



Itasca County

2021

5-Year Plan For Highway Improvement Projects

Itasca County Engineer
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327-2853

March 30, 2021

Introduction

Itasca County annually reviews and updates the Five-Year Plan for Highway Improvement Projects. The annual review process allows the County Board and staff the opportunity to reassess the Highway Improvement Plan and to make adjustments due to changes in financial restrictions, highway conditions, public input, and goals and priorities.

The 2021 Five Year Plan is a flexible five-year action plan for bridge and highway projects. Only construction projects listed during the current year are funded.

- Notice - Itasca County 5 Year Plan for Road and Bridge Construction Projects

Public input concerning the Itasca County 5 Year Plan for Road and Bridge projects will be accepted at the regularly scheduled County Board Work Session on March 2, 2021 in the County Board Room of the Itasca County Courthouse. County Board members will be available to hear verbal input. Written comment will be accepted at the Transportation Department until March 23, 2021. A copy of the proposed plan and maps showing the projects and their locations is available for review at the Transportation Department in the County Courthouse and online on the Itasca County website under the Transportation Department tab.

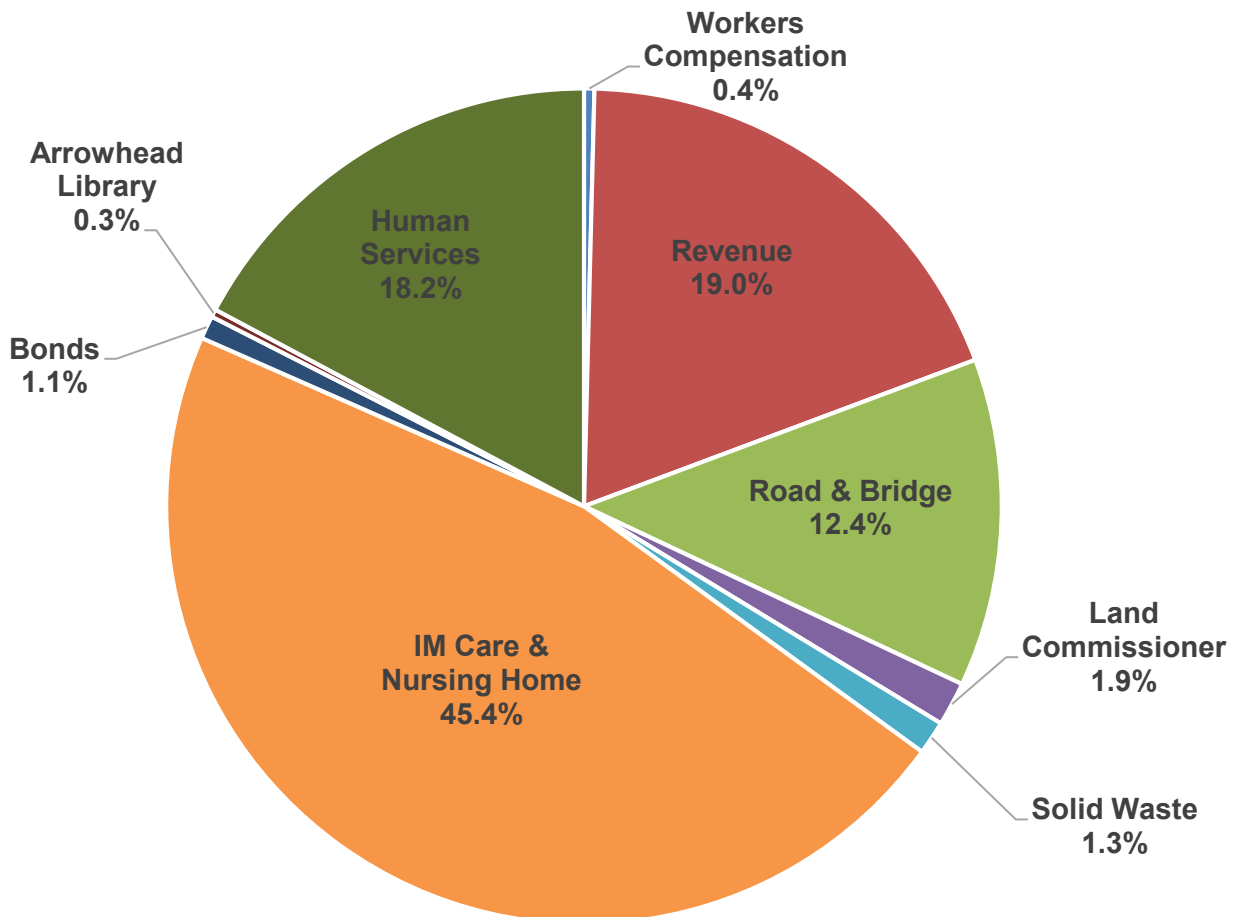
Itasca County Transportation Department Overview

The County Transportation Department is responsible for maintaining approximately 1335 miles of roadway and 140 bridges. The department also can be directly or indirectly involved with the maintenance of roadways under the jurisdiction of the 16 cities, 39 organized townships, and the 40 unorganized townships in the county.

The County Engineer, through the staff, is responsible for the administration of both the highway maintenance division and the highway construction division. The maintenance division consists of approximately 75 employees divided between 5 maintenance districts and central purchasing and repair. These employees are responsible for graveling, grading, drainage, signing, snow removal, ice control, equipment repair and minor road improvements. The construction division consists of approximately 15 employees and is responsible for the design and construction administration of all contracted road and bridge improvement projects.

As is shown below, the Transportation Department accounts for approximately 12.4% of the proposed \$156,032,898 - 2021 Itasca County Budget. In addition to the \$19,301,971 administered by the Transportation Department as part of the Itasca County Budget, the construction division administers on average an additional \$1,000,000 per year in federal construction dollars spent in Itasca County.

2021 Itasca County Budget



Road Jurisdiction

In Itasca County, there are generally three levels of road jurisdiction:

State - Consisting of Trunk Highways - Examples include TH 169, TH 2, TH 1 etc. These roads are generally higher volume highways, which provide primary transportation routes between cities and regions within the state.

County - Consisting of;

- County State Aid Highways (CSAH) - Examples include CSAH 7, CSAH 19, and CSAH 3 etc. These roads are generally roads which serve as local transportation routes between cities and regions within the county.
- County Municipal State Aid Highways - Consisting of Municipal State Aid Highways located within cities with populations less than 5000. Examples include CSAH 61 in Coleraine and CSAH 81 in Deer River
- County Roads - Examples include County Road 449, County Road 128, and County Road 539. These roads are generally lesser traveled and serve as access to local population areas. All county roads have 3-digit numbers.
- Unorganized Township Roads - These are generally local gravel roads located within an unorganized township. By state statute, the county is required to provide maintenance on these roads. These roads have county road numbers.

Local - Consisting of:

- Municipal State Aid Streets - Consisting of Municipal State Aid Streets located within cities with populations greater than 5000.
- Local Municipal Streets - These are generally local streets serving municipal subdivisions.
- Organized Township Roads - These are local roads within organized townships. Examples include Southwood Road in Harris Township or Walker Road in Spang Township.
- Federal Forest Service Roads - These are local recreational or logging roads having forest service jurisdiction.
- County Forest Access Roads - These roads are under the jurisdiction of the County Land Commissioner (Land Department). They are generally used for timber access and recreational uses. They may be gated or receive little or no maintenance.

Funding Sources

Funding Sources for Itasca County consist of a combination of Federal, State and Local Funds.

Federal Funds

- Federal Funds spent on road projects within Itasca County are originally allocated by Congress as part of a nationwide transportation bill. The source of the money is based on the federal portion of the gas tax. The majority of these funds which make it to Minnesota are spent on state administered trunk highway projects.
- Itasca County can and does receive federal funds. The county has historically used federal funds to supplement local funding for bridge projects or railroad crossing projects. In addition, due to the fact that the Chippewa National Forest is located within the county, the county periodically receives a portion of The Federal Forest Highway Fund. These funds can only be spent on roads within the forest boundary. The projects are prioritized by the forest service and the county and the projects are administered by the county.
- Federal funds can only be spent on qualifying projects and generally require a substantial increase in project administration costs due to the increase in required federal documentation. The funds also generally require a minimum of 20% local match.

State Aid Funds

- The county receives a yearly allotment from the state to be spent on county state aid and municipal aid routes. The source of this allotment is primarily the state gas tax. These funds can only be spent on qualifying state aid routes and have historically been used for construction and maintenance. This allotment is approximately 50% of the funding for the transportation department.

Bridge Bonding

- Bridge Bonding funds are allocated by the Minnesota legislature every other year. The county can and does receive bridge bonding funds. These funds can be used on any eligible bridge in Itasca County on either a CSAH, a county road or a township bridge. State Bridge Bonding funds are allocated to the county as grants (no repayment by the county).

County Funds

- The County Board allocates a portion of its yearly budget to the transportation department for construction and maintenance of county roads. The funding primarily comes from local property taxes. These funds are generally spent on local road and maintenance projects. The amount available each year can vary greatly based on overall county budget needs.
- In 2014, the County Board implemented a wheelage tax on vehicles registered in Itasca County. This tax is estimated to generate approximately \$420,000 per year. These funds are used to supplement the maintenance and construction on roads not qualifying for state aid funding.

Unorganized Township Funds

- The unorganized township fund receives monies from the road and bridge levy in each unorganized township. These funds are generally spent on local road and maintenance projects in unorganized township areas.

Typical Funding Amounts

Construction Funding

It is difficult to provide a 'Typical' funding year due to the variability of different funding sources. The following data is based on historical data and does not indicate future funding amounts.

Federal Funds

- On average, Itasca County receives over \$1,000,000 per year in federal funds for road and bridge projects.

State Aid Funds

- Each year Itasca County receives approximately \$10,050,000 of State Aid Funds. Of that amount, \$8,900,000 is regular state aid and \$1,150,000 is municipal state aid.
- The funding is split 60/40 so that approximately \$5,300,000 is allocated for construction and \$3,600,000 for maintenance.
- Approximately \$690,000 is allocated for Municipal County State Aid construction and \$460,000 is allocated for Municipal Maintenance.

Bridge Bonding

- Over the past 5 years approximately \$600,000 per year has been available for bridge and railroad crossing construction projects. These funds vary from year to year.

County Funds

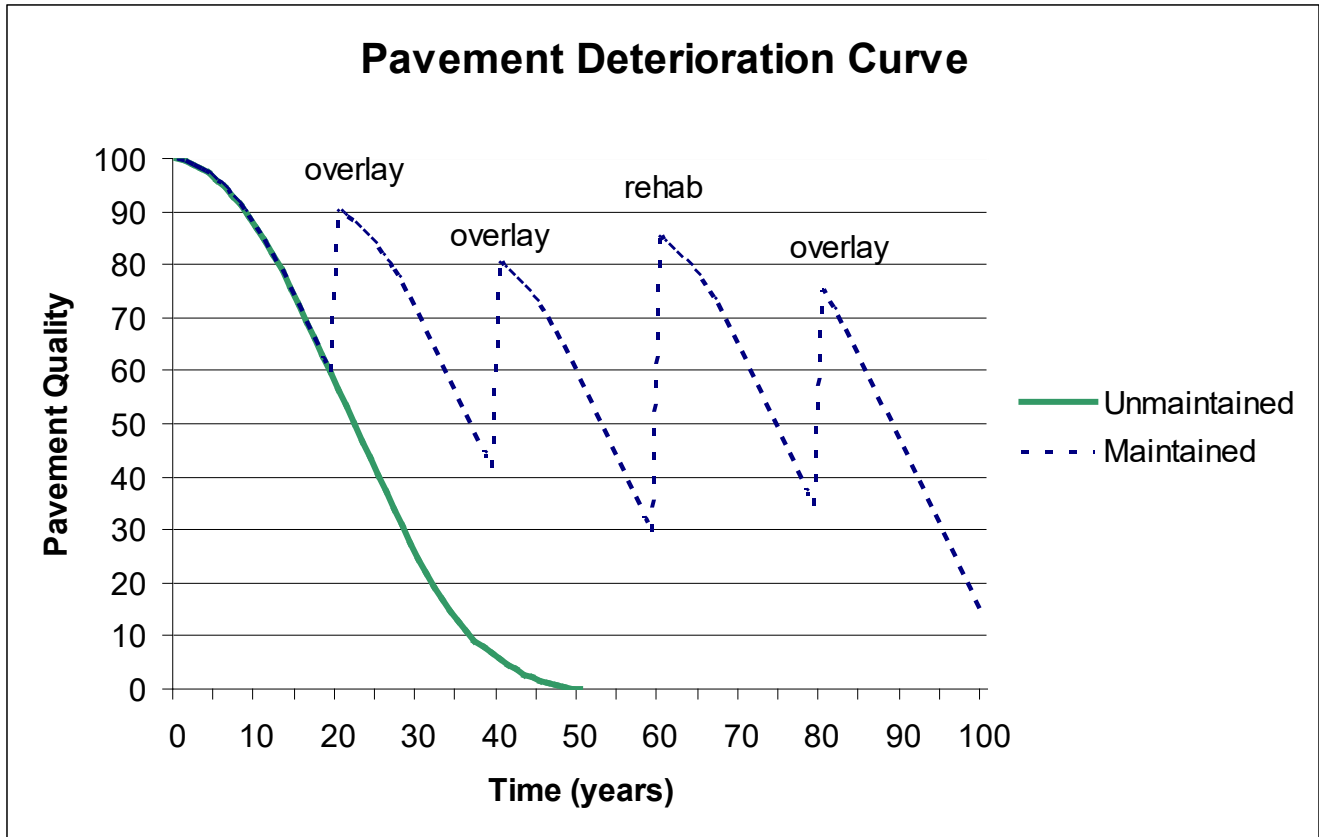
- County Construction funds are typically utilized to upgrade existing gravel County Roads to a bituminous surfaced road. These funds have not been available for many years due to budgeting constraints.
- County Preservation funds have remained at \$680,000 over the past 5 years and are supplemented with the monies collected from the wheelage tax, providing a total of \$1,100,000 for preservation. These funds are typically used on existing paved roads for contracted projects such as bituminous overlays, regrading and surfacing.
- The County averages \$300,000 per year for gravel production which is used to surface existing County gravel roads.

Other Funding

- Itasca County has received funding for projects from other sources including State Bridge Bonding, Unorganized Township Funding, Town Bridge and Town Road accounts. State Bridge Bonding is a major source of funding for bridge construction projects and is allocated by the State Legislature.

Protecting our Pavement Investment

Pavements tend to deteriorate over time due to traffic loads and environmental effects. A graph of the life cycle of a typical bituminous road is shown below where the pavement rating is a relative evaluation of the condition of the road.



The solid line indicates how a pavement would perform with no maintenance. The road is graded and paved at year 0 and is at its best condition (Pavement Quality Index, PQI = 100). The pavement will deteriorate over time and after about 30 to 35 years the pavement would deteriorate to the point where vehicle travel would be dangerous at best (PQI = 20).

The dashed line indicates the maintenance strategy of most transportation departments. Periodic overlays and rehabilitation projects are performed to increase the PQI on an interval which attempts to maximize the pavement's ride quality. Every 50 years a rehabilitation project is performed, which replaces culverts and addresses minor grade or subgrade issues. Approximately every 100 years, the road will require a major regrade project.

How much does a paved road Cost?

This County will review construction standards and consider:

- Reconstruct the grade of the road every 100 years
- Rehabilitate the road every 50 years
- Perform surface treatment every 20 years

The following costs are used for budgeting road improvement projects:

1. \$ 1,000,000 per mile to reconstruct a road and surface with bituminous pavement.
2. \$ 250,000 per mile to rehabilitate an existing bituminous road.
3. \$ 100,000 per mile for surface treatment of an existing bituminous road.

The Cost cycle of 1 mile of road:

Year 1	Construct	@	\$ 1,000,000
Year 20	Surface Treatment	@	\$ 100,000
Year 40	Surface Treatment	@	\$ 100,000
Year 60	Rehabilitation	@	\$ 250,000
Year 80	Surface Treatment	@	\$ 100,000
Total			\$ 1,550,000

This equates to approximately **\$15,500 per mile per year** to maintain a bituminous road.

There are:

1. 557 total miles of paved roads (County Jurisdiction)
2. 450 of paved CSAH mileage
3. 107 of paved County funded road mileage (3-digit roads)

Therefore; to maintain our existing bituminous county roads we require the following yearly budget:

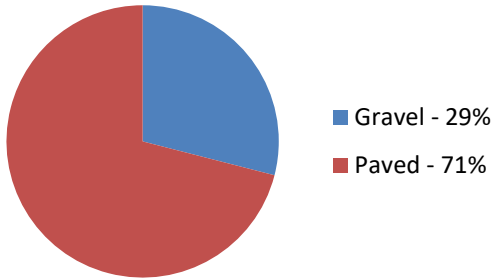
450 CSAH miles - \$6.98 million (current allocation at \$5.95 million)

107 County miles - \$1.66 million (current allocation at \$1.1 million)

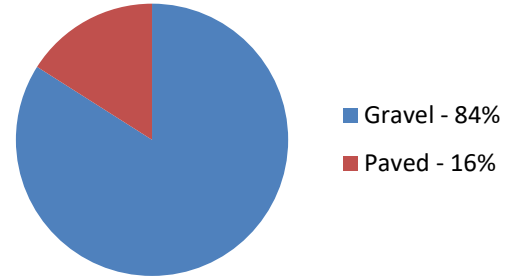
These figures do not include bridge projects, snow plowing, minor surface repairs or other incidental maintenance costs

Gravel vs. Paved

CSAH SYSTEM (648 MILES - TOTAL)



COUNTY SYSTEM (687 MILES - TOTAL)



Of the approximately 1335 miles of roads under Itasca County jurisdiction, approximately 50% are designated CSAH and 50% are designated straight County. In addition, approximately 42% of Itasca County road miles are paved.

The average annual cost to maintain a bituminous road is approximately \$15,500 per mile based on construction and surface resurfacing costs over the expected life of the road.

The annual cost to maintain a gravel road surface can vary greatly and is usually directly related to the traffic volume on the road. The following table indicates an estimate of the road surface maintenance costs required for gravel roads with three traffic volume levels.

Road ADT	100	200	300
Surface Maintenance Costs (Grader time)			
Grader minutes per mile	60 minutes @ \$120.00/hr per mile	60 minutes @ \$120.00/hr per mile	60 minutes @ \$120.00/hr per mile
Number of grading passes per week	0.5	2	3
Grading weeks per year	26	26	26
Grading Cost per mile per year	\$ 1,560.00	\$ 6,240.00	\$ 9,360.00
Material Costs (Gravel)			
Re-gravel interval	10 years	5 years	3 years
Cost per mile per year	\$ 1,250.00	\$ 2,500.00	\$ 4,166.00
Total yearly cost per mile	\$ 2,810.00	\$ 8,740.00	\$ 13,526.00

As can be seen, the maintenance costs rise with the increase in daily traffic volume. The surface costs for a gravel road begin to justify paving at an ADT level of around 300 vehicles per day, from a maintenance perspective.

The following table lists the number of miles of gravel and bituminous surfaced roads under county jurisdiction. As can be seen, the majority of roads over 300 ADT have bituminous surface

NOTES:

- ADT means the Average Annual Daily Traffic count which is an estimate of the number of vehicles per day, calculated on an annual average.
- The State Aid Funding rules discourage the use of State Aid funds for paving roads under an ADT of 150 vehicles per day.

SURFACE TYPE - CATEGORIZED BY TRAFFIC COUNT						
	Surface type	0-100 ADT	100 -200 ADT	200 - 300 ADT	OVER 300 ADT	Total
CSAH SYSTEM	Paved (miles)	10	65	52	334	461
	Gravel (miles)	97	68	10	12	187
COUNTY ROAD SYSTEM	Paved (miles)	22	27	40	26	115
	Gravel (miles)	507	63	2	0	572
	Total	636	223	92	384	1,335

System Preservation Priorities

The County Transportation Department uses a variety of indicators to prioritize construction and rehabilitation projects. Some of these are:

- Safety
- Preservation of existing pavement
- Availability of funding
- Traffic count
- Cost participation by others
- Project grouping
- Maintenance costs
- Pavement Quality Index
- Economic Development
- Public request

These factors are evaluated on potential projects to arrive with the County 5-year Plan which is reviewed and updated on a yearly basis.

System Evaluation

The Transportation Department performs a pavement roadway evaluation and rating which gives a relative ride and pavement condition rating to all paved State Aid and county roads. This process provides a basis for potential future construction projects based on the condition of the existing road independent of other factors. The department then evaluates the individual projects as to a recommended type of construction project required to bring the roadway to an acceptable ride

Condition Rating Scale Description

- 100 - New Road
- 80 - Good Condition (10 years after new construction)
- 60 - Overlay needed (20 years after new construction)
- 40 - Rehabilitation recommended
- 20 - Reconstruction recommended

5 Year Plan Base Data

RE-GRADE PROJECTS

Road	Description	Project Length	2017 ADT	PQI	Proposed Const. Yr.
238	End of pavement to CR 247	0.8	220	NA	2021
Bigfork	Rajala Mill Rd & Ash Street	0.7	NA	NA	2021
63	Hwy 2 / 63 Intersection	-	4400	2.9	2021
52	TH 65 to CR 544	5.0 mi	100	NA	2021
Bike Trail	City of Deer River - Hwy 2 to City Ball Fields	1.8 mi	-	NA	2021
60	CR 329 to CSAH 7	1.5 mi	210	2.6	2022
7	TH 169 to 1.3 miles North	1.3 mi	1500	3.1	2022
52	CR 340 to CR 342	2.8 mi	100	NA	2023
7	CSAH 59 to CSAH 8	4.0 mi	1050	3	2024
15	TH 169 to end	0.7mi	465	NA	2024
92	0.15 mi E of CR 256 to CSAH 19	1.2 mi	475	NA	2025
52	CR 340 to Horsehead Lake Trail	4.3 mi	100	NA	2025

BITUMINOUS PROJECTS

Road	Description	Project Length	2017 ADT	PQI	Proposed Const. Yr.
60	CSAH 49 to CR 329	6.0 mi	210	NA	2021
433	TH 65 to 1.5 miles west	1.5 mi	70	NA	2021
561	TH 169 to TH 169	0.8 mi	35	0.5	2021
80	TH 169 to TH 169 (Marble)	1.2 mi	800	2	2021
84	TH 169 to TH 169 (Calumet)	0.5 mi	195	2.4	2021
16	TH 169 to 1st Ave	0.4 mi	1600	1.5	2021
45	TH 38 to end of Pavement	11.1 mi	235	2.9	2021
82	TH 169 to 2nd Street	0.7 mi	1150	1.8	2021
3	Th 169 to City Limits	3.6 mi	4000	2.1	2022
4	CSAH 29 to TH 6	6.2 mi	230	3.7	2022
81	TH 2 to TH 6 (Deer River)	0.9 mi	590	2.8	2022
29	TH 46 to Dora Lake Bridge	10.8 mi	170	3.7	2022
238	CSAH 19 to CR 247	2.3 mi	220	2.3	2022
94	CSAH 62 to 1.7 miles east	1.7 mi	330	3.1	2022
149	Bridge 88201 to TH 46	0.7	75	3	2022
449	CSAH 17 to CR 458	6.5	340	6.5	2022
75	CSAH 7 to State Park	1.5 mi	70	3.2	2023
92	CSAH 44 to 0.15 mi E of CR 256	8.5 mi	475	3.1	2023
93	CR 179 to CSAH 88	1.0 mi	190	2.3	2023
7	CSAH 75 to TH 38	7.1 mi	435	3	2023
43	TH 38 west Daley Larson Road	2.0 mi	225	3.6	2023
432	CSAH 68 to 2.67 miles south	2.7 mi	175	3.3	2023
427	CSAH 67 to CSAH 68	5.0 mi	275	3.2	2023
440	CSAH 21 to Hwy 169	2.3 mi	230	3.1	2023
97	CR 250 to Hwy 169 (south int)	1.25 mi	620	2.8	2023

78	CSAH 7 to CR 77	0.7 mi	930	NA	2023
533	TH 1 to end of Pavement	2.2 mi	110	2.9	2024
560	TH 65 to TH 65 (Goodland)	2.7 mi	100	3.1	2024
560	TH 65 to TH 65 West Shore	2.0 mi	235	2.1	2024
52	TH 65 to Horsehead Lake Trail	5.9 mi	100	NA	2024
52	3.8 miles north of CSAH 7 to CR 340	3.5 mi	225	2.9	2024
52	CR 340 to CR 342	2.8 mi	100	NA	2024
340	CSAH 52 to end of pavement	0.35 mi	245	3.4	2024
61	Coleraine City Limits to Hwy 169	1.7 mi	1100	NA	2024
239	CSAH 17 to CSAH 17	4.6 mi	280	3.2	2025
35	TH 46 to CR 175	9.9 mi	365	NA	2025
32	TH 46 to End Pavement	2.2 mi	130	NA	2025
62	CSAH 63 to Hwy 169	2.4 mi	1300	NA	2025
96	(CR 457) Grand Rapids City Limits to CSAH 64	1.25 mi	710	NA	2025

BRIDGE REPLACEMENT PROJECTS

Road	Description	Project Length	2017 ADT	PQI	Proposed Const. Yr.
238	Bridge 88209 over unnamed stream	-	220	NA	2021
149	Bridge 88201	-	75	NA	2021
70	Bridge 7109 over Swan River	-	670	NA	2022
70	Bridge 7110 over Swan River	-	670	NA	2022
336	Bridge 7108 over the Prairie River	-	235	NA	2023
336	Bridge 93290 over the Prairie River	-	235	NA	2023
68	Bridge 7027 over Split Hand Creek	-	445	NA	2024
17	Bridge 7146	-	1475	NA	2025
140	Bridge 88193	-	47	NA	2025

CULVERT REPLACEMENT PROJECTS

Road	Description	Project Length	2017 ADT	PQI	Proposed Const. Yr.
CR 439	Bridge 7026 over Split Hand Creek	-	53	NA	2024

SIGNAL REPLACEMENT PROJECTS

Road	Description	Project Length	2017 ADT	PQI	Proposed Const. Yr.
63	Hwy 2 / CSAH 63 Signal	-	4400	NA	2021
61	West Int. of CSAH 61 & Hwy 169	-	1100	NA	2021

RAILROAD CROSSING PROJECTS

Road	Description	Project Length	2017 ADT	PQI	Proposed Const. Yr.
CR 407	Railroad Crossing	-	53	NA	2023

2021 - 5 Year Plan for Construction Projects

The following worksheets and maps detail the proposed 2021 - 5 year plan. It should be noted that this plan is subject to change based on available funding, project conflicts and engineering workload. Project cost and allotment estimates are preliminary and are used for planning purposes only. The detail sheets contain the following sections:

- 2021 through 2025 Highway Construction Project lists
- 2021 through 2025 Highway Construction Project Maps

Public Involvement

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Questions or comments can be addressed to:

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Grand Rapids, MN 55744
218-327-2853

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**Proposed Project Schedule for
Highway Improvement Projects**