County Road Needs Study

County: Adams County

Contact: Theo Schalesky 701-567-2235 adamscounty@ndsupernet.com
Name Phone Email

Preparer: Theo Schalesky Date Prepared: 2-15-16

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☒
- Scoria ☒
- Pit Run ☐
- Crushed Material ☒
- Specifications ☒
- Tested ☒
- Other________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☒
- Windrow/Equalize ☒
- Water/Rolling/Compaction ☒
- Other________________ ☐

N.D. LTAP/UGPTI
515 ½ E. Broadway Suite 101
Bismarck N.D.
58501

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing	0 %	100 %
Hauling	80 %	20 %
Placement	80%	20 %
Blading	100 %	0 %
Dust Control	0 %	0 %
Base Stabilization	0 %	0 %

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	$5.22 yard	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	.45 Loaded mile	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	10	Miles	
- Placement Costs	$1800.00	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	$575.80	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	$0.00	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	$0.00	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	$133.08	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	*Traffic Levels*		
	Low	*Medium*	*High*
Daily Traffic	*>50*	*50-150*	*150-350*
Average Regraveling Thickness	*3 in*	*4 in*	*5 in*
Blading Frequency (# per year)	*8*	*12*	*16*
Regraveling Frequency (years between overlay)	*7*	*5*	*3*
Dust Suppressant (yes/no)	*no*	*no*	*Yes*
Base Stabilization (yes/no)	*no*	*no*	*Yes*

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	>50	100	350
Average Regraveling Thickness	2"	3"	4.5"
Blading Frequency (# per month)	3 Times year	5 Times year	4 Times Month
Regraveling Frequency (years between overlay)	15-20 years	10 years	8 years
Dust Suppressant (yes/no)	No	No	No
Base Stabilization (yes/no)	No	No	No

If you answered yes for Dust Suppressant – which type do you use?____

If you answered yes for Base Stabilization – which type do you use?____

How would you classify the average gravel road condition in your county?

☐ Very Good ☐ Good ☒ Fair ☐ Poor

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: Barnes

Contact: Kerry Johnson (Name) 701-845-8508 (Phone) Kjohnson@barnescounty.us (Email)

Preparer: Kerry Johnson Date Prepared: 8-26-15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☒
- Scoria ☐
- Pit Run ☐
- Crushed Material ☒
- Specifications ☒
- Tested ☐
- Other________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☒
- Windrow/Equalize ☐
- Water/Rolling/Compaction ☐
- Other________________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing		100 %
Hauling	100 %	
Placement	100 %	
Blading	100 %	
Dust Control		100 %
Base Stabilization		100 %

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	5 75	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	.30	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	25	Miles	
- Placement Costs	100	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	1100	Per mile Per year	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	NA	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	42,000	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	480	Per mile Per year	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	>50	50-100	> 100
Average Regraveling Thickness	3/4"	1"	1 1/2
Blading Frequency (# per month)	1	2	2-3
Regraveling Frequency (years between regraveling)	every other year	every other year	every other year
Dust Suppressant (yes/no)	no	no	no
Base Stabilization (yes/no)	no	no	no

If you answered yes for Dust Suppressant – which type do you use?____

If you answered yes for Base Stabilization – which type do you use?____

How would you classify the average gravel road condition in your county?

☐Very Good ☒Good ☐Fair ☐Poor

Fair To Good

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

Rcvd 3/28/16

County Road Needs Study

County: Benson County

Contact: Lester Ellingson 4735496 bchwydep@gondtc.com
Name Phone Email

Preparer: Lester Date Prepared: 3-22-16

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☒
- Scoria ☐
- Pit Run ☒
- Crushed Material ☒
- Specifications ☐
- Tested ☐
- Other________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☒
- Windrow/Equalize ☒
- Water/Rolling/Compaction ☐
- Other________________ ☐

Benson County Highway Department
6375 45th St NE :: PO Box 184
Minnewaukan ND 58351-0184

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing	0	Maddock Const
Hauling	100	0
Placement	100	0
Blading	100	0
Dust Control	—	—
Base Stabilization	—	—

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	5.–	Per cubic yd.	Is this Contractor Price? (yes/~~no~~)
- Trucking Cost from Gravel Origin	.50	Per loaded mile/Cu. Yard	Is this Contractor Price? (~~yes~~/no)
- Average trucking distance for aggregate	30	Miles	
- Placement Costs	$30.–	Per mile	Is this Contractor Price? (~~yes~~/no)
- Blading Cost	$10.–	Per mile	Is this Contractor Price? (~~yes~~/no)
- Dust Suppressant Costs	—	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	—	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	$15.00	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	*Traffic Levels*		
	Low	*Medium*	*High*
Daily Traffic	*>50*	*50-150*	*150-350*
Average Regraveling Thickness	*3 in*	*4 in*	*5 in*
Blading Frequency (# per year)	*8*	*12*	*16*
Regraveling Frequency (years between overlay)	*7*	*5*	*3*
Dust Suppressant (yes/no)	*no*	*no*	*Yes*
Base Stabilization (yes/no)	*no*	*no*	*Yes*

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	50		
Average Regraveling Thickness	1 in		
Blading Frequency (# per month)	2		
Regraveling Frequency (years between overlay)	6		
Dust Suppressant (yes/no)	—		
Base Stabilization (yes/no)	—		

If you answered yes for Dust Suppressant – which type do you use?____________________

If you answered yes for Base Stabilization – which type do you use?____________________

How would you classify the average gravel road condition in your county?

☑ Very Good ☐ Good ☐ Fair ☐ Poor

County Road Needs Study

County: Billings

Contact: JeFF Iverson 701-290-9581 dist3@ndsupernet.com
Name Phone Email

Preparer: JeFF Iverson Date Prepared: 8-24-15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☒
- Scoria ☒
- Pit Run ☐
- Crushed Material ☒
- Specifications ☒
- Tested ☒
- Other__________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☐
- Windrow/Equalize ☒
- Water/Rolling/Compaction ☒
- Other__________________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing	—	100%
Hauling	80%	20%
Placement	100%	—
Blading	60%	40%
Dust Control	80%	20%
Base Stabilization	100%	

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	\$7.50 to \$9.00	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	.34¢	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	65	Miles	
- Placement Costs	\$6000.00	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	\$180.00	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	\$8000.00	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	\$12,000.00	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	\$25.00	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	25	75-100	150-275
Average Regraveling Thickness	2"	3"	4"
Blading Frequency (# per month)	Every other Mnth	1	2
Regraveling Frequency (years between regraveling)	5	3	3
Dust Suppressant (yes/no)	NO	Yes	Yes
Base Stabilization (yes/no)	NO	NO	Some

If you answered yes for Dust Suppressant – which type do you use? CA.CL.

If you answered yes for Base Stabilization – which type do you use? BASE / (When we do)

How would you classify the average gravel road condition in your county?

☐ Very Good ☐ Good ☒ Fair ☐ Poor

Comments or Suggestions (please attach additional sheets if needed):

Scoria put in lighter lifts & more often due to Terrain.

Some Gravel pits 45+ mile haul.

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: Bottineau

Contact: Ritch Gimbel 701-263-1607 ritch.gimbel@co.bottineau.nd.us
Name Phone Email

Preparer: Ritch Gimbel Date Prepared: ____________

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☒
- Scoria ☐
- Pit Run ☒
- Crushed Material ☒
- Specifications ☒
- Tested ☐
- Other____________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☒
- Windrow/Equalize ☐
- Water/Rolling/Compaction ☐
- Other____________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing		100%
Hauling	40%	60%
Placement	95%	5%
Blading	100%	
Dust Control		100%
Base Stabilization	30%	70%

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	\$6.25	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	.35¢ per yd per mile	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	20	Miles	
- Placement Costs	\$100	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	\$60	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	\$5500	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	\$6000	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	\$60	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	>25	25-200	200 - 500
Average Regraveling Thickness	1½-2in	2in	3-4in
Blading Frequency (# per month)	>1	2	4
Regraveling Frequency (years between regraveling)	5	3	2
Dust Suppressant (yes/no)	no	no	yes
Base Stabilization (yes/no)	no	no	yes

If you answered yes for Dust Suppressant – which type do you use? Dust-B-gone

If you answered yes for Base Stabilization – which type do you use? Base 1

How would you classify the average gravel road condition in your county?

☐ Very Good ☒ Good ☐ Fair ☐ Poor

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

"North Dakota State University does not discriminate on the basis of race, color, national origin, religion, sex, disability, age, Vietnam Era Veteran's status, sexual orientation, marital status, or public assistance status. Direct inquiries to the Vice President of Equity, Diversity, and Global Outreach, 205 Old Main, Fargo, ND 58108, (701) 231-7708."

The needs for better roads increase daily with the amount and size of trucks and equipment there are out there now. Which is going to require thicker gravel bases and more stabilizing with more dust control also. We have done our first road stabilizing project which was a 6 mile stretch of farm to market gravel with a price tag of just over one million, and this is just a small portion of roads we should be looking at doing. Here in Bottineau county we have over 200 bridge structures of which most of them are timber and are in bad shape and way under capacity of what todays needs are. Bottineau County has set a goal to try to remove/replace at least 5 bridges a year, but this depends on size and cost of replacement and what the budget can do. Also in Bottineau County we have oil and Ag issues both. Bottineau county is somewhat split in half with the oil activity mainly in the west and just ag in the east, but the road needs are equal west and east, north and south, I feel that there needs to be a little less rules on where the counties can use their funding, such as oil areas and not oil areas. In the 30 years I have been with Bottineau County, I have seen the demand from the public on good quality roads increase 10 times over, which requires more equipment, more man power, and more time on the roads which then increases fuel and repair costs.

In close Bottineau county has been able to budget every year to be able to fund some of the projects needed on our own, with others being done with Federal, State and Local monies, but these projects are getting more expensive and detailed where Bottineau county will have a hard time doing these on our own budget.

Thank you for this report on the needs of Bottineau County.

County Road Needs Study

County: BOWMAN

Contact: Neil Hofland (Name) 701-523-5843 (Phone) nhofland@bowmancountynd.gov (Email)

Preparer: Neil Hofland Date Prepared: 10-2-15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☒
- Scoria ☒
- Pit Run ☐
- Crushed Material ☒
- Specifications ☒
- Tested ☒
- Other________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☐
- Windrow/Equalize ☒
- Water/Rolling/Compaction ☒
- Other________________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing	50%	50%
Hauling	20%	80%
Placement	80%	20%
Blading	100%	0%
Dust Control	40%	60%
Base Stabilization	50%	50%

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	$6.47	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	$120.00	Per ~~loaded~~ hour ~~mile/Cu. Yard~~	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	10	Miles	
- Placement Costs	$11.50 - 20.65	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	$130	Per ~~mile~~ hour	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs calcium - $5640 stabilock $12,400	$6000-12,400	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost Strong Road	$170,000	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	$140	Per ~~mile~~ hour	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic			
Average Regraveling Thickness	3"	3"	3"
Blading Frequency (# per month)	When it rains	When it rains	When it rains
Regraveling Frequency (years between regraveling)	15	10	10
Dust Suppressant (yes/no)	yes	yes	yes
Base Stabilization (yes/no)	No	No	yes

If you answered yes for Dust Suppressant – which type do you use? Calcium Chloride, Stabilock, Mag crystals production wate

If you answered yes for Base Stabilization – which type do you use? Trail bos, Strong road, - Base 1

How would you classify the average gravel road condition in your county?

☐Very Good ☒Good ☐Fair ☐Poor

Comments or Suggestions:

While the surfacing on most of our gravel roads is in good condition, there are a number of them that will require widening in the future.

Our gravel roads are in basically good condition. However, there are some roads that have soft spots, unraveled surfacing which require regular maintenance.

One of our greatest challenges is dealing with ever increasing gravel shortages.

County Road Needs Study

County: Burke County

Contact: Kenny Tetrault (Name) 701-339-2455 (Phone) kenlooburke@gmail.com (Email)

Preparer: Kenny Tetrault Date Prepared: 9-30-2015

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☒
- Scoria ☐
- Pit Run ☒
- Crushed Material ☒
- Specifications ☒
- Tested ☒
- Other__________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☒
- Windrow/Equalize ☒
- Water/Rolling/Compaction ☒
- Other__________________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing	0%	100%
Hauling	40%	60%
Placement	100%	0%
Blading	100%	0%
Dust Control	0%	100%
Base Stabilization	0%	100%

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	10.00	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	.75	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	20	Miles	
- Placement Costs	250.00	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	125.00	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	5500.00	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	200,000.00	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	75.00	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	>50	50 - 150	150 - 500
Average Regraveling Thickness	1"	2"	3"
Blading Frequency (# per month)	1	2	4
Regraveling Frequency (years between regraveling)	4	3	2
Dust Suppressant (yes/no)	Yes	yes	yes
Base Stabilization (yes/no)	No	yes	yes

If you answered yes for Dust Suppressant – which type do you use? Mag or Calicum Cloride

If you answered yes for Base Stabilization – which type do you use? Soil Cement, Geo Grid + Fabric

How would you classify the average gravel road condition in your county?

❑Very Good ❑Good ❑Fair ❑Poor

Comments or Suggestions (please attach additional sheets if needed):

Burke County is in need of Base repair on many of our County gravel Roads, Alot of our roads were built with a mucker, alot of the Material put on our grades is Not Good enough to handle the increased truck and oil Field traffic. Future needs to fix this problem would be Base Stablization (Soil Cement) to Fix Base problems.
The abillity to Find good gravel in Burke County is getting harder and harder all the time and we are hauling our gravel from a greater distance.

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: Burleigh

Contact: Marcus J. Hall | 701-204-7748 | mahall@nd.gov

Name | Phone | Email

Preparer: Marcus & others Date Prepared: Sept

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☒
- Scoria ☒
- Pit Run ☐
- Crushed Material ☒
- Specifications ☐ → Class 13
- Tested ☐
- Other____________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☒
- Windrow/Equalize ☐
- Water/Rolling/Compaction ☐
- Other____________________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing	0	100
Hauling	50	50
Placement	50	58
Blading	85	15
Dust Control	80	20
Base Stabilization	100	0

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	$12.85	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	$0.58	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	25	Miles	
- Placement Costs	$1,800	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	$700	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	$10,767	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	—	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	$171	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	<50	50 - 200	> 200
Average Regraveling Thickness	2.0 in	2.0 in	2.0 in
Blading Frequency (# per month)	5	11	16
Regraveling Frequency (years between regraveling)	8	5	3
Dust Suppressant (yes/no)	No	spot Treatment	yes
Base Stabilization (yes/no)	No	No	only if needed

If you answered yes for Dust Suppressant – which type do you use? MgCl

If you answered yes for Base Stabilization – which type do you use? —

How would you classify the average gravel road condition in your county?

☐Very Good ☒Good ☐Fair ☐Poor

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: ~~Jas~~ Cass

Contact: Jason Benson (Name) 701-298-2372 (Phone) bensonj@casscountynd.gov (Email)

Preparer: Rick Sieg Date Prepared: 9/23/15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☒
- Scoria ☐
- Pit Run ☐
- Crushed Material ☒
- Specifications ☒
- Tested ☐
- Other__________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☒
- Windrow/Equalize ☐
- Water/Rolling/Compaction ☐
- Other__________________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing	0	100
Hauling	80	20
Placement	100	0
Blading	100	0
Dust Control	0	100
Base Stabilization	0	100

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	#7.00	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	#0.30	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	50	Miles	
- Placement Costs	#120	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	#1,300	Per mile per year	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	#5,300	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	#130,000	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	#600	Per mile per year	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	*Medium*	*High*
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	>50	50-150	150-400
Average Regraveling Thickness	2"	2"	2"
Blading Frequency (# per month)	1	3	4
Regraveling Frequency (years between regraveling)	4	3	1
Dust Suppressant (yes/no)	no	no	no
Base Stabilization (yes/no)	no	yes (some)	yes (some)

If you answered yes for Dust Suppressant – which type do you use? We may use this in the near future

If you answered yes for Base Stabilization – which type do you use? We are looking at using more cement treated subgrade we currently have 38 miles of gravel roads w/ cement treated subgrade

How would you classify the average gravel road condition in your county?

☐ Very Good ☒ Good ☐ Fair ☐ Poor

Comments or Suggestions (please attach additional sheets if needed):

We are looking forward to your online gravel roads maintenance calculator that will help us better estimate the costs of doing the status quo, using gravel stabilization, or paving.

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: CAVALIER

Contact: TERRY JOHNSTON (Name) 701-256-2161 (Phone) TJohnsto@nd.gov (Email)

Preparer: TERRY JOHNSTON Date Prepared: 8-27-15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☑
- Scoria ☐
- Pit Run ☑
- Crushed Material ☑
- Specifications ☑
- Tested ☐
- Other__________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☑
- Windrow/Equalize ☑
- Water/Rolling/Compaction ☐
- Other__________________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing	0 %	100 %
Hauling	0 %	100 %
Placement	100 %	0 %
Blading	100 %	0 %
Dust Control	0 %	100 %
Base Stabilization	—	—

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	# 5.96	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	$ 0.28	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	25	Miles	
- Placement Costs	# 200.00	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	# 40.00	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	# 7,392.00	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	—	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	# 50.00	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	>50	50-150	150-350
Average Regraveling Thickness	2 in	2 in	3 in
Blading Frequency (# per month)	2	4	5
Regraveling Frequency (years between regraveling)	4	3	2
Dust Suppressant (yes/no)	NO	NO	Yes
Base Stabilization (yes/no)	NO	NO	NO

If you answered yes for Dust Suppressant – which type do you use? MAGNESIUM

If you answered yes for Base Stabilization – which type do you use?________

How would you classify the average gravel road condition in your county?

☐ Very Good ☐ Good ☑ Fair ☐ Poor

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

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County Road Needs Study

County: Dickey

Contact: JEFF HAGEN 701-349-3326 dchighway@nd.gov
Name Phone Email

Preparer: GLENN PAHL Date Prepared: 8-25-15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☒
- Scoria ☐
- Pit Run ☒
- Crushed Material ☐
- Specifications ☐
- Tested ☐
- Other__________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ■
- Windrow/Equalize ☐
- Water/Rolling/Compaction ☐
- Other__________________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing		100%
Hauling	50%	50%
Placement	75%	25%
Blading	100%	
Dust Control	N/A	
Base Stabilization	N/A	

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	\$5.00	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	.30¢	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	10	Miles	
- Placement Costs 400 c.y. per mile	\$2,600.00	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	\$48.00	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	N/A	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	N/A	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost \$125.00 per hr.	\$25.00	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	75	50	100
Average Regraveling Thickness	3	4	5
Blading Frequency (# per month)	1	2	4
Regraveling Frequency (years between regraveling)	5	3	1
Dust Suppressant (yes/no)	NO	NO	NO
Base Stabilization (yes/no)	NO	NO	NO

If you answered yes for Dust Suppressant – which type do you use?____

If you answered yes for Base Stabilization – which type do you use?____

How would you classify the average gravel road condition in your county?

☐ Very Good ☒ Good ☐ Fair ☐ Poor

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: Divide County

Contact: Name	Phone	Email
Douglas Graupe	965-6351	dcgraupe@nccray.com
Gerald Brady		gbrady@nccray.com
Tim Selle		tselle@nemont.net

Preparer: Bryan Haugenoe   Date Prepared: 9/23/15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☐
- Scoria ☐
- Pit Run ☐
- Crushed Material ☒ X
- Specifications ☐
- Tested ☐
- Other____________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☒ X
- Windrow/Equalize ☒ X
- Water/Rolling/Compaction ☐
- Other____________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing		100%
Hauling	100%	
Placement	100%	
Blading	100%	
Dust Control	20% county costs	80% product&application
Base Stabilization	explained on page 4	

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	$6.50	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	$ .50	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	25	Miles	
- Placement Costs	$22,800.00	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	$180.00	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	$5280.Contractor $1100.County	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	$35,000.00	Per ~~mile~~ location	Is this Contractor Price? (~~yes/no~~) Both
- Snow Removal Cost	$100.00	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	N/A	200	500
Average Regraveling Thickness		6	6
Blading Frequency (# per month)		4	4
Regraveling Frequency (years between regraveling)		one per year	two per year
Dust Suppressant (yes/no)		yes one per yr	yes two per year
Base Stabilization (yes/no)		yes	yes explained on back

If you answered yes for Dust Suppressant – which type do you use? Mag. Chloride and Calcium Chloride

If you answered yes for Base Stabilization – which type do you use? Explained on Back

How would you classify the average gravel road condition in your county?

☐ Very Good ☒ Good ☐ Fair ☐ Poor

Comments or Suggestions (please attach additional sheets if needed):

Dust Suppressant-several of our county roads have two applications at $6,380 per application for a total of $12,760 per mile per year.

Base Stabilization-used on blow outs by using fabric and 1" to 3" rock. We use 12 inches of rock below and then the fabric with 12 incehes of crushed gravel applied above the fabric. Average cost per location is $35,000.00 on we had approximately 35 locations in 2014. Total cost was $1,225,000.00 in 2014 and was done by the county along with private contractor. So far in 2015 we have done 20 locations and more will be completed before the end of the year.

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

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County Road Needs Study

County: Eddy

Contact: Irvin Loe (Name) 701-947-5518 (Phone) ____ (Email)

Preparer: Irvin Loe Date Prepared: 10-9-15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- ☐ Gravel
- ☐ Scoria
- ☐ Pit Run
- ☑ Crushed Material
- ☑ Specifications
- ☐ Tested
- ☐ Other____

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- ☑ Truck Drop and Blade
- ☐ Windrow/Equalize
- ☐ Water/Rolling/Compaction
- ☐ Other____

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing		100
Hauling		100
Placement	100	
Blading	100	
Dust Control NA		
Base Stabilization NA		

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	$7.50	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	$.30	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	12	Miles	
- Placement Costs	NA	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	$45.00	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	NA	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	NA	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	$90.00	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	20	20 - 40	
Average Regraveling Thickness	1	1-2	
Blading Frequency (# per month)	1	1+	N.A.
Regraveling Frequency (years between regraveling)	5	4	
Dust Suppressant (yes/no)	no	no	
Base Stabilization (yes/no)	no	no	

If you answered yes for Dust Suppressant – which type do you use?____

If you answered yes for Base Stabilization – which type do you use?____

How would you classify the average gravel road condition in your county?

☐ Very Good ☐ Good ☒ Fair ☐ Poor

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: Dunn

Contact: Mike Zimmerman 701-260-8819 mike.zimmerman@dunncountynd.org
Name Phone Email

Preparer: Mike Zimmerman Date Prepared: 11-2015

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☒
- Scoria ☒
- Pit Run ☐
- Crushed Material ☒
- Specifications ☐
- Tested ☐
- Other____________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☒
- Windrow/Equalize ☒
- Water/Rolling/Compaction ☒
- Other____________________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing	- 0 -	100 %
Hauling	80%	20%
Placement	100 %	- 0 -
Blading	100 %	- 0 -
Dust Control	100%	- 0 -
Base Stabilization	40 %	60%

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	Gravel 9.85 Scoria 8.65	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	$ 1.57	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	10	Miles 10	
- Placement Costs	$ 960.00	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	$ 4,800.00	Per mile per year	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	$8,000.00	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost		Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	$ 120.00	hour ~~Per mile~~	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	*Traffic Levels*		
	Low	*Medium*	*High*
Daily Traffic	*>50*	*50-150*	*150-350*
Average Regraveling Thickness	*3 in*	*4 in*	*5 in*
Blading Frequency (# per year)	*8*	*12*	*16*
Regraveling Frequency (years between regraveling)	*7*	*5*	*3*
Dust Suppressant (yes/no)	*no*	*no*	*Yes*
Base Stabilization (yes/no)	*no*	*no*	*Yes*

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	0-50	50-150	150 +
Average Regraveling Thickness	4	6	8
Blading Frequency (# per month)	1	3	5
Regraveling Frequency (years between regraveling)	6	5	3
Dust Suppressant (yes/no)	Yes	Yes	Yes
Base Stabilization (yes/no)	NO	NO	Cement Treated Geo

If you answered yes for Dust Suppressant – which type do you use? MAG CHLORIDE

If you answered yes for Base Stabilization – which type do you use? Cemet Treated Base - Geo

How would you classify the average gravel road condition in your county?

☐ Very Good ☒ Good ☐ Fair ☐ Poor

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: Emmons

Contact: Nick 254-4591 ECShop AT ND.Gov
Name Phone Email

Preparer: Michael S Lawles Date Prepared: 4-25-16

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☒
- Scoria ☐
- Pit Run ☐
- Crushed Material ☒
- Specifications ☐
- Tested ☒
- Other class 13 ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☒
- Windrow/Equalize ☐
- Water/Rolling/Compaction ☐
- Other________________ ☐

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing		100%
Hauling	100 %	
Placement	100 %	
Blading	100 %	
Dust Control	NA	
Base Stabilization	NA %	

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	6.65	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	$6.00 20yd	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	15	Miles	
- Placement Costs	180.00	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	62.50	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	NA	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	NA	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	per hr $175.00	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	*Traffic Levels*		
	Low	*Medium*	*High*
Daily Traffic	*>50*	*50-150*	*150-350*
Average Regraveling Thickness	*3 in*	*4 in*	*5 in*
Blading Frequency (# per year)	*8*	*12*	*16*
Regraveling Frequency (years between overlay)	*7*	*5*	*3*
Dust Suppressant (yes/no)	*no*	*no*	*Yes*
Base Stabilization (yes/no)	*no*	*no*	*Yes*

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	X		
Average Regraveling Thickness	3 in		
Blading Frequency (# per month)	1 per month		
Regraveling Frequency (years between overlay)	4 to 5		
Dust Suppressant (yes/no)	N A		
Base Stabilization (yes/no)	N A		

If you answered yes for Dust Suppressant – which type do you use?____

If you answered yes for Base Stabilization – which type do you use?____

How would you classify the average gravel road condition in your county?

☐ Very Good ☐ Good ☐ Fair ☐ Poor

Rec'd 3/23/16

County Road Needs Study

County: Foster County

Contact: Casey Cables 701-652-2441 ccables@nd.gov

Preparer: Nate Monson Date Prepared: 3-23-16

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications

- Gravel ☒
- Scoria ☐
- Pit Run ☒
- Crushed Material ☒
- Specifications ☐
- Tested ☒
- Other ______ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay

- Truck Drop and Blade ☒
- Windrow/Equalize ☐
- Water/Rolling/Compaction ☐
- Other ______ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing	0%	100%
Hauling	10%	90%
Placement	10%	90%
Blading	100%	0%
Dust Control	0%	100%
Base Stabilization	NA	NA

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost

- Average Gravel/Scoria Cost (crushing & royalties at the pit)	$4.95	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	.28	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	15	Miles	
- Placement Costs	$500.00	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	$75.00	Per ~~mile~~ hour	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	$5,200	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	N.A	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	$75.00	Per ~~mile~~ hour	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE

	Traffic Levels		
	Low	*Medium*	*High*
Daily Traffic	*>50*	*50-150*	*150-350*
Average Regraveling Thickness	*3 in*	*4 in*	*5 in*
Blading Frequency (# per year)	*8*	*12*	*16*
Regraveling Frequency (years between overlay)	*7*	*5*	*3*
Dust Suppressant (yes/no)	*no*	*no*	*Yes*
Base Stabilization (yes/no)	*no*	*no*	*Yes*

County Entry

	Traffic Levels		
	Low	Medium	High
Daily Traffic	>5	6 - 25	26 - 75
Average Regraveling Thickness	2"	4"	6"
Blading Frequency (# per month)	1	2	4
Regraveling Frequency (years between overlay)	5-6	4	3
Dust Suppressant (yes/no)	no	yes	yes
Base Stabilization (yes/no)	no	no	no

If you answered yes for Dust Suppressant – which type do you use? chloride

If you answered yes for Base Stabilization – which type do you use? NA

How would you classify the average gravel road condition in your county?

☐ Very Good ☒ Good ☐ Fair ☐ Poor

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by October 15, 2015. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: Golden Valley

Contact: Pete Wirtzfeld 701-872-4123 gvshop@midstate.net
Name Phone Email

Preparer: Pete Wirtzfeld Date Prepared: 9-22-2015

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☑
- Scoria ☑
- Pit Run ☐
- Crushed Material ☑
- Specifications ☑
- Tested ☑
- Other__________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☑
- Windrow/Equalize ☑
- Water/Rolling/Compaction ☑
- Other__________________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing	0	100%
Hauling	100%	0%
Placement	100%	0%
Blading	98%	2%
Dust Control	100%	0%
Base Stabilization	100%	0%

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	7.50/gravel 5.50/Scoria	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	1.60/yd 1st 3 mi plus .25/yd/mi. after 3 miles	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	20	Miles	
- Placement Costs	3500.00	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	120.00	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs		Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost		Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	19	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	>50	75 - 175	175 - 400
Average Regraveling Thickness	4"-6"	6"	6"-8"
Blading Frequency (# per month)	1	1-3	1-3
Regraveling Frequency (years between regraveling)	8-10	5-7	3-5
Dust Suppressant (yes/no)	no	no	yes some
Base Stabilization (yes/no)	no	no	no

If you answered yes for Dust Suppressant – which type do you use? watering + some regraveling with 5-7 Plasticity index gravel

If you answered yes for Base Stabilization – which type do you use? Occasionally have used Base one

How would you classify the average gravel road condition in your county?

☐ Very Good ☑ Good ☑ Fair ☐ Poor

Comments or Suggestions (please attach additional sheets if needed):

while this survey data may establish an average baseline some of the questions seem ambiguous to answer. Blading frequency, which is directly influenced by weather patterns as is snow removal. wet heavy snow takes twice as long to manage as light fluffy snow. Random traffic counts often miss actual traffic peak or even average numbers. a neighboring County has over 250,000 cubic yards of gravel stockpiled in our County. The past 2 months they have put on in addition to their own trucks, 15 lease trucks to contract haul this gravel. In addition 2 contractors have over 100,000 yds of gravel that is all hauled out of this county. It is not uncommon to see 15-20 different Trucks hauling all at the same time. This survey is used to provide our needs. Based on the questions asked, how is it supposed to cover the impacts of this type. When the technical data is averaged and applied to road mileage or factored into number of wells serviced how is our County's needs adjusted when an additional 50-60 wells in Billings County west of the Little Missouri River all impact our roads and very little of theirs. They get 100% of the production revenue and we get 90% of the mileage impact. How are our needs adjusted when factoring in the technical data? Quantify

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how the last needs assement nearly doubled for Billings and Bowman Counties but went down for Dunn, Mountrail, and Golden Valley. Bowman County until a year ago had no new wells drilled. I understand that this needs assessment may not just be for new impacts, but the funding by the legislature was to address the impacts of industry providing the revenue. Sorry only comments and no suggestions.

Pete

County Road Needs Study

County: Grand Forks

Contact: Nick West 701-780-8248 nick.west@gfcounty.org
Name Phone Email

Preparer: Nick West Sue MacMillan Date Prepared: 10/14/15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☒ NDDOT CL 13
- Scoria ☐
- Pit Run ☐
- Crushed Material ☐
- Specifications ☐
- Tested ☐
- Other__________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☒
- Windrow/Equalize ☒
- Water/Rolling/Compaction ☐
- Other__________________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing		100%
Hauling	10%	90%
Placement	10%	90%
Blading	100%	
Dust Control		100%
Base Stabilization	NA	NA

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	$4.25	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	$0.22	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	60	Miles	
- Placement Costs	$5200.00	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	$500.00	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	$5700.00	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	—	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	$310.00	Per mile Per Year	Is this Contractor Price? (yes/no)

5-Year Average

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	<50	50-150	150-350
Average Regraveling Thickness	1 in	1 in	1 in
Blading Frequency (# per month)	2	4	4
Regraveling Frequency (years between regraveling)	2.0	1.5	1.5
Dust Suppressant (yes/no)	NO	NO	Yes / Select Roads
Base Stabilization (yes/no)	No	NO	NO

If you answered yes for Dust Suppressant – which type do you use? Calcium Chloride

If you answered yes for Base Stabilization – which type do you use? Na

How would you classify the average gravel road condition in your county?

☐ Very Good ☐ Good ☒ Fair ☐ Poor

Comments or Suggestions (please attach additional sheets if needed):

- On Average grand Forks pays #17.25/c.y. for gravel Delivered to site. then County forces blade in place.

- Dust Suppressant is used on two roads, one with 310 ADT and the other by Reynolds Beet Pile for beet Campaign.

Please return this survey in the enclosed envelope by **October 15, 2015.** Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

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County Road Needs Study

County: Grant County

Contact: David Reinke 425-9251 ____________
Name Phone Email

Preparer: David Reinke Date Prepared: 3-23-16

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☒
- Scoria ☐
- Pit Run ☐
- Crushed Material ☒
- Specifications ☒
- Tested ☐
- Other__________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☒
- Windrow/Equalize ☒
- Water/Rolling/Compaction ☐
- Other__________________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing	0	100%
Hauling	~~100%~~ 100%	0 %
Placement	100%	0 %
Blading	100%	0
Dust Control	0	0
Base Stabilization	0	0

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	6.50	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	$6.00	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	15	Miles	
- Placement Costs	$9,750	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	$50.00	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	0	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	0	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	0	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between overlay)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	>50	50-100	100-150
Average Regraveling Thickness	2.5	3	4
Blading Frequency (# per month)	3	4	4
Regraveling Frequency (years between overlay)	5	4	3
Dust Suppressant (yes/no)	No	no	no
Base Stabilization (yes/no)	No	No	no

If you answered yes for Dust Suppressant – which type do you use?____

If you answered yes for Base Stabilization – which type do you use?____

How would you classify the average gravel road condition in your county?

☐ Very Good ☐ Good ☒ Fair ☐ Poor

County Road Needs Study

County: Griggs

Contact: Wayne Oien 701 797 3420 wayne.oien@griggscountynd.gov
Name Phone Email

Preparer: Wayne Oien Date Prepared: 10/8/2015

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☑
- Scoria ☐
- Pit Run ☑
- Crushed Material ☑
- Specifications ☐
- Tested ☑
- Other____________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☐
- Windrow/Equalize ☐
- Water/Rolling/Compaction ☐
- Other Windrow/Equalize + compact with roller ☑

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing		100%
Hauling	95%	5%
Placement	95%	5%
Blading	100%	
Dust Control	0	0
Base Stabilization	0	0

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	6.50	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	$2. per cyd 3 mi or less. .30 per cyd over per mi over 3 mi	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	15	Miles	
- Placement Costs	$450	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	$75	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	4,500	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	4,500	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	$75	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	25	50-150	150-200
Average Regraveling Thickness	1"	1.5"	2"
Blading Frequency (# per month)	2	2	3-4
Regraveling Frequency (years between regraveling)	10	10	7
Dust Suppressant (yes/no)	no	no	no
Base Stabilization (yes/no)	no	no	no

If you answered yes for Dust Suppressant – which type do you use?____

If you answered yes for Base Stabilization – which type do you use?____

How would you classify the average gravel road condition in your county?

☐ Very Good ■ Good ☐ Fair ☐ Poor

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: Hettinger County

Contact: Lee Meier 824-2050 lmeir@ndsupernet.com
Name Phone Email

Preparer: Lee Meier Date Prepared: 9/1/15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☐
- Scoria ☒
- Pit Run ☐
- Crushed Material ☒
- Specifications ☒
- Tested ☐
- Other__________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☐
- Windrow/Equalize ☒
- Water/Rolling/Compaction ☐
- Other__________________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing	0	100
Hauling	100	
Placement	100	
Blading	100	
Dust Control		
Base Stabilization		

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	$7.00	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin w/ loading + spreading	126.00	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	10	Miles	
- Placement Costs see above		Per mile	Is this Contractor Price? (yes/no)
- Blading Cost Based on 3x blading @ $150/mi	$50.00	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs		Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost		Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost same as + included in above	50.00	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic		X	
Average Regraveling Thickness		4"	
Blading Frequency (# per month)		3	
Regraveling Frequency (years between regraveling)		15 YEARS	
Dust Suppressant (yes/no)			
Base Stabilization (yes/no)			

If you answered yes for Dust Suppressant – which type do you use?____

If you answered yes for Base Stabilization – which type do you use?____

How would you classify the average gravel road condition in your county?

☐Very Good ☒Good ☐Fair ☐Poor

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: KIDDER

Contact: JEAN SCHOEN HARD | 701-475-4547 | JSCHOENHARD@ND.GOV
Name | Phone | Email

Preparer: MARLIN KAPP Date Prepared: 9-14-15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☒
- Scoria ☐
- Pit Run ☐
- Crushed Material ☒
- Specifications ☐
- Tested ☐
- Other__________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☒
- Windrow/Equalize ☒
- Water/Rolling/Compaction ☐
- Other__________________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing	0	100%
Hauling	10%	90%
Placement	100%	0
Blading	100%	0
Dust Control	0	0
Base Stabilization	0	0

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	$1.00 / gravel $4.35 / crushing + loading	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	$4.68	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	12.5	Miles	
- Placement Costs	$250	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	$90	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	0	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	0	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost		Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	15	40	75
Average Regraveling Thickness	1½"	3"	5+"
Blading Frequency (# per month)	1	3	4
Regraveling Frequency (years between regraveling)			
Dust Suppressant (yes/no)	NO	NO	NO
Base Stabilization (yes/no)	NO	NO	NO

If you answered yes for Dust Suppressant – which type do you use?____________________

If you answered yes for Base Stabilization – which type do you use?____________________

How would you classify the average gravel road condition in your county?

❑Very Good ❑Good ❑Fair ❑Poor

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: LaMoure County

Contact: Lauren Worrel 701-883-5131 lauren.worrel@co.lamoure.nd.us
Name Phone Email

Preparer: Lauren Worrel Date Prepared: 10-12-2015

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☒
- Scoria ☐
- Pit Run ☐
- Crushed Material ☒
- Specifications ☒
- Tested ☐
- Other________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☒
- Windrow/Equalize ☐
- Water/Rolling/Compaction ☐
- Other Roll ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing	100 %	
Hauling	100 %	
Placement	100 %	
Blading	100 %	
Dust Control		100 %
Base Stabilization	100%	

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	5 00	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	0-10=2.80 CuYd 10+ miles = .30 mile/cu Yd	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	22	Miles	
- Placement Costs	96 00	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	91 00	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	4800 00	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	20,000	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	96 00	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	50	50-150	150 - 350
Average Regraveling Thickness	1"	1"	1"
Blading Frequency (# per month)	2	2	3
Regraveling Frequency (years between regraveling)	5	3	1
Dust Suppressant (yes/no)	Yes	Yes	Yes
Base Stabilization (yes/no)	Yes	Yes	Yes

If you answered yes for Dust Suppressant – which type do you use? Mag Chloride

If you answered yes for Base Stabilization – which type do you use? Base 1 or geoTex Fabric

How would you classify the average gravel road condition in your county?

☐ Very Good ☐ Good ☒ Fair ☐ Poor

Comments or Suggestions (please attach additional sheets if needed):

La Moure County performs all work on its county gravel Roads with The exception of Mag chloride Application whitch is done in a small percentage in construction Areas. Our Trucking cost For Materials Has a minimum charge #2.80 Per cubic Yds From 0 To 10 Miles. From 10 miles + .30 cents per mile per cubic Yd is Added. Placement costs are at 96.00 dollar per mile with Roller Attached To The Blade. 20,000 Plus Yard Per Year. Blading costs were based at 91.00 dollars per mile at 16 plus rounds per Year We grade 115.5 miles of County owned gravel Roads. Base Stableization is also used in the county. We are testing a 4 mile area That was pavement and Turned Back To gravel. Product was applied at a 6" depth. The mine and bled of ground material addition of 3" of Gravel and 175 Yds of clay per mile is not included in This cost. Cost were based on base 1 product cost, Application, lay down and compaction. We also use This product in low lying slough Areas other products we use in unstable areas are geotex Fabric, Snow removal cost were based on 96 dollars per mile Average 10 Rounds per Year on 115 miles of gravel. This one is a gamble based on weather The dozers have To go out or not.

Hope This Helps on where These figuires come from.

Thanks
Lauren O'Worn
La Moure County Hwy Supt.

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: LOGAN

Contact: DEAN ENTZMINGER 485-3774 entzming@DAKTEL.COM
Name Phone Email

Preparer: DEAN ENTZMINGER Date Prepared: 11-11-15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☒
- Scoria ☐
- Pit Run ☒
- Crushed Material ☐
- Specifications ☐
- Tested ☐
- Other__________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☒
- Windrow/Equalize ☐
- Water/Rolling/Compaction ☐
- Other__________________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing	0	100
Hauling	100	0
Placement	100	0
Blading	100	0
Dust Control	0	0
Base Stabilization	100	0

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	$4.50	Per cubic yd.	Is this Contractor Price? (yes/no) no
- Trucking Cost from Gravel Origin	$60/5 mile $4/mile	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no) no
- Average trucking distance for aggregate	8	Miles	
- Placement Costs	$400.00	Per mile	Is this Contractor Price? (yes/no) no
- Blading Cost	$100.00/hr	Per mile	Is this Contractor Price? (yes/no) no
- Dust Suppressant Costs	0	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	?	Per mile	Is this Contractor Price? (yes/no) no
- Snow Removal Cost	$100.00/hr	Per mile	Is this Contractor Price? (yes/no) no

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	*Traffic Levels*		
	Low	*Medium*	*High*
Daily Traffic	*>50*	*50-150*	*150-350*
Average Regraveling Thickness	*3 in*	*4 in*	*5 in*
Blading Frequency (# per year)	*8*	*12*	*16*
Regraveling Frequency (years between regraveling)	*7*	*5*	*3*
Dust Suppressant (yes/no)	*no*	*no*	*Yes*
Base Stabilization (yes/no)	*no*	*no*	*Yes*

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	750	75	
Average Regraveling Thickness	3"	3"	3"
Blading Frequency (# per month)	1	1	1
Regraveling Frequency (years between regraveling)	3	3	3
Dust Suppressant (yes/no)	NO	NO	NO
Base Stabilization (yes/no)	NO	NO	NO

If you answered yes for Dust Suppressant – which type do you use?____________________

If you answered yes for Base Stabilization – which type do you use?____________________

How would you classify the average gravel road condition in your county?

☐ Very Good ☒ Good ☐ Fair ☐ Poor

County Road Needs Study

County: McHenry

Contact: Darlene Carpenter | 537-5724 | dcarpenter@nd.gov
Name | Phone | Email

Preparer: ______________ Date Prepared: 3-30-16

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel -- select crushed material and specifications.

- [x] Gravel
- [ ] Scoria
- [x] Pit Run
- [ ] Crushed Material
- [ ] Specifications
- [ ] Tested
- [ ] Other______________

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- [x] Truck Drop and Blade
- [ ] Windrow/Equalize
- [ ] Water/Rolling/Compaction
- [ ] Other______________

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing	0	100 %
Hauling	0	100 %
Placement	0	100 %
Blading	100 %	0
Dust Control		100 %
Base Stabilization		100 %

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	17.00	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	.40	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	20	Miles	
- Placement Costs		Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	150.00	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	10,000	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost		Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost		Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	*Traffic Levels*		
	Low	*Medium*	*High*
Daily Traffic	*>50*	*50-150*	*150-350*
Average Regraveling Thickness	*3 in*	*4 in*	*5 in*
Blading Frequency (# per year)	*8*	*12*	*16*
Regraveling Frequency (years between overlay)	*7*	*5*	*3*
Dust Suppressant (yes/no)	*no*	*no*	*Yes*
Base Stabilization (yes/no)	*no*	*no*	*Yes*

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	7 50	50-150	150-400
Average Regraveling Thickness	2-3	2-3	2-3
Blading Frequency (# per month)	1	1	2
Regraveling Frequency (years between overlay)	as Funds are available	as Funds are available	as Funds are available
Dust Suppressant (yes/no)	No	No	No
Base Stabilization (yes/no)	No	No	No

If you answered yes for Dust Suppressant – which type do you use?____________________________________

If you answered yes for Base Stabilization -- which type do you use?____________________________________

How would you classify the average gravel road condition in your county?

☐ Very Good ☑ Good ☐ Fair ☐ Poor

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: McIntosh

Contact: Dennis Glas 701 709 0832 ddglas@nd.Gov
Name Phone Email

Preparer: Dennis Glas Date Prepared: 9-1-15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☐
- Scoria ☐
- Pit Run ☐
- Crushed Material ☒
- Specifications ☒
- Tested ☐
- Other________ ☐

We ask for Class 5

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☒
- Windrow/Equalize ☒
- Water/Rolling/Compaction ☐
- Other________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing		100 %
Hauling	100 %	
Placement	100 %	
Blading	100 %	
Dust Control	0	0
Base Stabilization	0	0

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	$ 4.10	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	.34	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	15	Miles	
- Placement Costs	$ 100.00	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	$ 40.00	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	0	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	0	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	$ 33.00	Per mile	Is this Contractor Price? (yes/no)

$100 per hour assuming machine can cover 3 miles in that hour

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	<50	50-100	100 up
Average Regraveling Thickness	2-3	3-5	mostly Pavements
Blading Frequency (# per month)	1	2	
Regraveling Frequency (years between regraveling)	10	7	
Dust Suppressant (yes/no)	no	no	
Base Stabilization (yes/no)	no	no	

If you answered yes for Dust Suppressant – which type do you use?____

If you answered yes for Base Stabilization – which type do you use?____

How would you classify the average gravel road condition in your county?

☐ Very Good ☐ Good ☒ Fair ☐ Poor

Comments or Suggestions (please attach additional sheets if needed):

Most all the town counties need money for all roads. It seems like all available money must be used on Federal aid roads or CMC routes. We need money for roads and bridges for other roads also.

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

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County Road Needs Study

County: MCKENZIE

Contact: ______________________ ______________ ________________

Name Phone Email

Preparer: M. DOWNVIOR Date Prepared: 10/13/15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☐
- Scoria ☒
- Pit Run ☒
- Crushed Material ☒
- Specifications ☐
- Tested ☐
- Other__________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☒
- Windrow/Equalize ☒
- Water/Rolling/Compaction ☒
- Other__________________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing		X
Hauling	X	X
Placement	X	X
Blading	X	
Dust Control	X	
Base Stabilization	X	

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	12.50	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	#0.30/Mi	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	45	Miles	
- Placement Costs	500.00	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	165.00	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	8,500.00	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	10,000.00	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	165.00	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	>100	100-250	250-450
Average Regraveling Thickness	3"	5"	8"
Blading Frequency (# per month)	3	3	3
Regraveling Frequency (years between regraveling)	5	3	1
Dust Suppressant (yes/no)	Y	Y	Y
Base Stabilization (yes/no)	NO	NO	Y

If you answered yes for Dust Suppressant – which type do you use? MAG CHLORIDE

If you answered yes for Base Stabilization – which type do you use? CEMENT

How would you classify the average gravel road condition in your county?

☐Very Good ☒Good ☐Fair ☐Poor

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: McLean

Contact: Jim Grey 701 462-8802 jagrey@nd.gov
Name Phone Email

Preparer: Jim Grey Date Prepared: 9-16-2015

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☑
- Scoria ☐
- Pit Run ☑
- Crushed Material ☑
- Specifications ☑
- Tested ☑
- Other__________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☑
- Windrow/Equalize ☑
- Water/Rolling/Compaction ☑
- Other__________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing	0	100
Hauling	70	30
Placement	70	30
Blading	100 maintenance 70 lay down	30 lay down
Dust Control		100
Base Stabilization	0	0

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	~~$3.70~~ [illegible]	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	.50 per mile per c/yd	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	15	Miles	
- Placement Costs with gravel	$80,000	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	$100.00	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	$6,688.00	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	N/A	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	$300.00	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	>25	25-75	<75
Average Regraveling Thickness	3 inches	4 inches	4 inches
Blading Frequency (# per month)	2	3	4
Regraveling Frequency (years between regraveling)	7	5	3
Dust Suppressant (yes/no)	no	no	yes
Base Stabilization (yes/no)	no	no	no

If you answered yes for Dust Suppressant – which type do you use? Mag Chloride

If you answered yes for Base Stabilization – which type do you use? __________

How would you classify the average gravel road condition in your county?

☐ Very Good ☐ Good ☑ Fair ☐ Poor

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: Mercer

Contact: Ken Miller | 701-873-5586 | Kenmiller@nd.gov
Name | Phone | Email

Preparer: Ken Miller Date Prepared: 25 Aug 15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☒
- Scoria ☒
- Pit Run ☒
- Crushed Material ☒
- Specifications ☒
- Tested ☒
- Other________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☒
- Windrow/Equalize ☒
- Water/Rolling/Compaction ☒
- Other________________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing	0	100%
Hauling	~~[illegible]~~ 70	30
Placement	100%	0
Blading	100%	0
Dust Control	0	0
Base Stabilization	0	0

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	7.00	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	110.00/hour	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	20	Miles	
- Placement Costs	$80,000.00	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	145.00	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	$ 6,688.00	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	N/A	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	145.00/hour	Per mile	Is this Contractor Price? (yes/no)

about 24.00/mile

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	25-50	100-150	200+
Average Regraveling Thickness	3"	4"	5"
Blading Frequency (# per month)	2	3	4
Regraveling Frequency (years between regraveling)	7	5	3
Dust Suppressant (yes/no)	No	No	No
Base Stabilization (yes/no)	No	No	No

If you answered yes for Dust Suppressant – which type do you use?________________________

If you answered yes for Base Stabilization – which type do you use?________________________

How would you classify the average gravel road condition in your county?

☐ Very Good ☐ Good ☒ Fair ☐ Poor

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: MORTON

Contact: NICK KRAFT 667-3360 ____________
Name Phone Email

Preparer: NICK KRAFT Date Prepared: 02-18-2016

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☐
- Scoria ☒
- Pit Run ☐
- Crushed Material ☒
- Specifications ☒
- Tested ☒
- Other__________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☒
- Windrow/Equalize ☒
- Water/Rolling/Compaction ☐
- Other MIX WITH OLD MATERIAL ON ROADWAY ☒

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing		100%
Hauling	100% (TYPICAL)	(UNTIL SB 2103)
Placement	100% (TYPICAL)	(UNTIL SB 2103)
Blading	100% (TYPICAL)	(UNTIL SB 2103)
☆ Dust Control FOR GRAVEL HAULING	100%	
Base Stabilization	50%	50%

☆ FOR GRAVEL HAULING PURPOSES ONLY

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	$8.60 YR2015	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	$1.70	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	16	Miles	
= - Placement Costs	$8450	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost MTCE ONLY	$175	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	$8000	Per mile	Is this Contractor Price? (~~yes/no~~) BOTH
- Base Stabilization Cost	N/A	Per mile	Is this Contractor Price? (yes/no)
☆ - Snow Removal Cost	$35	Per mile	Is this Contractor Price? (yes/no)

☆ SNOW REMOVAL CAN VARY SO MUCH DEPENDING ON THE EVENT. IT CAN RANGE FROM $35 - $100 PER MILE

= PLACEMENT COSTS INCLUDE LOADER, LAYDOWN, TRUCKING, DUST CONTROL

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	*Traffic Levels*		
	Low	*Medium*	*High*
Daily Traffic	*>50*	*50-150*	*150-350*
Average Regraveling Thickness	*3 in*	*4 in*	*5 in*
Blading Frequency (# per year)	*8*	*12*	*16*
Regraveling Frequency (years between overlay)	*7*	*5*	*3*
Dust Suppressant (yes/no)	*no*	*no*	*Yes*
Base Stabilization (yes/no)	*no*	*no*	*Yes*

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	>20	50 >	50-300
Average Regraveling Thickness	3"	3"	3"
Blading Frequency (# per month)	1	2	3
Regraveling Frequency (years between overlay)	6	3-4	3-4
Dust Suppressant (yes/no)	NO	NO	3 MILES TOTAL/YR
Base Stabilization (yes/no)	NO	NO	NO

If you answered yes for Dust Suppressant – which type do you use? MAG CHLORIDE

If you answered yes for Base Stabilization – which type do you use? N/A

How would you classify the average gravel road condition in your county?

☐ Very Good ☐ Good ☒ Fair ☐ Poor

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: Mountrail County

Contact: Jana Heberlie 701-628-2390 janah@co.mountrail.nd.us
Name Phone Email

Preparer: Jana Heberlie Date Prepared: 9-15-15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ■
- Scoria ☐
- Pit Run ☐
- Crushed Material ☐
- Specifications ☐
- Tested ☐
- Other____________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ■
- Windrow/Equalize ☐
- Water/Rolling/Compaction ■
- Other____________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing	0%	100%
Hauling	5%	95%
Placement	5%	95%
Blading	100%	0%
Dust Control	50%	50%
Base Stabilization	0%	100%

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	$8.40	Per cubic yd.	Is this Contractor Price? (yes/no) yes
- Trucking Cost from Gravel Origin	$9.00	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no) yes
- Average trucking distance for aggregate	150 miles	Miles	
- Placement Costs	$300	Per mile	Is this Contractor Price? (yes/no) no BOTH
- Blading Cost	$300/mile (26 applications/year) $7,800/mile/year	Per mile	Is this Contractor Price? (yes/no) no
- Dust Suppressant Costs	$24,000	Per mile	Is this Contractor Price? (yes/no) BOTH
- Base Stabilization Cost	$108,000	Per mile	Is this Contractor Price? (yes/no) yes
- Snow Removal Cost	$300	Per mile /per trip	Is this Contractor Price? (yes/no) no

Comments or Suggestions (please attach additional sheets if needed):

Please consider the cost of:

* Milling $238,175.00 /mile
* Blowout Repair (5 miles per year) - $ 700,000 per mile
* Culvert clean out / replacement ($ 10.000/culvert) 20 culverts/year
* Rebuild every 12 years - $ 750,000 per mile
* Mowing
* Need to pave roads (aaa additional 50 miles / year) to accommodate oil industry = $ 93,674,812.00
* Dust Suppressant has to be re-aplied many times through the season.

Please return this survey in the enclosed envelope by **October 15, 2015.** Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	50-150	150-350	350-700+
Average Regraveling Thickness	3 in	4 in	6 in
Blading Frequency (# per month)	2	3	3-4
Regraveling Frequency (years between regraveling)	2	1	1
Dust Suppressant (yes/no)	yes	yes	yes
Base Stabilization (yes/no)	NO	NO	yes

If you answered yes for Dust Suppressant – which type do you use? Calcium or Magn. Chloride

If you answered yes for Base Stabilization – which type do you use? Cement Stabilization

How would you classify the average gravel road condition in your county?

☐Very Good ■Good ■Fair ☐Poor

Approx. 50 Miles Additional Pavement - Estimated Cost
(October 2015)

Route	Projects	Gravel (Current Status)	Project Description	Right of Way / Misc.	Construction Cost	Engineering Cost (12%)	TOTAL COST
CR 4	**Lostwood West - Hwy 8 West to CR7**	10.978	Grading & HBP	1,097,800	17,564,800	2,107,776	20,770,376
CR 3	**76th Ave NW - CR 14 to McLean Co**	7.000	Grading & HBP	700,000	11,200,000	1,344,000	13,244,000
CR 9	**101st Ave - US 2 South to White Earth Bay**	16.500	Grading & HBP	1,650,000	26,400,000	3,168,000	31,218,000
CR 11	**Blaisdell South - Approx 4 mi South of US 2 to CR 10**	8.061	Grading & HBP	806,100	12,897,600	1,547,712	15,251,412
CR 10	**51st St NW (Belden Rd) - CR 3 East to CR 11**	6.972	Grading & HBP	697,200	11,155,200	1,338,624	13,191,024
	Total Miles	**49.511**		**4,951,100**	**79,217,600**	**9,506,112**	**93,674,812**

Grading & HBP - Per Mile	$ 1,600,000
Right of Way - Per Mile (Incl. Eng.,Fencing,Util.)	$ 100,000

Mountrail County needs to pave an additional 50 miles to accommodate oil industry.

ANNUAL MAINTENANCE COST - MOUNTRAIL COUNTY **PAVED** ROADS
2016 - 2025 - 10% INFLATION - 208 MILES

YEAR →	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
MILEAGE →	208	208	208	208	208	208	208	208	208	208
COST PER MILE:										
ANNUAL CRACK SEALING	5,000	5,500	6,050	6,655	7,321	8,053	8,858	9,744	10,718	11,790
STRIPING EVERY 2 YEARS	2,500	2,750	3,025	3,328	3,660	4,026	4,429	4,872	5,359	5,895
CHIP SEAL EVERY 4 YEARS	35,000	38,500	42,350	46,585	51,244	56,368	62,005	68,205	75,026	82,528
OVERLAY EVERY 8 YEARS	600,000	660,000	726,000	798,600	878,460	966,306	1,062,937	1,169,230	1,286,153	1,414,769
WIDEN/OVERLAY EVERY 12 YRS	1,200,000	1,320,000	1,452,000	1,597,200	1,756,920	1,932,612	2,125,873	2,338,461	2,572,307	2,829,537
MILES PER YEAR:										
ANNUAL CRACK SEALING	208.00	208.00	208.00	208.00	208.00	208.00	208.00	208.00	208.00	208.00
STRIPING EVERY 2 YEARS	104.00	104.00	104.00	104.00	104.00	104.00	104.00	104.00	104.00	104.00
CHIP SEAL EVERY 4 YEARS	52.00	52.00	52.00	52.00	52.00	52.00	52.00	52.00	52.00	52.00
OVERLAY EVERY 8 YEARS	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00
WIDEN/OVERLAY EVERY 12 YRS	17.33	17.33	17.33	17.33	17.33	17.33	17.33	17.33	17.33	17.33
COST PER YEAR:										
ANNUAL CRACK SEALING	1,040,000	1,144,000	1,258,400	1,384,240	1,522,664	1,674,930	1,842,423	2,026,666	2,229,332	2,452,266
STRIPING EVERY 2 YEARS	260,000	286,000	314,600	346,060	380,666	418,733	460,606	506,666	557,333	613,066
CHIP SEAL EVERY 4 YEARS	1,820,000	2,002,000	2,202,200	2,422,420	2,664,662	2,931,128	3,224,241	3,546,665	3,901,332	4,291,465
OVERLAY EVERY 8 YEARS	15,600,000	17,160,000	18,876,000	20,763,600	22,839,960	25,123,956	27,636,352	30,399,987	33,439,985	36,783,984
WIDEN/OVERLAY EVERY 12 YRS	20,800,000	22,880,000	25,168,000	27,684,800	30,453,280	33,498,608	36,848,469	40,533,316	44,586,647	49,045,312
TOTAL ANNUAL COST	$ 39,520,000	$ 43,472,000	$ 47,819,200	$ 52,601,120	$ 57,861,232	$ 63,647,355	$ 70,012,091	$ 77,013,300	$ 84,714,630	$ 93,186,093
ANNUAL COST PER MILE	$ 190,000	$ 209,000	$ 229,900	$ 252,890	$ 278,179	$ 305,997	$ 336,597	$ 370,256	$ 407,282	$ 448,010

(October 2015)

MOUNTRAIL COUNTY GRAVEL ROADS
2016 ANNUAL MAINTENANCE COST

Current Miles of Gravel Road - 249 Miles

Graveling - $18.00 X 800 yards per mile = **$14,400** per mile

Blading - **$7,800** per mile /per year

Dust Control - $8,000 per mile X 3 applications per year- **$24,000** per mile

Blowout Repair (5 miles per year) - **$700,000** per mile

Rebuild every 12 years - **$750,000** per mile

Graveling - **249** miles per year

Blading - **249** miles per year

Dust Control - **249** miles per year

Blowout Repair - **5** miles per year

Rebuild - **249** ÷ 12 years = 20.75 miles per year

Graveling - 249 miles per year X $14,400 = **$3,585,600** per year

Blading - 249 miles per year X $7,800 = **$1,942,200** per year

Dust Control - 249 miles per year X $24,000 = **$5,976,000** per year

Blowout Repair - 5 miles per year X $700,000 = **$3,500,000** per year

Rebuild - 20.75 miles per year X $750,000 = **$15,562,500** per year

TOTAL 2016 ANNUAL GRAVEL MAINTENANCE COST - $30,566,300

Updated 7/2/15

ANNUAL MAINTENANCE COST - MOUNTRAIL COUNTY GRAVEL ROADS
2016 - 2025 - 10% INFLATION - DECREASE OF 50 MILES GRAVEL ROAD

(50 Mile Decrease = Lostwood West 11, 101st Ave 16.5, Fertile 76th 7, Blaisdell South 8, 51st CR3 to CR11 7)

YEAR →	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
MILEAGE →	249	239	229	219	209	199	199	199	199	199
COST PER MILE:										
GRAVELING	14,400	15,840	17,424	19,166	21,083	23,191	25,510	28,062	30,868	33,954
BLADING	7,800	8,580	9,438	10,382	11,420	12,562	13,818	15,200	16,720	18,392
DUST CONTROL	24,000	26,400	29,040	31,944	35,138	38,652	42,517	46,769	51,446	56,591
BLOWOUT REPAIR	700,000	770,000	847,000	931,700	1,024,870	1,127,357	1,240,093	1,364,102	1,500,512	1,650,563
REBUILD EVERY 12 YEARS	750,000	825,000	907,500	998,250	1,098,075	1,207,883	1,328,671	1,461,538	1,607,692	1,768,461
MILES PER YEAR:										
GRAVELING	249.00	239.00	229.00	219.00	209.00	199.00	199.00	199.00	199.00	199.00
BLADING	249.00	239.00	229.00	219.00	209.00	199.00	199.00	199.00	199.00	199.00
DUST CONTROL	249.00	239.00	229.00	219.00	209.00	199.00	199.00	199.00	199.00	199.00
BLOWOUT REPAIR-5 MILES/YR	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
REBUILD EVERY 12 YEARS	20.75	19.92	19.08	18.25	17.42	16.58	16.58	16.58	16.58	16.58
COST PER YEAR:										
GRAVELING	3,585,600	3,785,760	3,990,096	4,197,442	4,406,355	4,615,077	5,076,585	5,584,244	6,142,668	6,756,935
BLADING	1,942,200	2,050,620	2,161,302	2,273,614	2,386,776	2,499,834	2,749,817	3,024,799	3,327,279	3,660,006
DUST CONTROL	5,976,000	6,309,600	6,650,160	6,995,736	7,343,926	7,691,796	8,460,975	9,307,073	10,237,780	11,261,558
BLOWOUT REPAIR-5 MILES/YR	3,500,000	3,850,000	4,235,000	4,658,500	5,124,350	5,636,785	6,200,464	6,820,510	7,502,561	8,252,817
REBUILD EVERY 12 YEARS	15,562,500	16,431,250	17,318,125	18,218,063	19,124,806	20,030,718	22,033,790	24,237,169	26,660,886	29,326,974
TOTAL ANNUAL COST	$ 30,566,300	$ 32,427,230	$ 34,354,683	$ 36,343,354	$ 38,386,213	$ 40,474,210	$ 44,521,631	$ 48,973,794	$ 53,871,173	$ 59,258,291
ANNUAL COST PER MILE	$ 122,756	$ 135,679	$ 150,020	$ 165,951	$ 183,666	$ 203,388	$ 223,727	$ 246,099	$ 270,709	$ 297,780

Updated 7/2/15

MOUNTRAIL COUNTY PAVED ROADS
2016 ANNUAL MAINTENANCE COST

Current Miles of Paved Road - 158 Miles

Annual Crack Sealing - **$5,000** per mile

Striping every 2 years - **$2,500** per mile

Chip Seal every 4 years - **$35,000** per mile

Overlay every 8 years - **$600,000** per mile

Shoulder Widening & Overlay every 12 years - **$1,200,000**

Annual Crack Sealing - **158** miles per year

Striping - 158 ÷ 2 years = **79** miles per year

Chip Seal - 158 ÷ 4 years = **39.50** miles per year

Overlay - 158 ÷ 8 years - **19.75** miles per year

Shoulder Widening & Overlay - 158 ÷ 12 years = **13.17** miles per year

---

Annual Crack Sealing - 158 miles per year X $5,000 = **$790,000** per year

Striping - 79 miles per year X $2,500 = **$197,500** per year

Chip Seal - 39.50 miles per year X $35,000 = **$1,382,500** per year

Overlay - 19.75 miles per year X $600,000 = **$11,850,000** per year

Shoulder Widening & Overlay - 13.17 miles per year X $1,200,000 = **$15,800,000** per year

TOTAL 2016 ANNUAL PAVED MAINTENANCE COST - $30,020,000

Updated 7/9/15

ANNUAL MAINTENANCE COST - MOUNTRAIL COUNTY PAVED ROADS
2016 - 2025 - 10% INFLATION - ADDITIONAL 50 MILES PAVED ROAD

(50 Miles Additional = Lostwood West 11, 101st Ave 16.5, Fertile 76th 7, Blaisdell South 8, 51st CR3 to CR11 7)

YEAR →	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
MILEAGE →	158	168	178	188	198	208	208	208	208	208
COST PER MILE:										
ANNUAL CRACK SEALING	5,000	5,500	6,050	6,655	7,321	8,053	8,858	9,744	10,718	11,790
STRIPING EVERY 2 YEARS	2,500	2,750	3,025	3,328	3,660	4,026	4,429	4,872	5,359	5,895
CHIP SEAL EVERY 4 YEARS	35,000	38,500	42,350	46,585	51,244	56,368	62,005	68,205	75,026	82,528
OVERLAY EVERY 8 YEARS	600,000	660,000	726,000	798,600	878,460	966,306	1,062,937	1,169,230	1,286,153	1,414,769
WIDEN/OVERLAY EVERY 12 YRS	1,200,000	1,320,000	1,452,000	1,597,200	1,756,920	1,932,612	2,125,873	2,338,461	2,572,307	2,829,537
MILES PER YEAR:										
ANNUAL CRACK SEALING	158.00	168.00	178.00	188.00	198.00	208.00	208.00	208.00	208.00	208.00
STRIPING EVERY 2 YEARS	79.00	84.00	89.00	94.00	99.00	104.00	104.00	104.00	104.00	104.00
CHIP SEAL EVERY 4 YEARS	39.50	42.00	44.50	47.00	49.50	52.00	52.00	52.00	52.00	52.00
OVERLAY EVERY 8 YEARS	19.75	21.00	22.25	23.50	24.75	26.00	26.00	26.00	26.00	26.00
WIDEN/OVERLAY EVERY 12 YRS	13.17	14.00	14.83	15.67	16.50	17.33	17.33	17.33	17.33	17.33
COST PER YEAR:										
ANNUAL CRACK SEALING	790,000	924,000	1,076,900	1,251,140	1,449,459	1,674,930	1,842,423	2,026,666	2,229,332	2,452,266
STRIPING EVERY 2 YEARS	197,500	231,000	269,225	312,785	362,365	418,733	460,606	506,666	557,333	613,066
CHIP SEAL EVERY 4 YEARS	1,382,500	1,617,000	1,884,575	2,189,495	2,536,553	2,931,128	3,224,241	3,546,665	3,901,332	4,291,465
OVERLAY EVERY 8 YEARS	11,850,000	13,860,000	16,153,500	18,767,100	21,741,885	25,123,956	27,636,352	30,399,987	33,439,985	36,783,984
WIDEN/OVERLAY EVERY 12 YRS	15,800,000	18,480,000	21,538,000	25,022,800	28,989,180	33,498,608	36,848,469	40,533,316	44,586,647	49,045,312
TOTAL ANNUAL COST	$ 30,020,000	$ 35,112,000	$ 40,922,200	$ 47,543,320	$ 55,079,442	$ 63,647,355	$ 70,012,091	$ 77,013,300	$ 84,714,630	$ 93,186,093
ANNUAL COST PER MILE	$ 190,000	$ 209,000	$ 229,900	$ 252,890	$ 278,179	$ 305,997	$ 336,597	$ 370,256	$ 407,282	$ 448,010

Updated 7/9/15

ORGANIZED TOWNSHIP GRAVEL ROADS
ANNUAL MAINTENANCE COST

Current Miles of Organized Township Gravel Road - 1,218 Miles

Graveling - $18.00 X 500 yards per mile = **$9,000** per mile

Blading - **$7,800** per mile

Dust Control - $8,000 per mile X 1.5 applications per year- **$12,000** per mile

Blowout Repair - **$700,000** per mile

Rebuild every 25 years - **$500,000** per mile

Graveling - 1,218 ÷ 4 = **304.50** miles per year

Blading - **1,218** miles per year

Dust Control - 1,218 ÷ 5 = **243.60** miles per year

Blowout Repair - **5** miles per year

Rebuild - 1,218 ÷ 25 years = **48.72** miles per year

Graveling - 304.50 miles per year X $9,000 = **$2,740,500** per year

Blading - 1,218 miles per year X $7,800 = **$9,500,400** per year

Dust Control - 243.60 miles per year X $12,000 = **$2,923,200** per year

Blowout Repair - 5 miles per year X $700,000 = **$3,500,000** per year

Rebuild - 48.72 miles per year X $500,000 = **$24,360,000** per year

TOTAL ANNUAL GRAVEL MAINTENANCE COST - $43,024,100

Updated 9/4/15

ANNUAL MAINTENANCE COST - ORGANIZED TOWNSHIP GRAVEL ROADS
2014 - 2023 - 12% INFLATION - CURRENT TOWNSHIP ROADS 1,218 MILES

YEAR →	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
MILEAGE →	1,218	1,218	1,218	1,218	1,218	1,218	1,218	1,218	1,218	1,218
COST PER MILE:										
GRAVELING	9,000	10,080	11,290	12,644	14,162	15,861	17,764	19,896	22,284	24,958
BLADING	7,800	8,736	9,784	10,958	12,273	13,746	15,396	17,243	19,313	21,630
DUST CONTROL	12,000	13,440	15,053	16,859	18,882	21,148	23,686	26,528	29,712	33,277
BLOWOUT REPAIR	700,000	784,000	878,080	983,450	1,101,464	1,233,639	1,381,676	1,547,477	1,733,174	1,941,155
REBUILD EVERY 25 YRS	500,000	560,000	627,200	702,464	786,760	881,171	986,911	1,105,341	1,237,982	1,386,539
MILES PER YEAR:										
GRAVELING (¼ MLG)	304.50	304.50	304.50	304.50	304.50	304.50	304.50	304.50	304.50	304.50
BLADING	1,218.00	1,218.00	1,218.00	1,218.00	1,218.00	1,218.00	1,218.00	1,218.00	1,218.00	1,218.00
DUST CONTROL (⅕ MLG)	243.60	243.60	243.60	243.60	243.60	243.60	243.60	243.60	243.60	243.60
BLOWOUT REPAIR-5 MILES/YR	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
REBUILD EVERY 25 YRS	48.72	48.72	48.72	48.72	48.72	48.72	48.72	48.72	48.72	48.72
COST PER YEAR:										
GRAVELING (¼ MLG)	2,740,500	3,069,360	3,437,683	3,850,205	4,312,230	4,829,697	5,409,261	6,058,372	6,785,377	7,599,622
BLADING	9,500,400	10,640,448	11,917,302	13,347,378	14,949,063	16,742,951	18,752,105	21,002,358	23,522,641	26,345,357
DUST CONTROL (⅕ MLG)	2,923,200	3,273,984	3,666,862	4,106,886	4,599,712	5,151,677	5,769,878	6,462,264	7,237,736	8,106,264
BLOWOUT REPAIR-5 MILES/YR	3,500,000	3,920,000	4,390,400	4,917,248	5,507,318	6,168,196	6,908,379	7,737,385	8,665,871	9,705,776
REBUILD EVERY 25 YRS	24,360,000	27,283,200	30,557,184	34,224,046	38,330,932	42,930,643	48,082,321	53,852,199	60,314,463	67,552,199
TOTAL ANNUAL COST	$ 43,024,100	$ 48,186,992	$ 53,969,431	$ 60,445,763	$ 67,699,254	$ 75,823,165	$ 84,921,945	$ 95,112,578	$ 106,526,087	$ 119,309,218

Updated 9/4/15

County Road Needs Study

County: Nelson

Contact: Tim Lee 701 322 4433 nelsonhwy@gondtc.com
Name Phone Email

Preparer: Tim Lee Date Prepared: 8-25-15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

Gravel	☒
Scoria	☐
Pit Run	☐
Crushed Material	☐
Specifications	☒
Tested	☐
Other___________________	☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

Truck Drop and Blade	☒
Windrow/Equalize	☐
Water/Rolling/Compaction	☐
Other___________________	☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing		Dennis Gabriel 100%
Hauling	60%	40%
Placement	70%	30%
Blading	100%	
Dust Control	40%	60%
Base Stabilization	100%	

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	4.57	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	$2.$4	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	10	Miles	
- Placement Costs	70/hr	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	$70/hr	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	$8000	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	$70/hr	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	$70/hr	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	>30	3-100	100<
Average Regraveling Thickness	2"	3-5"	3-5"
Blading Frequency (# per month)	1-2	1-2	2-3
Regraveling Frequency (years between regraveling)	5-7yrs	2-5yrs	2-5yrs
Dust Suppressant (yes/no)			
Base Stabilization (yes/no)			

If you answered yes for Dust Suppressant – which type do you use? magnesium Chloride - only 400ft Distance by resident next to pit

If you answered yes for Base Stabilization – which type do you use?______________________________

How would you classify the average gravel road condition in your county?

☐Very Good ☑Good ☐Fair ☐Poor

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: Divide County

Contact: Kyle Miller 202-0397 ______________
Name Phone Email

Preparer: Kyle Miller Date Prepared: 3-23-16

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☒
- Scoria ☒
- Pit Run ☐
- Crushed Material ☒
- Specifications ☐
- Tested ☐
- Other______________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☒
- Windrow/Equalize ☐
- Water/Rolling/Compaction ☒
- Other______________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing	-0-	✓
Hauling	✓ 100%	-0-
Placement	✓ 100%	-0-
Blading	✓ 100%	-0-
Dust Control	✓ 100%	-0-
Base Stabilization		-0-

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	$ 9.90	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	$ 2.00	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	20	Miles	
- Placement Costs	$ 90.00	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	$ 70.00	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	2000	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	~~[illegible]~~	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	$ 80	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	*Traffic Levels*		
	Low	*Medium*	*High*
Daily Traffic	*>50*	*50-150*	*150-350*
Average Regraveling Thickness	*3 in*	*4 in*	*5 in*
Blading Frequency (# per year)	*8*	*12*	*16*
Regraveling Frequency (years between overlay)	*7*	*5*	*3*
Dust Suppressant (yes/no)	*no*	*no*	*Yes*
Base Stabilization (yes/no)	*no*	*no*	*Yes*

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	25-50	50-100	100
Average Regraveling Thickness	3	4	4
Blading Frequency (# per month)	3	4	5
Regraveling Frequency (years between overlay)	7	7	7
Dust Suppressant (yes/no)			
Base Stabilization (yes/no)			

If you answered yes for Dust Suppressant – which type do you use?____

If you answered yes for Base Stabilization – which type do you use?____

How would you classify the average gravel road condition in your county?

❑Very Good ☒Good ❑Fair ❑Poor

County Road Needs Study

County: Pembina

Contact: Troy Kittelson 701-265-4208 pembhwy@nd.gov
Name Phone Email

Preparer: Troy Kittelson Date Prepared: 9-14-2015

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☑
- Scoria ☐
- Pit Run ☑
- Crushed Material ☑
- Specifications ☐
- Tested ☐
- Other__________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☑
- Windrow/Equalize ☐
- Water/Rolling/Compaction ☑
- Other__________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing		✓
Hauling	✓	
Placement	✓	
Blading	✓	
Dust Control		✓
Base Stabilization	✓	

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	5.75	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	.12	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	28	Miles	
- Placement Costs		Per mile	Is this Contractor Price? (yes/no)
- Blading Cost		Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs		Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost		Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	$40	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	*Traffic Levels*		
	Low	*Medium*	*High*
Daily Traffic	*>50*	*50-150*	*150-350*
Average Regraveling Thickness	*3 in*	*4 in*	*5 in*
Blading Frequency (# per year)	*8*	*12*	*16*
Regraveling Frequency (years between regraveling)	*7*	*5*	*3*
Dust Suppressant (yes/no)	*no*	*no*	*Yes*
Base Stabilization (yes/no)	*no*	*no*	*Yes*

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic			
Average Regraveling Thickness	All Pembina	County	Roads are paved
Blading Frequency (# per month)			
Regraveling Frequency (years between regraveling)			
Dust Suppressant (yes/no)			
Base Stabilization (yes/no)			

If you answered yes for Dust Suppressant – which type do you use?______________________________

If you answered yes for Base Stabilization – which type do you use?______________________________

How would you classify the average ~~gravel~~ Paved road condition in your county?

☐ Very Good ☐ Good ☒ Fair ☐ Poor

Comments or Suggestions (please attach additional sheets if needed):

Pembina county does not maintain any gravel Roads. we have only 7 miles of gravel county Road which is the border between Walsh + Pembina county. Walsh county maintains this portion for us. The rest of our 183 miles of county Roads are Paved with Asphalt.

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: Pierce

Contact: Karin Fursather 776-5225 kfursath@nd.gov
Name Phone Email

Preparer: Karin Fursather Date Prepared: 8-24-15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☒
- Scoria ☐
- Pit Run ☒
- Crushed Material ☒
- Specifications ☐
- Tested ☒
- Other________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☒
- Windrow/Equalize ☐
- Water/Rolling/Compaction ☐
- Other________________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing		100%
Hauling		100%
Placement		100%
Blading	100%	
Dust Control		
Base Stabilization		

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	5.80	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	1.70	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	15	Miles	
- Placement Costs	$626	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	$145.00	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	N/A	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	N/A	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	$145.00	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	> 50	25-50	50 - 200
Average Regraveling Thickness	2"	3"	4"
Blading Frequency (# per month)	3	5	6
Regraveling Frequency (years between regraveling)	3	5	7
Dust Suppressant (yes/no)			
Base Stabilization (yes/no)			

If you answered yes for Dust Suppressant – which type do you use?________________________________

If you answered yes for Base Stabilization – which type do you use?________________________________

How would you classify the average gravel road condition in your county?

☐ Very Good ☒ Good ☐ Fair ☐ Poor

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

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County Road Needs Study

County: RAMSEY

Contact: KEVIN FIELDSEND | 701-662-7015 | hwydept@gondtc.com
Name | Phone | Email

Preparer: KEVIN FIELDSEND Date Prepared: 9/11/15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☐
- Scoria ☐
- Pit Run ☐
- Crushed Material ☒
- Specifications ☐
- Tested ☒
- Other________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☐
- Windrow/Equalize ☒ Less than 3"
- Water/Rolling/Compaction ☒ 3" or more
- Other________________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing	0%	100%
Hauling	15%	85%
Placement (new gravel)	100%	0%
Blading (maintenance)	100%	0%
Dust Control	0%	100%
Base Stabilization	0%	0%

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost	Class 13 gravel		
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	4.89	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	.33 ¢	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	25	Miles	
- Placement Costs have not tracked this (estimate)	$750.00	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost ACTUAL COST FOR 2014	$480.95	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	6,500	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	N/A	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost estimate	$50.00	Per mile	Is this Contractor Price? (yes/no)

It is hard to say how long it takes to plow snow depending on how bad the storm is.

County Road Needs Study

County: Ransom

Contact: Jerry Lamb 701-683-4452 ____________
Name Phone Email

Preparer: Sam Date Prepared: 9-7-15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☑
- Scoria ☐
- Pit Run ☐
- Crushed Material ■
- Specifications ■
- Tested ☐
- Other__________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ■
- Windrow/Equalize ☐
- Water/Rolling/Compaction ☐
- Other__________________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing		✓
Hauling		✓
Placement	✓	
Blading	✓	
Dust Control	NONE	
Base Stabilization	NONE	

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	2.75	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	$1.40	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	12 - 18	Miles	
- Placement Costs		Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	$13.00	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	NONE	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	NONE	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	$15.00	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	<30	30-100	100-300
Average Regraveling Thickness		2	3
Blading Frequency (# per month)		4	7
Regraveling Frequency (years between regraveling)		2	1
Dust Suppressant (yes/no)	NO	NO	NO
Base Stabilization (yes/no)	NO	NO	NO

If you answered yes for Dust Suppressant – which type do you use?____

If you answered yes for Base Stabilization – which type do you use?____

How would you classify the average gravel road condition in your county?

☐Very Good ☒Good ☐Fair ☐Poor

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: Renville

Contact: Rick Brunner — 756-6492 — ribrunner@nd.gov
Name — Phone — Email

Preparer: ___ Date Prepared: 8-26-15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☑
- Scoria ☐
- Pit Run ☑
- Crushed Material ☑
- Specifications ☐
- Tested ☐
- Other__________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☑
- Windrow/Equalize ☑
- Water/Rolling/Compaction ☐
- Other_________________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing		100
Hauling	50	50
Placement	50	50
Blading	100	
Dust Control	—	—
Base Stabilization	—	—

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	8^{50}	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	50¢	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	7	Miles	
- Placement Costs	9^{85}	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	65^{00}	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	—	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	—	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost		Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic		50-150	
Average Regraveling Thickness		2	
Blading Frequency (# per month)		3	
Regraveling Frequency (years between regraveling)		3	
Dust Suppressant (yes/no)			
Base Stabilization (yes/no)			

If you answered yes for Dust Suppressant – which type do you use?______________________________

If you answered yes for Base Stabilization – which type do you use?______________________________

How would you classify the average gravel road condition in your county?

☐Very Good ☐Good ☑Fair ☐Poor

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

Rw 3/24/16

County Road Needs Study

County: Richland

Contact: Ron Hohenstein ________ ronh@rrt.net
Name Phone Email

Preparer: Ron Hohenstein Date Prepared: 10-14-15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☑
- Scoria ☐
- Pit Run ☐
- Crushed Material ☑
- Specifications ☑ CLASS 13
- Tested ☐
- Other__________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☑
- Windrow/Equalize ☑
- Water/Rolling/Compaction ☐
- Other__________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing		100%
Hauling	90%	10%
Placement	90	10%
Blading	100%	
Dust Control	—	—
Base Stabilization	—	—

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	$1.27	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	$3.60	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	25	Miles	
- Placement Costs	$240	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	$300	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	—	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	—	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	$120	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	*Traffic Levels*		
	Low	*Medium*	*High*
Daily Traffic	*>50*	*50-150*	*150-350*
Average Regraveling Thickness	*3 in*	*4 in*	*5 in*
Blading Frequency (# per year)	*8*	*12*	*16*
Regraveling Frequency (years between regraveling)	*7*	*5*	*3*
Dust Suppressant (yes/no)	*no*	*no*	*Yes*
Base Stabilization (yes/no)	*no*	*no*	*Yes*

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	<25	25-75	75+
Average Regraveling Thickness	2"	2"	3"
Blading Frequency (# per month)	<1	5	6
Regraveling Frequency (years between regraveling)	3	3	2
Dust Suppressant (yes/no)	no	no	no
Base Stabilization (yes/no)	no	no	no

If you answered yes for Dust Suppressant – which type do you use?____

If you answered yes for Base Stabilization – which type do you use?____

How would you classify the average gravel road condition in your county?

☐ Very Good ☒ Good ☐ Fair ☐ Poor

County Road Needs Study

County: Rolette

Contact: Valerie McCloud (Name) 701-477-5665 (Phone) vmccloud@nd.gov (Email)

Preparer: Valerie McCloud Date Prepared: 9-15-15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

Gravel ☒
Scoria ☐
Pit Run ☐
Crushed Material ☒
Specifications ☒
Tested ☒
Other__________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

Truck Drop and Blade ☒
Windrow/Equalize ☐
Water/Rolling/Compaction ☐
Other__________________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing		100%
Hauling	40%	60%
Placement	100%	
Blading	100%	
Dust Control		100%
Base Stabilization	0%	0%

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	5.75	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	4.35	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	10	Miles	
- Placement Costs	$375	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	$60	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	$8600	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	N/A	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	$120	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	>50	50-150	150+
Average Regraveling Thickness	3"	3-4"	4"
Blading Frequency (# per month)	8x/yr.	1	4
Regraveling Frequency (years between regraveling)	5	4	3
Dust Suppressant (yes/no)	No	No	Yes
Base Stabilization (yes/no)	No	No	No

If you answered yes for Dust Suppressant – which type do you use? Magnesium Chloride

If you answered yes for Base Stabilization – which type do you use? ____

How would you classify the average gravel road condition in your county?

☐ Very Good ☒ Good ☐ Fair ☐ Poor Varies

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: Sargent

Contact: Merrill (Sparky) Engquist 701-724-3090 merrill.engquist@co.sargent.nd.us
Name Phone Email

Preparer: Merrill (Sparky) Engquist Date Prepared: 8-25-2015

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☒
- Scoria ☐
- Pit Run ☐
- Crushed Material ☒
- Specifications ☐
- Tested ☒
- Other__________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☒
- Windrow/Equalize ☒
- Water/Rolling/Compaction ☒
- Other Base One ☒

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing		100%
Hauling		100%
Placement	~~100%~~	
Blading	100%	
Dust Control	100%	
Base Stabilization	100%	

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	$6.00	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	$ .27	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	25	Miles	
- Placement Costs	$1200.00	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	$45.00	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	$3500.00	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	$6000.00	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	$15.00	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	50	50-150	150-350
Average Regraveling Thickness	1in	2in	2in
Blading Frequency (# per month)	2.5	3.5	4
Regraveling Frequency (years between regraveling)	4	5	5
Dust Suppressant (yes/no)	no	yes	yes
Base Stabilization (yes/no)	no		yes

If you answered yes for Dust Suppressant – which type do you use? Mag Chloride

If you answered yes for Base Stabilization – which type do you use? Base One

How would you classify the average gravel road condition in your county?

☐Very Good ☒Good ☐Fair ☐Poor

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: Sheridan

Contact: Shirley Murray 363-2205 smurray@nd.gov
Name Phone Email

Preparer: Shirley A. Murray Date Prepared: 8/24/15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

Gravel	☒
Scoria	☐
Pit Run	☒
Crushed Material	☒
Specifications	☐
Tested	☐
Other__________________	☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

Truck Drop and Blade	☒
Windrow/Equalize	☐
Water/Rolling/Compaction	☒
Other__________________	☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing	–	100%
Hauling	30%	70%
Placement	30%	70%
Blading	100%	
Dust Control	–	–
Base Stabilization	–	–

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	8.50	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	3.25	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	10	Miles	
- Placement Costs	.55	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	125.00	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs		Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost		Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	140.00	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	25	50	75
Average Regraveling Thickness	2	3	4
Blading Frequency (# per month)	1	1.5	2
Regraveling Frequency (years between regraveling)		1	2
Dust Suppressant (yes/no)			
Base Stabilization (yes/no)			

If you answered yes for Dust Suppressant – which type do you use?____

If you answered yes for Base Stabilization – which type do you use?____

How would you classify the average gravel road condition in your county?

❑Very Good ❑Good ❑Fair ❑Poor

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: Sioux

Contact: Steven Snider 701-422-3316 [redacted] smsnider@nd.gov
Name Phone Email

Preparer: Steve Date Prepared: 8-25-15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☒
- Scoria ☐
- Pit Run ☐
- Crushed Material ☒
- Specifications ☐
- Tested ☐
- Other__________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☐
- Windrow/Equalize ☒
- Water/Rolling/Compaction ☐
- Other__________________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing		100%
Hauling	100%	
Placement	100%	
Blading	100%	
Dust Control	NA	
Base Stabilization	NA	

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	\$9.00	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	6.00	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	20	Miles	
- Placement Costs	22,994	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	45.00	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	NA	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	NA	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	\$110.00	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	15	25	50
Average Regraveling Thickness	3	3	4
Blading Frequency (# per month)	1	1	1 to 2
Regraveling Frequency (years between regraveling)	20	15	10
Dust Suppressant (yes/no)			
Base Stabilization (yes/no)			

If you answered yes for Dust Suppressant – which type do you use?____

If you answered yes for Base Stabilization – which type do you use?____

How would you classify the average gravel road condition in your county?

☐ Very Good ☐ Good ☑ Fair ☐ Poor

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

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County Road Needs Study

County: Slope

Contact: Dale Powell 7014408506 slopecounty@Hotmail.com
Name Phone Email

Preparer: Dale Powell Date Prepared: 9 3 2015

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☑
- Scoria ☑
- Pit Run ❑
- Crushed Material ☑
- Specifications ❑ DOT specs grade 13
- Tested ❑
- Other__________ ❑

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ❑
- Windrow/Equalize ☑
- Water/Rolling/Compaction ❑
- Other__________ ❑

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing		100
Hauling	10	90
Placement	10	90
Blading	100	
Dust Control		
Base Stabilization		100

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	5.00	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin		Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	10 miles	Miles	
- Placement Costs	.75 Per yard	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost		Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs		Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost		Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost		Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic		50-150	
Average Regraveling Thickness		3	
Blading Frequency (# per month)		2	
Regraveling Frequency (years between regraveling)		10	
Dust Suppressant (yes/no)		NO	
Base Stabilization (yes/no)		NO	

If you answered yes for Dust Suppressant – which type do you use?______________________________________

If you answered yes for Base Stabilization – which type do you use?______________________________________

How would you classify the average gravel road condition in your county?

❑Very Good ☑Good ❑Fair ❑Poor

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: Stark

Contact: Al Heiser 290-8429 aheiser@starkcountyND.gov
Name Phone Email

Preparer: Todd Miller Date Prepared: 8/25/15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☒
- Scoria ☒
- Pit Run ☒
- Crushed Material ☒
- Specifications ☒
- Tested ☒
- Other__________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☒
- Windrow/Equalize ☒
- Water/Rolling/Compaction ☒
- Other__________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing	0 %	100 %
Hauling	80 %	20 %
Placement	100 %	0 %
Blading	100 %	0 %
Dust Control	90 %	10 %
Base Stabilization	100 %	0 %

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	$ 4.38	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	4.17	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	22	Miles	
- Placement Costs 2014 177,322.20 / 80 miles	$ 2,216.53	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost 2014 $ 702,188.23 / 1100 miles	$ 638.35	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	$ 7,000.00	Per mile	Is this Contractor Price? (yes/no)
Chemical Only - Base Stabilization Cost 24 ft Top 4" Depth	$ 6,476.00	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost / 1200 miles Average/Year = $ 236,725.41	$ 197.27	Per mile	Is this Contractor Price? (yes/no)

2015 $ 36,597.25
2014 $ 69,726.61
2013 $ 150,985.19
2012 38,356.93
2011 554,868.17
2010 395,538.86
2009 411,004.96

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	>50	50 - 250	250 - up
Average Regraveling Thickness	3	6	6
Blading Frequency (# per month)	2	4	12
Regraveling Frequency (years between regraveling)	15	10	5
Dust Suppressant (yes/no)	No	No	yes
Base Stabilization (yes/no)	No	no	yes

If you answered yes for Dust Suppressant – which type do you use?________ Mag Chloride ________

If you answered yes for Base Stabilization – which type do you use?________ Base 1 ________

How would you classify the average gravel road condition in your county?

☐ Very Good ☒ Good ☐ Fair ☐ Poor

County Road Needs Study

County: STEELE

Contact: MYRON MOTEBERG 701-789-0536 STEELECOHIGHWAY@MLGC.COM
Name Phone Email

Preparer: Myron Moteberg Date Prepared: FEB. 18, 2016

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☒
- Scoria ☐
- Pit Run ☒
- Crushed Material ☒
- Specifications ☐
- Tested ☐
- Other__________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☒
- Windrow/Equalize ☒
- Water/Rolling/Compaction ☐
- Other__________________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing		100% X
Hauling	10%	90%
Placement		
Blading	100%	
Dust Control	—	—
Base Stabilization	—	—

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)		Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	ALL COSTS BELOW	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	40	Miles	
- Placement Costs HAULING + MATERIAL	AVG. $5,948.00	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	APPROX $70.00	Per mile	Is this Contractor Price? (yes/no) COUNTY
- Dust Suppressant Costs	NONE	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	NONE	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	WE CHARGE TOWNSHIPS $85.00 PER HOUR	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	?	?	?
Average Regraveling Thickness			
Blading Frequency (# per month)	2 YR.	1 MONTH	4 MONTH County
Regraveling Frequency (years between regraveling)	5 AS	YEARS NEEDED	OR
Dust Suppressant (yes/no)	N	O N	E
Base Stabilization (yes/no)	N	O N	E

If you answered yes for Dust Suppressant – which type do you use?________________________________

If you answered yes for Base Stabilization – which type do you use?________________________________

How would you classify the average gravel road condition in your county?

☐ Very Good ☐ Good ☒ Fair ☐ Poor

Comments or Suggestions (please attach additional sheets if needed):

ANY ?'S
PLEASE CALL
ME. thanks,
Myron
701-789-0536

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: Stutsman

Contact: Mickey Nenow (Name) 701-252-9040 (Phone) MNenow@daktel.com (Email)

Preparer: Mickey Date Prepared: Aug 27-15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☐
- Scoria ☐
- Pit Run ☐
- Crushed Material ☒
- Specifications ☐
- Tested ☐
- Other__________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☒
- Windrow/Equalize ☐
- Water/Rolling/Compaction ☐
- Other__________________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing	100% County Pit	100% Contractor Crushing
Hauling	100%	0%
Placement	100%	0%
Blading	100%	0%
Dust Control	0%	0%
Base Stabilization	0%	0%

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	5.00-5.10	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	.45	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	12-18	Miles	
- Placement Costs 400yds/mile	2700.00	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost AVG.	75-100.00	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	—	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	—	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost Depend on winter.	75-100.00	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	40	40-100	100-300
Average Regraveling Thickness	1	2	3
Blading Frequency (# per month)	2	2	2
Regraveling Frequency (years between regraveling)	4-5	2-3	1-2
Dust Suppressant (yes/no)	—	—	—
Base Stabilization (yes/no)	—	—	—

If you answered yes for Dust Suppressant – which type do you use? —

If you answered yes for Base Stabilization – which type do you use? —

How would you classify the average gravel road condition in your county?

☐ Very Good ☒ Good ☐ Fair ☐ Poor

Comments or Suggestions (please attach additional sheets if needed):

County has it own gravel pit and also buy from contractors,
Price is the same as County prices
All Crushing is bid out in the spring

Placement cost varies depends on thikness

Blade cost also varies

Winter blade all depends on the winter

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: Towner

Contact: Kevin Rinas / Terry Vok 968-4366 tcem@gondtc.com
Name Phone Email

Preparer: Larry Halvorson Date Prepared: 3-24-16

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☑
- Scoria ☐
- Pit Run ☑
- Crushed Material ☐
- Specifications ☐
- Tested ☐
- Other_______________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☑ Less than 3"
- Windrow/Equalize ☐
- Water/Rolling/Compaction ☑ 3" or more
- Other_______________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing	0	100 %
Hauling	75 %	25 %
Placement	75%	25%
Blading	100 %	0 %
Dust Control	100%	0%
Base Stabilization	100 %	0%

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	6.00	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	.30	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	30	Miles	
- Placement Costs	60.00	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	75	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	—	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	—	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	85.00	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	*Traffic Levels*		
	Low	*Medium*	*High*
Daily Traffic	*>50*	*50-150*	*150-350*
Average Regraveling Thickness	*3 in*	*4 in*	*5 in*
Blading Frequency (# per year)	*8*	*12*	*16*
Regraveling Frequency (years between overlay)	*7*	*5*	*3*
Dust Suppressant (yes/no)	*no*	*no*	*Yes*
Base Stabilization (yes/no)	*no*	*no*	*Yes*

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	25	50	100
Average Regraveling Thickness	2"	3"	3"
Blading Frequency (# per month)	2	2	3
Regraveling Frequency (years between overlay)	5	5	4
Dust Suppressant (yes/no)	—	—	—
Base Stabilization (yes/no)	—	—	—

If you answered yes for Dust Suppressant – which type do you use?______________________________

If you answered yes for Base Stabilization – which type do you use?______________________________

How would you classify the average gravel road condition in your county?

☐Very Good ☐Good ☒Fair ☒Poor

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: TRAill

Contact: Corwyn Martin (Name) 701 636 4341 (Phone) CorwynM@ND.GOV (Email)

Preparer: Corwyn Martin Date Prepared: 9-8-15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☒
- Scoria ☐
- Pit Run ☐
- Crushed Material ☒
- Specifications ☐
- Tested ☐
- Other________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☒
- Windrow/Equalize ☐
- Water/Rolling/Compaction ☐
- Other________________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing		100%
Hauling	50 %	50 %
Placement	100 %	
Blading	100 %	
Dust Control		
Base Stabilization		

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	12.50	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	Included in Stock Pile	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	from Stock Pile	Miles 20 miles	
- Placement Costs	"	Per mile "	Is this Contractor Price? (yes/no)
- Blading Cost	110.00	~~Per mile~~ HR	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	0	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	0	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	110.00	~~Per mile~~ HR	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	50	50-150	150 - up
Average Regraveling Thickness	2 in	4 in	5 in
Blading Frequency (# per month)	1	2-3	4
Regraveling Frequency (years between regraveling)	5	4	3
Dust Suppressant (yes/no)			
Base Stabilization (yes/no)			

If you answered yes for Dust Suppressant – which type do you use?____

If you answered yes for Base Stabilization – which type do you use?____

How would you classify the average gravel road condition in your county?

☐ Very Good ☒ Good ☐ Fair ☐ Poor

Comments or Suggestions (please attach additional sheets if needed):

we gravel As needed

we Blade 1 A week

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: Walsh

Contact: Sharon Lipsh 352-1530 slipsh@nd.gov
Name Phone Email

Preparer: Sharon Lipsh Date Prepared: 10/13/15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☒
- Scoria ☐
- Pit Run ☐
- Crushed Material ☒
- Specifications ☐
- Tested ☒
- Other________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☒
- Windrow/Equalize ☒
- Water/Rolling/Compaction ☐
- Other________________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing	0	100%
Hauling	66%	34%
Placement	100%	0
Blading	100%	0
Dust Control	—	—
Base Stabilization	Varies	Varies

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	5.09	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	0.26	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	40	Miles	
- Placement Costs	150—	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost $274,658.91 Avg total (3 yrs)	1000—	(3yr. Avg) Per mile/Annually	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	N/A	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost (1 Project done in 2015)	$220000	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost $184,735.14 Avg total (3 yrs)	400—	Per mile/Annual (3yr. Avg)	Is this Contractor Price? (yes/no)

1 Spot was 275' long x 15' wide = $ 11,500—
Digouts fabric, pit run + gravel

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	*Traffic Levels*		
	Low	*Medium*	*High*
Daily Traffic	*>50*	*50-150*	*150-350*
Average Regraveling Thickness	*3 in*	*4 in*	*5 in*
Blading Frequency (# per year)	*8*	*12*	*16*
Regraveling Frequency (years between regraveling)	*7*	*5*	*3*
Dust Suppressant (yes/no)	*no*	*no*	*Yes*
Base Stabilization (yes/no)	*no*	*no*	*Yes*

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic			
Average Regraveling Thickness	2"	2"-3"	2"-4"
Blading Frequency (# per month)	2	3	3-4
Regraveling Frequency (years between regraveling)	3-4	2-3	1-2
Dust Suppressant (yes/no)	—	—	—
Base Stabilization (yes/no)	YES	YES	YES

if needed

If you answered yes for Dust Suppressant – which type do you use? NA

If you answered yes for Base Stabilization – which type do you use? Dig out bad area, install fabric then pitrun then gravel

How would you classify the average gravel road condition in your county?

☐Very Good ☐Good ☒Fair ☐Poor

Comments or Suggestions (please attach additional sheets if needed):

Gravel Road Reconstruction
includes shoulder work, base stabilization + graveling
$231,000/mi by contractor (Construction only)

Did a 8 mile stretch in 2014.

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

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County Road Needs Study

County: Ward County

Contact: Dana Larsen (Name) 701-838-2810 (Phone) dana.larsen@wardnd.com (Email)

Preparer: Dana Larsen Date Prepared: 9-23-2015

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☒
- Scoria ☐
- Pit Run ☐
- Crushed Material ☒
- Specifications ☒
- Tested ☒
- Other__________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☐
- Windrow/Equalize ☒
- Water/Rolling/Compaction ☒
- Other__________ ☒ Reshape and Pull Shoulders prior to graveling

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing	0%	100%
Hauling	50%	50%
Placement	50%	50%
Blading	100%	0%
Dust Control	0%	100%
Base Stabilization	20%	80%

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	$9	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	$1	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	15 miles, loaded miles	Miles	Average distance from pit to center of project
- Placement Costs	$20,000 *	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	$2,900	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs MgCl or CaCL sparyed at 0.35 to .50 gal/sy	$6,500 - $8,500	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost Gravel = Base One, Sub-grade = Cement	$15,000 (gravel) $120,000 (sub-grade)	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost 3 year average, (2013-2014) include snow removal & sanding	$1,460	Per mile	Is this Contractor Price? (yes/no)

* $20,000/ mile includes, signing, reshaping, equalizing windrow, blading, watering, packing, and mobilization. Price does not include base stabilization, or 12" subgrade pre type A for soft spots

** "Trucking Cost" from last survey were reported in tons, and "Placement Cost" from last report was based on work completed by county forces. Current "Placement Cost" based on bids from 2014 & 2015 for a total of 72 miles of graveling, placing 2.5" to 4" of CL 13 gravel.

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic	>100	100-200	200-400
Average Regraveling Thickness	3 inches	3-4 inches	4 inches
Blading Frequency (# per month)	2 / month	3-4 / month	5 / month
Regraveling Frequency (years between regraveling)	every 5 years	every 3 years	every 3 years
Dust Suppressant (yes/no)	No	* See Below	Yes
Base Stabilization (yes/no)	No	** See Below	Yes

If you answered yes for Dust Suppressant – which type do you use? *MgCL or CaCL used near intersections, curves, high traffic areas, and haul roads

If you answered yes for Base Stabilization – which type do you use? **Base One used with Gravel & Cement use to stabilize week sub grades where roads have truck traffic

How would you classify the average gravel road condition in your county?

☐ Very Good ☐ Good ☒ Fair ☐ Poor

See comments on page 4 (50 miles of very good, 150 miles of good gravel roads, 100 miles of fair gravel roads, and 100 miles of poor gravel roads)

Comments or Suggestions (please attach additional sheets if needed):

I would classify Ward County Gravel Roads as follows;

* 50 miles of very good county roads, they have been rebuilt within the last 20 years, they have newer culverts meeting the stream water crossing standards, they have been graveled within the last three yeas and have between 3" to 5" of gravel, have a stopping sight distance of 55 mph, have 4:1 inslopes and a 4% crown in the road and can support the traffic with the use of a base stabilizer or dust control.

* 150 miles of good county roads, they have been rebuilt within the last 30 years, they have newer culverts but may have some separations or scouring due runoff or silt may need to be removed, graveled within the last three years and have between 2" to 3" of gravel. The road has a stopping sight distance of 45 to 55 mph with 4:1 inslopes and only has a few soft area in the spring and the presents of a shoulder curb is noticeable.

* 100 miles of fair county roads, they have not been rebuilt within the last 30 years and have older culverts that are separating, rusting, undersized or are filled with silt. The road has not been graveled within the last three years and has between 1" to 2" of gravel, have a stopping sight distance less than 45 on some or all sections, 3:1 inslopes and have numerous soft spots in the spring, water is within 2 feet in elevation of the shoulder and inslopes are being to erode and there is a shoulder curb. Road may need grade raises, inslope repair, or may need to be reconstructed.

* 100 miles of poor county roads, no record of being rebuilt, and have older culverts that are separating, rusting, undersized or are filled with silt. The road has not been graveled within the last three to five years and has between 1" to 2" of gravel and bare spots with little to no gravel. The road has a stopping sight distance less than 35 on some or all sections, 3:1 and 2:1 inslopes and have numerous soft spots in the spring sloughs are within 1 feet in elevation of the shoulder, inslopes are eroding and need rip rap, some road may be closed or have narrow section due to high water, and a shoulder curb is present and hold water after rain. Road need either a grade raises, major inslope repair, and should be reconstructed.

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: Wells County

Contact: Mel Southard | 701-341-0411 | msouthard@nd.gov
Name | Phone | Email

Preparer: Mel   Date Prepared: Sep 2-2015

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

- Gravel ☑
- Scoria ☐
- Pit Run ☑
- Crushed Material ☐
- Specifications ☐
- Tested ☐
- Other________________ ☐

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

- Truck Drop and Blade ☑
- Windrow/Equalize ☐
- Water/Rolling/Compaction ☐
- Other________________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing		X
Hauling	X	X
Placement	X	X
Blading	X	
Dust Control		X
Base Stabilization		

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	county $5.50 / contractor $5.50	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	$6.00 a mile county no charge	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	10	Miles	
- Placement Costs	no charge	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	no charge	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs		Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost		Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	no charge	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic		✓	
Average Regraveling Thickness	✓		
Blading Frequency (# per month)		Every 14 Day's	
Regraveling Frequency (years between regraveling)	~~[illegible]~~	5	
Dust Suppressant (yes/no)	No	no	no
Base Stabilization (yes/no)	no	no	no

If you answered yes for Dust Suppressant – which type do you use?____

If you answered yes for Base Stabilization – which type do you use?____

How would you classify the average gravel road condition in your county?

☐ Very Good ☒ Good ☐ Fair ☐ Poor

Comments or Suggestions (please attach additional sheets if needed):

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

County Road Needs Study

County: Williams

Contact: Dennis Nelson (701)577-4521 dennisn@co.williams.nd.us
Name Phone Email

Preparer: Dennis Nelson Date Prepared: 9/14/15

Aggregate Description

To determine the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, spec gravel – select crushed material and specifications.

Gravel ☒
Scoria ☐
Pit Run ☐
Crushed Material ☒
Specifications ☒ Class 5
Tested ☐
Other Class 5 Modified ☒

Placement Practices

When aggregate overlays are placed in your county, please select the typical practice that is used to apply an aggregate overlay.

Truck Drop and Blade ☒
Windrow/Equalize ☐
Water/Rolling/Compaction ☒ When possible
Other__________ ☐

Operational Tasks

In this section, please provide a percentage of tasks that are done using county resources versus the percentage of work done by a contractor. For example, if your county owns the pit and does all of the crushing using county labor, 100% would be entered into the first column, and 0% in the second column.

	Performed by:	
Task	County	Contractor
Crushing		100%
Hauling	50%	50%
Placement	90%	10%
Blading	100%	
Dust Control		100%
Base Stabilization	25%	75%

Gravel Road Costs

Please report costs for gravel for county roads in the table below. The table asks for unit costs for graveling, maintaining, and operating gravel roads. If you are quoting contractor prices, please circle "yes" in the right hand column.

Gravel/Scoria Cost			
- Average Gravel/Scoria Cost (crushing & royalties at the pit)	10.81	Per cubic yd.	Is this Contractor Price? (yes/no)
- Trucking Cost from Gravel Origin	5.00	Per loaded mile/Cu. Yard	Is this Contractor Price? (yes/no)
- Average trucking distance for aggregate	15	Miles	
- Placement Costs	2,600.00	Per mile	Is this Contractor Price? (yes/no)
- Blading Cost	200.00	Per mile	Is this Contractor Price? (yes/no)
- Dust Suppressant Costs	7,500.00	Per mile	Is this Contractor Price? (yes/no)
- Base Stabilization Cost	300,000.00	Per mile	Is this Contractor Price? (yes/no)
- Snow Removal Cost	100.00	Per mile	Is this Contractor Price? (yes/no)

Gravel Road Practices

This section asks for information regarding gravel road practices based upon differing traffic levels. Under the "Daily Traffic" row, please enter what you would consider low, medium and high traffic levels on gravel roads within your county. In the example below, low is categorized as less than 50 vehicles, medium 50-150 vehicles and high 150-350. This is expected to vary significantly from county to county, so please use your own estimates of traffic levels. Following the traffic entry, please enter the regraveling thickness, blading frequency, regraveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

EXAMPLE	***Traffic Levels***		
	Low	***Medium***	***High***
Daily Traffic	***>50***	***50-150***	***150-350***
Average Regraveling Thickness	***3 in***	***4 in***	***5 in***
Blading Frequency (# per year)	***8***	***12***	***16***
Regraveling Frequency (years between regraveling)	***7***	***5***	***3***
Dust Suppressant (yes/no)	***no***	***no***	***Yes***
Base Stabilization (yes/no)	***no***	***no***	***Yes***

County Entry	Traffic Levels		
	Low	Medium	High
Daily Traffic			X
Average Regraveling Thickness	X		
Blading Frequency (# per month)	8		
Regraveling Frequency (years between regraveling)			X
Dust Suppressant (yes/no)	No		
Base Stabilization (yes/no)			Yes

If you answered yes for Dust Suppressant – which type do you use?____

If you answered yes for Base Stabilization – which type do you use? Perma-Zyme

How would you classify the average gravel road condition in your county?

☐Very Good ☐Good ☒Fair ☐Poor

Comments or Suggestions (please attach additional sheets if needed):

First, Williams County would like to thank Upper Great Plains for all the work on getting good information to the State Legislature in the past and also for helping in getting some funding for Williams County to get good road projects done.

On page 3, at the bottom you asked to classify the average gravel road condition in the county. Let me say this is hard to do, so lets say our good gravel roads are very few but we are doing our best to keep them in good shape, but the fair roads are majority in the county. On the township side of things, the roads are very poor.

I am sending some of our bid tabs from Williams County road projects from the funding through State Legislature. Without Upper Great Plains help in getting the information to the Legislature and the Legislature giving Williams County money, Williams County would be in disastrous shape and very unsafe to travel.

Again, thank you for the help and keep up the good work!

Please return this survey in the enclosed envelope by **October 15, 2015**. Please direct any questions to Alan Dybing at 701.231.5988 or alan.dybing@ndsu.edu.

Williams County Road #17 Widen and Overlay
Williams County, ND
P11117-2014-003
Detailed Bid Tab

No.	Description	Qty.	Unit	Mayo Construction Co. Unit Price	Mayo Construction Co. Extended Price	Central Specialties, Inc. Unit Price	Central Specialties, Inc. Extended Price	Knife River Corp.-North Central Unit Price	Knife River Corp.-North Central Extended Price	Northern Improvement Co. Unit Price	Northern Improvement Co. Extended Price
	CONTRACT NO. 1 Base Bid										
1	Mobilization and Contract Bond	1	LS	955,000.00	955,000.00	600,000.00	600,000.00	832,000.00	832,000.00	688,850.00	688,850.00
2	Clearing and Grubbing	1	LS	15,750.00	15,750.00	10,000.00	10,000.00	5,000.00	5,000.00	16,000.00	16,000.00
3	Common Excavation - Type C	66,691	CY	3.52	234,752.32	6.36	424,154.76	8.00	533,528.00	3.60	240,087.60
4	~~Additional Excavation~~	12,796	~~CY~~	0.00		0.00		0.00		0.00	
5	Remove and Replace Topsoil	16	MILE	13,650.00	221,130.00	18,803.51	304,616.86	12,220.00	197,964.00	14,000.00	226,800.00
6	Fill	98,842	CY	3.57	352,865.94	4.26	421,066.92	2.40	237,220.80	3.75	370,657.50
7	Water	3,000	MGAL	26.25	78,750.00	15.00	45,000.00	55.00	165,000.00	56.00	168,000.00
8	Subgrade Preparation (Type C - 12IN or R1)	856	STA	144.90	124,034.40	200.00	171,200.00	365.00	312,440.00	148.00	126,688.00
9	Silt Fence - Supported	27,450	LF	3.30	90,585.00	4.33	118,858.50	4.33	118,858.50	4.75	130,387.50
10	Remove Silt Fence - Supported	27,450	LF	1.30	35,685.00	0.25	6,862.50	0.25	6,862.50	0.30	8,235.00
11	Flotation Silt Curtain	10,320	LF	10.80	111,456.00	4.33	44,685.60	4.33	44,685.60	4.75	49,020.00
12	Remove Flotation Silt Curtain	10,320	LF	2.10	21,672.00	0.25	2,580.00	0.25	2,580.00	0.30	3,096.00
13	Aggregate Base Course Cl 5	84,476	TON	17.60	1,486,777.60	16.00	1,351,616.00	19.00	1,605,044.00	22.00	1,858,472.00
14	Remove and Relay Blended Material	89,410	SY	2.50	223,525.00	6.93	619,611.30	6.25	558,812.50	15.00	1,341,150.00
15	MC-70 Liquid Asphalt	84,712	GAL	1.00	84,712.00	2.75	232,958.00	3.40	288,020.80	4.00	338,848.00
16	CSS1H of MS1 Emulsified Asphalt	35,164	GAL	2.45	86,151.80	2.00	70,328.00	1.90	66,811.60	2.00	70,328.00
17	Superpave FAA 43	121,600	TON	38.82	4,720,512.00	39.92	4,854,272.00	46.00	5,593,600.00	42.50	5,168,000.00
18	PG 58-28 Asphalt Cement	4,885	TON	437.50	2,137,187.50	450.00	2,198,250.00	400.00	1,954,000.00	550.00	2,686,750.00
19	PG 58-34 Asphalt Cement	2,187	TON	598.00	1,307,826.00	600.00	1,312,200.00	450.00	984,150.00	700.00	1,530,900.00
20	Milling	117,000	SY	1.22	142,740.00	1.10	128,700.00	1.44	168,480.00	6.00	702,000.00
21	Flagging	2,430	MHR	37.00	89,910.00	20.00	48,600.00	40.00	97,200.00	41.00	99,630.00
22	Traffic Control Signs	4,782	UNIT	4.00	19,128.00	3.75	17,932.50	3.75	17,932.50	4.00	19,128.00
23	Type III Barricades	14	EA	160.00	2,240.00	150.00	2,100.00	150.00	2,100.00	130.00	1,820.00
24	Delineator Drums	25	EA	42.00	1,050.00	25.00	625.00	25.00	625.00	54.00	1,350.00
25	Tubular Markers	200	EA	15.00	3,000.00	12.00	2,400.00	12.00	2,400.00	15.00	3,000.00
26	Field Laboratory Type C	2	EA	8,000.00	16,000.00	10,000.00	20,000.00	7,800.00	15,600.00	15,000.00	30,000.00
27	Seeding Type B CL II	100	ACRE	512.40	51,240.00	1,139.00	113,900.00	1,139.00	113,900.00	1,200.00	120,000.00
28	Geogrid (Tensar)	146,000	SY	4.20	613,200.00	4.59	670,140.00	4.54	662,840.00	4.00	584,000.00
29	Reset Sign Panel	56	EA	262.50	14,700.00	250.00	14,000.00	250.00	14,000.00	241.00	13,496.00
30	Culvert Delineator - Object Markers	64	EA	73.50	4,704.00	70.00	4,480.00	70.00	4,480.00	103.00	6,592.00
31	Rumble Strips - Centerline	16	MILE	1,000.00	16,200.00	785.00	12,717.00	505.00	8,181.00	1,022.00	16,556.40
32	Rumble Strips - Edges	32	MILE	825.00	26,730.00	955.00	30,942.00	505.00	16,362.00	840.00	27,216.00
33	Rumble Strips - Intersection (Near Hwy 50)	6	EA	735.00	4,410.00	2,000.00	12,000.00	720.00	4,320.00	3,500.00	21,000.00
34	Short Term 4in Broken Line - NPZ - Pnt Tape	62,000	LF	0.16	9,920.00	0.15	9,300.00	0.15	9,300.00	0.15	9,300.00
35	Pavement Mk painted 4in Line	176,472	LF	0.10	17,647.20	0.10	17,647.20	0.09	15,882.48	0.08	14,117.76
36	Mailbox - All Types	7	EA	210.00	1,470.00	200.00	1,400.00	200.00	1,400.00	310.00	2,170.00
37	Remove Structure (Concrete Headwall)	2	EA	4,200.00	8,400.00	7,200.00	14,400.00	5,000.00	10,000.00	6,650.00	13,300.00
38	New Concrete Headwalls (Cash Allowance)	1	LS	450,000.00	450,000.00	450,000.00	450,000.00	450,000.00	450,000.00	450,000.00	450,000.00
39	60" RCP	38	LF	52.50	1,995.00	550.00	20,900.00	800.00	30,400.00	535.00	20,330.00
40	60" RCP - End Section	4	EA	3,570.00	14,280.00	4,750.00	19,000.00	3,950.00	15,800.00	3,650.00	14,600.00
41	73x45 Arch RCP	65	LF	625.80	40,677.00	480.00	31,200.00	695.00	45,175.00	640.00	41,600.00
42	73x45 Arch RCP - End Section	4	EA	3,780.00	15,120.00	3,535.00	14,140.00	3,970.00	15,880.00	3,850.00	15,400.00
43	24" RCP	105	LF	157.50	16,537.50	275.00	28,875.00	408.00	42,840.00	161.00	16,905.00
44	24" RCP - End Section	12	EA	1,312.50	15,750.00	1,960.00	23,520.00	1,450.00	17,400.00	1,340.00	16,080.00

Williams County Road #17 Widen and Overlay
Williams County, ND
P11117-2014-003
Detailed Bid Tab

				Mayo Construction Co.		Central Specialties, Inc.		Knife River Corp.-North Central		Northern Improvement Co.	
No.	Description	Qty.	Unit	Unit Price	Extended Price	Unit Price	Extended Price	Unit Price	Extended Price	Unit Price	Extended Price
45	88x54 Arch RCP	48	LF	735.00	35,280.00	850.00	40,800.00	767.00	36,816.00	750.00	36,000.00
46	18" RCP	189	LF	147.00	27,783.00	260.00	49,140.00	315.00	59,535.00	150.00	28,350.00
47	18" RCP - End Sections	18	EA	1,050.00	18,900.00	1,815.00	32,670.00	1,330.00	23,940.00	1,100.00	19,800.00
48	30" RCP	23	LF	199.50	4,588.50	360.00	8,280.00	373.00	8,579.00	205.00	4,715.00
49	30" RCP - End Sections	2	EA	1,575.00	3,150.00	3,150.00	6,300.00	1,760.00	3,520.00	1,610.00	3,220.00
50	36" RCP	12	LF	225.75	2,709.00	500.00	6,000.00	660.00	7,920.00	230.00	2,760.00
51	36" RCP -End Section	2	EA	1,863.75	3,727.50	4,400.00	8,800.00	2,000.00	4,000.00	1,900.00	3,800.00
52	48" CMP (galvanized steel)	153	LF	246.75	37,752.75	305.00	46,665.00	325.00	49,725.00	252.00	38,556.00
53	42" CMP (galvanized steel)	80	LF	210.00	16,800.00	320.00	25,600.00	340.00	27,200.00	215.00	17,200.00
54	36" CMP (galvanized steel)	13	LF	241.50	3,139.50	455.00	5,915.00	370.00	4,810.00	250.00	3,250.00
55	36" CMP - End Sections	2	EA	1,076.25	2,152.50	870.00	1,740.00	725.00	1,450.00	250.00	500.00
56	24" CMP (galvanized steel)	93	LF	105.00	9,765.00	160.00	14,880.00	240.00	22,320.00	110.00	10,230.00
57	24" CMP - End Sections	2	EA	288.75	577.50	600.00	1,200.00	500.00	1,000.00	300.00	600.00
58	Pilot Car	1,200	HR	52.00	62,400.00	30.00	36,000.00	45.69	54,828.00	61.00	73,200.00
	Total CONTRACT No. 1				$14,114,146.51		$14,781,169.14		$15,594,719.28		$17,524,041.76

Williams County Road #8 Rigid Pavement Design
Williams County, ND
P11117-2014-009
Detailed Bid Tab

No.	Description	Qty.	Unit	Northern Improvement Co. Unit Price	Northern Improvement Co. Extended Price
CONTRACT NO. 1 Base Bid					
A.	**General Conditions**				
1.0	**General Conditions**				
a.	Insurance, Bonds, etc.	1	l.s.	19,700.00	19,700.00
b.	Mobilization	1	l.s.	611,000.00	611,000.00
B.	**Site Work**				
1.0	**Removal and Demolition**				
a.	Removal of Bituminous Surfacing	184	s.y.	24.00	4,416.00
b.	Remove Existing 12" CMP Pipe	1	ea,	2,530.00	2,530.00
c.	Remove Existing 16" Steel Pipe	1	ea,	2,530.00	2,530.00
d.	Remove Existing 18" CMP Pipe	1	ea,	2,530.00	2,530.00
e.	Remove Existing 24" CMP Pipe	3	ea,	2,530.00	7,590.00
f.	Remove Existing 72" CMP Pipe	1	ea,	3,220.00	3,220.00
g.	Remove Existing Cattle Crossing	1	ea,	3,220.00	3,220.00
h.	Common Excavation - Type B	22,861	c.y.	6.90	157,740.90
2.0	**Rigid Pavement**				
a.	Class 5 Aggregate (compacted in place)	8,584	c.y.	59.00	506,456.00
b.	9" Non-Reinforced Concrete Pavement	47,780	s.y.	88.20	4,214,196.00
c.	9" Reinforced Concrete Pavement	840	s.y.	103.00	86,520.00
d.	Tie-bars	11,648	lbs.	1.35	15,724.80
e.	Sawing and Sealing Joints	46,479	l.f.	1.65	76,690.35
f.	4" Grooved Epoxy Pavement Marking	49,900	l.f.	1.50	74,850.00
g.	24" Grooved Epoxy Pavement Marking	28	l.f.	23.00	644.00
2.1	**Approaches**				
a.	12" Tapered Non-Reinforced Concrete Pavement	5,284	s.y.	140.50	742,402.00
b.	Tie-bars	2,376	lbs.	1.35	3,207.60
c.	Sawing and Sealing Joints	6,816	l.f.	1.90	12,950.40
2.2	**Aprons**				
a.	12" Non-Reinforced Concrete Pavement	3,053	s.y.	176.00	537,328.00
b.	Tie-bars	503	lbs.	1.35	679.05
c.	Sawing and Sealing Joints	1,071	l.f.	2.90	3,105.90
3.0	**Storm Water Management**				
a.	Erosion Control	1	l.s.	53,000.00	53,000.00
b.	36" Equivalent RCP Arch Pipe (44x27) (Sta 52+67, 47' RT)	76	l.f.	375.00	28,500.00
c.	24" RCP Circular Pipe (Sta 38+09)	79	l.f.	230.00	18,170.00
d.	24" RCP Circular Pipe (Sta 144+81)	66	l.f.	230.00	15,180.00
e.	24" RCP Circular Pipe (Sta 157+04)	97	l.f.	230.00	22,310.00
f.	72" RCP Circular Pipe (Sta 68+00)	136	l.f.	650.00	88,400.00
g.	54" RCP Flared End Sections	2	ea.	3,100.00	6,200.00
h.	60" RCP Flared End Sections	4	ea.	4,100.00	16,400.00
i.	18" CMP Approach Pipe	89	l.f.	60.00	5,340.00
j.	18" CMP Flared End Sections	14	ea.	290.00	4,060.00
k	24" CMP Flared End Sections	2	ea.	335.00	670.00

Williams County Road #8 Rigid Pavement Design
Williams County, ND
P11117-2014-009
Detailed Bid Tab

No.	Description	Qty.	Unit	Northern Improvement Co. Unit Price	Northern Improvement Co. Extended Price
4.0	**Phasing and Traffic Control**				
a.	Flagging	200	mhr	73.00	14,600.00
b.	Traffic Control	2,135	unit	4.60	9,821.00
c.	Traffic Control - Custom	10	ea.	230.00	2,300.00
d.	Type III Barricades	32	ea.	200.00	6,400.00
e.	Tubular Markers	30	ea.	29.00	870.00
5.0	**Restoration**				
a.	Seeding	7	ac.	6,200.00	43,400.00
b.	Reset Salvaged Signs	23	ea.	290.00	6,670.00
c.	Install New Signs	17	ea.	345.00	5,865.00
d.	Fence - Removeand Replace	725	l.f.	10.00	7,250.00
e.	Detour Route Gravel CL5 (Compacted in place)	200	ton	36.00	7,200.00
f.	Dust Control	500	l.f.	3.00	1,500.00
g.	Water	100	Mgal.	43.00	4,300.00
	Total CONTRACT No. 1				$7,457,637.00

Bid Tabulations

Williams County Road 8 Widening & Full Reconstruction

Williams County, North Dakota

Bid Opening: May 19, 2015 @ 10:00 AM

R14078.01

Item No.	Description	Unit	Quantity	Engineer's Estimate Unit Price	Engineer's Estimate Subtotal	Northern Improvement Unit Price	Northern Improvement Subtotal
1	Contract Bond	LS	1	$35,000.00	$35,000.00	$10,950.00	$10,950.00
2	Removal of Bituminous Surfacing	SY	36813	$5.00	$184,065.00	$3.50	$128,845.50
3	Saw Bituminous Surfacing-Full Depth	LF	29	$2.00	$58.00	$3.00	$87.00
4	Removal of Culverts - All Types & Sizes	LF	1006	$25.00	$25,150.00	$16.50	$16,599.00
5	Remove Existing Fence	LF	21493	$2.00	$42,986.00	$2.75	$59,105.75
6	Common Excavation - Type A	CY	31414	$5.00	$157,070.00	$5.25	$164,923.50
7	Topsoil	CY	32149	$4.00	$128,596.00	$3.50	$112,521.50
8	Common Excavation-Waste	CY	18912	$8.00	$151,296.00	$6.25	$118,200.00
9	Class 2 Excavation - Box Culvert	EA	1	$5,000.00	$5,000.00	$9,100.00	$9,100.00
10	Foundation Preparation	EA	1	$8,000.00	$8,000.00	$7,700.00	$7,700.00
11	Foundation Fill	Ton	532	$25.00	$13,300.00	$23.00	$12,236.00
12	Water	M Gal	1541	$50.00	$77,050.00	$32.00	$49,312.00
13	Subgrade Preparation - Type A	Sta	150.5	$450.00	$67,725.00	$485.00	$72,992.50
14	Hydraulic Mulch	Acre	39.9	$1,800.00	$71,820.00	$2,625.00	$104,737.50
15	Riprap Grade I	CY	102	$60.00	$6,120.00	$83.00	$8,466.00
16	Fiber Rolls 12 in	LF	11372	$2.50	$28,430.00	$3.00	$34,116.00
17	Aggregate Base Course Cl 5	Ton	58355	$20.00	$1,167,100.00	$13.00	$758,615.00
18	Tack Coat	Gal	5267	$2.50	$13,167.50	$2.00	$10,534.00
19	Prime coat	Gal	15800	$4.00	$63,200.00	$5.00	$79,000.00
20	Superpave FAA 41	Ton	18184	$60.00	$1,091,040.00	$31.00	$563,704.00
21	Cored Sample	EA	95	$250.00	$23,750.00	$23.00	$2,185.00
22	PG 58-28 Asphalt Cement	Ton	1055	$650.00	$685,750.00	$600.00	$633,000.00
23	5ft x 3 ft Precast RCB Culvert	LF	64	$550.00	$35,200.00	$930.00	$59,520.00
24	5 ft x 3 ft Precast RCB end Station	EA	2.0	$1,500.00	$3,000.00	$7,250.00	$14,500.00
25	Mobilization	LS	1	$125,000.00	$125,000.00	$160,845.00	$160,845.00
26	Flagging	Mhr	600	$35.00	$21,000.00	$31.00	$18,600.00
27	Traffic Control Signs	Unit	636	$3.50	$2,226.00	$4.10	$2,607.60
28	Type III Barricade	EA	2	$250.00	$500.00	$180.00	$360.00
29	Delineator Drums	EA	400	$35.00	$14,000.00	$20.00	$8,000.00
30	Pilot Car	HR	300	$40.00	$12,000.00	$47.00	$14,100.00
31	Geosynthetic Material Type R1	SY	66,058	$2.50	$165,145.00	$1.40	$92,481.20
32	Geosynthetic Material Type RR	SY	357	$3.00	$1,071.00	$4.15	$1,481.55
33	Pipe Conc Reinf 24 in Cl III	LF	410	$175.00	$71,750.00	$175.00	$71,750.00
34	Pipe Conc Reinf 30 In CL III	LF	120	$190.00	$22,800.00	$195.00	$23,400.00
35	Pipe Corr Steel .064 in 18 in	LF	584	$75.00	$43,800.00	$52.00	$30,368.00
36	Pipe Corr Steel .064 in 24 in	LF	238	$90.00	$21,420.00	$57.00	$13,566.00
37	Pipe Corr Steel .064 in 36 in	LF	34	$100.00	$3,400.00	$103.00	$3,502.00
38	Fence Barbed Wire 3 Strand-Steel Post	LF	18,320	$3.50	$64,120.00	$2.90	$53,128.00
39	Vehicle Gate	EA	10	$1,500.00	$15,000.00	$1,150.00	$11,500.00
40	Corner Assembly Barbed Wire - Wood Post	EA	24	$360.00	$8,640.00	$410.00	$9,840.00
41	Reset Sign Panel	EA	12	$100.00	$1,200.00	$130.00	$1,560.00
42	Reset Sign Support	EA	12	$150.00	$1,800.00	$200.00	$2,400.00
43	Remove Sign & Support	EA	6	$150.00	$900.00	$200.00	$1,200.00
44	Rumble Strips - Asphalt Shoulder	MILE	5.7	$550.00	$3,135.00	$1,125.00	$6,412.50
45	Rumble Strips - Asphalt Centerline	MILE	2.9	$600.00	$1,740.00	$3,900.00	$11,310.00
46	Rumble Strips - Intersection	EA	1	$2,400.00	$2,400.00	$3,300.00	$3,300.00
47	Pmvt Mk Painted 4 in line	LF	48164	$0.10	$4,816.40	$0.23	$11,077.72
48	Reset Mailbox	EA	3	$400.00	$1,200.00	$260.00	$780.00
					$4,692,936.90		$3,584,519.82

Bid Tabulations

Williams County Road 8 Widening & Full Reconstruction

Williams County, North Dakota

Bid Opening: May 19, 2015 @ 10:00 AM

R14078.01

				Central Specialties Inc.		Gratech Company	
Item No.	Description	Unit	Quantity	Unit Price	Subtotal	Unit Price	Subtotal
1	Contract Bond	LS	1	$6,000.00	$6,000.00	$18,200.00	$18,200.00
2	Removal of Bituminous Surfacing	SY	36813	$4.00	$147,252.00	$4.04	$148,724.52
3	Saw Bituminous Surfacing-Full Depth	LF	29	$1.00	$29.00	$2.04	$59.16
4	Removal of Culverts - All Types & Sizes	LF	1006	$20.00	$20,120.00	$27.22	$27,383.32
5	Remove Existing Fence	LF	21493	$0.75	$16,119.75	$3.50	$75,225.50
6	Common Excavation - Type A	CY	31414	$6.50	$204,191.00	$2.99	$93,927.86
7	Topsoil	CY	32149	$4.00	$128,596.00	$2.96	$95,161.04
8	Common Excavation-Waste	CY	18912	$3.48	$65,813.76	$9.00	$170,208.00
9	Class 2 Excavation - Box Culvert	EA	1	$9,500.00	$9,500.00	$9,173.71	$9,173.71
10	Foundation Preparation	EA	1	$7,750.00	$7,750.00	$5,433.36	$5,433.36
11	Foundation Fill	Ton	532	$18.00	$9,576.00	$31.41	$16,710.12
12	Water	M Gal	1541	$12.00	$18,492.00	$17.75	$27,352.75
13	Subgrade Preparation - Type A	Sta	150.5	$325.00	$48,912.50	$259.25	$39,017.13
14	Hydraulic Mulch	Acre	39.9	$2,550.00	$101,745.00	$3,315.00	$132,268.50
15	Riprap Grade I	CY	102	$75.00	$7,650.00	$74.85	$7,634.70
16	Fiber Rolls 12 in	LF	11372	$3.00	$34,116.00	$3.06	$34,798.32
17	Aggregate Base Course Cl 5	Ton	58355	$12.75	$744,026.25	$16.12	$940,682.60
18	Tack Coat	Gal	5267	$2.00	$10,534.00	$1.89	$9,954.63
19	Prime coat	Gal	15800	$3.00	$47,400.00	$3.83	$60,514.00
20	Superpave FAA 41	Ton	18184	$43.75	$795,550.00	$44.63	$811,551.92
21	Cored Sample	EA	95	$25.00	$2,375.00	$25.50	$2,422.50
22	PG 58-28 Asphalt Cement	Ton	1055	$450.00	$474,750.00	$408.00	$430,440.00
23	5ft x 3 ft Precast RCB Culvert	LF	64	$840.00	$53,760.00	$607.65	$38,889.60
24	5 ft x 3 ft Precast RCB end Station	EA	2.0	$14,000.00	$28,000.00	$5,395.12	$10,790.24
25	Mobilization	LS	1	$200,000.00	$200,000.00	$65,997.10	$65,997.10
26	Flagging	Mhr	600	$20.00	$12,000.00	$39.49	$23,694.00
27	Traffic Control Signs	Unit	636	$3.00	$1,908.00	$3.06	$1,946.16
28	Type III Barricade	EA	2	$112.00	$224.00	$114.24	$228.48
29	Delineator Drums	EA	400	$16.25	$6,500.00	$16.58	$6,632.00
30	Pilot Car	HR	300	$25.00	$7,500.00	$55.09	$16,527.00
31	Geosynthetic Material Type RI	SY	66,058	$2.25	$148,630.50	$2.89	$190,907.62
32	Geosynthetic Material Type RR	SY	357	$3.00	$1,071.00	$2.95	$1,053.15
33	Pipe Conc Reinf 24 in Cl III	LF	410	$380.00	$155,800.00	$161.88	$66,370.80
34	Pipe Conc Reinf 30 In CL III	LF	120	$350.00	$42,000.00	$203.53	$24,423.60
35	Pipe Corr Steel .064 in 18 in	LF	584	$89.00	$51,976.00	$96.02	$56,075.68
36	Pipe Corr Steel .064 in 24 in	LF	238	$100.00	$23,800.00	$112.39	$26,748.82
37	Pipe Corr Steel .064 in 36 in	LF	34	$160.00	$5,440.00	$170.27	$5,789.18
38	Fence Barbed Wire 3 Strand-Steel Post	LF	18,320	$2.49	$45,616.80	$2.91	$53,311.20
39	Vehicle Gate	EA	10	$375.00	$3,750.00	$1,150.56	$11,505.60
40	Corner Assembly Barbed Wire - Wood Post	EA	24	$159.00	$3,816.00	$4.03	$96.72
41	Reset Sign Panel	EA	12	$76.00	$912.00	$77.52	$930.24
42	Reset Sign Support	EA	12	$156.70	$1,880.40	$159.83	$1,917.96
43	Remove Sign & Support	EA	6	$38.04	$228.24	$38.80	$232.80
44	Rumble Strips - Asphalt Shoulder	MILE	5.7	$1,100.00	$6,270.00	$892.50	$5,087.25
45	Rumble Strips - Asphalt Centerline	MILE	2.9	$1,315.00	$3,813.50	$1,004.70	$2,913.63
46	Rumble Strips - Intersection	EA	1	$3,600.00	$3,600.00	$4,431.90	$4,431.90
47	Pmvt Mk Painted 4 in line	LF	48164	$0.11	$5,394.37	$0.01	$481.64
48	Reset Mailbox	EA	3	$253.00	$759.00	$258.06	$774.18
					$3,715,148.07		$3,774,600.19

Bid Tabulations

Williams County Road 8 Widening & Full Reconstruction

Williams County, North Dakota

Bid Opening: May 19, 2015 @ 10:00 AM

R14078.01

				Knife River		Park Construction Co.	
Item No.	Description	Unit	Quantity	Unit Price	Subtotal	Unit Price	Subtotal
1	Contract Bond	LS	1	$13,100.00	$13,100.00	$17,300.00	$17,300.00
2	Removal of Bituminous Surfacing	SY	36813	$2.25	$82,829.25	$2.55	~~$98,873.15~~ **$93,873.15**
3	Saw Bituminous Surfacing-Full Depth	LF	29	$3.10	$89.90	$8.85	$256.65
4	Removal of Culverts - All Types & Sizes	LF	1006	$18.50	$18,611.00	$18.60	$18,711.60
5	Remove Existing Fence	LF	21493	$2.69	$57,816.17	$2.80	$60,180.40
6	Common Excavation - Type A	CY	31414	$5.35	$168,064.90	$5.25	$164,923.50
7	Topsoil	CY	32149	$4.25	$136,633.25	$4.45	~~$143,063.40~~ **$143,063.05**
8	Common Excavation-Waste	CY	18912	$4.45	$84,158.40	$11.45	$216,542.40
9	Class 2 Excavation - Box Culvert	EA	1	$2,000.00	$2,000.00	$10,300.00	$10,300.00
10	Foundation Preparation	EA	1	$1,000.00	$1,000.00	$8,740.00	$8,740.00
11	Foundation Fill	Ton	532	$28.00	$14,896.00	$25.60	$13,619.20
12	Water	M Gal	1541	$45.00	$69,345.00	$18.00	$27,738.00
13	Subgrade Preparation - Type A	Sta	150.5	$470.00	$70,735.00	$280.00	$42,140.00
14	Hydraulic Mulch	Acre	39.9	$2,550.00	$101,745.00	$2,710.00	$108,129.00
15	Riprap Grade I	CY	102	$139.00	$14,178.00	$93.20	$9,506.40
16	Fiber Rolls 12 in	LF	11372	$3.00	$34,116.00	$3.20	$36,390.40
17	Aggregate Base Course Cl 5	Ton	58355	$15.00	$875,325.00	$13.60	$793,628.00
18	Tack Coat	Gal	5267	$1.85	$9,743.95	$1.90	$10,007.30
19	Prime coat	Gal	15800	$3.75	$59,250.00	$3.85	$60,830.00
20	Superpave FAA 41	Ton	18184	$43.75	$795,550.00	$45.00	$818,280.00
21	Cored Sample	EA	95	$25.00	$2,375.00	$25.70	$2,441.50
22	PG 58-28 Asphalt Cement	Ton	1055	$400.00	$422,000.00	$411.00	$433,605.00
23	5ft x 3 ft Precast RCB Culvert	LF	64	$600.00	$38,400.00	$1,050.00	$67,200.00
24	5 ft x 3 ft Precast RCB end Station	EA	2.0	$6,500.00	$13,000.00	$8,150.00	$16,300.00
25	Mobilization	LS	1	$185,000.00	$185,000.00	$258,000.00	$258,000.00
26	Flagging	Mhr	600	$45.50	$27,300.00	$50.00	$30,000.00
27	Traffic Control Signs	Unit	636	$3.00	$1,908.00	$4.95	$3,148.20
28	Type III Barricade	EA	2	$112.00	$224.00	$185.00	$370.00
29	Delineator Drums	EA	400	$16.25	$6,500.00	$26.80	$10,720.00
30	Pilot Car	HR	300	$50.00	$15,000.00	$60.00	$18,000.00
31	Geosynthetic Material Type R1	SY	66,058	$1.65	$108,995.70	$2.60	$171,750.80
32	Geosynthetic Material Type RR	SY	357	$6.00	$2,142.00	$4.65	$1,660.05
33	Pipe Conc Reinf 24 in Cl III	LF	410	$355.00	$145,550.00	$198.00	$81,180.00
34	Pipe Conc Reinf 30 In CL III	LF	120	$480.00	$57,600.00	$221.00	$26,520.00
35	Pipe Corr Steel .064 in 18 in	LF	584	$61.00	$35,624.00	$58.30	$34,047.20
36	Pipe Corr Steel .064 in 24 in	LF	238	$70.00	$16,660.00	$64.10	$15,255.80
37	Pipe Corr Steel .064 in 36 in	LF	34	$109.00	$3,706.00	$116.00	$3,944.00
38	Fence Barbed Wire 3 Strand-Steel Post	LF	18,320	$2.85	$52,212.00	$2.95	$54,044.00
39	Vehicle Gate	EA	10	$1,128.00	$11,280.00	$1,160.00	$11,600.00
40	Corner Assembly Barbed Wire - Wood Post	EA	24	$395.00	$9,480.00	$408.00	$9,792.00
41	Reset Sign Panel	EA	12	$76.00	$912.00	$125.00	$1,500.00
42	Reset Sign Support	EA	12	$156.70	$1,880.40	$258.00	$3,096.00
43	Remove Sign & Support	EA	6	$38.00	$228.00	$62.70	$376.20
44	Rumble Strips - Asphalt Shoulder	MILE	5.7	$1,205.00	$6,868.50	$2,460.00	$14,022.00
45	Rumble Strips - Asphalt Centerline	MILE	2.9	$1,315.00	$3,813.50	$2,460.00	~~$7,656.00~~ **$7,134.00**
46	Rumble Strips - Intersection	EA	1	$4,350.00	$4,350.00	$5,460.00	$5,460.00
47	Pmvt Mk Painted 4 in line	LF	48164	$0.15	$7,224.60	$0.15	$7,224.60
48	Reset Mailbox	EA	3	$253.00	$759.00	$417.00	$1,251.00
					$3,790,179.52		~~$3,944,323.40~~ **$3,943,801.40**

Bid Tabulations

Williams County Road 8 Widening & Full Reconstruction

Williams County, North Dakota

Bid Opening: May 19, 2015 @ 10:00 AM

R14078.01

				Selland Construction Inc.			
Item No.	Description	Unit	Quantity	Unit Price	Subtotal	Unit Price	Subtotal
1	Contract Bond	LS	1	$50,000.00	$50,000.00		$0.00
2	Removal of Bituminous Surfacing	SY	36813	$3.00	$110,439.00		$0.00
3	Saw Bituminous Surfacing-Full Depth	LF	29	$7.00	$203.00		$0.00
4	Removal of Culverts - All Types & Sizes	LF	1006	$13.00	$13,078.00		$0.00
5	Remove Existing Fence	LF	21493	$4.00	$85,972.00		$0.00
6	Common Excavation - Type A	CY	31414	$6.75	$212,044.50		$0.00
7	Topsoil	CY	32149	$5.00	$160,745.00		$0.00
8	Common Excavation-Waste	CY	18912	$4.75	$89,832.00		$0.00
9	Class 2 Excavation - Box Culvert	EA	1	$11,000.00	$11,000.00		$0.00
10	Foundation Preparation	EA	1	$5,000.00	$5,000.00		$0.00
11	Foundation Fill	Ton	532	$40.00	$21,280.00		$0.00
12	Water	M Gal	1541	$6.00	$9,246.00		$0.00
13	Subgrade Preparation - Type A	Sta	150.5	$390.00	$58,695.00		$0.00
14	Hydraulic Mulch	Acre	39.9	$2,550.00	$101,745.00		$0.00
15	Riprap Grade I	CY	102	$110.00	$11,220.00		$0.00
16	Fiber Rolls 12 in	LF	11372	$2.00	$22,744.00		$0.00
17	Aggregate Base Course Cl 5	Ton	58355	$15.00	$875,325.00		$0.00
18	Tack Coat	Gal	5267	$2.00	$10,534.00		$0.00
19	Prime coat	Gal	15800	$4.00	$63,200.00		$0.00
20	Superpave FAA 41	Ton	18184	$45.00	$818,280.00		$0.00
21	Cored Sample	EA	95	$25.00	$2,375.00		$0.00
22	PG 58-28 Asphalt Cement	Ton	1055	$425.00	$448,375.00		$0.00
23	5ft x 3 ft Precast RCB Culvert	LF	64	$1,200.00	$76,800.00		$0.00
24	5 ft x 3 ft Precast RCB end Station	EA	2.0	$8,000.00	$16,000.00		$0.00
25	Mobilization	LS	1	$285,000.00	$285,000.00		$0.00
26	Flagging	Mhr	600	$80.00	$48,000.00		$0.00
27	Traffic Control Signs	Unit	636	$5.00	$3,180.00		$0.00
28	Type III Barricade	EA	2	$200.00	$400.00		$0.00
29	Delineator Drums	EA	400	$30.00	$12,000.00		$0.00
30	Pilot Car	HR	300	$100.00	$30,000.00		$0.00
31	Geosynthetic Material Type R1	SY	66,058	$1.80	$118,904.40		$0.00
32	Geosynthetic Material Type RR	SY	357	$3.50	$1,249.50		$0.00
33	Pipe Conc Reinf 24 in Cl III	LF	410	$230.00	$94,300.00		$0.00
34	Pipe Conc Reinf 30 In CL III	LF	120	$260.00	$31,200.00		$0.00
35	Pipe Corr Steel .064 in 18 in	LF	584	$110.00	$64,240.00		$0.00
36	Pipe Corr Steel .064 in 24 in	LF	238	$121.00	$28,798.00		$0.00
37	Pipe Corr Steel .064 in 36 in	LF	34	$160.00	$5,440.00		$0.00
38	Fence Barbed Wire 3 Strand-Steel Post	LF	18,320	$3.00	$54,960.00		$0.00
39	Vehicle Gate	EA	10	$1,400.00	$14,000.00		$0.00
40	Corner Assembly Barbed Wire - Wood Post	EA	24	$500.00	$12,000.00		$0.00
41	Reset Sign Panel	EA	12	$150.00	$1,800.00		$0.00
42	Reset Sign Support	EA	12	$225.00	$2,700.00		$0.00
43	Remove Sign & Support	EA	6	$110.00	$660.00		$0.00
44	Rumble Strips - Asphalt Shoulder	MILE	5.7	$625.00	$3,562.50		$0.00
45	Rumble Strips - Asphalt Centerline	MILE	2.9	$1,300.00	$3,770.00		$0.00
46	Rumble Strips - Intersection	EA	1	$2,600.00	$2,600.00		$0.00
47	Pmvt Mk Painted 4 in line	LF	48164	$0.10	$4,816.40		$0.00
48	Reset Mailbox	EA	3	$300.00	$900.00		$0.00
					$4,098,613.30		$0.00

Bid Tabulations

Williams County Road 15 Widening, Base & Gravel Stabilization

Williams County, North Dakota

Bid Opening: May 28, 2015 @ 11:00 AM CDT

R13166

Item No.	Spec	Code	Description	Unit	Quantity	Engineer's Estimate Unit Price	Engineer's Estimate Subtotal	Melgaard Construction Unit Price	Melgaard Construction Subtotal	
1	103	0100	Contract and Bond	LS	1	$ 30,000.00	$ 30,000.00	$ 30,989.83	$ 30,989.83	
2	201	0330	Clearing & Grubbing	LS	1	$ 15,000.00	$ 15,000.00	$ 17,777.47	$ 17,777.47	
3	202	0170	Removal of Culverts - All Types & Sizes	LF	1,024	$ 25.00	$ 25,600.00	$ 17.96	~~$ 18,388.28~~	$ 18,391.04
4	202	0312	Remove Existing Fence	LF	991	$ 2.00	$ 1,982.00	$ 5.06	~~$ 5,009.59~~	$ 5,014.46
5	203	0101	Common Excavation - Type A	CY	20,323	$ 5.00	$ 101,615.00	$ 3.31	~~$ 67,333.58~~	$ 67,269.13
6	203	0109	Topsoil	CY	18,602	$ 4.00	$ 74,408.00	$ 3.11	~~$ 57,782.13~~	$ 57,852.22
7	203	0113	Common Excavation - Waste	CY	14,521	$ 8.00	$ 116,168.00	$ 8.06	~~$ 117,024.41~~	$ 117,039.26
8	216	0100	Water	M GAL	742	$ 50.00	$ 37,100.00	$ 13.21	~~$ 9,802.10~~	$ 9,801.82
9	253	0201	Hydraulic Mulch	ACRE	23.1	$ 1,800.00	$ 41,580.00	$ 3,891.79	~~$ 84,900.28~~	$ 89,900.35
10	256	0100	Riprap Grade I	CY	71	$ 60.00	$ 4,260.00	$ 136.12	~~$ 9,664.59~~	$ 9,664.52
11	256	0201	Riprap Grade II	CY	37	$ 65.00	$ 2,405.00	$ 75.08	~~$ 2,778.04~~	$ 2,777.96
12	261	0112	Fiber Rolls 12 in.	LF	16,627	$ 2.50	$ 41,567.50	$ 3.62	~~$ 60,246.27~~	$ 60,189.74
13	430	1000	Cored Sample	EA	51	$ 250.00	$ 12,750.00	$ 221.38	~~$ 11,290.13~~	$ 11,290.38
14	702	0100	Mobilization	LS	1	$ 125,000.00	$ 125,000.00	$ 38,281.56	$ 38,281.56	
15	704	0100	Flagging	MHR	2,600	$ 35.00	$ 91,000.00	$ 88.93	~~$ 231,219.90~~	$ 231,218.00
16	704	1000	Traffic Control Signs	UNIT	843	$ 3.50	$ 2,950.50	$ 8.67	~~$ 7,307.82~~	$ 7,308.81
17	704	1052	Type III Barricade	EA	2	$ 250.00	$ 500.00	$ 313.83	$ 627.66	
18	704	1060	Delineator Drums	EA	800	$ 35.00	$ 28,000.00	$ 47.55	~~$ 38,039.98~~	$ 38,040.00
19	74	1185	Pilot Car	HR	1,300	$ 40.00	$ 52,000.00	$ 108.31	~~$ 140,803.28~~	$ 140,803.00
20	709	0151	Geosynthetic Material Type R1	SY	1,919	$ 2.50	$ 4,797.50	$ 3.41	~~$ 6,538.40~~	$ 6,543.79
21	709	155	Geosynthetic Material Type RR	SY	359	$ 3.00	$ 1,077.00	$ 1.39	~~$ 499.55~~	$ 499.01
22	714	0615	Pipe Conc Reinf 24 in. CL III	LF	400	$ 175.00	$ 70,000.00	$ 95.15	~~$ 38,059.91~~	$ 38,060.00
23	714	0820	Pipe Conc Reinf 30 in CL III	LF	54	$ 190.00	$ 10,260.00	$ 154.15	~~$ 8,324.17~~	$ 8,324.10
24	714	0905	Pipe Conc Reinf 36 in CL III	LF	58	$ 200.00	$ 11,600.00	$ 695.51	~~$ 40,339.34~~	$ 40,339.58
25	714	5015	Pipe Corr Steel .064 in 18 in	LF	240	$ 75.00	$ 18,000.00	$ 44.75	~~$ 10,740.05~~	$ 10,740.00
26	714	5820	End Sect Corr Steel .064 In 18 in	EA	2	$ 270.00	$ 540.00	$ 78.43	$ 156.86	
27	752	0400	Fence Barbed Wire 3 Strand	LF	981	$ 3.50	$ 3,433.50	$ 4.54	~~$ 4,449.82~~	$ 4,453.74
28	752	1350	Corner Assembly Barbed Wire - Wood Post	EA	6	$ 360.00	$ 2,160.00	$ 453.60	$ 2,721.60	
29	754	0592	Reset Sign Panel	EA	14	$ 100.00	$ 1,400.00	$ 269.81	~~$ 3,777.29~~	$ 3,777.34
3	754	0593	Reset Sign Support	EA	14	$ 150.00	$ 2,100.00	$ 112.95	~~$ 1,581.25~~	$ 1,581.30
31	766	0120	Reset Mailbox	EA	1	$ 400.00	$ 400.00	$ 158.13	$ 158.13	
32	900	0001	Blended and Stabilized Base Course	CY	88,216	$ 4.50	$ 396,972.00	$ 4.58	~~$ 404,152.28~~	$ 404,029.28
33	900	0002	Stabilized Aggregate Surface Course Modified Cl 5	TON	53,734	$ 35.00	$ 1,880,690.00	$ 33.43	~~$ 1,796,266.04~~	$1,796,327.62
34	900	0003	Stabilized Aggregate Surface Course Cl 5	TON	72,175	$ 30.00	$ 2,165,250.00	$ 19.15	~~$ 1,382,377.02~~	$1,382,151.25
							$ 5,372,566.00		~~$ 4,654,408.23~~	
									$ 4,654,100.81	

Bid Tabulations

Williams County Road 15 Widening, Base & Gravel Stabilization

Williams County, North Dakota

Bid Opening: May 28, 2015 @ 11:00 AM CDT

R13166

						Phillips & Jordan, Inc.		Wanzek Construction, Inc.	
Item No.	Spec	Code	Description	Unit	Quantity	Unit Price	Subtotal	Unit Price	Subtotal
1	103	0100	Contract and Bond	LS	1	$ 20,810.00	$ 20,810.00	$ 51,000.00	$ 51,000.00
2	201	0330	Clearing & Grubbing	LS	1	$ 5,181.83	$ 5,181.83	$ 14,000.00	$ 14,000.00
3	202	0170	Removal of Culverts - All Types & Sizes	LF	1,024	$ 28.41	$ 29,091.84	$ 31.00	$ 31,744.00
4	202	0312	Remove Existing Fence	LF	991	$ 7.85	$ 7,779.35	$ 6.40	$ 6,342.40
5	203	0101	Common Excavation - Type A	CY	20,323	$ 6.95	$ 141,244.85	$ 5.00	$ 101,615.00
6	203	0109	Topsoil	CY	18,602	$ 2.78	$ 51,713.56	$ 4.00	$ 74,408.00
7	203	0113	Common Excavation - Waste	CY	14,521	$ 5.57	$ 80,881.97	$ 13.00	$ 188,773.00
8	216	0100	Water	M GAL	742	$ 75.76	$ 56,213.92	$ 64.00	$ 47,488.00
9	253	0201	Hydraulic Mulch	ACRE	23.1	$ 3,583.31	$ 82,774.46	$ 3,500.00	$ 80,850.00
10	256	0100	Riprap Grade I	CY	71	$ 161.61	$ 11,474.31	$ 88.00	$ 6,248.00
11	256	0201	Riprap Grade II	CY	37	$ 160.61	$ 5,942.57	$ 93.00	$ 3,441.00
12	261	0112	Fiber Rolls 12 in.	LF	16,627	$ 3.52	$ 58,527.04	$ 3.70	$ 61,519.90
13	430	1000	Cored Sample	EA	51	$ 156.83	$ 7,998.33	$ 170.00	$ 8,670.00
14	702	0100	Mobilization	LS	1	$ 214,109.21	$ 214,109.21	$ 150,000.00	$ 150,000.00
15	704	0100	Flagging	MHR	2,600	$ 61.43	$ 159,718.00	$ 65.00	$ 169,000.00
16	704	1000	Traffic Control Signs	UNIT	843	$ 5.57	$ 4,695.51	$ 4.20	$ 3,540.60
17	704	1052	Type III Barricade	EA	2	$ 211.16	$ 422.32	$ 170.00	$ 340.00
18	704	1060	Delineator Drums	EA	800	$ 31.99	$ 25,592.00	$ 29.00	$ 23,200.00
19	74	1185	Pilot Car	HR	1,300	$ 74.23	$ 96,499.00	$ 65.00	$ 84,500.00
20	709	0151	Geosynthetic Material Type R1	SY	1,919	$ 5.96	$ 11,437.24	$ 10.00	$ 19,190.00
21	709	155	Geosynthetic Material Type RR	SY	359	$ 8.09	$ 2,904.31	$ 10.00	$ 3,590.00
22	714	0615	Pipe Conc Reinf 24 in. CL III	LF	400	$ 69.81	$ 27,924.00	$ 190.00	$ 76,000.00
23	714	0820	Pipe Conc Reinf 30 in CL III	LF	54	$ 78.46	$ 4,236.84	$ 270.00	$ 14,580.00
24	714	0905	Pipe Conc Reinf 36 in CL III	LF	58	$ 91.70	$ 5,318.60	$ 350.00	$ 20,300.00
25	714	5015	Pipe Corr Steel .064 in 18 in	LF	240	$ 55.88	$ 13,411.20	$ 200.00	$ 48,000.00
26	714	5820	End Sect Corr Steel .064 In 18 in	EA	2	$ 458.74	$ 917.48	$ 600.00	$ 1,200.00
27	752	0400	Fence Barbed Wire 3 Strand	LF	981	$ 8.96	$ 8,789.76	$ 7.00	$ 6,867.00
28	752	1350	Corner Assembly Barbed Wire - Wood Post	EA	6	$ 831.84	$ 4,991.04	$ 1,000.00	$ 6,000.00
29	754	0592	Reset Sign Panel	EA	14	$ 159.97	$ 2,239.58	$ 51.00	$ 714.00
3	754	0593	Reset Sign Support	EA	14	$ 351.93	$ 4,927.02	$ 210.00	$ 2,940.00
31	766	0120	Reset Mailbox	EA	1	$ 447.91	$ 447.91	$ 260.00	$ 260.00
32	900	0001	Blended and Stabilized Base Course	CY	88,216	$ 6.24	$ 550,467.84	$ 3.70	$ 326,399.20
33	900	0002	Stabilized Aggregate Surface Course Modified Cl 5	TON	53,734	$ 27.95	$ 1,501,865.30	$ 37.00	$ 1,988,158.00
34	900	0003	Stabilized Aggregate Surface Course Cl 5	TON	72,175	$ 24.31	$ 1,754,574.25	$ 22.00	$ 1,587,850.00
							$ 4,955,122.44		$ 5,208,728.10

Bid Tabulations

Williams County Road 15 Widening, Base & Gravel Stabilization

Williams County, North Dakota

Bid Opening: May 28, 2015 @ 11:00 AM CDT

R13166

						Knife River Corp		Border States Paving, Inc.	
Item No.	Spec	Code	Description	Unit	Quantity	Unit Price	Subtotal	Unit Price	Subtotal
1	103	0100	Contract and Bond	LS	1	$ 18,000.00	$ 18,000.00	$ 19,500.00	$ 19,500.00
2	201	0330	Clearing & Grubbing	LS	1	$ 22,998.10	$ 22,998.10	$ 21,000.00	$ 21,000.00
3	202	0170	Removal of Culverts - All Types & Sizes	LF	1,024	$ 43.00	$ 44,032.00	$ 21.00	$ 21,504.00
4	202	0312	Remove Existing Fence	LF	991	$ 3.00	$ 2,973.00	$ 2.10	$ 2,081.10
5	203	0101	Common Excavation - Type A	CY	20,323	$ 5.00	$ 101,615.00	$ 8.40	$ 170,713.20
6	203	0109	Topsoil	CY	18,602	$ 6.35	$ 118,122.70	$ 6.30	$ 117,192.60
7	203	0113	Common Excavation - Waste	CY	14,521	$ 15.50	$ 225,075.50	$ 11.60	$ 168,443.60
8	216	0100	Water	M GAL	742	$ 54.00	$ 40,068.00	$ 28.00	$ 20,776.00
9	253	0201	Hydraulic Mulch	ACRE	23.1	$ 2,800.00	$ 64,680.00	$ 2,940.00	$ 67,914.00
10	256	0100	Riprap Grade I	CY	71	$ 105.00	$ 7,455.00	$ 137.00	$ 9,727.00
11	256	0201	Riprap Grade II	CY	37	$ 105.00	$ 3,885.00	$ 189.00	$ 6,993.00
12	261	0112	Fiber Rolls 12 in.	LF	16,627	$ 2.75	$ 45,724.25	$ 2.90	$ 48,218.30
13	430	1000	Cored Sample	EA	51	$ 23.00	$ 1,173.00	$ 52.50	$ 2,677.50
14	702	0100	Mobilization	LS	1	$ 90,530.00	$ 90,530.00	$ 289,021.78	$ 289,021.78
15	704	0100	Flagging	MHR	2,600	$ 43.50	$ 113,100.00	$ 42.90	$ 111,540.00
16	704	1000	Traffic Control Signs	UNIT	843	$ 3.70	$ 3,119.10	$ 3.85	$ 3,245.55
17	704	1052	Type III Barricade	EA	2	$ 150.00	$ 300.00	$ 158.00	$ 316.00
18	704	1060	Delineator Drums	EA	800	$ 25.00	$ 20,000.00	$ 26.30	$ 21,040.00
19	74	1185	Pilot Car	HR	1,300	$ 55.00	$ 71,500.00	$ 54.60	$ 70,980.00
20	709	0151	Geosynthetic Material Type R1	SY	1,919	$ 2.90	$ 5,565.10	$ 2.10	$ 4,029.90
21	709	155	Geosynthetic Material Type RR	SY	359	$ 2.65	$ 951.35	$ 2.10	$ 753.90
22	714	0615	Pipe Conc Reinf 24 in. CL III	LF	400	$ 185.00	$ 74,000.00	$ 263.00	$ 105,200.00
23	714	0820	Pipe Conc Reinf 30 in CL III	LF	54	$ 290.00	$ 15,660.00	$ 368.00	$ 19,872.00
24	714	0905	Pipe Conc Reinf 36 in CL III	LF	58	$ 268.00	$ 15,544.00	$ 436.00	$ 25,288.00
25	714	5015	Pipe Corr Steel .064 in 18 in	LF	240	$ 112.00	$ 26,880.00	$ 289.00	$ 69,360.00
26	714	5820	End Sect Corr Steel .064 In 18 in	EA	2	$ 226.00	$ 452.00	$ 420.00	$ 840.00
27	752	0400	Fence Barbed Wire 3 Strand	LF	981	$ 6.00	$ 5,886.00	$ 10.50	$ 10,300.50
28	752	1350	Corner Assembly Barbed Wire - Wood Post	EA	6	$ 650.00	$ 3,900.00	$ 525.00	$ 3,150.00
29	754	0592	Reset Sign Panel	EA	14	$ 45.00	$ 630.00	$ 47.30	$ 662.20
3	754	0593	Reset Sign Support	EA	14	$ 185.00	$ 2,590.00	$ 194.00	$ 2,716.00
31	766	0120	Reset Mailbox	EA	1	$ 230.00	$ 230.00	$ 242.00	$ 242.00
32	900	0001	Blended and Stabilized Base Course	CY	88,216	$ 6.40	$ 564,582.40	$ 6.45	$ 568,993.20
33	900	0002	Stabilized Aggregate Surface Course Modified Cl 5	TON	53,734	$ 32.50	$ 1,746,355.00	$ 38.90	$ 2,090,252.60
34	900	0003	Stabilized Aggregate Surface Course Cl 5	TON	72,175	$ 28.70	$ 2,071,422.50	$ 22.40	$ 1,616,720.00
							$ 5,528,999.00		$ 5,691,263.93

Bid Tabulations

Williams County Road 15 Widening, Base & Gravel Stabilization

Williams County, North Dakota

Bid Opening: May 28, 2015 @ 11:00 AM CDT

R13166

						Central Specialties, Inc.		Selland Construction, Inc.	
Item No.	Spec	Code	Description	Unit	Quantity	Unit Price	Subtotal	Unit Price	Subtotal
1	103	0100	Contract and Bond	LS	1	$ 10,000.00	$ 10,000.00	$ 90,000.00	$ 90,000.00
2	201	0330	Clearing & Grubbing	LS	1	$ 2,500.00	$ 2,500.00	$ 35,000.00	$ 35,000.00
3	202	0170	Removal of Culverts - All Types & Sizes	LF	1,024	$ 25.00	$ 25,600.00	$ 15.00	$ 15,360.00
4	202	0312	Remove Existing Fence	LF	991	$ 0.97	$ 961.27	$ 5.00	$ 4,955.00
5	203	0101	Common Excavation - Type A	CY	20,323	$ 12.00	$ 243,876.00	$ 11.00	$ 223,553.00
6	203	0109	Topsoil	CY	18,602	$ 6.00	$ 111,612.00	$ 5.00	$ 93,010.00
7	203	0113	Common Excavation - Waste	CY	14,521	$ 14.00	$ 203,294.00	$ 13.00	$ 188,773.00
8	216	0100	Water	M GAL	742	$ 50.00	$ 37,100.00	$ 75.00	$ 55,650.00
9	253	0201	Hydraulic Mulch	ACRE	23.1	$ 2,925.00	$ 67,567.50	$ 3,200.00	$ 73,920.00
10	256	0100	Riprap Grade I	CY	71	$ 150.00	$ 10,650.00	$ 140.00	$ 9,940.00
11	256	0201	Riprap Grade II	CY	37	$ 150.00	$ 5,550.00	$ 87.00	$ 3,219.00
12	261	0112	Fiber Rolls 12 in.	LF	16,627	$ 2.70	$ 44,892.90	$ 2.00	$ 33,254.00
13	430	1000	Cored Sample	EA	51	$ 30.00	$ 1,530.00	$ 25.00	$ 1,275.00
14	702	0100	Mobilization	LS	1	$ 660,000.00	$ 660,000.00	$ 496,167.00	$ 496,167.00
15	704	0100	Flagging	MHR	2,600	$ 30.00	$ 78,000.00	$ 70.00	$ 182,000.00
16	704	1000	Traffic Control Signs	UNIT	843	$ 3.65	$ 3,076.95	$ 10.00	$ 8,430.00
17	704	1052	Type III Barricade	EA	2	$ 150.00	$ 300.00	$ 500.00	$ 1,000.00
18	704	1060	Delineator Drums	EA	800	$ 25.00	$ 20,000.00	$ 20.00	$ 16,000.00
19	74	1185	Pilot Car	HR	1,300	$ 40.00	$ 52,000.00	$ 80.00	$ 104,000.00
20	709	0151	Geosynthetic Material Type R1	SY	1,919	$ 3.00	$ 5,757.00	$ 2.00	$ 3,838.00
21	709	155	Geosynthetic Material Type RR	SY	359	$ 5.00	$ 1,795.00	$ 4.00	$ 1,436.00
22	714	0615	Pipe Conc Reinf 24 in. CL III	LF	400	$ 275.00	$ 110,000.00	$ 280.00	$ 112,000.00
23	714	0820	Pipe Conc Reinf 30 in CL III	LF	54	$ 525.00	$ 28,350.00	$ 325.00	$ 17,550.00
24	714	0905	Pipe Conc Reinf 36 in CL III	LF	58	$ 550.00	$ 31,900.00	$ 365.00	$ 21,170.00
25	714	5015	Pipe Corr Steel .064 in 18 in	LF	240	$ 225.00	$ 54,000.00	$ 115.00	$ 27,600.00
26	714	5820	End Sect Corr Steel .064 In 18 in	EA	2	$ 275.00	$ 550.00	$ 420.00	$ 840.00
27	752	0400	Fence Barbed Wire 3 Strand	LF	981	$ 3.15	$ 3,090.15	$ 5.00	$ 4,905.00
28	752	1350	Corner Assembly Barbed Wire - Wood Post	EA	6	$ 189.00	$ 1,134.00	$ 500.00	$ 3,000.00
29	754	0592	Reset Sign Panel	EA	14	$ 45.00	$ 630.00	$ 100.00	$ 1,400.00
3	754	0593	Reset Sign Support	EA	14	$ 185.00	$ 2,590.00	$ 275.00	$ 3,850.00
31	766	0120	Reset Mailbox	EA	1	$ 230.00	$ 230.00	$ 600.00	$ 600.00
32	900	0001	Blended and Stabilized Base Course	CY	88,216	$ 10.00	$ 882,160.00	$ 6.50	$ 573,404.00
33	900	0002	Stabilized Aggregate Surface Course Modified Cl 5	TON	53,734	$ 36.65	$ 1,969,351.10	$ 43.00	$ 2,310,562.00
34	900	0003	Stabilized Aggregate Surface Course Cl 5	TON	72,175	$ 20.00	$ 1,443,500.00	$ 20.00	$ 1,443,500.00
							$ 6,113,547.87		$ 6,161,161.00