



Illinois Department of Transportation

To: Jeffrey L. Keirn Attn: Carrie Nelsen
From: Maureen M. Addis *MA*
Subject: Pavement Design Approval
Date: December 28, 2016

Route: I-57 Ramps at the Ina Interchange
Section: D9 Pavement Replacement 2017-1
County: Jefferson
Contract: 78532

We have reviewed the pavement design for the above referenced project which was submitted on December 12, 2016. The scope of the project is to replace approximately 300' of the SB and NB exit ramps, 400' of the SB entrance ramp, and 675' of the NB entrance ramp.

Due to the condition of the existing pavement, the high volume of large trucks, the turning movements of the large trucks at the ramp intersections, and the short length of the project, we concur with the District's determination of this being a special design; and with a special design, no cost analysis or comparison of pavement types is required.

The approved pavement design is as follows:

10" PCC Pavement w/ tied 10" PCC Shoulder
4" Stabilized Subbase
8" Aggregate Subgrade Improvement

If you have any questions, please contact Mike Brand at (217) 782-7651 or Michael.brand@illinois.gov.



Illinois Department of Transportation

Memorandum

To: Paul Niedernhofer
From: Jeffrey L. Keirn By: Carrie Nelsen
Subject: Pavement Design Submittal
Date: December 12, 2016

FAI 57 (I-57) Ramps at Ina Interchange
Section D9 Pavt Replacement 2017-1
Jefferson County
Contract No. 78532

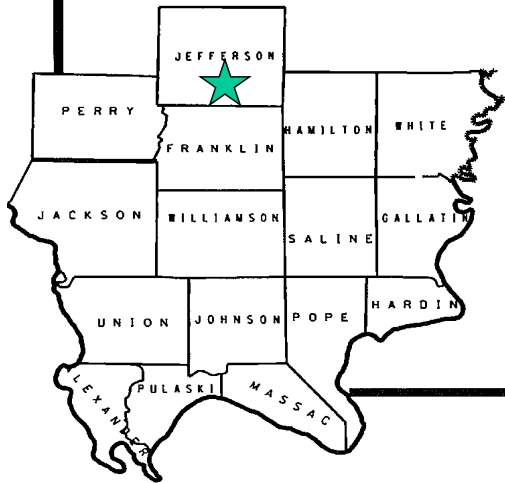
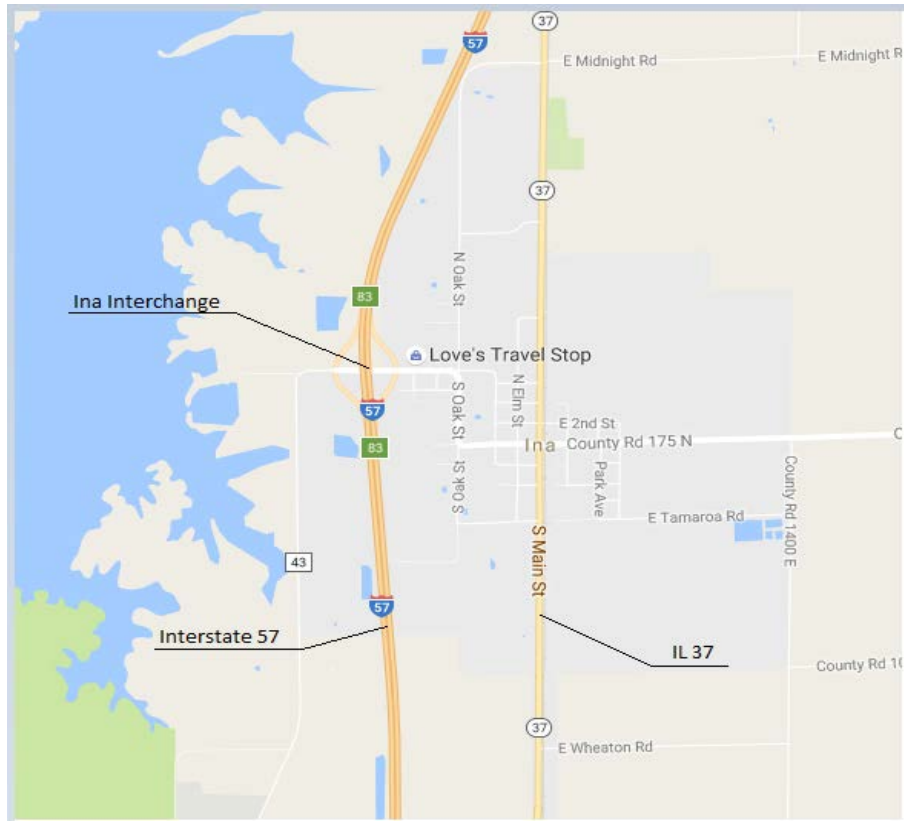
The proposed project is located on the entrance and exit ramps of the I-57/Ina Interchange in Jefferson County. Approximately 2000' of ramp pavement will be removed and replaced. The existing concrete/HMA overlay ramp pavement is experiencing rapid deterioration due to the extreme high number of multi-unit trucks (600 a day) generated by the Love's Truck Stop located at this interchange. Additionally, in the last year Love's Truck Stop has doubled its capacity for truck parking causing the District to anticipate more trucks resulting in higher pavement stress.

Attached please find a project location map, existing condition photos, proposed typical sections, the pavement design spreadsheet with life cycle costs, lifecycle task details for both HMA and PCC, and estimates of cost for both HMA and PCC.

Although the life cycle analysis shows a preference for HMA the district is requesting approval to proceed with PCC pavement on the above referenced contract.

Our reasoning for requesting PCC is as follows –

High Stress Pavement Section – 600 MU's a day
Multi-unit turning movements at ramp terminal



LOCATION MAP

I-57 at Ina Interchange Ramps
Jefferson County

PROJECT AND TRAFFIC INPUTS

(Enter Data in Gray Shaded Cells)

Route: FAI 57 at Ina ramps	Comments:			
Section: D9 Pavt Replacement 2017-1	Design Date:			
County: Jefferson	Modify Date:			
Location: Interchange Ramps at Ina				
Facility Type: Interstate or Freeway	** Ramp Design Fig. 54-1.B **			
# of Lanes = 1 Lane Ramp	Crossroad? Unmarked State Route			
Road Class: I	# of Lanes = 2 or 3			
Subgrade Support Rating (SSR): Poor				
Construction Year: 2017				
Design Period (DP) = 20 years				

	<-- BY		
	<-- BY	ADT	Year
	Current:	1,600	2017
	Future:	2,155	2037

Structural Design Traffic			
	Minimum ADT	Actual ADT	Actual %of Total ADT
PV =	0	1,055	56.2%
SU =	250	176	9.4%
MU =	750	646	34.4%
	Struct. Design ADT =	1,878	(2027)

TRAFFIC FACTOR CALCULATION			
FLEXIBLE PAVEMENT		RAMP DESIGN MIN	
Cpv =	0.15	0.15	50%
Csu =	132.5	112.06	50%
Cmu =	482.53	385.44	50%
TF flexible (Actual) =	6.70	(Actual ADT)	3.17
TF flexible (Min) =	3.17	(Min ADT Fig. 54-2.C)	

RIGID PAVEMENT		RAMP DESIGN MIN	
Cpv =	0.15	0.15	50%
Csu =	143.81	135.78	50%
Cmu =	696.42	567.21	50%
TF rigid (Actual) =	9.51	(Actual ADT)	4.59
TF rigid (Min) =	4.59	(Min ADT Fig. 54-2.C)	

NEW CONSTRUCTION / RECONSTRUCTION PAVEMENT DESIGN CALCULATIONS

Full-Depth HMA Pavement		JPC Pavement	
Use TF flexible =	6.70	Use TF rigid =	9.51
PG Grade Lower Binder Lifts =	PG 64-22 (Fig. 53-4.R)	Edge Support =	Tied Shoulder or C.&G.
HMA Mixture Temp. =	79.5 deg. F (Fig. 54-5.C)	Rigid Pavt Thick. =	10.00 in. (Fig. 54-4.E)
Design HMA Mixture Modulus (E _{HMA}) =	570 ksi (Fig. 54-5.D)		
Design HMA Strain (ε _{HMA}) =	70 (Fig. 54-5.E)	CRCP Pavement	
Full Depth HMA Design Thickness =	12.50 in. (Fig. 54-5.F)	Use TF rigid =	9.51
Limiting Strain Criterion Thickness =	16.50 in. (Fig. 54-5.I)	IBR value =	3
Use Full-Depth HMA Thickness =	12.50 inches	CRCP Thickness =	8.75 in. (Fig. 54-4.M)

TF MUST BE > 60 FOR CRCP

RECONSTRUCTION ONLY (SUPPLEMENTAL) PAVEMENT DESIGN CALCULATIONS

HMA Overlay of Rubblized PCC		Unbonded Concrete Overlay	
Use TF flexible =	6.70	Review 54-4.03 for limitations and special considerations.	
HMA Overlay Design Thickness =	9.25 in. (Fig. 54-5.U)	JPCP Thickness =	NA inches
Limiting Strain Criterion Thickness =	in. (Fig. 54-5.V)		
Use HMA Overlay Thickness =	999.00 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)

	Min. Str. Design Traffic (Fig 54-2.C)		
Facility Type	PV	SU*	MU*
Interstate or Freeway	0	500	1500
Other Marked State Route	0	250	750
Unmarked State Route	0	250	750

* Use marked route minimums for unmarked routes (Fig. 54-1.B)

	Traffic Factor ESAL Coefficients			
	Rigid (Fig. 54-4.C)		Flexible (Fig. 54-5.B)	
Class	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 One-Way Streets	
ADT	Class
0 - 3500	II
>3501	I

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

	Design Lane Distribution Factors For Structural Design Traffic (Fig. 54-2.B)					
	Rural			Urban		
Number of Lanes	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 **FAI 57 at Ina ramps**
 SECTION **D9 Pavt Replacement 2017-1**
 COUNTY **Jefferson**
 LOCATION **Interchange Ramps at Ina**

FACILITY TYPE **INTERSTATE**

PROJECT LENGTH **1500 FT == >** 0.28 Miles
 # OF CENTERLINES **1 CL**
 # OF LANES **1 LANES**
 # OF EDGES **2 EP**
 LANE WIDTH - AVERAGE **16 FT**
 SHOULDER WIDTH HMA Left **4 FT**
 HMA Right **10 FT**
 Total Width of Paved Shoulders **14 FT**

PAVEMENT THICKNESS (FLEXIBLE) **12.50 IN** **16.50 IN MAX**
 SHOULDER THICKNESS **12.50 IN** HMA_SD **Standard Design**
 POLICY OVERLAY THICKNESS **3.75 IN**

FLEX PAVEMENT	TRAFFIC FACTORS	MINIMUM	ACTUAL	USE
		3.17	6.70	6.70

[Read Me!](#)

HMA	COST PER TON	UNIT PRICE
HMA SURFACE		\$139.00 / TON
HMA TOP BINDER		\$121.00 / TON
HMA LOWER BINDER		\$101.00 / TON
HMA BINDER (LEVELING)		\$0.00 / TON
HMA SHOULDER		\$95.72 / TON

INITIAL COSTS

ITEM	THICKNESS	100% QUANTITY	UNIT	UNIT PRICE	COST
HMA PAVEMENT (FULL-DEPTH)	(12.50")	2667	2,667 SQ YD	\$82.21 / SQ YD	\$219,214 ~
HMA SURFACE COURSE	(2.00")	1.0104	302 TONS	\$139.00 / TON	\$0
HMA TOP BINDER COURSE	(2.25")	1.0326	347 TONS	\$121.00 / TON	\$0
HMA LOWER BINDER COURSE	(8.25")	1.0872	1,339 TONS	\$101.00 / TON	\$0

HMA SHOULDER	(12.50")	2333	2,333 SQ YD	\$67.00 / SQ YD	\$156,343 ~
CURB & GUTTER			0 LIN FT	\$0.00 / LIN FT	\$0
SUBBASE GRAN MATL TY C (TONS)			0 TONS	\$0.00 / TON	\$0
IMPROVED SUBGRADE:	Aggregate	Width = 33.1'	5,514 SQ YD	\$17.00 / SQ YD	\$93,738
Reserved For User Supplied Item			0 UNITS	\$0.00 / UNITS	\$0
Reserved For User Supplied Item			0 UNITS	\$0.00 / UNITS	\$0
PAVEMENT REMOVAL			2,667 SQ YD	\$19.00 / SQ YD	\$50,673
SHOULDER REMOVAL			2,000 SQ YD	\$10.00 / SQ YD	\$20,000

Note: * Denotes User Supplied Quantity

FLEXIBLE CONSTRUCTION INITIAL COST \$539,968
 FLEXIBLE CONSTRUCTION ANNUAL COST PER MILE \$77,520

MAINTENANCE COSTS:

ITEM	THICKNESS	MATERIAL	T	UNIT COST
ROUTINE MAINTENANCE ACTIVITY				\$0.00 LANE-MILE / YEAR
HMA OVERLAY PVMT SURF	(2.00")	1.0104 Surface Mix	2.00	\$15.73 / SQ YD
HMA OVERLAY PVMT	(3.75")	1.0195 Surface Mix	3.75	\$27.43 / SQ YD
HMA SURFACE MIX	(1.50")	1.0078 Surface Mix	1.50	\$11.77 / SQ YD
HMA BINDER MIX	(2.25")	1.0273 Top Binder Mix	2.25	\$15.66 / SQ YD
HMA OVERLAY SHLD (Year 30)	(1.75")	Shoulder Mix	1.75	\$9.38 / SQ YD
HMA OVERLAY SHLD	(2.00")	Shoulder Mix	2.00	\$10.72 / SQ YD
MILLING (2.00 IN)			2.00	\$3.00 / SQ YD
PARTIAL DEPTH PVMT PATCH (Mill & Fill Surf)		Surface Mix	2.00	\$85.57 / SQ YD

PARTIAL DEPTH SHLD PATCH	(Mill & Fill Surf)	Shoulder Mix	2.00	\$80.72 / SQ YD
PARTIAL DEPTH PVMT PATCH	(Mill & Fill +2.00 ")	Leveling Binder Mix	2.00	\$70.00 / SQ YD
PARTIAL DEPTH SHLD PATCH	(Mill & Fill +2.00 ")	Shoulder Mix	2.00	\$80.72 / SQ YD
LONGITUDINAL SHOULDER JOINT ROUT & SEAL				\$2.00 / LIN FT
CENTERLINE JOINT ROUT & SEAL				\$2.00 / LIN FT
RANDOM / THERMAL CRACK ROUT & SEAL	(100% Rehab = 110.00' / Station / Lane)			\$2.00 / LIN FT

FLEXIBLE TOTAL LIFE-CYCLE COST	\$675,831
FLEXIBLE TOTAL ANNUAL COST PER MILE	\$97,025

PCC PAVEMENT

JPCP

ROUTE
SECTION
COUNTY
LOCATION

**FAI 57 at Ina ramps
D9 Pavt Replacement 2017-1
Jefferson
Interchange Ramps at Ina**

FACILITY TYPE

INTERSTATE

PROJECT LENGTH **1500 FT == >** 0.28 Miles
 # OF CENTERLINES **1 CL**
 # OF LANES **1 LANES**
 # OF EDGES **2 EP**
 LANE WIDTH - AVERAGE **16 FT**
 SHOULDER WIDTH PCC Left **4 FT**
 PCC Right **10 FT**
 Total Width of Paved Shoulders **14 FT**

PAVEMENT THICKNESS (RIGID) **JPCP 10.00 IN TIED SHLD**
 SHOULDER THICKNESS **10.00 IN**

POLICY OVERLAY THICKNESS **3.75 IN**

RIGID PAVEMENT	TRAFFIC FACTORS	MINIMUM	ACTUAL	USE
Worksheet Construction Type is	Reconstruction	4.59	9.51	JPCP
			The Pavement Type is	JPCP

INITIAL COSTS

ITEM	THICKNESS	100% QUANTITY	UNIT	UNIT PRICE	COST
JPC PAVEMENT	(10.00")	2,667	SQ YD	\$96.00 / SQ YD	\$256,032
PAVEMENT REINFORCEMENT		0	SQ YD	\$0.00 / SQ YD	\$0
STABILIZED SUBBASE	(4.00")	5,167	SQ YD *	\$20.00 / SQ YD	\$103,340
PCC SHOULDERS		2,333	SQ YD	\$87.00 / SQ YD	\$202,971
CURB & GUTTER		0	LIN FT	\$0.00 / LIN FT	\$0
SUBBASE GRAN MATL TY C	(~ 1.68")	0	TONS *	\$0.00 / TON	\$0
IMPROVED SUBGRADE:	Aggregate Width = 31.0'	5,167	SQ YD	\$28.00 / SQ YD	\$144,676
Reserved For User Supplied Item		0	UNITS	\$0.00 / UNITS	\$0
Reserved For User Supplied Item		0	UNITS	\$0.00 / UNITS	\$0
PAVEMENT REMOVAL		2,667	SQ YD	\$19.00 / SQ YD	\$50,673
SHOULDER REMOVAL		2,000	SQ YD *	\$10.00 / SQ YD	\$20,000

Note: * Denotes User Supplied Quantity
 RIGID CONSTRUCTION INITIAL COST **\$777,692**
 RIGID CONSTRUCTION ANNUAL COST PER MILE **\$111,648**

MAINTENANCE COSTS:

ITEM	THICKNESS	MATERIAL	T	UNIT COST
ROUTINE MAINTENANCE ACTIVITY				\$0.00 / LANE-MILE / YEAR
HMA POLICY OVERLAY	(3.75")		3.75	
HMA POLICY OVERLAY PVMT	(3.75")	1.0195	3.75	\$27.43 / SQ YD
HMA SURFACE MIX	(1.50")	1.0078	1.50	\$11.77 / SQ YD
HMA BINDER MIX	(2.25")	1.0273	2.25	\$15.66 / SQ YD
HMA POLICY OVERLAY SHLD	(3.75")		3.75	\$20.10 / SQ YD
CLASS A PAVEMENT PATCHING				\$195.00 / SQ YD
CLASS B PAVEMENT PATCHING				\$150.00 / SQ YD
CLASS C SHOULDER PATCHING				\$145.00 / SQ YD
PARTIAL DEPTH PVMT PATCH (Mill & Fill HMA Surf)		Surface Mix	1.50	\$81.68 / SQ YD
PARTIAL DEPTH PVMT PATCH (Mill & Fill HMA 1.50")		Surface Mix	1.50	\$81.68 / 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 **\$863,346**
 RIGID TOTAL ANNUAL COST PER MILE **\$123,945**

LIFE-CYCLE COST ANALYSIS: NEW DESIGN

Calculated / Revised : 10/25/16 9:17 AM

			JPCP	HMA
CONSTRUCTION	INITIAL COST	PRESENT WORTH	\$777,692	\$539,968
		ANNUAL COST PER MILE	\$111,648	\$77,520
MAINTENANCE	LIFE-CYCLE COST	PRESENT WORTH	\$85,654	\$135,863
		ANNUAL COST PER MILE	\$12,297	\$19,505
TOTAL	LIFE-CYCLE COST	PRESENT WORTH	\$863,346	\$675,831
		ANNUAL COST PER MILE	\$123,945	\$97,025

LIFE-CYCLE COST ANALYSIS: FINAL SUMMARY

LOWEST COST OPTION	=====>	HMA	\$97,025	
OTHER OPTIONS (LOWEST TO HIGHEST):	TYPE / PERCENTAGE	JPCP	\$123,945	27.7%

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
YEAR 5							
	LONG SHLD JT R&S	100.00%	3,000	LIN FT	\$2.00	\$6,000	
	CNTR LINE JOINT R&S	100.00%	1,500	LIN FT	\$2.00	\$3,000	
	RNDM / THRM CRACK R&S	50.00%	825	LIN FT	\$2.00	\$1,650	
	PD PVMT PATCH M&F SURF	0.10%	3	SQ YD	\$85.57	\$257	
	PWFn =	0.8626		PW =	0.8626 X	\$10,907	\$9,408
YEAR 10							
	LONG SHLD JT R&S	100.00%	3,000	LIN FT	\$2.00	\$6,000	
	CNTR LINE JOINT R&S	100.00%	1,500	LIN FT	\$2.00	\$3,000	
	RNDM / THRM CRACK R&S	50.00%	825	LIN FT	\$2.00	\$1,650	
	PD PVMT PATCH M&F SURF	0.50%	13	SQ YD	\$85.57	\$1,112	
	PWFn =	0.7441		PW =	0.7441 X	\$11,762	\$8,752
YEAR 15							
	MILL PVMT & SHLD 2.00"	100.00%	5,000	SQ YD	\$3.00	\$15,000	
	PD PVMT PATCH M&F ADD'L 2.00"	1.00%	27	SQ YD	\$70.00	\$1,890	
	HMA OVERLAY PVMT 2.00"	100.00%	2,667	SQ YD	\$15.73	\$41,947	
	HMA OVERLAY SHLD 2.00 "	100.00%	2,333	SQ YD	\$10.72	\$25,015	
	PWFn =	0.6419		PW =	0.6419 X	\$83,852	\$53,821
YEAR 20							
	LONG SHLD JT R&S	100.00%	3,000	LIN FT	\$2.00	\$6,000	
	CNTR LINE JOINT R&S	100.00%	1,500	LIN FT	\$2.00	\$3,000	
	RNDM / THRM CRACK R&S	50.00%	825	LIN FT	\$2.00	\$1,650	
	PD PVMT PATCH M&F SURF	0.10%	3	SQ YD	\$85.57	\$257	
	PWFn =	0.5537		PW =	0.5537 X	\$10,907	\$6,039
YEAR 25							
	LONG SHLD JT R&S	100.00%	3,000	LIN FT	\$2.00	\$6,000	
	CNTR LINE JOINT R&S	100.00%	1,500	LIN FT	\$2.00	\$3,000	
	RNDM / THRM CRACK R&S	50.00%	825	LIN FT	\$2.00	\$1,650	
	PD PVMT PATCH M&F SURF	0.50%	13	SQ YD	\$85.57	\$1,112	
	PWFn =	0.4776		PW =	0.4776 X	\$11,762	\$5,618
HMA SD							
YEAR 30 INTERSTATE							
	MILL PVMT ONLY 2.00"	100.00%	2,667	SQ YD	\$3.00	\$8,001	
	PD PVMT PATCH M&F ADD'L 2.00"	2.00%	53	SQ YD	\$70.00	\$3,710	
	PD SHLD PATCH M&F SURF 2.00"	1.00%	23	SQ YD	\$80.72	\$1,857	
	HMA OVERLAY PVMT 3.75 "	100.00%	2,667	SQ YD	\$27.43	\$73,147	
	HMA OVERLAY SHLD 1.75 "	100.00%	2,333	SQ YD	\$9.38	\$21,888	
	PWFn =	0.4120		PW =	0.4120 X	\$108,603	\$44,743
YEAR 35							
	LONG SHLD JT R&S	100.00%	3,000	LIN FT	\$2.00	\$6,000	
	CNTR LINE JOINT R&S	100.00%	1,500	LIN FT	\$2.00	\$3,000	
	RNDM / THRM CRACK R&S	50.00%	825	LIN FT	\$2.00	\$1,650	
	PD PVMT PATCH M&F SURF	0.10%	3	SQ YD	\$85.57	\$257	
	PWFn =	0.3554		PW =	0.3554 X	\$10,907	\$3,876
YEAR 40							
	LONG SHLD JT R&S	100.00%	3,000	LIN FT	\$2.00	\$6,000	
	CNTR LINE JOINT R&S	100.00%	1,500	LIN FT	\$2.00	\$3,000	
	RNDM / THRM CRACK R&S	50.00%	825	LIN FT	\$2.00	\$1,650	
	PD PVMT PATCH M&F SURF	0.50%	13	SQ YD	\$85.57	\$1,112	
	PWFn =	0.3066		PW =	0.3066 X	\$11,762	\$3,606
							\$135,863
ROUTINE MAINTENANCE ACTIVITY				0.28 Lane Miles	0.00	\$0	\$0
						MAINTENANCE LIFE-CYCLE COST	\$135,863
45	YEAR LIFE CYCLE	CRFn = 0.0407852				MAINTENANCE ANNUAL COST PER MILE	\$19,505

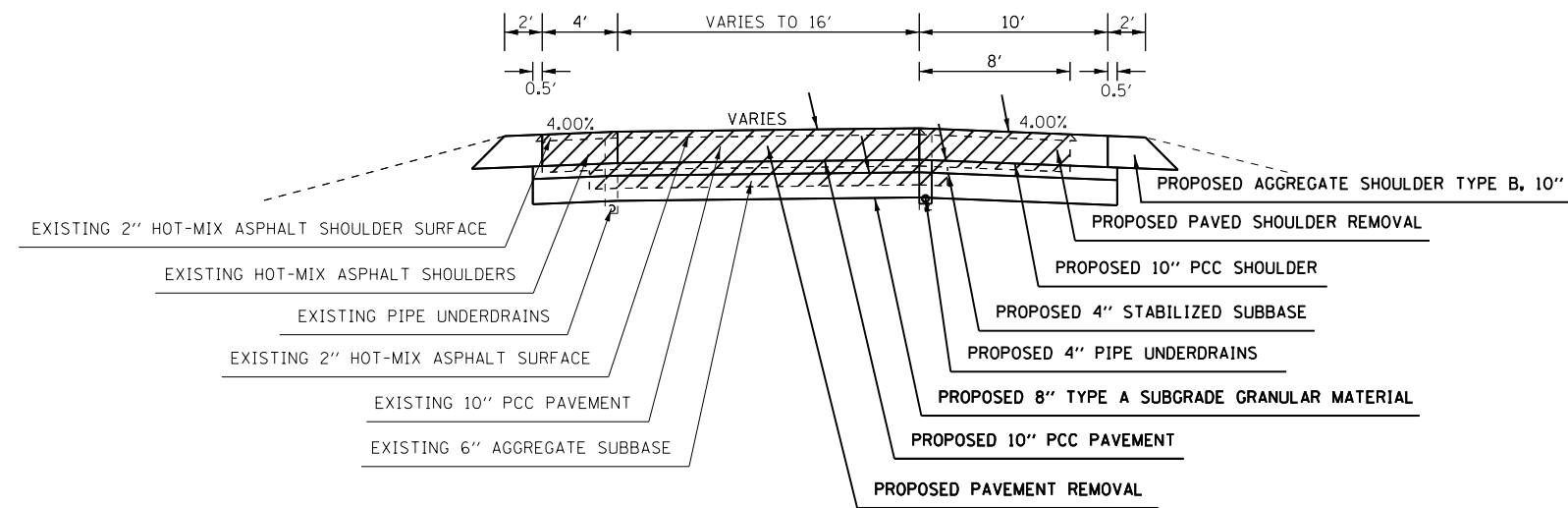
JOINTED PLAIN CONCRETE PAVEMENT
UNBONDED JOINTED PLAIN CONCRETE OVERLAY
Figure 54-7.A

MAINTENANCE COSTS:	ITEM	%	QUANTITY	UNIT	UNIT COST	COST	PRESENT WORTH	
YEAR 10								
	PAVEMENT PATCH CLASS B	0.10%	3	SQ YD	\$150.00	\$450		
		PWFn = 0.7441			PW = 0.7441 X	\$450	\$335	
YEAR 15								
	PAVEMENT PATCH CLASS B	0.20%	5	SQ YD	\$150.00	\$750		
		PWFn = 0.6419			PW = 0.6419 X	\$750	\$481	
YEAR 20								
	PAVEMENT PATCH CLASS B	2.00%	53	SQ YD	\$150.00	\$7,950		
	SHOULDER PATCH CLASS C	0.50%	12	SQ YD	\$145.00	\$1,740		
	LONGITUDINAL SHLD JT R&S	100.00%	3,000	LIN FT	\$2.00	\$6,000		
	CENTERLINE JT R&S	100.00%	1,500	LIN FT	\$2.00	\$3,000		
		PWFn = 0.5537			PW = 0.5537 X	\$18,690	\$10,348	
YEAR 25								
	PAVEMENT PATCH CLASS B	3.00%	80	SQ YD	\$150.00	\$12,000		
	SHOULDER PATCH CLASS C	1.00%	23	SQ YD	\$145.00	\$3,335		
		PWFn = 0.4776			PW = 0.4776 X	\$15,335	\$7,324	
YEAR 30								
	INTERSTATE							
	PAVEMENT PATCH CLASS B	4.00%	107	SQ YD	\$150.00	\$16,050		
	SHOULDER PATCH CLASS C	1.50%	35	SQ YD	\$145.00	\$5,075		
	HMA POLICY OVERLAY 3.75" (PVMT)	100.00%	2,667	SQ YD	\$27.43	\$73,147		
	HMA POLICY OVERLAY 3.75" (SHLD)	100.00%	2,333	SQ YD	\$20.10	\$46,903		
		PWFn = 0.4120			PW = 0.4120 X	\$141,175	\$58,162	
YEAR 35								
	INTERSTATE							
	LONGITUDINAL SHLD JT R&S	100.00%	3,000	LIN FT	\$2.00	\$6,000		
	CENTERLINE JT R&S	100.00%	1,500	LIN FT	\$2.00	\$3,000		
	RANDOM CRACK R&S	50.00%	750	LIN FT	\$2.00	\$1,500		
	REFLECTIVE TRANSVERSE CRACK R&S	40.00%	640	LIN FT	\$2.00	\$1,280		
	PD PVMT PATCH M&F HMA SURF 1.50"	0.10%	3	SQ YD	\$81.68	\$245		
		PWFn = 0.3554			PW = 0.3554 X	\$12,025	\$4,273	
YEAR 40								
	INTERSTATE							
	PAVEMENT PATCH CLASS B	0.50%	13	SQ YD	\$150.00	\$1,950		
	LONGITUDINAL SHLD JT R&S	100.00%	3,000	LIN FT	\$2.00	\$6,000		
	CENTERLINE JT R&S	100.00%	1,500	LIN FT	\$2.00	\$3,000		
	REFLECTIVE TRANSVERSE CRACK R&S	60.00%	960	LIN FT	\$2.00	\$1,920		
	RANDOM CRACK R&S	50.00%	750	LIN FT	\$2.00	\$1,500		
	PD PVMT PATCH M&F HMA SURF 1.50"	0.50%	13	SQ YD	\$81.68	\$1,062		
		PWFn = 0.3066			PW = 0.3066 X	\$15,432	\$4,731	
							\$85,654	
	ROUTINE MAINTENANCE ACTIVITY				0.28 Lane Miles	\$0.00	\$0	\$0
							MAINTENANCE LIFE-CYCLE COST	\$85,654
45	YEAR LIFE CYCLE		CRFn = 0.0407852		MAINTENANCE ANNUAL COST PER MILE		\$12,297	

TYPICAL SECTION #1

ENTRANCE & EXIT RAMPS

JEFFERSON COUNTY
SOUTHBOUND RAMPS
F.A.I. ROUTE 57
(LOOKING IN DIRECTION OF INCREASING STATION)



TO BE USED:
INA INTERCHANGE RAMPS
RAMP "A" SOUTHBOUND ENTRANCE
STATION 1A+00 TO STATION 4A+64.00

FILE NAME =	USER NAME = poesl	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	TYPICAL SECTION RAMP A			F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
p:\11\084EBIDINTEG\illinois.gov\PIWIDOT\Documents\DOT Offices\District 9\Projects\78532\Drawings\CADsheets\78532-shrb-typ_sch.dgn	DRAWN =	CHECKED -	REVISED -					1-57	D9 PAVT REPLACEMENT 2017-1	JEFFERSON		
Default	PLOT SCALE = 10.0000' / in.	DATE -	REVISED -		CONTRACT NO. 78532			ILLINOIS FED. AID PROJECT				
	PLOT DATE = 12/12/2016	DATE -	REVISED -		SCALE:	SHEET	OF	SHEETS	STA.	TO STA.		