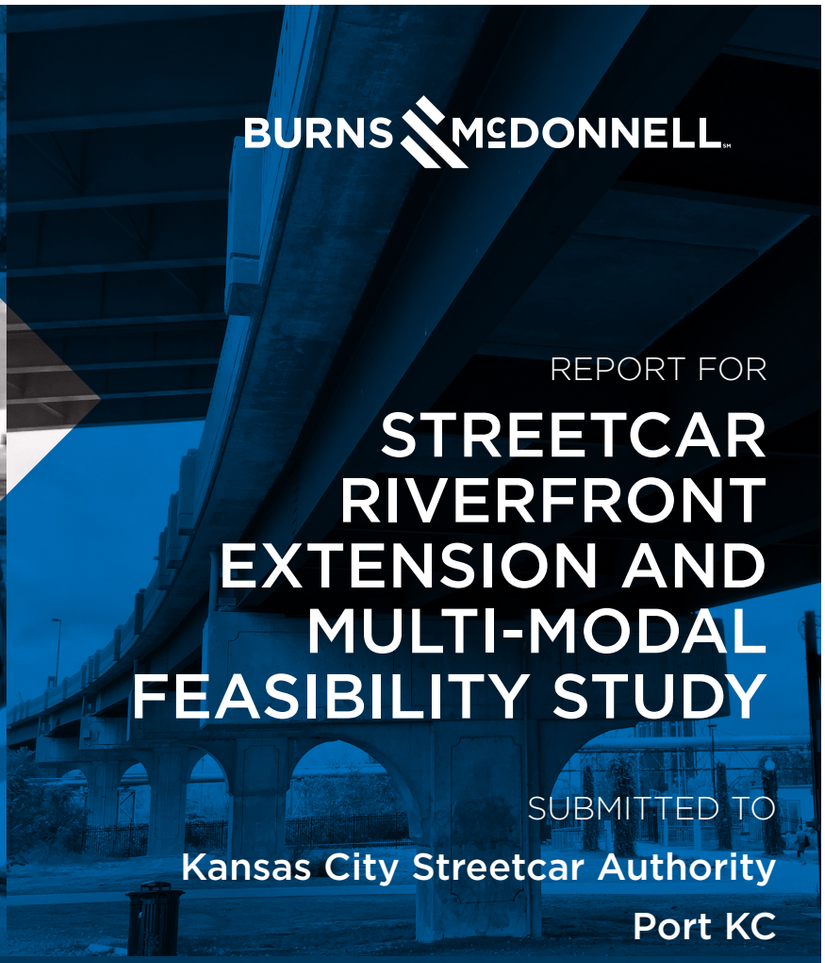

BURNS McDONNELL

REPORT FOR

STREETCAR RIVERFRONT EXTENSION AND MULTI-MODAL FEASIBILITY STUDY

SUBMITTED TO

Kansas City Streetcar Authority

Port KC

Kansas City Area Transportation Authority

City of Kansas City, Missouri

August 9, 2017

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1 Introduction and Summary

In May of 2016, the Kansas City Streetcar (KC Streetcar) commenced operation in downtown Kansas City, spanning a 2.2-mile route between the River Market and Union Station. The KC Streetcar presently runs through Kansas City's central business district along Main Street, stopping in close proximity to popular locations on the route and facilitating connections to other modes of mass transportation. The initial route has been an outstanding success. Just before its first-year anniversary of operations, the streetcar boarded its two millionth passenger.

Figure 1 River Market North Station

The Kansas City Streetcar Authority (KCSA), Kansas City Area Transportation Authority (KCATA), and the City of Kansas City, Missouri (KCMO), which collectively oversaw the development and implementation of the initial 2.2-mile route, have partnered with Port KC to evaluate an extension of the KC Streetcar line north from the River Market area to provide streetcar access to the Berkley Riverfront and to the Missouri River. It is anticipated that the extension will bring the KC Streetcar within a five-minute walk to several undeveloped parcels of land overlooking the Missouri River, which will include a series of mixed-use facilities.

Developing the Riverfront has been a long-range goal for Port KC. In 2016, these four "project partners" formally began to investigate the feasibility of (a) extending the streetcar to the riverfront and (b) changing multi-modal connections and paths in this area ("the Study").

In early 2017, the project partners and their consultants began the formal investigation.

The scope of the study had two major components (listed below).

The Riverfront Streetcar Extension Study is separate and different from efforts to extend the KC Streetcar to the south.

The vast majority of the Riverfront Extension study area is geographically outside both the Initial Transportation Development District (TDD) and the possible TDD extension for the Southern Expansion.

1.1 Streetcar Feasibility Study Overview

The consultant team and project partners ("the Team") investigated the ability of the streetcar to be extended to "just touch" the riverfront. The Team received local public input, investigated technical engineering issues, reviewed operational considerations, and approximated costs and proposed funding and financing.

1.2 Multi-modal Feasibility Study Overview

The Team also investigated the existing transit modes in the study area (including bus, bus rapid transit

(BRT), pedestrian paths, and bike paths) and the exiting multi-modal facilities. The Team was then tasked with making recommendations to improve the multi-modal interface and inventorying the different obstacles (and their estimated costs) to improve the multi-modal types of transit.

1.3 Summary of Findings

It is financially, structurally, and operationally feasible for the Kansas City Streetcar to be constructed and operated to the Riverfront and for it to incorporate and support multi-modal transit.

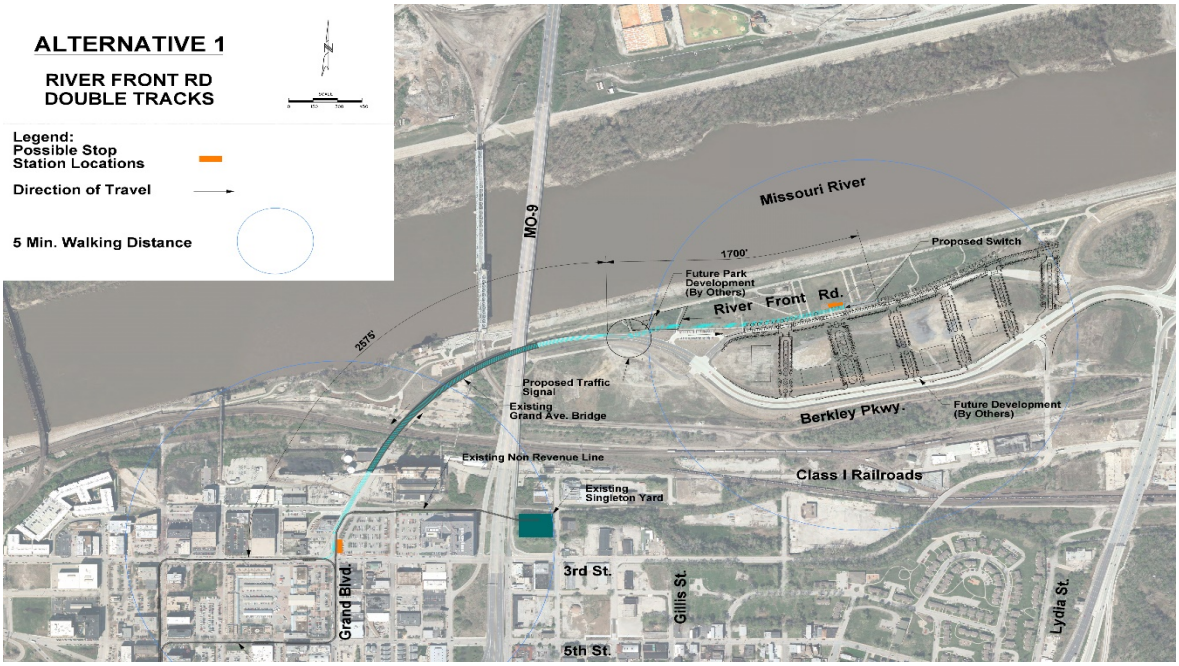
To reach this finding, the Team reviewed and investigated:

- Potential alignments
- Structural loads and requirements
- Public perception and input
- Operational needs and limitations
- Cost estimates (operational and capital)
- Funding and financing

A summary of all of the different alignments reviewed begins on Page 10 in Conceptual Alignment Plans

Route: The preferred alignment (see Figure 2 below) of this extension is double tracked and begins at/near the intersection of 3rd Street and Grand Avenue. The alignment will install new special trackwork at the intersection, then traverse north up Grand Avenue. The northbound portion of operations in this area will use the existing non-revenue track and overhead contact system (OCS), with the southbound using newly installed infrastructure. The preferred alignment will then traverse the existing Grand Avenue Bridge over

Figure 2 Preferred Alignment



existing railroads, dip under the Heart of America Bridge, and land on the Riverfront. The track will then continue to a centrally located station stop near the midpoint of the riverfront development. An end-of-the-line station stop will be constructed at this location, along with a track-switch to permit return

operations (similar to the current and existing Union Station terminus).

Structure: The Study confirmed that connecting the existing Starter Line to the Riverfront Extension via the Grand Avenue Bridge was feasible and that the existing structure could accept the additional live and dead loads for the streetcar.

Figure 3 Initial Development Construction on the Riverfront

Operations: The study determined that one additional vehicle would be required to retain the current headways and that with an addition of only 7 minutes to the round trip time, greater flexibility and/or improved headways might be possible. The study also determined that the relocated stop from west of the 3rd/Grand intersection to north of the intersection would improve bus/streetcar transfers and increase overall transit demand.

Funding, Financing, Economic Development: The project team determined several potential paths to fund the entire project entirely from local sources, and also outlined a potential method for applying for federal assistance (TIGER 2017 grants). Funding of operations and capital work were separated and reviewed as independent plans.

Figure 4 Streetcar Pedestrian Maintenance of Traffic signage – Starter Line.

The Riverfront Streetcar Extension Study does not impact the financial structure of the existing TDD.

For operational funding, the project will utilize the Port Improvement District's (PID's) or other improvement district overlay's ability to raise one-percent funding on retail sales in the Improvement District. Given the many variables related to sales and use income and new retail operations coming on board, the Team conservatively forecasted that these funds would fully support Riverfront operations by 2027. In the interim, Port KC and KCSA have begun a working agreement in which Port KC will initiate a sinking fund account to supplant operational shortcomings during this timeframe.

For capital funding, the Team is using a quasi-private-public approach, while keeping the possibility of federal funding to assist the capital costs. The current estimate of extending the streetcar alignment to the mid-river stop is approximately $30 million (includes construction, one vehicle, design, and project/construction administration/oversight). Port KC will

continue working with private investment institutions to back the initial fund. While property taxes were reviewed as a funding source, it was determined that these would not be sufficient. Therefore, using Pork KC's additional not-yet-developed riverfront parcels will be used as collateral on funding the capital costs of the streetcar. The revenue stream from these parcels will be the future sale of the parcels, excess PID sales and use tax, and/or condominium association fees.

Public Involvement: Through the study period, the public was interviewed and questioned for input. Both stakeholders and surveyed Starter Line passengers understood the premise of extending to the Riverfront to continue connecting Kansas City neighborhoods. Support for the extension was substantial. A public meeting was held during the Study. Attendance was strong and much positive feedback was received from the attendees.

Multi-modal Recommendations: In the feasibility study – specifically regarding pedestrians and bicycles and their interaction with vehicles – the project team has (among other items) recommended a separated pedestrian/bicycle path to access the riverfront. This access would supplement the existing Town of Kansas and Lydia at-grade access to the riverfront.

Supporting details and methods of determination are included in the sections below.

2 Purpose and Need

The purpose of the Kansas City Downtown Riverfront Extension and Multimodal Feasibility Study is to provide strong connectivity between the riverfront and downtown activity centers, provide attractive transit connections to and from the riverfront that support economic development and enhance community livability, provide non-automobile connection options into the "string" of downtown districts from Union Station to the Riverfront, serve downtown area populations through accessible and affordable transportation from the downtown area to the riverfront, better serve parking demand in the downtown and river market areas by connecting it with transit demand, and slow the growth of automobile congestion in the downtown area.

Figure 5 Frog and Turnout at Union Station

The Riverfront Extension Feasibility Study built on the Starter Line purpose and need statement. Namely, the Study focused on the following four items:

- Connect – Link city centers and neighborhoods.
- Develop – Transform the previous riverfront brownfield to increase the downtown population.
- Thrive – Continue the unique string of districts and build intra-district support.
- Sustain – Provide long-term developable areas, while increasing TOD patterns of development.

During the feasibility study period, and given the geography of the Riverfront Extension area, it became apparent that the purpose and need statements from the Starter Line would apply to the overall study. With the need to cross existing railroads, "connection" became a driving need for the reviewed alignments. The "connection" portion of the project required the alignment to be constructed without the typical supporting TDD, Tax Increment Finance (TIF), and/or sales/use tax income. The bridge structure literally became the bridge to connect the future riverfront development to the rest of the Kansas City alignment.

Once landing on the riverfront proper, the ability of the project to develop, thrive, and sustain was similar (if not greater) than that of the Starter Line alignment.

Supporting these efforts is the focus of this feasibility study.

3 Conceptual Alignment Plans

Determining possible alignments to the Riverfront was a primary task during the feasibility study. The intent of the project was to connect the River Market and/or Columbus Park areas to the Riverfront area.

In doing so, the Team studied several different alignment alternatives. One of the alignments reviewed the possibility of an at-grade crossing of freight railroads, two reviewed the possibility of new structures over the railroads, and two reviewed the possibility of using an existing structure. Some of these alignments had minor variations.

3.1 Selecting Study Alignment

The review of the different alignments was completed in two phases (see summary graphic in Figure 6). During the first phase, the six major potential choices were drafted and conceptually plotted.

The alignments reviewed were numbered[1] and labeled:

- Alternative 1 – River Front Road Double Tracks (aka Mid-River Stub)[2]
- Alternative 2 – Berkley Parkway[3] Double Tracks
- Alternative 3 – Berkley Parkway to River Front Road Track Mid Block (aka Short Loop)

[1] In the public meeting, the alternative 6, 5, 3 and 1 were renumbered 1, 2, 3A, and 3B respectively.

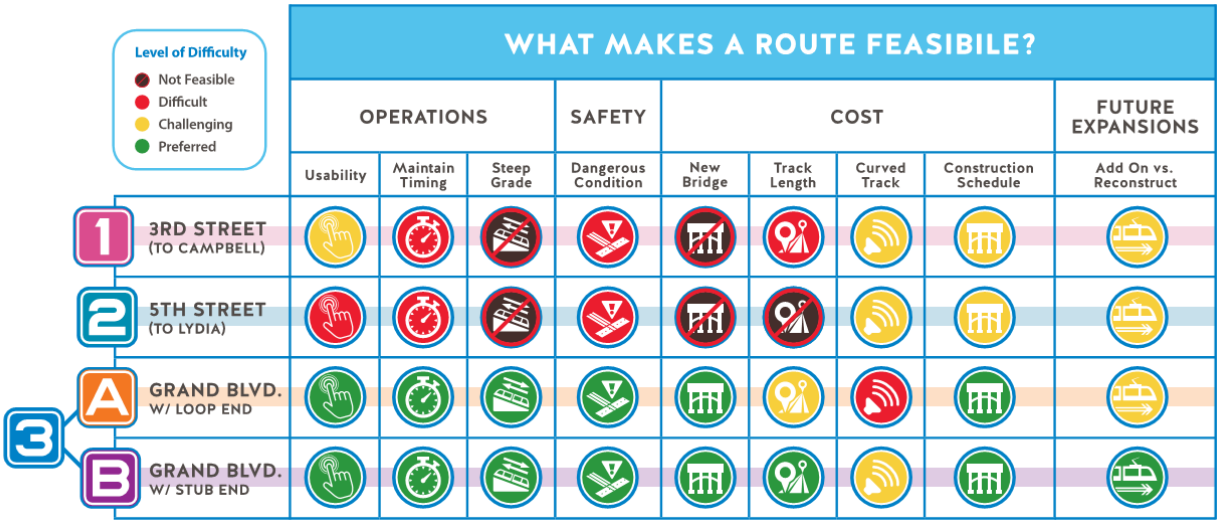
[2] A significant benefit on Alternative 1 is its ability to be easily extended to the Isle of Capri land east of I-29/35. It appears that the right-of-way to and from and the clearances under the interstate bridge are sufficient for a future extension to the existing casino property.

[3] Although a local ordinance has legally defined the location and formal names of the streets from 2nd Street over the Grand Boulevard Bridge to the riverfront. This report will follow and use the as-signed names of the streets. Grand Boulevard continues from 2nd Street over the Grand Boulevard Bridge until the street meets Berkley Parkway (formally Front Street) at the north/east end of the bridge. The Front Street name continues along the south side of the development to I-29/35. "Grand Avenue Viaduct" will not be used. See Figure 2.

- Alternative 4 – Front Street to River Front Road Track (aka Long Loop)
- Alternative 5 – 5th Street to Lydia Street Double Tracks
- Alternative 6 – 3rd Street to Gillis Street Double Tracks

A variation of Alternative 5 crossed the existing freight railroads at grade. This variation was discarded as (a) the possibility of needing to wait on freight movement was not acceptable and (b) the FRA requirements to temporally separate freight traffic and streetcar traffic was not viable.

Figure 6 Summary Graphic of Route Feasibility



After the at-grade crossing was discarded, the Team reviewed sharp curves, potential bridge length rehab or construction, and overall alignment lengths. During this phase of the review, vertical geometry and new structure construction costs were considered.

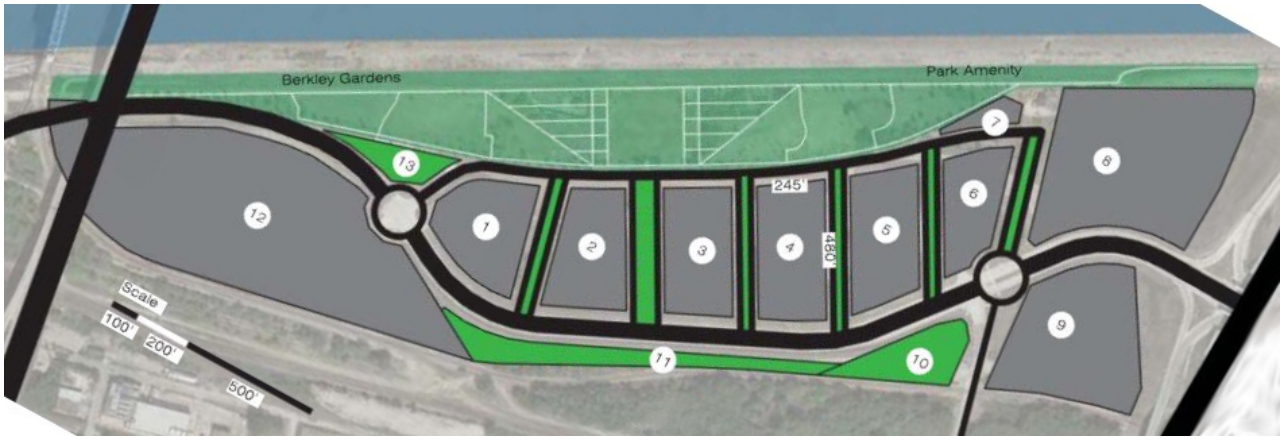
Vertical geometry was reviewed for the alignments. Alternatives 5 and 6 both had challenges in this area. To study this geometry, the Team provided the railroads with 23'-0" of vertical clearance and added a 5'-0" superstructure deck thickness. Therefore, new structures would need to descend 28'-0" after crossing the railroads. Based on the conceptual drawings and providing for one-streetcar length prior to an intersection, Alternative 5 needed to descend in 300' creating a 9.3% grade and Alternative 6 needed to descend in 150' creating an 18.7% grade. These decent rates created grades that were too great for the streetcar and for pedestrians, bicyclists, and ADA requirements. The Team did consider the possibility of lengthening the structure to either turn and reduce the descent rate or bridge over Front Street and land in the Port KC parcels, but these options were deemed too expensive – both for construction and for the opportunity cost of lost parcels.

Figure 7 Railroad under the Grand Avenue Bridge

While the vertical geometry precluded these alternatives, the Team did review and estimate the construction costs for these alignments. A comparison of those costs is shown in Table 1 Construction Cost Comparison to "just touch" the Riverfront. Given the vertical geometry and high estimated costs, Alternatives 5 and 6 were determined to be unfeasible.

Alternative 4 was then reviewed. Initially, this alternative was created to broaden the reach of the streetcar and to support development farther east on the riverfront. However, after the Team drew a quarter-mile walk-distance circle on the riverfront schematic and considered the additional cost of the track, this alternative was abandoned.

Figure 8 Riverfront Parcel Numbers



Almost concurrently, Alternative 2 was reviewed. Initially, Alternative 2 was provided to create or permit streetcar riders to traverse the new neighborhood and development on the riverfront. However, as it became apparent that the entire riverfront area was within about a five minute walking radius and that having a stop near Parcels 8 and 9 (south-side long parcels reserved for water detention/retention) was not necessary, it was agreed that this alignment did not benefit the streetcar ridership or development.

As such, Alternatives 1 and 3 were the two alternatives that were investigated further and discussed with stakeholders, engineers, and planners in greater detail. Both of these alternatives depart from the Starter Line alignment at 3rd and Grand Streets and use the existing Grand Ave. Bridge (see Figure 9) to access the riverfront. Near the northern/eastern end of the bridge, Alternative 1 turns off of the road and structure and proceeds parallel with the river to a stub-end track near the middle of the riverfront development.

Alternative 3 creates a loop by continuing east on Front Street, then via two 90-degree turns near the middle of the development moves west in the grass area north of River Front Road, where it completes its loop near the north/east end of the Grand Blvd. Bridge.

Figure 9 View of Grand Ave Bridge under the Heart of America Bridge taken from Riverfront elevation.

From an engineering perspective, both alignments were similar in technical feasibility. Ultimately, Alignment 1 was selected as the preferred alignment due to stakeholder feedback (desire to reduce the number of slow and possibly noisy 90-degree turns) and the significant construction cost savings (see Table 2 Alternative 1 and 3 Summary Estimates). Additional input regarding these factors are provided in other sections.

Graphics of the alternatives follow.

Figure 10 Alternative 1 River Front Tracks

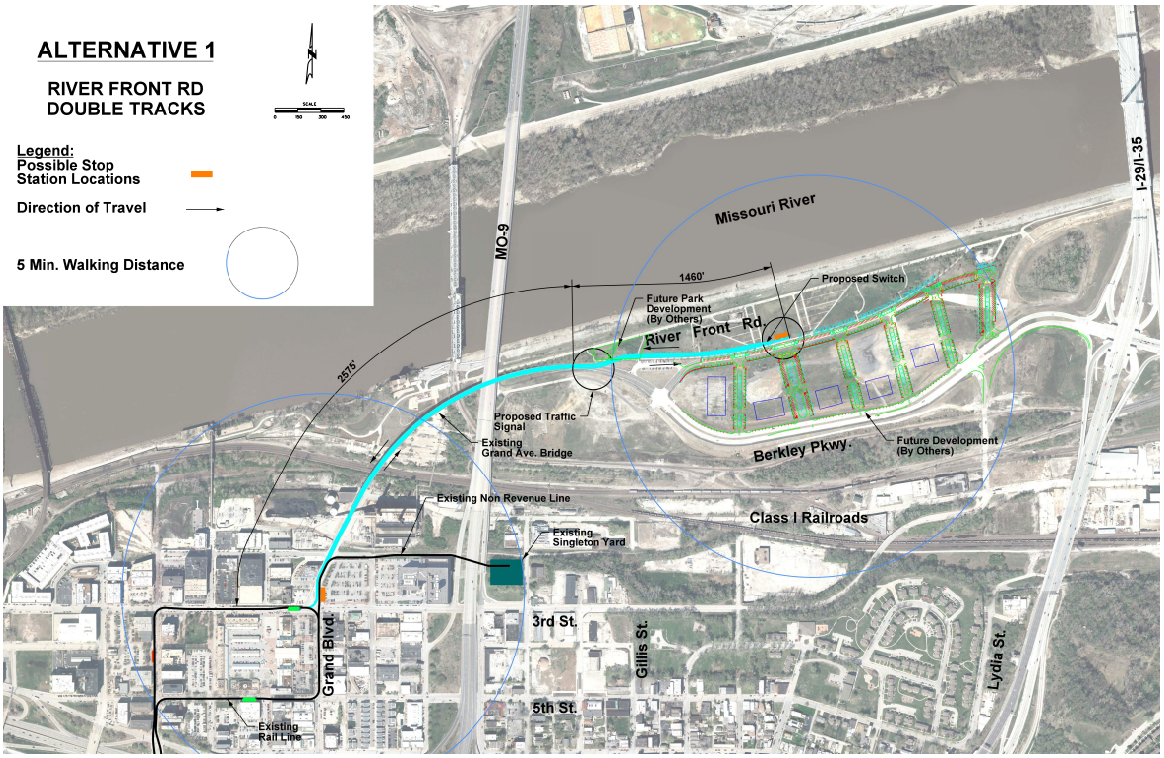


Figure 11 Alternative 2 Berkley Pkwy Tracks

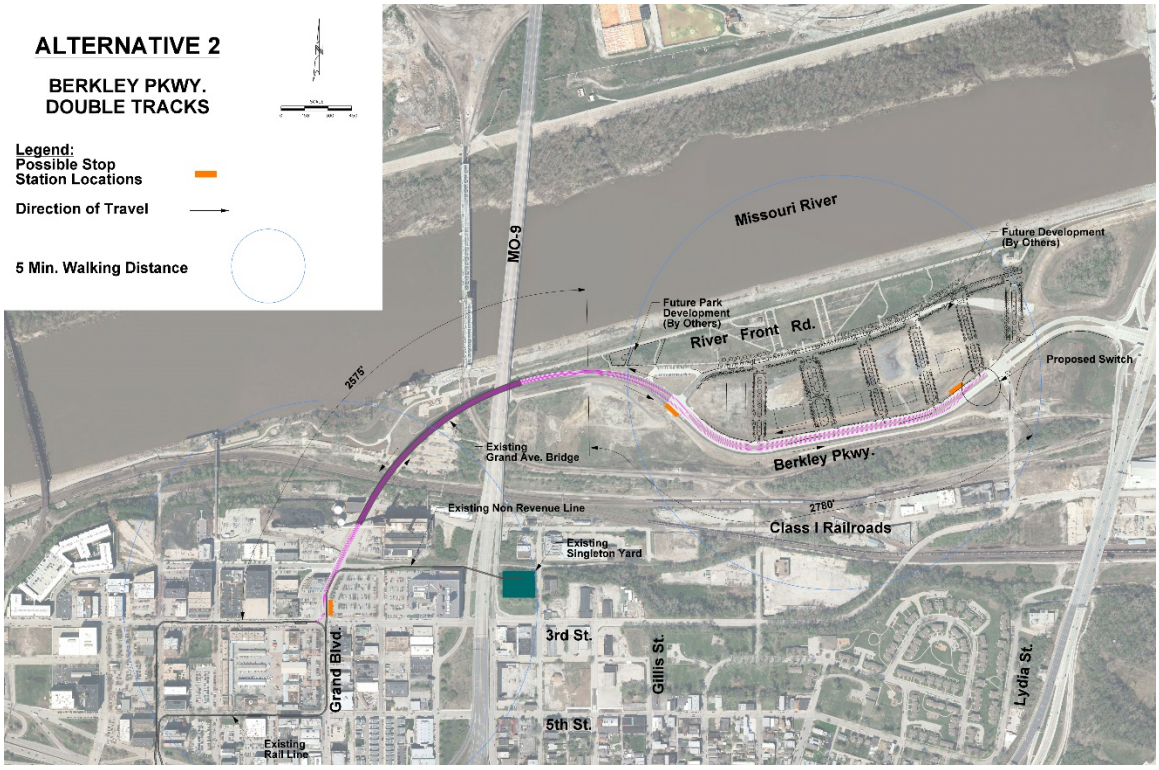


Figure 12 Alternative 3 Short Loop

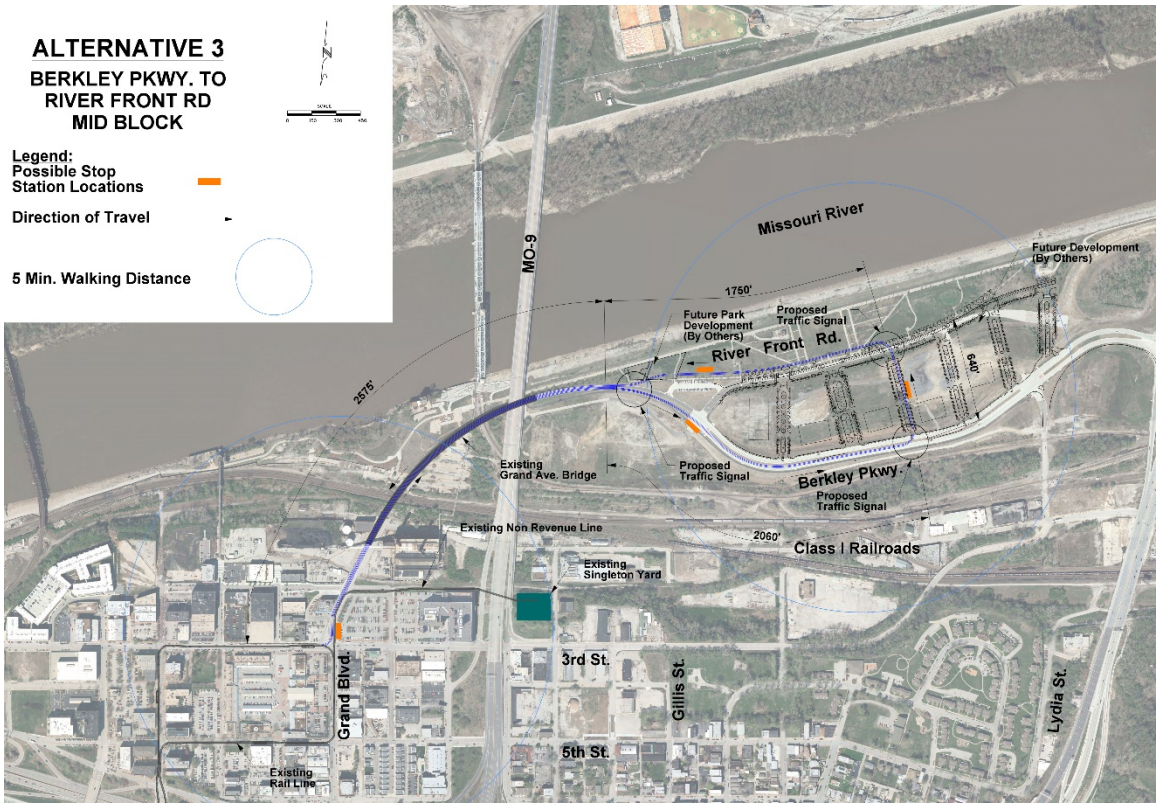


Figure 13 Alternative 4 Long Loop

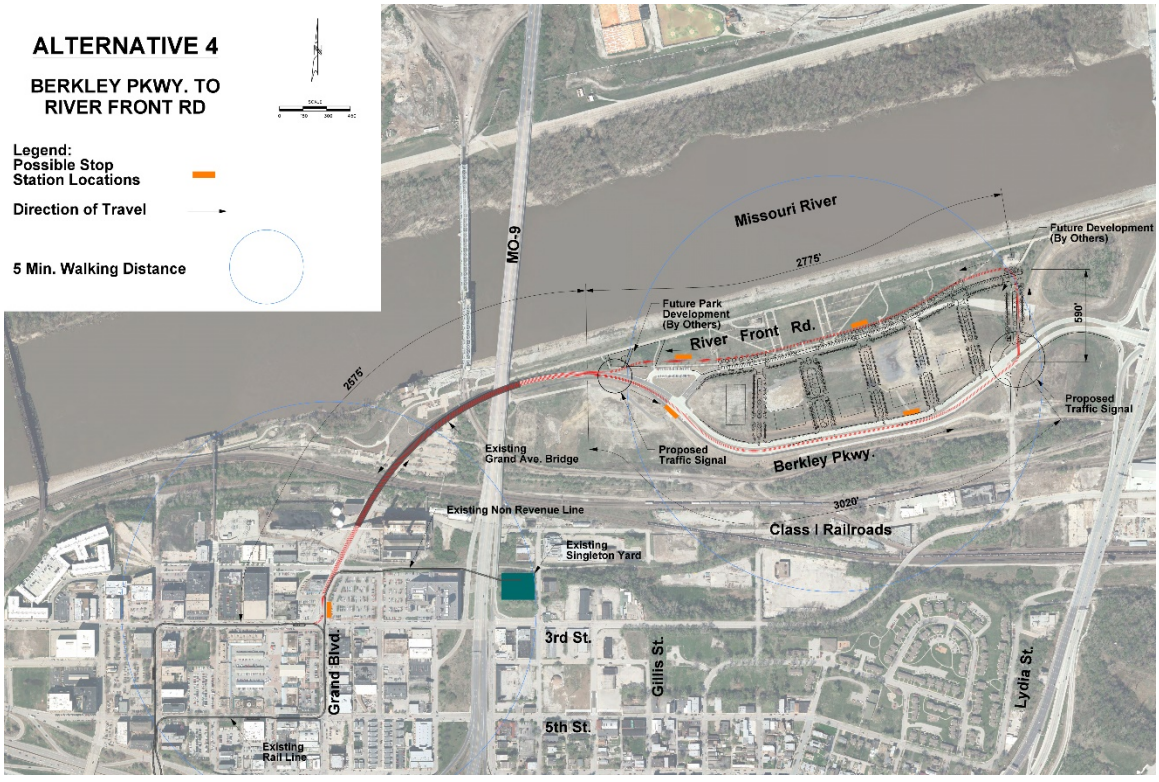


Figure 14 Alternative 5 Fifth Street to Lydia Street

Figure 15 Alternative 6 Third Street to Gillis Street

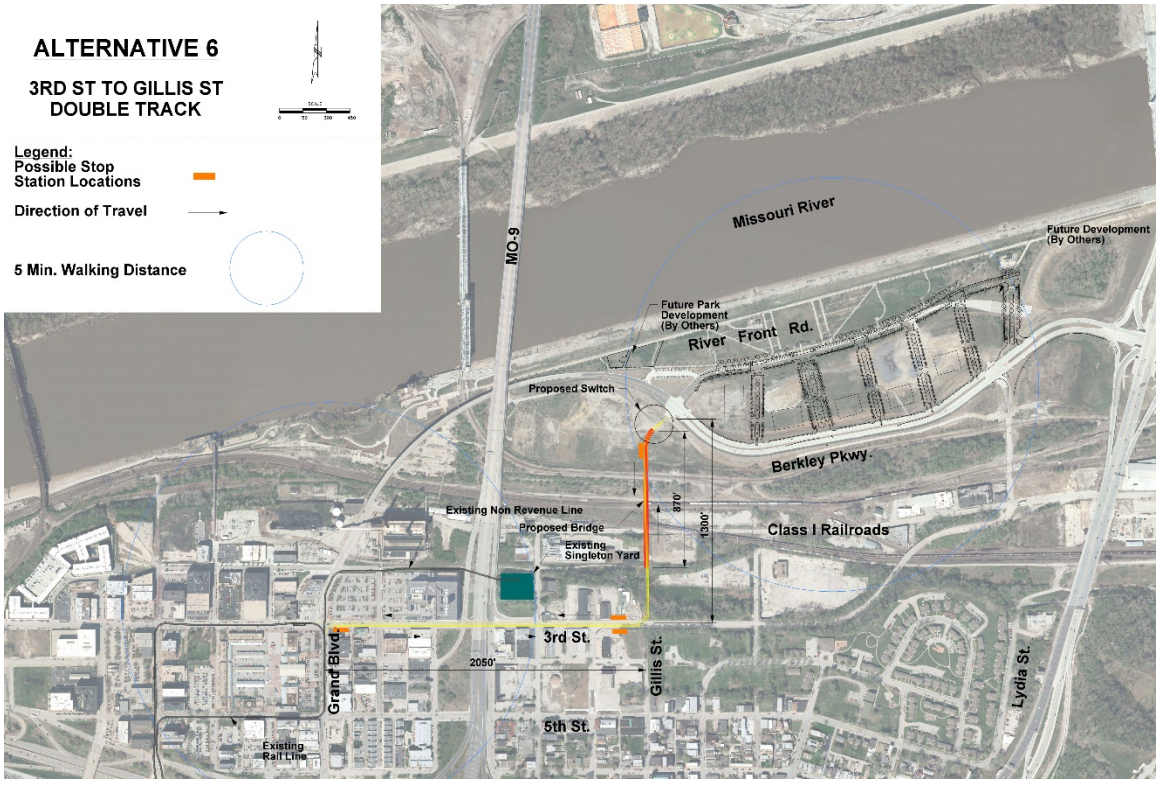


Table 1 Construction Cost Comparison to "just touch" the Riverfront

	Cost Comparisons to "just land" on the Riverfront		
Shown on Drawing Named	Alternative 5	Alternative 6	Alternative 1
Terminus	Just Touches Riverfront	Just Touches Riverfront	Just Touches Riverfront
Description	Connect at 5th and Grand, then 5th, Lydia, new structure to east end of Riverfront	Connect and 3rd and Grand, then 3rd to Gillis, new structure, to Front and River Front Rd.	Connect at 3rd and Grand northbound over existing viaduct to near Front St and River Front Road
Track Summary - 200 feet south of 3rd/Grand Intersection to 50 feet north of 2nd/Grand	10700 TF on street south of RR; 2800 TF on new structure; 0 TF on existing structure; 300 TF on road north of RR; 0 TF on turf.	5000 TF on street south of RR; 1600 TF on new structure; TF on existing structure; 600 TF on road north of RR; TF on turf.	600 TF on street south of RR; 0 TF on new structure; 3600 TF on existing structure; TF on road north of RR; 400 TF on turf.
Special Track Work	1 switch and 5th/Grand, 1 switch at terminus	1 switch at 3rd/Grand, 1 switch at terminus	1 switch at 3rd/Grand, 1 switch at terminus, 1 switch at VMF
Demo Notes			
Track Feet (total)	13,800	6,900	5,200
Station Summary	Station Stop near Front Street and Lydia	Station Stop near Front St and Riverfront Road.	Station Stop near 3rd/Grand
Contractor Raw Construction Costs	$ 29,553,000	$ 17,129,300	$ 10,213,200
Contract Indirect Costs	$ 5,910,600	$ 3,425,860	$ 2,042,640
ROW	$ -	$ -	$ -
Vehicles	$ 6,000,000	$ 6,000,000	$ 6,000,000
Professional Service	$ 8,865,900	$ 5,151,290	$ 3,063,960
Contingency	$ 7,549,425	$ 4,763,468	$ 3,197,970
Finance Charges	$ -	$ -	$ -
Total	$ 57,878,925	$ 36,469,918	$ 24,517,770

For comparison purposes, the above table compares each of the alignments getting across each of the respective bridges and then terminating. Given this info, Alternative 5 is approximately $23 million greater and Alternate 6 is approximate $12 million greater than the preferred Alternative cost to “just touch the riverfront”. The table below then adds the cost to for Alternate 1 to get to the middle riverfront station stop location.

Table 2 Alternative 1 and 3 Summary Estimates

	Grand Avenue Viaduct - "just touch" riverfront	Alt 1 extended to middle Riverfront
Summary Estimates		
Contractor Raw Construction Costs	$ 10,213,200	$ 2,282,000
Contract Indirect Costs	$ 2,042,640	$ 456,400
ROW	$ -	$ -
Vehicles	$ 6,000,000	$ -
Professional Service	$ 3,063,960	$ 684,600
Contingency	$ 3,197,970	$ 513,450
Finance Charges	$ -	$ -
Total	$ 24,517,770	$ 3,936,450

Therefore, the cost to get to the middle river station stop is approximate $28.5 million.

4 Multi-modal Connectivity

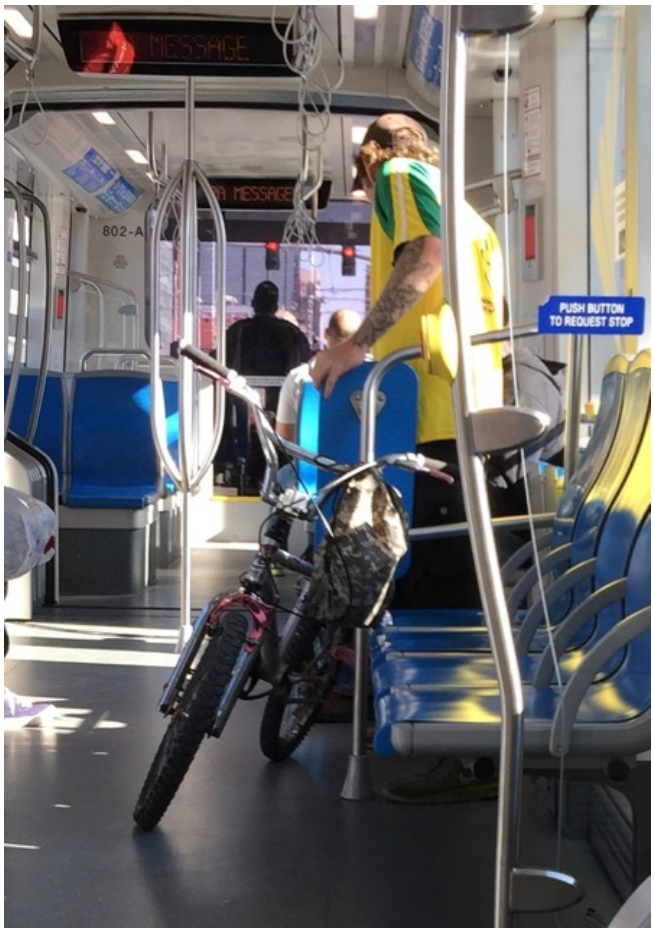
The focus of the Study was the incorporation and possible improvement of the connection and interconnection of transit systems in and throughout Kansas City, specifically in the River Market and Riverfront areas.

A brief introduction of the characteristics of a strong multi-modal community and its importance to the implementation of the streetcar extension is summarized below. It is followed by the results of an examination of the existing conditions and recommendations for bicycle, pedestrian, and transit facilities in the River Market, along with recommendations of connectivity improvement of modes of transportation in the River Market, Columbus Park, and Riverfront areas.

4.1 Introduction

Safe, comfortable, and convenient access to new streetcar stations will be an important component to the successful implementation of an expanded alignment connecting the River Market and Riverfront areas.

Figure 16 Bicyclist on the Starter Line Route.



By nature, transit is multi-modal. Every transit trip begins and ends with a person walking or biking. Creating a public transit-based mobility system that makes these connections and experiences equitable and convenient will further grow strong transit ridership.

Designing with transit accessibility for all users as a priority improves stop configurations, stations, and the overall transit experience for pedestrians, cyclists, those with disabilities, and motorists. Providing safe and comfortable connectivity between all modes of travel expands the catchment area for potential streetcar users. A typical pedestrian will walk a quarter of a mile to access a transit line, a cyclist will bike a mile or more, and a park-and-rider will travel farther still, so locations of multi-modal connections are a balance of need and rider types. Improved multi-modal connectivity will be critical for the expansion of the streetcar to the Riverfront area.

4.2 Characteristics of Good Multi-modal Connectivity

Good multi-modal connections are well-signed, direct, safe, continuous, and in a good state of repair. Specifically:

- Sidewalks should accommodate designed user-loads and should be minimally 5-feet wide and adhere to Americans with Disabilities Act (ADA) requirements. Intersections should foster safe interactions with vehicles and could include striped crossing routes, ramps with tactile truncated domes, and pedestrian crossing signals where warranted.
- Lighting should be designed to provide a more secure feeling for pedestrians in the evenings and at night. Well-lit areas improve safety by raising overall visibility and awareness for all modes, specifically for pedestrians/vehicle interactions.

- Safety should include traffic-calming features that better predict vehicle speed and movements around pedestrians and bicyclists. These types of improvements frequently include crosswalks or narrowed lanes that are distinctly marked (raised or textured pavement, striped or even slightly raised to slow traffic).
- Discontinuous sidewalks, interrupted bike paths, and obstructions (e.g., utility poles, waste receptacles, newspaper boxes, street trees) negatively impact multi-modal connections.
- Attractive and inviting streets create places where people want to get out of their cars and walk. Active sidewalks with outdoor cafes, a variety of retail and commercial activity at street-level, and transparent storefronts form interesting and welcoming environments that support more pedestrian activity and transit use.
- Clear and effective wayfinding helps people quickly, intuitively, and easily orient themselves and move within a space, and it also brings a distinctive and unified look across an area that can be quickly and easily located and read at a distance.

Taken together, all of these various elements help build an environment that supports multi-modal connectivity and create a place where people feel comfortable on foot, cycling, using transit, or driving.

4.3 Review of Current Planning Documents

The River Market, Riverfront and Columbus Park areas have been the subject of several planning efforts over the last two decades. Many of these plans make recommendations related to development of more walkable and bicycle-friendly communities. Kansas City's current comprehensive plan, FOCUS (Forging Our Comprehensive Urban Strategy), was adopted in 1997[4]. The FOCUS Plan set many of the strategic priorities that have led to Kansas City's success and established a foundation for citywide planning that continues today. Of the many critical areas addressed in the plan, mobility options for the city was a high priority focus. The plan stated that:

[4] http://kcmo.gov/planning/comprehensive-plan/

"The intent of FOCUS is to increase the ease of, and broaden the options for, moving about the city, and to create logical extensions of the existing transportation network…Many people will walk if there is a direct, continuous, safe, pleasant and secure pedestrian route for doing so. People will ride bicycles if they can do so safely. People use public transportation if it is convenient and pleasant and there are pedestrian connections between the transit stop and destination. People will use modes of transportation besides the automobile if the other modes provide reasonable alternatives. Moving about the city requires attention to, and integration of, many different ways of moving from place to place – called multimodal transportation." (FOCUS Kansas City Plan)

Figure 17 Signed Bike Lane at 3rd and Grand

Many other targeted planning studies have been completed since this integrated multi-modal transportation vision was adopted. This section summarizes the most relevant and impactful planning documents that inform the development of an extended streetcar to the Riverfront area and strategies to enhance multi-modal connectivity in these neighborhoods.

The Riverfront Extension addresses many of the goals of the planning documents and progresses their individual goals. Several of these plans are outlined below.

4.4 Existing Conditions of Multi-modal Connectivity in River Market/Riverfront

To more closely examine the elements that support multi-modal connectivity related specifically to expansion of the streetcar from the River Market to the Riverfront district, a detailed review and assessment of existing conditions was conducted in late February 2017. The purpose of the inventory was to gather data on the current state of connectivity within the River Market and between the River Market, Columbus Park, and Riverfront areas.

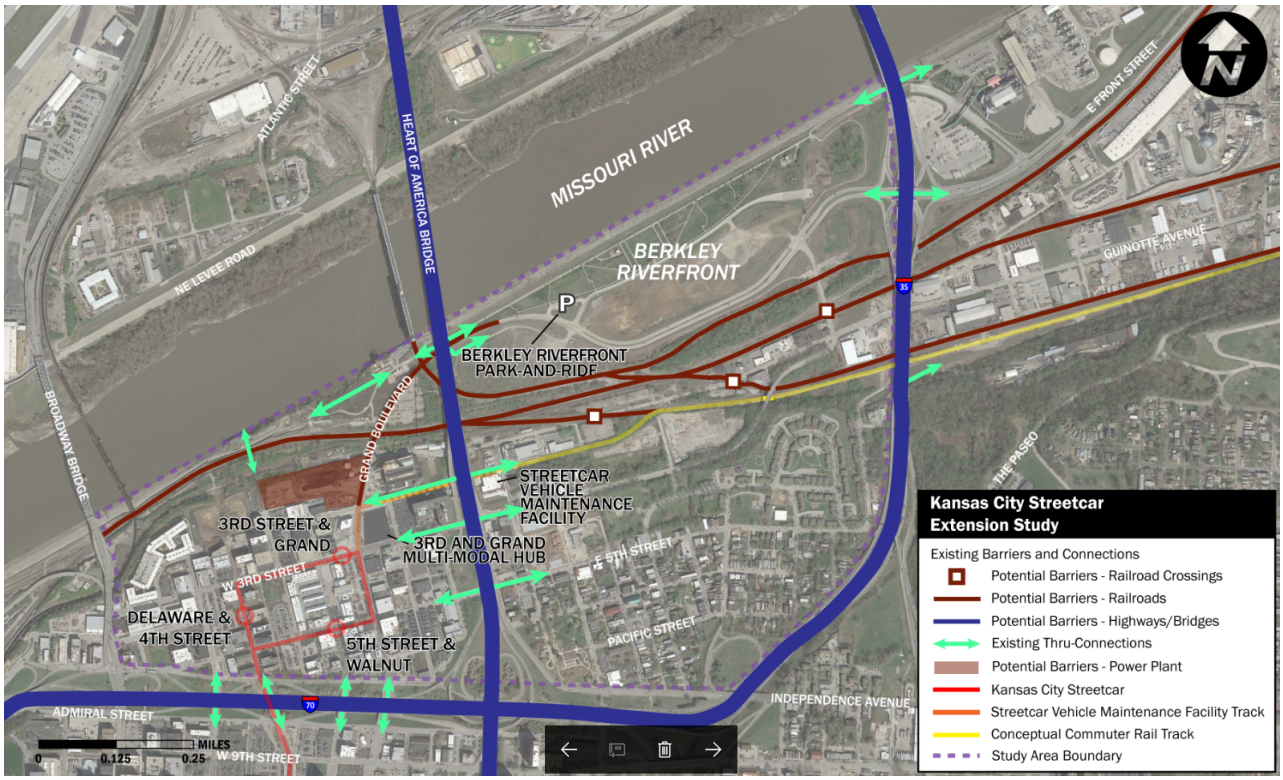
The multi-modal connectivity existing-conditions review looked at four areas that impact connectivity directly between the River Market and Riverfront as well as within the River Market. These four areas examined barriers to connectivity, sidewalks, bicycle facilities, and access to public transit.

4.4.1 Barriers to Connectivity

Providing continuous, direct, and safe routes to move to, within, through, and between areas is central to supporting strong multi-modal connectivity. The River Market and Riverfront districts today have a high concentration of major barriers that disrupt connectivity for transit users, pedestrians, and cyclists. Some of these significant barriers are roadways and railroads developed over many decades. Additionally, I-35

forms a barrier to the east and south sides of the streetcar extension study area. Access over I-35/70 from the River Market into the greater Central Business District is limited to four primary bridges on Grand Boulevard, Walnut, Delaware, and Wyandotte Streets. Another major roadway barrier is the Heart of America (HOA) Bridge/Missouri Highway 9, which bisects the streetcar extension study area from north to south. Connection points for cars, pedestrians, and cyclists between the River Market and Columbus Park to the east are limited to 2nd, 3rd, and 5th Streets east to west under the HOA Bridge. The major physical barriers to multi-modal connectivity are depicted in Figure 18 below.

Figure 18 Barriers to Multi-modal Connectivity in River Market/Riverfront



The second significant barrier to multi-modal connectivity in this area is caused by the multiple railroads operating across and along the Missouri River. Three Class I freight railroads own track rights-of-way and operate freight trains in the area, including the Burlington Northern Santa Fe (BNSF) Union Pacific (UP), and Kansas City Southern (KCS). These rail lines and trains create another physical barrier making safe and direct connections between the River Market and Riverfront all but impossible, as seen in Figure 19.

Figure 19 Railroads are Barrier to Riverfront

Because of the BNSF and UP lines, there are essentially two ways to access the riverfront from the River Market. The first is the bicycle and pedestrian connection from Main Street across the Town of Kansas Bridge (Figure 20) connecting to the River Front Heritage Trail. The Town of Kansas Bridge is an elevated structure over the existing railroads that provides access to the Riverfront Trail via a staircase or an elevator. Along the Town of Kansas Bridge are several plaques that provide detailed history of the area and the foundation of Kansas City.

The other primary connection to the riverfront is the Grand Avenue Bridge. The Grand Boulevard Bridge provides access from auto and truck traffic only. The narrow two lanes of the bridge do not provide pedestrian or bicycle accommodations and function as an added barrier to multi-modal connectivity to the riverfront.

Other Barriers to the riverfront include:

- The topography connecting to the River Market. There are several areas with steep declines moving north toward the Riverfront area.
- The industrial uses along 1st Street with the Veolia Tri-Gen Power Plant and coal storage area.

Figure 20 Town of Kansas Bicycle / Pedestrian Bridge

4.4.2 Sidewalks and Pedestrian Amenities

Continuous sidewalks that are in good condition, clear of obstructions, and provide mobility for persons of all abilities are the foundation of strong multi-modal connectivity. The River Market today is one of the richest environments in the Kansas City

metropolitan region for multi-modal transportation. The area sees the operation of local fixed-route bus transit service, MAX BRT, streetcar, bike share, car share, park-and-ride facilities, bicycle lanes, and generally strong sidewalk connectivity.

The Heritage Trail and ASB Underpass was a $20 million pedestrian amenity project coordinated and supported by Port KC, KCMO, and MoDOT.

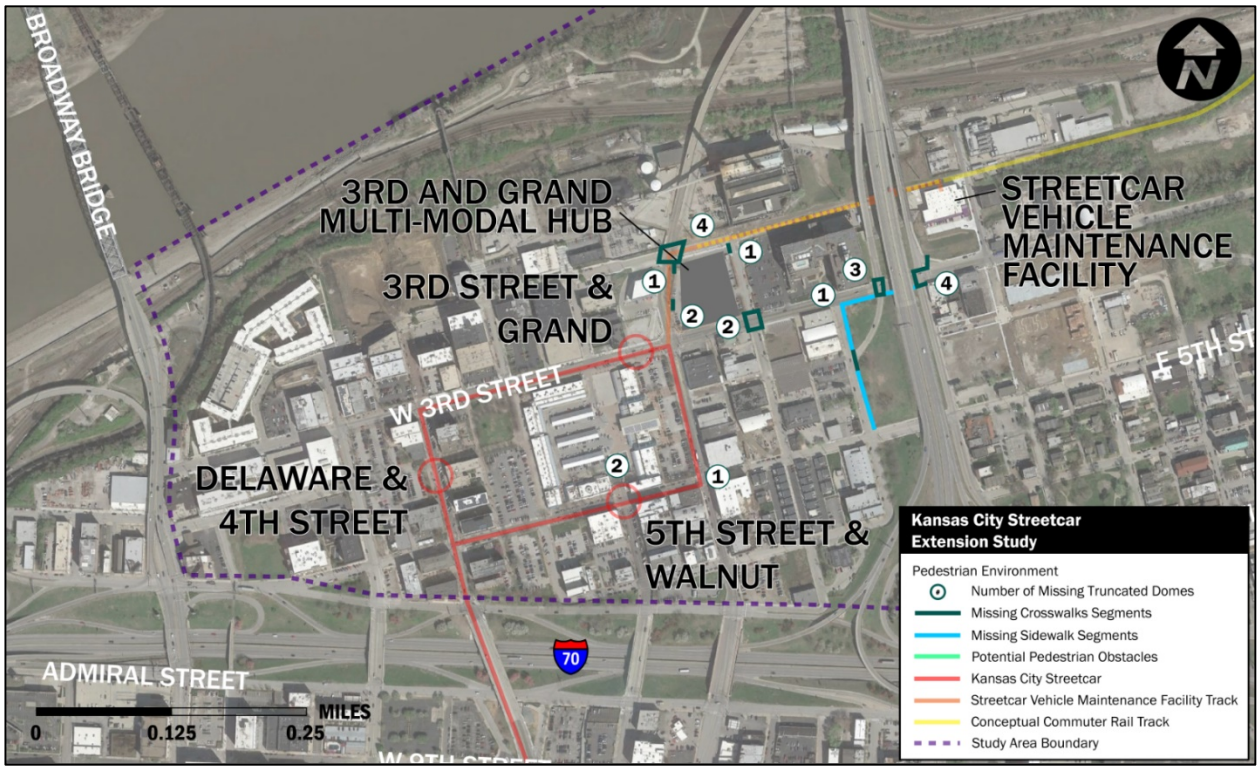
The field review of multi-modal connectivity to/from the riverfront looked closely at the existing conditions of sidewalks and pedestrian amenities in the River Market and the Riverfront areas and how these two areas are connected for those on foot or in a wheelchair. Generally, the River Market has strong sidewalk connectivity. City streets in this district are in a grid, and most have sidewalks on both sides of the street. The only areas where sidewalks are absent are along the south side of 3rd Street from Cherry Street to Locust Street, under the HOA Bridge, and along the east side of Locust Street from 3rd Street to 5th Street. Sidewalk pavement condition is generally good, with some localized areas that need pavement replacement.

Street crossings, pedestrian ramps, and pavement markings are central to providing safe interaction between pedestrians and automobile traffic. Throughout the River Market area, there are a wide variety of curb ramps with truncated tactile domes that are ADA compliant and marked crosswalks. All intersections along the existing streetcar alignment were reconstructed as part of the streetcar project. This reconstruction included fully ADA-compliant pedestrian amenities on all corners of the intersections where the streetcar line operated. These improvements included audible pedestrian push-button signal crossing, curb ramps with truncated domes, and striped crosswalks.

Outside of the streetcar alignment, there are many intersections that have street crossing deficiencies. Figure 21 below calls out many of the identified issues related to crosswalks and pedestrian curb ramps. The circled numbers indicate intersections where curb ramps exist, but without truncated domes to alert those with visual impairments that they have reached the edge of the street or driveway. Many of the corners with missing truncated domes are located around the 3rd and Grand park-and-ride facility and the Cold Storage Apartments.

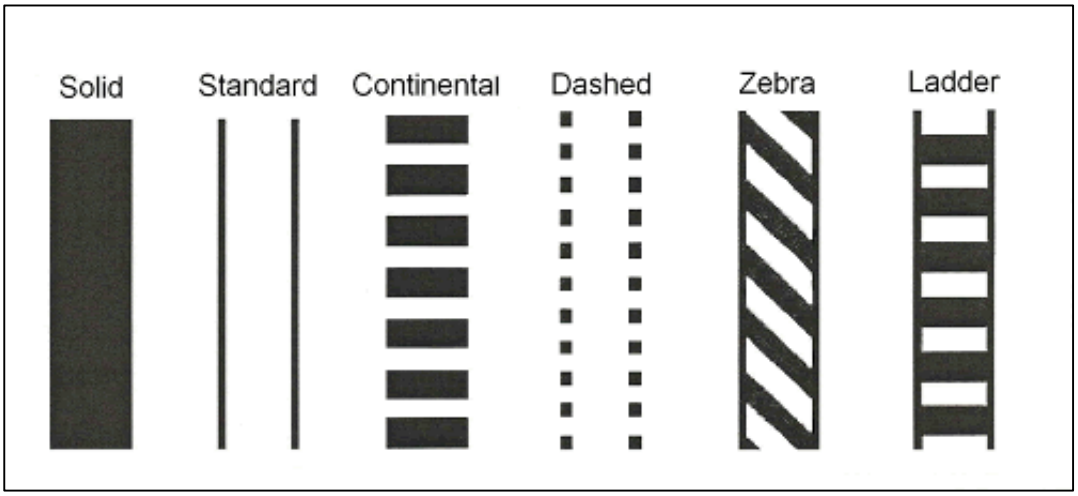
Figure 21 also notes the intersection or specific legs of an intersection where crosswalks are not striped. Again, many of these unmarked pedestrian street crossings are located around the 3rd and Grand area. There are three intersections that have multiple issues: 2nd and Grand, 3rd and Oak, and 3rd and Cherry/Locust (under HOA Bridge). One location where truncated domes are missing is at the main entrance to the City Market at 5th and Walnut. Along the brick paved sidewalk at the driveway, there is a painted yellow stripe to mark the outer extent of the driveway into the River Market, but no tactile strip is present to alert pedestrians with visual impairment that the driveway exists.

Figure 21 River Market Pedestrian Connectivity Existing Conditions



Where crosswalks contain striping, there is a lack of consistency with design and placement. Some intersections use the standard two parallel white lines to denote the pedestrian path, while others use "piano keys" or continental white bars. The ladder-marked crosswalk is also used in the River Market area. Figure 22 below illustrates typical crosswalk markings. Throughout the River Market area, many of the painted crosswalks are faded and in need of reapplication with reflective paint.

Figure 22 Typical Crosswalk Marking Types



Source: Federal Highway Administration

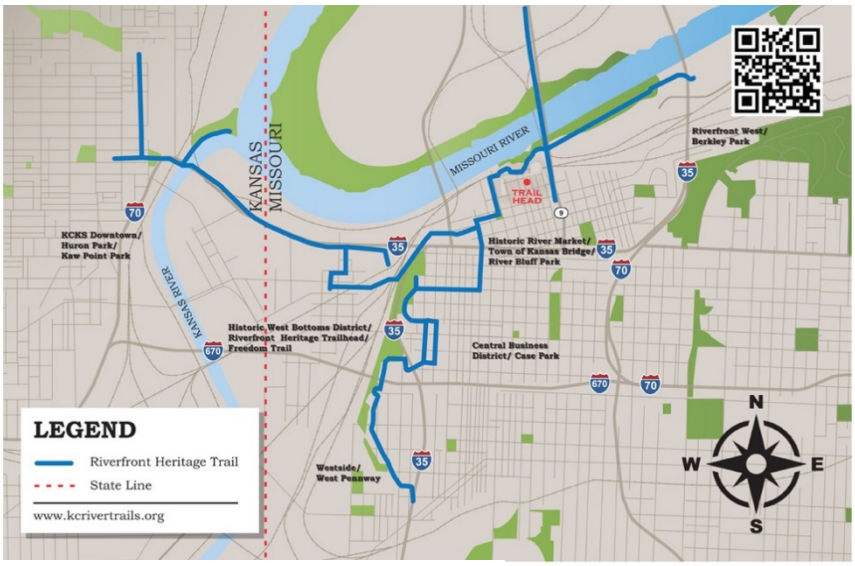
4.4.3 Bicycle Amenities and Connectivity

As noted earlier, the River Market and Riverfront areas are excellent environments for active transportation, specifically cycling. Between the Riverfront, the River Market and the Columbus Park areas, numerous bicycle amenities make cycling safe, attractive, and comfortable for riders of varying experience

levels.

The 3rd Street corridor between Delaware and Cherry form a central cycling corridor for the overall area. This portion of 3rd Street has nearly continuous striped bicycle lanes for eastbound and westbound cyclists, with 3rd Street eastbound from Delaware to Grand being marked with sharrows. A B-Cycle bicycle sharing station is located at the southwest corner of the KCATA's 3rd and Grand park-and-ride facility and allows for greater cycling in the area.

Figure 23 Riverfront Heritage Trail

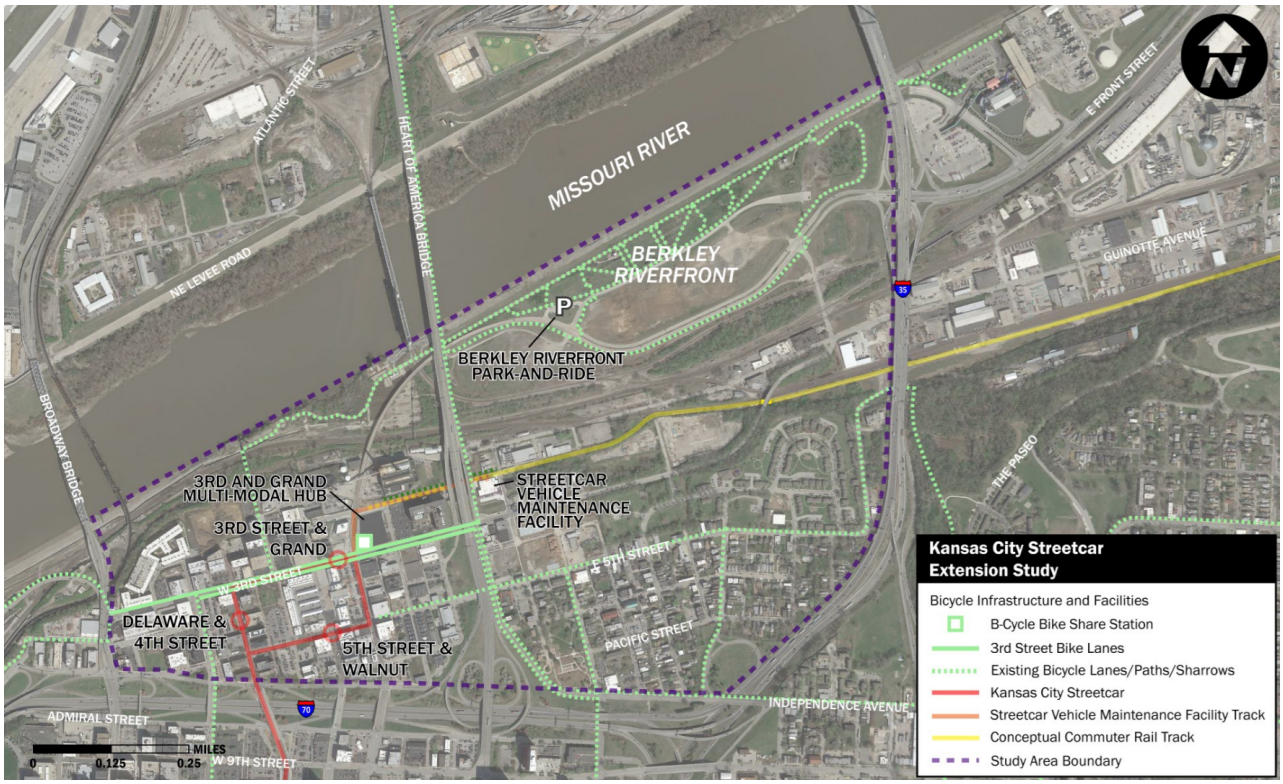


Source: http://www.kcrivertrails.org/trail.htm

The Riverfront also has excellent facilities for cycling. The Riverfront Heritage Trail system is approximately 15 miles of paved trails and signed bicycle and pedestrian routes that connect historic portions of the Kansas City region dating back to the Louis and Clark expedition. The Riverfront Heritage Trail links Kaw Point in Kansas City, Kansas, to the West Bottoms and into the River Market and beyond to the Riverfront area. Connections are also made to the Central Business District and Penn Valley Park. In the Riverfront Extension study area, this trail connects via the Town of Kansas Bridge, as described earlier. The concrete paved trail curves from the base of the Town of Kansas Bridge east through the former Port of Kansas City, then under the Armour-Swift Burlington (ASB) Bridge and HOA Bridge by way of a switchback ramp then continues east along the levee to I-35. The Riverfront Heritage Trail system also includes a north-south bicycle and pedestrian connection over the Missouri River on the east side of the HOA Bridge. The Riverfront Heritage Trail has good maps and wayfinding signage place along the trail, as well as several public art installations.

This trail, using the Town of Kansas Bridge, is currently the primary connection to the Riverfront area from the River Market. Cyclists use the Grand Boulevard Bridge – riding in and with vehicular traffic – but this route is not formally designated as a bike route. The limited lane widths and lack of shoulders on the Grand Avenue Bridge make this route undesirable for less-experienced riders. Access to the riverfront is also possible on a bicycle using NE Industrial Trafficway and Lydia to reach the east side of the Riverfront area, but this route requires crossing four railroad tracks and is blocked by freight trains on a daily basis.

Figure 24 Bicycle Amenities in River Market/Riverfront Area



A broader view of the study area shows good bicycle connectivity with many signed bike routes through the surrounding neighborhoods, as seen in Figure 24. In the Columbus Park neighborhood, bicycle routes are signed along 5th Street, Cherry, Charlotte, and Troost. In addition, a new connection was opened under I-35 at 2nd Street between Columbus Park and Cliff Drive/Kessler Park.

4.4.4 Transit Connectivity

The River Market and 3rd and Grand areas are well served by public transit, as seen in Figure 25 Transit Routes in the River Market and River Front. This area is a developing hub where several transit service types interact, including streetcar, local bus, and BRT. The adjacent parking lot is owned and operated by KCATA and accommodates 193 free parking spaces for transit riders. Transit connections are made along 3rd Street.

This location is a layover point for several KCATA routes. The layover point includes an operator restroom facility, provides operators with short breaks, and permits schedule recovery. Connection to the streetcar from the 3rd and Grand park-and-ride can be made at the center island platform stop on 3rd street, west of Grand.

Today multiple routes come together at 3rd and Grand and operate through the River Market and/or Riverfront areas. A summary of bus routes and their operational characteristics is outlined in Table 3 below.

Table 3 Bus Transit Service in River Market / Riverfront

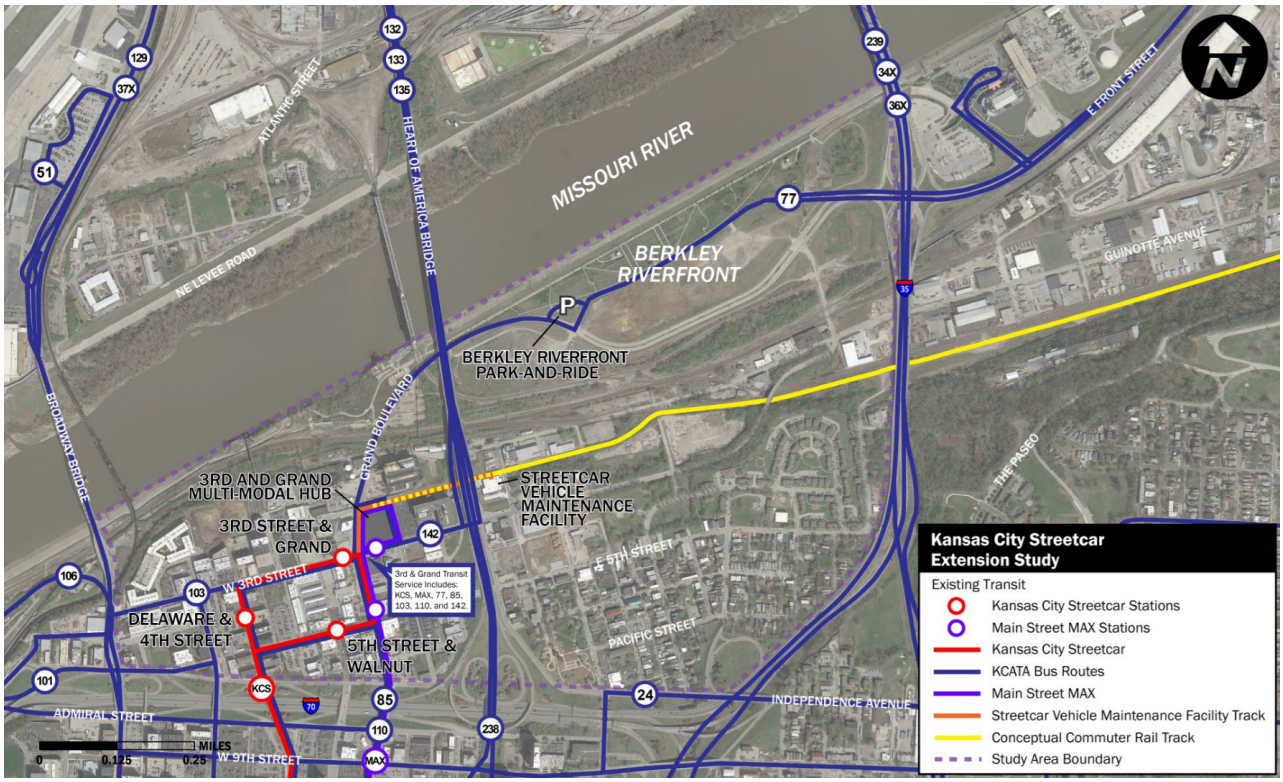
	Weekday					Saturday					Sunday				
	Hours	Headway				Hours	Headway				Hours	Headway			
Route		AM	Midday	PM	Nights		AM	Midday	PM	Nights		AM	Midday	PM	Nights
Main St. MAX	4:00a - 1:00a	10	10	10	15	5:00a - 1:00a	15	15	15	30	6:00a - 12:30a	30	30	30	30
77 - Casino Cruiser	5:30a - 12:30a	60	60	60	60	5:30a - 12:30a	60	60	60	60	5:30a - 10:30p	60	60	60	60
85 - Paseo	5:00a - 12:00a	30	30	30	60	5:15a - 12:00a	60	60	60	60	7:15a - 11:00p	60	60	60	60
103 - Fairfax	5:30a - 7:30p	60	60	60	60										
110 - Woodland / Brooklyn	6:45a - 6:15p	60	60	60											
142 - North Oak	5:00a - 11:30p	20	60	20	60	6:30a - 11:30p	60	60	60	60	8:30a - 11:30p	60	60	60	60

The KC Streetcar operates seven days a week and its hours of operation vary by the day of week. Streetcars maintain approximately 10 minute headways during the morning and afternoon peak periods, and 12 to 18 minute headways in the midday and night hours. Hours of the streetcar operation are:

- Monday-Thursday: 6:00a – 12:00a
- Friday: 6:00a – 2:00a
- Saturday: 7:00a – 2:00a
- Sunday: 7:00a – 11:00p

The 3rd and Grand properties (both northwest and northeast quadrants) have plans to be developed into a multi-story commercial office development with ground floor retail within the next two to three years. When the new developments are complete, the plans call for transit connectivity to be maintained on-street in much the same way it operates today. But the development plans are still fluid and may be modified as they progress.

Figure 25 Transit Routes in the River Market and River Front



4.5 Recommendations to Improve Multi-modal Connectivity for Streetcar Expansion

After reviewing the multiple plans related to connectivity in the River Market and Riverfront areas, as well as issues in need of improvement noted from the existing conditions review and inventory, there are several recommendations that would improve multi-modal connectivity with the extension of the streetcar.[5]

A direct pedestrian and bicyclist route to the riverfront would greatly improve riverfront accessibility.

4.5.1 Recommendation #1: Create a Direct Pedestrian and Bicyclist Route to Riverfront

Pedestrian and bicycle connectivity would be greatly improved with the construction of a new and direct multi-use trail from 2nd and Grand to the riverfront. This new amenity would provide safe accessibility between the River Market and Riverfront areas by separating cyclists and pedestrians from auto and truck traffic on the bridge. As adaptations to the Grand Avenue Bridge are investigated to accommodate future streetcar use, planners and engineers should determine if a multi-use trail facility could be added to the existing structure. If another alignment for streetcar connection to the Riverfront is found to be more feasible, bicycle and pedestrian accommodations should be included in the design of that new structure to carry streetcars, cyclists, and pedestrians to the riverfront area.

[5] It should be noted that the streetcar expansion and multimodal improvement can proceed separately and independently of each other with only minor coordination.

4.5.2 Recommendation #2: Fill in Gaps in Sidewalk Network

Figure 26 Missing Sidewalk on 3rd Street

Figure 27 Google Maps of 4th Street Diagonal

Overall, the River Market area has a well-developed sidewalk network, but gaps in the network do exist in isolated areas and should be constructed to fully connect the pedestrian pathways in the district. Specifically, new sidewalk is needed along the east side of Locust Street from 5th Street to 3rd Street – a popular dog park adjacent to Locust Street has a high demand for complete pedestrian amenities at this location (Figure 26). Another gap in the sidewalk network that should be addressed is along the south side of 3rd Street from Locust, under the HOA Bridge to Cherry Street (Figure 27).

To help improve safety at this location, KCMO should also explore the potential of closing the 4th Street diagonal cut-through extending from the southbound off-ramp from Missouri Highway 9. Vacating this street would allow for an extended and continuous park/greenspace and remove a street crossing where pedestrians and cyclist may conflict.

4.5.3 Recommendation #3: Pedestrian Safety Improvements

The River Market and Riverfront areas are experiencing higher levels of traffic – especially on weekends – since the opening of the KC Streetcar. More cars, trucks, and transit vehicles (buses, streetcar) are operating throughout the River Market area, especially in and around the 3rd and Grand intersection. This increased activity raises the need for enhanced safety improvements for pedestrians and should include increased awareness of pedestrian pathways to all drivers. Because marked crosswalks throughout the River Market are currently inconsistent, it is recommended that all major intersections be marked with consistently with ladder-striping crosswalks and that these be used throughout the River Market and Riverfront areas. Specifically, four intersections should be addressed:

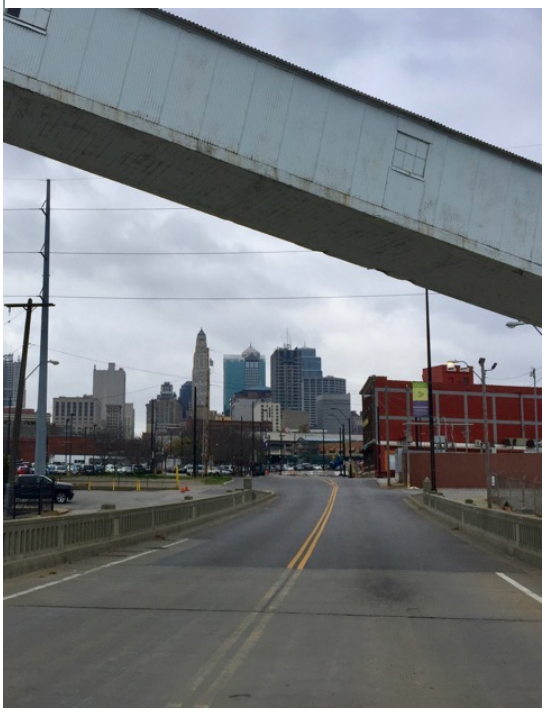
- 2nd and Grand Intersection
- 3rd and Oak Intersection

- 3rd and 4th Street/Off-ramp Intersection
- 3rd and Cherry Intersection

Other safety improvement recommendations include the consistent application of truncated tactile domes on all pedestrian curb ramps. Specifically, two areas should be addressed and include the installation of tactile warning strips to provide visually impaired pedestrians a warning that they are entering a busy drive lane. They are:

- The main entrance to the City Market at 5th and Walnut
- The main entrance/exit to the City Market at 3rd and Walnut

Figure 28 Grand Avenue Bridge (looking south) - no sidewalks.



4.5.4 Recommendation #4: Expand System of On-Street Bike Lanes and Bike Share

Today, on-street bike lanes exist along Cherry Street in the Columbus Park neighborhood and along 3rd Street in the study area. Several other streets in the River Market and Riverfront areas are signed as designated bike routes, but offer limited separation or protection from auto traffic.

Where physically possible, the system of on-street bike lanes should be expanded. On streets with limited right-of-way and width, sharrow markings should be used to inform drivers that they are to share the roadway with cyclists on priority bike routes.

KCMO is currently updating its *Bicycle Master Plan*. As detailed planning for streetcar system expansion advances, the Streetcar Authority, KCATA, and Port KC should engage with KCMO's Planning Department as the new *Bicycle Master Plan* is developed. Improved bicycle facilities will extend the overall reach of the streetcar system beyond the typical quarter-mile walk-shed for transit access. As the Riverfront area continues to be developed, roadways in the area should include on-street bicycle lanes to provide safe connectivity to the River Market and the Central Business District.

With residential development expanding in the Columbus Park and the Riverfront areas, expansion of the B-Cycle bike share network should be examined. A new B-Cycle station in both Columbus Park and the Riverfront areas would provide another convenient mobility option to interconnect these neighborhoods to the greater downtown area. Where possible, new B-Cycle stations should be collocated with or located near streetcar stations or other high-use transit stops.

4.5.5 Recommendation #5: Improve Wayfinding and Streetscapes

Connectivity in the study area could be improved with refreshed and expanded wayfinding for drivers, pedestrians, and cyclists. Currently, much of the wayfinding signage is auto-oriented. More pedestrian-level wayfinding amenities should be developed and deployed at key locations and along busy corridors in the River Market to help visitors move throughout the district. As the Central Business District (CBD)

recently improved its wayfinding, the study area's wayfinding should reference and be consistent with the CBD's .Wayfinding maps and signage should allow cyclist and pedestrians to quickly and intuitively get their bearings and establish clear pathways to major destinations.

Successful wayfinding systems integrate technology through apps, QR codes, maps, and amenities for sharing experiences. These features could elevate wayfinding to a destination in this area and should be investigated.

Figure 29 Bicycle Wayfinding Example

Pedestrian/bicycle-level wayfinding should describe distance between major destinations or landmarks in terms of walk time, as opposed to only miles or blocks (See Figure 29 Bicycle Wayfinding Example). Access to streetcar stations, bus stops, B-Cycle stations, park-and-ride, car share, etc., should be identified. Auto-oriented wayfinding should also denote routes to key destinations, as well as public parking locations, transit stations, and other mobility amenities. Creating Experiences related to history, places, and exercise can also be incorporated into wayfinding to create additional benefit to users.

The Rivermarket Business Association, KCMO, KCSA, KCATA and Port KC should begin a process to plan, develop and implement a new system of multi-modal wayfinding maps and signage that will make the River Market, Riverfront and Columbus Park areas more connected and easier to navigate.

4.5.6 Recommendation #6: Transit Station Location and Seamless Transfers

Careful consideration must be given to the location and design of new streetcar stations and platforms and their integration to the existing bus/BRT services. These bus and streetcar modes should coordinate and locate stations in close proximity (if not sharing platforms) to minimize commuters transfer steps. Currently, the Main Street MAX terminus station is located mid-block along 3rd Street between Oak and Grand and is about 415 feet from the existing streetcar stop on 3rd St (west of Grand). If the MAX station were to move closer to the intersection of 3rd and Grand, this distance would be shortened by roughly 150 feet, lowering transfer times and making both systems easier to use. As planning for streetcar stations and redevelopment of the 3rd and Grand transit hub progress, efforts should be made to locate primary, high-volume transit stations, such as streetcar and MAX, in close proximity, and to limit street crossings to promote ease of transferring between transit modes.

5 Public Engagement

5.1 Face-to-Face, One-on-One Meetings

In April 2017, the Team's public involvement specialists met with about a dozen Riverfront project stakeholders. Overall, there was large support for the project and for the extension. Most of the stakeholders understood the purposes for extending the route. When the decision process was discussed regarding the preferred route, all understood the methodology and most agreed with the preferred route.

The stakeholder comments have been reorganized into several broad categories below. Several of the bulleted items appear redundant, but have been included to note several views of support or comment.

The memos to file regarding the individual discussions are attached as Appendix 2 Public Involvement One-to-One Stakeholder Discussions.

Feedback of the stakeholders has been grouped by topical areas below:

Figure 30 KC Streetcar at 3rd and Grand.

5.1.1 Operations/Routes Public Comments:

- Streetcar system needs shorter headways.
- Supports idea of a multi-modal hub at riverfront.
- Shorter headways would be better.
- Simple, fast operations are preferred.
- Alternate 3 seems preferable (Short Loop)
- Would prefer the route run on the river side.
- Overall supportive of the extension and the "simple system" to moving streetcars to the Riverfront area and back.
- "Simple system" makes the most sense (i.e., one line that goes from 3rd & Grand to Riverfront, then back to 3rd Street to complete River Market loop).
- Supportive of a riverfront extension and using a "simple system" to integrate the Riverfront stop.
- Supportive of a riverfront extension. Grand Blvd viaduct options seem to make the most sense.
- A "simple system" in terms of operations made the most sense to both.
- Prefer Alternate Route #1 – Grand Boulevard viaduct that ends with a switch and station stop on the riverfront
- If Grand Blvd viaduct is used, a pedestrian should be part of the plan.

5.1.2 Parking Public Comments:

- If City can reduce parking requirements development – require one space per unit, instead of two.
- The starter-line has put pressure on off-street parking in the River Market.
- The majority of the tenants have more than one car. This is challenging because the market rate for those units doesn't support building two parking spots per unit.
- Downtown line has had a negative impact on the park-and-ride at 3rd and Grand.
- While switching all lots to paid parking is necessary, it does increase the cost of running businesses.
- Eliminate free parking in the River Market.

Stakeholder input supported an efficient route that addressed and improved parking issues and provided pedestrian and bicycle access to the riverfront.

- Parking in the River Market has become more strained since the streetcar and would like to see a shared parking option on the riverfront.

5.1.3 Development Public Comments:

- They pursued the site at 3rd and Grand Blvd because of the streetcar.
- Extending the streetcar to the riverfront will create even larger crowds in the River Market. Turning the Riverfront into a node creates greater opportunity for the River Market.
- Streetcar is changing the way retail is viewed in River Market – more food, more small-scale retail.
- City Market tenant sales are up and have been on continual incline.
- "The farther it goes, the better."
- Since the completion of the Downtown starter-line, the City Market has continued to see an increase in foot-traffic, tenant sales and evening traffic. Sales during streetcar construction were up 18%, which Deb attributes to a natural growth trajectory and the added visibility the Market received during media coverage of streetcar construction.
- An extension to the riverfront is good for the River Market.
- Planning process should ensure extending in any direction is still feasible (i.e., to Isle of Capri or North Kansas City).

5.1.4 Walking/Biking Public Comments:

- Riverfront Heritage Trail (Town of Kansas) connection is used by those who are aware of it, but more awareness is needed.
- Heritage Trail is well-utilized, but not convenient – especially for people with young children as there aren't any public restroom facilities.
- The Columbus park neighborhood residents have a walkable community and would like a short connection to the riverfront (Town of Kansas bridge is far and Lydia Ave can be blocked).
- Would like to see a Heart of America connection, but sees where Grand Blvd viaduct could work, if a walkway is added to make it a safe connection for bicyclists and pedestrians.
- Supportive of planning an additional pedestrian connection, potentially via Grand Blvd viaduct.
- It was understood how a streetcar connection between Columbus Park and the Riverfront would be cost-prohibitive, but stressed the importance of advancing a pedestrian connection.

5.2 Open House

On May 31, 2017, the Team hosted a public meeting to review and discuss the potential alignments for the extension. The meeting began with reviewing the purpose and need statement of the Riverfront

Extension, and then provided initial facts and details of the Starter Line's successes. The connection was drawn between the two alignments.

Figure 31 Public Meeting on May 31, 2017.

Subsequently, the public meeting reviewed the different considerations that were reviewed with each of the six potential alignments. The considerations included cost of a new bridges, track length, grade, safety, timing/schedule, noise, and usability.

The 3rd Street and 5th Street alignments were reviewed, and a grading of each of the considerations was provided. The ratings for these alignments varied from "Not Feasible" to "Challenging". Neither of these alignments included considerations that were deemed "Preferred".

The Short Loop and Mid-River Stub End track were also reviewed. For the Short Loop, six out of seven criteria were deemed "Preferred," and one (length of track) was rated "Challenging". The Mid-River Stub End alignment was presented as the preferred alignment. This alignment included "Preferred" on all of its categories.

Figure 32 Public Meeting with partial view of presentation boards.

Bike, pedestrian, and bus connections were also reviewed at this meeting. For bike and pedestrian, the Study recommended that dedicated path be provided for these users along the Grand Avenue Bridge. The bus recommendations included a transfer station between the streetcar and buses on the riverfront.

Near the conclusion of the tour of the boards, we solicited and obtained public comment regarding the alignments and information provided.

The presentation boards for the public meeting are included in Appendix 3.

5.3 On-Board Survey

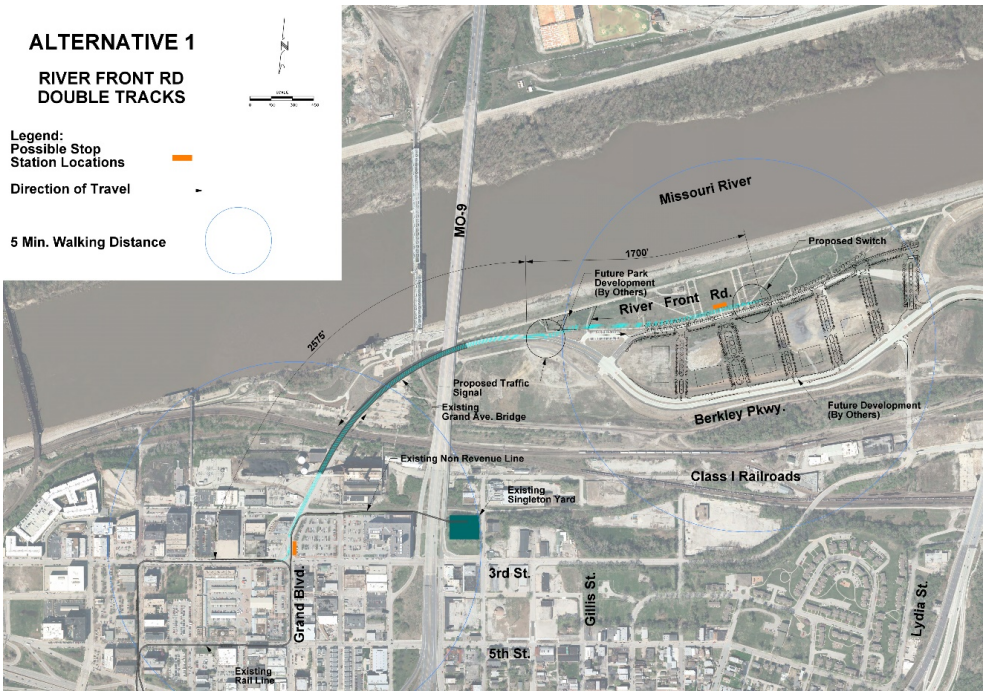
In May 2017, about 80 streetcar riders were asked about their use of the streetcar. These surveys supported previously held assessments regarding ridership and support of the streetcar. The summary of that survey is included in Appendix 6.

6 Conceptual Operations Plan

6.1 Conceptual Operating Plans for Alternatives 1 and 3

Alternatives 1 and 3 are the mid-river alternative and the loop alternative (both using the existing Grand Boulevard Bridge).[6] This section describes the conceptual operating plans for Alternatives 1 and 3, and includes estimated travel times, additional vehicle requirements, proposed service spans and frequencies, and estimated revenue hours and miles for the proposed streetcar extensions. Descriptions and diagrams of the alternatives are shown below.

Figure 33 Alternative 1 - Stub End Mid-River Alignment



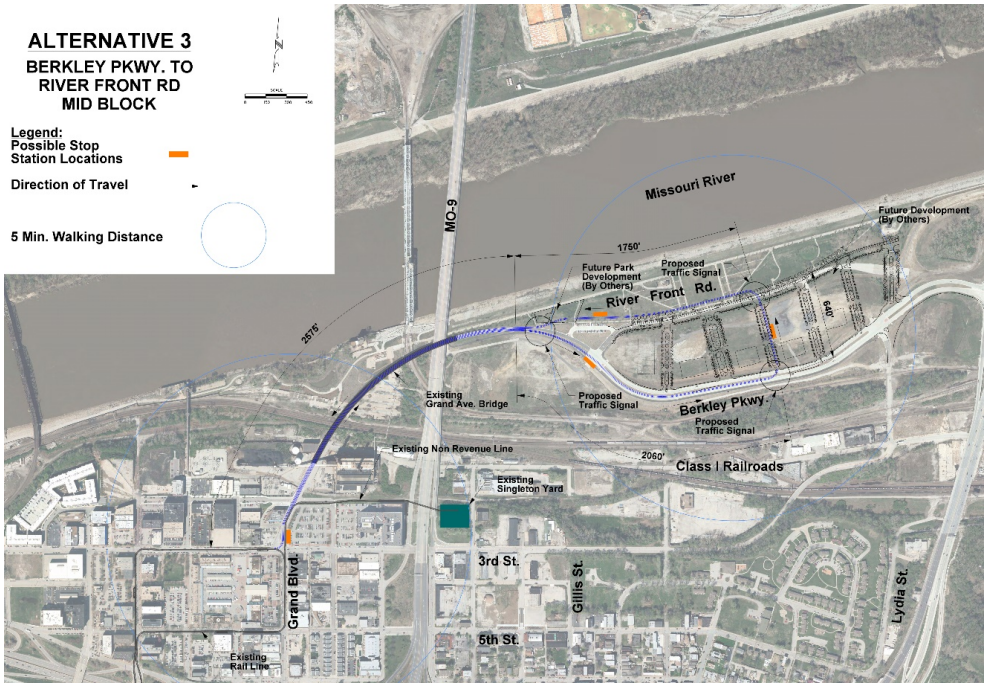
6.2 Operations Model Development

The first step in developing the operating plans was to develop travel-time estimates for the two alternatives. An operations model was developed for the existing streetcar alignment and then applied to the alternatives to determine the additional travel time that would be needed to extend the streetcar alignment. The operations model incorporated data and assumptions from several other sources, including the existing operating plan for the Kansas City Streetcar, the *2012 Transportation Technical Report of the Kansas City Downtown Streetcar Project*, and technical vehicle specifications for the CAF Vehicle (KC's vehicle) from the Cincinnati Streetcar. The data sources and assumptions are described in greater detail below.

[6] The Public involvement meeting referred these two Alternatives 3B and 3A, respectively.

- On Main Street (from Union Station north to the intersection of Delaware and 5th Street), the maximum speed of the streetcar vehicle was assumed to vary between 25 mph and 35 mph. On all other segments, the maximum speed was assumed to be 25 mph. While these were the maximum allowable speeds in the model, the streetcar vehicles were only estimated to attain these speeds on a handful of segments in the corridor. In most cases, the maximum speed attained on a segment was determined by the segment length (between stations and intersections, stations and stations, or intersections and intersections), and the acceleration and deceleration rates of the vehicle.

Figure 34 Alternative 3 Short Loop



- On 90-degree curves, a constant speed of 7 mph was assumed.
- The vehicle was assumed to decelerate at a rate of 3 miles per hour per second (mphps) from the maximum speed attained on the previous segment to a complete stop at every station, intersection, and 90-degree curve. Similarly, the vehicle was assumed to accelerate from a complete stop at a rate of three mphps from every station, intersection, and 90-degree turn.
- Intersection delay times were assumed to be equivalent to the 2015 Streetcar Alterative ("Build" Alternative) intersection delay times shown in the *2012 Transportation Technical Report*. The delay time at each intersection was calculated as the average of the AM and PM peak delay for each signalized and unsignalized intersection.
- New intersections included as part of the streetcar extensions were assumed to have an LOS C and were assigned a delay time equivalent to the average of all other LOS C intersections on the existing streetcar alignment. The delay time for new signalized intersections was calculated as an average of all existing LOS C signalized intersections, and the delay time for new unsignalized intersections was calculated as an average of all existing LOS C unsignalized intersections.
- In Alternative 1, a signalized intersection was assumed to be located at the point where the tracks diverge from Riverfront Road and enter the dedicated guideway to the north of River Front Road.

In Alternative 3, signalized intersections were assumed to be located at the proposed intersections of the new road segment with River Front Road and Front Street, and at the point where the westbound and eastbound tracks diverge on Riverfront Road.

- The dwell time at all existing and proposed stations was assumed to be 15 seconds.
- A minimum layover time of six minutes was assumed at Union Station. For Alternative 1, a minimum layover time of two minutes was assumed at the proposed River Front Road terminal station to allow for the streetcar to switch tracks. For Alternative 3, the minimum layover time at the proposed Riverfront Road station was assumed to be one minute.

6.3 Travel Time Estimates

The round-trip travel time estimates generated from the operations model are shown in Table 4 below.

Table 4 Round-Trip Travel Time Estimates

	Round-Trip Running Time	Total Layover Time	Round-Trip Travel Time (including layover)
Existing KC Streetcar	28.2 min	7 min	35.2 min
Alternative 1	33.5 min	8 min	41.5 min
Alternative 3	35.2 min	7 min	42.2 min

The existing streetcar alignment was estimated to have a round-trip travel time of 35.2 minutes, including a six-minute layover at Union Station and a one-minute layover at the River Market North (3rd and Grand) station, which aligns closely with the Kansas City Streetcar's existing schedules for peak period trips. The Alternative 1 alignment was estimated to have a round-trip travel time of 41.5 minutes during peak periods, including a four-minute layover at Union Station and four-minute layover at the River Front Road station. The Alternative 3 alignment was estimated to have a round-trip travel time of 42.2 minutes during peak periods, including a four-minute layover at Union Station and a three-minute layover at the River Front Road station.

In summary, there is less than a one minute difference between the travel time estimates for Alternatives 1 and 3. Both alternatives are estimated to require approximately seven more minutes of travel time during peak periods than the existing streetcar alignment.

6.4 Conceptual Ridership due to the Riverfront

In late 2016, ECONorthwest completed a study[7] for the Portland Streetcar of the relationship between housing development and streetcar ridership.

In the study of housing construction and streetcar ridership over the past 15 years, ECONorthwest found that each new housing unit built along the streetcar corridor added one new regular streetcar rider per

[7] https://storage.googleapis.com/streetcar/files/Portland-Streetcar-A-Tool-for-Better-Cities.pdf

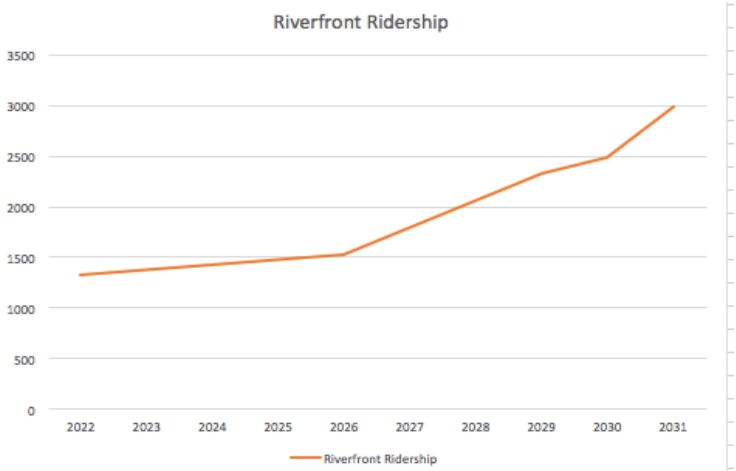
day - a one-to-one correlation between housing units and additional riders.

In 2022 when the Riverfront Extension is fully operational, the Riverfront will have an additional 1,300 housing units. This construction is expected to conservatively increase to 1,500 in 2026 and nearly 3,000 in 2031

With this housing unit growth and based on the Portland ECONorthwest study, the ridership of the streetcar due to this extension is estimated to be an additional 1,300 riders per day and will increase to nearly 3,000 riders per day due to this extension in 2031.

6.5 Conceptual Operating Plans

Figure 35 Riverfront Ridership Growth



The operating plan for the existing Kansas City Streetcar is illustrated in Appendix 9 Operating Plans

Table 21, beginning on page 87. The streetcar is generally operated from 6AM-12AM Monday through Thursday, 6AM-2AM on Friday, 7AM-2AM on Saturday, and 7AM-11PM on Sundays and six holidays per year. Aside from on Sunday mornings before 9AM and evenings after 6PM, the streetcar is operated using three vehicles during all time periods. Because the streetcar's running times vary throughout the day to adjust for varying levels of traffic and boarding and alighting activity, the scheduled headways also are variable. During off-peak periods, when passenger demand is likely lowest, the streetcar operates every 10 minutes on a 30-minute cycle time. During peak periods, the headway is stretched to 12 minutes to accommodate a 36-minute cycle time.

Ideally, the streetcar would operate at higher frequency during periods of peak passenger demand and lower frequency when demand is reduced, or at a constant headway during all time periods. However, this is not currently possible given the available fleet. While not ideal, the stretched headways likely have only a small impact on passengers as long as the streetcar is not operating at or over capacity during peak periods. The impact of the stretched headways is mitigated by the lack of published schedules, which encourages passengers to rely on real-time information and reduces waiting time at stations.

Based on the peak-period travel time estimates for Alternatives 1 and 3, it would be necessary to continue to operate the streetcar with stretched headways during peak periods in order to maintain existing service levels with only one additional vehicle. As shown in Table 22 and Table 23, the operating plans for Alternatives 1 and 3 would maintain the existing service spans and headways during all time periods. During off-peak periods, the streetcar would be operated every 10 minutes with four vehicles on a 40-minute cycle time. During peak periods, the streetcar would be operated every 12 minutes with four vehicles on a 48-minute cycle time.

Additionally, there is significantly more slack in the proposed 48-minute cycle time than in the existing 36-minute cycle time, which presents some options for providing a slightly higher level of service with the

four vehicles. The streetcar could potentially be operated every 11 minutes during peak periods with a 44-minute cycle time, or the periods when the streetcar is operated every 10 minutes could potentially be expanded, given that the estimated peak travel times for the streetcar extensions are only two minutes longer than the 40-minute cycle time that is required to operate every 10 minutes. Either of these options would generate a small increase in revenue miles of service over the proposed plan, but would require the same number of vehicles and revenue hours and would therefore result in only a small increase in operating costs over the proposed plan.

Existing and proposed operating plans are included in Appendix 9.

7 Integrating Bus and Streetcar Services

This section describes the recommendations for integrating bus and streetcar services near the existing park-and-ride lot at 3rd and Grand, including opportunities for improving bus-streetcar connections as the park-and-ride lot is primed for development. These opportunities are included at a conceptual level and do not have costs estimated or included in the streetcar extension estimate.

7.1 Existing Bus Operations at 3rd and Grand

In addition to being a park-and-ride lot, the parcel on the northeast side of 3rd Street and Grand Boulevard serves as the northern terminal station and layover point for the Main Street MAX BRT service and several other routes in the Ride KC system, including:

- Route 110 Woodland/Brooklyn (renamed as Route 10 beginning July 2017)
- Route 85 Paseo
- UGT Route 103 3rd Street/Fairfax
- Route 55 Universities/Crossroads (beginning July 2017)

These routes utilize the park-and-ride lot as a turnaround location and layover point, traveling clockwise around the lot from Grand Boulevard to the north side of the park-and-ride lot, then south on Oak Street to return to 3rd Street, where four bus bays and the MAX station are located on the south side of the park-and-ride lot.

In addition, two other routes serve the park-and-ride lot mid-route:

- Route 77 Casino Cruiser serves the western side of the park-and-ride lot, with northbound and southbound stops located on Grand Boulevard just to the north of 3rd Street.
- Route 142 North Oak (renamed as Route 201 beginning July 2017) serves the south side of the park-and-ride lot. In the southbound direction, Route 142 stops at the bus bays on the south side of the park-and-ride lot. In the northbound direction, the nearest stop is located one block further east on 3rd Street, mid-block between Oak Street and Locus Street.

7.2 Recommendations for Integrating Bus and Streetcar Services

Currently the River Market North streetcar station, located just west of the intersection of 3rd and Grand along 3rd Street, is the nearest station to the park-and-ride lot. However, this station is proposed to be eliminated with the planned extension of the streetcar and would be replaced by a new, center platform station on Grand Boulevard, just north of the 3rd and Grand intersection. The new station location and the

planned development of the 3rd and Grand park-and-ride lot create an opportunity to consider how operations might be optimized at the site to improve streetcar-bus connections and increase transit demand.

7.2.1 Stop Locations

In general, the existing stop locations for routes serving the 3rd and Grand park-and-ride lot are well positioned for facilitating bus-to-streetcar transfers. Even from the farthest bus bay on 3rd Street, the walk between the bus stop and proposed streetcar station is less than 300 feet. This would be an improvement over the existing connection to the River Market North station, which is a longer distance and requires crossing the 3rd and Grand intersection. The existing stops for Route 77 are very well located for transferring to and from the streetcar, but may need to be moved further north along Grand Boulevard or to the south of 3rd Street if there is insufficient right-of-way to accommodate northbound and southbound bus stops and the new station in this section. The connection between northbound Route 142 and the streetcar could be improved by adding a near-side stop at 3rd and Grand (on Grand Boulevard to the south of 3rd Street), or relocating the existing northbound stop at 5th and Grand to a mid-block location closer to 3rd Street.

Figure 36 River Market North during Big 12 Basketball Tourney Week.

7.2.2 Third and Grand

The intersection of Third and Grand is a logistical challenge as it coordinates and impacts existing operations, new operations, streetcar station stops, safety, bus integration, new development, and special track costs. To extend to the Riverfront on the preferred alignment, the streetcar will “tie-in” at this location and then pass by the Vehicle Maintenance Facility and (current) non-revenue track. The Team reviewed items which included:

- Operation Flexibility - Use of the existing non-revenue track and converting into revenue track (reduce construction costs)
- Operations – ability to store the streetcar along the alignment and to stack streetcars if needed
- Safety – Pedestrian Crossings and interactions with vehicles
- Flow – Logical progression of pedestrian pathways – is it obvious where to catch the streetcar

- Bicycles – Are cyclists able to easily traverse the area
- Development – Is future development positively or negatively impacted
- Cost – How much expensive special trackwork material is required (e.g., switches and diamonds)

A summary of these findings was listed and graded for each of the possible track and station location combinations are listed Figure 39 below. Placing the station stop north of the intersection and in the center of the street included (regardless of track configuration) the four highest rated combinations. Alternative 2C (Figure 37 below) and 6C (Figure 38 below) were the two highest rated combinations. The difference between the two are:

- Alternative 2C has less operational maneuverability (still need to make the reverse move coming out of the VMF to put a car into service)
- Alternative 6C requires one more piece of special trackwork (one additional switch)

Figure 37 Alternate 2C at 3rd and Grand

Figure 38 Alternate 6C at 3rd and Grand

Figure 39 Scoring of Alternates at 3rd and Grand

Riverfront Extension

3rd Street and Grand Avenue Connection Alternatives and Stop Locations

Legend		
1	2	3
Negative/Less Positive Condition	Neutral/Existing conditions	Positive/Better Condition

Description	Name	Station Location	Uses Existing Non-Revenue Line	Store on rail line	Ped Safety	Pedestrian Flow	Bicycle Flow	Stop Config	Development Impact	Special Trackwork Config	Manuevering Ease	Total	Number of Negatives
NB: Existing Non-Revenue Track. SB: 25m Curve Connection	1A	NE Curb	3	2	3	2	1	2	2.5	3	2	20.5	1
	1B	SE Curb	3	1	3	1	1.5	1	2.5	3	2	18	3
	1C	N Center	3	3	2.5	3	2	3	0.5	3	2	22	1
	1D	S Center	3	2	2	2	2	1	1.5	3	2	18.5	1
NB: Existing Non-Revenue Track. SB: 20m Curve Connection	2A	NE Curb	3	2	3	2	1	2	3	3	2	21	1
	2B	SE Curb	3	1	3	1	1.5	1	3	3	2	18.5	3
	2C	N Center	3	3	2.5	3	2	3	1	3	2	22.5	1
	2D	S Center	3	2	2	2	2	1	2	3	2	19	1
NB: New Track & New Diamond SB: 20m Curve Connection	3A	NE Curb	1	3	3	2	1	2	2	0.5	1.5	16	3
	3B	SE Curb	1	3	3	1	1	1	2	0.5	1.5	14	5
	3D	S Center	1	3	2	2	1	1	2	0.5	1.5	14	4
Same at Alt 3 but with existing NB to WB curve removed	4A	NE Curb	1	3	3	2	1	2	2	2	1.5	17.5	2
	4B	SE Curb	1	3	3	1	1	1	2	2	1.5	15.5	4
	4D	S Center	1	3	2	2	1	1	2	2	1.5	15.5	3
NB: Existing non-revenue and VMF to NB Connection SB: 20m Curve Connection	5A	NE Curb	3	2	3	2	1	2	2	1.5	2	18.5	1
	5B	SE Curb	3	1	3	1	1.5	1	2	1.5	2	16	3
	5C	N Center	3	3	2.5	3	2	3	1	1.5	2	21	1
	5D	S Center	3	2	2	2	2	1	2	1.5	2	17.5	1
NB: Existing non-revenue and Crossover between VMF and SB. SB: 20m Curve Connection	6A	NE Curb	3	2	3	2	1	2	3	2	3	21	1
	6B	SE Curb	3	1	3	1	1.5	1	3	2	3	18.5	3
	6C	N Center	3	3	2.5	3	2	3	1	2	3	22.5	1
	6D	S Center	3	2	2	2	2	1	2	2	3	19	1

7.2.3 Layover Recommendations

While the existing arrangement at the 3rd and Grand site is probably the best possible scenario from a transit operations perspective, there was some consideration given as to whether the site would continue to be a viable layover location in the future given the planned development of the site. If KCATA is required to abandon the layover site, one possible alternative would be to extend the routes that currently terminate at the 3rd and Grand site north to a site near the proposed Riverfront Road streetcar station. This new terminal station would serve as the layover location and transfer point between the streetcar and bus routes.

This alternative was determined to be less than ideal, however, mainly due to the added travel time, mileage, and operational cost of extending the routes almost a mile beyond their existing terminus. Depending on the time of day, the extension to Riverfront Road could add anywhere from 5 to 10 minutes of travel time to the routes, which in most cases would require adding an additional vehicle to the route to maintain existing service frequencies.

The existing location of the MAX station on the south side of the 3rd and Grand site would be another impediment to extending the routes to the riverfront. The station, which was funded in part with federal dollars, presumably cannot be moved (or at least not without some difficulty or expense), but would not be convenient to serve if the Main Street MAX were extended to the north along Grand Boulevard.

Should the 3rd and Grand site be determined no longer viable as a layover location, it would be preferable

to locate a new layover location to the east of the existing site, potentially in the vicinity of the Kansas City Streetcar vehicle maintenance facility. This would allow the routes that currently terminate at the 3rd and Grand site to continue to serve the MAX station location when traveling in the westbound direction along 3rd Street. In the opposite direction, a near-side stop on Grand Boulevard (just south of the 3rd and Grand intersection) served by Routes 110, 85, and the Main Street MAX would facilitate connections to the new streetcar station. For eastbound Route 55 and 103 trips, either a near-side or far-side stop on 3rd Street would create a suitable connection to the new station.

8 Cost Estimates

8.1 Methodology

The financial cost of the streetcar is a priority data point for the go/no-go decision regarding the extension of the streetcar to the Riverfront area. To create a reasonable estimate based on pre-conceptual plans, the Team created assumptions about the alignment, power requirements, station stops, bridge costs, and special track work costs. These assumptions were based on preliminary engineering drawings indicating the need for special track work (e.g., switches, diamonds, etc.), and head hardened rail (for sharp curves), rules of thumb for items (e.g., spacing of OCS poles, types and locations of rail sections), and local historic unit costs.

To create the cost estimate, the preferred route was created with preliminary engineering drawings showing route length and alignment, connections to existing alignment, switches and special track work needs, and the length of structural work involved. Subsequently, finite numbered items were included in the estimate (based on the alignment) and include station stops and substations. Utility work and demolition work was assumed as was based on historic percentages for relocation and demolition.

The base estimate includes the cost to “just touch” the riverfront with track that extended just past the Grand Avenue bridge. Several alternates were included for the project. The first alternate extended the alignment to the mid-river location. Other alternate/add-on items include adding a park-and-ride lot and adding a bicycle/pedestrian bridge.

Above the construction costs, line items for project administration, engineering, construction management, and associated tasks were included in the project estimate.

All estimates are in 2017 dollars and have not been inflated for future years.

8.2 Capital Costs

As noted previously, the different alignments that were reviewed and/or estimated were:

- Alternative 1 – River Front Road Double Tracks (aka Mid-River Stub)
- Alternative 2 – Front Street Double Tracks
- Alternative 3 – Front Street to Riverfront Road Track Mid Block (aka Short Loop)
- Alternative 4 – Front Street to Riverfront Road Track (aka Long Loop)
- Alternative 5 – 5th Street to Lydia Street Double Tracks
- Alternative 6 – 3rd Street to Gillis Street Double Tracks

Graphics of these alignments appear in Section 3 Conceptual Alignment Plans.

In performing the cost estimates, it quickly became apparent that the cost of a new structure and the track-foot distance to reach a new structure were driving factors in the review of each of the alignment costs.

The base costs of each of these alignments are in Table 5. The detailed cost estimates are included in Appendix 7 Cost Estimates.

Table 5 Alignment Costs

Alternative 1	$28.5M
Alternative 2	$35.1M
Alternative 3	$34.2M
Alternative 4	$38.0M
Alternative 5	$57.8M (just touches riverfront)
Alternative 6	$36.5M (just touches riverfront)

8.3 Operating Cost Estimate

Annual operating statistics and peak vehicle requirements for the existing streetcar and potential extensions are shown in Table 6 below. These values are built off of the analysis provided in Section 6.5 Conceptual Operating Plans(see page 38) Based on the proposed operating plans, Alternatives 1 and 3 would require an increase of approximately 6,600 revenue hours per year to operate and one additional vehicle. Alternative 1 would require an increase of approximately 50,000 revenue miles annually, and the slightly longer Alternative 3 alignment would require an increase of approximately 60,000 revenue miles.

Table 6 Operating Statistics

	Annual Revenue Hours	Annual Vehicle Miles	Peak Vehicles
Existing	19,424	128,846	3
Alternative 1	26,034	178,870	4
Alternative 3	26,034	188,701	4

The Streetcar's existing operation has estimate the hourly operating cost of the streetcar to be $105 to $140 per operating hour. Given that the extension will require 6,600 operational hours, the annual cost of operating the extension is estimated to be in the range of $693,000 to $924,000.

9 Economic Development

This section of the report provides a summary of potential economic development benefits that could be derived from the decision to extend streetcar service and connectivity into the Riverfront area. For the purposes of this study, these economic development benefits are primarily derived from anticipated increases in land values and development densities. For comparative purposes, this section provides

substantiated data and projections for three alternative economic development conditions, including: (a) land values – present day, (b) potential land values without streetcar service, and (c) potential land values with streetcar service.

The report has been crafted in this manner to compare the anticipated differences in economic development performance of remaining developable land parcels in the Riverfront area. This reflects the nature of the area's progress from undeveloped land parcels, to an area benefiting from an initial phase of moderate density mixed-use development construction (including infrastructure improvements and incentives), to an urban district connected with streetcar service that could stimulate additional development interest, demand, density, and value. Conservative estimates for land valuations in each of these scenarios is utilized to illustrate the potential role that streetcar service can have in shaping the future for development of the Riverfront area.

Figure 40 Union Pacific Railroad and Pre-Parcel 1 and 2 Construction

While significant investment will be required to extend streetcar service into the Riverfront area, there is also significant opportunity to realize increased land valuations and development density for future development parcels. Kansas City's first phase of streetcar service has already provided economic development benefits for properties in close proximity to the starter line, including increased lease rates for residential apartments and commercial properties, and it is anticipated that extending streetcar service into the Riverfront area will produce similar results and opportunities. Finally, this section concludes with a summary of case studies from other streetcar cities with similar circumstances and resulting improved economic development conditions.

Figure 41 Looking in a northerly direction at the Flaherty and Collins construction on the riverfront (July 2017).

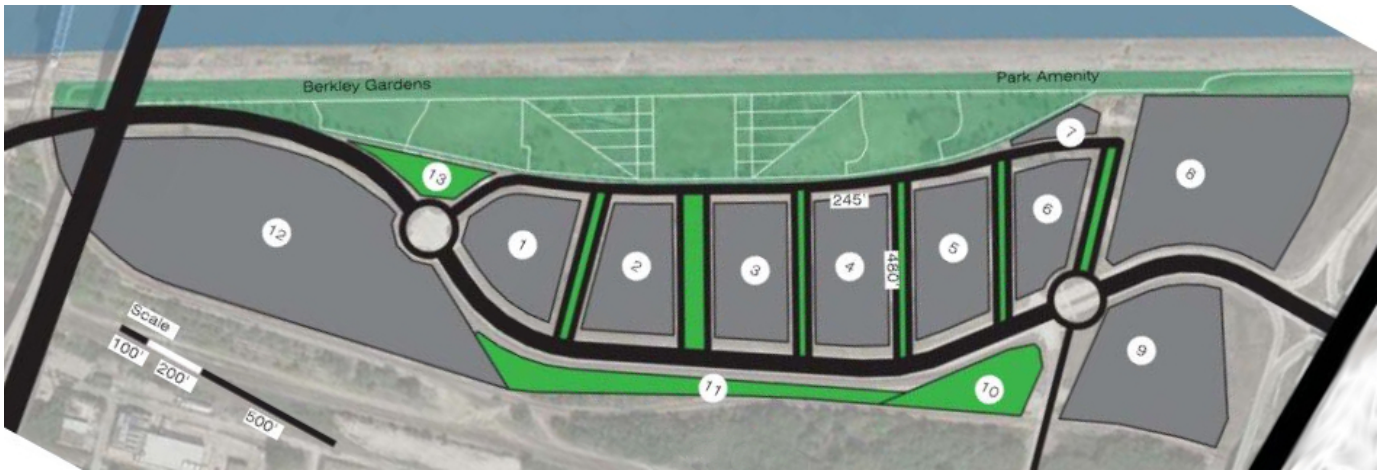
9.1 Overview

The Berkley Riverfront development is approximately 80 acres bounded to the north by the Missouri River, to the east by I-29/35, to the south by three railroads and their five tracks, and to the west by the Heart of America Bridge. The principal attraction to the area is currently the Richard L. Berkley Riverfront Park – a 17-acre park that parallels the Missouri River—and the interstate frontage and connections. To the west, south and east of the park are 13 undeveloped parcels that comprise the principal area of the Berkley Riverfront Development. Figure 42 below shows the area under development.

The total area of developable land within the boundaries identified in Figure 42 is approximately 78.67 acres in 13 parcels adjacent to the 17-acre park.

The development area is publicly owned and has never been on the tax rolls.

Figure 42 Development Parcels on Riverfront



There have been several master plans and ideas explored for developing the riverfront area over the last few decades. The park areas and all development parcels are owned by Port KC. As a result of strong leadership by Port KC, a strategic plan for creating developable blocks and parcels of land within the area was crafted – which included proactively establishing zoning for the area in advance of specific development interest. To streamline future development review procedures and timelines for implementation, Port KC proposed rezoning the entire area, which was eventually approved by the City of Kansas City as the Berkley Riverfront Development Master Planned Development (MPD) District in early 2014. This MPD anticipated buildings up to 10 stories to be located throughout the development area. The net acreage for development, after removing undevelopable right-of-way, is 62.51 acres.

As noted in the report summary, the development area has the potential to generate significant additional new property tax revenue for the City and County. However, given the limits of maximum assessments and low (Port KC) taxability, it does not appear that property tax will be a viable alternative to fund the capital portion of the streetcar extension.

While there is potential for residential and commercial lease rates to increase with the provision of streetcar service to the area, for the purposes of this study it was anticipated that future development parcels would be sold to developers and any increase in achievable lease rate would be factored into the increased land sale prices. As such, property tax and lease rate increases were not evaluated in this report, and a focus on identifying the land value differences was utilized as a vehicle for funding the capital portion of the streetcar extension.

9.2 Land Value – Present Day

As noted above, there are currently 13 parcels on the riverfront under formal development or planning for development. The existing valuation for land in the Riverfront area has been established at approximately $1 million per acre (equates to ~$23/sf), which is based on Port KC's development activity and land sales prior to the streetcar extension study being undertaken. These valuations are reflected in Table 9 for Parcels 1, 2, and 12.

Parcels 1 and 2 have been purchased by a private developer and are now under construction and expected to open in 2018. This construction is principally residential apartment facilities with embedded commercial retail space on the ground floor.

Table 7 Summary of Parcels

Parcel	Improvement Type
Parcel # 1	201 Residential Units
Parcel # 2	12,468 SF General Commercial, 209 Residential Units
Parcel # 3	Mixed Use
Parcel # 4	Mixed Use
Parcel # 5	Mixed Use
Parcel # 6	Mixed Use
Parcel # 7	Public Assembly / Amenity
Parcel # 8	Mixed Use
Parcel # 9	Mixed Use
Parcel # 10	Storm Water
Parcel # 11	Storm Water
Parcel #12	Mixed Use

Parcel 12 (just west of the current construction) has two active projects. The first project is BarKC, a small bar/restaurant associated with a private dog park facility. It is located on the western end of this parcel and is expected to open in 2018, ahead of its initially anticipated opening schedule. The second project on this parcel is anticipated to include primarily residential apartment facilities with smaller components of mixed-use office and/or commercial retail spaces. The negotiation for land purchase on this second project is significantly underway with another private developer and is nearing completion and formal execution.

Parcel 7 (far northeast parcel, near river) has been partially developed for public sport courts in 2016 by Port KC to support increasing activities, amenities, and exposure for the park and adjacent development parcels. These amenities will be present when the first developments on Parcels 1 and 2 are complete. The remainder of Parcel 7 (northeast) and 13 (western side of project, near river) will be reserved for public uses and can accommodate additional amenities and activity areas in support of the overall district.

Parcels 11 and 10 (west to east, south side paralleling the railroad rights-of-way) are tentatively proposed for stormwater and drainage systems but can have active development above ground if underground stormwater storage is built to replace this run-off capacity.

To present conservative estimations in this report, this study assumes that these four parcels (7, 10, 11, and 13) will have no formal development.

The remaining parcels are expected to be developed over the course of 15 years, with the final development (Parcel 9 – far southeast) to open around 2031. The MPD proposed mixed-use development on these remaining parcels includes office, retail, hospitality, entertainment, and additional residential land uses.

Table 8 Expected Initial Years of Operation

Parcel	Completion Date
Parcel # 1	2018
Parcel # 2	2018
Parcel # 3	2022
Parcel # 4	2022
Parcel # 5	2026
Parcel # 6	2030
Parcel # 7	
Parcel # 8	2029
Parcel # 9	2031
Parcel # 10	
Parcel # 11	
Parcel #12	2020

It is anticipated that new facilities will open intermittently between 2018 and 2031. A summary of the

expected years of initial operation are provided in Table 8 above[8]

For purposes of this study, the report uses conservative projections[9]. To this end, the assumptions for development activity during the 15-year (inclusive) span of the analysis include a provisional recessionary period for economic development forecasting and modeling purposes. This recessionary period factors a four-year time lapse between the opening of Parcels 5 and 6 into the development model.

Table 9 Parcel Values at time of sale or development

Parcel	Completion Date	Site Footprint (acres)	Land Value at Time of Sale or Development
Parcel # 1	2018	2.80	$ 2,796,000
Parcel # 2	2018	2.55	$ 2,550,000
Parcel # 3	2022	2.61	$ 5,220,000
Parcel # 4	2022	2.81	$ 5,628,000
Parcel # 5	2026	3.24	$ 6,484,000
Parcel # 6	2030	1.87	$ 3,740,000
Parcel # 7		0.42	
Parcel # 8	2029	7.08	$ 14,157,000
Parcel # 9	2031	4.57	$ 9,132,000
Parcel # 10		1.53	
Parcel # 11		2.45	
Parcel #12	2019	15.79	$ 15,793,000
			$ 65,500,000

9.3 Anticipated Land Values Without Streetcar Service

The riverfront development is anticipated to consist of a mix of low- and high-rise towers containing office, retail, hospitality, entertainment, and residential development. The residential components of the development is anticipated to provide market-rate units with modern amenities that include workout facilities, swimming pools and spas, lounges, barbecue equipment, and community social spaces that typically command rental rates on the upper end of the market.

Table 10 Graduated Land Values

Year and Base Value (per acre)	1,000,000
2017	1.0
2018	1.0
2019	1.0
2020	1.7
2021	1.7
2022	2.0
2023	2.0
2024	2.0
2025	2.0
2026	2.0
2027	2.0
2028	2.0
2029	2.0
2030	2.0
2031	2.0

The mixed-use development and the planned amenities will be situated to take advantage of the available views to both the Downtown skyline and the adjacent Missouri River corridor and Berkley Riverfront Park area.

With the first project construction underway, the look and feel of the surrounding district is instantly changed for the better and bodes well for additional development interest and activity. The area has long suffered from the perception of being isolated and not well-connected with Downtown and the River Market and Columbus Park neighborhoods. While this initial development is beneficial for anchoring the initial transformation of the area into a new mixed-use district, it should be noted that the density of this project is less than half of the allowable 10-story density the MPD would allow.

While this area has several assets that are attractive for new development, it remains to be seen whether future developments on remaining parcels can achieve the full density

[8] The anticipated dates of operation listed in Table 8 are assumptions based on the original 2016 approved MPD overlay.

[9] These conservative assumptions are based on the consultant's experience with similar development

allowances the MPD has the potential to provide. Given the relative scale of development occurring in this area, and without the benefit of additional streetcar connectivity or other significant amenities to serve this area, it may be challenging to achieve the overall allowable density of 10-story buildings on remaining parcels.

A series of anticipated development densities were initially developed by Port KC and refined by the project team and form a baseline development scenario reflecting a similar scale and character of development to that of "The Union" project – which is developing even without streetcar service. For these reasons, the future development scenario prepared for this option anticipates approximately 67% of the maximum 10-story density in the area – which equates to approximately 4 million square feet (see Table 11).

Figure 43 Port KC-constructed volleyball courts on the riverfront

Even with this less-than-maximized overall density of development, an incremental increase in value for remaining development parcels in the area is still anticipated – which in some way results from Port KC's proactive zoning efforts to provide density and a flexible planning/zoning approach in advance of specific development proposals.

Table 11 Potential Future Development Without Streetcar Service

Parcel	Completion Date	Improvement Type	Build Out Floors (Average 10 floors (e.g., High Density))	Residential (Units) (Assummed for Mix Use)*	Commercial - General (SF)	Office Space (SF)	Total Gross Square Footage
Parcel # 1	2018	201 Residential Units	4	201			232,000
Parcel # 2	2018	12,468 SF General Commercial, 209 Residential	4	209	12,468		244,000
Parcel # 3	2022	Mixed Use	5	180	42,000	92,400	350,000
Parcel # 4	2022	Mixed Use	5	279	45,600		380,000
Parcel # 5	2026	Mixed Use	5	200	46,800	102,960	390,000
Parcel # 6	2030	Mixed Use	5	165	27,000		225,000
Parcel # 7		Public Assembly / Amenity		0	-		0
Parcel # 8	2029	Mixed Use	10	792	39,600		990,000
Parcel # 9	2031	Mixed Use	10	504	25,200		630,000
Parcel # 10		Storm Water		0	-		0
Parcel # 11		Storm Water		0	-		0
Parcel #12	2020	Mixed Use	5	462	75,600		630,000
							0

Average Floors	Total Units	Total SF Commercial
6.5	2,992	314,268

Total Gross SF
4,071,000

9.4 Potential Land Values with Streetcar Service

As streetcar service is added to the district in this final scenario, a noticeable increase in land values and development densities are anticipated. There is evidence that the land values along the Starter Line of KC Streetcar have increased significantly since voters approved streetcar funding in December 2012 and the subsequent commencement of service in May 2015.

Recently in downtown Kansas City and prior to constructing and operating the streetcar starter line, a property on Main Street stood for sale at less than $1M/acre. This property stood for sale with no "bites" for more than 18 months. After the streetcar service, the land sold for more than $2M/acre.

Prior to the decision to implement the initial phase of streetcar construction in Kansas City's Downtown area, numerous properties were on the market with a prevailing market price of approximately $30 per square foot. Once funding was announced for the streetcar system and design for implementation began, property values immediately began to increase for properties in close proximity to the planned line. Once service began, the values per square foot have increased further. Several example properties are included for reference in Table 12 below:

Table 12 Comparative Land Values - Before and After Initiation of Streetcar Operations

Courtyard by Marriott and Residence Inn: (16th St. & Main St.)	This site is within 100 feet of the nearest KC Streetcar stop, affording ready and convenient access to the streetcar line.	This lot sold for approximately $88 per square foot in or about 2013-2014	Increase from estimated $30/SF to $88/Sf	293% of Initial Value
Home2Suites: (2001 Main St.)	This site is within 400 feet of the nearest KC Streetcar stop, providing easy access by foot to the station.	This lot sold for approximately $50 per square foot in 2014	Increase from estimated $30/SF to $50/Sf	167% of Initial Value
Potential Hotel/Office Site: (14th St. & Wyandotte St.)	This site is anticipated to become a hotel or office development, and is approximately 0.1 miles from the nearest KC Streetcar stop.[10]	This site is currently listed for sale at $125 per square foot.	Increase from estimated $30/SF to $125/Sf	417% of Initial Value
Potential Hotel/Mixed-Use Development: (9th St. & Wyandotte St.)	The site is anticipated to become a hotel or mixed-use development, and is within 0.1 miles of the nearest KC Streetcar stop[11]	This site is under contract with an asking price of $88 per square foot.	Increase from estimated $30/SF to $88/Sf	293% of Initial Value

For properties located along the Starter Line, these increased land values have also resulted an increased scale of development. In conjunction with other development tools, this approach can assist in balancing property acquisition costs to provide an acceptable rate of return for each project. By extending streetcar service into the Riverfront area, the opportunities to stimulate development demand at higher densities while also bolstering higher land values can create a unique opportunity for the entire development area to achieve its potential.

[10] In addition to its close proximity to the streetcar, the site is located within walking distance of several significant venues, including the Sprint Center and the Convention District. There are several hotels in the vicinity, including the Marriott and a planned Hyatt.

[11] This location is adjacent to the 21c Museum Hotel project and within walking distance of several high-rises offices in the Central Business District.

Figure 44 Possible Building out condition of Riverfront

While the MPD Zoning calls for 10-story development on any given parcel, the City recognizes this as an *average* height for use in regulating development within the area. This means that the initial development of smaller-scaled development can provide opportunities for remaining parcels to be constructed with buildings that exceed the 10-story limit.

Figure 45 Looking east at riverfront area and rendition

The City will apply the height limit in the aggregate rather than for each facility. Given these assumptions and this approach, the expected total square footage of each parcel (complete with anticipated building stories and associated square footage calculations) is shown in Table 13 and calculates to approximately 6 million square feet.

Table 13 Potential Future Development With Streetcar Service

Parcel	Completion Date	Improvement Type	Build Out Floors (Average 10 floors (e.g., High Density))	Residential (Units) (Assummed for Mix Use)*	Commercial - General (SF)	Office Space (SF)	Total Gross Square Footage
Parcel # 1	2018	201 Residential Units	4	201			232,000
Parcel # 2	2018	12,468 SF General Commercial, 209 Residential	4	209	12,468		244,000
Parcel # 3	2022	Mixed Use	6	261	42,000	134,400	490,000
Parcel # 4	2022	Mixed Use	6	405	45,600		532,000
Parcel # 5	2026	Mixed Use	8	473	46,800	243,360	858,000
Parcel # 6	2030	Mixed Use	8	390	27,000		495,000
Parcel # 7		Public Assembly / Amenity		0	-		0
Parcel # 8	2029	Mixed Use	14	1232	39,600		1,518,000
Parcel # 9	2031	Mixed Use	16	924	25,200		1,134,000
Parcel # 10		Storm Water		0	-		0
Parcel # 11		Storm Water		0	-		0
Parcel #12	2020	Mixed Use	5	462	75,600		630,000
							0

Average Floors	Total Units	Total SF Commercial
9.9	4,557	314,268

Total Gross SF
6,133,000

This scenario has assumed initial phases of development occurring at a slower pace, and at lower densities and building heights. As the streetcar system becomes operational, there is an anticipated uptick in development activity and interest, which is consistent with development activity in Denver, Portland, and Cincinnati.

Port KC currently estimates the Berkley Riverfront parcels at approximately $1,000,000 per acre (about $23.00 per square foot) or about 77% of downtown property values.

To analyze the future values of the Riverfront parcels, Table 14 is provided below. This table keeps the land values constant at $23/SF over the development period. Extrapolated (from square foot) land values by parcel are shown in the “Total Current Value” column in the table.

The KC Streetcar’s impact to land value are adjusted in the right two columns of Table 14. With the

streetcar servicing the Berkley Riverfront Development, the land values are adjusted from $55.00[12] per square foot in 2020 (streetcar extension operations date) and increasing through the development period (2031) to (a very conservative) $75.00 per square foot[13] [14]. Given this, the value of the developable parcels very conservatively increases by 70% with the streetcar service extension – from $43 million to over $83 million with individual parcels almost tripling in value. See Table 12 Comparative Land Values - Before and After Initiation of Streetcar Operations" for local property values before and after the streetcar.

Table 14 Anticipated Property Values

Parcel	Use	Buildout Year	Acreage	Square Feet	Current Value/SF	Total Current Value	Value with Streetcar	Total with Streetcar
Lot 1	Residential	2018	2.8	121,788	$ 23.00	$ 2,801,124	$ 23.00	$ 2,801,124
	Retail							
Lot 2	Residential	2018	2.55	111,086	$ 23.00	$ 2,554,978	$ 23.00	$ 2,554,978
	Commercial							
Lot 3	Mixed Use	2021	2.61	113,695	$ 23.00	$ 2,614,985	$ 55.00	$ 6,253,225
Lot 4	Mixed Use	2021	2.81	122,575	$ 23.00	$ 2,819,225	$ 55.00	$ 6,741,625
Lot 5	Mixed Use	2023	2.78	121,214	$ 23.00	$ 2,787,922	$ 60.00	$ 7,272,840
Lot 6	Mixed Use	2025	1.87	81,465	$ 23.00	$ 1,873,695	$ 65.00	$ 5,295,225
Lot 7	Public Assembly/Amenity		0.42	18,090				
Lot 8	Mixed Use	2029	7.08	308,337	$ 23.00	$ 7,091,751	$ 70.00	$ 21,583,590
Lot 9	Mixed Use	2031	4.57	198,887	$ 23.00	$ 4,574,401	$ 75.00	$ 14,916,525
Lot 10	Storm Water		1.53	66,740				
Lot 11	Storm Water		2.5	106,726				
Lot 12	Mixed Use	2031	15.79	687,957	$ 23.00	$ 15,823,011	$ 23.00	$ 15,823,011
	Total Acreage/SF		47.31	2,058,560				
	Total for Development		42.86	1,867,004		$ 42,941,092		$ 83,242,143

9.5 Land Values – Summary

To summarize, the property values on the riverfront were expected to increase from the present-day value of about $43 million to approximately $65 million given the development infrastructure, amenities, and zoning currently in place.

As the streetcar moves forward and is constructed and operated on the riverfront, this report's analysis is that land values will further increase to approximately $83 million.

[12] The lower end (current year) of the comparable properties listed in Table 14

[13] Given the data provided in Section 9.8.2, "Mature System - Portland Streetcar" where land values near the South Waterfront Line were recently appraised at $310/SF, this $75/SF could be seen as a very conservative estimate. $100/SF is a moderately conservative estimate.

[14] In July 2017, the 1517, 1519, and 1521 Main Street real estate sales flyer highlighted and emphasized the vacant property's proximity to the streetcar starter line. The 11,601 SF property was listed at $2,200,000 (about $190/SF)

9.6 Property Values – Overview

Typically, property values are estimated to indicate the amount of additional property tax that may be available from the development. To assist the capital costs of the streetcar, only the Port Improvement District (PID) portion of the property tax revenue was considered. Currently, the PID's relatively small revenue stream ($0.01 per $100 in assessed value) mitigates that value as servicing financing on the riverfront.

However, as it is important to the overall development on the riverfront to indicate/provide a broad estimate of that value, the following review and investigation has been added to the report.

To review developed property values, this report includes local research and nationwide trends from other streetcar cities. The report reviews mature, 10-year, and newly initiated streetcar cities. Most data is based on factual values – anecdotal information is also included (and noted).

As discussed below in the description of each residence, all but one of the comparable properties is located in close proximity to downtown Kansas City and the existing KC Streetcar line. Two of the comparable properties, RM West and Market Station, are in rough proximity to the Missouri River, and both facilities are within a few blocks of a streetcar stop. In addition, although no commercial properties were considered comparable, the report has assumed that price per square foot is approximately the same for the commercial space as the residential space. This assumption is reasonable considering the anticipated highest and best use of each space. Each of the comparable properties is included and described in Appendix 1 Comparable Developments[15], and a map of their locations is provided at its conclusion.[16]

9.7 Property Value – Development Projections

The development projection uses an estimated value per square foot applied against the area of residential, office, retail, and hospitality for the properties expected to be under six stories (parcels 1, 2, 3, 4, 5, 6 and 12). The value of $125 per square foot is based on the value per square foot of Market Station (Comparable No. 7).[17]

For parcels 8 and 9 (eastern parcels), the development analysis employs an estimated value of $160 per square foot. This figure is approximately the same as the present value per square foot of One Light (Comparable No. 2).[18] The buildings on parcels 8 and 9 will be the last constructed and are expected to be

[15] The descriptions provided are from the website for each building and from visual review of the area.
[16] The costs per square foot employed in the tax increment analysis are based on existing residential facilities in Kansas City that are reasonably similar in terms of expected amenities and were provided for this analysis by John McGurk of Polsinelli.

[17] This parcel has the most similar characteristics to the anticipated new mid-rise developments. Market Station is a low-rise residential facility with luxury apartments and is in proximity to the riverfront and to a KC Streetcar station.
[18] One Light is a high-rise luxury property like those expected to be developed on parcels 8 and 9. Parcels 8

completed in 2029 and 2031, respectively. These buildings will have the advantage of being able to maximize views because the adjacent developments will have been fully designed. Additionally, by 2029, it is anticipated that the KC Streetcar extension will have been operational for approximately eight years, and the overall attractiveness and value of the area will have increased accordingly.

Port KC plans continued investment in Berkley Park, which will further establish the site as a significant destination attraction within the region. This strategy will continue to incrementally improve the value of the adjacent properties.

The Berkley Riverfront Development will have a very substantial value when completed. Under the two density scenarios, the values will be approximately $587 million under the MPD lower density development entitlements and $906 million with the increased density plan (see Table 15 Potential Property Value Without Streetcar Service and Table 16 Potential Property Value with Streetcar Service). The development uses and square feet for the two plans are discussed in the Development Program section of this report.

Table 15 Potential Property Value Without Streetcar Service

Parcel	Build Out Floors (Average 10 floors (e.g., High Density))	Residential (Units) (Assummed for Mix Use)*	Commercial - General (SF)	Office Space (SF)	Total Gross Square Footage - Property	Property Value
Parcel # 1	4	201			232,000	$ 29,000,000
Parcel # 2	4	209	12,468		244,000	$ 30,500,000
Parcel # 3	5	180	42,000	92,400	350,000	$ 43,750,000
Parcel # 4	5	279	45,600		380,000	$ 47,500,000
Parcel # 5	5	200	46,800	102,960	390,000	$ 62,400,000
Parcel # 6	5	165	27,000		225,000	$ 36,000,000
Parcel # 7		0	-		0	$ -
Parcel # 8	10	792	39,600		990,000	$ 158,400,000
Parcel # 9	10	504	25,200		630,000	$ 100,800,000
Parcel # 10		0	-		0	$ -
Parcel # 11		0	-		0	$ -
Parcel #12	5	462	75,600		630,000	$ 78,750,000
					0	$ -
						$ -

Average Floors	Total Units	Total SF Commercial
6.5	2,992	314,268

Total Gross SF	Total Property Value
4,071,000	587,100,000

and 9 are anticipated to be well-appointed buildings with similar features as One Light, and constructed to maximize views of downtown and the riverfront by taking advantage of their height on the upper floors.

Table 16 Potential Property Value with Streetcar Service

Parcel	Build Out Floors (Average 10 floors (e.g., High Density))	Residential (Units) (Assummed for Mix Use)*	Commercial - General (SF)	Office Space (SF)	Total Gross Square Footage - Property	Property Value
Parcel # 1	4	201			232,000	$ 29,000,000
Parcel # 2	4	209	12,468		244,000	$ 30,500,000
Parcel # 3	6	261	42,000	134,400	490,000	$ 61,250,000
Parcel # 4	6	405	45,600		532,000	$ 66,500,000
Parcel # 5	8	473	46,800	243,360	858,000	$ 137,280,000
Parcel # 6	8	390	27,000		495,000	$ 79,200,000
Parcel # 7		0	-		0	$ -
Parcel # 8	14	1232	39,600		1,518,000	$ 242,880,000
Parcel # 9	16	924	25,200		1,134,000	$ 181,440,000
Parcel # 10		0	-		0	$ -
Parcel # 11		0	-		0	$ -
Parcel #12	5	462	75,600		630,000	$ 78,750,000
					0	$ -
						$ -

Average Floors	Total Units	Total SF Commercial
9.9	4,557	314,268

Total Gross SF	Total Property Value
6,133,000	906,800,000

9.8 Property Values – Case Studies of Cities with Streetcars

9.8.1 Overview

Kansas City development activities along its new streetcar route have been substantial. To date, $2 billion in documented development activity has been achieved. While KC's initial development has been significant along its initial phase, the Riverfront Extension must rely on other cities for examples of areas that have experienced development in brownfield and/or blighted areas. Following is that type of streetcar-created development from 20 years of operations in Portland, 10 years in Charlotte (LYNX), and the just-initiated operations (less than 1 year) in Cincinnati.

9.8.2 Mature System - Portland Streetcar

New data released by the group that oversees Portland's streetcars suggests that the system has exacted a $4.5 billion economic impact since 1998. The ECONorthwest data, commissioned by Portland Streetcar Inc. cites the line's "influence on real estate investment, housing development, and population changes in the Central City." The data analysis was conducted by ECONorthwest and evaluates economic development outcomes since construction began on the first Streetcar line in 1998.

In Portland, the Streetcar Corridor is defined as one-quarter mile on either side of the city's streetcar tracks. A full $229 million worth of real estate development, including 7.7 million square feet of commercial space and nearly 18,000 residential units, has taken hold over the last 17 years. In that timeframe, ECONorthwest estimates that 35% of the 7.7 million square feet of commercial real estate developed in the Streetcar Corridor has been directly due to the streetcar and its operations.

The most definitive analysis of the development activity in Portland is found in the *Portland Streetcar Development Impacts* report, prepared by E. D. Hovee & Company, dated November 2005. The report evaluated the density on parcels prior to the institution of the streetcar (1997) as compared after (2005). The density was measured by the square feet of development for each parcel before and after the streetcar. The analysis evaluated the density for parcels within one, two, and three blocks of the streetcar and those more than three blocks from the streetcar.

Table 17 Development and Distance to Streetcar (Portland)

Portland Streetcar				
Density of Development				
	1 block	2 blocks	3 blocks	3+ blocks
Density Percentage Pre-1997 Development	34%	35%	48%	43%
Density Percentage Post - 1997 Development	90%	73%	62%	42%

The changes were dramatic for parcels within the first block, where density increased from 34% to 90%. The densities continued to increase for the parcels two and three blocks from the streetcar. The ECONorthwest study concluded that there was a 37% price premium on new condominium sales during the first four years of streetcar operations, with a portion of that increase also attributable to zoning changes and infrastructure improvements. The premium was about 26% over the next four years, then fell to 12% over the third four-year period. After 15 years, the premium stabilized at about 9%.

Most of the KC Riverfront properties are within one block of the streetcar and all are within three blocks of the route.

Dan Bower, executive director of Portland Streetcar Inc. said, "People want to live ON the streetcar alignment and our relatively dense station spacing spreads the value along the alignment". The linear arrangement of the Port KC parcels that the direct access.

Rent premiums and higher densities translate into higher land values, although the new values are typically listed with the land, realty and furnishings, fixtures, and equipment all combined to establish the new values.

The South Waterfront property has had a resurgence. While the city and developer move forward with the site and its continued development, a local parcel that is currently reserved for affordable housing (at the City's option) was appraised in Fall 2015 for $310 per square foot.[19]

9.8.3 10-Year Operations – Charlotte LYNX Streetcar

Streetcar service began in 2007 running from South Charlotte into Uptown Charlotte. By 2010, there was $1.88 billion in development activity ($945 million proposed, $490 million under construction and $451 million completed). All the identified development was completed by 2013. The development included 6,659 residential units, 661,241 square feet of retail space, and 809,972 square feet of office space over the six year period.

[19] http://www.oregonlive.com/business/index.ssf/2016/12/zidell_yards_south_waterfront.html

Developers intensified their planned development, or later phases of existing developments, in response to the demand for residential units. Joint development projects were carried out, with the city funding decked park-and-ride structures, affordable housing and open space, and the private sector developing residential, mixed-use with retail and office, and a hotel.

The latest summary of development activity along the streetcar routes provided in a February 2017 report identifies six hotels completed, under construction, or planned. Eighteen apartment/condominium projects are similarly completed, under construction, or planned. Retail and mixed-use developments are part of the development program, including a Whole Foods Supermarket under construction.

The Charlotte experience supports Port KC's development plan to include a wide variety of development types.

Tina Votaw, who has been the TOD specialist for the Charlotte Area Transit System (CATS) since 2005 and the "go-to" person for the real estate development community, observed: "My sense is that there's about a 15-20% premium (increase) in commercial and multi-family land values for adjacency to transit vs. the appreciation of all other parcels in Mecklenburg County."

9.8.4 Newly Initiated Service – Cincinnati

The date used to evaluate the development incentivized by the streetcar is 2012, which is the year construction started after the project survived a second ballot initiative. The start of operations was September 9, 2016, or less than a year ago.

In November 2016 – just a few months after the Cincinnati Bell Connector (aka Cincinnati Streetcar) began operations – City Manager Harry Black noted that:

"We are experiencing tremendous resurgence throughout the urban core especially in Downtown and Over-the-Rhine along the Cincinnati Bell Connector route."

Projects initiated since the beginning of the planning of the streetcar and within three blocks of the route include:

- Washington Park, 2012 $48 M
- 84.51, 2015 $122 M
- The Banks, phase 3 began in 2015 $29 M
- Queen City Square/Great American Tower, 2011 $322 M
- Jack Casino, 2013 $400 M
- Mercer Commons, 2012 $25 M
- Mabley Place, 2014 $9 M
- Fourth & Race, demolition began in 2016 $77 M
- Eighth & Main, predevelopment phase began in 2016 $50 M
- 15th & Race, predevelopment began in 2016 $14 M
- 309 Vine, under construction in 2016 $80 M

Acknowledging that there is a critical mass for a space as dense as the urban core, city officials say the City should be prepared for the growth to continue.

It may be too early too early to assess the long-term economic impact along the streetcar in Cincinnati, but property values already appear to be on the rise, according to commercial real estate brokerage CBRE. In 2012, developers were paying an average of $17 per square foot for adaptive-use buildings in Over-the-Rhine, says retail broker Chris Hodge, a CBRE senior vice president. By late 2015 and early 2016, the average price had risen to $78 per square foot he says.[20]

"I think the biggest impact the streetcar has had is in Over-the-Rhine," Hodge says. "The development really started on the east side of Over-the-Rhine, and now it's moving west and north."[21]

Rhinegeist Brewery, which opened in a former Christian Moerlein Brewing bottling plant on Elm Street in 2013, is one business likely cashing in on the streetcar. President and cofounder Bob Bonder says that revenue from visits to the brewery is up more than 30 percent in 2016 from last year. "I couldn't tell you how much of that increase is due to the streetcar and how much is us being a new, fresh brand three years into existence," Bonder says.

"But all you have to do is stand there and watch the streetcar to see that, wow, this is working. It seems like every time the streetcar stops by, it drops off 20 people and picks up ten."[22]

9.8.5 Local - Kansas City Development

Anecdotally, a leasing agent from Market Station in the River Market (comparable location #7) – pulled average rent prices from their system going back to 2014, which pre-dates the KC Starter Line streetcar system being in place. This development was completed and began renting in 2010.

For the past four Aprils, rental prices were compared for the same two-bedroom/two-bath unit with a balcony overlooking downtown and 1,175 square feet space as follows:

Month/Year	Rate	Change	Note
April 2014	$1,450/month ($1.23/sf)		
April 2015	$1,470/month ($1.25/sf)	+1.6%	
April 2016	$1,589/month ($1.35/sf)	+ 8.0%	Just prior to streetcar operating
April 2017	$1,763/month ($1.50/sf)	+ 11.0%	After streetcar service was operational

The leasing agent has noticed an uptick in rental interest since streetcar began operation and they strongly market their property's proximity to the streetcar system. They are owned by a large national company that uses dynamic pricing to determine their asking prices for rents. Based on their available inventory and

[20] https://urbanland.uli.org/industry-sectors/infrastructure-transit/cincinnatis-streetcar-downtown-revival/
[21] Ibid.
[22] Ibid.

that of the competition in the area, their pricing fluctuates to reflect supply and demand – but it is apparent from reviewing the rental history that there has been a rent premium associated with available streetcar service. This finding could assist Port KC in approaching their existing development partners of residential apartments within the Riverfront area to explore opportunities for a creative partnership arrangement to contribute a fair and equitable portion of these anticipated rent "premiums" to offset anticipated capital and operations costs for providing the streetcar service.

10 Funding and Financing

This report evaluates the anticipated development values along the Berkley Riverfront and provides an analysis of the revenues that will become available related to the development from 2018 through 2031.

As a foundational point of view, this section of the report reviews the Starter Line's financing and funding methods and models that were used. The report then reviews the Operations Funding Plan and the Capital Funding Plan.

10.1 Starter Line Capital and Operational Financing

An overview of the existing funding sources of the streetcar in Kansas City is required prior to discussing the Riverfront Extension.

10.1.1 Transportation Development District (TDD)

For the KC Streetcar Starter Line, the voters within the District opted to create a Transportation Development District (TDD) to create a revenue stream for its capital and operational costs. Sales tax (1% additional), special assessment on real estate, and pay parking special assessment have adequately covered the operational costs and serviced the capital costs of the starter line's initial operations.

10.1.2 TIGER

Since 2009, Congress has appropriated funding to USDOT for the Transportation Investments Generating Economic Recovery / National Infrastructure Investments (TIGER) program. The KC Streetcar Starter Line was awarded a $20 million grant for its construction.

10.2 Riverfront Extension Operational and Capital Funding

The data noted in this funding work has been collected to test the ability of the Riverfront Extension to self-fund its construction and operation of the streetcar and associated mulit-modal connections. Both capital cost funding and operation cost funding have been reviewed in this section, with cross-references to corroborating data.

Funding the Riverfront Extension construction and operations is feasible without use of the existing TDD funding.

As noted above, the TDD funded the Starter Line. For the Riverfront Extension, approximately 25% of the preferred alignment lies within the existing Starter Line TDD, and most of this 25% of the alignment is on difficult-for-development (but simplified streetcar construction) structure.

10.3 Operational Funding

10.3.1 Port Improvement District (PID)

While the majority of the preferred alignment is not within the voter-approved TDD, all of the alignment is within City right-of-way or on Port KC owned/controlled property.

In 2015, Port KC created three PIDs in and around Kansas City. One of the improvement districts covers the Berkley Riverfront. This district permits Port KC to collect up to 1% in sales and use tax in the district. It also permits Pork KC to collect $0.01 per $100 of assessed value on real property on the Riverfront.

The approaches to fund the O&M costs follow:

10.3.2 Sales and Use Taxes

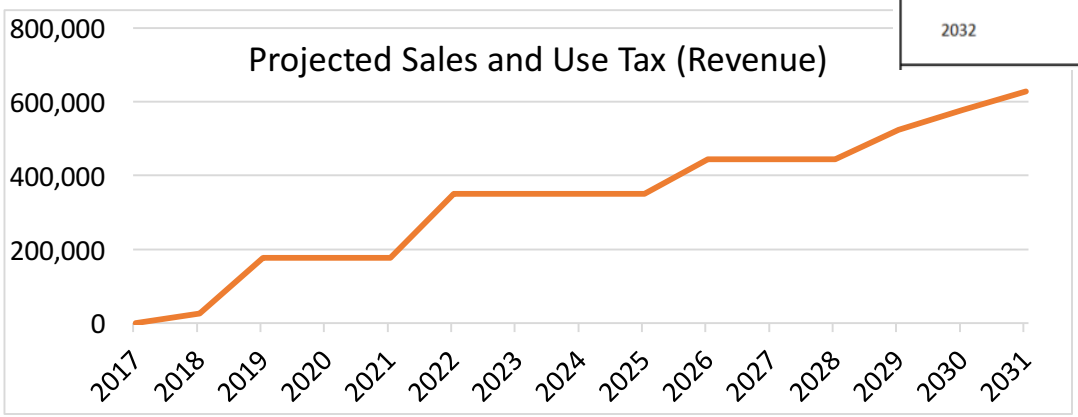
Under the PID or another improvement district overlay, sales and use taxes from riverfront development retail sales can be captured at the rate of up to 1%. Figure 46 Projected Sales and Use Tax (Revenue) provides the results of the analysis. This chart is based on a 1% sales tax on an income of $200 per square foot of retail space per year. This also assumes that 60% of the building's footprint is available as retail space. As such, the sales and use tax will earn $629,000 per year in the project's build-out year of 2032.

Table 18 Sales and Use Revenue

Sales and Use Tax

Year	Sales and Use Taxe Per Year Per Parcel (Dollars)	Accum Sales and Use Tax Total Per year (Dollars)
2017	0	0
2018	25,000	25,000
2019	151,000	176,000
2020	0	176,000
2021	0	176,000
2022	175,000	351,000
2023	0	351,000
2024	0	351,000
2025	0	351,000
2026	94,000	445,000
2027	0	445,000
2028	0	445,000
2029	79,000	524,000
2030	54,000	578,000
2031	50,000	629,000
2032	0	629,000

Figure 46 Projected Sales and Use Tax (Revenue)



10.3.3 Condominium Association Assessments (CAA)

Port KC is in discussions with the initial developers regarding the creation and utilization of a Condominium Association that would apply to all developments within the Berkley Riverfront parcels. As noted in Section 9.4, Kansas City's brief history and other city's longer histories indicate that streetcars create a value-increasing premium on nearby developments.

While this report notes that CAA may not be included in the initial agreements, it is understood that Port

KC and existing developers are negotiating the possibility of CAA fees in projects that are currently under construction or planned for the future.

These revenues are to be dedicated to upkeep and replacement of amenities in public and private common areas and include the type and kind of transit stations to be installed. This potential revenue stream is not currently included as a part of the funding to service operations or debt, but is included here as one of the project's back-up scenarios for funding the streetcar extensions operations. Revenue from this potential source is estimated and included in Table 19 Condo Association Fees and tops at approximately $1.4 million per year in 2032.

10.3.4 Advanced Industrial Manufacturing (AIM) Zones Act

In February 2017, State of Missouri's Department of Economic Development provided program guidelines for the AIM Zones Act. With this program, a port authority can designate an area where infrastructure is being developed as an "AIM Zone".

Subsequent to this resolution by a port authority and pending other administrative functions, the port authority is able to receive 50 percent of state tax withholdings from new jobs in an AIM Zone.

The revenue from these funds may be used by any port authority in Missouri for managerial, engineering, legal, research, promotion, planning, or satisfaction of bonds issued under the port authority's direction.

This funding scenario is new (adopted August 28, 2016). Given the possibility of new jobs on the riverfront – from construction to operations to office-related work – and considering that 50% of that subsequent state income tax will be available to Port KC and the riverfront, this funding source requires greater investigation and probable implementation.

Table 19 Condo Association Fees

Year	Increment from Properies coming on line	Accum Condo Assn Fees
2017	0	0
2018	123,000	123,000
2019	139,000	262,000
2020	0	262,000
2021	0	262,000
2022	200,000	461,000
2023	0	461,000
2024	0	461,000
2025	0	461,000
2026	142,000	603,000
2027	0	603,000
2028	0	603,000
2029	370,000	973,000
2030	117,000	1,090,000
2031	277,000	1,367,000
2032	0	1,367,000

10.3.5 Sinking Fund

Port KC and the Team Members agree that development will occur over the next several years and will not be in place on day one of streetcar operations to the riverfront. As such, the Team Members are in discussion to calculate and set up a sinking fund allocation and agreement to fund the operations of the streetcar until the sales tax revenue can cover operations.

10.4 Capital Financing

As noted above, this report anticipates that the extension will be funded with three methods that rely on the value of the riverfront property. Specifically, by (a) sale or lease of Pork KC-owned land to private developers, (b) public-private mortgage of future developable parcels, (c) sale or lease of Pork KC-owned future developed parcels, and (d) AIM Zone or other development related funds controlled by Port KC. Items (a) and (c) are typical and well understood. Item (b) is also known as a land guarantee.

Using a land guarantee to support borrowing or a private placement is feasible with the substantial current development's land value of approximately $43 million. The feasibility is enhanced by projected land values of $83 million upon completion of the streetcar.

10.4.1 Land Value Capture

Land Value Capture is sometimes referred to as mortgaging property values and centers around the value (and increasing values) of owned properties and parcels. In this case, the properties are owned in full by Pork KC and are expected to be sold and developed in future years.

Typically, developments and projects do not "break out the land separately" from the rest of the project. With this unique situation of Port KC being able to use the land as a guarantee, a land value capture is possible.

In most cases, developments and cities are more concerned with Tax Increment Programs and the value of the item – land, buildings or personal property is irrelevant. The project backers typically need to know how much revenue the project will generate in new taxes.

As noted previously, PID-related property taxes are insufficient to fund the capital side of the project.

For land mortgages (and for this project) the necessary steps would be:

- Generate appraisals on the parcels.
- Establish the discounted or wholesale values as of the date of the transaction.
- Generate a full market analysis for each development element.
- Establish the estimated timing and absorption of each of the elements of the project.
- Estimate which parcels will be ground leased and which will be sold
- Determine the appropriate ground lease rate for the parcels.
- Apply the ground lease rate to the appropriate parcels.
- Pre-determine the expected sales price for each parcel to be sold.
- Create cash flow projections for each parcel from the estimated sale or lease date.
- Work with the underwriter/lender to determine their specific underwriting criteria.
- Determine what amount the revenues will support in net proceeds based on the underwriter's coverage requirements and after reserves, underwriters discount, issuance costs, bond counsel, appraisal fees, financial advisor and other expenses paid from the proceeds.

As noted under the Land Values section of this report (Section 9.4), the current value of the development parcels, excluding non-developed parcels, currently totals over $42 million. The projections anticipate that with streetcar service to the Berkley Riverfront development, land values will increase to approximately $84 million.

Given the incremental development and the land value increases, Port KC will be able to utilize the future-developed land as collateral. It will be able to pledge ground value and/or lease payments and sales proceeds against borrowed funds, whether through bonds, a private placement or other financing vehicle.

A public/private partnership may improve the project's ratings in the Trump Administration's 2017 TIGER scoring.

10.4.2 Public Private Partnership

A public/private partnership benefits the City, the streetcar, and the developers by increasing downtown density and vibrancy.

The financing plan is a good example of a public-private partnership, where the public infrastructure, in this case the extension of the Streetcar, is funded and its O&M costs are covered by the private development activities of the project. It should be noted that using this public/private partnership approach may improves the project's potential rating in the Trump Administration's implementation of 2017's TIGER plan.

10.4.3 State Infrastructure Bank Loan

Currently, the state of Missouri will provide loans to state and quasi-state-backed projects that can show a reliable revenue stream. The land value capture would provide the State with the reliability it needs. Utilizing a state loan would benefit the project by possibly reducing the cost of money over the project's construction by 2% to 4%.

10.4.4 TIGER 2017

In 2017, Congress appropriated $500 million for the TIGER program.

TIGER provides discretionary grants for capital investments in surface transportation infrastructure that will have a significant impact on the nation, a metropolitan area, or a region. Eligible projects include highways, bridges, transit, passenger rail investments, freight investments, and marine port infrastructure. Several streetcar projects – including the KC Streetcar – have received TIGER funding in the early years of the program, but less so recently.

The future of the TIGER program is uncertain. The Trump administration has proposed eliminating TIGER in FY 2018. That said, TIGER maintains strong bi-partisan Congressional support, with every state having benefited from it over the duration of the program.

While the administration has yet to issue formal direction on such priorities, statements made by the president and others in his government suggest that priorities may include (in no particular order):

- Promotion of public-private partnerships
- Shovel-ready projects that are immediate "job-creators"
- Support of projects that are truly "transformative" and of "national significance," rather than those that only benefit a locality – which the administration believes should bear the full costs of the investment
- Support of rural transportation projects

It remains to be seen what the future holds for the TIGER program. The FY 2017 program will likely be solicited in summer or fall 2017. The future of the FY 2018 program should also be known this summer, when the House and Senate "mark up" their FY 2018 appropriations bills.

Appendix 1 Comparable Developments

Comparable Location No. 1

Lucas Place Lofts: 323 W. 8th Street: This building consists of loft-style apartments featuring one and two bedroom rentals, and is approximately three blocks from Main Street and 3/10 of a mile from the nearest KC Streetcar stop. The building is adjacent to the Kansas City garment district and is comprised of 130 total units. The façade of the building is an older-style brick, evoking the appearance of a repurposed warehouse, typical of many once-industrial areas. The total square footage of this property is 103,952, with a total market value of $9,729,600, and a value per square foot of $93.60.

Comparable Location No. 2

One Light: 1 W. 13th Street: One Light is one of the newest apartment facilities in downtown Kansas City, and is a full-service luxury apartment building developed by Cordish. The building is located on Main Street and within approximately 500 feet of the nearest KC Streetcar station. The residence has an all-glass façade, the newest trend of high-rise apartment facilities in large metropolitan areas. One Light has several amenities typical of modern high-rise apartments, including a rooftop pool and bar, green space, conference room, fitness center, grilling stations, theatre/social room, and electric car chargers. The Team was not provided with exact square footage of this building, however, research shows that the total square footage is approximately 343,000. Assuming this square footage, the building has a total market value of $54,915,119, for a value per square foot of $160.10.

Comparable Location No. 3

51 Main: 5050 Main Street: This building is a luxury apartment residence within a few blocks of the County Club Plaza in the Main Street Corridor. Although located on Main Street, this building is approximately 4 miles from Union Station, the closest KC Streetcar stop. The building is a low-rise residential facility with a number of luxury amenities, including a clubroom, fitness center, infinity pool, outdoor deck, outdoor kitchen, and fireside lounge. This residence has a primarily brick façade and is relatively isolated on the block. Consisting of 176 apartments, the facility is 183,037 square feet and has a total market value of $20,080,000, for a value per square foot of $109.70.

Comparable Location No. 4

Piper Lofts: 117 W. 20th Street: This building consists of loft-style apartments in the Crossroads Art District within four blocks of Main Street and approximately 1/5 mile from the nearest KC Streetcar stop. The apartments feature open-concept ceilings with exposed piping and bricks, complemented by modern fixtures, including stainless steel appliances and granite countertops. The building has an on-site fitness center, rooftop swimming pool, and parking garage, and some of the apartments have views of the Kansas City skyline. The building has a mostly brick façade and resembles a repurposed industrial space. The residence totals 136,041 square feet and has a market value of $13,792,500, for a value per square foot of $101.38.

Comparable Location No. 5

Window Lofts: 380 W. 22nd Street: This apartment building is near the Crossroads Arts District several blocks west of Main Street, and approximately ½ mile from the nearest KC Streetcar stop. The apartments are open concept loft-style with exposed ceilings, piping and brick walls, and the exterior of the building is primarily red brick resembling a repurposed warehouse. The building has a rooftop pool with views of the Kansas City skyline, and a fitness room. These apartments total 129,629 square feet, with a market value of $14,708,700 and a value per square foot of $113.47.

Comparable Location No. 6

RMWest: 228 W. 4th Street: This residence is approximately 1/5 mile from the nearest KC Streetcar location. As discussed above, this is one of two comparable facilities in relative proximity to the riverfront; however, the apartments do not feature views of the river or Berkley Riverfront Park. The building is a newer style low-rise construction, with a blended red brick and neutral colored exterior. The apartments feature modern amenities with neutral palates, and the building has a number of amenities, including a fitness center, work space, attached parking garage, recreation room, pool with sundeck, and an outdoor kitchen. Total square footage is 114,044 and total market value is $12,368,600, for a value per square foot of $108.45.

Comparable Location No. 7

Market Station: 240 W. 2nd Street: This property is the second of two comparable residences in proximity to the river, and is approximately 3/10 mile from the closest KC Streetcar stop. This is a luxury apartment building with a modern façade, and some of the units have views of downtown and the Missouri River. Apartments feature upgraded amenities and private patios and balconies, while the building has a fitness center, pool, spa, and billiards lounge. The building's total square footage is 313,327, and its total market value is $39,193,600, for a value per square foot of $125.09. This property is most similar to the anticipated new residential developments.

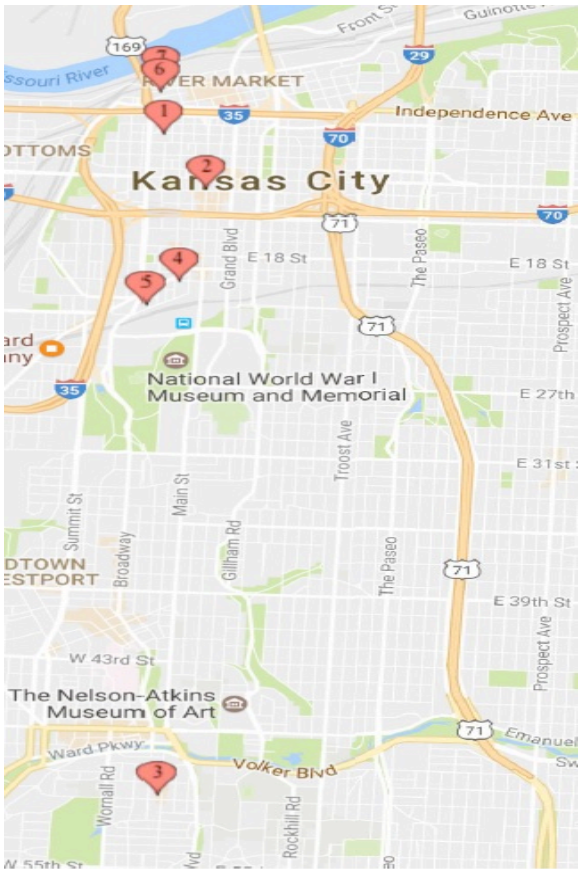
Table 20 below summarizes the data for the comparable properties used in the tax increment analysis:

Table 20 Comparable Properties Summary

Comparable Property	Address	Square Feet	Market	Value/SF
Lucas Place Lofts	323 W 8th Street	103,952	$9,729,600.00	$93.60
One Light	1 W 13th Street	343,000	$54,915,119.00	$160.10
51 Main	5050 Main Street	183,037	$20,080,000.00	$109.70
Piper Lofts	117 W 20th Street	136,041	$13,792,500.00	$101.38
Window Lofts	380 W 22nd Street	129,629	$14,708,700.00	$113.47
RMWest	228 W 4th Street	114,044	$12,368,600.00	$108.45
Market Station	240 W 2nd Street	313,327	$39,193,600.00	$125.09

Figure 47 below identifies the locations of each of the comparable properties employed in the tax increment analysis.

Figure 47 Comparable Property Locations



In addition to the comparable residential properties, the following hotels are the comparable properties to analyze potential values of hotel properties in the redevelopment area. The data are from the County Assessor's Office and the values may not yet reflect the full market values

Holiday Inn Express (417 E. 13th St.): In 2010, the land for this property had a value of $165,000, and in 2017, following the opening of the KC Streetcar, the property has a value of $178,200, representing an increase of 7.4%. This 75-room hotel conversion is approximately 0.4 miles, or about a ten-minute walk, from the two closest KC Streetcar locations. In addition, this hotel is across the street from the Sprint Center and close to the Jackson County courthouse.

Hampton Inn (801 Walnut St.): In 2010, the land for this property had a value of $230,000, while in 2017, with the KC Streetcar operation in place, the value of the land is $248,000, an increase of 7.4%. The Hampton Inn is within 0.1 miles, or about a 3minute walk, of the two nearest KC Streetcar stations. The hotel is one block east of Main Street and is in walking distance of several downtown locations.

Appendix 2 Public Involvement One-to-One Stakeholder Discussions

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STREETCAR RIVERFRONT EXTENSION AND MULTI-MODAL FEASIBILITY STUDY

STAKEHOLDER INTERVIEW SUMMARY

Stakeholder Meeting:	Craig Slawson, Epoch development
Other Participants:	David Thurston (Burns & McDonnell), Meghan Jansen (Parson + Associates), Joe Perry (Port KC), Michael Collins (Port KC) – part of meeting
Date and Time:	April 21, 2017 at 10:30 AM
Location:	Port KC 300 Wyandotte Street

Background: Craig has properties on Delaware and Baltimore.

Key Takeaways:

- Streetcar system needs shorter headways.
- If City can reduce parking requirements for Epoch – require one space per unit, instead of two.
- The Riverfront developments create competition for Delaware developments. Craig is doing his own "placemaking."
- How can the commuter rail tie-in?
- Supports idea of a multi-modal hub at riverfront.
- Build a downtown stadium.

STREETCAR RIVERFRONT EXTENSION AND MULTI-MODAL FEASIBILITY STUDY

STAKEHOLDER INTERVIEW SUMMARY

Stakeholder Meeting:	Briarcliff Development – Richie Benninghoven, Michael Fischer, Ryan Selby
Other Participants:	David Thurston (Burns & McDonnell), Meghan Jansen (Parson + Associates), Joe Perry (Port KC)
Date and Time:	April 21, 2017 at 1:00 PM
Location:	1300 NW Briarcliff Parkway, Kansas City, MO 64150

Background: Briarcliff is the KCATA's developing partner for the property at the northeast corner of 3rd and Grand. Plans are not finalized, but could include 200,000 square feet of office space; eight levels above ground, some residential and approximately 600 parking stalls.

Key Takeaways:

- Station stop location at 3rd and Grand is flexible, as they are very early in the planning stages for the property at the northeast corner of 3rd and Grand.
- Envision the development as a multi-modal station.
- Prefer Alternate Route #1 – Grand Boulevard viaduct that ends with a switch and station stop on the riverfront
- Would like to stay in contact as the Study advances and the development plans for the NEC of 3rd and Grand progress.
- Shorter headways would be better.
- They pursued the site at 3rd and Grand Blvd because of the streetcar.

STREETCAR RIVERFRONT EXTENSION AND MULTI-MODAL FEASIBILITY STUDY

STAKEHOLDER INTERVIEW SUMMARY

Stakeholder Meeting:	Flaherty & Collins – Ryan Cronk
Other Participants:	David Thurston (Burns & McDonnell), Meghan Jansen (Parson + Associates), Joe Perry (Port KC), Marissa Wamble (Port KC)
Date and Time:	April 21, 2017 at 3:00 PM
Location:	Port KC 300 Wyandotte Street

Background: Flaherty & Collins is developing property in Berkley Riverfront Park.

Key Takeaways:

- Simple, fast operations are preferred.
- Alternate 3 seems preferable (Short Loop)
- The loop at the end of Alternate Route #X seemed unnecessary, until Dave explained implications of loop v. no loop.
- Do not want a stop within the festival area.
- Would prefer the route run on the river side.
- Would like to be kept apprised of developments pertaining to the stop location specifically. Feels this would be great opportunity to put a restaurant.

STREETCAR RIVERFRONT EXTENSION AND MULTI-MODAL FEASIBILITY STUDY

STAKEHOLDER INTERVIEW SUMMARY

Stakeholder Meeting:	Dana Gibson
Other Participants:	David Thurston (Burns & McDonnell), Meghan Jansen (Parson + Associates)
Date and Time:	April 26, 2017 at 10:30 AM
Location:	Dana's Office, 201 Wyandotte

Key Takeaways:

- If Grand Blvd viaduct is used, a pedestrian should be part of the plan.
- The starter-line has put pressure on off-street parking in the River Market.
- Extending the streetcar to the riverfront will create even larger crowds in the River Market. Turning the Riverfront into a node creates greater opportunity for the River Market.
- Streetcar is changing the way retail is viewed in River Market – more food, more small-scale retail.
- Overall supportive of the extension and the "simple system" to moving streetcars to the Riverfront and back.

STREETCAR RIVERFRONT EXTENSION AND MULTI-MODAL FEASIBILITY STUDY

STAKEHOLDER INTERVIEW SUMMARY

Stakeholder Meeting:	Justin Cottrell, KC Commercial Realty
Other Participants:	David Thurston (Burns & McDonnell), Meghan Jansen (Parson + Associates), Joe Perry (Port KC), Marissa Wamble (Port KC)
Date and Time:	April 26, 2017 at 1:00 PM
Location:	Port KC, 301 Wyandotte

Background: KC Commercial Realty's properties within the study area include: City Market, Centropolis (3rd & Grand), 3rd Street lots (Grand to Walnut), two lots at 5th & Main.

Key Takeaways:

- The majority of Centropolis tenants have more than one car. This is challenging because the market rate for those units doesn't support building two parking spots per unit.
- More than 50% of City Market patrons are not from Jackson County.
- City Market tenant sales are up and have been on continual incline.
- Port KC should consider a community pool on riverfront.
- "Simple system" makes the most sense. I.e. one line that goes from 3rd & Grand, to Riverfront, then back to 3rd Street to complete River Market loop.
- "The farther it goes, the better."

STREETCAR RIVERFRONT EXTENSION AND MULTI-MODAL FEASIBILITY STUDY

STAKEHOLDER INTERVIEW SUMMARY

Stakeholder Meeting:	Deb Churchill, City Market
Other Participants:	David Thurston (Burns & McDonnell), Meghan Jansen (Parson + Associates)
Date and Time:	April 26, 2017 at 3:30 PM
Location:	City Market Offices

Background: Deb manages the City Market property and tenants.

Key Takeaways:

- Since the completion of the Downtown starter-line, the City Market has continued to see an increase in foot-traffic, tenant sales and evening traffic. Sales during streetcar construction were up 18%, which Deb attributes to a natural growth trajectory and the added visibility the Market received during media coverage of streetcar construction.
- Downtown line has had a negative impact on the park and ride at 3rd and Grand.
- While switching all lots to paid parking is necessary, it does increase the cost of running businesses.
- Deb's team is regularly contacted by representatives from conventions or tour groups requesting information on the River Market's "free parking lots" because they do not want to pay for parking at the hotels.
- Small parking space – just west of Cascone's, south side of 5th Street – is a continual problem. Vehicle mirrors regularly stick out over the white line. Even when Deb or her staff go out to fold in the mirror, often times the streetcar operator still refuses to proceed. (Honking is troublesome to businesses). Deb indicated that she has spoken with KCSCA.
- Deb recommended talking to Todd at the Isle of Capri.
- Supportive of the extension. No route preference.
- "Simple system" makes the most sense. I.e. one line that goes from 3rd & Grand, to Riverfront, then back to 3rd Street to complete River Market loop.

STREETCAR RIVERFRONT EXTENSION AND MULTI-MODAL FEASIBILITY STUDY

STAKEHOLDER INTERVIEW SUMMARY

Stakeholder Meeting:	Matt Staub
Other Participants:	David Thurston (Burns & McDonnell), Meghan Jansen (Parson + Associates)
Date and Time:	April 27, 2017 at 7:30 AM
Location:	Quay Coffee

Background: Matt is a River Market resident who owns his own digital marketing company – Proxima, which he operates from his home, TDD Director for the KC Streetcar Authority Board,

Key Takeaways:

- Riverfront Heritage Trail (Town of Kansas) connection is used by those who are aware of it, but more awareness is needed.
- How will extra 10 minutes spent going to and from the Riverfront impact operations further up the line?
- Would like to see a Heart of America connection, but sees where Grand Blvd viaduct could work, if a walkway is added to make it a safe connection for bicyclists and pedestrians.
- Heart of America connection is needed.
- Residents have concerns with track noise at corners (ex. 5th & Delaware). And the residual grease that builds up on the street.
- Supportive of a riverfront extension and using a “simple system” to integrate the riverfront stop.

STREETCAR RIVERFRONT EXTENSION AND MULTI-MODAL FEASIBILITY STUDY

STAKEHOLDER INTERVIEW SUMMARY

Stakeholder Meeting:	Thomas Morefield – Columbus Park resident, BikeWalkKC employee
Other Participants:	David Thurston (Burns & McDonnell), Meghan Jansen (Parson + Associates
Date and Time:	April 27, 2017 at 9:00 AM
Location:	Happy Gillis

Background: Thomas's comments were coming from an urban planner and Columbus Park resident view point. He recommended that we meet separately with Eric Rogers to gain the official BikeWalkKC perspective on the Study.

Key Takeaways:

- Thomas has a vision to use the initial work on the connection to the riverfront to be the first piece of infrastructure (rail, OCS, Heart of America (HOA) bridge modifications) to connect to North Kansas City
- The Columbus park neighbor hood residents have a walkable community and would like an short connection to he riverfront (Town of Kansas bridge is far and Lydia Ave can be blocked)
- Thomas envisions a developer that includes a transfer station within the development that permits pedestrians and bicycles to easily move from HOA bridge level to riverfront level.
- When the streetcar is extended to North KC and Independence Ave there will need to be different routes.

STREETCAR RIVERFRONT EXTENSION AND MULTI-MODAL FEASIBILITY STUDY

STAKEHOLDER INTERVIEW SUMMARY

Stakeholder Meeting:	Chris Sally
Other Participants:	David Thurston (Burns & McDonnell), Meghan Jansen (Parson + Associates
Date and Time:	April 27, 2017 at 11:00 AM
Location:	Quay Coffee

Background: River Market resident and developer of River Market area properties including northeast corner of 5th & Wyandotte.

Key Takeaways:

- Supportive of a riverfront extension. Grand Blvd viaduct options seem to make the most sense.
- An extension to the riverfront is good for the River Market.
- Eliminate free parking in the River Market.
- Heritage Trail is well-utilized, but not convenient – especially for people with young children as there aren't any public restroom facilities.
- The Riverfront needs a driving range.

STREETCAR RIVERFRONT EXTENSION AND MULTI-MODAL FEASIBILITY STUDY

STAKEHOLDER INTERVIEW SUMMARY

Stakeholder Meeting:	River Market Community Association – Tim Kruse and Mark Rowlands
Other Participants:	David Thurston (Burns & McDonnell), Meghan Jansen (Parson + Associates
Date and Time:	April 27, 2017 at 1:30 PM
Location:	Opera House Coffee

Background: Tim Kruse lives in the City Homes and operates a business from his home. Mark Rowlands is an employee of the Downtown Council and manages the River Market Community Improvement District

Key Takeaways:

- Supportive of planning an additional pedestrian connection, potentially via Grand Blvd viaduct.
- Planning process should ensure extending in any direction is still feasible (i.e. to Isle of Capri or North Kansas City)
- Parking in the River Market has become more strained since the streetcar and would like to see a shared parking option on the riverfront.
- Both gentleman understood how a streetcar connection between Columbus Park and the Riverfront would be cost-prohibitive, but stressed the importance of advancing a pedestrian connection.
- A “simple system” in terms of operations made the most sense to both.
- Both are supportive of an extension to the Riverfront and will do what they can to promote the Study and upcoming public meeting.
- River Market Community Association meets quarterly. Mark will provide upcoming meeting information to Meghan.

Appendix 3 Public Meeting Presentation Material

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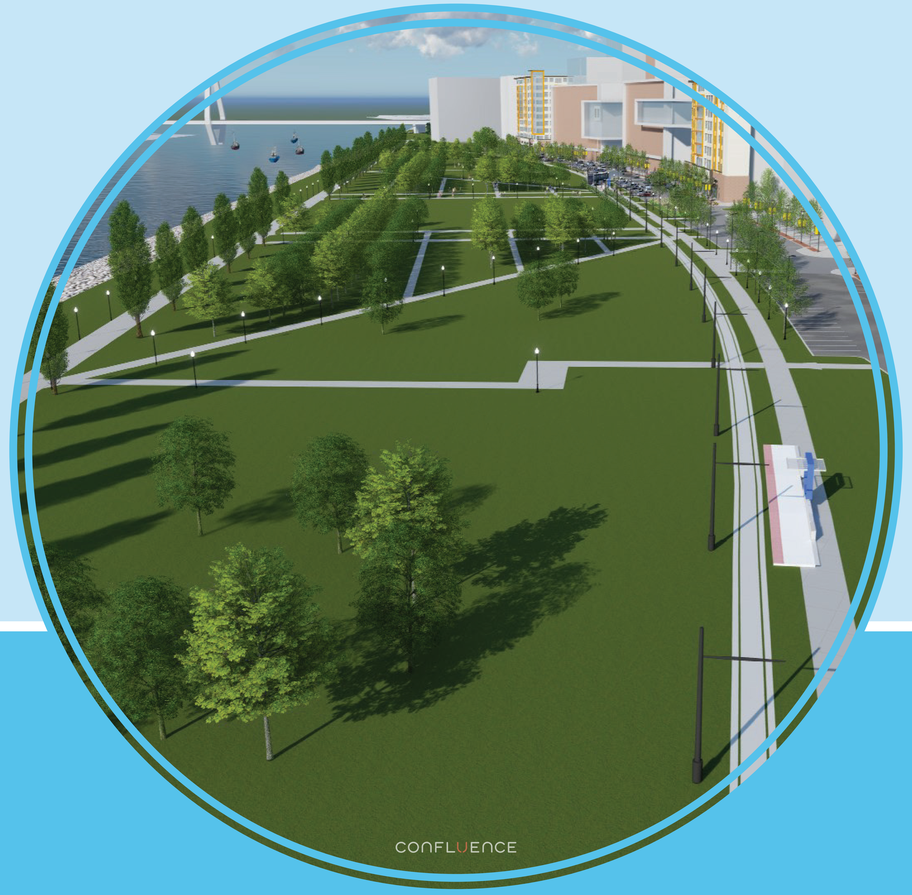
RideKC STREETCAR portkc RideKC

Connect. Thrive. Develop.



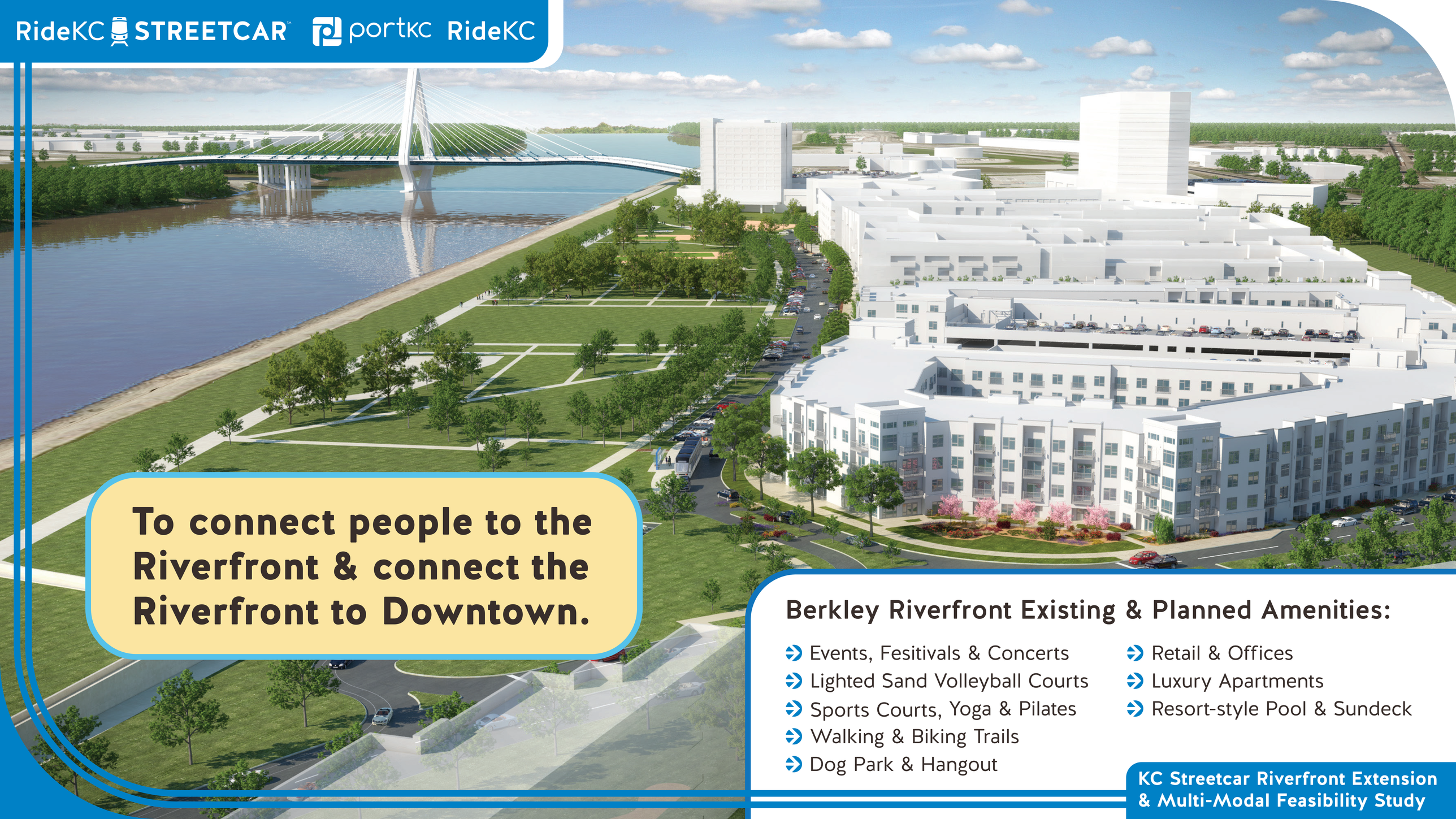
KC Streetcar Riverfront Extension
& Multi-Modal Feasibility Study

Why go to the Riverfront?

KC Streetcar is a proven catalyst for development & connecting people to Downtown.

- **$2 billion** in adjacent development:
  new businesses, hotels, apartments & amenities
- **10** surface parking lot conversions to new active uses
- **40% increase** in downtown residential density
- **2 million** passenger trips
  5,830 daily average trips

RideKC STREETCAR portkc RideKC



To connect people to the Riverfront & connect the Riverfront to Downtown.

Berkley Riverfront Existing & Planned Amenities:

- Events, Fesitivals & Concerts
- Lighted Sand Volleyball Courts
- Sports Courts, Yoga & Pilates
- Walking & Biking Trails
- Dog Park & Hangout
- Retail & Offices
- Luxury Apartments
- Resort-style Pool & Sundeck

KC Streetcar Riverfront Extension & Multi-Modal Feasibility Study

Opportunities to Connect

- Integrate with bus routes & potential future bicycle / pedestrian connections
- Streamline Riverfront & Downtown access; offer parking alternatives
- Allow for future Streetcar expansions

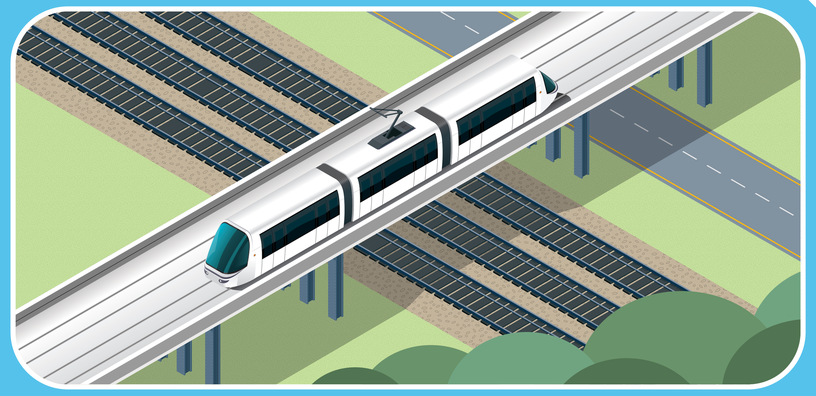
What makes a Streetcar route feasible?

COST TO BUILD

- Will it require a new bridge?
- What is the length of track?

COST TO OPERATE

- Are riders going out of their way?
- Can we maintain route timetables?
- Travel time & number of streetcars required to support the route



Considerations

NEW BRIDGE

TRACK LENGTH

STEEP GRADE

SAFETY

TIMING

NOISE

USABILITY

Level of Difficulty

- Not Feasible
- Difficult
- Challenging
- Preferred

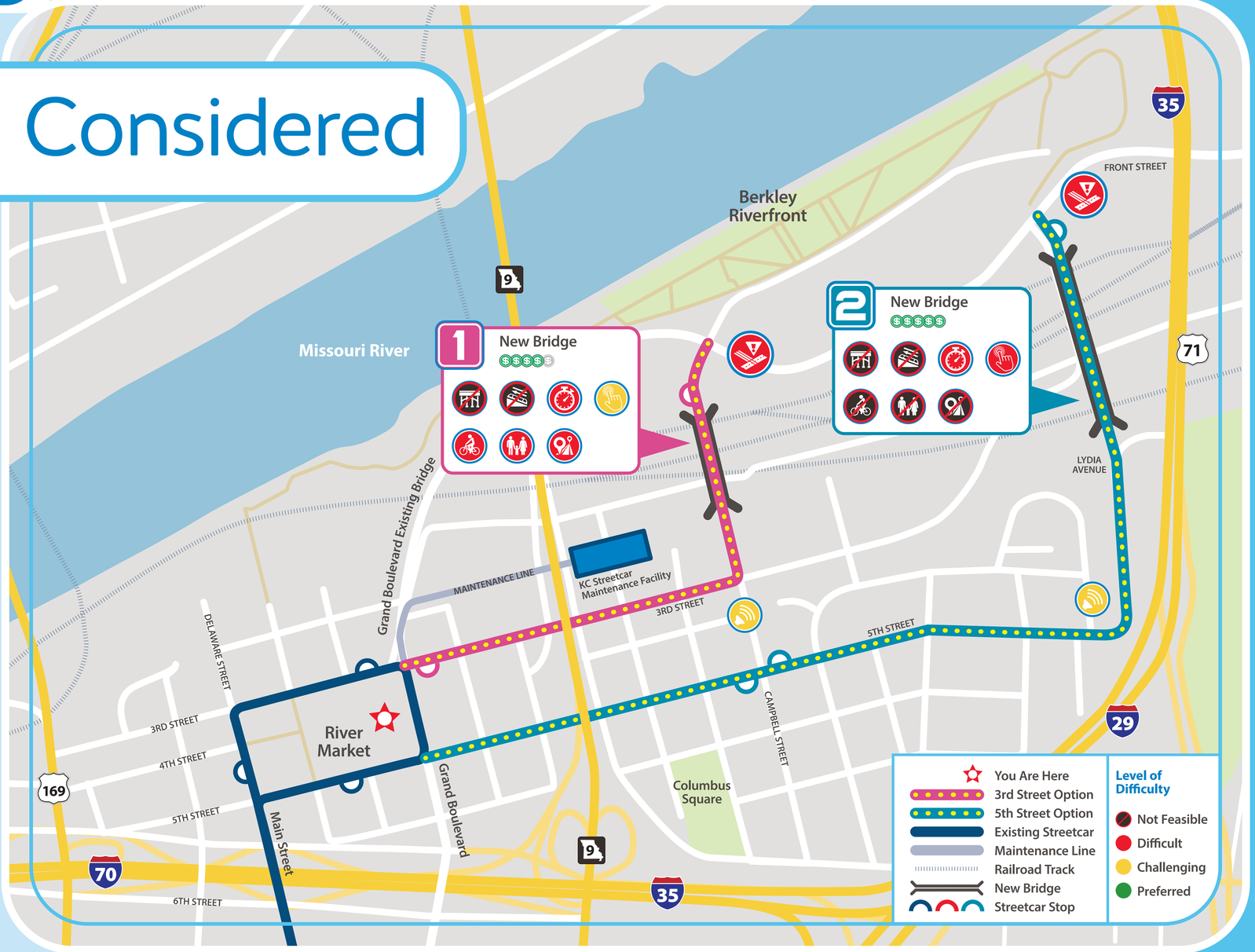
Streetcar Options Considered

1 3rd Street

- An 870 foot bridge over railroad tracks is expensive
- The steep grade causes safety issues and excessive wear-and-tear on streetcars

2 5th Street

- Additional track length increases costs
- And a 1,350 foot bridge is even more expensive



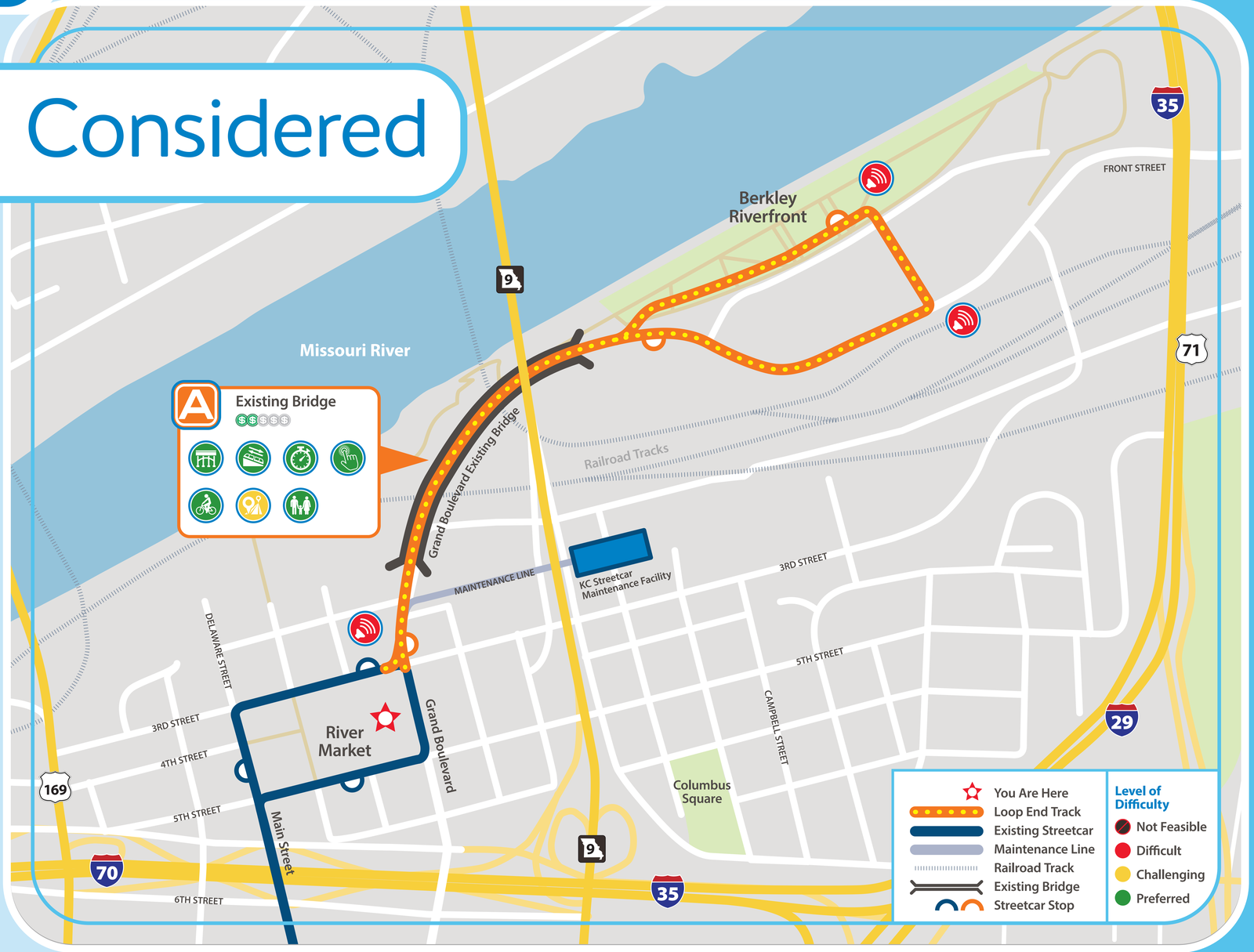
Streetcar Options Considered

3 Grand Boulevard

- Use of existing bridge is less expensive
- Grades are manageable

A Loop End

- More track required for loop around end
- Curved track is more expensive & can be noisy
- Additional stop requires more money



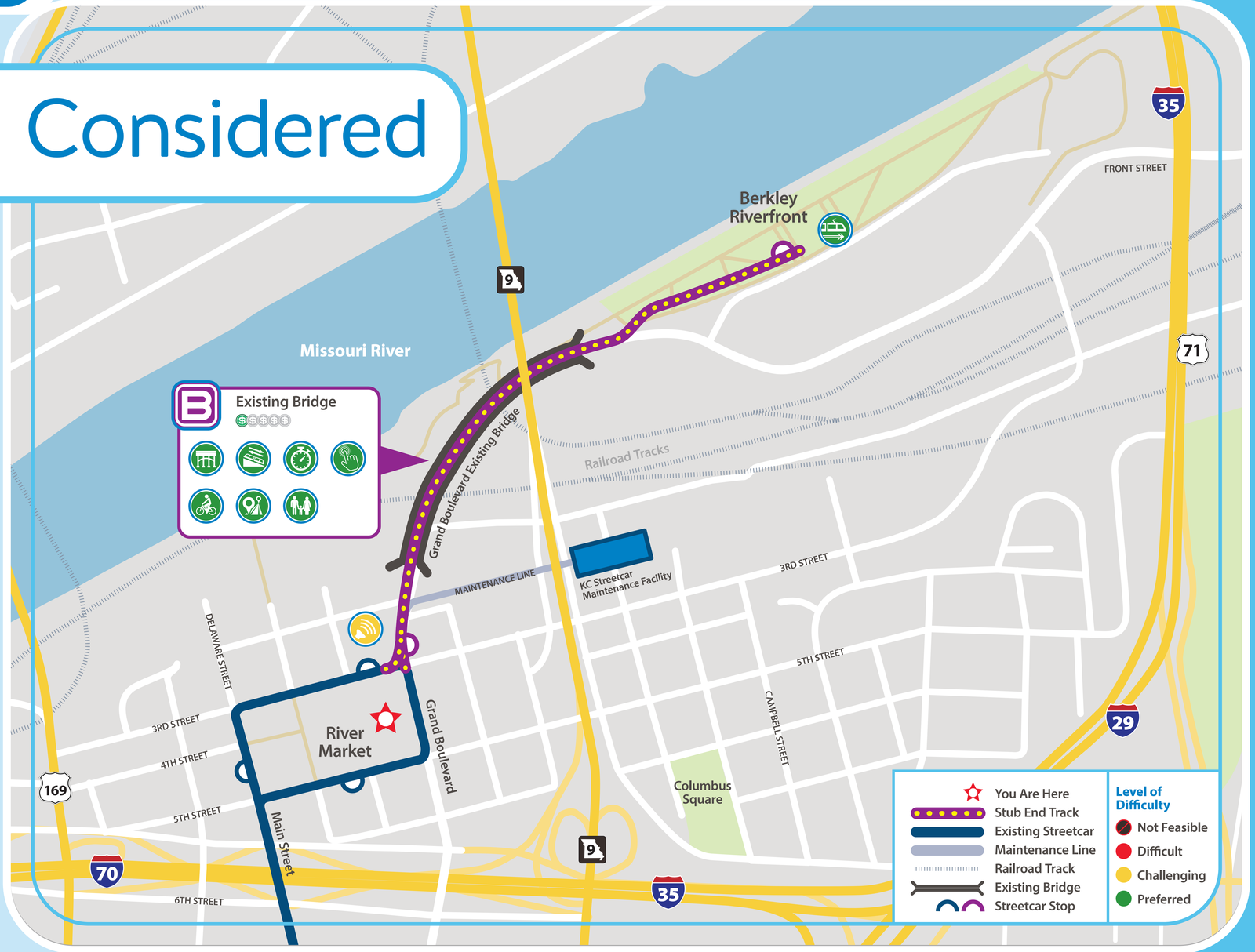
Streetcar Options Considered

3 Grand Boulevard

- Shorter distance with less track to construct
- Use of existing bridge is less expensive
- Grades are manageable

B Stub End – Preferred Route

- Less track to construct
- Easier to expand to the east in the future
- Less noise



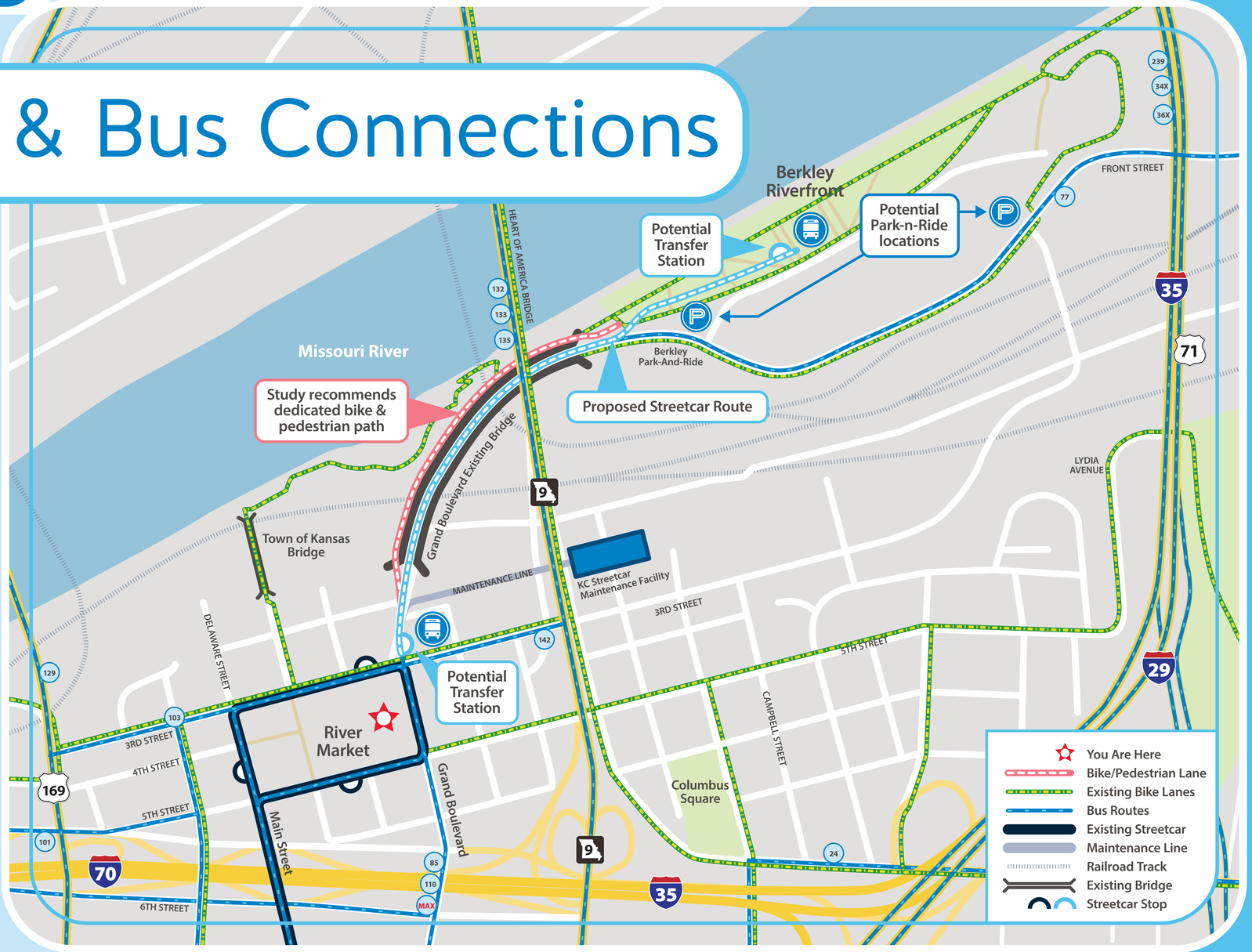
Bike, Pedestrian & Bus Connections

Existing Connections:

- Bike & Pedestrian: Safe access via Town of Kansas Bridge & Lydia Ave.
- KCATA Routes:
  - Route 77 over the Grand Blvd. Bridge
  - Many routes converge at 3rd & Grand
  - Routes 239, 34X & 36X pass near the Riverfront on I-29/I-35

Study Recommendations:

- Transfer stations between streetcar & buses on the Riverfront
- Dedicated pedestrian & bike path along Grand Blvd. Bridge
- Parking options on the Riverfront such as Park-n-Ride to connect via streetcar to downtown neighborhoods



Streetcar Study Summary

Level of Difficulty
- Not Feasible
- Difficult
- Challenging
- Preferred

		WHAT MAKES A ROUTE FEASIBILE?								
		OPERATIONS			SAFETY	COST				FUTURE EXPANSIONS
		Usability	Maintain Timing	Steep Grade	Dangerous Condition	New Bridge	Track Length	Curved Track	Construction Schedule	Add On vs. Reconstruct
1	3RD STREET (TO CAMPBELL)									
2	5TH STREET (TO LYDIA)									
3A	GRAND BLVD. W/ LOOP END									
3B	GRAND BLVD. W/ STUB END									

Funding strategy would not take away from other city services such as:
street maintenance, bus funds, or recently approved GO Bond funds

How will the proposed Streetcar route be funded?

- Revenues generated from new development on the Riverfront
- State / Federal programs and grants
- Multi-modal grants
- Existing funding streams

Next steps: Streetcar to the Riverfront

1 Study Phase

- Which route is more feasible?
- How much will it cost?

2 Financial

- Identify local & federal funding opportunities

3 Design

- Where should station stops be located?
- What type of shelter should be installed at each stop?
- Where do power poles go?

4 Construction

- Communication with those along the route who will be affected by the construction.
- Utility coordination (such as electric, water, gas, cable, etc.)

5 Testing

- Dry-run testing & careful consideration for rider safety.

6 Ongoing Operations

- Riders are ready to board!
- Ongoing maintenance is provided

Appendix 4 Public Meeting Public Input

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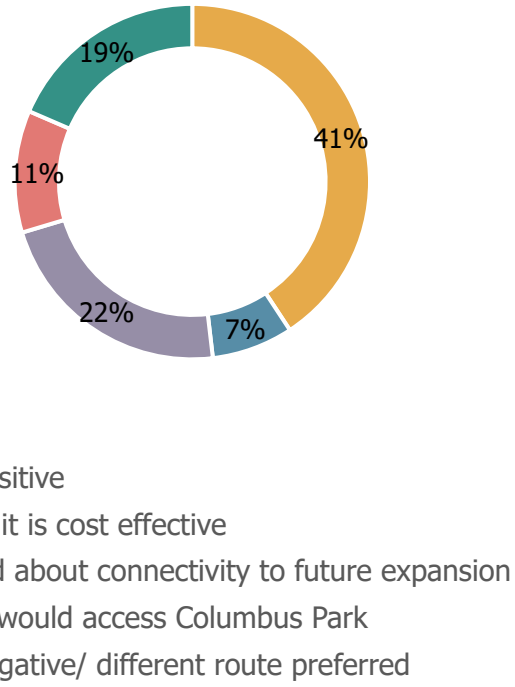
RideKC STREETCAR portkc RideKC

KC Streetcar Riverfront Extension & Multi-Modal FEASIBILITY STUDY

May 31, 2017 Open House – Public Comments Summary

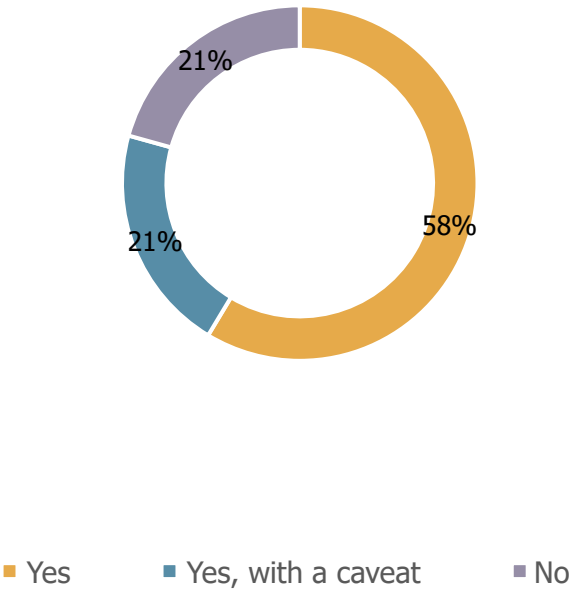
1. What are your thoughts about the preferred route?



Key Quotes:

- "Of the proposed options, it appears to be most cost effective."
- "Preferred route is east from Downtown Loop serving existing communities."
- "Great development tool for the Riverfront Park area."
- "Interrupts the view of the riverfront."
- "Loops in general tend to be excessive. See strength in the stub end solution."
- "Keep it simple, use existing infrastructure, integrate bicycles."

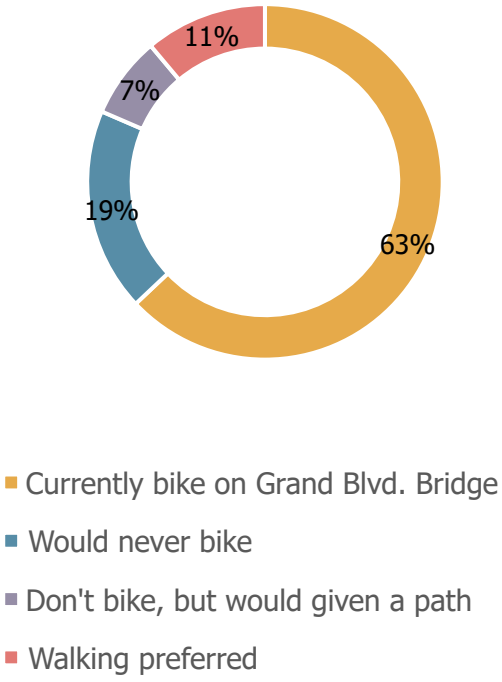
2. Would you use the Streetcar or Bus to access the new activities and developments coming to the Riverfront?



Key Quotes:

- "I'd use whichever is most convenient to me and runs at the times I need it."
- "Yes, as long as there are cool things to do, not just apartments."
- "Yes, if the development feels urban and not like the suburbs."
- "Depends on what is publicly accessible."

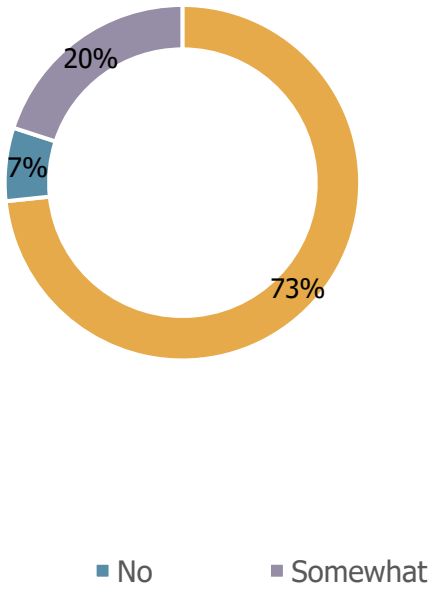
3. Do you currently access the Riverfront via bicycle? Would you use a dedicated bike/pedestrian path on the Grand Blvd. Bridge?



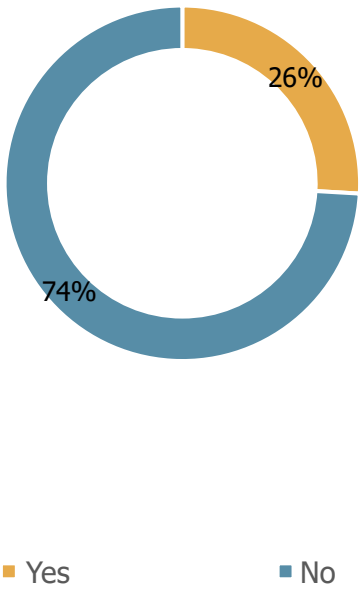
Key Quotes:

- "I have walked from the River Market to the river via the Town of Kansas Pedestrian Bridge. I would utilize a dedicated path."
- "The design of the bike/pedestrian path is important. Given the grade it will need to be wide enough to accommodate the traffic"
- "Please add safety features with lights, patrols, etc."
- "A bicycle path should be put in rather than a streetcar."

4. Before today were you aware of the developments coming to Berkley Riverfront?



5. Would you use a Park-and-Ride lot or parking lot facility located "on the Riverfront"?



6. Is there anything else you'd like to share with us today?

- "Make sure there are ped/bike lanes."
- "If this can be funded without an additional sales tax, I am in support of it."
- "I am mildly concerned about attracting additional development to the flood plain."
- "I am concerned regarding where funds to build would come from. I am NOT in favor of increased property tax for this extension."
- "I am hopeful for the extension to UMKC but am concerned about how other extensions will be underwritten. Will the process used for the starter line and the extension to the plaza be viable in any other part of the city?"
- "Grand loop seems redundant – stub like Union Station would work well."
- "I am concerned about preserving the availability of middle-income/workforce housing as the area is developed. Please consider setting aside affordable units."
- "People want to feel safe walking alone at night downtown to the Riverfront."
- "I would like to know how bike/ped safety is being considered with the danger the tracks present to cyclists."
- "Bike lane on Grand!"
- "I believe that we need to continue to integrate bicycles in all future transportation infrastructure development."
- "This would be a perfect way to connect KCMO to the waterfront."
- "Thank you for the presentation! I look forward to streetcar expansion that makes sense."
- "Excellently executed event!"

Appendix 5 Public Meeting Feedback

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RideKC STREETCAR portkc RideKC

KC Streetcar Riverfront Extension & Multi-Modal FEASIBILITY STUDY

Your Name ANDY ST. FORT

Your Email [redacted]anzacsf2010@gmail.com Your Phone 816.778.2014

1. What are your thoughts about the preferred route?

Awesome Study

2. Before today, were you aware of the developments coming to Berkley Riverfront?

Yes

3. Would you use the Streetcar or Bus to access the new activities and developments coming to the Riverfront?

Yes

4. Do you currently access the Riverfront via bicycle? Would you use a dedicated bike/pedestrian path on the Grand Blvd. Bridge?

Yes

5. Would you use a Park-and-Ride lot or parking facility located on the Riverfront?

Yes

6. Is there anything else you would like to share with us today?

Not really

For more information, visit: www.kcstreetcar.org or contact Donna Mandelbaum at dmandelbaum@kcstreetcar.org or (816) 627-2526.

RideKC STREETCAR portkc RideKC

KC Streetcar Riverfront Extension & Multi-Modal FEASIBILITY STUDY

Your Name Peter Carnesciali

Your Email pcarn9@gmail.com Your Phone 314-640-9502

1. What are your thoughts about the preferred route?
I like Grand - Stub end, but there must be good Walking access. Currently, Town of Kansas Bridge is too Far Out of the way to be a feasible travel method.

2. Before today, were you aware of the developments coming to Berkley Riverfront?
Yes, I've seen constration

3. Would you use the Streetcar or Bus to access the new activities and developments coming to the Riverfront?
Yes, as long as there are cool things to go to. Not just apartments.

4. Do you currently access the Riverfront via bicycle? Would you use a dedicated bike/pedestrian path on the Grand Blvd. Bridge?
YES. Absolutely.

5. Would you use a Park-and-Ride lot or parking facility located on the Riverfront?
No.

6. Is there anything else you would like to share with us today?
Make sure there is ped/bike lanes.

For more information, visit: www.kcstreetcar.org or contact Donna Mandelbaum at dmandelbaum@kcstreetcar.org or (816) 627-2526.

RideKC STREETCAR portkc RideKC

KC Streetcar Riverfront Extension & Multi-Modal FEASIBILITY STUDY

Your Name GREG ELLIOTT

Your Email GREG.ELLIOTT@GMAIL Your Phone (816) 585-9833

1. What are your thoughts about the preferred route?

DOWN GRAND VIADUCT TO THE PARK IS PREFERRED

2. Before today, were you aware of the developments coming to Berkley Riverfront?

YES

3. Would you use the Streetcar or Bus to access the new activities and developments coming to the Riverfront?

YES

4. Do you currently access the Riverfront via bicycle? Would you use a dedicated bike/pedestrian path on the Grand Blvd. Bridge?

YES AND YES

5. Would you use a Park-and-Ride lot or parking facility located on the Riverfront?

NO

6. Is there anything else you would like to share with us today?

I LIKE THE PLAN - GOOD EXTENSION

For more information, visit: www.kcstreetcar.org or contact Donna Mandelbaum at dmandelbaum@kcstreetcar.org or (816) 627-2526.

RideKC STREETCAR portkc RideKC

KC Streetcar Riverfront Extension & Multi-Modal FEASIBILITY STUDY

Your Name Austen Strassle

Your Email Austen.strassle@gmail.com Your Phone 816-500-2677

1. What are your thoughts about the preferred route?
   Interesting proposal. Most I would prefer an elevated station on Mo 9. Hwy and the line come down 3rd St to set the foundation for expansions to N. KC and Independence Ave, but overall I am supportive of it.

2. Before today, were you aware of the developments coming to Berkley Riverfront?
   Yes

3. Would you use the Streetcar or Bus to access the new activities and developments coming to the Riverfront?
   Absent a southern expansion down Main St., I would still drive to the River front. Otherwise, I would consider taking the streetcar.

4. Do you currently access the Riverfront via bicycle? Would you use a dedicated bike/pedestrian path on the Grand Blvd. Bridge?
   I have walked from the River Market to the River via Town of Kansas Bridge. I would utilize a dedicated path.

5. Would you use a Park-and-Ride lot or parking facility located on the Riverfront?
   No.

6. Is there anything else you would like to share with us today?
   If this can be funded without additional sales tax hikes, I am supportive of it.

For more information, visit: www.kcstreetcar.org or contact Donna Mandelbaum at dmandelbaum@kcstreetcar.org or (816) 627-2526.

RideKC STREETCAR portkc RideKC

KC Streetcar Riverfront Extension & Multi-Modal FEASIBILITY STUDY

Your Name Tim Kramps

Your Email timothy.kramps@gmail.com Your Phone 913.568.6387

1. What are your thoughts about the preferred route?

   Not clear how it would connect w/ potential N.KC streetcar route

2. Before today, were you aware of the developments coming to Berkley Riverfront?

   Yes

3. Would you use the Streetcar or Bus to access the new activities and developments coming to the Riverfront?

   I'd use whichever is most convenient and runs @ times I need it

4. Do you currently access the Riverfront via bicycle? Would you use a dedicated bike/pedestrian path on the Grand Blvd. Bridge?

   No, I walk. Ped access would be great

5. Would you use a Park-and-Ride lot or parking facility located on the Riverfront?

   No, live downtown

6. Is there anything else you would like to share with us today?

For more information, visit: www.kcstreetcar.org or contact Donna Mandelbaum at dmandelbaum@kcstreetcar.org or (816) 627-2526.

RideKC STREETCAR portkc RideKC

KC Streetcar Riverfront Extension & Multi-Modal FEASIBILITY STUDY

Your Name Jack Kenward

Your Email jwkenward822@gmail.com Your Phone 816-830-5090

1. What are your thoughts about the preferred route?
   It's a rational possibility in a difficult area

2. Before today, were you aware of the developments coming to Berkley Riverfront?
   yes

3. Would you use the Streetcar or Bus to access the new activities and developments coming to the Riverfront?
   possibly - More likely to bike over the river from NKC

4. Do you currently access the Riverfront via bicycle? Would you use a dedicated bike/pedestrian path on the Grand Blvd. Bridge?
   Yes. I have biked in the Park several Times, but not as a destination. The design of the bike/pedestrian path is important. Given the grades, it will need to be wide enough to accommodate the traffic

5. Would you use a Park-and-Ride lot or parking facility located on the Riverfront?
   More likely to ride in from NKC.

6. Is there anything else you would like to share with us today?

For more information, visit: www.kcstreetcar.org or contact Donna Mandelbaum at dmandelbaum@kcstreetcar.org or (816) 627-2526.

RideKC STREETCAR portkc RideKC

KC Streetcar Riverfront Extension & Multi-Modal FEASIBILITY STUDY

Your Name Sam Pierron

Your Email spierron@gmail.com Your Phone 785-218-3636

1. What are your thoughts about the preferred route?
   It's certainly the most cost efficient solution, but, boy, wouldn't it be great to go through Columbus Park?

2. Before today, were you aware of the developments coming to Berkley Riverfront?
   Yes

3. Would you use the Streetcar or Bus to access the new activities and developments coming to the Riverfront?
   Yes

4. Do you currently access the Riverfront via bicycle? Would you use a dedicated bike/pedestrian path on the Grand Blvd. Bridge?
   No. Not likely. I don't like riding bicycles!

5. Would you use a Park-and-Ride lot or parking facility located on the Riverfront?
   I can see using it.

6. Is there anything else you would like to share with us today?

For more information, visit: www.kcstreetcar.org or contact Donna Mandelbaum at dmandelbaum@kcstreetcar.org or (816) 627-2526.

RideKC STREETCAR portkc RideKC

KC Streetcar Riverfront Extension & Multi-Modal FEASIBILITY STUDY

Your Name Claus Wawrzinch

Your Email Claus.wawrzinch@gmail.com Your Phone 816 517 5244

1. What are your thoughts about the preferred route?
   Great development tool for the river front park area

2. Before today, were you aware of the developments coming to Berkley Riverfront?
   Yes

3. Would you use the Streetcar or Bus to access the new activities and developments coming to the Riverfront?
   Yes

4. Do you currently access the Riverfront via bicycle? Would you use a dedicated bike/pedestrian path on the Grand Blvd. Bridge?
   Yes

5. Would you use a Park-and-Ride lot or parking facility located on the Riverfront?
   Yes

6. Is there anything else you would like to share with us today?
   I am mildly concerned about flooding in the "flood plain". I have no concerns for the street car, but somewhat about attracting additional development in the floodplain.

For more information, visit: www.kcstreetcar.org or contact Donna Mandelbaum at dmandelbaum@kcstreetcar.org or (816) 627-2526.

RideKC STREETCAR portkc RideKC

KC Streetcar Riverfront Extension & Multi-Modal FEASIBILITY STUDY

Your Name Ron Olmstead

Your Email ronolmstead@ymail.com Your Phone 816-213-0675

1. What are your thoughts about the preferred route?
Of the proposed options it appears to be the most cost effective

2. Before today, were you aware of the developments coming to Berkley Riverfront?
Yes.

3. Would you use the Streetcar or Bus to access the new activities and developments coming to the Riverfront?
I live at 2nd + Main so more than likely not.

4. Do you currently access the Riverfront via bicycle? Would you use a dedicated bike/pedestrian path on the Grand Blvd. Bridge?
Yes + yes

5. Would you use a Park-and-Ride lot or parking facility located on the Riverfront?
See #3

6. Is there anything else you would like to share with us today?
Concern regarding where Funds to build would come from. NOT in favor of increased property tax for this extension.

For more information, visit: www.kcstreetcar.org or contact Donna Mandelbaum at dmandelbaum@kcstreetcar.org or (816) 627-2526.

RideKC STREETCAR portkc RideKC

KC Streetcar Riverfront Extension & Multi-Modal FEASIBILITY STUDY

Your Name Joy Cota

Your Email joyfulcota@gmail.com Your Phone 816-645-4390

1. What are your thoughts about the preferred route?
   ability for future connection to Independence Ave.

2. Before today, were you aware of the developments coming to Berkley Riverfront?
   yes

3. Would you use the Streetcar or Bus to access the new activities and developments coming to the Riverfront?
   streetcar - I live on 7th St

4. Do you currently access the Riverfront via bicycle? Would you use a dedicated bike/pedestrian path on the Grand Blvd. Bridge?
   yes and yes

5. Would you use a Park-and-Ride lot or parking facility located on the Riverfront?
   no

6. Is there anything else you would like to share with us today?
   grand loop seems redundant - stub like Union Station would work well

For more information, visit: www.kcstreetcar.org or contact Donna Mandelbaum at dmandelbaum@kcstreetcar.org or (816) 627-2526.

RideKC STREETCAR portKC RideKC

KC Streetcar Riverfront Extension & Multi-Modal FEASIBILITY STUDY

Your Name Ina Anderson

Your Email inalouiseanderson@gmail Your Phone

1. What are your thoughts about the preferred route?

Good

2. Before today, were you aware of the developments coming to Berkley Riverfront?

Yes - new housing - BAR K - etc. Looking forward to more.

3. Would you use the Streetcar or Bus to access the new activities and developments coming to the Riverfront?

Yes

4. Do you currently access the Riverfront via bicycle? Would you use a dedicated bike/pedestrian path on the Grand Blvd. Bridge?

I try to - but it is hard. Would definitely use a dedicate bike path!! Yes.

5. Would you use a Park-and-Ride lot or parking facility located on the Riverfront?

NO

6. Is there anything else you would like to share with us today?

I am concerned about preserving the availabilit a middle-income / workforce housing as the area is developed. Please consider setting aside affordable units!!

For more information, visit: www.kcstreetcar.org or contact Donna Mandelbaum at dmandelbaum@kcstreetcar.org or (816) 627-2526.

RideKC STREETCAR portKC RideKC

KC Streetcar Riverfront Extension & Multi-Modal FEASIBILITY STUDY

Your Name Chris Crabtree

Your Email thechris@mac.com Your Phone 913-707-2583

1. What are your thoughts about the preferred route?
   3B (Preferred Route) is the best of them. That's just how I would imagine doing it.

2. Before today, were you aware of the developments coming to Berkley Riverfront?
   Yes but didn't realize those buildings were going to be so big & extensive.
   Will the 4th of July Celebration still happen there?

3. Would you use the Streetcar or Bus to access the new activities and developments coming to the Riverfront?
   Sometimes. Depends on how monstrous that complex will be and what it's appeal is. It should feel urban - NOT like the suburbs! I live in River Market. I live downtown because I want an urban lifestyle. Don't build it to attract people from the burbs - they won't come anyway.

4. Do you currently access the Riverfront via bicycle? Would you use a dedicated bike/pedestrian path on the Grand Blvd. Bridge?
   Yes and Yes. But lots of people like to walk, ride, run on the existing path. Please add safety features to it - lights, patrols, etc.

5. Would you use a Park-and-Ride lot or parking facility located on the Riverfront?
   No need for me to. I'd like to take the Streetcar to work from River Market to the Plaza.

6. Is there anything else you would like to share with us today?
   People want to feel safe walking alone at night downtown to the River Front. Riding the street car there will be nice but it's nicer to walk on a lovely evening. I sometimes ride from R.M. to Kauffman but walk back after the symphony, for instance.

For more information, visit: www.kcstreetcar.org or contact Donna Mandelbaum at dmandelbaum@kcstreetcar.org or (816) 627-2526.

RideKC STREETCAR portkc RideKC

KC Streetcar Riverfront Extension & Multi-Modal FEASIBILITY STUDY

Your Name ERIC SOLBERG

Your Email ERIC@DBQUALITY.COM Your Phone

1. What are your thoughts about the preferred route?

DOES IT MATTER IF ITS GOING TO NOWHERE?

PREFERRED ROUTE EAST FROM DOWNTOWN LOOP SERVING EXISTING COMMUNITIES.

2. Before today, were you aware of the developments coming to Berkley Riverfront?

SOMEWHAT

3. Would you use the Streetcar or Bus to access the new activities and developments coming to the Riverfront?

DEPENDS ON WHAT IS PUBLICLY ACCESSIBLE.

4. Do you currently access the Riverfront via bicycle? Would you use a dedicated bike/pedestrian path on the Grand Blvd. Bridge?

PLEASE - BIKE/PED FRIENDLY!

5. Would you use a Park-and-Ride lot or parking facility located on the Riverfront?

NO

6. Is there anything else you would like to share with us today?

THANK YOU FOR THE PRESENTATION! I LOOK FORWARD TO STREETCAR EXPANSION THAT MAKES SENSE.

For more information, visit: www.kcstreetcar.org or contact Donna Mandelbaum at dmandelbaum@kcstreetcar.org or (816) 627-2526.

RideKC STREETCAR portkc RideKC

KC Streetcar Riverfront Extension & Multi-Modal FEASIBILITY STUDY

Your Name BOB SPECHT

Your Email BSPECAT.KC@GMAIL Your Phone 913 660 3586

1. What are your thoughts about the preferred route?

I'LL TAKE IT.

2. Before today, were you aware of the developments coming to Berkley Riverfront?

YES.

3. Would you use the Streetcar or Bus to access the new activities and developments coming to the Riverfront?

BOTH

4. Do you currently access the Riverfront via bicycle? Would you use a dedicated bike/pedestrian path on the Grand Blvd. Bridge?

YES.

5. Would you use a Park-and-Ride lot or parking facility located on the Riverfront?

NO.

6. Is there anything else you would like to share with us today?

—

For more information, visit: www.kcstreetcar.org or contact Donna Mandelbaum at dmandelbaum@kcstreetcar.org or (816) 627-2526.

RideKC STREETCAR portkc RideKC

KC Streetcar Riverfront Extension & Multi-Modal FEASIBILITY STUDY

Your Name Joe Kmetz

Your Email _____ Your Phone _____

1. What are your thoughts about the preferred route?
   Love the use of the riverfront, much needed to usher us into the 21st century. Would like to plan more for future (northland, multimodal design)

2. Before today, were you aware of the developments coming to Berkley Riverfront?
   Y

3. Would you use the Streetcar or Bus to access the new activities and developments coming to the Riverfront?
   Y

4. Do you currently access the Riverfront via bicycle? Would you use a dedicated bike/pedestrian path on the Grand Blvd. Bridge?
   NO, YES

5. Would you use a Park-and-Ride lot or parking facility located on the Riverfront?
   NO

6. Is there anything else you would like to share with us today?
   Excellently executed event!

For more information, visit: www.kcstreetcar.org or contact Donna Mandelbaum at dmandelbaum@kcstreetcar.org or (816) 627-2526.

RideKC STREETCAR portkc RideKC

KC Streetcar Riverfront Extension & Multi-Modal FEASIBILITY STUDY

Your Name Sarah Israel

Your Email sarahsuefonyau@gmail.com Your Phone 816 778 4620

1. What are your thoughts about the preferred route?
Interrupts the view of the riverfront

2. Before today, were you aware of the developments coming to Berkley Riverfront?
Just by the invitation to attend today.

3. Would you use the Streetcar or Bus to access the new activities and developments coming to the Riverfront?
Rarely - Easily accessible by the Heritage trail and roadway.

4. Do you currently access the Riverfront via bicycle? Would you use a dedicated bike/pedestrian path on the Grand Blvd. Bridge?
YES — this should be put in rather than a streetcar line.

5. Would you use a Park-and-Ride lot or parking facility located on the Riverfront?
yes

6. Is there anything else you would like to share with us today?
I would like to know how bicycle/pedestrian safety is being considered with the danger the tracks present especially to cyclists

For more information, visit: www.kcstreetcar.org or contact Donna Mandelbaum at dmandelbaum@kcstreetcar.org or (816) 627-2526.

RideKC STREETCAR portkc RideKC

KC Streetcar Riverfront Extension & Multi-Modal FEASIBILITY STUDY

Your Name _____

Your Email _____ Your Phone _____

1. What are your thoughts about the preferred route?

Love it

2. Before today, were you aware of the developments coming to Berkley Riverfront?

yes

3. Would you use the Streetcar or Bus to access the new activities and developments coming to the Riverfront?

yes

4. Do you currently access the Riverfront via bicycle? Would you use a dedicated bike/pedestrian path on the Grand Blvd. Bridge?

yes AND YES ♡ people bike + walk on Grand anyway - make it safe ☺

5. Would you use a Park-and-Ride lot or parking facility located on the Riverfront?

no

6. Is there anything else you would like to share with us today?

BIKE LANE ON GRAND ♡

For more information, visit: www.kcstreetcar.org or contact Donna Mandelbaum at dmandelbaum@kcstreetcar.org or (816) 627-2526.

RideKC STREETCAR portkc RideKC

KC Streetcar Riverfront Extension & Multi-Modal FEASIBILITY STUDY

Your Name THOM ALLEN

Your Email thom@kcdesigncenter.org Your Phone 6202124112

1. What are your thoughts about the preferred route?
"LOOPS" IN GENERAL TEND TO BE EXCESSIVE AND SEE STRENGTH IN THE STUB END SOLUTION.

2. Before today, were you aware of the developments coming to Berkley Riverfront?
YES

3. Would you use the Streetcar or Bus to access the new activities and developments coming to the Riverfront?
STREET CAR

4. Do you currently access the Riverfront via bicycle? Would you use a dedicated bike/pedestrian path on the Grand Blvd. Bridge?
1. YES.
2. YES.

5. Would you use a Park-and-Ride lot or parking facility located on the Riverfront?
NO, BUT THAT IS BECAUSE I DO NOT OWN A VEHICLE.

6. Is there anything else you would like to share with us today?
I BELIEVE THAT WE NEED TO CONTINUE TO INTERGRATE BICYCLES IN ALL FUTURE TRANSPORTATION INFRASTRUCTURE DEVELOPMENT.

For more information, visit: www.kcstreetcar.org or contact Donna Mandelbaum at dmandelbaum@kcstreetcar.org or (816) 627-2526.

RideKC STREETCAR portKC RideKC

KC Streetcar Riverfront Extension & Multi-Modal FEASIBILITY STUDY

Your Name Charlie Parker

Your Email cparkerksu01@gmail.com Your Phone _____

1. What are your thoughts about the preferred route?
   Stub end on Grand is most logical of those presented
   Study should include ~~self~~ taking 3rd/5th with station on MO-9 (shortens distance to UMKC)

2. Before today, were you aware of the developments coming to Berkley Riverfront?
   Yes

3. Would you use the Streetcar or Bus to access the new activities and developments coming to the Riverfront?
   Yes

4. Do you currently access the Riverfront via bicycle? Would you use a dedicated bike/pedestrian path on the Grand Blvd. Bridge?
   Yes. Yes, pedestrian/bike connection is vital. Streetcar is waste of money without better connections.

5. Would you use a Park-and-Ride lot or parking facility located on the Riverfront?
   No

6. Is there anything else you would like to share with us today?

For more information, visit: www.kcstreetcar.org or contact Donna Mandelbaum at dmandelbaum@kcstreetcar.org or (816) 627-2526.

RideKC STREETCAR portkc RideKC

KC Streetcar Riverfront Extension & Multi-Modal FEASIBILITY STUDY

Your Name Thomas Morefield

Your Email tmorefield@gmail.com Your Phone 816-401-0374

1. What are your thoughts about the preferred route?
Serving the riverfront via Grand Viaduct makes it impossible to connect this investment to future expansion of the streetcar system to North KC and the historic northeast. Use of the viaduct also adds immense cost to the provision of bike/ped connections to the riverfront. Very disappointed an HOA alternative was not even evaluated.

2. Before today, were you aware of the developments coming to Berkley Riverfront?
Yes

3. Would you use the Streetcar or Bus to access the new activities and developments coming to the Riverfront?
Not with the proposed alignment (does not serve Columbus Park)

4. Do you currently access the Riverfront via bicycle? Would you use a dedicated bike/pedestrian path on the Grand Blvd. Bridge?
This would be closer than the Town of Kansas Bridge but still does not really serve Columbus Park

5. Would you use a Park-and-Ride lot or parking facility located on the Riverfront?
No

6. Is there anything else you would like to share with us today?

For more information, visit: www.kcstreetcar.org or contact Donna Mandelbaum at dmandelbaum@kcstreetcar.org or (816) 627-2526.

RideKC STREETCAR portkc RideKC

KC Streetcar Riverfront Extension & Multi-Modal FEASIBILITY STUDY

Your Name Eva Steinman

Your Email steinman19@gmail.com Your Phone 816-536-4573

1. What are your thoughts about the preferred route?
I like the routes that include opportunity to have a station in Columbus Park, however the cost of the new bridges over the rail lines make Grand a much more feasible option.

2. Before today, were you aware of the developments coming to Berkley Riverfront?
Yes

3. Would you use the Streetcar or Bus to access the new activities and developments coming to the Riverfront?
Yes, most definitely.

4. Do you currently access the Riverfront via bicycle? Would you use a dedicated bike/pedestrian path on the Grand Blvd. Bridge?
I do via the Town of Kansas bridge. Another option instead of the elevator would be nice.

5. Would you use a Park-and-Ride lot or parking facility located on the Riverfront?
We typically come from the south (Waldo neighborhood) so probably not but a park-and-ride at this location would be great for residents north of the river, and free up the lots around river market for development instead of wasted space dedicated to surface lots.

6. Is there anything else you would like to share with us today?
This would be the perfect way to connect KCMO to the waterfront which is currently a great resource that is under utilized.

For more information, visit: www.kcstreetcar.org or contact Donna Mandelbaum at dmandelbaum@kcstreetcar.org or (816) 627-2526.

RideKC STREETCAR portkc RideKC

KC Streetcar Riverfront Extension & Multi-Modal FEASIBILITY STUDY

Your Name Karen Clawson

Your Email kclawson@marc.org Your Phone 816-701-8255

1. What are your thoughts about the preferred route?
keep it simple - use existing infrastructure.
- integrate bike

2. Before today, were you aware of the developments coming to Berkley Riverfront?
somewhat. - not sure I'd seen renderings yet.

3. Would you use the Streetcar or Bus to access the new activities and developments coming to the Riverfront?
yes - love recreation along riverfront - other uses would be great.

4. Do you currently access the Riverfront via bicycle? Would you use a dedicated bike/pedestrian path on the Grand Blvd. Bridge?
yes - I walk more than bike

5. Would you use a Park-and-Ride lot or parking facility located on the Riverfront?
not likely.

6. Is there anything else you would like to share with us today?

For more information, visit: www.kcstreetcar.org or contact Donna Mandelbaum at dmandelbaum@kcstreetcar.org or (816) 627-2526.

RideKC STREETCAR portkc RideKC

KC Streetcar Riverfront Extension & Multi-Modal FEASIBILITY STUDY

Your Name BETH DAWSON

Your Email bethdawson3 @gmail.com Your Phone 816.213.4716

1. What are your thoughts about the preferred route?
THE PREFERRED ROUTE SEEMS TO MAKE THE MOST ECONOMICAL CONNECTION. ~~BUT~~ THE ONLY QUESTION I HAVE IS DO YOU MAXIMIZE THE DOMINANT FUTURE CONNECTIONS. IT SEEMS LIKE YOU MIGHT BE MISSING AN OPPORTUNITY TO CONNECT OVER THE RIVER IN THE FUTURE.

2. Before today, were you aware of the developments coming to Berkley Riverfront?
YES I HAD HEARD OF DEVELOPMENT AND HAVE EVEN SEEN THE CONSTRUCTION BUT COULDN'T SITE SPECIFICS.

3. Would you use the Streetcar or Bus to access the new activities and developments coming to the Riverfront?
YES I WOULD.

4. Do you currently access the Riverfront via bicycle? Would you use a dedicated bike/pedestrian path on the Grand Blvd. Bridge?
NO I DON'T CURRENTLY ACCESS THE RIVERFRONT VIA BICYCLE. I WOULD THOUGH BE INTERESTED IN ACCESS VIA A PEDESTRIAN BRIDGE ON THE GRAND BLVD BRIDGE.

5. Would you use a Park-and-Ride lot or parking facility located on the Riverfront?
NO, I DOUBT THAT I WOULD HAVE A NEED FOR A PARKING FACILITY ON THE RIVERFRONT.

6. Is there anything else you would like to share with us today?
I AM HOPEFUL FOR THE EXTENSION TO UMKC BUT AM CONCERNED ABOUT HOW OTHER EXTENSIONS WILL BE UNDERWRITTEN. WILL THE PROCESS USED FOR THE STARTER LINE AND THE EXTENSION TO THE PLAZA BE VIABLE IN ANY OTHER PART OF THE CITY?

For more information, visit: www.kcstreetcar.org or contact Donna Mandelbaum at dmandelbaum@kcstreetcar.org or (816) 627-2526.

RideKC STREETCAR portkc RideKC

KC Streetcar Riverfront Extension & Multi-Modal FEASIBILITY STUDY

Your Name Scott Tanos

Your Email scott.tanos@me.com Your Phone 816.728.2478

1. What are your thoughts about the preferred route?
I like the preferred route as it seems to be the most cost effective

2. Before today, were you aware of the developments coming to Berkley Riverfront?
Yes

3. Would you use the Streetcar or Bus to access the new activities and developments coming to the Riverfront? Yes

4. Do you currently access the Riverfront via bicycle? Would you use a dedicated bike/pedestrian path on the Grand Blvd. Bridge? Yes

5. Would you use a Park-and-Ride lot or parking facility located on the Riverfront?
No, I live in the River Market

6. Is there anything else you would like to share with us today?

For more information, visit: www.kcstreetcar.org or contact Donna Mandelbaum at dmandelbaum@kcstreetcar.org or (816) 627-2526.

RideKC STREETCAR portkc RideKC

KC Streetcar Riverfront Extension & Multi-Modal FEASIBILITY STUDY

Your Name ALBYRD

Your Email albert.byrd@modot.mo.gov Your Phone (816)863-4757

1. What are your thoughts about the preferred route?

3-B

2. Before today, were you aware of the developments coming to Berkley Riverfront?

YES

3. Would you use the Streetcar or Bus to access the new activities and developments coming to the Riverfront?

STREET CAR + BUS

4. Do you currently access the Riverfront via bicycle? Would you use a dedicated bike/pedestrian path on the Grand Blvd. Bridge?

NO

5. Would you use a Park-and-Ride lot or parking facility located on the Riverfront?

YES

6. Is there anything else you would like to share with us today?

IT IS GREAT TO CONSIDER EXPANDING STREET CAR SYSTEM

For more information, visit: www.kcstreetcar.org or contact Donna Mandelbaum at dmandelbaum@kcstreetcar.org or (816) 627-2526.

RideKC STREETCAR portkc RideKC

KC Streetcar Riverfront Extension & Multi-Modal FEASIBILITY STUDY

Your Name Maren Morefield

Your Email marenmorefield@gmail.com Your Phone 816 325-0782

1. What are your thoughts about the preferred route?
I like the preferred route but this option does not easily connect my neighborhood Columbus Park to the river front. It would also be nice for an easy streetcar route to north kansas city

2. Before today, were you aware of the developments coming to Berkley Riverfront?
yes, I want as much development as possible on the riverfront -- condos, lofts, townhomes, retail, restaurants, offices, etc. KC is a great city and it deserves an active riverfront!

3. Would you use the Streetcar or Bus to access the new activities and developments coming to the Riverfront?

Absolutely. I would use it weekly.

4. Do you currently access the Riverfront via bicycle? Would you use a dedicated bike/pedestrian path on the Grand Blvd. Bridge?

yes. Biking on grand is currently scary and it would be awesome to have a protected bike line

5. Would you use a Park-and-Ride lot or parking facility located on the Riverfront?
Maybe

6. Is there anything else you would like to share with us today?
I would love a pedestrian/bike path from Columbus Park to the Riverfront. Please :)

For more information, visit: www.kcstreetcar.org or contact Donna Mandelbaum at dmandelbaum@kcstreetcar.org or (816) 627-2526.

RideKC STREETCAR portkc RideKC

KC Streetcar Riverfront Extension & Multi-Modal FEASIBILITY STUDY

Your Name AJAY SOOD (PRESIDENTIAL CANDIDATE

Your Email AJAppel1236@ Your Phone

1. What are your thoughts about the preferred route?
INCOMPLETE

2. Before today, were you aware of the developments coming to Berkley Riverfront?
NO

3. Would you use the Streetcar or Bus to access the new activities and developments coming to the Riverfront?
NO

4. Do you currently access the Riverfront via bicycle? Would you use a dedicated bike/pedestrian path on the Grand Blvd. Bridge?
NO

5. Would you use a Park-and-Ride lot or parking facility located on the Riverfront?
MIGHT

6. Is there anything else you would like to share with us today?
YES I TOLD SLYJAMES 2016 DURING MY CAMPAIGNING THAT THE STREET CAR SHOULD HAVE BEEN EXTENDED TO SOUTH TO MAKE IT WORTH

For more information, visit: www.kcstreetcar.org or contact Donna Mandelbaum at dmandelbaum@kcstreetcar.org or (816) 627-2526.

Appendix 6 Public Involvement Survey

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Streetcar On-Board Survey Summary
May 2017

Overview

A total of eighty-two streetcar passengers were surveyed by an in-person surveyor while riding the streetcar over a two-day period in May 2017. Participation breakdown is as follows:

Day	Timeframe	Participants
Sunday, May 21	10am-3pm	60
Tuesday, May 23	7am-10am and 3pm-6pm	22

Questions

Six questions were asked. Some participants opted to skip some questions. The questions included:

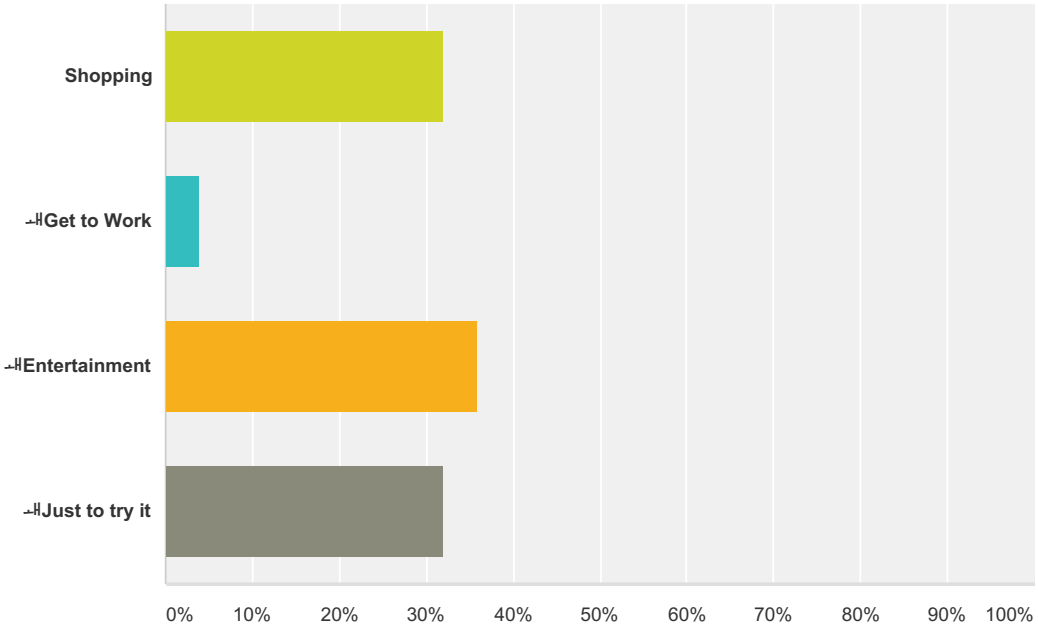
1. Why are you riding the streetcar today?
2. How often do you ride the streetcar?
3. Do you live or work Downtown?
4. (If don't live Downtown) Where did you park?
5. Do you ride the bus? Why or why not?
6. What would make you want to visit the Riverfront? (Passengers were informed of new activities and developments coming online at the Riverfront.)

Question #4 was only asked of those who responded that they did <u>not</u> live Downtown. The open-ended response to that question are summarized below:

	Union Station	Crown Center	City Market Lot/Street	Power & Light	Crossroads	Kauffman PAC	Main Street Garage	23rd & Grand	Town Pavilion	No Answer
Sunday, May 21	9	3	17	2	2	2	0	0	0	25
Tuesday, May 23	4	0	4	0	0	0	1	1	1	11
	13	3	21	2	2	2	1	1	1	36

Q1 Why are you riding the Streetcar today?

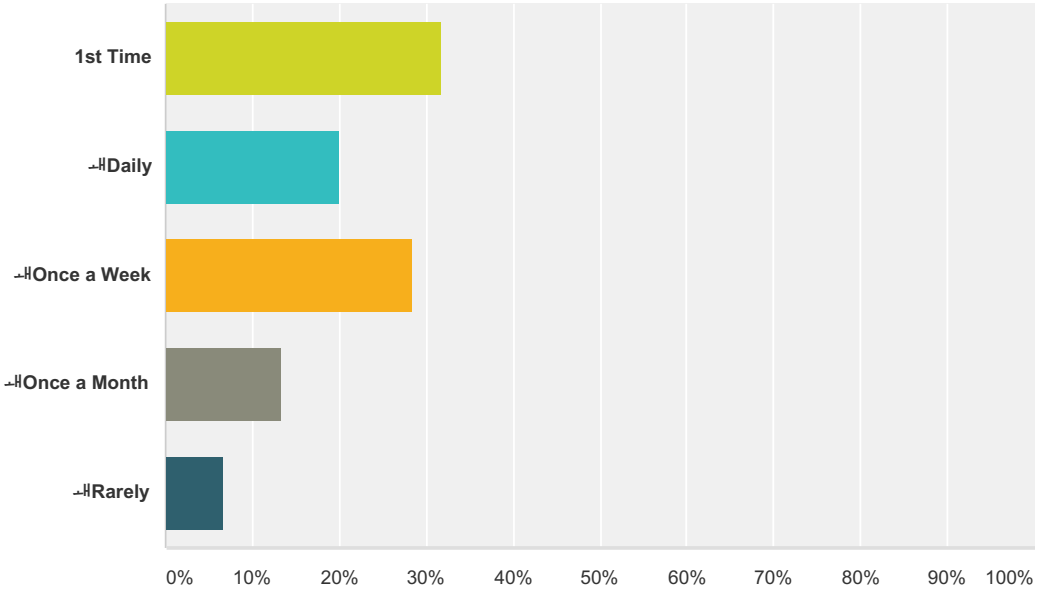
Answered: 50 Skipped: 10



Answer Choices	Responses	
Shopping	**32.00%**	16
Get to Work	**4.00%**	2
Entertainment	**36.00%**	18
Just to try it	**32.00%**	16
Total Respondents: 50		

Q2 How often do you ride the Streetcar?

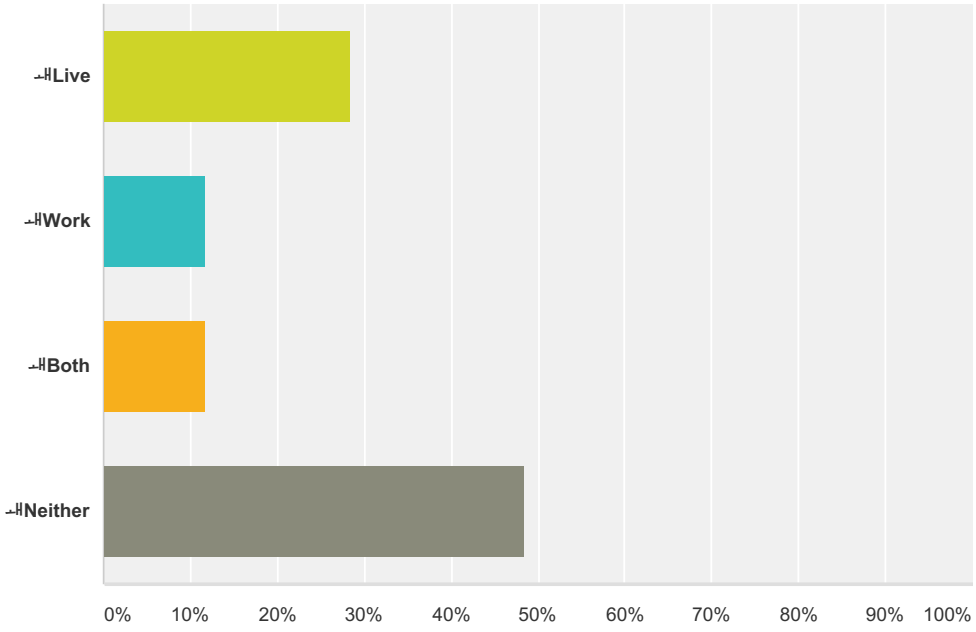
Answered: 60 Skipped: 0



Answer Choices	Responses	
1st Time	**31.67%**	19
Daily	**20.00%**	12
Once a Week	**28.33%**	17
Once a Month	**13.33%**	8
Rarely	**6.67%**	4
Total		**60**

Q3 Do you live or work Downtown?

Answered: 60 Skipped: 0



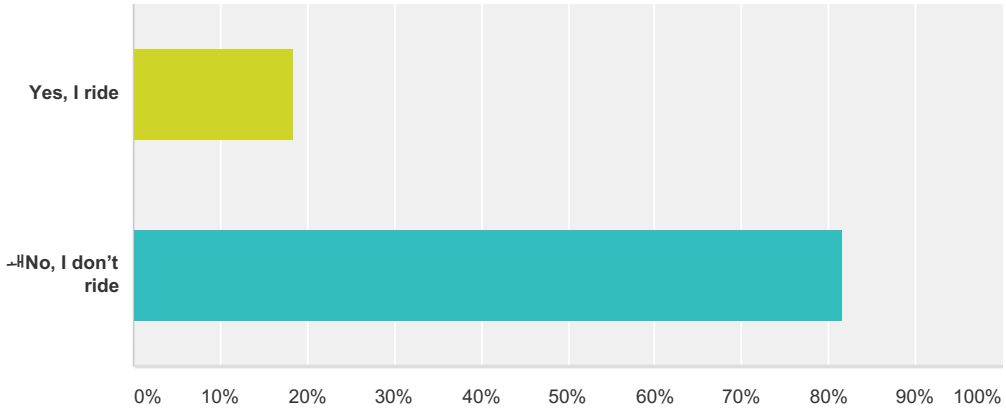
Answer Choices	Responses	
Live	28.33%	17
Work	11.67%	7
Both	11.67%	7
Neither	48.33%	29
Total		60

Q4 Where did you park?

Answered: 35 Skipped: 25

Q5 Do you ride the bus? Why or why not?

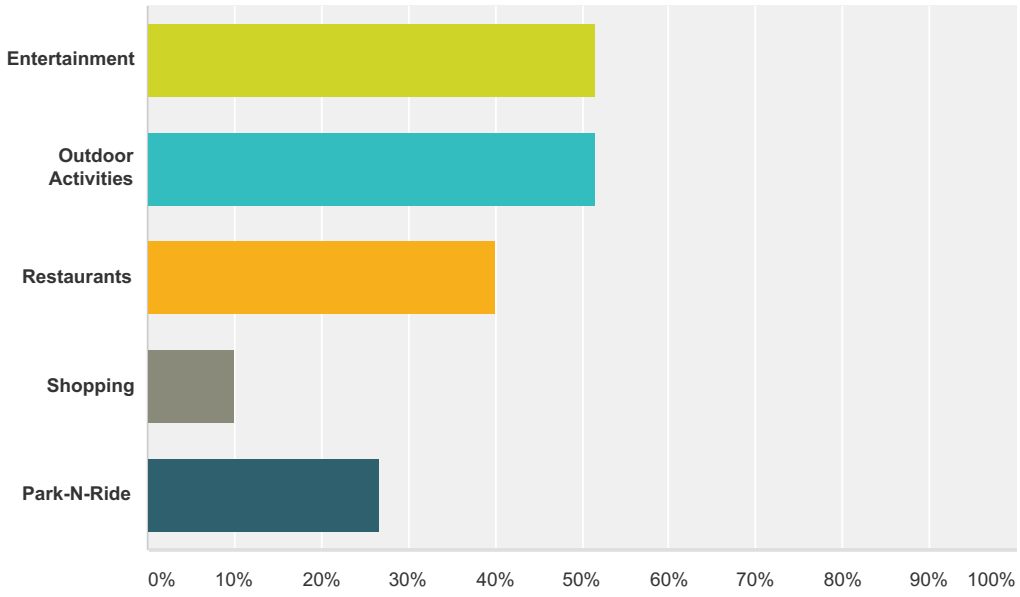
Answered: 60 Skipped: 0



Answer Choices	Responses	
Yes, I ride	**18.33%**	11
No, I don't ride	**81.67%**	49
Total		**60**

Q6 We are asking about this because we are looking at extending the Streetcar to the Riverfront. What would make you want to visit the Riverfront?

Answered: 60 Skipped: 0



Answer Choices	Responses	
Entertainment	**51.67%**	31
Outdoor Activities	**51.67%**	31
Restaurants	**40.00%**	24
Shopping	**10.00%**	6
Park-N-Ride	**26.67%**	16
Total Respondents: 60		

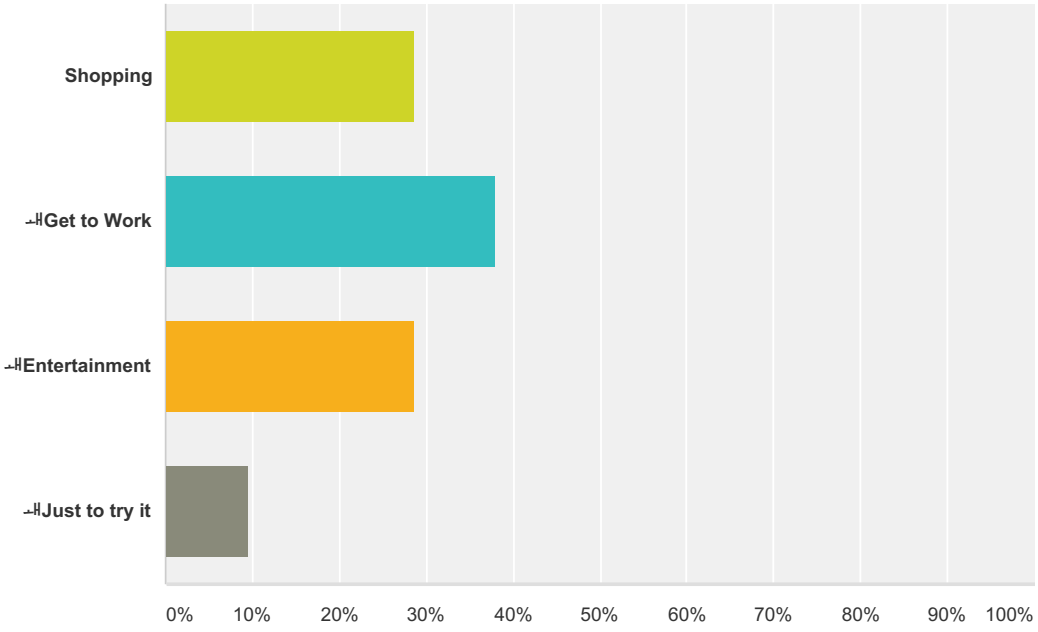
Q7 Date of Survey

Answered: 60 Skipped: 0

Answer Choices	Responses	
Date / Time	100.00%	60

Q1 Why are you riding the Streetcar today?

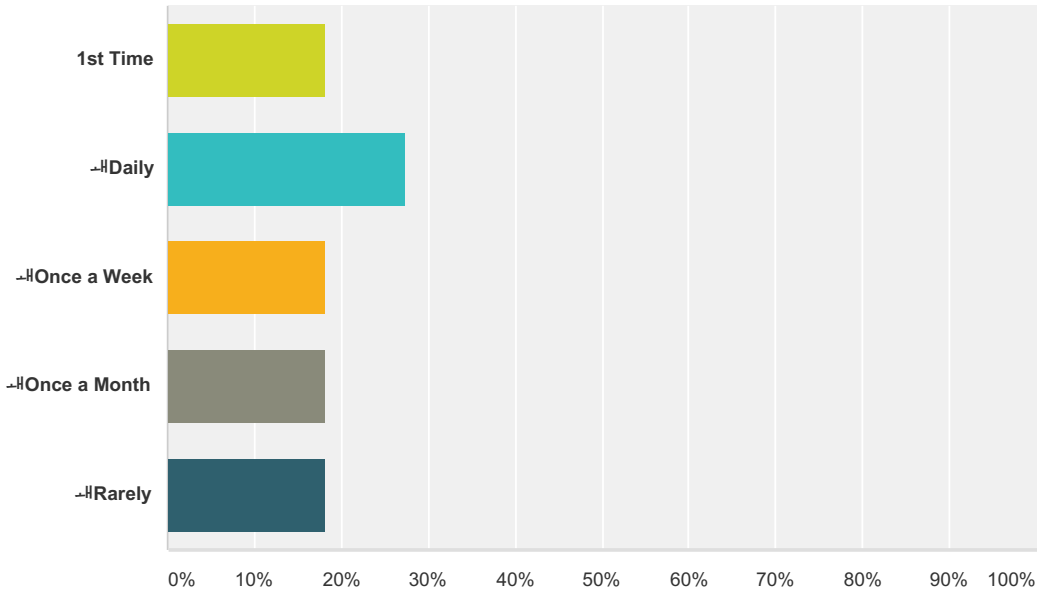
Answered: 21 Skipped: 1



Answer Choices	Responses	
Shopping	**28.57%**	6
Get to Work	**38.10%**	8
Entertainment	**28.57%**	6
Just to try it	**9.52%**	2
Total Respondents: 21		

Q2 How often do you ride the Streetcar?

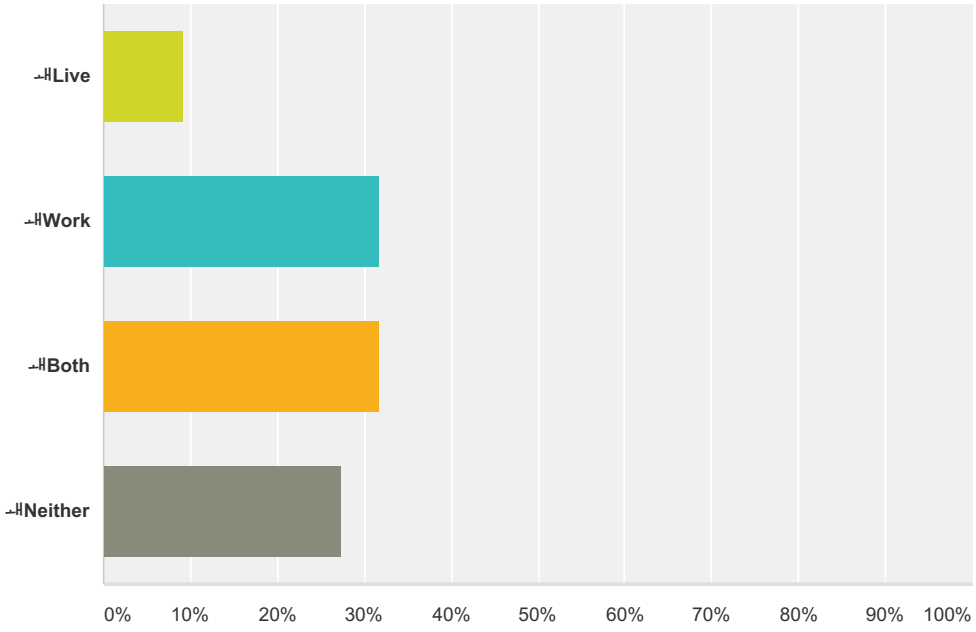
Answered: 22 Skipped: 0



Answer Choices	Responses	
1st Time	**18.18%**	4
Daily	**27.27%**	6
Once a Week	**18.18%**	4
Once a Month	**18.18%**	4
Rarely	**18.18%**	4
Total		**22**

Q3 Do you live or work Downtown?

Answered: 22 Skipped: 0



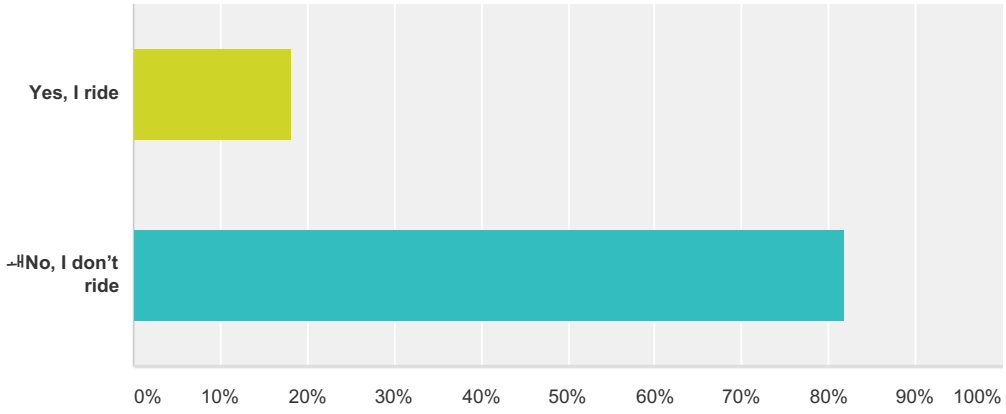
Answer Choices	Responses	
Live	9.09%	2
Work	31.82%	7
Both	31.82%	7
Neither	27.27%	6
Total		22

Q4 Where did you park?

Answered: 12 Skipped: 10

Q5 Do you ride the bus? Why or why not?

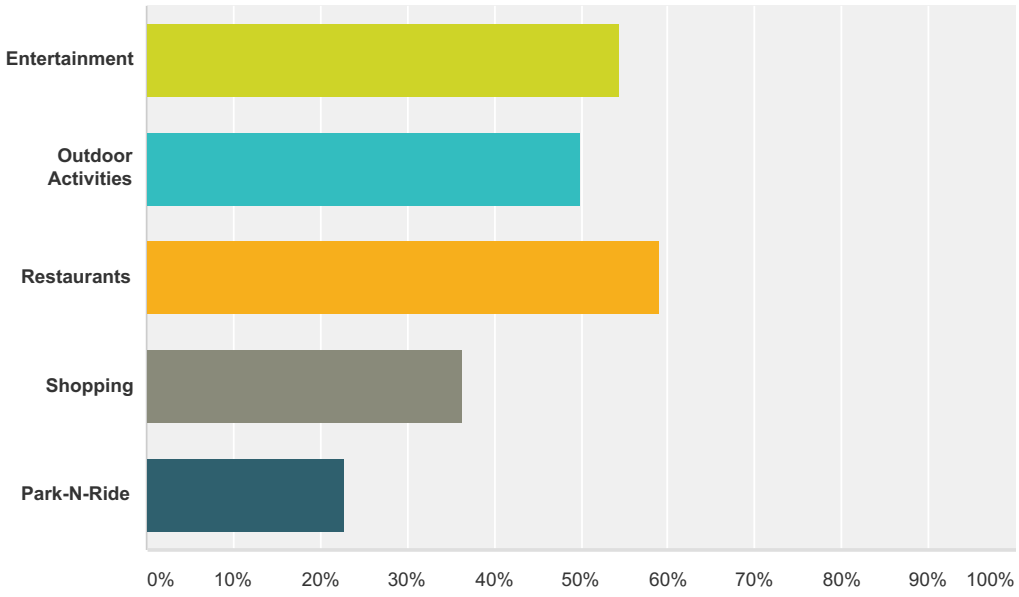
Answered: 22 Skipped: 0



Answer Choices	Responses	
Yes, I ride	**18.18%**	4
No, I don't ride	**81.82%**	18
Total		**22**

Q6 We are asking about this because we are looking at extending the Streetcar to the Riverfront. What would make you want to visit the Riverfront?

Answered: 22 Skipped: 0



Answer Choices	Responses	
Entertainment	**54.55%**	12
Outdoor Activities	**50.00%**	11
Restaurants	**59.09%**	13
Shopping	**36.36%**	8
Park-N-Ride	**22.73%**	5
Total Respondents: 22		

Q7 Date of Survey

Answered: 22 Skipped: 0

Answer Choices	Responses	
Date / Time	100.00%	22

Appendix 7 Cost Estimates

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Kansas City Streetcar - Riverfront Extension

						Cost Comparisons to "just land" on the Riverfront			**Extend On Riverfront**		
	Shown on Drawing Named					Alternative 1					
	Shorthand Description					Grand Avenue Viaduct - "just touch" riverfront			Alt 1 extended to middle Riverfront		
	Terminus					Just Touches Riverfront			Includes 1 stop on riverfront		
	Description					Connect at 3rd and Grand northbound over existing viaduct to near Front St and River Front Road			Includes track in soil and relocated station stop		
	Track Summary - 200 feet south of 3rd/Grand Intersection to 50 feet north of 2nd/Grand					600 TF on street south of RR; 0 TF on new structure; 3600 TF on existing structure; TF on road north of RR; 400 TF on turf.			0 TF on street south of RR; 0 TF on new structure; 0 TF on existing structure; 0 TF on road north of RR; 2800 TF on turf.		
	Special Track Work					1 switch at 3rd/Grand, 1 switch at terminus, 1 switch at VMF			Extend Seg farther east.		
	Demo Notes										
	Track Feet (total)							5,200			2,800
	Station Summary					Station Stop near 3rd/Grand			1 Stop Relocated		
		Unit Price		per Units of		Units		Extended	Units		Extended
10	Guideway & Track Elements (Track Miles)										
	Guideway: At-Grade in Mixed Traffic										
101	Base/Subgrade Allowance (road ar	$ 35		TF		1,600	$	56,000	2800	$	98,000
	Guideway: Aerial Structure						$	-		$	-
102	Mill 1.5" from Bridge Deck (9' widt	$ 8		SY		4400	$	33,000	0	$	-
103	Place 4.5" Concrete Wearing Cours	$ 85		SY		4400	$	374,000	0	$	-
104	OCS Blisters on Existing Bridge (80'	$ 3,500		EA		90	$	315,000	0	$	-
105	2 Parallel Conduits on Existing Brid	$ 50		TF		3600	$	180,000	0	$	-
106	New 32' wide Road/Track Structur	$ 200		SF		-	$	-	0	$	-
107	New 10' wide Bike/Pedestrian Stru	$ 200		SF						$	-
	Track: Ties and Ballast						$	-		$	-
111	112 Tram on Pandrol Wooden Ties	$ 275		TF		400	$	110,000	2800	$	770,000
112	Crossings for Ties on Ballast	$ 25,000		EA			$	-		$	-
							$	-		$	-
	Track: Embedded						$	-		$	-
121	Embedded Track, 112 Tram on Ste	$ 430		TF		1200	$	516,000	0	$	-
122	Embedded Track, 112 Tram on Stru	$ 500		TF		3600	$	1,800,000	0	$	-
123	Embedded Track, 112 Tram Precur	$ 100		TF		0	$	-	0	$	-
125	Structure Expansion Joints	$ 115,000		EA		4	$	460,000		$	-
	Track: Special (Switches, Turnouts, Diamonds)						$	-		$	-
131	20M Embedded Turnout	$ 275,000		EA		2	$	550,000		$	-
132	20M Turnout (on Timbers)	$ 175,000		EA		1	$	175,000		$	-
133	20M Embedded Equilateral Turnou	$ 320,000		EA			$	-		$	-
134	25M Embedded Turnout	$ 400,000		EA			$	-		$	-
135	90° Diamond	$ 400,000		EA			$	-		$	-
136	Diamond, non-right angle	$ 420,000		EA			$	-		$	-
20	Stations, Stops, Terminals, Intermodal						$	-		$	-
	At-Grade Station Stop, Shelter						$	-		$	-
201	Streetcar Stop	$ 150,000		EA		2	$	300,000	0	$	-
202	Multi-Modal Transit Hub	$ 1,000,000									
30	Support Facilities: Yards, Shop, Admin, Buildings						$	-		$	-
	Yard and Yard Track						$	-		$	-
301	New Yard Track (Additional Storag	$ 300		TF		600	$	180,000		$	-
302	25M Turnout 115RE Rail (115RE on	$ 200,000		EA		1	$	200,000		$	-
303	Site Civil Allowance for Yard	$ 200,000		LS		1	$	200,000		$	-
304	VMF	$ 150,000		LS		1	$	150,000		$	-
40	Site work and Special Conditions						$	-		$	-
	Demolition, Clearing, Earthwork						$	-		$	-
401	Demo	$ 150,000		LS		1	$	150,000		$	-
402	Landscaping, Hardscaping	$ 100,000		LS		1	$	100,000		$	-
403	Parking Area	$ 2,500		Space			$	-		$	-
	Sitework and Special Construction						$	-		$	-
411	Utility Allowance (Road Sections)	$ 300		TF		1,200	$	360,000	0	$	-
412	Utility Allowance (Tie Sections)	$ 100		TF		400	$	40,000	2800	$	280,000
413	Roadway	$ 140		TF		1,200	$	168,000	0	$	-
414	Sidewalk	$ 6		TF		1,200	$	7,200	0	$	-
415	Signs and Striping (Road and Bridg	$ 35		TF		4,800	$	168,000	0	$	-
416	Street Lighting (Road and Bridges S	$ 50		TF		4,800	$	240,000	0	$	-
417	Street Lighting (Tie Sections)	$ 50		TF		400	$	20,000	2800	$	140,000
	Temporary Facilities and Other Indirect Costs										
421	Contractor Indirect Percentage		20%	Pct	$	10,213,200	$	2,042,640	2,282,000		456,400
50	Systems						$	-		$	-
	Traffic Signals and Crossing Protection						$	-		$	-
501	Traffic Signals New	$ 175,000		EA		1	$	175,000		$	-
502	Traffic Signals Modified Intersectio	$ 60,000		EA		1	$	60,000		$	-
503	Traffic Signals Traffic Circle	$ 250,000		EA			$	-		$	-
504	Traffic Signals Parkway	$ 350,000		EA			$	-		$	-
505	Traffic Control	$ 50,000		LS		1	$	50,000		$	-
506	Streetcar Signal Innerconnect	$ 175,000									
	Traction Power						$	-		$	-
511	Substation (1 MW)	$ 1,250,000		EA		1	$	1,250,000		$	-
512	Substation Flood Protection	$ 200,000		LS		1	$	200,000		$	-
513	OCS Poles (every 80 feet)	$ 8,000		EA		65	$	520,000	35	$	280,000
514	OCS Foundations (Road Only)	$ 6,000		EA		20	$	120,000	35	$	210,000
515	OCS Cable (and all hardware)	$ 135		TF		5,200	$	702,000	2800	$	378,000
515	Corrosion Control			TF							
	Communications			TF			$	-		$	-
521	Communication - System	$ 45		TF		5,200	$	234,000	2800	$	126,000
522	Communication - SCADA (allowanc	$ 50,000		LS		1	$	50,000			
60	ROW						$	-		$	-
70	Vehicles						$	-		$	-
701	CAF Vehicle	$ 5,000,000		EA		1	$	5,000,000		$	-
702	Consultant (Pct of CAF Vehicle)		10%	Pct	$	5,000,000	$	500,000	$ -	$	-
703	Spare Parts		10%	Pct	$	5,000,000	$	500,000	$ -	$	-
80	Professional Services										
801	Consultants (Pct of Sum of 10-60)		25%	Pct	$	12,255,840	$	3,063,960	$ 2,738,400	$	684,600
90	Unallocated Contingency										
901	Contingency (Pct of Sum of 10 - 80		15%	Pct	$	21,319,800	$	3,197,970	$ 3,423,000	$	513,450
100	Finance Charges										
							$	**24,517,770**		**$**	**3,936,450**

	Grand Avenue Viaduct - "just touch" riverfront	Alt 1 extended to middle Riverfront
Summary Estimates		
Contractor Raw Construction Costs	$ 10,213,200	$ 2,282,000
Contract Indirect Costs	$ 2,042,640	$ 456,400
ROW	$ -	$ -
Vehicles	$ 6,000,000	$ -
Professional Service	$ 3,063,960	$ 684,600
Contingency	$ 3,197,970	$ 513,450
Finance Charges	$ -	$ -
Total	$ 24,517,770	$ 3,936,450

Project Totals	
Base	$ 24,517,770
Base + Mid River Stop	$ 28,454,220

Appendix 8 Structural Analysis - Bridge Initial Assessment Report

General

This report summarizes the initial structural assessment made from a visual inspection and preliminary analysis of the Grand Avenue Viaduct. The purpose of this initial assessment is to record conditions of the bridge that might have an impact on the cost of an extension of the KC Streetcar system into the Riverfront area. The goal is to identify modifications and/or repairs that will be necessary for the addition of streetcar tracks across the bridge, long-term durability of the new streetcar extension, and the possibility of a cantilevered sidewalk on the structure

Inspection Procedure

A visual inspection was performed by walking underneath the bridge from abutment to abutment, and including the MSE walls at both ends of the bridge, making notes of observations and taking photos of the structure to document the condition of each item. The orientation and naming conventions from existing bridge plans were used in our notes. The terminology used for our observations of conditions was taken from the list of general condition codes included with this report.

Inspection was not performed on top of the deck as the structure does not contain a sidewalk and traffic control was not utilized.

Description

The bridge is built in six units consisting generally of two or three spans each. Most of the spans are less than 100 feet. There are MSE walls at both ends of the bridge, resulting in a total length of structure from beginning of wall to end of wall of about 1,302 feet. The alignment of the bridge is curved at an approximate 1,600-foot radius.

Four welded plate girders are erected on chords of variable lengths (due to several skewed piers). Cross frames and diaphragms are spaced at approximately 15 feet. There are no stiffeners welded to the exterior face of the outside girders that could be used for sidewalk brackets.

The piers are flared single column concrete with capbeam cantilevered on each side. The abutments are integral pile cap type.

Drains and drain pipes are located on the low side of the deck at each pier.

The expansion joints at Piers 2, 5, and 8 are steel finger plates with a fabric trough. The joints at Piers 11 and 12 are armored elastomeric strip seals.

The bridge crosses several features: Span 1 is over 1st Street; Span 4 is over the UPRR and KC Terminal Railroad tracks; and Span 12 is over the BNSF Railway. The bridge crosses under the Heart of America Bridge at Pier 14.

The bridge is comprised of four welded plate girders spaced at 8’-6”. The concrete deck is constructed with 3-inch prestressed panels and 5-1/2 inches of cast-in-place concrete. It is anticipated the location of the streetcar tracks will be in the outer bays with an 8-foot wide level slab.

Findings and Recommendations

Overall, the bridge is in good condition. No problem areas are noted for the steel girders, just a small amount of rust at the joints in Piers 2, 5, and 8.

No problems were noted in the prestressed deck panels.

At the finger plate expansion joints, the fabric troughs are working well. Some discoloration and minor cracks in the deck overhang at the low end were observed. Pier caps at these piers also were discolored with minor cracks. Overall, these three areas are in satisfactory condition.

The barriers along the MSE Wall section at the south end of the bridge are in fair condition. There are numerous vertical cracks along the curb line and several spalls at barrier expansion joints.

There are no recommendations for immediate repairs that would be required to modify the bridge for the new streetcar line.

Provided the bridge continues to be maintained, cleaned, and re-painted as needed, the remaining life expectancy of the structure is greater than 50 years.

Structural Analysis

An analysis of Girder C for each unit was performed using a RISA model and CAF streetcar loading. It was assumed the centerline of the tracks would be at the centerline between Girders A and B and between Girders C and D. An additional 4 inches of concrete was assumed for dead load of the deck. An impact load of 33 percent was applied to the live load. No load factors were applied, and the structure was assumed non-composite. Based on this preliminary analysis, the maximum stress for DL + LL + I, is in the range of 20 ksi. The allowable stress for 50 ksi weathering steel is 27ksi. This indicates that required girder strengthening for the streetcar load is unlikely.

Figure 48 General View - Grand Ave Bridge.

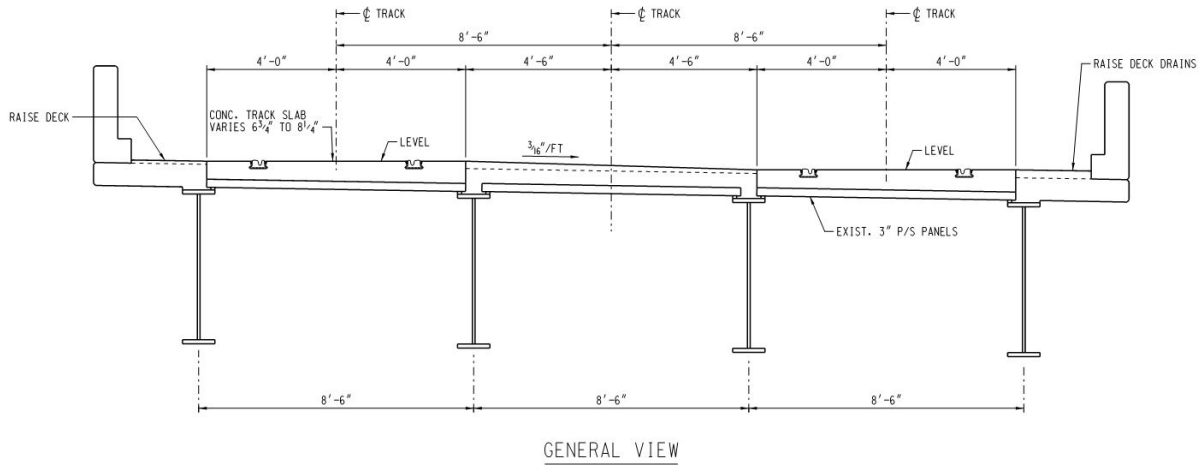


Figure 49 Track Slab - Grand Ave Bridge.

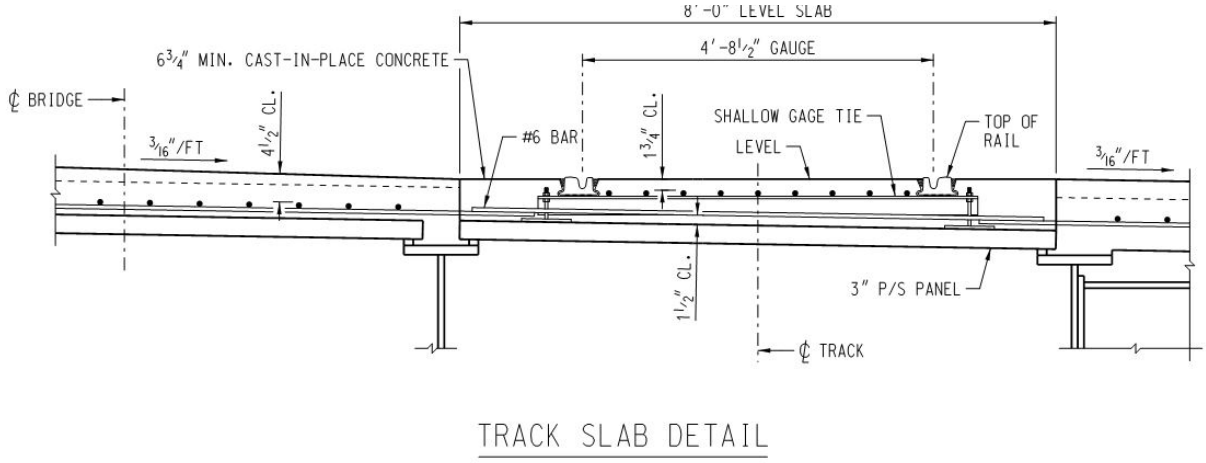


Figure 50 General View Looking North

Figure 51 West Girder and Overhang with Utilities

Figure 52 Typical Piers

Typical Piers

Figure 53 Drain Pipes and Overhang at Pier 8

Figure 54 Cathedral Barrier Wall and Crack in West Curb on MSE Wall Segment

Figure 55 Cracks in Base of Barrier Post on MSE Wall Segment

Figure 56 West MSE Wall near Abutment 1

Figure 57 Piping under the Bridge

Figure 58 General View of North End of Bridge

Figure 59 General View at North MSE Wall Segment

Appendix 9 Operating Plans

Table 21 Existing Kansas City Streetcar Operating Plan

KC Streetcar (Mon-Thurs)	Start Time	End Time	Hours	One-Way Distance	Round Trip Running Time	Layover Time	Cycle Time	Frequency	Vehicles	Trips
AM Peak	6:00 AM	9:00 AM	3	1.9 miles	22 min	8 min	30 min	10 min	3	18
Midday Morning	9:00 AM	11:00 AM	2	1.9 miles	27 min	9 min	36 min	12 min	3	10
Midday Afternoon	11:00 AM	3:00 PM	4	1.9 miles	29 min	7 min	36 min	12 min	3	20
PM Peak/Evening	3:00 PM	10:00 PM	7	1.9 miles	28 min	8 min	36 min	12 min	3	35
Night	10:00 PM	12:00 AM	2	1.9 miles	26 min	10 min	36 min	12 min	3	10

KC Streetcar (Friday)	Start Time	End Time	Hours	One-Way Distance	Round Trip Running Time	Layover Time	Cycle Time	Frequency	Vehicles	Trips
AM Peak	6:00 AM	9:00 AM	3	1.9 miles	22 min	8 min	30 min	10 min	3	18
Midday Morning	9:00 AM	11:00 AM	2	1.9 miles	27 min	9 min	36 min	12 min	3	10
Midday Afternoon	11:00 AM	3:00 PM	4	1.9 miles	29 min	7 min	36 min	12 min	3	20
PM Peak/Evening	3:00 PM	12:00 AM	9	1.9 miles	28 min	8 min	36 min	12 min	3	45
Night	12:00 AM	2:00 AM	2	1.9 miles	22 min	8 min	30 min	10 min	3	12

KC Streetcar (Saturday)	Start Time	End Time	Hours	One-Way Distance	Round Trip Running Time	Layover Time	Cycle Time	Frequency	Vehicles	Trips
AM	7:00 AM	11:00 AM	4	1.9 miles	26 min	10 min	36 min	12 min	3	20
Midday/Evening	11:00 AM	12:00 AM	13	1.9 miles	28 min	8 min	36 min	12 min	3	65
Night	12:00 AM	2:00 AM	2	1.9 miles	22 min	8 min	30 min	10 min	3	12

KC Streetcar (Sunday/Holiday)	Start Time	End Time	Hours	One-Way Distance	Round Trip Running Time	Layover Time	Cycle Time	Frequency	Vehicles	Trips
AM	7:00 AM	9:00 AM	2	1.9 miles	22 min	8 min	30 min	15 min	2	8
Midday	9:00 AM	6:00 PM	9	1.9 miles	28 min	8 min	36 min	12 min	3	45
Evening	6:00 PM	11:00 PM	5	1.9 miles	24 min	6 min	30 min	15 min	2	20

Table 22 Alternative 1 Operating Plan

KC Streetcar (Mon-Thurs)	Start Time	End Time	Hours	One-Way Distance	Round Trip Running Time	Layover Time	Cycle Time	Frequency	Vehicles	Trips
AM Peak	6:00 AM	9:00 AM	3	2.7 miles	30 min	10 min	40 min	10 min	4	18
Midday Morning	9:00 AM	11:00 AM	2	2.7 miles	36 min	12 min	48 min	12 min	4	10
Midday Afternoon	11:00 AM	3:00 PM	4	2.7 miles	36 min	12 min	48 min	12 min	4	20
PM Peak/Evening	3:00 PM	10:00 PM	7	2.7 miles	36 min	12 min	48 min	12 min	4	35
Night	10:00 PM	12:00 AM	2	2.7 miles	36 min	12 min	48 min	12 min	4	10

KC Streetcar (Friday)	Start Time	End Time	Hours	One-Way Distance	Round Trip Running Time	Layover Time	Cycle Time	Frequency	Vehicles	Trips
AM Peak	6:00 AM	9:00 AM	3	2.7 miles	30 min	10 min	40 min	10 min	4	18
Midday Morning	9:00 AM	11:00 AM	2	2.7 miles	36 min	12 min	48 min	12 min	4	10
Midday Afternoon	11:00 AM	3:00 PM	4	2.7 miles	36 min	12 min	48 min	12 min	4	20
PM Peak/Evening	3:00 PM	12:00 AM	9	2.7 miles	36 min	12 min	48 min	12 min	4	45
Night	12:00 AM	2:00 AM	2	2.7 miles	30 min	10 min	40 min	10 min	4	12

KC Streetcar (Saturday)	Start Time	End Time	Hours	One-Way Distance	Round Trip Running Time	Layover Time	Cycle Time	Frequency	Vehicles	Trips
AM	7:00 AM	11:00 AM	4	2.7 miles	36 min	12 min	48 min	12 min	4	20
Midday/Evening	11:00 AM	12:00 AM	13	2.7 miles	36 min	12 min	48 min	12 min	4	65
Night	12:00 AM	2:00 AM	2	2.7 miles	30 min	10 min	40 min	10 min	4	12

KC Streetcar (Sun/Holiday)	Start Time	End Time	Hours	One-Way Distance	Round Trip Running Time	Layover Time	Cycle Time	Frequency	Vehicles	Trips
AM	7:00 AM	9:00 AM	2	2.7 miles	30 min	10 min	40 min	15 min	3	8
Midday	9:00 AM	6:00 PM	9	2.7 miles	36 min	12 min	48 min	12 min	4	45
Evening	6:00 PM	11:00 PM	5	2.7 miles	30 min	10 min	40 min	15 min	3	20

Table 23 Alternative 3 Operating Plan

KC Streetcar (Mon-Thurs)	Start Time	End Time	Hours	One-Way Distance	Round Trip Running Time	Layover Time	Cycle Time	Frequency	Vehicles	Trips
AM Peak	6:00 AM	9:00 AM	3	2.8 miles	30 min	10 min	40 min	10 min	4	18
Midday Morning	9:00 AM	11:00 AM	2	2.8 miles	36 min	12 min	48 min	12 min	4	10
Midday Afternoon	11:00 AM	3:00 PM	4	2.8 miles	36 min	12 min	48 min	12 min	4	20
PM Peak/Evening	3:00 PM	10:00 PM	7	2.8 miles	36 min	12 min	48 min	12 min	4	35
Night	10:00 PM	12:00 AM	2	2.8 miles	36 min	12 min	48 min	12 min	4	10

KC Streetcar (Friday)	Start Time	End Time	Hours	One-Way Distance	Round Trip Running Time	Layover Time	Cycle Time	Frequency	Vehicles	Trips
AM Peak	6:00 AM	9:00 AM	3	2.8 miles	30 min	10 min	40 min	10 min	4	18
Midday Morning	9:00 AM	11:00 AM	2	2.8 miles	36 min	12 min	48 min	12 min	4	10
Midday Afternoon	11:00 AM	3:00 PM	4	2.8 miles	36 min	12 min	48 min	12 min	4	20
PM Peak/Evening	3:00 PM	12:00 AM	9	2.8 miles	36 min	12 min	48 min	12 min	4	45
Night	12:00 AM	2:00 AM	2	2.8 miles	30 min	10 min	40 min	10 min	4	12

KC Streetcar (Saturday)	Start Time	End Time	Hours	One-Way Distance	Round Trip Running Time	Layover Time	Cycle Time	Frequency	Vehicles	Trips
AM	7:00 AM	11:00 AM	4	2.8 miles	36 min	12 min	48 min	12 min	4	20
Midday/Evening	11:00 AM	12:00 AM	13	2.8 miles	36 min	12 min	48 min	12 min	4	65
Night	12:00 AM	2:00 AM	2	2.8 miles	30 min	10 min	40 min	10 min	4	12

KC Streetcar (Sun/Holiday)	Start Time	End Time	Hours	One-Way Distance	Round Trip Running Time	Layover Time	Cycle Time	Frequency	Vehicles	Trips
AM	7:00 AM	9:00 AM	2	2.8 miles	30 min	10 min	40 min	15 min	3	8
Midday	9:00 AM	6:00 PM	9	2.8 miles	36 min	12 min	48 min	12 min	4	45
Evening	6:00 PM	11:00 PM	5	2.8 miles	30 min	10 min	40 min	15 min	3	20

Appendix 10 Planning Documents

1 Greater Downtown Area Plan (2010)

The Greater Downtown Area Plan (GDAP) was the culmination of several years of detailed planning efforts and extensive community engagement to develop a guide for the development and redevelopment in the planning area, generally bounded by the municipal boundary with North Kansas City on the north, State Line Road on the west, 31st Street on the south, and Woodland Avenue on the east – fully encompassing the River Market, Riverfront and Columbus Park neighborhood.

The overall purpose for the plan was to reestablish the downtown area of Kansas City as the region's cultural, economic, and activity center. Through public engagement, stakeholder workshops and input from the planning team, the GDAP developed a vision to guide the plan into the future. The vision's stated goals were:

---

*"We must focus on **connecting our neighborhoods** to create a strong urban community, flourishing with diversity, fostering business, maintaining historic neighborhood identifier, and sustain a safe, vibrant, and healthier Greater Downtown Area for current and future generations." (GDAP p.5)*

To help realize this vision the plan set forth five primary goals to:

1. Create a walkable downtown
2. Double the population downtown
3. Increase employment downtown
4. Retain and promote safe, authentic neighborhoods
5. Promote sustainability

Of the five primary goals, the first goal of creating a more walkable downtown has the most relevance to the future extension of the streetcar from the River Market to the Riverfront area. The Riverfront Extension also has the potential to positively impact population and employment growth, safety, and sustainability. The GDAP makes several specific recommendations under this goal that relate directly to the future extension of the streetcar. These recommendations include:

- Elevate walking as the primary mode of transportation (while not ignoring the importance of vehicular traffic).
- Implement a district parking strategy (park once for multiple destinations).
- Conduct and maintain a complete inventory of pedestrian infrastructure.
- Complete key gaps in the sidewalk system.
- Connect all districts with safe, walkable pathways.
- Improve street crossings, bridges, underpasses, and railroad crossings, and mitigate barriers.
- Improve public spaces to enhance the pedestrian experience and encourage pedestrian activity.
- Support transportation options beyond the automobile.
- Pursue new and expanded transit options:
  - Pursue fixed guideway transit along a dense transit corridor.
  - Pursue commuter rail and enhanced connections to regional transit.

- Enhance the development of connected mixed-use activity centers, which serve as nodes for the transit system

Transportation and connectivity were critical elements throughout the GDAP. The plan noted the Riverfront as a future activity center and recommended making stronger connections to the isolated area. To help accomplish this, the GDAP was highly supportive of public transit and the application of transit-oriented development (TOD) principles that would:

- Focus density along transit corridors.
- Encourage a variety of uses and housing types and prices
- Create an environment that is designed for cycling and walking, with adequate facilities and attractive street conditions.
- Reduce parking requirements.
- Ensure that transit stops and stations are convenient, comfortable, and secure.
- Apply incentives to proactively encourage TOD.

Other recommendations in the GDAP that have applicability to multi-modal connectivity and extension of the streetcar to the Riverfront area include:

- Create a series of gateways to communicate entry into a district area and help define edges.
- Improve wayfinding.
- Improve street crossings along key corridors.
- Implement bike lanes and trails.
- Construct additional viaducts to provide access to the riverfront.
- Improve access to Columbus Park.

Figure 60 Bike Lane west of Grand Avenue

2 Riverfront Comprehensive Development Plan Compilation (2010)

The Comprehensive Development Plan for the Kansas City Riverfront compiled an implementation strategy from several documents with a focus to redevelop the Riverfront area into the city's next great neighborhood on the 120-acre site under control of Port KC. The plan envisioned a mixed-use village bringing together commercial, residential, and public open spaces to the long-neglected Kansas City riverfront. The plan addressed the needs of both the public and private realm to improve connectivity, spur development, and increase population density. The developable area south of Berkley Riverfront Park was defined as the Riverfront Economic Development Initiative (REDI) Site. This site was targeted for office and commercial space, along with medium-density housing.

This plan reviewed and assessed several past plans that gave direction to the improvement and development of the Riverfront area, including the Greater Downtown Area Plan. The plan echoed the recommendations of the GDAP regarding the need for enhanced connectivity between the River Market and the developing Riverfront area for all modes of transportation, with a priority on pedestrians and cyclists.

3 3rd and Grand Transportation Hub – Area Plan (2013)

In 2013 a partnership of the KCATA, KCMO, Jackson County and Mid-America Regional Council (MARC) produced the *Third and Grand Transportation Hub Area Plan*. This plan centered on the park-and-ride lot located at the northeast corner of the intersection of 3rd Street and Grand Avenue. This site is owned and operated by KCATA and serves as a transfer hub for several bus routes, including the Main Street MAX BRT line, and serves as a layover point for bus operator relief and schedule recovery. The purpose of the plan was to identify future opportunities for a multi-modal transportation facility that would incorporate bus, streetcar, commuter rail, bicycles, and other modes of travel. The primary goals for the plan included:

- Promoting high-density development to spur economic growth
- Integrating development with surrounding neighborhoods and improving connectivity
- Improving pedestrian amenities
- Continuing to serve as a park-and-ride, while becoming the multi-modal hub for streetcar, bus, commuter rail and other transit modes
- Forming a vision for a premier TOD for the Kansas City region

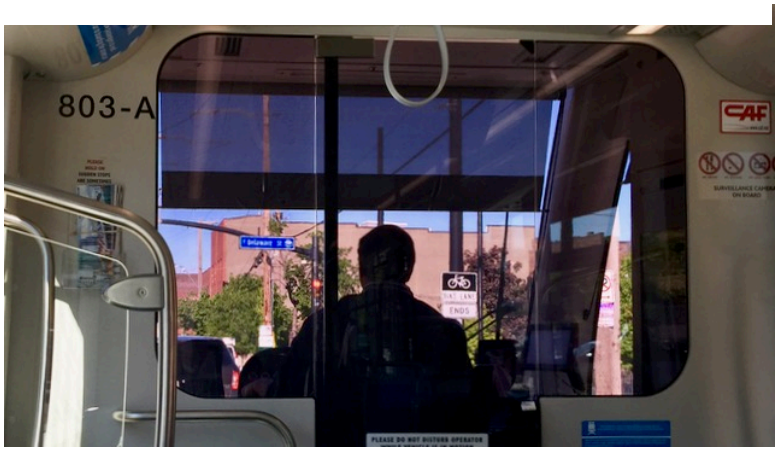
The plan developed six alternatives that proposed potential site developments with variations of new multi-story buildings and parking on the existing 3rd and Grand site. This was refined to three preferred development alternatives that would support the highest and best use of the site for transit and economic development. Each of the three preferred development concepts included residential, office, and retail uses, with building heights ranging from three to six stories.

Lastly, the plan provided development guidelines that focus directly on the creation of a site with excellent multi-modal amenities and connectivity. These guidelines for the development of the 3rd and Grand hub included:

- Provide clear, direct routes for transit system transfers without degrading the pedestrian experience and streetscape character.

- When located along street frontage, and where feasible, developments are encouraged to include first-floor pedestrian active uses, such as retail and services.
- Provide street-level, pedestrian-oriented uses and active street walls in mixed-use developments.
- Architectural elements that project from the building, such as building-mounted lighting, awnings, canopies and signage, should be designed so as to ensure pedestrian safety and comfort.

Figure 61 View inside Streetcar 803



- Provide direct, safe, and convenient access to public transit facilities and integrate into the overall site design whenever possible

4 Jackson County Commuter Corridors Alternatives Analysis (2012)

In the summer of 2011, MARC, Jackson County, KCMO, and KCATA formed a partnership to conduct the *Jackson County Commuter Corridors Alternatives Analysis* (JCCCAA). This analysis examined a range of public transit improvements along two primary corridors connecting downtown Kansas City to eastern and southeastern Jackson County.

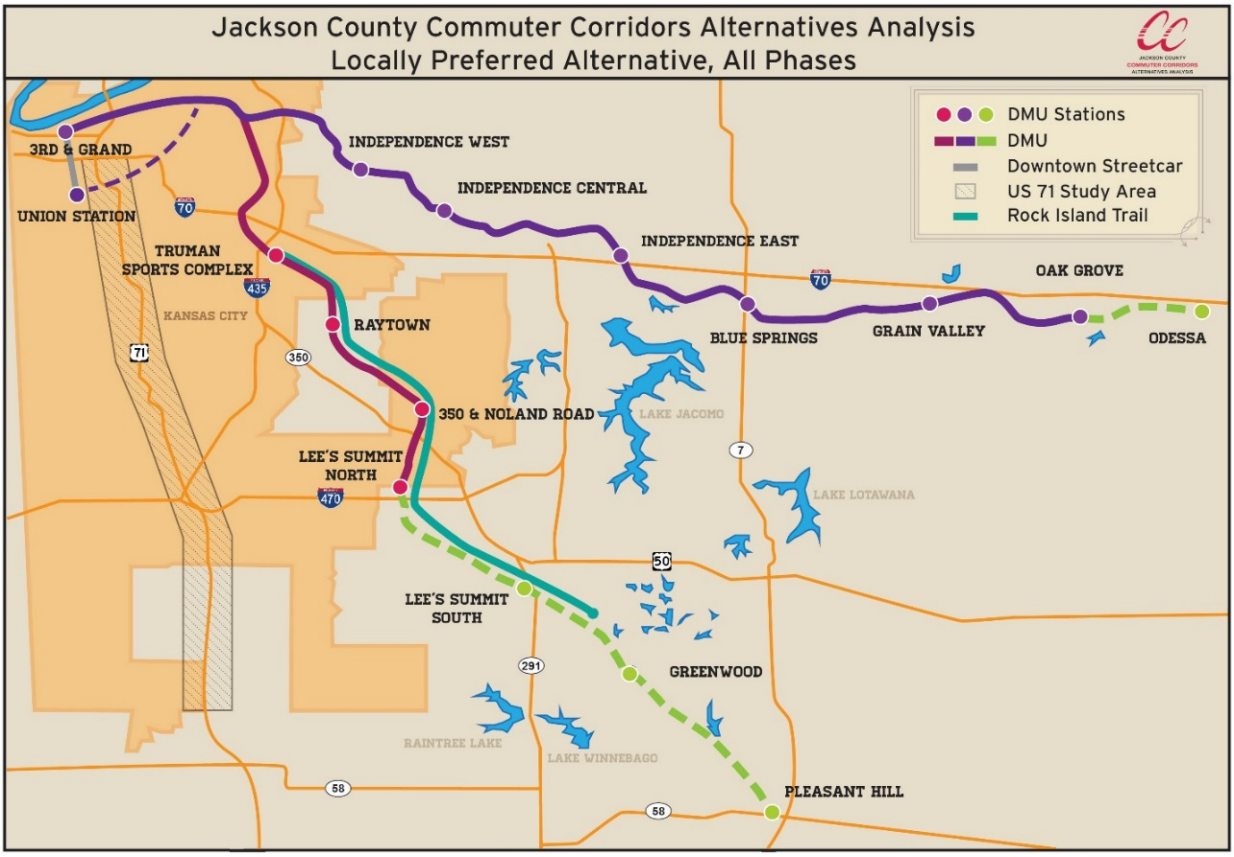
Key goals for the JCCCAA included expansion of available transit alternatives, improvement of transit speeds and schedule reliability, increasing mode share and travel time competitiveness of transit for commuting and other trip-making purposes, and supporting regional goals for development, redevelopment, and sustainability.

The JCCCAA partnership team came to the overall conclusion that the DMU (Diesel Multiple Unit) commuter rail alternative was best able to adequately meet the study's purpose and need and multiple goals.

With the JCCCAA proposing the 2nd Street and Grand area as a commuter rail terminus, consideration will need to be given to development that occurs at the 3rd and Grand site, as well as the extension of the streetcar to the Riverfront, so as not to preclude the possibility of the integration of commuter rail with other transit modes in this critical area. Figure 62 displays the draft Locally Preferred Alternative for DMU service along I-70 and in the Rock Island Corridor.

Figure 62 JCCCAA Locally Preferred Alternative

(Jackson County Commuter Corridor Alternatives Analysis, 2012)

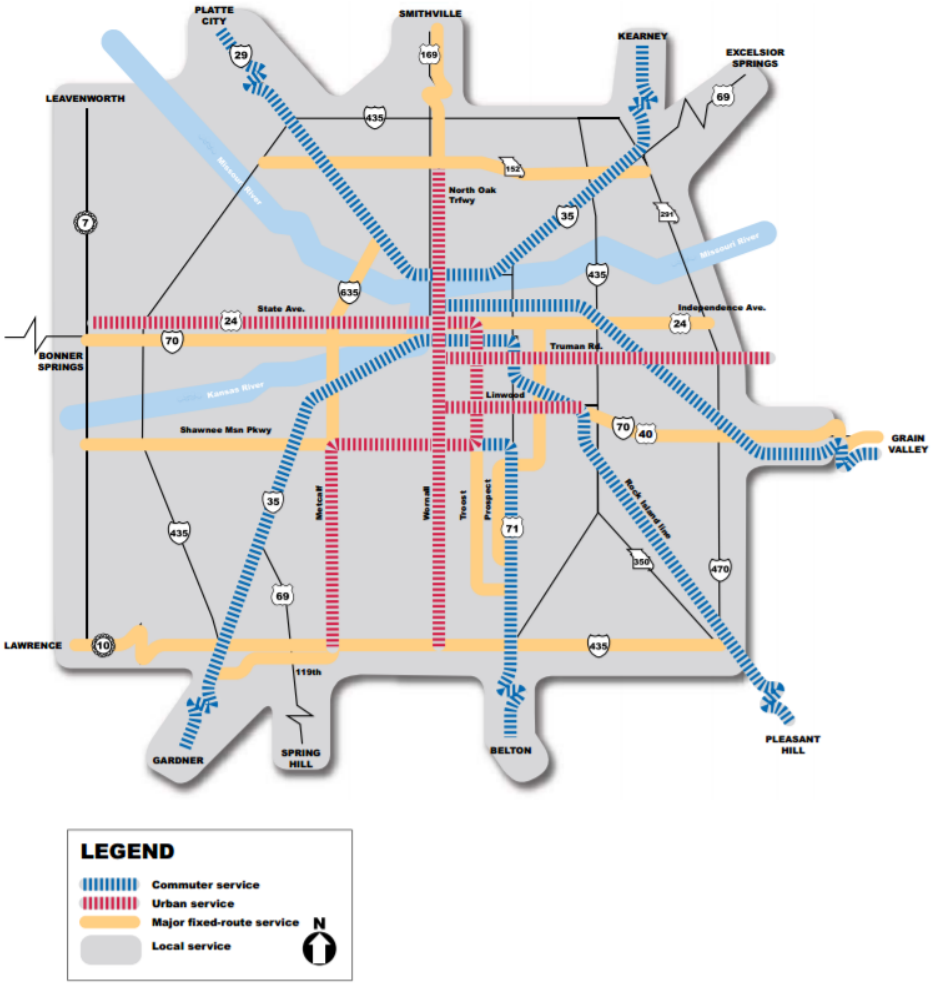


Source: Jackson County Commuter Corridor Alternatives Analysis, 2012

5 Smart Moves

The *Smart Moves Plan* is the Kansas City regional vison for a connected, expanded, and coordinated public transit system. The initial *Smart Moves Plans* was developed in 2002 and revised in 2008. The plan envisions a largely bus-based transit system built around major key corridors that would serve as the framework to support a larger network of transit routes throughout the KC metro region. Both the original plan and 2008 update involved extensive input from the public and technical experts. The conceptual Smart Moves system map from the 2008 update is shown in Figure 63 below.

Figure 63 2008 Smart Moves System Map



Source: Smart Moves Update Report, 2008

The *Smart Moves Plan* identified critical corridors across the region, made recommendations for specific service improvements, and set conceptual service standards in terms of headway, span of service, minimum days of service, and minimum hours of service. Smart Moves was highly successful in advancing the planning and development of MAX BRT service on Main Street, Troost, and Prospect. Improvements to the Metcalf and State Avenue Corridors also flowed from planning work conducted in the *Smart Moves Plan*.

The regional vision for the future of public transit in the KC region continues to adapt and change. To keep the *Smart Moves Plan* current, a new effort was initiated in 2015 to revise the *Smart Moves Plan* again. The *Smart Moves 3.0 Plan* is still developing and is expected to be completed in 2017. The *Smart Moves 3.0 Plan* again sets the long-term vision for transit improvements, as well as short-term investments that will enhance transit services. The *Smart Moves 3.0 Plan* focuses on more frequent trips on major corridors, development of new integrated multimodal mobility hubs, creation of new innovations in mobility options, and incorporation of placemaking into transit and mobility solutions. Goals expressed for the *Smart Moves 3.0 Plan* include:

- Develop strategies to double the number of jobs accessible by transit in 10 years.

- Address land-use and growth challenges that impact the ability to provide transportation choices.
- Create strategies and guidelines for better connection of transit to other modes of travel.
- Develop policies and strategies to generate transit-supportive and transit-oriented development.
- Engage a broad set of stakeholders, including those most impacted by transit access.
- Create an implementation and funding strategy supported by the public and community leaders.

As this plan is finalized, recommendations relating to the development of mobility hubs will need to be reviewed. The transit hub at 3rd and Grand will be a key mobility hub as the transit system grows over time. With the addition of an expanded streetcar to the Riverfront area, this hub will become a key connection point for downtown and the greater Kansas City region.

6 Kansas City Walkability Plan (2003)

The *Kansas City Walkability Plan* was developed to address a wide range of pedestrian issues in the city. For many years pedestrian accommodations and amenities were not a priority in the metro region. This plan generally sought to identify where pedestrian demand existed, determine the quality of pedestrian systems in the city, recommend needed improvements, establish priorities for public investment, and identify policy changes needed in policy, ordinance or codes to improve pedestrian safety and quality across Kansas City. The plan defined five characteristics of quality pedestrian systems (Walkability Plan p.7):

- **Directness** – The measure of distance between destinations, including home, transit stops, schools, parks, commercial area, or activity centers. Pedestrian routes should be direct as possible.
- **Continuity** – The completeness of the sidewalk/walkway system and identifying gaps.
- **Street Crossings** – Intersections where pedestrians interact with auto traffic. Several factors affect pedestrian real and perceived comfort and safety: traffic control, crosswalks, number/width of travel lanes, travel speed, and traffic volume.
- **Visual Interest** – Pedestrian system needs to have basic visual quality. Areas that are pleasing and appealing with activities along the route are used more.
- **Security** – Pedestrians require a sense of security, both through visual lineof sight with others, and separation from vehicle. Also require well-lighted pathways/sidewalks.

The *Kansas City Walkability Plan* made specific recommendations to improve walkability in the Missouri Riverfront area, which includes the River Market, Columbus Park, and the Riverfront neighborhoods as seen in Table 24. The plan describes the area as one that benefits from the continuation of the direct (grid) roadway system that exists in downtown, but throughout the Riverfront area numerous obstacles and barriers exist that prevent direct pedestrian travel. These barriers include major roadway, rail and bridge facilities, and heavily overgrown and underdeveloped sections that prevent linear connectivity (*Kansas City Walkability Plan* p. 65). The plan makes a series of improvement recommendations with general cost estimations broken into short-term (0-3 years), mid-term (4-6 years) and long-term recommendations (more than 6 years).

Developing the property south of the Berkley Riverfront in a pedestrian usable manner was a recommendation of this plan

Table 24 Kansas City Walkability Plan Riverfront Improvement Recommendations

Improvement Recommendation	Estimated Amount
Near Term	
Repaint crosswalk markings at high pedestrian demand crossings in River Market	$ 22,500
Complete sidewalk system where gaps exist around River Market	$ 500,000
Include additional landscaping and amenities at gateways, open spaces and along walkways	$ 500,000
Mid-Term	
Improve pedestrian connections on highway bridges between River Market and downtown on Wyandotte, Main and Grand	$ 540,000
Enhance 5th Street connection between River Market and Columbus Park	$ 125,000
Repair existing sidewalks in poor condition	$ 700,000
Long-Term	
Develop property south of Berkley Riverfront Park in pedestrian orientated manner	--

7 Second Street Infrastructure and Development Plan (2005)

The *Second Street Corridor Plan* was developed after the Kansas City Southern Railway (KCS) vacated and abandoned its rail yard located west of 2nd Street and Delaware, and vacated and removed its tracks from the 2nd Street Corridor from Delaware to Holmes. This presented KCMO with a unique opportunity to reclaim and remake an important piece of the River Market and reconnect the city to its historical roots at the Missouri River.

The boundary for the *Second Street Corridor Plan* was 3rd Street from Broadway to the Heart of America Bridge and the Missouri River. With the KCS rail infrastructure removed, the plan looked to create a safe and functional street that would better serve the needs of adjacent property and business owners, develop an attractive streetscape, and identify a prioritized set of capital improvement recommendations. One of the key recommendations from this plan was to establish the 3rd and Grand parking lot as the northern terminus for the Main Street MAX BRT line and to develop the site as a future TOD that would create a mix of retail, commercial, and residential uses. The plan also noted the potential for a future commuter rail service terminus near 2nd and Grand.

Two Highlighted Goals:

(1) Encourage pubic access to the Missouri River and (2) promote the use of the Heritage Trail

The *Second Street Corridor Plan* also developed a detailed list of urban design principles that could be expanded beyond 2nd Street to improve multi-modal connectivity. These principles included:

- Embracing the corridor's existing urban character
- Creating an attractive, inviting area for people to live, work, play, shop, and visit
- Connecting and enhancing the existing street grid
- Providing for safe and convenient pedestrian movement
- Incorporating public art opportunities
- Stimulating sidewalk activity and economic vitality
- Encouraging public accessibility to and awareness of the Missouri River
- Promoting the use of the Riverfront Heritage Trail

Many of the recommendations for this plan have been implemented, including a pedestrian trail linking the 2nd Street Corridor east under the Heart of America Bridge to Columbus Park, significant streetscape improvements, traffic claiming, pedestrian amenities. The TOD recommendation will become reality in the coming two years.

8 Transportation Outlook 2040

Transportation Outlook 2040 (TO 2040) is the Kansas City region's long-range transportation plan, and was last updated in 2015. The plan established goals and a policy framework to guide the investment of federal, state, and local funds over the next 25 years. *TO 2040* defines the transportation for the region as "safe, balanced, regional, multimodal transportation system that is coordinated with land-use planning, supports equitable access to opportunities, and protects the environment." The plan assesses all modes of transportation, including public transportation and active transportation; examines existing conditions; makes projections for future funding; and develops strategies to attain the vision of the plan. *TO 2040* reaffirms the importance of implementing the recommendations of the *Smart Moves Plan* to develop a more seamless and regional public transit network. For active transportation, *TO 2040* recommends the removal of barriers to walking and cycling, development of complete streets, and implementation of the *Kansas City Regional Bikeways and Metro Green Plans*.

TO 2040 also makes several fiscally constrained capital project recommendations looking forward to the year 2040. These projects include several transit recommendations. The plan recommends and allocates funding for the development of BRT service in the North Oak Corridor. This enhanced service would likely replace Route 142 – North Oak, which serves the 3rd and Grand Transit hub. As plans for this first BRT service north of the Missouri River, the streetcar extension and 3rd and Grand TOD development will coordinate closely to best integrate these premium transit services and seamlessly facilitate transfers in the River Market area.

Figure 64 Sign at Union Pacific Railroad under Grand Avenue Bridge