

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Adams County Highway Dept.

Contact: Nathan J. Nash 701-567-2235 adamscounty@ndsuper.net, com

Preparer: Nathan J. Nash Name 701-567-2235 Phone adamscounty@ndsuper.net, com Email Date Prepared: 2/18/2019

### Aggregate Description

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

Gravel

Scoria

Pit Run

Screened

Crushed Material

Specifications

Tested

Other \_\_\_\_\_

<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input checked="" type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

### 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 \_\_\_\_\_

<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input type="checkbox"/>

## 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.

Task	Performed by:	
	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)		<input type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	.45	<input checked="" type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/ <u>no</u> )
Average trucking distance for aggregate	10-12	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	20	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	\$1800.00	Per Mile	Is this Contractor Price? (yes/ <u>no</u> )
Blading Cost	\$525.80	Annual cost per mile	Is this Contractor Price? (yes/ <u>no</u> )
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)

## 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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE</b> <b>ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	>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 regaveling)	7	5	3
Dust Suppressant (yes/no)	no	no	Yes
Base Stabilization (yes/no)	no	no	Yes

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	250	50-75	150-200
Average Regraveling Thickness	3"	2"-3"	3"-4"
Blading Frequency (# per month)	2-3x/yr.	3-5x/yr.	1-2x/mo.
Regraveling Frequency (years between regaveling)	15-20 yrs	10-15 yrs.	10 yrs.
Dust Suppressant (yes/no)			
Base Stabilization (yes/no)			

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

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

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## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good		
Good	20%	
Fair	30%	50%
Poor	50%	50%
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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



# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

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County: Barnes

Contact: Kerry Johnson 701-845-8508 kjohnson@barnescounty.us  
Name Phone Email

Preparer: Kerry Johnson Date Prepared: 10-23-19

### Aggregate Description

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

- |                  |                                     |
|------------------|-------------------------------------|
| Gravel           | <input checked="" type="checkbox"/> |
| Scoria           | <input type="checkbox"/>            |
| Pit Run          | <input type="checkbox"/>            |
| Screened         | <input type="checkbox"/>            |
| Crushed Material | <input checked="" type="checkbox"/> |
| Specifications   | <input type="checkbox"/>            |
| Tested           | <input type="checkbox"/>            |
| Other _____      | <input type="checkbox"/>            |

### 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     | <input checked="" type="checkbox"/> 50% |
| Windrow/Equalize         | <input type="checkbox"/>                |
| Water/Rolling/Compaction | <input checked="" type="checkbox"/> 50% |
| Other _____              | <input type="checkbox"/>                |

## 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.

Task	Performed by:	
	County	Contractor
Crushing	0%	100%
Hauling	100%	0%
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)	\$4.25	<input type="checkbox"/> Per cu. yard <input checked="" type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	\$10.00	<input type="checkbox"/> Per loaded mile <input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	20	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	11	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	\$250.00	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	\$1,000.00	Annual cost 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)

## 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.

<b>EXAMPLE</b> <b>ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regraveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	> 20	20-50	50 <sup>+</sup>
Average Regraveling Thickness	1"	1 1/2"	2"
Blading Frequency (# per month)	1	2	2
Regraveling Frequency (years between regraveling)	2	2	2
Dust Suppressant (yes/no)			
Base Stabilization (yes/no)			

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

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

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## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	20%	0%
Good	70%	10%
Fair	10%	90%
Poor	0%	0%
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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

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County: Benson County Highway Dept.

Contact: Lester Ellingson 473-5886 lchwydep@gondte.com  
Name Phone Email

Preparer: Lester Ellingson Date Prepared: 2-27-2020

### Aggregate Description

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

Gravel

Scoria

Pit Run

Screened

Crushed Material

Specifications

Tested

Other \_\_\_\_\_

<input checked="" type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input checked="" type="checkbox"/>
<input type="checkbox"/>
<input checked="" type="checkbox"/>
<input type="checkbox"/>

### 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 \_\_\_\_\_

<input checked="" type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>



## 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.

Task	Performed by:	
	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)	5.75	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	1.25	<input checked="" type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	20	<input type="checkbox"/> Miles one-way <input checked="" type="checkbox"/> Miles roundtrip	
Truck Payload	20	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	1.20	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	\$1.20	Annual 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)





## 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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regravelling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	50	100	—
Average Regraveling Thickness	2"	4	
Blading Frequency (# per month)		12	24
Regraveling Frequency (years between regravelling)		5	
Dust Suppressant (yes/no)			
Base Stabilization (yes/no)			

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

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

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## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	10%	20
Good	50%	40
Fair	25%	20
Poor	15%	20
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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

"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."



# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: BILLINGS

Contact: JEFF IVERSON 701-290-9581 jciverson@nd.gov  
Name Phone Email

Preparer: JEFF IVERSON Date Prepared: 10/31/19

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input checked="" type="checkbox"/>
Pit Run	<input type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input checked="" type="checkbox"/>
Tested	<input checked="" type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input type="checkbox"/>
Windrow/Equalize	<input checked="" type="checkbox"/>
Water/Rolling/Compaction	<input checked="" type="checkbox"/>
Other _____	<input type="checkbox"/>



## 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	100%	
Blading	80%	20%
Dust Control	100%	
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)	\$8.00	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/ <u>no</u> )
Trucking Cost from Gravel Origin	\$8.50	<input type="checkbox"/> Per loaded mile <input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/ <u>no</u> )
Average trucking distance for aggregate	20	<input type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	18	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	\$5500	Per Mile	Is this Contractor Price? (yes/ <u>no</u> )
Blading Cost	\$300	Annual cost per mile	Is this Contractor Price? (yes/ <u>no</u> )
Dust Suppressant Costs	\$7500	Per mile	Is this Contractor Price? (yes/ <u>no</u> )
Base Stabilization Cost	N/A	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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regaveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	35	35-100	100-250
Average Regraveling Thickness	2"	3"	4"
Blading Frequency (# per month)	1	2	3
Regraveling Frequency (years between regaveling)	<b>5</b>	<b>3</b>	<b>3</b>
Dust Suppressant (yes/no)	NO	YES	YES
Base Stabilization (yes/no)	NO	NO	YES

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 140%

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## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	40%	40%
Good	40%	40%
Fair	20%	10%
Poor		10%
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

CMC'S ARE CL 13 MOD. 4-12 PI. OR ARMOUR COAT. NON CMC ARE BOTH CL 13 OR  
*Score @ 1 3/4"*

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



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# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

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County: Bottineau County

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

Preparer: Ritch Gimbel Date Prepared: 11-1-19

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input type="checkbox"/>
Pit Run	<input checked="" type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input type="checkbox"/>
Tested	<input checked="" type="checkbox"/>
Other <u>Class 13 Modified</u>	<input checked="" type="checkbox"/>
<u>Blended millings</u>	<input checked="" type="checkbox"/>
<u>+ Crushed gravel</u>	<input checked="" type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input type="checkbox"/>
Water/Rolling/Compaction	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

## 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.

Task	Performed by:	
	County	Contractor
Crushing	0%	100%
Hauling	30%	70%
Placement	100%	0%
Blading	100%	0%
Dust Control	90%	10%
Base Stabilization	90%	10%

## 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	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	.35¢	<input checked="" type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	20	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	20	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	\$ 22	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	\$ 379	Annual cost per mile	Is this Contractor Price? (yes/no)
Dust Suppressant Costs Brine water	30¢	Per mile	Is this Contractor Price? (yes/no)
Base Stabilization Cost	17,000 to 20,000	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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE</b> <b>ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	>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 regaveling)	7	5	3
Dust Suppressant (yes/no)	no	no	Yes
Base Stabilization (yes/no)	no	no	Yes

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	20	20-90	90-190
Average Regraveling Thickness	1/2	1/2	1"
Blading Frequency (# per month)	1	1	2
Regraveling Frequency (years between regaveling)	5+	up to 5	3
Dust Suppressant (yes/no)	no	no	some/yes
Base Stabilization (yes/no)	no	no	some area's

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

Brine water

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

Base one

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	20%	0%
Good	20%	10%
Fair	35%	40%
Poor	25%	50%
<b>Total</b>	<b>100%</b>	<b>100%</b>

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

*CMC - Most Times use The Class 13 Modify*

*Non CMC (Townships) use most Times a class 13*

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



## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Bowman County

Contact: Shane Biggs 701-253-5843 sbiggs@bowmancountynd.gov  
Name Phone Email

Preparer: Shane Biggs Date Prepared: 2/13/20

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input checked="" type="checkbox"/>
Pit Run	<input type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input checked="" type="checkbox"/>
Tested	<input checked="" type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input checked="" type="checkbox"/>
Water/Rolling/Compaction	<input checked="" type="checkbox"/>
Other _____	<input type="checkbox"/>

## 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	50	50
Blading	100 Maintaining	90-100 Laying new gravel
Dust Control	10	90
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)	8.00	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	120.00 Hourly	<input type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	15-20	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	19	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	3,000.00	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	420.00	Annual cost per mile	Is this Contractor Price? (yes/no)
Dust Suppressant Costs	7,000.00	Per mile	Is this Contractor Price? (yes/no)
Base Stabilization Cost	60,000.00	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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regaveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;30</b>	<b>30-100</b>	<b>100-150</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>6-10 in, under chip seal or asphalt</b>
<b>Blading Frequency (# per month)</b>	<b>When moisture allows</b>	<b>When moisture allows</b>	<b>Most of these roads are chip sealed or asphalt</b>
<b>Regraveling Frequency (years between regaveling)</b>	<b>10 - 12</b>	<b>7 - 10</b>	<b>Other measures, either chip seal or asphalt</b>
<b>Dust Suppressant (yes/no)</b>	<b>yes /some roads</b>	<b>yes / some roads</b>	<b>yes / some roads</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>yes</b>	<b>yes</b>

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

---

If you answered yes for Base Stabilization – which type do you use?  
 Cement based under some chip seal or pavement projects.

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## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	5	5
Good	40	30
Fair	50	60
Poor	5	5
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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

Most of our higher traffic roads in Bowman County are chip sealed or asphalt, with some of our chip seal not performing as expected due to weather related issues, freeze / thaw cycles and heavier traffic rutting issues, this in turn drives up the cost of maintaining them to keep them in a safe manner, which may result in the future of returning some of these roads back to gravel. Even our newly double chip sealed roads are deteriorating after 1-2 years. If it is determined that the cost of trying to stay ahead of maintaining these roads becomes too heavy of a financial burden and we do, as a result, have to return some of these roads back to gravel, our gravel needs will become even higher for Bowman County. Right now we have a pretty even balance between oiled roads (chip sealed, asphalt roads) and gravel roads in the County. We only have 38 miles of CMC routes with gravel surfacing. 0605 (14 miles), 0615 (10 miles), 0619 (3 miles), 0637 (5 miles) and 6041 (6 miles).

# **E WORKSHEET**

f Transportation, Materials & Research  
 2001)

BEI	(mm)	Ret.	#1	#2	#3	#4	Sample Average	
								Spec.
1-4	100	4"						
	90	3-1/2"						
anke Pit	75	3"						
	63	2-1/2"						
	50	2"						
	37.5	1-1/2"						
an CO Agg	25.0	1"	100	100	100	100	100	100
	19.0	3/4"	95	98	96	98	97	70-100
man CO	16.0	5/8"	92	95	93	94	94	
	12.5	1/2"	87	91	89	90	89	
ass 13	9.5	3/8"	83	86	84	84	84	
	4.75	No. 4	70	73	71	71	71	38-75
ass 13	2.36	No. 8	58	60	59	59	59	22-62
	2.00	No. 10	58	60	59	59	59	
	1.18	No. 16	44	48	47	48	47	
	600µm	No. 30	29	36	33	33	33	12-45
	425µm	No. 40	29	36	33	33	33	
	300µm	No. 50	19	26	22	22	22	
	150µm	No. 100	10	16	12	15	13	
gineering, Inc.	75µm	No. 200	6.5	11.0	7.6	10.3	8.9	7-15



## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Burke County  
 Contact: Kenny Tetrault 701-339-2455 ken100burke@gmail.com  
Name Phone Email  
 Preparer: Kenny Tetrault Date Prepared: 11-18-2019

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>	
Scoria	<input type="checkbox"/>	
Pit Run	<input checked="" type="checkbox"/>	
Screened	<input type="checkbox"/>	
Crushed Material	<input checked="" type="checkbox"/>	class 13 modified
Specifications	<input checked="" type="checkbox"/>	
Tested	<input checked="" type="checkbox"/>	
Other _____	<input type="checkbox"/>	

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input checked="" type="checkbox"/>
Water/Rolling/Compaction	<input checked="" type="checkbox"/>
Other _____	<input type="checkbox"/>

## 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.

Task	Performed by:	
	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 <sup>00</sup>	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no) <u>yes</u>
Trucking Cost from Gravel Origin	\$ 125 <sup>00</sup>	<input type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input checked="" type="checkbox"/> Per <del>Ton</del> Hour	Is this Contractor Price? (yes/no) <u>yes</u>
Average trucking distance for aggregate	20	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	20	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	\$ 2170 <sup>00</sup>	Per Mile	Is this Contractor Price? (yes/no) <u>no</u>
Blading Cost	\$ 3000 <sup>00</sup>	Annual cost per mile	Is this Contractor Price? (yes/no) <u>no</u>
Dust Suppressant Costs	\$ 6000 <sup>00</sup>	Per mile	Is this Contractor Price? (yes/no) <u>yes</u>
Base Stabilization Cost	\$ 200,000 <sup>00</sup>	Per mile	Is this Contractor Price? (yes/no) <u>yes</u>



## 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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE</b> <b>ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regaveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	>50	50-150	150-400
Average Regraveling Thickness	1"	2"	3"
Blading Frequency (# per month)	1	2	4
Regraveling Frequency (years between regaveling)	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 Calcium chloride

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

Soil Cement, Geo Grid & Fabric

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	25%	10%
Good	25%	40%
Fair	50%	40%
Poor		10%
<b>Total</b>	<b>100%</b>	<b>100%</b>

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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

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# **BURKE COUNTY HIGHWAY DEPARTMENT**

PHONE 701-377-2312 FAX 701-377-2866 CELL 701-339-2455  
PO BOX 310 BOWBELLS ND 58721-0310

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## Burke County gravel spec

Sieve Size Or Testing Method	Aggregate
	Gravel Surfacing
	Percent passing or Test Limit
1"	100
3/4"	70 – 100
No. 4	38 – 75
No. 8	22 – 62
No. 30	12 – 45
No. 200	7 - 15
Plasticity Index (PI)	3 - 9
ND T 113, Shale (max %)	12.0%
AASHTO T 96, L.A. Abrasion (max %)	50%
NDDOT 4, Fractured Faces <sup>1</sup>	10%



# AGGREGATE SAMPLE WORKSHEET

Department of Transportation, Materials & Research  
SFN 9987 (Rev. 08-2015)

PCN	NA	Sieve Size		Wt. Ret.		% Ret.	% Pass	ND Spec.		Falling Sieve	
				Non-Cum.	Cum.			Lower	Upper		
Laboratory No.	WC Lab	100 mm	4"								
		90 mm	3 1/2"								
Field Sample No.	1	75 mm	3"								
		63 mm	2 1/2"								
Pit Location	S19, T160N, R90W	50 mm	2"								
		37.5 mm	1 1/2"								
Owner	Blwer	25.0 mm	1"	0.0	0.0	0.0	100.0	100			
		19.0 mm	3/4"	13.1	13.1	0.2	99.8	70	100		
Project	N18-ST313	16.0 mm	5/8"	73.4	86.5	1.6	98.4				
		12.5 mm	1/2"	219.3	305.8	5.5	94.5				
County	Burke	9.5 mm	3/8"	317.5	623.3	11.2	88.8				
		4.75 mm	No. 4	1017.5	1640.8	29.6	70.4	38	75		
Material/Specification	Class 13/302	Minus No. 4		3907.4	5548.2	0.03%					
		Wt. Check			5548.2						
Date Received	9-11-18	Original Wt.		5549.9							
		ND T 27									
Date Sampled	9-10-18	Sieve Size		Wt. Ret.		% Ret.	% Pass.	% Pass Tot Smpl	ND Spec.		Falling Sieve
				Non-Cum.	Cum.				Lower	Upper	
Sampled From	Stockpile	2.36 mm	No. 8	84.3	84.3	18.9	81.1	57.1	22	62	
Submitted By	Brosz Engineering	2.00 mm	No. 10								
		1.18 mm	No. 16	69.9	154.2	34.6	65.4	46.0			
		600 um	No. 30	77.4	231.6	52.0	48.0	33.8	12	45	
<b>FRACTURED FACES</b>		425 um	No. 40	39.0	270.6	60.8	39.2	27.6			
FF= % of particles w/frac. faces		300 um	No. 50	31.3	301.9	67.8	32.2	22.7			
WF= Wt. of frac. particles		150 um	No. 100	42.4	344.3	77.4	22.6	16.0			
	610.8	75 um	No. 200	19.3	363.6	81.7	18.3	12.9	7.0	15.0	
WQ= Wt. of questionable frac. particles		Minus No. 200 (75 um)		2.2	365.8	0.11%					
	0.0	Original Wt.		445.1							
WA= Wt. of total sample		Wt. After Wash		365.3							
	727.6	Wash Loss		79.8							
FF= [WF + (WQ/2)]/WA x 100	83.9%	ND Spec.		Wt. Check	445.6						
				ND T 27		ND T 11					

NDDOT 4

## LIGHTWEIGHT PIECES

+No. 4 (4.75mm) Material			-No. 4, +No. 30 Material		
(A) % Retained on No. 4 Sieve	=	29.6	(I) Weight of Lt Wt Pieces, -No. 4, +No. 30 Mtrl.	=	4.8
(B) % Passing No. 30, Total Sample	=	33.8			
(C) % Pass No. 4 - % Pass No. 30, [100-(A+B)]	=	36.6	(J) Weight of -No. 4, +No. 30 Material	=	231.6
(D) Total Sample A+B+C	=	100.0	(K) Lt Wt Pieces, -No. 4, +No. 30 (I/J)x100	=	2.07
(E) Weight of Lt Wt Pieces in +No. 4 Mtrl.	=	20.6	(L) Lt Wt Pieces, -No. 4, +No. 30 Material		
(F) Weight of +No. 4 Material	=	1640.8	% of Total Sample (KxC)/100	=	0.76
(G) Lt Wt Pieces, +4 Mtrl. (E/F)x100	=	1.26			
(H) Lt Wt Pieces, +No. 4 Mtrl., % of Total Sample (GxA)/100	=	0.37			ND Spec.
			(M) Lightweight Pieces in Total Sample (H+L)	=	1.1
					12.0%

ND T 113

LL = 24 / PL = 19

Plastic Index 5  
LA Abrasion           

Distribution:  
Engineer                                   
Contractor                                 

9-12-18  
Date

Tyler Cox  
Tester



# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Burleigh

Contact: Marcus S. Hall 701-204-7748 mahall@nd.gov  
Name Phone Email

Preparer: Marcus & others Date Prepared: Nov

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input type="checkbox"/>
Pit Run	<input type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input type="checkbox"/> <u>Class 13</u>
Tested	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input type="checkbox"/>
Water/Rolling/Compaction	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

## 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.

Task	Performed by:	
	County	Contractor
Crushing	0 %	100 %
Hauling	35 %	65 %
Placement	100 %	0 %
Blading	100 %	0 %
Dust Control	17 %	83 %
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)	\$18.23	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	\$0.57/mile	<input checked="" type="checkbox"/> Per loaded mile <input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	25	<input type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	18	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	\$1,177	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	\$1,489	Annual cost per mile	Is this Contractor Price? (yes/no)
Dust Suppressant Costs	\$7,643	Per mile	Is this Contractor Price? (yes/no)
Base Stabilization Cost	\$18,525	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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE</b> <b>ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	>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 regaveling)	7	5	3
Dust Suppressant (yes/no)	no	no	Yes
Base Stabilization (yes/no)	no	no	Yes

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	< 50	51 - 200	> 201
Average Regraveling Thickness	2.0 in	3.0 in	4.0 in
Blading Frequency (# per month) <del>year</del>	5	11	16
Regraveling Frequency (years between regaveling)	8	5	3
Dust Suppressant ( <input checked="" type="radio"/> yes/no)	No	Spot Treatment	yes
Base Stabilization ( <input checked="" type="radio"/> yes/no)	No	As needed	As 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?

Base One , Crushed Concrete , Blended Base

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	10 %	10 %
Good	40 %	25 %
Fair	35 %	50 %
Poor	15 %	15 %
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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

# GRAVEL CRUSHING BIDS

## BURLEIGH COUNTY HIGHWAY DEPARTMENT

### 2019 SEASON

Class 13 Aggregate Surfacing Crushing & Stockpiling using primary jaws capable of handling 18" dia. rock and secondary crushing (all settings for this season).	\$ _____ per Cubic Yard
---	-------------------------

- (1) A performance bond of \$20,000 will be required immediately after award of the gravel crushing bid. Prior to award, successful contractor shall furnish an insurance certificate copy indicating adequate liability coverage.
- (2) Approximately two (2) settings totaling around 60,000 cubic yards, more or less, may be crushed this year. The minimum amount crushed in each pit will be 10,000 cubic yards. Prior to set up, Burleigh County will provide prospecting & pit maps for each site. Maps will include topsoil depth for each test hole, test hole locations, gravel depths, description of gravel, average over burden depth, average gravel depth & estimated amount in deposit. Burleigh County will stake pit and mark test hole by G.P.S.
- (3) The unit of measure to be used at a specific site will be cubic yards of material per stockpiling. Stockpile will be measured within 10 days of the contractor notifying the County that the pile is complete. In case of discrepancy, the County will re-measure the stockpile at Contractor's request and expense. Re-measured quantity will be the basis for final payment.
- (4) Contractor will crush material to meet the following specification: For the Class 13 Aggregate Surfacing.
- (5) Sampling and acceptance of material will follow the North Dakota Department of Transportation (NDDOT) "Standard Specifications for Road and Bridge Construction" and the NDDOT Field Sampling and Testing Manual.
- (6) Crushing bid to include stripping over burden of up to 24" average depth, backfilling and sloping of entire pit to a minimum slope of 4:1. If average overburden exceeds the 24" average, a method of payment for extra work shall be agreed upon prior to any work taking place. Contractor's crushing equipment must meet the approval of the County Road Superintendent prior to award of bid.
- (7) Successful bidder must complete all work no later than October 15, 2019. No stockpiling will be started until the County Engineer has been notified of the location.

Company:
Signed:
Printed Name:
Title:
Address:
Phone:
Date:



# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Cass

Contact: Blaine Laaveg 701-298-2377 laavegb@casscountynod.gov  
Name Phone Email

Preparer: Blaine Laaveg Date Prepared: 11-14-19

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input type="checkbox"/>
Pit Run	<input type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input checked="" type="checkbox"/>
Tested	<input checked="" type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input type="checkbox"/>
Water/Rolling/Compaction	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

## 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.

Task	Performed by:	
	County	Contractor
Crushing	0	100
Hauling	80	20
Placement	80	20
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)	\$ 8 <sup>65</sup>	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	\$ 0.30	<input type="checkbox"/> Per loaded mile <input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	50	<input type="checkbox"/> Miles one-way <input checked="" type="checkbox"/> Miles roundtrip	
Truck Payload		<input type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	\$ <del>10,000</del> 175	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	\$ 1400	Annual cost per mile	Is this Contractor Price? (yes/no)
Dust Suppressant Costs	\$ 4,000	Per mile	Is this Contractor Price? (yes/no)
Base Stabilization Cost Cement Treated	\$ 110,000	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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE</b> <b>ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regaveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

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

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?

We have been doing cement treated base for approximately the last 8 years to treat 6-8 miles a year.

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	20%	20%
Good	45%	45%
Fair	30%	30%
Poor	5%	5%
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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



## GRADATION REPORT

**Report Number:** M1191009.0008  
**Service Date:** 06/14/19  
**Report Date:** 06/18/19 Revision 1 - Add LL/PL Correct spec

# Terracon

860 9th St. NE, Unit K  
West Fargo, ND 58078  
701-282-9633

### Client

Mark Sand & Gravel Company  
Attn: Paula Dietman  
PO Box 458  
Fergus Falls, MN 56538-0458

### Project

Plant Tests 2019 - Mark Sand and Gravel Company  
525 Kennedy Park Road  
Fergus Falls, MN

Project Number: M1191009

DATE SAMPLED/SUBMITTED:

### TEST OF AGGREGATE

6-13-19/6-13-19

LOCATION SAMPLED:

Stockpile

SOURCE:

Olson Pit

SAMPLE NUMBER:

1

NDDOT  
SPECIFICATIONS  
SECTION 816.02

MECHANICAL ANALYSIS: (AASHTO T 27)

		<u>Class 13</u>
% Passing	1" (25.0 mm)	100%
	3/4 (19.0)	70-100
	5/8 (16.0)	---
	1/2 (12.5)	---
	3/8 (9.5)	---
	#4 (4.75)	38-75
	8 (2.36)	22-62
	16 (1.18)	---
	30 (600 µm)	12-45
	50 (300)	---
	100 (150)	---
	200 (75)	7-15

TEST ON FRACTION PASSING #40: (AASHTO T89/T90)

Liquid Limit	25
Plastic Limit	16
Plasticity Index	9

REMARKS: Sample was submitted by Mark Sand & Gravel on June 13, 2019.

**Services:** Test sample submitted by the client or client's representative for gradation.

**Terracon Rep.:**

**Reported To:**

**Contractor:**

**Report Distribution:**

(1) Mark Sand & Gravel Company, Paula Dietman

**Reviewed By:**

  
Shaun Levi

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.



## GRADATION REPORT

**Report Number:** M1191009.0006  
**Service Date:** 06/11/19  
**Report Date:** 06/12/19 Revision 1 - Add Plasticity Index  
**Task:** Dakota

# Terracon

860 9th St. NE, Unit K  
West Fargo, ND 58078  
701-282-9633

### Client

Mark Sand & Gravel Company  
Attn: Paula Dietman  
PO Box 458  
Fergus Falls, MN 56538-0458

### Project

Plant Tests 2019 - Mark Sand and Gravel Company  
525 Kennedy Park Road  
Fergus Falls, MN

Project Number: M1191009

### DATE SUBMITTED:

### TEST OF AGGREGATE

6/11/2019

### LOCATION SAMPLED:

Pit Stockpile

### SOURCE:

Olson Pit, Lisbon, ND, Mark Sand and Gravel

### NDDOT SPECIFICATIONS SECTION 816.02

### MECHANICAL ANALYSIS: (AASHTO T 27)

		Class 13
% Passing	1" (25.0 mm)	100%
	3/4 (19.0)	70-100
	5/8 (16.0)	---
	1/2 (12.5)	---
	3/8 (9.5)	---
	#4 (4.75)	38-75
	8 (2.36)	22-62
	16 (1.18)	---
	30 (600 µm)	12-45
	50 (300)	---
	100 (150)	---
	200 (75)	7-15

### TEST ON FRACTION PASSING #40: (AASHTO T89/T90)

Liquid Limit	28
Plastic Limit	18
Plasticity Index	10

**REMARKS:** Sample was submitted by Mark Sand and Gravel on June 11, 2019.

**Services:** Test sample submitted by the client or client's representative for gradation.

**Terracon Rep.:** Gabriel Olivas

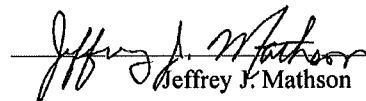
**Reported To:**

**Contractor:** Mark Sand and Gravel

**Report Distribution:**

(1) Mark Sand & Gravel Company, Paula Dietman

**Reviewed By:**

  
Jeffrey J. Mathson

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.



# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Cavalier

Contact: Terry Johnston 701-256-2161 tjohnsto@nd.gov  
Name Phone Email

Preparer: Terry Johnston Date Prepared: 11/12/19

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input type="checkbox"/>
Pit Run	<input checked="" type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input checked="" type="checkbox"/>
Tested	<input checked="" type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input checked="" type="checkbox"/>
Water/Rolling/Compaction	<input checked="" type="checkbox"/>
Other _____	<input type="checkbox"/>



## 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.

Task	Performed by:	
	County	Contractor
Crushing		100%
Hauling		100%
Placement	100%	
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)	\$5.96	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	\$0.28	<input checked="" type="checkbox"/> Per loaded mile <input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	35	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	22	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	\$200.00	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	\$40.00	Annual cost per mile	Is this Contractor Price? (yes/no)
Dust Suppressant Costs	\$7400.00	Per mile	Is this Contractor Price? (yes/no)
Base Stabilization Cost	NA	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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regravelling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	>50	50-150	150-700
Average Regraveling Thickness	2"	2"	3"
Blading Frequency (# per month)	2	4	5
Regraveling Frequency (years between regravelling)	<b>4</b>	<b>3</b>	<b>2</b>
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?

---



## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	22%	17%
Good	21%	20%
Fair	36%	41%
Poor	21%	22%
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

Class 13, Class 13 modified and Class 5

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



## NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

### SPECIAL PROVISION

### GRAVEL SURFACING

#### DESCRIPTION

This work consists of furnishing and placing aggregate as a roadway surface course.

#### EQUIPMENT

Equipment	Section
Tow-Type Pneumatic-Tired Rollers	151.01 A.2
Self-Propelled Pneumatic-Tired Rollers	151.01 A.3
Water Trucks	152.01 B
Aggregate Trucks	152.01 C

#### MATERIALS

##### A. General.

Sieve Size Or Testing Method	Aggregate
	Gravel Surfacing
	Percent passing or Test Limit
1"	100
3/4"	70 – 100
No. 4	38 – 75
No. 8	22 – 62
No. 30	12 – 45
No. 200	7 - 15
Plasticity Index (PI)	3 - 9
ND T 113, Shale (max %)	12.0%
AASHTO T 96, L.A. Abrasion (max %)	50%
NDDOT 4, Fractured Faces <sup>1</sup>	10%

<sup>1</sup>Minimum weight percentage allowable for the portion of the aggregate retained on a No. 4 sieve having at least 1 fractured face.

The Engineer's testing procedures will follow Section 302 of the Field Sampling and Testing Manual. Frequencies will follow this specification.

##### B. Acceptance of Aggregate.

###### 1. Gradation.

The Engineer will collect three samples for each 1,000 tons of material placed, except when more than 1,000 tons are placed in a day. If more than 1,000 tons are placed in a day, the Engineer will collect three samples for that day's placement. If the aggregate fails to meet the specified gradation, the Engineer will apply a price reduction as specified in Section 302.06 B, "Contract Price Adjustments".



## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Dickey

Contact: Jeff Hagen 701-349-3326 jhagen@nd.gov  
Name Phone Email

Preparer: Jeff Hagen Date Prepared: 02/14/2020

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input type="checkbox"/>
Pit Run	<input type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input type="checkbox"/>
Tested	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input type="checkbox"/>
Water/Rolling/Compaction	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

## 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	25%	75%
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)	<b>\$5.00</b>	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	\$2.00/C.Y. up to 7 miles & \$.30 per C.Y. 8 miles +	<input checked="" type="checkbox"/> Per loaded mile <input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	<b>20</b>	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	<b>26-30</b>	<input type="checkbox"/> Cu. Yards <input checked="" type="checkbox"/> Tons	
Placement Costs	<b>\$125.00</b>	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	<b>\$48.00</b>	Annual 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)



## 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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regravelling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)			
Average Regraveling Thickness	1"	1"	1"
Blading Frequency (# per month)	3	4	5
Regraveling Frequency (years between regravelling)	<b>3</b>	<b>3</b>	<b>2</b>
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?

---

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	10%	25%
Good	50%	35%
Fair	30%	15%
Poor	10%	25%
<b>Total</b>	<b>100%</b>	<b>100%</b>

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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

Dickey County is budgeted for \$150,000 for contractor haulers

# 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Divide County  
Contact: Bryan Haugenoe 701-965-6523 bdhaugenoe@nd.gov  
Name Phone Email  
Preparer: Bryan Haugenoe Date Prepared: Oct 24/2019

## Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input type="checkbox"/>
Pit Run	<input checked="" type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input checked="" type="checkbox"/>
Tested	<input checked="" type="checkbox"/>
Other	<input type="checkbox"/>

## 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input checked="" type="checkbox"/>
Water/Rolling/Compaction	<input type="checkbox"/>
Other	<input type="checkbox"/>

## 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.

Task	Performed by:	
	County	Contractor
Crushing		100%
Hauling	100%	
Placement	100%	
Blading	100%	
Dust Control	20%	80%
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)	8.00 stock pile \$5.50 pits	<input type="checkbox"/> Per cu. yard <input checked="" type="checkbox"/> Per Ton	Is this Contractor Price? (yes/ <u>no</u> ) County
Trucking Cost from Gravel Origin	.40	<input checked="" type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input checked="" type="checkbox"/> Per Ton	Is this Contractor Price? (yes/ <u>no</u> ) County
Average trucking distance for aggregate	25	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	26	<input type="checkbox"/> Cu. Yards <input checked="" type="checkbox"/> Tons	
Placement Costs	20,960 <sup>09</sup>	Per Mile	Is this Contractor Price? (yes/ <u>no</u> ) County
Blading Cost	180 <sup>09</sup>	Annual cost per mile	Is this Contractor Price? (yes/ <u>no</u> ) County
Dust Suppressant Costs	6070 contractor 1100. county	Per mile	Is this Contractor Price? ( <u>yes</u> /no)
Base Stabilization Cost	25,000.00 BASE IV	Per mile	Is this Contractor Price? ( <u>yes</u> /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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE</b> <b>ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regaveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	25	50-150	150-450
Average Regraveling Thickness	2"	4"	5" to 6"
Blading Frequency (# per month)	1	4	4
Regraveling Frequency (years between regaveling)	4 to 5	2	1
Dust Suppressant (yes/no)	yes	yes	yes x 2
Base Stabilization (yes/no)	yes	yes	yes

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

Magnesium Chloride and Calcium Chloride

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

Base 1 1 to 3" rock Geotextile fabric

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	10%	
Good	65%	60%
Fair	25%	40%
Poor		
<b>Total</b>	<b>100%</b>	<b>100%</b>

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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

The need for better roads increase daily with the size of Trucks & Equipment not just oil field also agriculture equipment. We have done are first road stabilizing road project, this was a 12 mile project with costs at about 165,000/mile included reshaping, Base One in 4" of gravel and double chip seal. Started working on Bridges, trying to repair 2 bridges per year. We need to start rebuilding and regrading CMC and non CMC Routes to make road safer through the hills and curves, These roads have been pushed out from Heavy hauls and Semi Truck traffic.

# Sundre Sand & Gravel Inc.

## Material Gradation Summary

### Riveland Pit 2018 (Divide County Crushing)

#### Class-13

Test #	Date	1"	3/4"	5/8"	1/2"	3/8"	#4	#8	#16	#30	#50	#100	#200	1FF
1	8/17	100.0%	93.7%	88.5%	82.1%	76.7%	62.0%	56.3%	48.5%	40.1%	28.8%	17.6%	11.8%	65.2%
2		100.0%	95.0%	90.7%	84.1%	77.9%	63.0%	54.1%	46.2%	37.7%	27.1%	18.6%	12.7%	
3	8/21	100.0%	94.4%	87.2%	78.3%	72.9%	58.8%	50.4%	42.1%	32.7%	20.6%	12.4%	9.5%	
4		100.0%	94.1%	88.3%	82.7%	76.9%	63.2%	55.3%	44.8%	34.2%	22.1%	13.4%	9.7%	
5	8/22	100.0%	92.1%	86.8%	81.2%	74.6%	60.9%	52.3%	42.8%	32.7%	21.1%	12.2%	9.3%	71.8%
6		100.0%	92.9%	87.2%	79.2%	72.6%	60.1%	51.6%	42.6%	32.7%	20.7%	11.9%	8.9%	
7	8/23	100.0%	95.4%	89.7%	83.4%	77.6%	63.6%	54.5%	45.3%	35.0%	21.8%	11.6%	8.7%	
8		100.0%	93.6%	89.7%	83.7%	78.4%	63.8%	55.3%	46.1%	35.6%	22.8%	13.8%	9.8%	
9	8/24	100.0%	93.6%	89.0%	83.1%	77.7%	64.0%	56.2%	47.9%	37.7%	23.8%	12.6%	9.0%	62.6%
10		100.0%	92.6%	89.0%	82.0%	77.2%	64.9%	56.2%	47.4%	37.1%	23.6%	13.3%	9.5%	
11	8/28	100.0%	93.2%	87.0%	80.8%	75.1%	60.9%	53.3%	45.8%	37.3%	25.8%	15.3%	11.2%	
12		100.0%	91.5%	87.2%	79.4%	73.6%	60.6%	53.0%	45.8%	37.2%	24.9%	14.2%	10.1%	
13	8/29	100.0%	92.8%	90.2%	85.1%	80.0%	64.9%	57.4%	51.1%	41.3%	27.3%	14.9%	10.1%	66.8%
14		100.0%	96.2%	92.9%	87.4%	82.3%	64.4%	58.0%	50.1%	40.4%	28.4%	17.8%	12.8%	
15	8/30	100.0%	93.1%	88.2%	81.6%	76.6%	63.2%	55.4%	45.5%	33.9%	20.6%	11.9%	8.6%	
16		100.0%	93.5%	89.2%	83.3%	77.9%	64.8%	57.4%	48.0%	36.6%	23.1%	13.9%	10.5%	
17	8/31	100.0%	93.0%	89.6%	84.7%	79.2%	64.2%	57.0%	48.4%	38.7%	25.4%	16.1%	12.4%	
18		100.0%	93.2%	88.4%	82.6%	77.7%	64.4%	58.2%	50.4%	40.7%	27.6%	17.5%	13.5%	
19	9/4	100.0%	93.9%	89.0%	84.3%	79.6%	64.7%	58.3%	51.3%	40.8%	26.2%	13.6%	9.8%	
20	9/5	100.0%	93.8%	90.9%	84.9%	79.9%	64.5%	58.9%	49.6%	39.3%	27.1%	16.6%	12.4%	
21		100.0%	90.6%	87.0%	81.4%	77.2%	64.3%	56.3%	48.7%	37.7%	24.7%	15.9%	11.5%	
22	9/6	100.0%	92.3%	87.1%	81.2%	74.7%	62.4%	53.6%	44.9%	35.8%	23.3%	14.2%	10.5%	
23		100.0%	95.8%	91.4%	85.4%	79.7%	64.6%	57.1%	46.7%	36.0%	23.8%	14.3%	10.7%	
24	9/7	100.0%	93.8%	88.2%	80.8%	75.1%	61.5%	53.7%	45.6%	36.8%	26.2%	16.8%	12.1%	
25														
26														
AVG		100.0%	93.5%	88.9%	82.6%	77.1%	63.1%	55.4%	46.9%	37.0%	24.5%	14.6%	10.6%	66.6%





# MATERIAL TESTING SERVICES - WILLISTON

## GRADATION TEST RESULTS

6"		
5 1/2"		
5"		
4 1/2"		
4"		
3 1/2"		
3"		
2 1/2"		
2"		
1 1/2"		
1"		100
3/4"	93.4	70-100
5/8"	87.4	
1/2"	77.5	
3/8"	69.5	
#4	56.1	38-55
#8	47.6	22-62
#10	45.5	
#16	39.1	
#20	34.9	
#30	30.7	12-45
#40	26.8	
#50	23.8	
#100	16.4	
#200	12.8	7-15

PROJECT NO.: EIDE PIT  
 REPORTED TO: DIVIDE CO.  
 PIT LOCATION: \_\_\_\_\_  
 PIT OWNER: JOHN NYSTUER  
 SAMPLED FROM: \_\_\_\_\_  
 MATERIAL: CLASS 13  
 SAMPLE NO.: \_\_\_\_\_  
 DATE SAMPLED: 8/3/18  
 DATE RECEIVED: 8/7/18  
 SUBMITTED BY: BRIAN  
 LAB NO.: W18-026

\_\_\_\_\_  
 MATERIAL TESTING AUTHORIZED SIGNATURE

1 FRACTURED FACES 83.3% 10% MIN.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

PASTIC LIMIT (P.L.) 26

LIQUID LIMIT (L.L.) 17

PASTIC INDEX (P.I.) 9

P.I. RANGE

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



# MATERIAL TESTING SERVICES, LLC

PO Box 634  
Minot, ND 58702  
(701) 852-6663

## PARTICLE-SIZE ANALYSIS

7101 W 2nd Avenue  
Williston, ND 58801  
(701) 672-4226

PROJECT: PRODUCTION CHECK  
EIDE PIT (JOHN NYSTUER)

DATE: 13-Aug-18

COPIES: [bdhaugenoe@nd.gov](mailto:bdhaugenoe@nd.gov)

REPORTED TO: Divide County Road Department  
PO Box 71  
Crosby, ND 58730

Laboratory Number W18-026

### SAMPLE IDENTIFICATION:

Class 13  
Eide pit

DATE SAMPLED:  
DATE SUBMITTED:

8/3/18  
8/7/18 by Brian

NDDOT  
Table 816-01  
Class 13

### MECHANICAL ANALYSIS (AASHTO/ND T-11, T-27):

passing 1"	100	100
3/4"	93.4	70 - 100
1/2"	77.5	
3/8"	69.5	
# 4	56.1	38 - <del>45</del> 65
# 8	47.6	22 - 62
# 16	39.1	
# 30	30.7	12 - 45
# 50	23.8	
# 100	16.4	
# 200	12.8	7 - 15

FRACTURES (% , 1 face, NDDOT 4):

83.3

Minimum 10

### ATTERBERG LIMITS (AASHTO/ND T-89, T90):

Liquid Limit	26
Plastic Limit	17
Plasticity Index	9

REMARKS: The sample was submitted to the laboratory by Divide County.  
The sample meets the listed NDDOT Class 13 requirements.

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL.

Material Testing Services, LLC

by





# MATERIAL TESTING SERVICES, LLC

PO Box 634  
Minot, ND 58702  
(701) 852-5553

## PARTICLE-SIZE ANALYSIS

7101 W 2nd Avenue  
Williston, ND 58801  
(701) 572-4226

PROJECT: PRODUCTION CHECK  
EIDE PIT (JOHN NYSTUER)

DATE: 24-Sep-18

COPIES: [bdhaugenoe@nd.gov](mailto:bdhaugenoe@nd.gov)

REPORTED TO: Divide County Road Department  
PO Box 71  
Crosby, ND 58730

Laboratory Number W18-026

SAMPLE IDENTIFICATION: Class 13, Eide pit

SAMPLE NO. 2 3 4 5

DATE SAMPLED: 7/25/18 8/2/18 9/6/18 9/13/18 NDDOT  
DATE SUBMITTED: 9/14/18 9/14/18 9/14/18 9/14/18 Table 816-01  
Class 13

MECHANICAL ANALYSIS (AASHTO/ND T-11, T-27):

passing 1"	100	100	100	100	100
3/4"	89.7	93.0	93.6	93.5	70 - 100
1/2"	76.0	73.4	80.5	86.0	
3/8"	69.0	65.3	73.1	81.5	
# 4	55.4	50.6	61.9	69.5	38 - <del>25</del> 65
# 8	47.6	37.5	52.1	59.5	22 - 62
# 16	39.1	29.0	44.1	47.3	
# 30	29.8	22.4	35.5	35.5	12 - 45
# 50	20.3	17.0	26.1	24.2	
# 100	13.8	13.3	18.6	18.2	
# 200	10.6	10.9	14.0	14.6	7 - 15

FRACTURES (% , 1 face, NDDOT 4): 73.8 67.9 58.5 51.9 Minimum 10

ATTERBERG LIMITS (AASHTO/ND T-89, T90):

Liquid Limit	23	29	24	27
Plastic Limit	19	18	18	17
Plasticity Index	4	11	6	10

REMARKS: The sample was submitted to the laboratory by Divide County.  
The sample meets the listed NDDOT Class 13 requirements.

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL.

Material Testing Services, LLC

by 



# Sundre Sand & Gravel Inc.

## Material Gradation Summary

### Aaberg Pit - Divide County Crushing 2019

#### Crushed Gravel

Test #	Date	1"	3/4"	5/8"	1/2"	3/8"	#4	#8	#16	#30	#50	#100	#200	1FF	
1	10/6	100.0%	94.5%	89.3%	82.9%	77.2%	64.6%	56.1%	46.1%	36.3%	23.1%	14.7%	11.1%	5000	54.2%
2		100.0%	95.5%	92.4%	84.7%	77.6%	63.0%	51.7%	41.2%	32.2%	21.7%	15.0%	12.3%	10000	
3	10/7	100.0%	93.4%	88.9%	82.9%	77.5%	60.9%	52.4%	43.0%	33.5%	22.1%	15.0%	10.8%	15000	55.1%
4		100.0%	93.6%	87.3%	78.9%	72.4%	59.7%	48.4%	39.8%	31.0%	20.6%	13.3%	10.2%	20000	
5	10/8	100.0%	95.1%	88.7%	80.6%	74.4%	60.5%	51.8%	42.8%	33.3%	22.8%	15.5%	11.3%	25000	
6	10/9	100.0%	93.6%	87.3%	78.9%	72.4%	59.7%	48.4%	39.8%	31.0%	20.6%	13.3%	9.8%	30000	
7															
8															
9															
10															
AVG		100.0%	94.3%	89.0%	81.5%	75.3%	61.4%	51.5%	42.1%	32.9%	21.8%	14.5%	10.9%		54.7%





## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Dunn County

Contact: David Lym 701-764-5546 david.lym@dunncountynd.org  
Name Phone Email

Preparer: David Lym Date Prepared: 2/13/20

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input checked="" type="checkbox"/>
Pit Run	<input type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input type="checkbox"/>
Specifications	<input type="checkbox"/>
Tested	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input type="checkbox"/>
Windrow/Equalize	<input type="checkbox"/>
Water/Rolling/Compaction	<input checked="" type="checkbox"/>
Other _____	<input type="checkbox"/>

## 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	5	95
Hauling	70	30
Placement	80	20
Blading	100	0
Dust Control	95	5
Base Stabilization	95	5

## 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	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	9.6	<input type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input checked="" type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	15	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	18	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	5200	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	6000	Annual cost per mile	Is this Contractor Price? (yes/no)
Dust Suppressant Costs	8500	Per mile	Is this Contractor Price? (yes/no)
Base Stabilization Cost	8500	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.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regraveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	>25	120	1200
Average Regraveling Thickness	3"	4"	9"
Blading Frequency (# per month)	>1	1	2
Regraveling Frequency (years between regraveling)	<b>12</b>	<b>7</b>	<b>5</b>
Dust Suppressant (yes/no)	no	yes/no	yes
Base Stabilization (yes/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?  
 Mag Chloride

---

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	20	15
Good	45	25
Fair	25	35
Poor	10	25
<b>Total</b>	<b>100%</b>	<b>100%</b>

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Eddy

Contact: Todd Weber 701-341-7290 tjweber@nd.gov  
Name Phone Email

Preparer: Todd Weber Date Prepared: 1-20-20

### Aggregate Description

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

Gravel  
Scoria  
Pit Run  
Screened  
Crushed Material  
Specifications  
Tested  
Other \_\_\_\_\_

X
X
X
X

### 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 \_\_\_\_\_

X
X
X

## 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.

Task	Performed by:	
	County	Contractor
Crushing	0	100%
Hauling	0	100%
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	<input type="checkbox"/> Per cu. yard <input checked="" type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no) <u>yes</u>
Trucking Cost from Gravel Origin	.30	<input type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input checked="" type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no) <u>yes</u>
Average trucking distance for aggregate	10 miles	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	25	<input type="checkbox"/> Cu. Yards <input checked="" type="checkbox"/> Tons	
Placement Costs	\$1,500	Per Mile	Is this Contractor Price? (yes/no) <u>yes</u>
Blading Cost	\$420	Annual cost per mile	Is this Contractor Price? (yes/no) <u>yes</u>
Dust Suppressant Costs	Do not use on County Rds	Per mile	Is this Contractor Price? (yes/no)
Base Stabilization Cost	Have not used	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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regaveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)			
Average Regraveling Thickness	3"	4"	4"
Blading Frequency (# per month)	1	1	1
Regraveling Frequency (years between regaveling)	8	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?

---

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	15%	10%
Good	40%	40%
Fair	25%	25%
Poor	20%	25%
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

*NDOT class 13*  
*class 13M*

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

*71.7 miles of non-FAS gravel roads*  
*19.5 miles of FAS gravel roads*  
*63 miles of FAS paved roads*



# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Emmons County

Contact: Nick Lawler 254-5491 ecshop@nd.gov  
Name Phone Email

Preparer: \_\_\_\_\_ Date Prepared: 11/14/19

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input type="checkbox"/>
Pit Run	<input type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input checked="" type="checkbox"/>
Tested	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input type="checkbox"/>
Water/Rolling/Compaction	<input type="checkbox"/>
Other _____	<input type="checkbox"/>



## 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	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)	\$8.70	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	\$6.00	<input checked="" type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	16	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	20	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	\$425.00	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	\$350.00	Annual cost 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)



## 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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regaveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	15	50	>100
Average Regraveling Thickness	2"	2"	3" - 4"
Blading Frequency (# per month)	1	2	4
Regraveling Frequency (years between regaveling)			
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?

---



## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good		
Good	100%	75%
Fair		25%
Poor		
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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





# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

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County: Foster County

Contact: Brad Solberg 701-652-2441 bradsolberg@nd.gov

Preparer: Nate Monsun Date Prepared: 10-25-19

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input type="checkbox"/>
Pit Run	<input checked="" type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input checked="" type="checkbox"/>
Tested	<input checked="" type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input type="checkbox"/>
Water/Rolling/Compaction	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

## 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.

Task	Performed by:	
	County	Contractor
Crushing	0%	100%
Hauling	15%	85%
Placement	15%	85%
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)	\$6.40	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? <u>yes</u> /no
Trucking Cost from Gravel Origin	.28	<input checked="" type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? <u>yes</u> /no
Average trucking distance for aggregate	14	<input type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	25	<input type="checkbox"/> Cu. Yards <input checked="" type="checkbox"/> Tons	
Placement Costs <i>Gravel, Trucking blading,</i>	\$2,000	Per Mile	Is this Contractor Price? <u>yes</u> /no
Blading Cost	\$75.00	Annual cost per mile	Is this Contractor Price? (yes)/ <u>no</u>
Dust Suppressant Costs	\$5,300	Per mile	Is this Contractor Price? <u>yes</u> /no
Base Stabilization Cost	NA	Per mile	Is this Contractor Price? (yes)/ <u>no</u>

Binary variable  
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.

<b>EXAMPLE</b> <b>ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regraveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	715	16-40	41-100
Average Regraveling Thickness	2"	3"	4"-6"
Blading Frequency (# per month)	1.5	2	4
Regraveling Frequency (years between regraveling)	4-5	4	2
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?

magnesium chloride

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

NA

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	90%	25%
Good	10%	50%
Fair	—	15%
Poor	—	10%
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

*Attached*

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

*All of our gravel roads are becoming tougher to maintain due to increased traffic & also the size of Farm machinery. The increase in corn & bean crops has also changed the amount of traffic and also the timing (later Fall traffic when roads are wet). We are finding that we have to maintain (blade) the roads more often just to stay even & not improve many gravel roads.*

# Foster County

## Class 13 Aggregate Surface Course

Sieve Size or Testing Method	% Passing
1 Inch	100
¾ Inch	70-100
No. 4	38-75
No. 8	22-62
No. 30	12-45
No. 200	7-15
ND T 113, Shale (max%)	12.0%
NDDOT 4, Fractured Faces <sup>1</sup>	10%
<sup>1</sup> Minimum weight percentage allowable for the portion of the aggregate retained on a No. 4 sieve having at least 1 fractured face.	



# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

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County: Golden Valley  
Contact: Pete Wirtzfeld 701-872-4123 gvshop@midstate.net  
Preparer: Pete Wirtzfeld Date Prepared: 11-13-19

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input checked="" type="checkbox"/>
Pit Run	<input type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input checked="" type="checkbox"/>
Tested	<input checked="" type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input checked="" type="checkbox"/>
Water/Rolling/Compaction	<input checked="" type="checkbox"/>
Other _____	<input type="checkbox"/>

## 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.

Task	Performed by:	
	County	Contractor
Crushing	0	100
Hauling	100	0
Placement	100	0
Blading	90	10
Dust Control	100	
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 gravel 5.00 scoria	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	3.80	<input type="checkbox"/> Per loaded mile <input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	15	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	21 gravel 24 scoria	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	2880	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	560	Annual cost per mile	Is this Contractor Price? (yes/no)
Dust Suppressant Costs	5,756	Per mile	Is this Contractor Price? (yes/no)
Base Stabilization 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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE</b> <b>ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	Low	Medium	High
Daily Traffic (Total AADT)	>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 regaveling)	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 (Total AADT)	< 50	50 - 100	100 - 285 +
Average Regraveling Thickness	6"	6"	6" - 8"
Blading Frequency (# per month)	1	1-3	1-3
Regraveling Frequency (years between regaveling)	10	7	3-5
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?

*MgCl<sup>2</sup> Flakes - spreader truck, water truck, motorgrader/wrapper*

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

---

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	30	17
Good	58	66
Fair	7	10
Poor	5	7
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

gravel: 3/4" 100% Scoria 2" minus  
 No 4 25-70  
 No 30 10-45  
 No. 200 5-15  
 P1 4-12

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

# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

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County: Grand Forks

Contact: Nick West 701-780-8248 Nick.West@grfcounty.org

Preparer: Nick West Date Prepared: 1-8-20  
Sue MacMillan

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/> NDDOT CL 13
Scoria	<input type="checkbox"/>
Pit Run	<input type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/> concrete - special locations
Specifications	<input type="checkbox"/>
Tested	<input checked="" type="checkbox"/>
Other	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input checked="" type="checkbox"/>
Water/Rolling/Compaction	<input checked="" type="checkbox"/> - Sometimes - depends on moisture content of supplied gravel, but doing more watering
Other	<input type="checkbox"/>

### 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.

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

2 Hopefully 1st project in 2020

### 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)	\$ 3.55	<input type="checkbox"/> Per cu. yard <input checked="" type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	\$ 0.18	<input checked="" type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input checked="" type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	60	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	32	<input type="checkbox"/> Cu. Yards <input checked="" type="checkbox"/> Tons	
Placement Costs	\$ 7241	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	\$ 550	Annual cost per mile	Is this Contractor Price? (yes/no)
Dust Suppressant Costs	\$ 5750	Per mile	Is this Contractor Price? (yes/no)
Base Stabilization 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 regreveling thickness, blading frequency, regreveling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	Traffic Levels		
	Low	Medium	High
Daily Traffic (Total AADT)	<50	50-150	150-350
Average Regravelling Thickness	3 in	4 in	5 in
Blading Frequency (# per year)	8	12	16
Regravelling Frequency (years between regravelling)	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 (Total AADT)	750	50-150	150-350
Average Regraveling Thickness	1"	1"	1"
Blading Frequency (# per month)	2	4	4
Regraveling Frequency (years between regreveling)	2.0	1.5	1.0
Dust Suppressant (yes/no)	No	No	Yes / Selectively
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?

No

### Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	0	0
Good	25	25
Fair	50	50
Poor	25	25
Total	100%	100%

### Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

*we use NDDOT LL 13 with no modifications  
materials do not differ*

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

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Grant County

Contact: Jon Alt 701-425-9251 jalt@nd.gov  
Name Phone Email

Preparer: Jon Alt Date Prepared: 2/19/2020

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input checked="" type="checkbox"/>
Pit Run	<input type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input checked="" type="checkbox"/>
Tested	<input checked="" type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input checked="" type="checkbox"/>
Water/Rolling/Compaction	<input checked="" type="checkbox"/>
Other _____	<input type="checkbox"/>

## 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)	\$11.50	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	\$7.00	<input checked="" type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	20-25	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	20	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	\$19,500	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	\$60.00	Annual cost 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)



## 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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE</b> <b>ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regaveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	15	75	175
Average Regraveling Thickness	3"	2 lifts of 3"	2 lifts of 3"
Blading Frequency (# per month)	1	2	3
Regraveling Frequency (years between regaveling)	10years	5 years	4 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?

N/A

---

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

N/A

---

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good		
Good	80%	50%
Fair	20%	30%
Poor		20%
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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

## GRADATION REPORT

Report Number: M2111371.0038  
Service Date: 10/23/18  
Report Date: 10/24/18

# Terracon

1805 Hancock Dr, PO Box 2084  
Bismarck, ND 58501  
701-258-2833

### Client

Grant County ND  
Attn: Accounts Payable  
PO Box 227  
Carson, ND 58529

### Project

Pit Check  
Various Locations  
Grant County, ND

Project Number: M2111371

SAMPLE NUMBER: 1  
SAMPLE IDENTIFICATION: R-2  
DATE SUBMITTED: 10-18-18  
SOURCE: J. Ruschinski

### MECHANICAL ANALYSIS:

Passing 4"	100%	
3	89	
2	86	
1 1/2	84	
1	81	100
3/4	78	70-100
5/8	77	
1/2	74	
3/8	71	
#4	58	38-75
8	46	22-62
16	36	
30	28	12-45
50	20	
100	9.3	
200	6.0	7-15

### ATTERBERG LIMITS:

Liquid Limit	NP
Plastic Limit	NP
Plasticity Index	NP

REMARKS: Sample was submitted to and received here at the laboratory for test.

ASTM Test Methods: C136, C117, D4318

### Services:

Terracon Rep.:

Reported To:

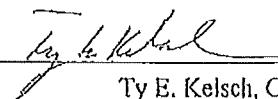
Contractor:

Report Distribution:

(1) Grant County ND, Lynn  
Mutschelknaus  
(1) Sauber Engineering, Inc, John Sauber

(1) Sauber Engineering, Inc, Jeff Wright

Reviewed By:



Ty E. Kelsch, CET  
CMT Dept Manager

# GRADATION REPORT

Report Number: M2191167.0003  
Service Date: 07/25/19  
Report Date: 07/25/19  
Task:

# Terracon

1805 Hancock Dr, PO Box 2084  
Bismarck, ND 58501  
701-258-2833

## Client

Grant County ND  
Auditor  
Attn: Sara Meier  
106 2nd Ave NW  
Carson, ND 58529-5014

## Project

SC-1927(619)  
Grant County Hwy Dept  
Grant County, ND

Project No. M2191167

ND T11	Materials Finer than No. 200 Sieve in Mineral Aggregates by Washing
ND T27	Sieve Analysis of Fine and Coarse Aggregates
ND T89	Liquid Limit of Soils
ND T90	Plastic Limit and Plasticity Index of Soils
ND T113	Lightweight Pieces in Aggregate
NDDOT 4	Percentage of Fractured Particles in Coarse Aggregate
AASHTO T96	Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion in the LA Machine
Sample Number:	7
Aggregate Type:	Aggregate Surface Course
Sample Location:	Zimmerman Pit
Date Submitted:	7/23/19

Sieve Analysis		NDDOT Table 816-01 Class 13 Specifications			Test Item	Result	Specs
Sieve Size	Percent Passing	Min.	Max.	Result	Lightweight Pieces		
1 in.	100	100		pass	Plus #4 (%)	0.3	
3/4 in.	96	70	100	pass	Minus #4 (%)	0.8	
5/8 in.	90				Total Sample (%)	0.6	Max. 12%
1/2 in.	84				Liquid Limit	23	
3/8 in.	74				Plastic Limit	15	
#4	60	38	75	pass	Plasticity Index	8	3 - 9
#8	50	22	62	pass			
#16	45				Fractured Particles		
#30	42	12	45	pass	Plus #4 (1 or more)(%)	94.2	Min. 10%
#50	35						
#100	23				LA Abrasion		
#200	14.9	7	15	pass	Grading "C" (% loss)	NT	Max. 50%

Notes: NT=Not tested  
Services: Testing of NDDOT Class 13 Aggregate Surface Course  
Terracon Rep: Kelly Melchior  
Reported To:  
Contractor:

## Report Distribution

(1) Grant County ND, Sara Meier  
(1) Sauber Engineering Inc, John Sauber  
(1) Sauber Engineering Inc, Jeff Wright

Reviewed By: Brian Pettig  
Brian Pettig, CET  
Office Manager

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.

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County: Griggs

Contact: Wayne Oren 701 797 3420 Wayne.Oren@griggscountynod.gov  
Name Phone Email

Preparer: Wayne Oren Date Prepared: \_\_\_\_\_

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input type="checkbox"/>
Pit Run	<input type="checkbox"/>
Screened	<input checked="" type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input checked="" type="checkbox"/>
Tested	<input checked="" type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input type="checkbox"/>
Windrow/Equalize	<input type="checkbox"/>
Water/Rolling/Compaction	<input type="checkbox"/>
Other <u>Truck drop/Windrow/</u> <u>equalize compaction with</u> <u>Roller</u>	<input checked="" type="checkbox"/>

## 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.

Task	Performed by:	
	County	Contractor
Crushing	0	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)	650	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	125	<input checked="" type="checkbox"/> Per loaded mile <input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	15	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	18	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	\$ 450	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	\$ 425	Annual cost 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)

## 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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regaveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	25	50-150	150-200
Average Regraveling Thickness	1 1/2"	2"-3"	4"
Blading Frequency (# per month)	2	3	3
Regraveling Frequency (years between regaveling)	5	5	4
Dust Suppressant (yes/no)	0	0	0
Base Stabilization (yes/no)	0	0	0

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

---

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

---

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	50	25
Good	25	50
Fair	20	20
Poor	5	5
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

*Modified Class 13 with a higher percentage on the #4 screen*

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

*The reason our CMC routes are very good, is because of the special oil revenue.*



## 2019 COUNTY ROAD NEEDS STUDY SURVEY

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County: Hettinger County

Contact: Elliott Finck 701-824-2050 efinck@nd.gov  
Name Phone Email

Preparer: Elliott Finck Date Prepared: 2-24-2020

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input checked="" type="checkbox"/>
Pit Run	<input type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input type="checkbox"/>
Specifications	<input type="checkbox"/>
Tested	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input type="checkbox"/>
Water/Rolling/Compaction	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

## 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)	7.00	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	.65	<input checked="" type="checkbox"/> Per loaded mile <input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	14	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	21	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	NA	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	150	Annual cost 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)

## 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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regaveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	>50	50-150	150-350
Average Regraveling Thickness	2 in	4 in	4 in
Blading Frequency (# per month)	1	1	1
Regraveling Frequency (years between regaveling)	10	10	10
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?

---

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	0	0
Good	50	25
Fair	25	25
Poor	25	50
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Kidder County

Contact: Jean Schoenhard 701-475-4547 jschoenhard@nd.gov  
Name Phone Email

Preparer: Jean Schoenhard Date Prepared: 2/14/2020

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input type="checkbox"/>
Pit Run	<input type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input checked="" type="checkbox"/>
Tested	<input type="checkbox"/>
Other <u>Class 5</u>	<input checked="" type="checkbox"/>

### 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	<input type="checkbox"/>
Windrow/Equalize	<input checked="" type="checkbox"/>
Water/Rolling/Compaction	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

## 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	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	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	\$6.00	<input type="checkbox"/> Per loaded mile <input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	10	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	22	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	\$5,700	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	\$390	Annual cost 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)

## 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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regravelling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)		50-150	
Average Regraveling Thickness	3	4	5
Blading Frequency (# per month)	5	9	15
Regraveling Frequency (years between regravelling)		As Needed	
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?  
None

---

If you answered yes for Base Stabilization – which type do you use?  
None

---

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	0	0
Good	75	0
Fair	20	50
Poor	5	50
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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

Funding is limited in Kidder County and extra funding would help tremendously and would be greatly appreciated.



# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: LaMoore County

Contact: Josh Loegerns 701-408-9030 josh.loegerns@co.lamoore.nd.us  
Name Phone Email

Preparer: Josh Loegerns Date Prepared: 11/5/19

### Aggregate Description

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

- |                  |                                     |
|------------------|-------------------------------------|
| Gravel           | <input checked="" type="checkbox"/> |
| Scoria           | <input type="checkbox"/>            |
| Pit Run          | <input checked="" type="checkbox"/> |
| Screened         | <input type="checkbox"/>            |
| Crushed Material | <input checked="" type="checkbox"/> |
| Specifications   | <input type="checkbox"/>            |
| Tested           | <input type="checkbox"/>            |
| Other _____      | <input type="checkbox"/>            |

### 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     | <input checked="" type="checkbox"/> |
| Windrow/Equalize         | <input type="checkbox"/>            |
| Water/Rolling/Compaction | <input type="checkbox"/>            |
| Other _____              | <input type="checkbox"/>            |

## 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.

Task	Performed by:	
	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)	\$4.65	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no) <u>no</u>
Trucking Cost from Gravel Origin	\$0.30/mile	<input checked="" type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no) <u>no</u>
Average trucking distance for aggregate	18 miles	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	22	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs <i>Approx \$500/mi</i>	<del>Per mile</del>	Per Mile	Is this Contractor Price? (yes/no) <u>no</u>
Blading Cost	\$618/mi	Annual cost per mile	Is this Contractor Price? (yes/no) <u>no</u>
Dust Suppressant Costs	NA	Per mile	Is this Contractor Price? (yes/no)
Base Stabilization Cost	NA	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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regaveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	725	25-100	100 L
Average Regraveling Thickness	2"	3"	3"
Blading Frequency (# per month)	1.5	2	2
Regraveling Frequency (years between regaveling)	<del>3</del> 3	<del>3</del> 2	<del>3</del> 2
Dust Suppressant (yes/no)	No	No	No
Base Stabilization (yes/no)	No	<del>No</del> 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?

Base One

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	50	20
Good	25	20
Fair	25	40
Poor	0	20
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

No ~~specification~~ used.  
specification

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

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

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County: Logan

Contact: Blanche Schumacher 701-321-1544 baschuma@nd.gov  
Name Phone Email

Preparer: Blanche Schumacher Date Prepared: 02-13-2020

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input type="checkbox"/>
Pit Run	<input checked="" type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input type="checkbox"/>
Tested	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input type="checkbox"/>
Water/Rolling/Compaction	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

## 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.

Task	Performed by:	
	County	Contractor
Crushing	0	100
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)	3.85	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	103.00	<input checked="" type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	12.15	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	.65	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs		Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	100.00	Annual 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)

## 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.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regraveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	-50		
Average Regraveling Thickness	2 in		
Blading Frequency (# per month)	1		
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?

---

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good		
Good	50	50
Fair	50	50
Poor		
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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



## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: McHenry County

Contact: <u>Darlene Carpenter</u>	<u>701-537-5724</u>	<u>dcarpenter@nd.gov</u>
Name	Phone	Email

Preparer: Darlene Carpenter Date Prepared: 02/14/2020

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>	
Scoria	<input type="checkbox"/>	
Pit Run	<input type="checkbox"/>	
Screened	<input type="checkbox"/>	
Crushed Material	<input checked="" type="checkbox"/>	
Specifications	<input checked="" type="checkbox"/>	
Tested	<input type="checkbox"/>	
Other _____	<input type="checkbox"/>	

### 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	<input checked="" type="checkbox"/>	
Windrow/Equalize	<input type="checkbox"/>	
Water/Rolling/Compaction	<input type="checkbox"/>	
Other _____	<input type="checkbox"/>	

## 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.

Task	Performed by:	
	County	Contractor
Crushing	0%	100%
Hauling	0%	100%
Placement	0%	100%
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)	\$6.00	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	\$7.00	<input type="checkbox"/> Per loaded mile <input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	25	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	20	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	\$1.50	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	\$160	Annual cost 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)

## 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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regravelling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	<50	50-150	>150
Average Regraveling Thickness	1	1	1
Blading Frequency (# per month)	1	3	3
Regraveling Frequency (years between regravelling)	10	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?

---

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good		50
Good	40	
Fair	50	50
Poor	10	
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

Class 13

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

## 2019 COUNTY ROAD NEEDS ASSESSMENT SURVEY

Please return this survey in the enclosed envelope by November 20, 2019. Please direct any questions to Alan Dybing at 701.231.5988 or [alan.dybing@nd.gov](mailto:alan.dybing@nd.gov).

County: McIntosh

Contact: Chris Opsahl 701-709-0832 copsahl@nd.gov

Name Phone Email

Preparer: Chris Opsahl Date Prepared: 03/03/2020

### Aggregate Description

To provide information on the type and quality of aggregate used in your county, please check all boxes that apply. For example, if your county uses crushed, specification base gravel – select gravel, crushed material and specification.

Gravel	<input checked="" type="checkbox"/>
Scoria	<input type="checkbox"/>
Pit Run	<input checked="" type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input type="checkbox"/>
Tested	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input checked="" type="checkbox"/>
Water/Rolling/Compaction	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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.

Task	Performed by:	
	County	Contractor
Crushing	0%	100%
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)	\$5.21	<input type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	\$10.00	<input type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	25	<input type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	12	<input type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	\$250.00	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	\$1,000.00	Annual cost 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)

## 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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

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

<b>County Entry</b>	Traffic Levels		
	Low	Medium	High
<b>Daily Traffic (Total AADT)</b>	>20	20-50	50+
<b>Average Regraveling Thickness</b>	1"	1 1/2"	2"
<b>Blading Frequency (# per month)</b>	1	2	2
<b>Regraveling Frequency (years between regaveling)</b>	3	3	3
<b>Dust Suppressant (yes/no)</b>	no	no	no
<b>Base Stabilization (yes/no)</b>	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?

---

### Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	60%	10%
Good	40%	50%
Fair	0%	30%
Poor	0%	10%
Total	100%	100%

### Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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





## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: MCKENZIE

Contact: Tommy Glover 701-580-1666 tglover@co.mckenzie.nd.us  
Name Phone Email

Preparer: Tommy Glover Date Prepared: 9-30-19

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input checked="" type="checkbox"/>
Pit Run	<input checked="" type="checkbox"/>
Screened	<input checked="" type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input checked="" type="checkbox"/>
Tested	<input checked="" type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input type="checkbox"/>
Water/Rolling/Compaction	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

## 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.

Task	Performed by:	
	County	Contractor
Crushing <i>N/A</i>	85%	15%
Hauling	85%	15%
Placement	85%	15%
Blading	85%	15%
Dust Control	85%	15%
Base Stabilization <i>N/A</i>		

## 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)	\$14.00	<input type="checkbox"/> Per cu. yard <input checked="" type="checkbox"/> Per Ton	Is this Contractor Price? (yes/ <u>no</u> )
Trucking Cost from Gravel Origin	\$3.25	<input checked="" type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/ <u>no</u> )
Average trucking distance for aggregate	30 miles	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	25	<input type="checkbox"/> Cu. Yards <input checked="" type="checkbox"/> Tons	
Placement Costs	\$3.25	Per Mile	Is this Contractor Price? (yes/ <u>no</u> )
Blading Cost	\$1,500+	Annual cost per mile	Is this Contractor Price? (yes/ <u>no</u> )
Dust Suppressant Costs	\$10,000+	Per mile	Is this Contractor Price? (yes/ <u>no</u> )
Base Stabilization Cost	N/A	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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE</b> <b>ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	>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 regaveling)	7	5	3
Dust Suppressant (yes/no)	no	no	Yes
Base Stabilization (yes/no)	no	no	Yes

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)			X
Average Regraveling Thickness	3 inch	4 inch	
Blading Frequency (# per month)			16+
Regraveling Frequency (years between regaveling)			2
Dust Suppressant (yes/no)			yes
Base Stabilization (yes/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?

\_\_\_\_\_

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good		
Good		
Fair	<i>we get no federal aid</i>	
Poor		
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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

McKenzie County, North Dakota  
2020 Aggregate Stockpiles  
Standard Specifications

I. Description

The board of McKenzie County Commissioners has advertised for sealed bids to be submitted to:

Erica Johnsrud  
McKenzie County Auditor  
201 5<sup>th</sup> St NW, Suite 543  
Watford City, ND 58854

For furnishing McKenzie County Road and Bridge Department, hereinafter referred to as the County, with stockpiling aggregate at two (2) sites, hereinafter referred to as the Project.

II. Scope

The Project consists of furnishing all labor, materials, and equipment to perform the hauling and stockpiling of 115,000 total tons of Class 13 Modified that will be divided between two (2) sites.

III. Site

The site(s) are located at two (2) location(s), is/are known as the Site # 1 and Site # 2 and described as follows:

Site # 1: Will be known as Watford City and is located in NW ¼ of Section 29, T150N, R98W on the southeast edge of town. The Contractor will stockpile 75,000 Tons of Class 13 Modified at this site. The completion date for this site is 09/30/2020.

Site # 2: Will be known as Rawson and is located in SW ¼ SE ¼ of Section 12, T150N, R98W on the west edge of town. The Contractor will stockpile 40,000 Tons of Class 13 Modified at this site. Completion date for this site is 09/30/2020.

The County will prepare the site and will provide the Contractor access. The Contractor shall provide a two week notice for each site prior to hauling and stockpiling the material.

Upon completion of each stockpile location, the Contractor shall perform clean-up operations on the site to minimize County restoration. This will include the removal of structures supplied by the Contractor, the removal of material spills on the site, and the disposal of any chemical spills. Clean-up shall be considered incidental to the project.

IV. Construction Requirements

The Contractor shall supply all labor, materials, and equipment to perform the hauling and stacking operations at the designated site. The Contractor shall notify the County of the

McKenzie County, North Dakota  
2020 Aggregate Stockpiles  
Standard Specifications

proposed source of the material prior to delivery of the materials to site and provide a NDDOT Material Source Certificate of Approval.

The stockpiled material shall be free of sod, roots, plants, trash, or other objectionable material. Stockpile material to prevent segregation. Do not use equipment or methods that cause segregation, degradation, or contamination of the aggregate when constructing stockpiles or delivering material. Do not incorporate segregated, degraded, or contaminated material into the work. The material shall be stacked with a conveyor belt and in a continuous and uniform pile.

The Contractor shall not be permitted to haul material during inclement weather nor at any time when the contractor's operation will damage the existing road surface leading to any site. Should the County restrict roads due to inclement weather, the Contractor shall adhere to the restrictions and cease hauling. If the Contractor chooses to continue hauling once restrictions are in place, the County will not pay for any loads delivered to site after restrictions are in effect. Do not supply tickets to truck drivers if the weight of the load is in excess of the legal load limits in place on the haul route. If the Contractor supplies tickets in excess of legal load limits in place on the haul route, the load will be rejected or not paid for.

The County shall only accept small overruns on the specified quantities.

V. Material

Aggregate Class 13 Modified	
Sieve Size or Testing Method	Percent Passing or Testing Requirement
1 Inch	100
¾ Inch	70-100
No. 4	38-75
No. 8	22-62
No. 30	12-45
No. 200	7-15
Plasticity Index (PI)	5.0 – 8.0
ND T 113, Shale (max %)	12%
AASHTO T 96, L.A. Abrasion (max %)	50%
NDDOT 4, Fractured Faces <sup>1</sup>	10%
<sup>1</sup> Minimum weight percentage allowable for the portion of the aggregate retained on a No. 4 sieve having at least 1 fracture face	

McKenzie County, North Dakota  
2020 Aggregate Stockpiles  
Standard Specifications

VI. Material Acceptance

The Contractor shall provide the County's testing agency one (1) sample per 1,000 tons of material delivered or one day's production for delivered quantities less than 1,000 tons for gradation tests and PI determination. If the aggregate fails to meet the specified gradation, the County will apply a price reduction as specified in the North Dakota Department of Transportation (NDDOT) Standard Specifications for Road and Bridge Construction Section 302.06 B "Contract Price Adjustments". If two consecutive tests fail to meet the specified gradation or PI, the Contractor shall cease production immediately and shall not resume until corrective actions are taken and the material passes a gradation test.

The Contractor shall provide the County's testing agency three (3) sample per 10,000 tons of material delivered to determine fractured faces and maximum shale content. If the material fails to meet the requirement for fractured faces, the Contractor shall cease production immediately and shall make corrections to the stockpile before incorporating additional material. If the material exceeds the maximum shale content by less than 3 percentage points, the County will apply a price reduction as specified in Section 302.06 B of the NDDOT Standard Specifications for Road and Bridge Construction. The County will reject the material if the maximum shale content is exceeded by 3 or more percentage points.

If 10 consecutive samples taken meet the material requirements for gradations and plasticity index, the County may reduce the frequency of sampling. In the event that a sample fails the gradations and plasticity index requirements, after the County has reduced the sampling frequency, the County will resume the original sampling frequency. All testing will be performed in accordance with the NDDOT Field Sampling and Testing Manual. In the event of a discrepancy between the NDDOT Field Sampling and Testing Manual and these 2020 Aggregate Stockpile Specifications, frequencies and locations in the 2020 Aggregate Stockpile Specifications govern.

Testing shall be performed by the County or a testing agency hired by the County. Upon request by the Contractor, the County will provide all testing related credentials and certifications of the testers who will be performing the on-site tests.

Within 24 hours of the testing sample being taken, the testing agency shall distribute the results of the test to the County and the Contractor.

All material samples shall be taken from the stacking belt located at the site.

VII. Mobilization

Mobilization for the Project shall be considered incidental to the Project.

McKenzie County, North Dakota  
2020 Aggregate Stockpiles  
Standard Specifications

VIII. Completion Date

The Project shall be completed on or before 09/30/2020. The contractor shall inform the County of completion 10 days after contractor operations are finished.

IX. Measurement

The Contractor shall furnish weight tickets, in duplicate, for each load of material delivered to the job site. The Contractor shall also furnish daily haul reports to be provided within 24 hours after a day's production. The weight tickets and haul sheets shall conform to the specifications outlined in Section 109.01 J.6 of the NDDOT's Standard Specifications for Road and Bridge Construction.

Provide scales that meet Section 109.01 J.1 of the NDDOT's Standard Specifications for Road and Bridge Construction and submit a copy of the certification to the County before starting weighing operations. The County will conduct Random Comparison Tests as outlined in Section 109.01 J.5 of the NDDOT's Standard Specifications for Road and Bridge Construction.



# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: McLean

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

Preparer: Jim Date Prepared: 2-20-2020

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input type="checkbox"/>
Pit Run	<input checked="" type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input type="checkbox"/>
Specifications	<input checked="" type="checkbox"/>
Tested	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input type="checkbox"/>
Water/Rolling/Compaction	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

## 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.

Task	Performed by:	
	County	Contractor
Crushing	0	100%
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)	\$4.75	<input type="checkbox"/> Per cu. yard <input checked="" type="checkbox"/> Per Ton	Is this Contractor Price? (yes/ <u>no</u> )
Trucking Cost from Gravel Origin	\$4.20	<input type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input checked="" type="checkbox"/> Per Ton	Is this Contractor Price? (yes/ <u>no</u> )
Average trucking distance for aggregate	15	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	25	<input type="checkbox"/> Cu. Yards <input checked="" type="checkbox"/> Tons	
Placement Costs	\$700	Per Mile	Is this Contractor Price? (yes/ <u>no</u> )
Blading Cost	\$750	Annual cost per mile	Is this Contractor Price? (yes/ <u>no</u> )
Dust Suppressant Costs	0	Per mile	Is this Contractor Price? (yes/no)
Base Stabilization 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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE</b> <b>ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	>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 regaveling)	7	5	3
Dust Suppressant (yes/no)	no	no	Yes
Base Stabilization (yes/no)	no	no	Yes

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	>50	50-125	125-350
Average Regraveling Thickness	2 in	3 in	4 in
Blading Frequency (# per month)	2	2	4
Regraveling Frequency (years between regaveling)	4	4	2
Dust Suppressant (yes/no)			
Base Stabilization (yes/no)			

If you answered yes for Dust Suppressant – which type do you use?  
 none

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If you answered yes for Base Stabilization – which type do you use?  
 none

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## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	0	0
Good	10%	20%
Fair	80%	50%
Poor	10%	30%
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Morco

Contact: Ken Miller 701-873-5586 Kenmillerend.gov  
Name Phone Email

Preparer: Ken Miller Date Prepared: 28 Oct. 19

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>	Class 13
Scoria	<input checked="" type="checkbox"/>	screened
Pit Run	<input type="checkbox"/>	
Screened	<input type="checkbox"/>	
Crushed Material	<input type="checkbox"/>	
Specifications	<input type="checkbox"/>	
Tested	<input type="checkbox"/>	
Other _____	<input type="checkbox"/>	

### 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	<input checked="" type="checkbox"/>	
Windrow/Equalize	<input type="checkbox"/>	
Water/Rolling/Compaction	<input type="checkbox"/>	
Other _____	<input type="checkbox"/>	

## 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.

Task	Performed by:	
	County	Contractor
Crushing	0%	100%
Hauling	90%	10%
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		Contractor price.	
Average Gravel/Scoria Cost (crushing & royalties at the pit)	5.75/hr / 9.00 gravel / scoria	<input type="checkbox"/> Per cu. yard <input checked="" type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	12.80	<input checked="" type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	35	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	End dump 15 side/belly 25	<input type="checkbox"/> Cu. Yards <input checked="" type="checkbox"/> Tons	
Placement Costs	127,000 / mile 28' wide top 4" thick	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	166.00	Annual 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)

## 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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	>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 regaveling)	7	5	3
Dust Suppressant (yes/no)	no	no	Yes
Base Stabilization (yes/no)	no	no	Yes

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	>50	50-150	150-350
Average Regraveling Thickness	2"	3"	4"
Blading Frequency (# per month)	1	2	3
Regraveling Frequency (years between regaveling)	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?

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

---

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	75%	75%
Good	25%	12.5%
Fair		12.5%
Poor		
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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



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# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Morton County

Contact: John Saiki 701.667.3346 john.saiki@mortonnd.org  
Name Phone Email

Preparer: John Saiki Date Prepared: February 12, 2020

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input checked="" type="checkbox"/>
Pit Run	<input checked="" type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input type="checkbox"/>
Tested	<input checked="" type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input checked="" type="checkbox"/>
Water/Rolling/Compaction	<input checked="" type="checkbox"/>
Other _____	<input type="checkbox"/>



## 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	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 Crushing \$2 Royalties	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	\$6.94	<input type="checkbox"/> Per loaded mile <input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	15 miles	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	18	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	\$ 4,500	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	\$ 375	Annual cost per mile	Is this Contractor Price? (yes/no)
Dust Suppressant Costs	\$ 145	Per mile	Is this Contractor Price? (yes/no)
Base Stabilization Cost	None	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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regaveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)			
Average Regraveling Thickness	3 inches	3 inches	3 inches
Blading Frequency (# per month)	1	2	3
Regraveling Frequency (years between regaveling)	<b>8</b>	<b>5</b>	<b>3</b>
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?

---



## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	75%	60%
Good	10%	10%
Fair	10%	15%
Poor	5%	15%
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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





**SPECIFICATIONS AND PROPOSAL  
GRAVEL CRUSHING  
MORTON COUNTY  
SPECIFICATIONS**

All work shall be done in accordance with section 816 and all other applicable sections of the North Dakota Department of Transportation Standard Specifications for Road and Bridge Construction, October 2014 or as directed by the Morton County Engineer.

The locations of the pits are pre-determined by Morton County and maps are attached.

Crushed gravel shall meet the following specifications.

**CLASS 13 MODIFIED**

<b>SIEVE SIZE</b>	<b>% PASSING</b>
1"	100%
3/4"	70-100%
# 4	38-75%
# 8	22-62%
# 30	12-45%
# 200	7-15%
NDT 113, SHALE MAX %	12%

Payment for the finished product shall be made after pile is completed in its entirety less \$10,000 until pit release agreement is received, in accordance with Section 109 of the 2014 North Dakota Department of Transportation Standard Specifications for Road and Bridge Construction according to the following schedule:



SIEVE SIZE	AVERAGE OF 3 SAMPLES DEVIATION FROM GRADATION RANGE LIMITS IN PERCENTAGE POINTS	DEDUCTION CONTRACT UNIT PRICE
3/4"	0.00 to 2.00 2.01 to 3.00 3.01 and over	10% 30% Rejected
#4	0.00 to 5.00 5.01 to 10.00 10.01 and over	10% 30% Rejected
#30	0.00 to 5.00 5.01 to 10.00 10.01 and Over	10% 30% Rejected
#200	0.00 to 2.00 2.01 to 3.00 3.01 to 4.00 4.01 and over	3% 5% 10% Rejected

The contractor shall take random samples from the conveyor belt representative of approximately each 2500 cubic yard lot, and provide conformance with specification results to the county. Samples shall be split with the split sample to be provided to the county for quality management. Price reductions for failing gradation to be as indicated in the above chart. Electrical supply and connector to on site Morton County testing lab shall be provided by the contractor.

The finished product shall be stockpiled in a minimum of four (4) equal lifts to minimize aggregate separation of stockpile.

Reclaiming reject material shall be handled as directed by County Road Superintendent or landowner of the pit. Price of reclaiming reject material shall be included in the crushing bid price.

All material passing a 22" ring shall be crushed. Crushing shall be done in one continuous operation and any operation not capable of meeting such conditions will not be accepted.

Quantity shall be measured by the contractor on the basis of a belt scale or other approved methods. Morton County shall also measure the completed stockpile. If the contractor feels the amount is different than what has been determined, then he shall have it measured at his own expense.



# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Mountrail County

Contact: Jana Hennessy 7016282390 janah@co.mountrail.nd.us  
Name Phone Email

Preparer: Jana Hennessy Date Prepared: 11-5-2019

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input type="checkbox"/>
Pit Run	<input type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input checked="" type="checkbox"/>
Tested	<input checked="" type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input type="checkbox"/>
Water/Rolling/Compaction	<input type="checkbox"/>
Other _____	<input type="checkbox"/>



## 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.

Task	Performed by:	
	County	Contractor
Crushing	0%	100%
Hauling	20%	80%
Placement	20%	80%
Blading	100%	0%
Dust Control	100%	0%
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)	\$8.92	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	\$11.54	<input checked="" type="checkbox"/> Per loaded mile <input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	15	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	28.50	<input type="checkbox"/> Cu. Yards <input checked="" type="checkbox"/> Tons	
Placement Costs	\$400	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	\$7,800/MILE/YEAR ; \$300/MILE PER ACQU	Annual cost per mile	Is this Contractor Price? (yes/no)
Dust Suppressant Costs	\$8,451.52	Per mile	Is this Contractor Price? (yes/no)
Base Stabilization Cost	\$175,291.53/MILE	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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regaveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>50-150</b>	<b>150-350</b>	<b>350-700+</b>
<b>Average Regraveling Thickness</b>	<b>2</b>	<b>2</b>	<b>3</b>
<b>Blading Frequency (# per month)</b>	<b>1</b>	<b>2</b>	<b>2</b>
<b>Regraveling Frequency (years between regaveling)</b>	<b>3</b>	<b>2</b>	<b>1</b>
<b>Dust Suppressant (yes/no)</b>	<b>YES</b>	<b>YES</b>	<b>YES</b>
<b>Base Stabilization (yes/no)</b>	<b>NO</b>	<b>NO</b>	<b>YES</b>

If you answered yes for Dust Suppressant – which type do you use?  
**CALCIUM CHLORIDE, MAGNESIUM CHLORIDE**

---

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

---



## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	50%	0%
Good	30%	50%
Fair	10%	40%
Poor	10%	10%
<b>Total</b>	<b>100%</b>	<b>100%</b>

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

ATTACHED

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



# MATERIAL TESTING SERVICES, LLC

P.O. Box 634  
Minot, ND 58702  
(701) 852-5553

## CLASS 13M

7101 w 2ND Ave  
Williston, ND 58801  
(701) 572-4226

PROJECT: PRODUCTION CHECK

DATE: 8/6/19

REPORTED TO: Fritel Construction  
PO Box 1650  
Stanley, ND 58784

COPY: [samfritel@gmail.com](mailto:samfritel@gmail.com)

Laboratory Number 19-001

SAMPLE IDENTIFICATION: Fritel Pit

DATE SUBMITTED: 8/1/19

MECHANICAL ANALYSIS (AASHTO T-11, T-27):  
passing 1"

Mountrail  
County  
Specifications  
Class 13M  
100 %

3/4"	99	
1/2"	94	
3/8"	88	
# 4	71	50 - 78
# 8	57	37 - 67
# 16	45	
# 30	36	
# 40	31	13 - 35
# 50	26	
# 100	19	
# 200	12.3	4 - 15

SHALE: 2.8 12 Maximum

FRACTURES (NDDOT 4): 75 50 Minimum

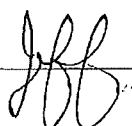
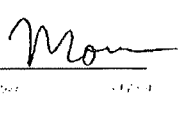
ATTERBERG LIMITS (AASHTO/ND T 89, T 90):

Liquid Limit	25	
Plastic Limit	19	
Plasticity Index	6	4 - 12

REMARKS: The sample was submitted on the date shown.

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL.

Material Testing Services, LLC

by  



### 1. NDDOT Aggregate Base – Class 5

<u>Sieve Size</u>	<u>Total % Passing by Weight</u>
1"	100%
¾"	90 – 100%
No. 4	35 - 75%
No. 30	16 - 40%
No. 200	4 -10%

### 2. Mountrail County Modified Class 13 Aggregate Base – Class 13

- A. The required gradation for the stockpile Mountrail County Gravel Surface Spec. as shown below:

<u>Sieve Size</u>	<u>Total % Passing by Weight</u>
¾"	100%
No. 4	50-78%
No. 8	37-67%
No. 40	13-35%
No. 200	4-15%

- B. The plasticity index shall be from 4-12. Tests will be run in accordance to AASHTO-T90.
- C. LA Abrasion of less than 40%
- D. A maximum allowable percentage of Shale 12%
- E. There will be a minimum of 50% fractured faces, at least 1 fractured face, NDDOT method.
- F. Clay additive material to be provided by the Mountrail County Road and Bridge Department.

### 4. Testing

- A. The Contractor will be required to provide one test per 5,000 cubic yards of material produced for sieve analysis, plasticity index and fractured faces. Tests for each 5,000 cubic yards produced must be run by an approved testing agency and submitted to the County Engineer for review and approval. Final acceptance





## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Nelson County

Contact: <u>Seth</u>	<u>701-322-4433</u>	<u>nchd@gondtc.com</u>
Name	Phone	Email

Preparer: Seth Hamre Date Prepared: 11-Feb-2020

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>	
Scoria	<input type="checkbox"/>	
Pit Run	<input checked="" type="checkbox"/>	
Screened	<input checked="" type="checkbox"/>	
Crushed Material	<input checked="" type="checkbox"/>	
Specifications	<input type="checkbox"/>	
Tested	<input type="checkbox"/>	
Other _____	<input type="checkbox"/>	

### 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	<input checked="" type="checkbox"/>	
Windrow/Equalize	<input type="checkbox"/>	
Water/Rolling/Compaction	<input type="checkbox"/>	
Other _____	<input type="checkbox"/>	

## 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	65	35
Placement	100	0
Blading	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			
Average Gravel/Scoria Cost (crushing & royalties at the pit)	\$5	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	\$0.25-\$0.30	<input checked="" type="checkbox"/> Per loaded mile <input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	18	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	22	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	\$2975	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	\$1130	Annual cost per mile	Is this Contractor Price? (yes/no)
Dust Suppressant Costs	\$9,000	Per mile	Is this Contractor Price? (yes/no)
Base Stabilization 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.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regraveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&lt;25</b>	<b>25-75</b>	<b>&gt;75</b>
<b>Average Regraveling Thickness</b>	<b>2</b>	<b>2</b>	<b>3</b>
<b>Blading Frequency (# per month)</b>	<b>1</b>	<b>2</b>	<b>4</b>
<b>Regraveling Frequency (years between regraveling)</b>	<b>10</b>	<b>7</b>	<b>5</b>
<b>Dust Suppressant (yes/no)</b>	<b>Haul Roads</b>	<b>Haul Roads</b>	<b>Haul Roads</b>
<b>Base Stabilization (yes/no)</b>	<b>n</b>	<b>n</b>	<b>n</b>

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?

---

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	5	10
Good	75	55
Fair	20	30
Poor		5
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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

Dust suppression is only done on "Haul roads" in front of Farms that are within 200ft of a County Road.

Haul Roads are designated as roads that the county uses to haul gravel with County trucks.

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: oliver

Contact: kyle 2070397 countyshop@westriv.com  
Name Phone Email

Preparer: kyle Date Prepared: 2/13/2020

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input checked="" type="checkbox"/>
Pit Run	<input checked="" type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input type="checkbox"/>
Tested	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input checked="" type="checkbox"/>
Water/Rolling/Compaction	<input checked="" type="checkbox"/>
Other _____	<input type="checkbox"/>

## 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.

Task	Performed by:	
	County	Contractor
Crushing		100
Hauling	100	
Placement	100	
Blading	100	
Dust Control	1008	
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)	8.70	<input type="checkbox"/> Per cu. yard <input checked="" type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	3.50	<input checked="" type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	35	<input type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	35-40	<input type="checkbox"/> Cu. Yards <input checked="" type="checkbox"/> Tons	
Placement Costs	160	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	80	Annual 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)

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good		
Good		
Fair	100	100
Poor		
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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

need to find gravel





# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Pembina County

Contact: Devon Johnson 701-265-4208 pembHwy@ND.Gov  
Name Phone Email

Preparer: Devon Johnson Date Prepared: 1-28-20

### Aggregate Description

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

Gravel	<input type="checkbox"/>
Scoria	<input type="checkbox"/>
Pit Run	<input checked="" type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input type="checkbox"/>
Specifications	<input type="checkbox"/>
Tested	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input type="checkbox"/>
Windrow/Equalize	<input type="checkbox"/>
Water/Rolling/Compaction	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

## 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.

Task	Performed by:	
	County	Contractor
Crushing		100
Hauling	100	
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)	4.25	<input type="checkbox"/> Per cu. yard <input checked="" type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	—	<input type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	14	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	8	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	—	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	—	Annual 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)

## 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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE</b> <b>ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	>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 regaveling)	7	5	3
Dust Suppressant (yes/no)	no	no	Yes
Base Stabilization (yes/no)	no	no	Yes

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	_____	_____	_____
Average Regraveling Thickness	_____	_____	_____
Blading Frequency (# per month)	_____	_____	_____
Regraveling Frequency (years between regaveling)	_____	_____	_____
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?

\_\_\_\_\_

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	_____	_____
Good	_____	_____
Fair	_____	_____
Poor	_____	_____
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

\_\_\_\_\_

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

\_\_\_\_\_

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# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Pierce

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

Preparer: Karin Fursather Date Prepared: 11-5-19

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input type="checkbox"/>
Pit Run	<input checked="" type="checkbox"/>
Screened	<input checked="" type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input type="checkbox"/>
Tested	<input checked="" type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input type="checkbox"/>
Water/Rolling/Compaction	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

## 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.

Task	Performed by:	
	County	Contractor
Crushing	0	100
Hauling	0	100
Placement	0	100
Blading	100% 10	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)	6.20-7.00	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	1.75-3 mile 38¢ after	<input type="checkbox"/> Per loaded mile <input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	1.5 miles	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	1.00 yd	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	2 yd	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	205.00	Annual cost per mile	Is this Contractor Price? (yes/no)
Dust Suppressant Costs	0	Per mile	Is this Contractor Price? (yes/no)
Base Stabilization 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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE</b> <b>ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regaveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	750		<del>250</del> 4
Average Regraveling Thickness	2.5		3-4
Blading Frequency (# per month)	1-m.	1-mo	1-mo
Regraveling Frequency (years between regaveling)	5-6	4-6	3-5
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?

---

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	75%	
Good	25%	50%
Fair		30%
Poor		20%
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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



# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: RAMSEY

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

Preparer: KEVIN FIELDSEND Date Prepared: 10/29/19

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input type="checkbox"/>
Pit Run	<input checked="" type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input type="checkbox"/>
Tested	<input checked="" type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/> SPOT GRAVELING
Windrow/Equalize	<input checked="" type="checkbox"/> LESS THAN 3"
Water/Rolling/Compaction	<input checked="" type="checkbox"/> 3" OR MORE
Other _____	<input type="checkbox"/>



## 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.

Task	Performed by:	
	County	Contractor
Crushing	0 %	100 %
Hauling	20 %	80 %
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)	5.25	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	.33 ¢	<input checked="" type="checkbox"/> Per loaded mile <input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	30	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	20	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	\$ 800. <sup>00</sup>	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	\$ 634. <sup>67</sup>	Annual cost per mile	Is this Contractor Price? (yes/no)
Dust Suppressant Costs	\$ 7200 <sup>00</sup>	Per mile	Is this Contractor Price? (yes/no)
Base Stabilization Cost	\$ 35,714 <sup>00</sup>	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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regaveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	>40	40-100	100<
Average Regraveling Thickness	1"	2"	3"
Blading Frequency (# per month)	1	4	12
Regraveling Frequency (years between regaveling)	4	3	2
Dust Suppressant (yes/no)	No	No	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 ONE ★ BAGS OF CEMENT



# CLASS OF AGGREGATE AND SPECIFICATION LIMITS

## B. Specific Requirements.

Table I: Aggregates for Subgrade Repair, Trench Backfill, Bases, and Surfacing

Sieve Size Percent Passing	Permeable Trench Backfill	Aggr. for Subgrade Repair <sup>5</sup>	Aggr. for Blended Base	Shldr. Aggr. Surface	Aggr. Base <sup>5</sup>	Permeable Base Aggr.	Temp. Traffic Surface Aggr.	Aggr. Surface
	2	3	3M	4	5	7	8	13
3"		100						
1-1/2"							100	
1-1/4"								
1"			100		100	100		100
3/4"	100	80-100	80-100	100	90-100	95-100		70-100
5/8"								
1/2"						85-100		
3/8"	50-95					60-90		
No. 4		35-85	35-85	35-85	35-70	15-25	35-80	38-75
No. 8						2-10		22-62
No. 10	0-15							
No. 16								
No. 30	0-4	20-50	20-50	10-50	16-40			12-45
No. 50								
No. 100								
No. 200		0-15	4-10	7-17	4-10	0-3		7-15
Shale <sup>1</sup>		12%	12%	15%	12%	8%	20%	12%
L. A. Abrasion <sup>1</sup>				50%	50%	40%		50%
Plasticity Index <sup>2</sup>								
Fractured Faces <sup>3</sup>				10%	10%	85%		10%

Footnotes for Tables I and II:

<sup>1</sup> Maximum Allowable Percentages.

<sup>2</sup> Maximum allowable unless range shown. N.P. = Non Plastic as per AASHTO T-90. Use material passing the No. 40 sieve (standard method). For Class 5 aggregate the maximum allowable Plasticity Index shall be determined from the following formula: Max. allowable PI for Class 5 = 10 - (% Passing No. 40 Sieve / 10)

<sup>3</sup> Minimum weight percentage allowable for the portion of the aggregate retained on a No. 4 sieve having at least 1 fractured face for Classes 4, 5, 13, 27, 29, 31, and 33, and at least 2 fractured faces for Class 7.

<sup>4</sup> Minimum percentage of material passing a No. 4 sieve that is composed of fractured material produced by a crushing process. The Contractor shall demonstrate that the crushing operation produces this result.

<sup>5</sup> Salvaged Base meeting the requirements of Section 302 and 817 may be substituted for Cl. 3 or Cl. 5 virgin aggregate, unless otherwise specified on the Plans.





## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	5%	0%
Good	60%	35%
Fair	25%	50%
Poor	10%	15%
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

WE SPEC CLASS 13  
state spec for all of our graveling projects.

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

We also have costs for mowing road ditches, culvert installations and bridge repairs that come from tax payer dollars. Building & grounds maintenance and equipment repairs are a part of road maintenance also



# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

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County: Ransom County

Contact: Jeff Hopkins 701 680 8363 jeff.hopkins@co.ransom.nd.us

Preparer: Jeff Hopkins Date Prepared: 2-20-20

### Aggregate Description

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

Gravel  
Scoria  
Pit Run  
Screened  
Crushed Material  
Specifications  
Tested  
Other \_\_\_\_\_

<input checked="" type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

### 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 \_\_\_\_\_

<input checked="" type="checkbox"/>
<input type="checkbox"/>
<input checked="" type="checkbox"/>
<input type="checkbox"/>



## 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	3	97
Placement	3	97
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)	3.75	<input type="checkbox"/> Per cu. yard <input checked="" type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no) <u>yes</u>
Trucking Cost from Gravel Origin	1.25 0-4 miles .25 5-20+ miles	<input type="checkbox"/> Per loaded mile <input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	11 miles	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	26	<input type="checkbox"/> Cu. Yards <input checked="" type="checkbox"/> Tons	
Placement Costs		Per Mile	Is this Contractor Price? (yes/no)
Blading Cost		Annual 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)



## 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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regravelling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	>50	50-100	100-300
Average Regraveling Thickness	2	3	4
Blading Frequency (# per month)	3	3	4
Regraveling Frequency (years between regravelling)	6	4	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?

mag chloride

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

Base One use on one 9 mile stretch





## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	30	30
Good	30	30
Fair	30	30
Poor	10	10
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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



# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

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County: Renville

Contact: Sean Mattern (701) 756-6442 smattern@nd.gov  
Name Phone Email

Preparer: Sean Mattern Date Prepared: 2-13-2020

### Aggregate Description

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

Gravel	<input type="checkbox"/>
Scoria	<input type="checkbox"/>
Pit Run	<input checked="" type="checkbox"/>
Screened	<input checked="" type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input type="checkbox"/>
Tested	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input type="checkbox"/>
Water/Rolling/Compaction	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

## 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.

Task	Performed by:	
	County	Contractor
Crushing	0	100
Hauling	20	80
Placement	20	80
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)	\$9.00/ton	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no) <u>no</u>
Trucking Cost from Gravel Origin	\$50¢ per yrd	<input checked="" type="checkbox"/> Per loaded mile <del><input type="checkbox"/> Per cu. yard</del> <input type="checkbox"/> Per Ton	Is this Contractor Price? <u>yes</u> /no
Average trucking distance for aggregate	20	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	20	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs		Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	\$228	Annual cost per mile	Is this Contractor Price? (yes/no) <u>no</u>
Dust Suppressant Costs	0	Per mile	Is this Contractor Price? (yes/no)
Base Stabilization 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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE</b> <b>ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regaveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	10	20	30
Average Regraveling Thickness	2 in	2 in	2 in
Blading Frequency (# per month)	3	3	3
Regraveling Frequency (years between regaveling)	10	10	10
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?

---

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good		
Good		50%
Fair		50%
Poor		
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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

# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

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County: Richland

Contact: Jesse Sedler 701-642-7810 jsedler@co.richland.wd.us  
Name Phone Email

Preparer: Jesse Sedler Date Prepared: 11/15/19

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input type="checkbox"/>
Pit Run	<input type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input checked="" type="checkbox"/>
Tested	<input checked="" type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input type="checkbox"/>
Water/Rolling/Compaction	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

## 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.

Task	Performed by:	
	County	Contractor
Crushing	0	100
Hauling	70	30
Placement	100	0
Blading	100	0
Dust Control	0	0
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)	<i>Contractor</i> <i>Crushing 1.218</i> <i>Provided clay .20</i> <i>\$1.418</i>	<input type="checkbox"/> Per cu. yard <input checked="" type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	.21/tan/mile	<input checked="" type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	25	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	Avg 21	<input type="checkbox"/> Cu. Yards <input checked="" type="checkbox"/> Tons	<i>Truck 10-12 ton</i> <i>Truck/Pup 15-20 ton</i> <i>Belly dump 18-22 ton</i> <i>Contractor-25 ton</i>
Placement Costs	Avg \$2900	Per Mile	Is this Contractor Price? (yes/no) (no)
Blading Cost	Avg \$1500	Annual cost per mile	Is this Contractor Price? (yes/no) (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)



## 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.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regraveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	> 75	75 - 300	300 - 550
Average Regraveling Thickness	3	3	3
Blading Frequency (# per month)	4	4	4
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?

*Used base one on one road a number of years back but haven't used any in sometime besides for base work for placement of asphalt*

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	25%	10%
Good	50%	40%
Fair	25%	40%
Poor	0%	10%
<b>Total</b>	<b>100%</b>	<b>100%</b>

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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

The Board of County Commissioners reserves the right to reject any or all bids or to waive any informality in the bids received and to accept any bid deemed to be most favorable to the interests of Richland County.

### **Gravel Crushing Specifications**

1. Approximately 125,000 tons of gravel material shall be crushed in the Richland County pit located southwest of Hankinson, North Dakota.
2. Approximately 125,000 tons of gravel material shall be crushed to meet the following North Dakota Highway Department Specifications for Aggregate Surfacing, Class 13 (as modified by Richland County):

<b>Sieve Size</b>	<b>Total % Passing</b>
1"	100
3/4"	70-100
#4	38-75
#8	22-62
#30	12-45
#200	9-15
% Shale and Soft Rock	Max. 15%
L.A. Abrasion Loss	Max. 50%
Plasticity Index	4-12
Fractured Faces	10%

3. All crushed material shall be weighed on a belt scale or in a manner approved by the County Engineer or Road Foreman.
4. The price bid for crushing aggregate material shall be on a ton basis for crushing and stockpiling at the Hankinson site, including all labor, materials, equipment, supplies, bond, and all other things necessary or incidental to the cost of producing this material.
5. The County Road Foreman shall instruct the contractor as to the area in the pit from which the material is to be processed. The aggregate processing shall not commence until such time that the clay material in the bank can be incorporated into the crushing process. These statements shall not release the contractor from the requirement to provide the specified class of aggregate material.
6. The contractor shall use the appropriate crushing equipment to meet the fractured faces requirement as outlined in the specification for Aggregate Surfacing, Class 13 Modified, and minimize the amount of rejected rock. All rejected rock, if any, during the crushing process, shall be in the form of rock rip rap which can be utilized as such by the Richland County Highway Department. All materials shall remain the property of Richland County and shall not be removed from the



Richland County pit. No additional compensation shall be awarded for the sizing and separation of reject material.

7. The pit area shall be restored, after completion of the work, to the satisfaction of the County Engineer or Road Foreman. All debris and waste material shall be disposed of in a manner approved by the County Engineer or Road Foreman.
8. The maximum number of working days allowed for completion of the aggregate crushing, as outlined in Section 108.06, shall be **30 working days** with the successful bidder completing the work no later than **May 31, 2019**. A penalty of \$500 per working day will be assessed if the Contractor fails to meet this deadline.



## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Bolette

Contact: Val McClell 701-477-5665 vmcclell@nd.gov  
Name Phone Email

Preparer: Tara McDougall Date Prepared: 11/7/19

### Aggregate Description

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

- Gravel ☒
- Scoria ☐
- Pit Run ☒
- Screened ☐
- 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.

Task	Performed by:	
	County	Contractor
Crushing	ROLETTE	NICKLESSON BGR
Hauling	"	ROLETTE CO.
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)	5.00	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no) <u>no</u>
Trucking Cost from Gravel Origin	1.90/mile for first 3 miles, 35¢/mile after	<input type="checkbox"/> Per loaded mile <input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no) <u>no</u>
Average trucking distance for aggregate	10	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	20	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	600	Per Mile	Is this Contractor Price? (yes/no) <u>no</u>
Blading Cost	160.00/hr	Annual cost per mile	Is this Contractor Price? (yes/no) <u>no</u>
Dust Suppressant Costs		Per mile	Is this Contractor Price? (yes/no)
Base Stabilization 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.

<b>EXAMPLE</b> <b>ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	>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

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	750	50-200	200-800
Average Regraveling Thickness	3"	4"	4"
Blading Frequency (# per month)	7	12	18
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?

---

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good		
Good		50%
Fair		50%
Poor		
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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

36

# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Sargent County

Contact: Merill Englund Spitz 70-7243090 merill.englund@co.sargent.nd.us

Preparer: Merill Englund Spitz Date Prepared: 2-12-2020

### Aggregate Description

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

Gravel  
Scoria  
Pit Run  
Screened  
Crushed Material  
Specifications  
Tested  
Other \_\_\_\_\_

<input checked="" type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input type="checkbox"/>

### 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 \_\_\_\_\_

<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input type="checkbox"/>

## 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.

Task	Performed by:	
	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)	4.50	<input type="checkbox"/> Per cu. yard <input checked="" type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	1.214	<input type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input checked="" type="checkbox"/> Per Ton mi	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	20 Mi.	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	26-30	<input type="checkbox"/> Cu. Yards <input checked="" type="checkbox"/> Tons	
Placement Costs	\$8000	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	\$1200	Annual cost per mile	Is this Contractor Price? (yes/no)
Dust Suppressant Costs	\$3,000	Per mile	Is this Contractor Price? (yes/no)
Base Stabilization Cost	\$7,000	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.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regraveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	> 50	50 - 150	150 - 350
Average Regraveling Thickness	1.5	2.5	3.5
Blading Frequency (# per month)	2	3	4
Regraveling Frequency (years between regraveling)	8	6	4
Dust Suppressant (yes/no)			yes
Base Stabilization (yes/no)			yes

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

Mag

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

Base ONE

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good		
Good	70	60
Fair	25	30
Poor	5	10
<b>Total</b>	<b>100%</b>	<b>100%</b>

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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

# GRADATION REPORT

Report Number: M3141021.0003

Service Date: 07/15/14

Report Date: 07/15/14



4102 7th Ave. N.  
Fargo, ND 58102-2923  
701-282-9633

## Client

Bear Creek Gravel, Inc.  
Attn: Delores Anderson  
405 4th St.  
Englevale, ND 58033-5021

## Project

Plant Tests 2014 - Bear Creek Gravel  
405 4th Street  
Englevale, ND 58033

Project Number: M3141021

## TEST OF AGGREGATE BASE

SAMPLE NUMBER:

3

NDDOT  
SPECIFICATIONS  
SECTION 816.03  
Class 5 Class 13

DATE SUBMITTED:

7-14-14

LOCATION SAMPLED:

Stockpile

SOURCE:

Jorgenson Pit

MECHANICAL ANALYSIS:(AASHTO T 27)

% Passing 1" (25.0 mm)	100%	100%	100%
3/4 (19.0)	97	90-100	70-100
5/8 (16.0)	92	---	---
1/2 (12.5)	84	---	---
3/8 (9.5)	79	---	---
#4 (4.75)	66	35-70	38-75
8 (2.36)	56	---	22-62
16 (1.18)	44	---	---
30 (600 µm)	30	16-40	12-45
50 (300)	17	---	---
100 (150)	13	---	---
200 (75)	10.0	4-10	7-15

## REMARKS:

Sample was submitted to the laboratory by Bear Creek Gravel, Inc. and received here on July 14, 2014.

## Services:

MTL, Inc. Rep.: Jamison Veil

Reported To:

Contractor:

Report Distribution:

(1) Bear Creek Gravel, Inc., Delores  
Anderson

Reviewed By:

Jeffrey J. Mathison

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.

Department of Transportation, Materials & Research  
SFN 9987 (Rev. 07-2007)

## LIGHTWEIGHT PIECES

- No. 4; + No. 30 Material

Remarks:Plastic Index \_\_\_\_\_  
LA Abrasion \_\_\_\_\_

Engineer \_\_\_\_\_  
Contractor \_\_\_\_\_

KNUTSON  
10519



# AGGREGATE SAMPLE WORKSHEET

Department of Transportation, Materials & Research  
SFN 9987 (Rev. 07-2007)

PCN	Sieve Size		Wt. Ret.		% Ret.	% Pass.	ND Spec.		Falling Sieve
	(mm)	(Inch)	Non-Cum.	Cum.			Lower	Upper	
Laboratory No.	100	4"							
	90	3 1/2"							
Field Sample No.	75	3"							
	63	2 1/2"							
Pit Location	50	2"							
	37.5	1 1/2"							
Owner	25	1"	0.0	0.0	0.0	100.0			
	19	3/4"	123.8	123.8	4.0	96.0	70	100	
Project	16	5/8"	201.6	325.4	10.4	89.6			
	12.5	1/2"	184.7	510.1	16.3	83.7			
County	9.5	3/8"	216.8	726.9	23.2	76.8			
	4.75	No. 4	379.1	1106.0	35.4	64.6	38	75	
Material/Specification	Minus No. 4		2020.3	3126.3	0.02%				
	Wt. Check			3126.3					
Date Received	Original Wt.		3126.8						

Date Sampled	Sieve Size		Wt. Ret.		% Ret.	% Pass.	% Pass Tot Smpl	ND Spec.		Falling Sieve
	(mm)	No.	Non-Cum.	Cum.				Lower	Upper	
6-5-15										
Sampled From	2.36	8	78.9	78.9	16.6	83.4	53.9	22	62	
Submitted By	2	10								
	1.18	16	90.1	169.0	35.6	64.4	41.6			
	600 um	30	79.7	248.7	52.3	47.7	30.8	12	45	
	425 um	40	40.7	289.4	60.9	39.1	25.3			
	300 um	50	36.9	326.3	68.7	31.3	20.2			
	150 um	100	53.1	379.4	79.9	20.1	13.0			
	75 um	200	25.4	404.8	85.2	14.8	9.6	10	15	X
WQ= Wt of questionable fractured particles	Minus No. 200 (75 um)		12.3	417.1	-0.18%					
	Original Wt.		475.1							
WA= Weight of total sample	Wt. After Wash		418.0							
	Wash Loss		57.1							
FF= (WF + WQ/2)/WA x 100	Wt. Check			474.2						
ND Spec										

## LIGHTWEIGHT PIECES

+No. 4 (4.75mm) Material		- No. 4, + No. 30 Material	
(A) % Retained on No. 4 Sieve	=	(I) Weight of Lt. Wt. Pieces, -No. 4, + No. 30 Mtrl.	=
(B) % Passing No. 30, Total Sample	=	(J) Weight of - No. 4, + No. 30 Material	=
(C) % Pass No. 4 - % Pass No. 30 [100-(A+B)]	=	(K) Lt. Wt. Pieces, - No. 4, + No. 30 (I/J)x100	=
(D) Total Sample A+B+C	=	(L) Lt. Wt. Pieces, - No. 4, + No. 30 Material % of Total Sample (KxC)/100	=
(E) Wt. of Lt. Wt. Pieces In + No. 4 Mtrl.	=		
(F) Weight of + No. 4 Material	=		
(G) Lt. Wt. Pieces, + 4 Mtrl (E/F)x100	=		
(H) Lt. Wt. Pieces, + No. 4 Mtrl., % of Total Sample (GxA)/100	=	(M) Lightweight Pieces In Total Sample (H+L)	=
			ND Spec.

Remarks:

Plastic Index \_\_\_\_\_  
LA Abrasion \_\_\_\_\_

Distribution:  
Engineer \_\_\_\_\_  
Contractor \_\_\_\_\_

Date \_\_\_\_\_

Tester \_\_\_\_\_

# Aggregate Gradation & Physical Properties Report

PCN 0  
 Project: 0  
 Material/Specification:  
 MODIFIED CLASS 13  
 Pit Location:  
 MARLOW  
 Pit Owner:  
 0  
 County:  
 SARGENT

Laboratory No.: 0  
 Field Sample No.: 1  
 Date Received: 0  
 Date Sampled: 5-8-2015  
 Sampled From: STOCKPILE  
 Submitted By: ENDERSON CONSTRUCTION

Sieve Size		Comparison Results (%Passing)	(%Passing)	Failing Sieve	ND Spec.	
Inch	(mm)				Lower	Upper
3"	75.0					
2 1/2"	63					
2"	50					
1 1/2"	37.5					
1"	25.0		100			
3/4"	19.0		95		70	100
5/8"	16.0		89			
1/2"	12.5					
3/8"	9.5		75			
No. 4	4.75		59		38	80
No. 8	2.36		46		22	62
No. 10	2.00					
No. 16	1.18		36			
No. 30	600um		28		12	45
No. 40	425um					
No. 50	300um					
No. 100	150um		15			
No. 200	75um		11.3		10.0	15.0

Shale				12%
Fractured Faces				10%
L.A. Abrasion				
Wt. Lbs. / C.F. Loose				
Wt. Lbs. / C.F. Rodded				

Remarks:

SENT COPY TO SPARKY E.

Distribution:

Engineer \_\_\_\_\_  
 Contractor \_\_\_\_\_

Approved X  
 Not Approved

KNUTSON  
 Title/Supervisor

Date 5-8-2015

SFN 9987

Report Number: M1151010.0006  
Service Date: 12/14/15  
Report Date: 12/15/15

**Terracon**

4102 7th Ave. N.  
Fargo, ND 58102-2923  
701-282-9633

**Client**

Bernard Mahrer Construction, Inc.  
Attn: Mitch Mahrer  
PO Box 57  
Rutland, ND 58067-0057

**Project**

Plant Tests 2015 - Bernard Mahrer Construction, Inc.  
305 1st St. N.  
Rutland, ND 58067

Project Number: M1151010

TEST OF AGGREGATE

DATE SUBMITTED: 12/12/2015  
LOCATION SAMPLED: Stockpile, Sargent County Project  
SOURCE: Mahrer Construction

MECHANICAL ANALYSIS: (AASHTO T 27)

% Passing 1" (25.0 mm)	100
3/4 (19.0)	95
5/8 (16.0)	89
1/2 (12.5)	84
3/8 (9.5)	78
#4 (4.75)	64
8 (2.36)	50
16 (1.18)	39
30 (600 $\mu$ m)	28
50 (300)	19
100 (150)	15
200 (75)	13.4

NDDOT  
SPECIFICATIONS  
SECTION 816.02  
Class 13 Modified, Sargent Co.

100%
70-100
---
---
---
38-75
22-62
---
12-45
---
---
10-15(modified)

REMARKS:

Sample meets the above Modified NDDOT Class 13 gradation requirements.  
Sample was submitted by Mitch Mahrer and received here on December 12, 2015.

**Services:** Test sample submitted by the client or client's representative for gradation.

**Terracon Rep.:**

**Reported To:**

**Contractor:**

**Report Distribution:**

(1) Bernard Mahrer Construction, Inc.,  
(701) 724-3041

**Reviewed By:**

Jeffrey J. Mathson

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.



# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Sheridan

Contact: Shirley A. Murray 701-363-2205 smurray@nd.gov  
Name Phone Email

Preparer: Shirley A. Murray Date Prepared: 11/8/19

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input type="checkbox"/>
Pit Run	<input checked="" type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input type="checkbox"/>
Specifications	<input type="checkbox"/>
Tested	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input type="checkbox"/>
Water/Rolling/Compaction	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

## 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.

Task	Performed by:	
	County	Contractor
Crushing	- 0 -	100%
Hauling	25%	75%
Placement	25%	75%
Blading	75%	25%
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)	\$ 4.75	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/ <u>no</u> )
Trucking Cost from Gravel Origin	\$3.25 plus .55 for each mile after 3 miles	<input checked="" type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? ( <u>yes</u> /no)
Average trucking distance for aggregate	10	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	12	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	N/A	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	\$125.00	Annual cost per mile	Is this Contractor Price? (yes/ <u>no</u> )
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)

## 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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regaveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	> 50	50-150	150-350
Average Regraveling Thickness	2	3	3
Blading Frequency (# per month)	1	2	3
Regraveling Frequency (years between regaveling)	8	6	5
Dust Suppressant (yes/no)			
Base Stabilization (yes/no)			

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

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

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## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	—	—
Good	20	20
Fair	30	30
Poor	50	50
<b>Total</b>	<b>100%</b>	<b>100%</b>

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

*Class #13 or #5 gravel is used on roads.*

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



## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Sioux

Contact: Steven Snider 701-422-3316 smsnider@nd.gov  
Name Phone Email

Preparer: Steven Snider Date Prepared: 10-22-2019

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input type="checkbox"/>
Pit Run	<input type="checkbox"/>
Screened	<input checked="" type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input checked="" type="checkbox"/>
Tested	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input type="checkbox"/>
Water/Rolling/Compaction	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

## 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.

Task	Performed by:	
	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)	8.00	<input type="checkbox"/> Per cu. yard <input checked="" type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	6.00	<input checked="" type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	3/mile	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	24 ton	<input type="checkbox"/> Cu. Yards <input checked="" type="checkbox"/> Tons	
Placement Costs	43/19.26	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	53.10	Annual 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)

## 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.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regraveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	750	50-150	
Average Regraveling Thickness	3"	4"	
Blading Frequency (# per month)	1	1	
Regraveling Frequency (years between regraveling)	15 no Budget	15-20 no Budget	
Dust Suppressant (yes/no)			
Base Stabilization (yes/no)			

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

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

---

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	60	
Good	30	60
Fair	10	20
Poor		20
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

*Class 13*

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

*We don't get to ~~regard~~ regravell much do to our (Sioux Co) tax base. We just don't have much of a budget and still have alot of dirt roads to maintain (side roads). And all the water this year our roads have taken a beating.*

4

# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Slope County

Contact: Nathan Miller 701-206-0710 nlmiller@nd.gov  
Name Phone Email

Preparer: Nathan Miller Date Prepared: 10-23-19

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input checked="" type="checkbox"/>
Pit Run	<input type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input checked="" type="checkbox"/> DOT class 13
Tested	<input checked="" type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input checked="" type="checkbox"/>
Water/Rolling/Compaction	<input type="checkbox"/>
Other <u>spot scatter</u> <u>+ Blade</u>	<input checked="" type="checkbox"/>

## 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.

Task	Performed by:	
	County	Contractor
Crushing	0	100%
Hauling	10%	90%
Placement	10%	90%
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)	\$6.00	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	Prices vary Based on mileage	<input checked="" type="checkbox"/> Per loaded mile <input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	10	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	22	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	\$120 - \$150 Per Hour Blade time	Per <del>mile</del> Hour	Is this Contractor Price? (yes/no)
Blading Cost	\$90 Hourly Rate	Annual cost per <del>mile</del> Hour	Is this Contractor Price? (yes/no)
Dust Suppressant Costs	\$8100 / 24' wide mile	Per mile	Is this Contractor Price? (yes/no)
Base Stabilization Cost	unknown	Per mile	Is this Contractor Price? (yes/no)

Varys/Project

## 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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE</b> <b>ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	>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 regaveling)	7	5	3
Dust Suppressant (yes/no)	no	no	Yes
Base Stabilization (yes/no)	no	no	Yes

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	>50	50 - 150	
Average Regraveling Thickness	3	3	
Blading Frequency (# per <del>year</del> <sup>1 spring 1 fall</sup> years)	1-3	1-3	
Regraveling Frequency (years between regaveling)	10-15	10	
Dust Suppressant (yes/no)	NO	yes	
Base Stabilization (yes/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?

\_\_\_\_\_

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	50	10
Good	40	40
Fair	10	45
Poor	0	5
<b>Total</b>	<b>100%</b>	<b>100%</b>

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

*All roads use ND DOT class 13 spec gravel*

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



*entire before*

*#20  
E-mailed*

# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: STARK

Contact: AL HEISER 701-290-8429 aheiser@starkcountynd.gov  
Name Phone Email

Preparer: TODD MILLER, Road Operations Specialist Date Prepared: 10/23/2019

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input checked="" type="checkbox"/>
Pit Run	<input checked="" type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input checked="" type="checkbox"/>
Tested	<input checked="" type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input checked="" type="checkbox"/>
Water/Rolling/Compaction	<input checked="" type="checkbox"/>
Other _____	<input type="checkbox"/>

## 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	95	5
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)	\$6.13	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	\$110.00/HR	<input type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	25	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	18-20	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	\$156.99/HR	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	\$146.70/HR	Annual cost per mile	Is this Contractor Price? (yes/no)
Dust Suppressant Costs	7,000	Per mile	Is this Contractor Price? (yes/no)
Base Stabilization Cost	6,000	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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regaveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	>50	50-250	250-up
Average Regraveling Thickness	3	6	6
Blading Frequency (# per month)	2	4	12
Regraveling Frequency (years between regaveling)	<b>15</b>	<b>10</b>	<b>5</b>
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

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If you answered yes for Base Stabilization – which type do you use?  
BASE-1 and GEO GRID and Fabric

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## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	80	65
Good	10	10
Fair	10	10
Poor	0	15
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

ATTACHMENT

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

# AGGREGATE QUALITY TESTS SUMMARY

North Dakota Department of Transportation Materials & Research Division  
NDN 10077 (Rev. 11/2015)

Project No.		Crushing and Stockpiling Gravel		PCN		Aggregate Class		12M	
Specification Section Number		302		Title		Stark County Gravel		LA Abrasion	
Location		Jaeger Pit						Lab Number	
Source of Aggregates		SW SEC 11, T141N, R96W/ Dunn County, ND							

Specifications		SIEVE SIZES AND PERCENTS PASSING														
		1"	3/4"	#4	#8	#10	#20		P1							
		Spec Limit	100	70-100	10-75	32-62	12-45	7.5-18.0		3-6.4						
		* Target Range														

TEST DATA	DATE/TIME SAMPLED	LOCATION SAMPLED	TEST NO	PERCENTS PASSING													
	10/8/18	Belt	18-SCG01	100	99	66	55	39	14.4		2.6						
	10/11/18	Belt	18-SCG02	100	99	64	53	38	14.0		3.4						
	10/12/18	Belt	18-SCG03	100	97	66	53	39	13.6		4.0						
	10/15/18	Belt	18-SCG04	100	97	68	58	44	14.6		2.0						
	10/16/18	Belt	18-SCG05	100	98	68	58	43	13.8		2.4						
	10/17/18	Belt	18-SCG06	100	98	62	51	36	12.3		2.1						
	10/18/18	Belt	18-SCG07	100	99	68	56	39	12.4		2.9						
	10/22/18	Belt	18-SCG08	100	97	63	52	38	13.9		2.5						
	10/23/18	Belt	18-SCG09	100	99	64	52	35	12.3		3.9						
	10/24/18	Belt	18-SCG10	100	97	62	50	35	12.2		3.2						
	10/25/18	Belt	18-SCG11	100	96	63	51	36	13.4		6.0						
	10/29/18	Belt	18-SCG12	100	97	64	52	36	12.3		5.2						
	10/30/18	Belt	18-SCG13	100	98	52	42	35	11.5		3.8						
	10/31/18	Belt	18-SCG14	100	98	62	56	40	12.5		3.2						
	11/1/18	Belt	18-SCG15	100	98	63	53	38	12.5		3.1						
	11/19/18	Belt	18-SCG16	100	96	69	58	44	14.3		5.5						
11/20/18	Belt	18-SCG17	100	97	66	56	41	15.1		6.4							
11/26/18	Belt	18-SCG18	100	98	68	56	41	14.7		7.4							

If the P1 and LL are required, these should also be shown. Sieve size percentages and physical property results shall be reported to the required specification. Include all tests conducted, both passing and failing and circle all failing percentages. Indicate under "Remarks" the action taken to correct the situation causing failing tests. As each item of the project is completed, submit the original copies of these reports to the district materials coordinator for correction and review. When the district materials coordinator is satisfied that all tests are fabricated, place form in the project records.

Submitted by Project Engineer Name		Legend: V - Verify P - Prepare I - Inspect
Mike Njos, Highlands Engineering		
Reviewed by District Materials Coordinator Name		
Date		

# AGGREGATE QUALITY TESTS SUMMARY

North Dakota Department of Transportation Materials & Research Division  
SEN 100/2 (Rev. 11-2015)

Project No.			Crushing and Stockpiling Gravel							PLAN		Aggregate Class			1.5M		
Specification Section Number			302				Title			Stark County Gravel			LA Abrasion			5	
Location			Jaeger Pit										Lab Number				
Source of Aggregates			SW SEC 11, T141N, R96W Dunn County ND														
Specifications				SIEVE SIZES AND PERCENTS PASSING													
				1"	3/4"	#4	#8	#30	#200	P.T.							
				Spec. Limit	100	75-100	38-75	25-60	12-40	75-100	75-100						
				Target Range													
TEST DATA	DATE/TIME SAMPLED	LOCATION SAMPLED	TEST NO.	PERCENTS PASSING													
	11/27/18	Belt	18-SCG19	100	98	65	54	38	13.7	4.0							
	11/28/18	Belt	18-SCG20	100	99	65	54	38	11.4	3.2							
	11/29/18	Belt	18-SCG21	100	96	68	57	43	13.3	5.1							
	12/3/18	Belt	18-SCG22	100	95	58	49	37	11.7	7.9							
	12/4/18	Belt	18-SCG23	100	98	66	56	40	13.4	4.4							
	12/5/18	Belt	18-SCG24	100	96	57	47	36	12.9	6.3							
	12/6/18	Belt	18-SCG25	100	96	63	53	40	14.9	6.3							
				100	97	64	54	39	12.3	4.3							
	<p>If the P.T. and F.T. are required, these should also be shown. Sieve size percentages and physical property results shall be reported to the required specification. Include all tests conducted, both passing and failing and circle all failing percentages. Indicate under "Remarks" the action taken to correct the situation causing failing tests. As each item of the project is completed, submit the original copies of these reports to the district materials coordinator for correction and review. When the district materials coordinator is satisfied that all tests are tabulated, place form in the project records.</p>				Submitted by Project Engineer Name										Requested Approved Rejected Indefinite		
Mike Njos, Highlands Engineering																	
Reviewed by District Materials Coordinator Name																	
Date																	

10/20/2019

## Stark County Road Department

10/17/2019	Tysver, Richard	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	18-19 : 10 Hours : \$15.01	SCORIA 220.00 \$6.25
10/18/2019	Dillinger, Randy	HIGHWAY DISTRIBUTION	0.00	8.00	Haul Material	18-19 : 10 Hours : \$15.01	
10/21/2019	Harrington, Doug	HIGHWAY DISTRIBUTION	8.50	0.00	Haul Material	11-37 : 6 Hours : \$73.35	GRAVEL 100.00 \$9.88
10/21/2019	Harrington, Paul	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	18-20 : 8.5 Hours : \$15.01	SHALE 260.00 \$5.10
10/21/2019	Kubas, Melvin	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	11-37 : 8.5 Hours : \$73.35	
10/21/2019	Kudma, Roger	HIGHWAY DISTRIBUTION	5.00	0.00	Haul Material	18-15 : 10 Hours : \$15.01	SCORIA 240.00 \$6.25
10/21/2019	Kudma, Roger	HIGHWAY DISTRIBUTION	5.00	0.00	Haul Material	11-31 : 10 Hours : \$73.23	
10/21/2019	Kudma, Roger	HIGHWAY DISTRIBUTION	5.00	0.00	Haul Material	18-16 : 10 Hours : \$15.01	SCORIA 260.00 \$6.25
10/21/2019	Kudma, Roger	HIGHWAY DISTRIBUTION	5.00	0.00	Haul Material	11-32 : 10 Hours : \$72.95	SHALE 20.00 \$5.10
10/21/2019	Kudma, Roger	HIGHWAY DISTRIBUTION	5.00	0.00	Haul Material	18-13 : 5 Hours : \$15.01	GRAVEL 120.00 \$9.88
10/21/2019	Kudma, Roger	HIGHWAY DISTRIBUTION	5.00	0.00	Haul Material	11-35 : 5 Hours : \$73.35	
10/21/2019	Kudma, Roger	HIGHWAY DISTRIBUTION	0.00	0.50	Haul Material	18-13 : 5 Hours : \$15.01	SCORIA 100.00 \$6.25
10/21/2019	Kudma, Roger	HIGHWAY DISTRIBUTION	0.00	0.50	Haul Material	11-35 : 5 Hours : \$73.35	GRAVEL 70.00 \$9.88
10/21/2019	Reindel, Cary	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	18-13 : 0.5 Hours : \$15.01	
10/21/2019	Schaff, Gary	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	11-35 : 0.5 Hours : \$73.35	GRAVEL 70.00 \$9.88
10/21/2019	Schaff, Gary	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	18-14 : 10 Hours : \$15.01	SCORIA 260.00 \$6.25
10/21/2019	Schaff, Gary	HIGHWAY DISTRIBUTION	0.00	1.00	Haul Material	11-27 : 10 Hours : \$68.00	SHALE 20.00 \$5.10
10/21/2019	Schaff, Gary	HIGHWAY DISTRIBUTION	0.00	1.00	Haul Material	11-05 : 10 Hours : \$45.00	GRAVEL 126.00 \$9.88
10/21/2019	Schank, Keith	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	11-05 : 10 Hours : \$45.00	GRAVEL 15.00 \$9.88
10/21/2019	Schank, Myron	HIGHWAY DISTRIBUTION	5.00	0.00	Haul Material	11-31 : 10 Hours : \$72.95	SCORIA 240.00 \$6.25
10/21/2019	Schank, Myron	HIGHWAY DISTRIBUTION	5.00	0.00	Haul Material	18-21 : 5 Hours : \$15.01	SCORIA 100.00 \$6.25
10/21/2019	Schank, Myron	HIGHWAY DISTRIBUTION	5.00	0.00	Haul Material	11-33 : 5 Hours : \$73.23	
10/21/2019	Schank, Myron	HIGHWAY DISTRIBUTION	0.00	1.00	Haul Material	18-21 : 5 Hours : \$15.01	GRAVEL 100.00 \$9.88
10/21/2019	Schank, Myron	HIGHWAY DISTRIBUTION	0.00	1.00	Haul Material	11-33 : 5 Hours : \$73.23	
10/21/2019	Schaper, John	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	18-21 : 1 Hours : \$15.01	GRAVEL 70.00 \$9.88
10/21/2019	Schaper, John	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	11-33 : 1 Hours : \$73.23	
10/21/2019	Tysver, Richard	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	11-06 : 10 Hours : \$45.00	SCORIA 56.00 \$6.00
10/21/2019	Tysver, Richard	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	18-17 : 10 Hours : \$15.01	GRAVEL 28.00 \$6.00
10/21/2019	Tysver, Richard	HIGHWAY DISTRIBUTION	0.00	1.00	Haul Material	11-21 : 10 Hours : \$59.69	GRAVEL 180.00 \$9.88
10/22/2019	Harrington, Doug	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	18-17 : 1 Hours : \$15.01	GRAVEL 180.00 \$9.88
10/22/2019	Harrington, Doug	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	11-21 : 1 Hours : \$59.69	
10/22/2019	Harrington, Doug	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	18-20 : 10 Hours : \$15.01	SCORIA 320.00 \$6.25
10/22/2019	Harrington, Doug	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	11-37 : 10 Hours : \$73.35	SHALE 20.00 \$5.10
10/22/2019	Kubas, Melvin	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	18-15 : 10 Hours : \$15.01	SCORIA 260.00 \$6.25
10/22/2019	Kubas, Melvin	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	11-34 : 10 Hours : \$73.23	SHALE 20.00 \$5.10
10/22/2019	Kudma, Roger	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	18-16 : 10 Hours : \$15.01	SCORIA 260.00 \$6.25
10/22/2019	Kudma, Roger	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	11-32 : 10 Hours : \$72.95	
10/22/2019	Reindel, Cary	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	18-13 : 10 Hours : \$15.01	GRAVEL 200.00 \$9.88
10/22/2019	Reindel, Cary	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	11-35 : 10 Hours : \$73.35	
10/22/2019	Schaff, Gary	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	18-15 : 10 Hours : \$15.01	SHALE 200.00 \$9.00
10/22/2019	Schaff, Gary	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	11-26 : 10 Hours : \$67.89	
10/22/2019	Schaff, Gary	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	11-05 : 10 Hours : \$45.00	GRAVEL 126.00 \$9.88
10/22/2019	Schank, Keith	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	18-19 : 10 Hours : \$15.01	SCORIA 280.00 \$6.25
10/22/2019	Schank, Keith	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	11-31 : 10 Hours : \$72.95	
10/22/2019	Schank, Myron	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	18-21 : 10 Hours : \$15.01	GRAVEL 200.00 \$9.88
10/22/2019	Tysver, Richard	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	11-33 : 10 Hours : \$73.23	
10/22/2019	Tysver, Richard	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	18-17 : 10 Hours : \$15.01	GRAVEL 200.00 \$9.88
10/22/2019	Tysver, Richard	HIGHWAY DISTRIBUTION	10.00	0.00	Haul Material	11-21 : 10 Hours : \$59.69	

Employee Hours / Cost (Reg Time = 6254 / \$256,629.53, Overtime = 292 / \$13,114.63)

Equipment Hours (\$2937.75)

\$269,744.71

## Employee Subtotals

Employee	Regular Hours	Cost	Overtime Hours	Cost
Harrington, Doug	737.50	\$30,810.86	32.75	\$1,478.01
Herrick, Paul	821.50	\$33,939.88	34.00	\$1,514.02
Kuntz, Leon	285.00	\$13,149.80	1.00	\$48.30
Schank, Keith	115.00	\$4,671.62	0.00	\$0.00
Schank, Myron	774.50	\$32,128.93	33.50	\$1,501.14
Schaper, John	154.00	\$5,522.50	26.00	\$1,124.76
Schmidt, Robert	152.00	\$6,105.52	0.00	\$0.00
Tysver, Richard	557.50	\$23,150.78	8.50	\$390.89
Kilven, Gary	70.00	\$896.90	14.50	\$717.61
Messeri, Marvin	267.00	\$11,232.96	66.00	\$2,662.00
Mossier, Chad	73.50	\$1,034.47	0.00	\$0.00
Stoltz, Chad	55.50	\$2,267.81	0.00	\$0.00
Kubas, Melvin	311.00	\$12,967.49	3.50	\$156.91
Reindel, Cary	778.50	\$31,136.85	44.50	\$1,604.16
Messeri Jr, Joseph	390.00	\$14,044.35	26.75	\$1,091.81
Kudma, Roger	615.00	\$24,718.89	4.00	\$171.16
Miller, Todd	47.50	\$2,365.50	0.00	\$0.00
Dillinger, Randy	24.50	\$1,219.37	7.50	\$414.83
Stephens, Thomas	4.00	\$194.16	0.00	\$0.00
Schaff, Gary	94.00	\$3,807.94	1.00	\$49.06

Hauling Material

<https://nd-co-stark.timecard-plus.rtvision.com/reports.php?r=3>

Stark County Road Department

Mayer, Gary	13.00	\$589.10	0.00	\$0.00
Heddl, James	13.00	\$504.00	0.00	\$0.00
<b>Equipment Subtotals</b>				

Equipment	Quantity
18-20	916.75 Hours
11-37	874.75 Hours
18-15	880.5 Hours
11-34	883.5 Hours
18-17	141 Hours
11-26	744.25 Hours
18-16	805 Hours
11-32	876.5 Hours
18-21	926.5 Hours
11-33	916.5 Hours
18-13	979.5 Hours
11-35	653.5 Hours
18-14	886.25 Hours
11-27	183.75 Hours
18-19	718.25 Hours
11-31	739.25 Hours
11-06	60 Hours
11-05	125 Hours
11-22	72.5 Hours
11-21	113 Hours
11-28	2.5 Hours
11-36	35 Hours
11-23	53 Hours
11-24	54 Hours
18-18	14 Hours
17-03	1 Hours
389	20 Hours
11-25	10 Hours

Inventory Subtotals

Inventory	Quantity
SCORIA	25074
GRAVEL	56252.5
Berried	3048
SAND	288
SHALE	40162.5
TOP SOIL	768
Mixings (Blacktop)	16516
Blacktop-Cold Mix	440
24" Culvert	520
MagChloride	33500
Used > 48" Culvert	0
Rock for Rip Rap	415
Heavy-Duty Material	870
WATER	60000
Fill Dirt	112
CONCRETE FOR RIP RAP	66
48" Culvert	40
Steel Beams	1
PAVEMENT	700

Hauling Materials



10/23/2019

# Stark County Road Department

10/21/2019	Mayer, Gary	HIGHWAY DISTRIBUTION	10.00	0.00	Blading Roads	15-18 10 Hours \$97.05
10/21/2019	Schmidt, Robert	HIGHWAY DISTRIBUTION	10.00	0.00	Blading Roads	15-21 8.25 Hours \$118.16
10/22/2019	Mayer, Gary	HIGHWAY DISTRIBUTION	10.00	0.00	Blading Roads	15-18 10 Hours \$97.05
10/22/2019	Schmidt, Robert	HIGHWAY DISTRIBUTION	10.00	0.00	Blading Roads	15-21 8.25 Hours \$118.16

Employee Hours / Cost (Reg Time = 4386.5 / \$187,506.07, Overtime = 466 / \$22,872.23)

## Employee Subtotals

Equipment Hours (4730)

\$210,178.30

Employee	Regular Hours	Cost	Overtime Hours	Cost
Schmidt, Robert	457.00	\$18,627.32	25.90	\$1,248.25
Messer, Chad	469.50	\$20,867.39	13.50	\$682.31
Stephens, Thomas	306.00	\$14,619.60	38.50	\$2,067.07
Miller, Todd	225.50	\$11,105.66	33.00	\$1,876.56
Schaff, Gary	438.00	\$17,550.84	63.75	\$3,127.58
Mayer, Gary	529.50	\$23,742.87	73.50	\$3,637.52
Messer, Marvin	439.00	\$18,463.03	41.50	\$1,898.63
Schaper, John	394.60	\$14,171.14	18.50	\$880.31
Kuntz, Leon	306.00	\$14,130.71	51.25	\$2,519.18
Schank, Keith	325.50	\$12,982.23	55.50	\$2,479.64
Kilzan, Cary	315.50	\$14,116.18	15.50	\$767.10
Baer, Wayne	16.50	\$793.49	0.00	\$0.00
Schank, Myron	2.50	\$101.98	28.50	\$1,277.09
Harrington, Doug	125.50	\$5,181.94	8.00	\$381.04
Holt, Justin	38.00	\$1,251.72	0.00	\$0.00

## Equipment Subtotals

Equipment	Quantity
15-21	386.75 Hours
15-19	508 Hours
15-17	277.25 Hours
15-15	236 Hours
15-20	487.75 Hours
15-18	615 Hours
15-11	510.5 Hours
15-10	329.5 Hours
15-14	315.5 Hours
15-13	339 Hours
15-16	389 Hours
15-22	325.75 Hours

Blading

Stark County Road Department

	Chad	DISTRIBUTION			Gravel		
09/25/2019	Miller, Todd	HIGHWAY DISTRIBUTION	2.00	0.00	Spread Gravel	15-15	2 Hours \$97.05
09/25/2019	Schmidt, Robert	HIGHWAY DISTRIBUTION	10.00	0.00	Spread Gravel	15-21	9 Hours \$118.16
09/26/2019	Messer, Chad	HIGHWAY DISTRIBUTION	10.00	0.00	Spread Gravel	15-19	10 Hours \$118.96
09/26/2019	Messer, Marvin	HIGHWAY DISTRIBUTION	2.00	0.00	Spread Gravel	15-18	2 Hours \$97.05
10/07/2019	Kuntz, Leon	HIGHWAY DISTRIBUTION	10.00	0.00	Spread Gravel	15-20	10 Hours \$118.96
10/07/2019	Messer, Marvin	HIGHWAY DISTRIBUTION	10.00	0.00	Spread Gravel	15-11	10 Hours \$80.80
10/08/2019	Messer, Marvin	HIGHWAY DISTRIBUTION	7.00	0.00	Spread Gravel	15-11	7 Hours \$80.80
10/09/2019	Schmidt, Robert	HIGHWAY DISTRIBUTION	10.00	0.00	Spread Gravel	15-21	9 Hours \$118.16
10/14/2019	Kuntz, Leon	HIGHWAY DISTRIBUTION	10.00	0.00	Spread Gravel	15-20	10 Hours \$118.96
10/15/2019	Kuntz, Leon	HIGHWAY DISTRIBUTION	10.00	0.00	Spread Gravel	15-20	10 Hours \$118.96
10/16/2019	Kuntz, Leon	HIGHWAY DISTRIBUTION	10.00	0.00	Spread Gravel	15-20	10 Hours \$118.96
10/17/2019	Kuntz, Leon	HIGHWAY DISTRIBUTION	10.00	0.00	Spread Gravel	15-20	10 Hours \$118.96
10/17/2019	Kuntz, Leon	HIGHWAY DISTRIBUTION	0.00	1.00	Spread Gravel	15-20	1 Hours \$118.96
10/21/2019	Kuntz, Leon	HIGHWAY DISTRIBUTION	10.00	0.00	Spread Gravel	15-20	10 Hours \$118.96
10/21/2019	Messer, Marvin	HIGHWAY DISTRIBUTION	10.00	0.00	Spread Gravel	15-11	10 Hours \$80.80
10/22/2019	Messer, Marvin	HIGHWAY DISTRIBUTION	10.00	0.00	Spread Gravel	15-11	10 Hours \$80.80
10/22/2019	Messer, Marvin	HIGHWAY DISTRIBUTION	0.50	0.50	Spread Gravel	15-11	0.5 Hours \$80.80
10/22/2019	Miller, Todd	HIGHWAY DISTRIBUTION	6.00	0.00	Spread Gravel	15-20	6 Hours \$118.96

Employee Hours / Cost (Reg Time = 1278 / \$54,847.15, Overtime = 27.25 / \$1,344.53)

Equipment Hours (1312.25)

\$56,191.68

Employee Subtotals

Employee	Regular Hours	Cost	Overtime Hours	Cost
Schank, Keith	30.00	\$1,117.40	0.00	\$0.00
Schaff, Gary	160.00	\$6,465.20	0.00	\$0.00
Kuntz, Leon	269.00	\$12,286.67	15.75	\$783.72
Schmidt, Robert	344.00	\$14,021.44	3.50	\$171.71
Messer, Chad	292.00	\$12,853.84	2.50	\$123.73
Kittan, Gary	65.00	\$2,047.10	2.00	\$91.50
Messer, Marvin	92.00	\$3,909.08	0.00	\$0.00
Miller, Todd	13.00	\$647.40	0.00	\$0.00
Beier, Wayne	3.00	\$145.62	0.00	\$0.00
Mayer, Gary	2.00	\$79.40	2.00	\$91.50

Equipment Subtotals

Equipment	Quantity
15-13	24 Hours
15-22	110 Hours
15-20	360.75 Hours
15-21	313.5 Hours
15-14	20 Hours
15-19	308.5 Hours
15-16	68.5 Hours
15-11	70 Hours
15-15	7 Hours
15-18	30 Hours

Spread Gravel

# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Steele County  
Contact: Reed L. Oien 701-789-0536 steelecohighway@nd.gov  
Name Phone Email  
Preparer: 2-13-20 Date Prepared: 2-13-20

### Aggregate Description

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

Gravel  
Scoria  
Pit Run  
Screened  
Crushed Material  
Specifications  
Tested  
Other \_\_\_\_\_

<input checked="" type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input checked="" type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

### 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 \_\_\_\_\_

<input checked="" type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

## 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.

Task	Performed by:	
	County	Contractor
Crushing	0 %	100 %
Hauling	25 %	75 %
Placement	75 %	25 %
Blading	100 %	0 %
Dust Control	0 %	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)	\$ 7.50	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no) <u>yes</u>
Trucking Cost from Gravel Origin	\$ 17.00	<input type="checkbox"/> Per loaded mile <input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no) <u>yes</u>
Average trucking distance for aggregate	33 miles	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	22	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	Included in Contractor price	Per Mile	Is this Contractor Price? (yes/no) <u>yes</u>
Blading Cost	\$ 95/hr	Annual cost per mile	Is this Contractor Price? (yes/no) <u>no</u>
Dust Suppressant Costs	All Contractor	Per mile	Is this Contractor Price? (yes/no) <u>yes</u>
Base Stabilization Cost	All Contractor	Per mile	Is this Contractor Price? (yes/no) <u>yes</u>

## 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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE</b> <b>ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	>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 regaveling)	7	5	3
Dust Suppressant (yes/no)	no	no	Yes
Base Stabilization (yes/no)	no	no	Yes

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	< 30	30-80	> 80
Average Regraveling Thickness	4 in	4 in	4 in
Blading Frequency (# per month)	2	3	4
Regraveling Frequency (years between regaveling)	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?

---

### Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good		
Good	60	60
Fair	40	40
Poor		
Total	100%	100%

### Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

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

"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."



**Steele County Highway Department**

201 Gordon Street, PO Box 291

Finley ND 58230-0291

(701) 789-0536

Re: Road Standards

To Whom It May Concern:

It is the standard practice of the Steele County Highway Department to maintain a minimum of four inches of Crushed gravel and four inches of class five or higher gravel on its entire County Road gravel surfaces.

Sincerely,

Reed L. Oien, Road Superintendent  
Steele County Highway Department





# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by November 20, 2019. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Stutsman

Contact: Mickey Nenow 7012529040 mnenow@stutsmancounty.gov  
Name Phone Email

Preparer: Jim Wentland Date Prepared: Feb.25 2020

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input type="checkbox"/>
Pit Run	<input type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input checked="" type="checkbox"/>
Tested	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input type="checkbox"/>
Water/Rolling/Compaction	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

## 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.

Task	Performed by:	
	County	Contractor
Crushing	0	100
Hauling	80	20
Placement	80	20
Blading	90	10
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)	6.41	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	.45	<input checked="" type="checkbox"/> Per loaded mile <input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	12	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	18	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs		Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	1140.00	Annual cost 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)

## 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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

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

<b>County Entry</b>	Traffic Levels		
	Low	Medium	High
Daily Traffic (Total AADT)	50	10	40
Average Regraveling Thickness	3in	3in	4in
Blading Frequency (# per month)	7	7	12
Regraveling Frequency (years between regaveling)	2	2	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?

---

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	10	10
Good	30	20
Fair	40	40
Poor	20	30
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

Class 13 road gravel.

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

Water this spring is not going to help ,as we are very wet already. Stutsman county has a disaster declaration since fall 2019.

# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Towner

Contact: Kevin Rivas 739-6225 Fccm@gondtc.com  
Name Phone Email

Preparer: Kevin Rivas Date Prepared: 11/5/19

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input type="checkbox"/>
Pit Run	<input type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input type="checkbox"/>
Tested	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input type="checkbox"/>
Water/Rolling/Compaction	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

## 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.

Task	Performed by:	
	County	Contractor
Crushing	0%	100%
Hauling	70%	30%
Placement	70%	30%
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)	\$8.30 \$2.00	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	\$6.00	<input checked="" type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	25	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	20 yds	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs		Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	\$40.00	Annual 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)

## 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.

<b>EXAMPLE</b> <b>ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regraveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	50		
Average Regraveling Thickness		4"	
Blading Frequency (# per month)	8	10	
Regraveling Frequency (years between regraveling)		5	
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?

---

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	10%	10%
Good	20%	30%
Fair	60%	30%
Poor	10%	30%
<b>Total</b>	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes; please provide sample specifications and gradation by system type, if available.

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



# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

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County: TRAILL Co.

Contact: CORWYN MARTIN 701.636.4341 CORWYNM@ND.GOV  
Name Phone Email

Preparer: CORWYN MARTIN Date Prepared: 10-21-19

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input type="checkbox"/>
Pit Run	<input type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input type="checkbox"/>
Specifications	<input checked="" type="checkbox"/>
Tested	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input type="checkbox"/>
Water/Rolling/Compaction	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

## 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.

Task	Performed by:	
	County	Contractor
Crushing		
Hauling	25%	75%
Placement	25%	75%
Blading	100%	
Dust Control		100%
Base Stabilization	N/A	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)	<del>17.30</del> - Contractor 17.30	<input type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	included Above	<input type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	Included above	<input type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	Contractor: Included Above.	<input type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs	Cont: Included Above County: 6.00	Per Mile	Is this Contractor Price? (yes/no) - combination
Blading Cost	\$35.00	Annual cost per mile	Is this Contractor Price? (yes/no)
* Dust Suppressant Costs	\$15,000	Annually Per mile	Is this Contractor Price? (yes/no)
Base Stabilization Cost	N/A	Per mile	Is this Contractor Price? (yes/no)

\* County budgets \$15,000 Annually for Dust Control, would do more if funding was available

## 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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE</b> <b>ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regaveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	>50	50-150	150-350
Average Regraveling Thickness	1"	2"	3"
Blading Frequency (# per month)	4-5	4-5	4-5
Regraveling Frequency (years between regaveling)	3	2	1
Dust Suppressant (yes/no)	As needed	As needed	As needed
Base Stabilization (yes/no)	N/A	N/A	N/A

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?

N/A

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	0%	0%
Good	0%	0%
Fair	25%	25%
Poor	75%	75%
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

NDDOT CLASS 13

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

TYPICALLY we ReGravel AT 300 YARD PER/mile  
BUT DO TO ROAD CONDITIONS we ARE going TO  
400 YARDS PER mile IN 2020 AS Budget PERMITS,  
TRAIL County DOES NOT HAVE ANY gravel LEFT AND  
HAS NO CHOICE BUT TO GO FOR CONTRACTED gravel

# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

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County: Walsh

Contact: Sharon Lipsh 701-352-1530 slipsh@nd.gov  
Name Phone Email

Preparer: Sharon Lipsh Date Prepared: 11/21/2019

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input type="checkbox"/>
Pit Run	<input type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input checked="" type="checkbox"/>
Tested	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input checked="" type="checkbox"/>
Water/Rolling/Compaction	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

## 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	33	67
Placement	100	0
Blading	100	0
Dust Control	0	0
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)	3.50	<input type="checkbox"/> Per cu. yard <input checked="" type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	0.19	<input checked="" type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input checked="" type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	40	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	20	<input type="checkbox"/> Cu. Yards <input checked="" type="checkbox"/> Tons	
Placement Costs	181.86 avg. blading only	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	1,071 (avg. 2019)	Annual cost per mile	Is this Contractor Price? (yes/no)
Dust Suppressant Costs	County does no dust suppressant	Per mile	Is this Contractor Price? (yes/no)
Base Stabilization Cost	17,900 (Base One wheeldrainer)	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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	>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 regaveling)	7	5	3
Dust Suppressant (yes/no)	no	no	Yes
Base Stabilization (yes/no)	no	no	Yes

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	>50	50-150	150+
Average Regraveling Thickness	2"	2" - 3"	3" - 4"
Blading Frequency (# per month)	2	3	3-4
Regraveling Frequency (years between regaveling)	4	3	1-2
Dust Suppressant (yes/no)	N	N	N
Base Stabilization (yes/no)	As needed	As needed	As needed

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

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

BaseOne with reclaimer application or county crew digout and replace with fabric, pit run and gravel.

---

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	13	8
Good	21	23
Fair	52	57
Poor	14	12
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

We use 816.03B for gravel surfacing for normal maintenance gravel. For regrading projects we have used SP714(14).

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



## 2019 COUNTY ROAD NEEDS STUDY SURVEY

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County: Ward County

Contact: Dana Larsen 701-838-2810 dana.larsen@wardnd.com  
Name Phone Email

Preparer: Dana Larsen Date Prepared: 11-19-2019

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input type="checkbox"/>
Pit Run	<input type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input checked="" type="checkbox"/>
Tested	<input checked="" type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input checked="" type="checkbox"/>
Water/Rolling/Compaction	<input checked="" type="checkbox"/>
Other <u>Soft Spots Repair &amp; Roadway Reshaping</u>	<input checked="" type="checkbox"/>

## 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	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)	\$6.00	<input type="checkbox"/> Per cu. yard <input checked="" type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	\$4.00	<input type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input checked="" type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	30	<input type="checkbox"/> Miles one-way <input checked="" type="checkbox"/> Miles roundtrip	
Truck Payload	24	<input type="checkbox"/> Cu. Yards <input checked="" type="checkbox"/> Tons	
Placement Costs *	\$9,000	Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	\$3,800	Annual cost per mile	Is this Contractor Price? (yes/no)
Dust Suppressant Costs	\$9,000	Per mile	Is this Contractor Price? (yes/no)
Base Stabilization Cost	\$125,000	Per mile	Is this Contractor Price? (yes/no)

\* Placement Cost include \$3,000/mile to pull shoulders and reshape roadway, \$1,000/mile soft spot repair, \$5,000/mile lay-down; including the cost for water, signing and mobilization

## 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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regravelling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	>50	50-150	150-300
Average Regraveling Thickness	3	4	6
Blading Frequency (# per month)	2	3	5
Regraveling Frequency (years between regravelling)	<b>7</b>	<b>5</b>	<b>5</b>
Dust Suppressant (yes/no)	no	Only on haul routes	Yes
Base Stabilization (yes/no)	no	yes on haul routes	yes

If you answered yes for Dust Suppressant – which type do you use?  
 Calcium Chloride and Magnesium Chloride and starting to use Brine Water

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If you answered yes for Base Stabilization – which type do you use?  
 12-16 inch Cement-treated base (CTB)

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## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	5	0
Good	35	15
Fair	50	50
Poor	10	35
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

Attached is a copy of our Gravel Spec that we have used for about 15 years but added the PI spec about 6 years ago. We have added a 1/2 inch sieve and increased the fractured faces to 30% to make sure the crushing contractor does not screen out the rock and making sure we have enough fractured rock.

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

For the Gravel Road Condition i use South Dakota rating guidelines, which i attached. We have focus that last 8 years on making sure our roads had a 4% and have be adding between 3-6 inches of new gravel. When we gravel. Most of our roads in the Fair to Poor category are at least partially deficient in the following; have bridges, culvert that need repaired, replaced or cleaned, inslopes range between 2:1 and 4:1, ditches separation is less then 4 feet in places, vertical and horizontal curves do not meet design standards, backslopes create snow traps and sloughs, rip rap, culvert ends and fences are within clear zone.

For gravel road practices, we are looking at using CTB on our road to bring them up to a 105,500 pound load rating on roads with over 150 ADT, higher truck volumes, and roads with poor soil (silt)

## BIDDER'S FORM FOR ROAD GRAVEL CRUSHING AND STOCKPILING

### Governing Specifications:

Standard Specifications for Road and Bridge Construction, adopted by the North Dakota Department of Transportation, October, 2014 shall apply to all North Dakota Department of Transportation contracts, standard drawings currently in effect, and other contract provisions submitted herein.

Class 13 (modified type 1), NDDOT Specifications, Sections 816.02. Modify percent passing the 1/2" sieve to 50-90%, Plastic Index (PI) between 4-9; minimum fracture faces of 30%; delete reference to shale and L.A. Abrasion.

Class 13 (modified type 2), NDDOT Specifications, Sections 816.02. Modify percent passing the 1/2" sieve to 50-90%, minimum fracture faces of 30%; delete reference to shale and L.A. Abrasion.

Payment shall be made on measured stockpile quantity. The cost of testing, stripping, stockpiling and restoration of excavated, shall be included in the bid amount.

Bidders shall make necessary site investigations to determine satisfactory pit location. All prebid test holes shall be filled and leveled before leaving the site. Do not bid crushing at a specific site unless assured of making product specified.

The Contractor shall make the necessary sieve analysis to assure a specified product, and use good practices to prevent segregation in the stockpile. For this crushing bid a lot will be defined as 5000 ton of production of the specified material. Three random belt samples will be taken for each lot and tested by a certified testing laboratory and reported to Ward County and will be incidental to the crushing. If the material from all three samples meets the gradation specified only one of the three samples will be tested from each subsequent lot. The laboratory will also need to run one hydrometer test per lot. If the sample tested does not meet the gradation requirements, the remaining two samples will be tested. The average gradation of these three samples will then be used to determine acceptance of the material. The testing of three samples will continue until all three samples meet the gradations specified then only one of the three samples will be tested from each lot. When the aggregate does not meet the gradation specified, a reduction in the Contract Unit Price will be made. If the aggregate fails to meet the specified gradation on one or more sieves or fracture face, the reduction will be the sum of the deductions as calculated below.

Unit Price Reduction:  $\text{Percent of deduction} = 5 \times \text{percent of deviation from the range limits.}$

If material is produced that deviates from the specified gradation for two consecutive lots or good crushing and stockpile techniques are not use, incorporation of additional materials into the work will not be allowed until the contractor takes the necessary corrective action to meet the specifications. If the average does not meet the specified limits for fractured faces, the Contractor shall correct the stockpile so the material meets specifications.

## INTRODUCTION

**Table 1. Gravel Roadway Rating and Evaluation Scheme.**

Surface Rating	Visible Distresses and Overall Roadway Condition
100 to 81 (Excellent)	Roadway surface is in excellent condition with very good rideability. Good gravel thickness and excellent drainage. No distresses in the roadway, with the exception of dusting in dry conditions.
80 to 61 (Good)	Adequate gravel thickness, good pavement crown, and good drainage. Moderate loose aggregate and slight washboarding. Slight rutting (< 25 mm [1 in]) in some areas during wet weather.
60 to 41 (Fair)	Good crown of 75 to 150 mm (3 to 6 in). Primary ditches present on more than 50 percent of the roadway. Some culvert cleaning is necessary. Secondary ditches beginning to develop along portions of the shoulder line. Gravel layer is adequate, but additional aggregate is necessary in isolated areas. Moderate washboarding (25 to 50 mm [1 to 2 in] deep) over 10 to 25% of the area. Moderate rutting (25 to 50 mm [1 to 2 in] deep), especially in wet weather. Occasional small potholes (< 50 mm [2 in] deep). Some loose aggregate (50 mm [2 in] deep).
40 to 21 (Poor)	Travel at slow speeds (< 40 kph [25 mph]) is required. Little or no roadway crown (< 75 mm [3 in]). Adequate primary ditches on less than 50 % of the roadway. Deep secondary ditches located along more than 50 % of the roadway length. Some areas (up to 25 %) with little or no aggregate. Culverts partially filled with debris. Moderate to severe washboarding (> 75 mm [3 in] deep) over 25 % of area. Severe rutting (> 75 mm [3 in]) in 10 to 25 % of roadway during wet weather. Moderate potholes (50 to 100 mm [2 to 4 in] deep) over 10 to 25 % of area. Severe loose aggregate (> 100 mm [4 in]).
20 to 0 (Failed)	Travel on roadway is very difficult. No roadway crown, or the road is bowl-shaped with extensive ponding. Little, if any, primary ditches. Deep secondary ditches are located along most of the roadway. Culverts are damaged or filled with debris. Severe rutting (> 75 mm [3 in]) on more than 25 % of area, especially in wet weather. Severe potholes (over 100 mm [4 in] deep) over at least 25 % of the area. Many areas (over 25 %) with little or no aggregate.

## INTRODUCTION

**Table 1. Gravel Roadway Rating and Evaluation Scheme (cont.).**

Surface Rating	Typical Repair	Level of Repair
100 to 81 (Excellent)	Little or no maintenance needed. Routine blading.	None
80 to 61 (Good)	Routine blading. Cut out washboard areas and relay the gravel when moisture is present.	Routine/preventive maintenance.
60 to 41 (Fair)	Regrading of the surface is necessary to eliminate washboarding and secondary ditch. The regrading should be done when moisture is present. Some areas may need additional gravel. Some ditch improvement and culvert cleaning may be necessary.	Heavy maintenance.
40 to 21 (Poor)	Reshaping of the roadway surface and shoulders is necessary, along with the placement of additional aggregate. Major ditch reconstruction and culvert maintenance are also required.	Rehabilitation.
20 to 0 (Failed)	The entire roadway cross section must be reshaped, and a new gravel layer must be constructed. Ditches must be reestablished, and new culverts are typically needed.	Reconstruction.





# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by November 20, 2019. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Wells County

Contact: Brent Keller 701-341-0167 brekeller@nd.gov  
Name Phone Email

Preparer: Brent Keller Date Prepared: 2-25-2020

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input type="checkbox"/>
Pit Run	<input type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input type="checkbox"/>
Specifications	<input type="checkbox"/>
Tested	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input checked="" type="checkbox"/>
Water/Rolling/Compaction	<input type="checkbox"/>
Other _____	<input type="checkbox"/>

## 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.

Task	Performed by:	
	County	Contractor
Crushing		100%
Hauling	75%	25%
Placement	75%	25%
Blading	100%	
Dust Control	NA	NA
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)	\$5.50	<input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Trucking Cost from Gravel Origin	\$.50	<input checked="" type="checkbox"/> Per loaded mile <input type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no)
Average trucking distance for aggregate	20	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	12	<input checked="" type="checkbox"/> Cu. Yards <input type="checkbox"/> Tons	
Placement Costs		Per Mile	Is this Contractor Price? (yes/no)
Blading Cost	\$100	Annual cost 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)

## 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.

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

<b>County Entry</b>	Traffic Levels		
	Low	Medium	High
Daily Traffic (Total AADT)	20-50	50-150	150 +
Average Regraveling Thickness	1 in	2 in	3 in
Blading Frequency (# per month)	1	1	1-2
Regraveling Frequency (years between regraveling)	8-10	6-7	4-5
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?

---

## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	65%	45%
Good	35%	35%
Fair		15%
Poor		5%
Total	100%	100%

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

see attached

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

# MATERIAL TESTING SERVICES, LLC

P.O. Box 634  
Minot, ND 58702  
(701) 852-6553

## CLASS 5 & 13

7101 w 2100 Ave  
Wells, ND 58093  
(701) 572-4226

PROJECT: PRODUCTION CHECK

DATE: 6/13/19

REPORTED TO: Wells County Rd Department  
1203 5th Street NE  
Fessenden, ND 58438

COPIES: [bret.eller@nd.gov](mailto:bret.eller@nd.gov)

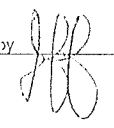
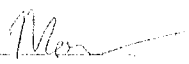
Laboratory Number 19-001

SAMPLE IDENTIFICATION:	Beaver Pit	Hartel Pit	Johnson Pit		
DATE SUBMITTED:	6/10/19	6/10/19	6/10/19		
MECHANICAL ANALYSIS (AASHTO T-11, T-27):				ND DOT Section 816.01	
				Class 5	Class 13
	passing 1"	100	100	100	100 %
	3/4"	97	94	94	90 - 100
	1/2"	87	76	80	70 - 100
	3/8"	81	70	72	
	# 4	70	57	58	35 - 70
	# 8	56	44	46	22 - 62
	# 16	43	32	33	
	# 30	32	19	22	16 - 40
	# 50	18	9.8	15	12 - 48
	# 100	9.6	7.0	8.2	
	# 200	7.0	6.5	5.7	4 - 10
ATTERBERG LIMITS:					
Liquid Limit	non-plastic	non-plastic	non-plastic		
Plastic Limit	non-plastic	non-plastic	non-plastic		
Plasticity Index	non-plastic	non-plastic	non-plastic		

REMARKS: The sample was submitted by Wells County Road Department.

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL.

Material Testing Services, LLC

by  



# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County: Williams

Contact: Dennis Nelson (701)577-4521 dennisl@co.williams.nd.us  
Name Phone Email

Preparer: Dennis Nelson Date Prepared: 11/13/19

### Aggregate Description

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

Gravel	<input checked="" type="checkbox"/>
Scoria	<input type="checkbox"/>
Pit Run	<input type="checkbox"/>
Screened	<input type="checkbox"/>
Crushed Material	<input checked="" type="checkbox"/>
Specifications	<input checked="" type="checkbox"/>
Tested	<input checked="" type="checkbox"/>
Other <u>Specifications(Class 5)</u>	<input type="checkbox"/>

### 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	<input checked="" type="checkbox"/>
Windrow/Equalize	<input type="checkbox"/>
Water/Rolling/Compaction	<input checked="" type="checkbox"/>
Other <u>Water/Rolling/Compaction(when possible)</u>	<input type="checkbox"/>





## 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.

Task	Performed by:	
	County	Contractor
Crushing	0%	100%
Hauling	70%	30%
Placement	80%	20%
Blading	95%	5%
Dust Control	0%	100%
Base Stabilization	10%	90%

## 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)	\$5.43	<input type="checkbox"/> Per cu. yard <input checked="" type="checkbox"/> Per Ton	Is this Contractor Price? (yes/no) <u>yes</u>
Trucking Cost from Gravel Origin	\$3.39	<input checked="" type="checkbox"/> Per loaded mile <input checked="" type="checkbox"/> Per cu. yard <input type="checkbox"/> Per Ton	Is this Contractor Price? <u>yes</u> /no
Average trucking distance for aggregate	15	<input checked="" type="checkbox"/> Miles one-way <input type="checkbox"/> Miles roundtrip	
Truck Payload	26	<input type="checkbox"/> Cu. Yards <input checked="" type="checkbox"/> Tons	
Placement Costs	\$1,500	Per Mile	Is this Contractor Price? (yes/ <u>no</u> )
Blading Cost	\$3,125	Annual cost per mile	Is this Contractor Price? (yes/ <u>no</u> )
Dust Suppressant Costs	N/A	Per mile	Is this Contractor Price? (yes/no)
Base Stabilization Cost	\$133,000	Per mile	Is this Contractor Price? <u>yes</u> /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 regravelling thickness, blading frequency, regravelling frequency, and whether dust suppressant or base stabilization are used at each of these traffic categories.

<b>EXAMPLE ENTER ACTUAL BELOW</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Daily Traffic (Total AADT)</b>	<b>&gt;50</b>	<b>50-150</b>	<b>150-350</b>
<b>Average Regraveling Thickness</b>	<b>3 in</b>	<b>4 in</b>	<b>5 in</b>
<b>Blading Frequency (# per year)</b>	<b>8</b>	<b>12</b>	<b>16</b>
<b>Regraveling Frequency (years between regaveling)</b>	<b>7</b>	<b>5</b>	<b>3</b>
<b>Dust Suppressant (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>
<b>Base Stabilization (yes/no)</b>	<b>no</b>	<b>no</b>	<b>Yes</b>

<b>County Entry</b>	<b>Traffic Levels</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
Daily Traffic (Total AADT)	100	100-350	350-600
Average Regraveling Thickness	1"	2"	2" to 3"
Blading Frequency (# per month)	1	2	3
Regraveling Frequency (years between regaveling)	<b>4</b>	<b>3</b>	<b>2</b>
Dust Suppressant (yes/ <u>no</u> )			
Base Stabilization ( <u>yes</u> /no)			

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

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

Cement or Permazyme

---



## Gravel Road Condition

This section asks for information regarding gravel road conditions and is broken into two separate categories: Federal Aid, and Non-Federal Aid. Please provide a rough estimate of the percentage of unpaved roads by condition for these two categories.

Condition	% Federal Aid Roads (CMC)	% Non-Federal Aid Roads (non-CMC)
Very Good	30%	20%
Good	20%	30%
Fair	30%	20%
Poor	20%	30%
<b>Total</b>	<b>100%</b>	<b>100%</b>

## Gravel Materials Specifications

Please attach a sample specification and sample gradation, or state materials specification number. If materials used on CMC routes differ from non-CMC routes, please provide sample specifications and gradation by system type, if available.

Class 5 DOT

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

