

# 2024 D4 Highway Commission Meeting

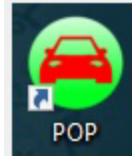
## Construction Presentation



# POP

## Pavement Optimization Program

POP Version 4.5.10.0



### Nebraska Department of Transportation Pavement Optimization Program

Pavement Management Data

Life Cycle Cost Analysis

Decision Criteria

Help

About

#### Pavement Management Data

Statewide

District

District

Highway

Highway

Highway within a District

Highway within a District

District

Highway

Section Type

- Pavement Sections
- Needs Sections
- Recreation Roads

Highway System

- All Systems
- Interstate
- Priority Commercial
- Expressway

#### PAVEMENT SECTION NOTE:

Pavement Sections are project size segments defined by age with surface type based on predominance.

# POP

## Pavement Optimization Program

District

District

Highway

Highway

Highway within a District

Highway within a District

District

Highway

Highway

4

002  
004  
005  
006  
008  
010  
011  
014  
022  
030  
030R  
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040  
041  
044  
052  
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068  
069  
070  
074  
078  
080  
081  
091  
092

136  
183  
281  
L10B  
L10C  
L10D  
L10E  
L10F  
L40C  
L40G  
L41D  
L61D  
L63A  
L82A  
L85F  
L93B  
S01A  
S01B  
S01C  
S01D  
S18A  
S18B  
S18C  
S18D  
S18E  
S18F  
S18G  
S30B  
S30C  
S30D

S30H  
S40D  
S41A  
S41B  
S41C  
S47A  
S61A  
S65A  
S85A  
S85B  
S85C  
S85D  
S85E  
S85H  
S91A  
S91B  
S93A  
S93C  
S93D  
S93F

**PAVEMENT SECTION NOTE:**  
Pavement Sections are project size segments defined by age w predominance.

**NEEDS SECTION NOTE:**  
Needs Sections are smaller than Pavement Sections and are de changes, corporate limits, project limits, surface type, and future

**NOTES:**  
-Some sections could include smaller sections of a different mat  
-If a geometric deficiency is noted within a section, then the ent  
deficient.  
-Programmed Surface Related Project Data is refreshed every 2  
Program/Project Management system (PPM).  
-If a project is a "Bridge Only" project, then the programmed info  
with the pavement section data.

# POP

## Pavement Optimization Program

Hwy Num	Beg Ref	End Ref	Dir	Location	Length	Thru Lanes	Surf T...
No filter: ▾	No filt... ▾	No filt... ▾	N... ▾	No filter: ▾	N... ▾	No filt... ▾	N... ▾
014	0.00	1.90	B	KANSAS/NEBR LINE-S...	1.86	2	ASPH
014	1.90	2.84	B	SUPERIOR	0.93	2	CONC
014	2.84	7.32	B	SUPERIOR NORTH	4.46	2	ASPH
→ 014	11.29	15.31	B	NELSON SOUTH	4.02	2	COMP
014	15.31	21.34	B	NELSON-S JCT N4	6.03	2	CONC
014	22.32	26.50	B	N JCT N4-DEWEESE S...	4.16	2	CONC
014	26.50	37.17	B	DEWEESE SPUR NOR...	10.67	2	ASPH
014	37.17	41.72	B	CLAY CENTER-US6	4.53	2	ASPH
014	44.69	60.58	B	E JCT US6-AURORA	15.91	2	ASPH
014	60.58	61.74	B	I80 INTERCHANGE AU...	1.14	2	ASPH
014	61.74	63.89	B	JCT I80-AURORA	2.15	2	ASPH
014	63.89	65.09	B	AURORA	1.20	2	CONC
014	65.09	77.29	B	AURORA NORTH	12.18	2	ASPH
014	77.28	80.99	B	CENTRAL CITY SOUTH	3.70	2	COMP
014	80.99	81.55	B	CENTRAL CITY	0.55	2	CONC
014	81.55	82.70	B	CENTRAL CITY	1.17	2	CONC
014	82.70	86.73	B	CENTRAL CITY-W JCT...	4.01	2	ASPH
014	86.73	87.74	B	W JCT N92-E JCT N92	1.01	2	ASPH
014	87.74	94.64	B	E JCT N92 NORTH	7.08	2	ASPH
014	94.64	97.85	B	FULLERTON SOUTH	3.20	2	ASPH
014	97.85	98.97	B	FULLERTON SOUTH	1.06	2	CONC
014	98.97	99.90	B	FULLERTON	0.92	2	ASPH
014	99.90	106.94	B	FULLERTON-JCT N52	7.06	2	ASPH
014	106.94	110.01	B	JCT N52 NORTH	3.07	2	ASPH

# Pavement Data

## Pavement Management Data

Dist Num	Hwy Num	Beg RP	End RP	Dir	Length	Age	Lanes	Load Date
04	014	11.29	15.31	B	4.02	13	2	9/24/2024

### Location Description

NELSON SOUTH

### Section Type Highway System

Pavement Sections All Systems District = 4 Highway = 014

**Status**

Optimum Year: 2031  
 Critical Year: 2035  
 Under Const: NO

Pavement Status Indicator: ●

**Geometric Data**

Trvlwy Width: 24 Ft  
 Vert Curve Def:

**Shoulder**

Total Width: 10.0 Ft  
 Surface Width: 8.0 Ft  
 Condition Rating: 7  
 Slope: >4:1

**Bridges**

Num Bridges: 2  
 Bridge Def: 0

**NSI**

NSI: 88.0  
 Low NSI: 74.4  
 NSI Date: 2/22/2024

**Profile Data**

PSI: 4.0  
 IRI: 1.48 mm/m  
 Profile Date: 2/22/2024

Rut Depth: 3.5 mm  
 Faulting: 0.0 mm

**PCC Rating**

Spalled Jnts: 0.0 %  
 Panel Crks: 0.0 %  
 Joint Seal: 0.0 %  
 Jnt/Pnl Repair: 0.0 %

**BIT Rating**

ThrmI Crk: 8.235  
 Whl Path Crk: 5.0 %  
 Trans Crk: 70.3  
 Rutt >13mm: 0.6 %

**Maint Cost/LnMile**

5 YR Avg\*: \$5,383  
 Prev FY Cost: \$17,900

**Traffic**

ADT: 1740  
 20 Yr ADT: 1740  
 % Heavy Trk:

TADT: 245  
 20 Yr TADT: 245  
 TADT: 14

**Crashes**

Prev Yr: Fatal 0, Injury 0, Property 0  
 5 Year Avg: Fatal 0, Injury 0, Property 0

Item Num	BegRefPost	EndRefPost	Alert Description
<b>Nebraska Serviceability Index</b>			

- Help
- Cross Section
- Section Report
- PathWeb Link
- Open Log Book
- History Graphs
- Return

Press the PrtScn key on your keyboard to print this screen.

\*5 YR Avg does not include material costs (cold mix) for FY 2018 - 2020

# Pavement Data

## Pavement Management Data

Dist Num	Hwy Num	Beg RP	End RP	Dir	Length	Age	Lanes	Load Date
04	014	11.29	15.31	B	4.02	13	2	9/24/2024

### Location Description

NELSON SOUTH

### Section Type Highway System

Pavement Sections: All Systems District = 4 Highway = 014

Status	Geometric Data	Bridges
<b>Optimum Year</b> 2031 <b>Critical Year</b> 2035 <b>Under Const</b> NO <b>Pavement Status Indicator</b> <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/>	<b>Trvlwy Width</b> 24 Ft <b>Vert Curve D</b> <input type="checkbox"/>	<b>Shoulder</b> <b>Total Width</b> 10.0 Ft <b>Surface Width</b> 8.0 Ft <b>Condition Rating</b> 7 <b>Slope</b> >4:1 <b>Num Bridges</b> 2 <b>Bridge Def</b> 0

NSI	Profile Data	PCC Rating
<b>NSI</b> 88.0 <b>Low NSI</b> 74.4 <b>NSI Date</b> 2/22/2024	<b>PSI</b> 4.0 <b>IRI</b> 1.48 mm/m <b>Faulting</b> 0.0 mm <b>Profile Date</b> 2/22/2024	<b>Spalled Jnts</b> 0.0 % <b>Panel Crks</b> 0.0 % <b>Joint Seal</b> 0.0 % <b>Jnt/Pnl Repair</b> 0.0 %

BIT Rating
<b>ThrmI Crk</b> 8.235 <b>Whl Path Crk</b> 5.0 % <b>Trans Crk</b> 70.3 <b>Rutt &gt;13mm</b> 0.6 %

Maint Cost/LnMile
<b>5 YR Avg*</b> \$5,383 <b>Prev FY Cost</b> \$17,900

Traffic	
<b>ADT</b> 1740 <b>20 Yr ADT</b> 1740 <b>% Heavy Trk</b> 	<b>TADT</b> 245 <b>20 Yr TADT</b> 245 <b>14</b>

Crashes	
<b>Prev Yr</b> <b>Fatal</b> 0 <b>Injury</b> 0 <b>Property</b> 0	<b>5 Year Avg</b> <b>Fatal</b> 0 <b>Injury</b> 0 <b>Property</b> 0

Hwy Num	BegRefPost	EndRefPost	Alert Description
<b>Present Serviceability Index</b>			

- Help
- Cross Section
- Section Report
- PathWeb Link
- Open Log Book
- History Graphs
- Return

Press the PrtScn key on your keyboard to print this screen.

\*5 YR Avg does not include material costs (cold mix) for FY 2018 - 2020

# Pavement Information

## Not Just Pavement Condition

Hwy Num	Beg Ref	End Ref	Dir	Location	Length	Thru Lanes	Surf T...	Surf Desc	Surf Depth	Base Desc	Base Depth
No filter: ▾	No filt... ▾	No filt... ▾	N... ▾	No filter: ▾	N... ▾	No filt... ▾	N... ▾	No filter: ▾	No filter: ▾	No filter: ▾	No filter: ▾
→ 040	63.45	74.40	B	MILLER-AMHERST	10.94	2	ASPH	AC, SP4 SP.(.375&9.5)	6.750	SOIL AGG BASE COURSE	3.000
040	74.40	86.22	B	AMHERST-JCT N10	11.81	2	ASPH	AC, TYPE SP4 SP.(0.5)	7.500	SOIL AGG BASE COURSE	3.000

Hwy Num	Beg Ref	End Ref	Dir	Location	Length	Thru Lanes	Surf T...	Surf Desc	Surf Depth	Base Desc	Base Depth
No filter: ▾	No filt... ▾	No filt... ▾	N... ▾	No filter: ▾	N... ▾	No filt... ▾	N... ▾	No filter: ▾	No filter: ▾	No filter: ▾	No filter: ▾
→ 030	254.77	267.40	B	DAWSON/BULFFALO C...	12.58	2	COMP	AC, TYPE SPR	6.500	8" CONC PAVEMENT	8.000
030	267.40	270.63	B	KEARNEY WEST	3.26	2	COMP	AC, TYPE SPR	8.000	CONC PAVEMENT	7.000

# Oldest Road Surface in D4?

Highway	Beg Ref	End Ref	Dir	Location	Length	Surf Typ	Age
011	62.74	63.35	B	NORTH LOUP	0.61	CONC	88
008	0.00	0.52	B	SUPERIOR	0.52	CONC	72
014	1.90	2.84	B	SUPERIOR	0.93	CONC	72
092	384.81	395.90	B	PLATTE RIVER-W JCT US81	11.08	CONC	69
S41B	3.31	3.67	B	I80 INTERCHANGE GILTNER	0.36	CONC	58
S85B	0.00	0.28	B	HUBBELL SPUR	0.28	ASPH	50
011	74.96	75.74	A	11TH ST-15TH ST ORD	0.78	CONC	48
011	74.96	75.74	D	11TH ST-15TH ST ORD	0.78	CONC	48
014	81.55	82.70	B	CENTRAL CITY	1.17	CONC	47
281	92.74	94.22	A	ST PAUL	1.49	CONC	46



# Most Trucks in D4? (By % of traffic)

Hwy Num	Beg Ref	End Ref	Location	Length	%TADT
008	24.10	38.16	JCT US81-THAYER/JEFFERS	14.06	29
004	111.61	122.60	BRUNING EAST	10.98	27
L93B	0.00	0.33	I80 INTERCHANGE WACO	0.32	26
281	12.19	20.32	JCT S91B-W JCT N4	8.13	24
030	346.05	346.65	JCT N92-JCT N39	0.6	23
006	242.43	249.81	SUTTON-GRAFTON	7.37	23
006	249.81	255.99	GRAFTON-FAIRMONT WEST I	6.18	23
030	337.82	346.05	CENTRAL CITY-JCT N92	8.23	23
281	6.17	12.19	RED CLOUD-JCT S91B	6.01	23
281	113.47	131.49	N JCT N22-GREELEY/WHEEL	17.97	22

# Nebraska Department of Transportation Pavement Optimization Program

Pavement Management Data

Life Cycle Cost Analysis

Decision Criteria

Help

About

## Life Cycle Cost Analysis

Statewide

District

District

4

Highway


Section Type

- Pavement Sections
- Needs Sections

Highway System

- All Systems
- Freeway Only

# Artificial Intelligence! (Or just a ton of simple math)

 Cost Analysis Yearly Budgets

## Pavement Optimization Lifecycle Cost Analysis - District 4

Perform a Cost Benefit Analysis for  years. (Enter a value  $\leq 30$ )

Set Budget Amount for all years

Create Years

Reset

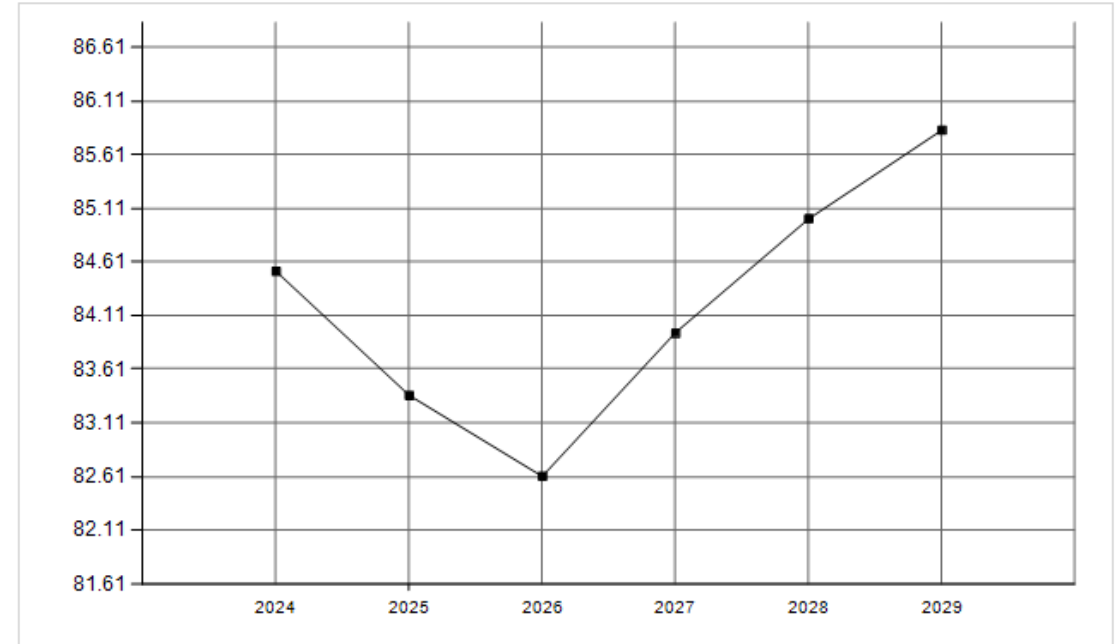
Return

# Predictive Analysis

- Predicts pavement deterioration
- Selects future projects
- Evaluates future pavement conditions

**Average NSI**  
5 Year Analysis for District 4

**Average NSI**  
5 Year Analysis for District 4



2024	\$0	\$0	84.52	0.00
2025	\$48,625,000	\$1,202	82.78	80.51
2026	\$48,625,000	\$3,920	81.06	62.60
2027	\$48,625,000	\$694	79.79	80.73
2028	\$48,625,000	\$520	79.38	105.20
2029	\$48,625,000	\$1,475	79.16	107.16

# M & R Generates 'Candidate List'

HWY NUM	BEGIN REF. POST	END REF. POST	LANE DIR	LENGTH	LOCATION	PRIORITY RANK	CB RANK	STRATEGY	CANDIDATE YEAR	EST. COST	NSI BEFORE STRATEGY	NSI AFTER STRATEGY	PROGRAM YEAR
2	337.49	343	B	5.51	CAIRO WEST	2.93	1.95	RS-AC	2029	\$3,096,620	71	100	
6	214.38	227.93	B	13.55	HASTINGS-HARVARD	2.87	1.98	RS-AC	2029	\$7,615,100	69.53	100	2024
10	84.3	101.85	B	17.56	HAZARD-LOUP CITY	2.91	2.01	RS-AC	2029	\$6,725,480	66.61	100	
11	45.73	53.24	B	7.51	COTESFIELD N & S	2.73	1.88	RS-AC	2029	\$3,212,403	68.44	100	
14	87.74	94.64	B	7.08	E JCT N92 NORTH	2.96	2.04	RS-AC	2029	\$3,028,470	68.75	100	
14	106.94	110.01	B	3.07	JCT N52 NORTH	2.78	1.92	RS-AC	2029	\$1,313,193	68.75	100	
22	0	12.1	B	11.89	JCT N70-N JCT N11	2.94	1.96	RS-AC	2029	\$4,553,870	62.13	100	2026
30	254.77	267.4	B	12.58	DAWSON/BULFFALO CO LINE EAST	3	2.07	RS-AC	2029	\$7,069,960	64.07	100	2028
30	276.88	285.71	B	8.86	KEARNEY-GIBBON	3.02	2.08	RS-AC	2029	\$4,979,320	63	100	2030
34	232.77	233.32	A	0.56	LOCUST ST E & W GRAND ISLAND	2.76	2.01	RS-AC	2029	\$314,720	66.25	100	
34	252.97	257.39	B	4.42	HAMPTON WEST	2.89	1.99	RS-AC	2029	\$2,484,040	63.41	100	
34	257.7	262.04	B	4.33	HAMPTON EAST	2.9	2	RS-AC	2029	\$2,433,460	63.88	100	
92	323.27	331.25	B	8.05	ASHTON WEST	2.93	2.02	RS-AC	2029	\$3,443,388	62.17	100	
136	103.25	116.25	B	13.01	N JCT N14-NUCKOLLS/THAYER CO LINE	2.78	1.92	RS-AC	2029	\$4,982,830	67.63	100	2028
136	136.28	140.4	B	4.09	GILEAD EAST	2.82	1.88	RS-AC	2029	\$1,749,498	68.39	100	2027
S01A	0	3.01	B	3.01	KENESAW SPUR	2.69	1.92	RS-AC	2029	\$1,152,830	69.75	100	2025
S01B	0	1.01	B	1.01	JUNIATA SPUR	2.79	2.06	RS-AC	2029	\$386,830	62.29	100	2025



Thanks !