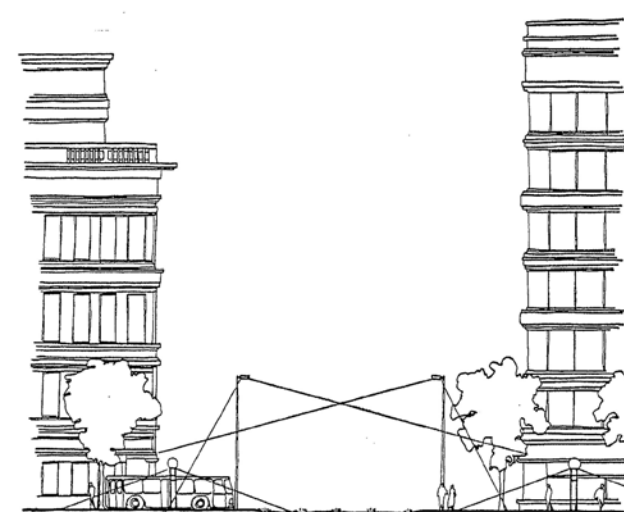
The appearance of the fixtures during the day was considered in terms of scale, color and rhythm, and sparkly highlights off the domes were anticipated. 'All of the components of this fixture will have a rich bronze color, and the scale of dimensions is as delicate as possible. Their location and numbers emphasize and double the rhythm of the locust trees, within the strict order of the Mall design'.



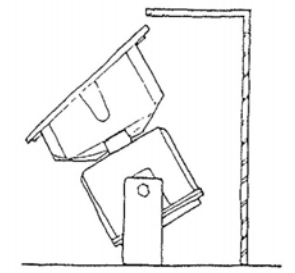
lantern post light street/intersection light



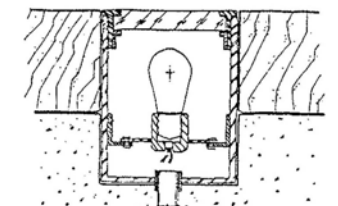
The original lighting concept at an intersection - transverse section looking towards the Mall - with higher, cut-off pattern street lights near the corners, augmenting the lantern post lights.



The same concept in a longitudinal section, looking along the Mall's sides.



alley flood light - never installed



pavement light - never installed

# 16th Street Design

*the place*



The Mall, looking southeast in 1983



Early experiments with enclosed restaurant seating in the median, 1991



Enclosed restaurant seating next to an adjacent restaurant, 1991 and the preferred configuration today



Detail of enclosed restaurant seating in the median, 1991



Fixed and moveable seating in the median, 1991



Early use of enclosed restaurant seating in the furnishings zone of an asymmetrical block, 1991



Moveable seating in the furnishing zone of an asymmetrical block

*programmed activities*



*School children at a Mall performance, 1991*



*Ticket vending on the Mall, 1991*



*New Year's Eve – an annual event on the Mall*



*Buggy Ride - winter season*



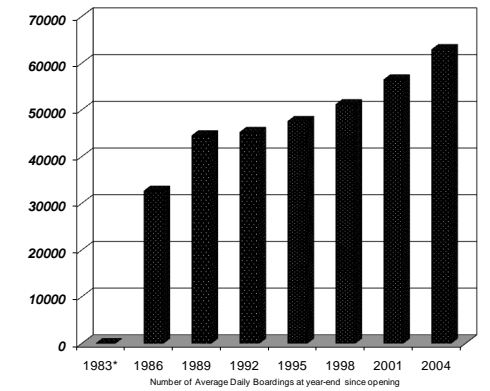
*Spontaneous performances*



*Street music*



**16th Street Mall Shuttle - Weekday Boardings**



*Mall weekday boardings and peak hour shuttle volumes have steadily increased since service began in 1983*

everyday activity



The Mall's trees now offer the most continuous shade of any street in downtown



The chess tables at block 4 (not an original element) are a consistently popular focal point throughout the year



The steady addition of furnishings and other elements has made the medians cluttered and difficult to stroll through



The success of vending is variable on the Mall



Seating has stayed popular because of the pleasant environment the Mall offers



# Recommended Urban Design Plan

Recommended  
Urban Design Plan

## Urban Design

### *overall concept*

The overall urban design concept, as endorsed by the 16th Street Plan Steering Committee, includes the following broad recommendations:

- 16th Street is to be complemented by the eventual upgrading of adjacent named and numbered streets to form an attractive pedestrian district within Downtown.
- 16th Street shuttle service is to be complemented by Downtown Circulator shuttle service on 18th and 19th streets to balance the demands for transit service on 16th Street with goals for pedestrian experience and economic development.

### **Original Mall segment**

- The existing configuration of asymmetrical/wide north sidewalk and symmetrical/median blocks is to remain and be completely renovated.
- Furnishings are to be renovated or replaced and re-arranged to support vending, café patios, passive areas and general pedestrian circulation on both the sidewalks and medians.
- Lighting is to be renovated or replicated to provide the variety and quality of lighting in the original equipment.
- Water features are to be renovated and brought into compliance with current codes.
- Intersections are to be re-constructed with curb extensions of the Mall granite paving and extending along the cross streets.
- Facilities are to be upgraded to meet current ADA compliance where necessary.

### **Lower Downtown segment**

- As regional and city bus service is shifted from Market Street Station to new facilities at Denver Union Station, the requirement for a passing lane on 16th Street is to be removed.
- Both sidewalks are to be widened equally while accommodating two shuttle bus lanes between Market and Wynkoop streets.
- A normal sidewalk is to be developed for the Market Street Station block facing 16th Street.
- Replacement of sidewalk paving in remaining blocks of the LoDo segment is to be completed, consistent with the adopted paving pattern and materials on the south sidewalk.
- Furnishings and lighting are to be renovated and upgraded.
- Facilities are to be upgraded to meet current ADA compliance where necessary.

### **Denver Union Station segment**

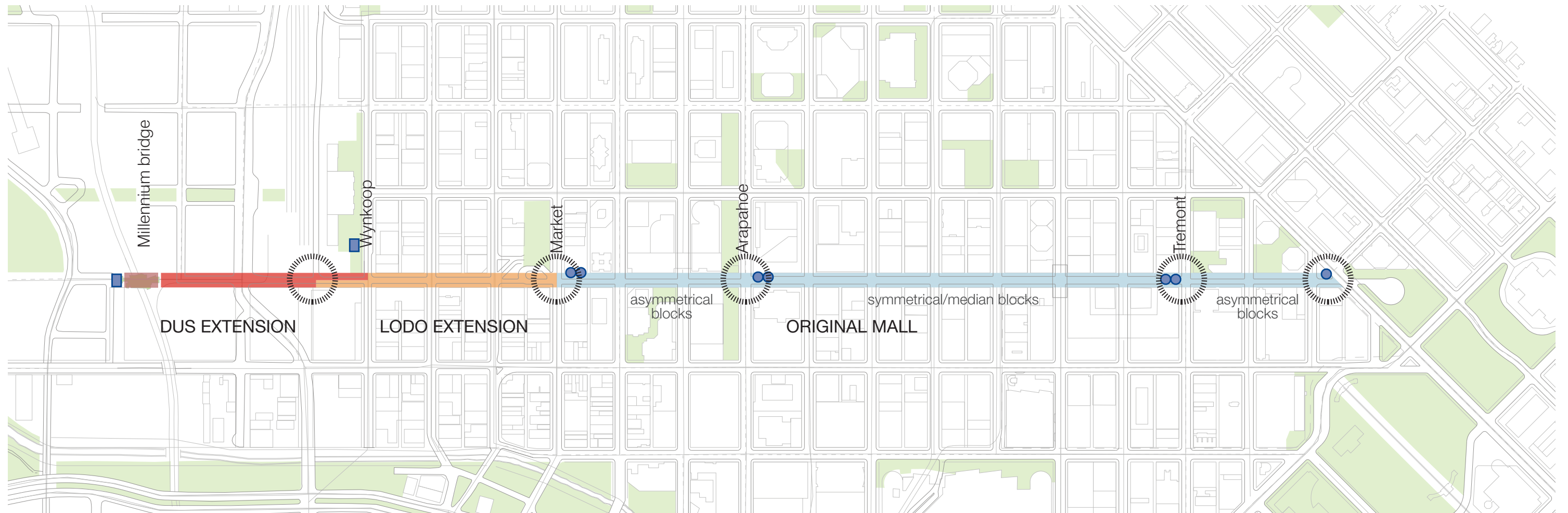
- 16th Street between Wynkoop Street and the Millennium Bridge will provide continuity of the enhanced pedestrian experience with special paving, furnishings and coordinated street trees.



16th Street Mall Civic Framework

- 16th street mall
- other enhanced streets – existing, approved or under construction
- potential future enhanced streets
- public and private open space
- significant public and private buildings/complexes

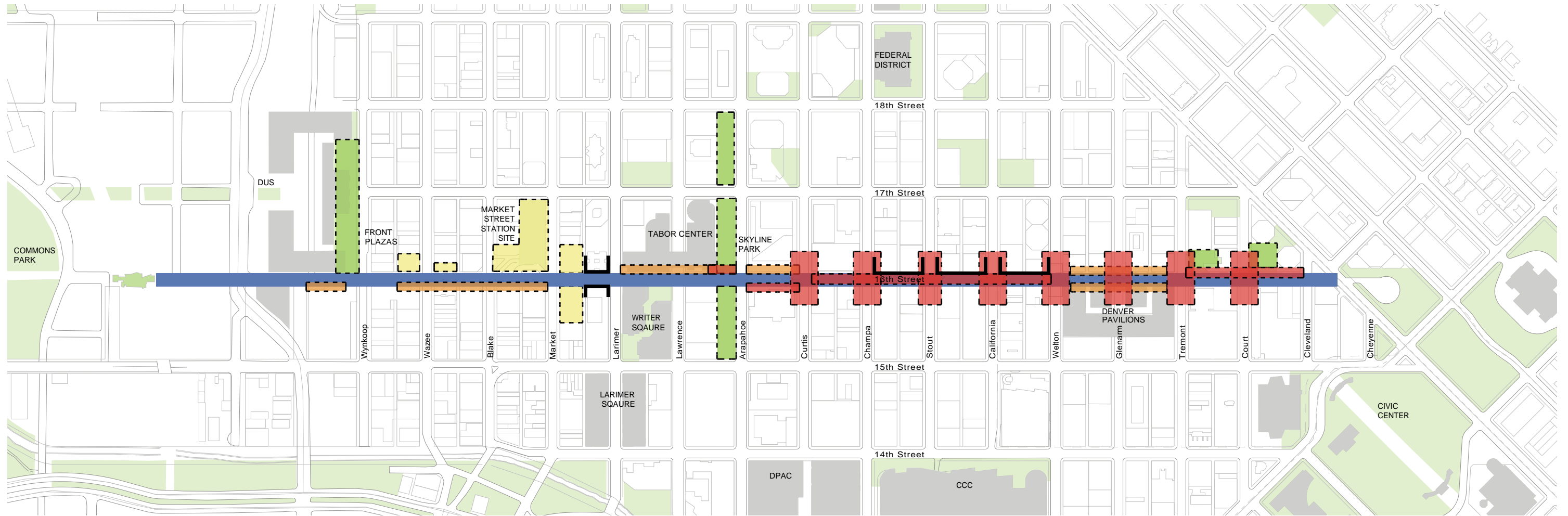
This diagram portrays the ideal Denver urban pedestrian precinct where enhanced streets connect in a dense grid and in all directions to all major civic, cultural and commercial destinations within downtown. This also implies that all Mall intersections are important pedestrian crossings that should be a part of the enhanced system.



### 16th Street Mall Design Segments Framework

- 1982 original mall segment
- 1994 lower downtown extension
- 2012 DUS extension
- millennium bridge segment
- existing or planned water features
- gateway or transition point

This diagram illustrates the three geographical districts with distinct design character. While these design palettes change, there is a consistency of high quality pedestrian environment throughout the entire corridor. Also illustrated is the concept of water features at important transition points: basins mark the beginning and end of districts and the transition from asymmetrical to symmetrical/median blocks. Other water features in the DUS segment and beyond, extend the tradition of 16th as a street of fountains.



### 16th Street Mall Activity Framework

Activation Strategies

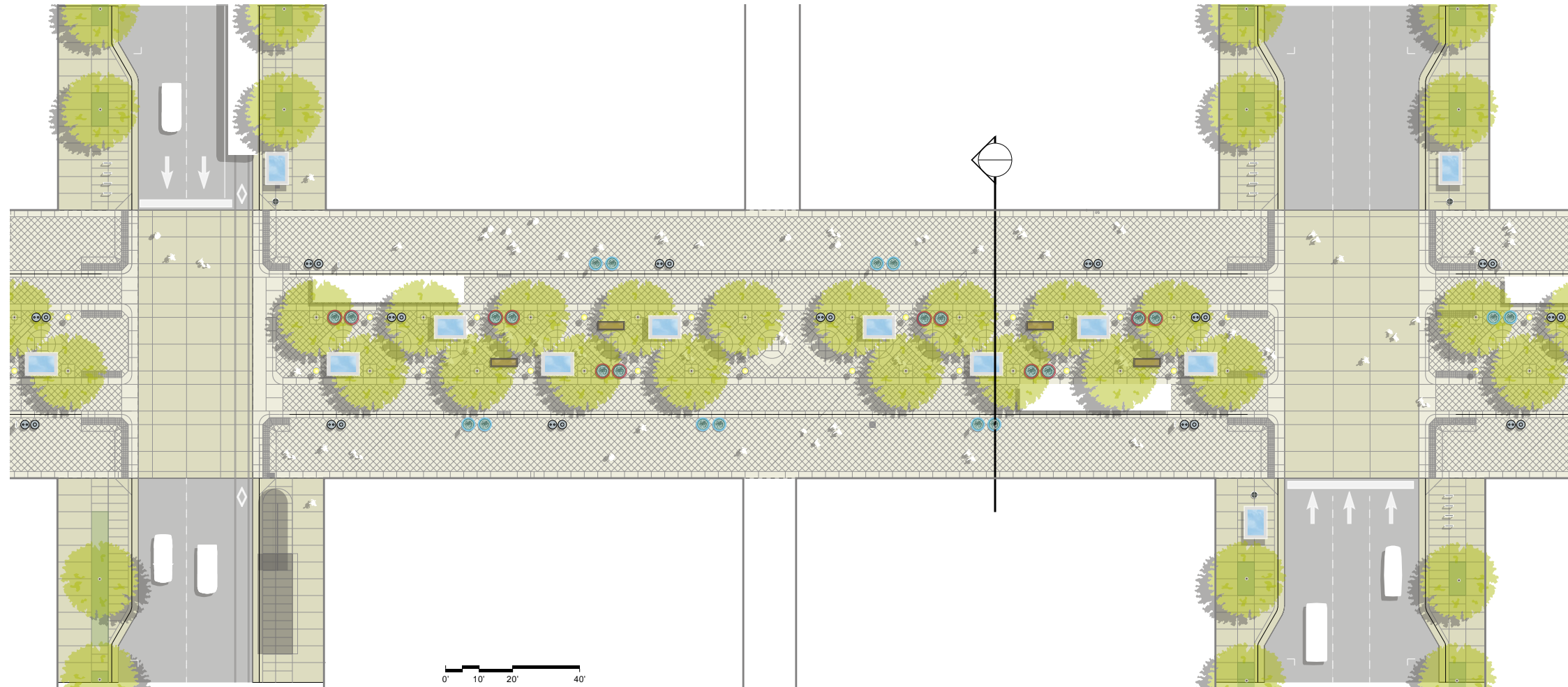
- concentrated vending
- concentrated cafe patios
- programmed uses in adjacent open space
- infill development
- renovated store fronts
- public and private open space
- significant public and private buildings/complexes
- 16th street mall

This diagram illustrates a strategy to activate the Mall throughout its length through deployment of a coordinated street vending program, provision of amenity areas, programming of adjacent open spaces and potential redevelopment and storefront revitalization. The goal is to provide a variety of experiences for Mall users and a variety of opportunities for commercial uses on the Mall.

# Prototype Block

original mall segment • symmetrical/median • with vending

Note: furnishings locations and quantities are conceptual and subject to change in final design



## Plan

This block plan illustrates a symmetrical/median block with a vending cluster. It would be positioned to activate blocks with less vital storefronts and few restaurant patios. It provides off-set vending unit locations, alternating on either side of the median yet still providing circulation space and areas to the side for seating, as well as visibility across the street.

Also shown are two re-designed Mall intersections, one that is typical, and one at a light-rail intersection.

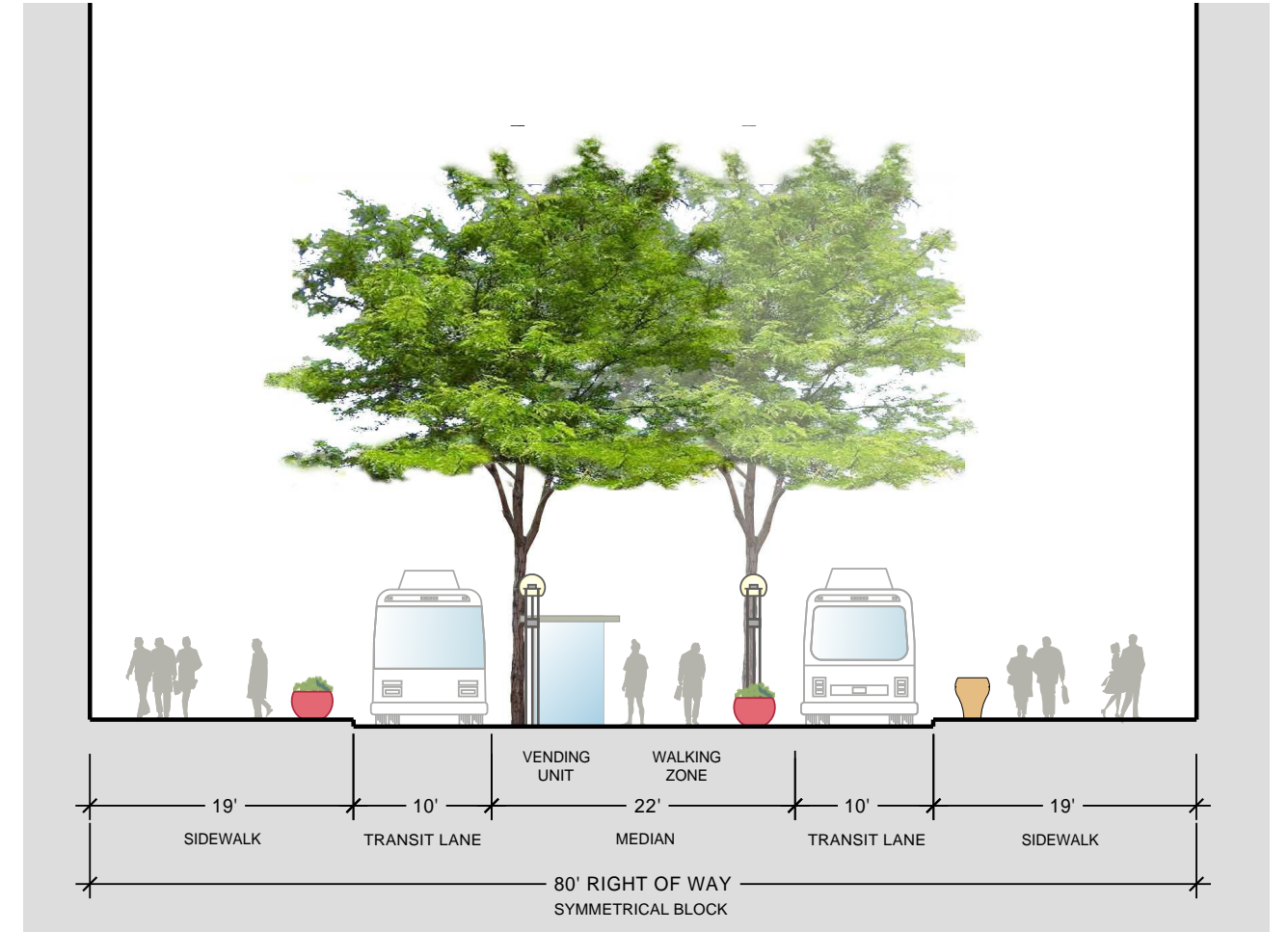
## Legend

- planter pots, two sizes
- trash and recycling receptacles
- mall light
- mall signage
- cafe zone
- bench, backless
- bench, podium
- fountain with granite blocks
- tree
- vending carts
- trash receptacle, cross streets  
bike rack, cross streets

original mall segment • symmetrical/median • with vending



A successful vending unit in a median block.



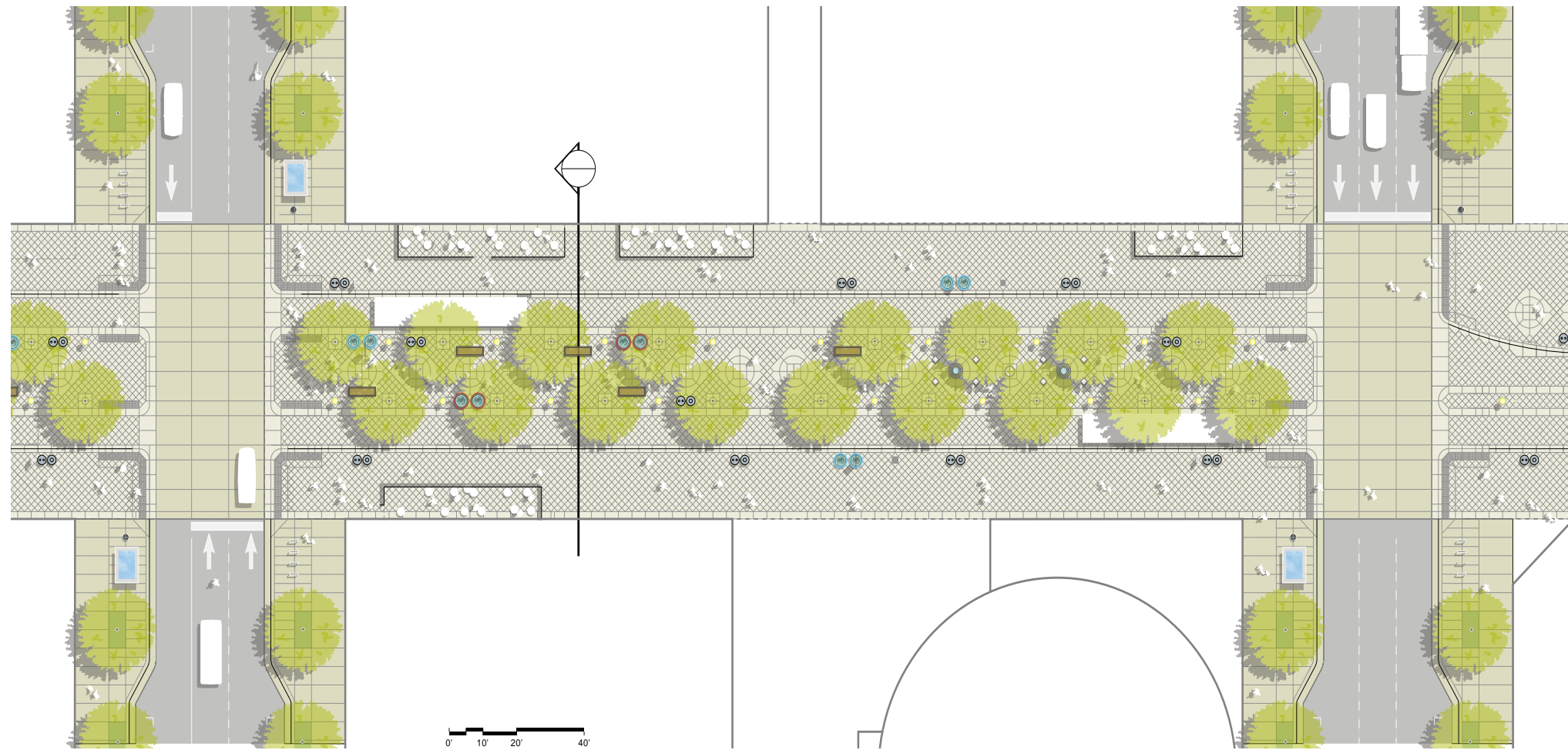
Section prototypical block



# Prototype Block

original mall segment • symmetrical/median • public emphasis • fountain basins • no vending

Note: furnishings locations and quantities are conceptual and subject to change in final design









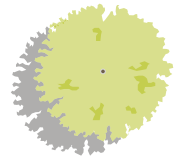




## Plan

This block plan illustrates a symmetrical/median block with intense, commercial frontage and restaurant patios. It provides seating areas for passive enjoyment without vending operations as a contrast from blocks with active vending. Benches are aligned straight, to one side and off-set to allow pedestrian circulation along the median and views to storefronts. At fountain basins, outboard stone pedestal seats are removed to improve circulation.

Also shown are two typical re-designed Mall intersections.

## Legend

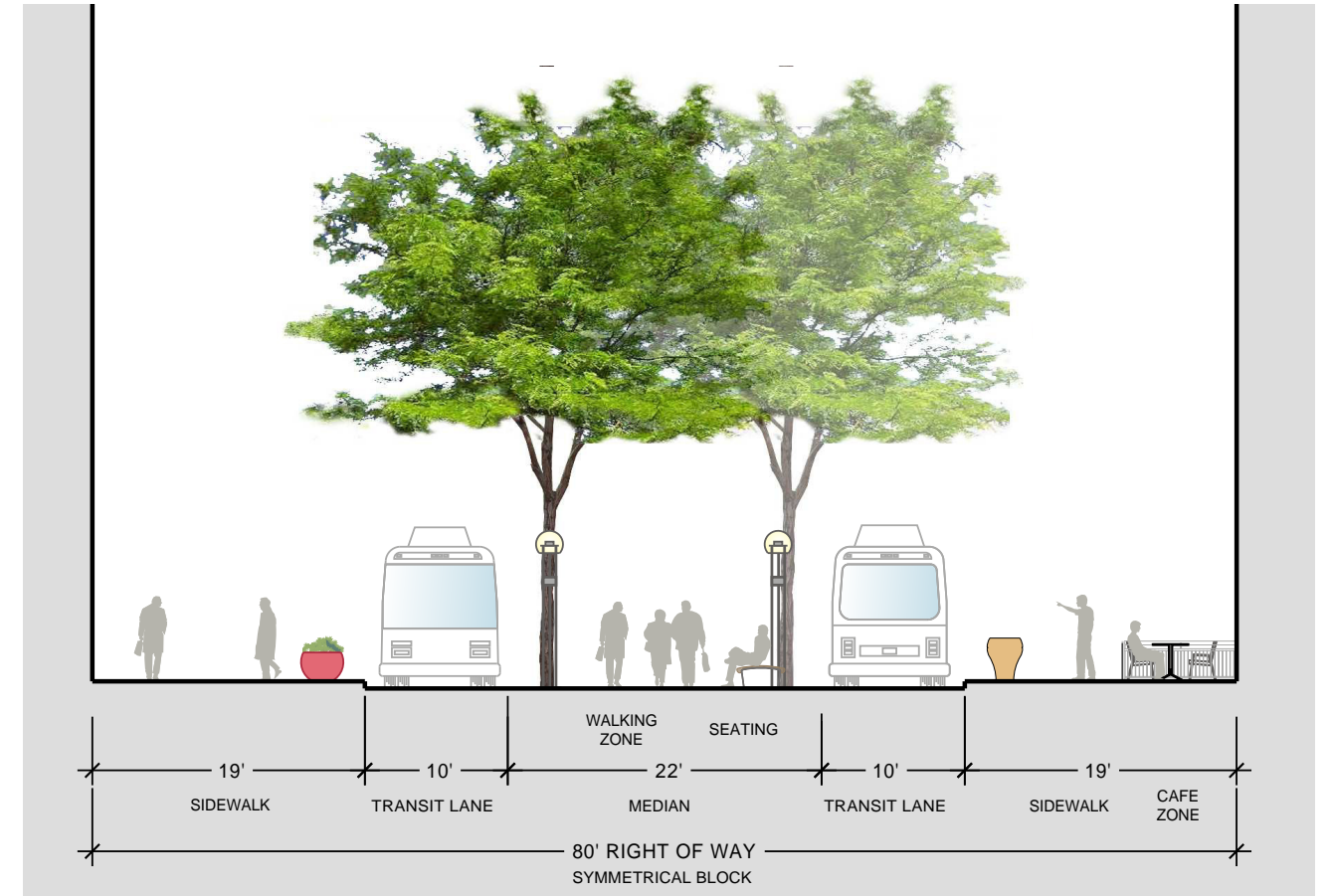
-  planter pots, two sizes
-  trash and recycling receptacles
-  mall light
-  mall signage
-  cafe zone
-  bench, backless
-  bench, podium
-  fountain with granite blocks
-  tree
-  vending carts
-  trash receptacle, cross streets  
bike rack, cross streets



original mall segment • symmetrical/median • public emphasis • fountain basins • no vending



Median Space at block 10



Section prototypical block



Original fountain basins are to be renovated and have out-board stone pedestal seats removed to allow pedestrian and ADA access along the median.



Current clutter of original and added elements in the median.

## Prototype Block

*original mall segment • symmetrical/median • public emphasis • no vending*



## Prototype Block

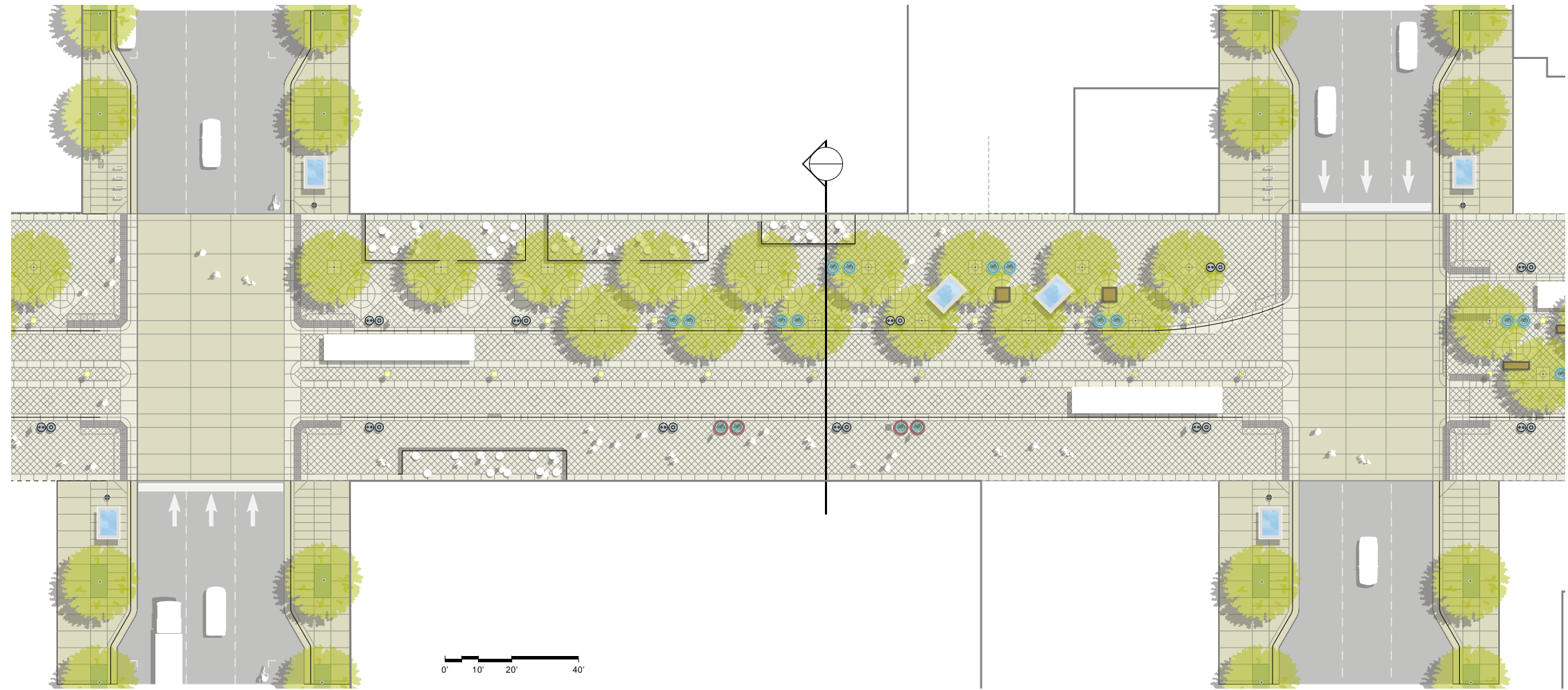
original mall segment • asymmetrical • wide patios



# Prototype Block

original mall segment • asymmetrical • wide patios

Note: furnishings locations and quantities are conceptual and subject to change in final design














## Plan

This block plan illustrates an asymmetrical block with extra wide restaurant patios and the walking zone shifted to the original furnishing zone. This configuration is already being employed in blocks 2 and 3 with some success. On blocks with good solar access, the extra patio space has proved attractive. Where there is no street frontage, vending carts could be deployed in the furnishing zone and walking shifted back to normal position.

Also shown are two typical re-designed Mall intersections.

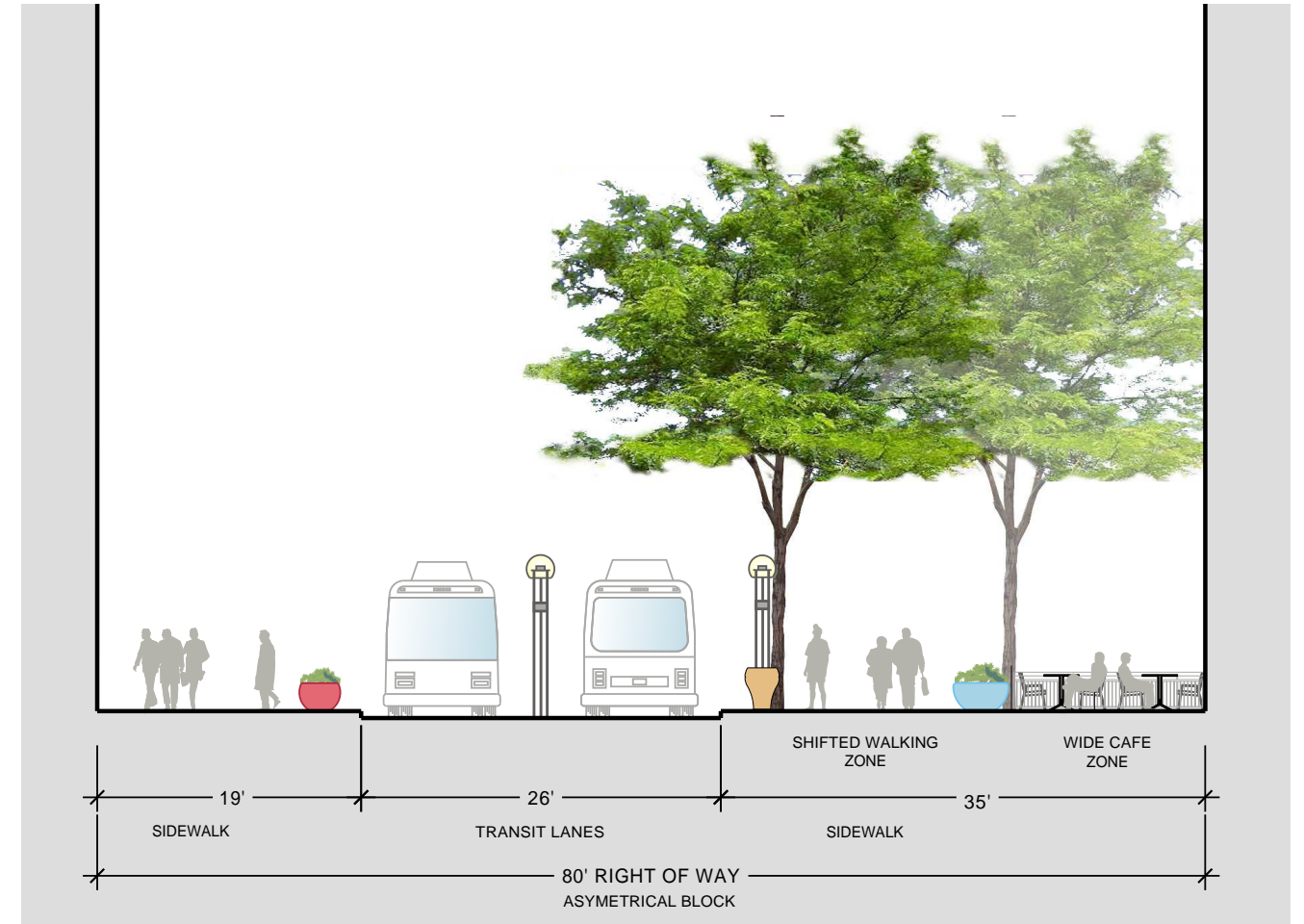
## Legend

-  planter pots, two sizes
-  trash and recycling receptacles
-  mall light
-  mall signage
-  cafe zone
-  bench, backless
-  bench, podium
-  fountain with granite blocks
-  tree
-  vending carts
-  trash receptacle, cross streets  
bike rack, cross streets

original mall segment • asymmetrical • wide patios



Asymmetrical block with wide restaurant patios and shifted walkway zone.

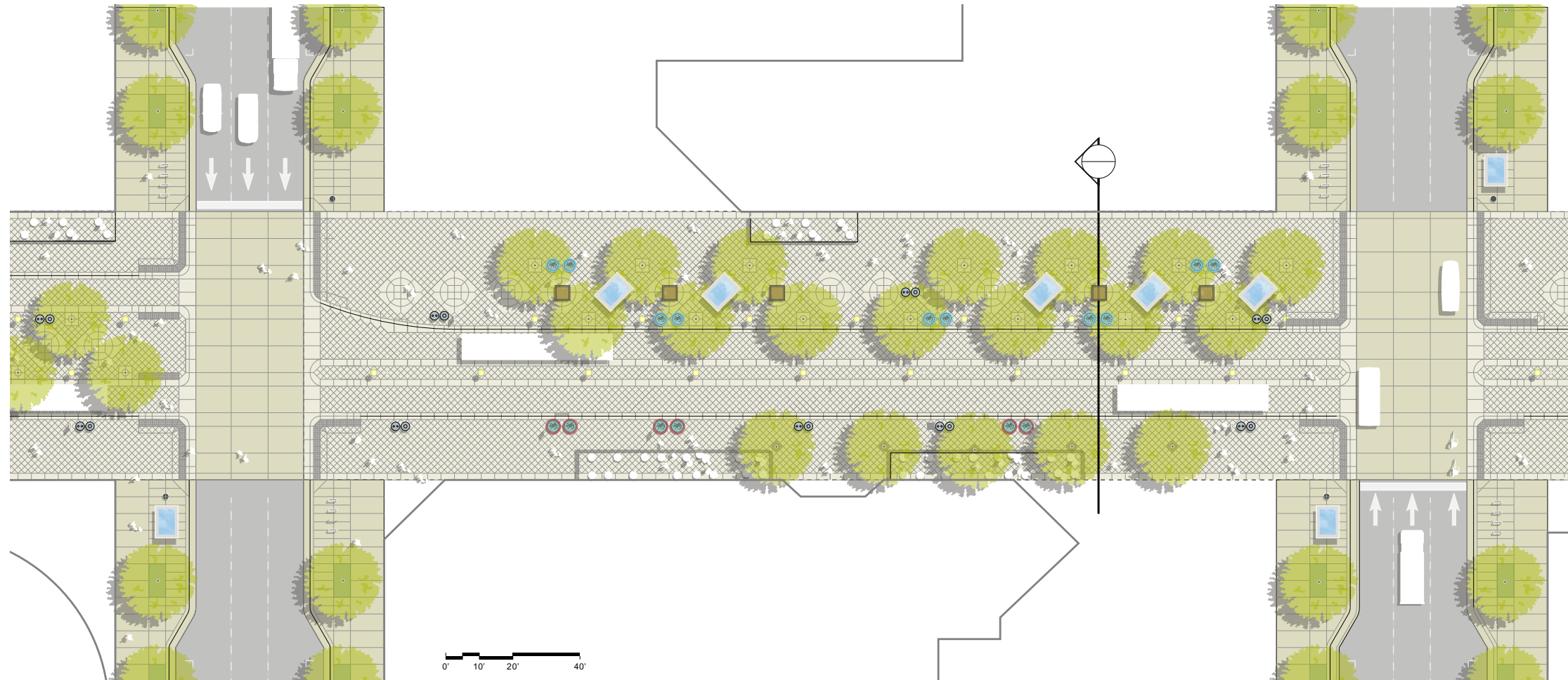


Section prototypical block

# Prototype Block

original mall segment • asymmetrical • adjacent plaza with street vending

Note: furnishings locations and quantities are conceptual and subject to change in final design



## Plan

This block plan illustrates an asymmetrical block with an adjacent plaza. It demonstrates how new vending locations interspersed with pedestal bench seating can be accommodated in the furnishings zone to generate activity where minimal street frontage exists. Orientation of cart units can be aligned with major paving patterns and spaced so that visual penetration back and forth across the street is maintained. Retail merchandise themes for vending carts have yet to be determined.

Also shown are two typical re-designed Mall intersections.

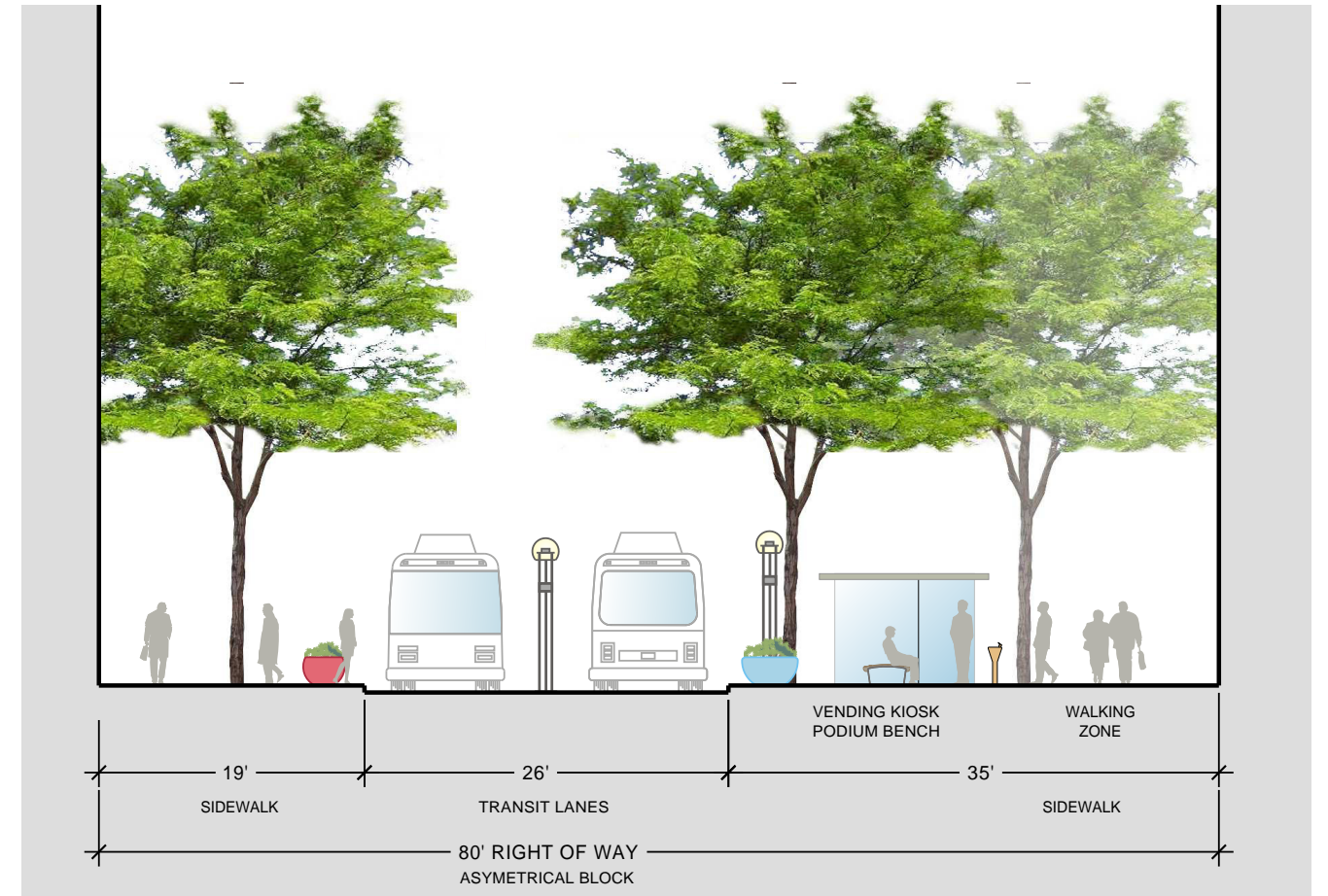
## Legend

- |  |                                 |  |   |
|--|---------------------------------|--|---|
|  | planter pots, two sizes         |  | tree  |
|  | trash and recycling receptacles |  | vending carts   |
|  | mall light                      |  | trash receptacle, cross streets<br>bike rack, cross streets |
|  | mall signage                    |  |   |
|  | cafe zone                       |  |   |
|  | bench, backless                 |  |   |
|  | bench, podium                   |  |   |
|  | fountain with granite blocks    |  |   |

original mall segment • asymmetrical • adjacent plaza with street vending



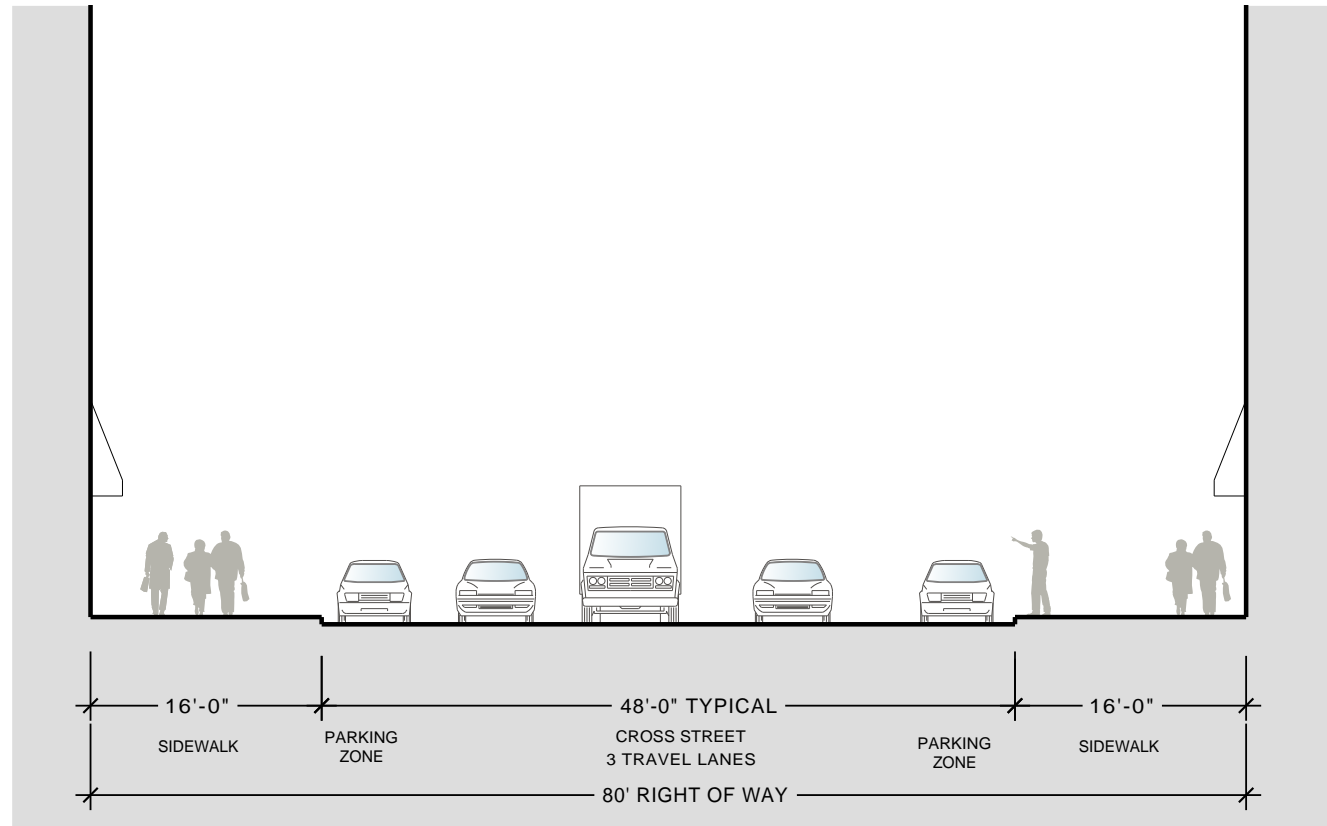
Successful street vendor in Manhattan



Section prototypical block

# Typical Mall Intersection

*original mall segment • existing intersection*



Section



*Intersection paving will be upgraded*

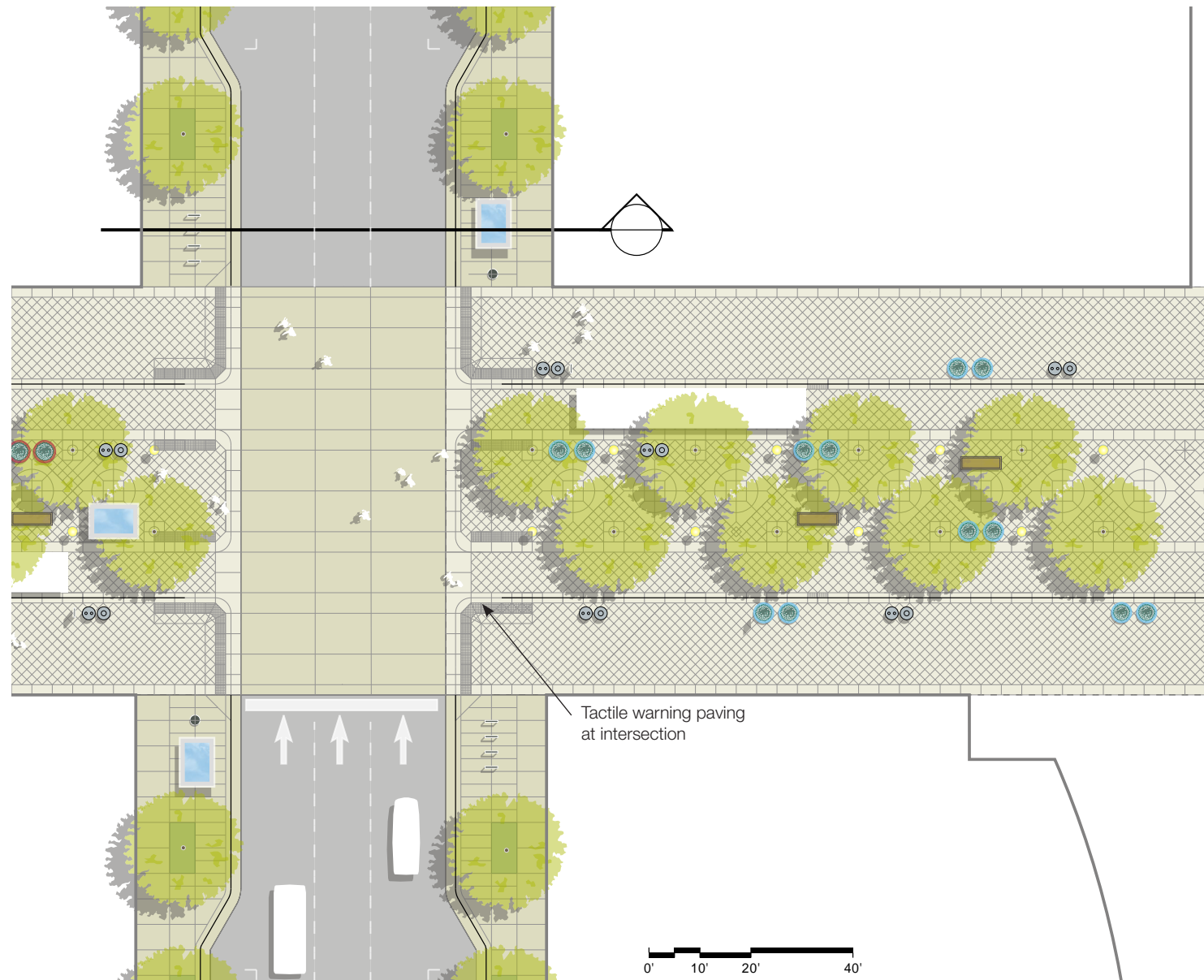


*Mall curb ramps will be re-built and have tactile warning pavers added*



*Mall curb ramps will be widened to the full walkway width*



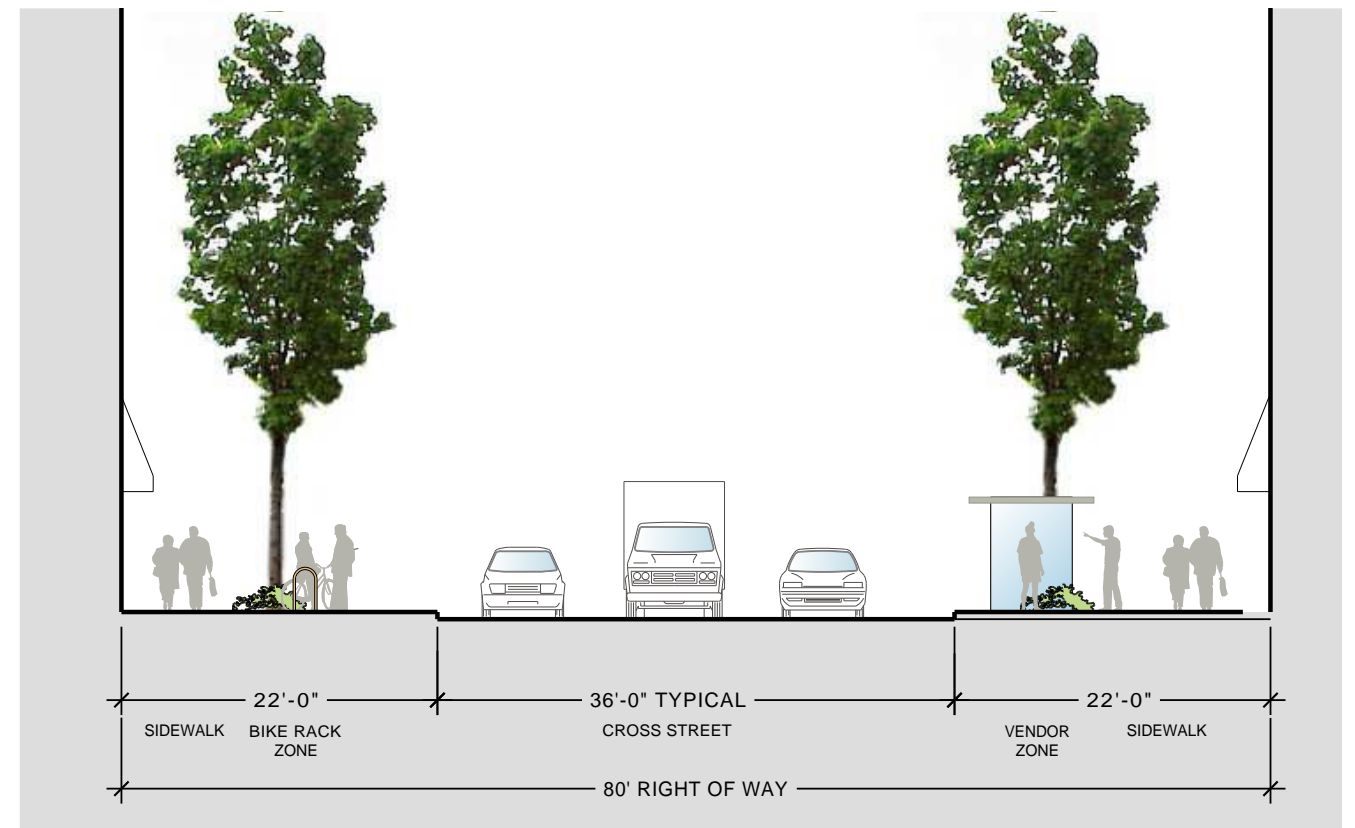


**Plan**

Typical intersection plan with Mall granite paving extended into intersection 6' on each side; tactile paving added at curb ramps; new saw-cut concrete roadway paving; new cross street sidewalks for the first 50' minimum; space for bike parking, vending unit and other typical corner elements.

**Legend**

- planter pots, two sizes
- trash and recycling receptacles
- mall light
- mall signage
- bench, backless
- bench, podium
- fountain with granite blocks
- tree
- vending carts
- trash receptacle, cross streets
- bike rack, cross streets



Section cross street at curb extension



Corner bike parking concept



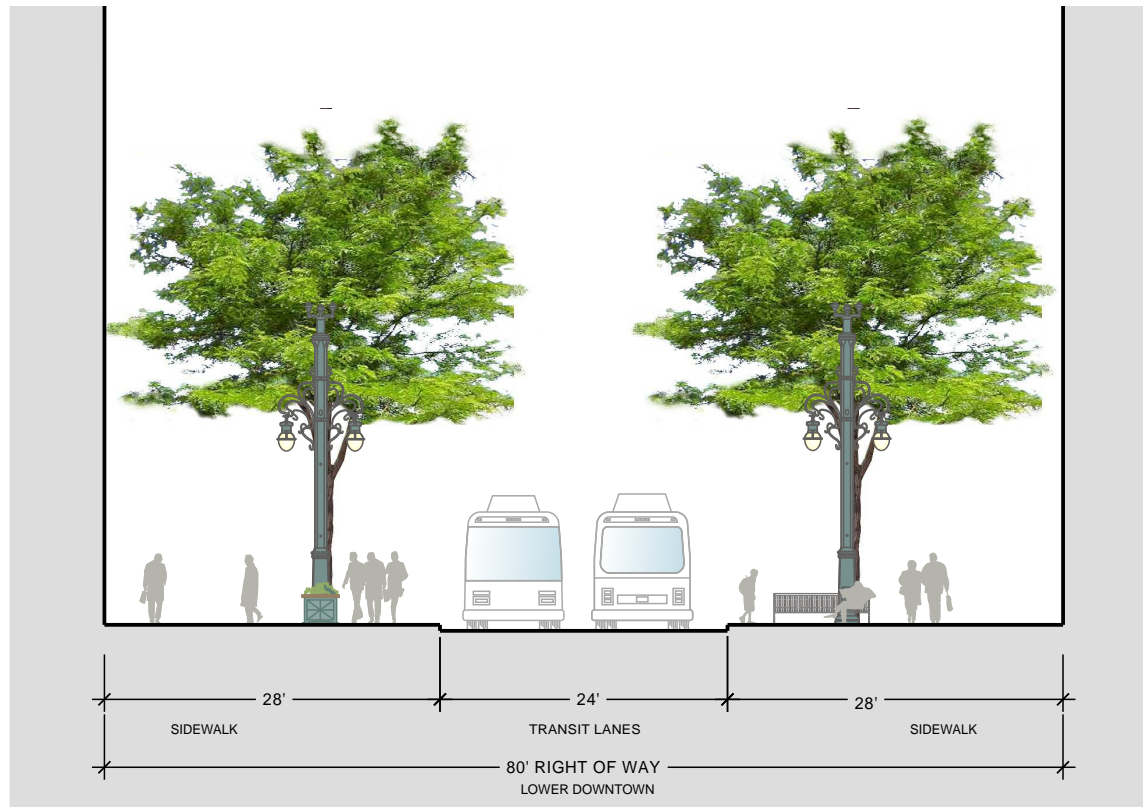
Tactile pavers will be added at Mall curb ramps



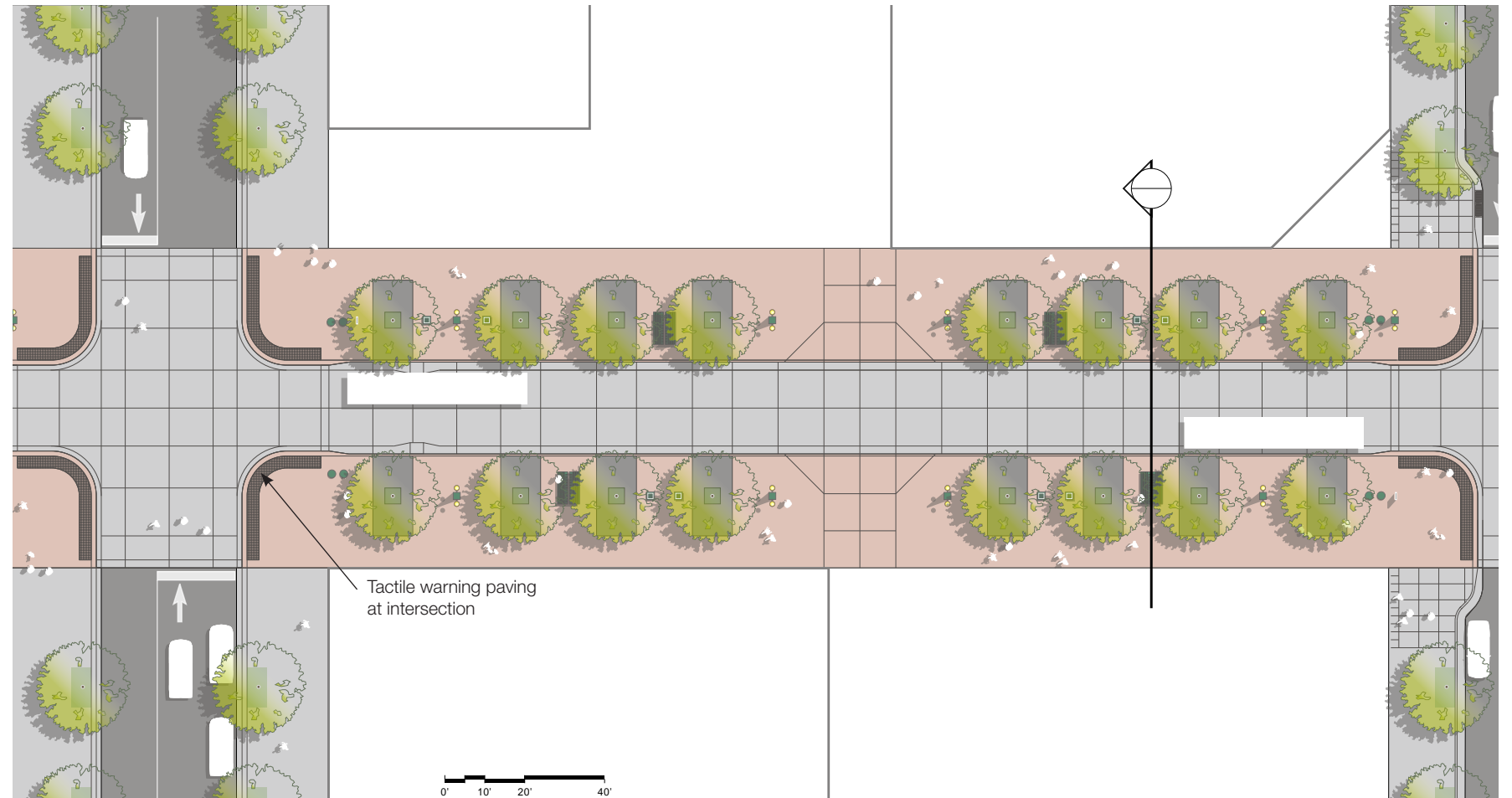
Corner food vending

# Prototype Block

lower downtown segment








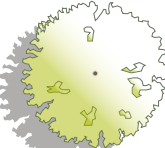
Section

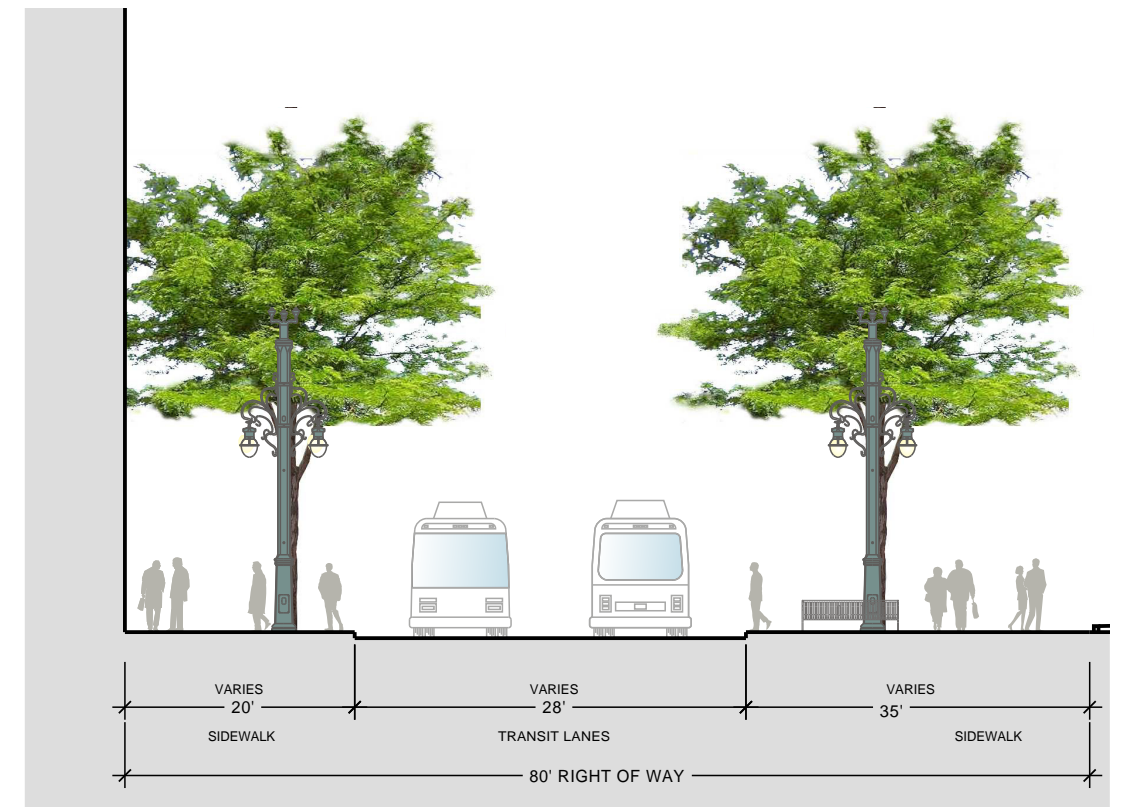
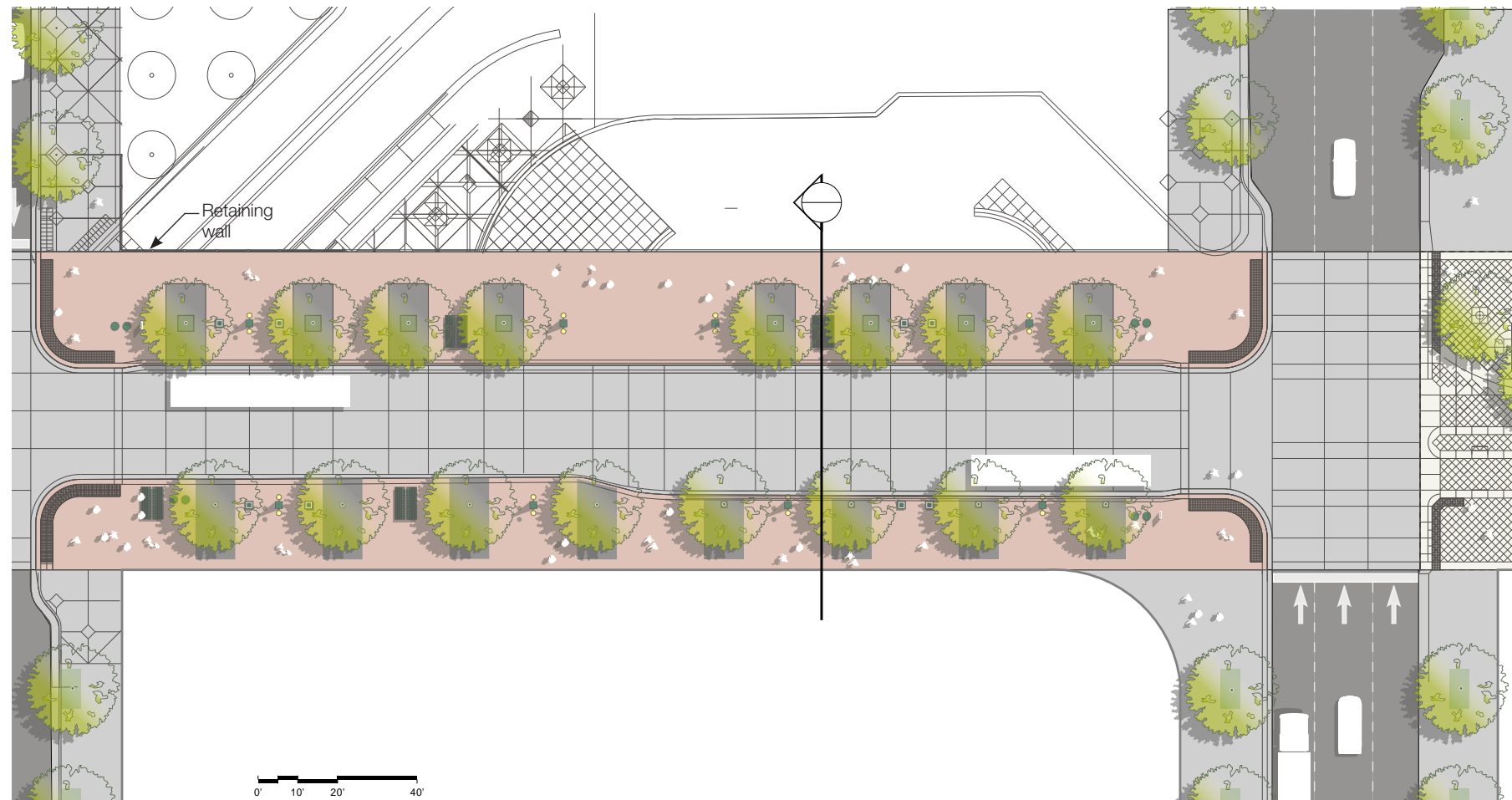


Plan

Improvements in the Lower Downtown blocks of the Mall envision replacing the rough sandstone paving with a smoother sandstone and granite to match work already done at 1600 Market St., the Sugar Cube Building and the EPA Headquarters Building. Sidewalks are proposed to be widened from 22.5 feet to 28 feet on each side. Bus lane and intersection paving is planned to be replaced and tactile warning pavers added to all corners.

Legend






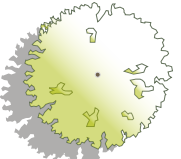
-  LoDo planter
-  LoDo trash and recycle receptacles
-  LoDo historic light
-  mall signage
-  LoDo bench, backed
-  tree



### Plan

When the new intermodal transportation center at Denver Union Station opens and city and regional bus traffic is removed from 16th Street between Wynkoop and Market streets, a redesign of the shuttle stop and turnaround area will become feasible. The 16th Street Urban Design Plan proposes to return the north part of the right-of-way to a normal LoDo Mall segment sidewalk to alleviate what has been a breach in the pedestrian continuity of the Mall for the last two decades. Future land use at Market Street station site is to be determined.

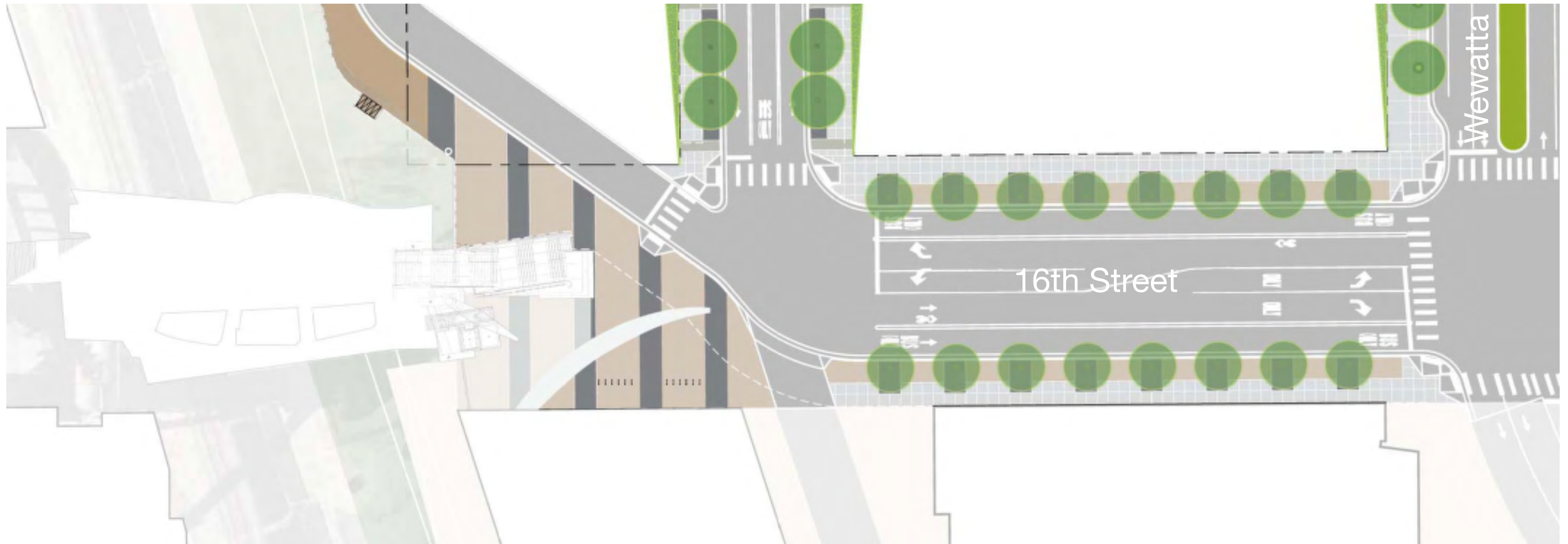
### Legend

-  LoDo planter
-  LoDo trash and recycle receptacles
-  LoDo historic light
-  mall signage
-  LoDo bench, backed
-  tree

### Section

## 16th Street - DUS Streetscape Plan

denver union station segment



### Plan

The Denver Union Station Vision Statement has guided the planning process for the rebirth of the historic Denver Union Station as a regional and statewide transportation center. The Denver Union Station Master Plan Supplement adjusts the Master Plan vision and set of expectations and how they will be accomplished. The significant changes between the 2004 Master Plan and the Supplement are: the reorganization of the transportation elements, the updated transportation program and the addition of the Transit District to the overall plan. The elements of the Transit District are: the His-

toric Station, Passenger Rail, Light Rail, RTD Regional Bus Facility, 16th Street Mall Shuttle and the Downtown Circulator, public space, private development, bicycles and automobile access and parking.

With passenger rail platforms at-grade, local vehicular access to the Transit District will be from Wewatta and 16th streets. 16th Street will be operated as a multi-modal corridor beginning at Wynkoop and extending to the Millennium Bridge. Mall shuttles, local vehicles, bicycles and pedestrians will share the right-of-way.

With the composite demands, extra lanes and right-of-way beyond the original 80 feet are required. However, the concept of an enhanced pedestrian route is being provided for in the DUS segment of 16th Street with wide sidewalks, special paving, lighting and furnishings. The basic design elements are described and illustrated on page 48.



Illustrations are courtesy of the Denver Union Station Master Plan/Design Team. See [http://www.denverunionstation.org/index.php?option=com\\_content&view=article&id=71&Itemid=74/final\\_master-plan\\_082008](http://www.denverunionstation.org/index.php?option=com_content&view=article&id=71&Itemid=74/final_master-plan_082008)

\* Existing EPA Streetscape (not shown) matches Prototype Block/ Lower Downtown Segment (page 36) except street lights. Existing Lower Downtown Historical lights are to be salvaged and re-used at Market Street Station Block/ Lower Downtown Segment (page 37).

## Design Standards

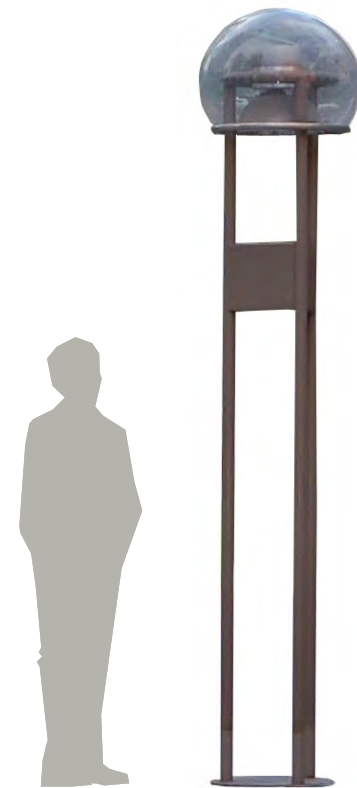
*original mall segment*



Tree: Honeylocust; maintain existing trees - prune crowns as necessary to keep in balance with root volume; phase out remaining Northern Red Oaks as they expire; replace with Honeylocust; repair irrigation systems.



Corner street light: renovate Mall Standard with fresh paint; evaluate re-lamping for better light and energy performance.



Pedestrian light: renovate option – re-lamp to improve performance and energy efficiency and to provide sequence of light effect phases that were included with original equipment.

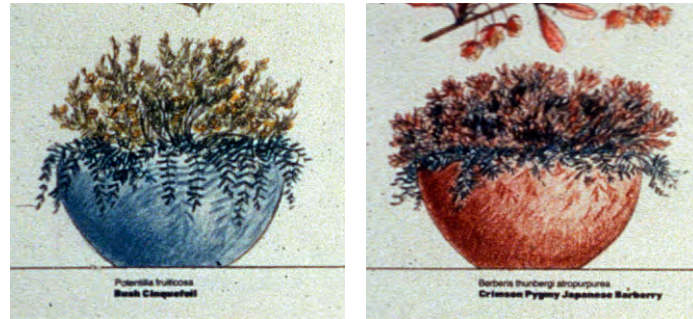
Replicate option – provide all-new fixture to match scale and look; new high performance equipment, stainless steel legs and base; complete sequence of original lighting effects.



Planter: repair and renovate original; two sizes; rebuild banner pole stays at bottom of container to provide secure footing for pole; adjust lower banner rods to meet ADA clearance at eye level.

Planter color option A) original gray.

original mall segment



Planter color option B) 2-color concept by Olin from original design (top); test both color options at pilot blocks; make choice in final design.



Median bench: new hardwood and stainless steel replacement benches; backed version – similar to original design with mid-support and arm rest; backless version – with mid-support and arm rest; both at 7' length.



Asymmetrical sidewalk bench: pedestal-style in hardwood and stainless steel framing to match other benches; to include mid-point raised armrest (not shown) and granite pedestal base; 4'-6" x 4'-6" square with eased corners. Aligned with paving pattern.



Trash and recycling receptacles: two options; A) new combination trash and recycling receptacle in stainless steel sheet metal with side entry doors (top);

B) repair and renovate original trash receptacle, fabricate new fiberglass matching recycling container with modified top; to be located together; repaint in original grey color, (bottom); test both options at pilot block, make choice in final design.

*original mall segment*



Drinking fountain: repair and renovate original; repaint in original grey color.



Moveable chairs: replace current chairs with tubular and mesh steel chair in silver aluminum; powder coat finish, stackable; Ronda model by EMU.



Way-finding sign pylon: near-term strategy – remove top decorative metal apparatus, repaint in silver metallic color. Long term strategy – replace with simpler, more weather resistant unit.



Electrical service cabinet: replace existing painted metal enclosures with smaller, manufactured stainless steel cabinet as electrical infrastructure is replaced with overall Mall renovation.





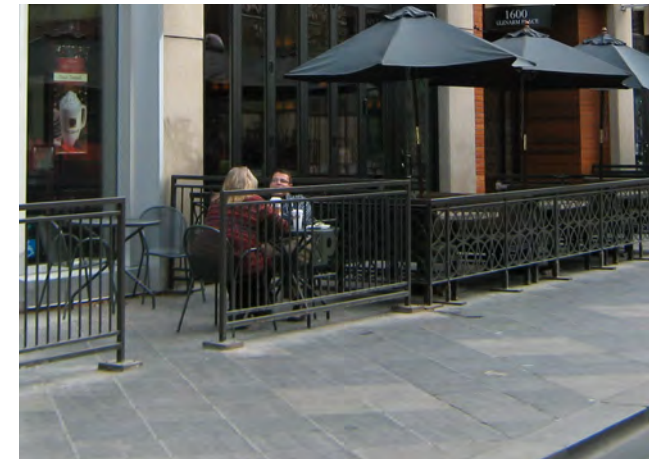
Public phone: remove all original phones; replace with four, new exterior-rated video phones at locations to be determined; Bazooka TK-4100 model by RedyRef; in black.



Bike rack: tubular, stainless steel "staple" style rack from various manufacturers; locate at corner curb extension in grouped rows.



Tree well/grate: maintain current design; ensure accessibility to root vault box with renovation of granite paving; adjust metal grates wider to prevent damage to tree trunk.



Restaurant patio fence: allow individual designs but based on revised criteria

Maximum height of any part of railing/planter: 42 inches

Material: painted or stainless steel

Configuration: posts with top and bottom horizontal rail; structural design – so that any support member is not required to be more than 2"x3" dimension; design to be self-supporting with rigid corners

Connecting components: design must allow rapid disassembly for Mall special events or emergency condition removal

Intermediate picket design – individual design permitted but goal is 75% transparency; glass panels as alternate filler - permitted

Minimum pedestrian clear zone at sidewalks: 10 feet from outside of any vertical object to face of curb or between inside edges of vertical objects

Foot plates – design for eccentric post placement so that edge of plate does not encroach into walkway zone more than 2 inches horizontally and 1/2 inch vertically; encroachment into seating area – unrestricted

Integrated planters – free-standing or hanging flower baskets – permitted but only if the composite railing/planter does not exceed 25% opaque; any planter cannot encroach beyond sidewalk face of railing

*original mall segment*



Tactile paver: two options; A) Sierra White Granite in 12" x 12" size; B) Hanover Tudor tactile paver in White, 24" x 24" size; pavers to be resolved with module of granite ramp pavers at full or half paver joints; evaluate both options at pilot block; make choice at final design.



Mall granite paving: renovate per the Phase I Technical Assessment and Rehabilitation Study recommendations; new pavers at curb extensions to match color, paver size and pattern of existing; colors – Radiant Red, Charcoal Black and Sierra White from Cold Spring Granite.



Miscellaneous non-original elements: yellow metal recycling receptacle - remove from Mall and re-use on other streets

Various public art sculpture and art furnishings – evaluate their compatibility with the Mall design through a City-sanctioned process with regional



arts commission; if decision is to remove, include a budget for new art with overall Mall renovation; if chess tables at Block 4 are determined to be removed, replace with new artist-designed chess tables and benches at the same location.

## Design Standards

*lower downtown segment*



Tree: Honeylocust; maintain existing trees - prune crowns as necessary to keep in balance with root volume; maintain/ repair irrigation systems.



Street light/signal pole: renovate LoDo standard; consider re-lamping for enhanced lighting and energy performance; repaint in Federal Green color; add new matching units at Market Street station block.



Street light/historic replica: renovate; consider re-lamping for enhanced lighting and energy performance; repaint in Federal Green color. Exception: remove existing fixtures at EPA block; re-use these at Market Street Station block. EPA block to be retrofitted with new DUS district lights.



Lower downtown gateway marker: renovate; repaint in Federal Green color.



Way-finding sign pylon: near-term strategy – remove top decorative metal apparatus, repaint in silver metallic color. Long term strategy – replace with simpler, more weather resistant unit.



Trash and recycling receptacles: renovate LoDo standard trash receptacle; add new matching recycling receptacle; locate together; Federal Green color; add new pairs at Market Street station block.



Planter: renovate original custom metal planter; colors – Federal Green and copper color to match recently-renovated units; add new matching planters at Market Street station block.



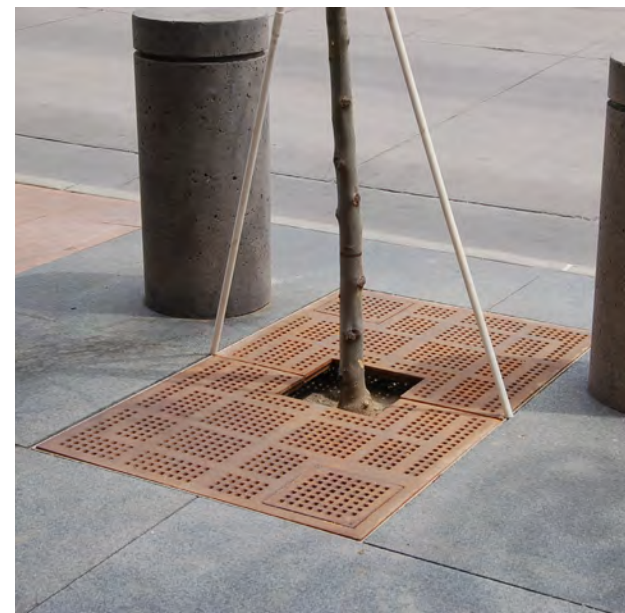
Bench: renovate existing LoDo standard; re-coat in Federal Green; add new matching units at Market Street Station block



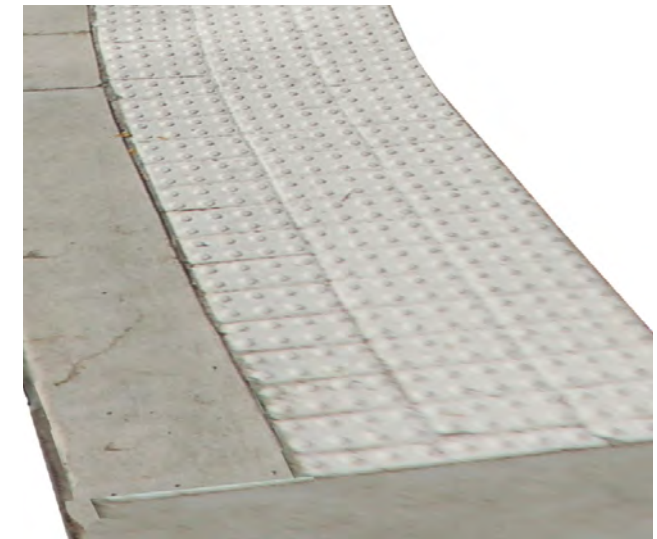
Restaurant Patio Fence: same criteria as original Mall segment



Parking lot fencing: renovate existing; repaint in Federal Green color; remove as infill redevelopment occurs at Mall blocks.



Tree well/grate: as LoDo sidewalk paving is replaced, incorporate existing tree well openings; replace existing frames and grates with heavy duty models with extra span support; irrigation system heads and valves must be visible and accessible for maintenance.



Sidewalk paving: replace original mortar-set sandstone paving with new aggregate-set, larger sandstone and granite paving to match blocks already renovated (Sugar Cube, 1600 Market, EPA blocks); Colorado Red Sandstone and Mesabi Black Granite; provide continuous tactile paving at all-flush corners; use 4" x 8" module pavers in Sierra White granite option or Hanover White Precast pavers in straight and custom-radiused pieces; mortar-set on existing or new subslab.

## Design Standards

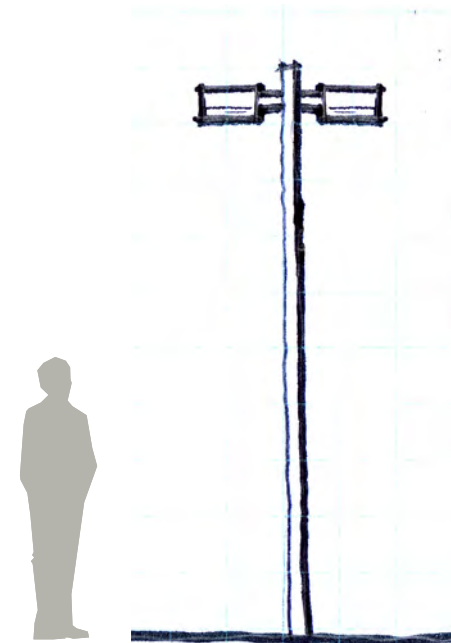
*denver union station segment*



Tree: Honeylocust to match other Mall segments.



Corner street light/signal pole: 35 foot modern, tapered pole with sharp, cut-off cylinder box, single luminaire; painted Federal Green.



Intermediate street light: 15 foot modern, tapered pole with sharp, cut-off cylinder box, double luminaire; painted Federal Green.



Trash and recycling receptacles: silver, powder coated, steel slatted cylinder; similar to LoDo segment.



Ganged newsrack: painted steel enclosure, pedestal mounted; painted Federal Green.



Sidewalk paving: composite of cast in place concrete strip next to the building with two colors of granite paving filling out the remaining sidewalk area. Primary granite is Carnelian in warm pink with Mesabi Black as accent rectangles around tree wells; tactile paving at corners is to be determined.

Way-finding sign pylon: to be determined in final design; consideration of a fixture compatible with other Mall segments for Mall identity.

Restaurant patio fence: same criteria as original Mall segment.

Benches: none planned for 16th Street.

Tree well/grate: opening in pavers; irrigation system must be accessible for maintenance.

# Urbloom





Design

Analysis

Urban Design Analysis

## Field Observations



Five representative locations on the Mall were selected, and observations of Mall use and users were made at four times of the day, on weekdays and weekends. Varying weather conditions were noted. Observers, alone or in pairs, spent an hour on each occasion watching and documenting distribution of pedestrians between the two sidewalks and the median, and their activities, such as walking, sitting, eating, shopping, watching performers, conversing and loitering. A summary of observations was:

### LOCATION 1: COURT PLACE – ASYMMETRICAL BLOCK

This section has few active uses and operates primarily as a pedestrian thoroughfare. Lack of built edges limits the success of this section as an active space or gathering area. A service area on the southwest side of the street disrupts passive use of the Mall. There is a high volume of pedestrians crossing the paired shuttle lanes mid-block.



### LOCATION 2: GLENARM PLACE – MEDIAN BLOCK

Entertainment, shopping and restaurant uses create substantial activity here. Numerous restaurant patios reduce use of median seating areas when compared to location 3. The clutter of furnishings and kiosks in the median restricts views and discourages use as a passive space. Pedestrian traffic is evenly divided between both the sunny and shady sides of the street.



### LOCATION 3: CALIFORNIA STREET – MEDIAN BLOCK

This is one of the most active intersections with a mix of light rail riders, visitors, mixed-demographic groups, loiterers and walkers. Numerous food carts, fewer restaurant patios, and a diversity of seating options make this section of median the most active on the Mall. The half-blocks east of both Stout and California Streets have limited seating, resulting in little use. With the exception of souvenir shops, retail uses along this section seem busy throughout the day.



### LOCATION 4: ARAPAHOE AND LAWRENCE STREETS – ASYMMETRICAL BLOCK

The low heights and extra setbacks of Independence Plaza and the Federal Reserve Bank give the Mall a different character at this block. Tabor Center, Park Central, and Writer Square add little activity with their less active ground floor uses. The chess tables here are the most consistently active median features on the Mall. A significant portion of Mall pedestrian traffic diverts through Writer Square to Larimer Street, rather than continuing along the Mall.

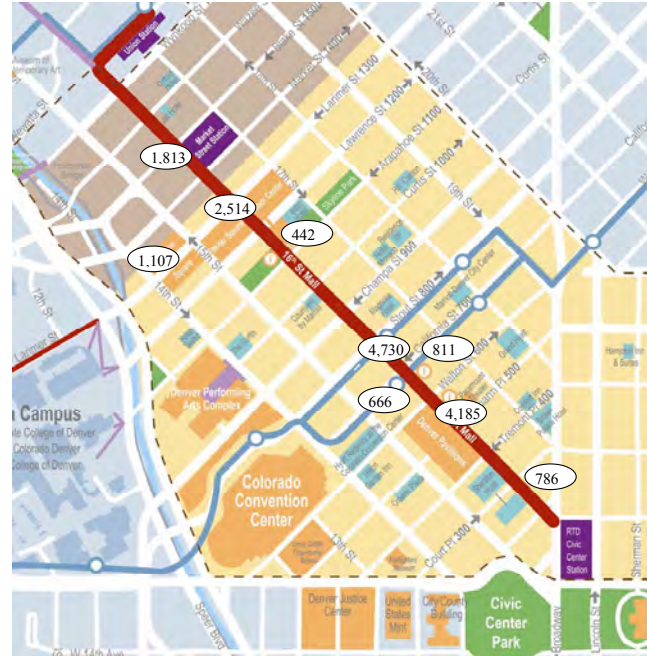
### LOCATION 5: WAZEE STREET

The majority of pedestrians in this portion of the Mall

appear to be office workers and downtown residents. There are fewer visitors. This section of the Mall is more consistent with other Lower Downtown neighborhood streets than the uptown portion. Adjacent surface parking lots reduce the viability of the Mall as an active place to congregate.

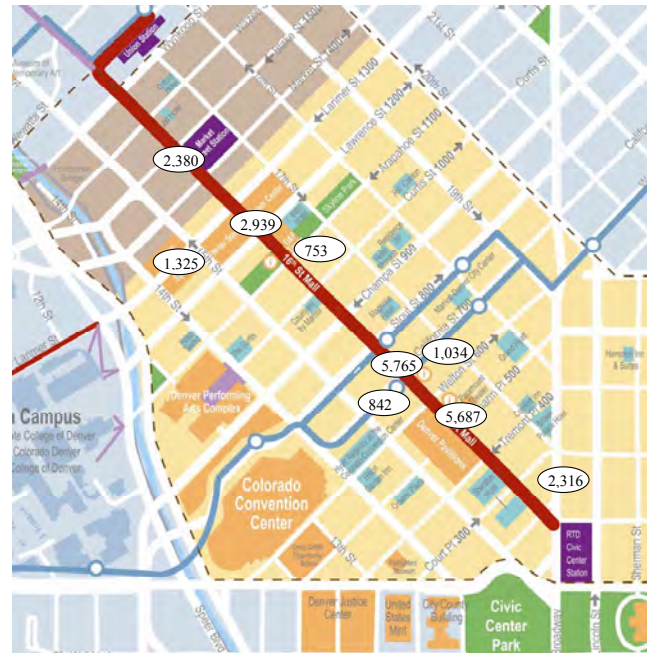
### Summer 2009 Pedestrian Counts

Average Weekday Evening Counts (5:00-7:00)



### Summer 2009 Pedestrian Counts

Average Weekday Counts (Midday and Evening)



## Stakeholder Focus Groups

In November and December 2009, the design team conducted interviews with a number of Focus Groups. Here are the relevant summaries:

### ACCESSIBILITY

Curb ramps should be widened and fitted with tactile warning. The median edge may or may not require tactile definition depending on interpretation of codes. The overhang profile of the existing planters, trash receptacles, sign pylons and pedestrian light legs do not present an ADA issue but the lower banner pole stays do. The median should be made more accessible to wheelchairs.

### BIKEDENVER

The biggest concern was lack of parking on or near the Mall and a desire for more hours of permitted use on weekends.

### STREET VENDORS

In general they felt the biggest problem to retail on the Mall was “homeless individuals and youth loitering on benches and sidewalks”. They indicated the Mall needs new retail to attract shoppers to Downtown.

### MALL RETAILERS

The current vending cart program is not seen as an asset, needs to be improved. All commented that “homeless individuals and loitering youth are deterrents to retail shoppers”. All were neutral about the median but felt its intended use was not clear. The Mall and Downtown need an improved retail recruitment program. The requirements for motion LED signs aren’t clear.

### MALL RESTAURANT OPERATORS

Golden hours are lunch and dinners on game days. Extra sidewalk space for expanded patios would be appreciated and utilized. Solar exposure to the patios is critical. Lighting and safety seem adequate. The median seems important for leisure. Rock Bottom leaves their patio ready to set up for meals all year.

### DENVER POLICE

The best locations on the Mall are the active restaurant patio blocks. Youth loitering and occasional gang activity has shown a relationship to adjacent cheap food outlets. Lighting needs to be more consistent. Dark alleys are a problem. Bench orientation can affect social behavior, clusters facing each other are problematic.

### SGI MALL MAINTENANCE

Benches are not durable enough. Snow plowing is a challenge with large blizzards. The SGI Ambassador program provides added “eyes on the street”. Events

that draw families seem to minimize homeless or youth loitering issues. Bench orientation was mentioned again.

*DON PESEK, BID OPERATIONS MANAGER*

The pedestrian lights are a high cost item because of sole-sources for parts. Several have been hit by vehicles and not replaced. The ability to move trash receptacles and planters (lighter weight fiberglass) is essential for programmed events on the Mall.

## Vending Program

Street vending of merchandise and to-go food has been a part of Mall programming since the 1980s. Large permanent kiosks were introduced to the Mall initially in a few median block locations to offer visitor information and limited apparel. Gradually, food carts were added to the Mall in both the median and wide asymmetrical blocks to add retail activity to the overall commercial mix. These are now managed as individual permits in a program operated by BID and managed by DDP staff.

The current program includes 5'x8' food push carts and 10'x10' kiosks. The 5'x8' footprint is a limit defined by the City and BID in the 16th Street Mall Guidelines. There are 54 vending locations on the original Mall segment with 3 additional locations in the Lower Downtown segment. As of 2009-2010, the BID has about 35 vendors operating – so there is a 30% vacancy rate.

The mix is about 60% food/40% merchandise.

**OPERATING RULES**

The 5'x8' cart owners are required to bring the cart every day and remove it after operation. Most store theirs nearby in rental locations.

Vendors sign up for a 12-month license agreement. Current minimum operating hours are at least four (4) hours each day, four (4) days a week, three hundred sixty five (365) days a year subject to weather conditions. Field observation concluded some vendor operators do not show up as required.

**LONG RANGE**

Goals are to improve vending operations, guarantee hours of operation, and upgrade the quality of carts, merchandise and presentation.

The BID and DDP have been evaluating a planned/phased upgrade of the vending program, in the context of the overall retail strategy for downtown. The BID and DDP would like to use an upgraded vending program to attract new retail to the Mall and to use vending as an interim step to better retail on the Mall and in Downtown in general.

The BID and DDP obtained a change of City ordinance in 2010 to a "Cluster Vending Permit" which would give them better control of the operation and quality of vendors. It involves an Intergovernmental Agreement between the City and BID to help them track profits and manage inventory.

## Street Level Vitality

Ground level conditions were mapped in early 2010 as a part of planning for overall activation for the Mall. A course-grained visual evaluation was mapped (see below). Street level vitality is measured as a combination of several factors described below. Sales per square foot, lease rates and other business statistics are a different measure of success and are not included as factors.

**RED/HIGH STREET LEVEL VITALITY**

Active retail use, street level and overall architecture consistent, urban retail window heights and proportions, high degree of transparency, provides "eyes on the street", signage oriented to the height, distance and direction of pedestrian traffic.

**GOLD/MODERATE STREET LEVEL VITALITY**

Retail use, street level and overall architecture consistent, may or may not have urban retail window heights and proportions, moderate transparency, moderate "eyes on the street"; signage may or may not be oriented to the height, distance and direction of pedestrian traffic.

**BLUE/LOW STREET LEVEL VITALITY**

May or may not be retail use, street level and overall architecture may not be consistent, does not have recognizable retail window heights and proportions or windows at all, low transparency, few or no "eyes on the street", signage may or may not be oriented to the height, distance and direction of pedestrian traffic.



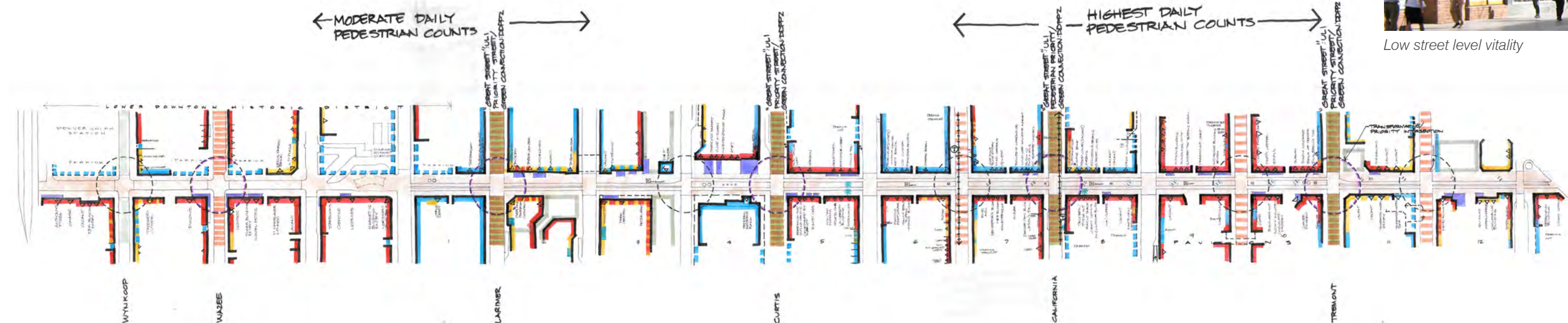
High street level vitality



Moderate street level vitality



Low street level vitality



Street Level Vitality

Legend

Red high level of vitality   Yellow moderate level of vitality   Blue low level of vitality

# D-C Zoning and Design Guidelines

## current design review

### Overview

The B-5 (now D-C) Downtown Zoning Design Review Standards and Guidelines were published in 1995. They were intended to provide development controls for the original 13 blocks of the 16th Street Mall, as Denver's central retail, entertainment, and businesses destination. However, participation in the design review process is only required when the cost of improvement is more than fifty percent of the value of the building in which proposed improvements are located. Consequently, substantial changes have been made to many Mall buildings with no design oversight. Nor is there any design control of vending carts and other structures on the Mall itself. Downtown design review is an administrative process, whereas most other design review districts have a public component.

#### "THE COOKBOOK"

All applicants have two design review options and may select the process that best suits the needs of their project. The first process has been nicknamed cookbook design standards from the intention to create a clear and unequivocal "by the book" approach to design review. Although the "Cookbook" approach sets an extremely low generic threshold for approval and requires little unique design creativity to achieve approval, it has been used only twice in 15 years.

### Design Guidelines

The B-5 Design Review Guidelines (now succeeded by D-C and D-CT), the other design review option, were meant to promote upscale development and redevelopment in the downtown commercial district that surrounds the Mall as well as on the Mall itself by providing a quantitative ("standards") and qualitative ("guidelines") review process for approvals. B-5 review using design guidelines invites discussion of design intention and is worded to enable an applicant to reach consensus with the City. The problem has not been with the Guidelines,



but with the fact that most projects on the Mall have been able to avoid design review altogether.

### Analysis

The paving, planting and lighting of the 16th Street Mall have created a place of exceptional quality, but equally important are the building frontages that contain the space of the Mall. Some storefronts meet this high standard of design, but many do not and are the result of exemptions to the design review process. The challenge is to establish and enforce a design code that will uphold the high quality set by public improvements in the Mall.

Design review requirements should recognize retailing as a special, highly competitive enterprise in today's global market. A design manual should document a procedure for enforcing design quality that is consistent with nurturing a financially successful retail business with a regional draw. A model for such an approach is to be found in the 'Exhibit C' standards and guidelines that were attached to properties in the Denver Pavilions development. Adherence to those standards and guidelines is a condition in every tenant agreement. The owner recognized the value of upholding quality in design, materials and practices, and was therefore willing to require a prescribed level of performance by tenants. This need not imply standardized design solutions. It does, however, require above average design, materials and workmanship.

Traditional retailing is about presentation of goods for sale as 'art with price tags'. Dining is entertainment where the quality of interior space, food, and service, together with the robust atmosphere generated by the crowd is 'theatre'. Some restaurants that currently exist along the Mall offer the best examples of interface with the passing public by enhancing visual exposure between the street and activities within, through the device of temporary, operable storefronts and extended patio seating.

The character of the Mall changes considerably between Broadway and its terminus in the Central Platte Valley. Design standards and guidelines must recognize these differences, and cannot therefore be uniformly prescriptive. Design Standards may be tied to specific locations, and guidelines should be focused on design intent rather than on a specific outcome.

### Recommendations

#### DESIGN REVIEW

The significant investment which the City of Denver has made towards creating the 16th Street Mall, a nationally recognized civic icon, demands and justifies raising the bar regarding minimum design expectations to foster excellence of commercial presentation along the Mall. The Design Review Manual should be updated to incorporate present-day qualitative design intentions into standard minimum requirements.

All businesses fronting the Mall should be required to participate. Case-by-case design review requirements should recognize retailing as a special, highly competitive business.

It is important that the owner and developer who have a prime financial interest in the outcome of the design review process, as well as the project as developed, be required to attend all critical meetings.

It is important that an updated Design Review Manual set a planning, urban design, and pro-business oriented basis that specifically explains why and how the 16th Street Mall (a special address) was conceived, and its significance as the leading place for doing business in the entire Denver region. This description should establish the intent statement for discussion at a pre-design, and at subsequent review sessions.

An updated version of the B-5 Zoning Design Review Manual must make clear that the total time involved completing a review process that begins with an initial pre-design meeting and ends with final completion is controlled by the applicant's response time at each phase of review. The manual should provide a graphic that defines each milestone of the review process, and graphics to illustrate each design intention. Guidelines and standards may differ for different parts of the Mall, but their application should be uniformly implemented.

#### GUIDELINES

Existing guidelines on ‘Building Placement’ and ‘Architectural Scaling’ are well-written, and made more explicit by the supporting graphics. Those recommendations that are mandatory to meet minimum acceptable standards should be moved from the Guidelines to the Standards section of the Design Review Manual. Where building types that are not typically programmed to provide at-grade retailing are being proposed, special enforcement strategies such as a use-permit process should be introduced to promote commercial continuity along the Mall.

#### SIGNS AND ADVERTISING

The B-5 Manual makes no mention of design requirements for signs and advertising, nor does the ‘Vital Signs’ program address the issue sufficiently. Retail as a shopping, dining, and entertainment phenomenon is increasingly a night-time activity. Illuminated signs that contribute to way-finding, and explain the commercial offerings, particularly at night, have become visually stimulating contributions that have elevated the images of downtowns and special districts such as Times Square in New York, the Ginza in Tokyo, Soho in London, and the recent LA Live mixed-use district in Los Angeles.

However, significant care should be taken to control the phenomenon of the bright, sometimes overwhelming experience of electronic reader boards that in some cases are more about paid advertising than highlighting adjacent activities.



Control is also needed of hanging posters in storefronts that advertise products and discount sales. The tawdry effect does not serve the best interest of the City’s

investment in the Mall, nor that of other merchants. The 16th Street Mall, as in the case of all upscale shopping centers, must create and rigorously enforce regulations that will ultimately benefit the financial performance of all participating businesses.

The B-5 Guidelines discourage dead-end shopping corridors off the Mall, which have been proven to fail, and should continue to be discouraged. However, continuous-loop shopping galleries can extend the 16th Street Mall address and retail experience in a manner that provides a clear, open-ended pedestrian flow from one end to the other. These are capable of redefining super-blocks into pedestrian-scaled parcels and should be encouraged.

#### ENFORCEMENT ENTITY

Enforcement of design standards and upholding of guidelines requires constant vigilance. Design review enforcement occurs only at the time of project implementation, and therefore cannot monitor later actions, such as hanging posters in storefronts. A special quasi-public entity should therefore be appointed as the official observer and enforcer, with a knowledgeable person regularly walking the Mall and responding to changes as they occur.

## Accessibility

### Design Intent

The original design intent of the Mall was “To create a new pedestrian environment in downtown – a place for people.” Although it preceded the 1990 Americans with Disabilities Act (ADA) by a decade, the Mall incorporated many of the features of accessibility that are now required. Today, we consider not only accessibility features that are required by law, but also those that provide greater safety and convenience for all Mall users – such as count-down pedestrian crossing signals.

### ADA Compliance

Focusing on the 13 blocks of the original Mall which preceded ADA requirements, a close survey of obstacles and other potential hazards was made and reviewed by disabled users. The ADA Accessibility Guidelines were used to measure the adequacy of pathway widths, cross slopes, walking surfaces and other aspects of the accessible environment.

## Sidewalks

Although the Mall sidewalks are wider than required, the volume of pedestrian traffic at times makes access by people using wheelchairs difficult. A ten-foot wide clear pathway is recommended between curb and patio railing or other encroachment from storefronts. A recommended maximum cross slope of 1:48 (approximately 2%) should be adhered to on all paved surfaces.



### CURB RAMPS & STREET CROSSINGS

As Mall paving is re-set, the gradient of corner curb ramps should not exceed 1:12 (8.3%), must be at least 48” wide, and must have detectable warning strips. The recommended design will extend curb ramps across the full width of sidewalks at cross streets to eliminate an existing tripping hazard. Warning strips will not be installed at curb ramps that are unsafe for disabled people to use – such as those at mid-block alleys intended for service access. The reason for this is that a warning strip may be construed as signaling a safe place to cross traffic. For the same reason, warning strips are not proposed on the median ends between intersections. Alternatively, mid-block curb ramps may be eliminated.

There is no requirement that the width of pedestrian crossings be marked, however they should be at least six feet wide and should not be obstructed at curb or median by poles or other fixed objects.



Lower banner pole stays need to be shortened to meet ADA clearance requirements at eye level; they protrude beyond the planter sides



#### MEDIANS AND MEDIAN ACCESS

Currently, permanent features such as seating at fountains, fixed benches and tables severely limit circulation within the medians, causing wheelchair users to veer into the transitways. Reconfiguration of street furnishings and vending units will ensure adequate space for access within the median.



#### MEDIAN EDGE

The edge of the median is not detectable with a cane, yet provision of a tactile strip would wrongly signal safe crossing of the transitway. It is the design team's current recommendation that the median edge be left as is.

#### MEDIAN ENDS

The ends of the median at each cross street are used occasionally as a third crosswalk. However, in order to give clear direction to visually-impaired users, tactile warning strips are not recommended for median-to-median crossings. Tactile warning strips are recommended for the crossings of the transit ways.



#### TRASH RECEPTACLES & PLANTERS

There was concern that protrusion of these vessels beyond their bases may constitute a hazard, but since the widest part is less than 27" above the ground, this is not considered a hazard.

#### BANNER POLES

Although not technically a hazard, it is recommended that the lower crossbar of the banner poles in some planters be shortened to less than the planter diameter.



#### PEDESTRIAN LIGHTS

An individual using a cane will detect the three vertical pipes that support the light fixtures before walking into them, so there is no objection to them.

#### WAY-FINDING SIGNAGE

The way-finding and transit stop signage meets relevant standards and does not constitute a hazard.

#### DRINKING FOUNTAINS

The existing drinking fountains meet the accessibility criteria of ADAAG for a side-approach fountain but not PROWAG. The two standards will be reconciled in the future therefore no changes are recommended.

#### VENDING CARTS

Currently some carts inhibit safe passage of wheelchairs within the median, and some have only high service counters. Electric cable covers used are unfriendly to wheelchair users. A new vending program will conform to accessibility standards throughout the Mall.

#### TABLES, BENCHES & OTHER SEATING

Most satisfy accessibility standards, however, some, such as the granite seating blocks around the fountains, reduce the width of travel path from the dynamic envelope of passing buses to less than 36", which is not acceptable. Tables, benches and other seating should be relocated to provide a path of travel at least 48" wide.

#### PUBLIC TELEPHONES

For many users, cell phones have rendered public telephones obsolete. Existing phones meet current standards, although many deaf and hard-of-hearing citizens prefer video-phones that permit use of sign language.



#### TRANSPORTATION

Shuttle buses stop at the end of each block at predictable locations that enable wheelchair users to anticipate the loading location. Problems have been noted with the current loading ramps concerning their steepness and a 1" bump at the top. Ramps are manually operated, which slows the boarding process. It is recommended that the new fleet of shuttle buses be equipped with an automatically deployable lift or ramp system in combination with a kneeling suspension system to minimize ramp slope. Automatic stop announcement on the shuttle buses is very helpful.

# Lighting

## Design Intent

Design of the original Mall lighting by Howard Brandston is summarized near the beginning of the original report. However, some phrases from the original report merit repetition here:

“Malls are for pedestrians. Streets are for vehicles.”  
“Lighting for Malls must respond to the way walking humans see and move.”

“Psychological comfort and satisfaction, as well as physical safety, must be achieved.”

“Lighting levels must be no higher than necessary to achieve these goals; and they must allow the retail character of the mall to be apparent.”

These remain guiding principles for Mall lighting today. Brandston knew that the Mall lighting fixture must be an assembly of equipment which addressed the needs of the environment by providing layers of light. Each layer was intended for a specific purpose – uplight for mature tree canopies, twinkle lights for vertical illumination and facial recognition, downlight for fill light between assemblies and a security flood for after-hours illumination of storefronts. The only shortcoming of the design was the expectation that store owners and building tenants would contribute light to the sidewalk zone by leaving window displays illuminated after hours or until late in the evening. This expectation was not fulfilled.



## CURRENT MALL LIGHTING

Although most of the original light fixtures remain in use (44 of the original 179 fixtures have been removed after sustaining vehicle collision or other damage), they have been retrofitted with equipment that reduces energy use, but has changed the ways in which light is distributed. Consequently, there are areas of the Mall that are overlit (center zone), areas that are very dark (edges at dark storefronts) and areas in between. Contrast ratios are poor, which most people perceive as insufficient illumination, although tests show light levels to be above the recommended level.



## DESIGN ALTERNATIVES

Three alternatives for the new pedestrian lighting equipment on the Mall were considered. The first alternative would renovate the existing assembly by installing new reflectors, sockets and conventional “white light” lamps. The second alternative would replicate the existing assemblies with all new, higher quality materials and current technologies. The third alternative would replace the existing assemblies with an entirely new, non-custom, readily available pole and luminaire.

## RENOVATE

The increased availability of improved color-rendering lamps with long life has made renovation a viable alternative. Ceramic metal halide (CMH) lamps are now available with the same or longer life as the high pressure sodium lamps currently in use on the Mall. Wattage of the sources would be reduced to realize additional energy savings. Longer life and reduced wattage are consistent with the project’s sustainability goals.

It is important to note that the Renovate Alternative would not alleviate the need for additional light to supplement the sidewalk zone. It cannot be understated how beneficial lighted window displays are to the nighttime scene, but their use at night cannot be mandated. Therefore, some consideration of a supplemental layer

of light from the buildings must be undertaken in Final Design.

Renovation will involve:

- Replacement of the acrylic globe. The new globe shall be clear UV-stabilized impact-resistant Type DR acrylic.
- Removal of light collecting mirror, lenses, couplers and other components associated with the previous fiber optic system. Refit light ring with single-node low-output (<10 lumens) LED lamps which emit warm-white light (3000K or lower).
- Removal and restoration of existing uplight and downlight reflectors.
- Removal and replacement of porcelain lamp socket and associated wiring.
- Installation of low-wattage phosphor-coated ceramic metal halide lamps (3000K) and electronic ballasts in both the uplight and downlight. Optional dimmable ballast should be considered for improved operational performance and energy savings (See Exhibit 3 - “Dimmable Electronic Ballast for Metal Halide Lamps” in the full Lighting Report from DDP)



- Repainting of all pieces of the structural assembly.
- Upgrading of the base assembly to stainless steel for all lights.

**REPLICATE**

The Replicate Alternative is intended to recreate the original design intent in every respect with all new materials, sources and related technologies. Compared to the existing fixtures, materials would be more durable, light sources would be more appropriate, and maintenance would be reduced. The aim would be to restore all of the functionality to the assembly that was originally conceived by the Pei/Olin/Brandston design team. The uplight, downlight, and light ring sub-assemblies would be replaced with LED systems featuring user-programmable color changing capabilities. An additional downlight would be added to provide illumination directly under the luminaire where there is currently a very dark shadow. The long-life, low energy use and control flexibility of LED technology makes it an ideal choice for this application. The continuing development of this technology indicates that capital costs will decrease as capabilities and lumen output increases.

**REPLACE**

In an effort to make sure all relevant alternatives had been explored, the design team developed several alternate schemes using current catalog offerings from outdoor lighting manufacturers. This would greatly reduce the maintenance and replacement costs if a suitable assembly could be found. Possibilities which were explored include:

- Raising the light source up to approximately 20 feet above grade to allow greater light distribution to the sidewalk zone.
- Keeping a shorter pole but curving the pole to reach closer to the sidewalk.
- Moving equipment to the edge of sidewalk zone to provide additional illumination and providing lighting bollards in the center zone.

**RECOMMENDED LIGHTING OPTION**

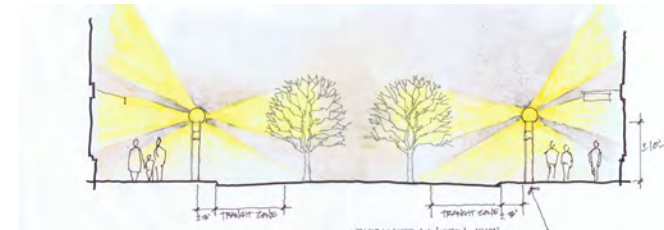
The Steering Committee selected renovation or replication of the existing light fixtures as the best option.

**SUPPLEMENTAL LIGHTING**

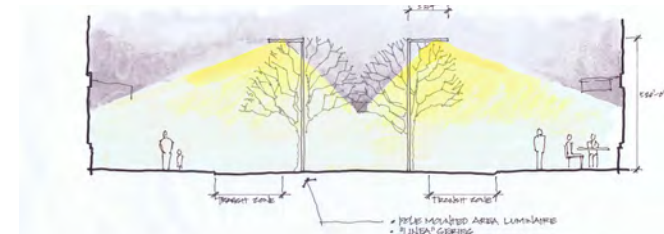
With either the renovation or replication option, a consistent secondary lighting source is needed to complement the street fixtures and provide a balanced quality of light at night. This would include façade lighting (example: the Sage Building) and/or storefront display lighting that projects reflected light out to the adjacent sidewalks (example: Pavilions).



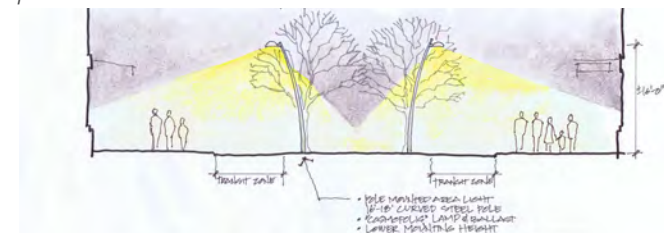
option 1: renovate and 2a: replicate.



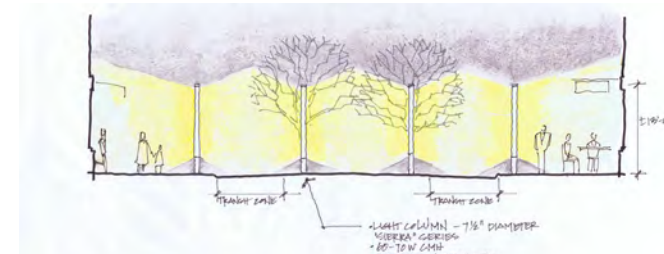
option 2b: replicate original pedestrian fixture at sidewalk with added lighting effects.



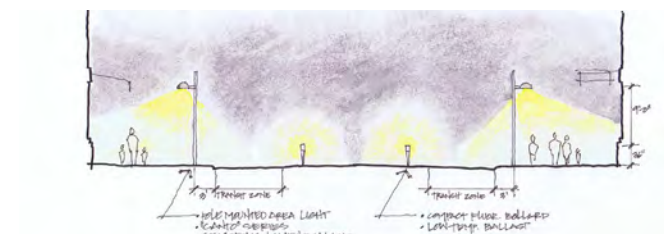
option 3a: replace with higher, median lights; straight pole.



option 3b: replace with higher, median lights; curved pole.



option 3c: replace with sidewalk and median lights; lipstick style luminaire



option 3d: replace with cut-off sidewalk lights and median bollard lights



At locations where retail lights are off at night, sidewalk lighting levels are inadequate



The proposed lighting program includes budget and incentives for façade lighting which improves the ambient sense of light level in the overall street



## Fountains

Ornamental fountains were part of the original Mall design concept to enhance enjoyment as a public space and to mark the ends and transition points along the Mall.

A technical assessment of existing conditions revealed that the nozzle basins leak, the nozzle pumps are too large for the appropriate water effect, water level controls are unreliable and the basins are difficult to clean. The systems also do not meet current health codes for water sanitation at fountains that come into human contact. Water related illnesses of concern are e-coli, cryptosporidium and giardia.

Four concepts for renovation or modification were evaluated:

1. Remove the interactive component by building a raised seat wall around the basin area and renovating the pumps.
2. Renovate the fountains with new pumps, new water purification equipment in a new vault, repair stone basins and seal joints.
3. Remove nozzles and current reservoir, change to different water effects, such as fog, to eliminate human contact and re-circulation.
4. Eliminate the fountains from the Mall, remove the depressed basins, replace the decorative stone paving.

### *RECOMMENDED FOUNTAIN OPTION*

After public and stakeholder discussion, it was concluded that any design concept for the Mall should include renovation of the current fountains for their beauty, their calming sound and their refreshing mist on hot days. The outside pairs of granite seats at fountains near Arapahoe and Tremont streets are recommended to be removed for accessibility reasons (see page 56).



# Furnishings

original mall segment • original/non-original elements



Corner street lights: part of the original custom design elements family; lighting and energy performance could be improved; countdown and audible pedestrian signals would be an improvement.



Public phones: part of original design elements; equipment is outdated; use has diminished due to cell phones; not preferred by the deaf because they cannot use sign language without a video screen.



Electrical Service Cabinet: circuitry for all electrical components on the Mall; usually at mid-block; painted steel is subject to corrosion from de-icers in winter; bulkier than necessary for modern equipment.



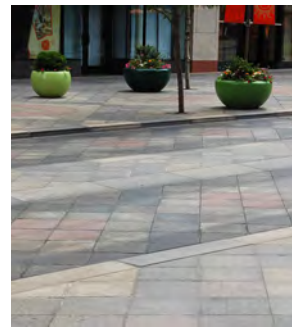
Way-finding signage: second generation, not part of original design elements; they provide a critical service for visitors and mark the shuttle stops; expensive to fabricate and maintain; some problem with water leaks, fogged glass and corroded electrical connections; appearance is questionable with original Mall furnishings.



Pedestrian lights: a critical iconic component of the original design elements family; unique effect with median placement; high maintenance cost; position, height and current function don't achieve good lighting performance; several missing due to collisions.



Drinking fountain: custom-made; part of original design elements family; plumbing needs periodic repair; original color – grey.



Granite paving: the most critical iconic component of the original design; delaminating, chipping, and occasional breakage are problems; recommendation for renovation is included in Phase I Technical Assessment and Rehabilitation Strategy.



Art: not part of original design; to be reviewed for compatibility with overall Mall design.



Trees: Honeylocust; a critical iconic component of the original design in the median blocks; they have mostly thrived on 16th Street Mall.



Concrete intersection paving: now 30 years old; has had subsequent utility trenching and is cracked, chipped, spalled and has differential settlement around manholes and former trenches; aesthetically inferior appearance.



Art Chess Tables: not a part of original design; very popular element on Block 4; provision for chess playing should be retained on the Mall as a public space amenity; to be reviewed for compatibility with overall Mall design; if removed, they should be replaced with a Mall-compatible chess table and stool design in the same location.



Planter/banner poles: custom-made; part of the original design elements family; relative light weight is an advantage for periodic moving for special events; fiberglass is repairable locally; original color – grey; banner pole bottom isn't secure so poles lean.



Trees: Northern Red Oaks; original specie of the asymmetrical blocks; have not fared well, particularly in periodic droughts; have been slowly replaced by Honeylocusts.



Moveable chairs: currently on third generation; many of first and second generation were stolen; current chairs are light enough and inexpensive enough to discourage theft; aesthetically inferior appearance



Art Bench: not part of original design; to be reviewed for compatibility with overall Mall design.



Trash receptacle: custom-made; part of original design elements family; relative light weight is an advantage for periodic moving for special events; fiberglass is repairable locally; original color – grey.



Bench: a replacement of the original benches; lack of center leg and frame has led to several being broken by vandalism.



Recycling receptacle: not an original element; part of a downtown program; aesthetically incompatible with original Mall furnishings.



Art Sculpture: not part of original design; to be reviewed for compatibility with overall Mall design.

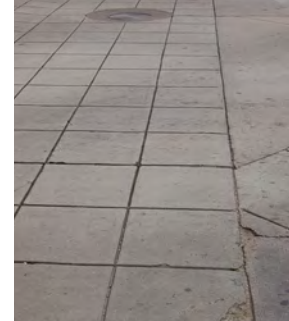
lower downtown segment



Corner street light and signal pole: LoDo standard; painted steel; high pressure sodium lamps; lighting and energy performance could be improved; countdown and audible pedestrian signals would be an improvement.



Planter: custom made for LoDo Mall segment; painted steel; does need frequent maintenance of paint surface.



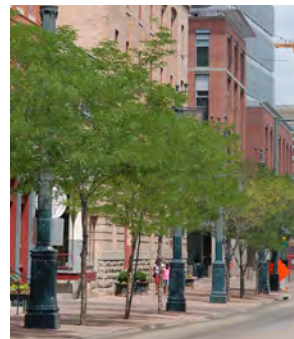
Concrete intersection paving: inferior initial installation; is cracked, chipped, spalled and has differential settlement around manholes and subsequent utility trenches; aesthetically inferior appearance.



Street light/historic replica: custom made; painted steel and aluminum fixture specifically for LoDo Mall segment; high pressure sodium lamps; lighting and energy performance could be improved



Way-finding signage: second generation, not part of original design elements; they provide a critical service for visitors and mark the shuttle stops; expensive to fabricate and maintain; some problem with water leaks, fogged glass and corroded electrical connections; their appearance should be coordinated with any modifications to same signs in original Mall segment.



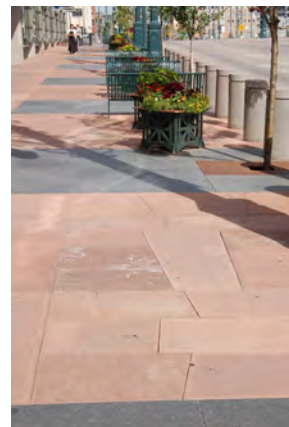
Trees: Honeylocust; a critical iconic component of the design continuity; they have mostly thrived on 16th Street Mall/LoDo segment.



Sidewalk paving: mortar-set sandstone pavers on subslab; many installation and durability issues; deteriorating at alley driveways; not consistent with new aggregate-set sandstone design which is now the standard for LoDo.



Bench: LoDo standard; powder coated tubular steel.



The new LoDo sidewalk paving standard.



Trash receptacle: LoDo standard; powder coated flat bar steel.

# Urban Design Concept Alternatives

original mall segment



section - median block



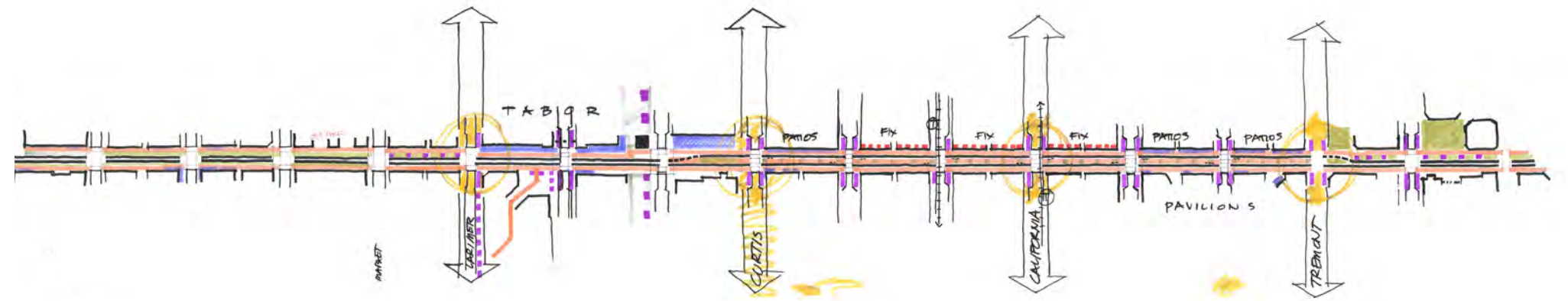
section - asymmetrical/end block



section - with vendors



section - with wide cafe patios

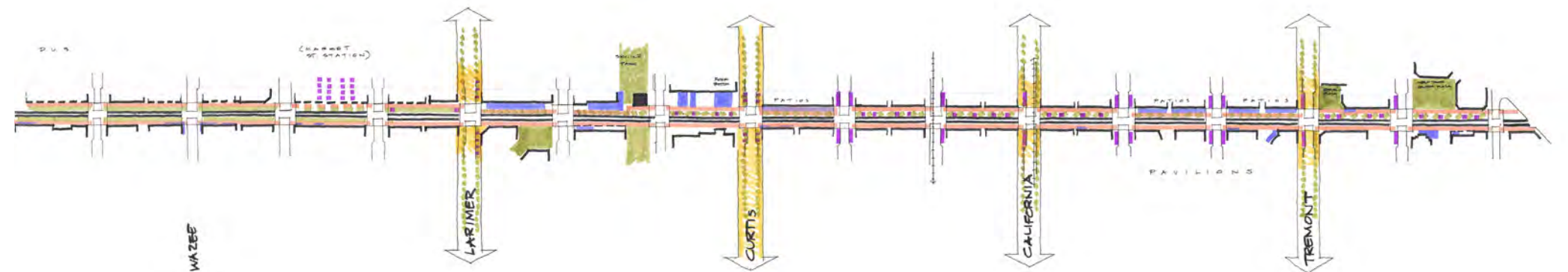


## Concept 1 existing configuration (recommended)

Concept 1 preserves the existing configuration of asymmetrical and median blocks and the two way shuttle service. Paving, furnishings and lighting would be renovated. Advantages noted were preservation of the spatial variety, simpler renovation,

and the opportunity to utilize the existing configuration in better ways. Challenges identified were the sidewalk's ability to accommodate future increases in pedestrian volumes, the ability to stage events without interfering with shuttle operations and the

need to program the median space for desired uses like vending, seating, people-watching to discourage loitering and anti-social behavior.



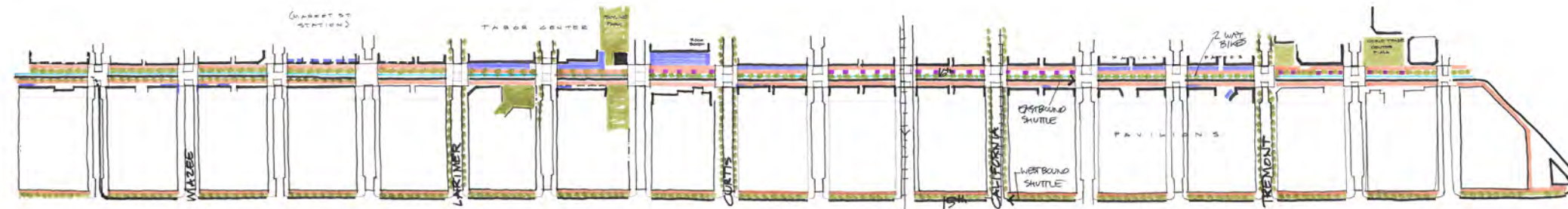
## Concept 2

Concept 2 proposed to convert median blocks to asymmetrical blocks so the Mall would be a single configuration from Broadway to Market streets. Advantages cited were the ability to use the wider sidewalks for expanded restaurant patios, vend-

ing, passive seating, and special events without interfering with shuttle operations. Constraints noted were the spatial monotony of a single cross section, the reality of being able to fully activate the wider north sidewalks, the inequity of all wider

sidewalks adjacent to north side businesses, the loss of pedestrian access to the tree canopy in the former median blocks and the added cost of reconstruction by shifting the westbound bus lane in the median blocks.

original mall segment



Concept 3 transit couplet

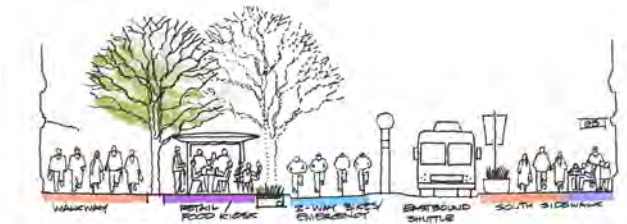
Concept 3 proposed a significant operational and physical change to the Mall. It envisioned moving the westbound Mall shuttle service to a newly enhanced 15th Street, forming a transit couplet. Advantages considered were: the possibility to spread retail energy to 15th; the opportunity to change the

appearance of 15th, which isn't currently attractive to development; the ability to capture even more pedestrian space on the Mall for special events and possibly introducing a two-way bicycle lane on the Mall. Constraints were: the inconvenience to transit riders by having one direction of shuttles off the

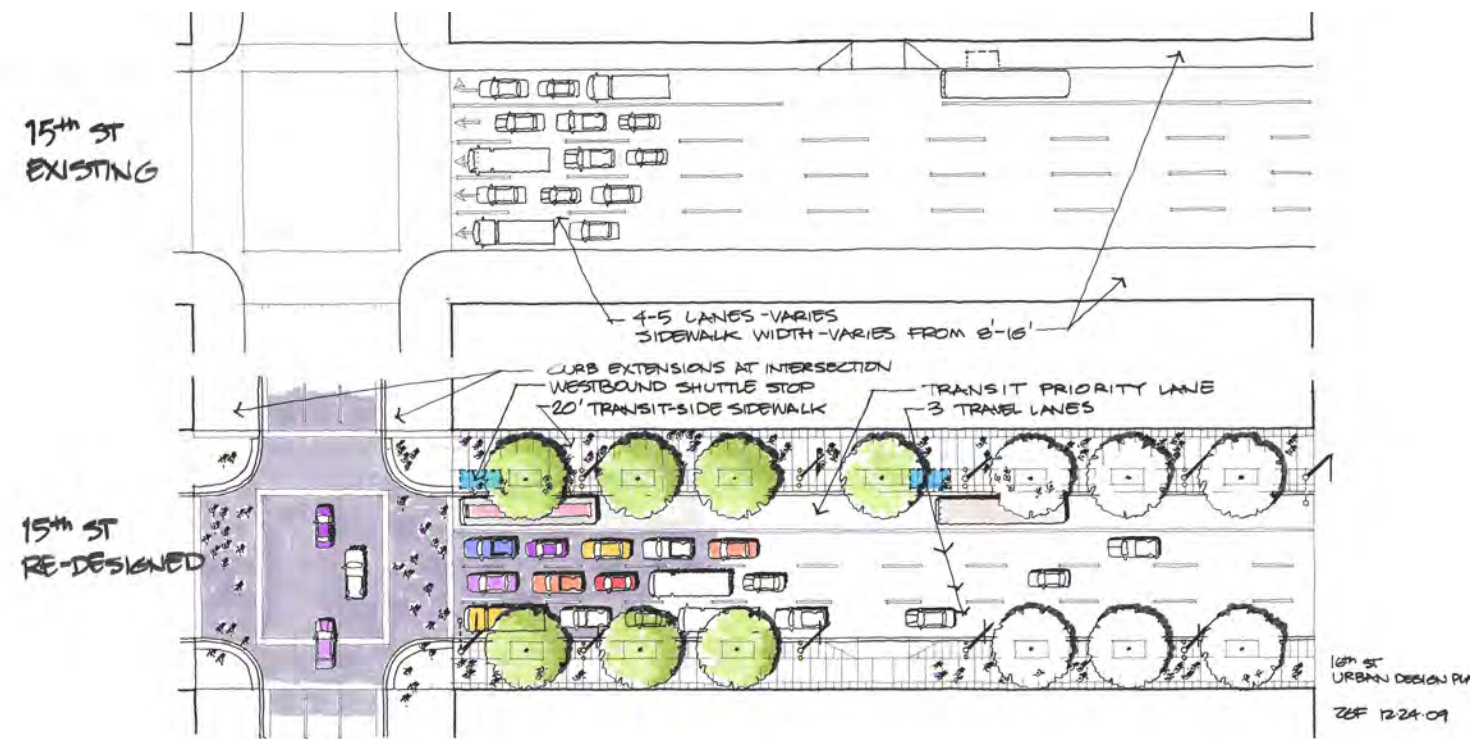
Mall; the confusion and potential conflicts created by adding bicycles to the Mall's heavy pedestrian flows; the reality of being able to activate up to 50 feet of north sidewalk area; and the considerable extra cost to rebuild 15th Street in addition to renovating the Mall.



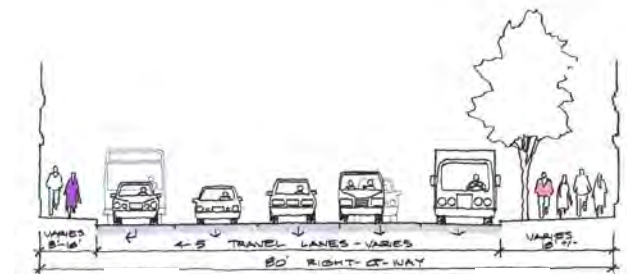
section - with wide patios



section - with vending



Concept 3 block plan/15th



section - existing 15th Street

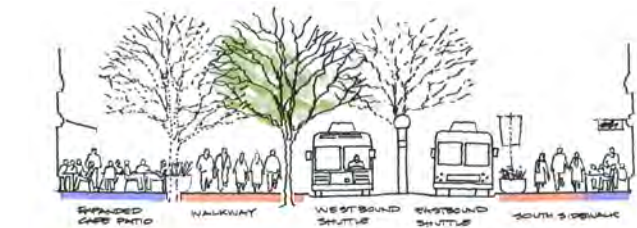


section - proposed 15th Street

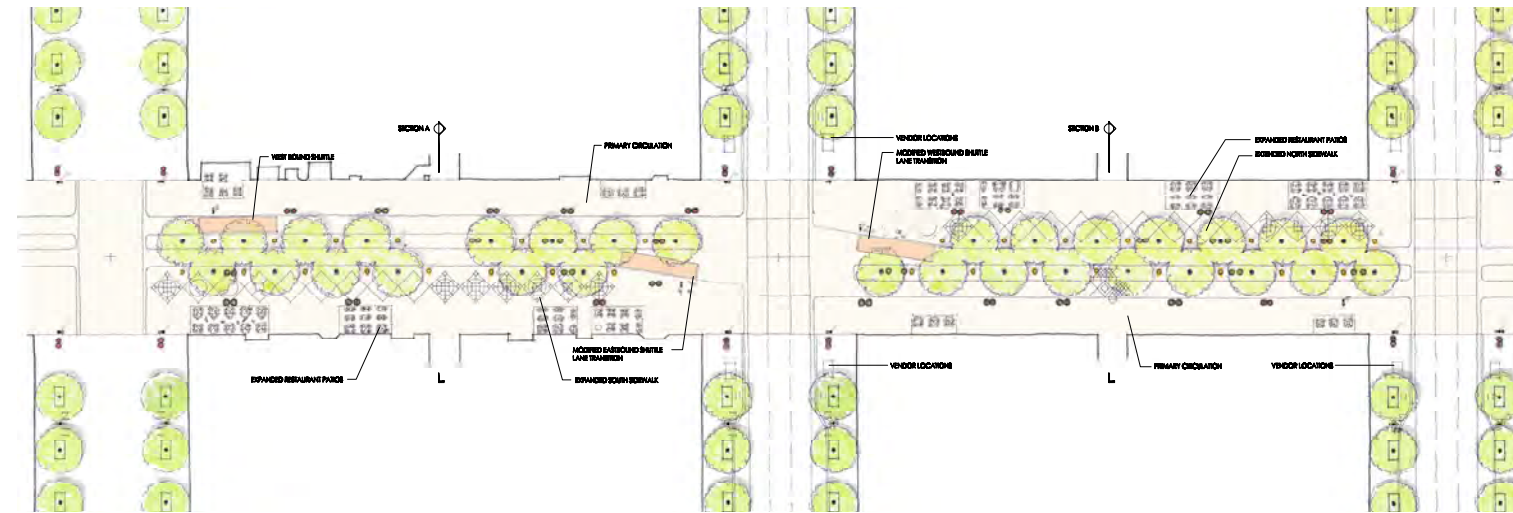
original mall segment



section - at wide south sidewalk



section - at wide north sidewalk

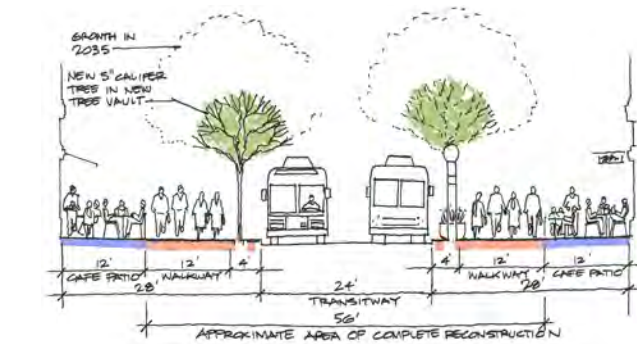


Concept 2.1

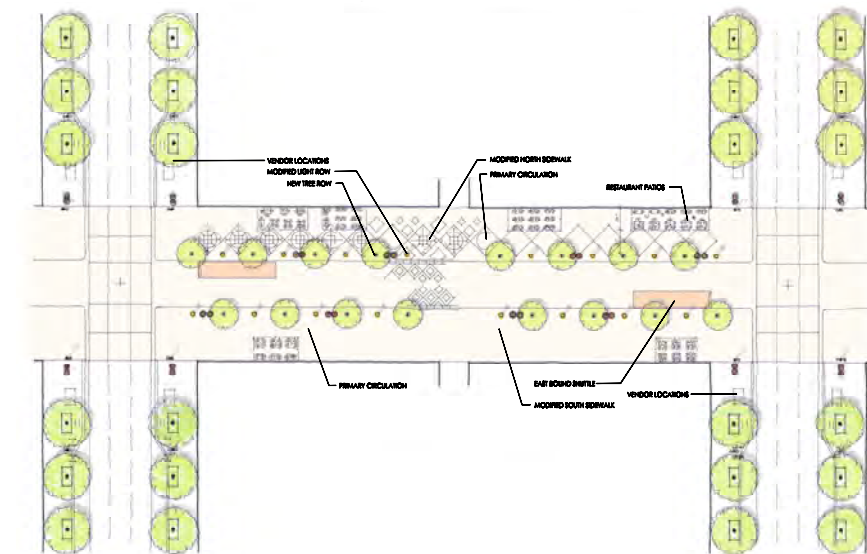
Concept 2.1 was a late added concept intended to address the inequities of sidewalk space identified in Concept 2. It proposed to convert to all asymmetrical blocks but to shift the bias so that Blocks 1-3 and 11-13 would remain asymmetrical with wide north sidewalks, blocks 4 and 10 would be converted from median blocks to asymmetrical

with wide north sidewalks and median blocks 5-9 would be converted to asymmetrical with wide south sidewalks. Advantages listed were the same as those stated for Concept 2 but with the 8 blocks with wide north sidewalks and 5 blocks with wide south sidewalks for a more equitable distribution. Criticisms were the same as those for Concept 2

but with the added question – what advantage do wider south sidewalks offer when they are in shade for 75% of the year? Concept 2.1 also added more reconstruction at transition blocks where both bus lanes would swing from one side of the street to the other.



section



Concept 4 existing configuration

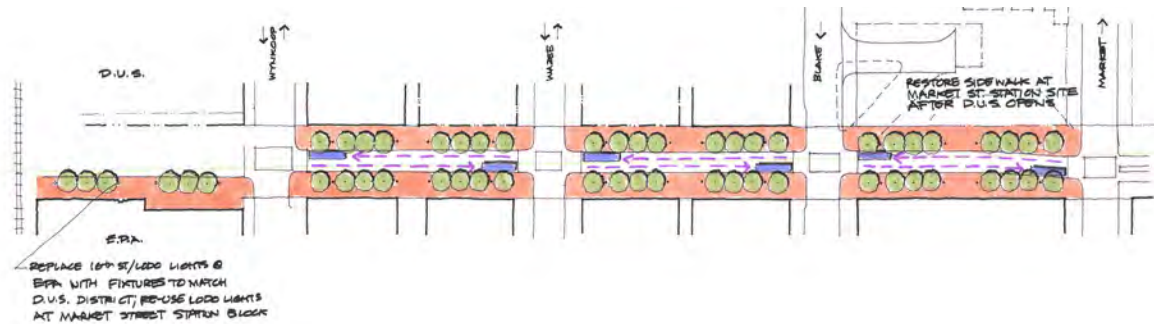
Concept 4 was another late added concept, also intended to address sidewalk width inequities. This design suggested rebuilding a major portion of the street to allow bus lanes to be set close together

and widening both sidewalks to approximately 28 feet width. Advantages were seen as more flexible sidewalks on both sides. Disadvantages were numerous: monotony of the cross section, real or

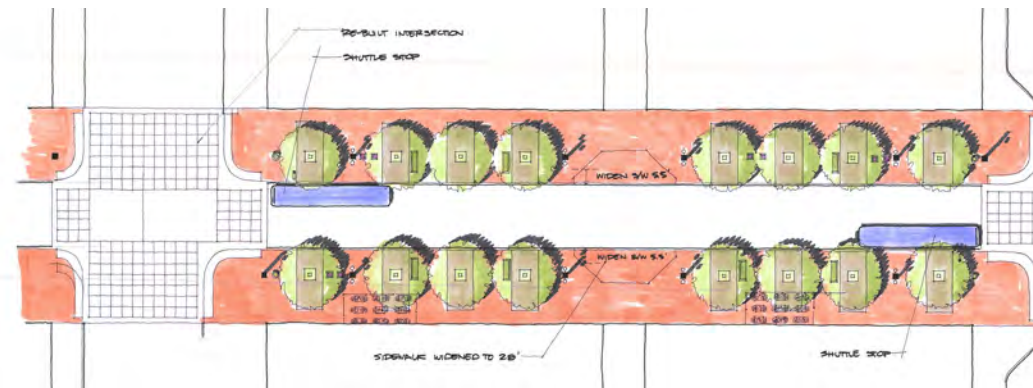
perceived difficulty in crossing both bus lanes at mid block, disruption to the iconic paving pattern, loss of the existing mature trees and considerable added expense of reconstruction.

# Urban Design Concept Alternatives

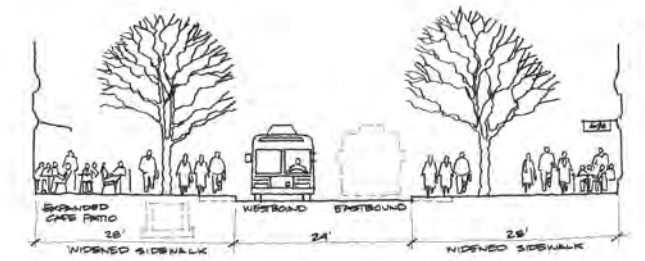
## lower downtown segment



segment plan



block plan



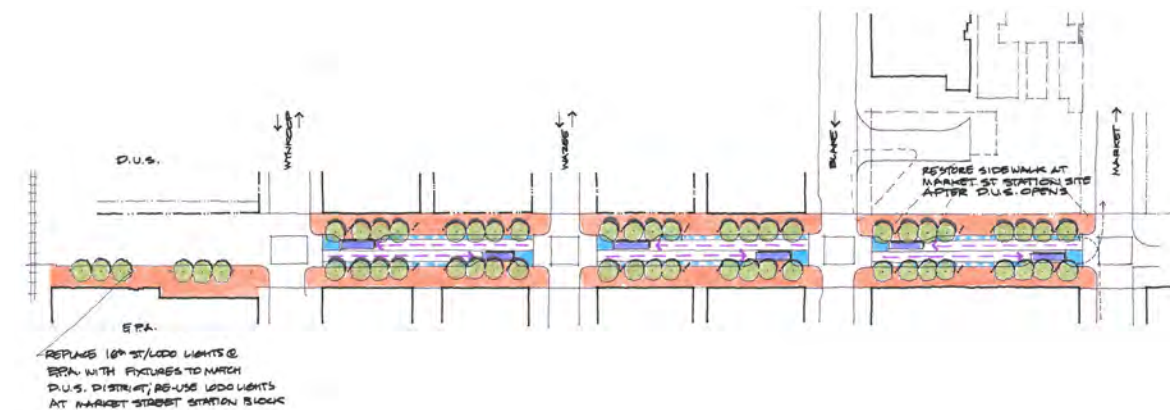
section

### Concept 1 symmetrical/widened sidewalks

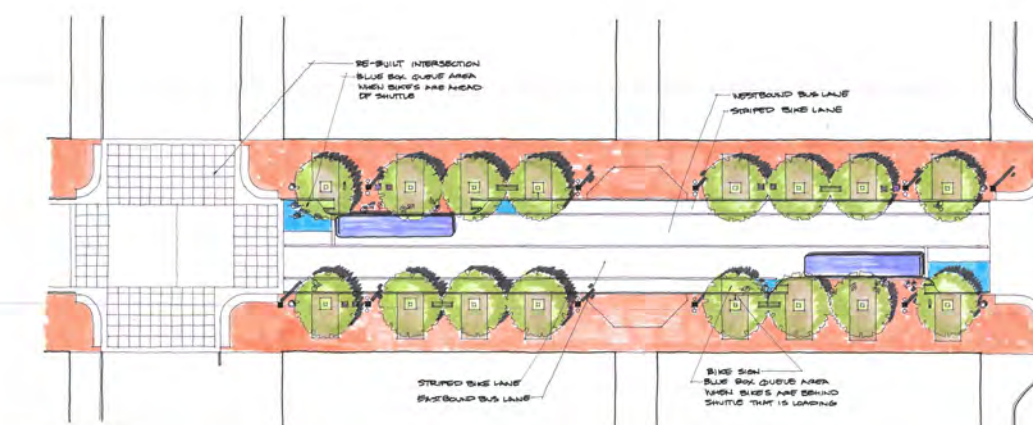
Concept 1 proposed to widen both sidewalks at the time when Denver Union Station opens for intermodal transit operations, removing regional and city bus traffic from 16th Street between Wynkoop and Market streets. With this change, the middle passing lane is no longer needed as shuttles operate as a platoon and do not

pass. This allows 5.5' of sidewalk to be added to both sidewalks for a total of 28' in width. Sidewalk paving would be upgraded to the new LoDo Mall standard. Existing trees and lights would remain. Benches and planters would be re-positioned. Intersection and

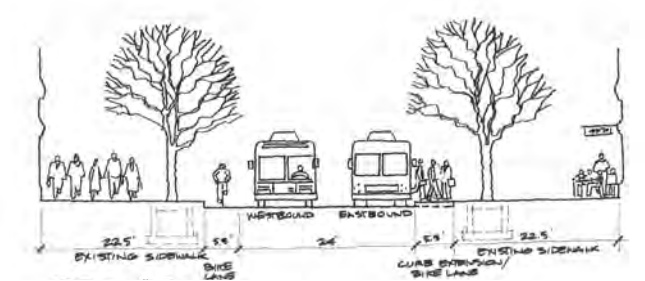
busway paving would be replaced. Corners would be re-built with tactile paving. Advantages were seen as extra sidewalk space for wider restaurant patios and additional walking space. Disadvantages – additional cost.



segment plan



block plan



section

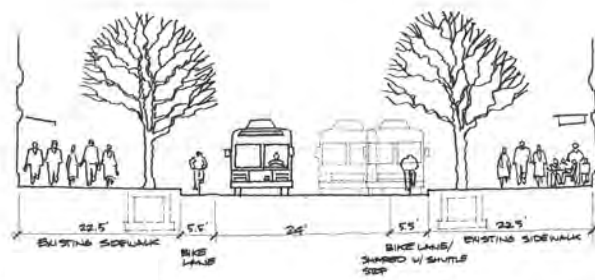
### Concept 2 curb extensions/side bike lanes

Concept 2 left sidewalk widths at their current dimension and added side bike lanes, a curb extension at the transit stop with a sidewalk bike bypass lane and colored bike boxes (queue jump area) at the near side of intersections. Paving, furnishings and trees would

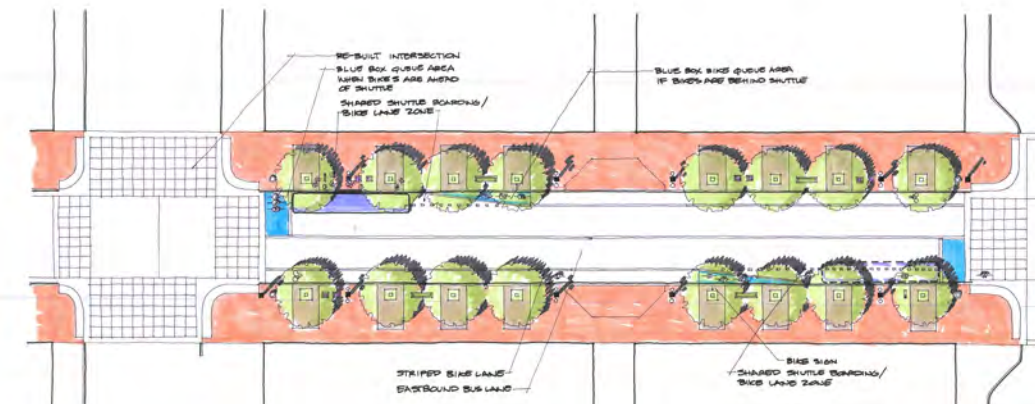
be the same as described in Concept 1. Advantages – more bicycle route options in downtown. Disadvantages – confusion and potential conflicts of adding another mode to a busy transitway; because bicycle access could not continue on 16th street past Market street, it

would have to divert bicyclists off the Mall. Neither Blake nor Market streets have or are planned to have bike lanes.

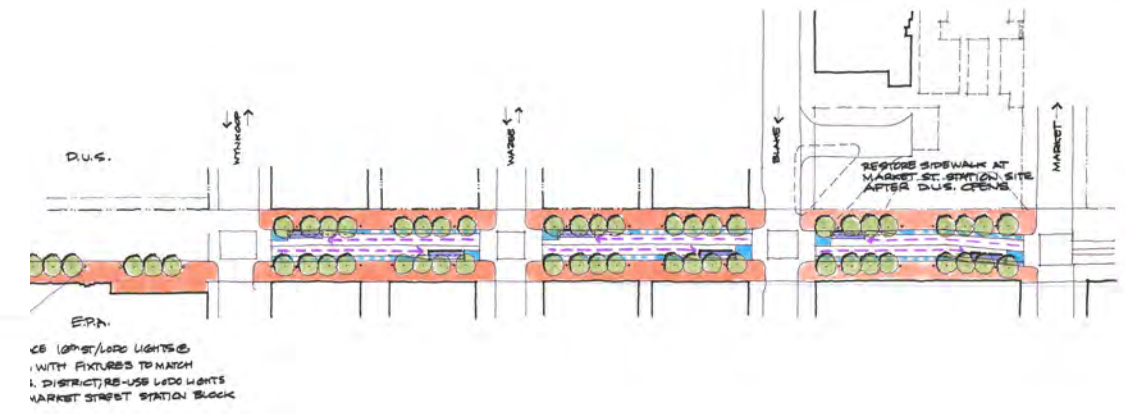
lower downtown segment



section



block plan

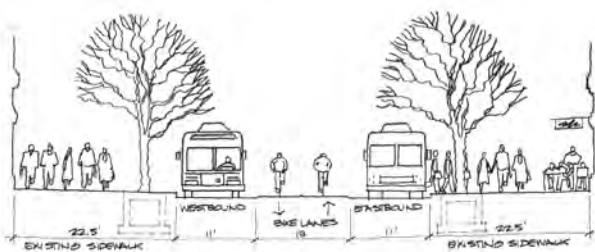


segment plan

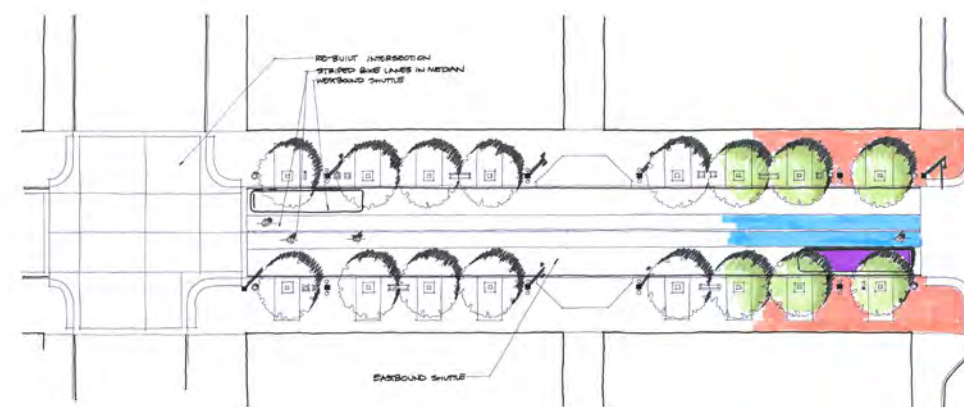
Concept 3

Concept 3 was similar to Concept 2 in adding side bike lanes. Instead of a curb extension at the transit stop, it proposes a wait/yield area behind the shuttle stop if bicycles find themselves behind a shuttle and a bike box

if they find themselves in front of a shuttle. Advantages and disadvantages were similar to Concept 2. Many questioned whether bicyclists would obey strict operating rules required to share the space with transit.



section



block plan

Concept 4

Concept 4 proposed to eliminate the shuttle stop/bicycle conflict by locating the two bicycle lanes in the former middle passing lane, consistent with what is being proposed for the segment of 16th west of Wynkoop Street. Advantages were the added route options

for bicyclists. Disadvantages were similar to those for Concepts 2 and 3 with the added difficulty of how to circulate bicycles back to the side of the street at Market Street where bicycle lanes would have to end.



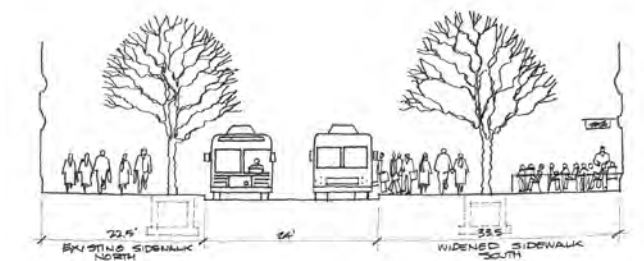




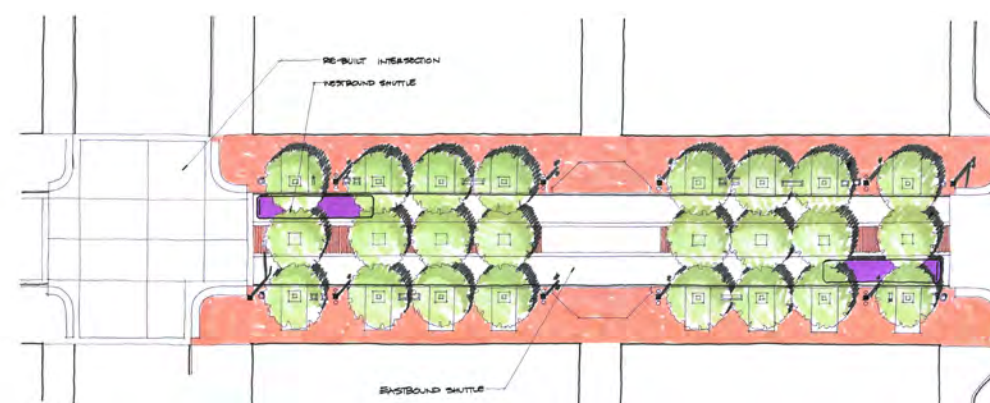
**Concept 5**

Concept 5 is similar to Concept 1 except added sidewalk space was proposed for the south sidewalk only. Advantages cited were giving more width where there are more active retail and restaurant uses. Disadvantages listed were inequitable distribution of extra space because there are parking lots on the north side

that may eventually redevelop with active uses that could benefit from extra space but not have access to it; some questioned the ability to activate over 33' of sidewalk space with the lighter pedestrian volumes in Lower Downtown.



section

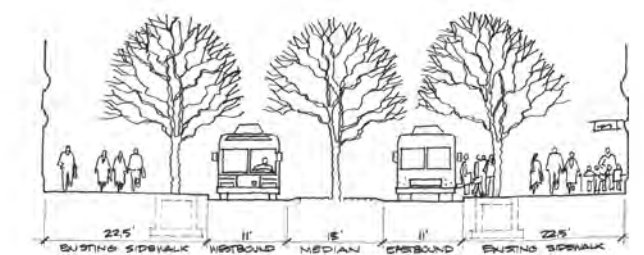


block plan

**Concept 6**

Concept 6 proposed to leave curb lines as they are and convert the passing lane to a hardscape, landscape median with an additional row of trees. Advantages seen were added shade to mitigate heat island effect and visually diminish hard surfaces. Disadvantages

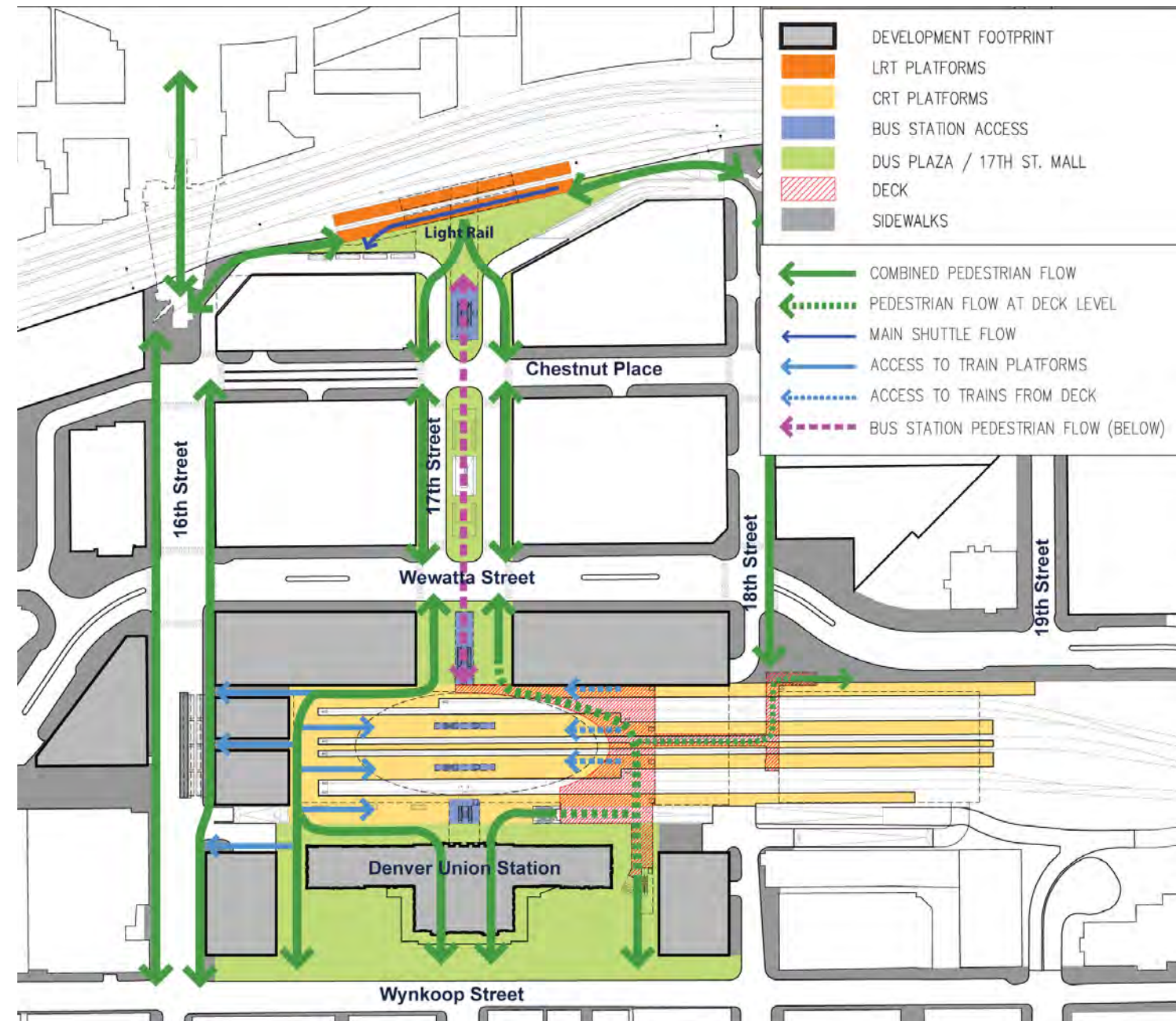
were – adding space in the middle of the street that is not intended for transit or pedestrian use when it could be made usable as in Concepts 1 and 5, added maintenance complexity for snow plowing operations and added cost of reconstruction.



section

# Urban Design Concept

denver union station segment • wynkoop to cml tracks



## Denver Union Station

### OVERVIEW

The Denver Union Station Master Plan serves as the blueprint for redeveloping and preserving Denver's historic Union Station and 20 acres of surrounding land. Union Station will be transformed into a multimodal transportation hub of international significance. It will become a prominent and distinctive gateway to downtown Denver and the region.

The 2004 Master Plan detailed the benefits and complexities of combining all of the region's ground transportation modes at one hub. By interconnecting all modes, Denver Union Station could enhance the value of local, metropolitan region, state and federal investments in highways, high-occupancy vehicle (HOV) lanes, light rail, passenger rail, buses, parking, bike paths and pedestrian networks. The multimodal hub concept also allows for expansion of the statewide transportation network through private bus and rental car services and internationally by linking to Denver International Airport.

### 16TH STREET MALL EXTENSION TO THE MILLENNIUM BRIDGE

The character of 16th Street changes abruptly as it crosses Wynkoop Street, leaving Lower Downtown and entering the Central Platte Valley just west of the Denver Union Station. The northwest end of the Mall is marked by the masts of the Millennium Bridge which carries pedestrians over the railroads Consolidated Main Line (CML). The Mall shuttle terminus will shift from Market Street to Denver Union Station multimodal center. 16th Street between Wynkoop Street and the Millennium Bridge will be served by the shuttle, but will also include local vehicular traffic.

The Denver Union Station project has developed streetscape standards for 16th Street between Wynkoop and the CML that are compatible with the Mall's LoDo segment but unique to the DUS neighborhood. Existing improvements at the EPA blockface will remain with the exception of the street lights, which will be changed to the new DUS standard.

Illustrations are courtesy of the Denver Union Station Master Plan/Design Team. See [http://www.denverunionstation.org/index.php?option=com\\_content&view=article&id=71&Itemid=74/final\\_master-plan\\_082008](http://www.denverunionstation.org/index.php?option=com_content&view=article&id=71&Itemid=74/final_master-plan_082008)

# Community Outreach

## Public Meetings and Open Houses

Five public meetings and two public open houses were held between December 2009 and August 2010. Interested citizens used these occasions to learn about design options and to question staff and consultants about them. Both public meetings and public open houses were used by citizens to record ideas and concerns that contributed to the design and evaluation processes.



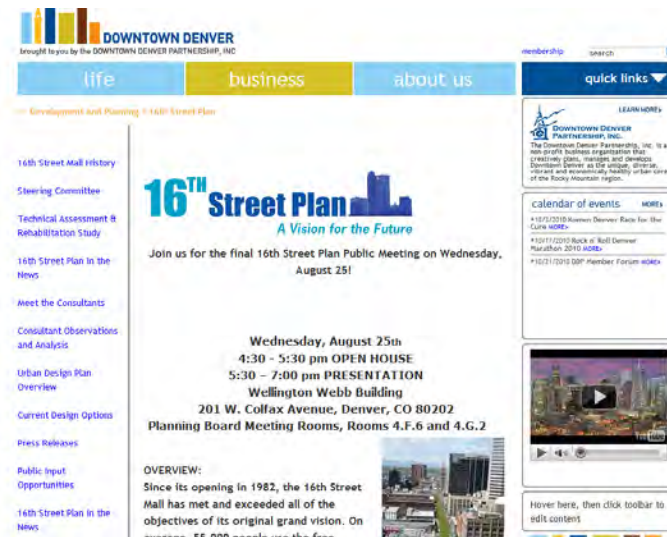
## Stakeholder Groups

Two rounds of stakeholder meetings were also held to allow more detailed review and commentary of the concept alternatives. Groups included historic preservation, design professionals and downtown Denver retail organizations.



## On-Line Surveys

The 16th Street Mall Facebook site yielded comments from 1,100 readers, responding on all aspects of the design options. There were also numerous email correspondents who commented on design aspects and on special interests such as bicycle access and preservation.



## Survey Results

The original mall configuration, Option #1, received wide support, citing diversity of block style (both asymmetrical and symmetrical sidewalks) that allows diversity of programming and maintains the design legacy of the original Mall plan. Concerns included those of larger retailers that future needs may not be met, and that there is, at this stage, no assurance that medians will be used to their full potential.

Elimination of the median, Option #2, was supported by the Transportation and Development Council because it would provide more options for use of expanded sidewalk on the north side, would improve pedestrian access, would increase pedestrian capacity and would eliminate bends in the transitway. Concerns were raised about the creation of a “tunnel” effect through the mall, and that unless filled with pedestrians, larger sidewalks would feel like dead spaces. There was also concern over property/owner equity: would Option #2 create a “first class” and “second class” side of the street?

Widened southwest sidewalk in lieu of the median,

Option #2.1, was offered to restore a sense of property owner equity. It was supported by the DDP Economic Development Council as diversity of sidewalk sizes could create a diversity of program, and increase pedestrian capacity and uses. Concerns included the complication of transit traffic crossovers at Glenarm and Curtis, and whether property/owner equity would in fact be achieved.

In all, 3,700 inputs were received. A small plurality favored Option 1 over Option 2, and almost one in six respondents preferred Option 2.1. Meetings were held with a number of stakeholder groups, including historic preservation, the design professions, and Mall retailers. Listening carefully to their advice, and considering the survey results, the Steering Committee recommended Option 1: the original configuration, but with improved furnishings and layout, including access improvements and improvements at cross streets.



# pppendix

Appendix

## Executive Summary - Cost Estimates

*for recommended urban design concept*

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Cost estimates for rehabilitation of and new improvements to the 16th Street Mall were based on an aggregate of recommendations from the Phase I Technical Assessment and Rehabilitation Study completed in November 2009 and Phase II Urban Design Plan, completed in November 2010. Broad categories included:

### *PAVING REPAIR*

- Removal and re-installation of granite pavers in the original Mall
- New curb extensions at cross street intersections in the original Mall
- Widened sidewalks, reconstructed intersections and bus lanes and new sidewalk at Market Street Station in the Lower Downtown segment of the Mall

### *DRY UTILITIES*

- Upgraded electrical service
- Renovated or replicated lighting
- New façade lighting

### *WET UTILITIES*

- Upgraded storm system components
- Upgraded water system components
- Renovated and upgraded fountains

### *ACCESSIBILITY UPGRADES*

- Renovated pedestrian ramps
- Miscellaneous upgrades

### *LANDSCAPING*

- New replacement and additional trees
- Urban Design elements and Street Furnishings
- Renovated or new street furnishings, signage, LoDo lights

All categories include allowances for design, general conditions, labor, materials, contractor quality control, traffic control, etc., plus a contingency for unforeseen cost items.

Scope area includes 16th Street from Broadway to Market Street and approximately 50 feet along cross streets in both directions from the 16th Street right-of-way; and 16th Street from Market Street to Wynkoop Street.

Total Concept Level construction cost estimate in 2011 dollars: \$63,600,000

Matrix Design Group, Inc.  
ZGF Architects LLP

# References

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## Abbreviations

*DDP*: Downtown Denver Partnership, Inc.

*Downtown Denver BID*: Downtown Denver Business Improvement District

*CCD*: City and County of Denver

*RTD*: Regional Transportation District

*16th Street Mall, Denver, Colorado - An Advisory Services Panel Report*, Urban Land Institute, Washington, DC, May 11-16, 2008

*16th Street Mall Pedestrian Counts*, 2009, compiled by the DDP and Downtown Denver BID

*16th Street Plan Phase I Technical Assessment and Rehabilitation Study*, Matrix Design Group Inc, EDAW/AECOM, Atkinson-Noland and Associates, Inc., RMH Group, for the DDP, Downtown Denver BID, CCD, RTD, August 28, 2009

*Denver Union Station Master Plan Supplement*, Final June 30, 2008, Denver Union Station Project Authority, [www.denverunionstation.org](http://www.denverunionstation.org)

*Denver Union Station Redevelopment – Public Presentation on Transit Architecture*, July 16, 2009, AECOM, SOM, Hargreaves Associates

*Denver Downtown Area Plan*, July 2007, CCD, Denver Civic Ventures, Inc. DDP, Moore Icofano Goltsman, Inc, Progressive Urban Management Associates, Fehr and Peers, Urban Trans Consultants, Inc, Carl Walker, Inc.

*Design Review for B-5 Downtown Zoning – Standards, Guidelines and Process, Community Planning and Development Agency*, CCD, spring 1995

*Downtown Denver's Pedestrian Priority Zone – an Implementation Framework*, 2009, DDP

*Downtown Denver Retail Demand Study*, 2005, DDP, Denver Urban Renewal Authority and City and county of Denver and the Colorado Housing and Finance Authority

*Downtown Multimodal Access Plan*, Denver, Colorado, December 2005, CCD, RTD, DDP

*Downtown Area Plan, A Plan For the Future of Downtown Denver*, Spring 1986, a joint venture of The Denver Partnership, Inc. and Denver Planning Office, City and County of Denver

*The Transitway/ Mall – A Transportation Project in the Central Business District of Metropolitan Denver*, November, 1977, I.M. Pei and Partners

*The Transitway Mall – Lighting Design Report*, 1978, Howard Brandston Lighting Design, Inc.