15th Ave N Corridor Study

15th Avenue N Corridor Study

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METROCOG
FM REGIONAL TRANSPORTATION PLANNING ORGANIZATION

Contents

Executive Summary

The Fargo-Moorhead Metropolitan Council of Governments (Metro COG) initiated the 15th Avenue North (15th Avenue) Corridor Study to identify improvements, funding sources, and an implementation strategy for the corridor.

This study will identify issues along the existing 15th Avenue corridor, the future use and travel patterns of the corridor, and feasible alternatives for future improvements along 15th Avenue from County Road (CR) 9 to County Road 11. The study also outlines considerations for jurisdictional ownership of the operation and maintenance of 15th Avenue.

Roadway jurisdiction along the 15th Avenue study area changes throughout the corridor: from 40th Street to midway to 50th Street is under the jurisdiction of Oakport Township; West of 50th Street to 60th Street is under Moorhead Township; and East of 60th Street is under Moland Townships jurisdiction. All three townships contract with Clay County for road maintenance.

15th Avenue provides continuous east-west travel across Dilworth and Moorhead. A bridge over the Red River provides access into North Fargo via 12th Avenue. The 15th Avenue corridor is a popular route to avoid congestion because it connects to CR 11/Minnesota Highway (MN) 336 with access to TH 10 and Interstate 94 (I-94).

Members of the Study Review Committee commented on two known issues throughout the corridor: dust and roadway surface condition. The existing roadway is gravel surfaced and does not have any dust palliative treatment applied. Dust from roadway traffic has been reported as an issue.

KLJ conducted broader public outreach in the first engagement phase targeted to Dilworth, Moorhead and north Fargo residents to understand perceived issues that exist along the corridor and current and future usage potential. KLJ and Metro COG conducted a second phase of engagement for the 15th Avenue Corridor Study to gain feedback on a range of roadway alternatives developed for the corridor.

Considering future traffic volumes, deficiencies outlined early in the study, feedback from the public, and the project's purpose and need, several alternatives were developed for review by the Study Review Committee.

A key component to alternatives development was considering future ownership of the roadway. It was determined that the two feasible options for short-term ownership would be either the townships retain ownership or Clay County takes ownership of the roadway.

Depending on whether the township or Clay County owns the corridor, two alternatives were carried forward: an Industry Design Standard for township ownership and a Clay County Minimum Design Standard for county ownership.

Both typical sections have an option for a separate shared use path between the roadway and Clay County Drain 41. This addition was based on public input and the potential for the Heartland Trail to parallel 15th Avenue N in the future.

It is suggested that Clay County, the City of Dilworth, Oakport, Moland and Moorhead Townships along with Metro COG explore a limited 10-year MOU to outline an agreed to set of proactive measures to ensure appropriate corridor investments along 15th Avenue North. It is also recommended the County work in cooperation with Dilworth and the townships on the development of a short-term funding and maintenance plan for the corridor.

1. Introduction

The Fargo-Moorhead Metropolitan Council of Governments (Metro COG) initiated the 15th Avenue North (15th Avenue) Corridor Study to identify improvements, funding sources, and an implementation strategy for the corridor.

Within the next several years the Minnesota Department of Transportation (MnDOT) plans to reconstruct Trunk Highway (TH) 10, one of the seven Red River crossings in the central Fargo-Moorhead area. MnDOT will potentially transition a portion of the roadway to a three-lane section, reducing capacity from its current four-lane section.

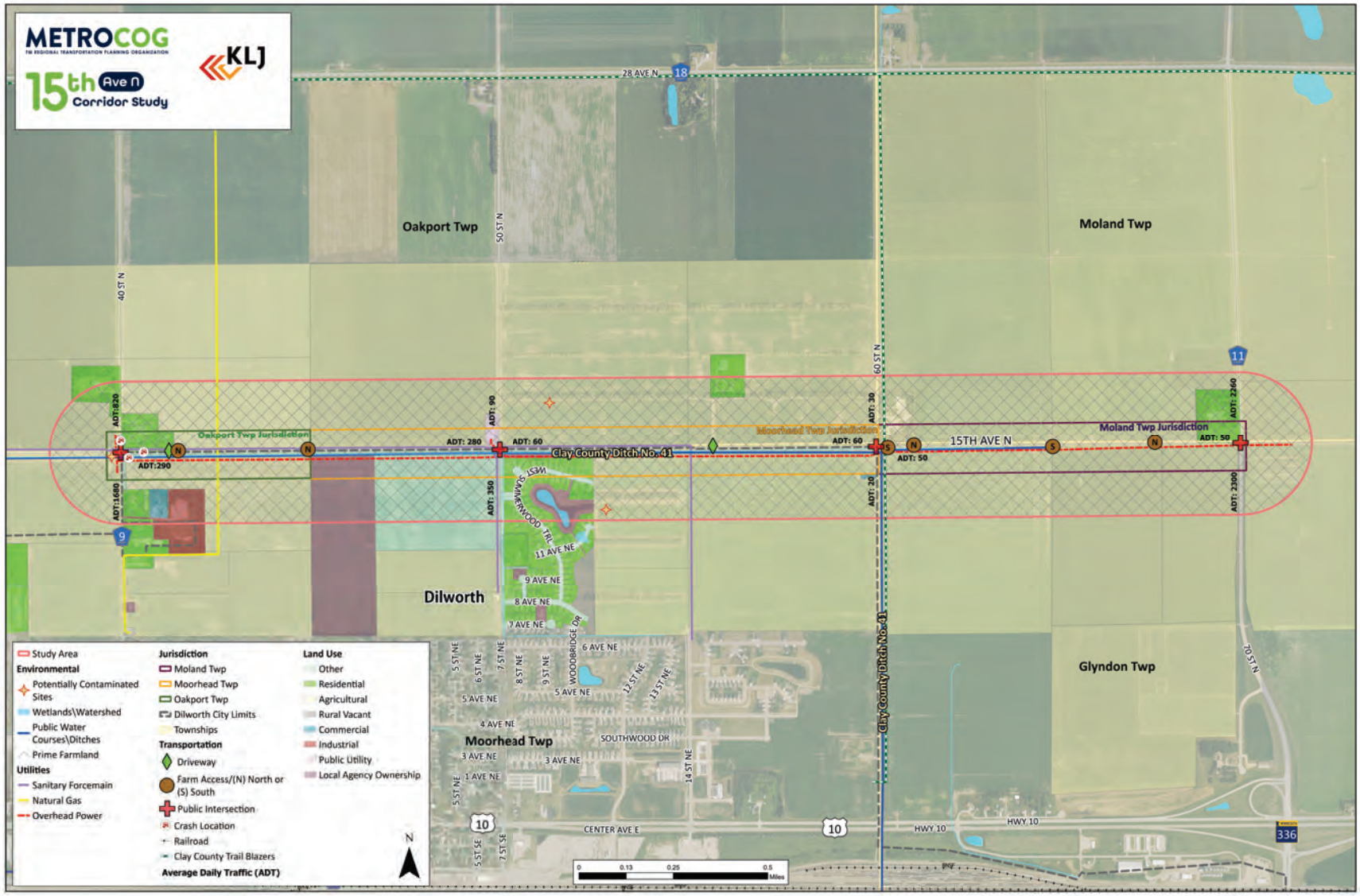
Results of the study will help Metro COG and partner agencies plan for the future of the corridor with respect to the evolving surrounding community and metropolitan arterial roadway network.

Objective

This study will identify issues along the existing 15th Avenue corridor, the future use and travel patterns of the corridor, and feasible alternatives for future improvements along 15th Avenue from County Road (CR) 9 to County Road 11. The study also outlines considerations for jurisdictional ownership of the operation and maintenance of 15th Avenue.

2. Study Area

Figure 1: Corridor Study Overview Map



Existing and Planned Land Use

The land adjacent to the study corridor is primarily of agricultural use. See Figure 2 for crop cover along the 15th Avenue study corridor indicated by a solid green line.

According to the *Clay County 2045 Comprehensive Plan* the crop cover on the corridor is made up of corn, soybeans, spring wheat, and sugar beet. There is a low-density residential subdivision southeast of 50th Street.

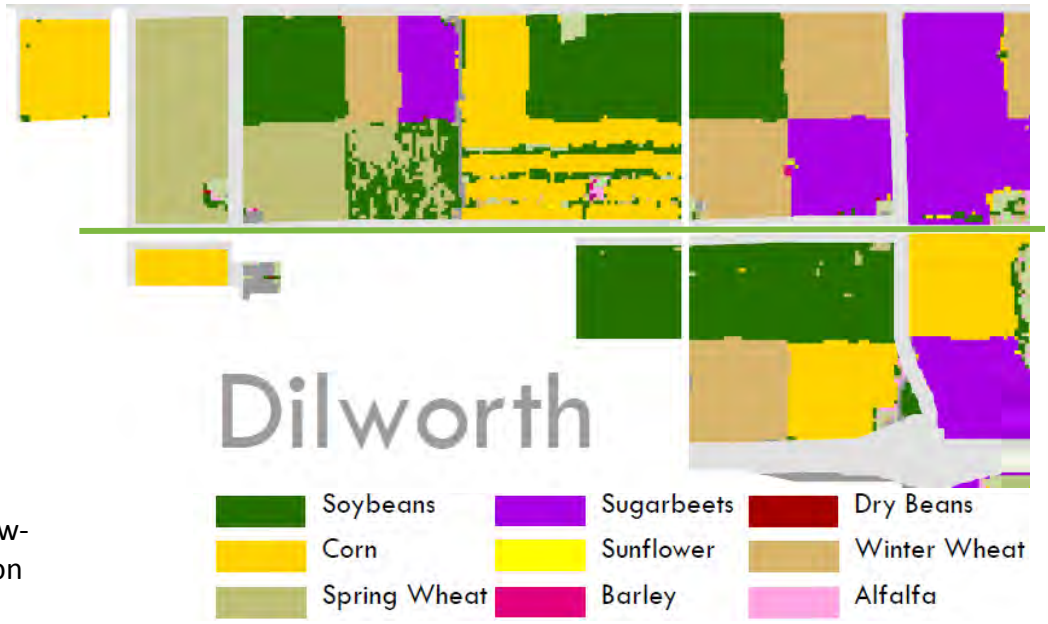


Figure 2: Crop Cover Along Study Corridor

The agricultural land within the City of Dilworth, defined in the *Dilworth Comprehensive Plan*, is categorized as a Transional Zone meant for annexed unplatted areas that haven't been zoned for development and are undergoing a transition from agricultural to urban uses. The residential subdivision is categorized as an R1 zone meant for predominantly single-family housing. See Figure 3: Exisng City of Dilworth Land Use for existing land use within City of Dilworth boundaries. 15th Avenue is indicated by a solid green line.

Figure 3: Existing City of Dilworth Land Use

The land parcels outside of Dilworth (in Moorhead, Oakport, Moland, and Glyndon Townships are zoned as Urban Expansion Tier 1. According to the Clay County 2045 Comprehensive Plan, land use in this tier is more restrictive and is expected to be annexed into Dilworth or Moorhead within the next five to 20 years. See Figure 4: Existing Zoning Districts Outside Dilworth Jurisdiction for existing zoning outside Dilworth city limits. 15th Avenue is indicated by a solid green line.

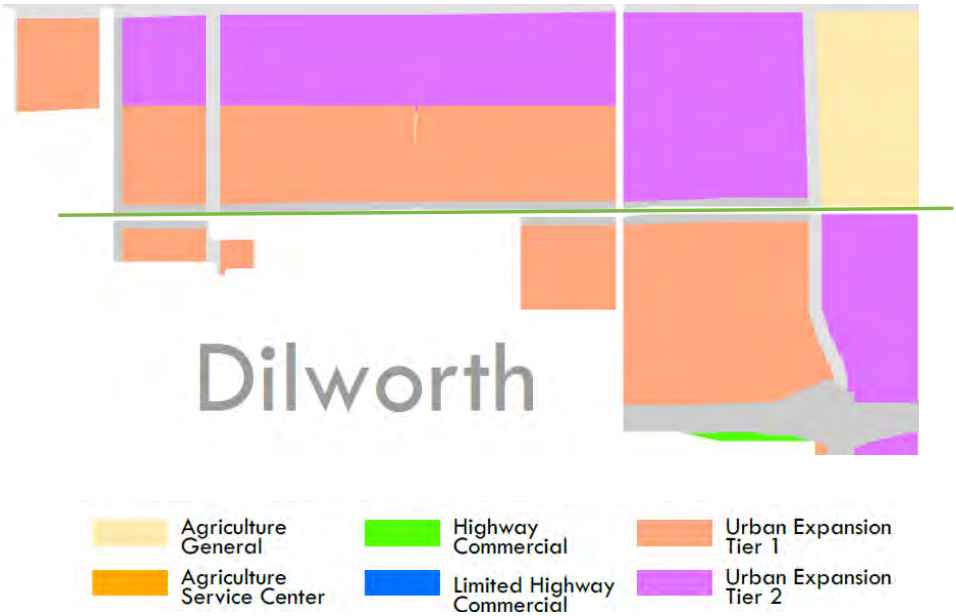
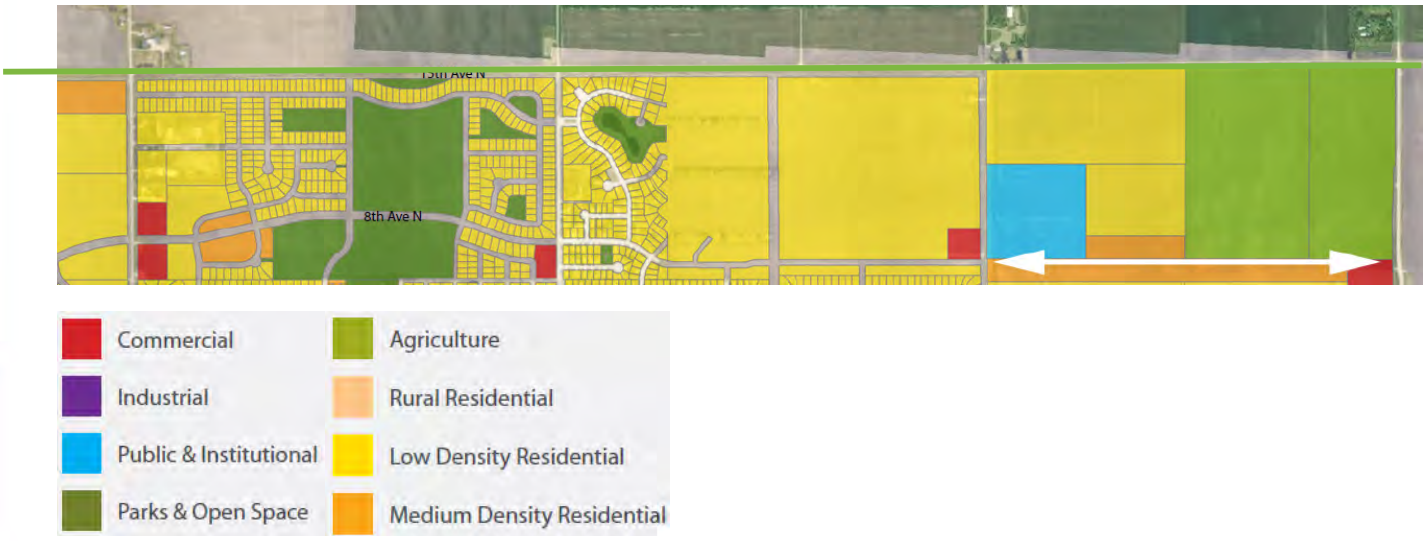


Figure 4: Existing Zoning Districts Outside Dilworth Jurisdiction

In the *Dilworth 2045 Comprehensive Plan*, the agricultural land south of 15th Avenue is expected to convert to more low-density residential except for the parcel just west of 60th Street which would remain agricultural. There are also higher density land uses expected west of 40th Street including medium-density residential and commercial. See Figure 5 for future land use within Dilworth city limits. 15th Avenue is indicated by a solid green line.

Figure 5: 2045 Future Land Use in Dilworth

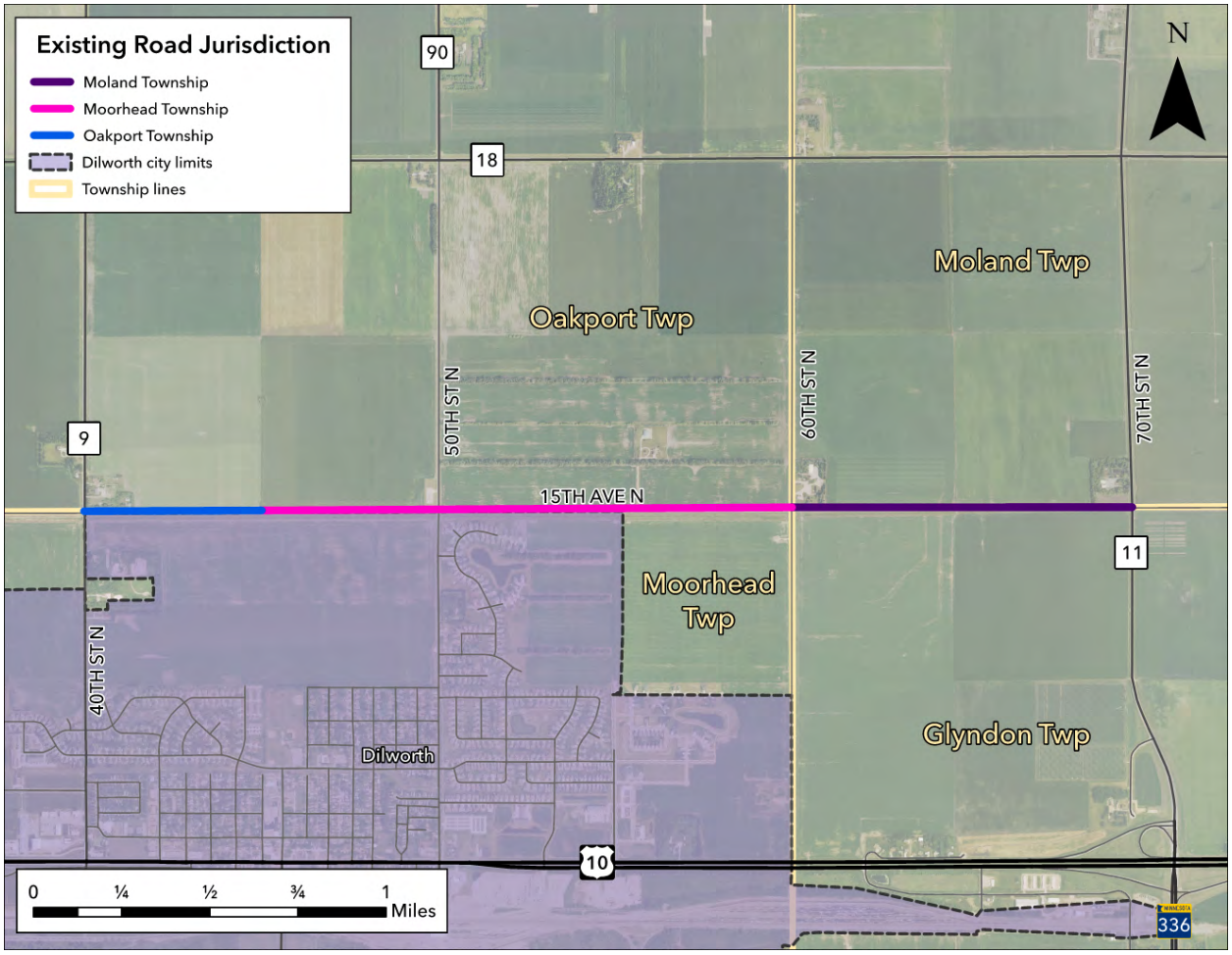


Right of Way

Roadway jurisdiction along the 15th Avenue study area changes throughout the corridor: from 40th Street to midway to 50th Street is under the jurisdiction of Oakport Township; West of 50th Street to 60th Street is under Moorhead Township; and East of 60th Street is under Moland Townships jurisdiction. All three townships contract with Clay County for road maintenance.

Similarly, municipal and township boundaries change along the study area. Southwest of 40th and 60th Street at 15th Avenue is Moorhead Township. North of the corridor from west of 40th Street to 60th Street is in Oakport Township. South of the corridor from 40th Street to 60th Street is the City of Dilworth. Northeast of 60th Street and 15th Avenue is Moland Township. Southeast of 60th Street and 15th Avenue is Glyndon Township. Refer to **Figure 6** for how these boundaries overlap.

Figure 6: Existing Road Jurisdiction



Throughout the corridor, the right of way on the north side is consistent with 33 feet of right of way north of the section line from County State Aid Highway (CSAH) 9 to CSAH 11. On the south side, there is 50 feet of right of way from CSAH 9 to the east side of the Summerwood Addition (approximately a quarter-mile east of 50th Street). From that point to CSAH 11, there is 33 feet of right of way on the south side of 15th Avenue.

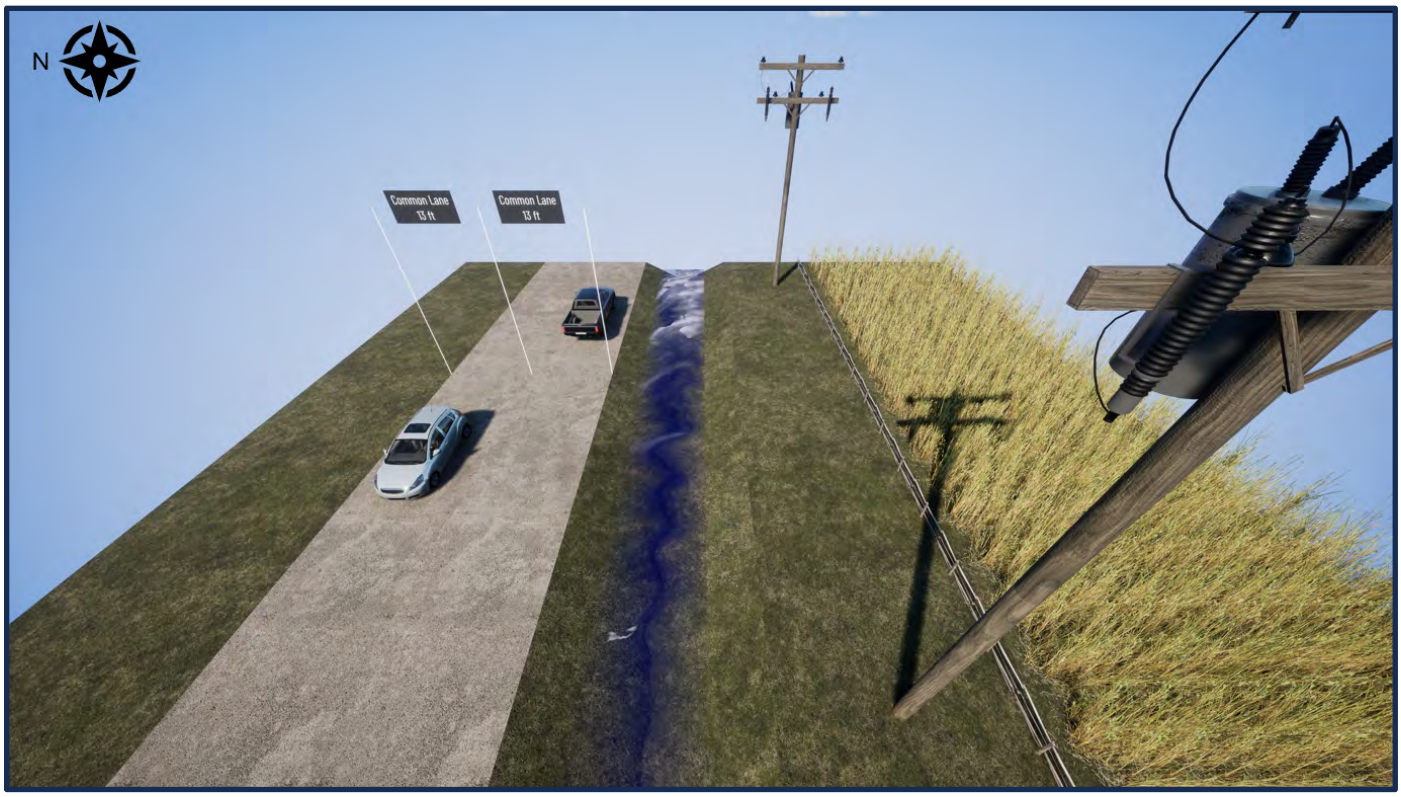
Roadway

15th Avenue provides continuous east-west travel across Dilworth and Moorhead. A bridge over the Red River provides access into North Fargo via 12th Avenue. The 15th Avenue corridor is a popular route to avoid congestion because it connects to CR 11/Minnesota Highway (MN) 336 with access to TH 10 and Interstate 94 (I-94).

Figure 7: 15th Avenue at 60th Street looking southeast

15th Avenue within the study area is a gravel-surfaced roadway varying between 20 to 30 feet wide. The roadway condition in the gravel covered portions of the corridor has degraded with heightened traffic levels. There is a minimal ditch-roadway separation on the north side, except for at centerline culvert locations to drain the agricultural land from the north to the south under the roadway. See Figure 8 for a more detailed cross section.

Figure 8 - Example Cross Section of 15th Avenue



The intersection at 40th Street is three-quarters paved; the east approach (15th Avenue) is gravel while the rest are bituminous. There are three other existing intersections at 50th, 60th, and 70th streets.

In Dilworth's *2045 Comprehensive Plan*, the city lists two future intersections along the study corridor: one between 40th and 50th Street (a continuation of 2nd Street NW) and one between 50th and 60th Street (a continuation of 14th Street NE).

There are two total residential driveway accesses, both on the north side of the study area: one just east of 40th Street, and one just west of 60th Street. 15th Avenue east of 70th Street is a single access residential driveway.

There are seven total agricultural accesses along the study area. Two are on the north side between 40th Street and 50th Street. The remaining five are between 60th Street and 70th Street: three on the north side and two on the south side. Refer to **Figure 1** for more detailed locations of the agricultural accesses.

Functional Classification

Presently limited in function due to its narrow cross section and gravel surface, the MnDOT Functional Classification Map identifies 15th Avenue as a local road. Locally classified roads are not intended for use in long distance travel, except at the origin or destination end of the trip, due to their provision of direct access to abutting land. One-half mile west of the corridor 15th Avenue is classified as a minor and major collector as it approaches the Red River to the west.

Functional classification can be elevated through reconstruction that targets improvements such as capacity, width, and surface type. Because it is already incorporated into the region's grid system and has a designated crossing of the Red River, 15th Avenue would be a candidate for an increased functional classification.

Roadway Maintenance

Oakport, Moorhead, and Moland Townships all contract with Clay County to provide summer blading maintenance and winter snow plowing. All graveling operations are completed by the townships. The City of Dilworth has a financial agreement with Oakport and Moorhead Townships to pay 75% of the maintenance costs between CSAH 9 and 60th Street N.

Based on information from Clay County, the corridor is bladed approximately every two weeks, sometimes more frequent depending on roadway conditions. In 2023, it cost Clay County $1,170.49 per mile for roadway maintenance. This cost is the average of all township and county roads (gravel and paved) that the county maintains. Based on invoices from Moorhead township to the City of Dilworth, the average cost per mile for the townships to maintain the roadway was $478.61 per mile in 2023.

The townships add gravel to the roadway, on average, once every three years.

Utilities

Utilities within the corridor were identified by publicly available data online or by a site visit. A Gopher State One Call was not completed for the study. Refer to **Figure 1** for general location utility locations.

Overhead power lines run along the south side of Clay County Drain 41 and cross 15th Avenue at CSAH 9 and 50th Street. The City of Dilworth has a sanitary forcemain on the north side of 15th Avenue from CSAH 9 to one-half mile east of 50th Street. The forcemain crosses 15th Avenue at this location and at 50th Street. Viking Gas Transmission Company has a gas forcemain that crosses 15th Avenue approximately 1,200 feet east of CSAH 9.

There are several telecommunication markers on the north side of 15th Avenue, but no utilities were located.

Existing Issues

Members of the Study Review Committee commented on two known issues throughout the corridor: dust and roadway surface condition. The existing roadway is gravel surfaced and does not have any dust palliative treatment applied. Dust from roadway traffic has been reported as an issue.

Between CSAH 9 and 50th Street N is the heaviest used portion of the corridor. Clay County periodically receives calls regarding the condition of the roadway in this portion and stated that this portion of the corridor requires the most maintenance.

At the intersections of CSAH 9/15th Ave N, 50th St/15th Ave N, and NW corner of CSAH 11/15th Ave N there are residential properties in the corners. The large trees at these properties can create sight distance issues for motorists at these intersections.

Past Studies

2011 CSAH 9/15th Avenue Study

Dilworth and Clay County studied long-term needs of County State Aid Highway (CSAH) 9 and 15th Avenue N in 2011. The 2011 CSAH 9/15th Avenue Study looked at future volume forecasts, right-of-way needs, opportunities and future considerations for bicycle and pedestrian improvements, and access management in future growth areas identified in the Dilworth Growth Area Plan. The plan took into account future funding needs and implementation scenarios for improvements to both corridors.

2023 MnDOT Trunk Highway 10 Corridor Study

MnDOT, Metro COG, and the City of Dilworth completed a corridor study of TH 10 in 2023 that identified cross section alternatives from 34th Street to 60th Street. Because TH 10 is one of few connections to the region and across the Red River, project members perceived risk without existing alternate routes.

Trunk Highway (TH) 10 in Dilworth, on the eastern edge of the Fargo-Moorhead Metropolitan Area, is a crucial passageway for travelers to and from the eastern side of the Metro. TH 10 serves as the only improved roadway to enter or leave the metropolitan area north of Interstate 94 (I-94).

The corridor study identified corridors to provide alternate routes for trips starting in the north headed for I-94 or eastbound TH 10 as well as local routes to access retail and commercial businesses. 15th Avenue N was identified as an alternate corridor, though it was assumed as unpaved and was not assigned diversion traffic in the 2045 conditions. The study stated that if 15th Avenue was paved, up to an estimated 3,000 vehicles a day could use it instead of Highway 10.

The study elevated two roadway alternatives: a four-lane highway throughout the study corridor, or narrowing the cross section to three lanes from 5th Street W to 7th Street E.

In MnDOT's District 4 Capital Highway Investment Plan (CHIP), TH 10 is scheduled to be resurfaced from Dilworth east to Glyndon in 2028. The CHIP also lists reconstructing TH 10 from 13th Street to 34th Street in 2029 and 34th Street east to SE 7th Street in 2030.

3. Community Engagement

Public Engagement Goals

- Coordinate with property owners and stakeholders along the corridor to understand current issues and future use of the corridor
- Inform and gain input from the broader community to understand current use of the corridor and how they may utilize the corridor in the future
- Keep stakeholders and the public informed and engaged on the project with timely updates, open communication, and ample opportunities to provide input on the study

Study Review Committee

A Study Review Committee (SRC) was developed to provide guidance and leadership throughout the study, and act as a mechanism for achieving consent among key stakeholders and regional partners. Members of the SRC included representation from the following entities:

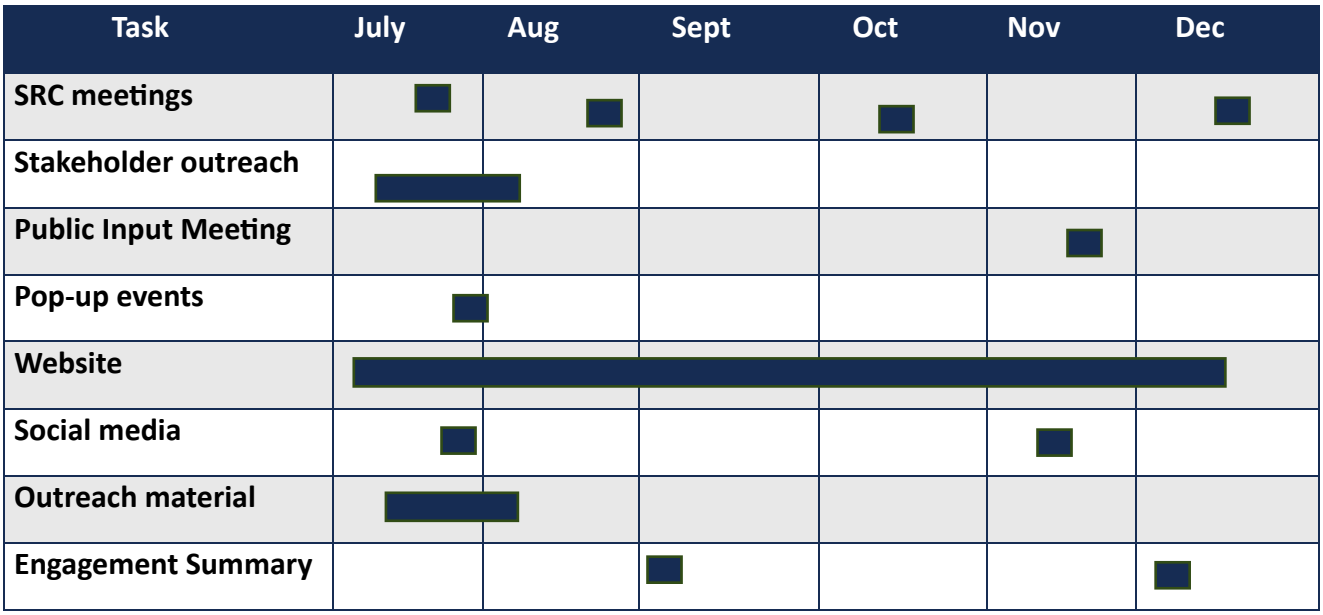
- FM Metro COG
- Oakport Township
- City of Dilworth
- Moorhead Township
- Clay County
- Moland Township
- MnDOT Detroit Lake District State Aid Office
- MnDOT District 4 Planner

KLJ held four SRC meetings throughout the project:

- SRC Meeting #1 – 7/22/24
- SRC Meeting #2 – 8/26/24
- SRC Meeting #3 – 10/14/24
- SRC Meeting #4 – 12/18/24

Engagement Schedule

Figure 9: Engagement Schedule



Public Outreach

Two phases of engagement were developed for the corridor study. Outreach efforts for each phase is outlined below.

Phase 1 Engagement

Phase 1 of engagement for the 15th Ave Corridor Study was intended to identify stakeholders, property owners and current and future corridor users and gain input on current issues of the corridor, current usage and future usage of the corridor, and understand desires for improvements to the corridor.

Stakeholder outreach

KLJ held two different stakeholder meetings to discuss the project and obtain local knowledge of the corridor. A summary of the stakeholder meetings is available below.

Buffalo-Red River Watershed District

The Buffalo-Red River Watershed District (BRRWD) operates and maintains Clay County Ditch 41 that parallels 15th Ave N. KLJ staff met with BRRWD staff via Microsoft Teams on July 22nd, 2024. The notes from the meeting can be found in the Public Involvement Reports in Appendix H.

Clay County, City of Dilworth & City of Moorhead

KLJ staff met with representatives from Dilworth Fire, Dilworth Maintenance, Moorhead Engineering, and Clay County Planning to discuss the 15th Ave N corridor. Existing and future usage of the corridor, pedestrian accommodations, and future traffic projections were discussed. The notes from the meeting can be found in the Public Involvement Reports Appendix H.

Tactics

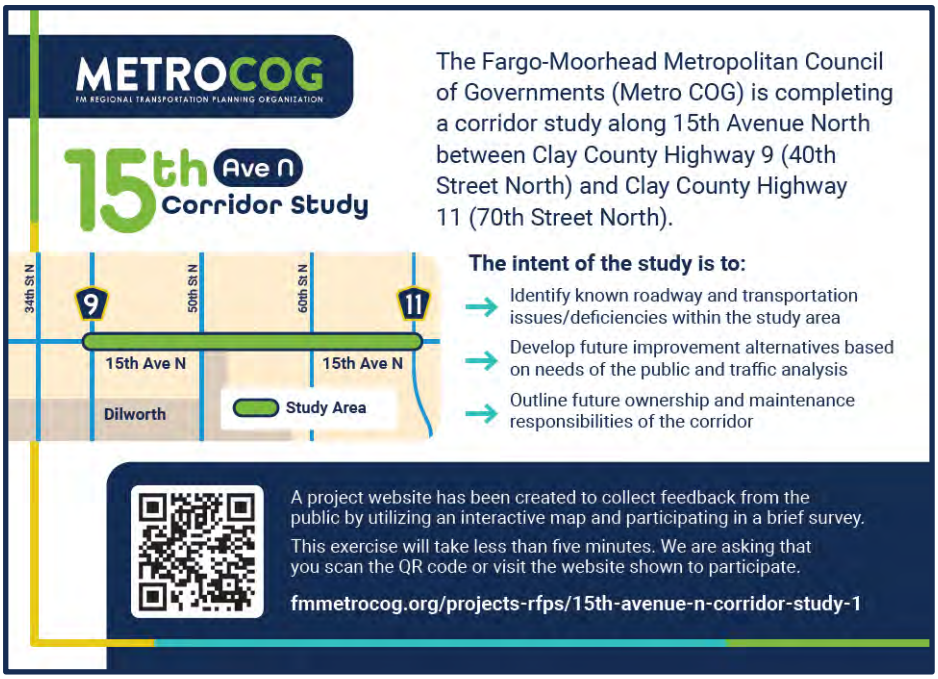
Figure 10: Public Outreach at LocoDaze in Dilworth

KLJ conducted broader public outreach targeted to Dilworth, Moorhead and north Fargo residents to understand perceived issues that exist along the corridor and current and future usage potential. Outreach was conducted in variety of ways:

- **Pop-up event at Dilworth LocoDaze**: KLJ coordinated and attended LocoDaze on Saturday, July 27 and connected with area residents on the corridor study. Informational handouts were distributed directing people to the online website and survey.

Figure 11: Example Social Media Ad

Figure 12: Example Postcard



- **Social Media**: KLJ created social media graphics and shared with MetroCOG and City of Dilworth for posting. Additionally, a Facebook ad was placed and targeted to the zip codes: 56529, 56560, and 58102. The ad ran from July 31- August 14 at a cost of $100. The ad reached 7,261 people and had 430 link clicks to the project website.

- **Postcard:** Postcards were developed and mailed to nearby landowners to inform about the study and solicit their input on issues/concerns they have. 72 Postcards were mailed and delivered to adjacent landowners and nearby residents on 8/1.

- **Website with survey and comment map**: KLJ worked with MetroCOG staff to populate MetroCOG's website with project information. The website linked to a survey and interactive comment map which was available for comment . Results from those engagement activities are summarized below.

Collected Feedback

118 people took the online survey. Survey questions and responses are below.

Figure 13: Question 1 - Do you live, own property, or rent property along the corridor?

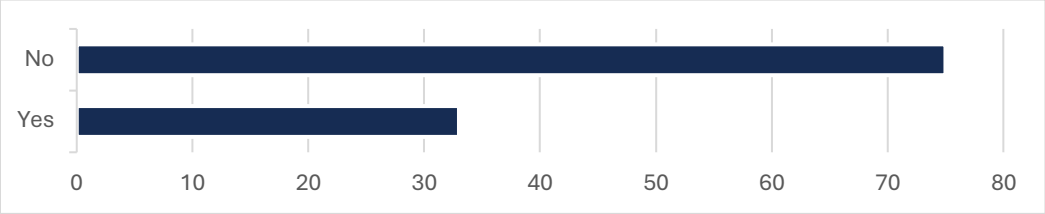


Figure 14: Question 2 - How do you currently use the corridor?

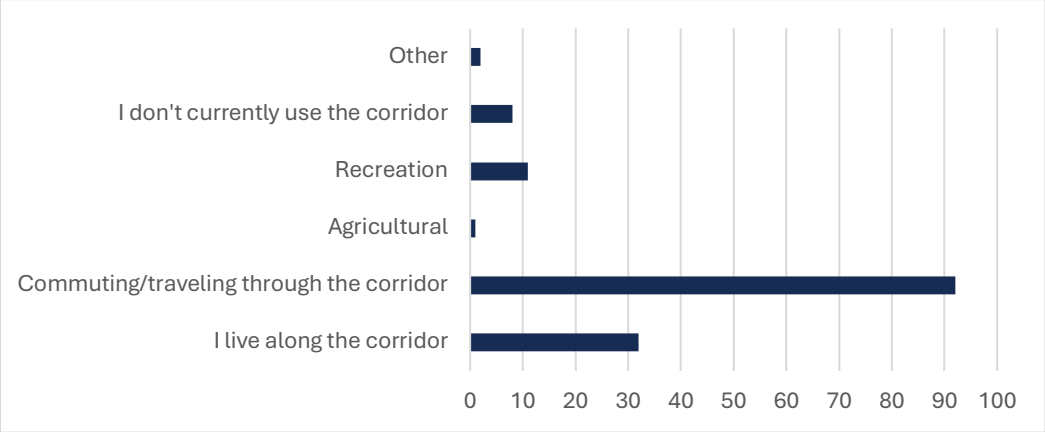


Figure 15: Question 3 - How frequently do you use the corridor?

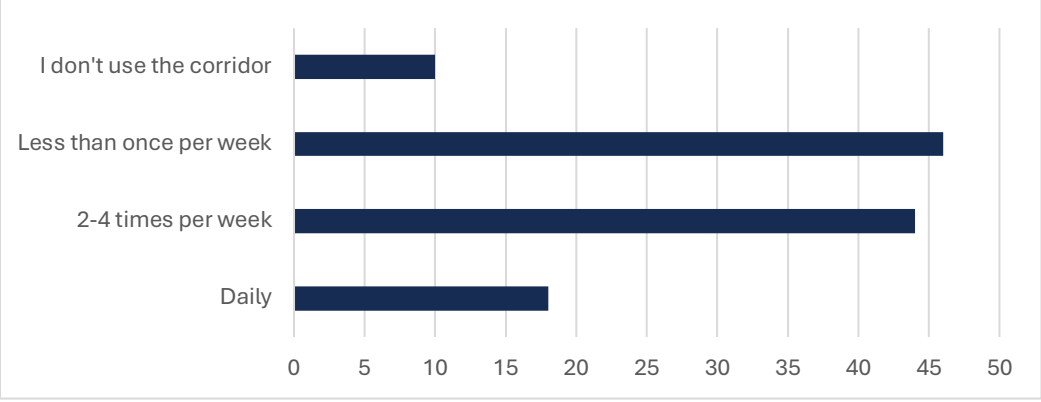


Figure 16: Question 4 - Would you use the corridor if it was improved beyond a gravel roadway?

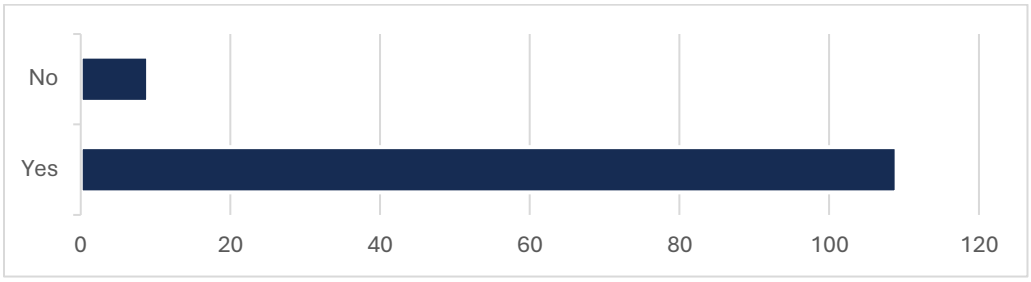


Figure 17: Question 5 - Would future improvements interfere with how you currently use the corridor?

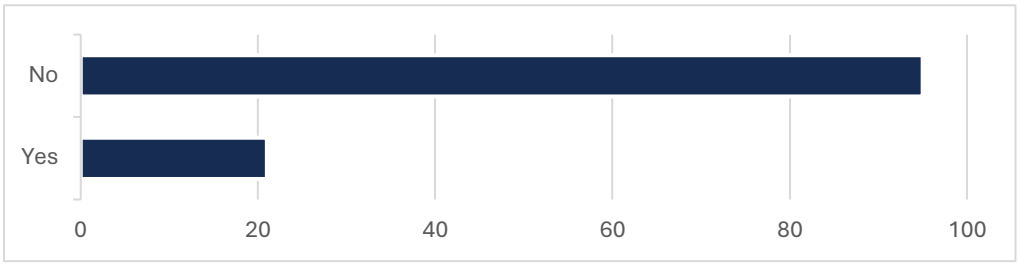


Figure 18: Question 6 - What would you like the roadway to include in the future?

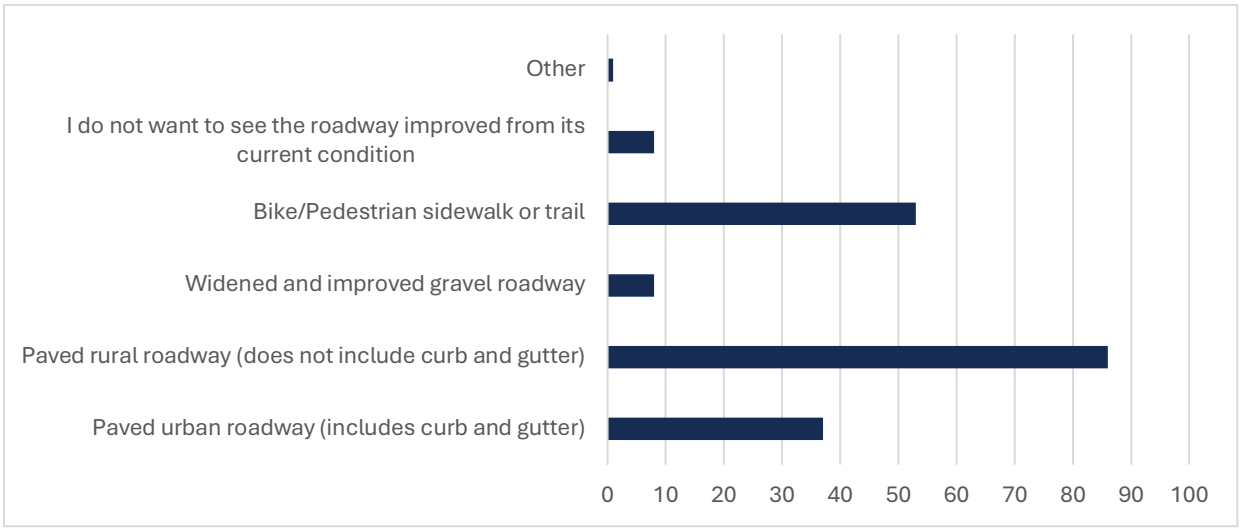


Figure 19: Question 7 - Where do you live?

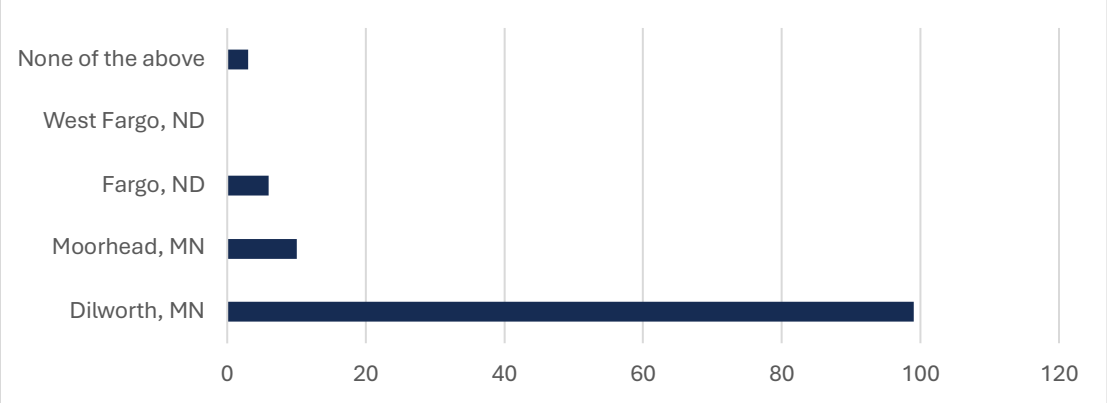


Table 1: Question 8 - What other comments would you like to share?

In favor of improvements to the roadway.

Neutral stance on roadway improvements or didn't indicate a preference.

Does not support improvements to the roadway.

Keywords	Comment
Paving	Paving this roadway would greatly improve traveling from north Moorhead to Dilworth and to the interstate
Paving	Paved east just to 50th St N would be great.
	I received a post card about a study that seems to lead to a road being paved on 15th Ave N. I have property on that road and just me and one other house are on that road. I got my house shaken up enough from the traffic that passes by each day and an increase is not welcome at all. The idea to just "ease" traffic flow for a convenience for others to ease up Hwy 10 makes no sense, it would be a the expense of future repairs to my basement walls and other out buildings with more vibration and noise. I have about a hundred trees that would have to be cut and removed and then my yard would be wide open and not have privacy or protection from the road so that would cause security issue, noise and car and truck pollution in my yard. If construction of a road did happen how am I supposed to get in and out of my house? I guess if I have to legally fight it I will. I'm not the only one that does not want this nightmare, that seems to be pushed on us. I have lived in this place for 31 years. Why should I have to put up with a convenience to ease traffic when it's a mile from Dilworth? Whose stupid idea was it anyway? how would anyone would like to change a lifestyle or have their house shake or have more pollution because of traffic? People drove on this road in the winter and then they get stuck because of drifts and paving it will be worse,

	what about the right of ways I don't want intrusion in my yard I like my privacy. As a homeowner property owner and a taxpayer I hate this idea, so there is my input. Yes I'm blunt to the point. find a another alternative route, it's a township road and not a county road this would turn into a place to race cars add noise, what's the positive part? and what would the property specials be? Very high.
Paving	Sabin to Fargo would be so convenient.
Paving	I would really love this and feel it is well needed. It would help the traffic going not only driving through the hwy. 10 stretch but also interstate 94 traffic trying to get from 94 to Hwy 10. Maybe even some of it out. Also traveling to the airport, Sanford downtown Fargo, NDSU, Dome, it is so crazy to have to jog around Dilworth's streets to avoid the gravel road, and get to the paved one up north. I hope it goes through.
Funding	Road changes including curb and gutter, include special assessments where the city of Dilworth not only defers payments to many residents but then also charges unneeded interest just because they can on payments we can barely afford.
Speeding	People already drive too fast on the gravel road. I'm concerned that of the roadway were paved, the speed would be out of control, which is frightening for homes that live along the corridor.
Paving	I would likely use it most times I travel east on Highway 10 or 94
Safety; Speeding	Sure pavement is nice but it's not safe now. People don't slow down or even think about stopping, doesn't matter what direction they are going. It's not safe. Don't waste our money until people start abiding the road laws
Paving	This most important would be for it to be paved. We live in Woodbridge and it would be easy access to commute if it was paved. Now we are going by the school to get to the paved portion.
Safety; Speeding	People already speed along this road and ignore stop signs. Paving the road will turn it into a major accident location.
Paving	If the road was paved, many more people would use it, which will reduce tons of traffic from Dilworth residents who currently cut through the residential roads to avoid the gravel to get the paved section, like myself.
Lighting	And lighting along the corridor. Thanks
Speeding	I live right on the corner of 7th Street and 15th Avenue and the number of people going 60+ mph and blowing the stop sign on a daily basis is surprising - including business trucks like UPS and FedEx as well as personal vehicles. Anyway to slow them down like a roundabout would be perfect!

Paving	I cannot wait until this gets paved
Paving	This roadway is used by so many and it would be nice if it was paved.
Funding	Who will be paying for this upgrade? Will it be special assessments for those in the area? IF it is updated PLEASE update the pavement and a walkway for county Hwy 9!!! (From Hwy 10 to 18) That road is terrible and many people walk along side it. One person even got hit by a car last year!!
Funding	How will it be funded? Will Dilworth residents have to pay specials on the improvement?
Paving; bike/ped	I would use this daily if it was paved. I work in North Fargo and this would be a better route. Currently I drive through the middle of town to avoid the gravel. It would be great to have more bike and walking paths available that you can go long distance. The gravel doesn't seem safe to do these activities because of the dust and risk of rocks kicking up.
bike/ped	Moorhead has such a nice bike path that ends at 34th St N. It would be nice to pick up where they leave off and have a bike path all along the corridor into the East end of town.
Paving	I would use that roadway more if it was a paved surface. I currently don't use it very much due to the rough washboarding conditions. The county seems to maintain it regularly, but it doesn't last long.
bike/ped; Safety	Only concerns I would have would be increased Traffic with a paved road if a 4 way stop would be enough. Many people bring dogs out to the gravel to walk with their cars. Worried about accidents occurring due to increased volume of traffic. This gravel road is still heavily used in summer by the farmers as well.
bike/ped; Paving	Paving this road would be an amazing improvement and great for adding a bike trail to connect too.
Funding	We were just hit with specials for 7th ave n. There needs to be consideration for what specials you will again be assessing residents for 15th ave n. Funding needs to be figured out and not all placed on the residents. Also, are the farmers in support of this? Their production and crops are important to our community.

Paving	This is a much needed improvement to the travel going to the west and north. It will take traffic off of 4th Ave and improve safety for kids and families utilizing our community. It will also improve traffic on highway 10. I live in Woodbridge and anytime I need to go west or northwest, I cut through Dilworth on 4th Ave or take highway 10 to bypass the gravel road but would much prefer to take 15th Ave N to save time and bypass going through Dilworth. Thank you for considering this improvement.
bike/ped; Paving	Would be great for this to be paved with a adjacent bike path!
	The people who actually live on this road should get the most input in if and how it is improved. I'm sure they bought big properties on a gravel road for a reason!
Paving	Road is consistently bad. Washboarded out when dry, a mud pit when wet. Paving to at least 7th Ave would be of great benefit to the community, but paving to 336 would alleviate traffic on 10 through Dilworth.
Paving	I would love to see it connected to 335 in the future. I think it would cut down on the traffic on Hwy 10 for those that are traveling to the lake area from north fargo
	Stop light on highway 10 at Rail District, it's a disaster waiting to happen!!!
bike/ped; Speeding	A number of people in our community use this road to run, walk, run their dogs, etc. There is a need for safer options to share the road with vehicles and pedestrians. One concern I have if it gets paved is the speed some cars will drive as people currently drive at high speeds even with it being gravel.
Paving	Paving this roadway would be a game changer! I personally would take this road every day if It were paved along with my husband and my son. I know a lot of others that would too. I believe it would take a lot of traffic away from 7th especially during rush hour. It would also relieve the intersection of 7th and highway 10... That gets bad before and after work hours. I wonder too if it would make it safer- there's a lot of weird stuff that goes on up there. Please please please pave it 🙌
bike/ped; Paving	If 15th Ave is paved along this corridor, there needs to be safe bike/ped infrastructure. I would love to see a bike/ped trail along this corridor that connects to the existing trail on 15th Ave farther west. When 15th Ave was paved between 34th St and County Road 9, it became worse for bikes and pedestrians. Traffic increased, and there is no shoulder at all. It was better when it was gravel. At a minimum, we need to have a wide shoulder.
Paving	We live up in Summerwood and love that road as a short cut being way in the back of Dilworth. But the gravel roads are so hard on our vehicles that we don't use it as often.

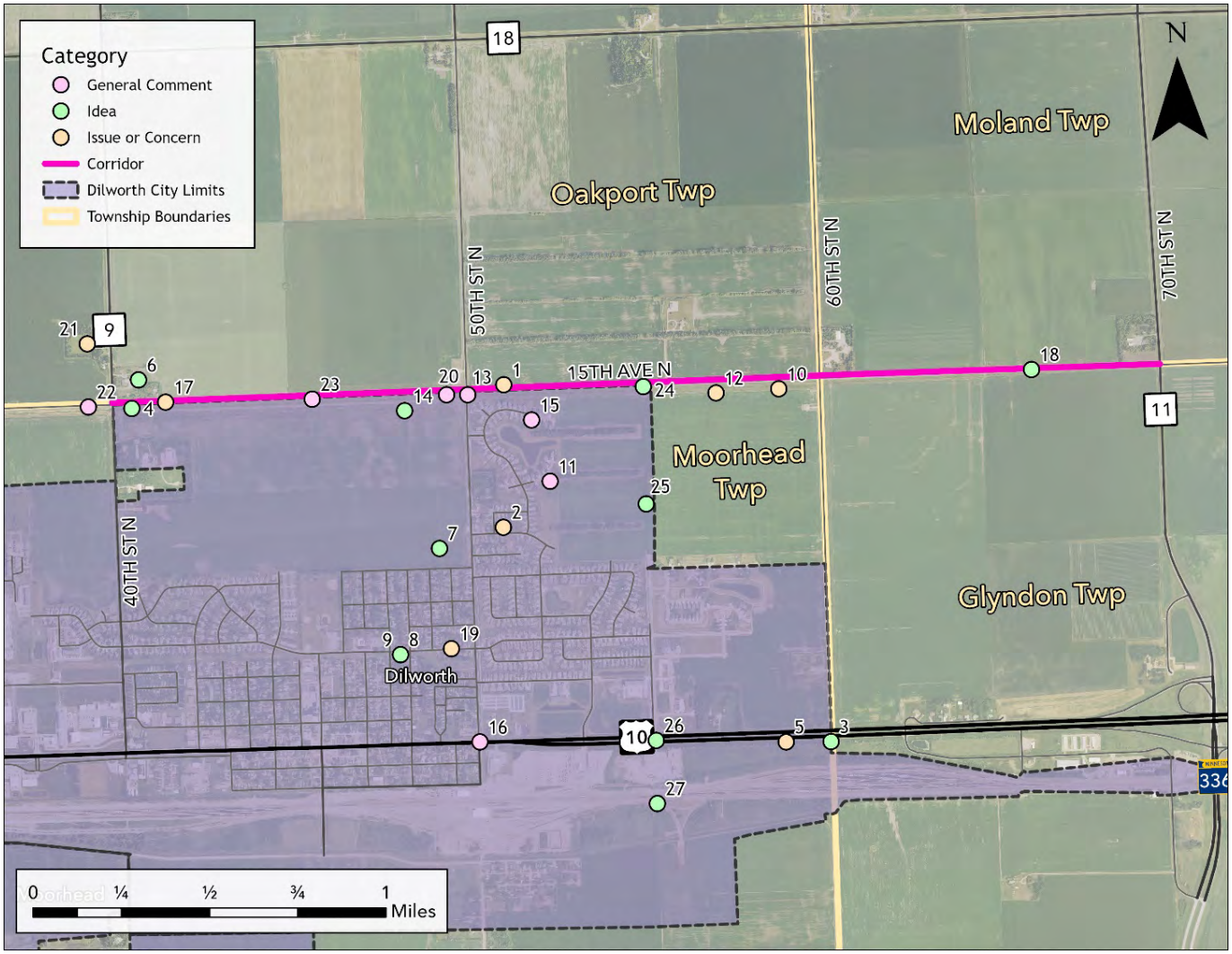
Funding	Stop spending money we do not have then making people pay more than they can afford to fund things we do not need. Stop trying to copy nearby cities and towns that have more money or higher populations. We are not them.
bike/ped; Paving	I travel on this road daily in my vehicle but also use it daily for a run. Would be nice to have it paved but still have the opportunity to run/walk.
Paving	I would like to see 15th Ave N fully paved. Years ago, when they paved 15th Ave N from 32nd Ave to County Road 9, it seemed like a missed opportunity not to extend the paving all the way to County Road 11. If the road were paved as proposed, my family and I would use it more frequently instead of driving through Dilworth to reach places in Moorhead.
Paving	Paved All of us in the NE side would take it much much more if it was paved
Paving	I would frequently use this as a method to bypass Hwy 10 for things like getting to the east ten shopping area and on my way to the airport. I always take 15th Ave to the airport, but leave Dilworth and then take Hwy 10 to Hwy 75 and hop on 15th Ave there because currently I would need to travel down a stretch of gravel on the 15th Ave corridor leaving the east side of Dilworth.
Paving	Living in the Woodbridge area of Dilworth we do have occasion to travel to north Moorhead and north Fargo. 15th Ave is our preferred corridor to get to our destination. We don't like driving on gravel so a paved roadway would be fantastic
Paving	Many people use that corridor daily. Even though it's graded by the road grader often, it still gets washboards frequently. Pavement would be very beneficial.
Paving	We live in the Summerwood addition on the farthest northeast part of Dilworth. It would greatly help us to get out of town quickly if we could head north, but the gravel roads hinder that option. Currently, we either take 7th St to Hwy 10 and have difficulty making a left turn onto Hwy 10 or we have to meander through the residential areas to get to 15th St where making a left turn is only slightly easier. Also, when going to Walmart or Aldi, we avoid the gravel and need to meander through town on 4th Ave to get to #9.
	This is the last road that needs to be getting improved in Dilworth.
Paving; Speeding	It would be great to not have all of the dust and dirt kicked up by the many vehicles coming through that stretch every day. Speed will definitely have to be monitored. They drive fast now and will drive even faster when it is paved.
Paving	Is it done yet
Paving	The 15th Ave N corridor should be improved to allow traffic to bypass Highway 10 through Dilworth.
Paving	I support the idea. I currently use 15th Ave and it would improve travel through the area.

Paving	I would like to see this road paved. I use this road daily to drive to work in north Fargo. My family would use this road more often if it was paved. The current road can be very rough and we avoid it sometimes. By paving this road, it would alleviate traffic through Dilworth.
Paving	We were told by our realtor when we bought property in the Summerwood development that the road would be paved all the way to our development. We were extremely disappointed when it was paved only part of the way. We would use instead of Hwy 10 if the road was paved. The gravel road is so rough, it is not usable
bike/ped; Paving	The corridor is in our backyard, so I see all the traffic on the gravel road. The amount of traffic surprised me after we first moved in. More people use it than I thought. If it were paved, we would use it everyday to go east and west instead of traveling south to highway 10. I would also like to point out many people walk their dogs on this road. I think it may be beneficial to include a sidewalk or trail for this reason.
	I live a mile east of the corridor in a rural area. It's a safe way to go to the airport or Moorhead transfer station without going through town. Eventually this may be part of Dilworth although the drainage ditch will be a natural barrier.
Paving	This would make a huge impact on travel for us and would love to see the project done
Paving	This would be awesome as I don't take that road since it's gravel - I have a new car. I currently go from NE Dilworth on 4th Ave headed west to get to Co. Rd. 9 to get to 15 to head west to 34th St and further west. Taking 4th Ave through town, there can be a lot going on with school, sports activities, church, etc. It would lessen wear and tear through that route to take 7th St NE north to 15 west if paved. It's more of a direct route too. Thank you so much for considering this - it would be GREAT and be more safe for the current route taking 4th Ave.

Interactive Comment Mapping

27 comments were collected on the interactive map.

Figure 20: Comment Map



Marker	Comment
1	I have a house on 15th Ave N and its true when cars or trucks come by it shakes the house, there is added noise, a paved road wont solve that, it will increase traffic, its bad enough now. New road special taxes to me and other property owners would be very high, its a bad idea.
2	While I like the idea of paving 15th for when we travel to airport and North Moorhead and Fargo, I don't want this to become a major collector street. Can we keep it a smaller 2 lane paved road. We chose Dilworth for its smaller, rural atmosphere. We don't want to be like Moorhead and turn this into a high traffic area.
3	I agree with the comment that there should be a transition zone of 45mph on W/B Hwy 10 between the 65 and 30 mph speed limits. This will save lives and injuries.
4	Ideal spot for a gas station convenience store and perhaps other businesses. A mile further east could also be a spot for this,but does not currently have the traffic flow that this corner does.
5	Speed limit from 60th St into Dilworth should be lowered to 45 mph.
6	Residents of this area should get the most say in what happens to the road. They have invested in valuable rural property and will have the most to lose if paving the road results in heavier traffic and new high-density development.
7	We need attractions more than we need gravel roads become paved or a new community center. We need a large splash pad and other free options to draw families in or direct traffic to Dilworth.
8	We need to draw more people into the area BEFORE we start spending a ton of money that the city doesn't have. Find cheaper options or attractions like a large splash pad park, and I mean LARGE so that we can accommodate visitors from our larger or smaller neighbor cities.
9	4th Ave needs work more than we need a new route around town.
10	This would only serve to bypass Dilworth.
11	I feel that paving that stretch of road would ease the congestion at 7th Street and Hwy 10 during rush hours.
12	I really feel that this road should not be paved. Because when it’s a rain or a snow storm, I am actually able to drive on this road unlike Highway 10. When Highway 10 is a complete ice rink, the gravel road is just fine and you are able to drive on it.
13	Please keep this a 4 way stop. Lights are not necessary and NO ROUND ABOUTS!
14	This toad should have pavement not gravel.

15	Anything other than a gravel road would be great!
16	Paving 15th Ave N to 70th St should reduce intersection traffic at 7th St NE and highway 10 for those heading east.
17	There are too many trucks that drive past the house on 15th Ave N just as the grave starts its shakes the house, there is to0 much traffic now. Adding pavement would only increase traffic and make it worse.
18	Please pave 15th Ave N all the way from 40th St N to 70th ST N. This would create a route people from rural Clay County could use to reach the Resource Recovery Center, the new Department of Motor Vehicles, or the new Withdrawal Management / Detox Facility. All of which are located on 15th Ave N.
19	Paving 15th Ave N would reduce traffic through Dilworth on 4th Ave NW. This entire mile of 4th Ave NW is residential and has significant pedestrian traffic.
20	Now that 7th St NE in Dilworth has been rebuilt, it only make sense to pave 15th Ave N between 40th ST N and 50th St N.
21	Large semi-trucks traveling between the Resource Recovery Center and Landfill must now drive through Dilworth on HWY 10. Paving 15th Ave N would create an alternate route for these trucks that would reduce the traffic on HWY 10.
22	New DMV on 15th Ave N will increase traffic on that roadway justifying the need to pave the road all the way to 70th ST N.
23	Paving 15th Ave N from 40th ST N to 70th ST N would create a way traffic could bypass driving through Dilworth.
24	Install a round-a-bout at 14th St NE and 15th Ave N.
25	Construct 14th ST NE all the way to 15th Ave NE.
26	Install a round-a-bout at Highway 10 and 14th St NE.
27	Build an overpass at 14th ST SE and the BNSF railway to provide access to area south of the tracks.

Phase 2 Engagement

KLJ and Metro COG conducted a second phase of engagement for the 15th Avenue Corridor Study to gain feedback on a range of roadway alternatives developed for the corridor. Feedback was collected at an in-person public meeting on November 21, 2024, and through an online survey that was open November 21- December 8, 2024. Feedback and outreach material is summarized below.

Open House

An open house was held at the City Depot in Dilworth from 5 - 7 p.m. on Thursday, November 21. 16 people attended the public meeting, including two representatives from KLJ, one representative from FM Metro COG, one representative from the City of Dilworth, and one representative from Clay County. Sign-in sheets are included in the Public Involvement Reports in Appendix H.

Figure 21: 15th Ave N Open House at City Depot in Dilworth

The meeting was held as an open house format showcasing the various typical sections being proposed on the corridor. Participants were asked to vote for the alternative they would like to see implemented on the corridor.

Voting results from the open house:

- One vote for the No Build option (Typical Section 1)
- Five votes for the Clay County Minimum (Typical Section 4)
- Two votes for the Clay County Minimum with Path (Typical Section 5)
- Two votes for the Clay County Minimum with Southern Alignment (Typical Section 6)
- Three votes for the Clay County Minimum with Southern Alignment and Path (Typical Section 7)

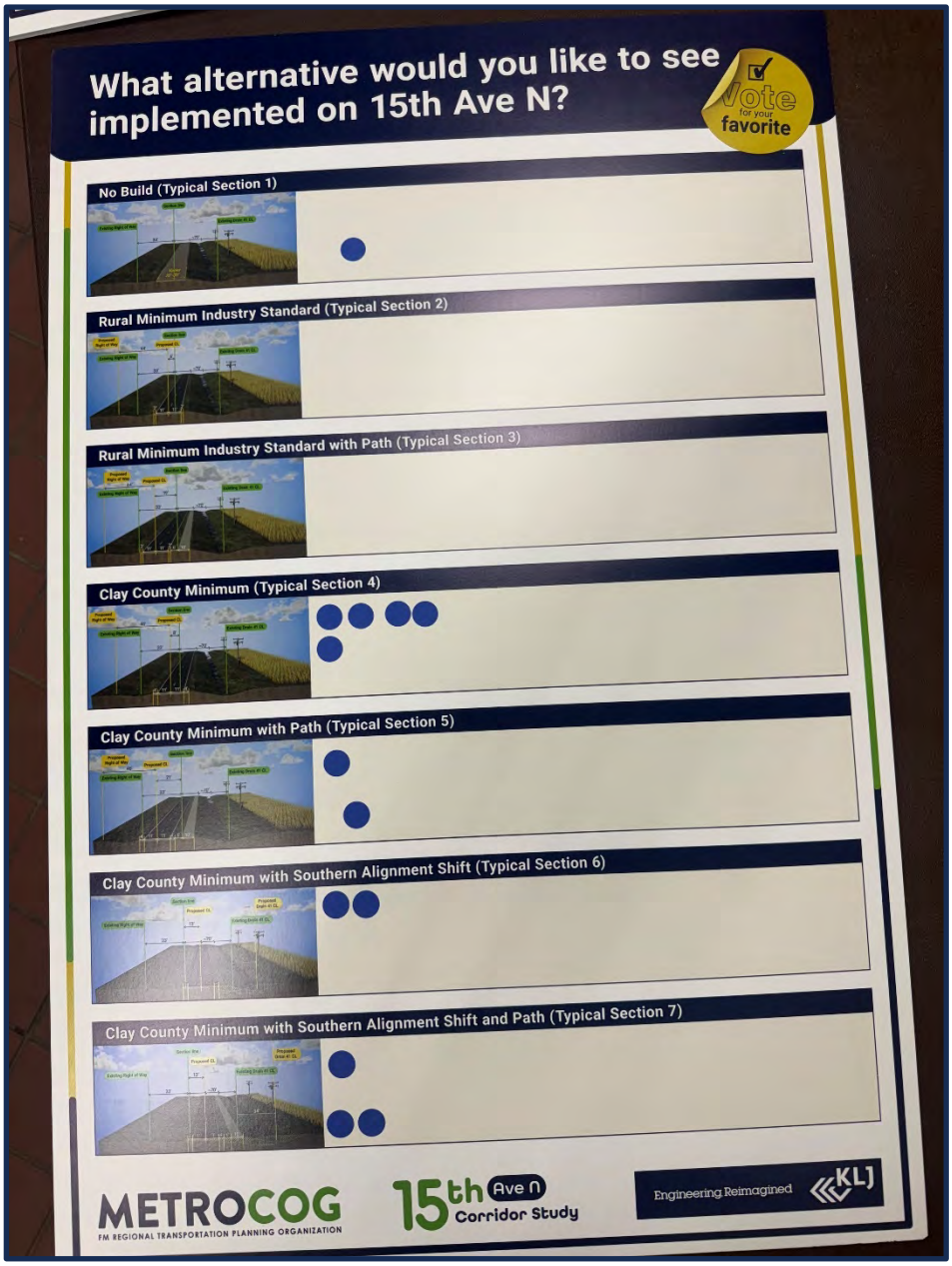


Figure 22: Open House Voting Matrix Board

Residents were informed of the meeting through a postcard, newspaper ads in the Fargo Forum and FM Extra, press release, and social media ads.

- **Postcard**: Postcards were sent to nearby landowners to inform about the open house meeting . 72 postcards were mailed on 11/12/24.

Figure 23: Example Postcard for Open House

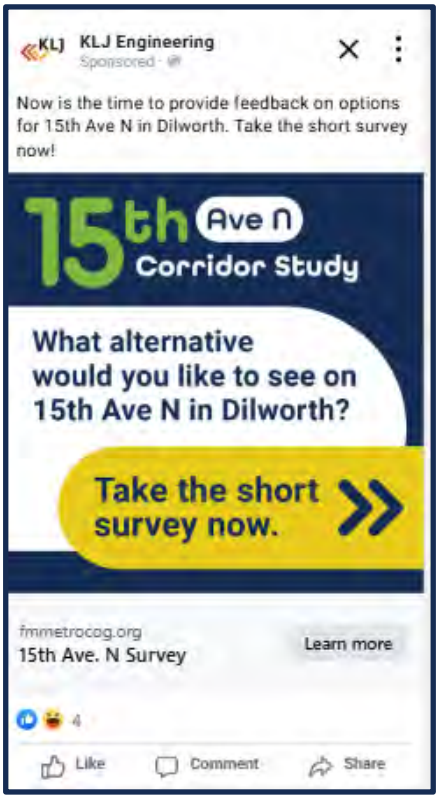
- **Newspaper ad:** Public notice ads ran in the Fargo Forum on 11/14/24 and the FM Extra on 11/14/24. Publication Affidavits can be found in the Public Involvement Reports in Appendix H.

- **Press Release:** A press release was sent on 11/14 to local media:
  - The Flag radio
  - Big 98.7 radio
  - Fargo Forum
  - FM Extra
  - WDAY TV
  - KVRR TV
  - Valley News Live
  - Prairie Public Radio
  - Minnesota Public Radio

- **Social Media**: KLJ created social media graphics and shared with MetroCOG and City of Dilworth for posting. KLJ placed two Facebook ads: 1) informing of the open house; 2) directing people to the online alternatives survey.
    - The open house ad was targeted to the zip codes: 56529, 56560, and 58102 and ran from Nov. 13- Nov. 21 at a cost of $75. The ad reached 33,173 people.
    - The alternatives survey ad was targeted to the zip codes: 56529, 56560, and 58102 and ran from Nov. 22- Dec. 8 at a cost of $120. The ad reached 15,868 people and resulted in 221 clicks to the website.

Figure 24: Open House Facebook Ad

Figure 25: Alternatives Survey Facebook Ad



- **Website and online survey:** For those that were unable to attend the open house, KLJ worked with Metro COG to update the website and provide a link to an online survey to view corridor alternatives and select their favorite. Results from the survey are summarized below.

Online Survey Results

The survey was open November 20- December 8. 60 surveys were completed.
The results are as follows:

Figure 26: Question 1 - Rank the metrics from most to least important

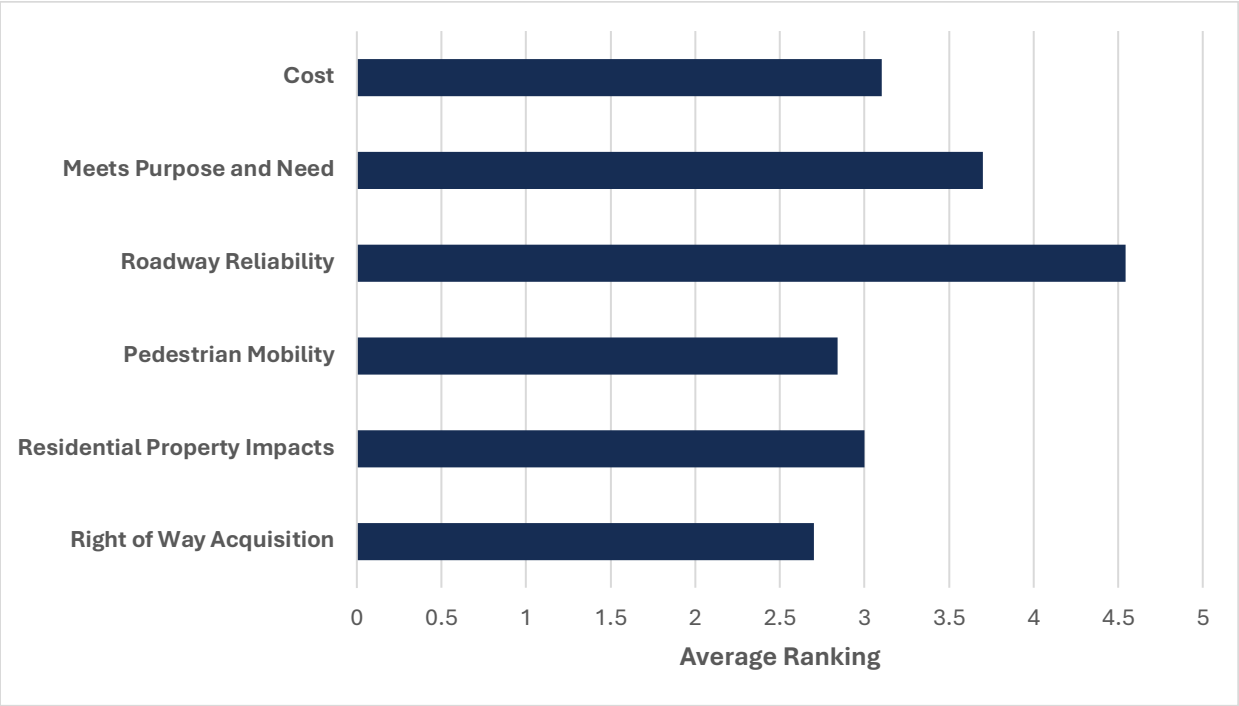


Table 2: Question 2 - What alternative would you like to see implemented on the corridor?

Corridor Type	Number of votes
No Build	5
Rural Minimum Industry Standard	5
Rural Minimum Industry Standard with Path	12
Clay County Minimum	11
Clay County Minimum with Path	15
Clay County Minimum with Southern Alignment Shift	3
Clay County Minimum with Southern Alignment Shift and Path	7

The typical section most preferred by the public was Clay County minimum with path (typical section 5) followed by Rural minimum industry standard with Path (typical section 3) and Clay County minimum (typical section 4).

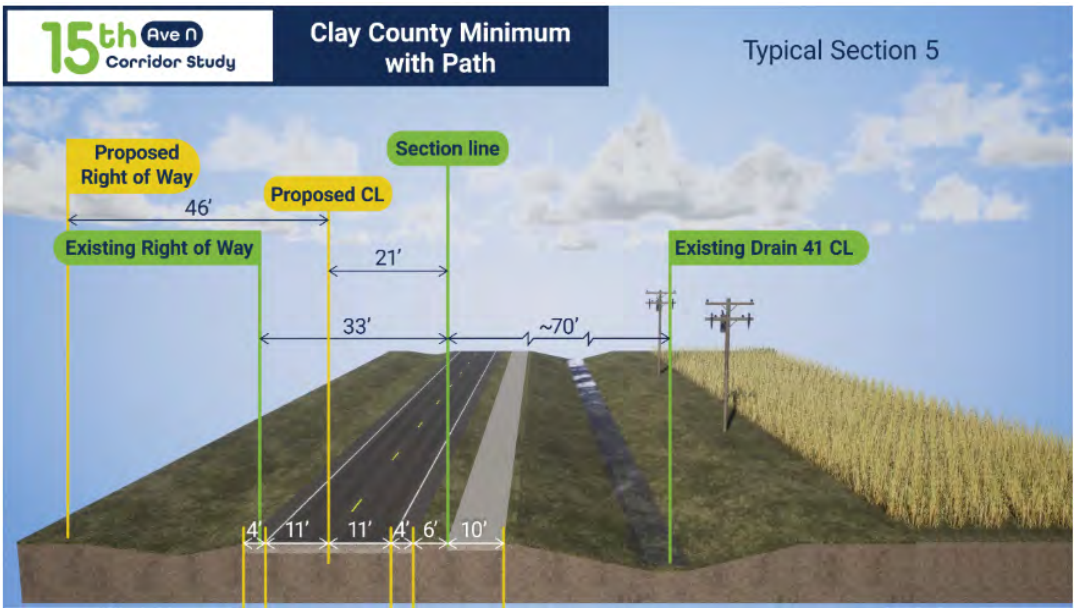


Figure 27: Public's Preferred Alternative - Clay County Minimum with Path

Figure 28: Question 3 - Where do you live?

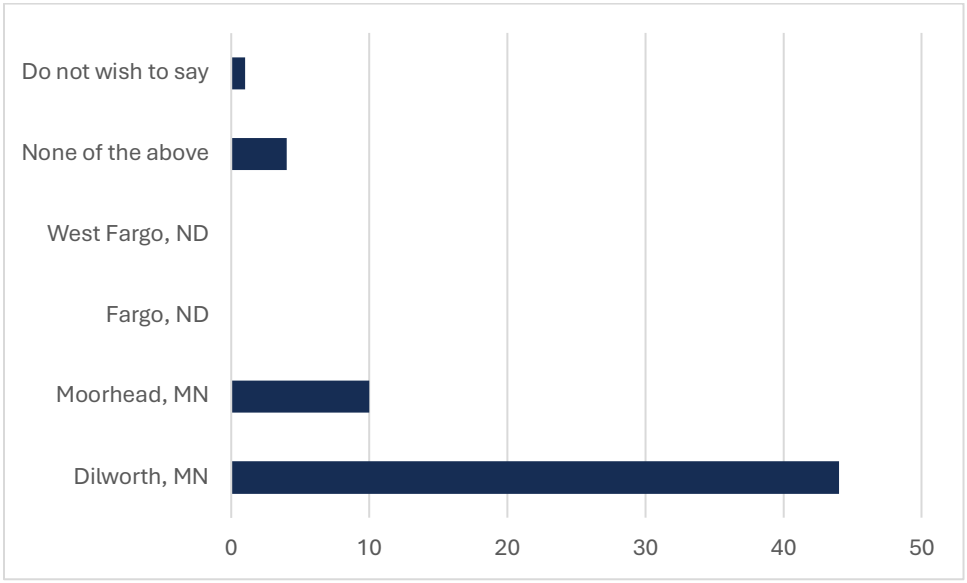


Table 3: Question 4 - Additional Comments

Could this be set up like the old toll bridge was so that the people using it are paying their share of the cost?
Spend money on existing paved roads. 4th Ave NE and 4th St are skating rinks in the winter and off road rally car tracks in the summer.
I don't believe it makes any sense to remove mature trees and landscaping from the farmsteads that will be affected by some proposed alignments. I am also opposed to a bike path/pedestrian path taking away precious land from the front yards of farmsteads located on 15th Avenue.
The Southern Alignment Shift is the only alternative to consider. While it may be a little more expensive, it puts the new roadway onto land that Dilworth has already considered for future development, instead of farmland that will probably never be developed. It also eliminates decimating farmsteads and removal of mature trees, which took many years to grow. That is time and growth that can never be replaced. The Southern Alignment will also place the new roadway farther away from homes which will lower noise and distractions from traffic.
Becker County Resident with family in Dilworth and Rural Clay County
It needs to be safe for pedestrians and bicyclists, otherwise leave it as a gravel road. At a minimum, there should be a 4-foot paved shoulder, but a path is preferred. If there is a path, a 2-foot shoulder would be fine. The path could be part of the Heartland Trail.
No
Does the whole town help pay for it. WHAT per cent the township county state federal pay for
This project needs to happen. Even if it the basic tar roads it will greatly benefit our community
Would be great to get the roadway paved!
When I lived in Moorhead and traveled to the lakes often, I used 15th Ave to County 11 a lot. Now I live in Glyndon and would LOVE an alternate route into Dilworth/Moorhead. Moving the existing roadway and ditch seems a bit extreme, there are no buildings that are right along the road, and there are only a few properties that would be affected, none significantly. Why add a pedestrian path? Where does it go? It's open country and will be a challenge to keep it open in the winter. The one thing I would add is some kind of barrier to the south between the roadway and the ditch. Thanks for putting this out there. Please do 12th Ave S from Dilworth to Glyndon next!!
Road should be paved, I drive the road from Moorhead to the stop sign before turning (so don't take gravel road) daily. I never see it busy enough other then farming season when tractors are getting to their fields. Don't believe it's worth moving a ton of infrastructure. If those need to be replaced anyway, then it would be worth considering.

Option 2 and 3 seem like the best choices, is there enough biking and pedestrian usage to add a path? If the cost isn't significantly more as no price estimate was given then a path is a good idea for future. Also there is no inclination of housing development increases in the area, which would also play a major factor so the city wouldn't be doing the same work twice because of new housing developments
I'm completely on board with the road reconstruction. It needs to be done to help the City of Dilworth. However, it does not make sense to spend more money moving the ditch south, only to save minimum impacts on a couple rural residential properties. Take the additional right-of-way needed from the north, and leave the ditch where it's currently at. The cost to move the ditch south, buy additional farmland at a premium price, and realign box culverts through the roads would probably sink the project.
I would utilize this road daily! I drive from Ulen to north Fargo for work & would love to see this come to fruition.
The project description mis-states the current route traffic takes eastward from Highway 75. Lakes traffic typically will go a mile north and take existing paved Highway 18 to go east. Most summer traffic does not follow 15th Avenue eastward from Highway 75. If this project is completed you will create another dangerous intersection at County Road 11 and 15th Avenue. It looks like the proposal is to build 3 miles of paved road in order to allow for a bike path and not from any real need for 3 miles of paved surface from County Road 9 to Highway 11.

4. Traffic Operations

Existing Traffic Characteristics

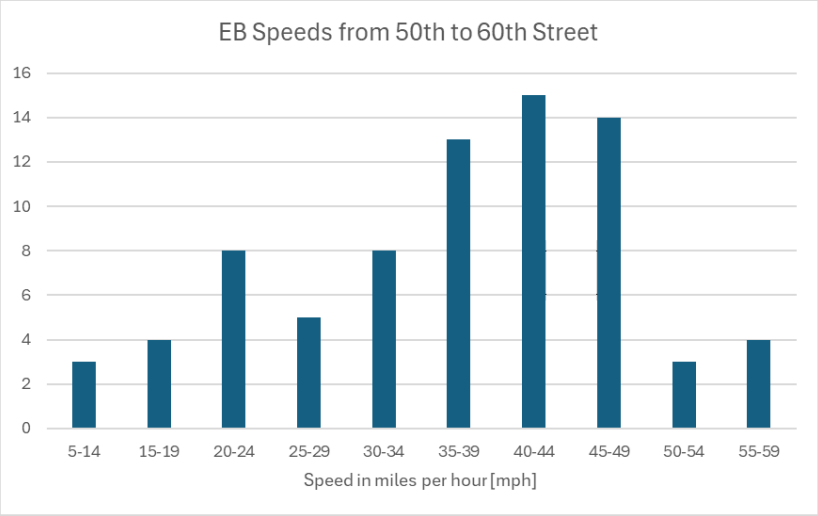
Speed

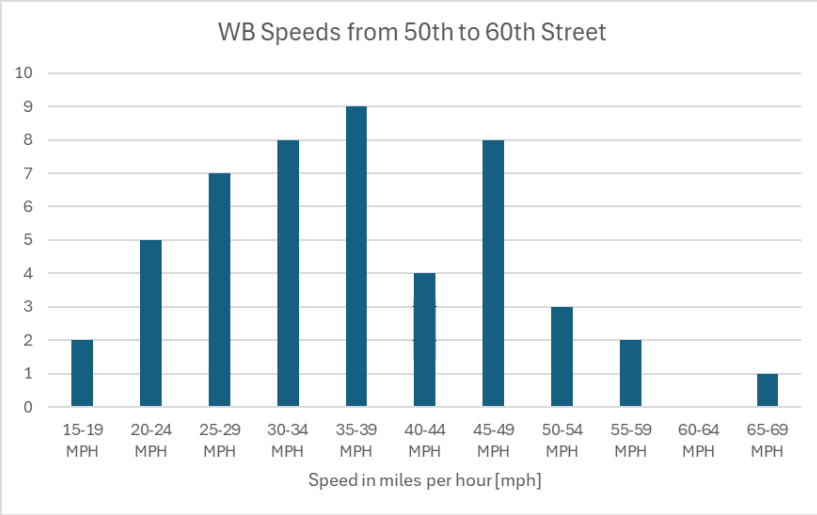
To investigate current driving behaviors, vehicle speeds were measured along 15th Avenue. Collected through pneumatic road tube counters, two locations were monitored along 15th Avenue for 24 hours on Wednesday July 10, 2024: one between 50th and 60th Avenue and the other between 60th and 70th Avenue. The speed profiles, grouped in five-mile-per-hour bins, for both eastbound and westbound vehicles are displayed in **Figure 9**.

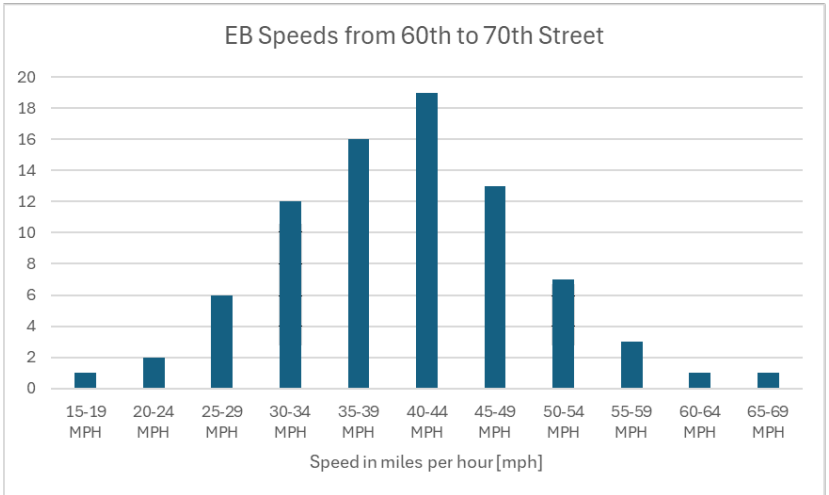
Although no speed limit is posted along this section of 15th Avenue, Minnesota Statute 169.14 governs speed limits on roads. A road authority may adopt a 35 miles per hour (mph) speed limit within rural residential districts. Otherwise, an unmarked rural road is subject to a 55 mph speed limit. By default, the speed limit along 15th Avenue is therefore assumed to be the statutory 55 mph.

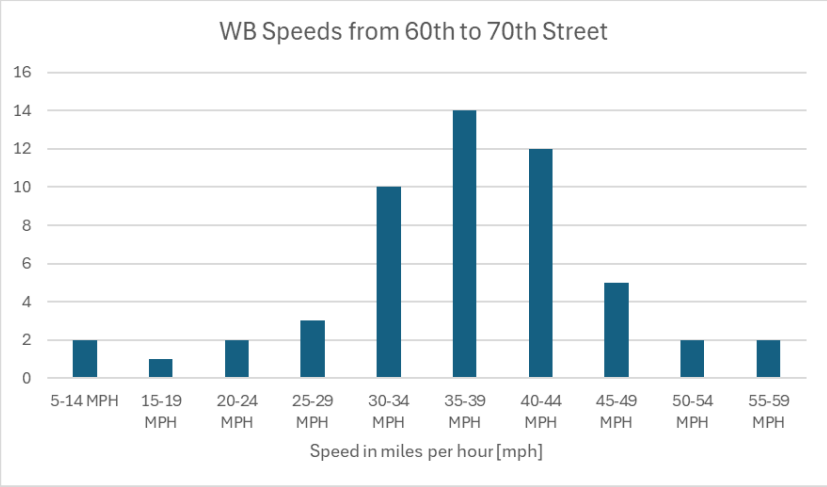
The observed speed profile indicates a tendency for drivers to travel at an intuitive pace likely associated with the highest speed the road will allow without feeling uncomfortable or unsafe. Drivers on this corridor travel at an average speed of approximately 40 mph with 85th percentile speeds falling at or below 50 mph.

Figure 29: Existing Vehicle Speeds









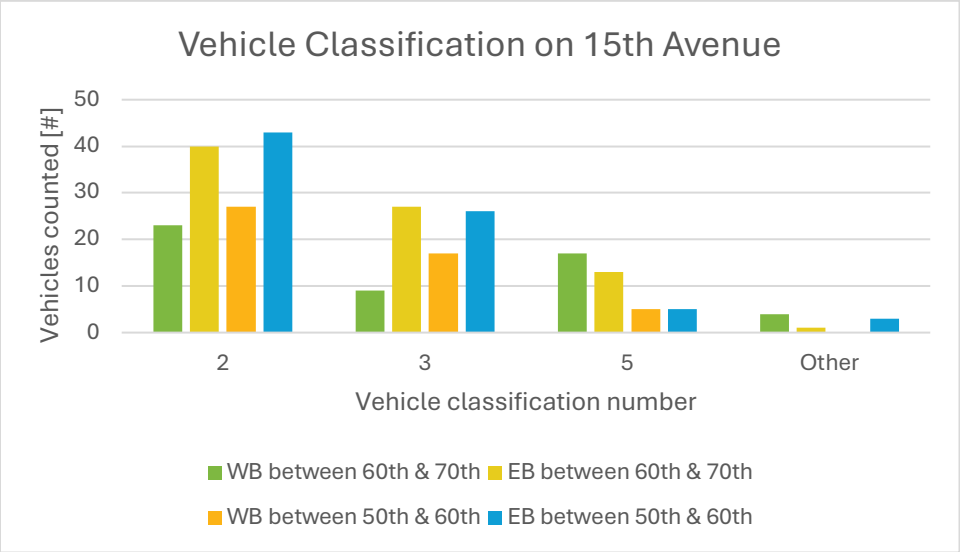
Vehicle Classifications

Vehicle classification data was collected in parallel to the speed data through pneumatic road tubes to identify the current usage of the corridor by vehicle type. The vehicle classes found on the corridor according to the Federal Highway Administration (FHWA) are:

- **Class 2**: Passenger Cars
- **Class 3**: Other Two-Axle, Four-Tire Single Unit Vehicles
- **Class 5**: Single-Unit Trucks
- **Other**: Buses and classifications larger than Single-Unit Vehicles

The counters did not detect motorcycles and detected three trucks with more than four axles (included as other on Figure 30: Vehicle Classification on 15th Avenue).

Figure 30: Vehicle Classification on 15th Avenue



The collected data in **Vehicle classification** data was collected in parallel to the speed data through pneumatic road tubes to identify the current usage of the corridor by vehicle type. The vehicle classes found on the corridor according to the Federal Highway Administration (FHWA) are:

- **Class 2**: Passenger Cars
- **Class 3**: Other Two-Axle, Four-Tire Single Unit Vehicles
- **Class 5**: Single-Unit Trucks
- **Other**: Buses and classifications larger than Single-Unit Vehicles

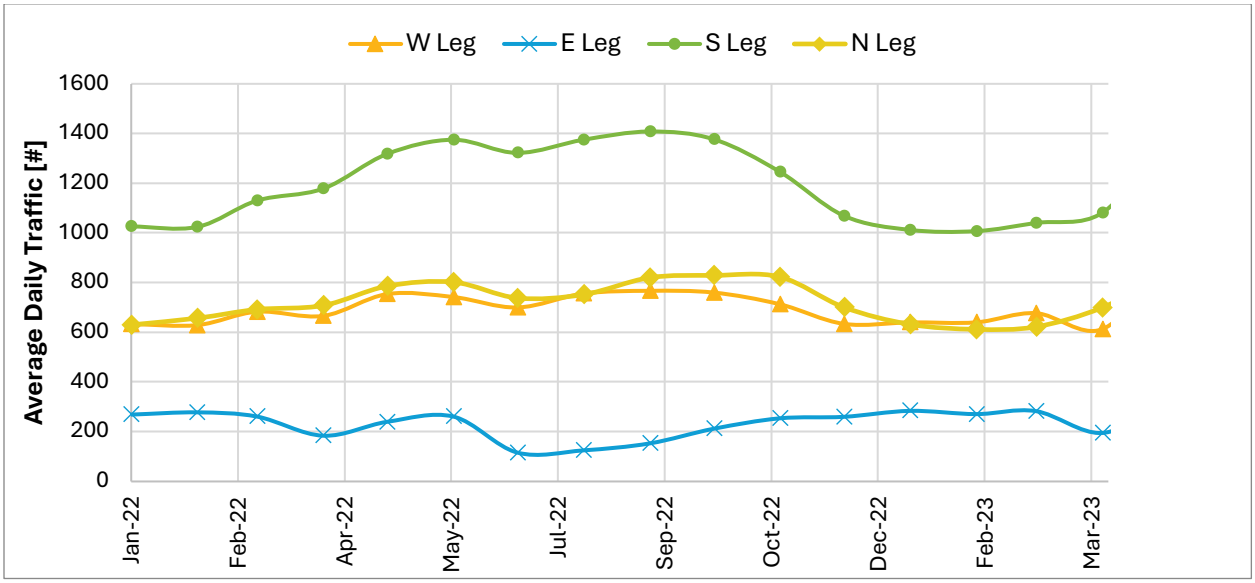
The counters did not detect motorcycles and detected three trucks with more than four axles (included as other on Figure 30: Vehicle Classification on 15th Avenue).

Figure 30**,** show that the corridor is traveled by mostly passenger vehicle and light-duty trucks. There are also heavier-classed vehicles that travel on this road. Use by heavier vehicle classifications contributes to accelerated deterioration and maintenance needs along gravel roads.

Seasonal Variation

Seasonal variation in the study area's traffic patterns were evaluated using StreetLight Data. StreetLight is a big data platform that uses location-based services and connected vehicle data to estimate trips and their destinations. An analysis of 2022 and the first five months of 2023 were completed to investigate seasonal variation along the corridor. The evaluation (in Figure 31) found that summer months (June through September) exhibit the highest volumes along the corridor.

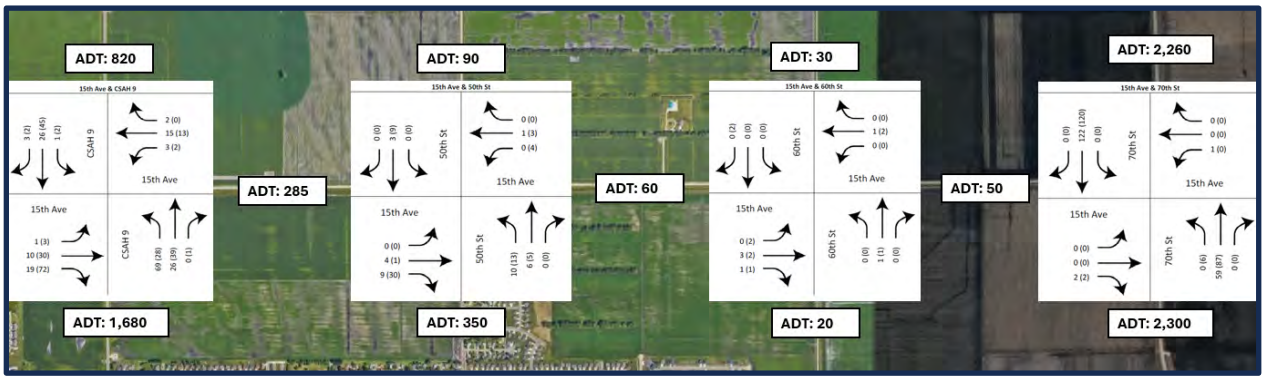
Figure 31: Existing Seasonal Variation of Vehicle Volumes (CSAH 9)



Volumes

To capture typical weekday traffic demand and behavior, 24-hour traffic turning movement counts were collected with video cameras and a third-party processing company at each of the primary study intersections (see Figure 32) on Wednesday July 10, 2024. As the collected counts are the most recent representing the corridor, balancing prioritization was given to the collected volumes over older traffic volumes obtained from StreetLight Data. The physical counts were consistently higher than the StreetLight counts, so to be conservative, collected counts were used in the analysis. Historical MnDOT Traffic Mapping Application data form 2017-2021 was similarly less than the 2024 physical counts. Therefore, the AM and PM peak values were not adjusted.

Figure 32 - Daily and Peak Hour Counts on 15th Avenue



Peak Hour

The morning (AM) peak was observed from 7 - 8 a.m. (7% of total daily traffic) and the evening (PM) peak was observed from 4:30 - 5:30 p.m (9% of total daily traffic). A separate analysis also investigated the impact and demand associated with peak recreational activity on Friday afternoons in the summer. A total of 335 additional vehicles, from 3 – 6 p.m., travel between Northern Fargo and the Detroit Lakes area, adding to the number of vehicles that could use the 15th Avenue corridor.

Daily

Average daily traffic (ADT) and peak turning movements counts are shown in **To capture** typical weekday traffic demand and behavior, 24-hour traffic turning movement counts were collected with video cameras and a third-party processing company at each of the primary study intersections (see Figure 32) on Wednesday July 10, 2024. As the collected counts are the most recent representing the corridor, balancing prioritization was given to the collected volumes over older traffic volumes obtained from StreetLight Data. The physical counts were consistently higher than the StreetLight counts, so to be conservative, collected counts were used in the analysis. Historical MnDOT Traffic Mapping Application data form 2017-2021 was similarly less than the 2024 physical counts. Therefore, the AM and PM peak values were not adjusted.

Figure 32. The daily volumes along 15th Avenue range between 50 vehicles per day on the eastern side to 285 vehicles per day on the western portion of the corridor.

Origin-Destination

Data Collection Methodology

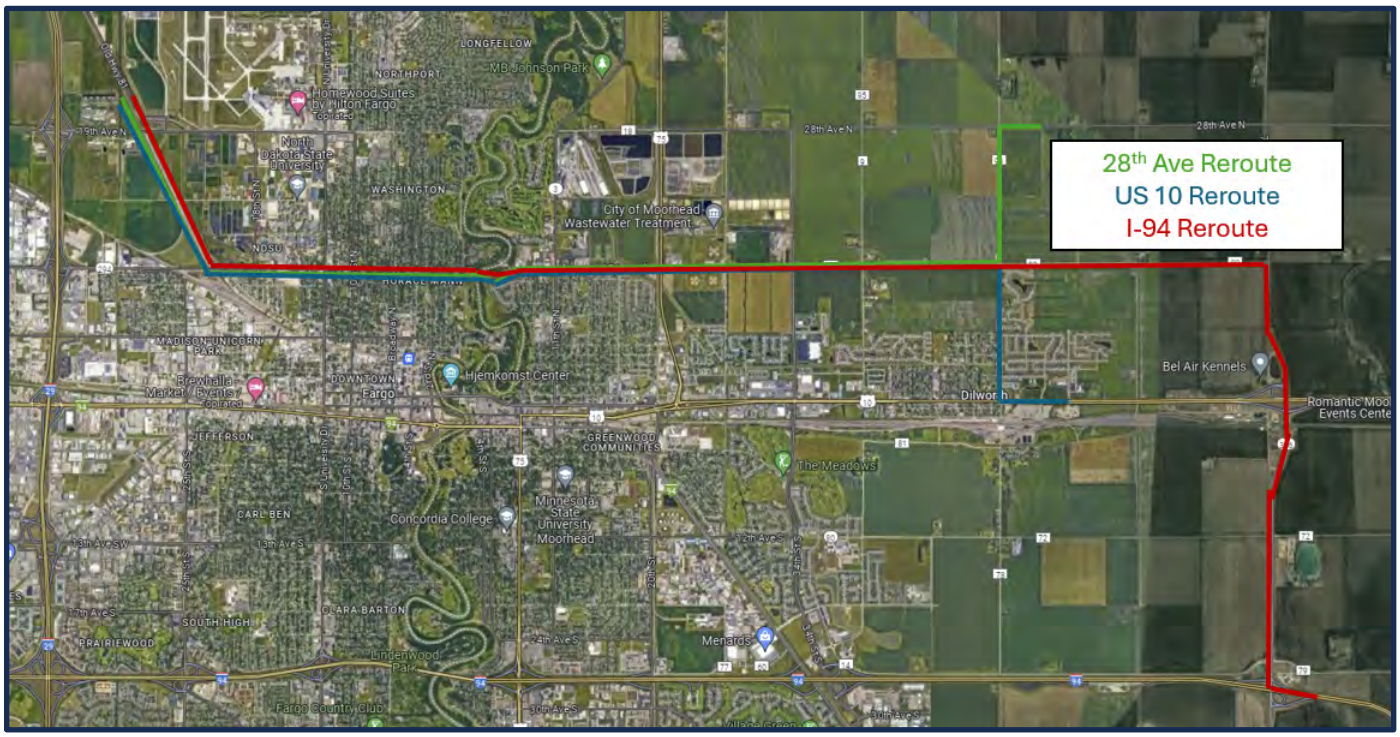
The dominant vehicular movements from each existing east-west connection were quantified using StreetLight Data. A "Top Routes" analysis was used to identify current traffic demands between Minnesota and North Dakota during the AM peak along with the corresponding return movement in the PM peak.

Potential Traffic Diversion

After considering the Origin-Destination data, three corridors where notable amounts of traffic may be diverted from were identified:

- **28th Avenue North**: The roadway, which is paved along the same extents as 15th Avenue, does not have a river crossing and terminates near the Red River. 15th Avenue provides the nearest river crossing. Therefore, traffic crossing between Minnesota and North Dakota are most likely to utilize one of the southern river crossings.
- **US 10**: When the roadway is occasionally congested, 15th Avenue would be a useful alternative. US 10 is not a freeway to North Dakota and this corridor could be used to avoid traffic signals.
- **I-94**: When the roadway is occasionally congested, 15th Avenue would be a useful alternative for those with destinations in Northern Fargo. Likewise, eastbound vehicles could take the corridor with the intention to connect back onto US 10 or I-94 further east.

Figure 33 - Reroute Options for 15th Avenue



Diverted volumes are applied to forecast scenarios along with traffic assumptions pertaining to the proportion diverted to 15th Avenue from each of the three corridors.

Future Conditions

Three future scenarios based on a 20-year horizon to 2045 developed with input from the Stakeholder Review Committee. 15th Avenue is assumed as a paved and improved roadway for analysis:

Low increase scenario – This demonstrates the lowest Origin-Destination diversion and background growth assumptions and incorporates a level of development along the corridor moderately consistent with Dilworth's comprehensive plan.

Moderate increase scenario – This applies the baseline Origin-Destination diversion and background growth assumptions and incorporates a level of development along the corridor moderately consistent with Dilworth's comprehensive plan.

High build-out scenario – This reflects increased Origin-Destination diversion and background growth assumptions, with significant and moderately dense development along the south side of the corridor.

Background Growth Rate

Background growth rate is described as growth along a corridor to account for nearby population growth, employment growth, and generalized growth in the surrounding areas. Annual traffic volume growth rates are based on each scenario projection. The rates chosen were 0.5%, 1.0%, and 1.5% for the low, moderate, and high scenarios respectively. These rates were applied to all movements of the study intersections to project traffic volumes for 2045.

New Development Volumes

The Dilworth area is on the outskirts of the Fargo-Moorhead metropolitan area with growth expected over the next 20 years. There is a high potential for developments along 15th Avenue to generate the most traffic growth on the corridor. Each scenario assumes development type, density, and location according the to the future land use plan. The Institute of Transportation Engineers (ITE) TripGen was used to estimate how many daily and peak hours trips are added for each type of development. In the low and moderate increase scenarios, 2,250 trips were generated per day by the new developments. In the high build-out scenario, 6,730 trips were generated per day.

Diversion Volumes

From the traffic diversion section, three reroute methods onto the 15th Avenue corridor were chosen based on ease of use or roadway congestion. There are circumstances under which construction along parallel routes might temporarily divert more traffic onto 15th Avenue. This was not considered in this diversion methodology. A percentage of vehicles was chosen from each road. The resulting assumptions for diverting traffic per day for each scenario are shown below in Table 4**.**

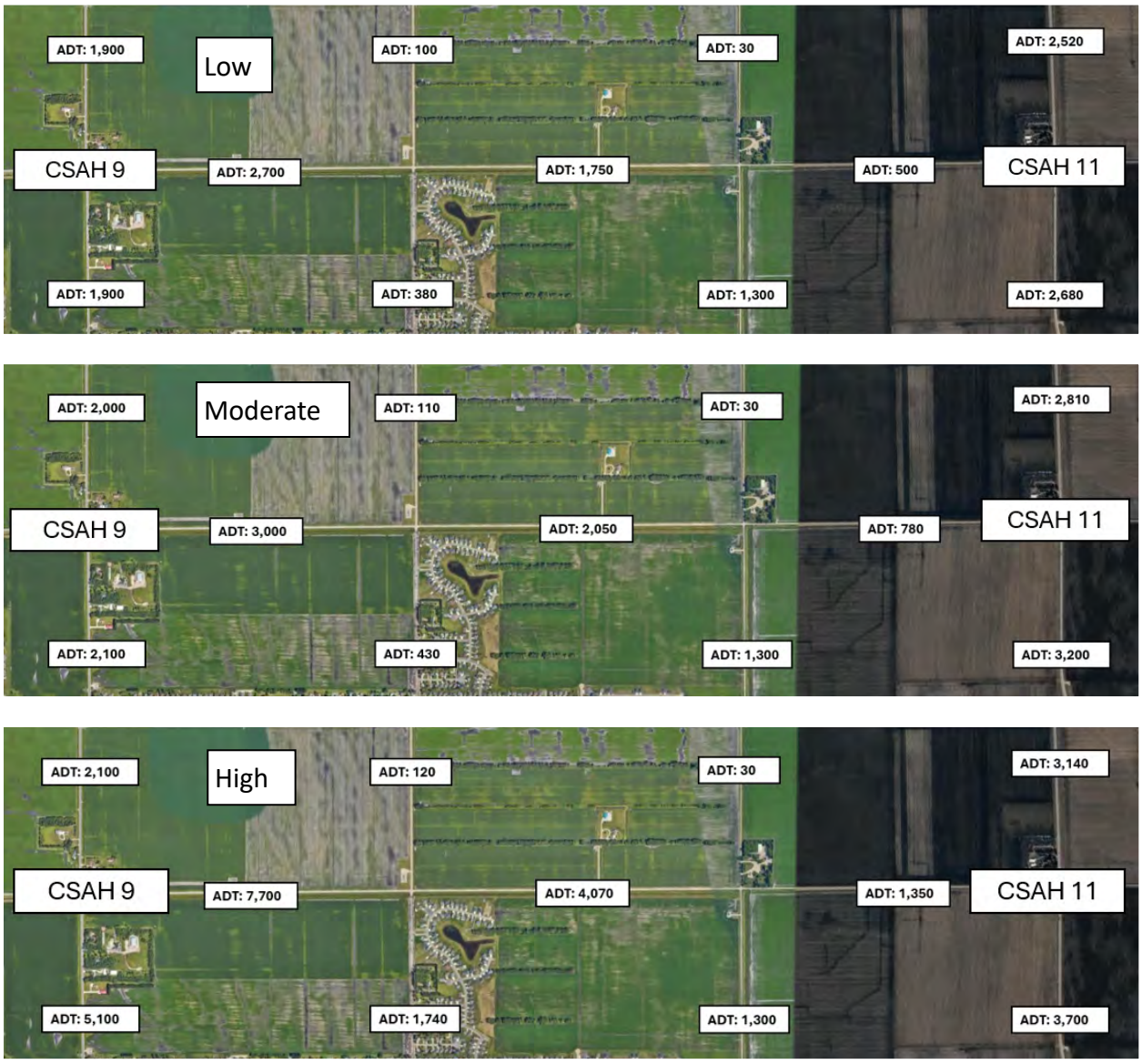
Table 4: Corridor Diversion Volumes by Growth Scenario

Scenario	Diverted from 28th Avenue [Percentage (Daily)]	Diverted from US 10 [Percentage (Daily)]	Diverted from I-94 [Percentage (Daily)]
Low Increase	**25% (93)**	**10% (52)**	**0% (0)**
Moderate Increase	**50% (185)**	**35% (183)**	**10% (45)**
High Build-Out	**100% (370)**	**35% (183)**	**10% (45)**

Future Volumes

The projected daily traffic volumes including background growth, diverted volumes, and new trips generated from development at the study intersections for the 2045 scenarios are summarized in **Figure 14.**

Figure 34: Daily Volumes for Future Volume Scenarios (Low/Moderate/High)



Traffic Operations Analysis

Capacity Analysis Methodology

The capacity analysis for 15th Avenue (a two-lane undivided roadway) investigates the impact of the future volumes on roadway performance. With significantly increased volumes under forecasted traffic conditions compared to the current day, operations become more complex. As projected volumes still fall within the functional capacity threshold, intersection operations are the limiting factor with respect to corridor capacity and mobility.

Traffic operational and queueing analysis results are described as a Level of Service (LOS) ranging from "A" to "F" with "A" operating with the least delay and "F" indicating a high amount of delay. LOS is determined by methodology in the *Highway Capacity Manual* (HCM), which defines the LOS for intersections based on control delay. MnDOT defines highway LOS as qualitative, measuring the effect of traffic flow factors like speed, travel time, interruption, freedom to maneuver, driver comfort and convenience, and indirectly, safety and operating costs. Level "F" is forced-flow operation at low speed with many stoppages, with the roadway acting as a storage area. The development of traffic mitigation strategies are recommended for locations with Level of Service E and F according to the MnDOT Access Management Manual.

The LOS and its associated intersection delay for unsignalized intersections as defined by the HCM are shown in Table 5. LOS for two-way stop-controlled intersections is undefined by the HCM; The major street generally experiences no delay because it is controlled. However, vehicles turning left or crossing the major street can experience significant delay. LOS assigned to two-way stop-controlled intersections in this study is determined based on the delay experienced by the side street approaches.

Table 5 - Vehicular Level of Service Thresholds

Level of Service (LOS)	Unsignalized Intersection Control Delay (sec/vehicle)
A	**≤ 10**
B	**> 10-15**
C	**> 15-25**
D	**> 25-35**
E	**> 35-50**
F	**> 50**

Traffic Models

A microscopic traffic operations analysis was completed using VISTRO software The analysis used geometric and operational elements including number of travel lanes, storage lengths, link distances, speed limits, and traffic volumes. The quantitative output of the VISTRO analysis provides a series of Measures of Effectiveness (MOE). The primary MOEs in this study are delay and Level of Service (LOS).

Intersection Traffic Control

The study intersections were modeled with existing intersection controls for both AM and PM peak periods under the existing 2024 and projected 2045 volumes. For certain scenarios, where peak hour operations were operated at LOS D or worse, the volumes on 15th Avenue exceeded the volumes on County State Aid Highway (CSAH) 9. For these supplemental scenarios, the approaches with the right of way at through-stop intersections were switched and alternative traffic controls (all-way stops and roundabouts) were tested.

Operations Results

The capacity analysis results are broken into four scenarios: Existing conditions (2024), Future Moderate Increase (2045) and Future High Build Out (2045), and Future High Build Out (2045) mitigated alternatives. The Low Increase scenario was not modelled because operations would perform at or better than the Moderate Increase Scenario.

Results show minimal delay under existing conditions which are attributed to the current low volumes along 15th Avenue. Under the future Moderate Increase scenario, vehicle operations still fall within acceptable performance levels, but with increased delay compared to existing conditions. The corridor experiences significant delay and poor LOS under the High Build Out scenario, particularly at the intersection with CSAH 9. Mitigations included switching the current two-way stop control to stop the northbound and southbound approaches and installing a mini roundabout. Modifying the two-way stop control improved operations, but the LOS remained poor. The mini roundabout provided significant improvement in performance and achieved an acceptable LOS for all approaches.

Existing Conditions (2024)

	CSAH 9 & 15th Avenue 10.3 (B)				50th Street & 15th Avenue 7.1 (A)				60th Street & 15th Avenue 6.9 (A)				70th Street & 15th Avenue 9.4 (A)			
AM Peak	**N Leg**	**S Leg**	**E Leg**	**W Leg**	**N Leg**	**S Leg**	**E Leg**	**W Leg**	**N Leg**	**S Leg**	**E Leg**	**W Leg**	**N Leg**	**S Leg**	**E Leg**	**W Leg**
Existing LOS (sec/veh)	0.3 (A)	5.3 (A)	10.3 (B)	9.3 (A)	6.9 (A)	7.1 (A)	6.8 (A)	6.6 (A)	6.8 (A)	6.8 (A)	6.8 (A)	6.9 (A)	0.1 (A)	0.1 (A)	9.4 (A)	9.4 (A)
V/C	0	0.04	0.02	0.02	-	-	-	-	-	-	-	-	0	0	0	0
95th Percentile Queue (veh)	0	0.14	0.09	0.11	0.02	0.06	0.01	0.04	0.01	0.01	0.01	0.02	0	0	0.01	0.01
	CSAH 9 & 15th Avenue 10.0 (B)				**50th Street & 15th Avenue 7.2 (A)**				**60th Street & 15th Avenue 6.9 (A)**				**70th Street & 15th Avenue 9.7 (A)**			
PM Peak	**N Leg**	**S Leg**	**E Leg**	**W Leg**	**N Leg**	**S Leg**	**E Leg**	**W Leg**	**N Leg**	**S Leg**	**E Leg**	**W Leg**	**N Leg**	**S Leg**	**E Leg**	**W Leg**
Existing LOS (sec/veh)	0.3 (A)	3.1 (A)	10.0 (B)	9.5 (A)	7 (A)	7.2 (A)	7.1 (A)	6.6 (A)	6.7 (A)	6.8 (A)	6.9 (A)	6.9 (A)	0.1 (A)	0.5 (A)	9.7 (A)	9.7 (A)
V/C	0	0.02	0.02	0.07	-	-	-	-	-	-	-	-	0	0	0	0
95th Percentile Queue (veh)	0	0.06	0.07	0.39	0.01	0.02	0.01	0.03	0.01	0.01	0.01	0.02	0	0.01	0.01	0.02

Future Moderate Increase Scenario (2045)

	CSAH 9 & 15th Avenue 12.8 (B)				50th Street & 15th Avenue 7.8 (A)				60th Street & 15th Avenue 7.9 (A)				70th Street & 15th Avenue 10.4 (B)			
AM Peak	**N Leg**	**S Leg**	**E Leg**	**W Leg**	**N Leg**	**S Leg**	**E Leg**	**W Leg**	**N Leg**	**S Leg**	**E Leg**	**W Leg**	**N Leg**	**S Leg**	**E Leg**	**W Leg**
Existing LOS (sec/veh)	1.6 (A)	4.3 (A)	12.8 (B)	11.2 (B)	7.3 (A)	7.7 (A)	7.8 (A)	7.4 (A)	7.2 (A)	7.9 (A)	7.5 (A)	7.3 (A)	0.1 (A)	3.0 (A)	10.4 (B)	9.8 (A)
V/C	0.01	0.06	0.20	0.09	-	-	-	-	-	-	-	-	0	0.03	0	0.04
95th Percentile Queue (veh)	0.04	0.18	1.07	0.37	0.02	0.12	0.54	0.27	0.01	0.33	0.24	0.23	0	0.10	0.01	0.17

	CSAH 9 & 15th Avenue 13.7 (B)				50th Street & 15th Avenue 8.2 (A)				60th Street & 15th Avenue 7.9 (A)				70th Street & 15th Avenue 11.1 (B)			
PM Peak	**N Leg**	**S Leg**	**E Leg**	**W Leg**	**N Leg**	**S Leg**	**E Leg**	**W Leg**	**N Leg**	**S Leg**	**E Leg**	**W Leg**	**N Leg**	**S Leg**	**E Leg**	**W Leg**
Existing LOS (sec/veh)	3.0 (A)	2.7 (A)	12.7 (B)	13.7 (B)	7.7 (A)	7.9 (A)	7.8 (A)	8.2 (A)	7.2 (A)	7.9 (A)	7.5 (A)	7.7 (A)	0.4 (A)	2.3 (A)	11.1 (B)	10.3 (B)
V/C	0.04	0.02	0.15	0.26	-	-	-	-	-	-	-	-	0.01	0.03	0	0.09
95th Percentile Queue (veh)	0.14	0.07	0.69	1.61	0.05	0.11	0.39	0.89	0.01	0.20	0.20	0.68	0.02	0.10	0.02	0.43

	CSAH 9 & 15th Avenue 16.9 (C)				50th Street & 15th Avenue 9.0 (A)				60th Street & 15th Avenue 8.5 (A)				70th Street & 15th Avenue 11.6 (B)			
Friday PM Peak	**N Leg**	**S Leg**	**E Leg**	**W Leg**	**N Leg**	**S Leg**	**E Leg**	**W Leg**	**N Leg**	**S Leg**	**E Leg**	**W Leg**	**N Leg**	**S Leg**	**E Leg**	**W Leg**
Existing LOS (sec/veh)	3.0 (A)	2.7 (A)	12.9 (B)	16.9 (C)	7.9 (A)	8.1 (A)	7.9 (A)	9.0 (A)	7.4 (A)	8.0 (A)	7.6 (A)	8.5 (A)	0.4 (A)	2.3 (A)	11.6 (B)	10.7 (B)
V/C	0.04	0.02	0.15	0.41	-	-	-	-	-	-	-	-	0.01	0.03	0	0.19
95th Percentile Queue (veh)	0.14	0.07	0.71	2.94	0.05	0.11	0.40	1.45	0.01	0.21	0.20	1.17	0.02	0.10	0.02	0.86

Future High Build Out Scenario (2045)

	CSAH 9 & 15th Avenue 48.5 (E)				50th Street & 15th Avenue 8.4 (A)				60th Street & 15th Avenue 8.6 (A)				70th Street & 15th Avenue 11.4 (B)			
AM Peak	**N Leg**	**S Leg**	**E Leg**	**W Leg**	**N Leg**	**S Leg**	**E Leg**	**W Leg**	**N Leg**	**S Leg**	**E Leg**	**W Leg**	**N Leg**	**S Leg**	**E Leg**	**W Leg**
Existing LOS (sec/veh)	0.3 (A)	5.3 (A)	48.5 (E)	17.7 (C)	7.6 (A)	8.4 (A)	8.3 (A)	7.7 (A)	7.6 (A)	8.3 (A)	8.6 (A)	7.8 (A)	0.1 (A)	3.8 (A)	11.4 (B)	11.1 (B)
V/C	0.01	0.12	0.69	0.27	-	-	-	-	-	-	-	-	0	0.03	0	0.04
95th Percentile Queue (veh)	0.01	0.42	8.23	2.41	0.01	0.51	0.68	0.34	0.01	0.42	0.88	0.37	0	0.06	0.01	0.06

	CSAH 9 & 15th Avenue 1000.0 (F)				50th Street & 15th Avenue 11.5 (B)				60th Street & 15th Avenue 8.6 (A)				70th Street & 15th Avenue 12.4 (B)			
PM Peak	N Leg	S Leg	E Leg	W Leg	N Leg	S Leg	E Leg	W Leg	N Leg	S Leg	E Leg	W Leg	N Leg	S Leg	E Leg	W Leg
Existing LOS (sec/veh)	1.1 (A)	4.1 (A)	1,000 (F)	276.3 (F)	8.6 (A)	9.2 (A)	9.4 (A)	11.5 (A)	7.5 (A)	8.2 (A)	8.0 (A)	8.6 (A)	0.3 (A)	3.0 (A)	12.4 (B)	12.2 (B)
V/C	0.02	0.11	0.80	1.16	-	-	-	-	-	-	-	-	0.01	0.05	0	0.15
95th Percentile Queue (veh)	0.06	0.36	41.4	33.3	0.06	0.34	1.14	2.87	0.02	0.22	0.48	1.19	0.02	0.17	0.02	1.04

	CSAH 9 & 15th Avenue 1000.0 (F)				50th Street & 15th Avenue 13.7 (B)				60th Street & 15th Avenue 9.6 (A)				70th Street & 15th Avenue 13.1(B)			
Friday PM Peak	N Leg	S Leg	E Leg	W Leg	N Leg	S Leg	E Leg	W Leg	N Leg	S Leg	E Leg	W Leg	N Leg	S Leg	E Leg	W Leg
Existing LOS (sec/veh)	1.1 (A)	4.1 (A)	1000 (F)	382.6 (F)	8.8 (A)	9.4 (A)	9.6 (A)	13.7 (B)	7.7 (A)	8.4 (A)	8.1 (A)	9.6 (A)	0.3 (A)	3.0 (A)	13.1 (B)	12.9 (B)
V/C	0.02	0.11	0.80	1.39	-	-	-	-	-	-	-	-	0.01	0.05	0	0.26
95th Percentile Queue (veh)	0.06	0.36	41.4	43.9	0.07	0.35	1.17	4.23	0.02	0.23	0.49	1.84	0.02	0.17	0.02	1.67

Future High Build Out Scenario with Mitigations (2045)

	CSAH 9 & 15th Avenue 34.1 (D)				50th Street & 15th Avenue 8.4 (A)				60th Street & 15th Avenue 8.6 (A)				70th Street & 15th Avenue 11.4 (B)			
AM Peak TWSC Flip	N Leg	S Leg	E Leg	W Leg	N Leg	S Leg	E Leg	W Leg	N Leg	S Leg	E Leg	W Leg	N Leg	S Leg	E Leg	W Leg
Existing LOS (sec/veh)	14.8 (B)	34.1 (D)	0.8 (A)	0.4 (A)	7.6 (A)	8.4 (A)	8.3 (A)	7.7 (A)	7.6 (A)	8.3 (A)	8.6 (A)	7.8 (A)	0.1 (A)	3.8 (A)	11.4 (B)	11.1 (B)
V/C	0.10	0.51	0.03	0.01	-	-	-	-	-	-	-	-	0	0.03	0	0.04
95th Percentile Queue (veh)	0.42	5.30	0.08	0.01	0.01	0.51	0.68	0.34	0.01	0.42	0.88	0.37	0	0.06	0.01	0.06

	CSAH 9 & 15th Avenue 280.0 (F)				50th Street & 15th Avenue 11.5 (B)				60th Street & 15th Avenue 8.6 (A)				70th Street & 15th Avenue 12.4 (B)			
PM Peak TWSC Flip	N Leg	S Leg	E Leg	W Leg	N Leg	S Leg	E Leg	W Leg	N Leg	S Leg	E Leg	W Leg	N Leg	S Leg	E Leg	W Leg
Existing LOS (sec/veh)	41.1 (E)	280.0 (F)	0.5 (A)	0.2 (A)	8.6 (A)	9.2 (A)	9.4 (A)	11.5 (A)	7.5 (A)	8.2 (A)	8.0 (A)	8.6 (A)	0.3 (A)	3.0 (A)	12.4 (B)	12.2 (B)
V/C	0.42	1.03	0.02	0.01	-	-	-	-	-	-	-	-	0.01	0.05	0	0.15
95th Percentile Queue (veh)	4.20	17.88	0.06	0.04	0.06	0.34	1.14	2.87	0.02	0.22	0.48	1.19	0.02	0.17	0.02	1.04

	CSAH 9 & 15th Avenue 17.0 (C)				50th Street & 15th Avenue 11.5 (B)				60th Street & 15th Avenue 8.6 (A)				70th Street & 15th Avenue 12.4 (B)			
PM Peak Roundabout	**N Leg**	**S Leg**	**E Leg**	**W Leg**	**N Leg**	**S Leg**	**E Leg**	**W Leg**	**N Leg**	**S Leg**	**E Leg**	**W Leg**	**N Leg**	**S Leg**	**E Leg**	**W Leg**
Existing LOS (sec/veh)	9.3 (A)	13.2 (B)	8.8 (A)	17.0 (C)	8.6 (A)	9.2 (A)	9.4 (A)	11.5 (A)	7.5 (A)	8.2 (A)	8.0 (A)	8.6 (A)	0.3 (A)	3.0 (A)	12.4 (B)	12.2 (B)
V/C	-	-	-	-	-	-	-	-	-	-	-	-	0.01	0.05	0	0.15
95th Percentile Queue (veh)	1.13	2.52	1.73	6.74	0.06	0.34	1.14	2.87	0.02	0.22	0.48	1.19	0.02	0.17	0.02	1.04

5. Safety Assessment

A review of historical crash data was conducted to identify current traffic safety performance deficiencies. Crash records for incidents within the study area were sourced from MnDOT's Minnesota Crash Mapping Analysis Tool (MnCMAT2).

For the general overview of the corridor, ten years of crashes were obtained representing 2014 through 2023. For the quantitative crash analysis, five years of crash records were analyzed from January 1, 2019 through December 31, 2023.

Reported Crash History

Crash Severities

Each crash's level of severity is dictated by the highest reported injury level, including events for which multiple injuries were recorded during a single crash. According to the *Minnesota Law Enforcement Accident Report Instruction Manual*, injuries are classified according to the descriptions below:

- **K: Fatal** – A fatal injury is any injury that results in death within 30 days after the motor vehicle crash in which the injury occurred.
- **A: Serious or Incapacitating Injury** – Any injury, other than a fatal injury, which prevents the injured person from walking, driving, or normally continuing the activities the person was capable of performing before the injury occurred.
- **B: Minor or Non-Incapacitating Injury** – Any injury, other than a fatal injury or an incapacitating injury, which is evident to the observers at the scene of the accident in which the injury occurred.
- **C: Possible Injury** – Any injury reported or claimed which is not a fatal injury, incapacitating injury, or non-incapacitating evident injury.
- **N (PDO): No Apparent Injury or Property Damage Only** – A situation where there is no reason to believe that the person received any bodily harm from the motor vehicle crash. There is no physical evidence of injury, and the person does not report any change in normal function.

Crash Narratives

In total, four (4) crashes were reported along the study corridor during the ten-year period from 2014 through 2023, three (3) of which occurred during the five-year period from 2019 through 2023. A detailed review of the reports and narratives was conducted to investigate potential trends associated with the four (4) crashes located in the study area. All four crashes occurred at or near the same intersection, 15th Avenue and 40th Street.

Figure 35: Photo of the 15th Avenue at 40th Street Intersection

Crash 1: September 2017

A two-vehicle, non-injury collision occurred at the intersection of 15th Avenue and 40th Street at approximately 1:42 PM under daylight conditions on Friday, September 1, 2017.

Both vehicles were traveling northbound along 40th Street and the vehicle in front intended to make a left turn onto westbound 15th Avenue. While in the process of making the left turn, the trailing vehicle struck the turning vehicle. The crash was reported as an angle type, with the officer narrative suggesting elements also associated with the Rear End type.

The physical condition of both drivers was reported as apparently normal and no clear contributing action was recorded.

Crash 2: December 2019

A two-vehicle, possible injury collision occurred at the intersection of 15th Avenue and 40th Street at approximately 7:54 AM under sunrise conditions on Wednesday, December 4, 2019.

Both vehicles were approaching the intersection, one traveling southbound and the other eastbound. While the southbound vehicle had the right of way, the eastbound vehicle did not stop for the stop sign, claiming the vehicle slid into the intersection, and collided with the other vehicle. The crash was reported as an angle type.

The physical condition of both drivers was reported as apparently normal and the eastbound vehicle running the stop sign was cited as a contributing factor.

Crash 3: October 2023

A two-vehicle, non-injury collision occurred at the intersection of 15th Avenue and 40th Street at approximately 9:25 PM under dark lighting conditions on Thursday, October 12, 2023.

Both vehicles were approaching the intersection, one traveling northbound and the other eastbound. While the northbound vehicle had the right of way, the eastbound vehicle did not stop for the stop sign and collided with the other vehicle. The crash was reported as an angle type.

The physical condition of both drivers was reported as apparently normal and failure of the eastbound vehicle to yield right-of-way was cited as a contributing factor.

Crash 4: December 2023

A single-vehicle, non-injury collision occurred east of the intersection of 15th Avenue and 40th Street at approximately 7:51 AM under daylight conditions on Thursday, December 7, 2023.

The vehicle was traveling westbound along 15th Avenue, ran off the road to the right, and struck a fence. The crash was reported as a “single vehicle run off road”.

The physical condition of the driver was reported as apparently normal and driver distraction was cited as a contributing factor.

Crash Rates

Crash rates describe the number of crashes in a period compared to the traffic volume (or exposure) to crashes. Crash rates are calculated by dividing the number of crashes in a roadway section or intersection over a specified period by a measure of exposure. With other methods and metrics of network screening, crash rates provide a normalized measure of traffic safety performance.

Observed Crash Rates

The study area was split into discrete sections for crash rate computations made of three (3) one-mile segments between four (4) at-grade intersections. Because all crashes occurred in the vicinity of the 15th Avenue and 40th Street intersection, only that intersection and adjacent segment exhibit nonzero crash rates within the study area.

Intersection of 15th Avenue and 40th Street: With an entering volume of 2,000 vehicles per day and two (2) crashes over the five-year period, the observed crash rate at this minor leg stop-controlled intersection is 0.548 crashes per million entering vehicle (MEV). As there were no fatal or serious injury crashes reported in this timeframe, the observed fatal and serious injury crash rate for this intersection is zero.

Segment of 15th Avenue from 40th Street to 50th Street: With a volume of 290 vehicles per day (vpd) and one (1) crash reported over the five-year period, the observed crash rate along this rural two-lane undivided section is 1.888 crashes per million vehicle miles traveled (MVMT). As there were no fatal or serious injury crashes reported in this timeframe, the observed fatal and serious injury crash rate for this segment is zero.

Critical Crash Rates

The critical crash rate index is the ratio of the experienced crash rate to the theoretical crash rate beyond that expected relative to similar transportation facilities. The ranges for the critical crash rate indices are as follows:

- Critical Crash Rate Index ≥ 1.0: Statistically substandard
- Critical Crash Rate between 0.9 and 1.0: Approaching substandard
- Critical Crash Rate < 0.9: Not statistically substandard

The critical crash rates of each facility were calculated using the systemwide average crash rates. Minnesota statewide crash rates for 2018 to 2022 were obtained from the MnDOT Office of Traffic Engineering Trunk Highway Section Toolkit (October 2023). Table 6 details the crash rate and critical rate indices for the intersection and segment with reported crash history.

Table 6. Critical Crash Rate Indices

Location	Facility Type and Comparison	Observed Crashes (2019-2023)	Daily Traffic Volume	Observed Crash Rate	Statewide Average Crash Rate	Critical Crash Rate	Critical Index
15th Avenue & 40th Street	Rural Thru-Stop Intersection	2 (0 Fatal or Serious Injury)	2,000 Entering	0.548 crashes per MEV	0.116 crashes per MEV	0.710 crashes per MEV	0.77
15th Avenue from 40th Street to 50th Street	Non-Junction Rural 2-Lane Undivided	1 (0 Fatal or Serious Injury)	290 Vehicles (1.0 Mile)	1.888 crashes per MVMT	0.379 crashes per MVMT	3.500 crashes per MVMT	0.54

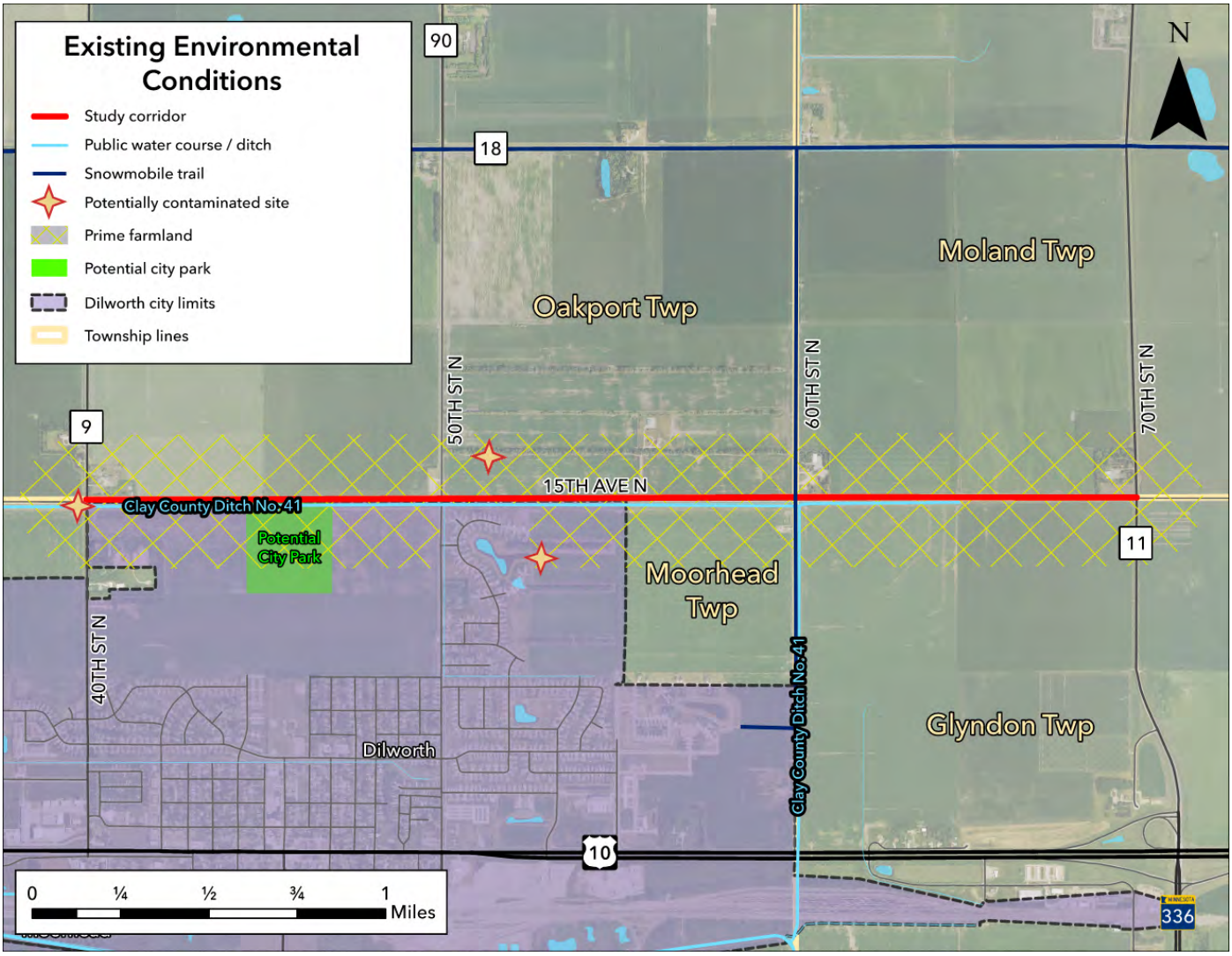
For intersections and segments not detailed, the observed crash rates and critical indices are zero. Although non-serious crashes occurred along the study corridor, no roadway facilities experienced crash rates approaching or exceeding their respective critical crash indices. Therefore, 15th Avenue does not appear to be experiencing substantive safety issues in its current state. However, the crash frequency at the intersection with 40th Street should be considered for potential safety countermeasure implementation throughout the project development process.

6. Environmental Conditions

This section provides an overview of the existing environmental conditions and resources within the study area. This information will be used to assist with the development and evaluation of potential alternatives and to better understand potential impacts of future proposed projects during the National Environmental Policy Act (NEPA) and/or Minnesota Environmental Policy Act (MEPA) environmental review process.

For purposes of the environmental resources review, the study area consists of 1,000 feet from the existing alignment of 15th Avenue as shown in Figure 36.

Figure 36: Existing Environmental Conditions



Natural Resources

Soils and Prime Farmland

The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey (WSS) was used to investigate data pertaining to geologic resources within the study area. Identifying areas with geological constraints enables the project to avoid areas of concern and limit impacts through design and construction. The following is a summary of the key information related to identified geologic resources and soils.

Soils

The soil taxonomies, classifications, and hydric ratings within the study area were reviewed through WSS. The most prominent soil types present within the study area are characterized as silty clay loam or silt loam and have shallow slopes ranging from zero (0) to two (2) percent: Bearden silty clay loam, Colvin silty clay loam, Wheatville silt loam, Overly silty clay loam, and Bearden silt loam.

The majority of soil units have drainage properties classified as “somewhat poorly drained”, with only the Overly silty clay loam located on the eastern end of the study area classified as “moderately well drained”. The depth to the water table varies throughout the study area, with a majority cited as a depth ranging between 18 and 42 inches, and others between zero and 60 inches.

Prime Farmland

The NRCS identifies the farmland classification of soil units based on their location and whether they are best suited for producing crops. Soil that is defined as prime farmland has been determined to have the best physical and chemical properties for producing crops and should be managed according to proper farming methods.

Nearly all, representing over 95 percent, of the soil units present in the study area are classified as either “all areas are prime farmland” or “prime farmland if drained”. Within the environmental study area, the majority of soils classified as “prime farmland if drained” are currently drained and actively used for agriculture.

The effects of projects on prime or unique agricultural farmland must be assessed under NEPA to ensure the impacts on agricultural land are minimized to the extent reasonable. The USDA NRCS and the Minnesota Department of Agriculture (MDA) will have an opportunity to review and comment on the agricultural impacts. For federally funded or authorized projects, coordination with the USDA NRCS must occur under the Farmland Protection Policy Act if a project directly or indirectly converts ten or more acres of important or prime farmland to non-agricultural use. The MDA must be notified if a project affects ten or more acres of farmland and does not require preparation of a state Environmental Assessment Worksheet (EAW) or Environmental Impact Statement (EIS), as required by Minnesota Statutes 17.82. The review by the MDA of the project documents and design will attempt to find alternative methods or locations which may avoid or reduce the adverse impacts.

Water Resources

The following subsections provide summaries of the key information related to the various types of water resources within the study area including wetlands, floodplains, and impaired waters.

Wetlands

Executive Order 11990, Protection of Wetlands, calls for avoiding adverse impacts associated with the destruction or modification of wetlands, and avoiding new construction in wetlands. Waters of the U.S., including wetlands, are protected and regulated under the Clean Water Act (CWA). The Environmental Protection Agency (EPA) generally describes waters of the U.S. as rivers, streams, ponds, and special aquatic sites (e.g., wetlands). The U.S. Army Corps of Engineers (USACE) and the EPA define wetlands as areas that are "inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstance do support, a prevalence of vegetation typically adapted for life in saturated soils conditions." Common examples include swamps, marshes, and bogs.

GIS data from the U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) for Minnesota was used in a desktop review to identify and estimate areas of wetlands. One wetland basin and one county ditch were identified within the study area.

Figure 36 depicts the locations of wetlands with respect to the study area.

- The wetland basin, a freshwater pond approximately 1.5 acres in area, is located within the existing subdevelopment in the southeast quadrant of the 50th Street intersection.

- Clay County Ditch No. 41 (Ditch 41) runs parallel along 15th Avenue from a half-mile west of CSAH 11 westward and eventually outlets into the Red River. Due to Ditch 41's proximity to the Red River, it is potentially subject to USACE jurisdiction and associated environmental considerations. Owned and maintained by the Buffalo-Red River Watershed District (BRRWD), Ditch 41 is designed for a 100-year flood event.

    - BRRWD has indicated any improvements to 15th Avenue should involve direct coordination with BRRWD and avoid modifications to the capacity or geometry of the drain.

Identifying wetland and surface water resources enables potential impacts from proposed projects to be identified early and avoided or minimized through design. There may be opportunities to engage regulatory agencies to use a regional approach to wetland compensation (mitigation) and to allow for the planning and preparation of any necessary permitting requirements.

Consideration, avoidance, minimization, and or compensation must be determined for wetland impacts. A Level 1 (preliminary) wetland delineation will likely be required for any proposed project that may contain wetlands or waters of the U.S. The results of the Level 1 wetland delineation will determine whether a Level 2 (detailed field study) delineation is needed.

Floodplain

The Federal Emergency Management Agency (FEMA) publishes Flood Insurance Rate Map (FIRM) panels to identify floodways and defined flood hazards. The southern and western portions of the

study area are classified as Zone AE, which represents areas subject to inundation by the 1-percent-annual-chance flood event. See **Appendix B** for the floodplain maps along the corridor.

Impaired Waters

To fulfil part of the requirements set forth by the EPA Clean Water Act (CWA), the Minnesota Pollution Control Agency (MPCA) monitors the quality of impaired waters and sets pollutant-reduction goals needed for their restoration. This data, documented within the Minnesota 2024 Impaired Waters List, was reviewed for impaired sites in proximity to the study area.

One impaired stream was identified approximately 2,000 feet to the east of the study corridor: the South Branch of the Buffalo River. This section has Total Maximum Daily Loads (TMDL) approved for *E. coli* and dissolved oxygen. However, the majority of the 15th Avenue corridor is located within the Upper Red River of the North watershed and therefore most drainage will not flow between the corridor and the South Branch of the Buffalo River.

Consideration of water quality under NEPA will be necessary because there are impaired waters present within one mile of the proposed project. Design for potential alternatives should avoid or minimize impacts to these resources. The associated NEPA analysis should identify impacts, determine permitting requirements, and identify appropriate avoidance, minimization, and mitigation measures.

Source Water Protection

The Minnesota Department of Health's online Source Water Protection Web Map Viewer provides an inventory of water supply management and well data. There are three (3) Drinking Water Supply Management Areas (DWSMA) and three (3) corresponding Wellhead Protection Areas (WPAs) within approximately one mile of the study area. There are also numerous public, domestic, and other wells located within the study area. Table 7 details the protected source water resources identified near the study area.

Table 7. Protected Source Water Resources

DWSMA	Type	Area (Acres)	Vulnerability
Buffalo Aquifer North (1140008)	Aquifer/Groundwater	1,508.6	High
Buffalo Aquifer South (1140008)	Aquifer/Groundwater	2,295.9	High
Moorhead Aquifer (1140008)	Aquifer/Groundwater	748.3	Low

Protected source waters that exhibit very high, high, and moderate vulnerability require further study for specific projects to determine infiltration and permitting requirements. Consideration of DWSMAs and WPAs under the NEPA process may therefore be required as there are DWSMAs with

high vulnerability near the study area. Consideration of the locations of these resources during project design should avoid adverse impacts. A stormwater permit may also be required.

Threatened and Endangered Species

The U.S. Fish and Wildlife (USFWS) Information for Planning and Consultation (IPaC) resources inventory was reviewed for federally-protected threated and endangered species within the study area. Per the IPaC system report, there are no refuge lands, fish hatcheries, or critical habitats within the project area.

Two federally threatened, endangered, proposed, experimental populations, or candidate species were identified within the study area: the monarch butterfly (*Danaus plexippus*) and western prairie fringed orchid (*Platanthera praeclara*).

Notable migratory birds that may require special attention within the project area include the Bald Eagle (*Haliaeetus leucocephalus*), Black Tern (*Chlidonias niger surinamenisis*), Black-billed Cuckoo (*Coccyzus erythropthalmus*), Bobolink (*Dolichonyx oryzivorus*), Chimney Swift (*Chaetura pelagica*), Franklin's Gull (*Leucophaeus pipixcan*), Golden-winged Warbler (*Vermivora chrysoptera*), Hudsonian Godwit (*Limosa haemastica*), Lesser Yellowlegs (*Tringa flavipes*), Northern Harrier (*Circus hudsonius*), Pectoral Sandpiper (*Calidris melanotos*), and Red-headed Woodpecker (*Melanerpes erythrocephalus*).

Traffic Noise and Air Quality

Highway traffic noise regulations, which protect the public's health and welfare, aim to minimize the highways' negative impact on nearby noise-sensitive locations. A desktop review of aerial imagery and planned developments was conducted to identify potential Noise Sensitive Areas (NSAs) and any existing noise infrastructure within the study limits. The potential NSAs within the study limits are a combination of residential and potential future recreational and industrial land uses. No existing noise berms or barriers were identified along the project corridor. Based on traffic volumes, housing density, and other geographic features, there is potential for noise levels to exceed the Federal Noise Abatement Criteria for future developed alternatives.

Consideration of air quality for a proposed project will be necessary as part of the requirements of the Clean Air Act (CAA) and NEPA/MEPA. Clay County is in attainment status for all National Ambient Air Quality Standards (NAAQS) pollutants that are associated with transportation per a review of the EPA Nonattainment Maintenance Status.

Contaminated Materials

The Minnesota Pollution Control Agency's (MPCA) What's in My Neighborhood (WIMN) database was reviewed to identify potentially hazardous and contaminated material sites within the study area. Per the MPCA WIMN database, ten sites associated with properties that were

previously contaminated or associated with various environmental permits and registrations are located within the study area. These sites are described in
Table 8 and depicted in Figure 36.

Table 8. MPCA Sites Within Study Area

Site ID	Name	Address	Activity(ies)
8825	Protech Autobody	140 County Road 9, Dilworth	Hazardous Waste
7288	E M Oelke Lawn Builder	RR 1, Moorhead	Hazardous Waste
223359	Summerwood 3rd Addition	West Summerwood Trail/11th Street NE, Dilworth	Construction Stormwater
9473	Able Painting Decorating	PO Box 8032, Moorhead	Hazardous Waste
120264	Donovan Truck & Trailer Repair Inc	110 County Road 9, Dilworth	Hazardous Waste
10564	L Harrington Studio Of Photography	RR 3 Box 261, Moorhead	Hazardous Waste
10837	Dr Jeffrey Harvey - Moorhead	Professional Center Ste 1, Moorhead	Hazardous Waste
8744	Holiday Printing & Supply	Holiday Mall Shopping Center, Moorhead	Hazardous Waste
5533	Fm Excavating Co	RR 3, Moorhead	Hazardous Waste
6179	Debates Todd E Dr Dds	Professional Ctr Ste 6 Holiday Mall, Moorhead	Hazardous Waste

Because there are contaminated sites within the study area that may require additional investigation, determined by their proximity to the proposed project's construction limits, consideration of hazardous and contaminated materials will likely be necessary. A complete Phase I Environmental Site Assessment (ESA) may be required for the project, and a Phase II ESA may subsequently be needed based on findings from the Phase I ESA.

Cultural Resources

Sections 4(f) and 6(f) Resources

Section 4(f)

Section 4(f) stipulates that Federal Highway Administration (FHWA) and other Department of Transportation agencies cannot approve the use of land from publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historic sites unless there is no feasible and prudent alternative to the use land, and the action includes all possible planning to minimize harm to the property resulting from use.

Identifying Section 4(f) properties during the study allows these properties to be avoided through the development and evaluation of alternatives. A qualitative review of existing planning documents, land use and zoning maps, readily available Geographic Information System (GIS) information, and aerial imagery was conducted but identified no parks and recreation facilities within the study area. However, notable existing and planned features, depicted in Figure 36 were identified:

- **Clay County Trailblazers Snowmobile Trail**: The Clay County Trail Blazers is a local snowmobile club for the Moorhead and greater Clay County, Minnesota area. The club maintains and grooms snowmobile trails throughout Clay County. One of their trails parallels 60th Street N, originates in Dilworth, and heads north to CSAH 18 where it intersects an east/west trail along the county road.

- **Potential Dilworth City Park**: The City of Dilworth acquired a parcel along the south side of 15th Ave between 40th St N and 50th St N intending to convert the existing agricultural land to a public park.

Section 6(f)

Section 6(f) of the Land and Water Conservation Fund (LWCD) Act of 1965, which established a federal funding program to assist states in developing outdoor recreation sites, prohibits the conversion of a property acquired or developed with these funds to a non-recreational purpose without the approval of the National Park Service.

A review of the Minnesota Department of Natural Resources (MnDNR) Land and Water Conservation Fund (LWCF) Grant Funded Sites list resulted in no 6(f) sites within the study area. However, the list includes sites funded by LWCF and sites that received state recreation grants to local governments that have similar retention requirements. Although outside of the environmental study limits, Centennial Park (owned by the City of Moorhead) is located approximately one mile west of the study corridor.

Historic and Archaeological Resources

A review of the State Historic Preservation Office's (SHPO) Minnesota Statewide Historic Inventory Portal (MnSHIP) identified one potentially historic resource (MnSHIP ID 27421) within the

environmental study area: Clay County Ditch No. 35 (Ditch 35). Perpendicular to 15th Avenue along 60th Street, Ditch 35 is owned and maintained by the Buffalo-Red River Watershed District (BRRWD) and is eligible as a linear architectural resource (Historic Inventory No. CY-XXX-001). The approximate alignment of Ditch 35 is depicted in Figure 36.

Environmental Justice

Environmental Justice (EJ), as implemented by the Federal Highway Administration (FHWA), involves identifying and addressing disproportionately high and adverse effects of an agency's programs, policies, and activities on minority and low-income populations to achieve an equitable distribution of benefits and burdens. An area where the percentage of minority and/or low-income persons is 10 percentage points higher than the county average; or represents greater than 50 percent of the total geographic unit is a strong indicator of minority and/or low-income persons population for the purposes of EJ analysis.

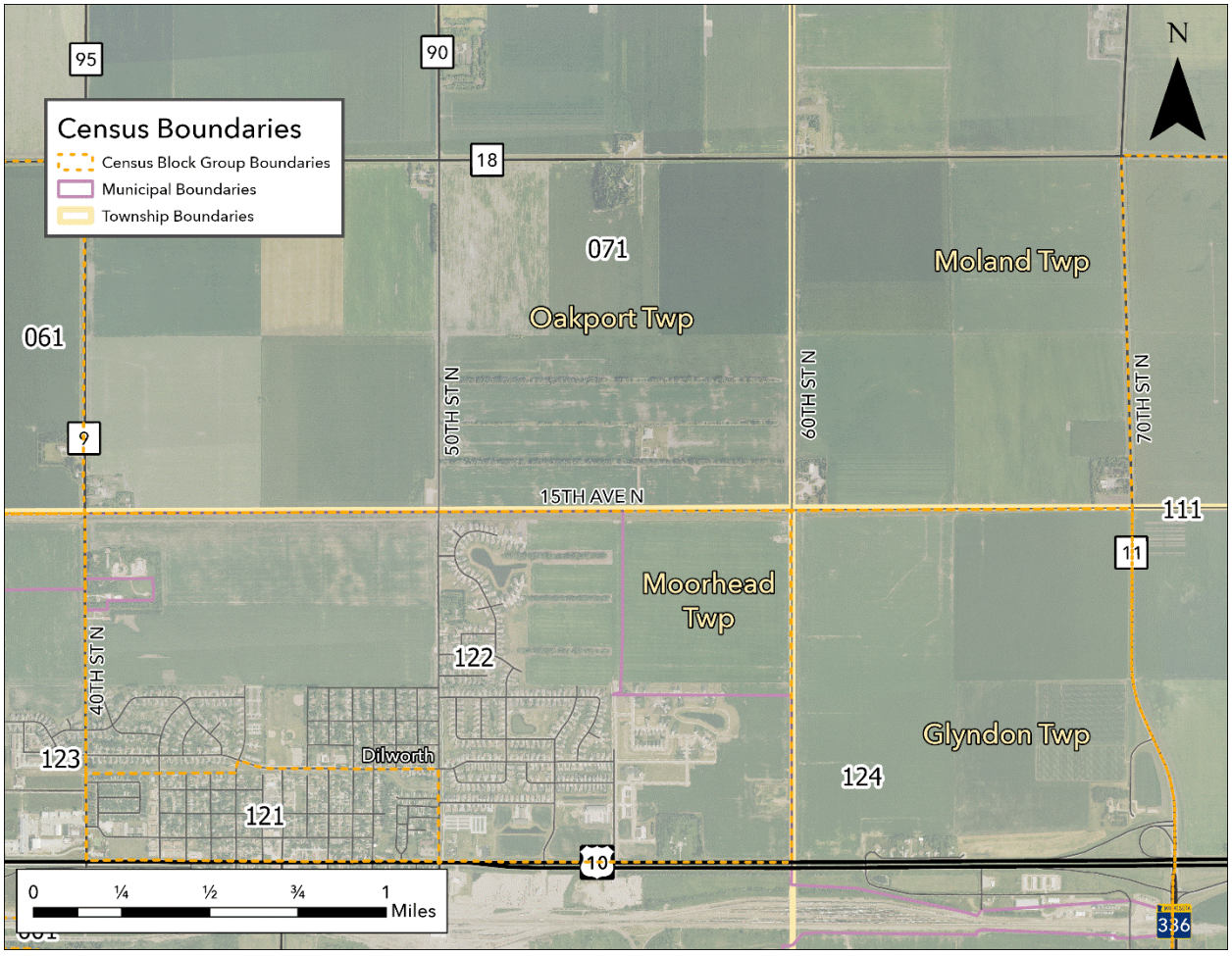
Table 9 provides a summary of the EJ populations and depicts the minority and low-income populations for block groups within the study area with respect to City of Dilworth and Clay County proportions. Given this socioeconomic data, two block groups with minority or low-income populations notably exceeding the county average have been identified that may be adversely impacted by a proposed project. Therefore, it is recommended an EJ analysis be completed as part of the NEPA phase of project development to fulfill requirements for federal and state regulati ons for EJ. Census block group boundaries are shown along the corridor in Figure 37.

Table 9. Environmental Justice Preliminary Screen

Area	Population [#]	Low Income [%]	People of Color [%]
Study Area	9,867	17%	14%
Block Group 270270301-061	2,126	16%	14%
Block Group 270270301-123	884	46%	31%
Block Group 270270301-071	1,639	17%	9%
Block Group 270270301-122	3,037	8%	8%
Block Group 270270301-124	51	37%	0%
Block Group 270270301-111	2,130	20%	18%
City of Dilworth	4,633	21%	13%
Clay County	65,307	27%	15%

Source: EPA EJScreen Version 2.3

Figure 37: Census Boundaries



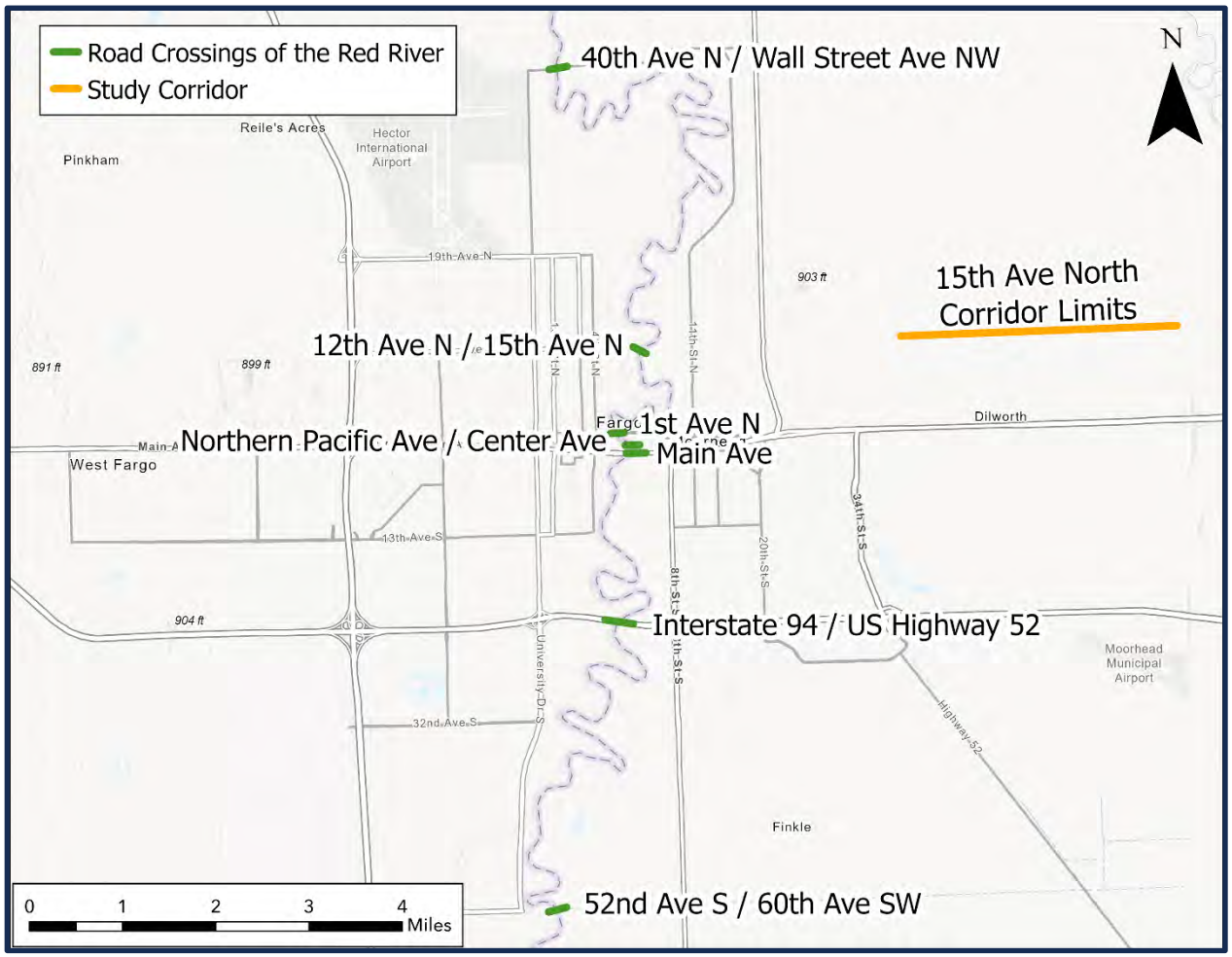
7. Alternatives Evaluation

Purpose and Need

15th Avenue N is a gravel roadway that is identified as a regionally significant east/west connection across the Red River to accommodate future growth in the metro area.

As the metro area continues to grow, increased infrastructure is needed to accommodate future traffic and development. There are seven locations for east/west traffic to cross the Red River of the North throughout the metro area. Three of these crossings are located between the downtown areas of Fargo and Moorhead. Additionally, there are three main east/west corridors that connect North Dakota to major north/south roadways in Minnesota. US Highway 10 is the northern most east/west corridor.

Figure 38: Metro Area Map of Red River Road Crossings



The Highway 10 Corridor Study, completed by Metro COG in 2023, identified a need to increase east/west mobility within the region. 15th Avenue N was one of the routes highlighted for this purpose. It is one of two roadways north of the downtown metro area that includes a Red River crossing. Improvements to 15th Avenue North will allow traffic to travel between 34th Street and Clay County Highway 11, which connects to US Highway 10.

In 2019, Oakport Township received a Local Road Improvement Program (LRIP) grant from MnDOT to improve 15th Avenue N between 34th Street and Clay County Highway 9. Prior to improvements, the roadway consisted of a gravel surface ranging from 20 to 30 feet in width. The upgrades included a 26-foot paved surface consisting of 12-foot travel lanes and 1-foot shoulders. Clay County assisted the township in preparing the grant application and completing the design of the improved roadway. Oakport Township stated that the roadway needed to be improved because maintenance could not keep up with traffic volumes. The township explained that during wet or snowy periods, the road could not be maintained frequently enough, causing cars to get stuck and the roadway to be closed.

In 2017, traffic counts on that portion of 15th Avenue N showed an average daily traffic (ADT) level of 352 vehicles. Since the study area's existing typical section matches the typical section prior to improvements west of CSAH 9 and the maintenance programs were the same before improvements, it can be assumed that once traffic levels meet or exceed approximately 350 ADT, maintenance on the roadway will surpass what can be completed by maintenance forces. Based on traffic counts from this study, the corridor has an ADT of 285.

Functional Classification

Currently, 15th Avenue N within the study area is classified as a local road according to MnDOT's Enterprise Mapping Application. A half mile west of the corridor, 15th Avenue N is classified as a minor collector, and further west of US Highway 75, it is classified as a major collector. 15th Avenue N is located within Metro COG's urbanized area (UZA), which classifies it as a minor arterial. It is assumed that 15th Avenue N will maintain this classification in the future after improvements are made.

Development of Alternatives

Considering future traffic volumes, deficiencies outlined early in the study, feedback from the public, and the project's purpose and need, several alternatives were developed for review by the Study Review Committee. A key component to alternatives development was considering future ownership of the roadway.

Future Ownership and Maintenance of the Roadway

Roadway ownership significantly influences the design standards of a road. Publicly owned roads must comply with government regulations and standards to ensure safety, accessibility, and durability. These design standards can vary further depending on whether the owner is a township, county, or city, as each entity has its own specific requirements.

Members of Oakport Township, Moorhead Township, Moland Township, Clay County, the City of Dilworth, and Metro COG met on two separate occasions to discuss the future ownership of the roadway. The following options for future ownership were identified and discussed:

- Townships (Oakport, Moorhead, Moland)
- Clay County
    - County State Aid Highway (CSAH)
    - Non-CSAH
- City of Dilworth

Township

Currently, the roadway is owned by Oakport, Moorhead, and Moland Townships, with all maintenance contracted through Clay County. The townships have expressed that they have limited financial resources to make improvements to the roadway unless supplemented by external funding. They also lack the necessary staff to design and facilitate the construction improvements. Their maintenance programs are not equipped to own and maintain hard surfaced roadways with high traffic volumes. Consequently, the townships have indicated a preference to relinquish ownership of the roadway. Until another entity steps forward with funding or proposes to take ownership of the facility, the townships will continue to own and operate the roadway.

Clay County State Aid Highway (CSAH)

All counties in Minnesota have an allotted number of County State Aid miles that can be applied to their county highway system. Assigning a section of county highway as State Aid allows MnDOT State Aid funding to be used for roadway improvements. Currently, Clay County has utilized its entire allotment of State Aid miles. If 15th Avenue N were to become a Clay County CSAH route, the county would need to remove the State Aid designation from another section of highway. This would require Clay County to reimburse MnDOT for all State Aid funds used to improve that section of roadway over the past 2 years. For those reasons, it was not feasible for the county to assign the corridor as a CSAH route.

Clay County Non-CSAH Highway

Another option discussed with Clay County was to add 15th Avenue N to their non-state aid highway miles. While Clay County recognizes the regional benefit of improving 15th Avenue N, they prefer not to add additional miles to their county roadway system, as this would reduce funding for improvements and maintenance of existing miles.

Clay County has indicated they would consider short term ownership of the roadway, provided there is a strict agreement in place to limit their financial risk and clear timeline for transferring long-term ownership. Although Clay County does not want to be financially responsible for the roadway's improvements, they acknowledge having the staff and resources to help facilitate the necessary upgrades. This future ownership option is considered moving forward.

City of Dilworth

Currently, Dilworth is focused on growth and investment within their city limits, particularly between 40th Street and 50th Street, south of 15th Avenue N. If Dilworth were to take ownership of the roadway, they would need to annex additional land into the city's corporate limits. This would require that any properties within the newly annexed area be served with City of Dilworth public services within an acceptable timeframe, typically within 5 years. Dilworth has stated that they are unlikely to annex anything north of 15th Avenue N until development occurs.

The City of Dilworth has annexation agreements with Oakport, Moorhead, and Glyndon Townships. Moland Township has jurisdiction of 15th Avenue N east of 60th Street. Dilworth does not have an annexation agreement with Moland Township and does not anticipate any growth east of 60th Street in the foreseeable future.

Given the need for annexation and the city limits not extending east of 60th Street in the near future, it was determined that it is not feasible for the City of Dilworth to take over ownership from the townships in the short term. However, Dilworth has acknowledged that they are likely to be the long-term owner of the corridor from CSAH 9 to 60th Street.

Based on the information above, it was determined that the two feasible options for short-term ownership would be either the townships retain ownership or Clay County takes ownership of the roadway.

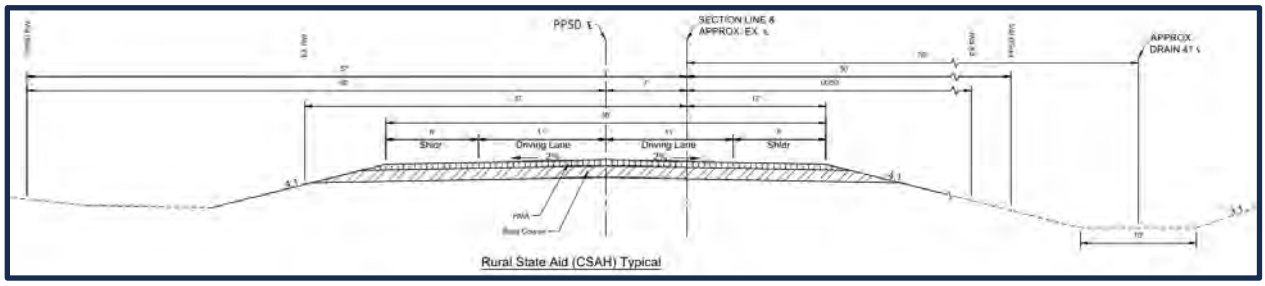
Alternatives Considered by Disregarded

To meet the project's needs, five typical sections were initially developed. However, three of these were disregarded because their designs were based on ownership scenarios that were determined to be unfeasible, as discussed above. The disregarded alternatives consisted of upgrading 15th Avenue N to meet rural state aid standards, reconstructing to an urban 36 feet face to face option, and reconstruction to an urban 40 feet face to face option.

Upgrading to Rural CSAH Standards

CSAH routes must adhere to Minnesota Administrative Rule 8820.9920 "Minimum Design Standards: Rural and Suburban Undivided; New or Reconstruction Projects". Based on the future traffic volumes determined during the study, the roadway would have to meet a 10-ton design, minimum 11-foot lanes, and 8-foot shoulders (at least two feet of which must be paved). The Rural State Aid (CSAH) alternative typical section is shown below:

Figure 39: Rural State Aid (CSAH) Typical Section

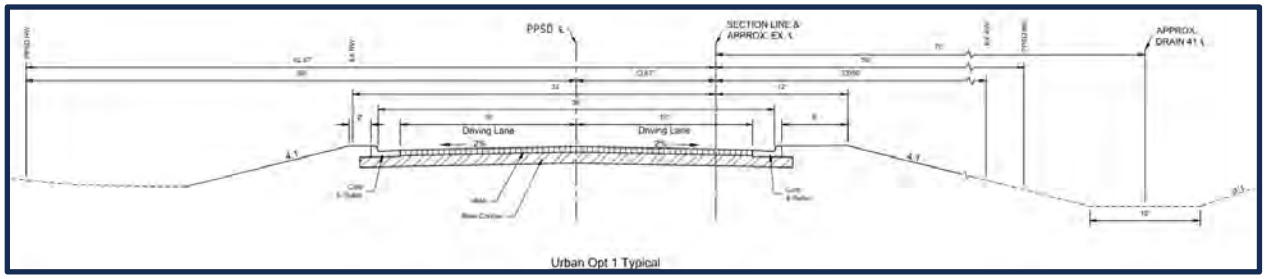


City of Dilworth Urban Options

Urban Option 1 (36 feet face-to-face)

The City of Dilworth recently constructed 7th Street, using a typical section that included two 11-foot lanes and 7-foot shoulders. The City determined that this typical section would be a suitable fit for 15th Avenue N if they were to own the roadway. The Urban Option 1 typical section is shown below:

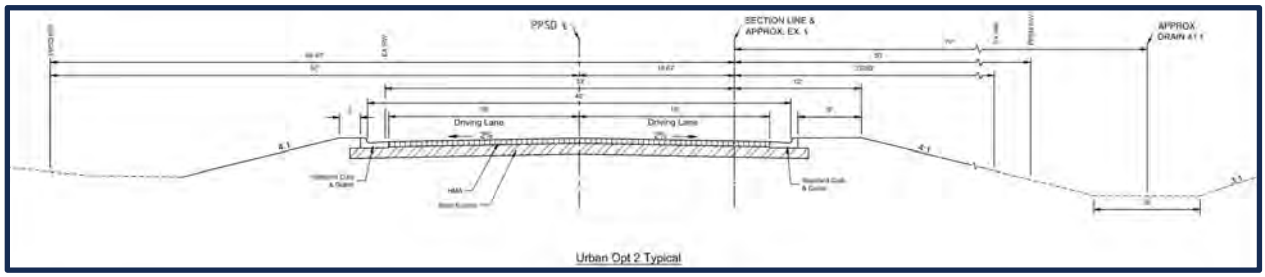
Figure 40: Urban Option 1 - Typical Section



Urban Option 2 (40 feet face-to-face)

Section 154.06 of City of Dilworth Code of Ordinances outlines Subdivision Design Standards. The ordinance state that when no design standard is provided, minor arterial streets must have a paved curb to curb width (minimum) of 40-feet. The Urban Option 2 typical section is shown below:

Figure 41: Urban Option 2 - Typical Section



Alternatives Carried Forward

Depending on whether the township or Clay County owns the corridor, two alternatives were carried forward: an Industry Design Standard for township ownership and a Clay County Minimum Design Standard for county ownership.

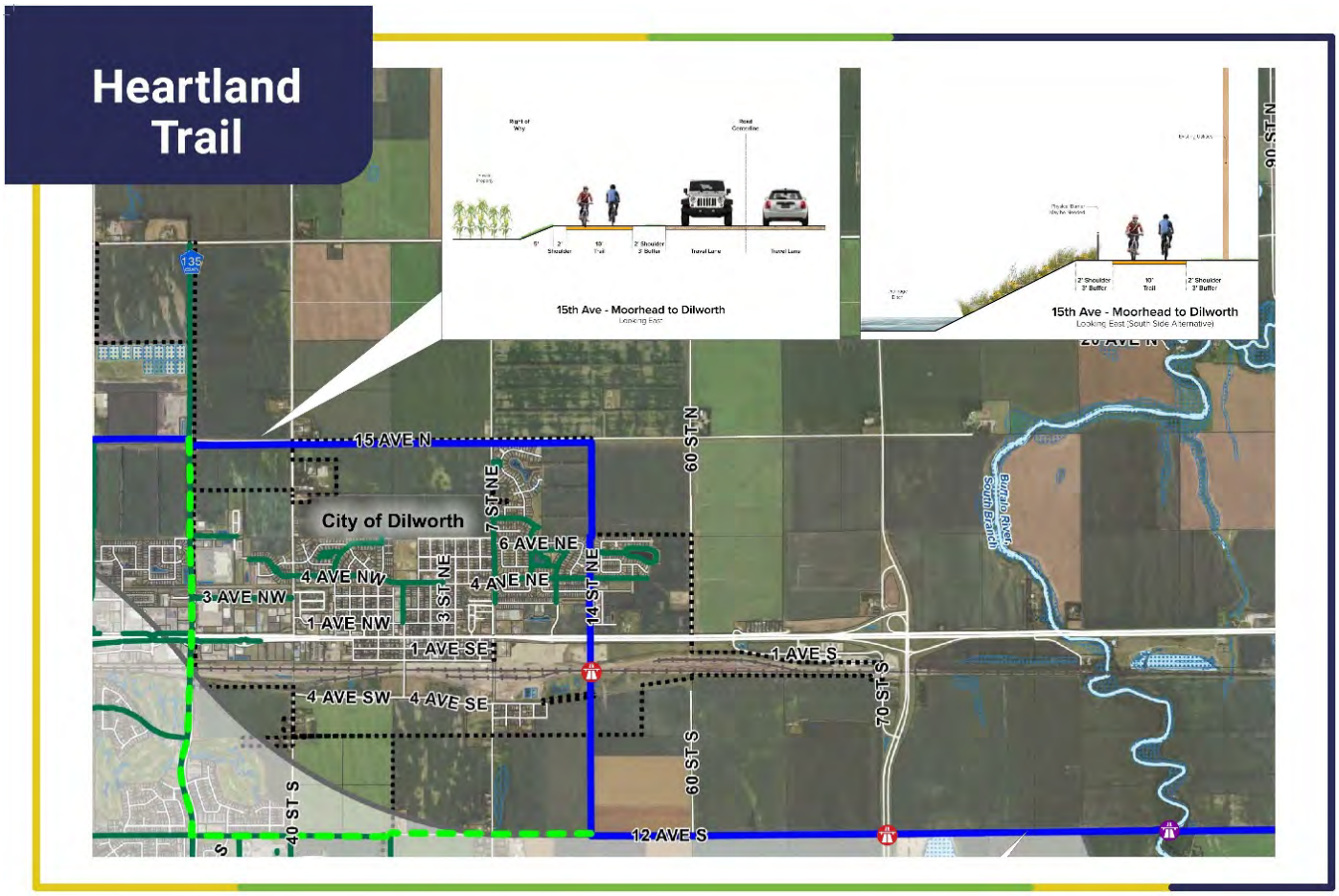
Both typical sections have an option for a separate shared use path between the roadway and Clay County Drain 41. This addition was based on public input and the potential for the Heartland Trail to parallel 15th Avenue N in the future.

Heartland Trail Coordination

Metro COG is currently studying the extension of the Heartland Trail through Clay County. Coordination with the Heartland Trail Study, has determined that the trail will enter the Fargo-Moorhead area along 12th Avenue S, follow 34th Street up to 15th Avenue N, and then parallel 15th Avenue N to Centennial Park at the intersection of 28th Street and 15th Avenue N. If a grade separated railroad crossing is installed over Burlington Northern Santa Fe's yard in Dilworth, the Heartland Trail would be realigned from 34th Street to 14th Street in Dilworth, which would be extended to 15th Avenue N. The trail would then parallel 15th Avenue N to Centennial Park.

Due to this long-term plan, the optional shared-use path for the alternatives below would be included from CSAH 9 to 60th Street. If a shared-use path is not implemented with improvements of 15th Avenue N, there is an option to construct bicycle and pedestrian facilities along the south side of Drain 41 at a later date.

Figure 42: Heartland Trail Alignment Map



Alignment Considerations

Drain 41 parallels 15th Avenue N within the study area from CSAH 9 to half a mile east of 60th Street. The depth of the drain significantly decreases east of 60th Street. The drain acts as a natural barrier on the south side of 15th Avenue N, therefore, any widening of the roadway must be to the north to avoid drain impacts. As shown in the typical sections discussed below, the Industry Standard Design section shifts the alignment 6-feet north without a shared use path and 19-feet north with a shared use path. The Clay County Minimum Design section shifts the alignment north 8-feet without a shared use path and 21-feet north with a shared use path. East of 60th Street, where the drain is shallower, the alignment is centered on the existing roadway centerline, which is the section line.

Industry Standard Design

The Industry Standard Design typical section is based on the minimum criteria to upgrade the corridor to a paved roadway. Local entities using local funds can set their own design standards for roadways off the state system. However, if state or federal dollars are used for improvements, the design must follow an industry design standard approved by the State Aid Engineer. Chapter 5 of the American Association of State Highway and Transportation Officials "A Policy on Geometric Design of Highways and Streets" (Green Book) should be referenced to determine the minimum design criteria. According to Table 5-5 of the Green Book, for a 55 MPH design, the roadway should allow for 22-feet of traveled way with 2-foot shoulders on each side of the roadway. This typical section is shown below:

Figure 43: Rural Industry Standard Typical Section

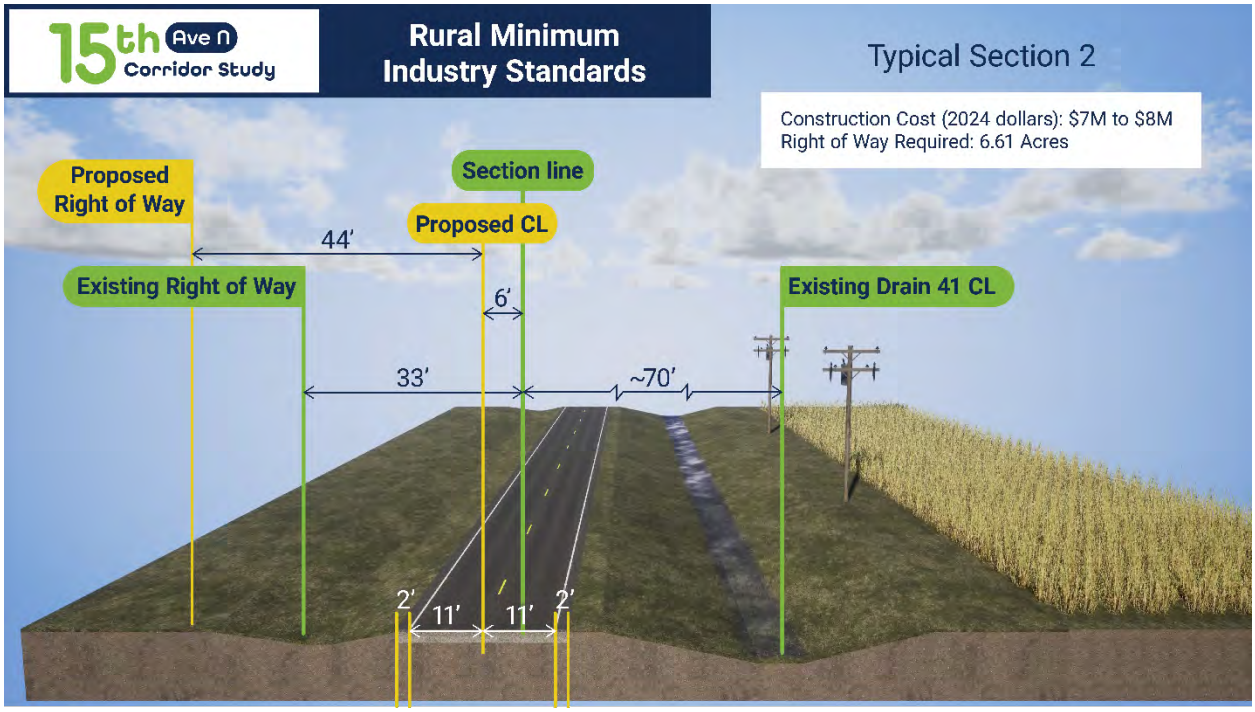
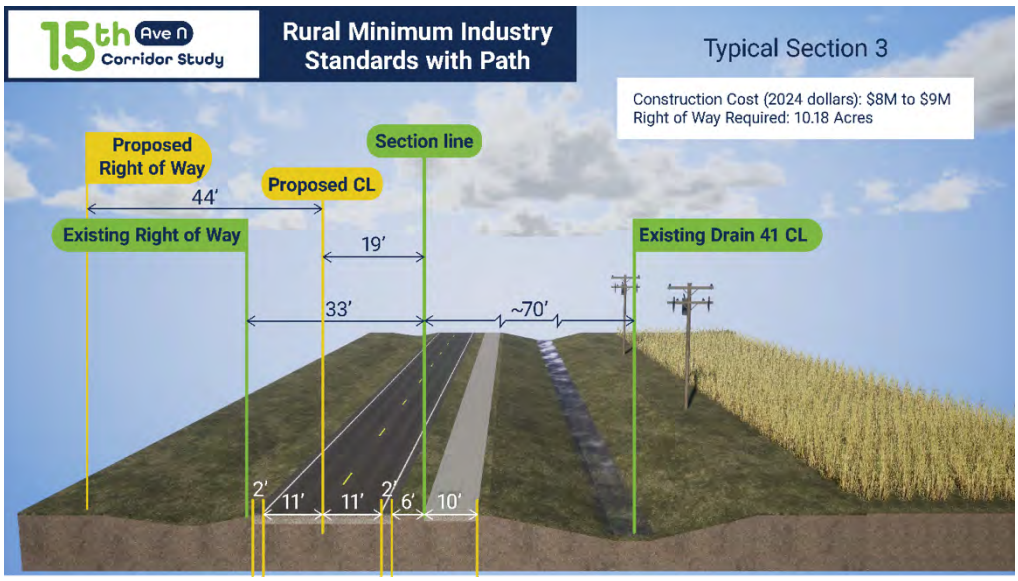


Figure 44: Rural Minimum Industry Standard with Path - Typical Section



Clay County Minimum Design

Clay County has indicated that if they were to construct an improved roadway for their County system, they would follow Minnesota Administrative Rule 8820.9920 “Minimum Design Standards: Rural and Suburban Undivided; New or Reconstruction Projects”. According to this rule, if the roadway is not on the State Aid system, existing traffic volumes are used to determine the typical section opposed to projected traffic volumes. This requires that a paved roadway meet a 10-ton design, 11-foot lanes, and 4-foot shoulders. The Clay County minimum design typical section is shown below:

Figure 45: Clay County Minimum Design - Typical Section

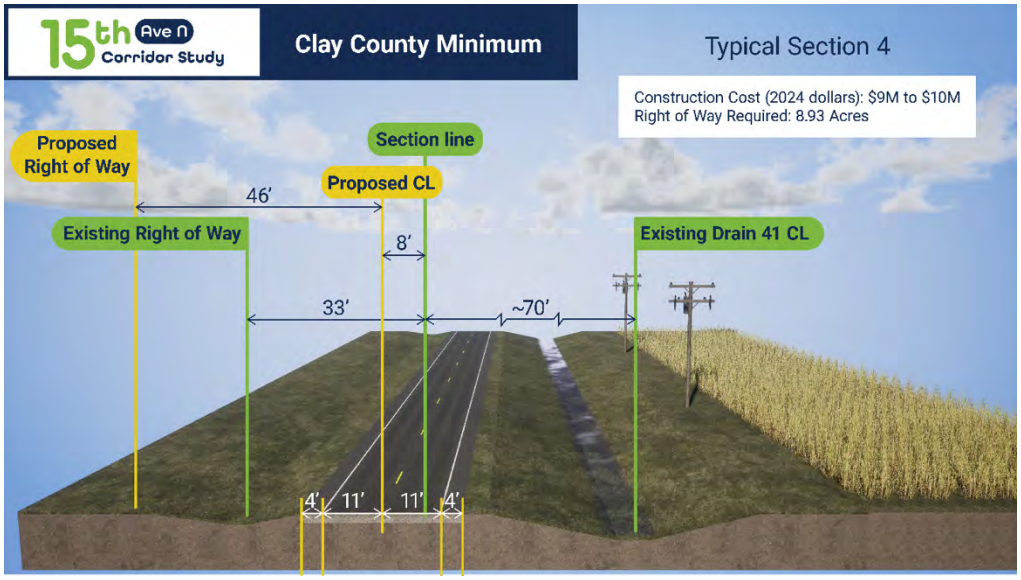
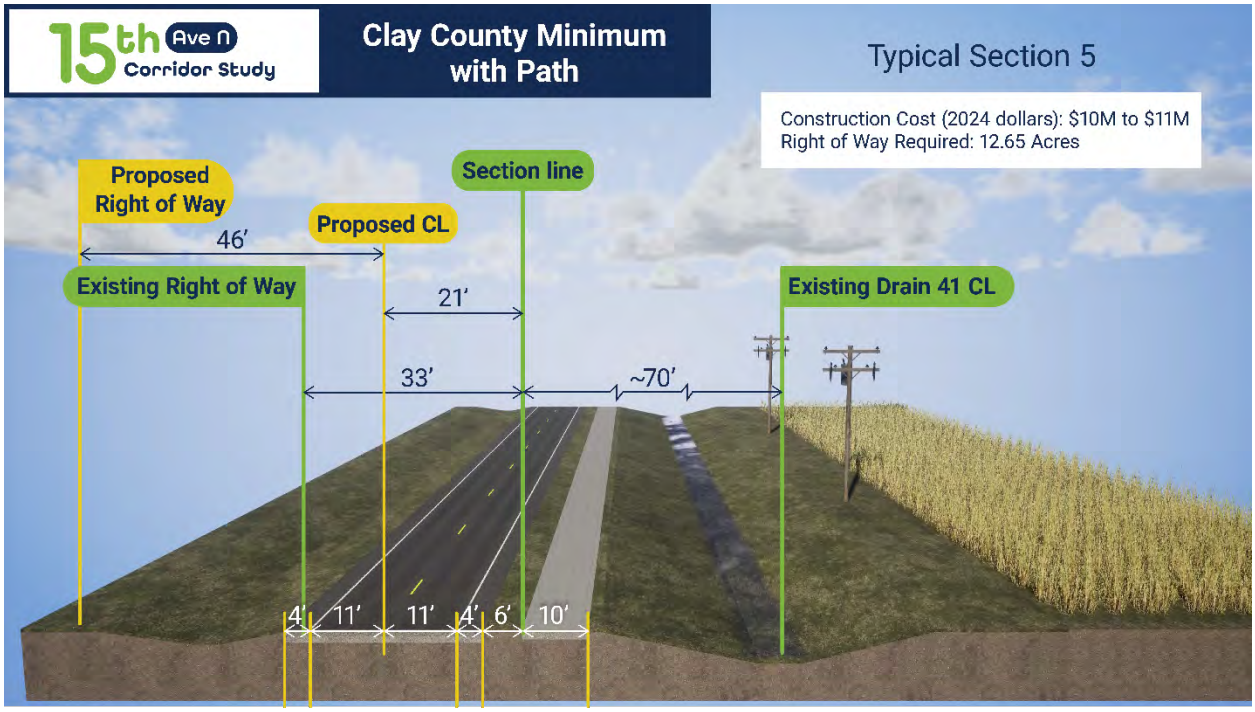


Figure 46: Clay County Minimum Design Standard with Path - Typical Section



Southern Alignment Shift

During the first round of public participation, some landowners expressed concerns about potential impacts to their property from the roadway improvements. Currently, there is 33-feet of right of way on north side of 15th Avenue N throughout the entire study area. To reduce impacts on residential properties, an alignment shift was proposed to move the roadway and Drain 41 to the south. This shift would only occur at the intersections of 50th Street and 60th Street, while the rest of the corridor would follow the previously described alignment.

In discussions with Clay County, they required a design speed of 55 MPH but agreed that the curves could be designed for 40 MPH with an advisory speed limit sign before the curves. Both the Industry Standard Design and the Clay County Minimum Design shift the alignment 13-feet south. Depending on the inclusion of a shared use path, Drain 41 will need to shift 21- to 34-feet south.

Figure 47: Clay County Minimum Design Standard with Southern Alignment Shift - Typical Section

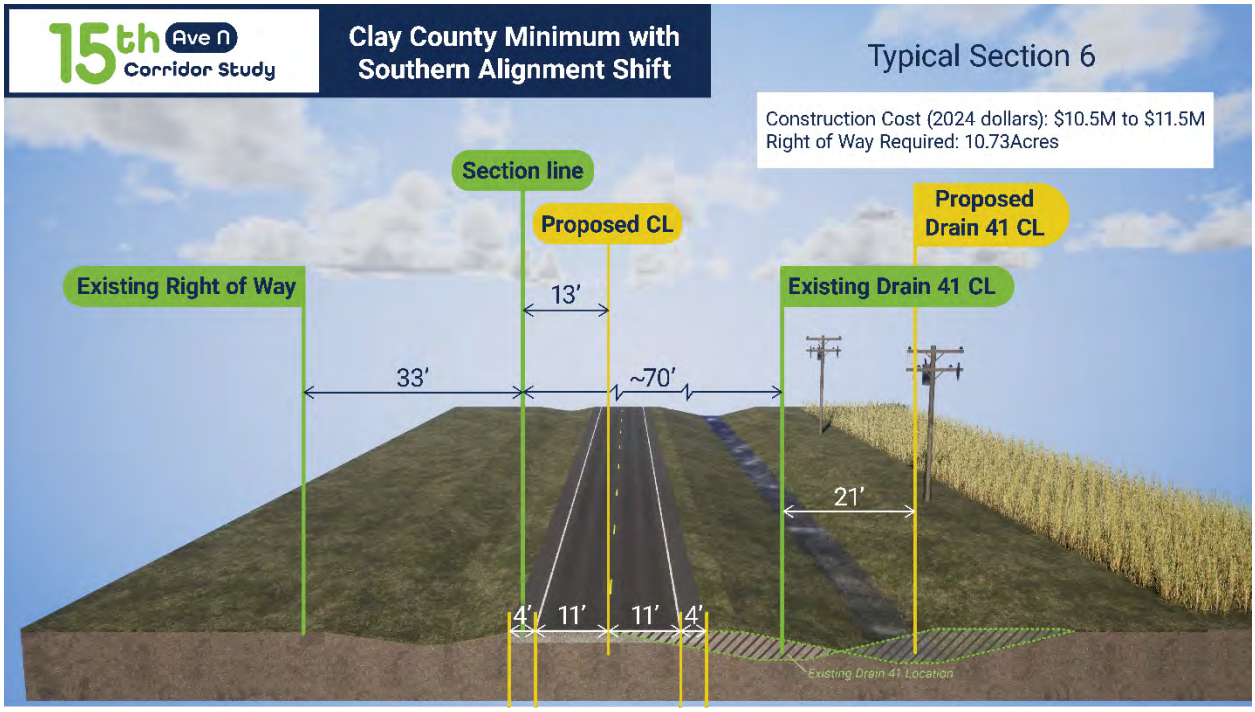
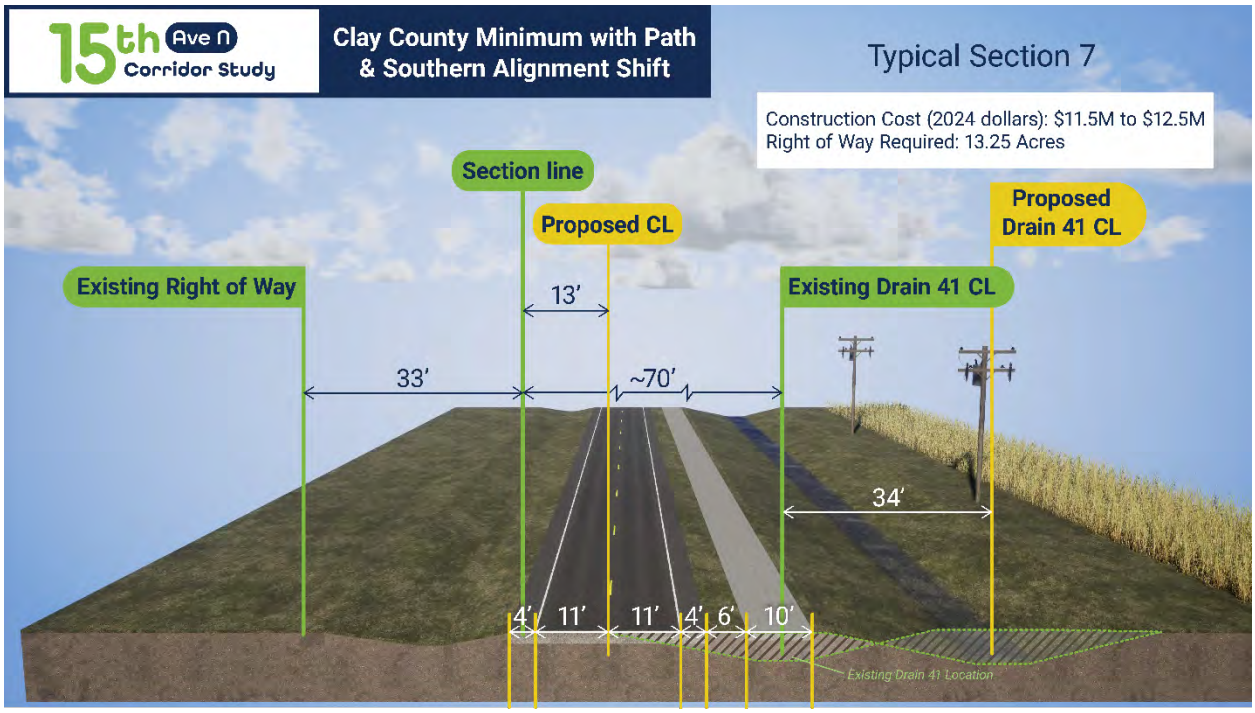


Figure 48: Clay County Minimum Design Standard with Path and Southern Alignment Shift - Typical Section



Intersection Improvements

The redevelopment of 15th Avenue N presents an opportunity to construct or otherwise establish right-of-way for turn lanes at intersections along the corridor. As most guidance and recommendations on turn lane warrants are intended for state highway systems, several sources were referenced to identify criteria appropriate for the future vision of the 15th Avenue N corridor. The identified turn lanes in Table 10 are based on criteria from the MnDOT Access Management Manual and Transportation Research Synthesis (TRS) 1406. Future traffic projections and operations were reviewed against these criteria to determine whether turn lanes may be warranted for each public intersection turning movement along the corridor.

Considering the uncertainty of future roadway ownership, intersection control modifications, potential changes in posted speed limits and traffic volumes over time, and the timeframe of future developments, the turn lanes identified for potential implementation reflect conservative assumptions and should be reevaluated at a later stage in the project development process.

Table 10: Corridor Intersections and Results

Location		Results		
Intersection	**Approach**	**Lanes**	**Criteria**	**Implementation Timeline**
15th Avenue & CSAH 9	West (Eastbound) →	LTL & RTL	Volume	Near Future
	East (Westbound) ←	LTL & RTL	Volume	Near Future
	South (Northbound) ↑	LTL & RTL	Volume	Near Future
	North (Southbound) ↓	LTL & RTL	Volume	After Further Development
15th Avenue & 50th Street	West (Eastbound) →	RTL	High Speeds	Near Future
	East (Westbound) ←	-	Insufficient Volume	-
	South (Northbound) ↑	LTL	Volume	After Further Development
	North (Southbound) ↓	-	Insufficient Volume	-
15th Avenue & 60th Street	West (Eastbound) →	RTL	High Speeds	Near Future
	East (Westbound) ←	-	Insufficient Volume	-
	South (Northbound) ↑	LTL	Volume	After Further Development
	North (Southbound) ↓	-	Insufficient Volume	-
15th Avenue & CSAH 11	West (Eastbound) →	RTL	High Speeds	Near Future
	East (Westbound) ←	-	Private Drive	-
	South (Northbound) ↑	LTL	Volume	Near Future
	North (Southbound) ↓	RTL	High Speeds	Near Future

The turn lanes labeled as “Near Future” have been incorporated into the Clay County Minimum Design alternative for 15th Avenue N only, excluding the approach roadways. If this alternative is selected for future construction, it can be assumed that adequate funding for the corridor has been secured.

Potential Enhanced Safety Features

For consideration of the future safety performance of the improved corridor, specific elements to enhance roadway safety for all users should be incorporated into alternatives development and project design. The risk of crashes is predominantly influenced by the type and design of intersection control devices and segment cross sections. Additional enhancements to improve safety performance may include, but are not limited to, destination lighting to improve visibility, oversized stop signs to attract attention, and stop bars along with other enhanced pavement markings to guide drivers clearly. Additional measures such as transverse rumble strips can alert drivers to upcoming stops or hazards, and improving clear zones and inslopes can reduce the severity of off-road incidents. Incorporating these elements can contribute to creating a safer and more user-friendly roadway environment.

Alternatives Scoring

To evaluate which alternatives best meet the project's needs and align with stakeholder and public input, scoring criteria have been developed to rank the alternatives discussed above. The scoring criteria are defined below:

- **Right of Way Acquisition** – How much right of way will the proposed alternative require?
- **Residential Property Impacts** – Will the alternative impact residential properties?
- **Pedestrian Mobility** – Will the alternative provide pedestrian accommodations?
- **Roadway Reliability** – Will the roadway be a reliable source of transportation year-round?
- **Meets Purpose & Need** – Does the alternative meet the purpose and need of the study?
- **Construction Cost** – What is the approximate construction cost of each alternative?

Other screening metrics considered were traffic impacts, safety, and environmental impacts. After review of these metrics, it was concluded that all of these would score the same for any no build or build alternative. Therefore, the metrics were not used to score the alternatives. Table 11 through Table 16 compare each alternatives criterion with all roadway designs.

Table 11: Right of Way Acquisition Criterion Comparison

Right of Way Acquisition	Most Right of Way Little to No Benefit	Least Right of Way Greatest Benefit
Alternative 1: No Build	— — — — — — — — — ●
Alternative 2: Rural Minimum Industry Standards	— — — — — ●
Alternative 3: Rural Minimum Industry Standards with Path	— — — ●
Alternative 4: Clay County Minimum	— — — — ●
Alternative 5: Clay County Minimum with Path	— ●
Alternative 6: Clay County Minimum with Southern Alignment Shift	— — — ●
Alternative 7: Clay County Minimum with Path & Southern Alignment Shift	●

Table 12: Residential Property Impacts Criterion Comparison

Residential Property Impacts	Most Property Impacts Little to No Benefit	Least Property Impacts Greatest Benefit
Alternative 1: No Build	— — — — — — — — — ●
Alternative 2: Rural Minimum Industry Standards	— — — — — — ●
Alternative 3: Rural Minimum Industry Standards with Path	— — ●
Alternative 4: Clay County Minimum	— — — — ●
Alternative 5: Clay County Minimum with Path	●
Alternative 6: Clay County Minimum with Southern Alignment Shift	— — — — — — — — — ●
Alternative 7: Clay County Minimum with Path & Southern Alignment Shift	— — — — — — — — — ●

Table 13: Pedestrian Mobility Criterion Comparison

Pedestrian Mobility	Least Pedestrian Mobility Little to No Benefit									Most Pedestrian Mobility Greatest Benefit
Alternative 1: No Build	●									
Alternative 2: Rural Minimum Industry Standards	—	●								
Alternative 3: Rural Minimum Industry Standards with Path	—	—	—	—	—	—	—	—	—	●
Alternative 4: Clay County Minimum	—	—	●							
Alternative 5: Clay County Minimum with Path	—	—	—	—	—	—	—	—	—	●
Alternative 6: Clay County Minimum with Southern Alignment Shift	—	—	●							
Alternative 7: Clay County Minimum with Path & Southern Alignment Shift	—	—	—	—	—	—	—	—	—	●

Table 14: Roadway Reliability Criterion Comparison

Roadway Reliability	Least Roadway Reliability Little to No Benefit									Most Roadway Reliability Greatest Benefit
Alternative 1: No Build	●									
Alternative 2: Rural Minimum Industry Standards	—	—	—	—	—	—	—	—	—	●
Alternative 3: Rural Minimum Industry Standards with Path	—	—	—	—	—	—	—	—	—	●
Alternative 4: Clay County Minimum	—	—	—	—	—	—	—	—	—	●
Alternative 5: Clay County Minimum with Path	—	—	—	—	—	—	—	—	—	●
Alternative 6: Clay County Minimum with Southern Alignment Shift	—	—	—	—	—	—	—	—	—	●
Alternative 7: Clay County Minimum with Path & Southern Alignment Shift	—	—	—	—	—	—	—	—	—	●

Table 15: Purpose & Need Criterion Comparison

Purpose & Need (P&N)	Does Not Meet P&N Little to No Benefit									Meets P&N Greatest Benefit
Alternative 1: No Build	●									
Alternative 2: Rural Minimum Industry Standards	—	—	—	—	—	—	—	—	—	●
Alternative 3: Rural Minimum Industry Standards with Path	—	—	—	—	—	—	—	—	—	●
Alternative 4: Clay County Minimum	—	—	—	—	—	—	—	—	—	●
Alternative 5: Clay County Minimum with Path	—	—	—	—	—	—	—	—	—	●
Alternative 6: Clay County Minimum with Southern Alignment Shift	—	—	—	—	—	—	—	—	—	●
Alternative 7: Clay County Minimum with Path & Southern Alignment Shift	—	—	—	—	—	—	—	—	—	●

Table 16: Construction Costs Criterion Comparison

Construction Costs	Highest Costs Little to No Benefit	Lowest Costs Greatest Benefit
Alternative 1: No Build	— — — — — — — — — ●	
Alternative 2: Rural Minimum Industry Standards	— — — — — ●	
Alternative 3: Rural Minimum Industry Standards with Path	— — — — ●	
Alternative 4: Clay County Minimum	— — — ●	
Alternative 5: Clay County Minimum with Path	— — ●	
Alternative 6: Clay County Minimum with Southern Alignment Shift	— ●	
Alternative 7: Clay County Minimum with Path & Southern Alignment Shift	●	

8. Implementation Plan

As a major east – west section line corridor inside the UZA for the Fargo-Moorhead Metropolitan Area, 15th Avenue will serve an important role for overall regional growth. The significance of 15th Avenue is further amplified as one of only a limited number of crossings of the Red River. As discussed in earlier elements of this study, the corridor is currently aligned generally outside areas that are likely to be annexed by a municipal entity (Dilworth) over the next ten years. However, investments in the roadway are likely to be needed sooner than corridor annexation by the City of Dilworth. Township ownership and maintenance of the corridor present significant limitations to proactive efforts at corridor preservation and construction of recommended future standards. Ownership of the existing study area corridor is as follows:

Ownership		
Jurisdiction	**Miles**	**%**
Oakport Township	0.5	16.67%
Moorhead Township	1.5	50.00%
Moland Township	1	33.33%
Dilworth City	0	0%
Total	3	100

Table 17: Ownership

Clay County has indicated a tentative interest in assuming ownership as a County Road. However, the county can't at this time commit to adding 15th Avenue North to the County State Aid Highway (CSAH) system. While turnback of other CSAH miles were discussed, a swap in CSAH mileage to add 15th Avenue to the CSAH system is not a desired vision of Clay County at this time. None the less Clay County can assist in facilitating the gradual maintenance and investment in the roadway to meet projected conditions over the next 10 years.

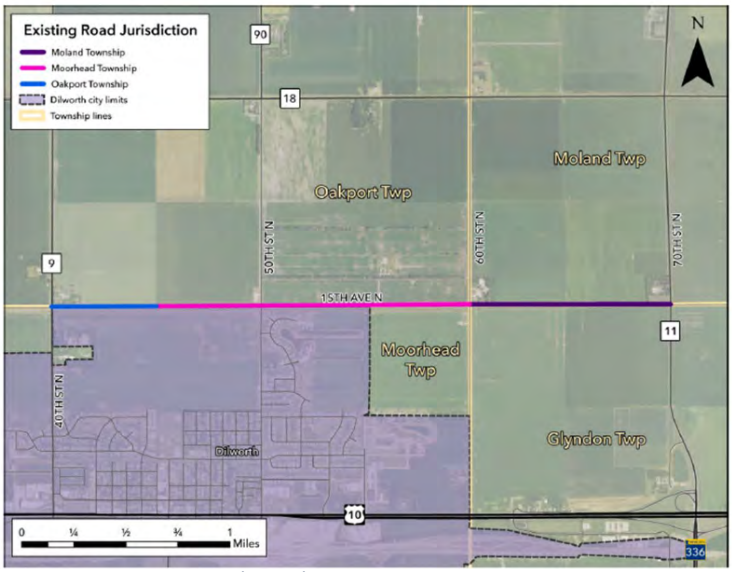


Figure 49: Existing Road Jurisdiction

Uncertainty with future ownership and management responsibilities of 15th Avenue North threatens the ability to make short to medium term investment in this important roadway. The Implementation Plan for 15th Avenue North looks at opportunities to support appropriate corridor management needs for the corridor, discuss ownership and maintenance integrity and evaluates investment opportunities for the corridor.

Memorandum of Understanding (MOU)

It is suggested that Clay County, the City of Dilworth, Oakport, Moland and Moorhead Townships along with Metro COG explore a limited 10-year MOU to outline an agreed to set of proactive measures to ensure appropriate corridor investments along 15th Avenue North. The MOU should outline a process of regular communication on corridor investments, coordinated cost sharing plans for maintenance/operations of the corridor, and strategies to incrementally provide investments into the corridor.

The MOU should establish annual coordination and dialogue between the project partners to support communication to monitor trends and conditions along the 15th Avenue North corridor. This will set the stage to preempt projected growth along the corridor or justifications for a more rapid investment strategy. The MOU would also integrate the elements of the 15th Avenue North corridor study to ensure future growth and development adjacent to the corridor respect the proposed alternatives for the roadway. The general outline and proposed framework for the MOU are as follows:

Annual Coordination

- **Existing** – No formal intergovernmental coordination beyond ongoing maintenance contracts.
- **Proposed** – Twice annual meetings between Clay County, Metro COG, Dilworth and the three townships. Discuss cost sharing, future project needs, potential funding requests and monitor annexations and development along the corridor.

Ownership

- **Existing**: Ownership of the three (3) miles is currently split between three (3) jurisdictions
- **Proposed**: Clay County consider 10-year ownership plan to facilitate management and gradual improvements in the corridor.
    - Turnback to Dilworth for west two miles upon MOU sunset, or upon annexation
    - Work through logistics of east one mile over time

Operations and Maintenance

- **Existing:** Patchwork between County and townships, City of Dilworth reimbursements to Moorhead and Oakport townships
- **Proposed:** County maintains. Dilworth pays 75% of west two miles, Moorhead and Oakport Townships cover 25%; Moland township pays 100% of east mile. Evaluate funding splits annually.

Construction/Paving

- **Existing** – No agreements
- **Proposed –** County lead agency in funding requests
    - Dilworth cover 100% of west two miles;
    - Work through logistics on east one mile

Programming

- **Existing** – No agreements
- **Proposed** – County serve as lead agency to facilitate funding requests, in coordination with Metro COG, Dilworth and Townships. Consider cost sharing agreements with each project. When Dilworth becomes a state aid/Federal aid eligible entity, the city can retain more autonomy on Federal aid pursuits.

Timeline of Improvements Needed

Recent pavement improvements from 34th Street to 40th Street/CSAH 9 have increased volumes on 15th Avenue. MnDOT will construct US 10 through Dilworth as early as 2030. Regardless of roadway closures and signed detour routes, traffic will most likely gravitate towards 15th Ave and use as a non-designated detour. Based on corridor history approximately 350 ADT will create a maintenance concern with a gravel surface. US DOT *Gravel Roads Construction & Maintenance Guide* (Appendix D) states that pavement is justified on a gravel surface when daily traffic of 400-500 vehicles per day use the roadway.

It is likely the 15th Avenue North corridor will require surface improvements by 2030, and the local jurisdictions should plan a strategy to ensure the corridor is adequately maintained on an annual basis and paved by 2030. Improvements of the corridor should move in a generally west to east direction over the next several years. Opportunities to potential improve 60th Street from 15th Avenue to TH 10 should be explored as potential bypass to improvements along the east most mile of the corridor from 60th Street to CSAH 11.

Future Ownership

Short-term

Clay County has indicated a willingness to maintain temporary ownership of the three-mile corridor as a County (non-CSAH) roadway. Clay County's leadership on ownership is critical to facilitating adequate corridor preservation and potential future funding for the 15th Avenue North Corridor. It is recommended the County work in cooperation with Dilworth and the townships on the development of a short-term funding and maintenance plan for the corridor. These specifics should be included in the intergovernmental MOU identified earlier.

Figure 50: Future Ownership

Long term

Once development occurs north of 15th Avenue (between CSAH 9 and 60th Avenue) the City of Dilworth could take over roadway ownership. However, it is unknown when that will happen as that area is not in their growth area at this time. As the corridor is platted the City of Dilworth needs to consider the alternatives developed as part of this study to ensure consistency with potential impacts to Drain 41 and the accommodation of potential multimodal facilities. Assuming a 10-year MOU as proposed earlier, the City of Dilworth could consider more proactive annexation to bring the west two miles of the corridor into city limits prior to the sunset of the MOU. This would relive the County of ownership and provide the City with more direct control over elements of the corridor in their future annexation area, see Figure 50.

Funding Sources

The 15th Avenue North corridor will need to serve a regionally significant function in the future. A funding and investment plan is critical to future corridor preservation efforts. Given the current jurisdictional alignment of the 15th Avenue North corridor, future funding requires a cooperative effort between all five impacted jurisdictions. Clay County is the most logical owner and facilitator of investment for the corridor. Clay County has expressed a willingness to assume a limited role in

corridor ownership and maintenance assuming cooperative funding partnership among other local agencies, specifically the City of Dilworth and the three townships. The west two miles of the corridor will be annexed by Dilworth at some point in the future. This analysis suggests annexation should be completed in 10 years. However, until Dilworth becomes a state aid community, it may not have the ability for various sources of state and Federal aid. Future funding of the corridor is cooperative partnership between Clay County other local agencies. What follows is a general overview of who each partnering jurisdiction could approach funding for the corridor.

Local Funding

Clay County, the City of Dilworth, and each Township have capacity through local revenues as part of annual budget and capital investment programming to invest in the 15th Avenue North Corridor. The capacity of each public agency to make those investments and the amount required can't be determined through this level of study. However, we estimate current annual investment in the corridor at about $5,000. Through an intergovernmental MOU, annual discussion and coordination and cooperative maintenance and investment should help direct more regular discussion on potential cost sharing and funding tools available through local funds managed by each public agency.

State Funding

State funding for the 15th Avenue North Corridor are currently limited given ownership by the Townships. However, two programs were identified which participate in some elements of the project.

Local Road Improvement Program

- Nearly $100M annually to support a broad range of transportation needs, with a focus on City and County State Aid and non-State Aid facilities.
- Solicitation typically open in September, applications due in December.
- Project should be ready to construct within a three (3) year time frame
- High Relevance to investment needs along the corridor.
    - This program has been used to improve 15th Avenue North directly west of the project corridor in 2019.
    - A future application should be developed to match with the potential CY 2029 Federal programming discussed later.

MN Active Transportation (AT) Program

- Support active transportation infrastructure
- County would need to be applicant/grantee
- Relates to only bike or pedestrian improvements along the corridor
- Low Relevance to investment needs

Federal Funds

Two (2) potential federal fundings sources are relevant to the 15th Avenue North Corridor. Federal funding is contingent on a roadway being functionally classified and owned by a Minnesota State Aid City or County.

Surface Transportation Block Grant Program (STBGP)

Metro COG has programming authority for the STBGP funds. These funds have a broad range of uses to support transportation investments on the Federal aid system. Metro COG solicits for this programming annually in the 4th quarter. Metro COG has made a preliminary FY2029 programming commitment of $1.0M for the segment of roadway from 40th Avenue/CR 9 to 7th Street.

Federal Discretionary Programs

The Infrastructure Investment and Jobs Act (IIJA) includes a series of evolving discretionary funding programs to support transportation infrastructure. Given the ownership limitations and general low impact of the 15th Avenue North corridor, these programs, in general, are not consider feasible or reasonable funding options for implementation of investments needs along the 15th Avenue North corridor. However, IIJA programs local communities could track through Metro COG would be:

- Rebuilding Americas Infrastructure with Sustainability and Equity (RAISE)
- Multimodal Discretionary Grant Program
- INFRA (Nationally Significant Multimodal Feight & Highway Projects program