CITY OF OVERLAND PARK, KANSAS PRELIMINARY ENGINEERING STUDY TH-1853

METCALF AVENUE 74TH STREET TO 83RD STREET





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1.0 Executive Summary

Metcalf Avenue is a four-lane undivided roadway in Overland Park, Kansas that serves as a major north-south connector for the region. The City of Overland Park Public Works (City) directed TREKK Design Group (TREKK) to perform a preliminary engineering study to determine the impacts of implementing concepts proposed in the City's long-term planning efforts, "Vision Metcalf Plan." The study evaluated impacts on the surrounding street network and adjacent properties by applying the Downtown Form Based Code and regulating plan along Metcalf Avenue from 83rd to 74th Street.

The purpose of the study was to complete a preliminary design, utilizing the City's approved typical section in the Form Based Code. This analysis will serve as a planning tool for the City to utilize as properties are redeveloped along the project limits of Metcalf Avenue. The study herein set forth is a guide for the City to determine what investment and coordination will be required to construct the proposed section within the project limits. City staff from the Public Works and Planning Departments were involved in developing the study and its recommendations.

The following objectives were achieved as part of the study:

- Establish the centerline for Metcalf Avenue.
- Identify the existing utilities along the corridor.
- Define preliminary footprint of the Form Based Code typical section.
- Determine the impacts of improved section on adjacent private properties.
- Incorporate relocated utilities into the corridor.
- Equip the City with a planning tool to guide development.
- Provide an opinion of probable cost including construction, utility relocation, right-of-way, administration, legal and engineering costs based upon 2020 costs.

Overland Park's Downtown Form Based Code Metcalf Avenue typical section was used along the corridor. Several alignments were evaluated including the existing section line, a best fit alignment between existing buildings and an alignment optimizing recently redeveloped properties along Metcalf Avenue before the City determined the section line was the most appropriate alignment. The proposed profile follows the existing ground profile with modifications to bring the profile up to current standards. To tie in the sections to existing ground, TREKK used a combination of grading and the City's standard Integral Sidewalk Retaining Wall (ISRW) was used. These walls were used to tie into existing property conditions. It is the goal that with redevelopment along the corridor, developers will grade the property to eliminate the need for the retaining wall along Metcalf Avenue.

2.0 Introduction

In 2008, The City of Overland Park (City) adopted a long-range vision for Metcalf Avenue, developed through months of discussions with elected officials, City staff, various stakeholders, and

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the people who live, work and visit the corridor. The result of this impressive undertaking was the adoption of A Vision Plan for the Metcalf Corridor, better known as the Vision Metcalf Plan. This study involved an in-depth understanding of the area, extensive public involvement, and comprehensive planning to develop a vision of the ideal future condition for the Metcalf corridor.

As the next step, the City developed the Downtown Overland Park Form-Based Code in 2011. The Form-Based Code provides the City with implementation tools to meet the objectives of the Vision Metcalf Plan. The Code specifies modifications developers and property owners must make to further the Plan's initiatives. In regard to roadway improvements, the Form-Based Code promotes a balance between all modes of transportation. The preferred urban typical section creates a complete street space that provides an efficient and safe area for all users.

In 2018, the City provided a Vision Metcalf Status Report to share progress on the Plan's implementation over the last 10 years. The status report includes an update on the progress of the objectives identified, the status of the recommendations including any changes, and a snapshot in time of development and redevelopment activities. The Report also presented several next steps to continue implementation of the Vision Metcalf Plan. One of the action items identified was to complete a Preliminary Engineering Study (PES) along Metcalf Avenue from 75th Street to 83rd Street.

The City is taking those next steps by hiring TREKK Design Group (TREKK) to complete this preliminary engineering study and report with preliminary plans along Metcalf Avenue from 74th Street to 83rd Street. The purpose of the PES is to evaluate the overall impacts of applying the Vision Metcalf Plan and, specifically, the Form-Based Code typical section to this corridor. The PES will involve completion of preliminary design to determine anticipated impacts to structures, properties and utilities along Metcalf Avenue. This document will serve as a planning tool for the City that helps clearly define the Metcalf Avenue centerline, sets defined right of way for future redevelopments and identifies potential utility conflicts. Specifically, the study includes the following:

- City's Downtown Form Based Code typical section
- Proposed horizontal alignment and profile
- Plan sheets showing existing and proposed right of way, permanent easements, property ownership, topographic features, locations of proposed retaining walls and limits of construction
- Roadway cross sections
- Opinion of probable costs

These items are discussed in the following sections. Please also refer to the Metcalf Avenue Preliminary Plans that accompany this report.

This preliminary engineering study was prepared by TREKK Design Group at the direction of the City of Overland Park Public Works Department and represents the best information available to the City Engineer.

3.0 Basic Information and Procedures

To develop the preliminary design of Metcalf Avenue, the following information and procedures were used:



- Aerial imagery was obtained from Johnson County AIMS
- Survey and topographic mapping were obtained by TREKK through mobile LiDAR
- Utility companies were contacted to determine which utilities exist along the corridor. Kansas One-Call was used to mark utilities on-site. The utility information shown on the plans is a combination of field-verified utilities and information from utility maps.
- The following development plans were provided by the City and are accounted for by access points in the proposed plan
 - o Avenue 80
 - o Avenue 81
 - $\circ \quad \text{Avenue 82}$
 - PT's Coffee
 - o Volvo
- Crash data along Metcalf Avenue was provided by the City
- Turning movement counts were collected by TREKK utilizing Miovision Scout traffic data collection cameras
- Design criteria is in accordance with guidance from the City of Overland Park, the Kansas Department of Transportation and AASHTO's A Policy on Geometric Design of Highways and Streets.
- Estimates of construction costs, utility relocation costs, and right of way and easement costs are based on 2020 dollars.

4.0 Existing Conditions

4.1 Existing Roadway

Metcalf Avenue is a north/south thoroughfare running through Downtown Overland Park that is a major connector for not just the City, but the region. Through the study extents, Metcalf Avenue is mostly a four-lane roadway with curb and gutter. The corridor has various right and left turn lanes. The section is divided from 83rd to Marty, the north and south legs of 79th Street and the north leg of 75th Street. Within the study limits, Metcalf Avenue intersects 14 other roadways, summarized below:

Minor Leg Stop Controlled Intersections

- 74th Street
- 76th Street
- 77th Street
- 78th Street
- Hamilton Drive
- 81st Street
- Floyd Street
- 82nd Street
- Marty Street
- Overland Park Drive

Signal Controlled Intersections

- 75th Street
- 79th Street
- 80th Street
- 83rd Street



Metcalf Avenue has existing sidewalk on both sides of the road. These 4- and 5-foot wide sidewalks are discontinuous within the project limits and defined crosswalks are only provided at the signalized intersections. There are over 50 driveways along this stretch of Metcalf Avenue.

4.2 Existing Right of Way

Existing right of way along Metcalf Avenue, shown in the Metcalf Avenue Preliminary Plans, ranges in width from 60-100'. Metcalf Avenue was originally constructed by Kansas Department of Transportation as State Highway 69.

4.3 Traffic Operations

Turning movement counts were collected and analyzed at identified intersections in Table 1. Data was collected using Miovision Scout cameras between the hours of 7:00 AM and 9:00 AM in the morning to determine the morning (AM) peak hour. Data was also collected between the hours of 4:00 PM and 6:00 PM in the afternoon to determine the afternoon (PM) peak hour. Data was collected on a typical weekday, Tuesday through Thursday, between November 5th, 2018 and December 3rd, 2019, avoiding holidays in order to accurately represent normal traffic patterns and volume data. The specific date of collection at each location is shown in Table 1 below. In addition, the AM and PM peak hours collected can be found in Table 2.

Table 1: Date of Traffic Data Collection					
Intersection		Date Collected			
1	75th Street	Tuesday, November 5, 2019			
2	76th Street	Tuesday, November 5, 2019			
3	77th Street	Tuesday, November 5, 2019			
4	77th Terrace	Tuesday, December 3, 2019			
5	78th Street	Thursday, November 7, 2019			
6	79th Street	Thursday, November 7, 2019			
7	80th Street	Thursday, November 7, 2019			
8	81 st Street	Tuesday, December 3, 2019			
9	Floyd Street	Tuesday, December 3, 2019			



Τα	Table 2: AM & PM Peak Hours																		
		AM						PM											
Intersection		7:00	7:15	7:30	7:45	8:00	8:15	8:30	8:45	00:6	4:00	4:15	4:30	4:45	5:00	5:15	5:30	5:45	6:00
1	75th Street																		
2	76th Street																		
3	77th Street																		
4	77th Terrace																		
5	78th Street																		
6	79th Street																		
7	80th Street																		
8	81 st Street																		
9	Floyd Street																		

The turning movement counts are shown in Appendix A during the specific AM and PM peak hours of that intersection. The volumes by movement are shown as well as the total number of vehicles entering the intersection by approach, volume "in" and the total number of vehicles leaving the intersection, volume "out". Additionally, the truck percentage for each approach volume is shown in parenthesis.

Future traffic volumes were not analyzed as part of this study. Additionally, operational analyses including capacity analysis, average delay and level of service were not completed as a part of the study. It is recommended that project engineer review these topics during final design to ensure the design will be appropriate for future conditions.

4.4 Safety Analysis

Road design attributes play a significant contributory role in crash occurrence. A tabulation of the crash history, for the years 2016 – 2018, is presented in Table 3 below. The table includes the number and percent of crashes that are expected to be eliminated (correctable) by the change in road alignment and the addition of left turn lanes on Metcalf. A further reduction of certain types of crashes (e.g. right-angle crashes) can be achieved by the installation of a traffic signal. Traffic control signals are not a solution for all traffic problems at intersection and may adversely affect the safety and efficiency of vehicular, bicycle, and pedestrian traffic if installed without justification from traffic and roadway condition. As future developments are planned, it is recommended that each intersection be evaluated for a traffic control signal based on existing conditions at the time.



Table 3: Metcalf Avenue Crash History								
Intersection	Existing Traffic		Crash	Туре		Crash	Corre	ctable
Intersection	Control	Rear End	Right Angle	Left-Turn	Other	Total	Number	Percent
75th	Traffic Signal	33	4	3	10	50	n/a	n/a
76th	Two-Way Stop	5	13	9	0	27	12	44%
77th	Two-Way Stop	9	10	15	6	40	25	63%
77th Ter	Two-Way Stop	11	11	1	3	26	8	31%
78th	Two-Way Stop	7	4	1	4	16	10	63%
79th	Traffic Signal	13	4	3	15	35	8	23%
80th	Traffic Signal	7	2	1	3	13	4	31%
Hamilton/81st	Two-Way Stop	11	2	0	1	14	13	93%
Floyd	Two-Way Stop	4	1	0	2	7	6	86%
Marty/82nd	Two-Way Stop	5	3	1	2	11	6	55%

Between the years 2000 and 2019 there were 16 recorded crashes involving a pedestrian along the study section. Accident Severity was reported as one fatal and 15 injury. Nine crashes were at an intersection and seven were at mid-block. Of these, five crashes were addressed with recent modifications at the 80th Street intersection and the construction of a pedestrian signal at 81st Street.

4.5 Existing Land Use

Land along the study's corridor is zoned as multi-use commercial/business/residential. On Metcalf Avenue, land is primarily used for commercial purposes at the ground level with residential space above the commercial area. Recent redevelopment in Downtown Overland Park has expanded to several properties along Metcalf Avenue. Over the course of this study, several properties were redeveloped to be mixed-use commercial and residential space.

4.6 Existing Vertical Alignments

Metcalf Avenue is currently signed for 35 miles per hour. The existing vertical alignment has five crest and four sag vertical curves. All vertical curves are compliant with the guidance set forth by the American Association of State Highway and Transportation Officials (AASHTO) in the 2018 version of A Policy on Geometric Design of Highways and Streets (The Green Book).

4.7 Existing Drainage

Surface water on Metcalf Avenue is currently carried in curb & gutters that flow to setback curb inlets along the roadway into an enclosed storm sewer system. No known drainage issues will be addressed with this study.

4.8 Existing Utilities

The major utilities in the study area are gas, fiber optic, telephone, water, power, and sanitary sewers. These utility lines are shown on the drawings in the Metcalf Avenue Preliminary Plans. The proposed corridor utilities are described as follows:

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Gas lines in the area are served by two different companies. Magellan has an 8" pipeline not currently being used running through the project area mostly on the west side of Metcalf Avenue within City right of way. As this line is unused, there will be no need to relocate it.

The other gas within the project limits is owned by Kansas Gas Service. This gas line exists on both sides of Metcalf Avenue. This line sits behind the existing curb on the east side of Metcalf Avenue from 83rd to 78th Street. At 78th Street to the north terminus of the project the line sits behind the existing curb on the west side of Metcalf Avenue. The line on both sides of the street primarily exists within the City right of way. This gas line will need to be relocated to within the proposed utility corridor. As this gas line sits within the existing right of way, the necessary relocations will be at the owner's expense.

Fiber is provided by several entities within the project limits and is located primarily on the east side of Metcalf Avenue, partially within and partially outside of City right of way. MCI provides fiber toward the south end of the project between 82nd and 80th Streets between the curb and sidewalk. Google provides fiber across the north side of the 79th Street intersection. AT&T provides fiber across the north side of the 80th Street, 77th Street and 76th Street intersections as well as between 77th Terrace and 77th Street on the east side of Metcalf Avenue behind the sidewalk. SureWest provides fiber along Metcalf Avenue from 83rd Street to 79th Street on the east side behind the curb. The City also has fiber along Metcalf Avenue from 83rd Street to 79th Street on the east side behind the curb. Much of this aerial fiber will need to be relocated and moved laterally several feet to fit within the proposed utility corridor. Since the fiber is within existing right of way, it will be relocated at the owner's expense. This also includes the fiber owned by the City, whose costs are detailed in Table 6.

Water mains within the project limits, owned by WaterOne, range in size from 6" to 12" pipes. The mains are located underneath the right southbound lane from 83rd to 78th Streets. At 78th Street the water shifts across the intersection to underneath the right northbound lane through the north project terminus. The WaterOne mains are within City right of way and estimated to be approximately 3.5-feet deep. The water main will keep its existing pattern of being on the west side south of 78th Street within the proposed utility corridor.

The existing water mains are ageing and experience frequent breakages. The specific section that requires replacement is between 75th and 79th Streets. WaterOne has expressed interest in investing to replace this section and relocating in coordination with this this project. The relocation of the water main to be within the proposed utility corridor will follow the existing pattern of being west of Metcalf Avenue south of 78th Street and east of Metcalf Avenue north of 78th Street.

Cable and Telephone lines along the Metcalf Avenue project corridor are provided by AT&T and are not located consistently along the project corridor. The telephone lines are typically buried 4-feet and exist primarily on the east side of Metcalf Avenue from Marty Street to 79th Street and 75th to 74th Streets. Additionally, the telephone lines cross Metcalf Avenue at Marty Street, Hamilton Drive, 80th Street, 78th Street, 77th Street, 76th Street and 74th Street. Much of the cable and telephone lines adjacent to Metcalf Avenue will need to be relocated at the owner's cost because it is within existing right of way. This relocation will require lateral movement several feet to fit within the proposed utility corridor,

Power lines along the corridor are owned by Evergy. The poles that connect these overhead lines are primarily on the east side of Metcalf Avenue and are located between the existing curb and sidewalk within City right of way. Power lines are buried between 82nd Street and 80th Street in

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front of the Avenue 81 and Avenue 80 properties. This section of buried power is to remain buried for this project. The intent of the City is to bury the remainder of the power lines within the project limits similar to in front of these properties. The City anticipates needing to invest funds to ensure the transition from overhead to buried power, see details in Table 7. The power lines will be relocated to between the proposed sidewalk and curb on the east side of Metcalf Avenue.

Wastewater within the county is provided by Johnson County Wastewater. The 8" mains within the project limits are primarily found on the west side of Metcalf Avenue underneath the existing curb and southbound lanes within the City right of way. Johnson County Wastewater estimates these mains to be 8-12' deep. The existing wastewater lines will remain in place for the proposed improvements to Metcalf Ave.

Most utilities within the project limits exist within City right of way and run parallel to Metcalf Avenue. As such, many of these utilities will be disrupted during construction. The proposed area for relocations will be in the tree lawn/flex space and underneath the sidewalk on either side of Metcalf Avenue. This would allow for utilities to access their facilities with minimal disruption to traffic and minimal repairs to any new features. This utility corridor will recommend following the existing pattern of utilities on their respective sides of Metcalf Avenue. For full details on the proposed utility corridor, see the Metcalf Avenue Preliminary Plans.



It is recommended that utilities bury underground features a minimum of 2 feet below the surface with most being buried at least 3-4 minimum below the surface. Most utilities do not have any planned work or relocations along the project with the exception of WaterOne. It is recommended that one of the first steps of final design be to meet with utility owners. This early coordination of their anticipated relocations will help reduce construction delays.

5.0 Preliminary Design

The design of Metcalf Avenue is in accordance with the current editions of: AASHTO's A Policy on Geometric Design of Highways and Streets, the Kansas Department of Transportation's (KDOT) Design Manual and Standard Specifications, the Overland Park Municipal Code and the Overland Park Design and Construction Standards.



5.1 Design Criteria

The criteria set forth for the design of Metcalf Avenue is shown below in Table 4.

Table 4: Design Criteria	
DESIGN CRITERIA	METCALF AVENUE
2019 AADT	34,413
Functional Classification	Thoroughfare
Percent Trucks	2.3%
Design/Posted Speed (mph)	35
Clear Zone	14'
Typical Section	110' R/W
Lane Width	11'
Number of Through Lanes	4
Cross slope	2%
Median	16'
Inside Curb & Gutter	Туре Е, 18"
Outside Curb & Gutter	Modified Type B, 18"
Flex Space	6'
Tree Lawn	8'
Sidewalk	8'
Min Shy Dist. to Building Face	2'
Right of Way Width	110'
Geometrics	
Intersection Radius	30'
Horizontal Radius (min.)	525'
Maximum PI Deflection	0°30'0"
Profile	
Minimum Grade	1%
Maximum Grade	6%
K-Value (min)	
Sag Vertical Curve	49
Crest Vertical Curve	29
Minimum Sight Distance	250'



5.2 Proposed Typical Section

The proposed typical section for Metcalf Avenue shown below is provided by the Overland Park Downtown Form Based Code. It utilizes four 11-foot lanes, a 16-foot median, 14-foot tree lawns/flex space, 8-foot sidewalks and 18" curb and gutter. The proposed section is 110 feet wide, with a two-foot "dooryard" from the edge of right of way to the face of buildings.



Although there is a median on the Downtown Form Based Code typical section, it was important to consider the access that would be allowed at each of the cross streets within the project limits. There are four existing traffic signals within the study corridor: 75th Street, 79th Street, 80th Street and 83rd Street. The study shows the City's plans for future traffic signals at 76th Street, 77th Street, 78th Street, 81st Street and 82rd Street. In accordance with City policy, these signals will only be considered once traffic counts warrant them at each specific location.

- 75th Street
 - Realign Marty Street north of 75th Street to align with Floyd Street
 - Keep existing lane configuration at intersection
- 76th Street
 - Show median opening with full access and left turn lanes on Metcalf
 - Show future signal
- 77th Street
 - Show median opening with full access and left turn lanes on Metcalf
 - Show future signal
- 77th Terrace
 - \circ Show median opening with full access and left turn lane on Metcalf
- 78th Street
 - \circ Show median opening with full access and left turn lanes on Metcalf
 - Show future signal
- 79th Street
 - Remove the southbound right turn and eastbound right turn lanes
 - 80th Street
 - Remove eastbound right turn lane at 80th Street
- 81st Street
 - Show median opening with full access and left turn lanes
 - Show future signal
- Floyd Street
 - Optional removal of existing Floyd Street and realign proposed Floyd Street with 81st Street
- Hamilton Drive
 - Show optional removal of existing Hamilton Drive
- 82nd Street
 - Show median openings with left turn lanes
 - Show future signal
 - $\circ~$ Optional removal of existing Marty Street and realign proposed Marty Street with 82^{nd} Street
- Overland Park Drive
 - Optional removal of existing Overland Park Drive and realign proposed Overland Park Drive to meet Metcalf Avenue at 90°

This guidance is reflected in the Metcalf Avenue Preliminary Plans

TREKK also completed a sight distance analysis along the corridor. It was determined that the various median breaks for intersections increases the overlap of sight distance triangles on Metcalf



within the project limits. This restricts the amount of landscaping or other aesthetic items allowed on the median.

Between 75th Street and 79th Street and 80th Street to 83rd Street, no items of any significant height (above that which grass or bricks would provide) should be allowed in the median. These stretches in particular present such restrictions due to the median openings every block with no current signalization. The section of roadway between 79th Street and 80th Street would allow for some landscaping and aesthetic items in the median since both intersections are signalized.

Sight distance requirements also will restrict the amount of landscaping and aesthetics that will be permitted near unsignalized intersections. It is recommended that these features be placed between the curb and sidewalk near midblock locations. Near midblock locations along Metcalf is where the unsignalized sight distance triangles no longer overlap, indicating that the area is available for improvements without limiting sight for drivers. Landscaping and other aesthetic items are encouraged near signalized intersections due to the lower necessity of sight distance that the signal provides. Full sight distance details and restrictions for landscaping can be found in Appendix B.

5.3 Proposed Right of Way

As displayed on the typical section, the proposed right of way is 110 feet wide, centered on the proposed alignment. In areas with retaining walls, a 2-foot permanent easement will be acquired to provide access for maintenance. Temporary easements are anticipated along most properties to perform construction activities.

5.4 Proposed Horizontal Alignment

TREKK developed several alignments for the City to evaluate, including the existing section line, a best fit alignment between existing buildings and an alignment optimizing recently redeveloped properties along Metcalf Avenue. The City evaluated impacts to properties and buildings as well as driver experience and equity along the corridor for property owners and renters.

The City determined the existing section line was the most appropriate choice for a horizontal alignment along Metcalf Avenue. This alignment combines several tangent sections with horizontal points of intersection (P.I.) at 79th Street and 75th Street. The angle at these P.I.s falls within the allowable maximum deflection angle.

Per the City's Regulating Plan, several existing side streets intersecting Metcalf at sub-optimal angles are shown as optional relocations along the project corridor. Along Metcalf Avenue, Overland Park Drive, Marty Street, and Floyd Streets are to be realigned to intersect Metcalf Avenue at 90-degree angles. Marty Street will be altered to align with 82nd Street and Floyd Street will be realigned to meet 81st Street. Near Floyd Street, Hamilton Drive will be abandoned.

In 2018, KCATA completed a study at the 75th Street and Metcalf Avenue Intersection. The KCATA study developed two concepts for how to improve operations at the intersection. Final Concept A is the "No Right-of-way Impacts" option while Final Concept B is the "Right-of-way Impacts" option. Some of the recommended design changes are included in both options. Many of the design changes recommended in the KCATA study are outside of the scope of this study and were not addressed either way. For example, a mobility hub was envisioned on the southeast corner of 75th



Street and Metcalf on private property. This concept can be explored further should redevelopment take place at this location in the near future.

This Metcalf Avenue study, in general, incorporates proposed elements from Final Concept B of the KCATA study. The main element of Final Concept B incorporated in this study is that Marty Street will be relocated to align with Floyd Street on the south side of 75th Street. The City will also limit access at this intersection to improve system operations. This existing intersection, shown below, is within 350 feet of the busy 75th Street and Metcalf Avenue intersection, which creates many operational problems. To alleviate this, the City proposes to limit access at the Marty Street/Floyd Street and 75th Street intersection. Left turns will only be allowed from 75th Street to Marty Street/Floyd Street and left turning storage will be optimized for both this intersection and at 75th and Metcalf Avenue.



5.5 Proposed Vertical Alignment

The proposed vertical alignment closely follows the existing profile with five crest vertical curves and four sag vertical curves since the existing profile meets the AASHTO guidelines. The proposed profile follows the existing profile but sits slightly above the existing surface in most places to accommodate the wider section. The adjusted profile will help maintain cover for underground utilities and minimize necessary grading or retaining walls to tie improvements into existing ground. The proposed profile also varies slightly from the existing profile in order to comply with the project's design criteria and to bring Metcalf Avenue up to current standards.



5.6 Proposed Drainage

Given the proposed section is wider than the existing section, all curb inlets on Metcalf Avenue will need to be replaced as part of this project. A drainage analysis was not completed as part of this study to assess the condition or capacity of the existing storm sewer system. As the design process proceeds, further consideration should be given to modifying or replacing the existing storm sewer system.

5.7 Retaining Walls

Several retaining walls will be needed within the project limits. The City's standard Integral Sidewalk Retaining Wall (ISRW) was primarily used for these walls. This standard allows cut walls up to three feet in height. Fill walls were also used in scenarios where improvements are above existing ground. In these situations, a fence will need to be placed on top of the walls to keep pedestrians safely within the pedestrian path. Additionally, a larger, non-ISRW wall will be needed in the southwest quadrant of 75th Street and Metcalf Avenue to replace the existing retaining wall that measures up to seven feet tall. Since this is not an integral wall, space was provided between the sidewalk and the wall for construction and maintenance.

All retaining walls will need to be constructed within existing right of way. This means that in areas with retaining walls will need to have the sidewalk shifted in and the tree lawn/flex space reduced. Additionally, all fill retaining walls will require a two-foot permanent wall easement. This will allow for enough space to construct the wall footing and for future maintenance.

For this study, grading beyond the proposed right of way was kept to a minimum based on existing land use and conditions. For example, if tying into a parking lot, a retaining wall would be used rather than grading and reconstructing that parking lot to tie in. This study took this unique approach since the study contents are to be utilized as a planning document for the corridor to be redeveloped.

Although these retaining walls are shown on the plan, the City prefers to minimize the number of walls along the corridor. It will be required for future development along the project limits to include grading or improvements that tie into the top back of sidewalk elevation to eliminate the need for any walls. Walls shown in the plans represent what would be necessary to tie in to current Metcalf Avenue properties without any development.

5.8 Historic Considerations

Initial investigation of the Kansas State Historical Society (KSHS) indicated there are no identified historic sites within the project limits so there should be no impact to properties listed on the State and National Register of Historic Places. It is recommended that further investigation be completed during final design.

5.9 Environmental Considerations

The United States Department of the Interior, Fish and Wildlife Services should be contacted during final design to verify that this project poses no impact to threatened or endangered species.



5.10 Permitting

Permits will be required prior to the start of construction on this project. It is recommended that the project engineer review permitting requirements during final design to ensure the proper permits are acquired.

6.0 Opinion of Probable Costs

Approximate quantities have been calculated to determine the estimate of project construction cost including potential utility relocations and right of way acquisition. The total project cost includes anticipated costs for additional engineering, City administration costs and costs for construction phase services.

Table 5: Summary of Estimated Costs							
-	ltem	Totals					
1	Construction Costs*	\$12,284,688					
2	Estimated Change Orders	\$ 614,234	5% of Constsruction				
3	Engineering/Survey	\$ 1,474,163	12% of Construction				
4	Inspection	\$ 368,541	3% of Construction				
5	Material testing	\$ 122,847	1% of Construction				
6	Project Administration	\$ 368,541	3% of Construction				
7	Legal Publications	\$ 122,847	1% of Construction				
8	Ownership Certificates/Title Reports	\$ 61,423	0.5% of Construction				
9	R/W Acquisition	\$ 17,027,800					
10	Utility Relocation**	\$ 2,520,000					
11	Engineering During Construction (EDC)	\$ 122,847	1% of Construction				

* Based in 2020 dollars

** See Utility Relocation Costs



6.1.1 Construction Costs

Table	6: Summary of Estimated Costs					
ltem	Description	Estimated Quantity	Units	ι	Jnit Price	Total
1	Clearing and Grubbing	1	LS	\$	75,000	\$ 75,000
2	Removal of Existing Structures	1	LS	\$	100,000	\$ 100,000
3	Contactor Furnished Surveying and Staking	1	LS	\$	100,000	\$ 100,000
4	Unclassified Excavation	25620	CY	\$	10.00	\$ 256,200
5	Compaction of Earthwork	2480	CY	\$	1.50	\$ 3,720
6	9" Concrete Pavement NRDJ	41240	SY	\$	75.00	\$ 3,093,000
7	6" Aggregate Base Course	41240	SY	\$	7.00	\$ 288,680
8	8" Fly Ash Treated Subgrade	41240	SY	\$	5.00	\$ 206,200
9	ADA Ramps	1320	SY	\$	150	\$ 198,000
10	Multiuse path	3060	SY	\$	45	\$ 137,700
11	Integral Sidewalk Retaining Wall (ISRW)	1070	СҮ	\$	900	\$ 963,000
12	Retaining Wall	2080	SF	\$	75	\$ 156,000
13	Fence (retaining wall)	3190	LF	\$	70	\$ 223,300
14	Curb & Gutter, Modified Type B (18")	10690	LF	\$	30	\$ 320,700
15	Type E Median Curb	9620	LF	\$	20	\$ 192,400
16	Concrete Median Nose	17	EACH	\$	2,000	\$ 34,000
17	Concrete Entrance Pavement	6030	SY	\$	70	\$ 422,100
18	Lighting	1	LS	\$	800,000	\$ 800,000
19	Traffic Control	1	LS	\$	500,000	\$ 500,000
20	Traffic Signals (79th & 80th)	2	EACH	\$	350,000	\$ 700,000
21	Permanent Pavement Marking and Signing	1	LS	\$	100,000	\$ 100,000
22	Remove and Reconstruct Transit Shelter	2	EACH	\$	200,000	\$ 400,000
23	Sodding	19540	SY	\$	6	\$ 117,240
24	Drainage	1	LS	\$	500,000	\$ 500,000
25	Erosion Control	1	LS	\$	250,000	\$ 250,000
26	City Owned Fiber Relocation	1	LS	\$	100,000	\$ 100,000

[Subtotal	\$ 10,237,240
	20% Contingencies	\$ 2,047,448
Total Estimated :	2020 Construction Cost	\$ 12,284,688



6.1.2 Right of Way Costs

Right of way and easements will be required for this project. All corridor property prices were determined using nearby property sale research. No appraisals were completed on any properties within the project limits for this study. The total right of way price shown in Table 5 is based on approximations of estimated value based on nearby properties.

The right of way and property acquisition costs assume that all properties adjacent to Metcalf Avenue conform to current setback requirements. However, there are various properties that may be in non-conformance. Once the project moves to the final design phase each property's actual conformance status will be determined and may impact the right of way costs.

6.1.3 Utilities Relocation Costs

Based on preliminary information, most of the corridor utilities will need to be relocated to accommodate the new typical section and fit within the defined utility corridor. No subsurface investigations were completed during this study to verify any utility locations or depths. Utilities shown on the plans were obtained in the field using Kansas One-Call services and supplemental maps provided by utility owners. During final design, investigations should be completed to verify that utilities have not been relocated from this record.

Table 7: Summary of Estimated City-Incurred Utility Relocation Costs								
ltem	Description	Estimated Quantity	Units	Unit Price		Total		
1	Buried Power (Evergy)	5040	LF	\$ 500	\$	2,520,000		

Total Estimated 2020 Utility Relocation Cost	\$	2,520,000
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