

WISCONSIN DEPARTMENT OF TRANSPORTATION

Doing Business

WisPave Home | File | Design | LCCA | Exit



User: Todd Peschke

Pavement Design Details			
Project ID:	2788-01-00	Design Name:	Section #3
Highway:	Waukesha Bypass	Project Termini:	(STH 59 to IH 94)
		Designer:	Todd Peschke
		Design Date:	01/12/2015
		County:	Waukesha

HMA ALT#1 Layer Thickness Design

							Add Layer	Delete Layer
Layers	Existing Pavement	Uppermost Base Agg.	Other	Material Type	Unit Type	Layer Coefficient	Thickness in.	Structural Number
1	☐	☐	☐	HMA Pavement Type E-3 ☒	-----	0.44	5.5	2.42
2	☐	☒	☐	Base Aggregate Dense 1 1/4-inch ☒	-----	0.1	11.0	1.1

Note: You can add only 10 layers (including 'Other' layers)

No. of Layers: 2 No. of Other Layers: 0 Total SN: 3.52
Required SN: 4.18

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Caution: Total SN differs from the required SN by 10% or more. This is just an alert; user may proceed.

Note 1. If the structural design includes a granular subbase, then the layer can only contribute a maximum of 10% of the required SN (see FDM 14-10-5.8), regardless of the material's strength coefficient or the thickness of the layer.

2. If the project involves subgrade improvement, the associated quantity and cost of the material can be accounted for and included in the LCCA by adding the material as a layer and setting the respective layer coefficient to 0.0 so that it isn't given additional credit in the structural design.

Direct questions to the WisDOT Computer Help Desk 1-800-362-3050

Version A



Pavement Design Details			
Project ID:	2788-01-00	Design Name:	Section #3
Highway:	Waukesha Bypass	Project Termini:	(STH 59 to IH 94)
		Designer:	Todd Peschke
		Design Date:	01/12/2015
		County:	Waukesha

HMA ALT#2 Layer Thickness Design

									Add Layer	Delete Layer
Layers	Existing Pavement	Uppermost Base Agg.	Other	Material Type	Unit Type	Layer Coefficient	Thickness in.	Structural Number		
1	☐	☐	☐	HMA Pavement Type E-3 ☐	-----	0.44	8.25	3.63		
2	☐	☒	☐	Base Aggregate Dense 1 1/4-inch ☐	-----	0.1	6.0	0.6		

Note: You can add only 10 layers (including 'Other' layers)

No. of Layers: 2 No. of Other Layers: 0 Total SN: 4.23
Required SN: 4.18

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Note 1. If the structural design includes a granular subbase, then the layer can only contribute a maximum of 10% of the required SN (see FDM 14-10-5.8), regardless of the material's strength coefficient or the thickness of the layer.

2. If the project involves subgrade improvement, the associated quantity and cost of the material can be accounted for and included in the LCCA by adding the material as a layer and setting the respective layer coefficient to 0.0 so that it isn't given additional credit in the structural design.

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Version A



User: Todd Peschke

Pavement Design Details			
Project ID:	2788-01-00	Design Name:	Section #3
Highway:	Waukesha Bypass	Project Termini:	(STH 59 to IH 94)
		Designer:	Todd Peschke
		Design Date:	01/12/2015
		County:	Waukesha

LCCA

* Project Type: ☒ Urban ☐ Rural

* LCCA Length: Miles

No. of HMA Alternatives: 4

* Select HMA Alternatives to include in LCCA: ☒ HMA Alt# 1 ☒ HMA Alt# 2 ☐ HMA Alt# 3 ☐ HMA Alt# 4

No. of Concrete Alternatives: 1

* Select Concrete Alternatives to include in LCCA: ☒ Concrete Alt# 1

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Pavement Design Details

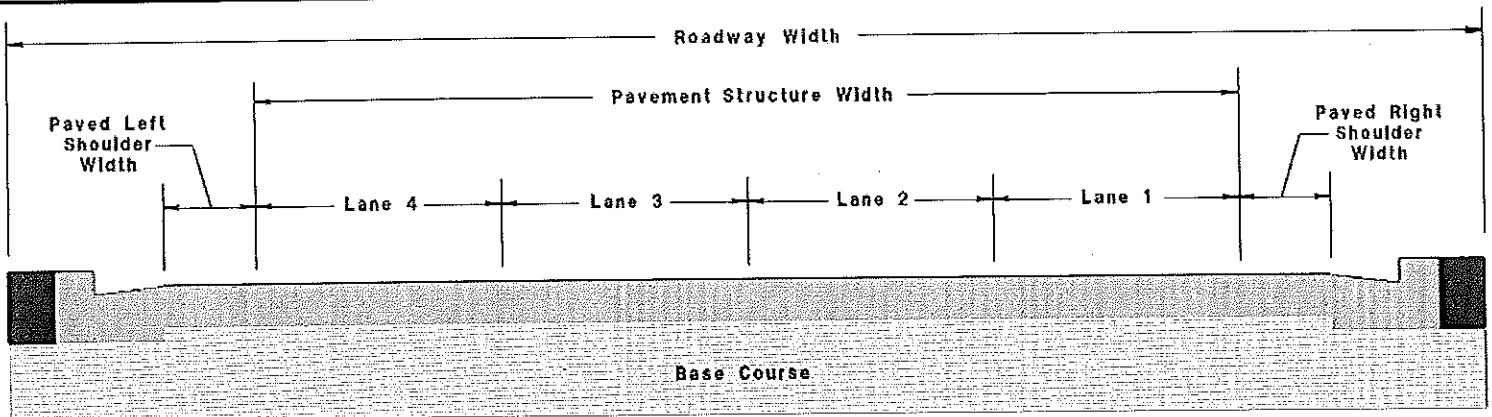
Project ID:	2788-01-00	Design Name:	Section #3	Design Date:	01/12/2015
Highway:	Waukesha Bypass	Project Termini:	(STH 59 to IH 94)	County:	Waukesha
		Designer:	Todd Peschke		

Concrete Alt#1 Urban Cross Section

*Roadway Width:	43	% of Project Length for new Curb & Gutter:	50
*Paved Left Shoulder Width:	4	*Paved Right Shoulder Width:	8
*Number of Travel Lanes :	2 ☒		
Lane 1 Width :	12.0	Lane 2 Width :	12.0
Number of Center/Shared Lanes :	0 ☒		
Pavement Structure Width:	24		

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**Concrete Alt#1 Quantities**

Layers	Bid Item No	Bid Item Desc	Units	Quantity
1	415.0080	Concrete Pavement, 8 inch	SY	14,080

Additional Initial Construction Quantities:

Bid Item No	Bid Item Desc	Units	Quantity
415.0080	Concrete Pavement, 8 inch (Shoulders)	SY	7,040
601.0409	Concrete Curb & Gutter 30-Inch Type A	LF	5,280

Other Quantities:

Other Description	Unit	Quantity
	Sel ☒	0.0
	Sel ☒	0.0
	Sel ☒	0.0

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Concrete Alternative - Maintenance & Rehabilitation Summary - Alt #1

Year	Type of Work	Activity	Service Life	Cost per Lane Mile	Calculate
0	Initial Construction		25		
8	Concrete Maintenance	1st Cycle		\$4000.0	
16	Concrete Maintenance	2nd Cycle		\$8000.0	
25	Concrete Rehabilitation	Concrete Repair & Grind	8		Calculate
28	Concrete Maintenance	1st Cycle		\$4000.0	
31	Concrete Maintenance	2nd Cycle		\$8000.0	
33	Concrete Rehabilitation	Concrete Repair & HMA Overlay	15		Calculate
38	Concrete Maintenance	1st Cycle		\$2000.0	
43	Concrete Maintenance	2nd Cycle		\$2500.0	
48	Concrete Rehabilitation	Mill, Concrete Repair & HMA	15		Calculate
53	Concrete Maintenance	1st Cycle		\$2000.0	
58	Concrete Maintenance	2nd Cycle		\$2500.0	
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Concrete Repair & Grind

% of Surface Area to be Repaired:

Grind Limits:

Item	Units	Quantity
Concrete Pavement Repair	SY	704
Drilled Dowel Bars	EACH	1,408
Sawing Concrete	LF	3,168
Concrete Pavement Continuous Diamond Grinding	SY	21,120
	v	0.0

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Concrete Repair & HMA Overlay

% of Surface Area to be Repaired: 5.0

Removing Concrete Surface Partial Depth Limits: None

Overlay Limits: Pavement Structure and Shoulders

Type	HMA Mix Type	Thickness	Asphaltic Material(PG)	% Asphalt in Mix	# of Tack Coat Layers	Tack Coat Coverage GAL/SY
Overlay	HMA Pavement Type E-3	4.0	Asphaltic Material PG58-28	5.5	2	0.025

Calculate

Item	Units	Quantity
Base Patching Concrete	SY	704
Drilled Dowel Bars	EACH	1,408
Sawing Concrete	LF	3,168
Removing Concrete Surface Partial Depth	SF	0
HMA Pavement Type E-3	TON	4,730.9
Asphaltic Material PG58-28	TON	260.2
Tack Coat(Pavement Structure)	GAL	1,056
Base Aggregate Dense 3/4-inch(Shoulder Gravel)	TON	0
		0.0

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Mill, Concrete Repair & HMA Overlay

Milling Limits: Milling Depth: (in)% of Surface Area to be Repaired: Removing Concrete Surface Partial Depth Limits: Overlay Limits:

Type	HMA Mix Type	Thickness	Asphaltic Material(PG)	% Asphalt in Mix	# of Tack Coat Layers	Tack Coat Coverage GAL/SY
Overlay	HMA Pavement Type E-3	4.0	Asphaltic Material PG58-28	5.5	2	0.025

Calculate

Item	Units	Quantity
Removing Asphaltic Surface Milling	SY	21,120
Base Patching Concrete	SY	704
Drilled Dowel Bars	EACH	1,408
Sawing Concrete	LF	3,168
Removing Concrete Surface Partial Depth	SF	0
HMA Pavement Type E-3	TON	4,730.9
Asphaltic Material PG58-28	TON	260.2
Tack Coat(Pavement Structure)	GAL	1,056
Base Aggregate Dense 3/4-inch(Shoulder Gravel)	TON	0
		0.0

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HMA Alt#1 Description

Layers	Existing Pavement	Material Type	Thickness in.	Unit Weight lbs/SY/in	%AC	PG	# of Tack Coat Layers	Tack Coat Coverage Gal/SY
1	N	HMA Pavement Type E-3	5.5	112.0	5.5	Asphaltic Material PG58-28 ☒	2	0.025
2	N	Base Aggregate Dense 1 1/4-inch	11.0	2.0	-----	-----	-----	-----

Shoulders

Material Type	Thickness in.	%AC	PG	# of Tack Coat Layers	Tack Coat Coverage Gal/SY
HMA Pavement Type E-3 ☒	5.5	5.5	Asphaltic Material PG58-28 ☒	2	0.025

Additional Construction Process

Add Construction Process

Delete Construction Process

Layers	Other	Process Description	% of LCCA Length Requiring Process	Existing Pavement Width ft.	% of Surface Area Requiring Repair	# of Stations
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HMA Alt#2 Description

Layers	Existing Pavement	Material Type	Thickness in.	Unit Weight lbs/SY/in	%AC	PG	# of Tack Coat Layers	Tack Coat Coverage Gal/SY
1	N	HMA Pavement Type E-3	8.25	112.0	5.5	Asphaltic Material PG58-28 ☐	2	0.025
2	N	Base Aggregate Dense 1 1/4-inch	6.0	2.0	-----	-----	-----	-----

Shoulders

Material Type	Thickness in.	%AC	PG	# of Tack Coat Layers	Tack Coat Coverage Gal/SY
HMA Pavement Type E-3 ☐	8.25	5.5	Asphaltic Material PG58-28 ☐	2	0.025

Additional Construction Process

Add Construction Process

Delete Construction Process

Layers	Other	Process Description	% of LCCA Length Requiring Process	Existing Pavement Width ft.	% of Surface Area Requiring Repair	# of Stations
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User: Todd Peschke

Pavement Design Details

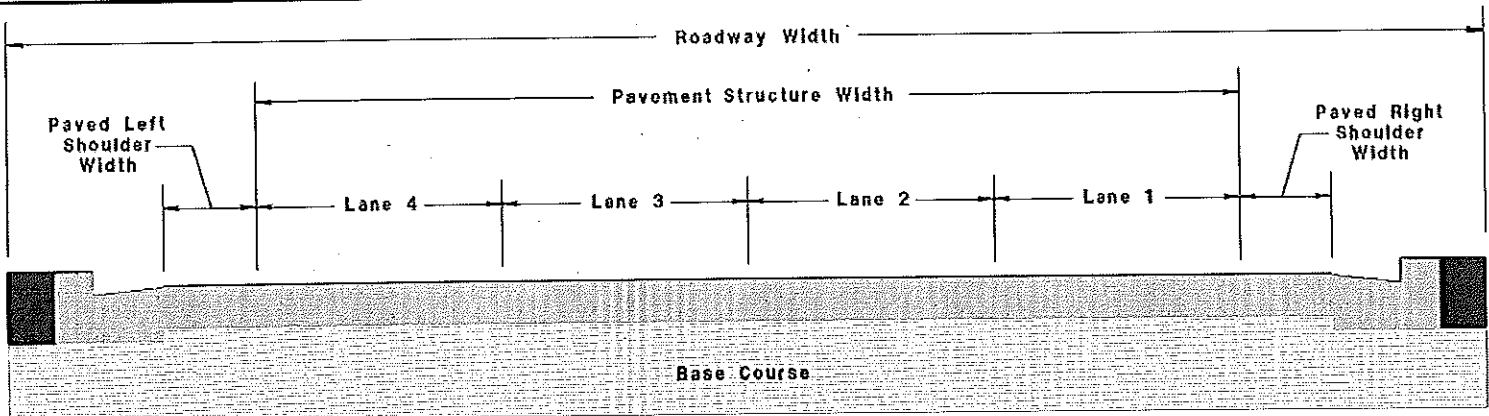
Project ID:	2788-01-00	Design Name:	Section #3	Design Date:	01/12/2015
Highway:	Waukesha Bypass	Project Termini:	(STH 59 to IH 94)	County:	Waukesha
		Designer:	Todd Peschke		

HMA Alt#1 Urban Cross Section

*Roadway Width:	43	* % of Project Length for new Curb & Gutter:	50
*Paved Left Shoulder Width:	4	*Paved Right Shoulder Width:	8
*Number of Travel Lanes :	2 v		
Lane 1 Width :	12.0	Lane 2 Width :	12.0
Number of Center/Shared Lanes :	0 v		
Pavement Structure Width:	24		

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User: Todd Peschke

Pavement Design Details

Project ID:	2788-01-00	Design Name:	Section #3	Design Date:	01/12/2015
Highway:	Waukesha Bypass	Project Termini:	(STH 59 to IH 94)	County:	Waukesha
		Designer:	Todd Peschke		

HMA Alt#2 Urban Cross Section

*Roadway Width: * % of Project Length for new Curb & Gutter:

*Paved Left Shoulder Width: *Paved Right Shoulder Width:

*Number of Travel Lanes :

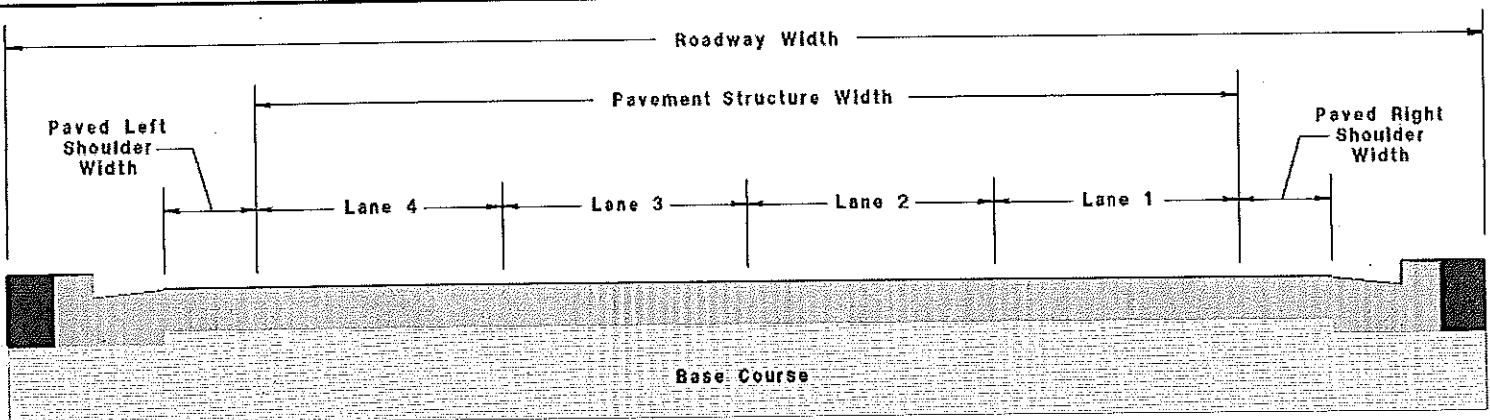
Lane 1 Width : Lane 2 Width :

Number of Center/Shared Lanes :

Pavement Structure Width:

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HMA Alt#1 Quantities

Layers	Bid Item No	Bid Item Desc	Units	Quantity
1	460.1103	HMA Pavement Type E-3	TON	4,336.6
	455.0105	Asphaltic Material PG58-28	TON	238.5
	455.0605	Tack Coat	GAL	704
2	305.0120	Base Aggregate Dense 1 1/4-inch	TON	16,003

Additional Initial Construction Quantities :

Bid Item No	Bid Item Desc	Units	Quantity
460.1103	HMA Pavement Type E-3 (Shoulders)	TON	2,168.3
455.0105	Asphaltic Material PG58-28 (Shoulders)	TON	119.3
455.0605	Tack Coat (Shoulders)	GAL	352
601.0411	Concrete Curb & Gutter 30-Inch Type D	LF	5,280

Other Quantities :

Other Description	Unit	Quantity
	Sele ☐	0.0
	Sele ☐	0.0
	Sele ☐	0.0

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HMA Alt#2 Quantities

Layers	Bid Item No	Bid Item Desc	Units	Quantity
1	460.1103	HMA Pavement Type E-3	TON	6,505
	455.0105	Asphaltic Material PG58-28	TON	357.8
	455.0605	Tack Coat	GAL	704
2	305.0120	Base Aggregate Dense 1 1/4-inch	TON	8,922.2

Additional Initial Construction Quantities :

Bid Item No	Bid Item Desc	Units	Quantity
460.1103	HMA Pavement Type E-3 (Shoulders)	TON	3,252.5
455.0105	Asphaltic Material PG58-28 (Shoulders)	TON	178.9
455.0605	Tack Coat (Shoulders)	GAL	352
601.0411	Concrete Curb & Gutter 30-inch Type D	LF	5,280

Other Quantities :

Other Description	Unit	Quantity
	Sele ☐	0.0
	Sele ☐	0.0
	Sele ☐	0.0

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HMA Alternative - Maintenance & Rehabilitation Summary - Alt #1

Year	Type of Work	Activity	Service Life	Cost per Lane Mile	Calculate
0	Initial Construction - ☐		18		
6	HMA Maintenance	1st Cycle		\$2000.0	
12	HMA Maintenance	2nd Cycle		\$2500.0	
18	HMA Rehabilitation	Mill & HMA Overlay ☐	12		Calculate
22	HMA Maintenance	1st Cycle		\$2000.0	
26	HMA Maintenance	2nd Cycle		\$2500.0	
30	HMA Rehabilitation	Mill & HMA Overlay ☐	12		Calculate
34	HMA Maintenance	1st Cycle		\$2000.0	
38	HMA Maintenance	2nd Cycle		\$2500.0	
42	HMA Rehabilitation	Mill & HMA Overlay ☐	12		Calculate
46	HMA Maintenance	1st Cycle		\$2000.0	
50	HMA Maintenance	2nd Cycle		\$2500.0	

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Mill & HMA Overlay

Milling Limits: Milling Depth: (in)Overlay Limits:

Type	HMA Mix Type	Thickness	Asphaltic Material(PG)	% Asphalt in Mix	# of Tack Coat Layers	Tack Coat Coverage GAL/SY
Overlay	HMA Pavement Type E-3	4.0	Asphaltic Material PG58-28	5.5	2	0.025

Item	Units	Quantity
Removing Asphaltic Surface Milling	SY	21,120
HMA Pavement Type E-3	TON	4,730.9
Asphaltic Material PG58-28	TON	260.2
Tack Coat(Pavement Structure)	GAL	1,056
Base Aggregate Dense 3/4-inch(Shoulder Gravel)	TON	0
	0.0	0.0

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User: Todd Peschke

Mill & HMA Overlay

Milling Limits: Milling Depth: (in)Overlay Limits:

Type	HMA Mix Type	Thickness	Asphaltic Material(PG)	% Asphalt in Mix	# of Tack Coat Layers	Tack Coat Coverage GAL/SY
Overlay	HMA Pavement Type E-3	4.0	Asphaltic Material PG58-28	5.5	2	0.025

Item	Units	Quantity
Removing Asphaltic Surface Milling	SY	21,120
HMA Pavement Type E-3	TON	4,730.9
Asphaltic Material PG58-28	TON	260.2
Tack Coat(Pavement Structure)	GAL	1,056
Base Aggregate Dense 3/4-inch(Shoulder Gravel)	TON	0
	0.0	

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Version A



Mill & HMA Overlay

Milling Limits: Milling Depth: (in)Overlay Limits:

Type	HMA Mix Type	Thickness	Asphaltic Material(PG)	% Asphalt in Mix	# of Tack Coat Layers	Tack Coat Coverage GAL/SY
Overlay	HMA Pavement Type E-3	4.0	Asphaltic Material PG58-28	5.5	2	0.025

Calculate

Item	Units	Quantity
Removing Asphaltic Surface Milling	SY	21,120
HMA Pavement Type E-3	TON	4,730.9
Asphaltic Material PG58-28	TON	260.2
Tack Coat(Pavement Structure)	GAL	1,056
Base Aggregate Dense 3/4-inch(Shoulder Gravel)	TON	0
	0.0	

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HMA Alternative - Maintenance & Rehabilitation Summary - Alt #2

						Add	Delete
Year	Type of Work	Activity	Service Life	Cost per Lane Mile	Calculate		
0	Initial Construction - ☐		18				
6	HMA Maintenance	1st Cycle		\$2000.0			
12	HMA Maintenance	2nd Cycle		\$2500.0			
18	HMA Rehabilitation	Mill & HMA Overlay ☐	12		Calculate		
22	HMA Maintenance	1st Cycle		\$2000.0			
26	HMA Maintenance	2nd Cycle		\$2500.0			
30	HMA Rehabilitation	Mill & HMA Overlay ☐	12		Calculate		
34	HMA Maintenance	1st Cycle		\$2000.0			
38	HMA Maintenance	2nd Cycle		\$2500.0			
42	HMA Rehabilitation	Mill & HMA Overlay ☐	12		Calculate		
46	HMA Maintenance	1st Cycle		\$2000.0			
50	HMA Maintenance	2nd Cycle		\$2500.0			
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Mill & HMA Overlay

Milling Limits: Milling Depth: (in)Overlay Limits:

Type	HMA Mix Type	Thickness	Asphaltic Material(PG)	% Asphalt in Mix	# of Tack Coat Layers	Tack Coat Coverage GAL/SY
Overlay	HMA Pavement Type E-3	4.0	Asphaltic Material PG58-28	5.5	2	0.025

Calculate

Item	Units	Quantity
Removing Asphaltic Surface Milling	SY	21,120
HMA Pavement Type E-3	TON	4,730.9
Asphaltic Material PG58-28	TON	260.2
Tack Coat(Pavement Structure)	GAL	1,056
Base Aggregate Dense 3/4-inch(Shoulder Gravel)	TON	0
	0.0	

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Mill & HMA Overlay

Milling Limits: Milling Depth: (in)Overlay Limits:

Type	HMA Mix Type	Thickness	Asphaltic Material(PG)	% Asphalt in Mix	# of Tack Coat Layers	Tack Coat Coverage GAL/SY
Overlay	HMA Pavement Type E-3	4.0	Asphaltic Material PG58-28	5.5	2	0.025

Item	Units	Quantity
Removing Asphaltic Surface Milling	SY	21,120
HMA Pavement Type E-3	TON	4,730.9
Asphaltic Material PG58-28	TON	260.2
Tack Coat(Pavement Structure)	GAL	1,056
Base Aggregate Dense 3/4-inch(Shoulder Gravel)	TON	0
	0.0	

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Mill & HMA Overlay

Milling Limits: Milling Depth: (in)Overlay Limits:

Type	HMA Mix Type	Thickness	Asphaltic Material(PG)	% Asphalt in Mix	# of Tack Coat Layers	Tack Coat Coverage GAL/SY
Overlay	HMA Pavement Type E-3	4.0	Asphaltic Material PG58-28	5.5	2	0.025

Calculate

Item	Units	Quantity
Removing Asphaltic Surface Milling	SY	
HMA Pavement Type E-3	TON	
Asphaltic Material PG58-28	TON	
Tack Coat(Pavement Structure)	GAL	
Base Aggregate Dense 3/4-inch(Shoulder Gravel)	TON	
	0.0	

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HMA Bid Items

Bid Item Desc	Bid Item No	Units	Unit Cost
Asphaltic Material PG58-28	455.0105	TON	105.17
Tack Coat	455.0605	GAL	3.18
HMA Pavement Type E-3	460.1103	TON	50.36
HMA Pavement Type E-10	460.1110	TON	54.92
Concrete Curb & Gutter 30-inch Type D	601.0411	LF	10.92

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Concrete Bid Items

Bid Item Desc	Bid Item No	Units	Unit Cost
Base Patching Concrete	390.0303	SY	48.45
Concrete Pavement, 8 inch	415.0080	SY	32.7
Drilled Dowel Bars	416.0620	EACH	11.53
Concrete Pavement Repair	416.1710	SY	77.33
Concrete Pavement Continuous Diamond Grinding	420.1000	SY	4.88
Concrete Curb & Gutter 30-inch Type A	601.0409	LF	12.81
Sawing Concrete	690.0250	LF	2.33

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Base Course Bid Items

Bid Item Desc	Bid Item No	Units	Unit Cost
Base Aggregate Dense 1 1/4-inch	305.0120	TON	10.61

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Remove Pavement Bid Items

Bid Item Desc	Bid Item No	Units	Unit Cost
Removing Asphaltic Surface Milling	204.0120	SY	2.03

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Costs For All Alternatives

Concrete Alt#1

Initial Construction Costs

Bid Item Desc	Bid Item No	Units	Costs
Concrete Pavement, 8 inch	415.0080	SY	\$460,416.00
Concrete Pavement, 8 inch (Shoulders)	415.0080	SY	\$230,208.00
Concrete Curb & Gutter 30-inch Type A	601.0409	LF	\$67,636.80
Total:			\$758,260.00

Rehab#1

Bid Item Desc	Bid Item No	Units	Costs
Drilled Dowel Bars	416.0620	EACH	\$16,234.24
Concrete Pavement Continuous Diamond Grinding	420.1000	SY	\$103,065.60
Concrete Pavement Repair	416.1710	SY	\$54,440.32
Sawing Concrete	690.0250	LF	\$7,381.44
Total:			\$181,121.00

Rehab#2

Bid Item Desc	Bid Item No	Units	Costs
Asphaltic Material PG58-28	455.0105	TON	\$27,365.23
Tack Coat	455.0605	GAL	\$3,358.08
HMA Pavement Type E-3	460.1103	TON	\$238,248.12
Base Patching Concrete	390.0303	SY	\$34,108.80
EXHIBIT #253			

Drilled Dowel Bars	416.0620	EACH	\$16,234.24
Sawing Concrete	690.0250	LF	\$7,381.44
		Total:	\$326,695.00

Rehab#3

Bid Item Desc	Bid Item No	Units	Costs
Asphaltic Material PG58-28	455.0105	TON	\$27,365.23
Tack Coat	455.0605	GAL	\$3,358.08
HMA Pavement Type E-3	460.1103	TON	\$238,248.12
Base Patching Concrete	390.0303	SY	\$34,108.80
Drilled Dowel Bars	416.0620	EACH	\$16,234.24
Sawing Concrete	690.0250	LF	\$7,381.44
Removing Asphaltic Surface Milling	204.0120	SY	\$42,873.60
		Total:	\$369,569.00

Maintenance Costs

Maintenance Cycle	Cost per Lane Mile	Total Cycle Cost
1	\$4,000.00	\$8,000.00
2	\$8,000.00	\$16,000.00
3	\$4,000.00	\$8,000.00
4	\$8,000.00	\$16,000.00
5	\$2,000.00	\$4,000.00
6	\$2,500.00	\$5,000.00
7	\$2,000.00	\$4,000.00
8	\$2,500.00	\$5,000.00
Total:		\$66,000.00

HMA Alt#1

Initial Construction Costs

Bid Item Desc	Bid Item No	Units	Costs
Asphaltic Material	455.0105	TON	\$25,083.05
		EXHIBIT #254	

PG58-28			
Tack Coat	455.0605	GAL	\$2,238.72
HMA Pavement Type E-3	460.1103	TON	\$218,391.18
Base Aggregate Dense 1 1/4- inch	305.0120	TON	\$169,791.83
Asphaltic Material PG58-28 (Shoulders)	455.0105	TON	\$12,546.78
Tack Coat (Shoulders)	455.0605	GAL	\$1,119.36
HMA Pavement Type E-3 (Shoulders)	460.1103	TON	\$109,195.59
Concrete Curb & Gutter 30- inch Type D	601.0411	LF	\$57,657.60
		Total:	\$596,024.00

Rehab#1

Bid Item Desc	Bid Item No	Units	Costs
Asphaltic Material PG58-28	455.0105	TON	\$27,365.23
Tack Coat	455.0605	GAL	\$3,358.08
HMA Pavement Type E-3	460.1103	TON	\$238,248.12
Removing Asphaltic Surface Milling	204.0120	SY	\$42,873.60
		Total:	\$311,845.00

Rehab#2

Bid Item Desc	Bid Item No	Units	Costs
Asphaltic Material PG58-28	455.0105	TON	\$27,365.23
Tack Coat	455.0605	GAL	\$3,358.08
HMA Pavement Type E-3	460.1103	TON	\$238,248.12
Removing Asphaltic	204.0120	SY	\$42,873.60

EXHIBIT #255

Surface Milling			
		Total:	\$311,845.00

Rehab#3

Bid Item Desc	Bid Item No	Units	Costs
Asphaltic Material PG58-28	455.0105	TON	\$27,365.23
Tack Coat	455.0605	GAL	\$3,358.08
HMA Pavement Type E-3	460.1103	TON	\$238,248.12
Removing Asphaltic Surface Milling	204.0120	SY	\$42,873.60
		Total:	\$311,845.00

Maintenance Costs

Maintenance Cycle	Cost per Lane Mile	Total Cycle Cost
1	\$2,000.00	\$4,000.00
2	\$2,500.00	\$5,000.00
3	\$2,000.00	\$4,000.00
4	\$2,500.00	\$5,000.00
5	\$2,000.00	\$4,000.00
6	\$2,500.00	\$5,000.00
7	\$2,000.00	\$4,000.00
8	\$2,500.00	\$5,000.00
Total:		\$36,000.00

HMA Alt#2

Initial Construction Costs

Bid Item Desc	Bid Item No	Units	Costs
Asphaltic Material PG58-28	455.0105	TON	\$37,629.83
Tack Coat	455.0605	GAL	\$2,238.72
HMA Pavement Type E-3	460.1103	TON	\$327,591.80
Base Aggregate Dense 1 1/4-inch	305.0120	TON	\$94,664.54
Asphaltic	EXHIBIT #256		

Material PG58-28 (Shoulders)	455.0105	TON	\$18,814.91
Tack Coat (Shoulders)	455.0605	GAL	\$1,119.36
HMA Pavement Type E-3 (Shoulders)	460.1103	TON	\$163,795.90
Concrete Curb & Gutter 30- inch Type D	601.0411	LF	\$57,657.60
Total:			\$703,512.00

Rehab#1

Bid Item Desc	Bid Item No	Units	Costs
Asphaltic Material PG58-28	455.0105	TON	\$27,365.23
Tack Coat	455.0605	GAL	\$3,358.08
HMA Pavement Type E-3	460.1103	TON	\$238,248.12
Removing Asphaltic Surface Milling	204.0120	SY	\$42,873.60
Total:			\$311,845.00

Rehab#2

Bid Item Desc	Bid Item No	Units	Costs
Asphaltic Material PG58-28	455.0105	TON	\$27,365.23
Tack Coat	455.0605	GAL	\$3,358.08
HMA Pavement Type E-3	460.1103	TON	\$238,248.12
Removing Asphaltic Surface Milling	204.0120	SY	\$42,873.60
Total:			\$311,845.00

Rehab#3

Bid Item Desc	Bid Item No	Units	Costs
Asphaltic Material PG58-28	455.0105	TON	\$27,365.23
Tack Coat	455.0605	GAL	\$3,358.08

EXHIBIT #257

HMA Pavement Type E-3	460.1103	TON	\$238,248.12
Removing Asphaltic Surface Milling	204.0120	SY	\$42,873.60
Total:			\$311,845.00

Maintenance Costs

Maintenance Cycle	Cost per Lane Mile	Total Cycle Cost
1	\$2,000.00	\$4,000.00
2	\$2,500.00	\$5,000.00
3	\$2,000.00	\$4,000.00
4	\$2,500.00	\$5,000.00
5	\$2,000.00	\$4,000.00
6	\$2,500.00	\$5,000.00
7	\$2,000.00	\$4,000.00
8	\$2,500.00	\$5,000.00
Total:		\$36,000.00

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Project ID: 2788-01-00

Direct questions to the [WisDOT Computer Help Desk](#) 1-800-362-3050

Version A



LIFE CYCLE COST ANALYSIS RESULTS

Current Year: 2015

Project Length: 1.0 Miles

Construction Year: 2017

Analysis Basis: LCCA Length

Analysis Period: 50 yrs

Discount Rate(%): 5

Present Worth Costs

	Concrete Alt#1	HMA Alt#1	HMA Alt#2
Initial Construction Costs	\$687,764.90	\$540,611.44	\$638,106.72
Maintenance Costs	\$18,274.27	\$9,929.35	\$9,929.35
Rehabilitation Costs	\$139,967.75	\$219,419.46	\$219,419.46
Rehabilitation Salvage Value	(\$25,334.05)	(\$8,221.93)	(\$8,221.93)
Total Facility Costs	\$820,672.86	\$761,738.31	\$859,233.59
	+ 7.74%	+ 0.00%	+ 12.80%

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Project ID: 2788-01-00

Direct questions to the [WisDOT Computer Help Desk](#) 1-800-362-3050

Version A



User: Todd Peschke

Edit Pavement Design General Information

* Project ID:	2788-01-00	* Designer's Name:	Todd Peschke
* Design Name:	Section #4	* Design Date:	01/12/2015
* Roadway Name:	Waukesha Bypass	* Type:	State v
* Project Termini:	(STH 59 to IH 94)	* Status:	Draft v
* Highway Name:	Waukesha Bypass		
* Region:	SE v		
* County:	Waukesha v Select v		
Comments:	Section #4: USH 18 - Sta 39+00 to Sta 66+00		

Last Updated date and Time: 01/13/2015 1:02:38 PM

Direct questions to the [WisDOT Computer Help Desk](#) 1-800-362-3050

Version A



Pavement Design Details			
Project ID:	2788-01-00	Design Name:	Section #4
Highway:	Waukesha Bypass	Project Termini:	(STH 59 to IH 94)
		Designer:	Todd Peschke
		Design Date:	01/12/2015
		County:	Waukesha

Soil Parameters

*Design Group Index (DGI):	12	▼
*Subgrade Improvement:	☒ Yes ☐ No	
*Subgrade Soil Support Value(SSV):	4.7	▼
*Subgrade Modulus of Subgrade Reaction(k):	375	▼
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Direct questions to the [WisDOT Computer Help Desk](#) 1-800-362-3050.

Version A



User: Todd Peschke

Pavement Design Details

Project ID:	2788-01-00	Design Name:	Section #4	Design Date:	01/12/2015
Highway:	Waukesha Bypass	Project Termini:	(STH 59 to IH 94)	County:	Waukesha
		Designer:	Todd Peschke		

Traffic Parameters

*Construction Year: 2017

*Design Year: 2037

*Construction Year AADT: 9900

*Design Year AADT: 15600

*Directional Factor(DF): 0.5

*Lane Distribution Factor(LDF): 1.0

Truck Classification	% of AADT
2D	2.2
3SU	0.7
2S-1,-2	4.6
3S-2	0.8
2-S1-2	0.0
Total % Truck Traffic	8.3

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Version A

WISCONSIN DEPARTMENT OF TRANSPORTATION

Doing Business

WisPave Home | File | Design | LCCA | Exit



User: Todd Peschke

Pavement Design Details					
Project ID:	2788-01-00	Design Name:	Section #4	Design Date:	01/12/2015
Highway:	Waukesha Bypass	Project Termini:	(STH 59 to IH 94)	County:	Waukesha
		Designer:	Todd Peschke		

Concrete Pavement Design

Truck Type	% of AADT	DLT	# of Trucks	ESAL Load Factor	ESALs
2D	2.2	6,375	140	0.3	42
3SU	0.7	6,375	45	1.2	54
2S-1,-2	4.6	6,375	293	0.6	176
3S-2	0.8	6,375	51	1.6	82
2-S1-2	0.0	6,375	0	2.1	0

Design Lane Daily ESALs: 353
 Design Lane Total Life ESALs: 2,578,177 Rounded to: 2,600,000

Soil Parameters

Subgrade Improvement Flag selected: Yes

k : 375

Design Calculation

Calculated Pavement Thickness:

7.5

Pavement Thickness(ALT# 1):

8.0 ☒

Pavement Thickness(ALT# 2):

0.0 ☒

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Version A



User: Todd Peschke

Pavement Design Details

Project ID:	2788-01-00	Design Name:	Section #4	Design Date:	01/12/2015
Highway:	Waukesha Bypass	Project Termini:	(STH 59 to IH 94)	County:	Waukesha
		Designer:	Todd Peschke		

HMA Pavement Design

Truck Type	% of AADT	DLT	# of Trucks	ESAL Load Factor	ESALs
2D	2.2	6,375	140	0.3	42
3SU	0.7	6,375	45	0.8	36
2S-1,-2	4.6	6,375	293	0.5	147
3S-2	0.8	6,375	51	0.9	46
2-S1-2	0.0	6,375	0	2.0	0

Design Lane Daily ESALs: 271

Design Lane Total Life ESALs: 1,978,300

Rounded to: 2,000,000

Soil Parameters

DGI : 12

Subgrade Improvement Flag selected: Yes

SSV : 4.7

Design Calculation

Calculated Required SN:

4.16

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Version A



Pavement Design Details			
Project ID:	2788-01-00	Design Name:	Section #4
Highway:	Waukesha Bypass	Project Termini:	(STH 59 to IH 94)
		Designer:	Todd Peschke
		Design Date:	01/12/2015
		County:	Waukesha

HMA ALT#1 Layer Thickness Design

									Add Layer	Delete Layer
Layers	Existing Pavement	Uppermost Base Agg.	Other	Material Type	Unit Type	Layer Coefficient	Thickness in.	Structural Number		
1	☐	☐	☐	HMA Pavement Type E-3 ☐	-----	0.44	5.5	2.42		
2	☐	☒	☐	Base Aggregate Dense 1 1/4-inch ☐	-----	0.1	11.0	1.1		

Note: You can add only 10 layers (including 'Other' layers)

No. of Layers: 2 No. of Other Layers: 0 Total SN: 3.52
Required SN: 4.16

Back: Next Alternative LCCA

Caution: Total SN differs from the required SN by 10% or more. This is just an alert; user may proceed.

Note 1. If the structural design includes a granular subbase, then the layer can only contribute a maximum of 10% of the required SN (see FDM 14-10-5.8), regardless of the material's strength coefficient or the thickness of the layer.

2. If the project involves subgrade improvement, the associated quantity and cost of the material can be accounted for and included in the LCCA by adding the material as a layer and setting the respective layer coefficient to 0.0 so that it isn't given additional credit in the structural design.

Direct questions to the [WisDOT Computer Help Desk](http://wisdot.com/helpdesk) 1-800-362-3050

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Pavement Design Details			
Project ID:	2788-01-00	Design Name:	Section #4
Highway:	Waukesha Bypass	Project Termini:	(STH 59 to IH 94)
		Designer:	Todd Peschke
		Design Date:	01/12/2015
		County:	Waukesha

HMA ALT#2 Layer Thickness Design

								Add Layer	Delete Layer
Layers	Existing Pavement	Uppermost Base Agg.	Other	Material Type	Unit Type	Layer Coefficient	Thickness in.	Structural Number	
1	☐	☐	☐	HMA Pavement Type E-3	-----	0.44	8.25	3.63	
2	☐	☒	☐	Base Aggregate Dense 1 1/4-inch	-----	0.1	6.0	0.6	

Note: You can add only 10 layers (including 'Other' layers)

No. of Layers: 2 No. of Other Layers: 0 Total SN: 4.23
Required SN: 4.16

Back Next Alternative LCCA

Note 1. If the structural design includes a granular subbase, then the layer can only contribute a maximum of 10% of the required SN (see FDM 14-10-5.8), regardless of the material's strength coefficient or the thickness of the layer.

2. If the project involves subgrade improvement, the associated quantity and cost of the material can be accounted for and included in the LCCA by adding the material as a layer and setting the respective layer coefficient to 0.0 so that it isn't given additional credit in the structural design.

Direct questions to the WisDOT Computer Help Desk 1-800-362-3050

Version A



User: Todd Peschke

Pavement Design Details

Project ID:	2788-01-00	Design Name:	Section #4	Design Date:	01/12/2015
Highway:	Waukesha Bypass	Project Termini:	(STH 59 to IH 94)	County:	Waukesha
		Designer:	Todd Peschke		

LCCA

* Project Type: ☒ Urban ☐ Rural

* LCCA Length: Miles

No. of HMA Alternatives: 4

* Select HMA Alternatives to include in LCCA: ☒ HMA Alt# 1 ☒ HMA Alt# 2 ☐ HMA Alt# 3 ☐ HMA Alt# 4

No. of Concrete Alternatives: 1

* Select Concrete Alternatives to include in LCCA: ☒ Concrete Alt# 1

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Version A



Pavement Design Details

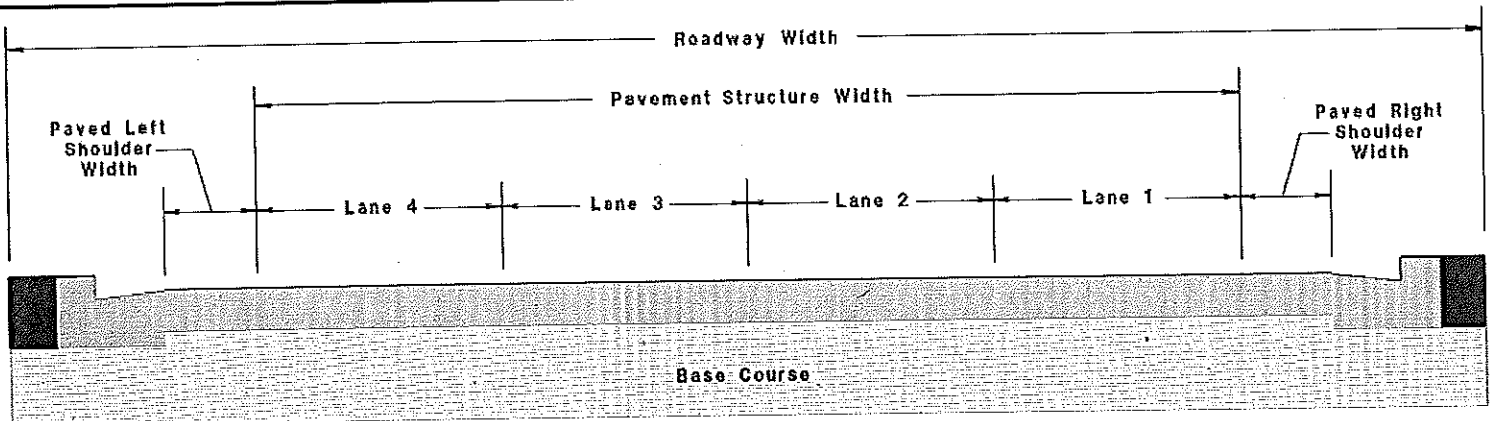
Project ID:	2788-01-00	Design Name:	Section #4	Design Date:	01/12/2015
Highway:	Waukesha Bypass	Project Termini:	(STH 59 to IH 94)	County:	Waukesha
		Designer:	Todd Peschke		

Concrete Alt#1 Urban Cross Section

*Roadway Width:	31	*% of Project Length for new Curb & Gutter:	50
*Paved Left Shoulder Width:	4	*Paved Right Shoulder Width:	8
*Number of Travel Lanes :	1 v		
Lane 1 Width :	12.0		
Number of Center/Shared Lanes :	0 v		
Pavement Structure Width:	12		

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**Concrete Alt#1 Quantities**

Layers	Bid Item No	Bid Item Desc	Units	Quantity
1	415.0080	Concrete Pavement, 8 inch	SY	7,040

Additional Initial Construction Quantities:

Bid Item No	Bid Item Desc	Units	Quantity
415.0080	Concrete Pavement, 8 inch (Shoulders)	SY	7,040
601.0409	Concrete Curb & Gutter 30-Inch Type A	LF	5,280

Other Quantities:

Other Description	Unit	Quantity
	Sel ☐	0.0
	Sel ☐	0.0
	Sel ☐	0.0

Project ID: 2788-01-00

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Concrete Alternative - Maintenance & Rehabilitation Summary - Alt #1

						Add	Delete
Year	Type of Work	Activity	Service Life	Cost per Lane Mile	Calculate		
0	Initial Construction		25				
8	Concrete Maintenance	1st Cycle		\$4000.0			
16	Concrete Maintenance	2nd Cycle		\$8000.0			
25	Concrete Rehabilitation	Concrete Repair & Grind	8		Calculate		
28	Concrete Maintenance	1st Cycle		\$4000.0			
31	Concrete Maintenance	2nd Cycle		\$8000.0			
33	Concrete Rehabilitation	Concrete Repair & HMA Overlay	15		Calculate		
38	Concrete Maintenance	1st Cycle		\$2000.0			
43	Concrete Maintenance	2nd Cycle		\$2500.0			
48	Concrete Rehabilitation	Mill, Concrete Repair & HMA	15		Calculate		
53	Concrete Maintenance	1st Cycle		\$2000.0			
58	Concrete Maintenance	2nd Cycle		\$2500.0			
63							
Back						Next Alternative	

Project ID: 2788-01-00

Direct questions to the WisDOT Computer Help Desk 1-800-362-3050

Version A



User: Todd Peschke

Concrete Repair & Grind

% of Surface Area to be Repaired: Grind Limits: ☒

Item	Units	Quantity
Concrete Pavement Repair	SY	352
Drilled Dowel Bars	EACH	704
Sawing Concrete	LF	1,584
Concrete Pavement Continuous Diamond Grinding	SY	14,080
	☐ ☒	0.0

Project ID: 2788-01-00

Direct questions to the [WisDOT Computer Help Desk](#) 1-800-362-3050

Version A



User: Todd Peschke

Concrete Repair & HMA Overlay

% of Surface Area to be Repaired: Removing Concrete Surface Partial Depth Limits: Overlay Limits:

Type	HMA Mix Type	Thickness	Asphaltic Material(PG)	% Asphalt in Mix	# of Tack Coat Layers	Tack Coat Coverage GAL/SY
Overlay	HMA Pavement Type E-3 v	4.0	Asphaltic Material PG58-28 v	5.5	2	0.025

Item	Units	Quantity
Base Patching Concrete	SY	352
Drilled Dowel Bars	EACH	704
Sawing Concrete	LF	1,584
Removing Concrete Surface Partial Depth	SF	0
HMA Pavement Type E-3	TON	3,153.9
Asphaltic Material PG58-28	TON	173.5
Tack Coat(Pavement Structure)	GAL	704
Base Aggregate Dense 3/4-inch(Shoulder Gravel)	TON	0
	v	0.0

Project ID: 2788-01-00

Direct questions to the [WisDOT Computer Help Desk](#) 1-800-362-3050

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Mill, Concrete Repair & HMA Overlay

Milling Limits: Milling Depth: (in)% of Surface Area to be Repaired: Removing Concrete Surface Partial Depth Limits: Overlay Limits:

Type	HMA Mix Type	Thickness	Asphaltic Material(PG)	% Asphalt in Mix	# of Tack Coat Layers	Tack Coat Coverage GAL/SY
Overlay	HMA Pavement Type E-3	4.0	Asphaltic Material PG58-28	5.5	2	0.025

Calculate

Item	Units	Quantity
Removing Asphaltic Surface Milling	SY	14,080
Base Patching Concrete	SY	352
Drilled Dowel Bars	EACH	704
Sawing Concrete	LF	1,584
Removing Concrete Surface Partial Depth	SF	0
HMA Pavement Type E-3	TON	3,153.9
Asphaltic Material PG58-28	TON	173.5
Tack Coat(Pavement Structure)	GAL	704
Base Aggregate Dense 3/4-inch(Shoulder Gravel)	TON	0
	☒	0.0

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Save

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HMA Alt#1 Description

Layers	Existing Pavement	Material Type	Thickness in.	Unit Weight lbs/SY/in	%AC	PG	# of Tack Coat Layers	Tack Coat Coverage Gal/SY
1	N	HMA Pavement Type E-3	5.5	112.0	5.5	Asphaltic Material PG64-28 ☒	2	0.025
2	N	Base Aggregate Dense 1 1/4-inch	11.0	2.0	-----	-----	-----	-----

Shoulders

Material Type	Thickness in.	%AC	PG	# of Tack Coat Layers	Tack Coat Coverage Gal/SY
HMA Pavement Type E-3 ☒	5.5	5.5	Asphaltic Material PG64-28 ☒	2	0.025

Additional Construction Process

Add Construction Process

Delete Construction Process

Layers	Other	Process Description	% of LCCA Length Requiring Process	Existing Pavement Width ft.	% of Surface Area Requiring Repair	# of Stations
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HMA Alt#2 Description

Layers	Existing Pavement	Material Type	Thickness in.	Unit Weight lbs/SY/in	%AC	PG	# of Tack Coat Layers	Tack Coat Coverage Gal/SY
1	N	HMA Pavement Type E-3	8.25	112.0	5.5	Asphaltic Material PG64-28 ☒	2	0.025
2	N	Base Aggregate Dense 1 1/4-inch	6.0	2.0	-----	-----	-----	-----

Shoulders

Material Type	Thickness in.	%AC	PG	# of Tack Coat Layers	Tack Coat Coverage Gal/SY
HMA Pavement Type E-3 ☒	8.25	5.5	Asphaltic Material PG64-28 ☒	2	0.025

Additional Construction Process

Add Construction Process

Delete Construction Process

Layers	Other	Process Description	% of LCCA Length Requiring Process	Existing Pavement Width ft.	% of Surface Area Requiring Repair	# of Stations
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Project ID: 2788-01-00

Direct questions to the [WisDOT Computer Help Desk](#) 1-800-362-3050

Version A

WISCONSIN DEPARTMENT OF TRANSPORTATION

Using Business

WisPave Home | File | Design | LCCA | Exit



User: Todd Peschke

Pavement Design Details

Project ID:	2788-01-00	Design Name:	Section #4	Design Date:	01/12/2015
Highway:	Waukesha Bypass	Project Termini:	(STH 59 to IH 94)	County:	Waukesha
		Designer:	Todd Peschke		

HMA Alt#1 Urban Cross Section

*Roadway Width: * % of Project Length for new Curb & Gutter:

*Paved Left Shoulder Width: *Paved Right Shoulder Width:

*Number of Travel Lanes :

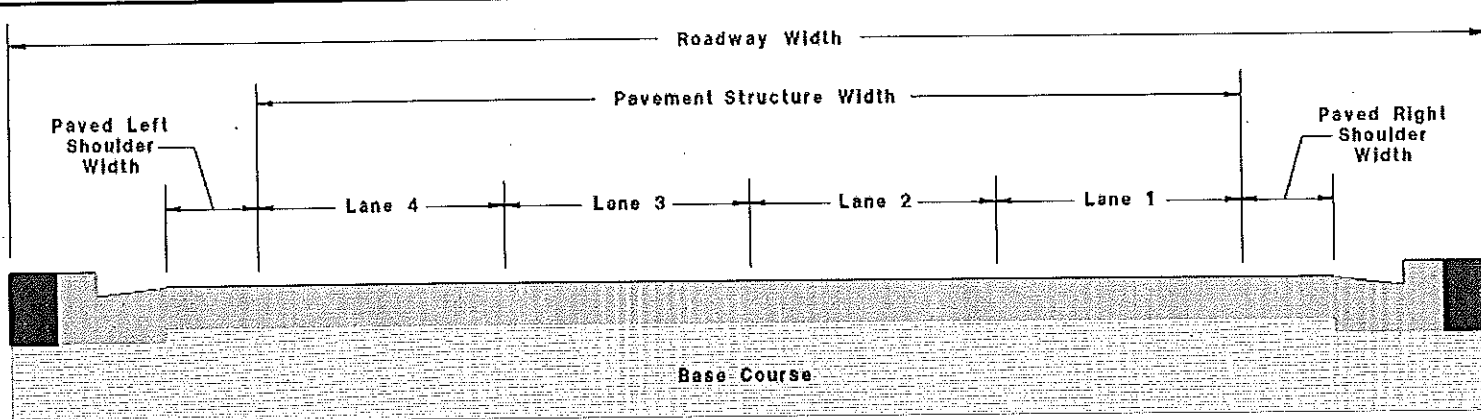
Lane 1 Width :

Number of Center/Shared Lanes :

Pavement Structure Width:

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Direct questions to the [WisDOT Computer Help Desk](#) 1-800-362-3050

Version A

EXHIBIT #276

1/12/2015

WISCONSIN DEPARTMENT OF TRANSPORTATION

Doing Business

WisPave Home | File | Design | LCCA | Exit

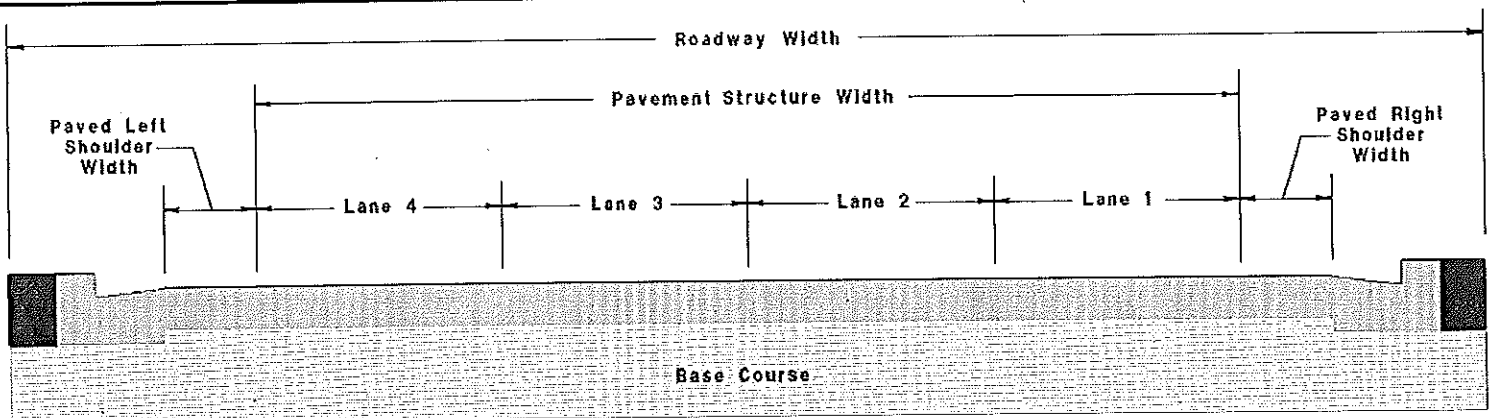


User: Todd Peschke

Pavement Design Details			
Project ID:	2788-01-00	Design Name:	Section #4
Highway:	Waukesha Bypass	Project Termini:	(STH 59 to IH 94)
		Designer:	Todd Peschke
		Design Date:	01/12/2015
		County:	Waukesha

HMA Alt#2 Urban Cross Section

*Roadway Width:	31	* % of Project Length for new Curb & Gutter:	50
*Paved Left Shoulder Width:	4	*Paved Right Shoulder Width:	8
*Number of Travel Lanes :	1 v		
Lane 1 Width :	12.0		
Number of Center/Shared Lanes :	0 v		
Pavement Structure Width:	12		
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Version A

EXHIBIT #277

1/13/2015



HMA Alt#1 Quantities

Layers	Bid Item No	Bid Item Desc	Units	Quantity
1	460.1103	HMA Pavement Type E-3	TON	2,168.3
	455.0120	Asphaltic Material PG64-28	TON	119.3
	455.0605	Tack Coat	GAL	352
2	305.0120	Base Aggregate Dense 1 1/4-inch	TON	11,505.2

Additional Initial Construction Quantities :

Bid Item No	Bid Item Desc	Units	Quantity
460.1103	HMA Pavement Type E-3 (Shoulders)	TON	2,168.3
455.0120	Asphaltic Material PG64-28 (Shoulders)	TON	119.3
455.0605	Tack Coat (Shoulders)	GAL	352
601.0411	Concrete Curb & Gutter 30-Inch Type D	LF	5,280

Other Quantities :

Other Description	Unit	Quantity
	Sele v	0.0
	Sele v	0.0
	Sele v	0.0

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HMA Alt#2 Quantities

Layers	Bid Item No	Bid Item Desc	Units	Quantity
1	460.1103	HMA Pavement Type E-3	TON	3,252.5
	455.0120	Asphaltic Material PG64-28	TON	178.9
	455.0605	Tack Coat	GAL	352
2	305.0120	Base Aggregate Dense 1 1/4-inch	TON	6,575.6

Additional Initial Construction Quantities :

Bid Item No	Bid Item Desc	Units	Quantity
460.1103	HMA Pavement Type E-3 (Shoulders)	TON	3,252.5
455.0120	Asphaltic Material PG64-28 (Shoulders)	TON	178.9
455.0605	Tack Coat (Shoulders)	GAL	352
601.0411	Concrete Curb & Gutter 30-Inch Type D	LF	5,280

Other Quantities :

Other Description	Unit	Quantity
	Sele ☐	0.0
	Sele ☐	0.0
	Sele ☐	0.0

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HMA Alternative - Maintenance & Rehabilitation Summary - Alt #1

Year	Type of Work	Activity	Service Life	Cost per Lane Mile	Calculate
0	Initial Construction - ☐		18		
6	HMA Maintenance	1st Cycle		\$2000.0	
12	HMA Maintenance	2nd Cycle		\$2500.0	
18	HMA Rehabilitation	Mill & HMA Overlay ☐	12		Calculate
22	HMA Maintenance	1st Cycle		\$2000.0	
26	HMA Maintenance	2nd Cycle		\$2500.0	
30	HMA Rehabilitation	Mill & HMA Overlay ☐	12		Calculate
34	HMA Maintenance	1st Cycle		\$2000.0	
38	HMA Maintenance	2nd Cycle		\$2500.0	
42	HMA Rehabilitation	Mill & HMA Overlay ☐	12		Calculate
46	HMA Maintenance	1st Cycle		\$2000.0	
50	HMA Maintenance	2nd Cycle		\$2500.0	

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User: Todd Peschke

Mill & HMA Overlay

Milling Limits: ☐ Milling Depth: (in)Overlay Limits: ☐

Type	HMA Mix Type	Thickness	Asphaltic Material(PG)	% Asphalt in Mix	# of Tack Coat Layers	Tack Coat Coverage GAL/SY
Overlay	HMA Pavement Type E-3 ☐	4.0	Asphaltic Material PG58-28 ☐	5.5	2	0.025

Item	Units	Quantity
Removing Asphaltic Surface Milling	SY	14,080
HMA Pavement Type E-3	TON	3,153.9
Asphaltic Material PG58-28	TON	173.5
Tack Coat(Pavement Structure)	GAL	704
Base Aggregate Dense 3/4-inch(Shoulder Gravel)	TON	0
	☐	0.0

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Mill & HMA Overlay

Milling Limits: ☐ Milling Depth: (in)Overlay Limits: ☐

Type	HMA Mix Type	Thickness	Asphaltic Material(PG)	% Asphalt in Mix	# of Tack Coat Layers	Tack Coat Coverage GAL/SY
Overlay	HMA Pavement Type E-3 ☐	4.0	Asphaltic Material PG58-28 ☐	5.5	2	0.025

Calculate

Item	Units	Quantity
Removing Asphaltic Surface Milling	SY	14,080
HMA Pavement Type E-3	TON	3,153.9
Asphaltic Material PG58-28	TON	173.5
Tack Coat(Pavement Structure)	GAL	704
Base Aggregate Dense 3/4-inch(Shoulder Gravel)	TON	0
	☐	0.0

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Mill & HMA Overlay

Milling Limits: Milling Depth: (in)Overlay Limits:

Type	HMA Mix Type	Thickness	Asphaltic Material(PG)	% Asphalt in Mix	# of Tack Coat Layers	Tack Coat Coverage GAL/SY
Overlay	HMA Pavement Type E-3	4.0	Asphaltic Material PG58-28	5.5	2	0.025

Item	Units	Quantity
Removing Asphaltic Surface Milling	SY	14,080
HMA Pavement Type E-3	TON	3,153.9
Asphaltic Material PG58-28	TON	173.5
Tack Coat(Pavement Structure)	GAL	704
Base Aggregate Dense 3/4-inch(Shoulder Gravel)	TON	0
	0.0	

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HMA Alternative - Maintenance & Rehabilitation Summary - Alt #2

Year	Type of Work	Activity	Service Life	Cost per Lane Mile	Calculate
0	Initial Construction - ☐		18		
6	HMA Maintenance	1st Cycle		\$2000.0	
12	HMA Maintenance	2nd Cycle		\$2500.0	
18	HMA Rehabilitation	Mill & HMA Overlay ☐	12		Calculate
22	HMA Maintenance	1st Cycle		\$2000.0	
26	HMA Maintenance	2nd Cycle		\$2500.0	
30	HMA Rehabilitation	Mill & HMA Overlay ☐	12		Calculate
34	HMA Maintenance	1st Cycle		\$2000.0	
38	HMA Maintenance	2nd Cycle		\$2500.0	
42	HMA Rehabilitation	Mill & HMA Overlay ☐	12		Calculate
46	HMA Maintenance	1st Cycle		\$2000.0	
50	HMA Maintenance	2nd Cycle		\$2500.0	
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Mill & HMA Overlay

Milling Limits: Pavement Structure and Shoulders ☐ Milling Depth: 2.0 (in)Overlay Limits: Pavement Structure and Shoulders ☐

Type	HMA Mix Type	Thickness	Asphaltic Material(PG)	% Asphalt in Mix	# of Tack Coat Layers	Tack Coat Coverage GAL/SY
Overlay	<u>HMA Pavement Type E-3</u> ☐	<u>4.0</u>	<u>Asphaltic Material PG58-28</u> ☐	<u>5.5</u>	<u>2</u>	<u>0.025</u>

Calculate

Item	Units	Quantity
Removing Asphaltic Surface Milling	SY	14,080
HMA Pavement Type E-3	TON	3,153.9
Asphaltic Material PG58-28	TON	173.5
Tack Coat(Pavement Structure)	GAL	704
Base Aggregate Dense 3/4-inch(Shoulder Gravel)	TON	0
	☐	<u>0.0</u>

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Version A



User: Todd Peschke

Mill & HMA Overlay

Milling Limits: ☐ Milling Depth: (in)Overlay Limits: ☐

Type	HMA Mix Type	Thickness	Asphaltic Material(PG)	% Asphalt in Mix	# of Tack Coat Layers	Tack Coat Coverage GAL/SY
Overlay	HMA Pavement Type E-3 ☐	4.0	Asphaltic Material PG58-28 ☐	5.5	2	0.025

Item	Units	Quantity
Removing Asphaltic Surface Milling	SY	14,080
HMA Pavement Type E-3	TON	3,153.9
Asphaltic Material PG58-28	TON	173.5
Tack Coat(Pavement Structure)	GAL	704
Base Aggregate Dense 3/4-inch(Shoulder Gravel)	TON	0
	☐	0.0

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Mill & HMA Overlay

Milling Limits: ☒ Milling Depth: (in)Overlay Limits: ☒

Type	HMA Mix Type	Thickness	Asphaltic Material(PG)	% Asphalt in Mix	# of Tack Coat Layers	Tack Coat Coverage GAL/SY
Overlay	HMA Pavement Type E-3 ☒	4.0	Asphaltic Material PG58-28 ☒	5.5	2	0.025

Calculate

Item	Units	Quantity
Removing Asphaltic Surface Milling	SY	14,080
HMA Pavement Type E-3	TON	3,153.9
Asphaltic Material PG58-28	TON	173.5
Tack Coat(Pavement Structure)	GAL	704
Base Aggregate Dense 3/4-inch(Shoulder Gravel)	TON	0
	☒	0.0

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HMA Bid Items

Bid Item Desc	Bid Item No	Units	Unit Cost
Asphaltic Material PG58-28	455.0105	TON	105.17
Asphaltic Material PG64-28	455.0120	TON	136.51
Tack Coat	455.0605	GAL	3.18
HMA Pavement Type E-3	460.1103	TON	50.36
HMA Pavement Type E-10	460.1110	TON	54.92
Concrete Curb & Gutter 30-inch Type D	601.0411	LF	10.92

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WisPave:

WISCONSIN DEPARTMENT OF TRANSPORTATION

Doing Business

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User: Todd Peschke

Concrete Bid Items

Bid Item Desc	Bid Item No	Units	Unit Cost
Base Patching Concrete	390.0303	SY	48.45
Concrete Pavement, 8 inch	415.0080	SY	32.7
Drilled Dowel Bars	416.0620	EACH	11.53
Concrete Pavement Repair	416.1710	SY	77.33
Concrete Pavement Continuous Diamond Grinding	420.1000	SY	4.88
Concrete Curb & Gutter 30-inch Type A	601.0409	LF	12.81
Sawing Concrete	690.0250	LF	2.33

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EXHIBIT #289

1/13/2015

WisPave:

WISCONSIN DEPARTMENT OF TRANSPORTATION

Doing Business

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User: Todd Peschke

Base Course Bid Items

Bid Item Desc	Bid Item No	Units	Unit Cost
Base Aggregate Dense 1 1/4-inch	305.0120	TON	10.61

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WisPave:

WISCONSIN DEPARTMENT OF TRANSPORTATION

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User: Todd Peschke

Remove Pavement Bid Items

Bid Item Desc	Bid Item No	Units	Unit Cost
Removing Asphaltic Surface Milling	204.0120	SY	2.03

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Costs For All Alternatives

Concrete Alt#1

Initial Construction Costs

Bid Item Desc	Bid Item No	Units	Costs
Concrete Pavement, 8 inch	415.0080	SY	\$230,208.00
Concrete Pavement, 8 inch (Shoulders)	415.0080	SY	\$230,208.00
Concrete Curb & Gutter 30-inch Type A	601.0409	LF	\$67,636.80
		Total:	\$528,052.00

Rehab#1

Bid Item Desc	Bid Item No	Units	Costs
Drilled Dowel Bars	416.0620	EACH	\$8,117.12
Concrete Pavement Continuous Diamond Grinding	420.1000	SY	\$68,710.40
Concrete Pavement Repair	416.1710	SY	\$27,220.16
Sawing Concrete	690.0250	LF	\$3,690.72
		Total:	\$107,738.00

Rehab#2

Bid Item Desc	Bid Item No	Units	Costs
Asphaltic Material PG58-28	455.0105	TON	\$18,247.00
Tack Coat	455.0605	GAL	\$2,238.72
HMA Pavement Type E-3	460.1103	TON	\$158,830.40
Base Patching Concrete	390.0303	SY	\$17,054.40

EXHIBIT #292

Wispave:

Drilled Dowel Bars	416.0620	EACH	\$8,117.12
Sawing Concrete	690.0250	LF	\$3,690.72
		Total:	\$208,178.00

Rehab#3

Bid Item Desc	Bid Item No	Units	Costs
Asphaltic Material PG58-28	455.0105	TON	\$18,247.00
Tack Coat	455.0605	GAL	\$2,238.72
HMA Pavement Type E-3	460.1103	TON	\$158,830.40
Base Patching Concrete	390.0303	SY	\$17,054.40
Drilled Dowel Bars	416.0620	EACH	\$8,117.12
Sawing Concrete	690.0250	LF	\$3,690.72
Removing Asphaltic Surface Milling	204.0120	SY	\$28,582.40
		Total:	\$236,760.00

Maintenance Costs

Maintenance Cycle	Cost per Lane Mile	Total Cycle Cost
1	\$4,000.00	\$4,000.00
2	\$8,000.00	\$8,000.00
3	\$4,000.00	\$4,000.00
4	\$8,000.00	\$8,000.00
5	\$2,000.00	\$2,000.00
6	\$2,500.00	\$2,500.00
7	\$2,000.00	\$2,000.00
8	\$2,500.00	\$2,500.00
Total:		\$33,000.00

HMA Alt#1**Initial Construction Costs**

Bid Item Desc	Bid Item No	Units	Costs
Asphaltic Material	455.0120	TON	\$16,285.64

EXHIBIT #293

PG64-28			
Tack Coat	455.0605	GAL	\$1,119.36
HMA Pavement Type E-3	460.1103	TON	\$109,195.59
Base Aggregate Dense 1 1/4- inch	305.0120	TON	\$122,070.17
Asphaltic Material PG64-28 (Shoulders)	455.0120	TON	\$16,285.64
Tack Coat (Shoulders)	455.0605	GAL	\$1,119.36
HMA Pavement Type E-3 (Shoulders)	460.1103	TON	\$109,195.59
Concrete Curb & Gutter 30- inch Type D	601.0411	LF	\$57,657.60
		Total:	\$432,929.00

Rehab#1

Bid Item Desc	Bid Item No	Units	Costs
Asphaltic Material PG58-28	455.0105	TON	\$18,247.00
Tack Coat	455.0605	GAL	\$2,238.72
HMA Pavement Type E-3	460.1103	TON	\$158,830.40
Removing Asphaltic Surface Milling	204.0120	SY	\$28,582.40
		Total:	\$207,898.00

Rehab#2

Bid Item Desc	Bid Item No	Units	Costs
Asphaltic Material PG58-28	455.0105	TON	\$18,247.00
Tack Coat	455.0605	GAL	\$2,238.72
HMA Pavement Type E-3	460.1103	TON	\$158,830.40
Removing Asphaltic	204.0120	SY	\$28,582.40

EXHIBIT #294

Surface Milling			
		Total:	\$207,898.00

Rehab#3

Bid Item Desc	Bid Item No	Units	Costs
Asphaltic Material PG58-28	455.0105	TON	\$18,247.00
Tack Coat	455.0605	GAL	\$2,238.72
HMA Pavement Type E-3	460.1103	TON	\$158,830.40
Removing Asphaltic Surface Milling	204.0120	SY	\$28,582.40
		Total:	\$207,898.00

Maintenance Costs

Maintenance Cycle	Cost per Lane Mile	Total Cycle Cost
1	\$2,000.00	\$2,000.00
2	\$2,500.00	\$2,500.00
3	\$2,000.00	\$2,000.00
4	\$2,500.00	\$2,500.00
5	\$2,000.00	\$2,000.00
6	\$2,500.00	\$2,500.00
7	\$2,000.00	\$2,000.00
8	\$2,500.00	\$2,500.00
Total:		\$18,000.00

HMA Alt#2

Initial Construction Costs

Bid Item Desc	Bid Item No	Units	Costs
Asphaltic Material PG64-28	455.0120	TON	\$24,421.64
Tack Coat	455.0605	GAL	\$1,119.36
HMA Pavement Type E-3	460.1103	TON	\$163,795.90
Base Aggregate Dense 1 1/4-inch	305.0120	TON	\$69,767.12
Asphaltic	EXHIBIT #295		

Material PG64-28 (Shoulders)	455.0120	TON	\$24,421.64
Tack Coat (Shoulders)	455.0605	GAL	\$1,119.36
HMA Pavement Type E-3 (Shoulders)	460.1103	TON	\$163,795.90
Concrete Curb & Gutter 30- inch Type D	601.0411	LF	\$57,657.60
		Total:	\$506,098.00

Rehab#1

Bid Item Desc	Bid Item No	Units	Costs
Asphaltic Material PG58-28	455.0105	TON	\$18,247.00
Tack Coat	455.0605	GAL	\$2,238.72
HMA Pavement Type E-3	460.1103	TON	\$158,830.40
Removing Asphaltic Surface Milling	204.0120	SY	\$28,582.40
		Total:	\$207,898.00

Rehab#2

Bid Item Desc	Bid Item No	Units	Costs
Asphaltic Material PG58-28	455.0105	TON	\$18,247.00
Tack Coat	455.0605	GAL	\$2,238.72
HMA Pavement Type E-3	460.1103	TON	\$158,830.40
Removing Asphaltic Surface Milling	204.0120	SY	\$28,582.40
		Total:	\$207,898.00

Rehab#3

Bid Item Desc	Bid Item No	Units	Costs
Asphaltic Material PG58-28	455.0105	TON	\$18,247.00
Tack Coat	455.0605	GAL	\$2,238.72

EXHIBIT #296

HMA Pavement Type E-3	460.1103	TON	\$158,830.40
Removing Asphaltic Surface Milling	204.0120	SY	\$28,582.40
Total:			\$207,898.00

Maintenance Costs

Maintenance Cycle	Cost per Lane Mile	Total Cycle Cost
1	\$2,000.00	\$2,000.00
2	\$2,500.00	\$2,500.00
3	\$2,000.00	\$2,000.00
4	\$2,500.00	\$2,500.00
5	\$2,000.00	\$2,000.00
6	\$2,500.00	\$2,500.00
7	\$2,000.00	\$2,000.00
8	\$2,500.00	\$2,500.00
Total:		\$18,000.00

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LIFE CYCLE COST ANALYSIS RESULTS

Current Year: 2015

Project Length: 1.0 Miles

Construction Year: 2017

Analysis Basis: LCCA Length

Analysis Period: 50 yrs

Discount Rate(%): 5

Present Worth Costs

	Concrete Alt#1	HMA Alt#1	HMA Alt#2
Initial Construction Costs	\$478,959.46	\$392,679.32	\$459,046.28
Maintenance Costs	\$9,137.13	\$4,964.67	\$4,964.67
Rehabilitation Costs	\$87,244.68	\$146,280.93	\$146,280.93
Rehabilitation Salvage Value	(\$16,229.99)	(\$5,481.34)	(\$5,481.34)
Total Facility Costs	\$559,111.28	\$538,443.58	\$604,810.54
	+ 3.84%	+ 0.00%	+ 12.33%

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