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Why Design Matters for Transit

Abstract: This *Recommended Practice* describes the importance of design in the success of a project. Design guidelines establish a vision and sense of purpose to guide the development of a facility. They clarify the project's core functions so the design decisions will support rather than contradict them. Common goals of design guidelines include convenience, cost-effectiveness, safety, passenger security, dynamic/vital placemaking, achieving multi-modal balance, being an economic catalyst, environmental sustainability, and creating a unique community identity.

Keywords: aesthetics, function, durability, development, features

Summary: Design is the necessary process for responding to three critical challenges of a successful development project: aesthetics, function and durability. A project that appeals to its users, anticipates and accommodates them, and ensures that future users can also benefit from its development has successfully addressed all three concerns. A lack of attention to design at the macro (system-wide) and micro (station/stop) levels puts the success of a project at risk. Function must be achieved while being aesthetically pleasing, and ignoring the future ability to maintain and sustain a project is never a cost-effective decision, no matter what the initial costs savings are. In short, good design is a good investment, and having good design guide decisions is one way to ensure that a project will be perceived as both an immediate success and one that gracefully stands the test of time. Successful transit agencies know that people have a choice; these things matter to riders.

Scope and purpose: This document analyzes design as broken down into three design characteristics: aesthetics, function and durability. This Transit Architectural Design Guideline highlights how good design decisions can have a positively impact on a Transit Facility's success for all stakeholders. While this standard can be applied to both large and small transit agencies, it should be applied in a way that is sensitive to the regional and local contexts. Good design is an integral feature of a positive environment, resulting in a good quality of life.

This Recommended Practice represents a common viewpoint of those parties concerned with its provisions, namely, transit operating/planning agencies, manufacturers, consultants, engineers and general interest groups. The application of any standards, practices or guidelines contained herein is voluntary. In some cases, federal and/or state regulations govern portions of a transit system's operations. In those cases, the government regulations take precedence over this standard. APTA recognizes that for certain applications, the standards or practices, as implemented by individual transit agencies, may be either more or less restrictive than those given in this document.

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1. Overview

Design is the necessary process for responding to three critical challenges of a successful development project: **aesthetics, function** and **durability**. A project that appeals to its users, that anticipates and accommodates them, and that ensures that future users can also benefit from its use has successfully addressed all three concerns. Common goals of design guidelines include convenience, cost-effectiveness, safety, passenger security, dynamic/vital placemaking, achieving multi-modal balance, being an economic catalyst, environmental sustainability and creating a unique community identity. These are all variations of aesthetics, function and durability. These features may be addressed with different degrees of relative importance in the overall project design. Regardless, good design must consider assure all three principles are considered and incorporated, and, ideally, implemented to enhance one another in their execution.

A lack of attention to design at the macro (systemwide) and micro (station/stop) levels puts the success of a project at risk. A project need not accommodate function at the expense of appearance. And ignoring the future ability to maintain and sustain a project is never a cost-effective decision, no matter what the initial costs savings are. In short, good design is a good investment, and having good design guide decisions is one way to ensure that a project will be perceived as both an immediate success and one that gracefully stands the test of time. Successful transit agencies know that people have a choice; these things matter to riders.

Decisions are made every day that affect the design and operation of transit facilities. The decisions are made by many parties affecting the built environment, including public works and buildings departments, developers, elected officials, community groups and transit agencies. It is often the case that these people may not share the same goals regarding the project development. But without coordination and consensus, the development of a project will not result in the efficient, attractive, safe and comfortable facility that transit riders deserve and transit operators need.

Design guidelines establish a vision and sense of purpose to guide the development of a facility. They clarify the project's core functions so the design decisions will support rather than contradict them. They are written so that they can be understood and used by a wide audience, allowing an entire community to easily find agreement on the key priorities and principles. This agreement will help resolve the conflicts and challenges that will arise throughout the development of the facility. Therefore, agencies should either develop their own design guidelines or use guidelines that have worked elsewhere.

1.1 APTA Sustainable Urban Design Standards program goals

Why design matters in developing transit facilities, and how to achieve *good* design, lies at the heart of the goals of the Sustainable Urban Design Standards program. These are:

- To build sustainable communities by **integrating transit service** into existing and new neighborhoods, corridors and regions;
- To increase transit ridership by effectively **linking transit service** with more compact development;
- To improve transit efficiency by **coordinating transit service** and investments with infrastructure improvements and land development; and
- To conserve natural resources by **developing patterns and communities** that require less land for development, create open space, and reduce the demand for fossil fuels to meet energy needs.

The key words among these goals are *integrating*, *linking*, *coordinating* and *developing* to encourage transit agencies in accomplishing outcomes in specific and thoughtful ways. Design is both the concept and the process of applying thought to achieve specific desired results.

1.2 Design: function, aesthetics and durability

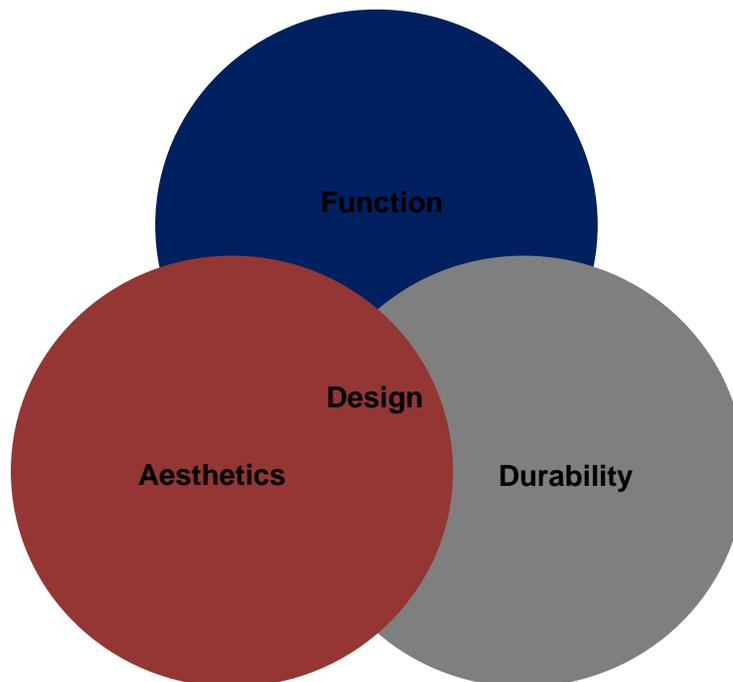
More specifically, the design process determines three principle characteristics:

- **Function:** How it works.
- **Aesthetics:** How it is perceived.
- **Durability:** How it holds up.

It's essential to keep the three features of design (**Figure 1**) in coexistence. These features are not ranked in order of importance; they are interdependent. Without durability and aesthetics, function is impaired. Yet aesthetics must be durable, to ensure a long life cycle. All three features make station environment characteristics.

Good design uplifts the environment and also enhances the quality of life.

FIGURE 1
The Three Elements of Design



Every transit facility decision integrates aesthetics, function and durability to some degree. The type of design priorities each agency follows is a choice made early on in the process. Frequently, local agencies, under pressure to keep costs within limits, focus more on pure function. While at the point of initial capital outlay this appears to save costs, failure to accommodate durability or aesthetics puts the long-term success of a project at risk, increases life-cycle cost and can reduce ridership. This *Recommended Practice* is intended to underscore the need to incorporate comprehensive design practices from the outset of the planning process through complete implementation of transit facilities.

2. Why commit to good design?

The design of transit facilities as well as system performance plays an integral role in building transit ridership and ensuring customer satisfaction and system productivity. An increasing number of transit agencies have used comprehensive design to change the way they provide service to their customers, to

improve their public image, and even to redefine their purpose. While good design does not necessarily cost more than poor design, these transit agencies have shown that investing in design features to *build* ridership can be a cost-effective alternative to reducing service or sacrificing aesthetics in an effort to cut costs—that can create a continuing downward spiral of ridership. In fact:

- **Design features are not necessarily expensive.** Methods to pay for design quality are quite diverse and include options other than advertising. The costs of providing design features may be offset by developing public/private partnerships with local communities, businesses and governments, as well as redefining the way transit agencies traditionally work with manufacturers. These costs may also be leveraged by fostering collaboration among project development managers, their architects, and artists who may be assigned to teams because of various “percent for art programs” (dedicating a portion of total project funds to incorporating an art element) that may be required as conditions of a grant award or municipal policy. Often, utilitarian and functional aspects of the facility design can be effectively influenced by these collaborations.
- **Good design is not as expensive as poor design.** “Poor” design in a transit facility can be described as one that fails to accomplish the goals of good design in one or more of the following ways: the design 1) does not fully anticipate the range of Functions the facility should accommodate, 2) dismisses the value of Aesthetics as a fundamental facility attribute, and 3) underestimates the need for Durability as a quality of the facility’s features. Poor design can often result in customer complaints and identification of functional and safety issues, which must be addressed through design work and possible service disruptions and followed by the actual remedies. Poor design could have a negative impact on safety, resulting in litigation and a decrease in ridership/passenger loyalty.
- **People react positively to features that were expressly designed to improve the transit experience.** Passengers especially appreciate these when they are well placed and well designed, particularly when such basic service characteristics as frequency, efficiency, safety and reliability are perceived by passengers to be well under control. Design features can help to instill rider confidence in a transit agency, as well as raise passenger optimism regarding the quality and stability of future transit trips and experiences.
- **Design features impact a broad range of passenger experiences and the ridership decisions of passengers.** An attractive, comfortable transit facility may be especially important for infrequent or choice riders, a major target audience for increasing ridership. Design features do not just help make transit safer and more comfortable, but also influence first-time or new riders’ perceptions of transit as a viable mobility option.
- **Agencies that implement amenity improvements and phased improvement programs are more likely to have sought input addressing actual passenger experiences or consumer perceptions. Appreciation of even small and inexpensive enhancements of riders’ experiences are often reflected and affirmed in customer feedback.** This is evident in some very simple yet effective steps that transit agencies are taking to assess customer concerns—focus groups, surveys and other methods—critical in ascertaining whether or not a particular amenity should be considered. Amenity projects thus become part of a total program geared toward providing customer-friendly service, and serve as a physical reminder of the bond between transit agency and community.

Successful transit systems across North America are continually striving to maintain and increase their ridership, and in some instances keep up with the ever growing demand of a growing ridership. To achieve the goal of making transit more attractive to riders and potential riders, an increasing number of agencies are making significant investments, or are considering such investments. There are opportunities to enhance all stages of the transit experience for passengers, from approaching and leaving the boarding area, to waiting at the stop/station, to boarding, riding and alighting from the vehicle. Knowing what design features passengers in a particular city want most and making sure they understand that those improvements can often come with a cost or a tradeoff (forgoing a fare decrease, for example) can help an agency determine which design

features to offer. “Design is critical to successful transit-oriented development,” says Linda Watson, President/CEO of Capital Metro in Austin, TX. She went on to add, “Good design integrates diverse uses and development density into a walkable urban place.” Agencies that have implemented successful amenity programs have experienced the tangible appreciation of their core riders’ everyday experiences, and have seen the appeal of such improvements to attracting new riders and new support centers in the community. These factors should be considered in the cost/benefit discussions that precede agency design and construction practices.

3. Impacts of good design

Design features impact customer behavior and adjacent communities, which may directly or indirectly affect ridership. Many transit agencies are committed to improving both passenger experience and the relationship of their facilities to the communities they serve because they recognize that their long-term viability depends on it.

3.1 Ridership

A 1996 TCRP study, “Transit Ridership Initiative,” describes ridership as “a fragile, somewhat ambiguous goal, and a moving target.” The study found that many aspects of transit operations and investment decisions affect ridership, and identified “Planning Orientation” (community- and customer-based approaches) as one of five main factors in achieving ridership increases.

For example, Metro-Dade Transit Agency in Miami experienced a 9.6 percent increase in ridership between 1991 and 1993. This was attributed to increasing “customer service orientation” (walkways, shelters, safer pedestrian access, new benches, etc.) and the use of mini-buses to provide more “cost effective and comfortable service,” as well as limited-stop services, special events to attract first-time riders, and improved bus-rail transfers and rail feeders.¹

3.2 Customer experience

While design features are closely associated with passenger comfort, they impact a broad range of passenger experience issues. These amenity features are discussed in the sections that follow.

3.2.1 Efficiency of service

Passengers desire design features that can make transit more efficient and easier to use. One example is bus waiting areas that “bump out” sidewalks so that buses do not have to pull into the curb and such that waiting areas are increased in size. Other features that appear to improve transit efficiency are multiple doors to allow simultaneous boarding and alighting, the alignment of the waiting area with the vehicle floor, fare purchase mechanisms, and the arrangement of design features at the stop and the waiting area to facilitate queuing and easy boarding.

3.2.2 Safety and Image

Design features can improve security for passengers waiting at a station or stop. A Canadian report suggests a broad range of strategies, including adequate lighting, telephone access, active land usage, and a map of the surrounding area at and *around* bus stops.

Design features can also impact security indirectly. People often perceive a station as more dangerous than it really is because of a poor general appearance, low lighting levels or a lack of maintenance, or because it lacks the presence of official people, like ticket agents or retail vendors. These signs of deterioration are often equated with signs that a place is unsafe or “out of control.” Studies of New York City subway station

¹ TCRP Report 22, p. 27.

environmental improvements have shown that when stations are rehabilitated, people feel safer, regardless of actual crime patterns.² When design features are provided and successfully maintained, there is also an implied security presence and a sense that someone is in control of the transit station. In addition, the use of fare or “smart” cards on buses and trolleys makes drivers feel safer because there is less cash on board. Security cameras on buses also may make passengers feel more secure.

Compliance with the requirements of the Americans with Disabilities Act (ADA) is pressing transit operators to make enormous changes in the way they design both their transit facilities and vehicles. Under ADA, a transit agency is obliged, when making design changes to a transit stop, to meet these guidelines. These include adequate circulation space within a bus shelter; bus stops that are connected to streets and sidewalks by an accessible path (which means that sidewalks of a prescribed width need to be provided); and legible signage, including bus route and schedule information.

3.2.3 Information

Design features that provide people with knowledge about how to use the transit system improve their ability to use public transit and perhaps make it more likely that they will do so. Examples of these are posted and available route schedules and information, both at the transit stop and on the vehicle; access to the driver to ask questions or directions; and recorded stop announcements.

A well-maintained and accurate website is another method to inform the public about local transportation methods. The public can avail themselves of this resource for route planning and also approximate arrival and departure times. Local transit officials could also promote the use of available online tools as an alternative method to trip planning. Multiple routes and modes of transportation are available for the passenger to choose from. A well thought out informational technology service for public transit information significantly improves public transit operations and potentially increases ridership.

3.2.4 Community building

Design features located within transit waiting environments can be viewed not only as serving transit, but also as focal points for the communities around them. Transit design features—such as newsstands, lighting, cafes, and even station buildings themselves—can be catalysts for the physical, economic, and social improvement of a community. Ridership benefits can thus be indirect: supporting revitalization of communities, which in turn increases demand for transit.

Case studies documenting this approach are presented in TCRP Report 22, “The Role of Transit in Creating Livable Metropolitan Communities.” There are numerous detailed case studies where transit design features have had a strong positive impact on surrounding neighborhoods where entire downtowns have sparked new community partnerships due to transit. Successful transit amenity improvements from Boston to Los Angeles have been implemented through partnerships, formed between government and the private sector, which allows local transit authorities to move beyond simpler design features to develop entire environments integral to the revitalization of a downtown. These partnerships represent significant opportunities, given the fact that many transit agencies have limited operating budgets, do not always own the property at which their bus or light rail stops are located, and often have difficulty citing these stops. They also provide ways for local communities to make a presence within transit service and facilities.

In many communities, providing transit service is difficult due to the automobile-oriented design of streets: Greater travel distances result from cul-de-sacs and winding roads. A lack of connections between subdivisions forces buses to use busy arterials, which are unappealing waiting environments for passengers. Many bus stops are not even located or reachable by sidewalks, forcing passengers to walk and sometimes

² TCRP Report 22, p. 69.

wait in the street. Additionally, the design of the workplace, often an isolated building surrounded by parking lots, renders access difficult for all modes except by car.

Even in this situation, design features that improve pedestrian access to transit can become a catalyst for improvements that are of broader benefit to a community. In Clark County, Washington, for example, zoning review includes criteria for improved transit access that must be addressed before a building permit is issued. This requires sidewalk access and transit stop enhancements to be included in the plan from the start and implemented on a step-by-step basis. In other communities, subdivision regulations have been revised (including those recommended by the Institute for Transportation Engineers) to stipulate adequate provision for transit, including sidewalks and space for bus stops as part of the initial construction documents.

3.3 Conclusions

Clearly, there are many reasons why a transit agency should address design features as part of a total effort to increase ridership. As has been noted, the impacts are both direct and indirect and present a compelling argument for undertaking a combination of initiatives and providing a variety of features. The next section describes how to put an amenity program together in an effective way.

4. Principles to inform a good design process

When designing transit facilities, the participants, the physical design and the process need to be equally well thought out. The following principles can help create a robust design exercise that results in successful outcomes.

4.1 People principles

- Use multidisciplinary, collaborative work teams.
- Always include the customer and the community.
- Use educational and cultural resources, such as local historians and residents, to help team members understand unique local situations.

4.2 Physical design principles

- Coordinate with complementary or integrated/adjacent projects.
- Treat every project and site as unique.
- Be alert to co-location opportunities for complementary and compatible needed public services.
- Where possible, use a flexible approach to achieving safety and security objectives that are sensitive to specific sites and neighborhoods.

4.3 Process principles

- Establish your own standards or adapt APTA design standards.
- Hire an agency architect.
- Look for opportunities to get involved early with redevelopment or economic development projects to integrate transit from the beginning.
- Be sure that project teams understand the challenges of providing passenger comfort and shelter amenities that are appropriate and practical for the local climate. In other words, agencies can't create transit facilities as an engineering exercise.
- Advocate for a balanced approach among the often-competing disciplines necessary to achieve the ultimate goal.
- Each agency can make its own decision regarding durability, design, etc.
- Public art on transit systems requires a good understanding of transit operations, safety, and maintenance. Seek advice and review from agencies who've successfully established an art program, as well as community programs, such as "percent for art" programs.

- Encourage team members and agency staff to become familiar with emerging design and construction practices, including those advanced by the United States Green Building Council (USGBC).
- Recognize the often-permanent nature of these valuable public infrastructure investments and make choices wisely that result in the appropriate level of quality and sustainability.

5. Developing design guidelines

5.1 Why create design guidelines?

Design guidelines establish a vision and sense of purpose to guide the development of a facility. They clarify needs and goals of facility components and requirements so the design decisions will support rather than contradict them. They are written so that they can be understood and used by a wide audience, allowing an entire community to easily find agreement on the key priorities and principles.

Guidelines should be both flexible and prescriptive. They allow for creativity in suggesting how a policy or goal could be achieved, but they also give guidance to steer users away from bad decisions: about appearance, function, and cost-effectiveness of operation. Many of the criteria guidelines employed are subjective, and each community has its own unique needs and preferences. The more clear and well defined the vision, though, the more useful design guidelines can be in helping decision makers find their way to a successful design solution.

5.2 Ensure good design when goals require compromise

Design guidelines need to consider the primary realm of concerns and jurisdiction of each stakeholder and identify where these realms overlap. Without coordination, collaboration and a common understanding of goals among the various stakeholders, decisions made during project development may not result in the aesthetic, functional, durable facility that transit riders deserve and transit operators need. Design guidelines can reduce that risk by anticipating the priorities and trade-offs and presenting alternatives that lead to achieving consensus among stakeholders.

Design guidelines establish a vision and a sense of purpose to guide the development of a transit project. They are intended to facilitate design decisions that support the functionality, aesthetics and maintainability of a transit project. Guidelines should be crafted so as to be clearly interpreted and easily implemented by a wide and diverse audience, allowing transit agencies, city agency staff, stakeholders and communities to easily reach agreement on key priorities and principles. This agreement will help resolve conflicts and challenges that may arise throughout the development lifecycle of the project or facility.

5.3 Design guidelines can be good marketing

Design guidelines must meet the needs and priorities of the agency and the surrounding community, be functional and designed for durable operation, and enhance the local context and present a positive identity, while embodying strategies to leverage funding are assets to the agency and community. Their very design and graphic layout should be consistent with the image and outcome they are designed to present. As well as being a tool for sound planning and effective community partnership, they should be viewed as a marketing piece to enhance the stature of the transit agency and to inspire confidence in the professionalism of the organization.

5.4 Design guidelines increase grant competitiveness of projects

Design guidelines are intended to precede the often-lengthy design and engineering process that takes a facility to a construction-ready state. Guidelines can facilitate the grant-readiness of a project by highlighting aspects that the design should address to be in a better position to qualify for funding from a variety of sources. Numerous grant programs have been established to reward agencies that develop facilities with aspects that feature artwork in the design, that measurably reduce reliance on fossil fuel and driving (such as

carefully thought out pedestrian links), that address safety, that represent extensive community engagement, that support environmental justice, that promote walking and better public health, etc.

5.5 Strategies for creating effective design guidelines

Consulting the document itself is not a recipe for success. The process of advancing the design development of a facility through the use of guidelines is key. Consensus is by definition a group effort. To facilitate consensus, guidelines should be structured to lead a group through:

- The identification of a concept;
- The assessment of the concept's adherence to community and stakeholder priorities;
- The method of balancing conflicting goals and brokering compromise; and
- Investment strategies to ensure implementing the desired outcome.

5.5.1 Set the bar higher

Transit agencies and amenity design teams can use effective and proven strategies that produce successful outcomes. These strategies can be used to introduce individual amenities, as well as larger, systemwide facilities within transit-oriented developments. A variety of agencies have developed their own guidelines, which can often be found posted on agency websites. Please visit <http://www.metro.net/about/board/agenda/> for the board reports for North Hollywood (NoHo) and Sepulveda conceptual guidelines with the full guidelines attached. These guidelines provided the basis for the RFP.

5.5.2 Consider using other communities' design guidelines as a starting point

Design guidelines used by other communities can serve as useful models for how to structure a new document and undertake a design process. Guidelines should be more flexible and conceptual than code provisions, while still being prescriptive enough to illustrate priority objectives and policies. They should allow for creativity in suggesting how a policy or goal could be achieved, but they also should provide guidance to steer designers away from bad decisions about appearance, function and the cost effectiveness of operation. Many of the criteria found in design guidelines are subjective, and as such reflect the personality and preferences of a given community. The more clearly well-defined the vision, however, the more useful the design guidelines can be in helping decision makers achieve successful design solutions. Below is a typical design guideline for bus rapid transit (BRT).

Key features:

- Physically separated bus lanes
- Rapid boarding and alighting because fares are collected in the station, not on the bus
- At-level boarding so people in wheelchairs or strollers can roll right onto the bus service
- Clean bus technologies
- Performance-based contracts with the bus operator to ensure high-quality service
- Real-time information displays
- Bus priority at intersections
- Integration with other transportation modes
- Sophisticated marketing identity
- Excellent customer service

5.5.3 Tailor design guidelines to fit the local context

When it comes to design guidelines, one size does not fit all. No set of design guidelines will address all the features and aspects of concern to every community. Incorporation of historical text, images and/or artifacts in station waiting areas is one approach to highlighting a community's unique attributes. The positive qualities

that make each community and transit agency unique should emerge and be addressed in the setting of goals and in the input obtained from stakeholders. These qualities should be clearly reflected in the guidelines' objectives and policies.

5.5.4 Learn from the process, and be prepared to revisit initial assumptions

During this assessment, the transit agency and the community may find it worthwhile to revisit the criteria, goals, policies and principles previously established should the guideline development process highlight areas that are no longer current, relevant or applicable. Being open to this possibility from the beginning and meticulous in documenting these observations throughout will help ensure the development of a refined guidelines document that accurately reflects its community.

5.5.5 Seek endorsement

Fundamentally, design guidelines are a public *statement of intent* to build healthy, attractive, safe and sustainable facilities and communities. This selling point alone may not hold its own when difficult compromises must be reached. To be effective, guidelines may require some official “stamp of approval”: adoption or endorsement by key commission and/or boards to give them the stature needed to enlist the attention and support of the all decision-makers they are designed to advise.

5.6 Who should be involved in creating design guidelines?

To ensure that the guidelines represent the appropriate concerns and are useful to the right audience, they should be developed with input from a variety of stakeholders, including but not limited to the following:

- Residents and members of the community
- Elected officials
- Transit agency planners, designers, engineers, architects, construction staff
- Transit agency operations staff: operators, maintenance and capital development staff
- Planning and design staff from the local jurisdiction
- Area businesses, employers and property owners
- Area employees
- Transit passengers
- The development community/industry
- Chambers of commerce/center city and downtown associations
- Law enforcement personnel
- Local chapters of professional architecture, engineering and planning associations

6. Strategies for shaping a successful design process

With a well-crafted set of design guidelines in place, the process of designing transit facilities is easier, promotes consistency across a line or throughout a system, and ensures desired outcomes. A successful design process requires the involvement of the right participants, the clear identification of the specific design objectives for the project, and a well-defined process to create a design that fulfills those objectives.

6.1 Have the right players at the table, at the right time

“Stakeholders” in the design process are the clients: transit riders, transit operators, land use planners, neighbors of transit facilities, other city agencies and officials, etc. Often the challenge in crafting a design process is recognizing that each stakeholder group has purposes and interests that may seem to conflict, and reconciling these areas in a manner that is consistent with the agreed to goals and vision.

Decisions are made every day by stakeholders that affect the design and operation of transit facilities and the areas proximate to them: about sidewalks, streets, land uses, abutting buildings and driveways, shelters,

benches, signs — even trees and streetlights. It is important to recognize that these stakeholders may not share the same goals or objectives regarding a transit facility, may become involved in the project at different stages rather than at the outset, and/or may not have an understanding of how their decisions affect the project as a whole as well as the scope of work of the other players. As a result, consensus and partnerships may be difficult to achieve. It is important to bring all of these stakeholders together at the outset of the planning process and then to report back to them at key intervals during project planning to obtain input, feedback and additional information or resources. At different phases in the design process, the specific technical expertise of some stakeholders will be required more than others; at other times additional input may be needed from team members. It is important to maintain an open, flexible, yet facilitated process of stakeholder involvement.

Below is a strategy for shaping a design process and for determining who needs to be involved in discussions and at what key points.

6.2 Outline a design process

The work of planning, designing and constructing transit-related facilities and amenities is generally conducted by various technical, design and engineering professionals too often working in isolation from one another. Developing a protocol whereby these players meet together regularly throughout the lifecycle of a project and agree to work toward realizing a consensus vision for the facility design will provide an important foundation and forum for achieving common agreement that will guide discussions and steer diverging opinions back on track. As with the identification of goals, skillfully facilitated public input and feedback should be part of the vision process and reflected in the final vision concept.

The design process should lead stakeholders toward a common vision that helps them to achieve consensus on the values and priorities they share. Achieving consensus is, by definition, a group undertaking. To facilitate consensus, the design process should be structured to lead a group through the following tasks:

- Identification of stakeholders
- Identification of design goals
- Identification of a vision concept for the transit facility
- Assessment of the proposed goals, vision and concept's fit with existing plans, guidelines, policies and standards
- Balancing conflicting goals and mediating compromise

6.3 Identify design goals

As key goals of the transit facility design process, stakeholders might be encouraged to optimize the following:

- Basic function/utility
- Decisions about long-term public infrastructure
- Safety and security
- Convenience for transit customers
- Efficient movement of transit vehicles (alignment)
- Life-cycle costs (maintenance)
- Placemaking and urban design (vision)
- Accommodations for all users (accessibility/universal design)
- Accommodations for all desired transportation modes (intermodal)
- Environmental sensitivity and sustainability
- Community identity (character/culture)
- Clarity, orientation and spatial organization

- Adaptability for expansion and future needs

The focus on function, aesthetics and durability may vary in importance in a particular project's design, and other goals may emerge to suit specific projects. Each community and transit agency, however, should have its own clear priorities and criteria. A good design process identifies which of these should apply to each situation, and ensures that all stated goals are considered and addressed in decision-making—and ideally complement one another in the execution of a project. At some point, skillfully facilitated public input and feedback is essential to building community confidence in the design process, and should be reflected in the final statement of goals.

6.4 Assess compatibility with other policies and plans

This stage involves a critical review and evaluation of existing plans, policies, regulations, mission statements and guidelines to make sure they are up to date and still relevant to and not in conflict with the goals and vision for the project. With the vision concept established, these regulatory and policy documents should be revisited and revised periodically to ensure that they remain consistent with and supportive of the priorities of the transit agency and the community it serves. Transit agencies typically have priorities expressed as goals, purposes and objectives that should continually be used in the assessment of existing regulations and policies. These service providers have a vested interest in efficient transit operation, including small single-bus or streetcar stops to park-and-ride lots, community transit centers, regional transit centers, and rail facilities with their various stations, and even maintenance yards and shops.

Designers and planners should assess the needs of these diverse stakeholder groups at the outset of the project planning process and then begin to undertake the design work, which can range from a few days to several years, depending on the complexity of the project's size and scope. Regardless of project complexity, the components of design work generally remain the same: A facility is designed and constructed from an approved scope of work, budget and schedule, based on materials selected for durability, function and aesthetics and located on a site according to local codes/regulations.

As the size and scope of projects become larger and/or more complex, the number of disciplines coming together to work on the projects also increases. Typical design teams today may include urban planners, urban designers, traffic designers, architects and landscape architects; civil, structural, mechanical and electrical engineers; geotechnical experts; public artists; security and surveillance specialists; and signage designers, as well as the customer and community or user representation. The community's general, master or comprehensive plans and other official planning documents and public statements of values and priorities should serve as guiding policies and principles for the work of these teams.

6.5 Balance conflicting goals and broker compromise

As stated earlier, agreement on a high-level vision concept and regular assessment of community and agency priorities will not guarantee that conflicting perspectives will not arise in the design process. Regardless of the size of the project or the size of the community, an attractive, functional and sustainable outcome is often about balancing what are often seen as competing interests. Often some of the interests immediately come to the forefront within a project, depending on time, place and local interests. Recently, there has been a trend toward prioritizing the importance of any kind of security or surveillance component. Aesthetics and perceived quality of materials can also become equally dominant aspects of a project.

These, in turn, are often balanced with cost efficiency and equity considerations, being careful not to “over-design” in some areas and “under-design” in others. Increasingly, successful projects are those that have been managed by a collaborative team comprised of professionals from the creative and technical disciplines who have the flexibility to treat each project as unique and location-specific.

Recognizing location-specific cultural and/or historic assets of a community can be effective project “starters” in building excitement and expectations about something that is about to happen in the community and provide a forum and topics around which people can come together and envision what kind of facility or amenity would be desirable and appropriate. This type of work also provides the valuable underpinnings for grassroots/community support. Established community groups or those with knowledge of the history of an area, as well as local art and cultural organizations and libraries, are examples of worthy local resources that can be engaged to help facilitate collaboration between transit agencies and communities around the creation of a new transit facility or service.

Examples of cultural and other community-values characteristics integrated in transit facility design include the *papel picado* style artwork in the railing of the 16th Street BART Station in San Francisco’s prominently Latino Mission District, or the preservation of a locally cherished Victorian home as part of BART’s Castro Valley Station Transit-Oriented development. Both projects are the result of long collaborations between the transit agency and the community adjoining the stations. In the 16th Street Station example, the local community group not only brokered consensus on artwork design, but managed the artist recruitment, selection and implementation process through a grant procured by BART.



FIGURE 2
Transit Facility Design with Integrated Cultural and Community Values

FIGURE 3

Place/Community Driven Approach

Place/Community Driven Approach

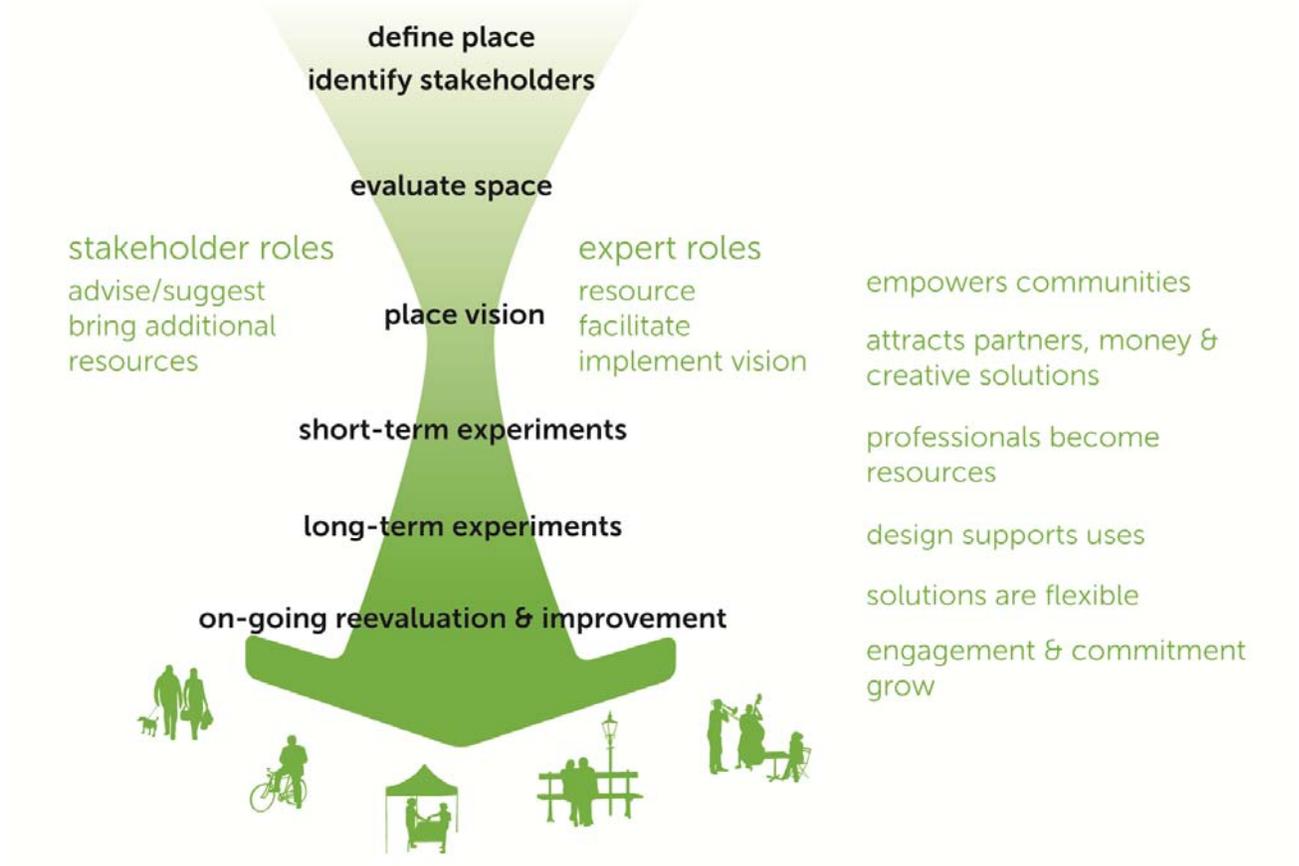
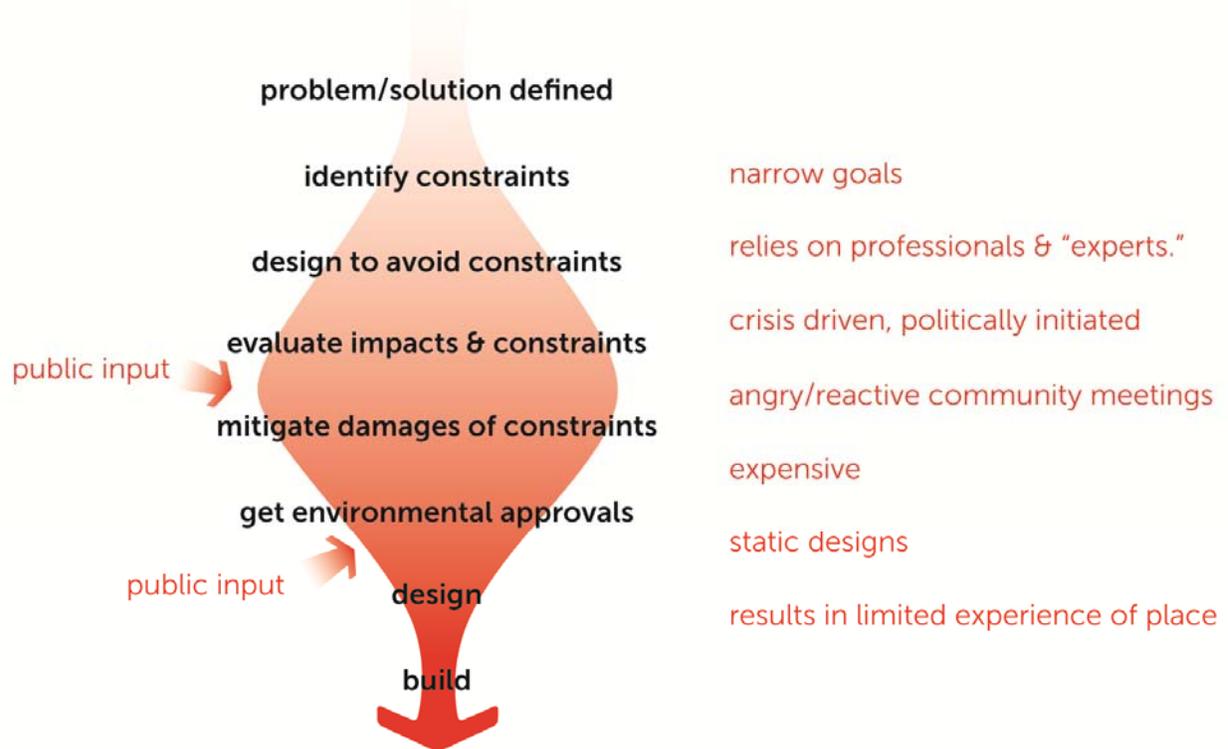


FIGURE 4
Project/Discipline Driven Approach

Project/Discipline Driven Approach



7. Design features and factors to consider

The following sections present those elements that comprise an effective amenity program and are meant as a checklist of factors to consider when embarking upon the design or redesign of a transit station stop or facility.

Key factors to keep in mind are described below, no matter what design features amenities are selected.

7.1 Matching the features to the context

Passenger priorities for design features vary according to the climate, lifestyle and other characteristics associated with different cities. The mode of transit is a factor in determining what constitutes an appropriate level of amenity as well as the size of platforms and vehicles.

7.2 Making a commitment to quality

Design features that demonstrate a commitment to quality and are designed to create a positive image for transit extend the impact of that amenity. Maintenance, too, is essential to the long-term use and image of most features, whether it is changing the information on schedules or keeping bus interiors clean.

7.3 Design and placement

While many transit agencies have provided design features for their riders, many do not live up to expectations simply because they are poorly located or designed. Mistakes made by transit agencies have ranged from vehicle seats that are too small to bus shelters that provide little weather protection. While people react positively to design features that directly enhance their transit experience and rate them highly, people have the opposite reaction to features that do not serve their needs or are in some way dysfunctional. In fact, providing an amenity that does not meet customer needs significantly reduces its positive impact and may produce negative reactions to it and the transit agency as well.

The placement, type and number of design features provided affect both passenger perceptions of their effectiveness and their actual use. In Rochester, New York, for example, the transit agency could not persuade local traffic engineers to widen sidewalks to accommodate their new shelters. As a result, they had to develop an alternative shelter design, which functions very poorly and provides little comfort or weather protection for riders.

It is not always possible to anticipate how an amenity will actually function until it is placed in operation. However, it is possible to identify design requirements in advance of their implementation. For example, the following is a series of requirements for bus shelters that meet passenger needs:

- **Visibility:** People must be able to see a bus coming. Some shelters are designed with signs, solid walls, or other obstructions that block the view of oncoming buses or are set too far back from the curb. As a result, people will wait outside the shelter if they want to see which buses are coming.
- **Accessibility:** People must be able to board a bus conveniently. To many people, this is the most important aspect of a shelter's design; transit riders tend to wait (in a queue or a cluster) at the exact point where the bus doors will open.
- **Information:** People need to know when a bus will arrive and where it will go. This is not a problem for people who regularly take a certain route, but it may be for riders who do not regularly use the service.
- **Comfort:** Comfort means different things to different people. To some, it means a place to sit, while others prefer to stand and lean. Shelters should be designed to accommodate both seating and leaning, with ledges and rails provided at appropriate leaning height. Studies of commercial streets have shown that seating outside shelters can serve dual purposes and can be well used by both shoppers and bus patrons.

Design features on commuter train platforms (benches, lighting, trash receptacles, newspaper vending boxes and information kiosks) work more effectively when clustered together. Benches are more frequently used if they are located inside shelters or under canopies, next to a light fixture (important to personal security at night), in the center of the platform within view of a ticket agent (again for security), and situated so that people do not have to lean over the seating to read a schedule or other information.

In addition to functional placement and design issues, commitment to quality also relates to the character of the transit vehicle or waiting environment. In Corpus Christi, Texas, the transit agency decided to go beyond

building just a bare-bones bus transfer center and instead created a small-scale Mexican plaza, with an attractive shed structure; community art projects; and extensive trees, plantings and seating.³

Working holistically on a particular transit line—treating the whole corridor, not just the transit vehicle or stop—helps to build support for an amenity project and enhance ridership. SFMTA’s F Line Streetcar project in San Francisco, where historic PCC streetcars have replaced electric trolley buses, shows how streetscape and vehicle design can work together to enhance transit visibility, increase ridership and strengthen local business.

7.4 Maintainability and durability

Maintenance is a critical issue, and many transit agencies lack the personnel and financial resources required to maintain design features well. Design features that fall into disrepair or are vandalized can give a worse impression to riders than if no design features are provided in the first place.

From the vehicle perspective, maintenance implications of design—for example, longevity of and ability to clean and maintain certain materials, need for repair of specific types of seating and lighting, and structural soundness—must be weighed against increased security measures and the threat of vandalism. “The image of bus services,” David Hensher writes, based on his study of riders in two Australian cities, “can be significantly enhanced if the vehicles are modern and clean.”⁴ In San Francisco, restored vintage streetcars, in regular transit service use, contain many elements theoretically prone to vandalism, including painted surfaces and well-padded seats. Despite this, they have not been subject to vandalism.

Inclusion of facilities personnel who maintain and operate the transit system is critical to the design process. Their ability to maintain the system is also subject to changes in Operational and Maintenance funding, personnel training, material and equipment storage and procurement, and safety protocols. Consideration should be given to a ‘Commission’ period before the end of the project to ensure smooth and cost-effective turn-over process. Providing effective and useful product information, hands-on training, and complete project information greatly improves the system’s maintenance. These steps, in turn, will greatly enhance the public’s appreciation and use of transit.

Likewise, design features and good design actually can *decrease* maintenance and operational costs in terms of vandalism. For example, it has been demonstrated that when a community decorates a constantly vandalized wall with a mural, the graffiti often stops. Seattle applied this philosophy to approximately 425 neighborhood bus shelters that have been outfitted with murals created by community based students and professional artists alike. “Researchers are now studying whether the murals have reduced graffiti, but bus riders say they sense a change.... For the [transit] agency, the murals have sent a signal that Metro cares about the communities it serves, and neighborhoods are much more willing to listen now when Metro proposes a new shelter.”⁵

The impact of design features depends not only on their original design, but also on how well they are maintained. In Rochester and Portland, efforts to meticulously maintain transit shelters in the downtown were planned from the very beginning of the project and were not afterthoughts. In San Francisco, drivers take such pride in SFMTA’s historic streetcars that they often make a special effort to help keep them clean. There is even a non-profit volunteer organization, Market Street Railway, which participates in keeping the F Line streetcars in good condition.

³ Project for Public Spaces. “Staples Street Bus Station.” www.pps.org/great_public_spaces/one?public_place_id=113.

⁴ Hensher, David. “Bus Transport: Economics, Policy and Planning.” P. 379.

⁵ Federal Transit Administration, “Art in Transit...Making It Happen,” p. 29.

7.5 Customer satisfaction

Transit agencies can help transit passengers make better use of the time they spend waiting for a bus or train (down time). During these wait periods, passengers rely wholly upon the transit agency to guarantee their mobility and the safe, timely arrival at their destination. Providing real-time arrival information at transit stops helps reduce uncertainty and anxiety and even allows waiting customers to make choices (buy a paper, grab a coffee, choose another route, etc.)

Giving passengers things to look at and do while waiting can enhance the waiting experience, and as a result, reduce their perception of wait time. Design features that have positive psychological impacts on passengers' perceptions, in addition to contributing to their sense of safety and comfort, contribute to the overall passenger experience.

7.6 Cost efficiency

In addition to the issue of customer satisfaction is the issue of cost effectiveness, specifically the efficient achievement of the design objectives set out in this document. This can be accomplished by managing expenditures in a way that balances lifecycle costs. For example, investments in public art can be leveraged by integrating them into the functional design of the facility (platform floor finishes, benches, special lighting, railings, etc.). This section provides examples of how agencies have dealt with cost to the benefit of the transit agency, customers and communities alike.

First, it is important to emphasize that design features are not necessarily expensive; indeed, research shows that the cost of many are quite nominal. For example, when serving people with disabilities, design features such as low-floor buses represent a saving over wheelchair lifts and on-call van service. In addition, methods to pay for design features are quite diverse and include options other than advertising. Offsetting the costs of providing design features may be most easily achieved by developing public/private partnerships with local communities, businesses and governments, as well as redefining the way transit agencies traditionally work with manufacturers.

Knowing what design features passengers in a particular city want most and determining their willingness to pay for them (or to forgo a fare decrease) can help an agency determine which design features to offer.

7.6.1 Working with manufacturers

Since transit agencies purchase design features for vehicles or waiting environments largely from manufacturers, working with these manufacturers is one of the key ways that design features can be provided in a cost-effective manner—and, more importantly, meet real passenger needs. For example, transit shelters typically are easily selected “off the shelf” through catalogs, but these standard elements may not address local passenger needs or complement the local architecture. This problem is compounded by the fact that most transit agencies have to buy from the lowest bidder. If the low bidder provides a design that is not what the agency (or its passengers) wants, it often is obligated to accept it anyway.

One obstacle is the size of the market for transit design features. As one historian described, “Throughout most of their history, transit bus manufacturers have faced two significant constraints on developing innovative technologies: little demand for such innovations, and a persistently limited market size in terms of sales per year. The first constraint is largely due to the fact that transit...operators want sturdy vehicles with low operating costs, minimal maintenance requirements, and long service lives; they're not interested in expensive design changes that do not increase transit revenues.”⁶

⁶ Mandell et al, “A Historical Survey of Transit Buses in the U.S.,” p. 3.

7.6.2 Community partnerships

Amenity projects completed within broader community objectives—such as air quality goals or making a city more livable—create stronger support for transit design features. And even when costs are significant (such as providing bus shelters), there are creative solutions to minimize acquisition and maintenance costs. Through public/private partnerships in Rochester, New York, San Francisco and Portland, Oregon, for example, transit agencies greatly expanded what they were able to accomplish by themselves and became an integral part of community revitalization projects. In Aspen, Colorado, design features on commuter buses are part of a much larger effort to reduce air pollution and vehicle usage, while eliminating the need to widen a scenic road to accommodate ever-increasing commuter traffic.

Today, transit agencies are exploring new ways to provide services (such as restrooms, refreshments and newspapers; shelter from the elements; and information) which can vastly improve the passenger experience. New Jersey Transit has begun to develop innovative community partnerships to accomplish this difficult objective without great cost to the transit agency itself. In some cases, this has involved partnering with a downtown business association to take over management of a station, involving local garden clubs in making landscaping improvements to a station, providing local artists and schoolchildren with paint and materials needed to create or repair a mural, and encouraging a city to pave or brick the pathways leading from the station to the downtown. A unique example of a beneficial partnership is Greater Cleveland Regional Transit Authority (GCRTA) selling the naming rights of its Euclid Corridor BRT project to the Cleveland Clinic and University Hospitals. Selling of the naming rights generated sufficient revenue to fund maintenance and landscaping and allowed them to avoid placement of advertisement on buses.

Developing a management system along with the design features therefore becomes critical. For example, in Rochester, new \$250,000 bus shelters (they are quite large and spacious) are meticulously maintained by property owners in the downtown through a special management district.

Adopt-a-shelter programs are also growing in popularity. Residents of Savannah, Georgia, have adopted 100 bus stops since 1992 and are committed to keeping the stops clean and litter- and graffiti-free. Many stops have been elaborately landscaped; one stop was even adopted and presented as a surprise gift to a family member. The Los Angeles Neighborhood Initiative is a community-based economic redevelopment effort centered on turning individual bus stops into places constructed and maintained by the community. At a focus group in Portland, Oregon, an elderly woman who personally cleans the bus information sign in front of her house says she and other volunteers would do more if they were asked!

7.6.3 Advertising

Using advertising to support design features is another strategy. However, many transit agencies tend to view design features solely as a source of revenue, sometimes losing sight of the fact that they are a service to customers. While clearly it is desirable to see how bus shelters and benches can collect revenue from advertisements, there is a chance that they begin to dominate the design rather than enhance rider experience.

7.6.4 Experiments and demonstration projects

Experiments and demonstration projects that test design features and assess customer reactions are becoming more common as part of the planning for amenity programs. These experiments allow an agency to determine how an amenity will function before a major investment is made, so it is a cost-saving measure as well.

7.7 Conclusion

Design excellence with a reasonable cost is a public investment, and good business. Using a design process to guide planning and budgetary decisions helps ensure that a transit facility becomes both an immediate success and a lasting community asset that gracefully stands the test of time. Furthermore, when transit stations and

stops become community destinations in and of themselves, ridership increases, as does the willingness of the private sector to invest in the areas proximate to these facilities.

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Definitions

accessible path: Clarify what ADA requires or recommends vis-a-vis transit station and transferring.

architect: One who designs and supervises the construction of buildings or other large structures. His or her design reach and impact is probably greatest in transit facilities.

auto-oriented design: Design that prioritizes accommodating the automobile over transit, walking, bikes, etc.

brokering compromise: In a facilitated context, working with stakeholders with differing aims and objectives to establish common ground and general agreement.

built environment: The context for transit facilities that includes buildings, streets, plazas, parks, track ways.

bus-rail transfer: The function and accommodation of transferring activity typically between rail stations and bus stops.

civil engineer: An engineer trained in the design and construction of public works, such as bridges or dams, and other large facilities.

community identity: The physical, demographic or ideological characteristics that distinguish a community from others.

design features: Elements of a transit facility that could be subject to design, such as stations, shelters, seating, monitors, etc. The design of these elements is often considered integral to transit users experience.

design guidelines: Recommended practices, tools, or elements that establish a vision and sense of purpose to guide the development of a facility and that suggests but does not dictate, encouraging creative solutions to technical problems.

facilitated public input: Facilitation of collaborative decision making within a community to emphasize openness and comprehensiveness in seeking input and avoid biasing a response.

grant-ready: This references the state of a design solution, and implies that that it complies with typical requirements for grant to fund furthering the design or construction.

landscape architect: One whose profession is the decorative and functional alteration and planting of grounds, especially at or around a building site. This individual typically works collaboratively with architects in the design process.

local jurisdiction: A county, city, village or township that exercises some level of control over land use and development within its boundaries.

multi-modal: Refers to the integration of multiple transit services (and sometimes suggests different transit technologies such as rail, bus, ferry, etc.) including but not limited to: transit, vehicular, pedestrian and bicycling.

percent for art: Municipal or other type of governmental ordinance requiring the dedication of a portion of total project budget costs to incorporating an art element in a capital construction project.

placemaking: A holistic process of engaging communities in defining and designing public spaces to meet their needs and create a sense of place

rail feeder: Transit services that are designed to support a “trunkline” or major, higher-capacity rail transit corridor.

real-time information: Technologies that go beyond a fixed schedule display and let riders know fairly precisely when transit vehicles are due to arrive and depart.

stakeholders: Project clients: transit riders, transit operators, land use planners, neighbors of transit facilities, other city agencies and officials, building and property owners, employees in a TOD, special needs population, elected officials - all may have unique and differing needs.

structural engineer: One whose profession is to analyze, design, plan, and research structural components and structural systems to achieve design goals and ensure the safety and comfort of users or occupants. Their work takes account mainly of safety, technical, economic and environmental concerns, but they may also consider aesthetic and social factors.

transit facilities: Bus stops, shelters, stations, and other key components that house transit systems, and contain design features.

transit visibility: A degree of high-profile expression in which transit service exists and functions, including ROW, station facilities, and lighting.

transit-oriented development: Real estate development and neighborhoods that take advantage of transit access and support increased transit usage. TOD is often characterized by compact, mixed-use development within an easy walking distance of transit (typically within one-half mile of the transit station) that accommodates safe multi-modal access.

urban designer: A professional who works in the field of urban planning for the purpose of optimizing the effectiveness of a community's land use and infrastructure. His or her profession often includes street design and urban master plans

Abbreviations and acronyms

ADA	Americans with Disabilities Act
BART	Bay Area Rapid Transit
PCC	Presidents' Conference Committee
SFMTA	San Francisco Municipal Transportation Agency
TCRP	Transit Cooperative Research Program
USGBC	United States Green Building Council