

TRANSIT STRATEGIES

BETTER DOWNTOWN TRANSIT SERVICE

In most cities, downtown services have evolved over time, with individual routes added, eliminated, and revised, often with too little consideration of how individual changes fit within the overall system. The result is often complex service that is difficult for passengers to understand and use.

A systematic reconfiguration of downtown transit is one important way to improve transit service—to increase individual transit options, to improve connections, and to focus service in ways that can make service faster and enable the provision of better passenger facilities. Principles for the design of effective and attractive downtown services are:

- Services that operate from the same origin areas (for example, north, south, east, west) should come from the same locations and use the same alignment downtown so that passengers can easily use all routes that serve their destination.
- Circulation patterns should be simple so that passengers can easily learn and remember where to catch the bus. To accomplish this, routes that operate from the same origin areas should operate to the same downtown terminal and use the same alignment within downtown.
- Transfers should be possible between any two downtown routes without walking farther than across the street or one block in cases where bus service operates on one-way pairs. To accomplish this, all circulation patterns within downtown should connect at a minimum of one point.
- Transit should operate on streets that are compatible with high levels of bus service.

BENEFITS OF WELL-DESIGNED DOWNTOWN TRANSIT

The major benefits of well-designed downtown transit are that it will:

- ➔ **Make service easier to understand and use**
- ➔ **Provide better service to and from downtown, as well as within downtown**
- ➔ **Provide effective connections, including with other modes**
- ➔ **Improve service for existing riders**
- ➔ **Attract new transit riders**

Well-designed downtown transit that focuses service is often accompanied by the development of better passenger facilities that can make transit more visible, promote more vibrant street life, and, in some cases, promote new development, especially at street level.

DOWNTOWN SERVICE APPROACHES

The provision of effective downtown transit service typically consists of a combination of elements, which can include:

- ➔ **Service design**
- ➔ **Transit emphasis corridors**
- ➔ **Transit centers**
- ➔ **Transit priority**

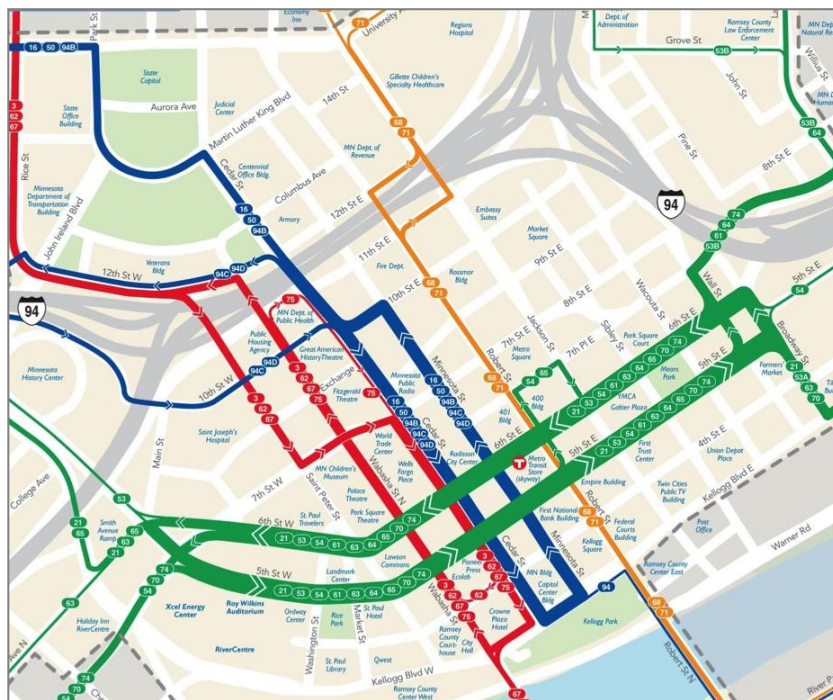
SERVICE DESIGN

A number of different service design approaches can be used for downtown transit, and common approaches include:

- Intersecting trunk routes where routes are organized into intersecting patterns
- Transit emphasis corridors, with transit service concentrated on a limited number of corridors, sometimes within a transit mall
- Perimeter service, in which service is limited to the periphery of downtown, with circulator service within downtown

Very few cities, if any, use a “pure” approach. Instead, most emphasize one approach and supplement that with others to address special circumstances.

FIGURE 1 DOWNTOWN SERVICE DESIGNS
SAINT PAUL, MN INTERSECTING TRUNK ROUTES



DENVER PERIMETER SERVICE



TRANSIT EMPHASIS CORRIDORS

Transit emphasis corridors are corridors that are served by high volumes of transit service where priority is given to transit and a high level of transit amenities are provided. In some cases, transit emphasis corridors are transit “malls” where vehicular traffic is limited entirely or, with only limited exceptions, to transit. (For example, Minneapolis’ Nicollet Mall also permits taxis.) The best examples of transit malls in the United States are Minneapolis’s Nicollet Mall and Denver’s 16th Street Mall (see Figure 2).

Much more common, however, are transit emphasis corridors that emphasize transit service but do not exclude other traffic. Examples of these types of transit emphasis corridors are Portland’s Transit Mall, which is a one-way pair that dedicates two lanes to transit and one lane to other traffic, and San Francisco’s Market Street, which is open to all traffic but heavily emphasizes transit (see Figure 3). A third example is Minneapolis’ Marq2 corridor, which is described in the case studies below.

FIGURE 2 TRANSIT-ONLY MALLS
MINNEAPOLIS NICOLLET MALL



DENVER 16TH STREET MALL



FIGURE 3 TRANSIT EMPHASIS CORRIDORS
PORTLAND, OR TRANSIT MALL



SAN FRANCISCO MARKET STREET



Major benefits of transit emphasis corridors are that they make transit service faster, which makes it more attractive. Transit emphasis corridors also typically include more significant and higher quality stop facilities, which helps to make transit service more comfortable.

TRANSIT CENTERS

Transit centers can provide both a focal point for transit and comfortable passenger facilities. Many small to medium size transit systems focus service around a single downtown transit center. Examples of this approach include Nashville and Fort Worth (see Figure 4).

However, as cities and their transit systems grow, increasing volumes of service and passengers can begin to overwhelm the surrounding area, meaning that additional capacity is needed. As this occurs, a more distributed approach using multiple transit centers may be pursued. As described below in the case studies, Kansas City and Providence are two examples of growing systems that are now taking this approach. Nearly all large transit systems have multiple downtown transit centers.

FIGURE 4 DOWNTOWN TRANSIT CENTERS
MTA'S MUSIC CITY CENTRAL (NASHVILLE)



THE T'S INTERMODAL TRANSPORTATION CENTER (FORT WORTH)



TRANSIT PRIORITY

Traffic in downtowns is usually congested, and, consequently, downtown transit service is typically slow. Transit can be made more attractive through the use of transit priority measures to make it faster. These measures can include:

- Exclusive bus lanes
- Queue jump lanes
- Signal priority

Exclusive Bus Lanes

Bus lanes can be implemented in a number of ways, which include:

- Regular flow bus lanes, in which buses travel in the same direction as regular traffic (see Figure 5).

FIGURE 5 REGULAR FLOW CURBSIDE BUS LANES
NEW YORK CITY



DOWNTOWN SAN ANTONIO



- Contraflow bus lanes, in which buses travel in the opposite direction as regular traffic. In effect, a one-way street is converted to two-way, with regular traffic traveling in one direction, and buses in the other (see Figure 6).

- Multiple lanes. In some downtowns with very high volumes of bus traffic—for example, Minneapolis and Portland—multiple adjacent lanes are dedicated to transit (see Figure 7).

FIGURE 6 CONTRAFLOW BUS LANE (PITTSBURGH)



FIGURE 7 MULTIPLE BUS LANES (MINNEAPOLIS)



Bus lanes can be full-time, meaning that only buses can use them at any time, or part-time, which means that the lanes are only reserved for buses at specific times. Most commonly, part-time bus lanes are shared with parking, with curb lanes used for bus service during peak periods and for parking at other times.

Queue Jump Lanes

Queue jump lanes are short sections of bus lanes at the intersection that allows a bus to move to the front of stopped traffic. This allows buses to skip to the front of the line at a stop light (see Figure 8).

Transit Signal Priority

Transit signal priority (TSP) gives preferential treatment to buses at traffic signals by either holding the green light a bit longer or changing the light earlier to let the vehicle pass (see Figure 9). Some systems rely on transit operator intervention or activation, while others have automated systems that use transponders to connect with signal equipment.

FIGURE 8 QUEUE JUMP LANE

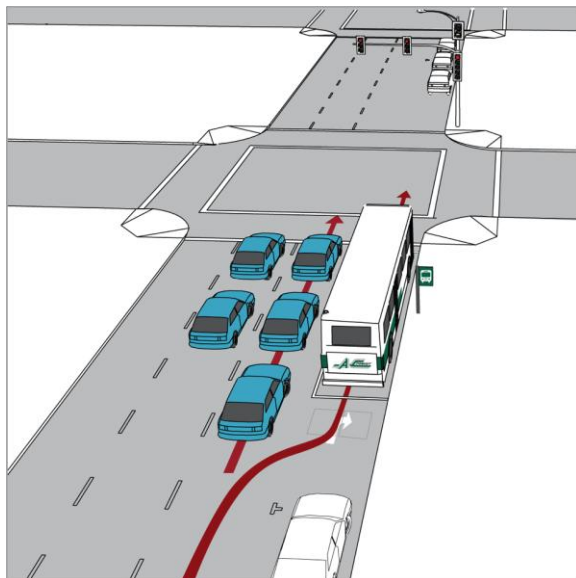
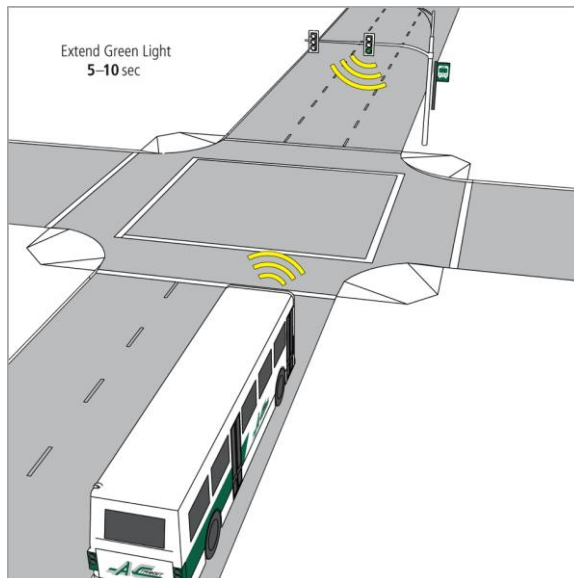


FIGURE 9 TRANSIT SIGNAL PRIORITY



CASE STUDIES

MINNEAPOLIS

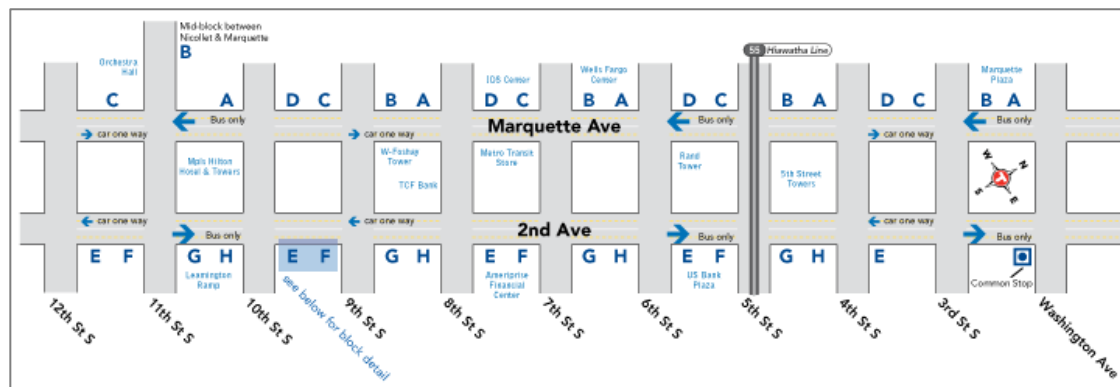
In 2009, Minneapolis converted two major downtown arterials—Marquette Avenue and 2nd Avenue South—to transit emphasis corridors for express bus service and named it the “Marq2 Corridor.” On both streets, the bus lanes operate as contraflow lanes (see Figure 10). On Marquette Avenue, there are two northbound general traffic lanes and two southbound bus lanes, and on 2nd Avenue, the pattern is reversed. The bus lanes are part-time, with only buses permitted on weekdays from 6:00 to 9:00 a.m. and from 3:00 to 7:00 p.m.

FIGURE 10 MINNEAPOLIS MARQ2 TRANSIT CORRIDOR



The Marq2 corridor also features wider sidewalks with trees, bike racks, and public art. Customer waiting shelters are heated and well-lit, with detailed transit information and real-time information signs. Finally, skip-stop operating patterns are used, with individual routes stopping at only A, B, C, or D stops on Marquette Avenue and only E, F, G, and H stops on 2nd Avenue (see Figure 11).

FIGURE 11 MARQ2 STOP PATTERNS



As described on the Transit for Livable Communities website:¹

“December 2009 saw the complete reconstruction of Marquette Avenue and 2nd Avenue S between Washington Avenue and 12th Street that has dramatically improved express bus service through downtown.

FIGURE 12 MINNEAPOLIS MARQ2 BUS OPERATIONS



The original contraflow bus lanes on Marquette and 2nd Avenue opened in the 1970s. Contraflow lanes were a new concept back then. By running in the opposite direction as the street’s auto traffic, contraflow lanes can handle more buses per hour than with-flow lanes, and it’s much easier to police traffic that doesn’t belong in them. Over the next 30 years, however, the number of buses using the lanes increased dramatically and overwhelmed the capacity of the lanes.

This situation was made worse because buses stopped in every block. Furthermore, with a few exceptions, the entire block was a bus stop, with waiting passengers spread out along the entire block. This led to most buses making separate stops at the front and rear of each block. It often took two light cycles for a bus to progress through the next intersection, and no bus could travel faster than the slowest one. Travel time through downtown was scheduled at slightly over three miles per hour, no faster than a person walking. Between 4:30 and 5:30 p.m., buses often weren’t able meet that slow schedule and it routinely took 20 minutes or more to traverse downtown. This negated the travel time savings from other transit advantages such as ramp meter bypasses, shoulder lanes, and HOV lanes.

Slow speed wasn’t the only problem with the old lanes. Most stops offered no shelter from the weather, and bus departure information was almost completely nonexistent. In contrast, most downtown auto commuters never had to step outdoors to reach their cars. Between the snail-like pace of travel, the exposed stops, and no information, it was difficult for the bus to compete with the auto.

In 2006 the City of Minneapolis and Metro Transit decided it was time to reevaluate the state of transit by conducting a transportation study called Access Minneapolis. A major part of that study was the Downtown Action Plan which included suggested strategies to improve Marquette and 2nd Avenues. The Action Plan had the broader goal of making all downtown buses faster, simpler, and more customer-friendly.

Early on, Metro Transit staff identified a likely solution. Buses stay in the left lane unless they are stopped to load or unload. Buses in the through lane yield to buses leaving the curb lane. As part of the project, the City of Minneapolis has experimented with traffic signal timings to minimize bus delays.”

¹ <http://www.dev.tlcmnnesota.org/a-transit-improvement-marq2-bus-lanes/>

KANSAS CITY

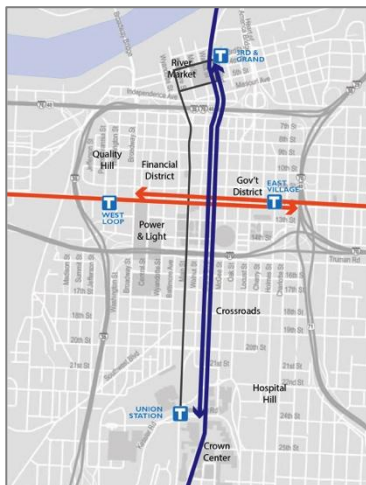
In 2011, KCATA undertook a Comprehensive Service Analysis (CSA) to improve transit service throughout the Kansas City region. Phase 1 of the study, which was completed in 2012, identified a far-reaching set of changes that improved service outside of downtown on nearly every route. These changes were implemented in 2013 and in the first half of 2014. However, plans for corresponding changes within downtown were deferred because planning for Kansas City's streetcar starter line had just begun. To ensure strong integration of bus and streetcar service, it was necessary to understand how streetcar service would operate first. Once that work was completed, KCATA undertook Phase 2 of the CSA to determine how to:

- Make service simpler and more intuitive
- Make service more direct
- Improve connections
- Integrate bus and streetcar services so that they complement each other as effectively as possible
- Provide convenient service for trips within downtown
- Provide better service for existing riders
- Attract new riders

The planned improvements are intended to transform transit in downtown and include the following interrelated elements (see also Figure 13):

FIGURE 13 DOWNTOWN KANSAS CITY IMPROVEMENTS

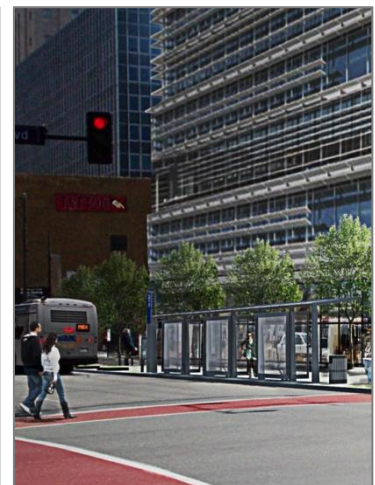
INTERSECTING TRUNK ROUTES



TRANSIT EMPHASIS CORRIDORS AND BUS LANES



ENHANCED STOPS



1. **Intersecting Trunk Route Service Design:** The reconfiguration of downtown routes—based on an intersecting trunk route service design—to make service simpler and faster, to improve service within downtown, and to improve connections between other bus routes and streetcar service.
2. **Transit Emphasis Corridors:** The development of transit emphasis corridors (TECs) on Grand Boulevard and 11th and 12th Streets to make service faster and more visible.
3. **Bus Lanes:** Bus lanes within the TECs on Grand Boulevard and on 11th and 12th Streets to make service faster and more reliable.
4. **Enhanced Stops:** The consolidation of regular bus stops into more attractive stops along TECs to make waiting more comfortable and service faster.
5. **East Village Transit Center:** The development of a new transit center in East Village to improve connections between east side routes and shift many transfers out of the core of downtown.

PROVIDENCE, RI

Providence's growth is now outstripping RIPTA's ability to support this growth with its traditional focus around a single transit terminal at Kennedy Plaza. Nearby Providence Station is the busiest outer station in the MBTA commuter rail system and the 14th busiest in the Amtrak system, but connections between Kennedy Plaza and Providence Station are limited. Ongoing development of the Jewelry District is anticipated to increase activity in a neighborhood that also has very limited transit service.

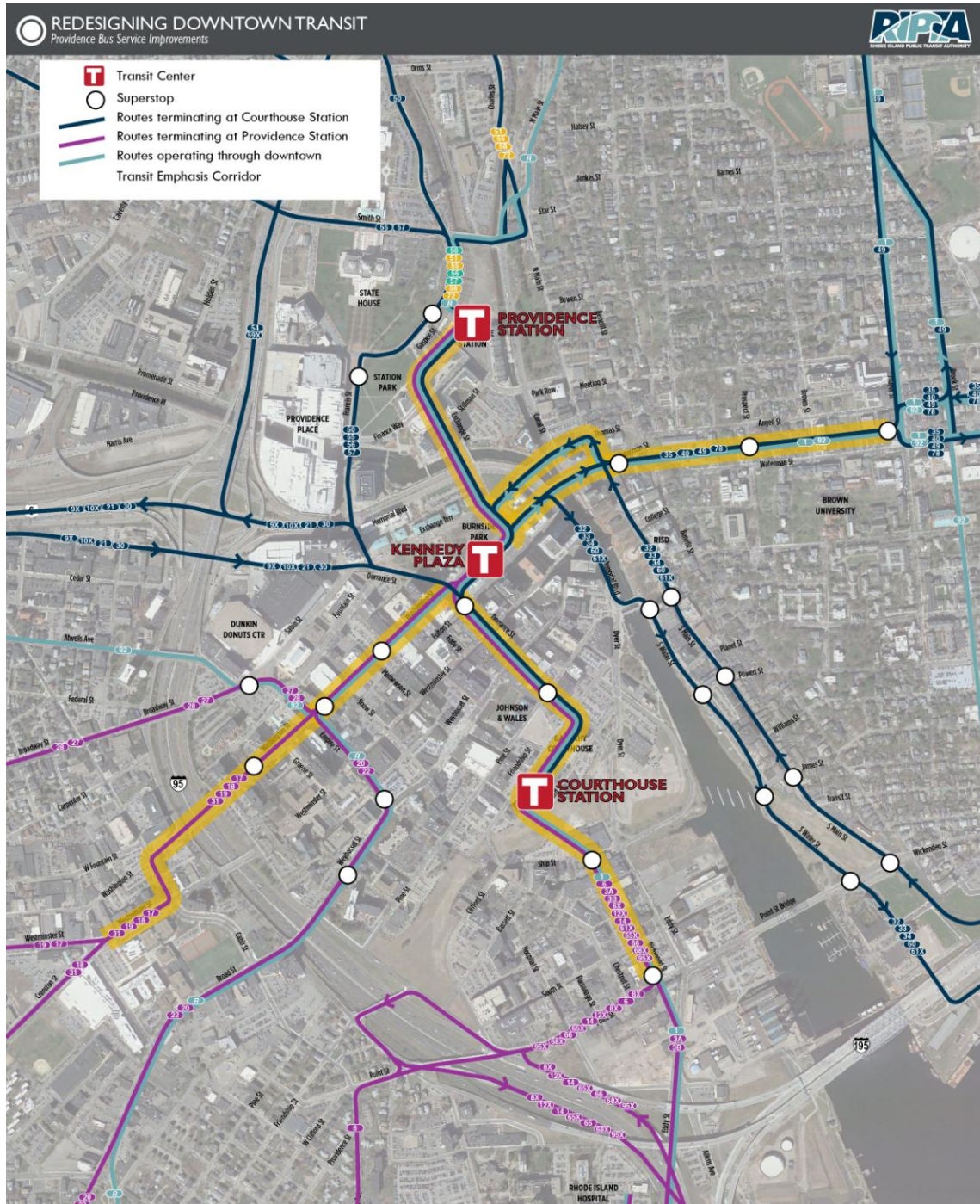
RIPTA has worked hard to keep pace with development, and the success of these efforts can be seen in ridership that continues to increase each year. This success has also contributed to operational challenges, such as crowding at Kennedy Plaza. For RIPTA to effectively serve continuing growth and revitalization, it has embarked on a redesign of its downtown transit to:

- Provide direct service to more of downtown, including emerging areas
- Provide better service within downtown
- Provide equal or better service to all existing riders
- Attract the largest number of new riders
- Resolve most operating and security issues at Kennedy Plaza
- Support new development around Providence Station and in the Jewelry District
- Provide strong connections between Providence Station, RIPTA bus services, and downtown

To do this, RIPTA will:

- **Develop Two New Transit Centers:** RIPTA will develop two new bus terminals. The first will be the expansion of Providence Station to a multimodal center that will include commuter rail, Amtrak, and RIPTA bus service. The second will be a new transit center in the emerging Jewelry District (Courthouse Station). All buses will continue to operate to Kennedy Plaza, but will then continue to operate past there to either Providence Station or Courthouse Station.
- **Develop Transit Emphasis Corridors:** Service is being reconfigured to operate via transit emphasis corridors that will improve the flow of buses throughout downtown, to create corridors with very frequent service, and to increase the convenience of trips within downtown Providence (see Figure 14).
- **Develop Superstops:** Stops along the transit emphasis corridor and other key locations in downtown will be enhanced. Transit Centers will be upgraded to "superstops" that will provide better passenger amenities.

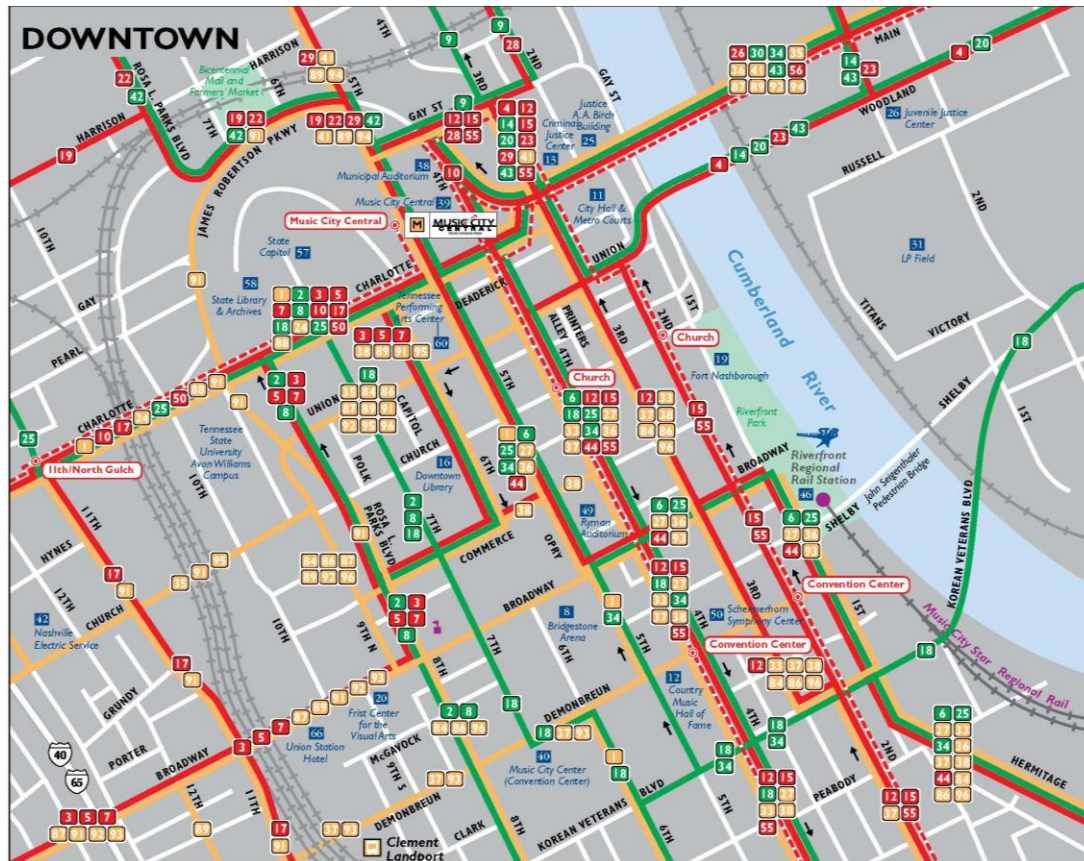
FIGURE 14 RECONFIGURED DOWNTOWN PROVIDENCE SERVICE



POTENTIAL NASHVILLE DOWNTOWN SERVICE IMPROVEMENTS

At present, nearly all MTA service operates to Music City Central, which is a modern facility with a full range of passenger amenities. However, service travels to this location via a number of different alignments that makes service somewhat confusing (see Figure 15). Many downtown streets are narrow and congested, which makes service very slow.

FIGURE 15 CURRENT DOWNTOWN NASHVILLE SERVICE



With the continuing growth of downtown and immediately adjoining areas such as the Gulch, service will become slower without improvements, and more and more destinations will be beyond walking distance of Music City Central. The types of changes described above could make service both easier to understand and faster. Changes to MTA's downtown service could also mean much better connections to the parts of downtown that are not directly served by individual routes.