



# Illinois Department of Transportation

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To: Kevin Marchek                      Attn: Dave Broviak  
From: Maureen M. Addis *MS MSB*  
Subject: Pavement Design Approval  
Date: February 28, 2017

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Route: IL 170                              Job No.: P-93-015-13  
Section: 111VBR                          Contract No.: 66C58  
County: LaSalle                          Target Letting: FY 2018  
Limits: Over the BNSF RR at Ransom, IL

On January 20, 2017, the Pavement Selection Committee met to review the pavement design for the above referenced project which was submitted on January 3, 2017. The scope of the project involves replacing the structure carrying IL 170 over the BNSF Railroad and raising the vertical profile of the roadway to meet policy. Approximately 1,950 feet of IL 170 will be reconstructed. The cross-section will be two 12' lanes with 4' shoulders.

The pavement design resulted in two pavement options: 10.25" Full-Depth HMA and 9.0" PCC. The life-cycle cost analysis of those options resulted in the HMA pavement being 1% less expensive (\$84,185/mile compared to PCC's Cost of \$84,991/mile). Due to the short length of the project combined with the existing resurfacing along the rest of IL 170, the District preferred the HMA option in-lieu of alternate bidding.

The Pavement Selection Committee concurred with the District's preference. In summary, the approved pavement design is as follows:

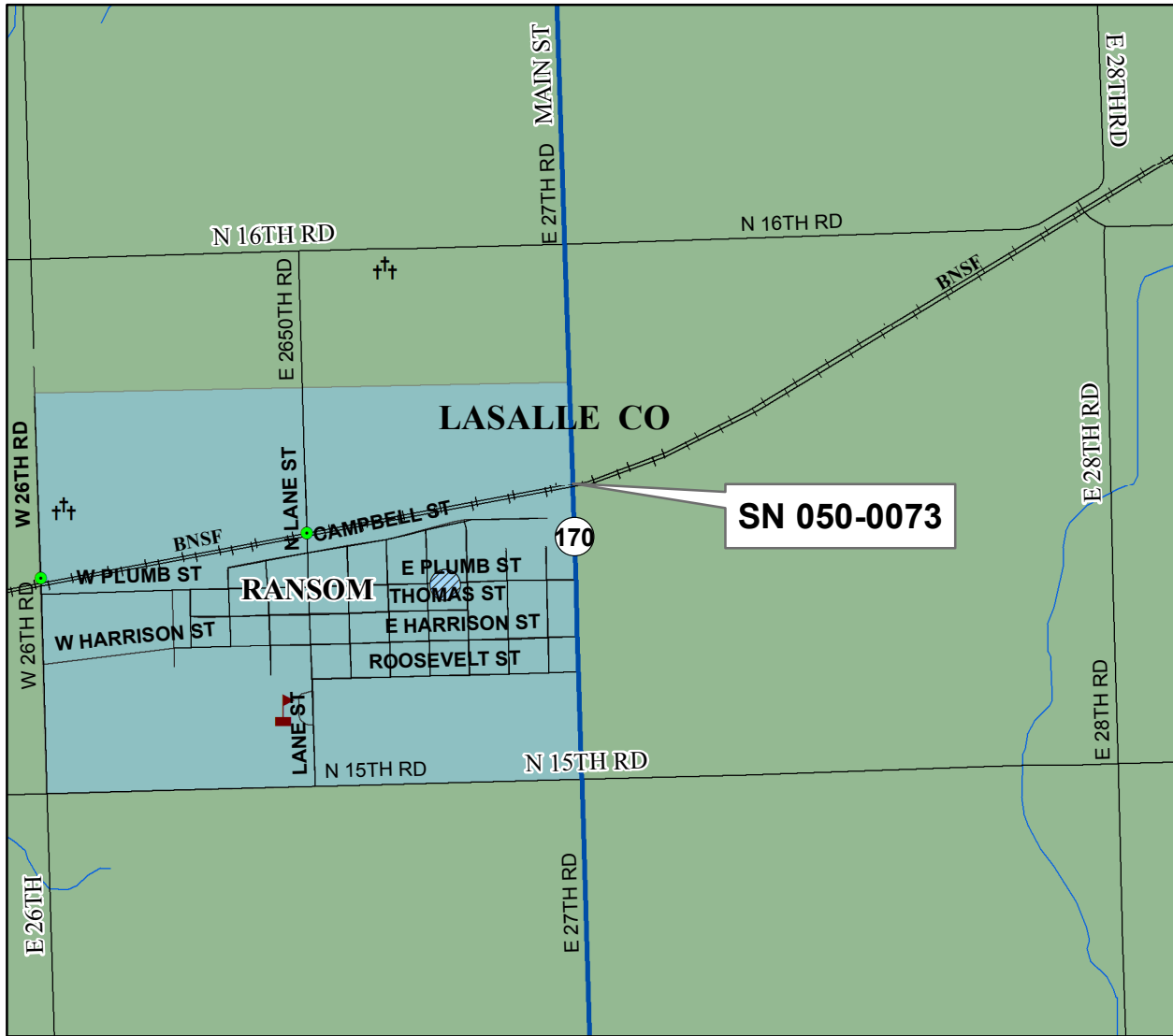
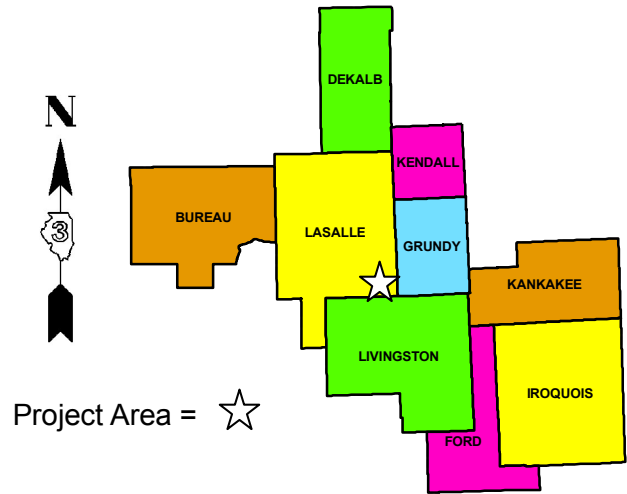
10.25" Full-Depth HMA Pavement w/ 8" HMA Shoulders  
12" Improved Subgrade

If you have any questions, please contact Mike Brand at (217) 782-7651.



# Project Location Map

FAP Route 786 (IL 170)  
Section 111 VBR  
Lasalle County  
Bridge Replacement (SN 050-0073)  
IL 170 over BNSF Railroad, 4.6 Miles  
North of IL 17  
Phase I Job No: P-93-015-13  
Contract No. 66C58



D3# 2276

**PROJECT AND TRAFFIC INPUTS**

(Enter Data in Gray Shaded Cells)

Route: **FAP 786 (IL 170)**

Comments:

Section: **111 VBR**

County: **LaSalle**

Location: **Over BNSF RR at Ransom**

Design Date: **12/29/2016**

Modify Date:

<-- BY

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	ADT	Year
Current:	1,300	2015
Future:	1,559	2038

Facility Type: **Other Marked State Route**

# of Lanes = **2 or 3**  
 Part of future 4 lanes or more? **No**  
 One Way Street? **No**  
 Road Class: **III**

Subgrade Support Rating (SSR): **Poor**  
 Construction Year: **2019**  
 Design Period (DP) = **20** years

	Structural Design Traffic			% of ADT in Design Lane
	Minimum ADT	Actual ADT	Actual % of Total ADT	
PV =	0	1,181	81.0%	P = 50%
SU =	250	144	9.9%	S = 50%
MU =	750	133	9.1%	M = 50%
Struct. Design ADT =	1,458 (2029)			

**TRAFFIC FACTOR CALCULATION**

**FLEXIBLE PAVEMENT**

Cpv = 0.15  
 Csu = **109.14**  
 Cmu = **384.35**  
 TF flexible (Actual) = 0.87 (Actual ADT)  
 TF flexible (Min) = 3.16 (Min ADT Fig. 54-2.C)

**RIGID PAVEMENT**

Cpv = 0.15  
 Csu = **129.58**  
 Cmu = **562.47**  
 TF rigid (Actual) = 0.93 (Actual ADT)  
 TF rigid (Min) = 4.54 (Min ADT Fig. 54-2.C)

**NEW CONSTRUCTION / RECONSTRUCTION PAVEMENT DESIGN CALCULATIONS**

**Full-Depth HMA Pavement**

**Goto Map**

Use TF flexible = 3.16  
 PG Grade Lower Binder Lifts = **PG 64-22** (Fig. 53-4.R)  
 HMA Mixture Temp. = **76.0** deg. F (Fig. 54-5.C)  
 Design HMA Mixture Modulus (E<sub>HMA</sub>) = 660 ksi (Fig. 54-5.D)  
 Design HMA Strain (ε<sub>HMA</sub>) = 87 (Fig. 54-5.E)  
 Full Depth HMA Design Thickness = 10.25 in. (Fig. 54-5.F)  
 Limiting Strain Criterion Thickness = **15.00** in. (Fig. 54-5.I)  
**Use Full-Depth HMA Thickness = 10.25 inches**

**Goto Map**

**JPC Pavement**

Use TF rigid = 4.54  
 Edge Support = **Tied** Shoulder or C.&G.  
**Rigid Pavt Thck. = 9.00 in. (Fig. 54-4.E)**

**CRC Pavement**

Use TF rigid = 4.54  
 IBR value = **3**  
**CRCP Thickness = 7.75 in. (Fig. 54-4.N)**

**TF MUST BE > 60 FOR CRCP**

**RECONSTRUCTION ONLY (SUPPLEMENTAL) PAVEMENT DESIGN CALCULATIONS**

**HMA Overlay of Rubblized PCC**

**Goto Map**

Use TF flexible = 3.16  
 HMA Overlay Design Thickness = 7.50 in. (Fig. 54-5.U)  
 Limiting Strain Criterion Thickness = **11.00** in. (Fig. 54-5.V)  
**Use HMA Overlay Thickness = 7.50 inches**

**Unbonded Concrete Overlay**

Review 54-4.03 for limitations and special considerations.

**JPCP Thickness = NA inches**

**CONTACT BMPR FOR ASSISTANCE**

**DESIGN TABLES FROM BDE MANUAL CHAPTER 54 - PAVEMENT DESIGN**

Class I Roads	Class II Roads	Class III Roads	Class IV Roads
4 lanes or more Part of a future 4 lanes or more One-way Streets with ADT > 3500	2 lanes with ADT > 2000 One way Street with ADT <= 3500	2 Lanes (ADT 750 -2000)	2 Lanes (ADT < 750)

Facility Type	Min. Str. Design Traffic (Fig 54-2.C)		
	PV	SU	MU
Interstate or Freeway	0	500	1500
Other Marked State Route	0	250	750
Unmarked State Route	No Min	No Min	No Min

Class Table for One-Way Streets	
ADT	Class
0 - 3500	II
>3501	I

Class	Traffic Factor ESAL Coefficients			
	Rigid (Fig. 54-4.C)		Flexible (Fig. 54-5.B)	
	Csu	Cmu	Csu	Cmu
I	143.81	696.42	132.50	482.53
II	135.78	567.21	112.06	385.44
III	129.58	562.47	109.14	384.35
IV	129.58	562.47	109.14	384.35

Class Table for 2 or 3 lanes (not future 4 lane & not one-way street)	
ADT	Class
0 - 749	IV
750 - 2000	III
>2000	II

Number of Lanes	Design Lane Distribution Factors For Structural Design Traffic (Fig. 54-2.B)					
	Rural			Urban		
	P	S	M	P	S	M
1 Lane Ramp	100%	100%	100%	100%	100%	100%
2 or 3	50%	50%	50%	50%	50%	50%
4	32%	45%	45%	32%	45%	45%
6 or more	20%	40%	40%	8%	37%	37%



# LIFE-CYCLE COST ANALYSIS: NEW CONSTRUCTION / RECONSTRUCTION

## FULL-DEPTH HMA PAVEMENT

Standard Design

ROUTE **FAP 786 (IL 170)**  
 SECTION **111 VBR**  
 COUNTY **LaSalle**  
 LOCATION **Over BNSF RR at Ransom**

FACILITY TYPE **NON-INTERSTATE**

PROJECT LENGTH **1954 FT ==> 0.37 Miles**  
 # OF CENTERLINES **1 CL**  
 # OF LANES **2 LANES**  
 # OF EDGES **2 EP**  
 LANE WIDTH - AVERAGE **12 FT**  
 SHOULDER WIDTH HMA Left **4 FT**  
 HMA Right **4 FT**  
 Total Width of Paved Shoulders **8 FT**

PAVEMENT THICKNESS (FLEXIBLE) **10.25 IN 15.00 IN MAX**  
 SHOULDER THICKNESS **8.00 IN Standard Design**  
 POLICY OVERLAY THICKNESS **2.25 IN**

FLEX PAVEMENT	TRAFFIC FACTORS	MINIMUM	ACTUAL	USE
		3.16	0.69	3.16

Read Me!

HMA COST PER TON	UNIT PRICE
HMA SURFACE	\$93.71 / TON
HMA TOP BINDER	\$83.91 / TON
HMA LOWER BINDER	\$72.82 / TON
HMA BINDER (LEVELING)	\$85.00 / TON
HMA SHOULDER	\$76.60 / TON

INITIAL COSTS	THICKNESS	100% QUANTITY	UNIT	UNIT PRICE	COST
HMA PAVEMENT ( FULL-DEPTH )	( 10.25" )	5,211	SQ YD	\$47.07 / SQ YD	\$0
HMA SURFACE COURSE	( 2.00" )	584	TONS	\$93.71 / TON	\$54,727
HMA TOP BINDER COURSE	( 2.25" )	657	TONS	\$83.91 / TON	\$55,129
HMA LOWER BINDER COURSE	( 6.00" )	1,751	TONS	\$72.82 / TON	\$127,508
HMA SHOULDER	( 8.00" )	736	TONS	\$76.60 / TON	\$56,378
CURB & GUTTER		0	LN FT	\$30.50 / LN FT	\$0
SUBBASE GRAN MATL TY C (TONS)		146	TONS	\$57.25 / TON	\$8,359
IMPROVED SUBGRADE	Aggregate	6,807	SQ YD	\$25.00 / SQ YD	\$220,175
Reserved For User Supplied Item		0	UNITS	\$0.00 / UNITS	\$0
Reserved For User Supplied Item		0	UNITS	\$0.00 / UNITS	\$0
PAVEMENT REMOVAL		0	SQ YD	\$0.00 / SQ YD	\$0
SHOULDER REMOVAL		0	SQ YD	\$0.00 / SQ YD	\$0

Note: \* Denotes User Supplied Quantity  
 FLEXIBLE CONSTRUCTION INITIAL COST **\$522,276**  
 FLEXIBLE CONSTRUCTION ANNUAL COST PER MILE **\$57,559**

MAINTENANCE COSTS:	THICKNESS	MATERIAL	UNIT COST
ROUTINE MAINTENANCE ACTIVITY			\$0.00 / LANE-MILE / YEAR
HMA OVERLAY PVMT SURF	( 2.00" )	Surface Mix	\$19.57 / SQ YD
HMA OVERLAY PVMT	( 2.25" )	Surface Mix	\$11.53 / SQ YD
HMA SURFACE MIX	( 1.50" )	Surface Mix	\$7.91 / SQ YD
HMA BINDER MIX	( 0.75" )	ing Binder Mix	\$3.82 / SQ YD
HMA OVERLAY SHLD (Year 30)	( 2.25" )	Shoulder Mix	\$9.85 / SQ YD
HMA OVERLAY SHLD	( 2.00" )	Shoulder Mix	\$8.88 / SQ YD
MILLING (2.00 IN)			\$14.00 / SQ YD
PARTIAL DEPTH PVMT PATCH (MI & FB Surf)		Surface Mix	\$91.50 / SQ YD
PARTIAL DEPTH SHLD PATCH (MI & FB Surf)		Shoulder Mix	\$89.58 / SQ YD
PARTIAL DEPTH PVMT PATCH (MI & FB +2.00")		Leveling Binder Mix	\$90.52 / SQ YD
PARTIAL DEPTH SHLD PATCH (MI & FB +2.00")		Shoulder Mix	\$89.58 / SQ YD
LONGITUDINAL SHOULDER JOINT ROUT & SEAL			\$2.00 / LN FT
CENTERLINE JOINT ROUT & SEAL			\$2.00 / LN FT
RANDOM / THERMAL CRACK ROUT & SEAL (100% Rehab = 110.00' / Station / Lane)			\$2.00 / LN FT

FLEXIBLE TOTAL LIFE-CYCLE COST **\$763,880**  
 FLEXIBLE TOTAL ANNUAL COST PER MILE **\$84,185**

FULL-DEPTH HMA PAVEMENT  
HMA OVERLAY OF RUBBLIZED PCC PAVEMENT  
Figure 54-7.C  
STANDARD DESIGN

MAINTENANCE COSTS:	ITEM	%	QUANTITY	UNIT	UNIT COST	COST	PRESENT WORTH	
<b>YEAR 5</b>								
	LONG SHLD JT R&S	100.00%	3,908	LIN FT	\$2.00	\$7,816		
	CNTR LINE JOINT R&S	100.00%	1,954	LIN FT	\$2.00	\$3,908		
	RNDM / THRM CRACK R&S	50.00%	2,149	LIN FT	\$2.00	\$4,298		
	PD PVMT PATCH M&F SURF	0.10%	5	SQ YD	\$91.50	\$457		
		PWF <sub>n</sub> = 0.8626			PW = 0.8626 X	\$18,479	\$14,215	
<b>YEAR 10</b>								
	LONG SHLD JT R&S	100.00%	3,908	LIN FT	\$2.00	\$7,816		
	CNTR LINE JOINT R&S	100.00%	1,954	LIN FT	\$2.00	\$3,908		
	RNDM / THRM CRACK R&S	50.00%	2,149	LIN FT	\$2.00	\$4,298		
	PD PVMT PATCH M&F SURF	0.50%	26	SQ YD	\$91.50	\$2,379		
		PWF <sub>n</sub> = 0.7441			PW = 0.7441 X	\$18,401	\$13,692	
<b>YEAR 15</b>								
	MILL PVMT & SHLD 2.00"	100.00%	6,854	SQ YD	\$14.00	\$95,958		
	PD PVMT PATCH M&F ADD'L 2.00"	1.00%	52	SQ YD	\$90.52	\$4,707		
	HMA OVERLAY PVMT 2.00"	100.00%	5,211	SQ YD	\$10.57	\$55,088		
	HMA OVERLAY SHLD 2.00 "	100.00%	1,643	SQ YD	\$8.58	\$14,094		
		PWF <sub>n</sub> = 0.6419			PW = 0.6419 X	\$169,825	\$109,004	
<b>YEAR 20</b>								
	LONG SHLD JT R&S	100.00%	3,908	LIN FT	\$2.00	\$7,816		
	CNTR LINE JOINT R&S	100.00%	1,954	LIN FT	\$2.00	\$3,908		
	RNDM / THRM CRACK R&S	50.00%	2,149	LIN FT	\$2.00	\$4,298		
	PD PVMT PATCH M&F SURF	0.10%	5	SQ YD	\$91.50	\$457		
		PWF <sub>n</sub> = 0.5537			PW = 0.5537 X	\$16,479	\$9,124	
<b>YEAR 25</b>								
	LONG SHLD JT R&S	100.00%	3,908	LIN FT	\$2.00	\$7,816		
	CNTR LINE JOINT R&S	100.00%	1,954	LIN FT	\$2.00	\$3,908		
	RNDM / THRM CRACK R&S	50.00%	2,149	LIN FT	\$2.00	\$4,298		
	PD PVMT PATCH M&F SURF	0.50%	26	SQ YD	\$91.50	\$2,379		
		PWF <sub>n</sub> = 0.4778			PW = 0.4778 X	\$18,401	\$8,788	
<b>HMA SD</b>								
<b>YEAR 30 NON-INTERSTATE</b>								
	MILL PVMT & SHLD 2.00"	100.00%	6,854	SQ YD	\$14.00	\$95,958		
	PD PVMT PATCH M&F ADD'L 2.00"	2.00%	104	SQ YD	\$90.52	\$9,414		
	PD SHLD PATCH M&F ADD'L 2.00"	1.00%	18	SQ YD	\$89.58	\$1,433		
	HMA OVERLAY PVMT 2.25 "	100.00%	5,211	SQ YD	\$11.53	\$60,074		
	HMA OVERLAY SHLD 2.25 "	100.00%	1,643	SQ YD	\$9.65	\$15,858		
		PWF <sub>n</sub> = 0.4120			PW = 0.4120 X	\$182,733	\$75,284	
<b>YEAR 35</b>								
	LONG SHLD JT R&S	100.00%	3,908	LIN FT	\$2.00	\$7,816		
	CNTR LINE JOINT R&S	100.00%	1,954	LIN FT	\$2.00	\$3,908		
	RNDM / THRM CRACK R&S	50.00%	2,149	LIN FT	\$2.00	\$4,298		
	PD PVMT PATCH M&F SURF	0.10%	5	SQ YD	\$91.50	\$457		
		PWF <sub>n</sub> = 0.3554			PW = 0.3554 X	\$16,479	\$5,858	
<b>YEAR 40</b>								
	LONG SHLD JT R&S	100.00%	3,908	LIN FT	\$2.00	\$7,816		
	CNTR LINE JOINT R&S	100.00%	1,954	LIN FT	\$2.00	\$3,908		
	RNDM / THRM CRACK R&S	50.00%	2,149	LIN FT	\$2.00	\$4,298		
	PD PVMT PATCH M&F SURF	0.50%	26	SQ YD	\$91.50	\$2,379		
		PWF <sub>n</sub> = 0.3066			PW = 0.3066 X	\$18,401	\$5,641	
							\$241,604	
<b>ROUTINE MAINTENANCE ACTIVITY</b>				0.74 Lane Miles	0.00	\$0	\$0	
							<b>MAINTENANCE LIFE-CYCLE COST</b>	\$241,604
<b>45</b>	<b>YEAR LIFE CYCLE</b>	CRF <sub>n</sub> = 0.0407852		<b>MAINTENANCE ANNUAL COST PER MILE</b>			\$26,627	



**PCC PAVEMENT**

**JPCP**

ROUTE **FAP 786 (IL 170)**  
 SECTION **111 VBR**  
 COUNTY **LaSalle**  
 LOCATION **Over BNSF RR at Ransom**

FACILITY TYPE **NON-INTERSTATE**

PROJECT LENGTH **1954 FT ==> 0.37 Miles**  
 # OF CENTERLINES **1 CL**  
 # OF LANES **2 LANES**  
 # OF EDGES **2 EP**  
 LANE WIDTH - AVERAGE **12 FT**  
 SHOULDER WIDTH **PCC Left 4 FT**  
                                   **PCC Right 4 FT**  
                                   **Total Width of Paved Shoulders 8 FT**

PAVEMENT THICKNESS (RIGID) **JPCP 9.00 IN TIED SHLD**  
 SHOULDER THICKNESS **9.00 IN**

POLICY OVERLAY THICKNESS **2.50 IN**

RIGID PAVEMENT TRAFFIC FACTORS	MINIMUM	ACTUAL	USE
Worksheet Construction Type is <b>Reconstruction</b>	<b>4.54</b>	<b>0.97</b>	<b>4.54</b>
The Pavement Type is			<b>JPCP</b>

INITIAL COSTS	THICKNESS	100% QUANTITY	UNIT	UNIT PRICE	COST
JPC PAVEMENT	( 9.00" )	5,211	SQ YD	\$48.71 / SQ YD	\$253,828
PAVEMENT REINFORCEMENT		0	SQ YD	\$0.00 / SQ YD	\$0
STABILIZED SUBBASE	( 4.00" )	5,862	SQ YD	\$25.00 / SQ YD	\$146,550
PCC SHOULDERS		1,642	SQ YD	\$58.00 / SQ YD	\$91,952
CURB & GUTTER		0	LIN FT	\$30.50 / LIN FT	\$0
SUBBASE GRAN MATL TY C		234	TONS	\$57.25 / TON	\$13,397
IMPROVED SUBGRADE: Aggregate		7,165	SQ YD	\$25.00 / SQ YD	\$179,125
Reserved For User Supplied Item		0	UNITS	\$0.00 / UNITS	\$0
Reserved For User Supplied Item		0	UNITS	\$0.00 / UNITS	\$0
PAVEMENT REMOVAL		0	SQ YD	\$0.00 / SQ YD	\$0
SHOULDER REMOVAL		0	SQ YD	\$0.00 / SQ YD	\$0

Note: \* Denotes User Supplied Quantity

RIGID CONSTRUCTION INITIAL COST	\$684,852
RIGID CONSTRUCTION ANNUAL COST PER MILE	\$75,476

MAINTENANCE COSTS:	THICKNESS	MATERIAL	UNIT COST
ROUTINE MAINTENANCE ACTIVITY			\$0.00 / LANE-MILE / YEAR
HMA POLICY OVERLAY ( 2.50" )			
HMA POLICY OVERLAY PVMT ( 2.50" )			\$12.74 / SQ YD
HMA SURFACE MIX ( 1.50" )		Surface Mix	\$7.91 / SQ YD
HMA BINDER MIX ( 1.00" )		asing Binder Mix	\$4.83 / SQ YD
HMA POLICY OVERLAY SHLD ( 2.50" )		Shoulder Mix	\$10.72 / SQ YD
CLASS A PAVEMENT PATCHING			\$170.00 / SQ YD
CLASS B PAVEMENT PATCHING			\$125.00 / SQ YD
CLASS C SHOULDER PATCHING			\$110.00 / SQ YD
PARTIAL DEPTH PVMT PATCH (Mill & Fill HMA Surf)		Surface Mix	\$88.87 / SQ YD
PARTIAL DEPTH PVMT PATCH (Mill & Fill HMA 2.50")		Surface Mix	\$94.12 / SQ YD
LONGITUDINAL SHOULDER JOINT ROUT & SEAL			\$2.00 / LIN FT
CENTERLINE JOINT ROUT & SEAL			\$2.00 / LIN FT
REFLECTIVE TRANSVERSE CRACK ROUT & SEAL			\$2.00 / LIN FT
RANDOM CRACK ROUT & SEAL (100% Rehab = 100.00' / Station / Lane)			\$2.00 / LIN FT

RIGID TOTAL LIFE-CYCLE COST	\$771,194
RIGID TOTAL ANNUAL COST PER MILE	\$84,991

JOINTED PLAIN CONCRETE PAVEMENT  
UNBONDED JOINTED PLAIN CONCRETE OVERLAY  
Figure 54-7.A

MAINTENANCE COSTS:	ITEM	%	QUANTITY	UNIT	UNIT COST	COST	PRESENT WORTH
<b>YEAR 10</b>							
	PAVEMENT PATCH CLASS B	0.10%	5	SQ YD	\$125.00	\$625	
		PWF <sub>n</sub> = 0.7441			PW = 0.7441 X	\$625	\$465
<b>YEAR 15</b>							
	PAVEMENT PATCH CLASS B	0.20%	10	SQ YD	\$125.00	\$1,250	
		PWF <sub>n</sub> = 0.6419			PW = 0.6419 X	\$1,250	\$802
<b>YEAR 20</b>							
	PAVEMENT PATCH CLASS B	2.00%	104	SQ YD	\$125.00	\$13,000	
	SHOULDER PATCH CLASS C	0.50%	8	SQ YD	\$110.00	\$880	
	LONGITUDINAL SHLD JT R&S	100.00%	3,908	LIN FT	\$2.00	\$7,816	
	CENTERLINE JT R&S	100.00%	1,954	LIN FT	\$2.00	\$3,908	
		PWF <sub>n</sub> = 0.5537			PW = 0.5537 X	\$25,604	\$14,176
<b>YEAR 25</b>							
	PAVEMENT PATCH CLASS B	3.00%	156	SQ YD	\$125.00	\$19,500	
	SHOULDER PATCH CLASS C	1.00%	16	SQ YD	\$110.00	\$1,760	
		PWF <sub>n</sub> = 0.4776			PW = 0.4776 X	\$21,260	\$10,154
<b>YEAR 30 NON-INTERSTATE</b>							
	PAVEMENT PATCH CLASS B	4.00%	208	SQ YD	\$125.00	\$26,000	
	SHOULDER PATCH CLASS C	1.50%	25	SQ YD	\$110.00	\$2,750	
	HMA POLICY OVERLAY 2.5" (PVMT)	100.00%	5,211	SQ YD	\$12.74	\$66,377	
	HMA POLICY OVERLAY 2.5" (SHLD)	100.00%	1,643	SQ YD	\$10.72	\$17,618	
		PWF <sub>n</sub> = 0.4120			PW = 0.4120 X	\$112,745	\$46,449
<b>YEAR 35 NON-INTERSTATE</b>							
	LONGITUDINAL SHLD JT R&S	100.00%	3,908	LIN FT	\$2.00	\$7,816	
	CENTERLINE JT R&S	100.00%	1,954	LIN FT	\$2.00	\$3,908	
	RANDOM CRACK R&S	50.00%	1,954	LIN FT	\$2.00	\$3,908	
	REFLECTIVE TRANSVERSE CRACK R&S	40.00%	1,248	LIN FT	\$2.00	\$2,496	
	PD PVMT PATCH M&F HMA 2.50"	0.10%	5	SQ YD	\$84.12	\$471	
		PWF <sub>n</sub> = 0.3554			PW = 0.3554 X	\$18,599	\$6,610
<b>YEAR 40 NON-INTERSTATE</b>							
	PAVEMENT PATCH CLASS B	0.50%	26	SQ YD	\$125.00	\$3,250	
	LONGITUDINAL SHLD JT R&S	100.00%	3,908	LIN FT	\$2.00	\$7,816	
	CENTERLINE JT R&S	100.00%	1,954	LIN FT	\$2.00	\$3,908	
	REFLECTIVE TRANSVERSE CRACK R&S	60.00%	1,872	LIN FT	\$2.00	\$3,744	
	RANDOM CRACK R&S	50.00%	1,954	LIN FT	\$2.00	\$3,908	
	PD PVMT PATCH M&F HMA 2.50"	0.50%	26	SQ YD	\$84.12	\$2,447	
		PWF <sub>n</sub> = 0.3066			PW = 0.3066 X	\$25,073	\$7,886
							\$86,342
	ROUTINE MAINTENANCE ACTIVITY		0.74 Lane Miles		\$0.00	\$0	\$0
							\$86,342
45	YEAR LIFE CYCLE	CRF <sub>n</sub> = 0.0407852					\$9,516



## LIFE-CYCLE COST ANALYSIS: NEW DESIGN

Calculated / Revised : 10/17/16 7:26 AM

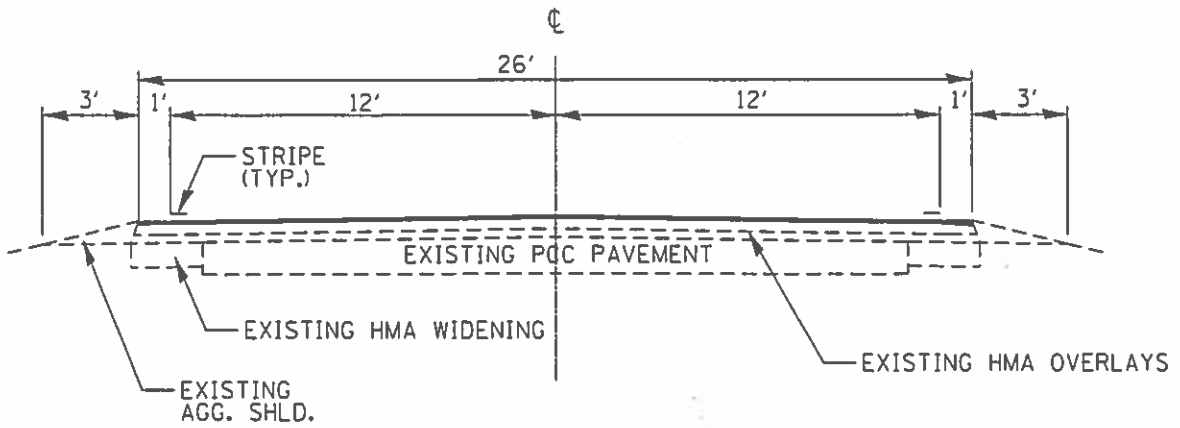
			JPCP	HMA
CONSTRUCTION	INITIAL COST	PRESENT WORTH	\$684,852	\$522,276
		ANNUAL COST PER MILE	\$75,476	\$57,559
MAINTENANCE	LIFE-CYCLE COST	PRESENT WORTH	\$86,342	\$241,604
		ANNUAL COST PER MILE	\$9,516	\$26,627
TOTAL	LIFE-CYCLE COST	PRESENT WORTH	\$771,194	\$763,880
		ANNUAL COST PER MILE	\$84,991	\$84,185

## LIFE-CYCLE COST ANALYSIS: FINAL SUMMARY

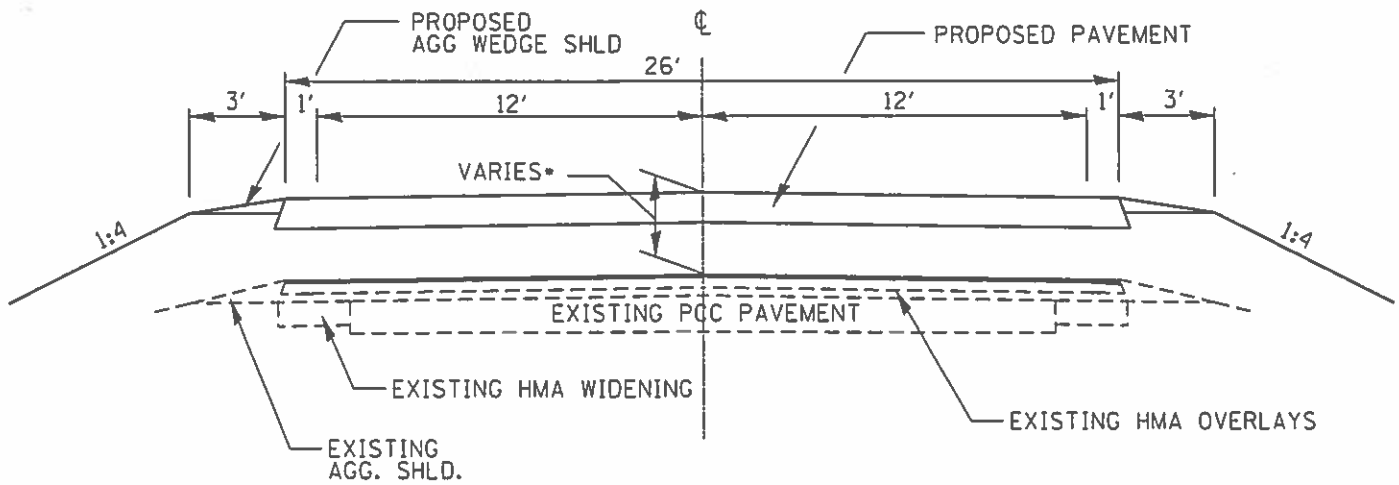
LOWEST COST OPTION	—————→	HMA	\$84,185	
OTHER OPTIONS (LOWEST TO HIGHEST):		JPCP	\$84,991	1.0%

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F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
786	III VBR	LaSALLE		
STA.		TO STA.		
FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJECT		
CONTRACT 66C58				



EXISTING ROADWAY TYPICAL SECTION



PROPOSED ROADWAY TYPICAL SECTION

689+00 TO 692+00  
709+25 TO 712+00

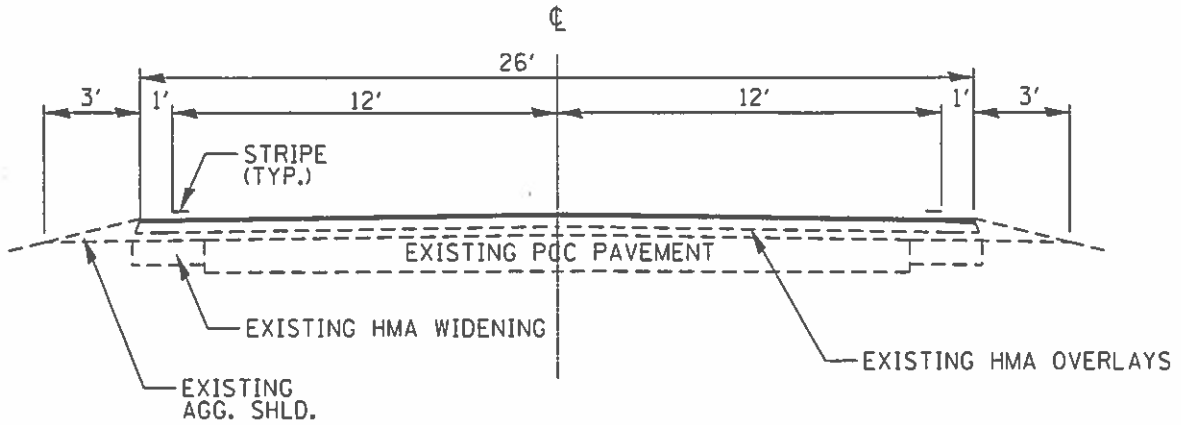
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• DATE • TIME

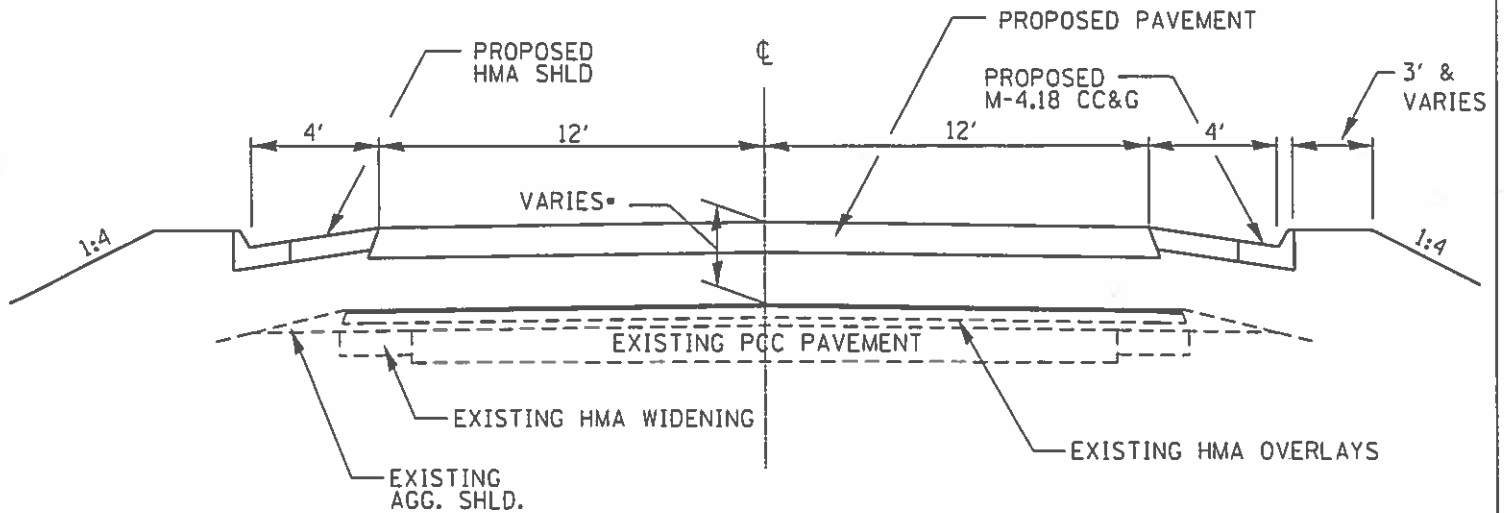
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**ROADWAY TYPICAL SECTION**

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
78E	111 VBR	LoSALLE		
STA.	TO STA.			
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		
CONTRACT 66C58				



### EXISTING ROADWAY TYPICAL SECTION



### PROPOSED ROADWAY TYPICAL SECTION

692+00 TO 693+89

708+31 TO 709+25 RT

708+94 TO 709+25 LT

• SEE PROFILE

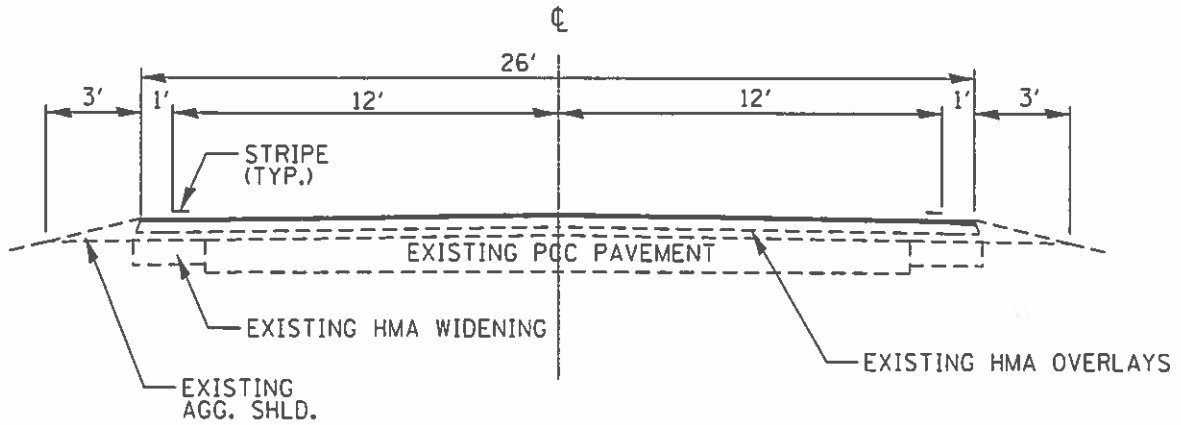
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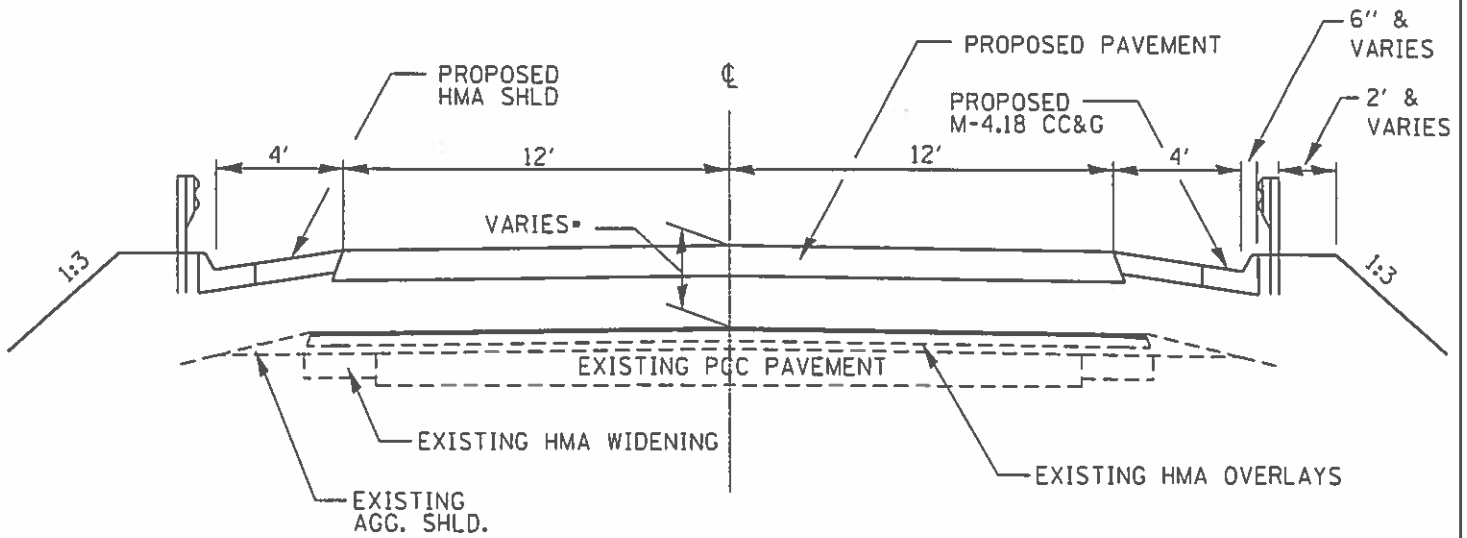
# ROADWAY TYPICAL SECTION



F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
786	111 VBR	LaSALLE		
STA.	TO STA.			
FED. ROAD DIST. NO.	ILLINOIS FED. AID PROJECT			
CONTRACT 66C58				



### EXISTING ROADWAY TYPICAL SECTION



### PROPOSED ROADWAY TYPICAL SECTION

693+89 TO 708+31 RT  
 693+89 TO 708+94 LT

• SEE PROFILE

• DATE • TIME •

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# ROADWAY TYPICAL SECTION