



SOUTHWEST INFRASTRUCTURE & **PLANNING STUDY**

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City of Des Moines Activity ID: 01-2020-005
FHU Reference No. 19-601-01

February 2022

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Executive Summary

What is the Southwest Infrastructure & Planning Study?

This infrastructure and planning study represents efforts by the City of Des Moines to coordinate transportation improvements that will support current and future land uses in the southwest portion of the community. The study supports the existing comprehensive plan (*PlanDSM*) and transportation plan (*MoveDSM*) which provide the long-term vision and goals of the community. *MoveDSM* describes how the transportation network organizes options for every citizen in every stage of life to get around Des Moines. It also communicates the roadway typologies and their purpose for supporting adjacent land uses with the outcome being a transportation network that is usable and safe for everyone. Significant changes to land use plans can result in the need to re-evaluate associated portions of the roadway network, while new data and public input can inform the need to address safety concerns and improve alternative modes of travel.

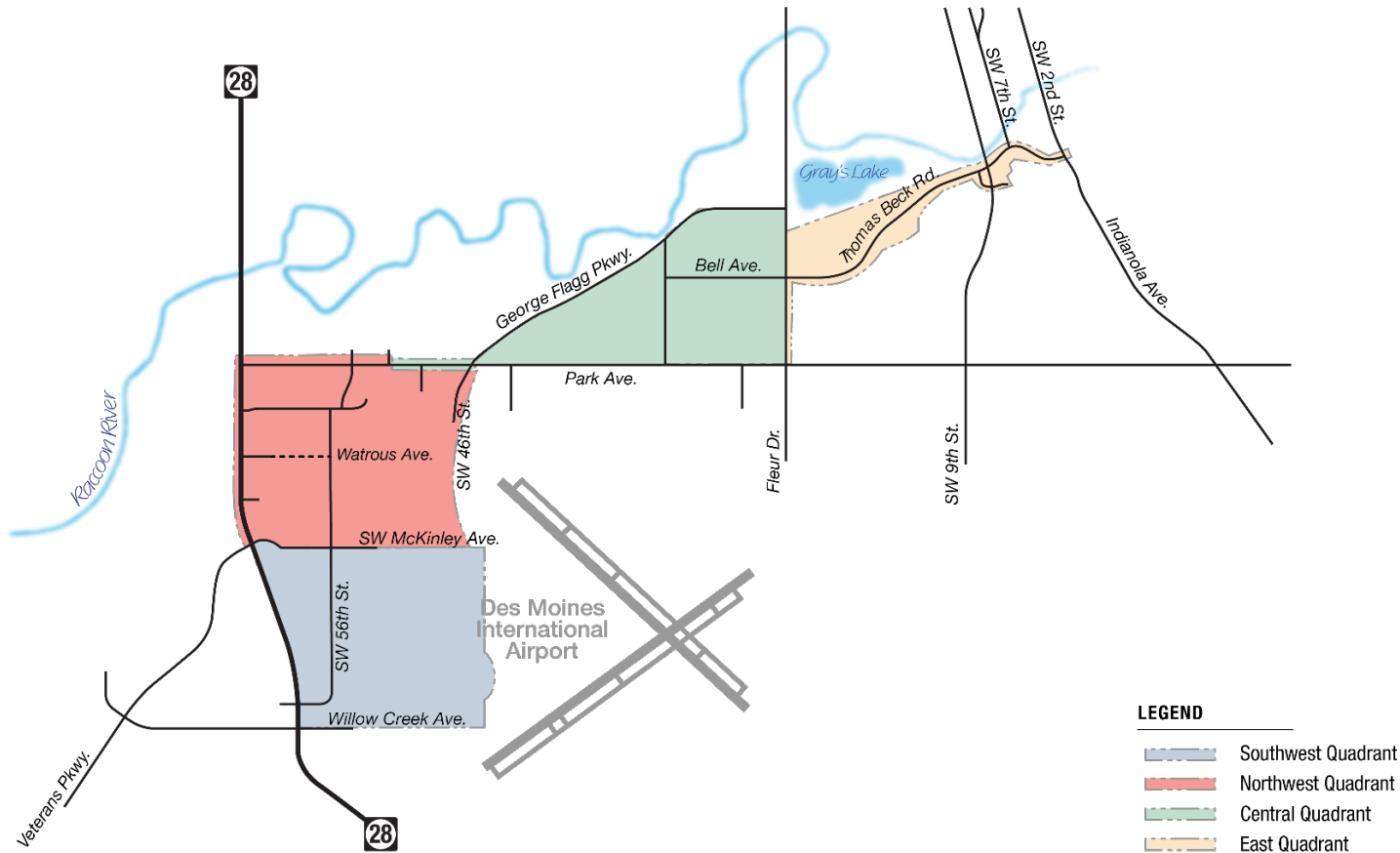
A Major Land Use Change

The *Des Moines International Airport Terminal Area Concept Plan* began to change in 2016. The vision for a new terminal located in the southwest quadrant of the community that would be served by a major new roadway, the Southwest Connector, was revised. This land use decision was based on many factors, but one result was a major question of what transportation improvements would be needed to support the land uses that would fill in the area instead. In addition to serving the needs of the airport terminal, the planned Southwest Connector would have made substantial changes to the roadway network between Park Avenue and SW 7th Street, facilitating traffic in and out of downtown Des Moines. Many of these changes were thought to be necessary for safe and efficient traffic flow, but traffic volumes did not justify constructing the major roadway and the estimated \$215 million project was removed from the Des Moines Long Range Transportation Plan. The *Southwest Infrastructure & Planning Study* was initiated in 2020 to study and help answer the resulting questions.

The Planning Study Process

The *Southwest Infrastructure & Planning Study* process was completed over approximately 18-months. City staff members joined with a stakeholder group of 28 community representatives who provided important guidance for the study findings and recommendations. The 31 advisory committee members of the *South of Gray's Lake Master Plan* met concurrently and provided continuity between the two efforts. Alternatives were developed based on the input of these individuals and refined to share with the public during one open house. Open house and stakeholder interview input led to the selection of recommended alternatives, additional considerations associated with recommended roadway projects, and recommendation for additional studies that could be completed following this planning process.

Figure ES-1. Southwest Infrastructure and Planning Study Area Vicinity Map



- LEGEND**
- Southwest Quadrant
 - Northwest Quadrant
 - Central Quadrant
 - East Quadrant



NOTE: Drawing Not to Scale



Southwest Infrastructure Plan - PLANNING 19-601 2/10/22

Project considerations and recommendations were communicated as a whole and organized around four study quadrants (**Figure ES-1**). This method of organizing the study was helpful for the project team to understand the network parts, neighborhood impacts, and the major influences that inform transportation decisions. It also helped the stakeholder group and public with the process of providing input about what affects them the most. A summary of the context-driving considerations of each quadrant is summarized below along with the roadway and alternative transportation strategies that are reflected by project recommendations. The complete list of recommendations and implementation steps is provided with the study.

The Southwest Quadrant

This area is bounded by IA Hwy 28, SW McKinley Avenue, SW 42nd Street, and Willow Creek Avenue. Less than half of the 855 acres in this quadrant is privately owned. The area offers a rural context characterized by rolling terrain with steeper slopes as it approaches the alignment of Frink Creek and the Great Western Trail. Existing land use is zoned for Business Park, Neighborhood Mixed Use, and Airport. The Des Moines International Airport property preserves a significant amount of land for a future runway addition and runway protection zone that overlays the intersection of SW McKinley Avenue and SW 56th Street.

Roadway Strategy: Airport development decisions are not imminent but will have the strongest influence over timing of other land development decisions in this quadrant. The current intersection of SW McKinley Avenue and SW 56th Street will be maintained until a new airport runway is programmed for construction which would force the western realignment of the intersection. Utility expansion into this area would occur with airport development decisions also, so private land development will be largely tied to airport development timing. The Industrial and Business Park development pattern will fill in along IA Hwy 28 and SW 56th with truck circulation expected to prominently support new businesses located east of SW 56th Street. Traffic operations recommendations were also produced from the study.

Alternative Transportation Strategy: The Great Western Trail is a prominent route serving grade separated circulation for bicycles and pedestrians. If a grade separated greenway with Frink Creek approximately 80 feet below the new runway is prohibited as anticipated, the realignment will circulate existing active transportation around the airport runway and reconnect to the trail alignment along SW 46th Street. On-street bicycle lanes were proposed instead of a shared use path from Great Western Trail to SW 56th Street because of the proximity to the Great Western Trail Realignment, the connectivity needed to an IA Hwy 28 planned trail, and an existing crossing to the Veterans Parkway sidepath. Fixed route transit services are not anticipated to serve this area, though first and last mile support can be achieved by filling in the recommended sidewalks, bike facilities, and trails recommended.

Table ES-1. Southwest Quadrant Roadway Projects

Southwest Quadrant Roadway Projects	Cost Estimate (2021 \$M)	Recommended Typology
- Willow Creek Avenue	\$3.854	Assign Industrial/ Business Park
- New Alignment <ul style="list-style-type: none"> o Great Western Trail to New Alignment Connection o New Alignment with Mountable Curb Bike Lanes 	\$9.324	Assign Industrial/ Business Park
- SW 56th Street – Leland Avenue -SW 56th Street – SW McKinley Avenue <ul style="list-style-type: none"> o 56th Street Side Path – South 	\$6.287	Modify from Local to Industrial/ Business Park

The Northwest Quadrant

The area is bounded by IA Hwy 28, Park Avenue west to the rail spur line, then south of Park Avenue east to SW 46th Street, and north of SW McKinley Avenue. The 780 acres within the quadrant includes large parcels of undeveloped property that were anticipated to develop around the previous alignment of the Southwest Connector. The future land use plan for the area has not been modified with the removal of the planned Southwest Connector so the future roadway network will support a mixture of Business Park, Low Density Residential, Parks and Open Space/Development Control, and Airport. Frink Creek and the Great Western Trail run along the east boundary of the quadrant.

Roadway Strategy: Through traffic circulation will continue to be directed to the intersection of IA Hwy 28 and Park Avenue. Single family residential housing is actively being developed along the east side of SW 56th Street. Business Park development will be anticipated east of SW 56th, but no roadway connection to SW 46th Street is recommended due to conflicts with the existing runway protection zone, grade and drainage challenges adjacent to Frink Creek, and an intention to prevent cut-through traffic. Traffic operations recommendations were also produced from the study.

Alternative Transportation Strategy: A grouping of sidepaths and trails will provide connectivity to and through this area. A trail along the west side of IA Hwy 28 will connect north to an improved crossing of the Raccoon River when the current bridge is reconstructed. An east-west sidepath would be constructed along the north side of Park Avenue and it would connect to a north-south sidepath constructed on the east side of SW 56th Street. The Great Western Trail approaches the intersection of Park Avenue from the south to cross at-grade. A realignment of the approach to Park Avenue is recommended adjacent to Frink Creek to provide a safer crossing for bicyclists and pedestrians. A connection to the Great Western Trail is recommended with a new trail between SW 46th

Street and SW 42nd Street. Fixed route transit services are not anticipated to expand into this area, though first and last mile support can be achieved by filling in the recommended sidewalks, sidepaths, and trails.

Table ES-2. Northwest Quadrant Roadway Projects

Northwest Quadrant Roadway Project	Cost Estimate (2021 \$M)	Recommended Typology
- Watrous Avenue Connection to SW 56 th Street	\$1.917	Assign Community Residential
- SW 56th Street North of SW McKinley Avenue <ul style="list-style-type: none"> o 56th Street Side Path - North 	\$6.483	Assign Community Residential

The Central Quadrant

The area is bounded by the Northwest Quadrant along Park Avenue, George Flagg Parkway, and Fleur Drive. It represents a significant portion of the developed Southwestern Hills neighborhood with interior single family residential mixed with Neighborhood Mixed Use, and Business Park along Park Avenue, Bell Avenue, and George Flagg Parkway. Des Moines Water Works Park access is provided from this area which also includes the major intersection of Park Avenue/George Flagg Parkway/SW 46th Street. Previous plans to construct a Southwest Connector would have addressed increasing traffic volumes and safety considerations at this intersection as well as reduced traffic loading onto Park Avenue east of George Flagg Parkway so that it could support the on-street bike network.

Roadway Strategy: Major transportation network improvements will support long-term traffic operations and safety between the developing portions of the area located southwest of Park Avenue with the developed and potential redevelopment areas along Bell Avenue/Thomas Beck Road east of Fleur Drive to downtown Des Moines. Raised medians along Park Avenue provide access control of some existing driveways. George Flagg Parkway should be realigned, and the grade raised above the floodplain to tie into proposed roundabout intersections with Park Avenue at SW 46th Street and Bell Avenue at SW 30th Street. Widening Bell Avenue to Fleur Drive and constructing the two roundabout intersections will best support the intent to maintain Park Avenue as a Community Residential typology and divert traffic east of George Flagg Parkway. This widening will impact adjacent properties and require access controls. Completion of these improvements will also allow the City of Des Moines to relocate the current truck route to a realigned George Flagg Parkway, tying into Bell Avenue at SW 30th Street.

Alternative Transportation Strategy: The intersection reconstruction at Park Avenue/George Flagg Parkway/SW 46th Street will provide the ideal opportunity to construct the Park Avenue grade separated undercrossing of Frink Creek/Great Western Trail Greenway. The projects should be funded and completed simultaneously because the

undercrossing would support the intersection safety considerations and minimize traffic disruptions. A sidepath running along the north side of Park Avenue would then connect to this trail undercrossing. The improved crossing and roadway alignment of George Flagg Parkway will also enable the Great Western Trail Connector to be improved along the existing alignment and maintain connectivity to the Bill Riley Trail and Des Moines Water Works Park. Existing transit service to this area will be maintained. On-demand transit services may support the needs of the area beyond the current fixed route.

Table ES-3. Central Quadrant Roadway Projects

Central Quadrant Roadway Project	Cost Estimate (2021 \$M)	Recommended Typology
- Park Avenue Improvements <ul style="list-style-type: none"> o Park Avenue Sidepath 	\$1.994	Modify from Community Residential to Community Mixed Use
- Roundabout Intersection at Park Avenue / George Flagg Parkway / SW 46th Street <ul style="list-style-type: none"> o Great Western Trail Park Avenue Realignment 	\$6.251 (includes trail grade separation)	Modify from Community Residential to Community Mixed Use
- George Flagg Parkway Realignment <ul style="list-style-type: none"> o Great Western Trail Connector Alignment 	\$14.888	Assign Community Mixed Use
- Roundabout Intersection at George Flagg Parkway / Bell Avenue / SW 30th Street	\$1.322	Assign Community Mixed Use
- Bell Avenue Widening	\$4.584	Maintain Community Mixed Use

The East Quadrant

The area is bounded by Fleur Drive on the west and Indianola Avenue on the east with major connections provided to SW 9th, SW 7th, and SW 2nd Streets leading into and out of downtown Des Moines. Gray’s Lake Park and a proposed constructed wetland bound the north side along with the Raccoon River as the corridor proceeds east. Grays Lake Neighborhood and the South of Gray’s Lake Master Plan area overlay the transportation corridor and connects residential land uses to the south. MacRae Park provides a connecting land use and a shared boundary with Indianola Hills neighborhood where redevelopment opportunities exist along the south side of Indianola Road. Access to parks,

safe connections for neighborhoods, and support for redevelopment opportunities directed the consideration of transportation infrastructure.

The infrastructure study incorporated concurrent planning process for the proposed Gray’s Lake wetland and the South of Gray’s Lake redevelopment area. The wetland study provided technical analysis and conceptual design considerations that confirmed a wetland could feasibly be constructed with a limited footprint and keen focus on long-term maintenance access and funding. The South of Gray’s Lake Master Plan documents a subarea plan for future redevelopment considerations. The document stands on its own, but was informative to evaluating roadway alignments, cross sections, and traffic demand from the preferred development scenario.

Roadway Strategy: Major transportation network improvements will support the roadway design as well as long-term traffic operations and safety along the Bell Avenue/Thomas Beck Road/Indianola Road corridor considering possible redevelopment that may be anticipated to occur in the area. Roadway cross sections will vary between Fleur Drive and Indianola Avenue. Where possible, road narrowing, or road diets are recommended to provide space for active transportation. Traffic demand along SW 9th Street should be included in a SW 9th Street corridor study. A roundabout is proposed on Thomas Beck Road to divide a two and three lane cross section near where redevelopment access may be located. The roadway design is intended to maintain traffic operations while providing a measure of traffic calming that can be supportive of the mixed-use development on either side of SW 9th Street.

Alternative Transportation Strategy: The area is located adjacent to a considerable network of trails on the south side of Thomas Beck Road and Indianola Road as well as east of MacRae Park. The study provides recommendations for specific crossing improvements at SW 9th Street, Thomas Beck Road, and Indianola Road. A road diet is recommended for study and design on Thomas Beck Road between SW 7th and SW 9th Streets to provide space for ADA accessible sidewalks. On the north side of Indianola Road, a trail connection down to Meredith Trail and an east-west side path between SW 7th and SW 2nd Streets are recommended.

Table ES-4. East Quadrant Roadway Projects

East Quadrant Roadway Project	Cost Estimate (2021 \$M)	Recommended Typology
- Thomas Beck Road Improvements <ul style="list-style-type: none"> o Thomas Beck Road Traffic and Transit Operations 	\$5.628	Maintain Community Mixed Use
- Indianola Hills Road Narrowing <ul style="list-style-type: none"> o Indianola Road Sidepath to Martin Luther King Jr. Trail Connection 	\$0.673	Maintain Regional Residential

How to Implement the Study Recommendations

The study documentation and recommendations are intended to be used by the City of Des Moines to prioritize projects for completion. At the City's discretion, coordination to complete projects may be immediate, emerging, or on the horizon. Recommended timeframes may be adjusted due to new data, updated policies, or a combination of factors agreed to by City stakeholders. The study must also recognize that projects may or may not be combined in the manner recommended and that a decision to construct the new Des Moines International Airport runway may not be made during the period of planning considered for this study. The recommended prioritization of projects therefore should be considered flexible.

The documentation and estimation of project cost was completed for the individual projects as an ultimate alignment or improvement. Recommendations are made to address the intended outcomes of this study; the primary outcome of which is to provide an efficient and reliable transportation corridor that is right sized for future traffic demand between the intersection of IA Hwy 28 with SW McKinley Avenue and SW 7th Street with Indianola Road. Additional outcomes supported by this study and that influenced recommended prioritization include:

- Accommodate timing and anticipated form of new development and redevelopment with supportive roadway typology/design, traffic operations, and active transportation infrastructure;
- Eliminate the need for trucks to utilize studied segments not listed as truck routes;
- Fill existing gaps and minimize or remove existing barriers to a safe and accessible active transportation network for Southern Hills, Gray's Lake, and Indianola Hills neighborhoods along the studied alignments; and
- Support natural resources and park plans with a complimenting multimodal transportation network.

Projects identified by this study may be included in the City's Capital Improvement Plan and the Des Moines MPO Transportation Improvement Plan. Similarly, developers may also use the study findings to inform their projects and timing. The implementation section of the study describes the cost assumptions that were used for project recommendations. Project funding options are also described to support the implementation steps that will follow this study.

1. Study Introduction

The decision of the Des Moines International Airport Authority to modify the Terminal Area Concept Plan began in 2016 and led to significant changes in anticipated traffic demand and travel patterns in the surrounding area immediately west of the airport. A 1998 Southwest Diagonal Corridor Study recommended a new transportation facility that would serve both the planned terminal location west of the airport as well as the through traffic planned between the Central Business District of the City of Des Moines and the southwest part of the city near the intersection of Iowa Highway (IA Hwy) 28 and SW McKinley Avenue.

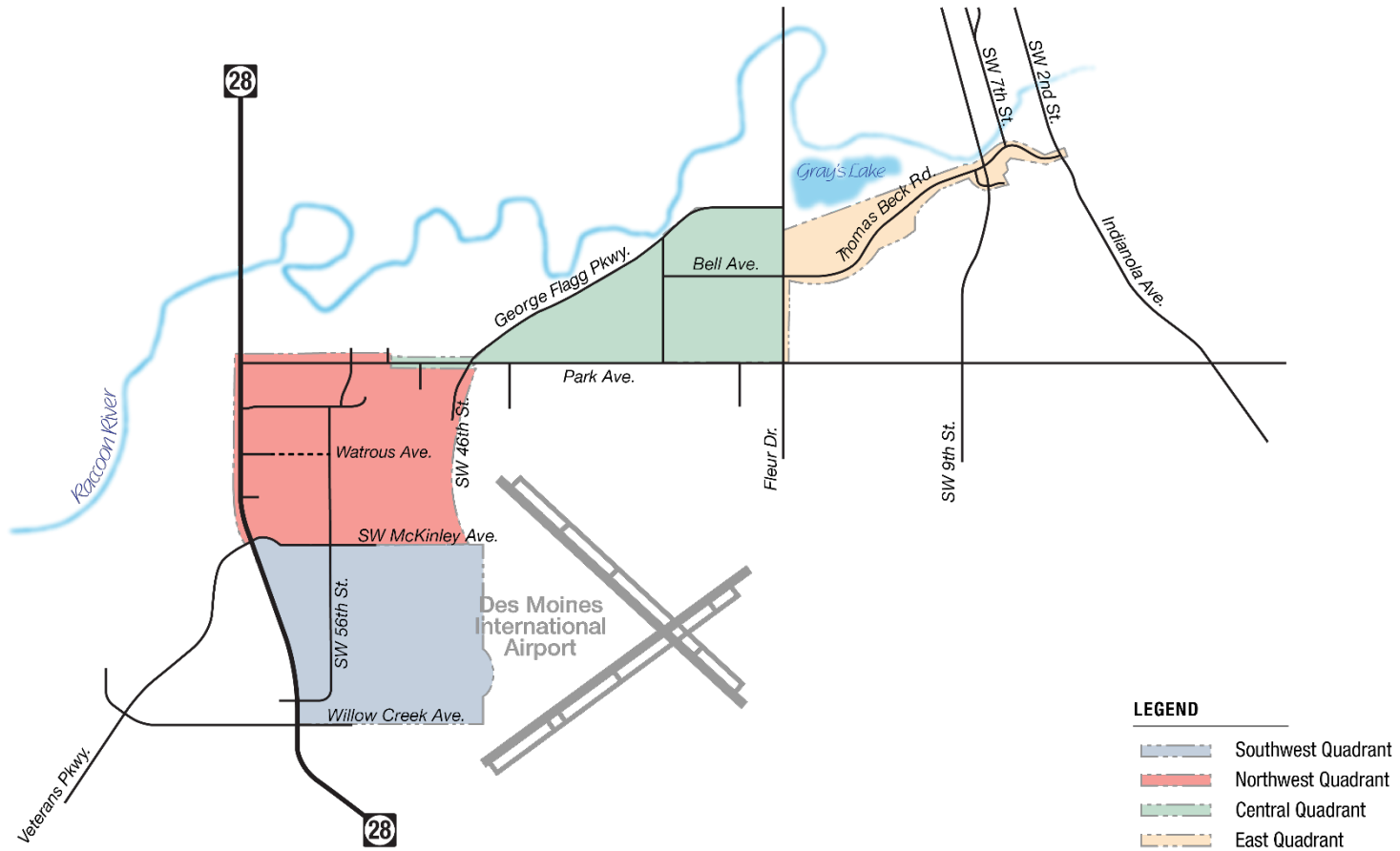
Traffic volumes along Park Avenue and Fleur Drive have increased over time but have not met the 2020 traffic model projections that were anticipated to further support the need for a five-lane divided roadway with a landscaped median and access control. In 2018, the City of Des Moines requested that the Des Moines Area Metropolitan Planning Organization (MPO) remove the Southwest Connector from the Long Range Transportation Plan (LRTP). This meant that the LRTP would no longer be consistent with the City's Transportation Improvement Plan (TIP) and funding would not be available to complete the estimated \$215 million project. The overall goal of this study is to support new and redevelopment within the Study Area (**Figure 1-1**), including capital investment required to upgrade rural roadways to an urban cross section within the new growth areas.

In addition to changing the Terminal Area Concept Plan, other land use and natural resource considerations have become relevant to the outcome of this study. The original corridor would have cut a 150-foot right-of-way through an undeveloped area currently planned for Business Park/Office in the Des Moines Comprehensive Plan. Replacing the diagonal Southwest Connector corridor with an alternative transportation network that requires less right of way would increase opportunities for development within the study area. Limited single family residential development has occurred west of SW 56th Street and the transportation network is expected to support this mixture of uses that may ultimately be bounded on the east by a new airport runway that would impact the current intersection of SW 56th Street and SW McKinley Avenue.

This study document includes:

- Study Introduction details components that were studied to produce the plan.
- Study Approach and Input provides insight into the study process, planning efforts that have influenced past decisions, and modifications to address future conditions.
- The Quadrant Assessment is provided to organize the distinct contexts that make up the study area. The area covers multiple corridors and development patterns that influence recommendations.
- Recommendations provide the intended outcome of public investments and opportunities for support of public projects.
- Implementation organizes the sequence and funding methods to accomplish the recommended projects over time.

Figure 1-1. Southwest Infrastructure and Planning Study Area Vicinity Map



NOTE: Drawing Not to Scale



Southwest Infrastructure Plan - PLANNING 19-601 2/10/22

The alignment of the Southwest Connector had planned to use an abandoned rail corridor between Park Avenue and George Flagg Parkway (previously Valley Drive), continuing under Fleur Drive and along the abandoned Union Pacific railyard right-of-way south of Gray's Lake Park. This later segment was purchased by the City of Des Moines in 2006. The alignment would have continued northeast through the intersection with SW 7th Street where Indianola Road begins. Eliminating plans for the Southwest Connector created two additional questions for land use, transportation, and recreation planners to consider:

1. How would the transportation network need to be improved to accommodate future traffic counts between the intersection of IA Hwy 28/Veterans Parkway/SW McKinley Avenue and the intersection of Indianola Avenue/Indianola Road/SE 1st Street?
2. How would the recommended transportation network support area and neighborhood plans for existing and future land development patterns?

This study organizes transportation and infrastructure information that can be used to support decisions regarding the future redevelopment potential along Thomas Beck Road east of Fleur Drive and, to a lesser extent, to the west along Bell Avenue. This study also considers infrastructure improvements that reflect the adopted 2016 Gray's Lake Master Plan, specifically Area E's and Area F's recreational and functional wetland treatment facility and supporting park improvements within the purchased railyard parcels as well as the multimodal circulation network envisioned by the 2014 Des Moines Water Works Master Parks Plan.

1.1 Study Background Purpose

The purpose of this Southwest Infrastructure and Planning Study is to document current influences on transportation decisions within the study area, evaluate alternatives for supporting existing and future land uses, and determine the future improvements necessary to support local and regional multimodal traffic growth. Recommendations for the future transportation network made by this study will support existing land use, future development and redevelopment, multimodal transportation, and recreational plans within the study area.

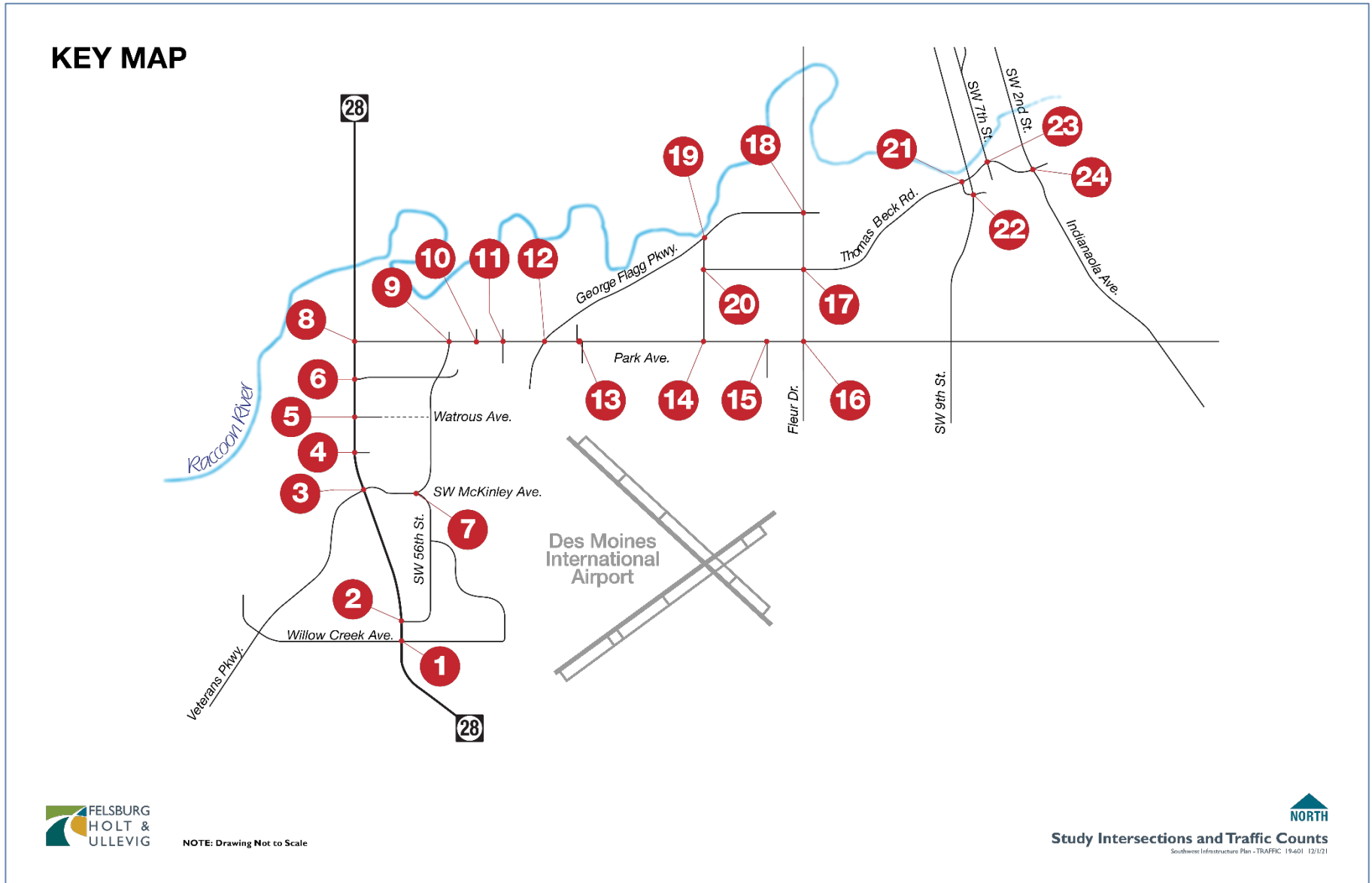
1.2 Study Area

The Southwest Infrastructure and Planning Study area boundary is generally defined by the 24 roadway intersection identified for analysis. The study area is bounded by Iowa Highway 28 to the west and extends east to Indianola Avenue / SW Second Street. George Flagg Parkway and Thomas Beck Road form the northern study boundary with Willow Creek Road forming the southern boundary.

- Seven intersections are studied along Iowa Highway 28
- Eight intersections were studied along Park Avenue
- Five intersections were studied along Thomas Beck Road
- Two intersections were studied along George Flagg Parkway
- One intersection was studied along SW McKinley Avenue
- One intersection was studied along SW 9th Street

These 24 roadway intersections can be seen below on **Figure 1-2**, and they are also listed in **Table 1-1**.

Figure 1-2. Study Intersections and Traffic Counts



The roadway intersections listed in **Table 1-1** are included as part of the transportation infrastructure alternatives analysis:

Table 1-1. SW Infrastructure and Planning Study Intersections

1 – Iowa Highway 28 & Willow Creek Avenue	13 – Park Avenue & SW 42nd Street
2 – Iowa Highway 28 & Leland Avenue	14 – Park Avenue & SW 30th Street
3 – Iowa Highway 28 & Veterans Parkway / SW McKinley Avenue	15 – Park Avenue & SW 24th Street
4 – Iowa Highway 28 & Scout Trail	16 – Fleur Drive & Park Avenue
5 – Iowa Highway 28 & Watrous Avenue	17 – Fleur Drive & Bell Avenue
6 – Iowa Highway 28 & Thornton Avenue	18 – George Flagg Parkway & Fleur Drive
7 – SW 56th Street & SW McKinley Avenue	19 – George Flagg Parkway & SW 30th Street
8 – Park Avenue & Iowa Highway 28	20 – SW 30th Street & Bell Avenue
9 – Park Avenue & SW 56th Street	21 – Thomas Beck Road & Bancroft Street
10 – Park Avenue & SW 54th Street	22 – Bancroft Street & SW 9th Street
11 – Park Avenue & SW 52nd Street	23 – Indianola Road & SW 7th Street
12 – Park Avenue & George Flagg Parkway	24 – Indianola Road / SE 1st Street & Indianola Avenue

Two additional areas of focus are included as part of the overall infrastructure and planning study. First, the railyard property that the City purchased from Union Pacific Railroad in 2006 is located between Gray’s Lake Park and existing developments north of Thomas Beck Road. Determining the feasibility of the constructed wetland as proposed by the adopted 2016 Gray’s Lake Master Plan was the goal of this component of the overall project. Beyond the footprint of the studied parcels, stormwater drainage was studied for the approximately 558-acre watershed upstream of the site that would drain into the future wetland. The wetland infrastructure analysis and recommendations are included as **Appendix C** of this study. **Figure 1-3** illustrates the boundary of the stormwater analysis of the potential wetland location.

Secondly, infill and redevelopment opportunities for the existing area adjacent to Thomas Beck Road could influence recommendations of this study. The City therefore expanded the Southwest Infrastructure and Planning Study to include a South of Gray’s Lake Master Plan to explore future land use alternatives including the option of maintaining the existing zoning conditions. The South of Gray’s Lake Master Plan is included as **Appendix D** of this study. **Figure 1-4** and **Figure 1-5** illustrate the master plan boundary and future land use for the South of Gray’s Lake area.

Figure 1-3. Gray's Lake Wetland Study Area Boundary

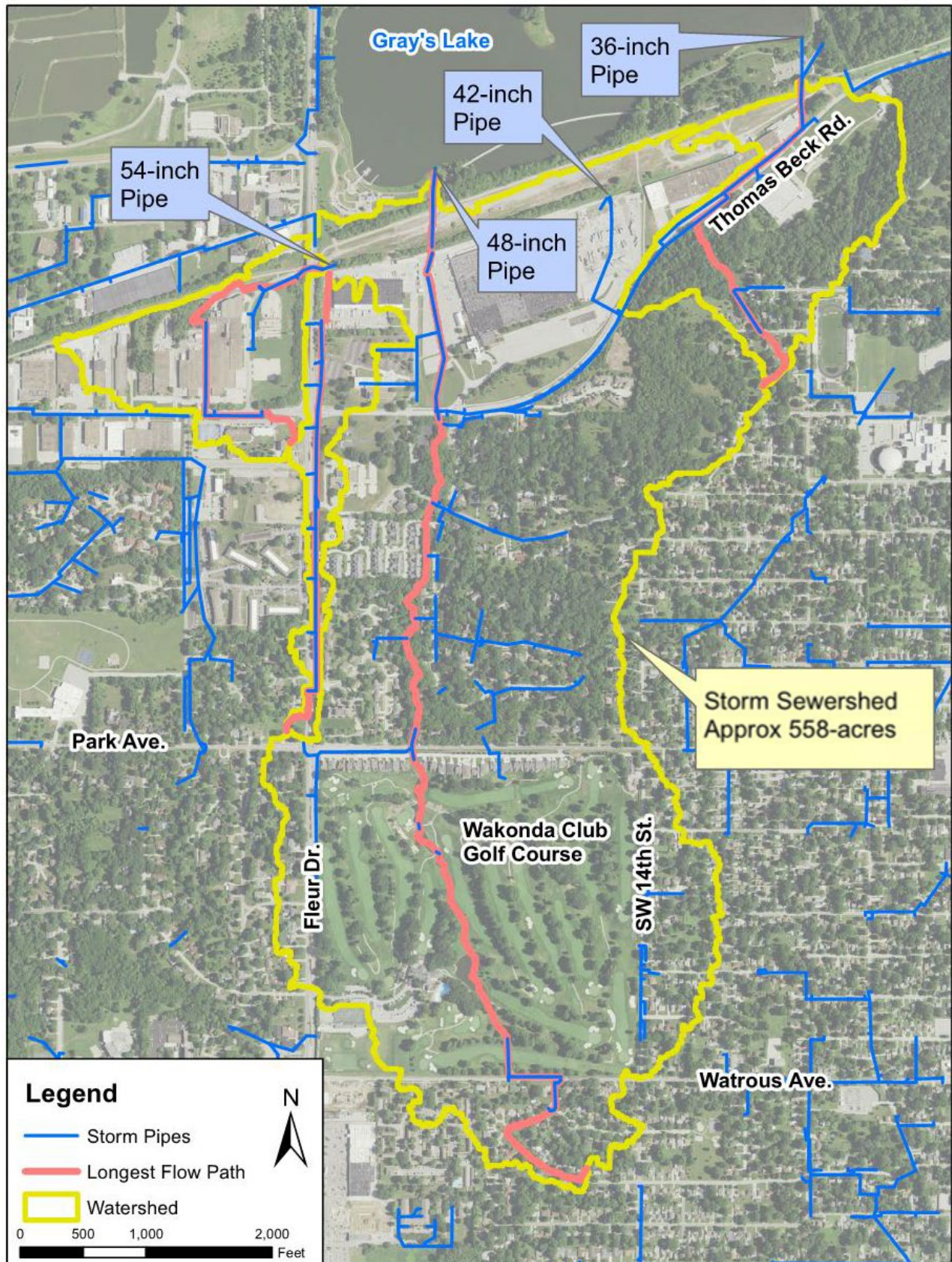


Figure 1-4. South of Gray's Lake Master Planning Area Boundary

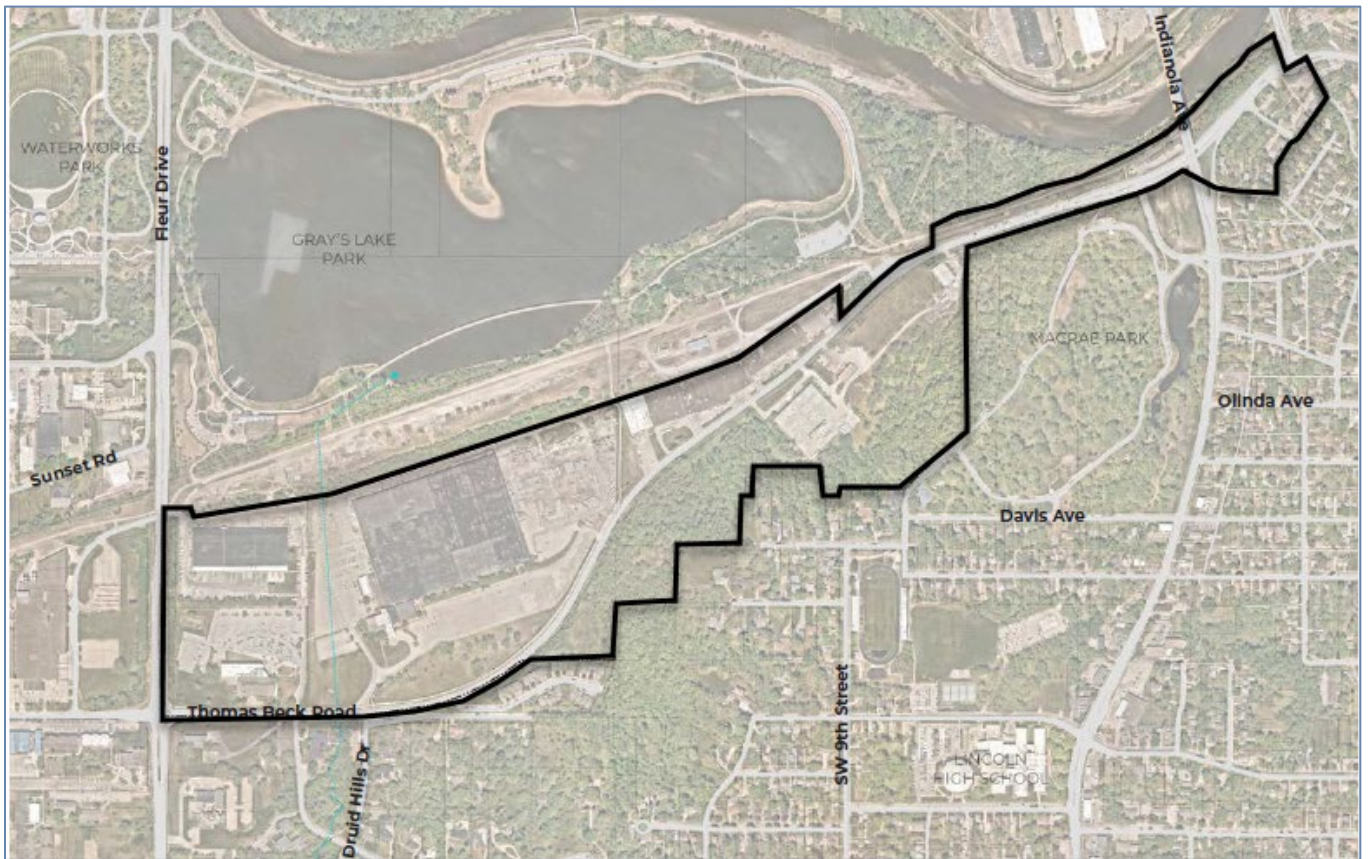


Figure 1-5. South of Gray's Lake Master Planning Area Land Use



1.3 Study Components

The comprehensive study areas described above require future transportation and infrastructure project investments to support anticipated growth and development envisioned by the City of Des Moines, elected officials, project stakeholders, adjacent neighborhoods and the community. To accomplish this outcome, the study approach was aligned with specific components intended to support and guide the purpose and timing of these future investment decisions.



Existing roadways such as George Flagg Parkway and Thomas Beck Road provide important links to the Des Moines Central Business District and are a significant focus of this study.

These components included:

- An updated operations analysis for existing year, interim (2030), and future (2040) traffic projections with recommendations and capital program phasing for roadway transportation system improvements.
- Conceptual cross-sections and planning level cost opinions for new and existing street alignments bound by the project study limits.
- Bicycle, pedestrian, and transit accommodations that can be accomplished in conjunction with roadway infrastructure projects or as separate projects.
- Considerations for water, sewer, and stormwater infrastructure relevant to the recommended roadway improvement projects.
- Technical analysis for evaluation of the feasibility to construct a new wetland in the area identified by the adopted 2016 Gray's Lake Master Plan.
- A land use master plan for the South of Gray's Lake area considering the potential impact on traffic, roadway and infrastructure impacts within the study period.

1.4 Project Stakeholders

Stakeholders for this planning study are comprised of the project management team as well as a group of community leaders, elected officials, and key subject area advisors listed in **Table 1-2**. The following sections briefly describe the composition and collaboration efforts with these stakeholders.

1.4.1 Project Management Team

The project was managed by a team of key representatives from City departments and the consultant team. City representatives provided guidance and direction throughout the study and coordinated information needed for the consultant team to complete their analysis. Project management team members represented:

- City Department Staff from Engineering, Economic Development, and Parks and Recreation
- Consultant Staff from Felsburg Holt & Ullevig and Confluence, Inc.

1.4.2 Stakeholder Group

A stakeholder group with a cross section of community leaders, elected officials, and key subject area advisors (**Table 1-2**) was established to provide helpful input as well as review study findings and recommendations. A series of three meetings were facilitated to provide stakeholders with opportunities to provide input and comments. Two meetings were held virtually with the group while the third meeting was organized with the joint public open house for the infrastructure study and South of Gray's Lake Master Plan in July 2021. Stakeholder Group members designated with an asterisk were also included with the South of Gray's Lake Advisory Committee.

Table 1-2. Study Stakeholder Group

City Manager	Des Moines Water Works
City Council*	Des Moines Water Reclamation Authority
Parks and Recreation Board*	Des Moines Public Schools
Planning & Zoning Commission	Southwestern Hills Neighborhood Association
Urban Design Review Board	Gray's Lake Neighborhood Association*
Public Works	Gray's Lake & Meredith Trail Advisory Committee*
Airport Engineering & Planning	Des Moines Water Works Foundation
DART*	Des Moines Street Collective

1.4.3 Additional Technical Input

The study approach also included 11 individual technical interviews to expand the insight beyond what could be collected during group meetings. In addition to representatives of stakeholders listed in **Table 1-2**, technical interviews were completed with representatives of Parks and Recreation Maintenance and Planning staff, the Nature Conservancy, and Polk County Conservation.

1.5 Relevant Plans and Studies

The study alternatives were developed as a result of removing the Southwest Connector, a five-lane roadway with landscaped median from SW 7th Street to IA Highway 28 (SW 63rd Street) at SW McKinley Avenue, from the Long Range Transportation Plan in 2018. Development and assessment of Southwest Infrastructure Planning and Study alternatives considered the influence of previous land use and transportation planning goals outlined in the other studies and plans described below.

1.5.1 Southwest Diagonal Corridor Study Report, Major Investment Study, 1998

Even though the Southwest Diagonal, also referred to as Southwest Connector, was removed from the Des Moines MPO LRTP, the long-term influence of the 1998 Major Investment Study that recommended it is helpful to understanding public sentiments and physical considerations of future investments. The Des Moines' Master Streets plan had included a major arterial facility extending from Fleur Drive near the intersection of George Flagg Parkway (previously Valley Parkway) southwest to Park Avenue and continuing to intersect with Willow Creek Avenue (previously Army Post Road) beginning in 1980. The facility became part of the Highway Element of the 2020 Long Range Transportation Plan after an alternative analysis was completed for addressing traffic impacts related to I-235 operational improvements. The construction of the Southwest Diagonal, combined with Transportation Demand Management, was part of the preferred alternatives of an Environmental Impact Statement completed in 1996. The Southwest Diagonal was considered a key component of the transportation network used to preclude a full expansion of I-235.

The 1998 Major Investment Study delivered an informative alternatives analysis necessary to complete the previous multimodal transportation recommendations, preferred alignment, and traffic operations for the Southwest Diagonal. Three highway alternatives were described and studied for land use and environmental impacts. Alternatives were evaluated for traffic service, compatibility with transportation and development plans, environmental impacts, cost opinions, and Public/Agency perceptions as shown in **Figure 1-6**. Although this information is outdated and not related to the current Southwest Infrastructure Planning and Study, it is helpful to gain insight into the way alternatives were previously considered. One important observation is that the table does not include any documentation of the impact to floodplains and water quality.

Figure 1-6. 1998 Southwest Diagonal Alternatives Evaluation Matrix

Evaluation of Proposed Alternatives – SW 7th Street to Park Avenue

Evaluation Criteria	SW 7 th Street to Park Avenue		
	Valley Drive Alternative	Railroad Alternative	Bell Avenue Alternative
LENGTH km (miles)	3.0 km (1.9 miles)	5.0 km (3.1 miles)	5.2 km (3.2 Miles)
TRAFFIC OPERATION IMPACTS			
Continuity between Future Airport Terminal Location and Downtown	Fair	Good	Fair
Connection between Future Airport Terminal & I-235 via Fleur Drive	Good	Fair	Good
Ability to Access Existing Roadway Network	2 Major Intersections 1 Minor Intersection	3 Major Intersections 3 Minor Intersections	4 Major Intersections 1 Minor Intersection
Ability to Maintain Existing Arterial Traffic During Construction	Fair	Good	Fair
Ability to Phase Construction	Fair	Good	Fair
Potential Accident Reduction	Poor	Good	Poor
LAND USE IMPACTS			
Diversion of Traffic from Neighborhood Streets	Poor	Good	Fair
Allows Growth on Existing Commercial/Industrial Streets	Fair	Fair	Poor
Provides Additional Access for Future Development of Grays Lake	Poor	Good	Fair
Ability to Maintain Access to Adjacent Properties During Construction	Fair	Good	Poor
Access to Existing Commercial Properties	Fair	Fair	Fair
SOCIOECONOMIC IMPACTS			
Right of Way Impacts (ha/ acres)	7ha (17 acres)	16ha (40 acres)	10 ha (25 acres)
Number of Proposed Displacements			
Commercial	1	1	4
Residential	1	0	0
Partial Acquisitions	9	13	22
ENVIRONMENTAL IMPACTS			
Park / Trails Affected	1 Trail	1 Park, 1 Trail	2 Parks, 1 Trail
Wetlands Affected ha (acres)	<0.4 ha (<1 acre)	1.2 ha (2.5 acres)	0
Historic/Architecture Sites Affected	1	2	1
Archaeology Sites	Majority Medium to High Potential	Low to High Potential - Mixed	Majority Medium to High Potential
Potential Contaminated Sites Affected	RR ROW & Several Businesses	RR ROW & Several Businesses	RR ROW & Several Businesses
Residential Units Exposed to Increased Noise (Within 50m of nearest Lane)	7 Units	14 Units	18 Units plus 1 AIB Dormitory
CONSTRUCTION/ROW COSTS			
Total Construction/ROW Costs	Low	Medium	High
Cost per Kilometer of New Construction/ROW	High	Low	Medium

Evaluation of Proposed Alternative – Park Avenue to West Corporate Limits

Evaluation Criteria	Park Avenue to West Corporate Limits		
	North Alignment	Central Alignment	South Alignment
LENGTH km(miles)	2.8 km (1.75 Miles)	2.9 km (1.8 miles)	3.1 km (1.9 miles)
AIRPORT IMPACTS			
Avoids Clear Zone of Existing Runway	Good	Good	Poor
Avoids Clear Zone of Future Parallel Runway	Fair	Fair	Poor
Protects Future Airport Needs for Fill Dirt	Good	Fair	Poor
Avoids Future Airport Boundary Between Runways	Good	Good	Poor
Allows for Future Rail Connection to Airport Property	Good	Good	Fair
LAND USE IMPACTS			
Ability for Private Development on Both North and South Sides of SW Diagonal	Good	Good	Poor
Ability for Existing Development to Expand or Develop Existing Property	Poor	Fair	Good
Ability to Maintain Access to Adjacent Properties During Construction	Good	Good	Good
Access to Existing Commercial Properties	Good	Good	Good
SOCIOECONOMIC IMPACTS			
Right of Way Impacts ha (acres)	13 ha (33 acres)	13 ha (33 acres)	14 ha (35 acres)
Farmland Affected	8 ha (20 acres)	8 ha (20 acres)	8 ha (20 acres)
Diagonal Severences - Parcels	4	4	4
Number of Proposed Displacements			
Commercial	0	0	0
Residential	0	0	0
Partial Acquisitions	12	12	12
ENVIRONMENTAL IMPACTS			
Parks/Trails Affected	Great Western Trail	Great Western Trail	Great Western Trail
Wetlands Affected ha (acres)	<0.7 ha (1.5 acres)	<0.7 ha (1.5 acres)	<0.7 ha (1.5 acres)
Historic/Architecture Sites Affected	0	0	0
Archeology Sites	Medium to High Potential	Medium to High Potential	Medium to High Potential
Farmland Affected	8 ha (20 acres)	8 ha (20 acres)	8 ha (20 acres)
Potential Contaminated Sites Affected	1 plus RR ROW	1 plus RR ROW	1 plus RR ROW
Residential Units Exposed to Increased Noise (within 50m of nearest lane)	1 Unit plus 1 Apartment Bldg	2 Units plus 1 Apartment Bldg	1 Unit plus 1 Apartment Bldg
CONSTRUCTION/ROW COSTS			
Total Construction/ROW Costs	Same	Same	Slightly Higher
Cost per Kilometer of New Construction/ROW	Same	Same	Same

Transportation recommendations from the Major Investment Study were followed by associated land use planning and supportive infrastructure decisions over time. Four examples include:

- Construction of Veterans Parkway from the IA Hwy 5 interchange to the IA Hwy 28 intersection with SW McKinley Avenue
- Closing the east bound leg of SW McKinley Avenue at SW 56th Street
- The realignment to the east of the north bound leg of SW 56th Street as it approaches Park Avenue
- The temporary rock base installed by Polk County Conservation along Great Western Trail Connector between SW 42nd Street and SW 30th Street.

Other subarea plans followed that anticipated the eventual construction of the Southwest Diagonal (Connector) along the Union Pacific rail corridor between SW 9th and SW 30th Street and utilizing the abandoned Chicago Great Western rail corridor to just south of Park Avenue. This was intended to eliminate the need to maintain Valley Drive (George Flagg Parkway) from SW 30th to Park Avenue and instead dedicating it to the Des Moines Water Works Park or the Polk County Conservation Commission as replacement for the Great Western Trail connector.

The Southwest Diagonal Corridor Study recommended horizontal alignment changes at the intersection of Park Avenue at SW 42nd Street to preserve the residential character of the street to the east and support the arterial nature to the west. The remaining alignment of the Southwest Connector was envisioned to avoid the Des Moines International Airport runway clear zone, impact private property and industrial operations, and support airport related development outside future airport protection areas. The later criteria is a reference to potential new terminal access and new runway construction. The new terminal plans were ultimately eliminated, but a new runway remains on the future Airport Layout Plan.

1.5.2 Des Moines Bicycle and Trail Master Plan 2011

Major improvements were organized for bicycle and trail planning in Des Moines through the 2011 Bicycle and Trail Master Plan. Expanding upon the rich network of existing recreational trail facilities, a network of complete streets was proposed by the plan. The Complete Streets Policy was advanced to integrate bicycling into the transportation network. A major outcome was the expanded alignment of bicycle and trail planning with the Des Moines MPO Long Range Transportation Plan for programmed funding and supported project prioritization with cost opinions and funding strategies. Relevant priority projects included SW 14th Street Quiet Street improvements and the influence of the Downtown Bicycle Facilities has created more demand for bike commuting to the urban core than ever before. Expanding the network out to the community was envisioned through neighborhoods and a mixture of on-street bike facilities.

1.5.3 Gray's Lake Neighborhood Plan, 2013

This neighborhood plan provides guidance for accomplishing the vision for Gray's Lake Neighborhood. It recommended corridor planning along SW 9th Street, called for improved

trails and supportive pedestrian activity, and proactive management of traffic and transportation specifically along the Southwest Connector corridor. Because of the Connector's prominence in the neighborhood plan, it may have established the context for how some neighborhood leaders and residents think about the Southwest Infrastructure and Planning Study alternatives.

A SW 9th Street Corridor Plan completed in 2016 demonstrates the commitment that the community and resident stakeholders maintained to complete action steps listed in the Neighborhood Plan. A Quiet Street was established along SW 14th Street to improve some bicycle and pedestrian connectivity by slowing traffic. Cost sharing of sidewalk improvements were generally accepted approaches, and additional trail connections were identified with opportunity to better connect the neighborhood to Gray's Lake Park. The crossing of Thomas Beck Drive at Bancroft Street reflects this intent to link MacRae Park to Meredith Trail. Reducing traffic speed along residential corridors is a consistent theme of the plan though it recognizes the potential impact of the Southwest Connector on traffic bisecting the neighborhood from Gray's Lake Park.

1.5.4 On-Street Bikeway Feasibility Study 2014

The Des Moines MPO collaborated with the Iowa Department of Economic Development to conduct a review of energy efficiency, changing demographics, economic development opportunities, and public health benefits associated with providing on-street bike facilities and other bicycle related programs. Information captured by this plan was helpful in justifying the potential opportunities reported in the Mobilizing Tomorrow plan associated with expanding facilities and protection of alternative modes of transportation within the Des Moines region. A proposed bikeway network was developed using guidance from the National Association of City Transportation Officials (NACTO). Posted speeds, traffic volumes, and street classifications provide a backbone of potential on-street bike facilities. Other resources supported the refinement of the network map and links for gaps.

Potential facility types were assigned to respective links of the bike network. Considering the Southwest Infrastructure Planning and Study area, the proposed bike network included the Great Western Trail connector north of Park Avenue and an on-street bike lane on Park Avenue from SW 42nd Street to SE 22nd Street. The plan assumed that the proposed Southwest Diagonal would be constructed and relieve traffic pressure along Park Avenue to Fleur Drive in order to make this on-street facility feasible. Although the planned route type for Park Avenue was not determined west of Fleur Drive, shared lane marking was proposed east of Fleur Drive for planning purposes within the existing cross section.

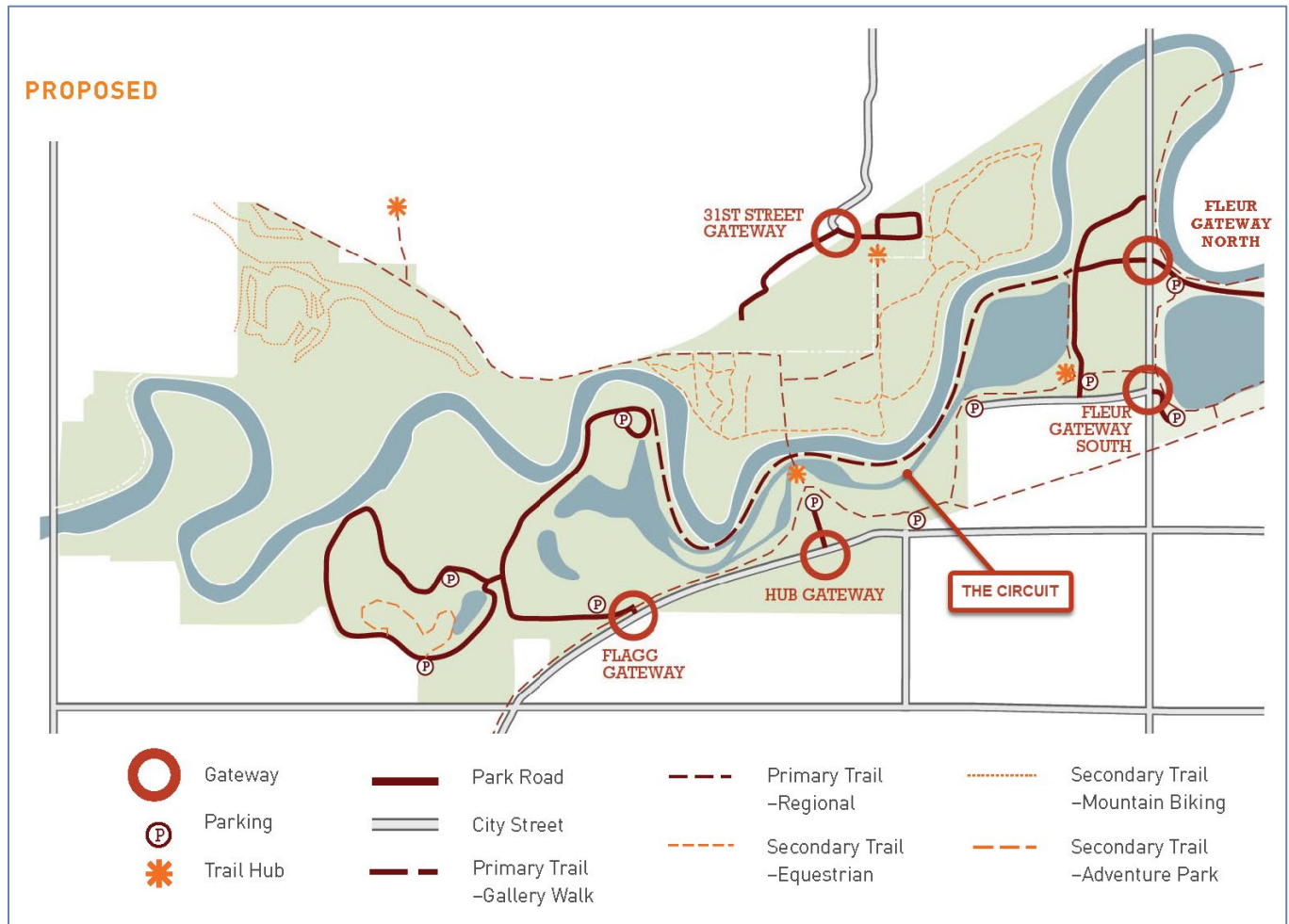
No proposed on-street facility type was proposed along the Southwest Diagonal, but the Major Investment Study had recommended repurposing Valley Drive as the Great Western Trail. Some of the additional on-street bike network segments included SW 22nd/23rd Street, SW 30th/31st Street, McKinley Ave (East and West of the Airport), IA Hwy 28 and residential streets in the Gray's Lake neighborhood. A significant gap in the network existed along Park Avenue between IA Hwy 28 (SW 63rd Street) and SW 42nd Street. An updated Complete Streets Policy was introduced with the On-Street Bikeway Feasibility Study.

1.5.5 Des Moines Water Works Park Plan 2014

This plan was organized to capture the long-term vision of the 1,500-acre urban park as an educational storehouse where the public can experience the natural, riparian landscape and learn how culture and society are shaped by water. Of relevance, this plan makes no reference to the consideration of the Southwest Connector, instead making transportation recommendations that are focused on modifications to George Flagg Parkway. Public sentiment began to reimagine a future that did not include the major Southwest Connector transportation project. The practical elements of the park plan that relate to this Southwest Infrastructure and Planning Study included park access, traffic circulation, and protection of the floodplain function. Specific recommendations formulated through extensive public and stakeholder input included:

- Protect and enhance The Circuit (**Figure 1-7**) – a water trail that roughly follows the park road - between park activity nodes. The Circuit provides essential functions for water quality treatment and expanding The Circuit capacity on the east side of SW 30th Street was an identified opportunity for the Des Moines Water Works facility. This concept has gained additional interest through recent plans to develop the Des Moines Water trails system further into the park.
- Programming of the West Activity Node was originally anticipated to hold the amphitheater for entertainment which was ultimately constructed on the East Activity Node instead due to the floodplain's influence on sustainability and the elevation of the area. The West Activity Node remains green space to this day where the expansion of the water quality treatment capacity was identified as an opportunity.
- Terminate westbound George Flagg Parkway at approximately SW 28th Street. The plan recommended the roadway terminate as a parking area at this location and vehicle traffic would maintain the access to the intersection of Gray's Lake Road and Fleur Drive as secondary access. This is a levee protected floodway and floodgates protect property along George Flagg Parkway which may not provide the most reliable emergency evacuation route during high water events.
- Terminate north bound SW 30th Street at Bell Avenue. The plan recommended the roadway terminate as a parking area with no vehicle access recommended to programmed areas including the existing Rails Football Club fields.
- Shift eastbound George Flagg Parkway to connect directly to Bell Avenue. This change would separate operations and park traffic and enable minimal vehicular crossing of the Circuit.
- Maintain and enhance existing trail network with improved trailhead with parking off of George Flagg Parkway at the Bill Riley bridge location.
- Des Moines Water Works Park entrances to parking areas were to be served through gateways (Hub Gateway and Flagg Gateway) located along George Flagg Parkway as shown in **Figure 1-7**.

Figure 1-7. Proposed Transportation Network for Des Moines Water Works Park



1.5.6 Gray's Lake Master Plan, 2016

Gray's Lake Park as it is known today is the result of a collaboration between the City of Des Moines and the generosity of donors, represented by the Gray's Lake Park and Meredith Trail Advisory Groups. The Advisors serve the community through a legal agreement with the City of Des Moines to preserve and maintain the original intent of the donors to Gray's Lake Park. The vision for Gray's Lake Park has been to maintain the natural and park like setting and to ensure major development does not encroach on the benefits the asset provides close to the city center. The 2016 Master Plan update replaced the 1998 Park Plan, which reflected the Southwest Diagonal Corridor along the south side of railroad tracks and Gray's Lake.

With the Southwest Connector removed from the Long-Range Transportation Plan and the purchase of the abandoned railroad property in 2006, the updated Plan envisions extending Gray's Lake Park to the south and constructing a major wetland treatment facility on the abandoned railyard parcels to further buffer the park from development and improve the quality of water discharging into the lake. The plan also recommends natural

walking trails through the wetland, terminating the existing park road on the east side of the lake, and constructing a new parking lot accessible from Thomas Beck Drive. The technical feasibility of the proposed constructed wetland was included in this Infrastructure and Planning Study because of the adopted 2016 Gray's Lake Master Plan.

1.5.7 Greater Des Moines Connect Downtown, 2017

Although this planning area is outside the Southwest Infrastructure Plan and Study boundary, the influence of the plan's recommendations can be anticipated along Thomas Beck Road, specifically at the intersections with SW 7th and SW 9th Streets as these crossings and corridors interact. To create an environment where pedestrians feel safer, landscaped buffers and medians along with narrow lanes were proposed to slow traffic, accommodate bike lanes, and provide on-street parking. Crossing improvements such as Rectangular Rapid Flash Beacons (RRFB), median refuge islands and high visibility crosswalks are encouraged to create a safer pedestrian experience. Above and in-ground strategies can be combined in projects to accomplish these outcomes and promote more active transportation into and out of downtown if the adjacent experience is complimentary for the bicyclist or pedestrian. The recommendation to reduce the number of through-lanes from four to three on SW 7th Street from north of Thomas Beck Road and Tuttle Street was included in this plan as well.

1.5.8 Des Moines Airport Layout Plan, 2018

The Des Moines Airport Authority maintains a current Layout Plan that projects the ultimate buildout conditions for the airport. The plan is updated from time to time as Federally required and as analysis indicates a change in the plan is warranted. To date, the layout plan includes the existing two runways (5-23 and 13-31) as well as a future new runway (13R-31L) programmed to run northwest/southeast parallel to existing runway 13-31. The runway protection zone (RPZ) for these two runways overlap the study area at potential points of intersection.

The existing runway has an RPZ that overlaps where Watrous Avenue would intersect with SW 46th Street. The proposed future runway has an RPZ that overlaps where SW McKinley Avenue intersects with SW 56th Street today. Federal Aviation Administration (FAA) guidelines (9/27/2012) directs the airport authority to avoid building new public roads within the RPZ. Airport Improvement Guide – 500 (9/1/2020) allows airport service roads, but not public roadways to be maintained within the RPZ. Closing SW McKinley Avenue east of the SW 56th Street intersection does not remove the existing intersection from the RPZ and local access remains open to traffic on SW 46th Street south of Park Avenue. Any improvements to either of these locations would be required to comply with the FAA guidelines.

1.5.9 MoveDSM, 2018

The ambitious notion that streets and transportation systems may evolve to support a wider range of transportation options for all citizens in every stage of life was captured within this City of Des Moines Transportation Master Plan. In support of the Plan DSM

comprehensive plan, MoveDSM anticipates the transportation challenges of the future with prioritizing the movement of people safely for everyone. It is flexible and creative, allowing the solution to fit the demand of the context and the people that it will serve. A major outcome of MoveDSM is the adoption of Street Typologies (**Figure 1-8**) and guidelines for the appropriate use of typologies when recommending and designing the transportation network elements.

The Southwest Connector was not included within MoveDSM and a placeholder network was included to study how the roadway network would be improved to support future travel patterns. The transportation goals within MoveDSM that influence these decisions and are shared with PlanDSM include:

- Develop a complete multi-modal transportation network for pedestrians, bikes, transit, and automobiles
- Develop updated street design standards
- Enhance the bicycle network
- Provide opportunities for healthy lifestyles
- Make transit more attractive
- Ensure freight facilities meet needs of local economy

MoveDSM utilizes data driven decision making expected for making federally compliant transportation funding decisions. Crash locations and frequencies were analyzed to identify systematic trends rather than only recommend individual spot improvements. Pavement conditions were considered for asset management, but network completeness was also analyzed for all modes of transportation to consolidate or bundle infrastructure investments over time. Bicycle network and nodes were updated and the gap along Park Avenue between IA Highway 28 and SW 42nd Street was filled from previous plans. A transit bus network of fixed routes was included while space was made to consider future on-demand transit service models. The existing truck route and emergency response network (**Figure 1-9**) was not modified significantly resulting in George Flagg Parkway and Bell Avenue west of Fleur Drive being retained as truck routes.

Figure 1-8. 2018 MoveDSM Roadway Existing Typology Map

TYOLOGIES

- NEIGHBORHOOD RESIDENTIAL
- COMMUNITY MIXED USE
- REGIONAL MIXED USE
- PROPOSED NEW STREETS
- COMMUNITY RESIDENTIAL
- REGIONAL RESIDENTIAL
- INDUSTRIAL/BUSINESS PARK
- LOCAL STREETS

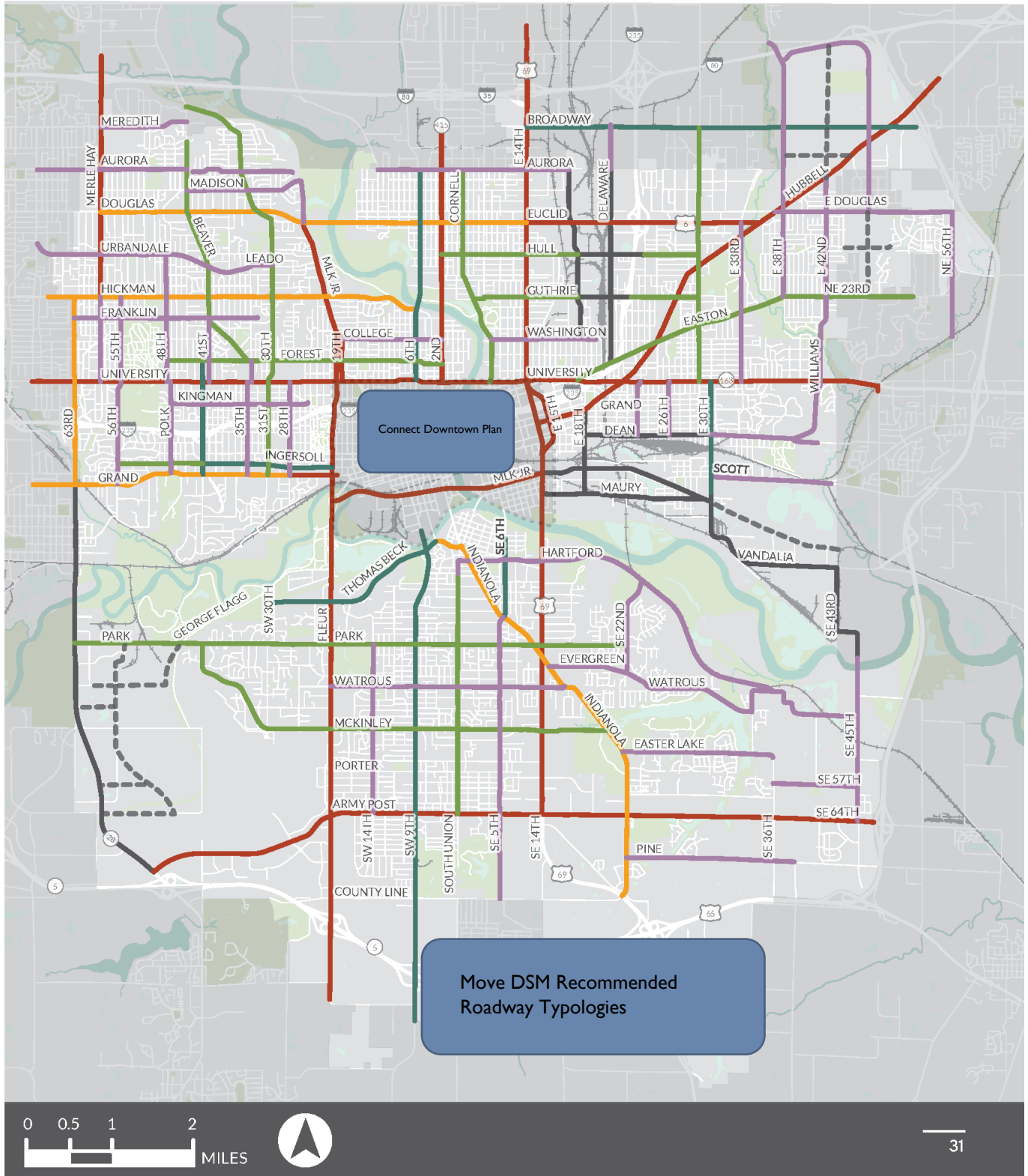
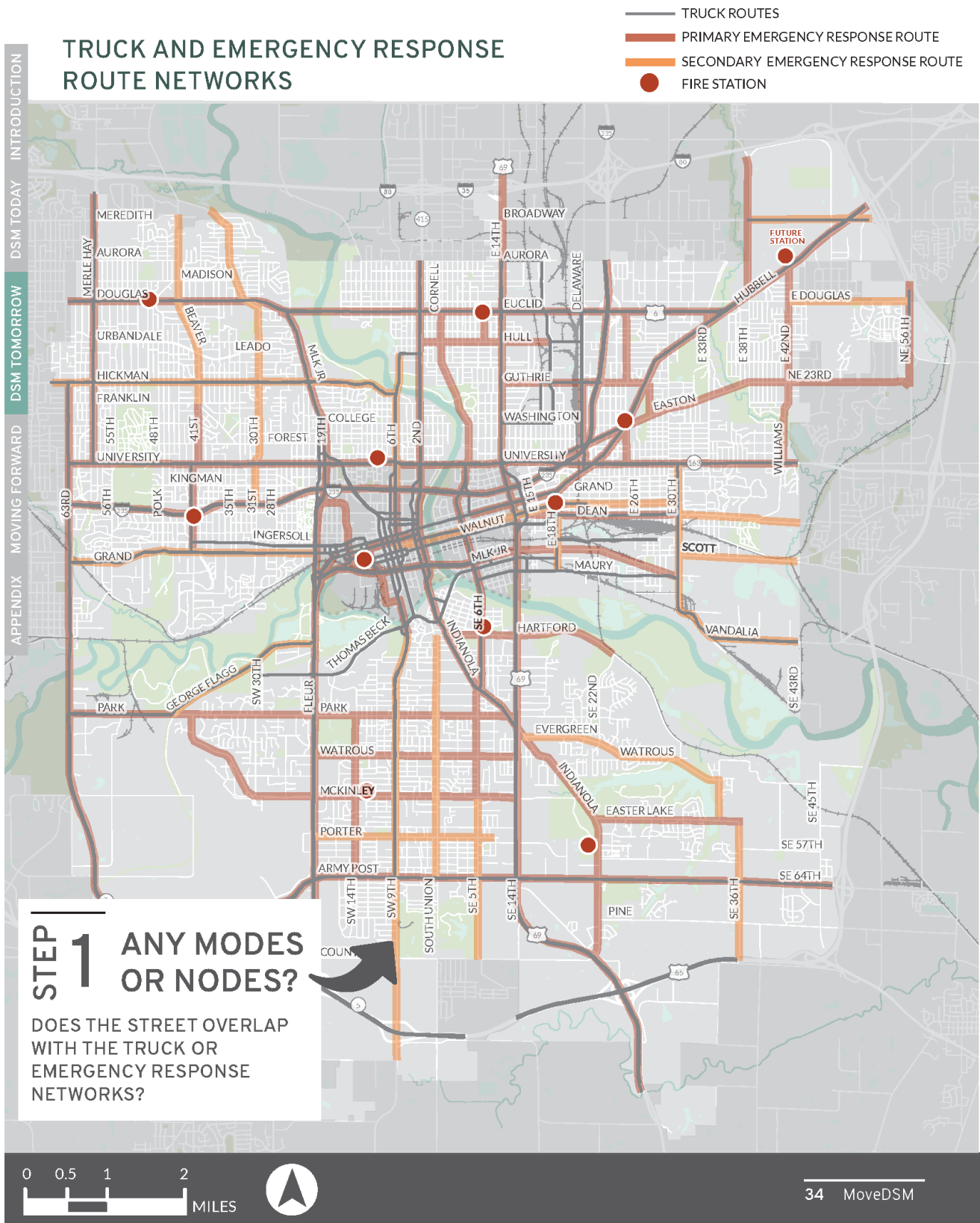


Figure 1-9. 2018 MoveDSM Truck and Emergency Response Route Map



1.5.10 LiveDSM, 2018

This Parks and Recreation Comprehensive Plan was completed and adopted at the direction of PlanDSM in 2018 as a long-range plan for improvements to our system that will enable multi-year planning for capital investments, provide updated level of service standards, inform the evolution of our recreation services, provide considerations for funding opportunities, and inspire the next game changing elements of our park system.

Gray's Lake Park is one of more than 75 parks in this system and is considered by many to be the nexus of the more than 80 miles of paved and unpaved trails that interconnect throughout the City. The plan recognizes the substantial efforts to accomplish the protection of Gray's Lake Park and its current use as a regional destination, ability of the park to accommodate both active and passive recreation close into the City center, and that "natural areas" are limited within the City. Protecting and expanding upon these existing natural areas is considered a finite and rare opportunity. Expanding the park to include a new constructed wetland and the area for supporting improvements will contribute to this objective of LiveDSM.

1.5.11 Mobilizing Tomorrow, 2019

Labeled as a transportation plan for a greener greater Des Moines, the Long Range Transportation Plan was produced to help maintain an efficient transportation system, support a regional economy, and enhance the quality of life for people living in the Des Moines area. The plan recognized significant growth potential, changes in demographics, and the shifts in travel mode throughout the region. Maintaining existing infrastructure already in place was prioritized to get more use out of it and offer more choices of travel modes. This is a consistent theme of MPOs that anticipate continued inflation of construction costs, decreasing purchasing power of limited gasoline taxes, shifting away from fossil fuels, and performance measures for reducing single occupancy vehicles that collectively contribute most to regional greenhouse gas emissions.

The plan organizes the recommended infrastructure and operational investments of 16 cities, three counties, and one transit agency. It also includes highway and freight planning in the Travel Demand Modeling of forecasted traffic operations. The 2050 LRTP is the first update to remove the Southwest Connector project since it was initially added. Recommendations of this Southwest Infrastructure and Planning Study are anticipated to be submitted to the MPO for approval to amend into Mobilizing Tomorrow, the 2050 LRTP of the Des Moines MPO.

As part of its environmental justice analysis for the plan, the Des Moines Area MPO identified seven degrees of disadvantage, or types of traditionally disadvantaged populations, as the analytic basis for ensuring compliance with Title VI. This analysis was utilized to evaluate the impacts of planned transportation projects in areas with socially disadvantaged populations. Using U.S. Census data at the census tract level, regional averages were determined for each of the seven degrees. A census tract was marked as disadvantaged for each degree if it exceeded the regional average.

1.5.12 DSM Airport Economic Development Plan 2020

The Des Moines Airport Authority produced a Development Plan with the primary objective to evaluate nine areas of Authority controlled land for new development opportunities. The Authority seeks to return the highest and best uses of available land giving known opportunities and constraints including market area trends for commercial and industrial development. One of the nine study areas, Area H, is located within the Southwest Infrastructure Planning and Study area (**Figure 1-10**). This area was identified with two potential development scenarios that would each have a different impact on the use of Willow Creek Avenue.

This area was identified with two potential development scenarios that would each have a different impact on the use of Willow Creek Avenue and support an extension of existing Runway 5-23. Alternative H-1 would develop the property overlaying Willow Creek Avenue as cargo support with the need to improve the pavement depth for higher volumes of semi-truck traffic. Alternative H-2 would develop the property on the south side of Willow Creek Avenue as General Aviation support. Such a use would not serve additional semi-truck traffic.

Figure 1-10. Airport Economic Development Plan Opportunity Areas



1.6 Land Use and Development Control Zones

The Southwest Infrastructure Study area (**Figure 1-1**) includes a wide range of land uses as illustrated by the current land use map (**Figure 1-11**). The area north and west of the airport have a primary focus on supporting more business park development with convenient access to IA Hwys 48 and 5 as well as Interstate 35. The section of Low Density Residential development along SW 56th Street is located just north has seen recent development connect to SW 56th Street north of the Development Control Zone for the Des Moines Airport runway approach. The existing parallel runway approach also maintains a Development Control Zone that overlays part of SW 46th Street.

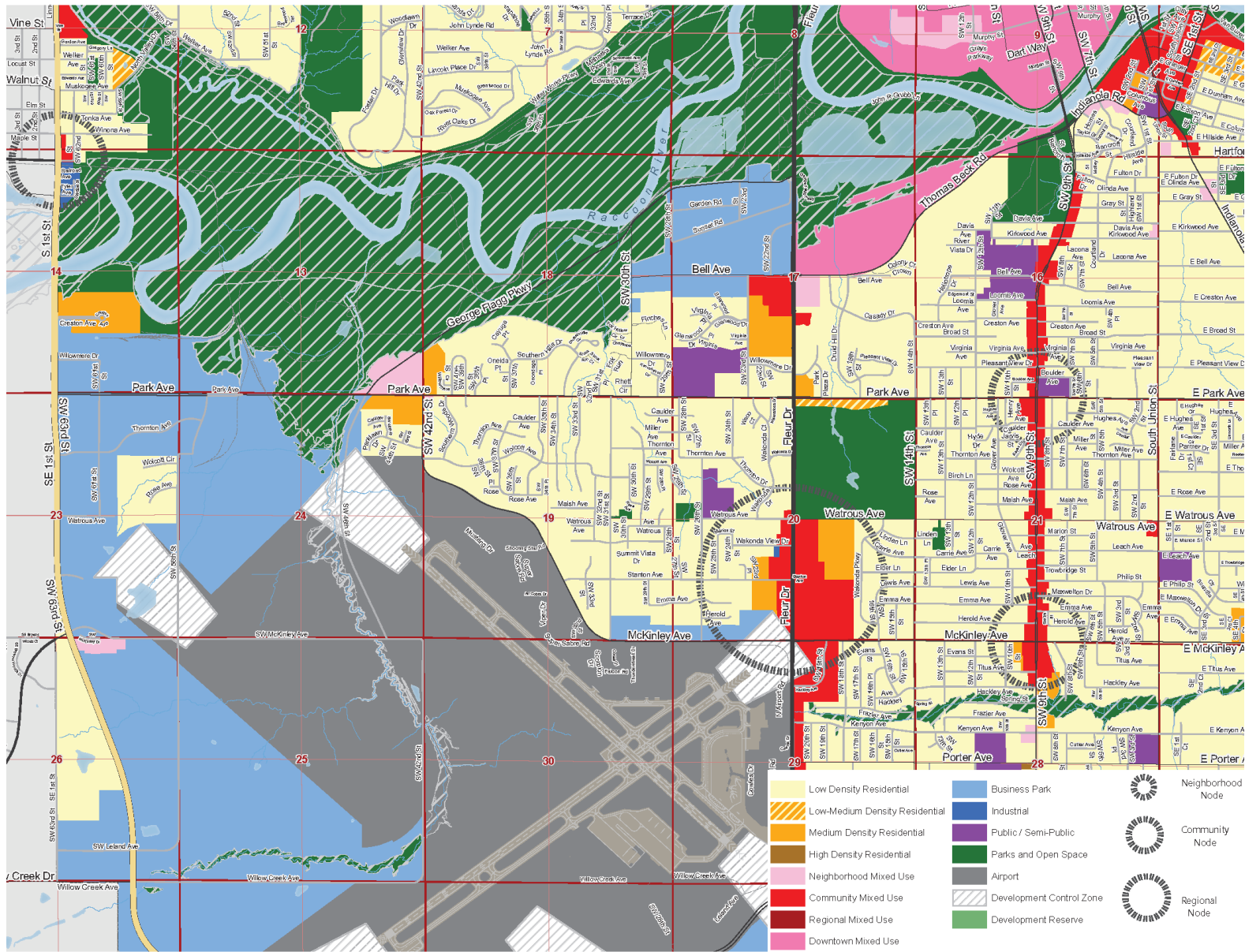
At the intersection of SW 46th Street with Park Avenue and George Flagg Parkway the land use transitions to Low Density Residential along Park Avenue to Fleur Drive and south of Bell Avenue/Thomas Beck Road/Indianola Road to Indianola Avenue. The Valley Gardens industrial area between SW 30th Street and Fleur Drive and the Development Mixed Use east of Fleur Drive are supported by a truck route shown in **Figure 1-9** along Bell Avenue and George Flagg Parkway connecting to Park Avenue and IA Hwy 28.

The Roadway Typology (**Figure 1-8**) assigned to Park Avenue east of SW 46th Street is currently listed as Community Residential similar to land use east of the intersection rather than Community Mixed Use which would be more consistent with the improved roadway cross section, adjacent development form, and continuity of traffic patterns between Park Avenue at the intersection with IA Hwy 28 and Indianola Road at the intersection of SW 7th Street. **Table 1-3** summarizes the purpose and observations of these two typologies as they could apply to Park Avenue from IA Hwy 28 to SW 46th Street.

Table 1-3. Community Residential and Mixed Use Typologies

Community Residential - Purpose	Community Mixed Use - Purpose
Important street network links for people using all modes of travel. Various of housing types exist along the roadway, including single family homes, town homes, and apartments, as well as community facilities and some commercial uses. Streets carry a moderate amount of people (up to 12,000 cars per day) and support community uses and character.	Important business corridor where people shop, dine, and work. They connect residents from their neighborhoods to commercial noted and are critical to Des Moines' economic well-being. Streets accommodate vehicles, buses, delivery trucks, and active transportation with particular focus on creating a welcoming pedestrian environment that fosters economic activity.
Community Residential - Observation	Community Mixed Use - Observation
West of SW 46 th Street, the roadway cross section does not match the assigned typology base design or speed limit. The transition to Low Density Residential land use east of this intersection could be a transition point for the roadway typology to support the anticipated need to divert increasing traffic volumes off Park Avenue to connect into Downtown.	SW 30 th Street is the current limits of the Bell Avenue/Thomas Beck Road/Indianola Road Mixed Use segment. A modification to connect George Flagg Parkway to Bell Avenue would enable the Community Mixed Use typology to extent to the intersection with Park Avenue and future development of employment centers north and west of the airport.

Figure 1-11. Des Moines Land Use Map



A few commercial properties are mixed in with the residential and industrial land uses along Indianola Road between SW 7th Street and Indianola Avenue. The South of Gray's Lake Master Plan (**Appendix D**) prepared with the Southwest Infrastructure and Planning Study documents the mixed-use redevelopment potential along Bell Avenue/Thomas Beck Road/Indianola Road east of Fleur Drive. Two schools are in the study area. Brody Middle School is located just west of the intersection of Park Avenue with SW 24th Street and St. Anthony's School is located on the northwest corner of the intersection of Indianola Road with Indianola Avenue.

Two significant Development Control Zones influence future land use planning within the study area. The Development Reserve Zone that overlays Gray's Lake Park, Des Moines Water Works Park, and extends west along the Raccoon River is important for protecting downstream properties from additional flooding impacts associated with development. Development in this zone is required to obtain a Floodplain Development Permit and meet the standards for no-rise certification and compensatory storage which discourages any significant development activities.

The other significant Development Control Zone is the overlay of runway protection. Des Moines Code of Ordinances, Chapter 22 addresses Aviation and is supported by the Iowa State Code Chapters 329 and 414. It addresses zoning regulations for the purpose of preventing hazards and non-compatible land uses in the vicinity of airports. Compatible land uses within geographic areas of airports are incorporated into the Des Moines comprehensive plan and zoning ordinances. The intent of protection is to maintain safe operational environments both on airport property, as well as within communities surrounding local airports.

One of the primary factors in determining land use compatibility often relates to the proximity of a specific land use to an airport and more specifically the runways. Development footprint and heights are regulated by this overlay zone which extends northwest of the intersection with SW McKinley Avenue and SW 56th Street. This study was completed with the understanding that no intention is retained to modify the current Development Control Zone for runway protection as shown on Figure 1-11. Two primary sources of information were used to develop recommended zones for land use compatibility within Iowa:

- Federal Aviation Administration (FAA) Advisory Circular (AC) 150-5300-13, Change 11, Airport Design, specifically Runway Protection Zones (RPZs)
- Federal Aviation Regulation (FAR) Part 77, Objects Affecting Navigable Airspace, commonly know as the FAR Part 77 Surfaces

Runway Protection Zones (RPZs) are the areas at each end of the runway that have a critical need for protection from incompatible land uses. It is desirable to clear all objects from the RPZ, per the criteria noted in FAA AC 150/5300-13 Change 11, Airport Design, although some uses are permitted, provided they do not attract wildlife, are outside of the runway object free area (OFA), and do not interfere with navigational aids.

Land uses specified in AC 150/5300-13 Change 11, Airport Design, which are prohibited from the RPZ areas include:

- Fuel storage facilities
- Residential structures (homes, condominiums, apartments, and manufactured housing parks)
- Places of public assembly (places of worship, schools, hospitals, office buildings, shopping centers, or other uses with similar concentrations of people)

If an airport does not own or control the entire RPZ where it has been determined to be impracticable to purchase the property, then the AC's RPZ land use standards should be consulted to determine the appropriate recommendation status for the portion not owned by the airport. Other options outlined in the AC may be considered if practical. The current roadway intersection may be retained in its current state, but no investment to improve the roadway cross section will be made inside the Runway Protection Zone overlaying the current alignment seen best in **Figure 1-10**. The intersection would need to be moved and reoriented further west of SW 56th Street to be placed outside of this zone.

1.7 Water, Wastewater and Stormwater Infrastructure

The Project Stakeholder Group included representatives of Des Moines Wastewater Reclamation Authority, Des Moines Water Works, and the Stormwater Division of the Public Works Department. As the study proceeded, input about infrastructure within the study area was shared. As projects were proposed, considerations for infrastructure relative to transportation improvements were provided. Input about water, wastewater and stormwater infrastructure is incorporated into Sections 2 and 3 of this plan and the South of Gray's Lake Master Plan (**Appendix D**).

1.8 Study Implementation

Completing the recommendations of the study will involve the coordinated efforts between all Departments, the Des Moines MPO, a host of stakeholders, and private development. Completion of redevelopment within South of Gray's Lake Master Plan area may require public private coordination and possibly partnership. Completion of the Gray's Lake wetland will require identification of funding for construction and commitment to budget for maintenance. Active transportation investments are often made based on the funding sources and restrictions placed on those funds. For example, sidepaths can be constructed as part of a roadway cross section improvement with roadway funds or as a stand along project using transportation alternative funds. Transit funding must be sufficient to support route options, operations, and amenities. These improvements are organized within the Transit Development Plan which can be updated in the future with the recommendations from this study. Parks advocates and environmental resource groups add an additional source of input for implementation and source for development funding for high priority projects. The balance of this study documents the inputs that can support implementation of recommendations documented in Section 5.

2. Study Approach and Input

The Southwest Infrastructure Planning and Study was completed over a year and a half period. The schedule was advanced during the Covid-19 pandemic and relied on stakeholder participation using virtual meetings and survey techniques. This section provides a summary of the data analysis process and the stakeholder input provided.

2.1 Traffic Analysis Summary

The traffic analysis portion of this study was developed, with all tables and figures included in **Appendix B**, evaluates conditions without the previously planned Southwest Connector in the existing year (2020), interim year (2030), and future year (2040) to determine traffic operations and safety performance for the intersections and streets in the study area. The study included a data collection effort, segment capacity analyses, intersection capacity analyses, traffic forecasting, and recommendations for transportation improvements.

2.1.1 Intersection Analysis

Traffic operations were analyzed for the study intersections using procedures documented in the Highway Capacity Manual, Sixth Edition: A Guide for Multimodal Mobility Analysis (HCM), Transportation Research Board, October 2016. Synchro 10 traffic analysis software was utilized for intersections with traffic signals or stop control. For intersections controlled with roundabouts, SIDRA 8 was utilized. Relevant intersection analysis results are included in Section 3 - Quadrant Assessment.

From the analyses, a key measure or “level of service” (LOS) rating of the traffic operational condition was obtained. In general, LOS is a qualitative assessment of traffic operational conditions within a traffic stream in terms of the average stopped delay per vehicle at a controlled intersection. Levels of service are described by a letter designation of either A, B, C, D, E or F, with LOS A representing essentially uninterrupted flow, and LOS F representing a breakdown of traffic flow with noticeable congestion and delay. Unsignalized, or stop sign controlled, intersection capacity analyses produce LOS results for each movement which must yield to conflicting traffic at the intersection. The period of experienced delay for LOS C criteria for signalized and unsignalized (stop sign or roundabout controlled) intersections ranges from 15-35 seconds while LOS F can exceed 80 seconds.

Turning movement counts were collected at the intersections shown on **Figure 1-2**. Traffic volumes for all study area intersections were compared to determine the study area peak hours. The AM peak hour was determined to be 7:15 AM to 8:15 AM; the PM peak hour was 4:30 PM to 5:30 PM. The Des Moines Area Metropolitan Planning Organization provided 2030 and 2040 Average Daily Traffic (ADT) projections for major streets in the study area from their 2040 long-range transportation model. The MPO travel demand model was used as a starting point in developing future traffic forecasts in the study area. The model ADT forecasts on network links for the 2040 Future year were compared to Iowa DOT 2012 and 2016 ADT maps and existing count information.

As part of project scoping, a 2030 Interim year was assumed for completion of improvements. A 2040 Future year was established as the horizon year for analysis. Existing intersection turning movement counts were used to develop representative 2030 Interim traffic volumes at the study area intersections. The raw peak hour turning movement counts were balanced using guidelines and methodologies from *NCHRP Report 255 & NCHRP Report 765* to develop 2030 Interim and 2040 Future traffic volumes for the AM and PM peak hours.

2.1.2 Crash Analysis

Crash data for the internal study intersections was provided by Iowa DOT from the Iowa Crash Analysis Tool (ICAT) database. The time frame for crash data ranged from January 1, 2016 through December 31, 2020. The provided data detailed the location, vehicle, and roadway characteristics of each crash. The crash rates for this study were compared to the Iowa statewide average (based on accidents from 1983 to 1987) crash rates. Relevant crash analysis results are included in Section 3 - Quadrant Analysis.

The majority of crashes at the study intersections were Rear-end (front to rear) (48%). Almost half of these crashes (49%) occurred on the segment of Fleur Drive between Park Ave and George Flagg Parkway. Other crash types that were common were Broadside (front to side) and Non-collision. Angle type collisions, such as Broadside, tend to be more severe in nature than rear-ends.

Crash rate can be used alone to evaluate the safety at an intersection, but it does not consider the severity of the crashes. To account for the severity of crashes at a location, an equivalent property damage only (EPDO) severity rate was used. For injury and fatal crashes, a cost to society of 12.2 times greater than property damage only crashes was applied. The project area crash severity rate of 2.63 crashes per Million Entering Vehicles (MEV) was established to compare individual study intersections against. Intersections with the five highest crash severity rates above the study area average included:

- Fleur Drive & Park Avenue
- George Flagg Pkwy & SW 30th Street
- George Flagg Pkwy & Fleur Drive
- Indianola Road & SW 7th Street
- Fleur Drive & Bell Avenue

2.1.3 Segment Analysis

A planning level cross-section analysis was conducted along several roadway segments in the study area shown in **Figure 2-1** and **Figure 2-2**. Estimated roadway segment ADT's for 2020 were developed by growing previous years of Iowa DOT daily count data, reviewing current count data, and using engineering judgement. Relevant segment analysis results are included in Section 3 - Quadrant Analysis.

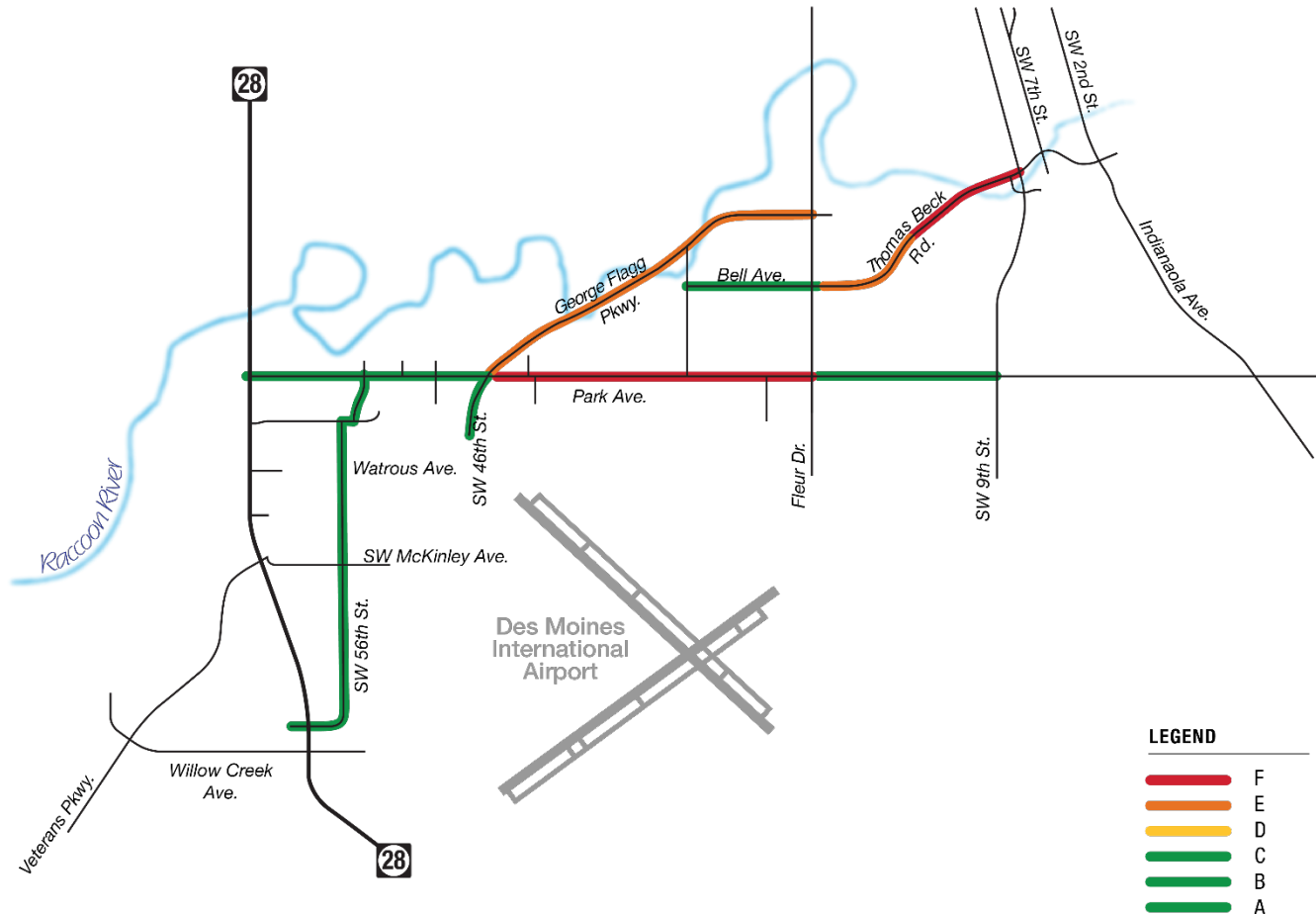
Similar to the intersection LOS thresholds described previously, street segment capacity LOS thresholds have also been established. For street segments, LOS is a qualitative

assessment of traffic operational conditions within a traffic stream in terms of its volume to capacity (V/C) ratio of the segment. Theoretical capacity is reached when the V/C ratio of that facility is at or exceeds 1.0. While a LOS A value may have a volume-to-capacity ratio less than 0.5, LOS F indicates the ratio is 1.0 or greater.

To develop street segment LOS for the study area roadway network, capacity thresholds were utilized from Iowa's Statewide Urban Design and Specifications (SUDAS), 2020 Edition, which are based on the *2000 Des Moines Area Daily Directional Capacities* developed by the Des Moines Area MPO. Utilizing SUDAS segment capacities and the Des Moines MPO LOS ranges, alternative cross-sections were analyzed under 2020 Existing and 2040 Future traffic volumes. The 2040 Future ADT values in the "No-Build" rows reflect projected volumes without any new roadways or new alignments. The 2040 Future ADT values in the "Alternative with Diversion" rows reflect projected volumes with the proposed new roadways and new alignments. Moderate side friction was assumed.

Without improving roadways to support the diversion of increasing traffic volumes, key study segments are expected to reach the LOS E or F by 2040. These segments are shown in **Figure 2-1** and include Park Avenue between SW 46th Street and Fleur Drive, George Flagg Parkway between Park Avenue and Fleur Drive, and Bell Avenue, Thomas Beck Road, Indianola Road east of Fleur Drive. The segment analysis was then completed with the alternative cross section improvements (**Figure 2-2**) that would support a diversion of traffic volumes off of Park Avenue east of SW 46th Street and direct it through the new alignment connecting with Bell Avenue at SW 30th Street. The segments of Bell Avenue and Thomas Beck Road are projected to have LOS E with the recommended improvements while all other segments perform at LOS D or better.

Figure 2-1. Segment Analysis 2040 No Build



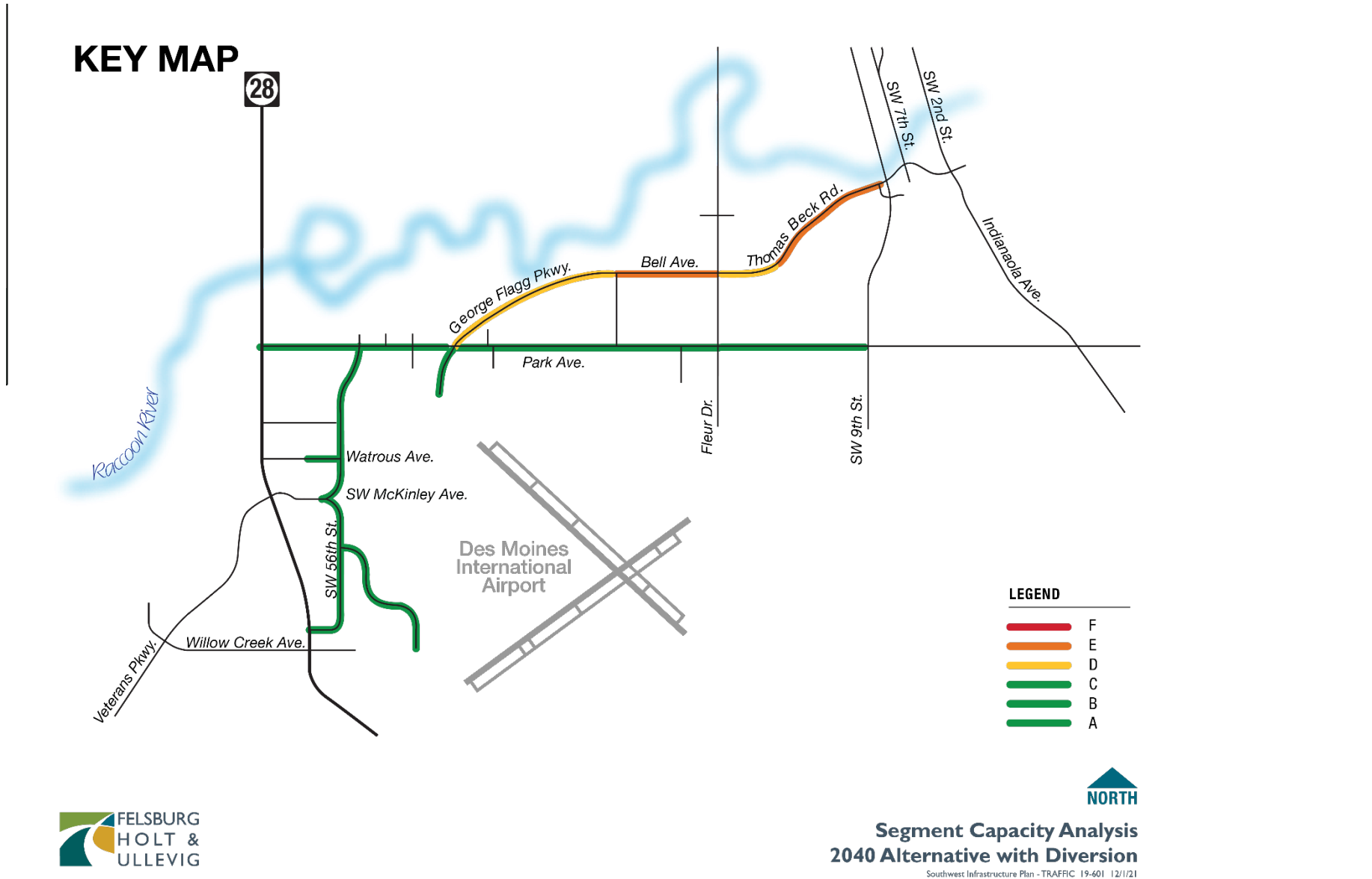
NOTE: Drawing Not to Scale



**Segment Capacity Analysis
2040 No Build**

Southwest Infrastructure Plan - TRAFFIC 19-601 2/10/22

Figure 2-2. Segment Analysis 2040 Build Alternative with Diversion



2.2 Active Transportation Summary

The project study included development of bicycle and pedestrian accommodations within the study area. Active transportation conditions and considerations for the study are summarized below which support recommendations in Section 3.

2.2.1 Trails

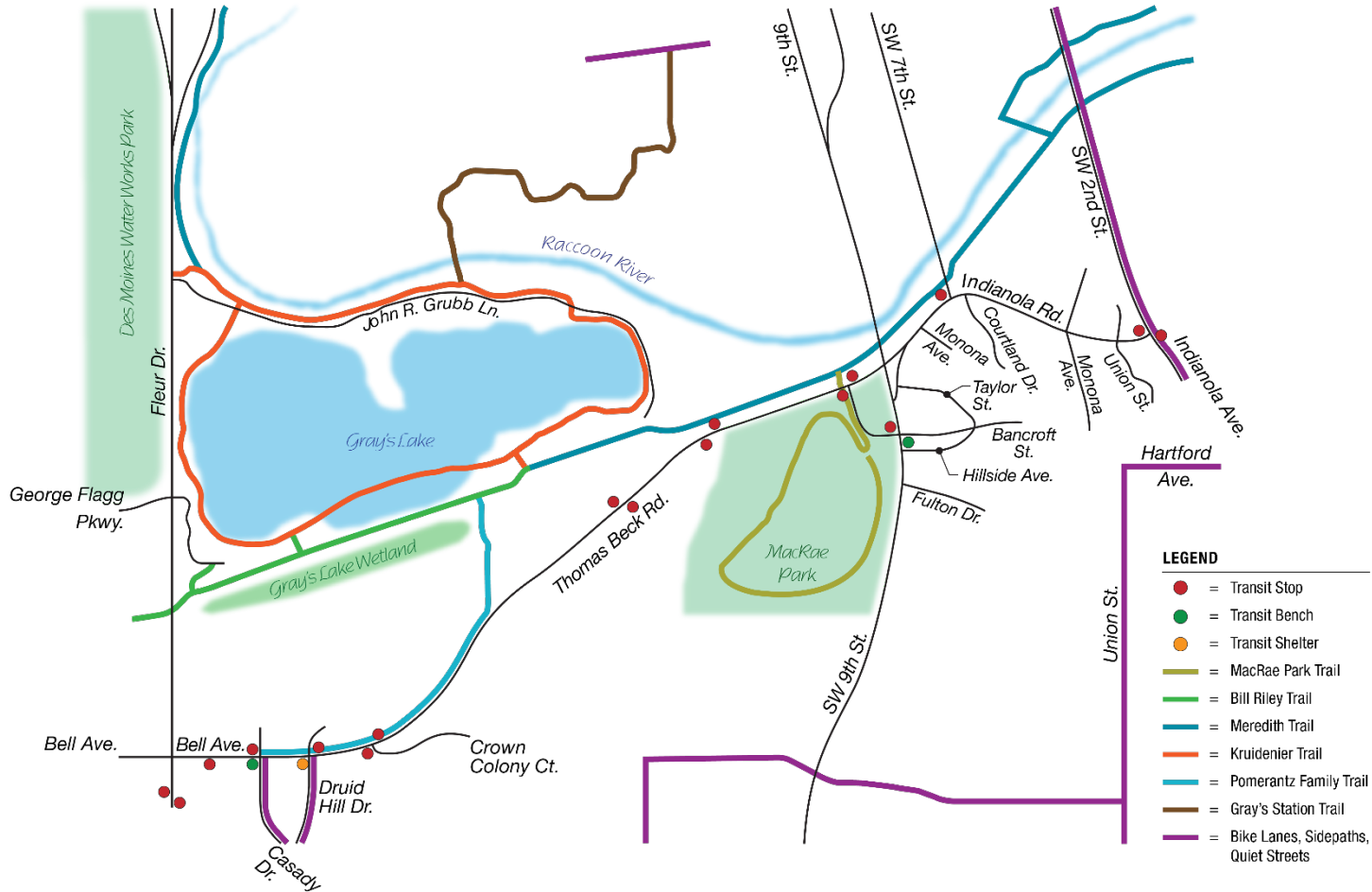
Trails in the area connect the regional parks and provide access to 600 miles of trails in central Iowa. Great Western Trail approaches the area from south of Willow Creek Avenue and plans for adding a new airport runway could result in rerouting the current alignment around the property fence line in the future. The Great Western Trail provides access to Des Moines Water Works Park ring roads and the Polk County Conservation Connector trail past Carney Park before it terminates at SW 30th Street and Bill Riley Trail. Bill Riley Trail originates north of the study area, connects with Great Western Trail Connector at SW 30th Street, and continues east to provide access to Gray's Lake Park and a network of trails (**Figure 2-3**) that access downtown Des Moines. Meredith Trail originates north of the study area, connects with Bill Riley Trail at Gray's Lake Park, and continues east along the south edge of the Racoon River and out of the study area. Thomas Beck Road and Indianola Road creates some disconnection between Gray's Lake and Indianola Hills Neighborhood to the trails network.

2.2.2 Bike Network

Mobilizing Tomorrow (2019) provide the framework for organizing and funding bicycle facilities within the Des Moines MPO. The bicycle network that supports recreational riders, can be expanded wider with bicycle facilities such as side paths, shared lanes, bike lanes, or cycle tracks appropriate to roadway context. These changes over time will increase ability to use a bicycle for commuting or other essential trips for a more diverse cross section of the population. MoveDSM (2018) highlighted that the 114 miles of existing bike facilities supports 53% of the population within $\frac{1}{4}$ mile of the network. By completing the core network and increasing to 151 miles would support 86% of the population within $\frac{1}{4}$ mile of the network. An estimated 310 miles is required to reach this goal for 100% of the population.

The Great Western Trail represents a significant portion of the existing bike network. As the trail enters the study area from the south, it transitions through grade separated crossings of IA Hwys 28 and 5. No connection from the trail to the Secondary Network segment proposed along IA Hwy 28 is currently possible due to the grade difference. Frink Creek also separates the trail from the rest of the Southwest Quadrant of this study. Removing this connectivity gap requires coordinating a roadway crossing of Frink Creek with a bike network link that can route access north to IA Hwy 28.

Figure 2-3. Trails and Transit Connections to Downtown Des Moines



NOTE: Drawing Not to Scale

Active Transportation and Transit Network

Southwest Infrastructure Plan - PLANNING 19-601 2/9/22



The Great Western Trail passes below IA Hwy 28 with no current connection to the secondary network segment proposed along this corridor and intersects with Park Avenue where two at-grade intersection crossings are required to access the Great Western Trail connector to the north.

Another significant portion of the existing bike network is provided by the Bill Riley and the Meredith Trails as they pass Gray's Lake and the Raccoon River around the nose of Thomas Beck Road and Indianola Road. Much of Gray's Lake neighborhood and Indianola Hills Neighborhood must use SW 9th Street to connect down to Thomas Beck Road where a pedestrian crossing is provided to access Meredith Trail. This is viewed as a barrier and additional connections were suggested at the intersection of SW 7th Street and east to the Martin Luther King Jr. Trail.

Park Avenue is identified as part of the Core Network. Previous improvements to Park Avenue from IA Hwy 28 to the intersection with George Flagg Parkway and SW 46th Street did not provide on-street or side path bicycle facilities. The five-lane cross section and high travel speeds are not welcoming to on-street facilities and a side path is likely the best facility type to retrofit into this alignment. From this intersection eastward to SW 2nd Street a range of cross sections exist to plan the future bike network along. Forecasted increases in vehicle traffic must be diverted off Park Avenue for this segment to consider on-street bike lanes and minimize right-of-way impacts to the east. McKinley Avenue transitions to SW 42nd Street where it connects with Park Avenue which is also identified as part of the Core Network. Potential right-of-way constraints along Park Avenue led to a recommendation that a trail connection be provided along the existing Des Moines Airport property in line with Wolcott Avenue to improve the connection with the Great Western Trail.



The Meredith Trail passes below Thomas Beck Road and Indianola Road and under the intersection of SW 7th Street with no current connection to the adjacent neighborhood to the south. Access is provided by at-grade crossings SW 9th Street and again at Thomas Beck Road.

The secondary bike network includes a combination of low traffic volume streets and the existing Pomerantz Family Trail. Southwest 30th and 31st Street segment crosses Park Avenue to connect with the Great Western Trail Connector. A sidewalk curb ramp is not provided on the north side of SW 30th Street and Park Avenue intersection. The Druid Hill Drive/Cassady Drive quiet street connects the Gray's Lake Neighborhood to connect with the Pomerantz Family Trail at the intersection with Thomas Beck Road.

2.2.3 Sidewalks

There are no sidewalks along IA Hwy 28 in the study area, but the cross section includes a paved shoulder to Railroad Avenue. Sidewalks are provided along the south side of Park Avenue from IA Hwy 28 to George Flagg Parkway. Park Avenue becomes more residential east of George Flagg Parkway where sidewalks are generally provided except for a few gaps on both sides of Park Avenue until Fleur Drive. Sidewalks are recently added with improvements being made along Fleur Drive. Sidewalks are not provided along George Flagg Parkway, but the trail system closely follows the alignment of George Flagg Parkway. Sidewalks are not provided along Bell Avenue from SW 30th Street to Fleur Drive. A mix of sidewalks and trails are provided along or near Bell Avenue and Thomas Beck Road from Fleur Drive to SW 7th Street. A sidewalk is provided on the side of Indianola Road from SW 7th Street to Indianola Avenue. There are no on-street bicycle facilities in the study area. All public improvements and private development are expected to include sidewalks and intersection ADA curb ramps with construction adjacent to public streets. Current examples of this requirement can be seen along Indianola Road as redevelopment is occurring. Were private development is not anticipated, sidewalk should be added as a public improvement such as along the northern toe of MacRae Park west of Bancroft Street.

2.3 Stakeholder Group Summary

A series of stakeholder meetings were facilitated to gather and organize input about the planning area that would help establish the plan recommendations. The members consisted of area leaders, business groups, neighborhood associations, and other area stakeholders who have background knowledge and insight that will help focus and refine the infrastructure investments that are best suited in the study area. The meeting dates were distributed across the project schedule and coordinated with the South of Gray's Lake Advisory Committee meetings. Each stakeholder meeting included a presentation of study materials and opportunity to share and discuss input.

2.3.1 Session 1: Goals

This meeting was held October 30, 2020. Attendees were asked to share their perspectives and perceptions about the infrastructure needs within the study areas. A series of questions was asked through live online polling to facilitate robust discussion. The group suggested the future infrastructure plan would serve the study area and neighborhoods best by expanding transportation opportunities and supporting all modes. The overall traffic flow from and to downtown should be addressed to reduce demand along Park Avenue west of SW 46th Street to intersection with Fleur Drive. The group recognized an opportunity to improve pedestrian access and walkable neighborhoods, increase safety for all modes, and connect to neighborhoods to trails.

The group also recognized the project provides an opportunity to serve the City of Des Moines and the region as well. Group members indicated that projects recommended should improve reliability of access from edge to Central Business District without cutting through neighborhoods, diverting future traffic growth off Park Avenue east of Fleur Drive. The projects should also support redevelopment opportunities and activate areas of new development that can draw in housing and employment. Safety should be addressed for project recommendations as traffic volumes are expected to grow.

Other ways this study and plan could improve the City and region include increasing the livability inside Des Moines and enhancing amenities for existing neighborhoods. An example of amenities included the recommendation for providing more Complete Streets that support the transportation needs of all modes. The group recognized that opportunities to wider mode share distribution between vehicles, bikes, pedestrians, and transit users could be supported.

The group was provided a list of five potential outcomes and asked to rate them. The highest rated outcome (4.8 out of 5) was the need to provide a safe network for all modes. The outcome with the lowest rating (3.5 out of 5) was to support efficient movement of vehicles and freight. Although this was the lowest of five scores, it still represented a highly valued outcome for the group. The outcomes and ratings, with 5 being strongly agree were:

- 4.8 – It needs to be safe for all modes
- 4.6 – It needs to address connectivity and access

- 4.1 – It needs to protect environment and recreation
- 4.0 – It needs to encourage alternative transportation
- 3.5 – It needs to support efficient movement of vehicles and freight

The group was asked to provide a summary of potential barriers to achieving the outcomes rated above. Potential concerns for funding for all modes, shared vision, clear priorities, and purpose or functions of the roadway, land use and environmental constraints were listed. To address these potential barriers, the group generally agreed that the six goals related to transportation listed in MoveDSM should be pursued in the project recommendations. These goals include supporting:

- A complete multi-modal transportation network
- Street design standards
- Enhanced bicycle network
- Opportunities for healthy lifestyles
- Attractive transit
- Freight facilities support local economy

Projects for funding as a Capital Improvement Project are selected with consideration of five transportation priorities. The group was asked if projects in the study area could be recommended according to these priorities. The group provided moderate agreement with existing priorities including:

- Project reconfigures an undivided four-lane street
- Project addresses a location with a history of fatal/serious injury traffic crashes
- Project is located in an environmental justice area
- Project overlaps with Priority 1 sidewalk gaps
- Project is part of the core bike network

The group participated in a brief scenario planning exercise to help understand other perspectives about the study area. Four divergent scenarios were presented that considered the future transportation network needed to support high or low mode shift away from single occupant vehicles after the Covid-19 pandemic was over, and fast or slow growing economy during the planning period to support infrastructure investments. The scenario that received the highest score was a retention of mode shifts to active transportation and a slow growing economy. This insight can be helpful as one piece of information when evaluating timing of project implementation.

A follow-up survey was provided to group members and a link to the recorded meeting for those that could not attend. Responses indicated that the study seemed to be overly focused on transportation infrastructure and wouldn't address the impact on economic development, quality of life and environmental and park concerns. Key barriers to success were suggested to include sacrificing quality of life for efficient transportation, dissecting established neighborhoods for the wants of suburban residents who want a faster path to downtown.

2.3.2 Session 2: Preliminary Results

This meeting was held June 30, 2021 and used to report out the technical analysis of traffic and operations at study intersections and roadway segments to date. The concept of evaluating the study area in four quadrants that could be woven together with a contiguous multimodal transportation network was shared for discussion and feedback. The group was presented with the suggestion that a continuous Community Mixed Use roadway typology should be provided between IA Hwy 28 and SW 7th Street. This would be accomplished by modifying the Typology of Park Avenue between IA Hwy 28 and George Flagg Parkway and improving George Flagg Parkway to connect with Bell Avenue.

Group members were provided access to review the preliminary results and concept recommendations for the various study roadways. The traffic operations along SW 9th Street were a concern raised with recommendations that would be supported by a separate corridor study. Other input that helped to make project recommendations included sidewalks, pedestrian crossings, right-of-way widths, connectivity to Valley Garden's if SW 30th Street is terminated north of Bell Avenue, preventing George Flagg Parkway from acting as a levee, and bicycle infrastructure improvements at the intersection of Great Western Trail and Park Avenue.

Two alternatives for modifying the alignment of George Flagg Parkway were presented for discussion. The raised existing alignment alternative was contrasted with a raised modified alignment that would move the roadway over the current alignment of the Great Western Trail Connector. The later alternative did not receive any positive support from the group who suggested the alignment should be kept away from adjacent neighborhood properties and avoid excessive impacts to existing vegetation and the trail network. Group members inquired about the sources for fill materials for either option. The project team can suggest sources, but the cost estimates would anticipate bring in soil fill and exporting soil to meet local floodplain requirements.

The discussion also included the exchange of ideas about SW 55th Street. The group recognized that the future land use north and south of SW McKinley Avenue could look and feel different and support different roadway typologies. Since single family residential properties will be supported north of SW McKinley Avenue, the cross section proposed should support traffic calming and less truck traffic than south of SW McKinley Avenue.

2.4 Technical Interviews Summary

Throughout the study, individual site meetings, virtual meetings, and phone calls were completed to gain additional information and supporting perspectives. Information provided helped to organize concept alternatives, understand site constraints, and anticipate timing and funding opportunities that could be incorporated into recommendations. A summary of technical interviews and key takeaways is provided.

DES MOINES PARKS MAINTENANCE AND PLANNING - STAFF

- Recognize that the area proposed for the constructed wetland is likely to be flooded infrequently similar to major events that occurred in 1993, 2013, and 2015.

- Stormwater treatment will make a big impact on Gray's Lake ongoing water quality. Reducing spikes in e.Coli is highly desired so the beach does not need to be closed.
- The terrace parking lot is overfilled while other lots sit under-utilized.
- The Department is not staffed with the qualifications needed to establish and maintain a large wetland complex like the one proposed. This needs to be addressed in the Gray's Lake Wetland analysis also.
- Stormwater infrastructure elevations were not available in GIS data or as-built drawings.
- Consideration needs to be provided for trail connections to the Bill Riley Trail at this location to limit risk of crashes as commuter and recreational bike traffic can move fast along this corridor.
- The picnic shelter proposed on the Gray's Lake Park plan would be isolated and difficult to maintain. Staff suggested moving it closer to the Pomeranz Family Trail connection to the Bill Riley Trail.

THE NATURE CONSERVANCY – GEOFF FISCHER

- This phone interview was provided at the suggestion of Meredith Trail and Gray's Lake Advisory Committee members. The Nature Conservancy may have a future interest in supporting the Gray's Lake wetland, but no comments were provided about the current study.

DES MOINES AIRPORT – BRIAN BELT

- Refer to the 2014 Terminal Area Concept Plan which led to locating the terminal in the South Quadrant and the Airport Layout Plan (ALP). This plan was updated in 2016 following site selection study approving the East Quadrant for the preferred terminal site. The ALP was updated and retained the potential to construct a new runway.
- An economic development plan was underway and close to completion at the time of this discussion. It was expected to propose future development opportunities on or adjacent to Willow Creek Avenue.
- A combination of side paths and trail realignments were documented with the Southwest Connector and ALP. Without the Southwest Connector, an alternative sidepath should be proposed.
- At Willow Creek Avenue, planning should anticipate no through traffic to SW 42nd Street. At SW McKinley Avenue, planning should anticipate maintaining the Airport Runway Protection Zones which overlap the intersection of SW McKinley Avenue and SW McKinley Drive as well as SW 46th Street in line with Watrous Avenue. The alignment right-of-way for any modified intersection at SW McKinley Avenue and SW 56th Street must remain outside the property line of the future runway. SW McKinley Drive should remain closed east of SW 56th Street.
- **POLK COUNTY CONSERVATION – ADAM FENDRICK**
- Provided support for finding solutions that remove the at-grade crossings for Great Western Trail at Park Avenue and SW 46th Street.

- Provided background about the crushed limestone trail surface of the Great Western Trail Connector. The alignment is frequently inundated with stormwater and the tread surface is beginning to deteriorate. The surface was meant to be temporary until the Southwest Connector was constructed.
- Polk County Conservation would favor retaining the existing alignment if George Flagg Parkway is raised and connected to Bell Avenue. The existing tree canopy is a desired feature to preserve.
- Polk County Conservation also constructs a lot of wetlands in the area. Their Natural Resource Division employs scientists with appropriate background to design, establish, and maintain constructed wetlands. Adam suggested Gray's Lake Wetland could benefit from these resources if opportunity was presented to collaborate with the City. Adam suggested the size of the wetland was small and would not make a good wetland bank. Although a wetland education theme was suggested to be explored with Polk County Conservation.

DES MOINES AREA RAPID TRANSIT (DART) – TONY FILIPPINI AND CARL SAXON

- DART Forward is the transit master plan produced in 2016. A transit optimization study was initiated from the plan's recommendations. It incorporates emerging transportation and technology considerations. DART is exploring innovative service delivery models with test pilot projects.
- None of the Growth Plans in DART Forward looked at new fixed route or expanding fixed route lines in the Southwest or Northwest Quadrants of this Infrastructure Study. The DART funding available would not currently support adding or expanding new fixed routes to this area. If businesses work with DART, routes could be expanded, but not likely to be an outcome of this study.
- Transit Route 8 currently serves areas that have a higher proportion of Environmental Justice population, and the quality of the service line needs to be preserved.

DES MOINES STREET COLLECTIVE – EMILEE RICHARDSON AND MIKE ARMSTRONG

- Removing gaps and improving connectivity of the active transportation network will be an important outcome of this study. Ensuring that sidewalks are provided on both sides of public projects and new development is desired.
- The current and anticipate traffic volumes along the improved section of Park Avenue will prevent on-street bike network to be recommended. A sidepath is needed to provide the intended bike network.
- Creative solutions to improve the existing crossing of George Flagg Parkway at Park Avenue would be welcomed for consideration. The intersection has visibility issues and is used by users with a range of abilities including those with disabilities using mobile assistance devices and bicyclists traveling at higher speeds.
- Design considerations for providing safe crossings at Thomas Beck and Bell Avenue should be made as traffic volumes will increase and the corridor already feels unsafe to cross.

INDIANOLA HILLS NEIGHBORHOOD – INPUT PROVIDED BY JEFF WIGGINS, CITY OF DES MOINES

- Connectivity for this neighborhood is highly important and will support a neighborhood with lower socioeconomic Environmental Justice criteria. Neighbors have a feeling of being cut off and entrenched without safe access to regional trails and complete sidewalks.
- Development opportunities are being explored for multifamily units along Indianola Road, but the lack of sidewalks on the south side and access to the Meredith Trail on the north side is problematic.
- A safe pedestrian crossing at SW 9th Street is needed to provide better access to MacRae Park and access to Meredith Trail north of Thomas Beck Road.

CITY OF DES MOINES DEVELOPMENT SERVICES – MICHAEL LUDWIG AND RYAN MOFFATT, ADMINISTRATIVE SERVICES – PHIL WAGEMAN

- Development Services works with property owners to develop subdivision plans that are supported by the land use plan and current zoning requirements. Where overlay zones exist, such as the Airport Runway Protection Zone, these requirements are also enforced during subdivision reviews.
- Development in the SW Quadrant of the study area is not eminent. A range of ideas have been considered, but are likely to take longer to materialize than the NW Quadrant.
- Development of Single Family Residential pressure has increased. A Comprehensive Plan amendment is anticipated separate from this infrastructure study as further expansion of residential development is not consistent with the land use plan. SW 56th Street is expected to support a mix of residential and business park land uses.
- Additional access points to IA Hwy 28 are not anticipated based on intensity of future land use. Access can be provided with current intersections at Willow Creek Avenue, Leland Avenue, or SW McKinley Avenue.
- Two intersection alternatives were presented for discussion. The Tee intersection alternative and a roundabout alternative had been considered. The former would limit right-of-way required for construction. The later could improve intersection safety. The discussion indicated that the selected alignment would need to be constructed outside the Airport Runway Protection Zone. The Tee intersection was expected to require less right-of-way and satisfy safety requirements during design if selected. Sanitary and water services are not currently provided to the private property on the northwest corner of the intersection which limits development proposal options.
- A future realignment of SW 56th Street with the improved section that connects with Park Avenue was discussed. It is not possible to complete the connection without impacts to private property. The horizontal and vertical alignment constraints as well as the requirement to maintain access to all existing businesses and cul-de-sac streets limits the alignment alternatives. Recommendations should minimize the number of properties impacted.

- Park Avenue is proposed to include raised medians that will limit some turning movements into businesses along Park Avenue. Where access can be maintained, consolidating access points can be considered for recommendations.
- The alignment of Watrous Avenue was discussed. This study will not recommend connecting Watrous to SW 46th Street. The intersection with SW 56th Street will serve future development to the east with higher traffic volumes. Maintaining the intersection on the current alignment and designating the connection a local street was recommended.
- Property owners were identified to invite to Public Open House.

CITY OF DES MOINES WATER WORKS – TED CORRIGAN

- Discussed the vision for connecting the infiltration gallery which crosses under George Flagg Parkway and SW 30th Street. Green space on the east side of SW 30th Street can provide the needed area and equalize levels of all treatment ponds. Head loss has been challenging to maintaining treatment levels and requires pumping in two directions. Improvement would not be made without an alternative way to connect to George Flagg Parkway from Bell Avenue.
- Soil excavated from the park to create the dog-eared shaped pond adjacent to the west lawn was used as fill around 2005 to construct interchange improvements at Martin Luther King Jr. Parkway and I-235. Soils from this area may also be suitable for raising George Flagg Parkway in the future.

2.5 Public Open House Summary

A public open house was hosted on July 28 from 3:30 – 7:30 at the Fred Maytag II Scout Center located within the study area at 6123 Scout Trail. City staff and the project team facilitated a come and go style open house with multiple information stations organized around the large meeting room. The meeting was held in conjunction with the South of Gray’s Lake Master Plan Neighborhood Workshop. The meeting was also promoted and shared with local landowners and the Project Stakeholder Group to attend. The combined meeting brought in approximately 80 members of the public.



The public open house provided ample time and space to consider the roadway segment alternatives studies and provide input. South of Gray’s Lake Neighborhood Workshop and information about the Gray’s Lake Wetland design were also shared.

Attendees were provided the option of recording comments on a single form to give back to the project team, emailing the project team, or adding sticky notes to the study display boards. Overwhelmingly, attendees chose to add their sticky notes right on the boards. Open House public comments are summarized in **Table 2-1**.

Table 2-1. Open House Public Input Summary

Station	Public Comments
Park Avenue	<p>Provide bike lane or bike path from I-28 to GFP</p> <p>Recommended grade separated underpass for Great Western Trail connection was desired</p> <p>Do whatever is needed to reduce vehicle traffic along Park Avenue west of SW 46th Street.</p>
SW 56th Street and SW McKinley Ave Intersection	<p>Alternative intersection that utilized a roundabout concept was liked over the T-Intersection</p>
Willow Creek Avenue	<p>No Comments</p>
Park Avenue/George Flagg Parkway/SW 46th Avenue Intersection	<p>No comments on the traditional signalized intersection alternative</p> <p>Roundabout concept received the most comments. None were outright negative, but some concerns were provided. Address bike/pedestrian crossings at roundabout legs safely. Provide a positive driving experience and operation that moves cars onto improved George Flagg Parkway. Ensure bike traffic arriving at northeast corner has safe crossing west and south.</p> <p>West-bound Park Ave T-intersection raised concern about impact to MVP sports. More parking needed, not less.</p>
George Flagg Parkway Alternative 1	<p>Positive comments over alternative 2. Protect the woodland area and existing trail</p> <p>Roundabout intersection with SW 30th and Bell Ave preferred over stop controlled</p> <p>Move trailhead connection to crossing with Bill Riley, not back to levee</p> <p>Bundle roadway/trail/safety projects</p>
George Flagg Parkway Alternative 2	<p>Comment encouraged using existing George Flagg Parkway as trail if Alt 2 picked, not returned to grass so riders don't have to go along ring roads.</p>

Bell Avenue	<p>Comments address sidewalk on both sides</p> <p>Concerns about east bound grade approach to Fleur Drive.</p>
Watrous Ave	<p>Question if it is possible to curve off current alignment to connect with SW 56th St south of current intersection</p> <p>Questions if Scout Trail will be extended by the City to SW 56th St</p> <p>Question what access will exist from SW 56th St and Watrous to property south of Watrous</p>
Great Western Trail	<p>Encouraged more consideration by airport for trail alignments that screened trail from airport or minimize impact to existing alignment.</p> <p>Bridge on SW 56th Street west of trail was encouraged to keep open if safe.</p>
Thomas Beck Rd	<p>Stop light, limited movement, or roundabout at druid hill all recommended</p> <p>Gateway roundabout encouraged to make room for big truck aprons, though some comments expressed concern about function and safety of a roundabout at this location. Signalized intersection recommended instead.</p> <p>Address storm drainage south to north under Thomas Beck Rd when designing modified cross section.</p> <p>Connect more trails from Macrae Park to Thomas Beck Rd</p>
SW 9th Street	<p>Safe bike/ped crossing of SW 9th preferred over a stairway up to SW 7th and Thomas Beck</p>
Gray's Lake Wetland	<p>Add 3 to 5 years of establishment costs, maintenance will be an on-going investment.</p>

3. Quadrant Assessment

The Southwest Infrastructure Planning and Study area presented in **Figure 1-1** is large and covers a range of diverse land use contexts and previous planning studies to consider. Four geographic quadrants were organized to support planning and assessment of project alternatives that can be understood in context. The information gained and input received within each quadrant is described below with conditions that are important for evaluating future transportation infrastructure improvements.

- **Southwest Quadrant (Section 3.1)** is bounded by IA Hwy 28, SW McKinley Avenue, SW 42nd Street, and Willow Creek Avenue.
- **Northwest Quadrant (Section 3.2)** is bounded by IA Hwy 28, Park Avenue west to the rail spur line, then south of Park Avenue east to SW 46th Street, and north of SW McKinley Avenue.
- **Central Quadrant (Section 3.3)** is bounded by the Park Avenue boundary with the Northwest Quadrant, George Flagg Parkway, and Fleur Drive.
- **East Quadrant (Section 3.4)** is bounded by Fleur Drive on the west and Indianola Avenue on the east with major connections provided to SW 9th, SW 7th, and SW 2nd Streets leading into and out of downtown Des Moines.

3.1 Southwest Quadrant

The southwest quadrant of the study area (**Figure 3-1**) is bounded by IA Hwy 28, SW McKinley Avenue, SW 42nd Street, and Willow Creek Avenue. The 855 acres in this quadrant are divided by SW 56th Street which currently serves local traffic as a two-lane,

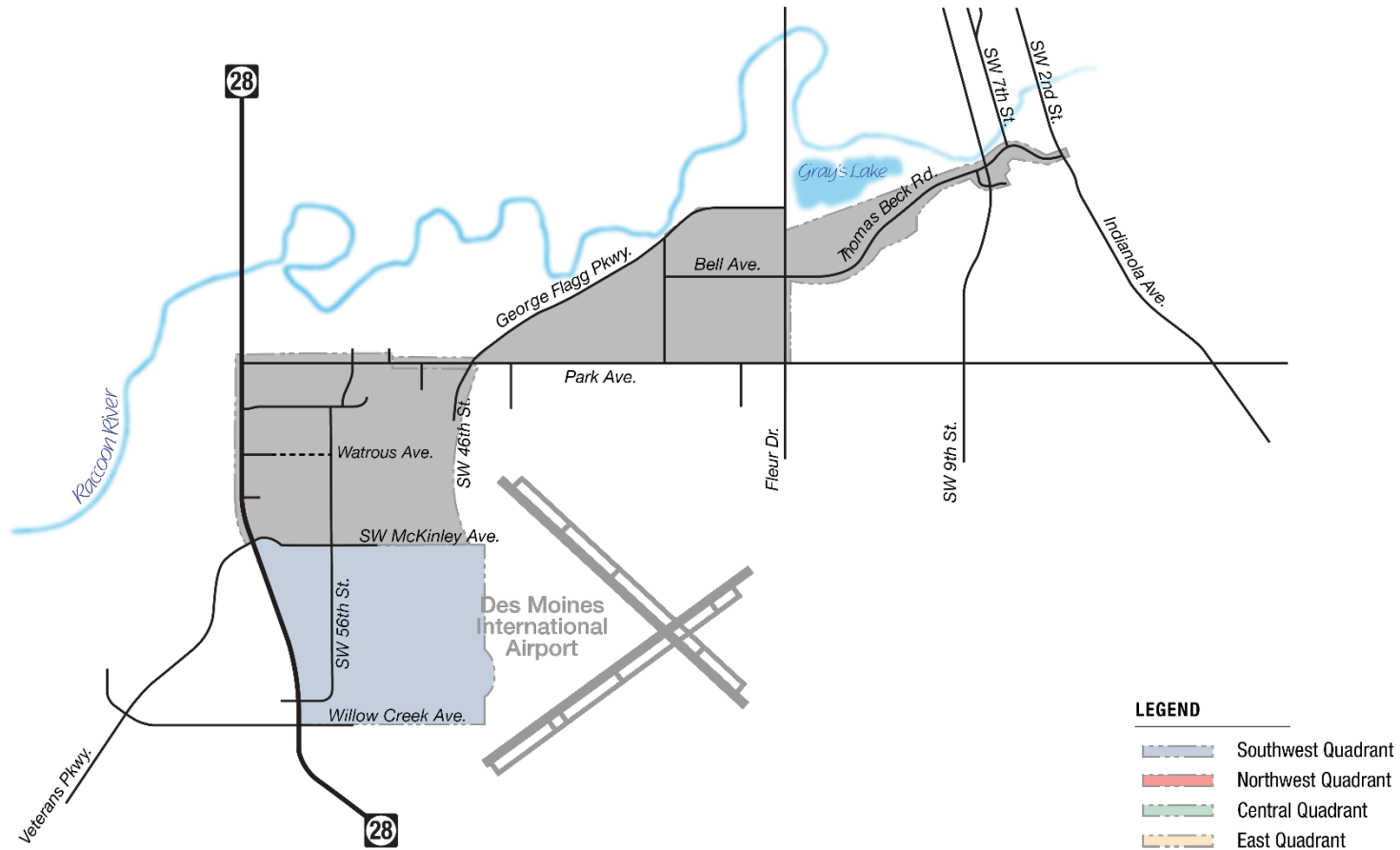


SW 56th Street looking north toward intersection with SW McKinley Avenue and Airport Runway Protection Zone.

rural cross section with no curb or sidewalk. Approximately 370 acres are in private ownership with the City and Airport Authority being the single largest land holder. The area is largely rural in context and characterized as rolling terrain with steeper slopes as it approaches the alignment of Frink Creek and the Great Western Trail, which are approximately 100 feet lower elevation than the quadrant's peak elevation. Existing land use is zoned for Business Park, Neighborhood Mixed Use, and Airport.

and Airport.

Figure 3-1. Southwest Quadrant of Southwest Infrastructure and Planning Study Area



NOTE: Drawing Not to Scale



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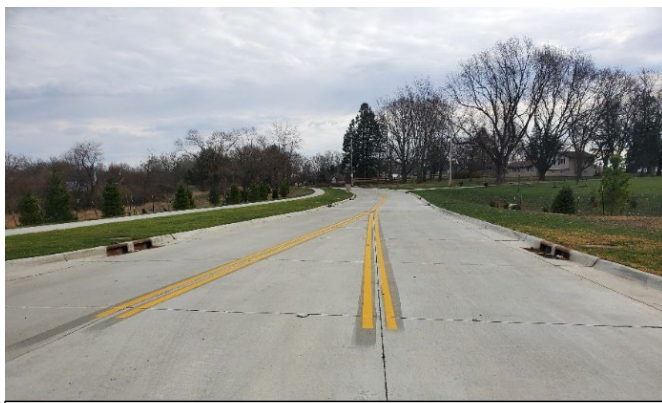
SW McKinley Avenue approaching intersection with SW 56th Street.

Prior to 2000, the connection to Old Army Post Road was eliminated and connection of SW 56th Street diverted into the unsignalized intersection of IA Hwy 28 at SW Leland Avenue. In 2014, the renamed Willow Creek Avenue was improved for a quarter mile east of IA Hwy 28 to maintain 12-foot drive lanes, add an additional 1-foot shoulder, and replace the aging bridge with a box culvert over the Great Western Trail. Existing pavement east of this improved section is currently in poor condition.

The Des Moines International Airport also maintains a runway protection zone that overlays the intersection of SW 56th Street with SW McKinley Avenue and private property to the northwest. The Airport Layout Plan includes construction of an additional runway that would cross Frink Creek. While the creek would be passed through a culvert below the runway, the airport layout plan redirects the Great Western Trail alignment around the airport, reconnecting along SW 46th Street. No timeline is established for construction of any new runway or existing runway expansion. Currently, the Great Western Trail crosses under Willow Creek Avenue and at-grade with SW 42nd Street and again at the closed SW McKinley Avenue roadway section.



SW 56th Street looking south from intersection with SW 56th Street.



SW McKinley Avenue improved cross section looking east.

Southbound left turn lanes provide access from IA Hwy 28 to this quadrant and a northbound right turn lane is only provided at SW McKinley Avenue. The westbound approach to this later intersection was improved for approximately 1,000 feet in 2020 with construction of a southbound left turn lane at the intersection. The turn lane opens to a two-way, center turn lane serving personal vehicle and truck traffic before narrowing to a two-lane curb and gutter section with 12-foot drive lanes and a five-foot sidewalk along the south side. An eight-foot side path was also constructed with the development on the northeast corner of the

intersection of IA Hwy 28 and SW McKinley Avenue. This is the first section of a side path intended to be constructed north to Park Avenue. In addition to the bounding intersections of the quadrant, SW Leland Avenue and a private drive have unrestricted and unsignalized access onto IA Hwy 28. No additional intersection access to the highway is planned.



Recent improvements to SW McKinley Avenue between IA Hwy 28 will bring more potential traffic toward the intersection with SW 56th Street where the Airport Runway Protection Zone overlays the existing intersection.

3.1.1 Roadway Design and Traffic Operations Considerations

A summary of key findings from the design and traffic operations assessment are listed below. These structural opportunities and constraints are considered in combination with other planning inputs gained (Section 3.1.2) to develop the recommendations for projects (Section 4) and implementation (Section 5).

- The IA Hwy 28 traffic volumes onto and from the Willow Creek Avenue and Leland Avenue intersections are minimal and development pressure may not generate significant volume changes during the planning period, delaying justification for significant improvements in near term without runway expansion by the Airport.
- A new diagonal alignment should connect Willow Creek Avenue and SW 56th Street to support eventual development and need for regional circulation.
- Less than 700' separates the signalized highway intersection at Willow Creek Avenue and the unsignalized intersection at Leland Avenue. Traffic volumes at Leland Avenue are not projected to warrant traffic signalization in the study period. As such, northbound traffic along a new alignment between Willow Creek Avenue and SW 56th Street would be directed to use the signalized intersection with SW McKinley and IA Hwy 28.
- Signal timing at IA Hwy 28 and Willow Creek Avenue would be modified if a cargo support facility is constructed and increased freight traffic begins loading at the intersection.

- The pavement cross section of Willow Creek Avenue should be designed for the most intense freight use; specifically for land side cargo support, improving the pavement depth to support significant potential truck traffic
- Steep grades between Frink Creek/Great Western Trail and SW McKinley Avenue influence the potential new alignment connecting Willow Creek Avenue, which should not have a grade exceeding 4% and maximize the potential to tie into adjacent future development bounded by the airport property line.
- The SW McKinley Avenue alignment will shift south to connect directly into SW 56th Street southbound along City property in the southwest quadrant of the intersection when it is reconstructed. A connection to northbound SW 56th Street is planned as a secondary movement; this connection is evaluated as part of the Northwest Quadrant.
- Crash analysis indicates no significant concern for the four Southwest quadrant study intersections. Reconstruction of the intersection at SW McKinley Avenue with IA Hwy 28 has experienced slightly reduced number of crashes per year since 2020.



The Great Western Trail is a significant active transportation corridor weaving through the study area and long term impacts from Business Park and Airport Development must be accommodated.

3.1.2 Additional Feedback and Input Considerations

A summary of additional feedback and input gained during the planning process are listed below. These qualitative opportunities and constraints are considered in combination with design and operations planning inputs gained (Section 3.1.1) to develop the recommendations for projects (Section 4) and implementation (Section 5).

- Define a roadway network that conforms with the current Airport Layout Plan and existing Runway Protection Zone requirements.
- Recommend Industrial/Business Park Typology for internal circulation of anticipated future land uses that also rely on access for workers who drive, walk, bike, or take transit.

- Maximize the use of the existing intersection of SW McKinley Avenue and SW 56th Street until reconstruction on new alignment is necessary, only programming when the financing to build a new runway is committed and the Airport Authority purchases any additional property required for the Airport Runway Zone.
- Plan Willow Creek Avenue to support Airport Development Plans and economic development opportunity Area H which will eliminate local access to SW 42nd Street from the west.
- Do not plan fixed route transit for this quadrant within the planning horizon, but on demand transit services could be supportive of heavy employment centers.
- Anticipate that a combined Frink Creek and the Great Western Trail greenway is not permitted to cross under the new, future runway. The trail would be rerouted adjacent to the airport runway fence line and maintain recreational trail functionality with no at-grade street crossings.
- Recommend separated side path or on-street bike facilities on both improved and new alignments to support the Complete Streets policy and recommend an appropriate level of protection for any on-street bike lanes proposed.
- Make connection to the Great Western Trail on the south end to support active transportation intending to cross under IA Hwy 5 to the south and make connection to the 130-foot-wide pedestrian crossing at IA Hwy 28 and SW McKinley Avenue to support active transportation intending to access the sidepath on the north side of Veterans Parkway.
- Utilize existing water lines along IA Hwy 28 (36" prestressed concrete), SW 56th Street (12" PVC), and SW 42nd Street (16" ductile iron) which should provide sufficient capacity for development in this quadrant though water demand can vary based on business support needed. If needed, the 12" PVC sized connecting with the 36" PCCP line at Leland Avenue may be increased to tee off from SW 56th Street. Minor development between Willow Creek Avenue and Frink Creek could be served best from a new water line connection made by the airport to support the Airport Economic Development Plan.
- Sanitary sewer main runs along SW 56th Street then turns east along Frink Creek before crossing under it and Willow Creek Avenue toward Army Post Road. Development plans for Airport Area H would modify the force main and supply enough length for developers to tap into. No public improvements are anticipated
- Public water supplies the area along SW 56th Street. Improvements to SW 56th Street should provide private tap for development east of SW 56th Street. Development between Frink Creek and Willow Creek Avenue constrained until Airport brings water to the area.
- Address increased impervious surfaces through subdivision review so new development satisfies stormwater retention and treatment requirements to prevent downstream flooding. Stormwater pipe will be constructed to drain the new alignment and collect development runoff at manholes.
- Surface drainage will be directed to cross under Great Western Trail at existing undercrossing locations. The cross section of SW 56th Street will also include curb

and gutter to drain stormwater from the site and receive runoff from adjacent development to the west.



The future infrastructure needs of this quadrant anticipate heavier business park use and a realigned intersection of SW McKinley Avenue with SW 56th Street and more truck traffic than is anticipated north of SW McKinley Avenue.

3.1.3 Southwest Quadrant Alternatives Considered

Two roadway network concepts were initially considered for the Southwest Quadrant highlighted in **Figure 3-1** based on the feedback and input received above. First, a traditional grid network could be envisioned with a connecting street that converted the private drive on IA Hwy 28 east to the Airport property line in alignment with what is Porter Avenue located east of the airport. After the northbound transition of SW Leland Avenue to SW 56th Street is made, an intersection could be constructed to continue a SW Leland Avenue alignment east to a point where it turns south to cross the Great Western Trail, Frink Creek, and connect with Willow Creek Avenue. Traffic operations would not support the recommendations for the intersection, but private development could make connections to these public improvements to complete the internal roadway network.

The second alternative considered was a curvilinear alignment that connected Willow Creek Avenue to SW 56th Street further north and in alignment with Kenyon Avenue located on the east side of the airport. This alternative would provide one spine for development to connect with on the north and south sides of the road. This alignment could best accommodate the steeper slopes located in this quadrant. Various cross section concepts could be considered to support the potential flexibility needed to serve the eventual development demand of this area. An innovative cross section was proposed to address the unique challenge of providing Complete Streets in this quadrant. Within the 38-foot travel lane cross section, two 11-foot driving lanes could be paired with 5-foot bike lanes elevated on 2-foot wide mountable curb and gutter. This would place bicycle through-traffic on-street as a travel lane to reduce at-grade intersection conflicts and connect with a new sidepath running north along the east side of SW 56th Street. No physical barrier other than the mountable curb was considered.



3.1.4 Description of SW Quadrant Proposed Roadway Alternatives

Three roadway alternatives in the Southwest Quadrant were proposed for evaluation and presented for public input. Roadways and intersections reflected existing corridors that should be improved to address forecast traffic volumes, development of adjacent land uses, and multi-modal

transportation needs. The alternatives in the Quadrant are summarized in **Table 3-1** and correspond with conceptual plan files included with the traffic analysis report.

Table 3-1. List of SW Quadrant Alternatives Proposed for Evaluation

Appendix A Figure	Alternative Name	Alternative Description
A-1 and A-2	Willow Creek Avenue	Willow Creek Avenue will be widened on alignment east of Iowa Hwy 28 approximately 1,250 feet through the intersection with the “New Alignment” street.
A-3 and A-4	New Alignment Street	The New Alignment is a proposed two-lane city street that runs from Willow Creek Avenue on the south to SW 56 th Street on the north. It is curvilinear due to area topography and controlled with stop signs. The cross section proposes mountable curb apron to provide a raised on-street bike lane connecting the Great Western Trail to future redevelopment.
A-5 and A-6	SW 56 th Street / Leland Avenue	The southern segment of SW 56 th Street is aligned in as a NW/SE diagonal along the western edge of the DSM Airport boundary and south of SW McKinley Ave.

3.2 Northwest Quadrant

The northwest quadrant of the study (**Figure 3-2**) is bounded by IA Hwy 28, Park Avenue west to the rail spur line, then south of Park Avenue east to SW 46th Street, and north of SW McKinley Avenue. The 780 acres within the quadrant includes large parcels of undeveloped property that were anticipated to develop around the previous alignment of the Southwest Connector. Approximately one third of the 620 acres of private land are held by two

property owners. The future land use plan for the area has not been modified and the future roadway network will support a mixture of Business Park, Low Density Residential, Parks and Open Space/Development Control (along Frink Creek), and Airport. Frink Creek and the Great Western Trail run along the east boundary of the quadrant approximately 80' lower than the highest elevation within the quadrant.

Parcels fronting IA Hwy 28 are developed north to the intersection with signalized Park Avenue with access provided at unsignalized Scout Trail, Watrous Avenue, and Thornton Avenue. Each northbound intersection has at least 60 feet of unstriped highway shoulder widened for right turning vehicles. Southbound left turn lanes are also provided at each study intersection to support access to the quadrant from the west. A mix of shoulder types are present and a separated sidepath is planned along the highway easement between SW McKinley Avenue and Park Avenue.



IA Hwy 28 moves vehicles between Veterans Parkway and Park Avenue. A sidepath is planned along the east side.

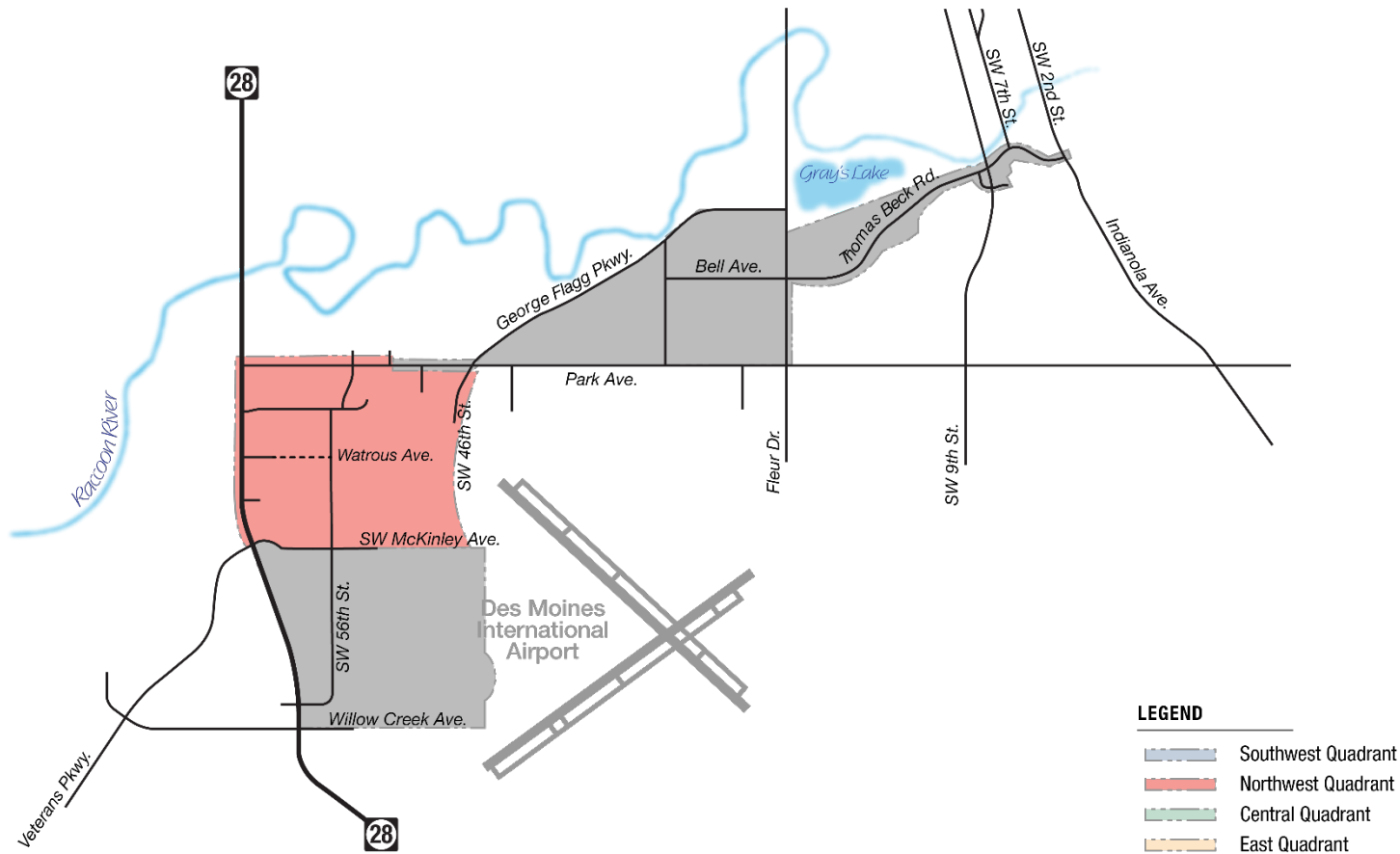


Park Avenue lanes, divided medians, and posted speed are not consistent with Community Residential Typology.

Park Avenue was reconstructed to a five-lane cross section with 12-foot drive lanes and a 35-mph posted speed limit within the past five years between IA Hwy 28 and SW 46th Street. The section is designated as Community Residential Typology with MoveDSM. The improved portion of Park Avenue within this study quadrant was constructed with raised landscaped medians that separate left turn lanes from oncoming traffic. A five-foot sidewalk was constructed on the south side of this roadway improvement, but no sidewalk exists currently on the north side. The raised

median section was terminated at the east bound approach to existing railroad spur lines that support industrial users on the south side of Park Avenue. This splits divides Park Avenue as two segments evaluated in the Northwest and the Central quadrants.

Figure 3-2. Northwest Quadrant of Southwest Infrastructure and Planning Study Area



NOTE: Drawing Not to Scale

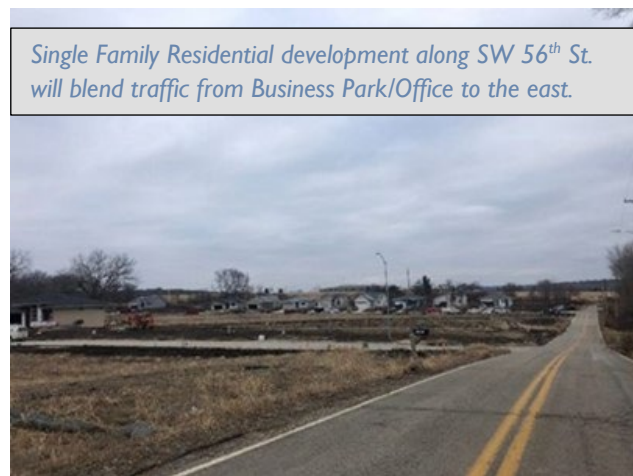


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The south leg of the Park Avenue and SW 56th Street intersection was shifted east in 2000. The realignment anticipated plans for a future connection to the Southwest Connector which would have removed one rail spur line serving existing industrial uses as well as multiple residences that remain today along SW 56th Street rural cross section. The undeveloped land along the south side of Park Avenue is subdivided and Thornton Avenue has been improved to connect IA Hwy 28 to the realigned segment of SW 56th Street.



A future realignment of SW 56th Street is needed to connect with previously improved alignment to Park Avenue.

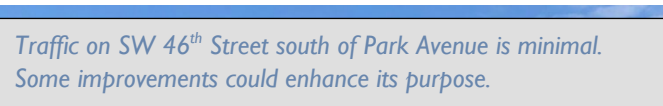


Single Family Residential development along SW 56th St. will blend traffic from Business Park/Office to the east.

Single family residential development has been constructed along SW 56th Street south of the realigned intersection with Park Avenue. Two residential cul-de-sac subdivisions access the new alignment of SW 56th Street anticipating the two alignments will be connected to improve safety for all modes of travel. Single family residential development pressure continues to grow west of SW 56th Street while Business Park is planned to the east. A recommended alignment for Watrous Avenue to connect east was evaluated as part of this study to support the combination of use

types. Scout Trail also intersects IA Hwy 28 but does not continue through to SW 56th Street. SW 56th Street currently serves local traffic as a two-lane rural cross section with no curb or sidewalk. SW 56th Street continues south toward the intersection with SW McKinley Avenue. When the intersection with SW McKinley Avenue is realigned, maintaining a northeast leg of the intersection realignment would impact private property adjacent to the Airport Runway Protection Zone limits.

Much of the private land between SW 56th Street and SW 46th Street is not currently platted for subdivision but is held by a single landowner who will make improvements to connect with public infrastructure provided. The Great Western Trail approaches Park Avenue from the south adjacent to the alignment of SW 46th Street. This roadway provides some private property and airport maintenance service access for vehicles and connects the gravel



Traffic on SW 46th Street south of Park Avenue is minimal. Some improvements could enhance its purpose.



road to SW 42nd Street from intersection with SW McKinley Avenue.



Frink Creek flows north, approaching Park Avenue in the northeast corner of this quadrant where the floodplain of the Raccoon River backs up through the existing triple box culvert during higher flows. The west and central boxes pass the base flows while the east box is raised to pass storm event flows. Vehicles routinely park along the wide, unpaved shoulders of SW 46th Street to use as an informal trailhead for accessing the Great Western Trail to walk, run or bike along it and avoid the at-grade crossing with Park Avenue.



Circulation of traffic in this Quadrant will limit cut through traffic and balance the need to support Business Park/Office east of SW 56th Street.

3.2.1 Roadway Design and Traffic Operations Considerations

A summary of key findings from the design and traffic operations assessment are listed below. These structural opportunities and constraints are considered in combination with other planning inputs gained (Section 3.2.2) to develop the recommendations for projects (Section 4) and implementation (Section 5).

- Avoid traffic circulation recommendations that would encourage vehicles cutting through the quadrant instead of utilizing available IA Hwy 28 and Park Avenue corridor capacity. Roadway segment analysis along Park Avenue indicated that

future traffic volumes will be supported by the current capacity and provide effective vehicle operations.

- A roadway alignment that connects Watrous SW 46th Street to development within this quadrant is not recommended due to the desire to limit loading of SW 46th Street, avoiding existing runway protection zones, limit cut through traffic, and allow future development to develop a roadway network supportive of the ultimate land use.
- A roadway alignment that connects Watrous Avenue to SW 56th Street is recommended to best support future Business Park development east of the intersection. A four-way intersection on the existing alignment avoids additional private residential property impacts to the east and supports traffic operations and safety along SW 56th Street.
- With the connection of Watrous Avenue and the limits on development footprint outside the Airport property, connecting Scout Trail through to SW 56th Street as a public improvement is not recommended.
- Intersection operation delay at IA Hwy 28 and Thornton Avenue may increase by 2040 depending on development scenarios. Monitor traffic signal warrants and promote traffic circulation patterns that reduce traffic demand at unsignalized intersections.
- Recommend traffic calming methods along SW 56th Street to discourage high travel speeds between SW McKinley Avenue and Park Avenue.
- Locate the northeast leg of SW 56th Street to SW McKinley Avenue intersection outside the future airport property line and provide safe operations for traffic approaching at an angle with reduced sight lines. The wider turning radius of the Industrial Business Park typology recommended for SW McKinley Avenue should be provided with the intersection design of the northeast leg of the intersection.
- Crash analysis suggests that the intersections studied in this quadrant are not an elevated priority to resolve. Although the Park Avenue and SW 56th Street intersection averaged 2.2 crashes per year, none were recorded in 2019 or 2020 suggesting that cross section improvements made along Park Avenue are operating satisfactorily under the current demands. Park Avenue and IA Hwy 28 experiences approximately 0.48 crashes per Million Entering Vehicles (MEV) which is slightly lower than the study area average of 0.55, though the severity rate of 2.82 MEV is slightly higher than the average of 2.63 MEV.



Connecting SW 56th Street to SW 46th Street is not feasible or beneficial to the intended outcome of this Study.

3.2.2 Additional Feedback and Input Considerations

A summary of additional feedback and input gained during the planning process are listed below. These qualitative opportunities and constraints are considered in combination with design and operations planning inputs gained (Section 3.2.1) to develop the recommendations for projects (Section 4) and implementation (Section 5).

- Recommend a Community Residential Typology for SW 56th Street and Watrous Avenue to blend the traffic needs of Single Family Residential and Business Park land uses on either side. This typology would support the current future land use plan as well as support any changes that may occur to increase the variety of housing types along SW 56th Street.
- Recommend a Community Mixed Use Typology along Park Avenue within this quadrant consistent with the cross section of recent roadway improvements. This recommendation continues east as described in the Central Quadrant analysis.
- Minimize the amount of land required to construct a northeast leg for a realigned intersection of SW 56th Street and SW McKinley Avenue and combine purchase of private property for realigning the intersection to accommodate both the airport protection zone limits and the right of way necessary to construct the connection.
- Preserve rural character and encourage a green corridor along SW 56th Street which is desirable for residential and business development.
- Anticipate UP Railroad spur line to remain in operation and support existing industrial properties after SW 56th Street is improved south of the current improved section.
- Anticipate the intersection of SW 56th Street and Watrous Avenue to serve Business Park development that needs access to signalized intersections at Park Avenue, IA Hwy 28, and likely SW McKinley Avenue. A four-way intersection constructed in line with the existing alignment supports future traffic operations and safety needs for the public improvement.

- Construct a sidepath that can connect bicycles traveling north to Park Avenue along the east side of SW 56th Street.
- Recommend bicycle facilities along Park Avenue to connect residents with trails, recreational areas, and destinations outside the quadrant and the study area.
- Anticipate the airport to construct a new runway at some time in the future and to realign the Great Western Trail along the property fence line to the point where it rejoins the existing alignment adjacent to SW 46th Street.
- Plan for eventual restriction of local access along SW 46th Street approximately one quarter mile south of the intersection with Park Avenue to support current Airport Development Plans at such time an additional runway is constructed.
- At the intersection of SW 46th Street with Park Avenue, preserve access to multi-family residential property on the east and consider alternative access for the sports facility parking lot to the west.
- Consider alternatives that can improve the northbound approach of the Great Western Trail to Park Avenue. Ideas to improve the traffic circulation and trailhead parking are welcomed.
- Recommend a trail connection between the intersection of Wolcott Avenue and SW 42nd Street to SW 46th Street to improve residential access to the Great Western Trail from east side of the airport.
- Anticipate development to connect with existing water and sewer lines along SW 56th Street and Park Avenue and to satisfy stormwater treatment requirements for new and redevelopment. Tee waterline under any improvement to SW 56th Street to allow development to connect. Private development will connect to existing gravity sewer through the area.

3.2.3 Northwest Quadrant Alternatives Considered

Multiple roadway network concepts were initially considered for the Northwest Quadrant highlighted in **Figure 3-2** based on the analysis and input described above. Each concept presumed that a new airport runway would eventually be constructed according to the Airport Layout Plan and the intersection of SW 56th Street and SW McKinley Avenue would maintain a realigned northeast leg to circulate traffic to the existing signalized intersection of SW McKinley Avenue and IA Hwy 28 rather than unsignalized intersections at Watrous Avenue and Thornton Avenue.

Concepts also considered the utility and constraints of connecting Watrous Avenue to SW 46th Street as a public improvement or limiting the segment to SW 56th Street only. Potential alignments that could limit private property impacts considered horizontal curve and vertical slope challenges to connect SW 56th Street south of the existing improved section. Access to and from SW 46th Street is expected to be retained, but not serve southbound through traffic in the long term. Opportunities to improve the existing Great Western Trail approach to Park Avenue were also compared with a realigned northbound approach to Park Avenue that would move the alignment adjacent to Frink Creek as a

greenway trail and create a new grade separated underpass of Park Avenue described in the Central Quadrant description.

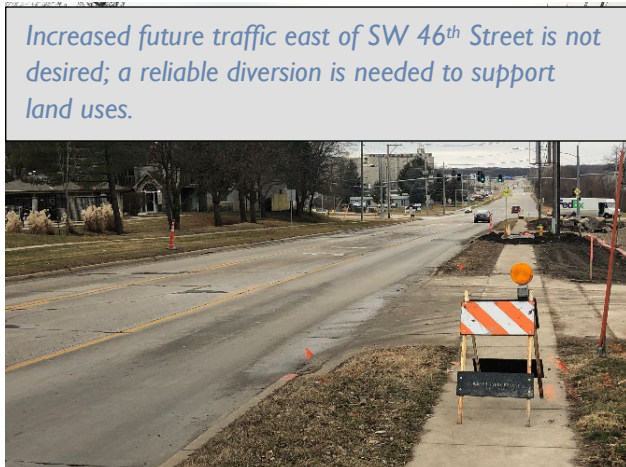
3.2.4 Description of NW Quadrant Proposed Roadway Alternatives

Three roadway and intersection alternatives in the Northwest Quadrant were proposed for evaluation and presentation for public input. Roadways and intersections reflected existing corridors that should be improved to address forecast traffic volumes, continued development of adjacent land uses, and multi-modal transportation needs. The alternatives in the Quadrant are summarized in **Table 3-2** and correspond with conceptual plan files included with the traffic analysis report.

Table 3-2. List of NW Quadrant Alternatives Proposed for Evaluation

Appendix A Figure	Alternative Name	Alternative Description
A-7	SW 56th Street & SW McKinley Ave Intersection	Two alternatives were evaluated, a traditional intersection (stop control on the southbound approach) and a roundabout.
A-8 and A-9	SW 56th Street – N of McKinley Ave	The northern segment of SW 56th Street is aligned as a NW/SE diagonal along the western edge of the DSM Airport boundary and north of SW McKinley Avenue to connect with the realigned section connection with Park Avenue.
A-10	Watrous Avenue	Watrous Avenue will be extended as a two-lane roadway east of the current segment to SW 56th Street.

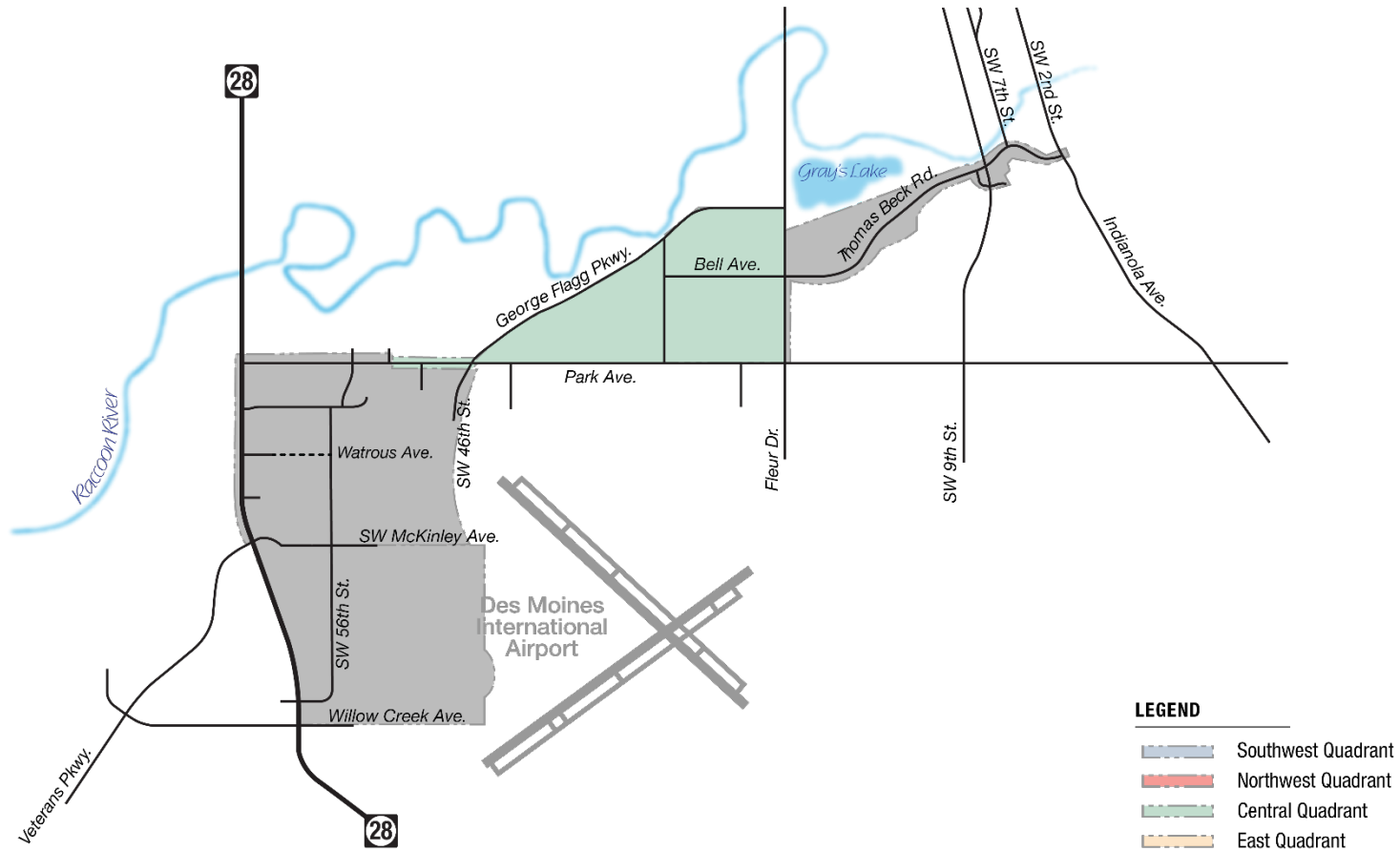
3.3 Central Quadrant



The Central Quadrant of the study area (**Figure 3-3**) is organized according to major transportation network decisions necessary to improve long-term traffic operations and safety between developing portions of the area located southwest of Park Avenue with the developed and potential redevelopment areas along Bell Avenue/Thomas Beck Road east of Fleur Drive to downtown Des Moines. The Central Quadrant is bounded by the Park Avenue boundary with the Northwest Quadrant, George Flagg Parkway, and Fleur Drive. It represents a significant portion of the

developed Southwestern Hills neighborhood with interior single family residential mixed with Neighborhood Mixed Use, and Business Park along Park Avenue, Bell Avenue, and George Flagg Parkway. It also includes the major intersection of Park Avenue/George Flagg Parkway/SW 46th Street. Previous plans to construct a Southwest Connector would have addressed increasing traffic operations and safety considerations at this intersection as well as reduce traffic loading onto Park Avenue east of George Flagg Parkway to Fleur Drive.

Figure 3-3. Central Quadrant of Southwest Infrastructure and Planning Study Area



NOTE: Drawing Not to Scale



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Previous plans anticipated traffic diverting away from Park Avenue. Currently, public is concerned about amount and high speed of traffic moving through this corridor between SW 46th Street and Fleur Drive.

The full length of Park Avenue between IA Hwy 28 and SE 22nd Street has been envisioned within MoveDSM to provide a Community Residential typology. This includes the improved five-lane cross section west of the intersection with George Flagg Parkway and SW 46th Street. East of this major intersection, Park Avenue transitions significantly from a three-lane cross section down to two-lanes at Southern Woods Drive, providing 13-foot lane widths until Wauwatosa Drive where it opens back to a five-lane cross section as it approaches the Fleur Drive intersection.

Unstripped, westbound right-turn bays are provided at SW 23rd Street, Southern Hills Drive, SW 39th, and SW 40th Streets. A traffic signal is located at the intersection with SW 42nd Street where a west bound right turn lane is also provided. Pedestrian walkways and signals support active transportation crossings at SW 24th Street and in front of Brody Middle School where bus loading lanes are also located adjacent to the school. The 30 mile per hour speed limit is reduced to 25 miles per hour before and after school to slow vehicle traffic. Parking is prohibited on both sides of this segment and DART Route 8 serves Brody Middle School.



Supporting the diversion of future traffic will require a realignment of George Flagg Parkway and modification of a current floodplain levee along SW 30th Street.

The Central Quadrant is also adjacent to Des Moines Water Works Park with two vehicle access points and two trail access points to the park for circulation. In addition, it includes Carney Park, Brody Middle School park, the at-grade Park Avenue crossing of the Great Western Trail, Great Western Trail Connector rail-trail segment, and Bill Riley multi-use trails. Existing development south of George Flagg Parkway and east of SW 30th Street are protected by a flood levee. Frink Creek passes under Park Avenue through a triple box culvert as it drains baseflow and stormwater to the Raccoon River. The Raccoon River is an imposing natural resource that can push floodwaters over George Flagg Parkway multiple times a year, degrading the longevity of the paved surface, and requiring temporary traffic closure of the truck route until floodwaters can recede.



A realignment of George Flagg Parkway to connect with Bell Avenue would improve the efficiency and reliability of the corridor for personal vehicles and truck traffic.

George Flagg Parkway does not include a defined typology in MoveDSM although it does serve as a truck route and secondary emergency response route between Fleur Drive and Park Avenue. The cross section provides two 12-foot driving lanes between Park Avenue and SW 30th Street which was resurfaced in 2017 to include 3-foot rock shoulders on both sides. From the east, vehicles either access the roadway at the intersection with Fleur Drive using 10 to 12-foot driving lanes and pavement conditions for the truck route that are degrading significantly, or from the intersection with SW 30th Street where trucks divert north from Bell Avenue. The George Flagg Parkway truck route and primary emergency response route continues west from the intersection with Park Avenue and SW 46th Street. The segment west of SW 30th Street would have been relinquished to the Des Moines Water Works Park under previous plans to construct the Southwest Connector. The alternative concept to raise George Flagg Parkway and connect it to Bell Avenue was most recently documented in the Des Moines Water Works Park Master Plan and was evaluated as the Bell Avenue Alternative of the Southwest Connector alternatives evaluation.



Bell Avenue between SW 30th Street and Fleur Drive can be modified to better support a community mixed use.

The area bounded by Bell Avenue, SW 30th Street, George Flagg Parkway, and Fleur Drive is designated as Business Park and has served a long history of warehousing, shipping, storage and limited manufacturing. The diversity of existing use types includes an operating vineyard and the Water Works Treatment facility buildings. Bell Avenue is designated as Community Mixed Use typology from the intersection with SW 30th Street to the east. The existing tee-intersection with SW 30th Street, 12-foot drive lanes, and large number of single property accesses are inconsistent with this future typology. The Bill Riley Trail serves as a key active transportation route through the area for recreation and bike commuters heading past Gray's Lake into downtown Des Moines.



The current intersection of George Flagg Parkway and Fleur Drive needs to support local development, but access beyond SW 28th is not necessary if George Flagg Parkway is connected to Bell Avenue at SW 30th Street. Parks and trails also influence design.

3.3.1 Roadway Design and Traffic Operations Considerations

A summary of key findings from the design and traffic operations assessment are listed below. These structural opportunities and constraints are considered in combination with other planning inputs gained (Section 3.3.2) to develop the recommendations for projects (Section 4) and implementation (Section 5).

- Previous plans and studies summarized in Section 1 reflect a base assumption that the Southwest Connector would divert east bound traffic away from Park Avenue between SW 46th Street and Fleur Drive. Traffic operations (**Appendix B**) were evaluated with and without a diversion that improved George Flagg Parkway.
- Retain the Park Avenue Community Residential typology between George Flagg Parkway and Fleur Drive by designing the intersection with SW 46th Street to encourage most of the east bound through-traffic to divert from Park Avenue onto an improved George Flagg Parkway.
- Evaluate multiple design concepts including the existing signalized alternative for the Park Avenue/George Flagg Parkway/SW 46th Street intersection.
- Raised medians added to Park Avenue west of SW 46th Street will limit some currently unrestricted access on the south side of the road. Recommend methods to limit this impact.
- Traffic demand on the existing 2-lane cross section of Park Avenue is projected to provide the lowest level of service if a reliable diversion is not provided for traffic heading to downtown Des Moines. A 3-lane section with a center turn lane would be required to provide the segment with acceptable future level of service, but the additional right-of-way for travel lanes and on-street bike lanes envisioned would impact a substantial amount of private property and expense.
- In addition to being unreliable during flood events and designated for truck traffic, George Flagg Parkway north of Park Avenue will also have future capacity limited on the existing 2-lane cross section compared to the anticipated volume.
- Eliminating the eastbound George Flagg Parkway to SW 30th Street to Bell Avenue transition and providing 3-lane cross sections at the approach to each intersection would provide acceptable traffic operations.
- Resurfacing George Flagg Parkway from SW 30th Street to Fleur Drive is recommended in the short term.
- Support the vehicle circulation and parking recommendations made in the Des Moines Water Works Parks Plan but maintain SW 30th Street north of Bell Avenue for egress from the area between Bill Riley Trail and George Flagg Parkway until an alternative egress can be constructed.
- Evaluate alternate intersection design concepts for George Flagg Parkway/SW 30th Street/Bell Avenue to support traffic operations, limit private property impacts, and address existing grade differences.

- Three intersections in the Central Quadrant have average crash rates per year that are supportive of prioritizing solutions. George Flagg Parkway and Fleur Drive (10.2 crashes/year) as well as Fleur Drive and Bell Avenue (9.6 crashes/year) and Park Avenue and George Flagg Parkway (3.2 crashes/year) accounted for approximately 30% of all crashes of the entire infrastructure study area. Crash rates and crash severity at the first two intersections were more than double the study area average.

3.3.2 Additional Feedback and Input Considerations

A summary of additional feedback and input gained during the planning process are listed below. These qualitative opportunities and constraints are considered in combination with design and operations planning inputs gained (Section 3.3.1) to develop the recommendations for projects (Section 4) and implementation (Section 5).

- Consider reducing Park Avenue's existing cross-section between Southern Woods Drive and Wauwatosa Drive up to three feet, minimizing the need for additional right-of-way to be taken for future on-street bike lanes and sidewalk infill.
- Recommend solutions to improve perceived safety challenges for pedestrians and bicyclists crossing Park Avenue and specifically those using the Great Western Trail.
- Consider grade separated solutions for the Great Western Trail that could improve reliability and safety for all modes of travel through this key intersection.
- Connect George Flagg Parkway to Bell Avenue with a surface elevation that is constructed above the 100-year floodplain to provide efficient and reliable personal, freight, and emergency vehicle movements.
- Locate any George Flagg Parkway realignment away from existing residential property of Southwestern Hills Neighborhood.
- DART Route 11 provides service near intersection of IA Hwy 28 and Park Avenue and Route 8 serves the intersection of Fleur Drive and Park Avenue. Without financing to support a fixed route in between, expanding the service of DART On-Demand and improving active transportation infrastructure to transit stops can support transit use.
- Consider the Des Moines MPO Environmental Justice analysis that identifies five of seven degrees of disadvantage overlaying this quadrant raising the importance of recommending equitable solutions for multimodal transportation.
- Preserve the existing alignment and natural wooded character of the existing Great Western Trail Connector to the extent practicable when determining the ultimate realignment of George Flagg Parkway.
- Preserve recreational facilities to the extent practicable including baseball fields at Carney Park, the Great Western Trail Connector, and access to Des Moines Water Works Park from the east.
- Account for the raised elevation of George Flagg Parkway when designing trail crossings and access to Water Works Park loop road and Grays Lake loop road.

- Evaluate alternatives to conceal the exposed section of sanitary sewer line along the south side of Great Western Trail Connector with any future project to improve resilience and ease of maintenance.
- Prior to removing the SW 30th Street segment north of Bell Avenue to support expanding the Circuit of the Des Moines Water Works treatment facility, develop a subarea master plan for Bell Avenue north to George Flagg Parkway between SW 30th Street and Fleur Drive (Valley Gardens). Within the plan organize access management along Bell Avenue and identify an easement for connecting SW 28th Street between George Flagg Parkway and Bell Avenue as well as sanitary and water line improvements. As an alternative, the Southwest Connector corridor study also considered connecting the two legs of SW 23rd Street. If a redevelopment plan is completed for the area, this alternative should be considered also.

3.3.3 Central Quadrant Alternatives Considered

Multiple roadway network concepts were considered for the Central Quadrant highlighted in **Figure 3-3** based on the feedback and input received above. All alternatives anticipated that no additional driving lanes would be constructed along Park Avenue between George Flagg Parkway/SW 46th Street and Fleur Drive. All alternatives also anticipated that raised medians would be constructed on Park Avenue west of the intersection to match the existing cross section of Park Avenue as it approaches IA Hwy 28.

The existing signalized intersection at Park Avenue/George Flagg Parkway/SW 46th Street with improved approach lanes was evaluated for future traffic operations and safety with no modification and contrasted relative with two alternatives. The first alternative would reconstruct the intersection as a roundabout serving all four legs of existing roadways. The second alternative would realign the west leg of Park Avenue to connect with George Flagg Parkway directly and tee the east leg of Park Avenue into a three-way signalized intersection. The assessment of these alternatives is presented in **Table 3-3** below.

Table 3-3. Park Ave/George Flagg Pkwy/SW 46th St Alternatives

Alternative Purpose	Four Way Signal	Roundabout	Three Way Signal
Encourage Traffic Diversion onto George Flagg Pkwy	Low	Moderate	High
Provide Efficient and Reliable Traffic Operations	Low	High	Moderate
Reduce Risk of Intersection Crash Severity	Low	High	Moderate
Relative Construction Cost of Intersection and Approach Lanes	\$0.54M	\$3.75M	Not Estimated
Relative Operational Cost Comparison	High	Moderate	High
Convenient Access to Existing Residential/ Commercial Properties	Moderate	High	Low
Public Perception	Moderate	Moderate	Low
Improve Safety for Active Transportation Crossing	Low	High	Low

Reduced accessibility for properties south of Park Avenue was the limiting factor for the three-way signal alternative and the reason a cost estimate was not produced. Overall, the roundabout design would be expected to provide greater benefit for the desired traffic diversion, peak hour operations reliability, directional wayfinding/gateway, and lower long-term cost of operations compared to the four-way signalized intersection. Access to some existing properties would be significantly impacted by the raised medians added to Park Avenue, but a roundabout could provide the best alternative to minimize these impacts. The construction cost of the roundabout is higher, but flexibility in the footprint location is greater and may benefit existing properties in all four corners of the existing intersection if it shifted to the northwest. The roundabout concept alternative is recommended with this study.

An outcome of project discussions about the intersection alternatives was an innovative concept proposed to remove the at-grade crossing of the Great Western Trail at Park Avenue. As described in the Northwest Quadrant summary, the existing alignment of the northbound trail could be shifted west to pass along the Frink Creek floodway as it passes the existing MVP Sports facility toward a triple box culvert underneath Park Avenue. The realignment would require the box culvert to be retrofit and pass a 12' paved trail under the roadway with 12' tall, boxed culvert. This greenway modification could be paired with creating paved diagonal parking for a formal trailhead along the west side of SW 46th Street. A new driveway entrance into the MVP Sports facility from SW 46th Street could then be created to improve traffic operations along the south side of Park Avenue and support Park Avenue west bound access restricted by the raised medians. Analysis was not completed, but if additional stormwater runoff is generated from the construction of a new Des Moines International Airport runway, upsizing of these existing culverts may be needed. The concept of combining culvert improvements with a realignment of the Great Western Trail under Park Avenue was a generally well-received by public review.



The grade and approach with of Frink Creek to Park Avenue could support a greenway design that included a paved recreation trail and passes underneath Park Avenue to remove two at grade crossings.

Two alternatives were considered to provide a raised vertical alignment of George Flagg Parkway. The Existing Alignment Alternative (**Figure 3-4**) would raise the roadbed on the approximate location of the existing alignment, shifting slightly to prevent the toe of the side slopes created from impacting the existing Circuit of Des Moines Water Works treatment facility. The alignment would then divert in-line east to connect with Bell Avenue at a reconstructed four-way intersection with SW 30th Street and Bell Avenue. The alignment would preserve the existing Great Western Trail Connector alignment which would divert under the elevated realignment of George Flagg Parkway as it crosses a minor drainage through Carney Park and approaches the top of existing levee adjacent to SW 30th Street. The trail would terminate at SW 30th Street across from the approximate intersection with the Bill Riley Trail.

The Modified Alignment Alternative (Figure 3-5) would transition George Flagg Parkway to widen and raise the alignment of Great Western Trail Connector as the new roadway alignment and transfer the Great Western Trail over to the previous alignment of George Flagg Parkway consistent with the Des Moines Water Works Park Plan. Negative environmental impact, unsubstantial difference in fill soil volume, and proximity to existing neighborhood residential property eliminated the Modified Alignment Alternative and no cost estimate was prepared.

Access to SW 30th Street north of Bell Avenue is anticipated to be retained for the planning period and resurfacing the deteriorating section of George Flagg Parkway is recommended as well between SW 30th Street and Fleur Drive. Two intersection alternatives were considered at SW 30th Street/George Flagg Parkway/Bell Avenue. A two-way stop-controlled intersection would maintain east/west through vehicle movements across the low traffic volume SW 30th Street. A four-leg roundabout alternative was also considered to increase the flexibility of orienting the intersection approaches and footprint. This alternative was considered to accommodate the vertical elevation challenges between the floodplain levee and existing grade of SW 30th Street. Because of the vertical elevation differences between George Flagg Parkway and Bell Avenue, it is not possible to prevent permanent impacts to adjacent properties to the north. Two properties would be eliminated as described in the Des Moines Water Works Park Master Plan.

Only one alternative was considered for Bell Avenue between SW 30th Street and Fleur Drive to create a cross section that matches the recommended Community Mixed Use typology from Move DSM. The ideal 10-foot drive lane and 10-foot center turn lane would only be recommended if a redevelopment plan removed warehouse and industrial users from the corridor. Access control will be required and was suggested as part of the analysis to support traffic operations along the proposed 3-lane cross section.

Figure 3-4. George Flagg Parkway Existing Alignment Alternative



Figure 3-5. George Flagg Parkway Modified Alignment Alternative



3.3.4 Description of Central Quadrant Proposed Roadway Alternatives

Seven roadway and intersection alternatives in the Central Quadrant were proposed for evaluation and presentation for public input. Roadways and intersections reflect existing corridors that should be improved to address forecast traffic volumes, provide reliable transportation network for personal vehicle and truck traffic, changes to adjacent land uses, and multi-modal transportation needs. The alternatives in the Central Quadrant are summarized in Table 3-4 and correspond with conceptual plan files included with the traffic analysis report.

Table 3-4. List of Central Quadrant Alternatives Proposed for Evaluation

Appendix A Figure	Alternative Name	Alternative Description
A-11 and A-12	Park Avenue	Park Avenue will be converted to provide a raised median to promote access control and crash reduction. A sidepath will also be provided on the north side of the street.
A-12A	George Flagg Pkwy & Park Avenue Traffic Signalized	The traffic signal control at the intersection of Park Avenue with George Flagg Parkway would remain and intersection would be reconfigured to provide signal modifications that direct flow from the west leg to the north leg. The east leg would become the minor leg of the intersection.
A-12B	George Flagg Pkwy & Park Avenue Roundabout	A roundabout is proposed as an alternative to traffic signal control at the intersection of Park Avenue with George Flagg Parkway.
A-13 and A-14	Realignment of George Flagg Parkway – Alternative 1	George Flagg Parkway is realigned between Park Avenue and SW 30th Street to tie in as the west leg of the existing intersection of SW 30th Street with Bell Avenue. This provides a more direct route connecting to Bell Avenue and a grade separation with the Great Western Trail connector with Bill Riley Trail.
A-16 and A-17	Realignment of George Flagg Parkway – Alternative 2	George Flagg Parkway is realigned between Park Avenue and SW 30th Street on the existing Great Western Trail connector alignment. Great Western Trail connector would be realigned to the abandoned George Flagg Parkway ROW.
A-15 and A-18	George Flagg Pkwy / Bell Avenue & SW 30th Street Intersection	Two alternatives were evaluated, a traditional intersection (stop control on the northbound approach) and a roundabout. A roundabout is proposed as an alternative to two-way stop-control at the intersection of SW 30th Street with Bell Avenue.
A-19	Bell Avenue	Bell Avenue will be improved to a three-lane cross section between SW 30th Street and Fleur Drive.

3.4 East Quadrant



Traffic operations approaching the Central Business District access streets are anticipated to become more congested over time.

The East Quadrant of the study area (**Figure 3-6**) is organized to support the roadway design as well as long-term traffic operations and safety along the Bell Avenue/Thomas Beck Road/Indianola Road corridor considering possible redevelopment that may be anticipated to occur in the area. The East Quadrant is bounded by Fleur Drive on the west and Indianola Avenue on the east with major connections provided to SW 9th, SW 7th, and SW 2nd

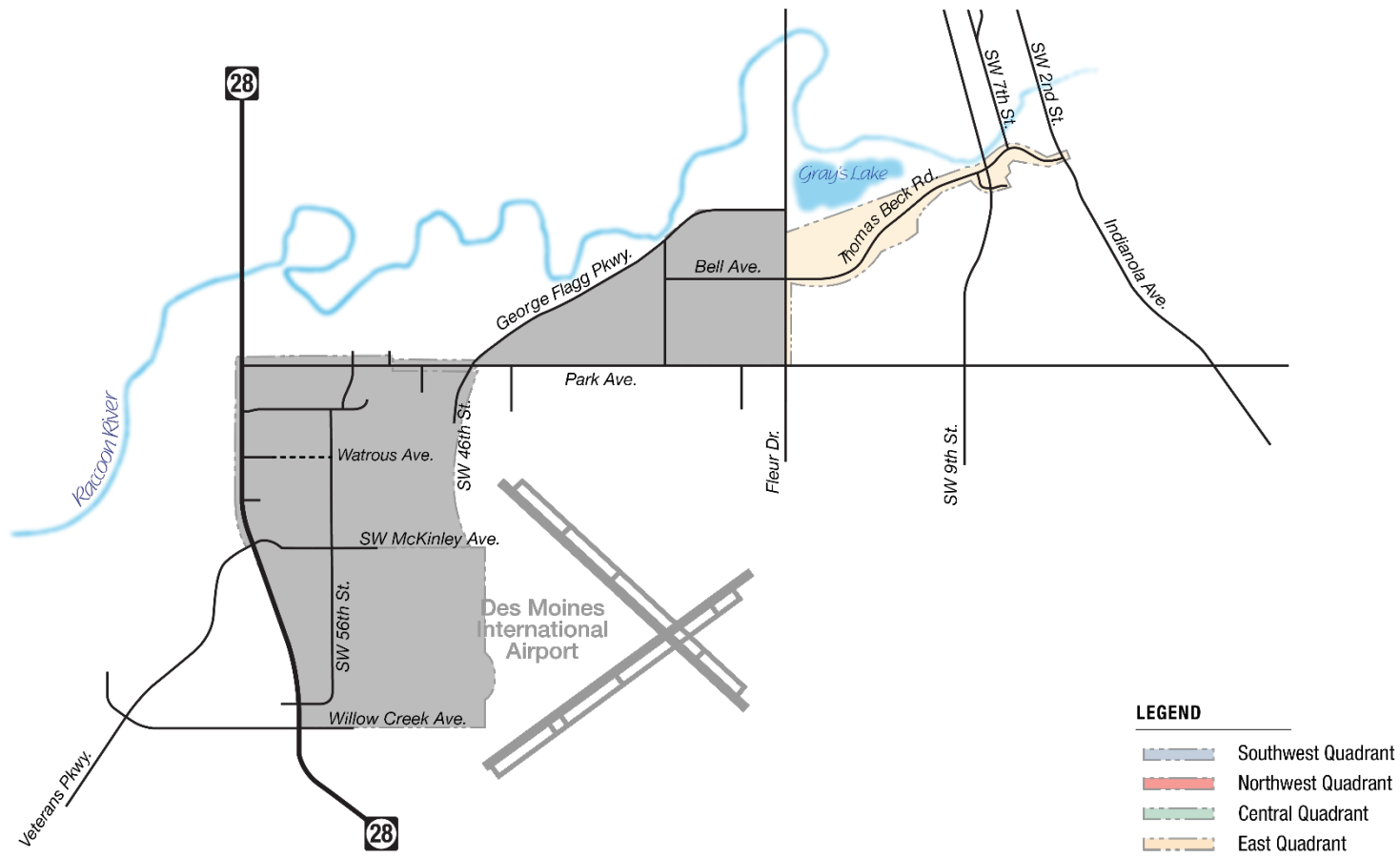
Streets leading into and out of downtown Des Moines. Gray's Lake Park and a proposed constructed wetland (**Appendix C**) bound the north side along with the Raccoon River as the corridor proceeds east. Grays Lake Neighborhood and the South of Gray's Lake Master Plan (**Appendix D**) overlay the transportation corridor and connects residential land uses to the south. MacRae Park provides a connecting land use and a shared boundary with Indianola Hills neighborhood where redevelopment opportunities also exist along the south side of Indianola Road.



Indianola Road carries regional residential typology from Indianola Avenue to SW 7th Street.

Indianola Hills Neighborhood residential properties line the steep slopes above Thomas Beck Road and Indianola Road to the south which divides at the intersection with Bancroft Street. Bancroft Street provides an existing truck route link down to Thomas Beck Road from SW 9th Street where a grade separated crossing serves access north into downtown. The intersection of Thomas Beck Road with SW 7th Street is at-grade, serves as a truck route also, and has an existing pedestrian crosswalk and signal on the east leg of the three-way intersection.

Figure 3-6. East Quadrant of Southwest Infrastructure and Planning Study Area

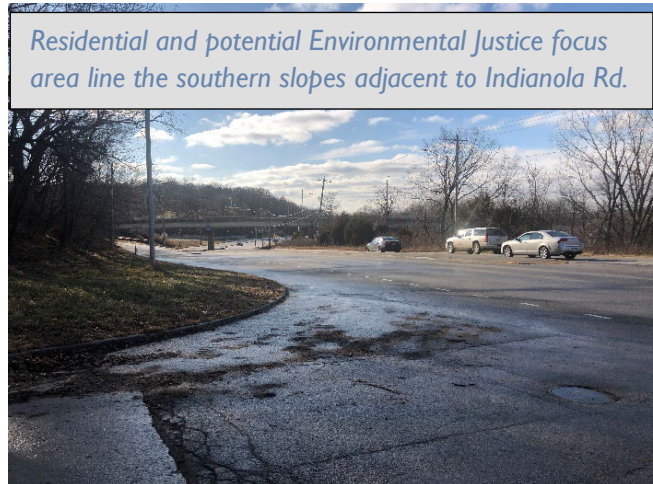


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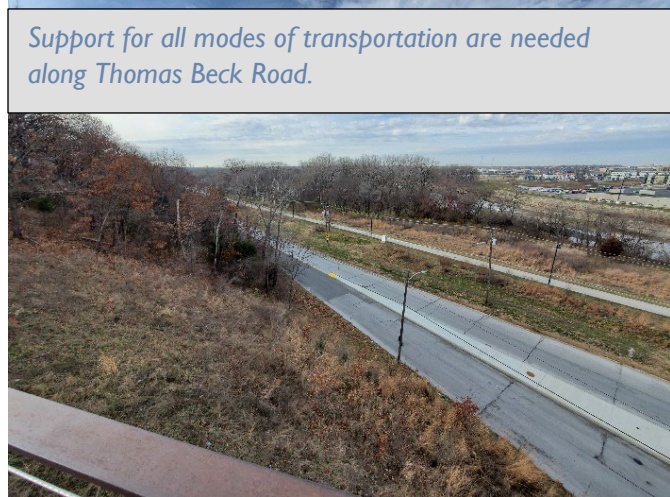


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In 2002, Indianola Avenue was connected north to SW 2nd Street by the new bridge over the Raccoon River. The intersection with Indianola Avenue was modified from three-legs, connecting with SE 1st Street, to the four-leg signalized intersection present today. Traffic patterns have shifted away from SW 7th Street for vehicles accessing downtown from the south and southeast, but the segment remains a defined truck route. The segment between SW 7th Street and Indianola Avenue includes various cross section lane widths, access drives, sidewalks, parking restrictions, school loading, and serves DART Routes 7 and 8.



Residential and potential Environmental Justice focus area line the southern slopes adjacent to Indianola Rd.



Support for all modes of transportation are needed along Thomas Beck Road.

Thomas Beck Road was established in part to serve mining operations near the current location of MacRae Park during the early history of Des Moines. The roadway cut into the toe of the park on the north end and serves a mix of developments west toward Fleur Drive including single-family homes, industrial warehousing, and office buildings. Signalized intersections at Fleur Drive and SW 7th provide a 1.5-mile free flowing segment of 35 mph roadway. The sloping topography and limited number of intersection crossings combined with the orientation of Gray's Lake Park and the

Raccoon River separates neighborhood active transportation connectivity to downtown. Addition of the Pomerantz Family Trail in 2013 and a sidepath between MacRae Park and the Meredith Trail in 2015 have helped to address some of the active transportation barriers between the neighborhood and downtown.



Bicycle and pedestrian traffic are also anticipated to increase through the area of Thomas Beck Rd./Bancroft as safer access from Indianola Hills Neighborhood and MacRae Park is provided.

Within the Grays Lake Neighborhood area, a South of Gray's Lake Master Plan (**Appendix D**) was created in conjunction with the Southwest Infrastructure Planning and Study process to anticipate transportation improvements and infrastructure needed to support redevelopment potential along the Thomas Beck Road corridor. The Master Plan organizes future development around the best land uses given proximity to natural resources, parks, downtown Des Moines, reconstruction of Fleur Drive with gateway access from the Des Moines International Airport, and DART Transit route 8.

The South of Gray's Lake Master Plan area is bounded by the intersections of Fleur Drive with Bell Avenue and SW 7th Street with Indianola Road. The predominant land uses are mixed-use and light industrial / flex space with the Bell Avenue Business Center campus occupying the largest amount of land area. The Gray's Lake wetland (**Appendix C**) is proposed as an integrated natural amenity adjacent to the master plan area.



Future land use planned for South of Gray's Lake may include increased residential and mixed use density, improve connectivity with Gray's Lake Park, and support greater demand for transit and active transportation in the study area.

3.4.1 Roadway Design and Traffic Operations Considerations

A summary of key findings from the design and traffic operations assessment are listed below. These structural opportunities and constraints are considered in combination with other planning inputs gained (Section 3.4.2) to develop the recommendations for projects (Section 4) and implementation (Section 5).

- Previous plans and studies summarized in Section 1 reflect a base assumption that a roadway project (the Southwest Connector) would carry 2040 thru traffic along the north boundary of this quadrant to an intersection with Thomas Beck Road and continue to SW 7th Street. Since the roadway will not be constructed, Bell Avenue, Thomas Beck Road, and Indianola Road from Fleur Drive to SW 7th Street need to support the anticipated future traffic volumes.
- Traffic circulating from Bell Avenue onto Fleur Drive to access downtown will be supported with the recent reconstruction projects along Fleur Drive and reduce some volume anticipated to continue east toward SW 9th or SW 7th Streets.
- The length of the uninterrupted corridor between Fleur Drive and SW 7th Street should be broken up with additional intersection traffic controls to support the Community Mixed Use Typology recommended by MoveDSM and calm traffic.
- Increased traffic volumes and wider cross-section for portions of the alignment should avoid reducing access to private property and may require shifting the centerline more to the south.
- Bell Avenue and Thomas Beck Road is expected to carry more traffic than the current two-lane roadway can support resulting in significant congestion levels along the corridor.
- The 3-lane cross section on Bell Avenue from Fleur Drive to Druid Hill Drive should be sufficient to support future traffic levels.
- Access control limiting northbound access to Casey Drive from Bell Avenue may be necessary to support the South of Gray's Lake Master Plan traffic circulation.
- An improved 3-lane cross section for mixed-use redevelopment access west of SW 9th Street could also support traffic demand.
- A 3-lane cross section on Thomas Beck Road between Druid Hill Drive and the east entrance of the Bell Avenue Business Center would cut into existing trail and tree line on the north or steep slopes on the south and not support any additional access points. Maintaining the current 2-lane cross section can be used as one of the recommended traffic calming measures along the corridor.
- The estimated 16,000 vehicles per day passing the pedestrian crossing at MacRae Park by 2040 will warrant a pedestrian activated traffic signal.
- Multiple cross-section widths could be modified to improve the MoveDSM Regional Residential typology on Indianola Road between SW 7th Street and Indianola Avenue. Although pavement condition has deteriorated to a point it must be resurfaced in the short term, a long-term evaluation is recommended to complete a

road diet and improve the cross section with improve infrastructure for active transportation on the north side of the alignment.

- Data for the previous five years recorded 96 intersection crashes in the East Quadrant. Crashes at intersections of Bancroft Street with 9th Street and Indianola Road with Indianola Avenue exceeded 6 crashes per year. The number of rear end collisions (17) is significant at the intersection of Bancroft Street and SW 9th Street. Broadsides crashes (13) were the most frequent type at the intersection of Indianola Road/SE 1st Street and Indianola Avenue.
- The SW 9th Street Corridor analysis beyond the intersection with Bancroft Street was beyond the limits of this study. Improvements at the intersection will result in better return on investment if they are made in conjunction with a longer corridor study covering the area between Dart Way and Bell Avenue or longer.
- Westbound left turns from Bancroft as well as both all turning movements of eastbound onto Bancroft are expected to have the lowest level of service and delay. If a traffic signal is not warranted by the corridor study limiting westbound thru and left turns is recommended to improve reliable operation for neighborhood residents accessing SW 9th Street.

3.4.2 Additional Feedback and Input Considerations

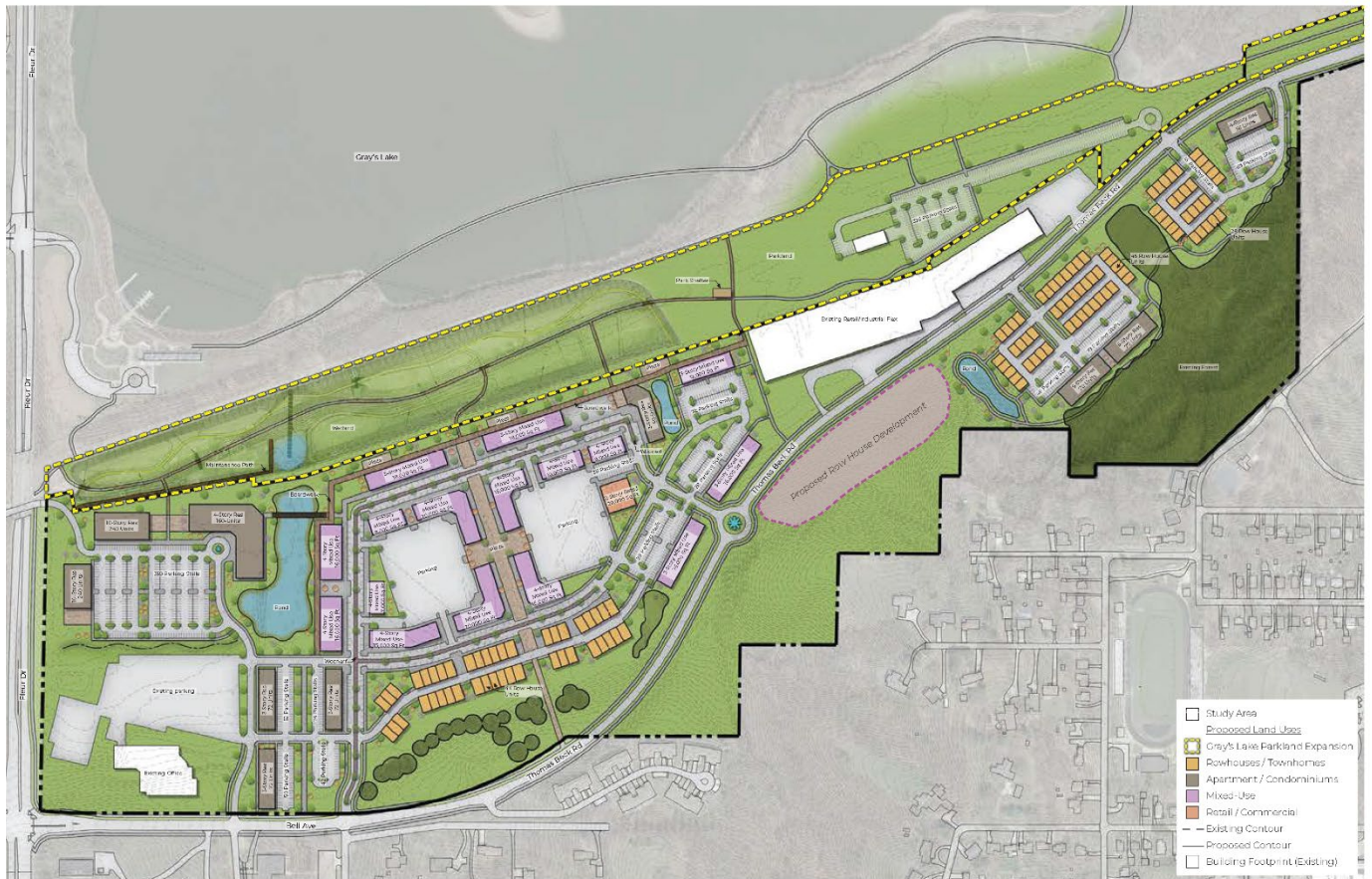
- Consider the Des Moines MPO Environmental Justice analysis identifies four of seven degrees of disadvantage overlaying this quadrant raising the importance of recommending equitable solutions for multimodal transportation.
- Sidewalks and trail connections must be improved to remove barriers to active transportation for the Indianola Hills Neighborhood. Creating safe crossings and connections with MacRae Park, Gray's Lake Park, and the Meredith Trail connecting to the regional trail system is a priority for the community.
- The South of Gray's Lake Master Plan (**Appendix D**) documents the feedback and input received from the community about redevelopment between Fleur Drive and SW 7th Street. The future redevelopment will support a unique destination within the metro Des Moines region, provide mid-intensity mixed-use developments, integrate open space and parks, add residential housing in the form of multi-family and townhome/row houses, all within a walkable development footprint.
- The South of Gray's Lake Master Plan was completed with no timeline for redevelopment to occur. Current redevelopment opportunities are being explored along Indianola Road, but major redevelopment of the largest parcels is not anticipated to be completed in the short term.
- Preserving existing amenities and functions of Gray's Lake is a high priority for the community. A constructed wetland between the lake and redevelopment area south of Gray's Lake will provide water quality improvements and a natural buffer between urban redevelopment and the lake.

- Additional water line capacity will be needed to support residential development on the south side to Thomas Beck Road. Project can be coordinated with roadway improvement based on timing of development proposals.
- Depth to sanitary line and the location of the line will influence the ability to construct stormwater treatment facilities on site. Integration of stormwater ponding and the Gray's Lake wetland will be challenged, but with coordination between the City and development, could be coordinated.
- Stormwater drains should be disconnected from Gray's Lake by constructing the wetland. The design concept (**Appendix C**) could be integrated with stormwater treatment requirements for redevelopment, but access to forebays for cleanout must be provided from the development side. A public/private partnership for construction and maintenance could be considered.

3.4.3 East Quadrant Alternatives Considered

Roadway network concepts were evaluated for the east Quadrant that reflected modified cross sections for Bell Avenue/Thomas Beck Road/Indianola Road. Development of the South of Gray's Lake Master Plan (**Figure 3-7**) included as **Appendix D** influenced the roadway alternatives considered necessary to support local access and circulation patterns. The results of the traffic study (**Appendix B**) were used to make operation and safety recommendations along the corridor. Projects that are programmed or have planning level cost estimates were also included with the study considerations.

Figure 3-7. South of Gray's Lake Land Use Master Plan



Redevelopment planning for the area South of Gray's Lake was an important step to complete and influence the multi-modal transportation recommendations of the Southwest Infrastructure study. The study's Advisory Group considered the potential outcomes of development under zoning in place and compared future desired land use scenarios to establish the recommended master plan. The produced master plan is illustrative and will guide the type and form of development and redevelopment to occur. Actual plans may look and operate slightly different than Figure 3-7 within the parameters set by the master plan. Maintaining and enhancing green infrastructure, preserving and increasing the number of active transportation connections, creating gateways with viewsheds of downtown, and calming traffic along the corridor were the largest influences from the master Planning effort affecting the transportation concepts considered.

3.4.4 Description of East Quadrant Proposed Roadway Alternatives

Two roadway alternatives in the East Quadrant were proposed for evaluation and presentation for public input. Both roadways reflected existing corridors that should be improved to address forecast traffic volumes, changes to adjacent land uses, and multi-modal transportation needs. The two alternatives in the Quadrant are summarized in Table 3-5 and correspond with conceptual plan files included with the traffic analysis report.

Table 3-5. List of NE Quadrant Alternatives Proposed for Evaluation

Appendix A Figure	Alternative Name	Alternative Description
A-20 and A-21	Thomas Beck Road	Thomas Beck Road will be improved to a three-lane cross section between Druid Hill Drive and SW 9th Street. A new roundabout intersection will be provided at the east entrance to the 1901 Bell Avenue building.
A-22	Indianola Hills Neighborhood Area Improvements	The east leg of the intersection of Bancroft Street and SW 9th Avenue will be converted to right-in / right-out / left-in access. A separate project would improve Indianola Road with a road narrowing, sidewalk, and sidepath. A pedestrian activated signal and crossing between Fulton Drive and Hillside Avenue would connect to a sidepath west of SW 9th as a separate project.

3.4.5 Description of Gray’s Lake Wetland Analysis

The Gray’s Lake Wetland analysis (**Appendix C**) that was completed for this study did not impact roadway or traffic circulation considerations directly. The purpose and benefit of parking area access to the wetland area from Thomas Beck Road and access locations for routine maintenance at the identified plunge pool locations were debated. The recommended wetland design concept was created to provide necessary water quality function first and support the recommendations that the wetland include trail surface connectivity with Bill Riley and Meredith Trails as well as maintain a green boundary separating redevelopment anticipated to the south.



Stormwater runoff to this area provides sufficient volume of water to support a constructed wetland, but the wide and narrow footprint makes designing an effective drainage pathway more challenging than other locations.

Gray’s Lake is a significant natural asset for the City of Des Moines with more than one million visitors a year. Protecting the active recreation and natural amenities of the lake includes constructing a new wetland south of the lake as documented in the adopted 2016

Gray's Lake Master Plan. The wetland area envisioned will use a portion of the property owned by the City and previously operated as a rail yard while recognizing environmental restrictions for soil excavation that overlay portions of the City's property. In conformance with covenant restrictions established by IDNR, selected parcels were avoided in the conceptual wetland design of approximately 16.7 acres in size. The recommended grading plan and details for establishment deviate or expand from the illustrative concept in the 2016 plan in a few ways described below.

- Grading Restrictions: Limitations placed on 16.64 acres of parcels 71, 72, and portions of 70 and 73 (City Parcel IDs 77-782416103005 and 77-782416103006) will exclude soil excavation for the wetland west of the Pomerantz Family Trail. Soils located west of these parcels (City Parcel ID 77-782417620005) have been approved for excavation by IDNR and should be the focused area for wetland construction.
- Establishment and Maintenance: Grading and construction of the wetland will require oversight during establishment and on-going maintenance. Staffing needs and technical knowledge of these phases of operation will need to be addressed by City through Parks and Recreation Department or in collaboration with Polk County Conservation. An initial establishment period of at least two and up to five years should be anticipated with plans to finance construction.
- Prior Soil Contamination: Soils in the wetland area were subject to a substantial testing and remediation plan that was completed prior to the City's purchase of the property. Pollutants in the soil column were remediated to the point of certification by IDNR that they were not mobile. Even so, care can be taken to avoid migration of any residual pollutants through vegetation uptake. The wetland maintenance plan may also consider, if recommended by IDNR, a vegetation harvest strategy that removed the currently immobile pollutants that may be taken up from the soil column. Based on the IDNR certification of the soil and groundwater conditions in the proposed wetland area, it was not anticipated that further monitoring would be required, though it could be implemented as a best practice.
- Picnic Shelter: The adopted 2016 Gray's Lake Master Plan illustrated a centralized picnic shelter connecting walking trails to shelter within the constructed wetlands. The function of a shelter can be provided, but alternate location is recommended to accommodate safety, maintenance, ADA access and cost. A location between the wetland and Pomerantz Family Trail is recommended to be accessible to staff for maintenance and cleaning by vehicles and equipment.
- Trails: The Bill Riley Trail and Meredith Trail are high traffic and higher-speed bike trails used by commuters and for recreation with access points to Gray's Lake and the larger Central Iowa Trails network beyond. Increased use of electric assist bikes will add to the anticipated travel speed through the corridor. Thoughtful orientation and alignment to connections is needed to limit cross traffic and control access in and out of the constructed wetland walking trails.
- Trail and Drainage: The design elevation of the wetland and permanent pool of Gray's Lake did not support the open channel flow design illustrated under Bill Riley Trail adjacent to the wetlands. A constructed headwall structure is required to be located between the wetland and the trail. The headwall maintains the existing

stormwater drainage pattern passing underneath the trail alignment and supports the intended water quality function of the wetland.

- Orientation to South of Gray's Lake Master Plan: The concept design defined the limits of the wetland within existing City property. The sediment forebay was designed to be established on the existing City property. Stormwater from the South of Gray's Lake Master Plan is required to account for onsite pre-treatment and storage of stormwater to ensure that the created wetlands are not adversely impacted by increased nutrient loads and increase stormwater loads. An opportunity to simplify maintenance access and support stormwater treatment requirements was identified and described in the South of Gray's Lake Master Plan concept. The timing of the wetland construction and redevelopment south of the wetland would need to be coordinated to support this concept.

4. Recommendations

The array of planning efforts that influenced this study were important for understanding how previous land use and transportation decisions formed the current transportation network and its gaps. Input from a range of project stakeholders and the public was also important to direct the development and evaluation of concepts that will determine the future transportation network. The many physical conditions that should influence the ultimate design decisions are addressed within this study's design considerations and evaluation. With this guidance in mind, this section documents the recommendations of the Southwest Infrastructure and Planning Study.

4.1 Roadway Typology Network Recommendations

"Streets in Des Moines do more than just move cars." That statement is the key to understanding Des Moines Transportation Plan Street Typologies which align the way streets are designed with the surrounding land uses and the way people use the streets. The Des Moines Transportation Master Plan designates street typologies for the roadways within the study area. The designations left some placeholders for the roadways to be defined by this study.

These segments are assigned a recommended typology. The transportation plan also leaves the typology of George Flagg Parkway undefined beyond a local road, yet the outcome of this study recommends a significant improvement to the roadway and contiguous roadway typology between IA Hwy 28 and SW 7th Street. The roadway typology network recommended by this study are illustrated in **Figure 4-1**. The comparison of current and recommended typologies is summarized in **Table 4-1** with notes about each recommendation and modified typology assignments highlighted.

4.2 Roadway Project Recommendations

A combination of roadway projects will be completed that provide the desired roadway transportation network within the study area. This network will be consistent with land use and neighborhood planning objectives, discourage cut through traffic, provide a reliable and efficient diversion for eastbound traffic off Park Avenue to access Fleur Drive, SW 9th Street, SW 7th Street, and SW 2nd Street arterials into downtown, and right-size roadways to support new development and redevelopment throughout the study area. Roadway projects described below may be completed with other multimodal transportation projects described within Sections 4.4 and 4.5.

Projects included with **Figure 4-2** were included in the traffic study segment analysis. They are included with these study recommendations along with the detail necessary for capital improvement programming.

Figure 4-1. Recommended Roadway Typologies

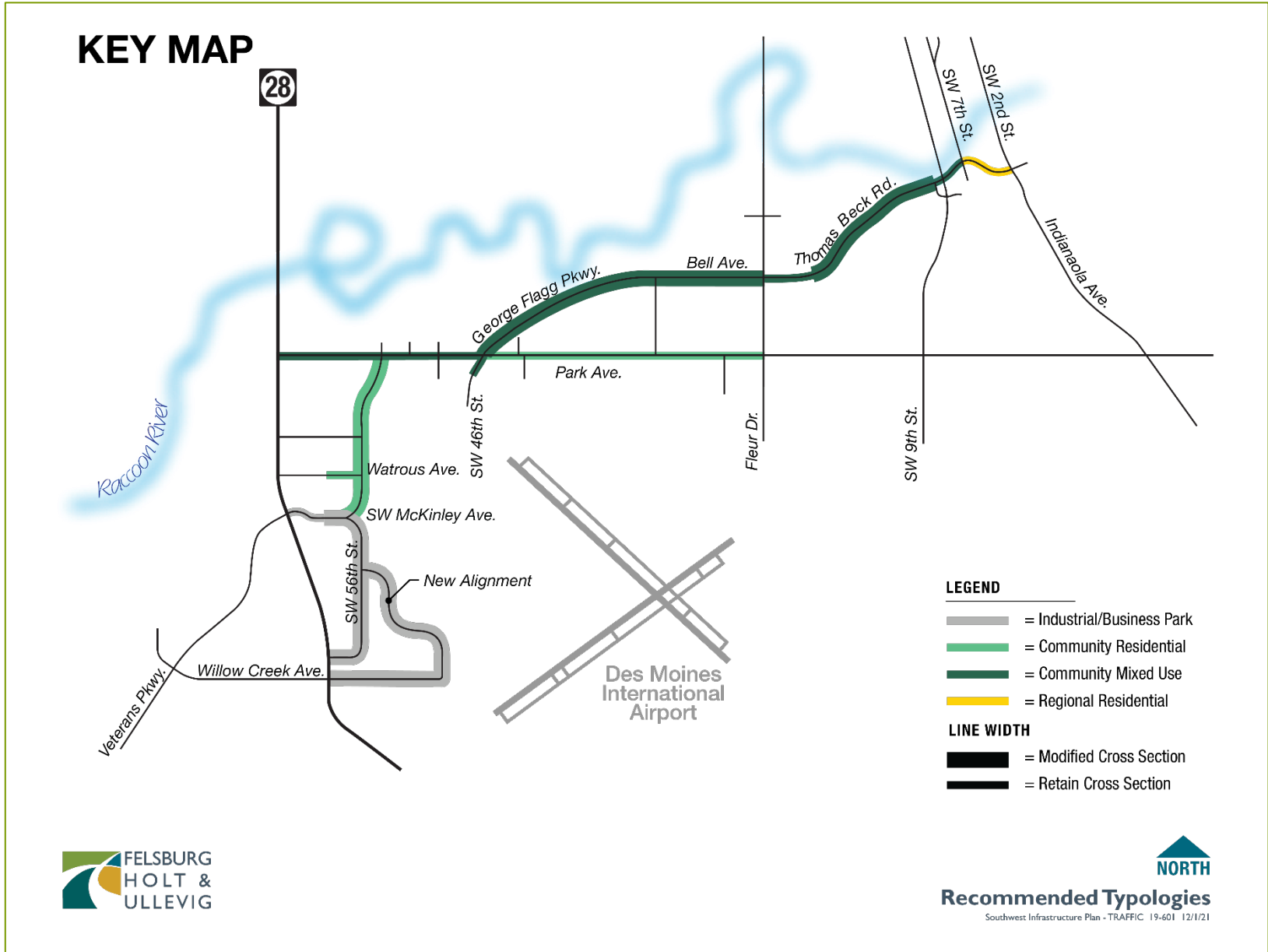


Table 4-1. Recommended Roadway Typologies

Alternative Name	Current	Recommended	Recommendation Notes
Willow Creek Ave	Not Established	Industrial/ Business Park	Anticipate future service for cargo support transportation and associated trucks from airport development.
New Alignment	Not Established	Industrial/ Business Park	Support contiguous traffic circulation type and compatible land uses adjacent to future airport runway. Support potential cargo and warehousing logistics services.
Leland Ave / SW 56 th St – S of McKinley Ave / SW McKinley Ave	Local Street	Industrial/ Business Park	Contiguous traffic circulation and industrial land uses between Willow Creek Ave and SW McKinley Ave to access traffic signals at IA Hwy 28.
SW 56 th Street – N of McKinley Ave	Not Established	Community Residential	Support link between single family residential and Business Park uses. No parking lanes provide sufficient space for 10-foot wide sidepath and tree along easement to separate vehicles from active transportation users.
Watrous Ave	Not Established	Community Residential	Support adjacent neighborhood access and traffic from Business Park land use east of SW 56 th Street. Narrower lanes and no parking to encourage alternate truck circulation north or south.
Park Ave – W of George Flagg Pkwy	Community Residential	Community Mixed Use	Existing improved roadway and posted speeds inconsistent with Current Typology. West leg of contiguous circulation route between IA Hwy 28 and SW 7 th Street.
Park Ave – E of George Flagg Pkwy	Community Residential	Community Residential	Reduce existing lane widths and stripe for on-street bikeways, limiting right-of-way impacts. Modify westbound right turn paved pull out with dedicated turn lanes.
Realignment of George Flagg Pkwy – Park Ave to Bell Ave	Local Street	Community Mixed Use	Truck route, emergency route, essential connection between Park Avenue and Bell Avenue once improved. Connect mixed uses on either end and continuity between IA Hwy 28 and SW 7 th Street.
George Flagg Pkwy - SW 30 th St to Fleur Dr	Local Street	Local Street	Remove from truck route and emergency route once George Flagg Parkway connects into Bell Avenue. Support local circulation and park access.

Bell Ave – SW 30 th Street to Fleur Dr	Community Mixed Use	Community Mixed Use	Provides contiguous circulation route between IA Hwy 28 and SW 7 th Street. Compatible with existing land use and redevelopment efforts.
Bell Ave / Thomas Beck Rd / Indianola d – Fleur Rd to SW 7 th St	Community Mixed Use	Community Mixed Use	Compatible with existing land use and any redevelopment planning efforts. Different designed cross sections support the highest and best use of along the corridor. Provides contiguous circulation route between IA Hwy 28 and SW 7 th Street.
Indianola Rd – SW 7 th St to Indianola Ave	Regional Residential	Regional Residential	Essential connection for the Indianola Hills Neighborhood and circulation with Indianola Avenue. Future road diet. No center turn lane, provide school drop off lane, add 8-foot sidewalk on north side connecting with Martin Luther King Jr Trail on the east and connection with Meredith Trail on the west.

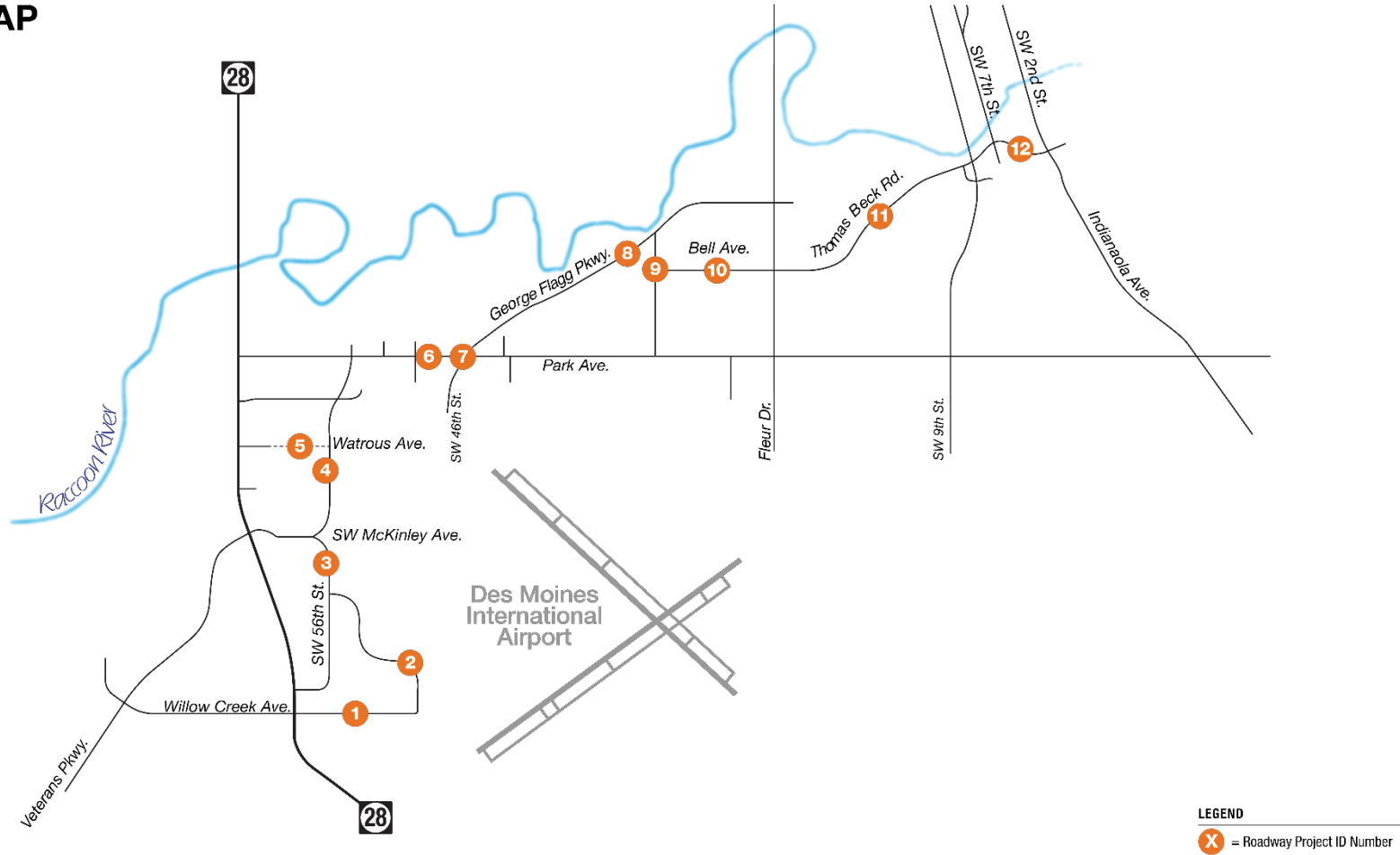
PROJECT ID 1 - IMPROVEMENTS TO WILLOW CREEK AVENUE


Planning Cost Estimate: \$3.854 million

The project is primarily designed and estimated to circulate cargo-support truck traffic with two, 11-foot travel lanes and a deeper pavement section needed for this type of traffic. A five-foot sidewalk is proposed with the public improvement on the south side of the alignment between the Great Western Trail access path and airport development area. A 30-mph posted speed limit is recommended. Sidewalk on the north side would be provided with private development. If the airport development Area H is not developed for cargo support, the cost estimate is expected to be reduced as the previous improved approach to IA Hwy 28 can be maintained and remaining pavement improvement depth reduced. Willow Creek Avenue improvements are not justified until the airport runway is extended and a development is approved. No timeline is established and can be completed independent of other roadway projects. (See **Appendix A** Figures A-1 and A-2 and Cross Section Reference Figure A-23).

Figure 4-2. Roadway Project Recommendations

KEY MAP



LEGEND
 = Roadway Project ID Number



NOTE: Drawing Not to Scale



Roadway Project Recommendations
 Southwest Infrastructure Plan - TRAFFIC 19-401 12/1/21

PROJECT ID 2 - NEW ALIGNMENT (CONNECTS SW 56TH STREET TO WILLOW CREEK AVENUE)

Planning Cost Estimate: \$9.324 million

This project is primarily designed to support future Business Park development on the north side of Frink Creek and access to Willow Creek Avenue. Steep slopes and the intent to maximize traffic loading at the intersection of SW McKinley Avenue and IA Hwy 28 determined that a curvilinear alignment was recommended to connect with SW 56th Street in line with Kenton Avenue located on the east side of the airport. Private development will construct sidewalks adjacent to the roadway. The cross section includes two 11-foot driving lanes to support truck traffic. A 30-mph posted speed limit is recommended. The cross section also includes two 5-foot on-street bike lanes separated from traffic by mountable curb. The project cost includes this active transportation functionality which supports connection from Great Western Trail to SW 56th Street. The recommended right-of-way is sufficient to provide an alternative cross section that replaces the mountable curb apron with a center turn lane and an 8-foot sidepath if the airport determines not to construct a new runway. This project can be completed independent of other roadway projects ahead of development activity adjacent to the alignment. (See **Appendix A** Figures A-3 and A-4 and Cross Section Reference Figure A-24).

PROJECT ID 3 - LELAND AVENUE -SW 56TH STREET – SW MCKINLEY AVENUE

Planning Cost Estimate: \$6.287 million

This project is primarily designed to support future Business Park development south of SW McKinley Avenue, maintaining an unsignalized IA Hwy 28 intersection at Leland Avenue and the signalized IA Hwy 28 intersection at SW McKinley Avenue. The New Alignment (Project ID 2) will connect with this improved alignment and the orientation of SW McKinley Avenue with SW 56th Street will be modified. Truck traffic is anticipated with future development, and 30-mph posted speed limit is recommended. Sidewalk is to be constructed with the project along the north side of SW McKinley Avenue to connect into the improved cross section leading to the intersection with IA Hwy 28. The cross section includes two, 11-foot driving lanes. At the intersection of SW 56th Street and Project ID 2, a 10-foot sidepath is recommended on the east side of the road to SW McKinley Avenue which would connect with a future realignment of Great Western Trail around the airport fence line. SW 56th Street north of SW McKinley Avenue (Project ID 4) connects the north leg at a stop-controlled intersection for southbound traffic on SW 56th Street. (See **Appendix A** Figures A-5 to A-7 and Cross Section Reference Figure A-25).

PROJECT ID 4 - SW 56TH STREET NORTH OF SW MCKINLEY AVENUE

Planning Cost Estimate: \$6.483

This project is primarily designed to support Business Park and Residential development north of SW McKinley Avenue. On the south, a stop-controlled intersection is proposed to provide redundant traffic circulation and optimization from the north to the previously realigned section of SW 56th Street and the signalized intersection with Park Avenue. Watrous Avenue (Project ID 5) will connect with this improved alignment. A 10-foot side path along the east side of the roadway and 30-mph posted speed limit is recommended. Trees should be preserved or replanted along the improved corridor between the roadway and sidepath. Private development is to provide sidewalk along the west side except for two segments indicated on the plans. The cross section includes two, 11-foot driving lanes. At the intersection of Watrous Avenue, two-way stop controls could be replaced with four-way stop controls to increase north-south traffic calming along the corridor. An estimate of the cost for property acquisition is not included with the construction estimate. If plans for a new airport runway are minimized or eliminated, the orientation of the connection with SW McKinley Avenue could be modified to improve sight distance. (See **Appendix A** Figures A-8 to A-9 and Cross Section Reference **Figure A-26**).

PROJECT ID 5 - WATROUS AVENUE

Planning Cost Estimate: \$1.917 million

This project is primarily designed to support Business Park and Residential development access between IA Hwy 28 and SW 56th Street. Future Business Park development east of SW 56th Street is anticipated to circulate thru this intersection with SW 56th Street. The cross section includes two, 11-foot drive lanes and 5-foot sidewalks are included on both sides of the public improvement. The alignment will address the steep grade and a 30-mph posted speed limit is recommended. (See **Appendix A** Figures A-10 and Cross Section Reference **Figure A-27**).

PROJECT ID 6 – PARK AVENUE

Planning Cost Estimate: \$1.994 million

This project is primarily designed to support the Community Mixed Use corridor proposed between IA Hwy 28 and SW 7th Street and match the raised median cross section between SW 54th Street and George Flagg Parkway/SW 46th Street. The cross section also includes addition of a 10-foot sidepath on north side of the existing alignment. No changes to the diving lane widths or posted speed limits are recommended. The segment will remain a designated truck route. The raised medians will limit some access with the most significant impact to westbound left access to MVP Sports. Construction of diagonal parking along SW 46th Street may alleviate the challenge of this limitation to access. (See **Appendix A** Figures A-11 and A-12 Cross Section Reference **Figure A-28**).

PROJECT ID 7 – ROUNDABOUT INTERSECTION AT PARK AVENUE / GEORGE FLAGG PARKWAY / SW 46TH STREET

Planning Cost Estimate: \$3.751 million

This project is primarily designed to support the Community Mixed Use corridor proposed between IA Hwy 28 with SW 7th Street and divert east bound thru traffic on Park Avenue to George Flagg Parkway. The overall outside diameter (ICD) of the multi-lane roundabout (Table 4-2) is recommended to be 167-feet and maintains all four street connections. With roundabout control, the intersection and each movement at the intersection is anticipated to operate at LOS B or better during both the 2030 Interim and 2040 Future traffic years. Circulatory roadway widths of 17-feet adjoin a mountable truck apron 11-feet wide for the truck and emergency access route. Posted signs on eastbound Park Avenue provide wayfinding to the Great Western Trail trailhead by SW 46th Street and downtown Des Moines by proceeding through the roundabout to George Flagg Parkway. Pedestrian crossings are provided at all but the west leg. The project is recommended to be completed with Park Avenue (Project ID 6) as well as the Great Western Trail Park Avenue Realignment (Project ID F) and Park Avenue Grade Separation (Project ID G) to consolidate construction costs traffic interruptions and fill the active transportation gap. (See **Appendix A** Figure A-12B).

PROJECT ID 8 - GEORGE FLAGG PARKWAY

Planning Cost Estimate: \$14.888 million

This project is primarily designed to provide an efficient and reliable connection between Park Avenue and Bell Avenue, linking the Community Mixed Use corridor proposed between IA Hwy 28 with SW 7th Street. From the intersection with Park Avenue, the cross section would transition from three, 11-foot lanes to two having been elevated on the current alignment above the 100-year floodplain adjacent to Des Moines Water Works Park. The alignment would divert to connect with Bell Avenue after carrying traffic over a minor tributary, a grade separation of the Great Western Trail Connector, and the 30th Street floodplain levee which shifts to the west accommodating the horizontal grade difference on the approach to the intersection. The alignment would maintain the existing access to Des Moines Water Works Park and allow for the potential of another access if the park constructs a parking area at the Bill Riley Bridge. The remaining portion of George Flagg Parkway to the intersection with SW 30th Street could be closed to vehicle traffic and the land transferred to the park. The project is recommended to be complete with the George Flagg Parkway / Bell Avenue / SW 30th Street (Project ID 9) and Great Western Trail Connector Alignment (Project ID I) to consolidate construction costs and active transportation interruptions. (See **Appendix A** Figures A-13 thru A-15 and Cross Section Reference Figure A-29-30).

PROJECT ID 9 – ROUNDABOUT INTERSECTION AT GEORGE FLAGG PARKWAY / BELL AVENUE / SW 30TH STREET

Planning Cost Estimate: \$1.322 million

This project is primarily designed to provide an efficient and reliable connection between Park Avenue and Bell Avenue, linking the Community Mixed Use corridor proposed between IA Hwy 28 with SW 7th Street. The overall outside diameter (ICD) of the single-lane roundabout (Table 4-2) is recommended to be 170-feet and may maintain all four directional legs if needed. With roundabout control, the intersection and each movement at the intersection is anticipated to operate at LOS B or better during both the 2030 Interim and 2040 Future traffic years. Circulatory roadway widths of 18-feet adjoin mountable truck apron 15-feet wide for the truck and emergency access route. Marked pedestrian crossings are provided on all but the south leg due to elevation differences. The project is recommended to be completed with George Flagg Parkway (Project ID 8) to consolidate construction costs and traffic interruptions. (See **Appendix A** Figure A-18 and Cross Section Reference Figure A-30).

PROJECT ID 10 – BELL AVENUE

Planning Cost Estimate: \$4.584 million

This project is primarily designed to provide an efficient and reliable cross section and access control improvement between SW 30th Street and Fleur Drive, linking the Community Mixed Use corridor proposed between IA Hwy 28 with SW 7th Street. The cross section includes two, 11-foot drive lanes and a five-foot sidewalk along the north side of the street. The horizontal transition between George Flagg Parkway and Bell Avenue will result in two properties losing functional access and two additional access are proposed to be consolidated at a minimum. A subarea planning study is recommended for this area which would ultimately determine access and an alternative thru connection to George Flagg Parkway east of SW 30th Street. Posted speed limits of 30 mph are recommended. This segment of Bell Avenue should be assigned as the primary emergency route once connected to George Flagg Parkway. Once an alternate access can be provided, the roadway segment of SW 30th Street between Bell Avenue and George Flagg Parkway can be terminated. This planning is recommended to be coordinated with Bell Avenue Area Master Plan (Project ID e). (See **Appendix A** Figures A-18 thru A-19 and Cross Section Reference Figure A-31).

PROJECT ID 11 – THOMAS BECK ROAD

Planning Cost Estimate: \$5.628 million

This project is primarily designed to provide an efficient and reliable cross section as well as support redevelopment between Bell Avenue and Indianola Road, linking the Community Mixed Use corridor proposed between IA Hwy 28 with SW 7th Street. The segment is proposed as two different cross sections, divided by a new roundabout entrance constructed to support gateway access for redevelopment and calm traffic.

The west cross section maintains the current two, 11-foot drive lanes east of Druid Hill Drive with trail and trees retained along the north side. The construction limits were estimated to improve future pavement condition and alignment geometry as it approaches the new proposed, roundabout intersection. East of the roundabout intersection, the alignment shifts the centerline slightly to the south to support deeper business frontage along the north side, recommends consolidating two existing access points, and provides two, 11-foot lanes with a center turn lane for residential and business access anticipated with the South of Gray's Lake Master Plan. A five-foot sidewalk is proposed to be constructed along the north side of the roadway, connecting to the Meredith Trail as well as on the south approach to Bancroft Street along the toe of MacRae Park. Posted speed limits of 30 mph are recommended.

The proposed single lane roundabout intersection (Table 4-2) and gateway entrance is recommended to have an overall outside diameter (ICD) of 120-feet. With roundabout control, the intersection and each movement at the intersection is anticipated to operate at LOS B or better during both the 2030 Interim and 2040 Future traffic years. A circulatory roadway width of 15-feet adjoins the 10-foot wide mountable truck apron to support the truck route. Marked pedestrian crossings are provided on the north and east legs. (See **Appendix A** Figures A-20 thru A-21 and Cross Section Reference Figure A-32).

PROJECT ID 12 – INDIANOLA HILLS ROAD NARROWING


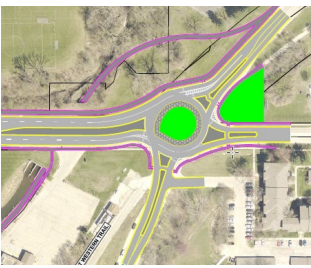

Planning Cost Estimate: \$0.673 million

This project is primarily designed to provide consistent 11-foot lane widths between SW 7th Street and Indianola Avenue as well as enhance connectivity for active transportation users. A five-foot sidewalk on the south side of the road is recommended to be paired with an eight-foot sidepath on the north side that provides connectivity with Martin Luther King Jr trail. Design consideration is recommended to include a student drop off lane adjacent to St. Anthony's School as well as a curb bump out at the intersection of SW 1st Street. Maintaining the existing 25 mph speed limit is recommended. (See **Appendix A** Cross Section Reference Figures A-22).

4.3 Roundabout Recommendations

Three intersections are proposed to be created along the Community Mixed Use corridor between IA Hwy 28 and SW 7th Street. The description of each roundabout is included with the project references above and summarized in **Table 4-2** below.

Table 4-2. Roundabout Project Recommendations

	Thomas Beck RDBT	George Flagg/Park Ave/46Th St. RDBT	30th and Bell RDBT
ILLUSTRATION			
ICD	120'	167'	170'
ROUNDABOUT TYPE	SINGLE LANE	MULTILANE	SINGLE LANE
CIRCULATORY ROADWAY WIDTHS	15'	17'	18'
TRUCK APRON WIDTHS	10'	11'	15'
NUMBER OF LEGS	3	4	3 or 4

As part of the alternative development process, roundabouts were considered for four intersections. Roundabouts were determined to be a viable intersection alternative due to their vehicular safety benefits, pedestrian safety benefits and lower long-term cost based on construction, operation, and maintenance. Specifically, roundabouts were considered at the intersections of Thomas Beck Road and development entrance; George Flagg Parkway, Park Avenue and Southwest 46th Street; Southwest 30th Street and Bell Avenue; and SW McKinley Avenue and SW 56th Street. The later location was ruled out due to context sensitive design and impacts to private property.

Roundabout design is context sensitive based on the intersection location, street typology, traffic volumes, pedestrian/cyclist volumes, property, and environmental impacts. The design also must take into consideration the largest vehicle type that may traverse the intersection. This is commonly referred to as the design vehicle. Each of the three intersections in **Table 4-2** was given design recommendations based on how best to balance these standard criteria.

The George Flagg Parkway, Park Avenue and Southwest 46th Street Roundabout was conceptually designed to accommodate higher traffic volumes, pedestrian and cyclist crossings, and a semi-truck as the design vehicle. This conceptual design resulted in a multi-lane roundabout. Multi-lane roundabouts range in size from 150' to 220' in diameter.

The size is dependent on the items considered above. The roundabout is large enough to allow a semi-truck to traverse the roundabout without encroaching adjacent lanes. Pedestrian crossings would be included on all legs of the intersection except the west leg of Park Avenue. The concept assumes the Great Western Trail will pass under Park Avenue utilizing the Frink Creek Box Culvert as an underpass serving both pedestrians and cyclists.

The Thomas Beck Road and development entrance roundabout and the Southwest 30th Street and Bell Avenue Roundabout are both single lane roundabouts. The traffic volumes determined a single lane roundabout would be the appropriate design. Single lane roundabouts range in size from 90' to 180' in diameter. The Thomas Beck Road roundabout would be smaller in diameter around the 120' range to balance property impacts. The Southwest 30th Street and Bell Avenue roundabout would be around the 150' to 170' diameter. Each location, while different in size each would accommodate semi-truck movements, both through and turning movements. Pedestrian crossings are expected to be provided with raised medians between sidewalk connections but would be determined during the design phase.

4.4 Existing Roadway Maintenance

Aging pavement will continue to degrade without routine maintenance. The implementation schedule for the projects listed above anticipates the City of Des Moines will conduct surface maintenance and repairs that extend the life of the paved surface until the programmed project is justified. When necessary, paved surfaces may degrade to a point that requires partial or full depth replacement at a much greater cost than maintaining pavement in good conditions. George Flagg Parkway between SW 30th Street and Fleur Drive has degraded to a point that the roadway must be reconstructed. The maintenance is programmed as a 4" mill and overlay project. The project will provide immediate benefit to adjacent properties and support the current truck route until George Flagg Parkway is connected to Bell Avenue.

Two roadways in the study area are also identified for resurfacing maintenance; Indianola Road from Indianola Avenue to SW 2nd Street is on the currently identified maintenance list. This study recommends that a road diet be programmed, but maintenance will be required before the project is prioritized for construction funding. Finally, approaches to the SW 56th Street and SW McKinley Avenue will also need to be resurfaced within the next ten years unless a decision is made to program the new airport runway construction. Ongoing maintenance should extend the useful life of the roadways recommended by this study to provide the City with flexibility in the implementation schedule.

4.5 Recommended Active Transportation Projects

A combination of active transportation projects will be completed within the study area to provide or improve bicycle and pedestrian infrastructure necessary to support all modes of travel. This network will be consistent with land use, neighborhood, and mode specific planning objectives as well as bundle projects with roadway improvements to consolidate construction costs. Active transportation projects described below may be completed as part of other multimodal transportation projects described in Section 4.2.

Active transportation project recommendations are made based on the criteria that the current airport layout plan will be maintained, and a new airport runway will be constructed in the future. Park Avenue on-street bicycle infrastructure improvements east of SW 46th Street are recommended after the alignment of George Flagg Parkway is improved. Project costs were not estimated with this study and should be completed in conjunction with recommendations for contiguous improvements east of Fleur Drive.

PROJECT ID A – GREAT WESTERN TRAIL TO NEW ALIGNMENT CONNECTION

Planning Cost Estimate: See Project ID 2

This project construction cost is included with New Alignment (Project ID 2) and will provide direct connection from the Great Western Trail to the proposed bike lanes along the new alignment. Due to the orientation of Frink Creek, the future airport runway, and IA Hwy 28, this would be the only location where access to SW 56th Street can be provided from the Great Western Trail. The SW 56th Street corridor will provide access to the bicycle network along Park Avenue. (See **Appendix A** Figure A-4).

PROJECT ID B – NEW ALIGNMENT WITH MOUNTABLE CURB BIKE LANES

Planning Cost Estimate: See Project ID 2

The proposed cross section for the New Alignment (Project ID 2) includes two five-foot bike lanes oriented upon six-inch mountable curbs. A linear mountable curb that functions similar to the mountable truck curb apron of roundabout designs is recommended. The ultimate cross section did not include a recommended sidepath because of the existing Great Western Trail alignment and possible realignment if the future runway is built. The mountable curb is intended to provide a moderate physical barrier that is easier to maintain than other barrier types. The bike lanes provide important commuter connectivity for the business park area and access between Project ID A and C. (See Appendix A Figures A-3 and A-4)

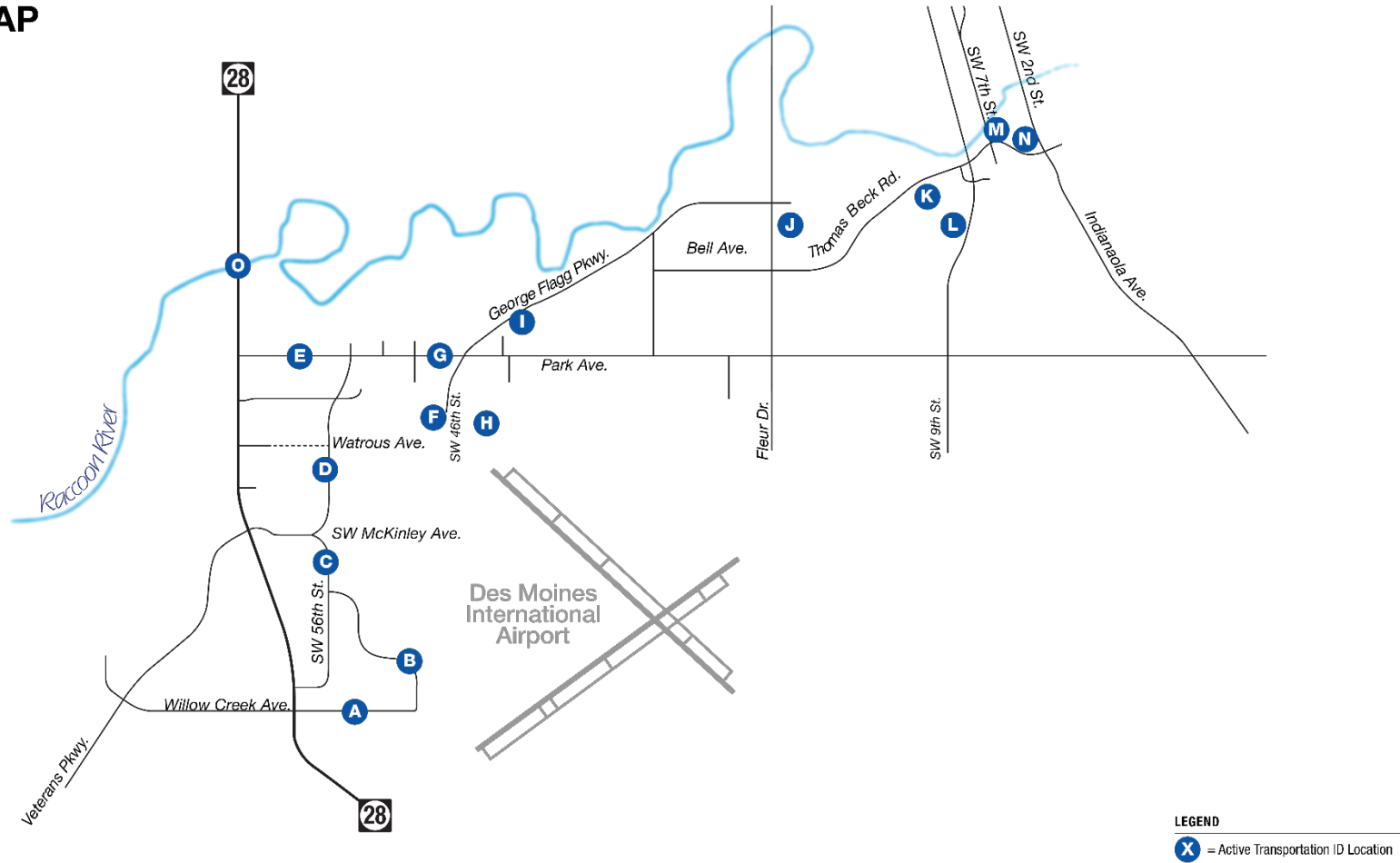
PROJECT ID C AND D – 56TH STREET SIDE PATH

Planning Cost Estimate: See Project ID 3 and 4

The proposed cross section and construction costs for the improved SW 56th Street (Project ID 3 and 4) between the intersection with New Alignment (Project ID 2) and Park Avenue includes a 10-foot sidepath. The alignment orientation of the sidepath should connect through the intersection with SW McKinley Avenue if the airport runway is not constructed. If the airport runway is constructed, the sidepath will connect into the realigned Great Western Trail from the south and divert from the realigned trail on the north. Depending on phasing of roadway improvements to SW 56th Street, the overlapping portion may be constructed with a temporary surface or asphalt for interim support of bicycles and pedestrians traveling north and south. (See **Appendix A** Figures A-6 thru A-9).

Figure 4-3. Active Transportation Project Recommendations

KEY MAP



NOTE: Drawing Not to Scale

LEGEND
 = Active Transportation ID Location

Active Transportation Project Recommendations
Southwest Infrastructure Plan - PLANNING 19-601 2/10/22



PROJECT ID E – PARK AVENUE SIDEPATH

Planning Cost Estimate: See Project ID 7

The regional bicycle network will be supported with bicycle infrastructure along Park Avenue from the intersection of IA Hwy 28 to SE 22nd Street. The cross-section recommended for Park Avenue (Project ID 6) includes the construction cost to provide a 10-foot sidepath along the north side between IA Hwy 28 and George Flagg Parkway. The north alignment is recommended to preserve the existing sidewalk on the south side, connect multifamily residential at the northwest end, baseball and soccer fields in the middle, as well as give access to George Flagg Parkway and the Des Moines Water Works Park. Pedestrian crossings on the south and west legs of the Park Avenue/George Flagg Parkway/SW 46th Street Roundabout (Project ID 7) will provide connectivity to any future improvements to add bike lanes east of SW 46th Street. (See **Appendix A** Figures A-11 and A-12).

PROJECT ID F – GREAT WESTERN TRAIL PARK AVENUE REALIGNMENT AND PROJECT ID G – PARK AVENUE GRADE SEPARATION

Planning Cost Estimate: \$2.5 million

A realignment and grade separation are recommended for the Great Western Trail. Beginning approximately 1,100 feet south of the intersection with Park Avenue, realign the Great Western Trail west to connect with Frink Creek along an improved greenway cross section approaching the triple box culverts passing under Park Avenue. A 10-foot paved surface trail would pass along the west side of MVP Sports and reconnect along the west side of George Flagg Parkway to the access with Des Moines Water Works Park. The realignment would remove three at-grade crossings for bicycles and pedestrians connecting currently required to make this connection. The construction cost to improve the underpass with a 12-foot paved trail in a box culvert was not included with any proposed roadway project, but it should be coordinated to minimize construction costs and traffic interruptions if possible. Design and construction of these improvements could add approximately \$2.5 million to the cost of Park Avenue/George Flagg Parkway/SW 46th Street Roundabout (Project ID 7). (See **Appendix A** Figure A-12b).

PROJECT ID H – GREAT WESTERN TRAIL - WOLCOTT AVENUE CONNECTION

Planning Cost Estimate: \$175,000-200,000

A 1,600-foot, multi-use trail connection along is recommended to improve access to the Great Western Trail from the intersection of SW 42nd Street/SW McKinley Avenue and Wolcott Avenue intersection. Currently, bicyclists and pedestrians must travel up to the sidewalk along Park Avenue and return south to access the Great Western Trail. This project is proposed to construct a 10-foot wide multi-use trail between SW 42nd Street/SW McKinley Avenue and SW 46th Street to improve access for the southeast quadrant of the Southwestern Hills neighborhood. The design of the trail will need to address challenging topography and is recommended to be placed along the northern boundary of the City of Des Moines and Des Moines Airport property.

PROJECT ID I – GREAT WESTERN TRAIL CONNECTOR ALIGNMENT

Planning Cost Estimate: See Project ID 8

The recommended alignment for improving George Flagg Parkway (Project ID 8) retains the existing alignment of the Great Western Trail Connector for approximately 1-mile from the intersection with Park Avenue. The roadway alignment is designed to cross over a tributary draining north to the Raccoon River. At this point, the Great Western Trail Connector is recommended to be routed north to pass under the roadway. The trail alignment would then continue east through the trees on the north side of the roadway and connect at the intersection with Bill Riley Trail on the west side of SW 30th Street. (See **Appendix A** Figure A-15).

PROJECT ID J – GRAY’S LAKE CONSTRUCTED WETLAND NATURE TRAIL

Planning Cost Estimate: See Gray’s Lake Wetland

The design for a constructed wetland adjacent to Gray’s Lake Park provides needed water quality. The grading plan includes access to eight-foot wide nature trails with two points of access from the Bill Riley Trail, one from the Pomerantz Family Trail, and future potential connections to redevelopment South of Gray’s Lake. The alignment of trail intersections is intended to minimize the risk of active transportation crashes. The cost estimate for a six-inch depth concrete trail and reinforced subgrade was used to address concerns about maintenance and erosion of natural surface trails. Final design decisions may substitute trail materials to lower the construction budget if maintenance funding is available to sustain a natural trail material through the wetland. The construction costs for the trail and bridges are included with the estimate for wetland construction. (See Gray’s Lake Wetland Analysis Sheet D01).

PROJECT ID K – MACRAE PARK NATURE AND RECREATION TRAILS

Planning Cost Estimate: No Estimate

The historic location of MacRae Park is where mining occurred and where remnants of mining haul roads are still present. A public recommendation for improving the park is to restore and maintain access to these alignments as nature trails that also connect with Thomas Beck Road. This recommendation is made to the Parks and Recreation Department for discussion with the neighborhood stakeholders and no cost estimate was provided.

PROJECT ID L – MACRAE PARK & LINCOLN HIGH SCHOOL SAFE ROUTES PROJECT

Planning Cost Estimate: \$900,000

The City of Des Moines has identified a set of recommended active transportation projects that are also supported by the 9th Street Operations Improvements (Section 4.5 Other Project ID - h). The bundle of projects estimated here includes addition of MacRae Park sidewalk and 8-foot wide trail/sidewalk south to Loomis Avenue. (See **Appendix A** Figure A-22).

PROJECT ID M – INDIANOLA ROAD TO MEREDITH TRAIL CONNECTION

Planning Cost Estimate: \$0.5-1.5 million

Trail access from the Indianola Hills Neighborhood is recommended to be improved by constructing a new connection between the intersection of Indianola Road with SW 7th Street down to Meredith Trail. The concept design and cost estimate consider the steep slopes and restricted property line which might require a portion of the connection to be constructed as a staircase. To limit costs, design of access to Indianola Road should begin 100-feet east of the intersection directing along an s-shaped trail for bicycles and pedestrians starting toward SW 7th Street, looping back to the east toward private property, and finally turning back the west toward a perpendicular connection with Meredith Trail. If acceptable grades cannot be attained, a staircase with integrated bike rail/ramp is recommended to shorten the length of the paved trail. The construction on city right of way could cost between \$0.5-1.5 million depending on site constraints and would be funded as a separate project. (See **Appendix A** Figure A-22).

PROJECT ID N – INDIANOLA ROAD SIDEPATH TO MARTIN LUTHER KING JR. TRAIL CONNECTION

Planning Cost Estimate: See Project ID 12

Trail access from the Indianola Hills Neighborhood is recommended to be improved by constructing a new eight-foot sidepath along the north side of Indianola Road between the intersection with SW 7th Street and Indianola Avenue. An existing pedestrian crossing at Indianola Avenue provides access to the Martin Luther King Jr. Trail into downtown Des Moines. Project construction costs for this improvement are included in the recommended Indianola Road – Road Narrowing (Project ID 12). (See **Appendix A** Figure A-22).

PROJECT ID O – IOWA HIGHWAY 28 (SW 63RD STREET / SE 1ST STREET) TRAIL SW MCKINLEY AVENUE TO LEVEE TRAIL

Planning Cost Estimate: Included with IDOT Project BRF-028-2(45)-38-77

Trail access between Jordan Creek Trail and SW McKinley Avenue is programmed in the CIP to be improved in coordination with IDOT's replacement of the Southbound Highway 28 bridge across the Raccoon River, which is programmed for 2022-2023. The project will create approximately one mile of new ten-foot shared use trail to be placed Iowa Highway 28 (known as SW 63rd Street in Des Moines and SE 1st Street in West Des Moines). As one of the few locations for crossing the Raccoon River west of downtown, this project would ensure safe access across one of the biggest transportation barriers in the community.

4.6 Additional Recommendations

A combination of additional projects and study recommendations are included for the study area to support the multimodal transportation network. Projects described below may be completed as part of other multimodal transportation projects described in Section 5.a and 5.c. Sidewalks are expected to be required on both sides of roadway improvement projects adjacent to development or future development. Where project concept plans show sidewalks on one or both sides, the cost has been included with project cost estimates. Where not shown, adjacent private development is anticipated to be responsible for constructing sidewalks.

PROJECT ID a – SIGNAL TIMING COORDINATION AT WILLOW CREEK AVENUE

Planning Cost Estimate: Operations

Current signal timing is supportive of modeled traffic patterns along IA Hwy 28. If cargo support facilities are constructed on Willow Creek Avenue, the signal timing to support truck movements will need to be reviewed and updated. The Business Park land use was used to model future traffic counts and did not include a possible cargo support facility for traffic generation. (See **Appendix A** Figure A-1).

PROJECT ID b – VETERANS PARKWAY SIGNAL PHASING

Planning Cost Estimate: Operations

The signalized intersection of IA Hwy 28 with Veterans Parkway / SW McKinley Avenue is anticipated to present declining performance as traffic volumes from the southwest increase. A protected/permitted phase may be needed for the eastbound left-turn lane between 2030 and 2040.

PROJECT ID c – THORNTON AVENUE SIGNAL WARRANT

Planning Cost Estimate: \$300,000

By the 2040 future year, the intersection of IA Hwy 28 with Thornton Avenue is anticipated to meet the signal-controlled warrant criteria with LOS F in the PM peak for westbound left turning vehicle. Maintaining southbound SW 56th Street access to SW McKinley Avenue is encouraged to reduce this potential need.

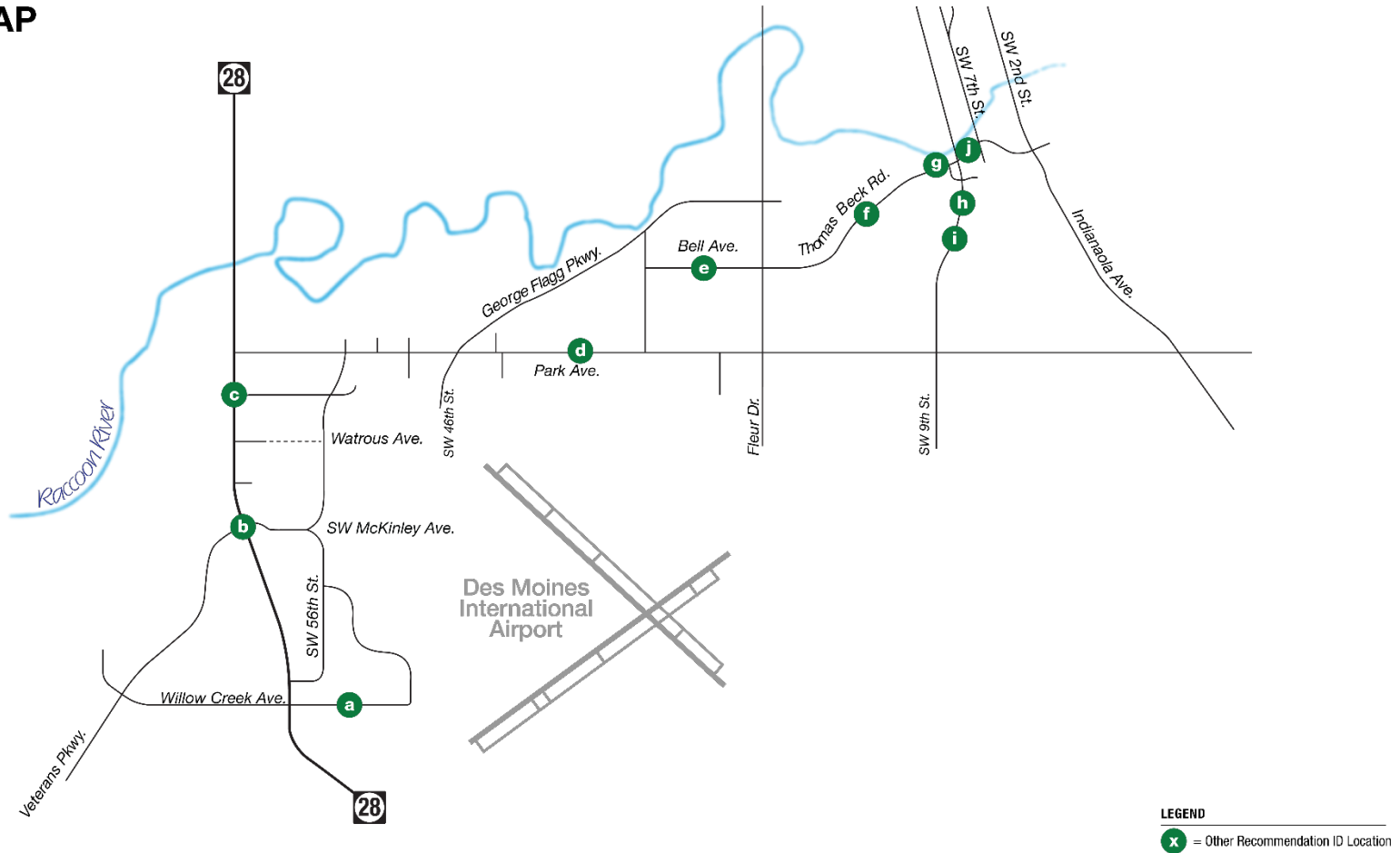
PROJECT ID d – PARK AVENUE BICYCLE INFRASTRUCTURE

Planning Cost Estimate: \$75,000

The Des Moines bicycle network will be supported by strong urban connections with the regional trails. The Park Avenue improvements (Project ID E) will support this network west of the intersection with SW 46th Street. East of this intersection, the improvement to George Flagg Parkway (Project ID 8) and George Flagg Parkway / Bell Avenue / SW 30th Street Roundabout (Project ID 9) are necessary before on-street improvements to Park Avenue can be made. A coordinated plan for designing bicycle infrastructure east of SW 46th Street is recommended. This study did not identify the specific designs recommended, but additional right of way would be needed combined with a narrowing of driving lane widths.

Figure 4-4. Operations, Safety, and Study Recommendations

KEY MAP



NOTE: Drawing Not to Scale

PROJECT ID e – BELL AVENUE DEVELOPMENT MASTER PLANNING

Planning Cost Estimate: \$15,000

A master plan or redevelopment strategy is recommended for the area bounded by SW 30th Street, George Flagg Parkway, Fleur Drive, and Bell Avenue. As future redevelopment pressure grows along Bell Avenue, a coordinated strategy for circulating traffic between Bell Avenue and George Flagg Parkway is needed if the north leg of SW 30th Street is to be removed to support the Des Moines Water Works treatment facilities and the park circulation plan. Without an alternative connection, SW 30th Street is recommended to be maintained north of Bell Avenue. (See **Appendix A** Figure A-15 and A-19).

PROJECT ID f – THOMAS BECK ROAD TRAFFIC AND TRANSIT OPERATIONS

Planning Cost Estimate: See Project ID 11

Thomas Beck Road (Project ID 11) recommendations were developed through an alternatives evaluation process. The roundabout that is recommended supports the redevelopment strategy and serves the important role of calming traffic through the corridor. Redevelopment activity will inform the timing and function of the intersection improvements. The roundabout supports the South of Gray's Lake Master Plan developed with this study. Additionally, the South of Gray's Lake Master Plan traffic circulation may justify eliminating eastbound left turns onto Casady Drive and southbound lefts onto Bell Avenue. Maintenance of DART Transit stops along Bell Avenue/Thomas Beck Road is expected. No modification of the existing route is recommended through future redevelopment, but DART may desire to update amenities for increased ridership access at Druid Hill Drive. (See **Appendix A** Figure A-20).

PROJECT ID g – THOMAS BECK ROAD PEDESTRIAN CROSSING

Planning Cost Estimate: \$150,000

The existing pedestrian crossing at Thomas Beck Road intersection with Bancroft Street provides a raised median refuge island. This intersection is an important north-south connection for neighborhoods to the south with Gray's Lake and regional trails system to downtown. Vehicle traffic counts for the 2040 future year could reach 16,000 per day and discourage use of the crossing. A pedestrian activated signal beacon at the existing crossing should be considered between 2030 and 2040 to provide a safe and reliable active transportation network. (See **Appendix A** Figure A-21).

PROJECT ID h – 9TH STREET OPERATIONS IMPROVEMENTS

Planning Cost Estimate: \$150,000

Eastbound shared through/left-turn movement at the intersection of Bancroft Street with SW 9th Street operate at LOS F during the PM peak hour. Although these movements are currently low volume during the PM peak hour, traffic along SW 9th Street will continue to increase. This study recommends a series of operational improvements to the intersection. As described in the MacRae Park & Lincoln High School Safe Routes (Project ID L), the existing southbound right turn slip lane is proposed to be removed and a pedestrian signal is recommended between Hillside Avenue and Fulton Drive. Median improvements on SW 9th Street would reduce the east leg with Bancroft Street to a three-quarter access, eliminating southbound left turns from SW 9th Street. The construction estimate includes these improvements. Along with these improvements, the existing nearside southbound transit stop should be moved to the far side of Bancroft Street. (See **Appendix A** Figure A-22).

PROJECT ID i – 9TH STREET TRANSPORTATION CORRIDOR PLAN

Planning Cost Estimate: \$200,000

The transportation corridor along 9th Street between Murphy Street and Bell Avenue should be supported by a study to address downtown access from SW 9th Street and the corridor land use vision. Development of traffic operations and cross section improvements along this segment of SW 9th Street was identified as a priority from this study.

PROJECT ID j – CLIFTON AVENUE ALIGNMENT AND THOMAS BECK ROAD DIET STUDY AND PRELIMINARY DESIGN

Planning Cost Estimate: \$150,000

A potential project was identified as part of the final review step. The Clifton Avenue slip lane could be realigned to intersect with Thomas Beck Road at a stop-controlled intersection. The current east bound lane configuration requires traffic to merge left or turn right on Monona Avenue. This section of Thomas Beck Road was evaluated, and it was determined that the existing cross section provides excess capacity for expected traffic volumes. A 2-lane cross section with turn lanes and medians could be proposed; slip lane would need to be accommodated or removed leaving adequate right of way for a 5-foot sidewalk between Taylor Avenue and Monona Avenue which is currently missing.

4.7 Gray's Lake Wetland Infrastructure

An opportunity to construct a seven-acre wetland close to dense population centers, accessible by a network of regional trail systems, and adjacent to significant

redevelopment potential is uncommon. The City of Des Moines is positioned to provide such an amenity and support the water quality for one of the most substantial urban parks in the region. The technical analysis documented in **Appendix C** provides the technical analysis, conceptional layout, how to work within constraints, and an opinion of probable cost. Parcel ID 77-782417620005 overlays the footprint of the proposed wetland and should be transferred from Des Moines Right of Way to Des Moines Parks and Recreation to support this project.

The overall cost of the project is determined to be highly variable due to the required soil excavation to provide water quality treatment pools. The cost estimates ranged from \$3.6 million to \$5.2 million dollars. The City has not identified a funding source for this project which aligns with the Gray's Lake Park Plan and Parks Department is encouraged to develop necessary coordination with Polk County Conservation and Nature Conservancy to oversee an effective establishment and maintenance schedule.

4.8 South of Gray's Lake Master Plan Infrastructure

The South of Gray's Lake Master Plan (**Appendix D**) provides a visionary and community driven outlook for redevelopment that is context sensitive along Bell Avenue, Thomas Beck Road, and Indianola Road. The plan recommends a blend of retention and redevelopment with mixed-use development taking advantage of grand view corridors and close in access to downtown Des Moines. Storm, Water, and Sanitary considerations are documented in the master plan and included in the considerations of the East Quadrant assessment. The plan preserves and incorporates the vision of a major constructed wetland adjacent to the redevelopment area and proposes development to take advantage of the amenity by incorporating a fun boardwalk-style corridor between development and the wetland. Off of Thomas Beck Road, the existing public parking lot is recommended to be replaced by a reconfigured parking area to open up more shoreline programming space and support the Parking demand management of Gray's Lake Park.

Redevelopment could bring more traffic to the area in addition to volume increases from regional traffic. Recommended improvements to Thomas Beck Road are made to accommodate both as redevelopment is phased (**Figure 4-5**).

PHASE 1

Opportunities include medium density row-house and multi-story residential property with close to 200 new parking stalls. Access management for these developments will be to conflict with the through traffic on Thomas Beck Road and across the street for existing commercial and warehouse properties. The alignment centerline of Thomas Beck Road is recommended to be shifted slightly to the south and a center turn lane added to support traffic operations. This alignment should be determined prior to approving any development plan and larger sewer line provided for development to connect with. Construction of the three-lane cross section could be completed from Bancroft Street to approximately 200-feet east of the intersection with the Pomerantz Family Trail.

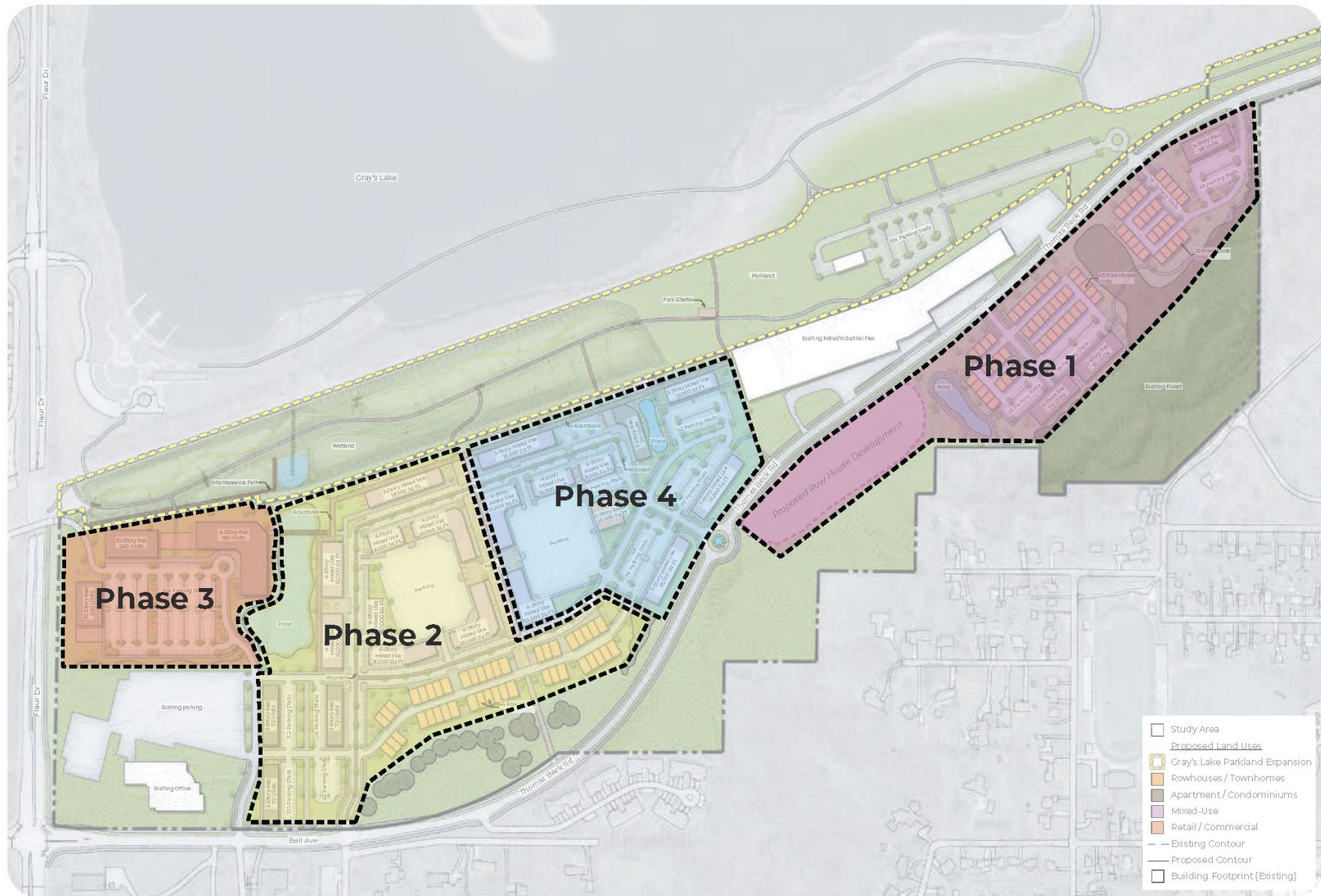
PHASE 2

Once the area begins to redevelop for true mixed-use development, additional pressure will build on managing traffic circulation along Bell Avenue and Thomas Beck Road. Increased loading to Casady Drive and Druid Hill Drive will build additional delay and introduce more active transportation to the intersections. Access to Casady Drive should be limited to right-in and right-out only and the remaining improvement along Thomas Beck and proposed roundabout constructed as the full redevelopment master plan will be known and internal circulation anticipated. The development plan will need to address the full stormwater management plan for the area to be redeveloped shown as Phases 2-4 at this point. If stormwater treatment is to be provided onsite and directly connected with the constructed wetland, this must be coordinated carefully to ensure the wetland function is preserved and maintenance can be provided to all forebays. Transit amenities at this intersection should be enhanced as transit is not anticipated to route through the development.

PHASES 3-4

The final phases will bring the area to full buildout and traffic demand. With just over 1,000 total parking stalls in the area to support Phase 1-4, the community mixed use corridor can serve the Community Mixed Use roadway typology envisioned in PlanDSM. Access to high quality trails and transit should lower traffic volumes somewhat, but regional through traffic will maintain a large influence on traffic volumes and level of service.

Figure 4-5. South of Gray's Lake Master Plan Phased Development Opportunities



5. Implementation

Full implementation of the project recommendations is anticipated to occur during the next 20-year period. This section summarizes an overview of the implementation strategy that may be used for project programming during that time. A combination of funding sources and support from public and private stakeholders will be needed to complete the recommended improvements. This study provides the background and justification for recommended projects, but the preliminary and final design plans will ultimately determine the roadway cross sections, vertical and horizontal alignments, construction phasing, and improvement of traffic operations.

5.1 Cost Assumptions Overview

The project cost estimates for construction included with this study were developed using standardized cost estimates for the engineer's opinion of quantities. The standard bid items considered grading, surfacing, drainage, structures, signing, striping, and signals in addition to 20% projection of undefined costs and 5% for associated utilities. The full cost of projects include 20% of construction estimate for engineering, legal, and administrative costs and are reported in 2021 dollars. Planning study recommendations are included as generalized estimates as the study limits and deliverables are not fully defined within this study. Signal timing modifications are not projected as a separate project cost but are included in the ongoing City of Des Moines effort to optimize traffic movement along corridors.

5.2 Project Prioritization Sequence

The documentation and estimation of study cost was completed for the individual projects as an ultimate alignment or improvement. The study must also recognize that projects may or may not be combined in the manner recommended in Section 4 and that a decision to construct the new Des Moines International Airport runway may not be made during the period of planning considered for this study. The prioritization of projects therefore recommended below should be considered flexible. Recommendations are made to address the intended outcomes of this study; the primary outcome of which is to provide an efficient and reliable transportation corridor that is right sized for future traffic demand between the intersection of IA Hwy 28 with SW McKinley Avenue and SW 7th Street with Indianola Road. Additional outcomes supported by this study and that influenced recommended prioritization include:

- Accommodate timing and anticipated form of new development and redevelopment with supportive roadway typology/design, traffic operations, and active transportation infrastructure;
- Eliminate the need for trucks to utilize studied segments not listed as truck routes;
- Fill existing gaps and minimize or remove existing barriers to a safe and accessible active transportation network for Southern Hills, Gray's Lake, and Indianola Hills neighborhoods along the studied alignments; and
- Support natural resources and park plans with complimenting multimodal transportation network.

5.2.1 Immediate Projects – 2022-2025

The immediate projects in **Table 5-1** are recommended to address currently programmed projects and anticipated maintenance needs within the study area. No projects are recommended to resolve traffic operations and safety concerns within this period, but the high level of public input about neighborhood connectivity raises the priority of some projects while additional plans are prepared to support final design of emergent plans.

Table 5-1. Recommended Immediate Projects and Plans

Project ID	Project Name	Cost Estimate (2021 \$M)	Notes
5	Watrous Avenue Connection to SW 56 th Street	\$1.917	Planned for Construction in 2022-2023
Repaving	George Flagg Parkway SW 30th Street to Fleur Drive	\$TBD	4" Mill and Overlay Planned for Construction in 2022
Repaving	Indianola Road - SW 7th Street to Indianola Avenue	\$TBD	4" Mill and Overlay
L	MacRae Park & Lincoln High School Safe Routes Project	\$0.9	
M	Indianola Road to Meredith Trail Connection	\$1.0	Estimate between \$0.5-1.5M based on alignment selected Planned for Construction in 2023
O	Highway 28 Trail SW McKinley Avenue to Levee Trail	Included with IDOT Project BRF-028-2(45)-38-77	Planned for Construction in 2024
d	Park Avenue Bicycle Infrastructure Study	\$0.075	Corridor plan for cross sections and intersection treatments
e	Bell Avenue Development Master Planning	\$0.15	Complete prior to final design of Bell Avenue
h	9th Street Operations Improvements	\$0.875	
i	9th Street Transportation Corridor Plan	\$0.2	
j	Clifton Avenue alignment and Thomas Beck Road diet study and preliminary design	\$150	Study and 60% Plans

5.2.2 Emergent Projects – 2026-2030

The emergent projects in **Table 5-2** are recommended to prepare major segments of the Community Mixed Use Corridor while design, permitting, and construction funding are developed for realignment of George Flagg Parkway. Active transportation projects are bundled with roadway projects to consolidate constructions costs where possible, though projects may be completed separately if restricted funding for trails is provided. Traffic operations and safety will be provided within later years of this period to address anticipated traffic volumes. Development opportunities north of SW McKinley Avenue are anticipated to be explored before the airport runway construction is initiated. Operation of the existing intersection with SW 56th Street must be maintained until a funding commitment is made and right of way for roadway realignment is coordinated with airport property line private property purchase.

Table 5-2. Recommended Emergent Projects and Plans

Project ID	Project Name	Cost Estimate (2021 \$M)	Notes
6	Park Avenue Improvements	\$1.994	
E	Park Avenue Sidepath		
7	Roundabout Intersection at Park Avenue / George Flagg Parkway / SW 46th Street	\$3.751	Sidepath estimate included with intersection alignment.
F	Great Western Trail Park Avenue Realignment		
10	Bell Avenue Widening	\$4.584	
11	Thomas Beck Road Improvements	\$5.628	
f	Thomas Beck Road Traffic and Transit Operations		
Repaving	SW 56th Street and SW McKinley Avenue Intersection Approaches	\$TBD	Anticipate maintaining existing intersection through 2030 and possibly 2040. 4" Mill and Overlay
G	Park Avenue Grade Separation	\$2.5	Coordinate with Project ID 7
b	Veterans Parkway Signal Phasing	Operations	Traffic Level of Service F
g	Thomas Beck Road Pedestrian Crossing	\$0.15	

5.2.3 Horizon Projects – Beyond 2030

The horizon projects in **Table 5-3** are recommended to address the ultimate future build out of the study area. Economic factors will largely determine the pace and scale of

development along SW 56th Street south of Park Avenue and an existing airport runway extension is required to support the airport economic development Area H on Willow Creek Avenue. With a significant amount of similar business park area available for development and an easier topography to work with southwest of this study area, projects between SW McKinley Avenue and Willow Creek Avenue can be prioritized last. Traffic operations along IA Hwy 28 will be optimized for 2040 future traffic projections within this period and the primary objective to provide an ultimate Regional Mixed Use roadway typology connecting to Veterans Parkway at IA Hwy 28 will be complete.

With a cross section of Bell Avenue/Thomas Beck Road improved, full redevelopment can be anticipated consistent with the objectives of the South of Gray's Lake Master Plan. Traffic will increase, but a supportive active transportation network provides destinations and amenities that are conveniently and safely reached without a personal vehicle. Construction of Gray's Lake Wetland and trails will provide minimal flood storage, but water quality discharging to Gray's Lake from smaller storm events will be improved.

Table 5-3. Recommended Horizon Projects and Plans

Project ID	Project Name	Cost Estimate (2021 \$M)	Notes
1	Willow Creek Avenue	\$3.854	Airport runway extension and development area H programmed.
2	New Alignment	\$9.324	Subdivision Application approval for business park development east of SW 56th Street.
A	Great Western Trail to New Alignment Connection		
B	New Alignment with Mountable Curb Bike Lanes		
3	SW 56th Street – Leland Avenue -SW 56th Street – SW McKinley Avenue	\$6.287	Subdivision Application approval for business park development east of SW 56th Street.
C	56th Street Side Path – South		
4	SW 56th Street North of SW McKinley Avenue	\$6.483	Subdivision Application approval for business park development east of SW 56th Street.
D	56th Street Side Path - North		
8	George Flagg Parkway Realignment	\$14.888	Park Avenue and Bell Avenue improvements complete.
I	Great Western Trail Connector Alignment		
9	Roundabout Intersection at George Flagg Parkway / Bell Avenue / SW 30th Street	\$1.322	Complete with Project ID 8

12	Indianola Hills Road Narrowing	\$0.673	Roadway surface condition warrant.
N	Indianola Road Sidepath to Martin Luther King Jr. Trail Connection		
J	Gray's Lake Constructed Wetland Nature Trail	Gray's Lake Wetland Project	Design and Construction funding available
K	MacRae Park Nature and Recreation Trails	Unknown	Parks Department funding available
a	Signal Time Coordination at Willow Creek Avenue	Operations	Airport runway extension and development area H programmed.
c	Thornton Avenue Signal Warrant	\$300,000	Traffic Level of Service F

5.3 Project Funding Considerations

Projects recommended by this study may be funded through a combination of funding methods. Where collaboration is required, the study provides the necessary background information to help funding partners identify action steps need to complete recommended projects.

LONG RANGE TRANSPORTATION PLAN

Transportation projects that represent regionally significant transportation improvements should be added to the Des MPO Long Range Transportation Plan. This study recommends that the following projects to be amended into the Long Range Transportation Plan: 6, 7, 8, 9, 10, 11 and associated Active Transportation Projects.

CAPITAL IMPROVEMENT PLAN

Additional capital projects identified by this study should be programmed according to the implementation plan through the Capital Improvement Plan. All projects included in the LRTP must be included in this improvement plan for year of expenditure to match local funds to the fiscally constrained budget of the MPO.

COMPLETE STREETS FUNDING

Operations and maintenance projects will be funded through the street improvement funds. Priority funding is committed to repairing streets that are in poor or very poor condition. Road condition data will direct timing of street maintenance within the study area. This funding is also used to fill sidewalk gaps documented in this study.

TRANSPORTATION ALTERNATIVES FUNDING

Trail projects and some multi-use side paths as well grade separation projects may be funded through federal Transportation Alternatives Program (TAP) funding. Where

possible, grade separation and sidepath projects included with this study should be bundled and funded with an associated roadway project. If this is not possible, projects should apply for TAP funding and timing of the projects coordinated with the associated roadway project.

OTHER FUNDING PARTNERS

This study recommends improvements that benefit access and amenities to Gray's Lake Park as well as Des Moines Water Works Park. As a result of these interrelated benefits, additional funding partners should be identified. Examples of programming partners that should be considered include Polk County Conservation, Gray's Lake and Meredith Trail Advisory Committee, The Nature Conservancy, and major developments within the study area.

