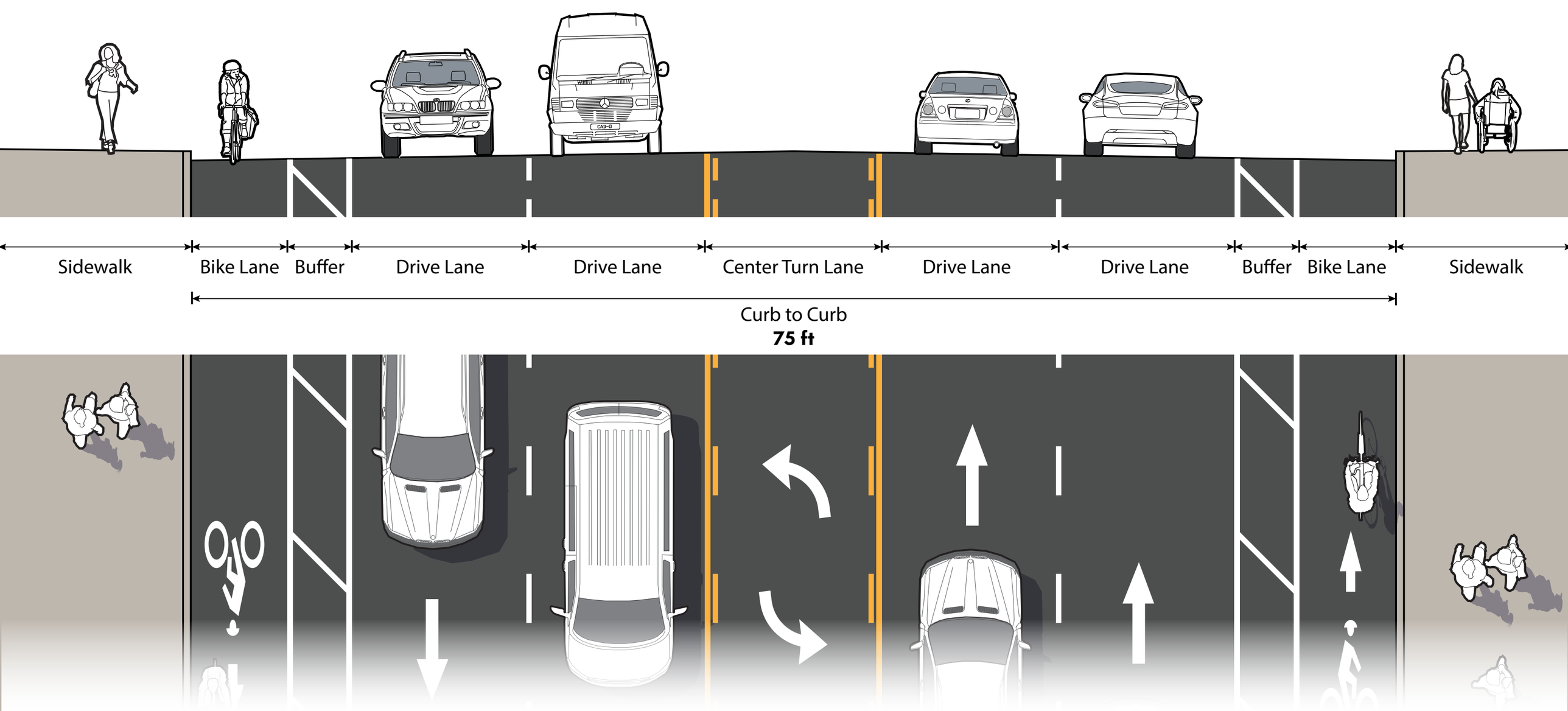

Truman Road
Complete Streets Plan

CITY OF KANSAS CITY, MISSOURI

June, 2018

PA | BIKE WALK KC | alta PLANNING + DESIGN

ACKNOWLEDGEMENTS

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CHAPTER ONE: INTRODUCTION

Background and Purpose

Truman Road is a critical component of Kansas City's street network, providing a valuable connection between Downtown Kansas City and numerous neighborhoods to the east. With six to seven travel lanes and a posted speed limit of 35 miles per hour, Truman Road prioritizes motor vehicle travel over other modes, particularly walking and bicycling. Truman Road is not unique in this regard. Many streets in Kansas City and the surrounding region lack safe, comfortable, and accessible facilities to support other modes of transportation.

Like many cities across the United States, Kansas City has begun to re-examine how its street network can better serve the community. Moving beyond a focus on motor vehicle throughput and level of service, the City is taking a "Complete Streets" approach to transportation. Complete Streets are planned, designed, and operated to serve people of all ages and abilities, including people walking, bicycling, riding public transit, and driving.

In addition to better supporting multimodal transportation, Complete Streets have the potential to address a variety of transportation, economic, and social issues. Desired outcomes, like a reduction in serious and fatal crashes, an increase in active transportation mode share, or an increase in private development or redevelopment, are often identified at the beginning of a project and supported through specific goals, strategies, and design elements during planning, design, and project development.

In 2017, Kansas City received funding through Mid-America Regional Council's (MARC) Planning Sustainable Places program to study Truman Road and develop a plan that transforms this vital corridor into a Complete Street. The purpose of the Truman Road Complete Streets Plan is to conceptualize a multimodal street for all road users, equitably engage local stakeholders to create a shared vision for the corridor, and support ongoing efforts to enhance Truman Road as a thriving commercial corridor.

Project Limits

The extents of the Truman Road Complete Streets Plan are Locust Street to the west and Van Brunt Boulevard to the east.

The Planning Process

The Truman Road Complete Streets Plan planning process is depicted in Figure 1. At each step in the process, input from community residents, area stakeholders, and/or the advisory committee provided inspiration, direction, and parameters to guide plan development.

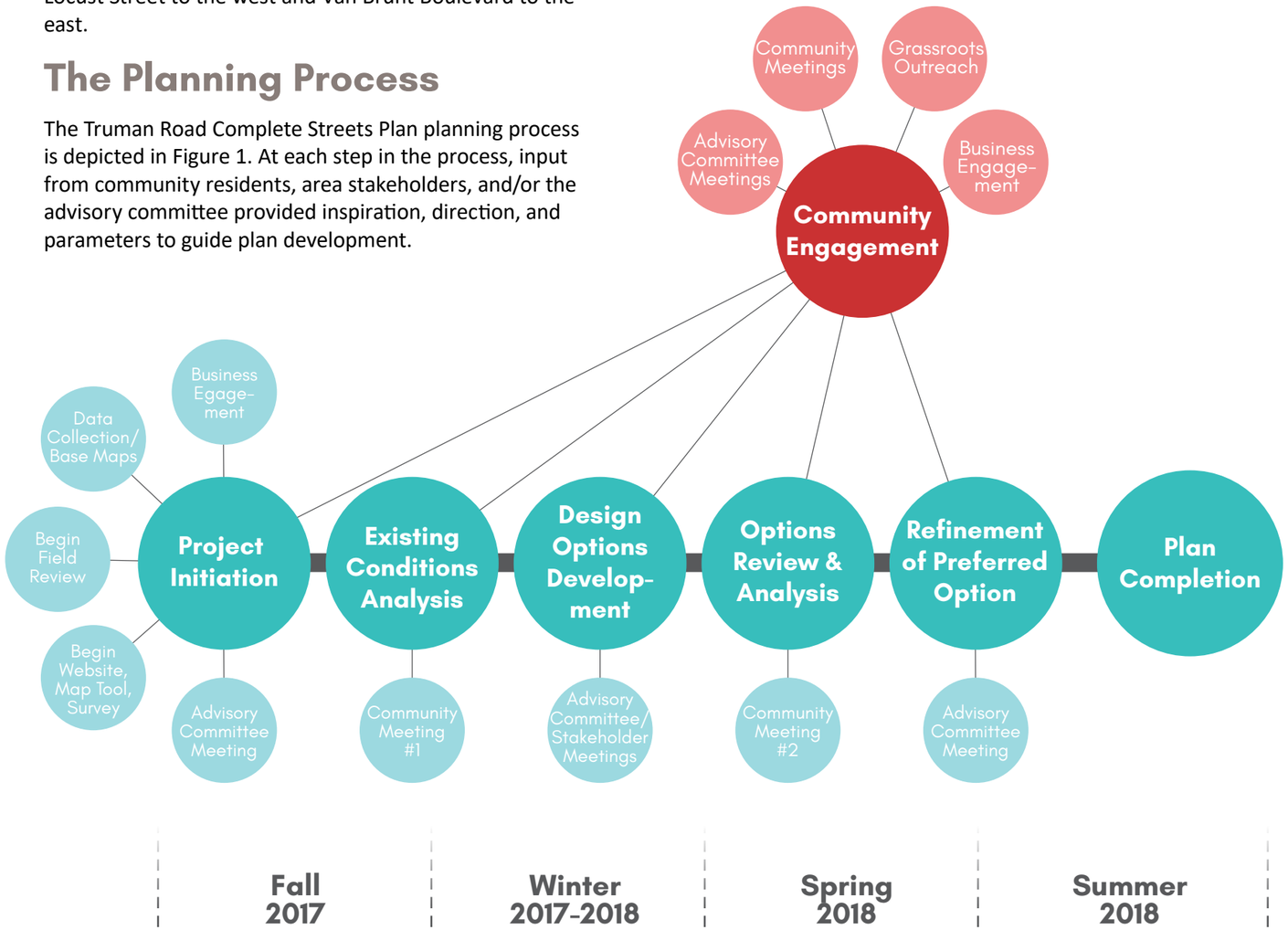

Figure 1. Truman Road Complete Streets Planning Process.

Plan Vision and Goals

Visioning and goal setting are an important part of any planning effort. A strong vision and supporting goals provide the foundation for all physical and programmatic recommendations included in the Truman Road Complete Street Plan. The vision statement encapsulates the values and aspirations of the community and paints a picture for the future of Truman Road. The goals support this vision by providing more concrete and measurable targets that can be achieved through specific actions, objectives and policies.

Vision Statement

Truman Road is a safe, accessible, comfortable, and welcoming complete street corridor that supports all modes of transportation and serves as a catalyst for economic and community development.

Plan Goals

Goal 1: Improve safety for all road users through crash reduction and traffic calming strategies, high-visibility crosswalks, separated bicycle facilities, pedestrian-scale lighting, and other safety countermeasures.

Goal 2: Make walking, bicycling, and transit preferred modes of travel by providing attractive, high-quality infrastructure, including wide sidewalks, safe pedestrian crossings, pedestrian-scale lighting, separated bicycle facilities, comfortable bus shelters, and other amenities that promote active transportation and public transportation.

Goal 3: Support economic development through high-quality public infrastructure that stimulates new development and supports a vibrant and lively corridor for area residents, businesses, employees, and visitors.

Goal 4: Support community development by enhancing the corridor's sense of place, embracing and reflecting the community's character and diversity, and providing public spaces for social interaction and congregation. Improvements may include street furniture and amenities, pedestrian-scale lighting, trash receptacles, benches, plazas, public art, murals, historical markers or plaques, etc.

Goal 5: The Truman Road corridor is a complete street that connects to and with the surrounding neighborhoods and key destinations throughout the City via safe and appealing pedestrian facilities, bikeways, and transit improvements.

Plan Outline

The plan document consists of five chapters as outlined below.

Chapter 1: Introduction

The Introduction Chapter provides an overview of the plan purpose and process.

Chapter 2: Existing Conditions

The Existing Conditions Chapter examines the current context in which the Truman Road Complete Streets Plan is being developed. Included are a review of relevant planning efforts and an analysis of current roadway characteristics and traffic patterns.

Chapter 3: Community Engagement

The Community Engagement Chapter documents the engagement process and the input gathered from community residents, businesses, stakeholders, and the plan advisory committee.

Chapter 4: Best Practices

The Best Practices Chapter discusses pertinent design guidelines, planning documents, and federal policies that support local development of Complete Streets. These invaluable resources inform the development of design alternatives and can serve the City of Kansas City on this and other Complete Streets planning and design initiatives throughout the City.

Chapter 5: The Truman Road Complete Streets Plan

The final plan chapter represents the culmination of the planning process. The chapter begins by presenting the vision and goals for the future of Truman Road. Two design alternatives are introduced and discussed, and then the final preferred design is described in greater detail, with conceptual plans provided for the entire corridor.

Figure 2. Project team members discuss the draft plan recommendations at the second Community Meeting on March 21, 2018.

CHAPTER TWO: EXISTING CONDITIONS

Introduction

Roadway characteristics can influence travel patterns and behavior, mode share, land use and development, business activity, and other sense of place. As such, understanding current conditions along the corridor is critical to the development of the Truman Road Complete Streets Plan. Similarly, previous planning efforts related to the Truman Road corridor can provide greater insight into proposed improvements and desired outcomes in and around the study area. This chapter documents previous planning efforts that impact the Truman Road Complete Streets Plan study area and examines physical conditions and traffic operations along the corridor.

Existing Plans Review

The Truman Road Complete Streets Plan builds on a number of previous city-wide and area planning efforts. This section of the chapter summarizes these plans, with a focus on information pertaining to the Truman Road corridor. The following studies are included in this review:

- Bike KC Plan / Bike Demand Analysis
- Greater Downtown Area Plan
- Truman Plaza Area Plan
- Heart of the City Area Plan
- Kansas City Major Street Plan
- Smart Cities Application

Bike KC Plan / Bike Demand Analysis

Truman Road is not identified on the current Kansas City Bike Plan. However, an analysis of latent bike demand (Figure 3) conducted by BikeWalkKC identifies the Truman Road corridor as an area of high potential bike ridership in the area between Downtown and I-70. This latent demand is based on concentrations of population, employment, and potential destinations. The latest draft for the update to Kansas City's Bike Plan (Figure 4), which was under study throughout the Truman Road Complete Streets Plan planning process, identifies Truman Road east of Charlotte Street as bike route with major separation, such as a protected bike lane.

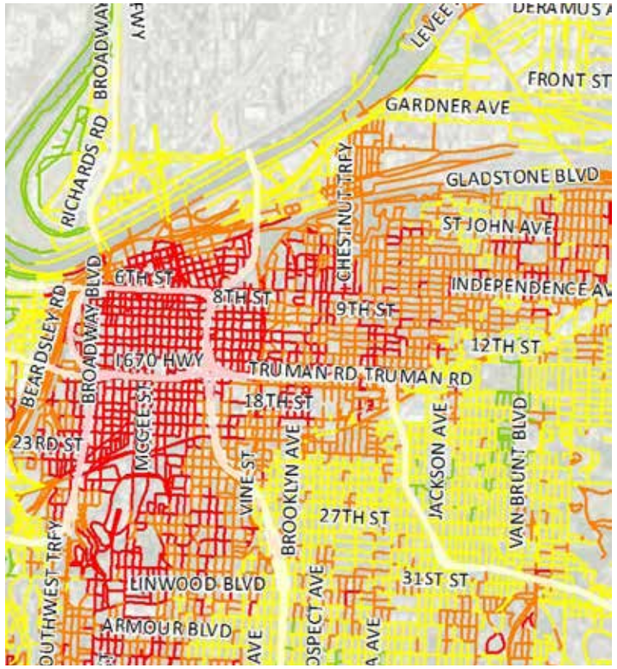

Figure 3. BikeWalkKC Bicycle Demand Analysis

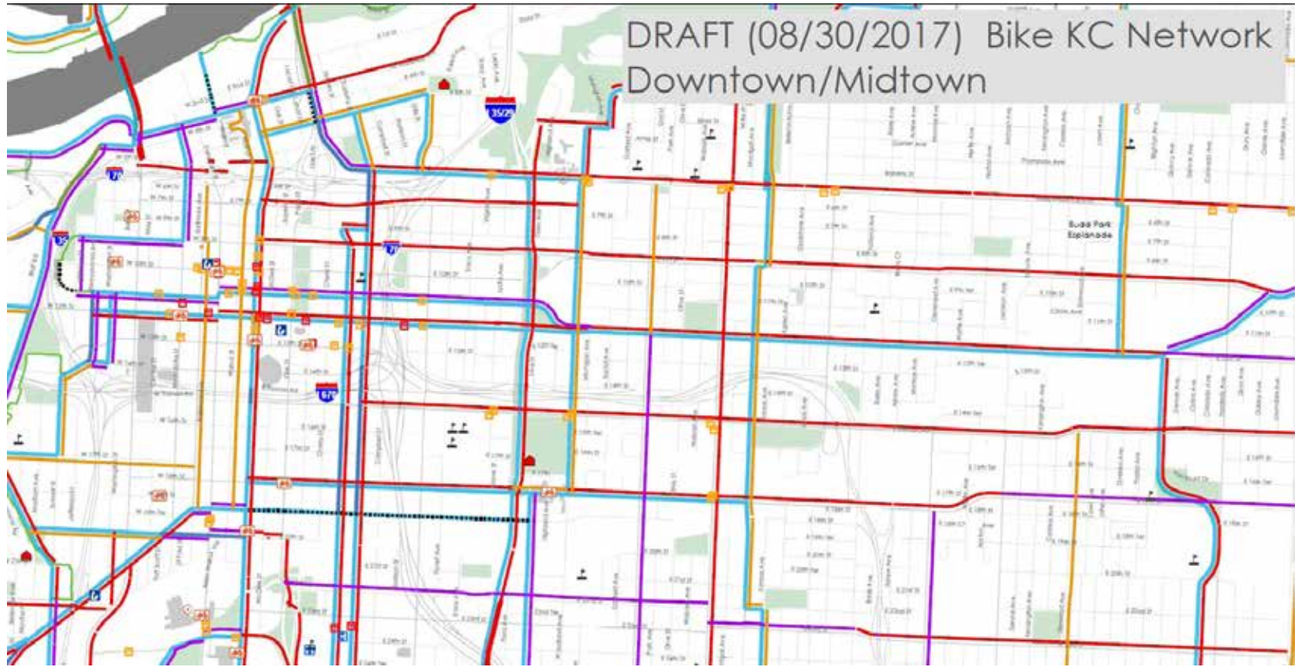

Figure 4. Draft Bike KC Network, Downtown/Midtown

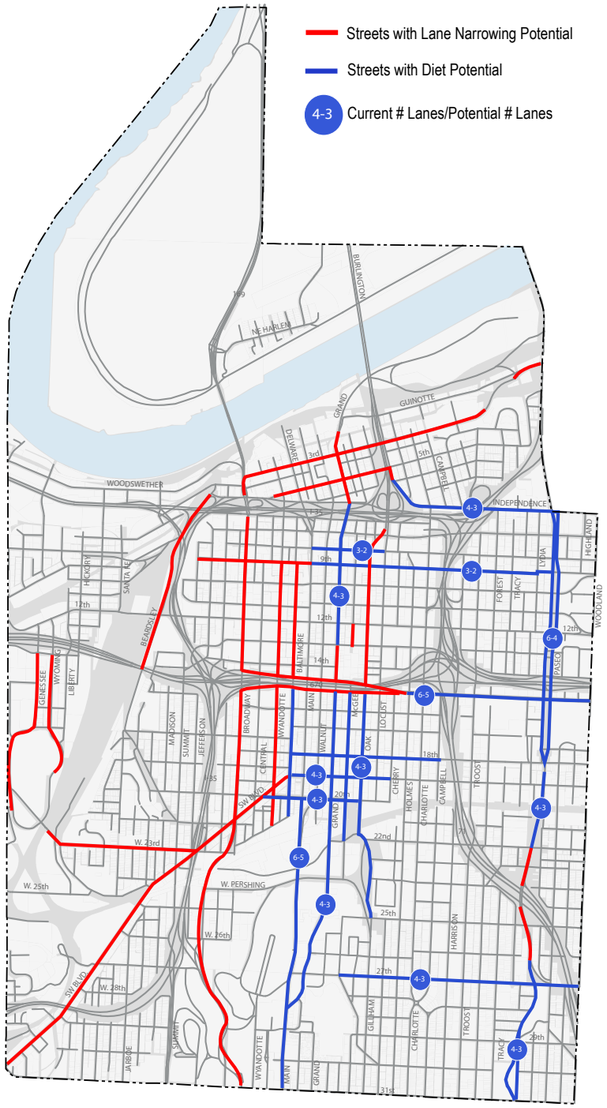

Figure 5. Potential Road Diets & Lane Narrowing, Greater Downtown Area Plan

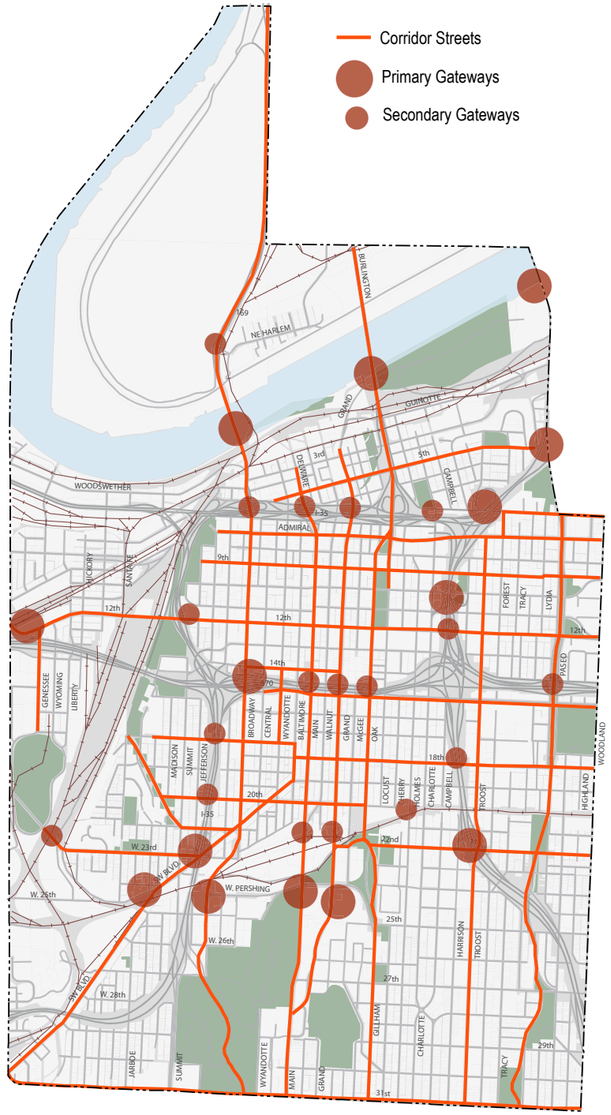

Figure 6. Corridor Streets, Greater Downtown Area Plan

Greater Downtown Area Plan (2010)

The Greater Downtown Area Plan supports transportation options beyond the automobile, including recommendations for complete streets, and where appropriate, implementation of road diets and lane narrowing to improve bikeability. Truman Road is specifically identified as a road diet candidate in the Greater Downtown Area Plan.

Truman Road is also identified as a “Corridor Street”. Corridor Streets form connections between neighborhoods and activity centers, and are priorities for streetscape improvements. Truman Road forms a potential connection between activity centers in the Crossroads and at 18th and Vine.

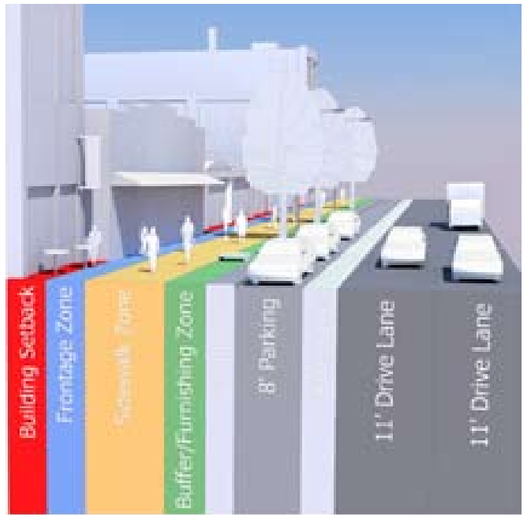

Figure 7. Public Realm Elements, Greater Downtown Area Plan

Truman Plaza Area Plan (2012)

The Truman Plaza Area Plan includes the Truman Road corridor east of I-70. The plan promotes a multimodal transportation system including pedestrians, cyclists, transit, and automobiles. The plan emphasizes that transportation system must be safe, maintained, and easy to use. Development is recommended to be oriented to take advantage of multimodal transportation options. Changes to the Major Street Plan designation for Truman Road are recommended in the area of Hardesty Avenue from a "Local Link" to a "Commercial /Mixed Use Corridor."

Heart of the City Area Plan (2011)

The Heart of the City Area Plan recommends the creation of an interconnected multimodal system focused on providing access to jobs and businesses. As a general recommendation, the Heart of the City Area Plan recommends the identification of additional east-west bike routes to supplement the north-south routes in the adopted Bike KC plan. The Heart of the City Area Plan identifies Truman Road as a primary transit street with a priority for pedestrian improvements. Truman Road is also identified as an "Image Street" which sets the tone for the area with streetscape improvements and aesthetic standards.

Major Street Plan (2016)

Kansas City's Major Street Plan identifies the network of major streets that provide the framework of transportation corridors that serve and connect the entire City. The Major Street Plan identifies the right of way requirements and typical sections for key streets in the transportation network. Truman Road is classified in three categories for the Major Street Plan. Between Downtown and I-70, Truman Road is identified as a Thoroughfare, which emphasizes vehicular mobility and through traffic. Truman Road is designated as a Commercial/Mixed-Use Street between I-70 and Jackson Avenue. Commercial/Mixed-Use streets are intended to "form a highly interconnected network (grid), dispersing "through" traffic and providing convenient routes for pedestrians, bicyclists, and transit users." East of Jackson Avenue, Truman Road is identified as a Local Connector, which is intended to carry moderate levels of traffic in a way that is compatible with bicycle and foot traffic. Several area plans and transportation plans recommend changes to the Major Street Plan designation for Truman Road.

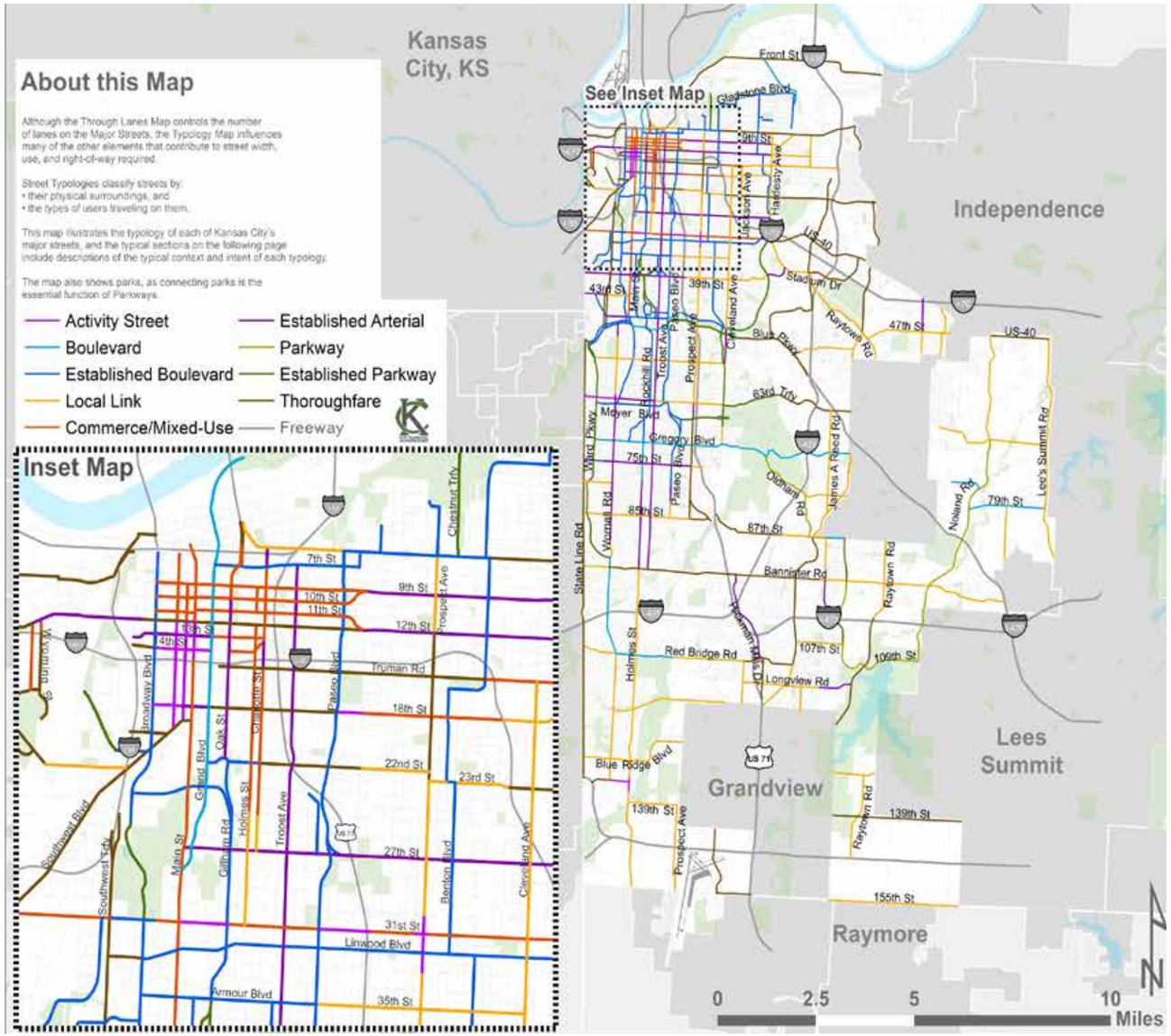

Figure 8. Street Typology Map, Major Street Plan

Smart Cities Application (2016)

Kansas City's 2016 Smart Cities Application identifies Truman Road as a key east-west connection in what is proposed as a "Central Bike Artery." Focused on transportation and technology improvements in the Prospect Corridor area, the Smart Cities application proposes a road diet on Truman Road, with protected bike lanes between Downtown and Benton Boulevard, and traditional bike lanes between Benton Boulevard and Van Brunt Boulevard. The goal is to connect destinations like the new Major League Baseball Youth Academy near the historic 18th and Vine District, and to create a more livable and inviting street that supports commercial redevelopment.

Additional Plans

The following plans provided general guidance and recommendations for complete street improvements, but do not include specific recommendations for Truman Road:

- MARC Complete Streets Policy and Handbook
- FOCUS Kansas City Plan
- KCMO Transit-Oriented Development Policy
- KCMO Walkability Plan

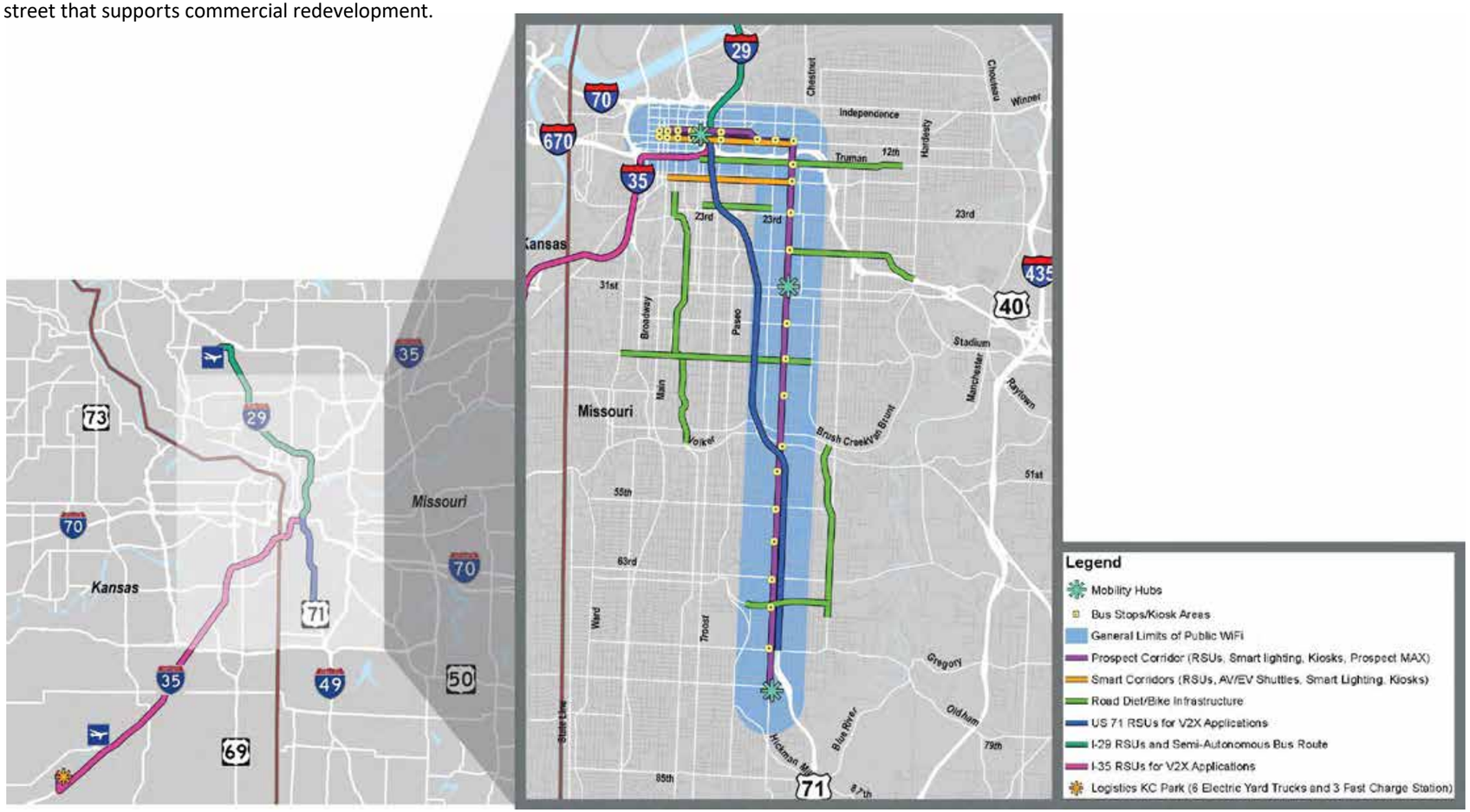

Figure 9. Annotated Site Map, Smart Cities Application

Existing Conditions

Corridor Overview

In its existing condition, Truman Road, between Locust Street and Van Brunt Boulevard is a six (6) to seven (7) lane minor arterial, which operates as a major east-west route through downtown Kansas City. The Annual Average Daily Traffic (AADT) on Truman Road within the project limits ranges from 7,000 vehicles per day (VPD) on the west end of the corridor to 19,000 vpd on the east end of the corridor. Based on Highway Capacity Manual (HCM) methodology, a roadway with six (6) lanes under ideal roadway conditions, can carry up to 44,000 vpd, which is double the capacity needed on the east end of the roadway, and more than six (6) times the capacity necessary for the west end. This project corridor is a great candidate for travel lane reallocation that will support a complete street approach to transportation in the corridor that will support biking, walking and transit operations as opposed to a focus on motor vehicle travel only.

The existing design of this street was focused on motor vehicles, and was planned for a different purpose than is present today, or envisioned for the corridor. The street has significant excess capacity for the existing vehicle demand, and as a result, vehicles are able to travel at high speeds with the number of lanes and wide roadway. There is a desire by the City of Kansas City, businesses and neighborhoods along Truman Road to create a walking and biking friendly corridor connecting neighborhoods east of downtown to downtown Kansas City. This desire will directly influence a conceptual design that reallocates existing street space to benefit all modes of transportation.

This chapter summarizes the results of the existing conditions study to determine the feasibility of implementing a road diet (or similarly-termed a travel lane conversion) along the Truman Road study corridor. As part of this initial step, Alta assessed the average annual daily traffic volumes (AADT) and performed an existing conditions operational analysis to identify any areas of concern when considering a travel lane conversion. The results discussed in this chapter indicate that no critical issues that would prevent the application of a travel lane conversion are identified as part of this existing conditions analysis. Therefore, the next step is to analyze the proposed conditions incorporating the elements of a travel lane conversion and any mitigation strategies necessary to maintain acceptable operations on the corridor. The next steps also include conceptual designs of enhanced bicycling, walking and transit integration.

General Conditions

Land uses along the Truman Road study area vary in form and function and include residential neighborhoods, industrial sites, and a diversity of commercial uses. Within the project study extents, Truman Road generally carries three (3) travel lanes in each direction, as well as a two-way center left turn lane (west of Indiana Avenue), and exclusive turn lanes at some larger intersections to provide additional capacity. Travel lanes are typically 11-12’ wide. The posted speed limit along Truman Road is 35 mph.

There are two (2) highway interchange connections along Truman Road within the project extents: US 71 (at Campbell Street) and I-70 (at Benton Boulevard and Indiana Avenue). I-70 also has various indirect access connections to Truman Road at Paseo Boulevard, Brooklyn Avenue, and Prospect Avenue

Figure 10. Truman Road’s wide curb-to-curb widths and lack of pedestrian-oriented streetscape elements reduce pedestrian comfort along the corridor.

Crash Data

Data provided by the City of Kansas City identifies a total of eight crashes involving bicyclists or pedestrians. Because the data provided by the City of Kansas City lacks time and date information, crash frequency cannot be determined. However, some insights can be gleaned from the limited information available. Of these eight crashes, six involved pedestrians, and two involved bicyclists. All eight crashes occurred at intersections, where motor vehicle turning movements create the greatest possible number of potential conflict points. Five crashes occurred at signalized intersections, while three crashes occurred at unsignalized intersections. Two crash locations saw two crashes each – Truman Road at Cleveland Avenue, and Truman Road at Troost Avenue. Both of these intersections are signalized. The data points to the need for safety improvements, particularly at major intersections, where bicyclists and pedestrians are most vulnerable. The list of crash types and locations is shown in Table 1.

Table 1. Truman Road Crash Types and Locations

Crash Location	Signalized Intersection	Crash Type
Brooklyn Ave & E Truman Rd	Yes	Pedestrian
Campbell St & E Truman Rd	No	Pedestrian
Cleveland Ave & E Truman Rd	Yes	Pedestrian
Cleveland Ave & E Truman Rd	Yes	Pedestrian
Norton Ave & E Truman Rd	No	Bicycle
Spruce Ave & E Truman Rd	No	Pedestrian
Troost Ave & E Truman Rd	Yes	Bicycle
Troost Ave & E Truman Rd	Yes	Pedestrian

Traffic Analysis

Synchro files of 2014 existing AM and PM peak for Truman Road within the project limits were provided to Alta from the City's Traffic Management Center. The files were updated to reflect the current lane configurations, and the volumes were generally balanced in the eastbound and westbound directions considering the numerous driveways that exist between major intersections. GIS data, including AADT values were also provided by the City for the extents of the Truman Road corridor.

Capacity analyses were performed for the existing AM and PM peak hour periods along Truman Road using Synchro software, version 9 to determine the Levels of Service (LOS) and delay for each of the study intersections. LOS analysis is a means of determining the ability of an intersection to accommodate vehicular traffic volume demand. The analysis uses Highway Capacity Manual (HCM) 2000 methodology, and accounts for roadway characteristics such as intersection geometry, traffic control devices, and traffic (vehicle, pedestrian, and bicycle) volumes.

LOS is defined by letter characters that range from A to F, with A representing the best traffic operating conditions that have little or no delay to vehicles utilizing the intersection and F characterizing poor conditions that have significant delay. LOS A through D are typically considered acceptable operations, while LOS E is representative of conditions where improvements could be needed if traffic volumes are expected to significantly increase in the future. LOS F is considered failing operations indicating the demand exceeds the capacity of the intersection as it is currently designed, and significant delays can be expected. Under these circumstances, improvements are needed, in the form of traffic control modification, geometric changes, or a combination of both, for the purpose of reducing vehicle delay. The delay limits for each LOS category, based on the HCM, are shown in Table 2.

Table 2. Level of Service Delay Limits

Level of Service (LOS)	Signalized Intersection Delay per Vehicle (sec/veh)	Unsignalized Intersection Delay per Vehicle (sec/veh)
A	≤10.0	≤10.0
B	10.1 - 20.0	10.1 - 15.0
C	20.1 - 35.0	15.1 - 25.0
D	35.1 - 55.0	25.1 - 35.0
E	55.1 - 80.0	35.1 - 50.0
F	> 80.0	> 50.0

The resulting overall intersection LOS for existing conditions at several signalized intersections along Truman Road during the AM and PM peak periods are summarized in Table 3. A detailed LOS summary can be seen in the attached reports.

As indicated in Table 3, all of the signalized intersections currently operate at an acceptable LOS D or better during both peaks under existing conditions. Only one (1) intersection is operating at LOS D: Charlotte Street during the AM peak. It is suspected that either traffic volumes or signal timing data is slightly outdated at this intersection due to Charlotte Street lane configuration modifications that were implemented within the last two years.

Table 3. Truman Road Existing Signalized Intersection Conditions Synchro LOS Results

Intersection	AM Peak LOS	PM Peak LOS
Truman Rd / Locust St	A	B
Truman Rd / Holmes St	B	B
Truman Rd / Charlotte St	D	B
Truman Rd / NB Hwy 71 off ramp	A	A
Truman Rd / Troost Ave	B	C
Truman Rd / The Paseo (Southbound)	C	C
Truman Rd / The Paseo (Northbound)	B	B
Truman Rd / Woodland Ave	B	B
Truman Rd / Brooklyn Ave	A	A
Truman Rd / Prospect Ave	B	B
Truman Rd / Chestnut Ave	A	B
Truman Rd / Benton Blvd	B	C
Truman Rd / Indiana Ave	A	B
Truman Rd / Cleveland Ave	C	C
Truman Rd / Jackson Ave	B	C
Truman Rd / Van Brunt Blvd	B	C

Proposed Conditions

Capacity analyses were performed for the proposed 3 lane section of travel, that includes designated full time on-street parking in the AM and PM peak hour periods along Truman Road using Synchro software, version 9 to determine the Levels of Service (LOS) and delay for each of the study intersections. As noted for the existing condition, LOS analysis is a means of determining the ability of an intersection to accommodate vehicular traffic volume demand. The analysis uses Highway Capacity Manual (HCM) 2000 methodology, and accounts for roadway characteristics such as intersection geometry, traffic control devices, and traffic (vehicle, pedestrian, and bicycle) volumes.

The resulting overall intersection LOS for the 3-lane conditions at several signalized intersections along Truman Road during the AM and PM peak periods are summarized in Table 4. A detailed LOS summary can be seen in the attached reports.

Table 4. Truman Road Signalized Intersection Synchro LOS Results - Proposed Conditions – 3-Lane Section Road Diet

Intersection	AM Peak LOS	PM Peak LOS
Truman Rd / Locust St	A	B
Truman Rd / Holmes St	B	C
Truman Rd / Charlotte St	E	C
Truman Rd / NB Hwy 71 off ramp	A	A
Truman Rd / Troost Ave	C	E
Truman Rd / The Paseo (Southbound)	C	C
Truman Rd / The Paseo (Northbound)	B	D
Truman Rd / Woodland Ave	A	B
Truman Rd / Brooklyn Ave	A	A
Truman Rd / Prospect Ave	B	C
Truman Rd / Chestnut Ave	B	C
Truman Rd / Benton Blvd	B	D
Truman Rd / Indiana Ave	A	C
Truman Rd / Cleveland Ave	C	D
Truman Rd / Jackson Ave	D	E
Truman Rd / Van Brunt Blvd	C	B

It should be noted that the values in Table 4 reflect the first cut at modeling a 3-lane section on Truman Road. The assessment of a three (3) lane section indicated that one intersections resulted in operation at LOS E (Charlotte) in the AM peak hour, and two (2) intersections at a level of service E in the PM Peak Hour (Troost and Jackson). This analysis does not include any mitigation measures such as adding turn lanes in order to achieve acceptable operations. It is anticipated that a 3-lane section with additional exclusive turn lanes at certain intersections as well as signal timing adjustments will yield acceptable conditions. It is likely that many of the intersections will require an additional turn lane in the eastbound direction to accommodate PM peak traffic volumes, while the AM peak traffic volumes in the westbound direction are not as critical, as one westbound lane of traffic is acceptable for traffic operations.

Conclusions

As previously mentioned, the capacity of a six (6) lane roadway with left turn lanes is 44,000 vpd, based on Highway Capacity Manual methodology. Additionally, the FHWA guidelines indicates that four (4) lane roadways with AADT less than 20,000 vpd may be good candidates for a four (4)- to three (3)- lane road diet conversion. The maximum AADT on TrumanRoadwithin the study limits is 19,000 vpd, between Indiana Ave and Van Brunt Boulevard, while some sections of the corridor carry as low as 7,000 vpd on the western end of the corridor.

It is recommended and acceptable to the city of Kansas City that parking be restricted from 4-6 PM in the eastbound direction to accommodate PM peak traffic volumes. A single lane of traffic in the westbound direction is able to allow operation of AM peak hour traffic through the corridor. The concept will take into account this recommendation in developing the preferred alternative.

The FHWA documents and the Advisory Committee confirmed benefits of and reasons to consider this road diet, including improved safety, reduced speeds, reduced side-street delay, transit, pedestrian and bicyclist facility enhancements, and quality of the corridor benefits. A road diet along the Truman Road corridor would naturally reduce travel speed and would provide opportunities for installing additional pedestrian supportive measures. Reduced travel speeds are desirable along this corridor east of the downtown area will be inviting to high volumes of pedestrians with enhanced infrastructure for pedestrian safety in addition to enhanced low stress bikeway connectivity.

Guadalupe Centers Elementary School Arrival/ Dismissal Observations

On December 19, 2017, project staff for the Truman Road Complete Streets Plan conducted on-site observations of arrival and dismissal operations for the Guadalupe Centers Elementary School located on the Villa Guadalupe Campus at 5123 E Truman Road. These observations were requested by the school to better understand travel patterns and behavior surrounding the school, and to better consider the impacts of roadway changes to their operations.

Arrival and dismissal analysis incorporates data gathering and synthesis of all the factors that impact a student's ability to get to and from school. Observers note everything from the behavior of students and parents at arrival and dismissal, to the quality of the physical infrastructure on and around the school site, to procedures that support or hinder safe and efficient operations. The synthesis of this data informs recommendations for site improvements, operational changes, or other improvements.

The goals of these observations included the following:

- Understand the existing infrastructure and operations on and around the school site.
- Identify the impact of any changes to Truman Road on school operations and arrival/dismissal procedures.
- Identify any other issues related to the safety or efficiency of arrival and dismissal procedures.

The following site locations were observed during arrival and dismissal periods:

- Intersection of Truman Road and Van Brunt Boulevard
- School Entrance (Intersection of Truman Road and Denver Avenue)
- Entry Monument (Intersection of Denver Avenue and Colorado Avenue)
- East Parking Lot
- West Parking Lot
- South Entrance (Intersection of Denver Avenue and Van Brunt Drive)

These locations are displayed as red dots in Figure 12.

On-Site Observations

Arrival/Dismissal Locations

Most students used the main entrance facing the east parking lot for arrival and dismissal. Some students with special needs used a bus that loaded at the west parking lot circle drive. Prior to dismissal, teachers lead students from other buildings to the large main building to prepare for pickup from the east parking lot.

Arrival and dismissal appeared safe and efficient for students. Traffic circulation patterns ensured that there were no conflicts between walking students and moving cars, and no situations where students are required to cross parking areas to reach buses or vehicles.

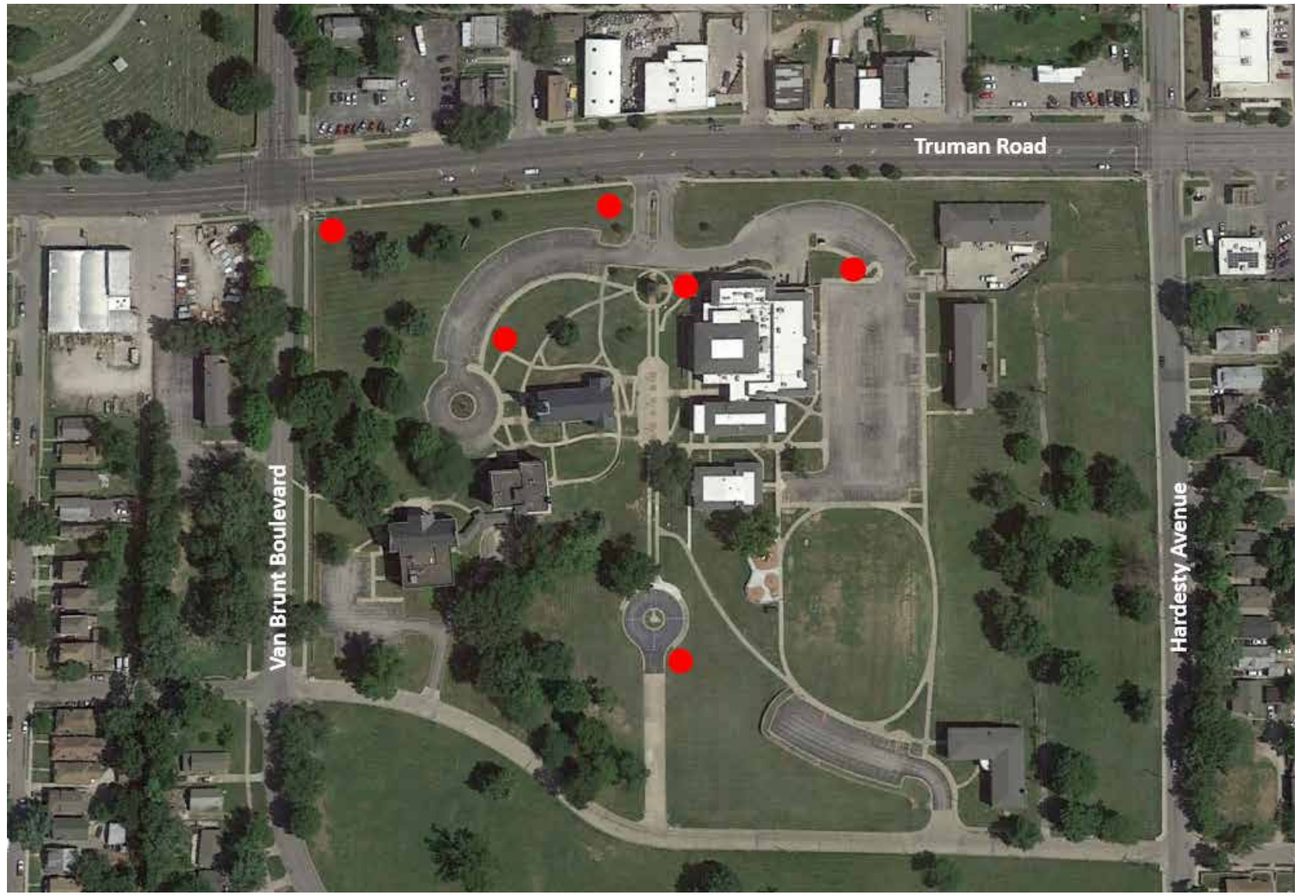

Figure 12. Arrival and dismissal observation sites. Sites shown as red dots.

Bus Circulation

In the morning, approximately eight buses begin arriving between 7:15am and 7:30am. Buses turn west once they are on campus, loop around the west circle drive and then travel east through the T-intersection toward the main entrance on the east side of the school. Buses then travel back to the T-intersection to exit. Bus traffic has ceased by 7:45am.

In the afternoon, approximately eight buses arrive ten to fifteen minutes before the 3pm dismissal. Most buses pick up from the main entrance facing the east parking lot. One bus picks up a small number of students from the west circle drive. Buses depart as a group at 3:05pm.

Buses arrived, circulated, and departed from the school site with any notable delay or incident. There were no issues observed with buses turning off or onto Truman Road.

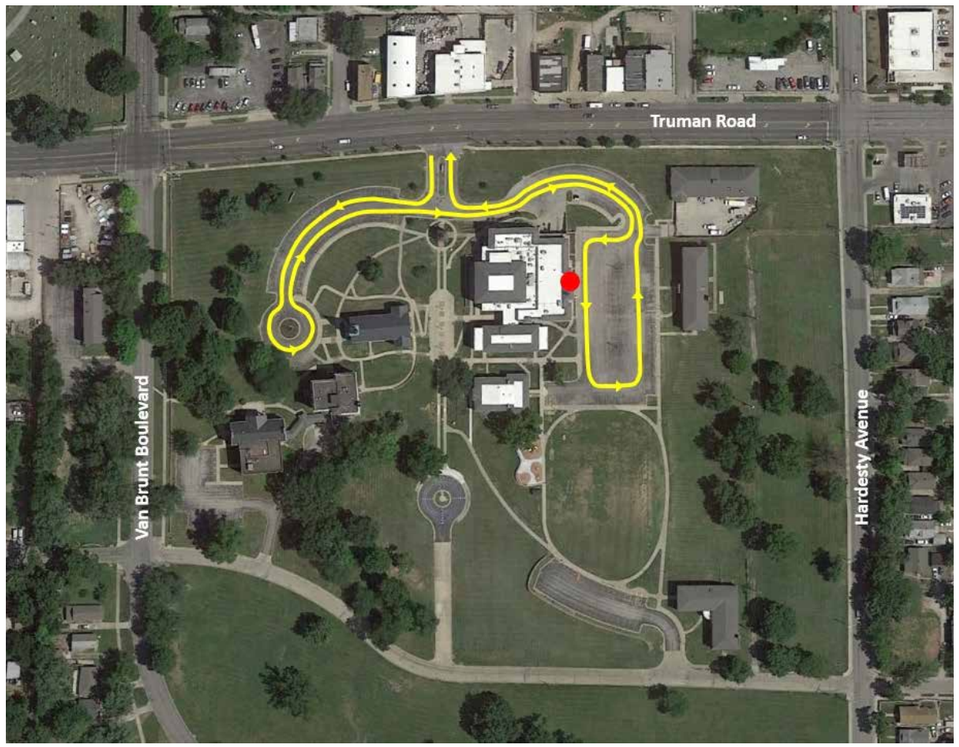

Figure 13. Arrival and dismissal observation sites. Bus circulation indicated by yellow line, and observation site indicated by red dot.

Car Circulation

In the morning, staff and private vehicles begin arriving between 7:15am and 7:30am. Staff park in both the east and west parking lots. Vehicles transporting students begin arriving between 7:30am and 7:40am, entering the campus from the main entrance drive at the intersection of Truman Road and Denver Avenue. Once on campus, they turn left at the T-intersection toward the school building entrance facing the parking lot on the east side of the school. Approximately 150 vehicles were observed between 7:30am and 8:10am.

In the afternoon, vehicles transporting students use the same path, circling past the school entrance facing the east parking lot. Approximately 135 vehicles were observed between 2:30pm and 3:30pm.

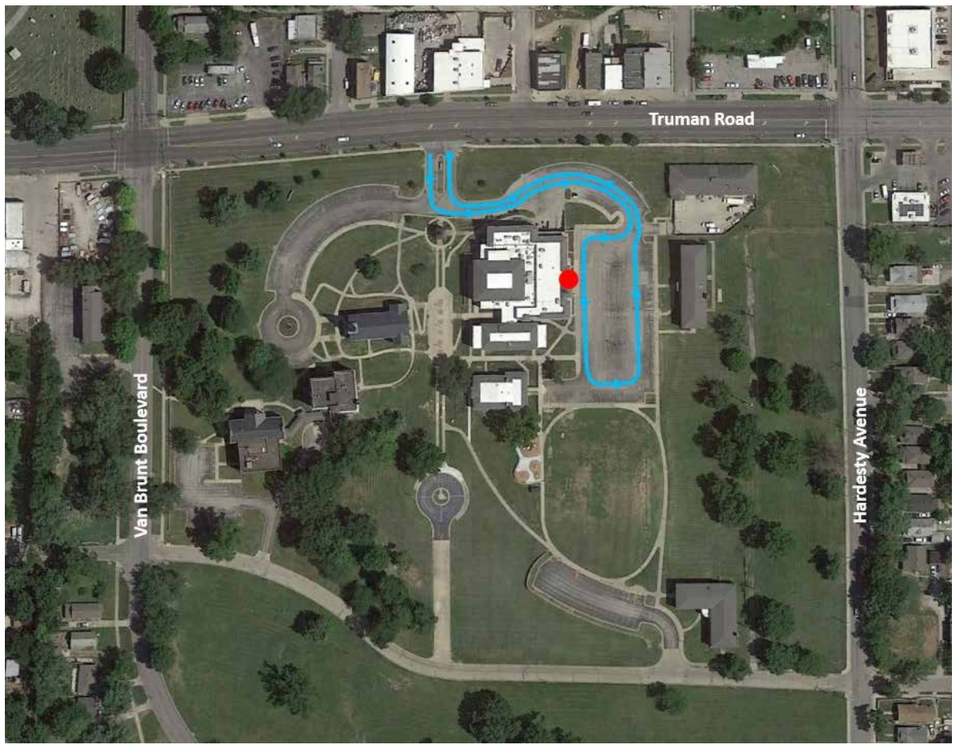

Figure 14. Arrival and dismissal observation sites. Car circulation indicated by blue line, and observation site indicated by red dot.

Denver Avenue Intersection (Main Entrance)

MORNING ARRIVAL

7:15am – 7:30am: Staff and private vehicles begin arriving, parking in both the east and west parking lots. There are no back-ups on Truman Road during this period. Traffic flows smoothly past the school.

7:30am – 7:40am: Vehicles transporting students begin arriving. After dropping off students, vehicles back up two to four cars deep waiting to exit onto Truman Road. The number of right and left turns onto Truman Road is roughly equal. Left-turning vehicles create most of the on-campus delays. The traffic on Truman Road flows normally with an occasional, brief slowdown behind eastbound vehicles turning right into the school campus.

Figure 15. Through traffic is sometimes unprepared for right turns from Truman Road, causing brief slowdowns.

7:40am – 7:50am: There are few vehicles arriving and few backups of vehicles existing to Truman Road. Traffic flows normally on Truman Road.

7:50am – 8:00am: There is a five-vehicle queue in the left turn lane of Truman Road where westbound traffic is waiting to turn left onto campus. There is no impact from this left turn queue on westbound Truman Road traffic and all other traffic flows smoothly. On campus, existing vehicles back up six to seven vehicles deep.

8:00am – 8:05am: Existing traffic is at its busiest, with eight to ten vehicles queued on campus waiting to turn onto Truman Road. There is normal traffic flow on Truman road with no delays.

Figure 16. At its longest, queued traffic stretches eight to ten cars while drivers wait for gaps in traffic to turn left.

8:05am – 8:10am: Two to three vehicles queue on campus, waiting to turn onto Truman Road. There are very few cars entering the school campus. There is normal traffic flow on Truman road with no delays.

8:10am – 8:15am: There is very little traffic incoming or outgoing from the school campus. There is sparse traffic on Truman Road.

AFTERNOON DISMISSAL

2:30pm – 3:00pm: There is scattered arrival of vehicles for parent pickup. There is no congestion in the parking lot or on Truman Road.

3:00pm – 3:15pm: The parent pickup line begins to get longer but does not cause any congestion in the parking lot or on Truman Road, except for a few occasions when a vehicle is attempting to turn left (west) out of the campus onto Truman Road and blocks other exiting vehicles.

3:15pm – 3:30pm: There are a few late pickups but for the most part traffic is calm and steady.

Van Brunt Boulevard Intersection

Traffic on Truman Road moves very quickly, exceeding posted speed limits. Traffic includes many buses (both transit and school buses) and various commercial trucks and trailers. In the morning, the busiest traffic travelled from east to west, toward Downtown Kansas City. In the afternoon, the busiest traffic travelled west to east.

Figure 17. At its longest, queued traffic stretches eight to ten cars while drivers wait for gaps in traffic to turn left.

For both arrival and dismissal, as school traffic increases, many cars do not signal their right turn from eastbound Truman Road into the school campus. This causes some last second braking and slowdowns. Overall, school traffic does not affect eastbound or westbound traffic on Truman Road. Vehicles do not seem to be prepared for others to be turning into the school campus. There does not appear to be any “School Zone” signage in either direction on Truman Road.

For both arrival and dismissal, there is busy traffic using the dedicated right turn lane from eastbound Truman Road to southbound Van Brunt Boulevard (possibly heading to East High School). While busy, the existing turn lane handles this turning traffic without issue or backup.

For both arrival and dismissal, there is busy traffic using the dedicated left turn lane from southbound Van Brunt Boulevard to eastbound Truman Road. While busy, the existing turn lane handles this traffic without issue or backup.

In the morning and afternoon, eight to ten pedestrians were observed crossing the Truman Road/Van Brunt intersection. The pedestrian crossing buttons did not function.

Most vehicles pulled into or through the crosswalks while waiting on a red light. Most vehicles turning right onto Truman Road from Van Brunt Boulevard did not slow down through the intersection for pedestrians or oncoming traffic.

Key Recommendations

The following key issues and corresponding recommendations summarize the Guadalupe Centers Elementary School Arrival and Dismissal Observations. These recommendations are incorporated into the conceptual plan for Truman Road at the Van Brunt Boulevard intersection.

Key Issue: Heavy turn movements from eastbound Truman Road to Southbound Van Brunt Boulevard

Recommendation: Maintain dedicated right turn lane on Truman Road.

Key Issue: Heavy turn movements from southbound Van Brunt Boulevard to eastbound Truman Road

Recommendation: Maintain dedicated left turn lane on Van Brunt Boulevard.

Key Issue: Heavy left turn movement from Truman Road into the school campus

Recommendation: Maintain dedicated left turn lane on Truman Road.

Key Issue: Moderate queues for cars exiting school campus onto Truman Road

Recommendation: Explore striping for dedicated right and left turns onto Truman Road to allow right turns to continue while left turns wait for cross traffic to clear.

Key Issue: Brief slowdowns for eastbound through traffic as cars turn right into the school campus

Recommendation: Explore school zone signage to indicate upcoming slowdowns and turn movements. Maintain two eastbound lanes on Truman Road (or dedicated right turn lane into school campus) east of Van Brunt Boulevard.

Figure 18. There appears to be room for separate left and right turn queues where cars turn onto Truman Road.

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CHAPTER THREE: COMMUNITY ENGAGEMENT

Introduction

Community engagement was a critical element of the Truman Road Complete Streets Plan process. The objective of public engagement for the Truman Road Complete Streets Plan was threefold:

- Solicit feedback to guide the guiding vision and goals and the selection of a preferred conceptual design for the corridor;
- Inform the public about the anticipated implementation of a protected bikeway facility on this segment of Truman Road; and
- Educate stakeholders on the need for protected bikeways and on project terminology.

Through multiple community meetings and an advisory committee consisting of local, municipal, and regional stakeholders, the needs, values, and aspirations of the community have been incorporated into the plan vision, goals, and recommendations.

This chapter of the plan provides an overview of the community engagement activities and the input provided by participants to shape the future Truman Road.

Stakeholder Engagement

During the early stages of the planning process, the project team met individually with local businesses, property owners, community organizations and other stakeholders to introduce the project and gather feedback. These meetings contributed to the planning process by raising awareness for the project, gathering contact information to keep stakeholders involved during plan development, and obtaining feedback and concerns from stakeholders with intimate knowledge of the study area. Table 5 summarizes the issues and desires of key community stakeholders contacted during the early phases of the project.

Table 5. Summary of Stakeholder Concerns and Desires

Stakeholder	Concerns	Desires
Manual Career & Technical Center	• Parking lot across Truman Rd from school • 5 buses deliver student twice per day	• Visible, safe crosswalk • Priority for school buses is desired • School Zone signs • Reduced speed • Lighting • Foot bridge over Truman
Guadalupe Centers	• 500 students who are transported by 8 school buses and motor vehicles, plus social services (public transportation) • Traffic is bottlenecked at drop-off and 3 pm school pickup • Visitors coming the campus at all times of day and on weekends • Master plan in the works to expand east of Van Brunt	• Safety • Crosswalks • Lighting • Improvements in cooperation with Guadalupe expansion and branding
U.S. Post Office – James Crews Location	• Customers travel by vehicle, public transportation, pedestrians	• Welcomes improvements but does not want to lose parking (private lot) • Keep their signage visible • Lighting
MLB Urban Youth Academy		• Defers to Parks & Recreation (property owner)
Walker Uniform	• Dangerous intersection	• On-street parking for visitors (currently do not have) • Barrier between street and building • Lighting • Aesthetics
Councilman Jermaine Reed, 3rd District	• No constituent concerns at this time	• Welcomes presentation at 3rd District community meeting
Missouri Sewing Machine	• Homeless camps • Littering	• Aesthetics and improvements that would encourage economic development • Enhanced pedestrian options from downtown • Crosswalks
C & S Wood Shop	• Heavy traffic at peak times • Truman Rd is alternate route	• Not in favor of reducing travel lanes for bicycle and turn lanes
OK Furniture	• Crime • Dangerous intersection • Littering • Homeless camps • Heavy traffic at peak times	• Not in favor of reducing travel lanes for bicycle and turn lanes • No bus stop or trees in front of store • Keep on-street parking (for customers and delivery) • Police presence • Welcomes any improvements

Advisory Committee Meetings

The Advisory Committee represented a diverse array of local and regional stakeholders vested in the community and committed to the future of Truman Road. The Advisory Committee met three times during the planning process in order to review draft materials and provide direction for plan development. Their input was instrumental to the development of design options and the selection of a pre-ferred option for a Complete Streets conceptual plan that will best achieve the vision and goals of the plan.

Community Meetings

Community Meeting #1

On November 9, 2017, Community Meeting #1 was held for the Truman Road Complete Streets Plan. The meeting was hosted at the Manual Career & Technical Center at 1215 Truman Road, in Kansas City, Missouri, from 4:30 to 6:30 PM. The goal of the first community meeting was to solicit feedback on the Vision and Goals of the planning effort and get input on appropriate Complete Street elements to incorporate in the Plan.

In order to get notice of the meeting out to the public, sev-eral avenues were used, including a flyer that was distribut-ed to area businesses and posted in the adjacent neighbor-hood. The flyer was also provided to Advisory Committee members to send to their contact lists. It was also publi-cized through the City of Kansas City, and by MARC.

The meeting agenda included three segments: introduction open individual discussion, presentation, then an open on-on-one discussion centered around the poster boards and corridor map. Presentation boards, power point and cor-ridor map are included as an attachment for information. The start of the meeting began with an open format to get familiar with information included in the poster boards developed for the open house, and to talk with study team staff.

The presentation included background information for the corridor, including the baseline traffic analysis, and the draft vision and goals developed by the Advisory Committee. The presentation also provided background on complete streets and benefits that they would offer to Truman Road.

During the second open discussion session, attendees placed colored dots on activity boards so the study team could gain an understanding of priority goals, complete streets elements, and performance measures that are important in the corridor. Results of the multi-voting are discussed further in the following section.

Discussion/Input Themes

The comments provided at the first Community Meeting are summarized into the following key themes:

- **Economic Development**
  - Stakeholders want their property values to go up again.
- **Roadway and Traffic Conditions**
  - Curve near Elmwood Cemetery between Cypress and Lawn is a challenge.
  - Prospect intersection is a challenge.
  - Business on the north side of Truman Road between Jackson and Cleveland need parking in front of buildings.
  - Parking in general needs to be formalized throughout the corridor.
  - Need to accommodate trucks and delivery vehicles servicing local businesses.
  - Concerns about motor vehicle crashes.
  - Reducing speeds can decrease crashes and support a safer pedestrian environment.
  - Need to consider school operations (pick up and drop off) and pedestrian movements at the Guadalupe School at the east end of the corridor.
- **Security**
  - Area needs policing before City spends money on Truman Road
  - Consider security cameras to reduce crime and anti-social behavior
  - Changing configuration will not solve crime, but percep-tion helps (feels safer, more pedestrian traffic means more eyes)
  - Lighting is needed for security purposes.
  - East Patrol officers have asked business owners not to install amenities like benches and plant pots that will entice people to sleep there.
- **Road Diets**
  - Crossroads has done 5 road diets, and all have been positively received.
  - McGee got a complete makeover and is now very pedestrian-active.
  - Storefronts now active along 18th & 19th
  - What is good for one place may not be good for another.
- Key Outcomes
  - Maintain traffic flow
  - Beautification
  - Safety

Voting Results

VISION AND GOALS

The vision was accurate as defined by the Advisory Committee from discussions with attendees. The goals are as follows in order of importance:

1. Support Economic Development
2. Improve Safety and Security
3. Truman Road is a Complete Street with connectivity to adjacent Neighborhoods.
4. Support Community Development by Improving the Sense of Place in the Corridor.
5. Make Walking, Biking and Transit the Preferred modes of travel.

PERFORMANCE MEASURES

Performance Measures that were of the highest impor-tance were as follows:

1. Mobility is Critical for pedestrians, bicyclist and transit and connectivity is critical.
2. Creating a sense of place and economic benefits are critical to measure success.
3. Safety is critical, especially in ways to decrease the speed of motor vehicles on Truman Road.

COMPLETE STREETS DESIGN ELEMENTS

Complete Street elements that are the most preferred are as follows:

1. Transit Integration and High Visibility Crosswalks
2. Pedestrian Scale Lighting
3. Wider Sidewalks
4. Bump Outs and Curb Extensions, Pedestrian Refuge Islands, and Street Trees
5. Sidewalk Buffers, Street Furnishings and Bicycle Facilities

The overall message from the results of comments and multi voting is that actions taken should first and foremost support businesses and the quality of life in the corridor, as well as improve safety.

The information from Community Meeting #1 was shared with the Advisory Committee to develop the direction for the development of concepts for the corridor. As a result of the first meeting, the project team also analyzed access to the Guadalupe Center, and the information gathered inform concept development.

Community Meeting #2

The second and final community meeting for the Truman Road Complete Streets Plan was held on Wednesday, March 21, 2018, from 4:30-6:00 p.m. at Gregg-Klice Community Center, 1600 East 17th Terrace. At the second community meeting, the project team presented two design options to attendees and gathered community input and preferences for the desired design. A total of 22 attendees signed in with 13 attendees completing comment forms regarding the project.

In addition to the comment forms received, attendees were encouraged to note directly on table maps their concerns and comments regarding the proposed design options for Truman Road. There were 22 comments left on post-it notes and attached at various locations on the table maps.

Comment Forms Summary/Key Themes

Meeting comment forms consisted of an invitation to provide additional thoughts, ideas or concerns on what was presented at the community meeting. The following are key takeaways from those comment forms.

- Of those who noted a preference to either one-way or two-way cycle tracks, 7 attendees preferred one way-cycle tracks and only one person indicated a preference for two-way cycle tracks. Some of the reasons noted in order of frequency were:
  - Cost savings
  - Two-way cycle tracks unpredictable and cause confusion
  - Two-way cycle tracks will require education
- Reduction of travel lanes is a concern.
  - Reduced lanes could deter business development; not good for commercial and industrial

Figure 19. Attendees review draft plan recommendations at the second community meeting on March 21, 2018.

  - Traffic is already heavy on Truman Road when there is an incident on I-70, particularly during peak times.
  - Reduction of lanes near Croft Trailer would cause problems for commercial vehicles with trailers pulling in and out of Croft property. Customers would not be able to turn onto Croft property after Van Brunt without stopping traffic.
- Attendees prefer protected bike lanes, however, a protected barrier on the south side of Truman Road in front of Croft Trailer would impede customers' ability to pull into the property.
- Safety is a priority, regardless of the option
- Commitment to maintenance is needed regardless of option (e.g. street sweeping of bike lanes).
- Pedestrian-scale lighting is preferred (but take into consideration sleeping residents).

Other comments provided by meeting attendees included:

- How would Truman Road west of Locust would be adjusted in the future based on the option chosen?
- Add visible signage for school zones
- Would like transit shelter island with comfortable seating and vital info
- Integrate Truman Road improvements with other area study plans
- Truman Road & Winchester lanes do not match (cause for accidents)
- Accidents frequent at Cypress & Lawn curve

Table Maps Summary/Key Themes

- Charlotte Street
  - Adequate signage needed between Holmes and Charlotte
  - Right turn from eastbound Truman Road to Charlotte is complicated; signage and paint needed
- 71 Highway
  - Lighting needed under 71 Bridge
  - Stop sign needed on eastbound Truman Road at 71 Highway
- Paseo Boulevard
  - Prefer Roundabout at Paseo & Truman Road
  - Eastbound traffic turning onto Paseo tends to run red light
  - Left turn lane should be eastbound only
- Cut out needed at Michigan on south side along curb
- Benton Boulevard
  - Is parking needed for park patrons in front of Truman Road & Benton?
  - How would one turn right on Truman Road from northbound Benton?
  - Would have dedicated right turn lane and island at Benton (northbound) be removed.
- Aggressive westbound traffic before I-70 ramp
- Rough pavement at Askew near railroad tracks
- Transition for bicyclists eastbound after Cleveland is dangerous; traffic sign or light is needed
- Curve at Cypress dangerous
- New gas station going at northeast corner of Elmwood & Truman Road (has since been completed)
- From Van Brunt continue sharrows south of Truman Road
- Concern with parking lot exits on north side of Truman Road
- Bike lanes need regular cleaning and maintenance

Figure 20. Attendees discuss the plan recommendations with project team members at the second Community Meeting.

Figure 21. Attendees discuss the plan recommendations with project team members at the second Community Meeting.

CHAPTER FOUR: COMPLETE STREETS BEST PRACTICES

Introduction

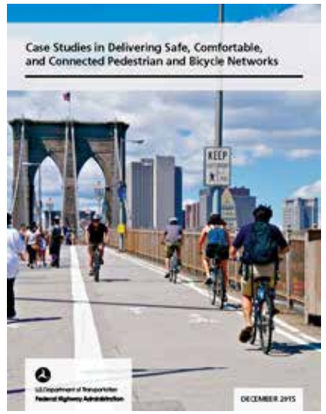
The term “Complete Streets” is about more than just designing and engineering roadways for multimodal transportation. Complete Streets is a comprehensive approach to planning, designing, and maintaining transportation systems that permeates all aspects of roadway development, from policy and funding, to planning and design, and to operations and maintenance. As the City of Kansas City continues to integrate Complete Streets concepts into local projects, it will be necessary to understand the key elements of Complete Streets and to utilize available resources to plan for and design roadways for people of all ages and abilities, regardless of transportation mode. This chapter identifies and summarizes Complete Streets best practices from available guidance documents and other resources. Where feasible, these best practices have been incorporated into the Truman Road Complete Streets Plan.

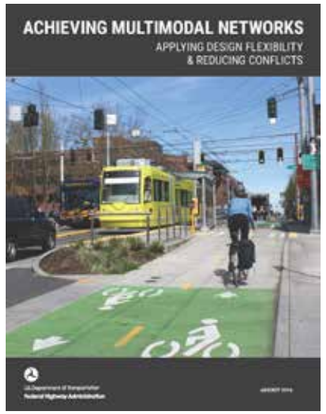
Resources

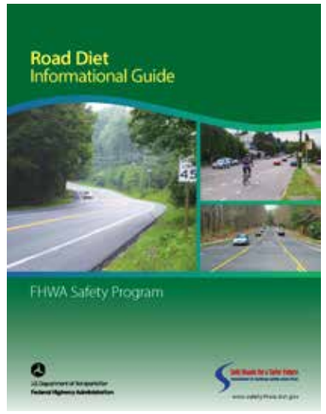
From federal, state, and local agencies to national associations and advocacy organizations, Complete Streets has been embraced as a systematic approach to roadway systems planning and design. The following resources bring to light Complete Streets best practices through policy development, design guidance, case studies, and other valuable insights from which the City of Kansas City can draw for inspiration and integration into local policy, planning, and design.

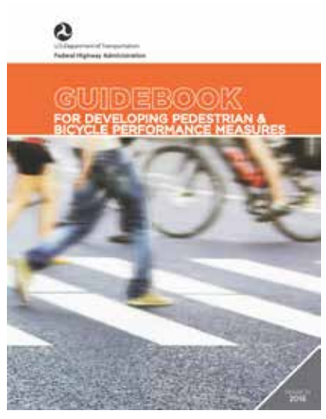
US Department of Transportation/ Federal Highway Administration

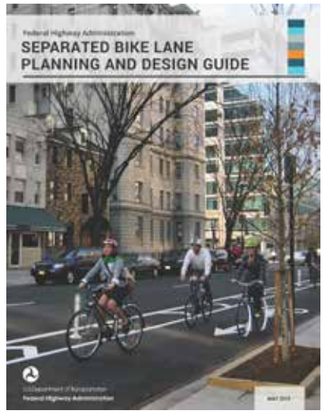
The US Department of Transportation (USDOT) has taken a firm stance on Complete Streets and the importance of incorporating bicycle and pedestrian facilities into all roadway projects. In 2010, the USDOT issued a policy statement on bicycle and pedestrian accommodation, regulations, and recommendations, which states:

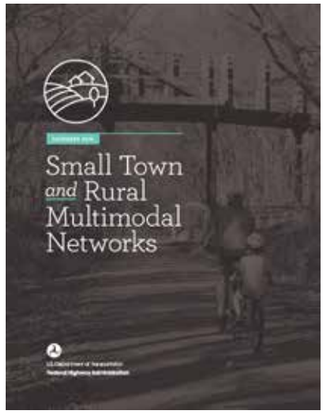


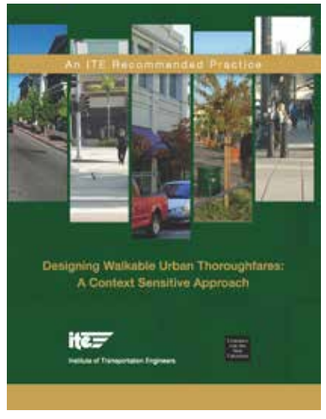


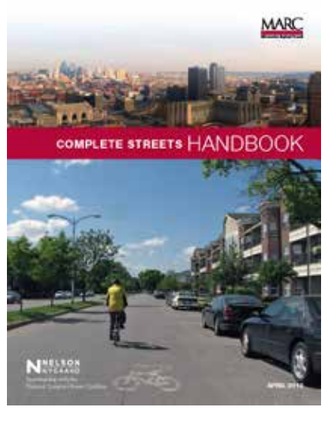


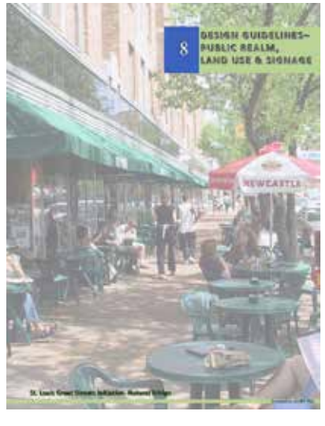


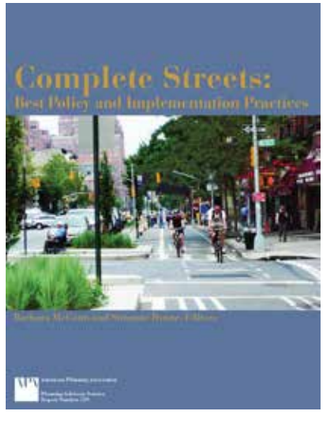


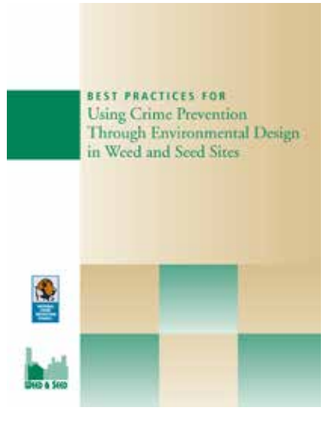












"The DOT policy is to incorporate safe and convenient walking and bicycling facilities into transportation projects. Every transportation agency, including DOT, has the responsibility to improve conditions and opportunities for walking and bicycling and to integrate walking and bicycling into their transportation systems. Because of the numerous individual and community benefits that walking and bicycling provide — including health, safety, environmental, transportation, and quality of life — transportation agencies are encouraged to go beyond minimum standards to provide safe and convenient facilities for these modes."

To support local agencies as they plan for and design multimodal systems and complete streets, the USDOT and Federal Highway Administration (FHWA) have published multiple guidance documents that incorporate best practices and case studies from across the country. In addition, the FHWA released a memorandum in 2013 in which it encourages design flexibility to incorporate bicycling and walking into transportation projects and endorses two widely available resources: the North American City Transportation Officials' Urban Bikeway Design Guide and the Institute of Transportation Engineers' (ITE) Designing Urban Walkable Thoroughfares.

The following FHWA-produced documents should be referenced for the planning and design of complete streets. Each of these documents provides a unique perspective on complete streets-related elements, from restriping and road diets to separated bike lanes and intersection design.

Road Diet Information Guide (2014)

Road diets can offer a variety of safety, operational, and environmental benefits. By reducing the number of travel lanes and reallocating that roadway space to provide bicycle facilities, wider sidewalks, or other streetscape enhancements, road diets can slow motor vehicle travel speeds, reduce crashes (notably crashes resulting in serious injury), create safer crossings for pedestrians, and provide dedicated space for bicycle travel. The FHWA's Road Diet Information Guide assists local agencies with determining if a road diet is an applicable design strategy for a particular corridor and designing the appropriate geometric and operational characteristics. The document also includes numerous case studies to highlight successful road diet projects.

Resource Link: https://safety.fhwa.dot.gov/road_diets/guidance/info_guide/

Separated Bike Lane Planning and Design Guide (2015)

The FHWA's Separated Bike Lane Planning and Design Guide compiles best practices and design guidance from across the country to assist local agencies in planning for and designing separated bike lane networks and facilities.

Resource Link: https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/separated_bikelane_pdg/page00.cfm

Achieving Multimodal Networks: Applying Design Flexibility and Reducing Conflicts (2016)

Achieving Multimodal Networks was published in 2016 to serve as a resource for planners and designers to apply flexibility found in national design guidance to develop connected, multimodal transportation networks. The document focuses on specific design elements to which flexible approaches can be applied, such as intersection geometry, road diets, and traffic calming, and on countermeasures to common conflicts, like turning vehicles, bike lanes at intersections, and school access.

Resource Link: https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/multimodal_networks/

Incorporating On-Road Bicycle Networks into Resurfacing Projects (2016)

Integrating bicycle facilities into a city's resurfacing program is a cost-effective method for developing an interconnected bikeway network. This valuable resource focuses on policies and procedures for incorporating bicycle facilities into a resurfacing program, as well as fitting bike lanes onto existing roadways. There are numerous case studies to add context and depth to this innovative yet accessible strategy for bikeway development.

Resource Link: https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/resurfacing/

Guidebook for Developing Pedestrian and Bicycle Performance Measures (2016)

All complete streets projects are planned and designed to address specific issues. During planning and design phases of project development, it is important that agencies develop measurable, meaningful outcomes to guide roadway design and evaluate project performance. The FHWA's Guidebook for Developing Pedestrian and Bicycle Performance Measures offers specific metrics related to bicycling and walking, including crashes, mode split, level of service, perception of safety, and crossing opportunities, to name a few.

Resource Link: https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/performance_measures_guidebook/

Case Studies in Delivering Safe, Comfortable and Connected Pedestrian and Bicycle Networks (2015)

This case study compendium highlights 86 bicycle and pedestrian projects from across the country that increase bicycle and pedestrian safety, comfort, and connectivity. Multiple examples of corridor improvements, on-road bicycle facilities, and intersection and crossing improvements incorporate complete streets principles to achieve these ends.

Resource Link: https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/network_report/network_report.pdf

Small Town and Rural Multimodal Networks (2017)

The Small Town and Rural Multimodal Networks guide focuses specifically increasing bicycle and pedestrian safety and connectivity through planning and design guidance tailored to non-urban environments. While Kansas City is primarily urban in character, there are still valuable design principles that may apply to specific corridors and areas of the City.

Resource Link: https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/small_towns/fhwahep17024_lg.pdf

Institute of Transportation Engineers

The Institute of Transportation Engineers is an international professional organization committed to improving mobility and safety for all transportation system users and helping to build smart and livable communities.

Designing Walkable Urban Thoroughfares: A Context Sensitive Approach (2010)

The ITE's Designing Walkable Urban Thoroughfares serves as a guidebook for planning and designing walkable, bikeable transportation networks and corridors. The document establishes design principles and guidance for a variety of contexts, focusing on flexible approaches that meet specific needs of each context. Design guidance covers all elements of a corridor, from adjacent land use and building envelopes to sidewalks, bicycle lanes, transit facilities, travelways, and intersections. This document has been endorsed by the Federal Highway Administration for its flexible, context-sensitive approach to roadway planning and design.

Resource Link: http://library.ite.org/pub/e1cff43c-2354-d714-51d9-d82b39d4dbad

North American City Transportation Officials (NACTO)

NACTO is a non-profit organization whose mission is "to build cities as places for people, with safe, sustainable, accessible, and equitable transportation choices that support a strong economy and a vibrant quality of life." The organization has developed numerous design guides to support cities in achieving this mission. Two of their guides in particular, the Urban Street Design Guide and the Urban Bikeway Design Guide, capture current best practices from pioneering cities in North America and beyond and convey clear, concise design solutions to assist local agencies in building safe, accessible, and attractive streets for all.

Urban Street Design Guide

The Urban Street Design Guide serves as an invaluable resource for local agencies as they re-imagine how city streets, which represent more than 80 percent of public spaces in urban areas, can be designed to meet the transportation, economic, environmental, and social needs of the community. The guide begins with an overview of detailed street typologies, from thoroughfares and boulevards to green alleys and shared commercial streets. The remaining content is divided into sections based on specific street elements and design solutions, including lane widths, sidewalks, bus lanes, bioswales, and mini roundabouts, to name just a few.

Resource Link: https://nacto.org/publication/urban-street-design-guide/

Urban Bikeway Design Guide

The Urban Bikeway Design Guide, now published in its second edition, became the industry standard as cities across the country started to explore new, innovative strategies for bikeway design, particularly bicycle boulevards, separated (protected) bike lanes, and cycle tracks. Based on AASHTO and MUTCD guidance, the Urban Bikeway Design Guide established the foundation and precedent for many cities to experiment with these newer facilities. The guide was endorsed by the FHWA and has led to the FHWA publishing incorporating many of the principles established in this guide into its own publications, and eventually publishing the Separated Bike Lane Planning and Design Guide in 2015.

Resource Link: https://nacto.org/publication/urban-bikeway-design-guide/

Smart Growth America National Complete Streets Coalition

Launched in 2004, the National Complete Streets Coalition has served as a clearinghouse for policy, planning and design information for Complete Streets. The Coalition's main focus is on policy change, particularly at the local level, but it has worked with partner agencies like the American Association of Retired Persons (AARP) and the American Planning Association to develop guidebooks, toolkits, and other valuable resources.

Complete Streets: Best Policy and Implementation Practices (2010)

Published by the American Planning Association as part of their Planners Advisory Service, this document provides an overview of Complete Streets policy, design and implementation. It utilizes multiple case studies to show how communities across the United States have addressed specific safety, economic, and transportation, and social issues through innovative complete streets strategies. Design elements discussed in the document include intersection controls, vehicle speed management, street crossings, transit access, bicycle facilities, and pedestrian enhancements.

Resource Link: https://www.planning.org/publications/report/9026883/

International Crime Prevention Through Environmental Design (CPTED) Association

The International CPTED Association (ICA) supports efforts by local governments around the world to reduce criminal activity and the perception of crime through environmental design strategies. CPTED as a design philosophy focuses on four principal built environment strategies to reduce crime: natural surveillance, natural access control, natural territorial reinforcement, and maintenance. CPTED strategies can be applied to public and private spaces, and many of the strategies for addressing crime in public spaces overlap with complete streets design principles, such as lighting and other streetscape enhancements that encourage socialization and increase the visibility of public spaces.

CPTED and Lighting: Reducing Crime, Improving Security (2009)

The goal of lighting as a CPTED design element is to make a place unattractive for criminal activity. The CPTED and Lighting guide, published jointly by the ICA and Atlas Safety & Security Design, Inc. explains the importance of appropriate use of lighting, placement of windows, removal of obstructions that limit sightlines, and other visibility-related factors that can increase the effectiveness of lighting as a public safety asset.

Resource Link: http://www.cpted.net/resources/Documents/ICA%20Resources/Guidebooks%20and%20Journals/Guidebook_02_CPTED%20and%20Lighting.pdf

Mid-America Regional Council

Mid-America Regional Council (MARC) is a non-profit association of city and county governments and serves as the Kansas City region's metropolitan planning organization. MARC has expressed its commitment to complete streets by adopting a complete streets policy, developing a handbook to assist local agencies with complete streets policies and projects, and developed a competitive program to provide funding for complete streets plans and projects.

Complete Streets Policy (2015)

MARC's complete streets policy was adopted in 2015 to guide the agency's planning and programming work in a manner consistent with the vision, values, and goals expressed in Transportation Outlook 2040, the region's long-range transportation plan. The policy statement applies to all the agency's planning activities involving public rights-of-way, as well as activities conducted by MARC to program federal funds for projects in the Transportation Improvement Program (TIP). The policy encourages local project sponsors to incorporate complete streets principles and design elements into local projects, particularly those for which they are applying for federal funds, and to utilize best practices included in design guides and other resources like those included in this memorandum.

Resource Link: http://www.marc.org/Transportation/Special-Projects/assets/CompleteStreetsPolicy_Dec2015.aspx

Complete Streets Handbook

MARC's Complete Streets Handbook is a comprehensive resource for developing and implementing a complete streets policy. The first few chapters of the document are dedicated to policy development and procedural changes to integrate complete streets into the way local agencies operate. One chapter is devoted to design considerations and impacts. This chapter includes recommendations for curb extensions, signal and crossing enhancements, road diets, bicycle lanes, sidewalks and buffer zones, and transit facilities.

Resource Link: http://www.marc.org/Transportation/Special-Projects/assets/CompleteStreetsHandbook.aspx

Local Complete Streets Planning Efforts

Communities in the Kansas City region and beyond have successfully applied these complete streets principles to local projects. The examples below demonstrate how complete streets can transform not only the form and character of a roadway, but its function as a transportation, economic, and social asset.

City of Kansas City Complete Streets Ordinance (2017)

In December 2017, the City Council approved a Complete Streets ordinance to codify the City's mission to provide equitable multimodal access to all roadway users. The ordinance specifies which projects and improvements are subject to the ordinance, procedures for implementing the ordinance, design guidelines to be considered for Complete Streets projects, and performance measures by which to measure the impact and effectiveness of Complete Streets-related improvements.

Resource Link: http://kcmo.gov/publicworks/completestreets/

Burlington Corridor Complete Street Plan (North Kansas City)

In 2016, the City of North Kansas City, Missouri adopted the Burlington Corridor Street Plan to transform this major arterial roadway that connects North Kansas City to Downtown Kansas City. The Plan takes a comprehensive approach to creating a complete street, tackling design elements in both the public and private realms. These include land use patterns and form, pedestrian connectivity, a two-way cycle track, stormwater, transit, lighting, traffic signals, street furniture, landscaping, street crossings, and traffic flow. The project is currently under design and, when completed, will significantly change the form, function, and character of this vital North Kansas City corridor.

Resource Link: http://nkc.org/departments/community_development/current_projects/burlington_corridor_project/

Natural Bridge Great Streets Plan (St. Louis)

The Natural Bridge Great Streets Plan addresses a key section of the Natural Bridge corridor, a major urban arterial and state highway in St. Louis County, Missouri. The Plan sets the stage for revitalization of the corridor through a transformative design focused on creating an ideal balance between land use and transportation. The Plan includes a lengthy chapter focusing on design elements for the public right-of-way and for adjacent private development, with a focus on transit-oriented development, mixed-use development, and infill development. The Plan's bold vision for a new Natural Bridge has received support from surrounding municipalities and community stakeholders like the University of Missouri – St. Louis and Beyond Housing. The streetscape improvements, road diet, and bicycle lanes were completed in 2015, and there are plans for private development near the MetroLink light rail station as well.

Resource Link: http://www.ewgateway.org/transportation-planning/great-streets-initiative/round-one/

CHAPTER FIVE: TRUMAN ROAD COMPLETE STREETS PLAN

Introduction

Truman Road's transformation into a Complete Street must reflect the values and aspirations of the community and must take into account the physical context of the corridor. During the course of the planning process, area residents and stakeholders shared their inspiration and ideas turning Truman Road into a safe, inviting, functional, and vibrant corridor. Their input has guided the development of design options and the selection of a preferred option that best meets the needs of the community.

This chapter consists of three key elements that define the Truman Road Complete Streets Plan: Vision and Goals, Design Options, and the Preferred Design Option. The Plan Vision and Goals represent the ultimate desired outcome for the corridor and the key aims through which that outcome can be achieved.

The two Design Options developed for the corridor present different strategies to achieve the plan vision. Each design option incorporates multiple Complete Streets elements to create a dedicated space for bicycle travel, reduce travel speeds, and create a safer, more comfortable environment for all road users.

The Preferred Design Option has been selected and refined based on input from community residents, the project advisory committee, and City staff. This preferred design, which consists of a road diet, new high-visibility crosswalks, parking-protected bike lanes, and peak-hour parking restrictions, represents the first step in Truman Road's Complete Streets transformation. Subsequent improvements to the pedestrian realm as opportunities and funding become available will increase pedestrian safety, enhance transit accessibility and efficiency, and support economic and community development initiatives, and elevate quality of life for people and neighborhoods along the corridor.

Plan Vision and Goals

Visioning and goal setting is an important part of any planning effort. A strong vision and supporting goals provide the foundation for all physical and programmatic recommendations included in the Truman Road Complete Street Plan. The vision statement encapsulates the values and aspirations of the community and paints a picture for the future of Truman Road. The goals support this vision by providing more concrete and measurable targets that can be achieved through specific actions, objectives and policies.

Vision Statement

Truman Road is a safe, accessible, comfortable, and welcoming complete street corridor that supports all modes of transportation and serves as a catalyst for economic and community development.

Plan Goals

1. Improve safety for all road users through crash reduction and traffic calming strategies, high-visibility crosswalks, separated bicycle facilities, pedestrian-scale lighting, and other safety countermeasures.
2. Make walking, bicycling, and transit preferred modes of travel by providing attractive, high-quality infrastructure, including wide sidewalks, safe pedestrian crossings, pedestrian-scale lighting, separated bicycle facilities, comfortable bus shelters, and other amenities that promote active transportation and public transportation.
3. Support economic development through high-quality public infrastructure that stimulates new development and supports a vibrant and lively corridor for area residents, businesses, employees, and visitors.
4. Support community development by enhancing the corridor's sense of place, embracing and reflecting the community's character and diversity, and providing public spaces for social interaction and congregation. Improvements may include street furniture and amenities, pedestrian-scale lighting, trash receptacles, benches, plazas, public art, murals, historical markers or plaques, etc.
5. The Truman Road corridor is a complete street that connects to and with the surrounding neighborhoods and key destinations throughout the City via safe and appealing pedestrian facilities, bikeways, and transit improvements.

Design Options

There is no single, “one size fits all” approach to designing Complete Streets. Every Complete Streets project must take into account a variety of factors, such as community needs, public input, surrounding land use, traffic patterns, roadway geometry, available rights-of-way, and availability of funding to implement the design. With these factors and others taken into consideration, two context-sensitive design options were developed to achieve the ultimate plan vision.

Both design options focus on practical, low-cost improvements, that can be implemented through as part of a resurfacing and restriping project. These options are described in this section of the plan.

Design Option One

Design Option One supports the Complete Streets vision for Truman Road through the provision of a low-stress bicycle facility, a two-way center turn lane, and on-street parking along the corridor.

Two cross sections are presented to account for the substantial change in existing curb-to-curb width on Truman Road at Cleveland Avenue (75 feet to the west, 60 feet to the east). Figure 22 depicts the proposed design for Truman Road west of Cleveland Avenue, and Figure 23 depicts the proposed design east of Cleveland Avenue.

Key design elements of the first design option include:

- Travel lane reduction (road diet)
- Two-way center turn lane
- On-street parking
- Directional, parking-protected bike lanes
- High visibility crosswalks

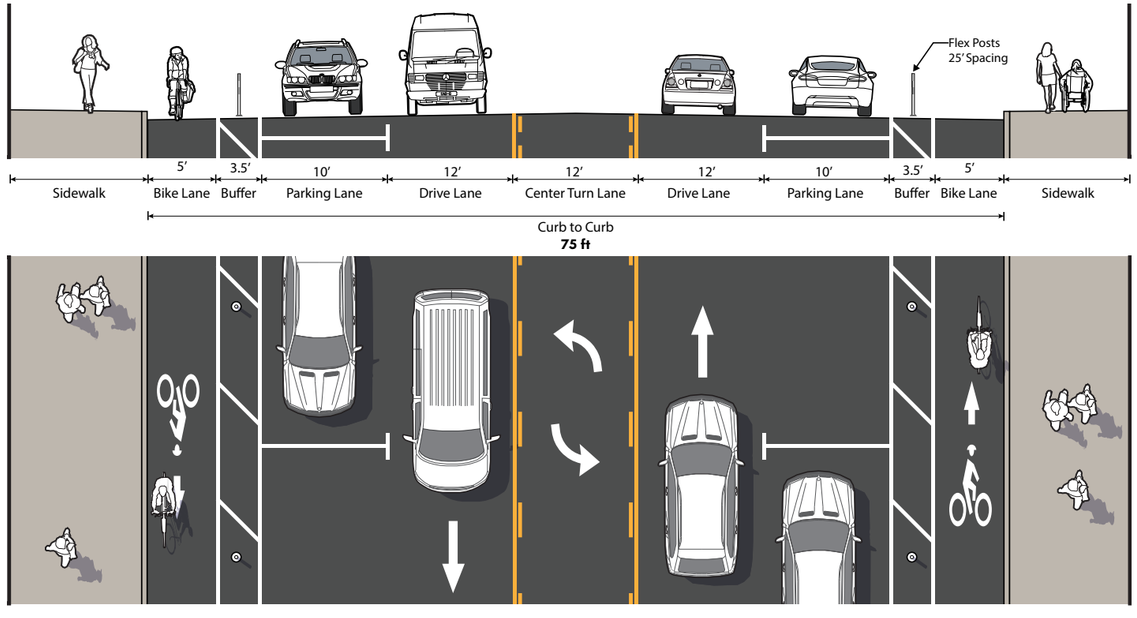


Figure 22.Design Option One: road diet with buffered bike lane section west of Cleveland Avenue (looking east). (Parking stripe above shown for illustrated purpose).

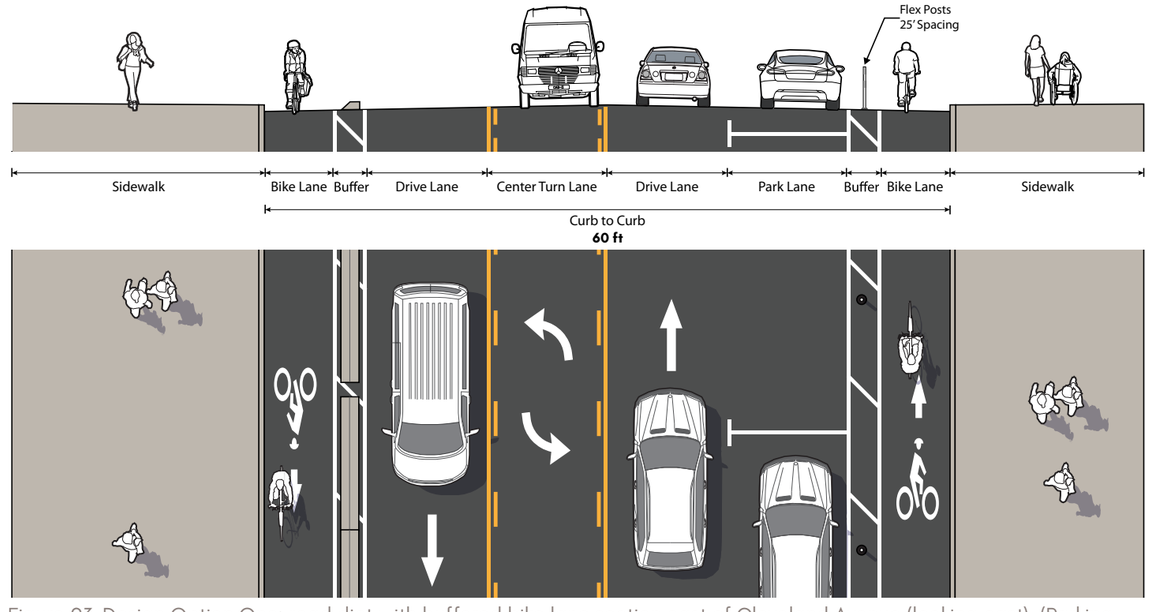


Figure 23. Design Option One: road diet with buffered bike lane section east of Cleveland Avenue (looking east). (Parking stripe above shown for illustrated purpose)

Design Option Two

Design Option Two advances the Complete Streets vision for Truman Road through the provision of a separated, bidirectional bike lane (also called a cycle track), a two-way center turn lane, and striped parking stalls to better demarcate parking locations along the corridor.

The two figures to the right depict proposed cross sections for Design Option Two. Figure 24 shows the proposed cross section for Truman Road west of Cleveland Avenue. The wider curb-to-curb width along this section of the corridor allows for the placement of on-street parking on both sides of the street. Figure 25 shows the proposed cross section for Truman Road east of Cleveland Avenue. With a narrower curb-to-curb width of 60 feet, the parking is provided only in the eastbound direction.

Key design elements of the first design option include:

- Travel lane reduction (road diet)
- Two-way center turn lane
- Striped on-street parking
- Bidirectional, two-way parking-protected bike lanes
- High visibility crosswalks

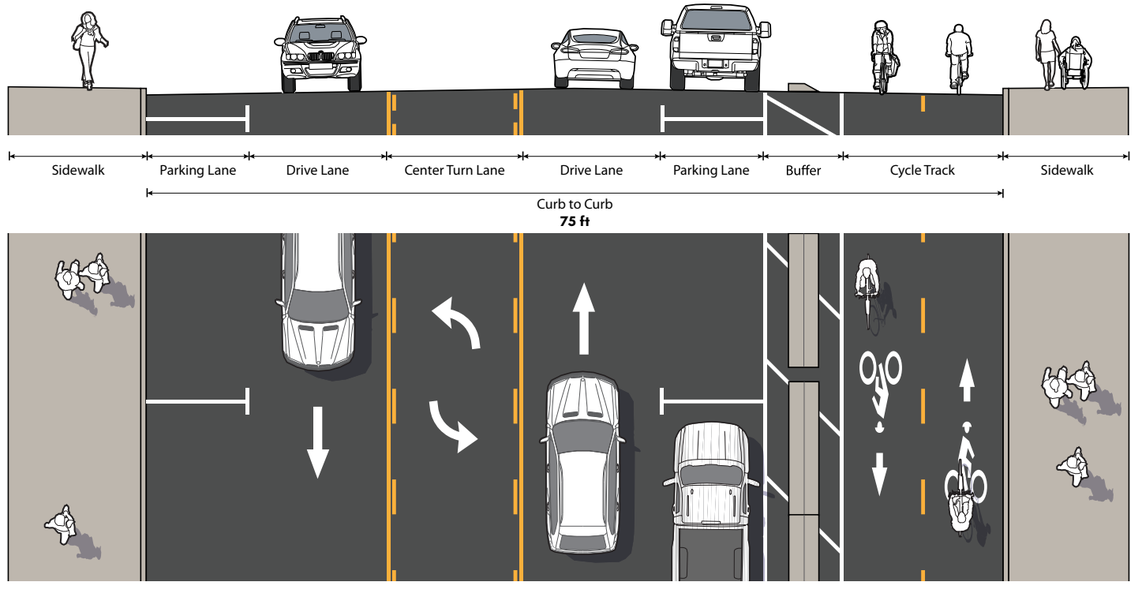


Figure 24.Design Option Two: Road diet with separated, bidirectional bike lane section west of Cleveland Avenue (looking east)

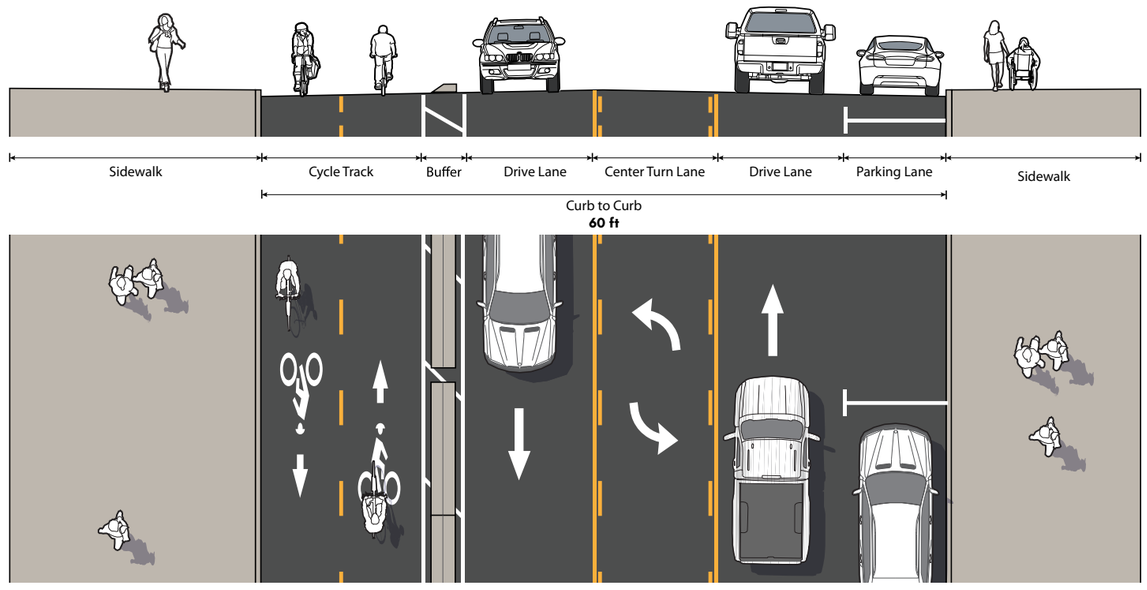


Figure 25. Design Option One: Road diet with separated, bidirectional bike lane section east of Cleveland Avenue (looking east)

Preferred Design

Based on input from attendees at the second community meeting and from the project advisory committee, Design Option One (directional bike lanes) was selected as the Preferred Design. The design concept was then refined to incorporate additional input from these two constituent groups.

West of Cleveland Avenue, the Preferred Design cross section (Figure 26) consists of a two-way center turn lane, one motor vehicle travel lane in each direction, striped on-street parking in each direction, and a parking-protected directional bike lane.

East of Cleveland Avenue, the Preferred Design cross section (Figure 27) consists of a two-way center turn lane, one motor vehicle travel lane in each direction, on-street parking in the eastbound direction, a parking-protected bike lane in the eastbound direction, and a buffered bike lane in the westbound direction.

Key design elements of the first design option include:

- Four-lane to three-lane road diet
- Two-way center turn lane
- On-street parking
- Directional, parking protected bike lanes
- High visibility crosswalks

The placement of vertical elements in the buffer area between the bike lane and motor vehicle or parking lane can provide additional comfort and safety. Vertical elements can include delineator posts, bollards, concrete barriers, raised medians, planters, and parking stops.

The Preferred Design concept plan is provided on the following pages to detail how these proposed configuration can be implemented within the existing roadway.

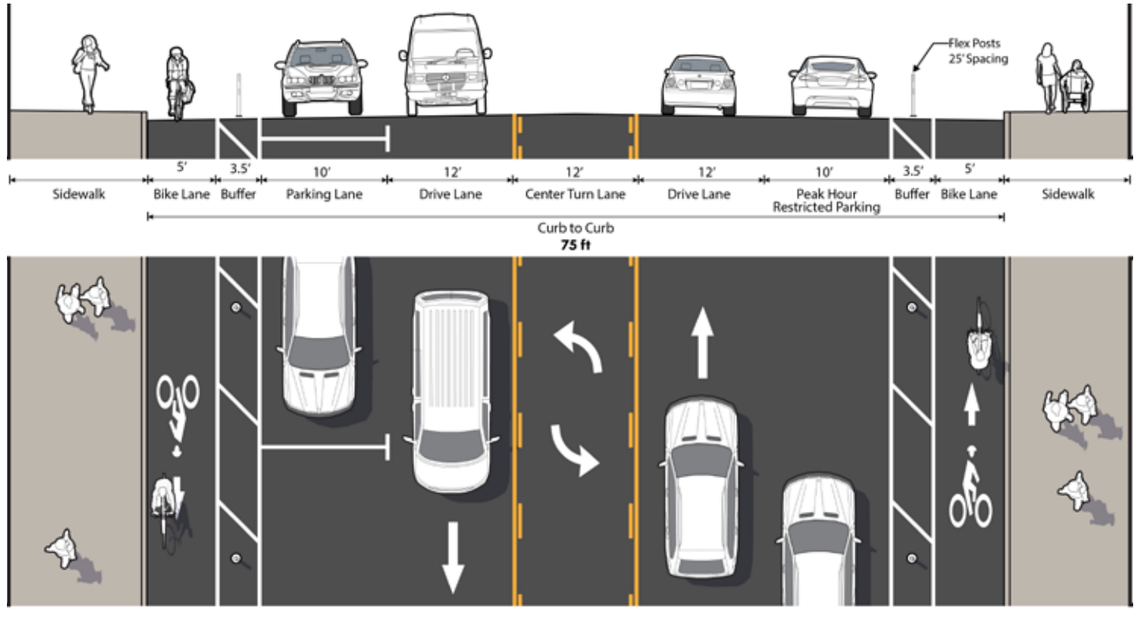


Figure 26. Preferred Design: Road diet with separated, bidirectional bike lane section west of Cleveland Avenue (looking east).

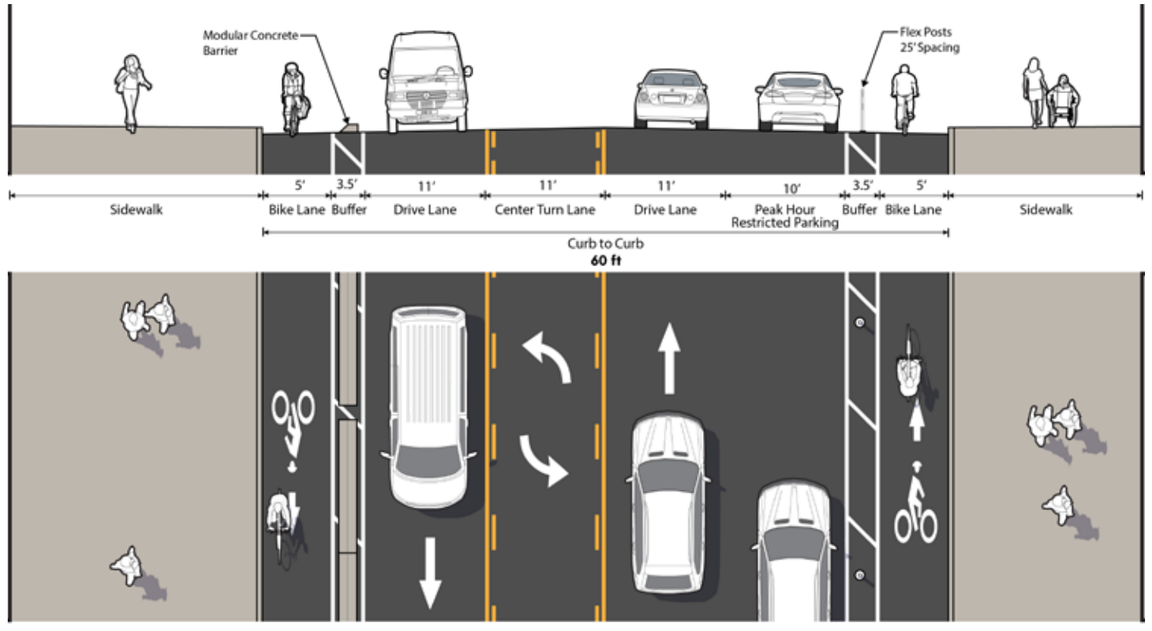


Figure 27. Preferred Design: Road diet with separated, bidirectional bike lane section east of Cleveland Avenue (looking east).

CITY OF KANSAS CITY, MISSOURI
TRUMAN ROAD
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PREFERRED ALTERNATIVE
PROTECTED BIKE LANES

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date	detailed
June 1, 2018	C. Ward
designed	checked
G. Howley	P. Wojciechowski

TRUMAN ROAD
LOCUST STREET TO
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PROTECTED BIKE LANES

project	contract
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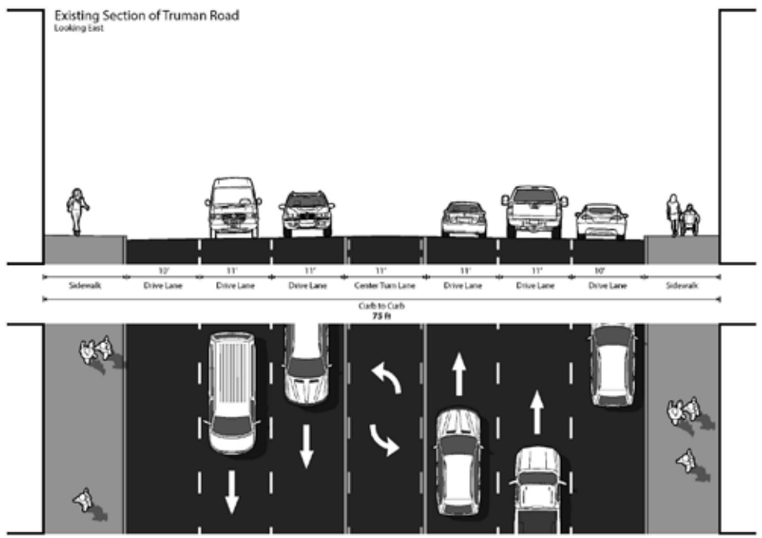
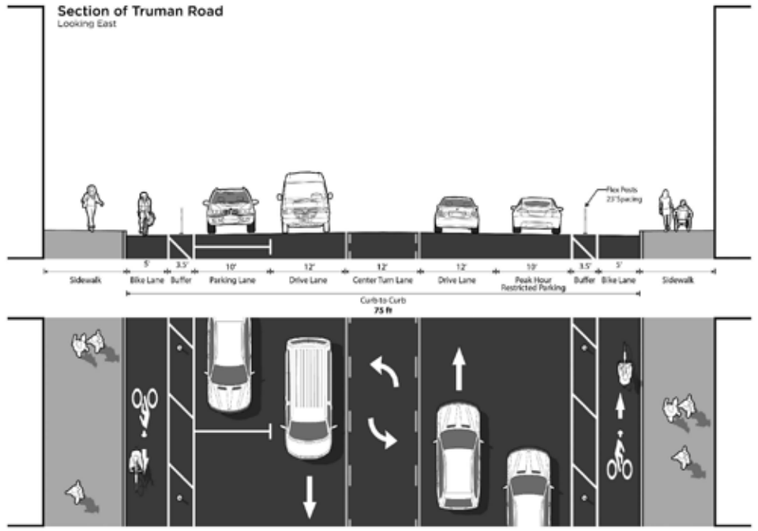


TYPICAL EXISTING SECTION
WEST OF CLEVELAND AVE



PROPOSED BUFFERED
BIKE LANES SECTION
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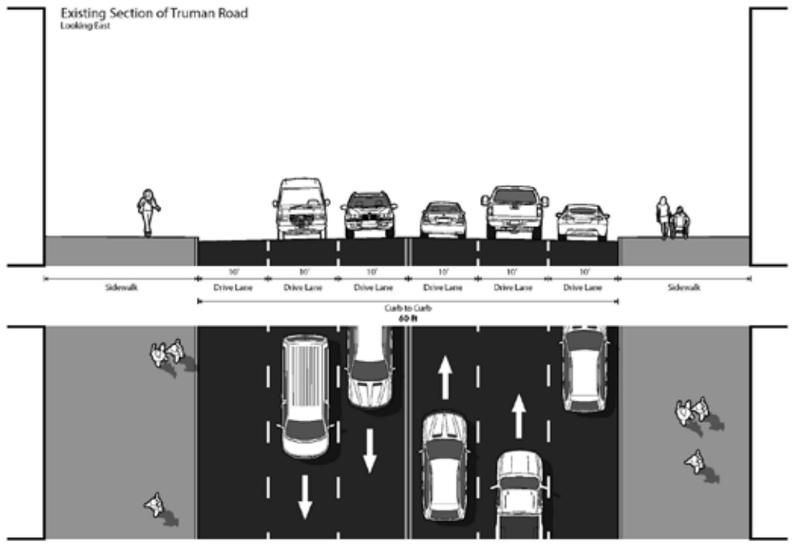

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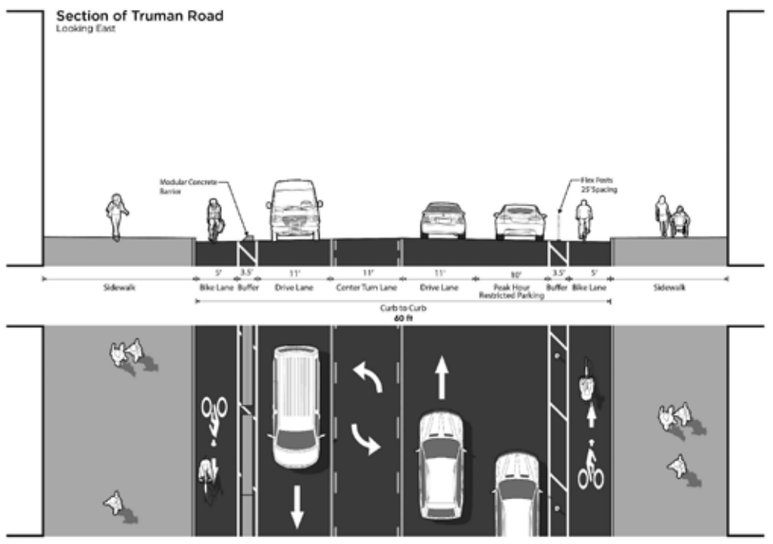

PROPOSED BUFFERED
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LOCUST STREET TO
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PROTECTED BIKE LANES

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Amenity	Example
Main MAX Shelter	
Troost MAX Shelter	
Connex Shelter	
25' Metro "Super" Shelter	
15' Barrel Top Shelter	
10' Standard Shelter	
7' Mini Shelter	

SHELTERS

Amenity	Example
MAX/Connex Bench	
Granite Bench	
Standard Bench	
Lean Rail	

BENCHES

COMPLETE STREET NOTES

BUS STOP AMENITIES SHOWN ON THIS SHEET ARE TAKEN FROM THE KANSAS CITY AREA TRANSPORTATION AUTHORITY'S BUS STOP GUIDELINES. THESE AMENITIES CAN CONTRIBUTE TO THE SAFETY AND VIBRACY OF TRANSIT USERS AND ENHANCE A 'COMPLETE STREETS' ENVIRONMENT, BY PROVIDING PEDESTRIAN LIGHTING, TRASH RECEPTACLES, SAFETY AND COMFORT TO THE STREET NETWORK.

Amenity	Example
Wired Lighting	
Solar Lighting	
Adjacent Lighting	

LIGHTING

Amenity	Example
MAX and Connex Trash Can	
Local Trash Can	
Recycling Bins	

TRASH CANS AND RECYCLE BINS

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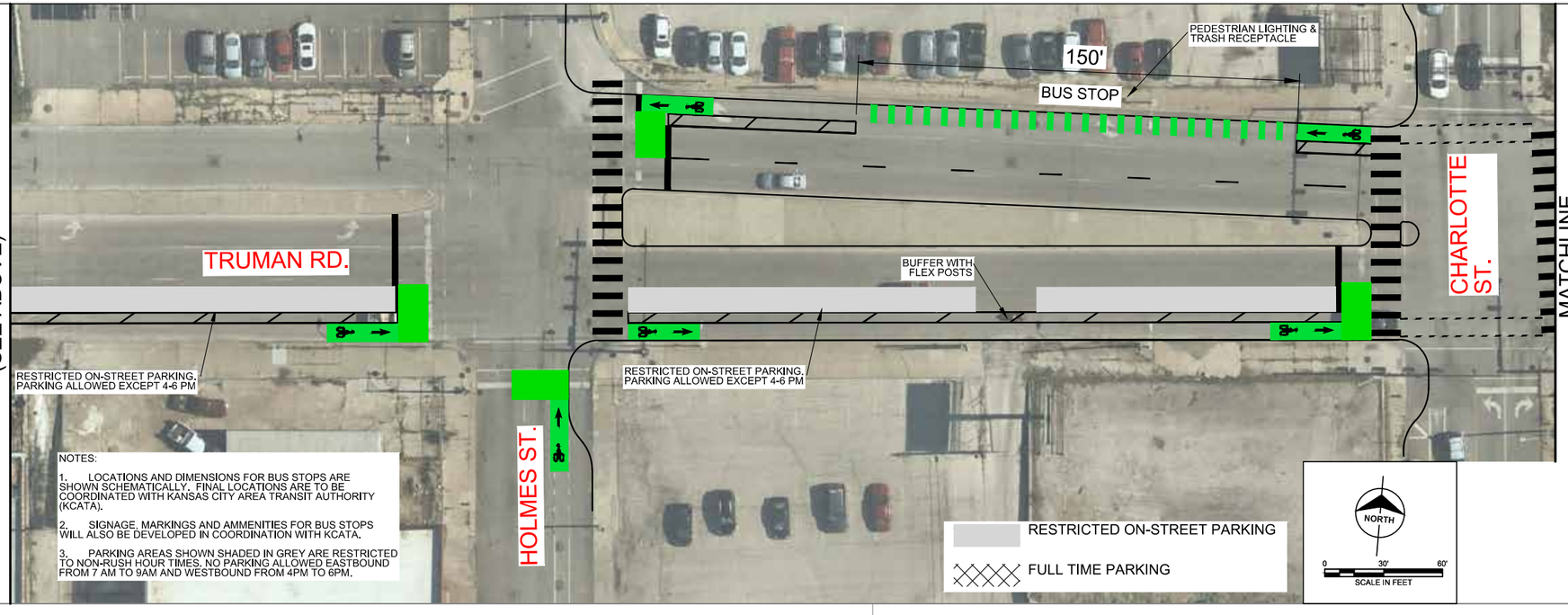

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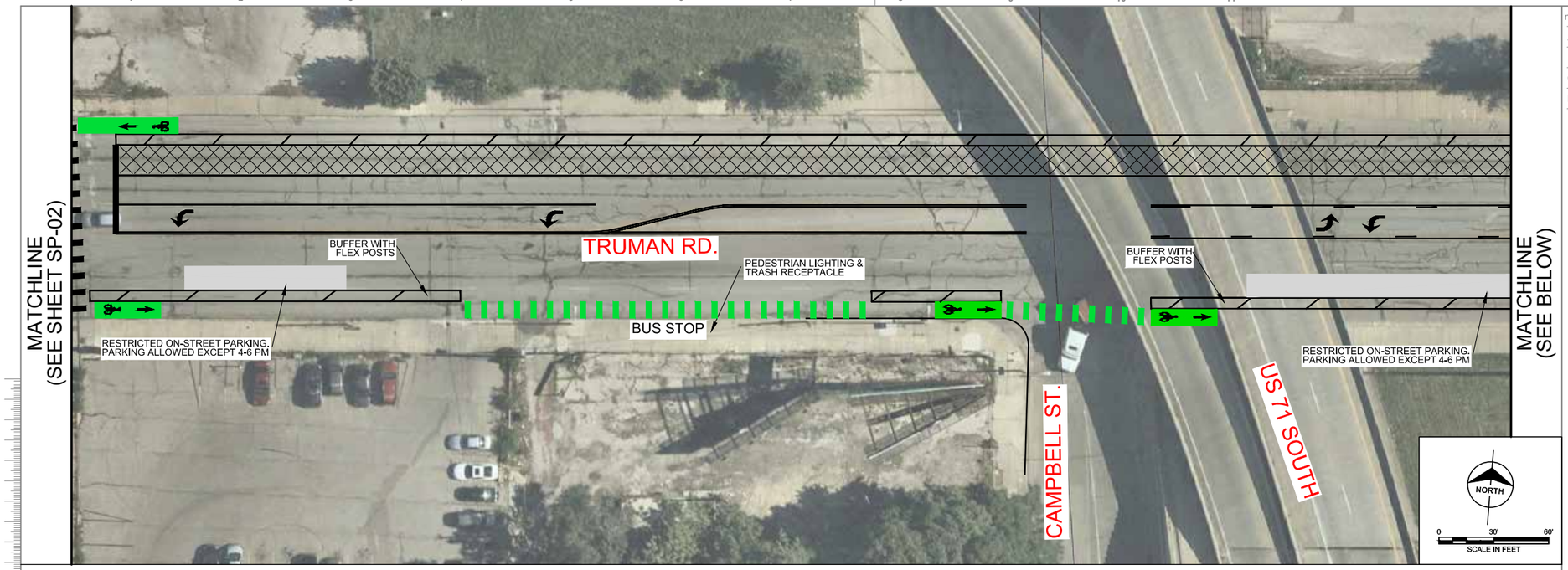

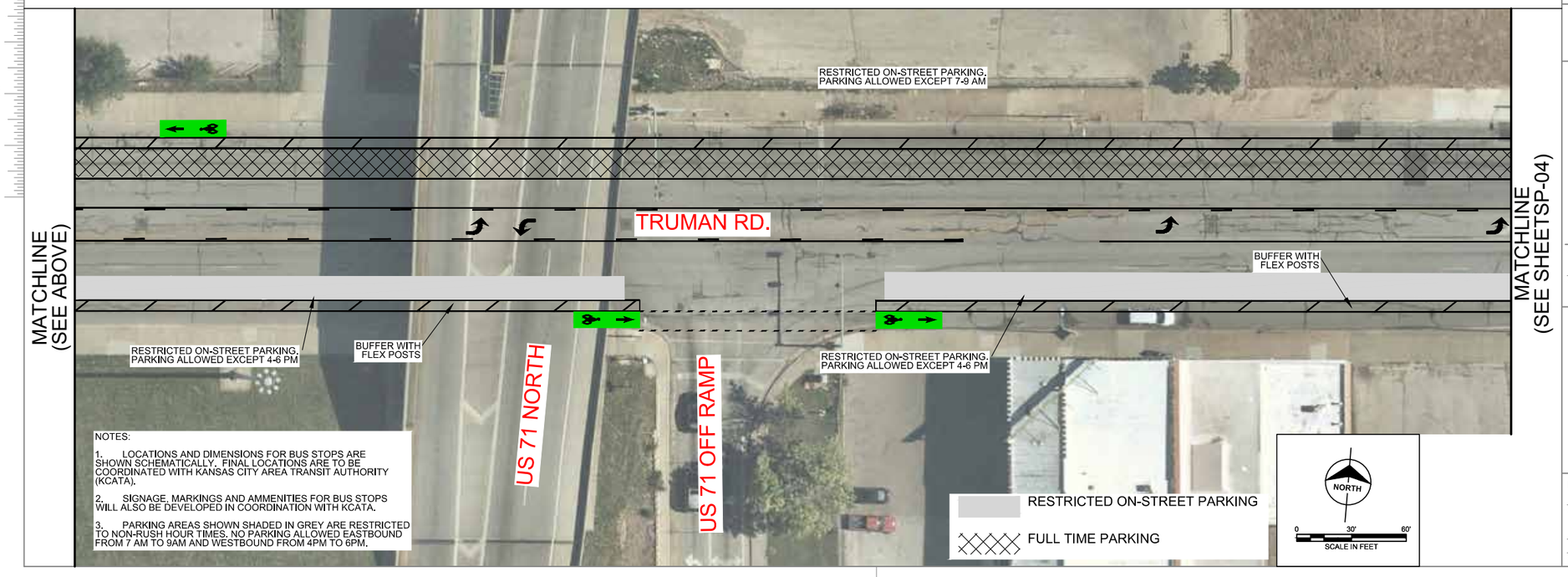

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PROTECTED BIKE LANES

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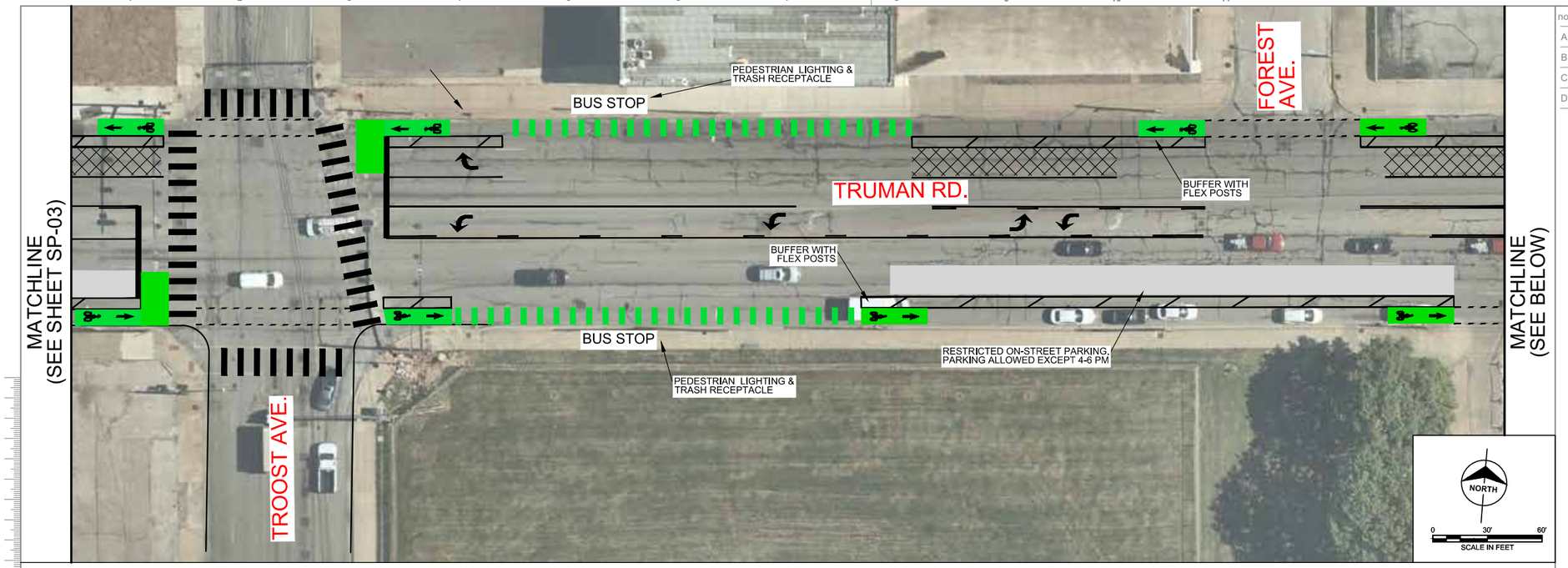

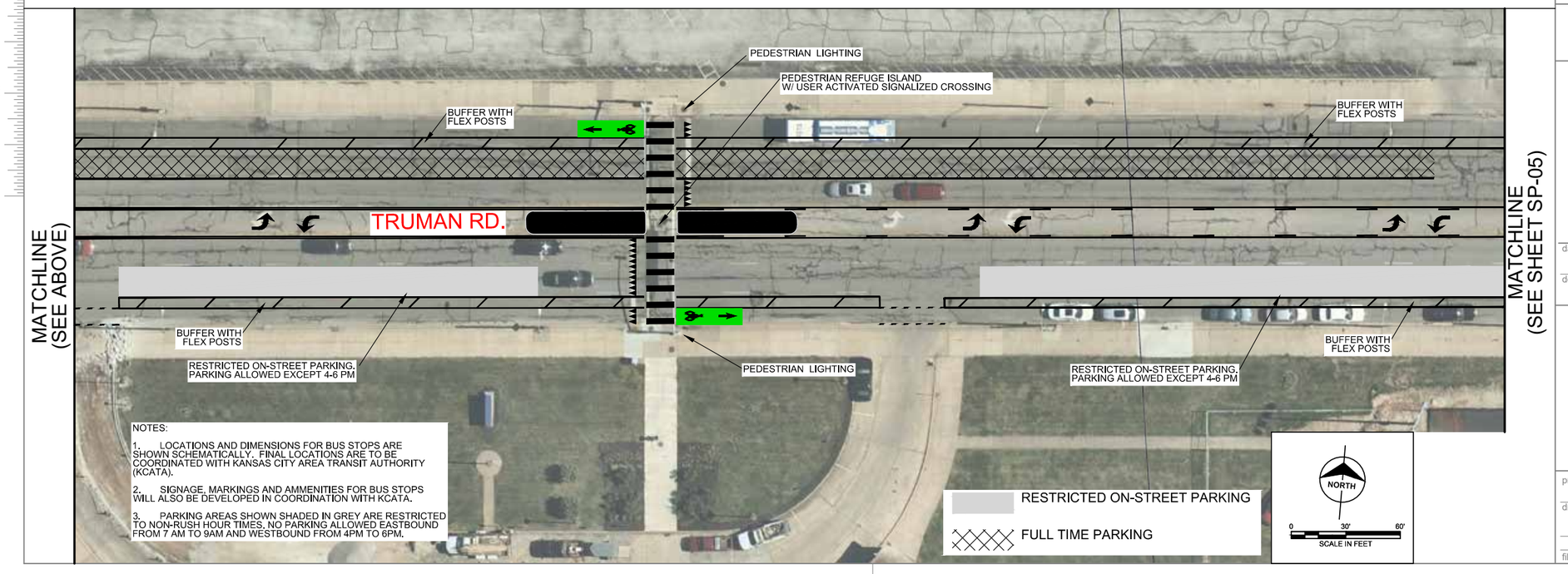

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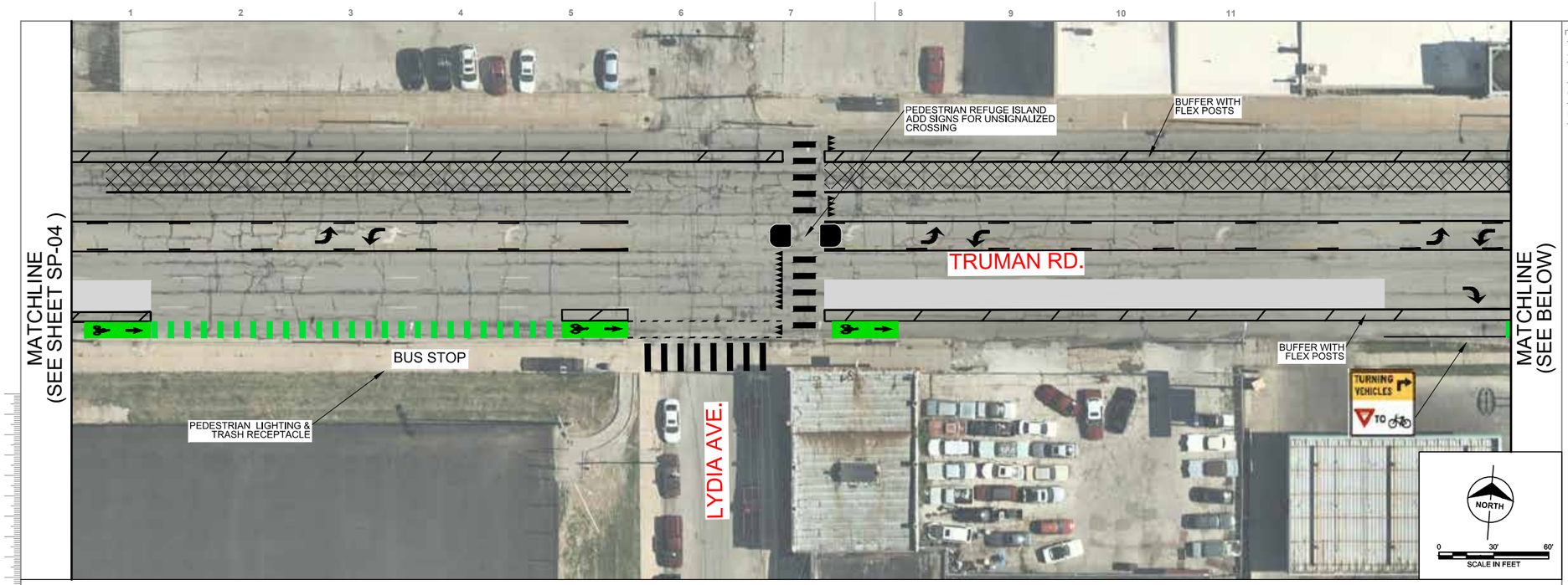

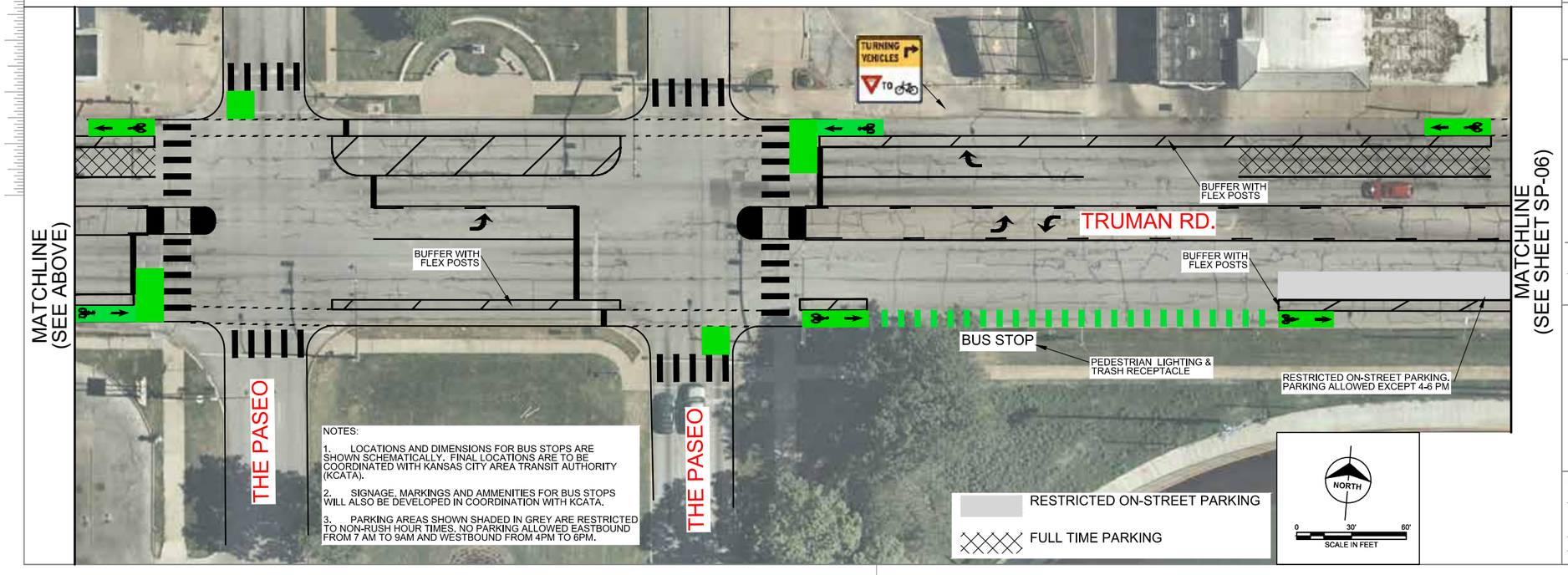

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designed: G. Howley	checked: P. Wojciechowski

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PROTECTED BIKE LANES

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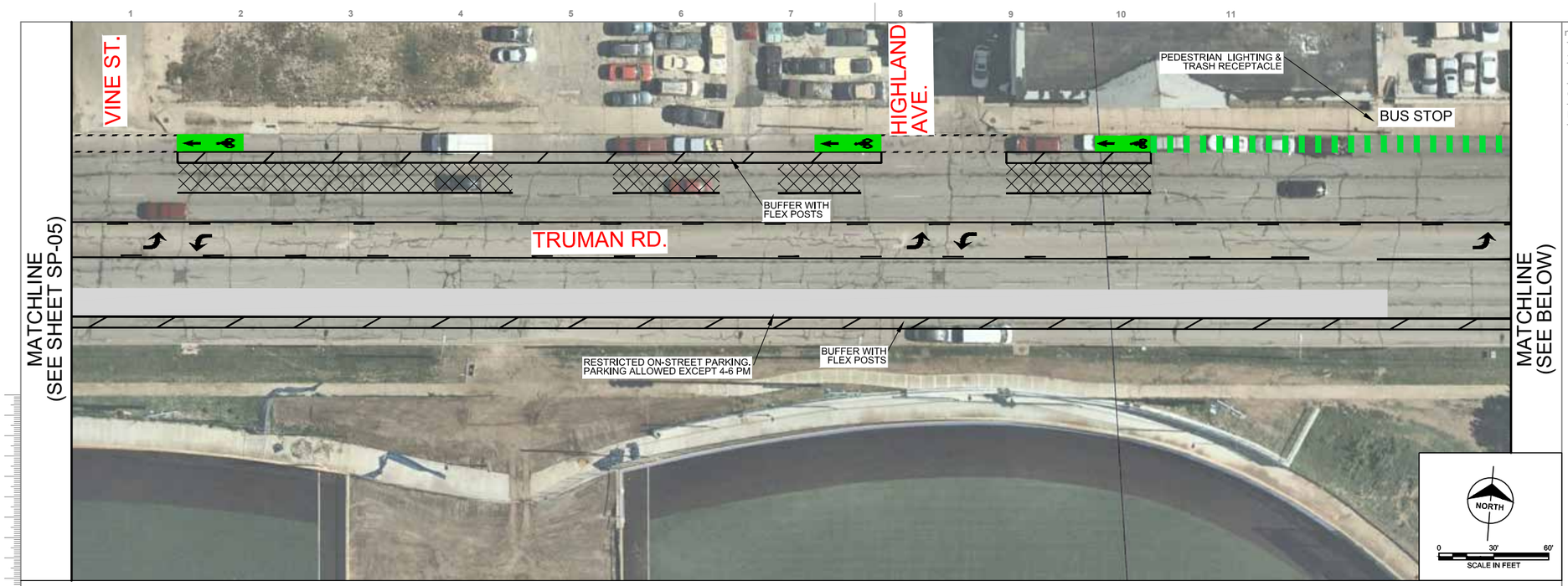

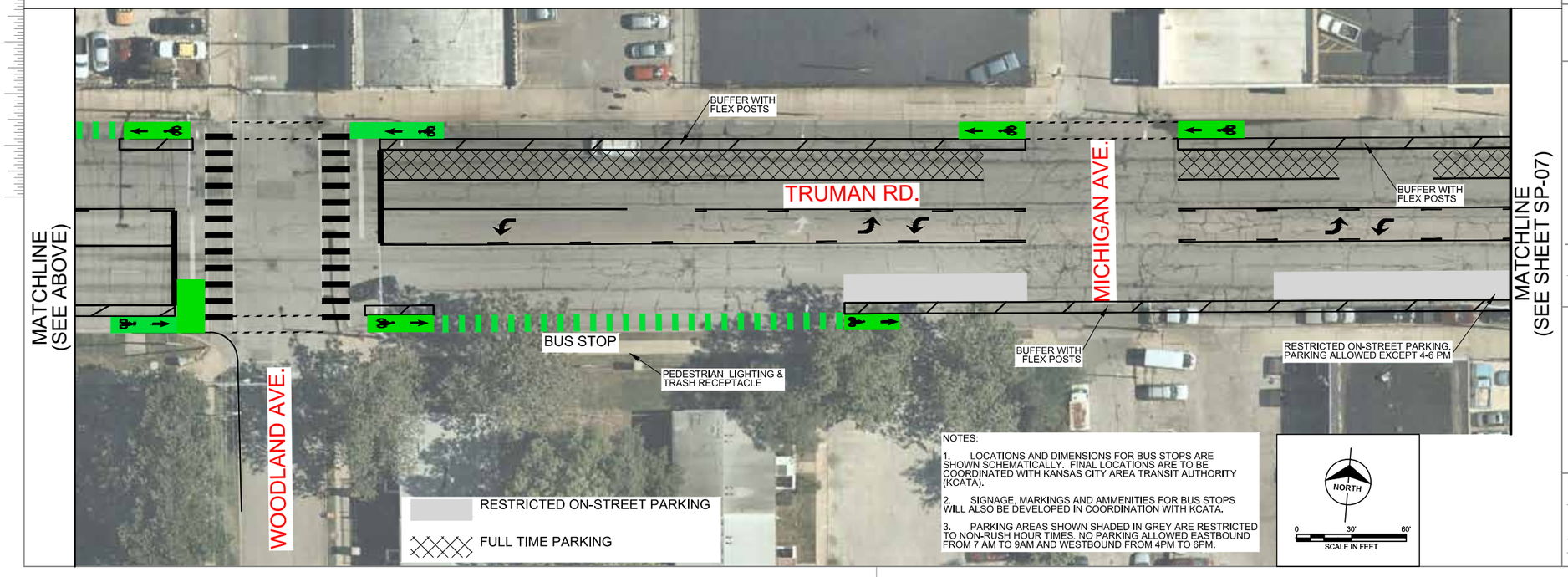

NOTES:

1. LOCATIONS AND DIMENSIONS FOR BUS STOPS ARE SHOWN SCHEMATICALLY. FINAL LOCATIONS ARE TO BE COORDINATED WITH KANSAS CITY AREA TRANSIT AUTHORITY (KCATA).
2. SIGNAGE, MARKINGS AND AMMENITIES FOR BUS STOPS WILL ALSO BE DEVELOPED IN COORDINATION WITH KCATA.
3. PARKING AREAS SHOWN SHADED IN GREY ARE RESTRICTED TO NON-RUSH HOUR TIMES. NO PARKING ALLOWED EASTBOUND FROM 7 AM TO 9AM AND WESTBOUND FROM 4PM TO 6PM.

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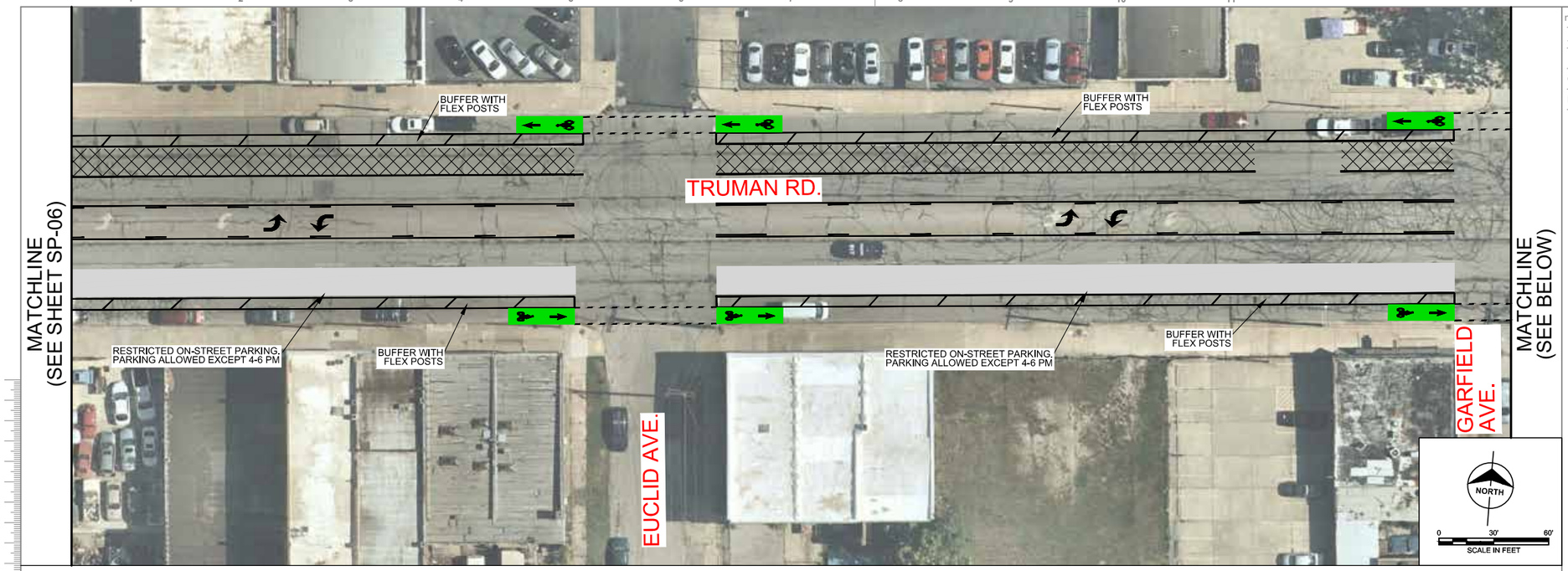

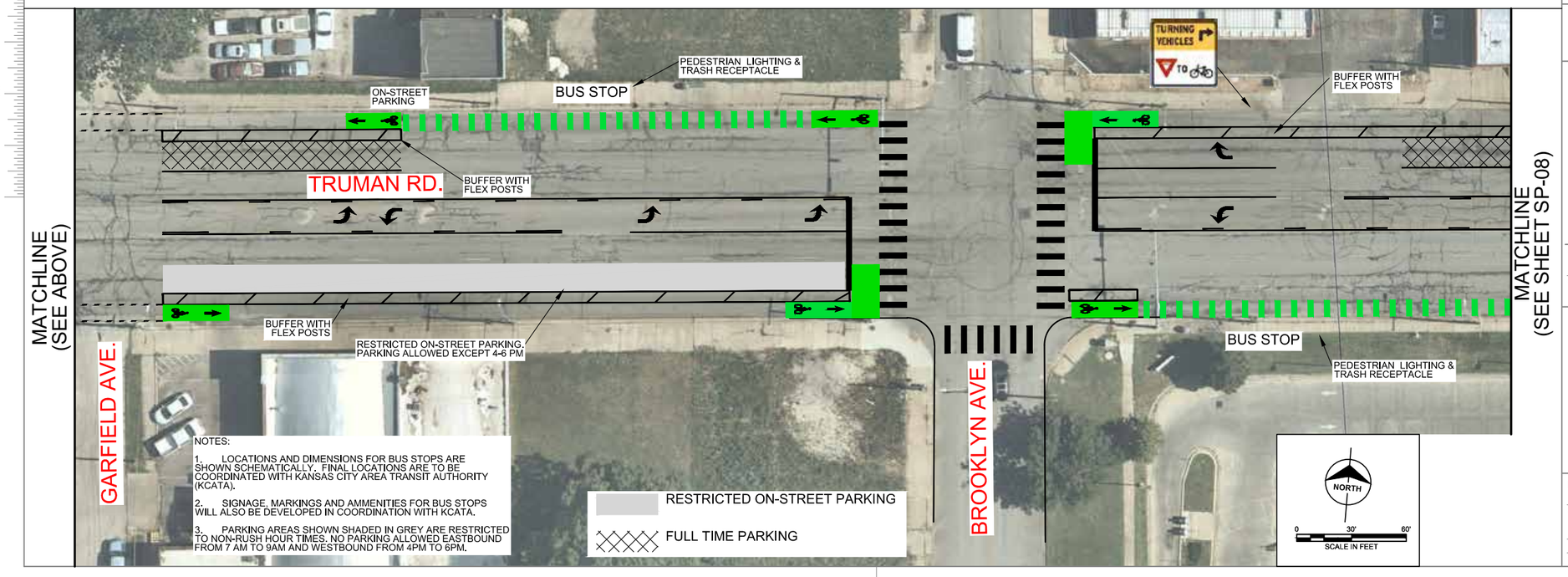

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RESTRICTED ON-STREET PARKING

FULL TIME PARKING

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TRUMAN ROAD
LOCUST STREET TO
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PROTECTED BIKE LANES

project	contract
00-2017-081	

drawing **SP-07** rev. —

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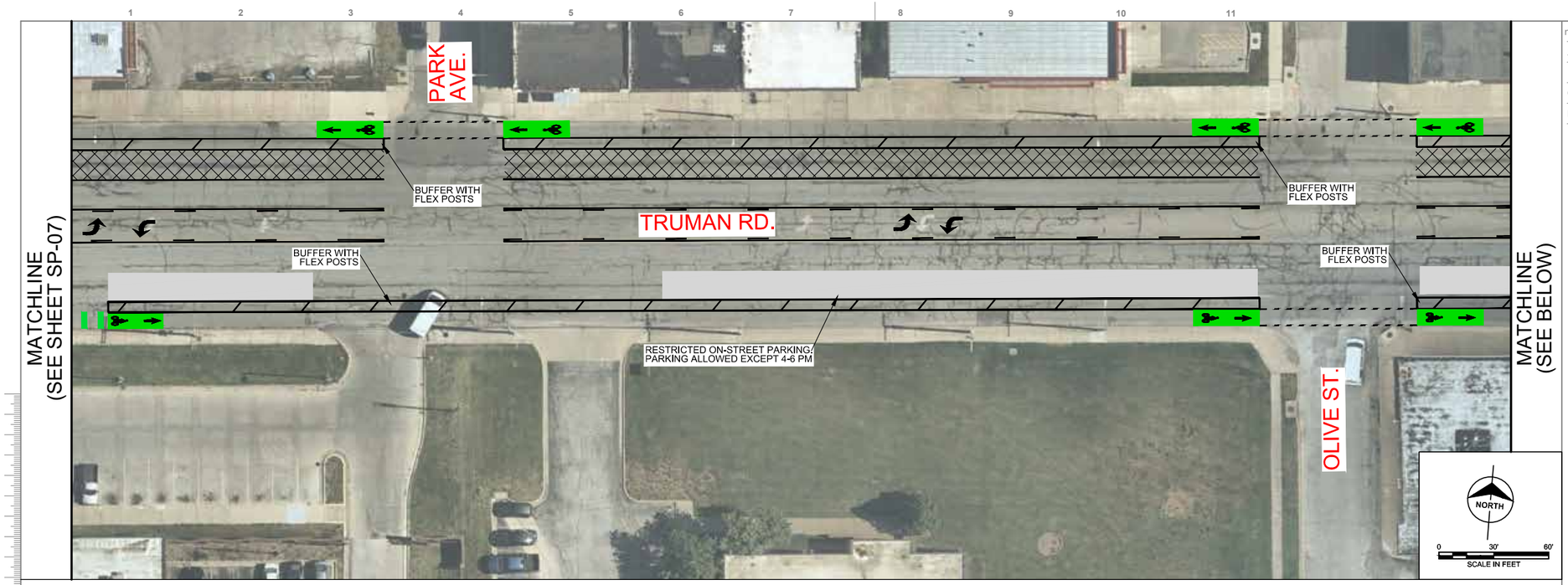

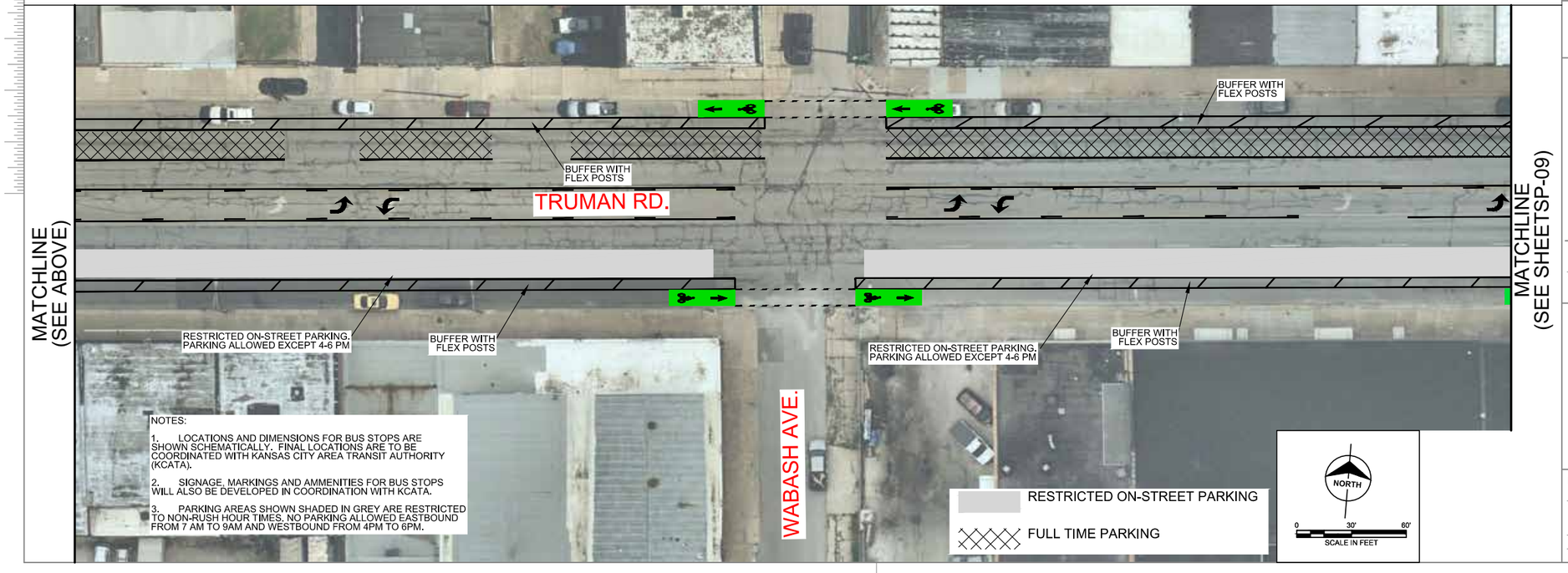

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PROTECTED BIKE LANES

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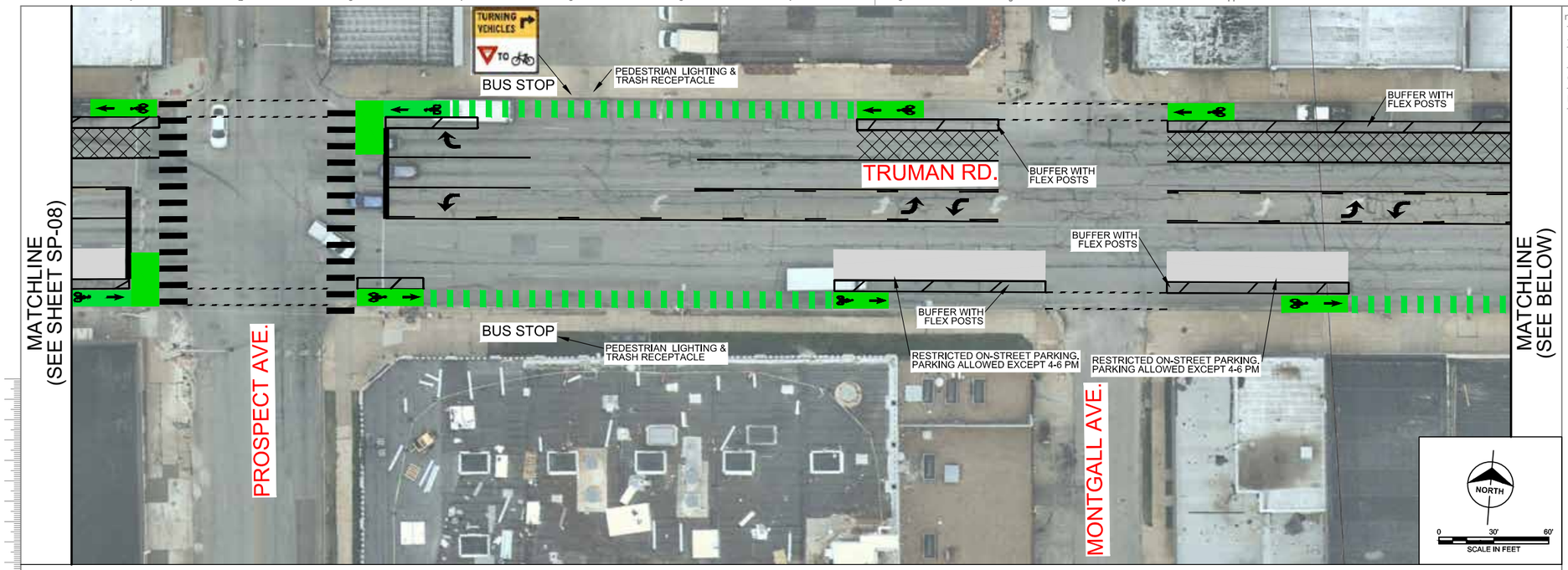

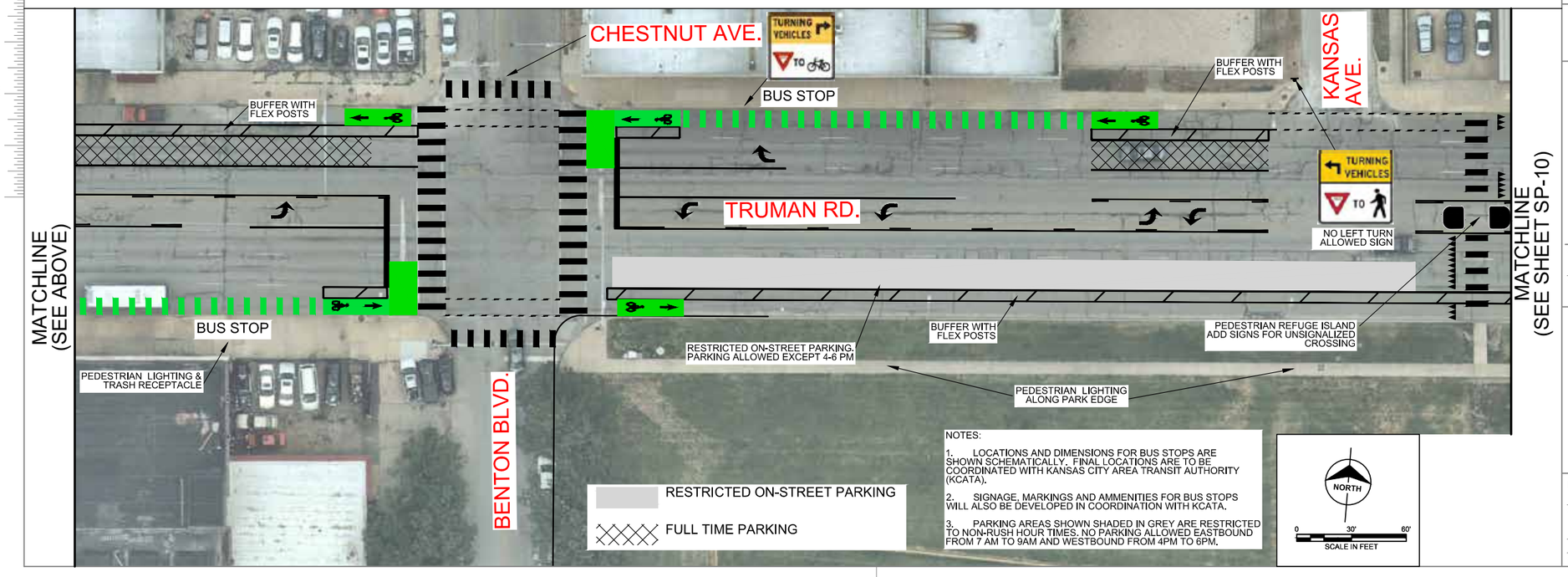

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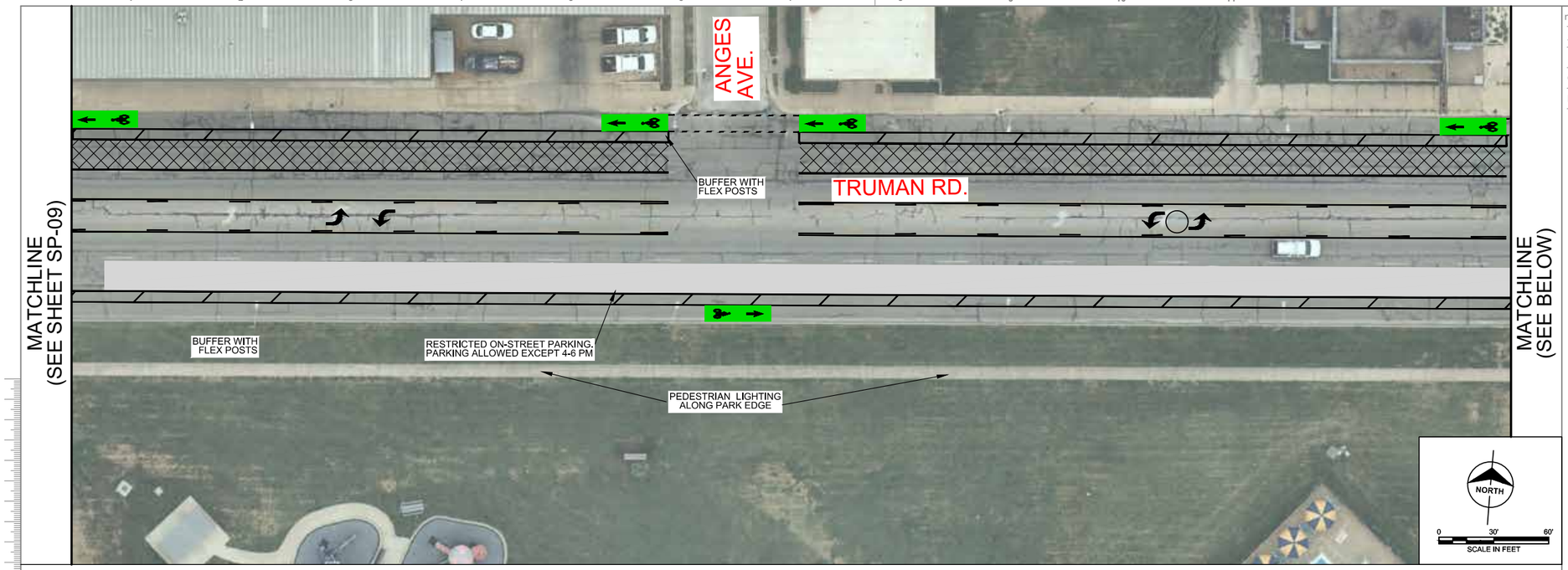

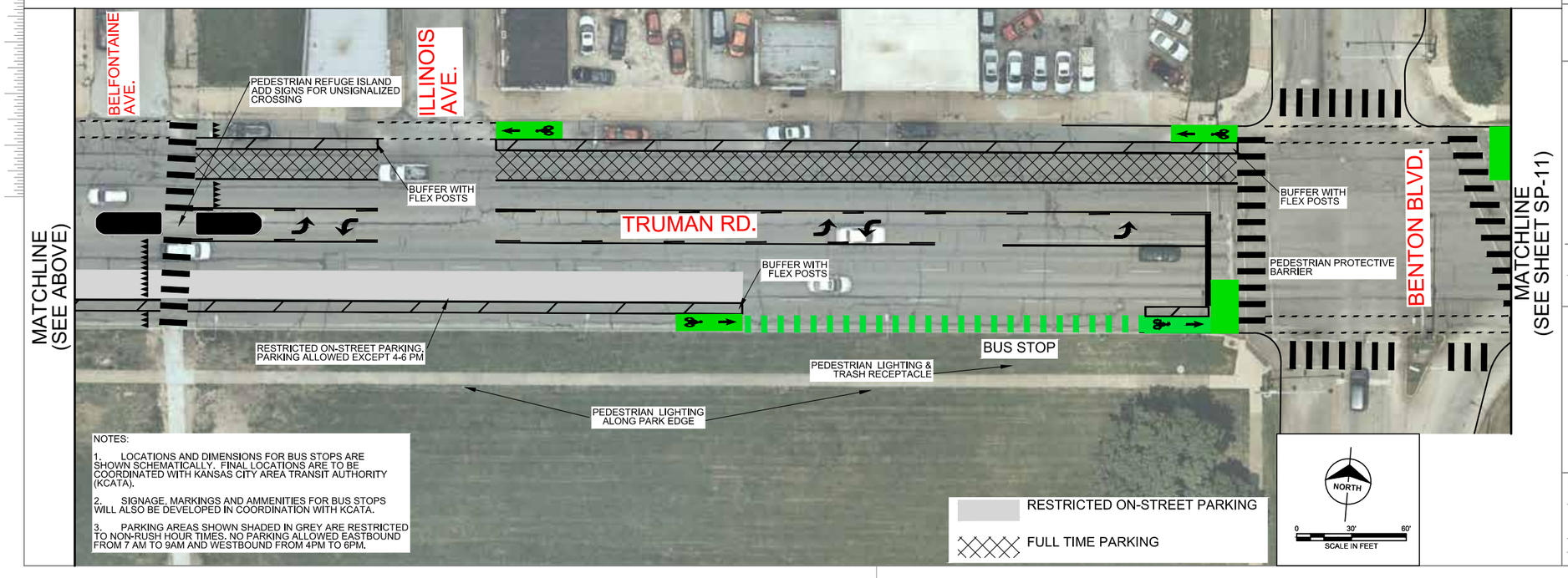

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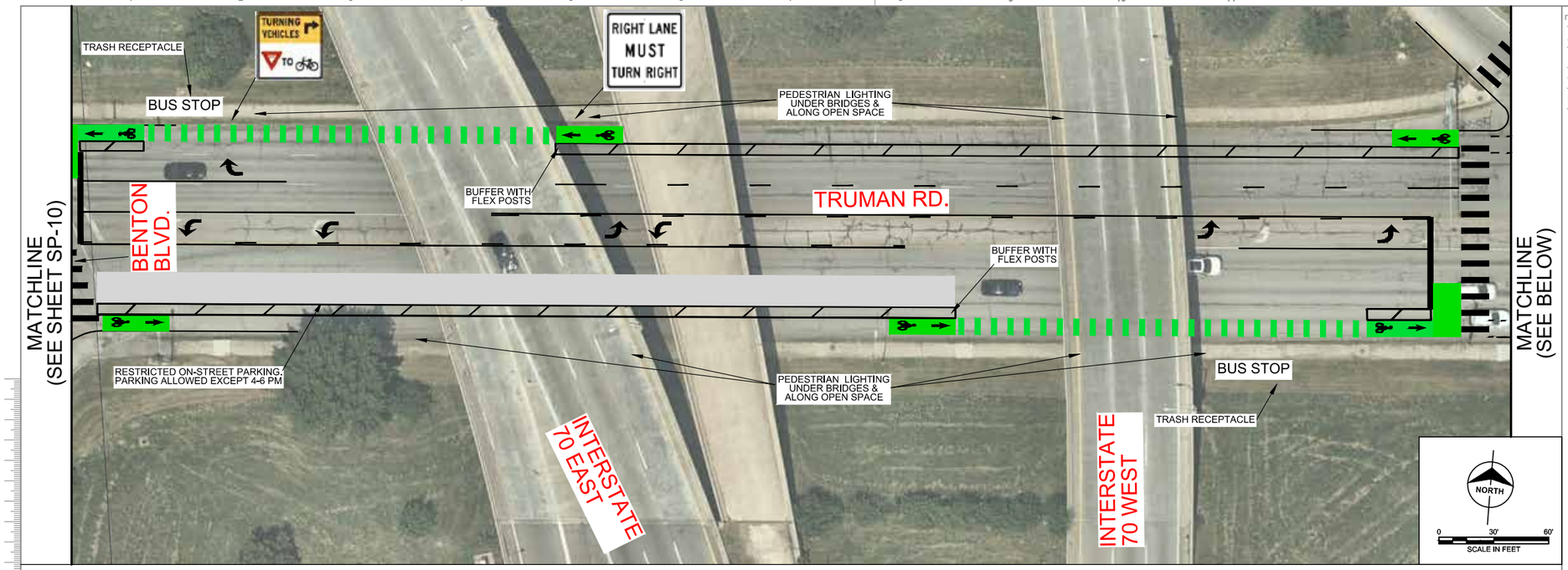

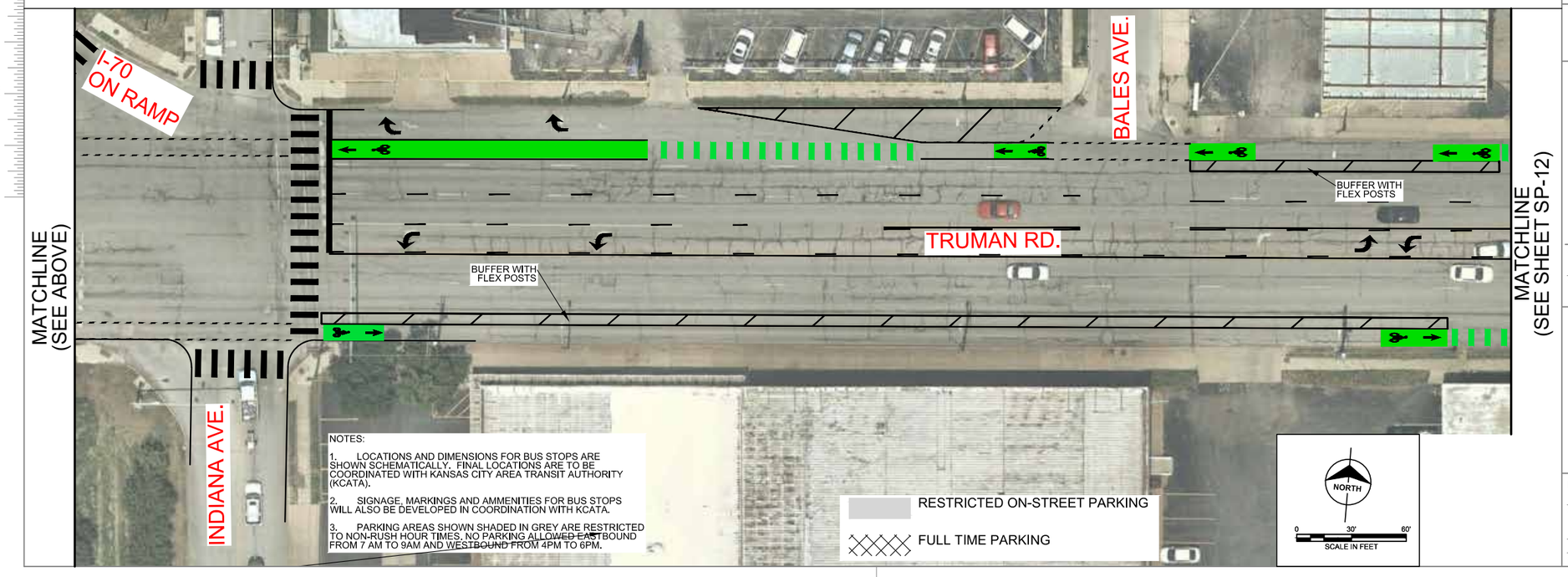

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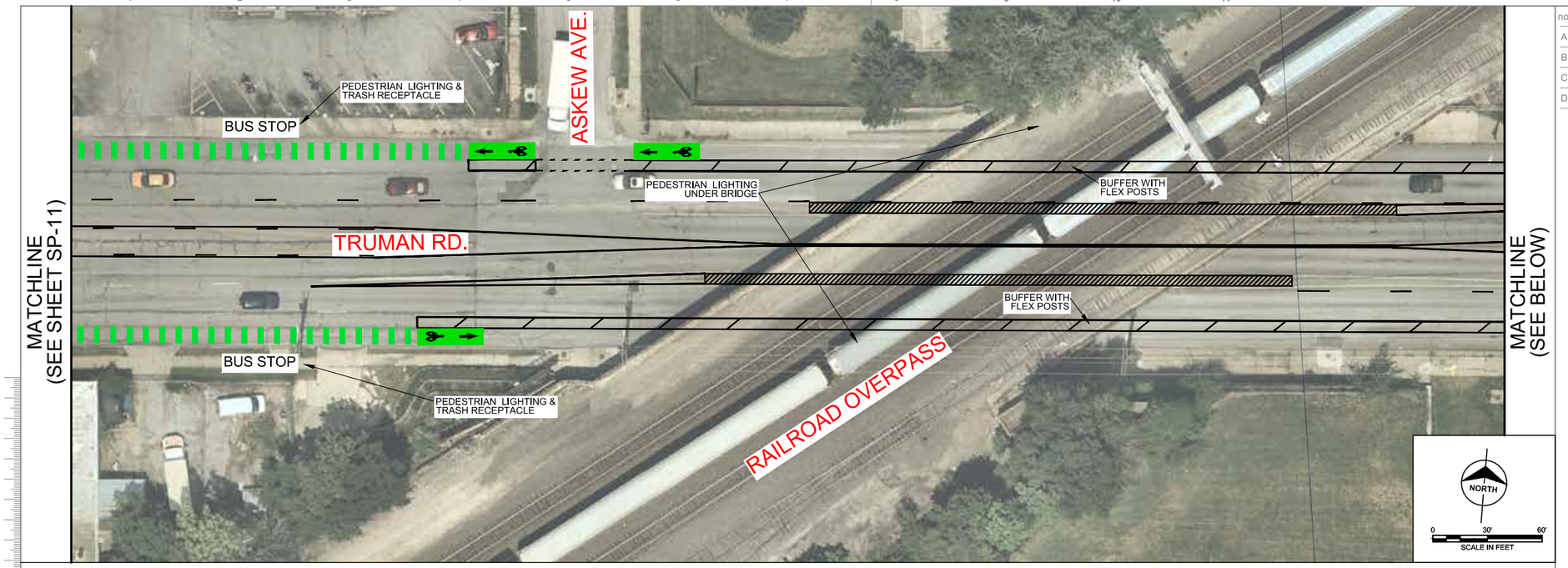

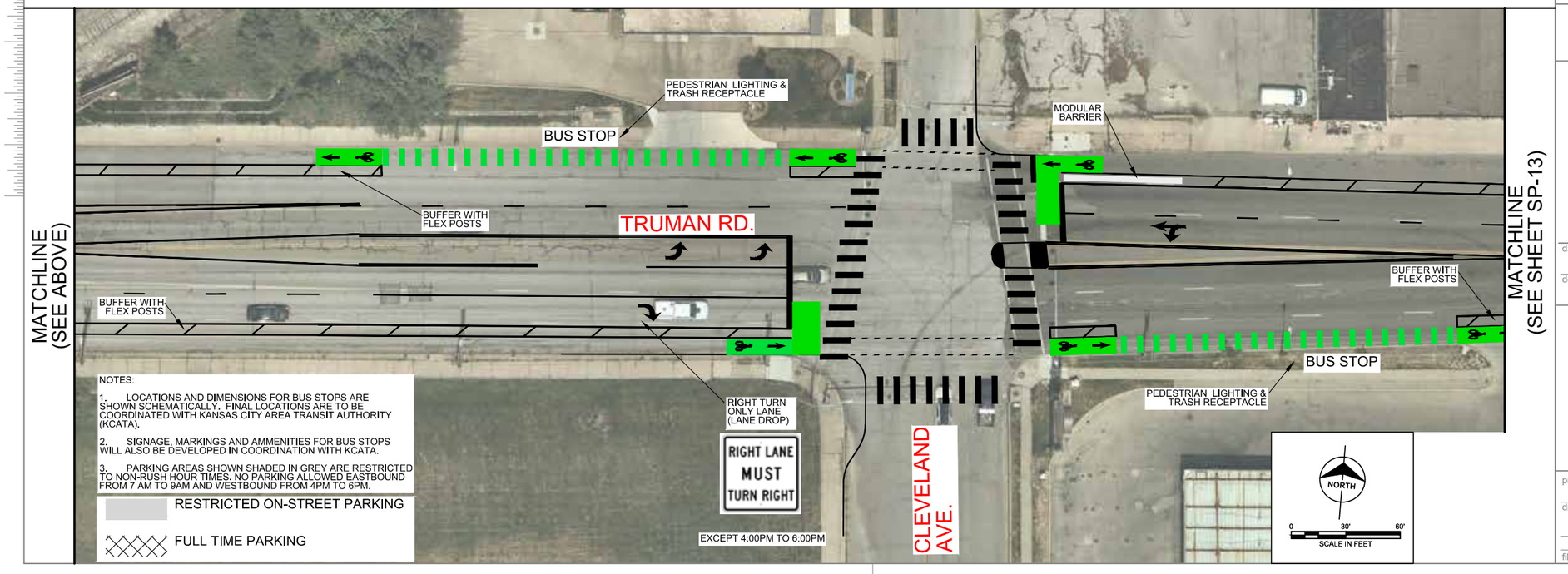

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PROTECTED BIKE LANES

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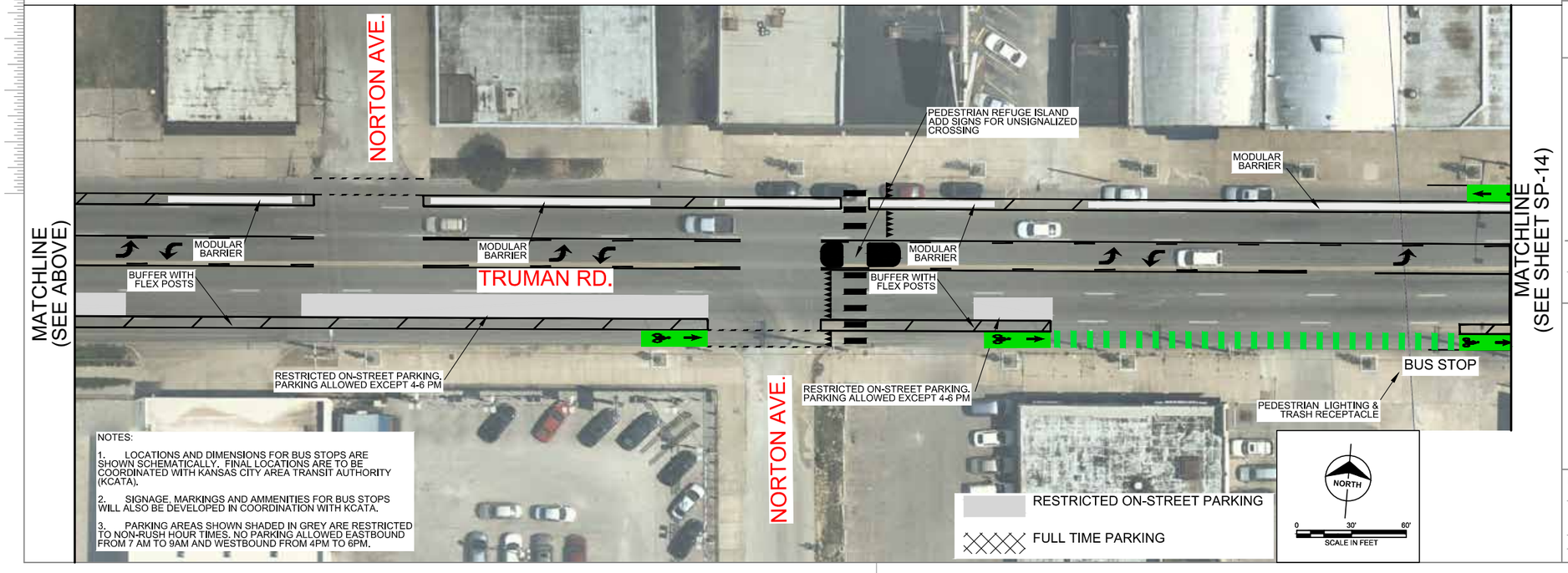

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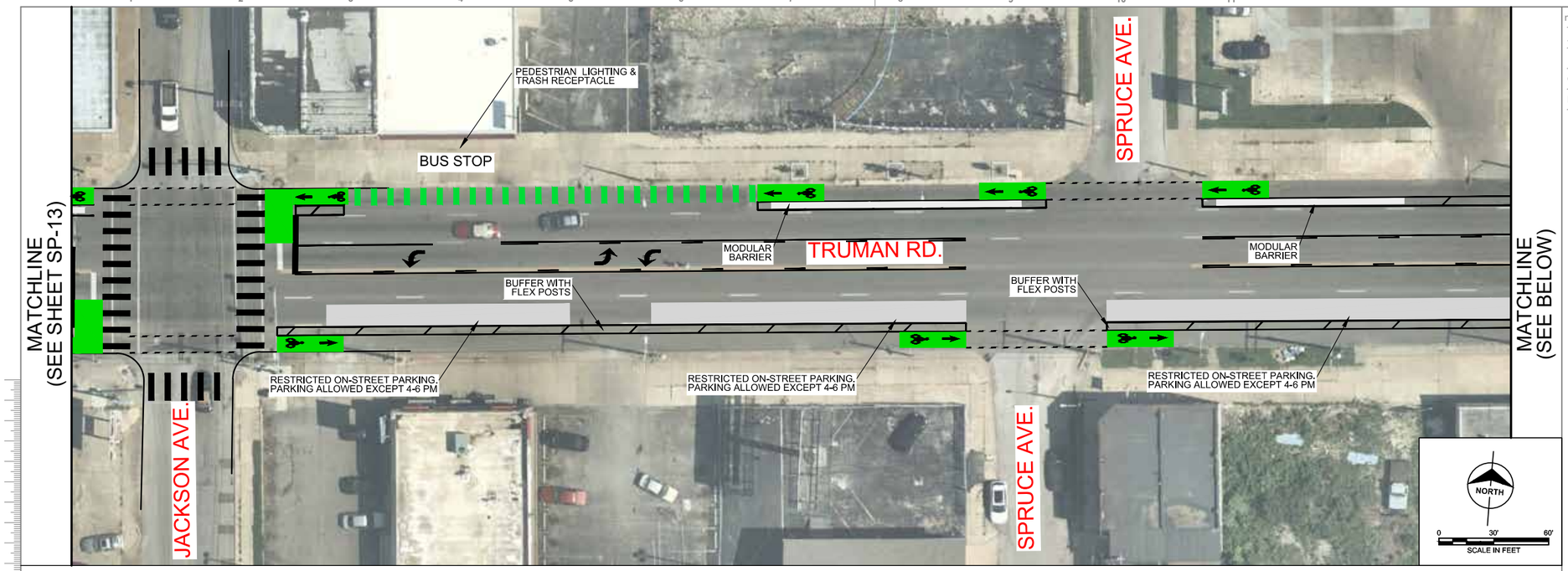

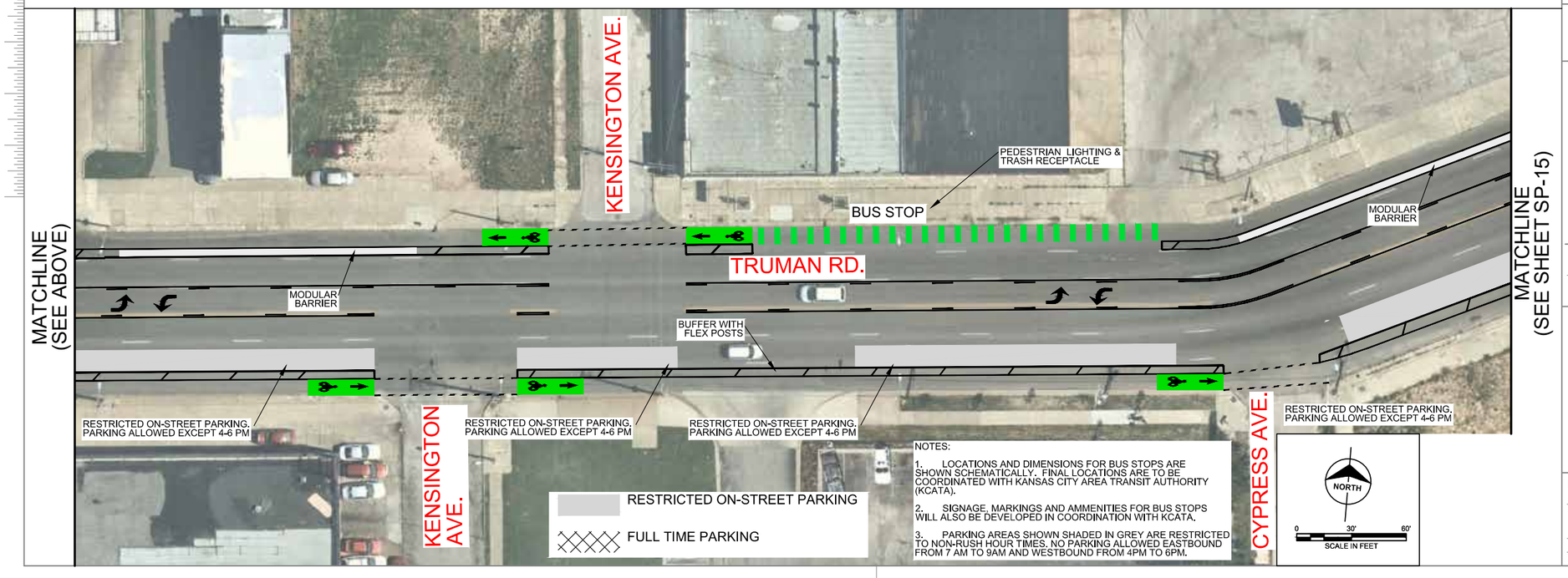

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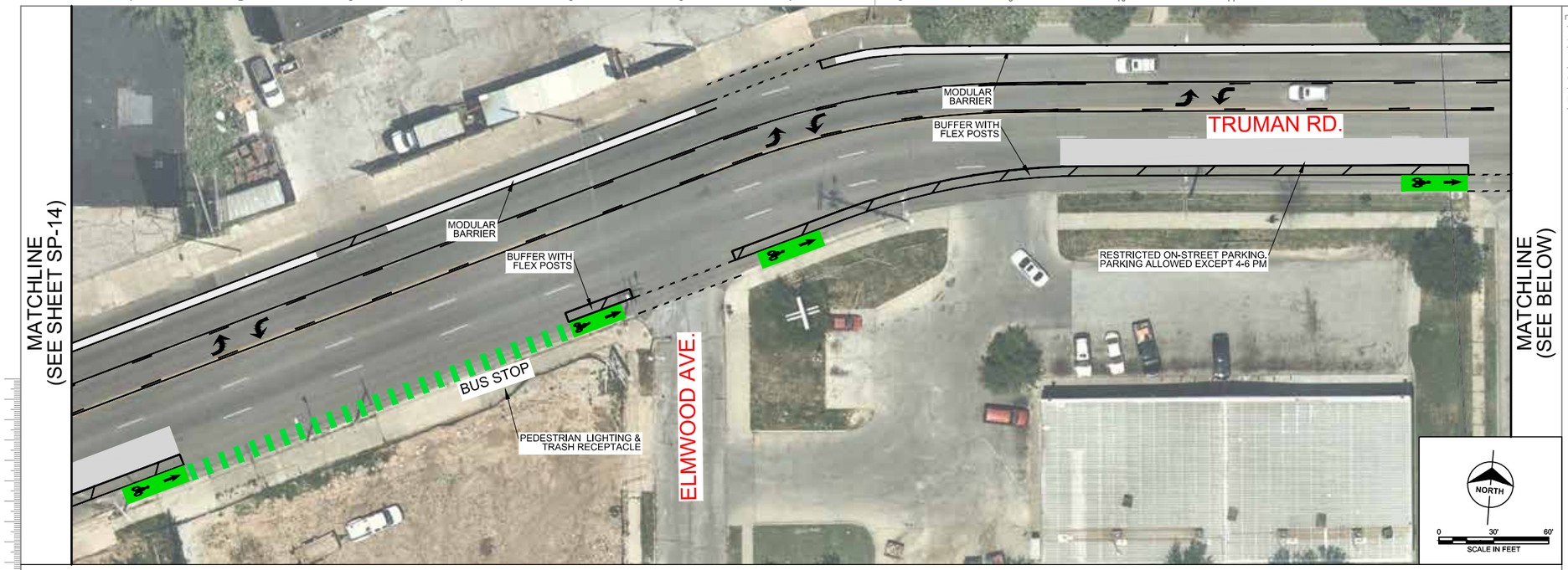

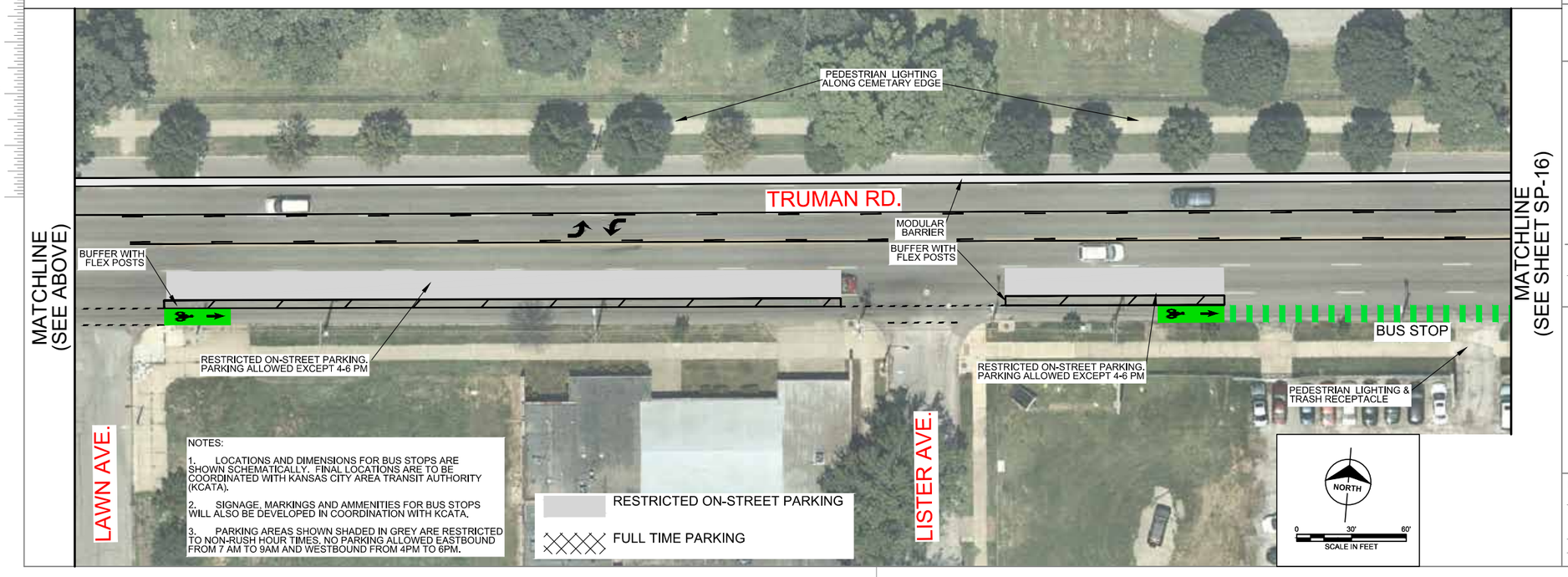

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PROTECTED BIKE LANES

project: 00-2017-081	contract:
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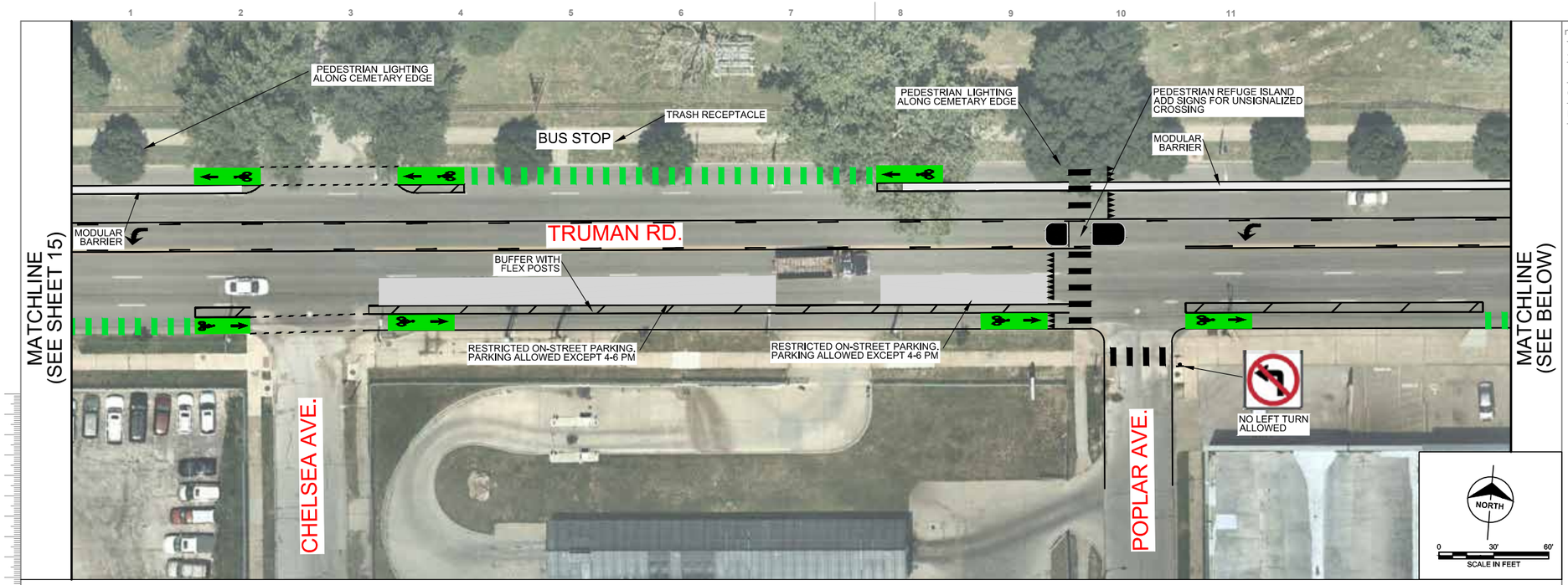

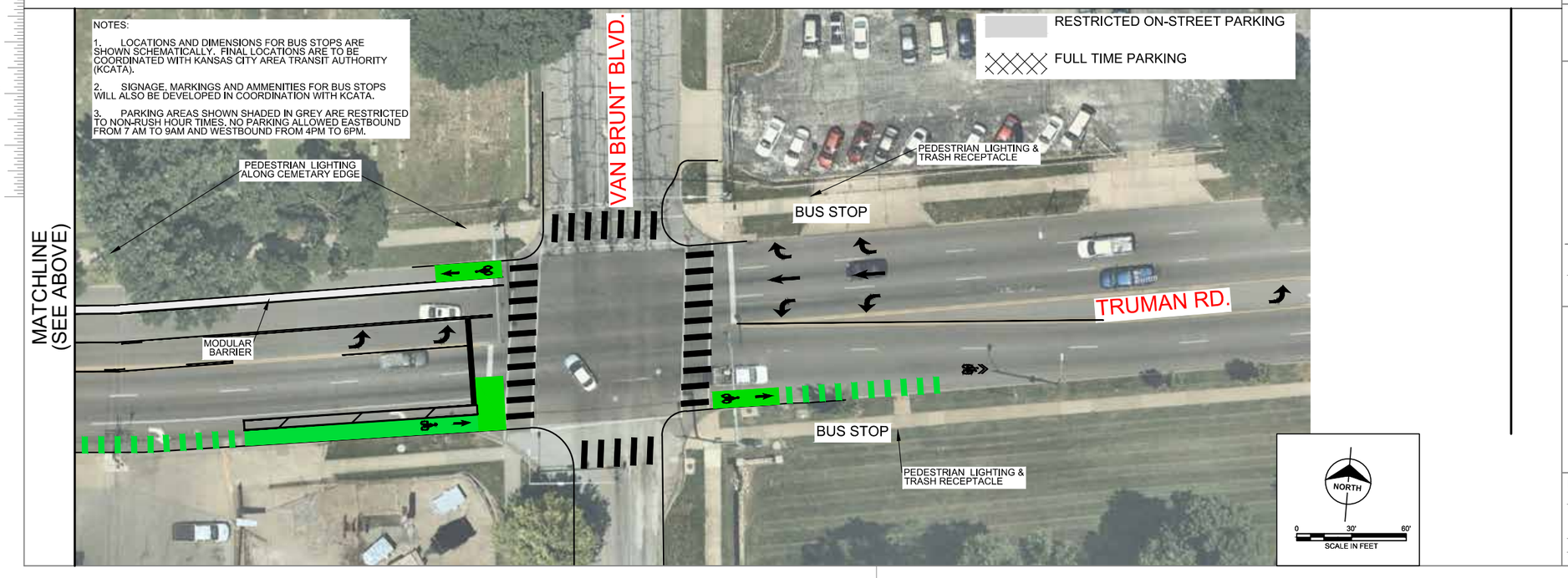

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CHAPTER SIX: ESTIMATE OF COST

Introduction

Cost estimates serve as a valuable tool for capital improvements planning, funding allocation and applications, and project development. As the City of Kansas City identifies the appropriate funding source(s) to implement the plan, these cost estimates will serve as a vital resource.

The estimates in Table 6 provide an opinion of probable cost for the Truman Road Complete Streets Project. These are 2018 figures, and should be adjusted to account for inflation should the project be pursued in subsequent years.

Table 6. Engineer's Estimate of Cost

Item Number	Item	Item Notes	Units	Quantity	Unit Cost	Item Cost
1	2" Bituminous Concrete Pavement Wearing Surface	2' Wide Patch along sawcuts	TON	46	$140.00	$6,498.77
2	8.5" Bituminous Concrete Base	2' Wide Patch along sawcuts	TON	197	$140.00	$27,619.75
3	Prime Coat	0.35 Gal per SY	GAL	146	$7.00	$1,023.56
4	Tack Coat	0.10 Gal per SY	GAL	42	$5.00	$208.89
5	Sawcut		LF	1,880	$8.00	$15,040.00
6	Type 5 Aggregate for Base, 4 Inch	Sidewalk, Conc. & Bit. Pavement, Curb Ramps	SY	1,203	$8.00	$9,622.22
7	Compacted Sub Base	6 Inch depth	SY	1,203	$2.00	$2,405.56
8	Concrete Sidewalk, 4 Inch		SY	785	$65.00	$51,025.00
9	Concrete Curb Ramp (includes truncated domes & base)		EA	47	$3,500.00	$164,500.00
10	Concrete Curb (6 In.) Type S		LF	1,880	$35.00	$65,800.00
11	Concrete Median (Doweled-On)	Islands / Modular Barriers	SY	1,285	$85.00	$109,225.00
12	Tubular Delineator Posts	1 per 25 LF of buffer and/or modular barrier	EA	1,249	$125.00	$156,125.00
13	Pedestrian Lighting at Bus Stop		EA	29	$15,000.00	$435,000.00
14	Bench	2 Per Bus Stop	EA	58	$2,500.00	$145,000.00
15	Trash Receptacles	1 Per Bus Stop	EA	29	$1,500.00	$43,500.00
16	Bus Shelter	5 for the corridor	EA	5	$20,000.00	$100,000.00
17	Roadway Signage (2 per 500 LF)		EA	63	$450.00	$28,350.00
18	Bike Lane Marking (Arrow and Helmeted Rider)		EA	148	$250.00	$37,000.00
19	Shared Lane Marking		EA	1	$300.00	$300.00
20	Left Turn Arrow		EA	109	$200.00	$21,800.00
21	Right Turn Arrow		EA	5	$200.00	$1,000.00
22	Thru Arrow		EA	2	$200.00	$400.00
23	6 Inch Solid White		LF	50,650	$2.00	$101,300.00
24	6 Inch Intermittent White (10' segment / 30' gap)		LF	660	$2.00	$1,320.00
25	6 Inch Intermittent White (2' segment / 4' gap)		LF	2,060	$2.00	$4,120.00
26	4 Inch Solid Yellow		LF	26,370	$1.50	$39,555.00
27	4 Inch Intermittent Yellow (10' segment / 30' gap)		LF	5,365	$1.50	$8,047.50
28	24 Inch solid White	Stop Bar	LF	790	$10.00	$7,900.00
29	24 Inch White Yield Marking		EA	148	$50.00	$7,400.00
30	30 Inch Wide - High Visibility Markings - White	Crosswalk Markings	LF	4,885	$15.00	$73,275.00
31	30 Inch Wide - High Visibility Markings - Green		LF	4,296	$15.00	$64,440.00
32	Green Solid Fill		SF	25,880	$12.00	$310,560.00
33	Rectangular Rapid Flashing Beacons (Solar)		EA	12	$10,000.00	$120,000.00
34	Signal Head Reconfiguration		EA	11	$50,000.00	$550,000.00
35	Signal Modifications		EA	3	$200,000.00	$600,000.00
36	Contractor Surveying and Staking (1%)		LS	1	$33,093.61	$33,093.61

Item Number	Item	Item Notes	Units	Quantity	Unit Cost	Item Cost
37	Protection and Restoration of Site (1%)		LS	1	$33,093.61	$33,093.61
38	Mobilization (10%)		LS	1	$330,936.12	$330,936.12
39	Traffic Control (4%)		LS	1	$132,374.45	$132,374.45
40	Removal of Improvements (5%)		LS	1	$165,468.06	$165,468.06
41	Utility Relocations (3%)		LS	1	$99,280.84	$99,280.84
42	Landscaping (2%)		LS	1	$66,187.22	$66,187.22
43	SWPPP (3%)		LS	1	$99,280.84	$99,280.84
	Subtotal					**$4,269,076.00**
	Contingency (25%)					**$1,067,269.00**
	Total					**$5,336,345.00**