Illinois Department of Transportation

To:	John Fortmann	Attn: District One
From:	John D. Baranzelli	
Subject:	Pavement Design	
Date:	June 9, 2015	

FAP Route 344 (IL 25 & IL 62)
13-00215-10-PV
Kane County
At Longmeadow Parkway

The project, submitted to BDE by email memo dated May 26, 2015, will construct a new roadway [Longmeadow Parkway] under local jurisdiction. The project length does not qualify for alternate bid, as it is less than 2 lane-miles. Pavement analysis yielded a rigid design for IL 25 [favored by 12.8%] and a flexible design for IL 62 [favored by 10.5%]. The approved pavement design is as follows:

<u>IL 25 (Pavement Reconstruction)</u>

10 inches of PCC Pavement with Tied PCC Curb & Gutter
12 inches of Aggregate Subgrade Improvement

<u>IL 62 (Pavement Reconstruction)</u>

10.25 inches of Full Depth HMA Pavement with PCC Curb & Gutter
- 2 inches of Polymerized HMA Surface Course, Mix "F", N90
- 2.25 inches of Polymerized HMA Binder Course, IL-19.0, N90
- 6 inches of HMA Base Course, IL-19.0, N90

12 inches of Aggregate Subgrade Improvement

If you have any questions, please contact Paul Niedernhofer at (217) 524-1651.

Illinois Department of Transportation

Memorandum

To: John D. Baranzelli | Attn: Paul Niedernhofer

From: Jose A. Dominguez | By: Melchor Mangoba / Ojas Patel

Subject: Pavement Analysis*

Date: May 26, 2015

*Route: IL 25 and IL 62
Limits: at Longmeadow Parkway
Section: 13-00215-10-PV
Current target: Fall 2015

County: Kane
Contract No.: NA
Job No.: C-91-513-08

We have completed the pavement analysis for the above captioned location. Review by the Central Office is required since the total pavement area for reconstruction exceeds 4,750 Square Yards. The following is the scope of the project:

Reconstruction of approximately 1,300 feet of IL 25 and 2,700 feet of IL 62 as a result of the new construction of Longmeadow Parkway (new route under local jurisdiction).

IL 25 and IL 62 at Longmeadow Parkway are "High Stress" intersections since the design lane MU ADT exceeds 200 vehicles. District 1 recommends rigid pavement or Mix "F" 90 or at "High Stress" intersections to be built at a minimum 150 feet back from the location of the stop bar.

A 20-year pavement analysis was performed on the above segments. We recommend a mechanistic-rigid pavement design for IL 25 and a mechanistic flexible pavement design for IL 62 based on the life cycle cost analysis which favors PCC pavement by 12.8% for IL 25 and flexible pavement by 10.5% for IL 62.

<u>IL 25</u>
Reconstruction
PCC Curb and Gutter (Tied)
10" PCC Pavement (Jointed)[1]
12" Aggregate Subgrade Improvement[4]

IL 62
Reconstruction
Shoulder with PCC Curb and Gutter
10 ¼" Full Depth HMA [2, 3]
2" Polymerized HMA Surface Course, Mix "F", N90
2 ¼" Polymerized HMA Binder Course, IL-19.0, N90
6" HMA Base Course, IL-19.0, N90
12" Aggregate Subgrade Improvement[4]

[1]Designer Note 1: Use pay item **42000501, PORTLAND CEMENT CONCRETE PAVEMENT 10" (JOINTED),** paid for in square yards.

[2]Designer Note 2: Use pay item **40701886, HOT-MIX ASPHALT PAVEMENT (FULL-DEPTH), 10 ¼"** paid for in square yards.

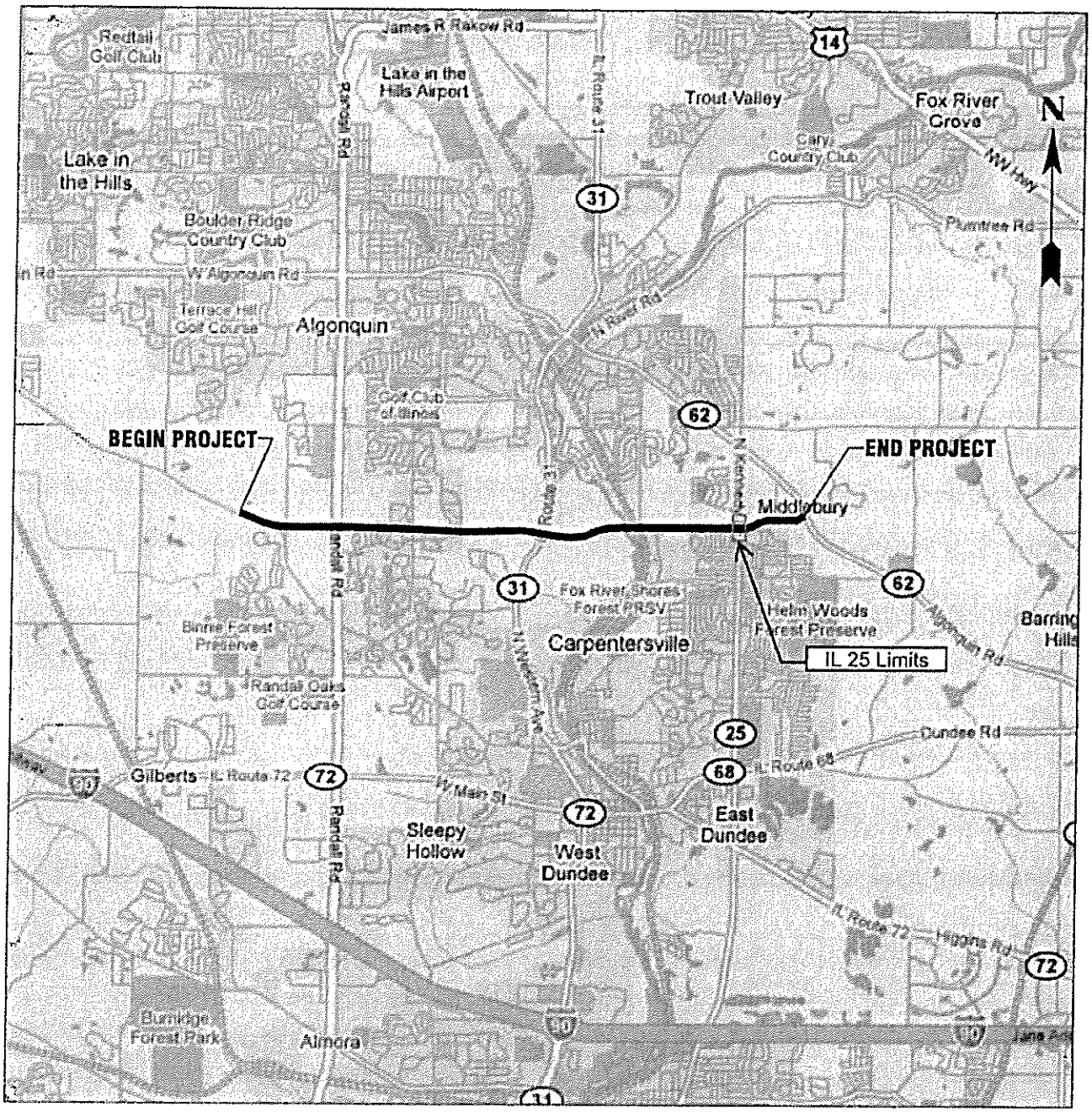
[3]Designer Note 3: Refer to the District One, Bureau of Materials' "Hot-Mix Asphalt – Mix Selection" tables to determine the corresponding HMA mix table requirements for the plans.

[4]Designer Note 4: Use pay item **30300112, AGGREGATE SUBGRADE IMPROVEMENT, 12"**, paid in square yards.

If you have any questions or need additional information, please contact Ojas Patel, Pavement Design Engineer, at (847)705-4550.

By: Jose A. Dominguez
Jose A. Dominguez, P.E.
Project Support Engineer

LOCATION MAP



LONGMEADOW PARKWAY
94-00215-01-ES
BOYER ROAD TO IL 62

EXHIBIT 1

BDE 5401 Template (Rev. 09/05/2013)

IDOT MECHANISTIC PAVEMENT DESIGN

Printed: 06/11/2015

PROJECT AND TRAFFIC INPUTS

(Enter Data in Gray Shaded Cells)

Route: IL 25
Section: 13-00215-20-BR
County: Kane
Location: at Longmeadow Parkway

Comments: Local Roads - Longmeadow Parkway (New Construction)

Design Date: 04/28/2015 ONP <-- BY
Modify Date: <-- BY

	ADT	Year
Current:	20,110	2011
Future:	34,000	2040

Facility Type: Other Marked State Route
# of Lanes = 4

Road Class: I

Subgrade Support Rating (SSR): Poor
Construction Year: 2016
Design Period (DP) = 20 years

	Minimum ADT	Structural Design Traffic: Actual ADT	Actual %of Total ADT	% of ADT in Design Lane	
PV =	0	23,746	87.0%	P =	32%
SU =	250	2,457	9.0%	S =	45%
MU =	750	1,092	4.0%	M =	45%
Struct. Design ADT =		27,294	(2026)		

TRAFFIC FACTOR CALCULATION

FLEXIBLE PAVEMENT

Cpv =	0.15	
Csu =	132.5	
Cmu =	482.53	
TF flexible (Actual) =	7.69	(Actual ADT)
TF flexible (Min) =	3.56	(Min ADT Fig. 54-2.C)

RIGID PAVEMENT

Cpv =	0.15	
Csu =	143.81	
Cmu =	696.42	
TF rigid (Actual) =	10.05	(Actual ADT)
TF rigid (Min) =	5.02	(Min ADT Fig. 54-2.C)

NEW CONSTRUCTION / RECONSTRUCTION PAVEMENT DESIGN CALCULATIONS

Full-Depth HMA Pavement

Use TF flexible =	7.69	
PG Grade Lower Binder Lifts =	PG 64-22	(Fig. 53-4.R)
HMA Mixture Temp. =	74.0	deg. F (Fig. 54-5.C)
Design HMA Mixture Modulus (E_{HMA}) =	720	ksi (Fig. 54-5.D)
Design HMA Strain (ε_{HMA}) =	67	(Fig. 54-5.E)
Full Depth HMA Design Thickness =	11.50	in. (Fig. 54-5.F)
Limiting Strain Criterion Thickness =	14.50	in. (Fig. 54-5.I)
Use Full-Depth HMA Thickness =	**11.50**	**inches**

Goto Map

Goto Map

JPC Pavement

Use TF rigid =	10.05	
Edge Support =	Tied	Shoulder or C.&G.
Rigid Pavt Thick. =	**10.00**	**in. (Fig. 54-4.E)**

CRC Pavement

Use TF rigid =	10.05	
IBR value =	3	
CRCP Thickness =	**9.00**	**in. (Fig. 54-4.M)**

TF MUST BE > 60 FOR CRCP

RECONSTRUCTION ONLY (SUPPLEMENTAL) PAVEMENT DESIGN CALCULATIONS

HMA Overlay of Rubblized PCC

Use TF flexible =	7.69	
HMA Overlay Design Thickness =	9.00	in. (Fig. 54-5.U)
Limiting Strain Criterion Thickness =		in. (Fig. 54-5.V)
Use HMA Overlay Thickness =	**999.00**	**inches**

Goto Map

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)

	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	No Min	No Min	No Min

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

	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 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%

BDE 5401 Template (Rev. 09/05/2013) Printed: 06/11/2015

LIFE-CYCLE COST ANALYSIS: NEW CONSTRUCTION / RECONSTRUCTION

FULL-DEPTH HMA PAVEMENT

Standard Design

ROUTE	IL 25
SECTION	13-00215-20-BR
COUNTY	Kane
LOCATION	at Longmeadow Parkway
FACILITY TYPE	NON-INTERSTATE

PROJECT LENGTH		1275 FT	= = >	0.24 Miles
# OF CENTERLINES		3 CL		
# OF LANES		4 LANES		
# OF EDGES		2 EP		
LANE WIDTH - AVERAGE		12 FT		
SHOULDER WIDTH	HMA Left	0 FT		
	HMA Right	0 FT		
	Total Width of Paved Shoulders	0 FT		

PAVEMENT THICKNESS (FLEXIBLE)	11.50 IN	14.50 IN MAX
SHOULDER THICKNESS	8.00 IN	HMA_SH **Standard Design**
POLICY OVERLAY THICKNESS	2.25 IN	

FLEX PAVEMENT TRAFFIC FACTORS	MINIMUM	ACTUAL	USE
	3.56	7.69	7.69

Read Me!

HMA COST PER TON	UNIT PRICE
HMA SURFACE	$97.52 / TON
HMA TOP BINDER	$88.28 / TON
HMA LOWER BINDER	$74.46 / TON
HMA BINDER (LEVELING)	$92.90 / TON
HMA SHOULDER	$72.00 / TON

INITIAL COSTS

ITEM	THICKNESS	100% QUANTITY	UNIT		UNIT PRICE		COST	
HMA PAVEMENT (FULL-DEPTH)	(11.50")	6,800	SQ YD	*	$52.82	/ SQ YD	$359,176	~
HMA SURFACE COURSE	(2.00")	764	TONS		$97.52	/ TON	$0	
HMA TOP BINDER COURSE	(2.25")	866	TONS		$88.28	/ TON	$0	
HMA LOWER BINDER COURSE	(7.25")	2,836	TONS		$74.46	/ TON	$0	
HMA SHOULDER	(8.00")	0	TONS		$72.00	/ TON	$0	~
CURB & GUTTER		2,550	LIN FT	*	$30.00	/ LIN FT	$76,500	
SUBBASE GRAN MATL TY C (TONS)		25	TONS		$25.00	/ TON	$625	
IMPROVED SUBGRADE:	Aggregate	7,213	SQ YD		$7.00	/ SQ YD	$50,491	
Reserved For User Supplied Item		0	UNITS		$0.00	/ UNITS	$0	
Reserved For User Supplied Item		0	UNITS		$0.00	/ UNITS	$0	
PAVEMENT REMOVAL		6,800	SQ YD		$15.00	/ SQ YD	$102,000	
SHOULDER REMOVAL		0	SQ YD		$10.00	/ SQ YD	$0	

Note: * Denotes User Supplied Quantity

FLEXIBLE CONSTRUCTION INITIAL COST	$588,792
FLEXIBLE CONSTRUCTION ANNUAL COST PER MILE	$99,446

MAINTENANCE COSTS:

ITEM	THICKNESS	MATERIAL	UNIT COST	
ROUTINE MAINTENANCE ACTIVITY			$0.00	LANE-MILE / YEAR
HMA OVERLAY PVMT SURF	(2.00")	Surface Mix	$10.96	/ SQ YD
HMA OVERLAY PVMT	(2.25")		$12.14	/ SQ YD
HMA SURFACE MIX	(1.50")	Surface Mix	$8.21	/ SQ YD
HMA BINDER MIX	(0.75")	eling Binder Mix	$3.93	/ SQ YD
HMA OVERLAY SHLD (Year 30)	(2.25")	Shoulder Mix	$9.07	/ SQ YD
HMA OVERLAY SHLD	(2.00")	Shoulder Mix	$8.06	/ SQ YD
MILLING (2.00 IN)			$3.00	/ SQ YD
PARTIAL DEPTH PVMT PATCH	(Mill & Fill Surf)	Surface Mix	$80.92	/ SQ YD
PARTIAL DEPTH SHLD PATCH	(Mill & Fill Surf)	Shoulder Mix	$78.06	/ SQ YD
PARTIAL DEPTH PVMT PATCH	(Mill & Fill +2.00 ")	Leveling Binder Mix	$80.40	/ SQ YD
PARTIAL DEPTH SHLD PATCH	(Mill & Fill +2.00 ")	Shoulder Mix	$78.06	/ 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	$765,948
FLEXIBLE TOTAL ANNUAL COST PER MILE	$129,368

MAINTENANCE AND REHABILITATION ACTIVITY SCHEDULE 06/11/15

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%	2,550	LIN FT	$2.00		$5,100	
	CNTR LINE JOINT R&S	100.00%	3,825	LIN FT	$2.00		$7,650	
	RNDM / THRM CRACK R&S	50.00%	2,805	LIN FT	$2.00		$5,610	
	PD PVMT PATCH M&F SURF	0.10%	7	SQ YD	$80.92		$566	
	PWFn =	0.8626		PW =	0.8626	X	$18,926	$16,326
YEAR 10								
	LONG SHLD JT R&S	100.00%	2,550	LIN FT	$2.00		$5,100	
	CNTR LINE JOINT R&S	100.00%	3,825	LIN FT	$2.00		$7,650	
	RNDM / THRM CRACK R&S	50.00%	2,805	LIN FT	$2.00		$5,610	
	PD PVMT PATCH M&F SURF	0.50%	34	SQ YD	$80.92		$2,751	
	PWFn =	0.7441		PW =	0.7441	X	$21,111	$15,709
YEAR 15								
	MILL PVMT & SHLD 2.00"	100.00%	6,800	SQ YD	$3.00		$20,400	
	PD PVMT PATCH M&F ADD'L 2.00"	1.00%	68	SQ YD	$80.40		$5,468	
	HMA OVERLAY PVMT 2.00"	100.00%	6,800	SQ YD	$10.96		$74,529	
	HMA OVERLAY SHLD 2.00 "	100.00%	0	SQ YD	$8.06		$0	
	PWFn =	0.6419		PW =	0.6419	X	$100,397	$64,441
YEAR 20								
	LONG SHLD JT R&S	100.00%	2,550	LIN FT	$2.00		$5,100	
	CNTR LINE JOINT R&S	100.00%	3,825	LIN FT	$2.00		$7,650	
	RNDM / THRM CRACK R&S	50.00%	2,805	LIN FT	$2.00		$5,610	
	PD PVMT PATCH M&F SURF	0.10%	7	SQ YD	$80.92		$566	
	PWFn =	0.5537		PW =	0.5537	X	$18,926	$10,479
YEAR 25								
	LONG SHLD JT R&S	100.00%	2,550	LIN FT	$2.00		$5,100	
	CNTR LINE JOINT R&S	100.00%	3,825	LIN FT	$2.00		$7,650	
	RNDM / THRM CRACK R&S	50.00%	2,805	LIN FT	$2.00		$5,610	
	PD PVMT PATCH M&F SURF	0.50%	34	SQ YD	$80.92		$2,751	
	PWFn =	0.4776		PW =	0.4776	X	$21,111	$10,083
	HMA_SD							
YEAR 30	NON-INTERSTATE							
	MILL PVMT & SHLD 2.00"	100.00%	6,800	SQ YD	$3.00		$20,400	
	PD PVMT PATCH M&F ADD'L 2.00"	2.00%	136	SQ YD	$80.40		$10,935	
	PD SHLD PATCH M&F ADD'L 2.00"	1.00%	0	SQ YD	$78.06		$0	
	HMA OVERLAY PVMT 2.25 "	100.00%	6,800	SQ YD	$12.14		$82,553	
	HMA OVERLAY SHLD 2.25 "	100.00%	0	SQ YD	$9.07		$0	
	PWFn =	0.4120		PW =	0.4120	X	$113,888	$46,920
YEAR 35								
	LONG SHLD JT R&S	100.00%	2,550	LIN FT	$2.00		$5,100	
	CNTR LINE JOINT R&S	100.00%	3,825	LIN FT	$2.00		$7,650	
	RNDM / THRM CRACK R&S	50.00%	2,805	LIN FT	$2.00		$5,610	
	PD PVMT PATCH M&F SURF	0.10%	7	SQ YD	$80.92		$566	
	PWFn =	0.3554		PW =	0.3554	X	$18,926	$6,726
YEAR 40								
	LONG SHLD JT R&S	100.00%	2,550	LIN FT	$2.00		$5,100	
	CNTR LINE JOINT R&S	100.00%	3,825	LIN FT	$2.00		$7,650	
	RNDM / THRM CRACK R&S	50.00%	2,805	LIN FT	$2.00		$5,610	
	PD PVMT PATCH M&F SURF	0.50%	34	SQ YD	$80.92		$2,751	
	PWFn =	0.3066		PW =	0.3066	X	$21,111	$6,472
								$177,156
	ROUTINE MAINTENANCE ACTIVITY		0.97	Lane Miles	0.00		$0	$0
					MAINTENANCE LIFE-CYCLE COST			$177,156
45	YEAR LIFE CYCLE	CRFn = 0.0407852			MAINTENANCE ANNUAL COST PER MILE			$29,921

PCC PAVEMENT

JPCP

ROUTE	IL 25
SECTION	13-00215-20-BR
COUNTY	Kane
LOCATION	at Longmeadow Parkway
FACILITY TYPE	NON-INTERSTATE

PROJECT LENGTH		1275 FT	= = >	0.24 Miles
# OF CENTERLINES		3 CL		
# OF LANES		4 LANES		
# OF EDGES		2 EP		
LANE WIDTH - AVERAGE		12 FT		
SHOULDER WIDTH	PCC Left	0 FT		
	PCC Right	0 FT		
	Total Width of Paved Shoulders	0 FT		

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

POLICY OVERLAY THICKNESS 2.50 IN

RIGID PAVEMENT TRAFFIC FACTORS	MINIMUM	ACTUAL	USE
	5.02	10.05	10.05
Worksheet Construction Type is Reconstruction		The Pavement Type is	JPCP

INITIAL COSTS

ITEM	THICKNESS	100% QUANTITY	UNIT		UNIT PRICE		COST
JPC PAVEMENT	(10.00")	6,800	SQ YD		$50.77	/ SQ YD	$345,236
PAVEMENT REINFORCEMENT		0	SQ YD		$22.00	/ SQ YD	$0
STABILIZED SUBBASE	(4.00")	0	SQ YD	*	$19.00	/ SQ YD	$0
PCC SHOULDERS	(10.00" to 10.00")	0	SQ YD		$40.00	/ SQ YD	$0
CURB & GUTTER		2,550	LIN FT	*	$30.00	/ LIN FT	$76,500
SUBBASE GRAN MATL TY C	(~ 0.00")	0	TONS		$25.00	/ TON	$0
IMPROVED SUBGRADE:	Aggregate	6,942	SQ YD		$7.00	/ SQ YD	$48,594
Reserved For User Supplied Item		0	UNITS		$0.00	/ UNITS	$0
Reserved For User Supplied Item		0	UNITS		$0.00	/ UNITS	$0
PAVEMENT REMOVAL		6,800	SQ YD		$15.00	/ SQ YD	$102,000
SHOULDER REMOVAL		0	SQ YD		$10.00	/ SQ YD	$0

Note: * Denotes User Supplied Quantity

RIGID CONSTRUCTION INITIAL COST	$572,330
RIGID CONSTRUCTION ANNUAL COST PER MILE	$96,666

MAINTENANCE COSTS:

ITEM	THICKNESS	MATERIAL		UNIT COST	
ROUTINE MAINTENANCE ACTIVITY				$0.00	/ LANE-MILE / YEAR
HMA POLICY OVERLAY	(2.50")		2.50		
HMA POLICY OVERLAY PVMT	(2.50")		2.50	$13.45	/ SQ YD
HMA SURFACE MIX	(1.50")	Surface Mix	1.50	$8.21	/ SQ YD
HMA BINDER MIX	(1.00")	eling Binder Mix	1.00	$5.24	/ SQ YD
HMA POLICY OVERLAY SHLD	(2.50")	Shoulder Mix	2.50	$10.08	/ 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	$78.19	/ SQ YD
PARTIAL DEPTH PVMT PATCH (Mill & Fill HMA 2.50")		Surface Mix	2.50	$83.65	/ 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	$679,041
RIGID TOTAL ANNUAL COST PER MILE	$114,689

MAINTENANCE AND REHABILITATION ACTIVITY SCHEDULE 06/11/15

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%	7	SQ YD	$150.00		$1,050	
	PWFn =	0.7441		PW =	0.7441	X	$1,050	$781
YEAR 15								
	PAVEMENT PATCH CLASS B	0.20%	14	SQ YD	$150.00		$2,100	
	PWFn =	0.6419		PW =	0.6419	X	$2,100	$1,348
YEAR 20								
	PAVEMENT PATCH CLASS B	2.00%	136	SQ YD	$150.00		$20,400	
	SHOULDER PATCH CLASS C	0.50%	0	SQ YD	$145.00		$0	
	LONGITUDINAL SHLD JT R&S	100.00%	2,550	LIN FT	$2.00		$5,100	
	CENTERLINE JT R&S	100.00%	3,825	LIN FT	$2.00		$7,650	
	PWFn =	0.5537		PW =	0.5537	X	$33,150	$18,354
YEAR 25								
	PAVEMENT PATCH CLASS B	3.00%	204	SQ YD	$150.00		$30,600	
	SHOULDER PATCH CLASS C	1.00%	0	SQ YD	$145.00		$0	
	PWFn =	0.4776		PW =	0.4776	X	$30,600	$14,615
YEAR 30	NON-INTERSTATE							
	PAVEMENT PATCH CLASS B	4.00%	272	SQ YD	$150.00		$40,800	
	SHOULDER PATCH CLASS C	1.50%	0	SQ YD	$145.00		$0	
	HMA POLICY OVERLAY 2.5" (PVMT)	100.00%	6,800	SQ YD	$13.45		$91,470	
	HMA POLICY OVERLAY 2.5" (SHLD)	100.00%	0	SQ YD	$10.08		$0	
	PWFn =	0.4120		PW =	0.4120	X	$132,270	$54,493
YEAR 35	NON-INTERSTATE							
	LONGITUDINAL SHLD JT R&S	100.00%	2,550	LIN FT	$2.00		$5,100	
	CENTERLINE JT R&S	100.00%	3,825	LIN FT	$2.00		$7,650	
	RANDOM CRACK R&S	50.00%	2,550	LIN FT	$2.00		$5,100	
	REFLECTIVE TRANSVERSE CRACK R&S	40.00%	1,632	LIN FT	$2.00		$3,264	
	PD PVMT PATCH M&F HMA 2.50"	0.10%	7	SQ YD	$83.65		$586	
	PWFn =	0.3554		PW =	0.3554	X	$21,700	$7,712
YEAR 40	NON-INTERSTATE							
	PAVEMENT PATCH CLASS B	0.50%	34	SQ YD	$150.00		$5,100	
	LONGITUDINAL SHLD JT R&S	100.00%	2,550	LIN FT	$2.00		$5,100	
	CENTERLINE JT R&S	100.00%	3,825	LIN FT	$2.00		$7,650	
	REFLECTIVE TRANSVERSE CRACK R&S	60.00%	2,448	LIN FT	$2.00		$4,896	
	RANDOM CRACK R&S	50.00%	2,550	LIN FT	$2.00		$5,100	
	PD PVMT PATCH M&F HMA 2.50"	0.50%	34	SQ YD	$83.65		$2,844	
	PWFn =	0.3066		PW =	0.3066	X	$30,690	$9,408
								$106,711
	ROUTINE MAINTENANCE ACTIVITY		0.97	Lane Miles	$0.00		$0	$0
					MAINTENANCE LIFE-CYCLE COST			$106,711
45	YEAR LIFE CYCLE	CRFn = 0.0407852			MAINTENANCE ANNUAL COST PER MILE			$18,023

LIFE-CYCLE COST ANALYSIS: NEW DESIGN

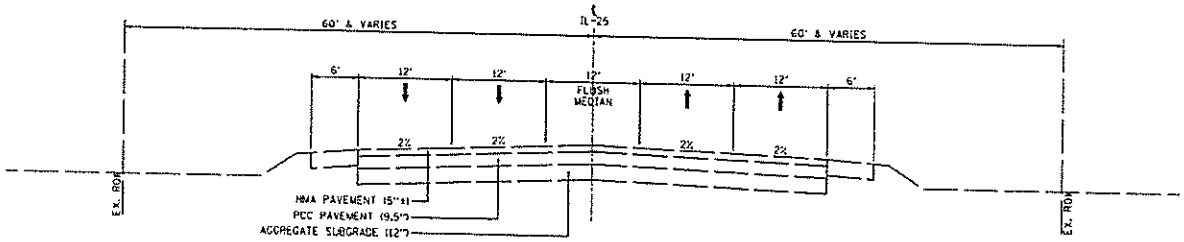
Calculated / Revised : 5/26/15 9:13 AM

			JPCP	HMA
CONSTRUCTION	INITIAL COST	PRESENT WORTH	$572,330	$588,792
		ANNUAL COST PER MILE	$96,666	$99,446
MAINTENANCE	LIFE-CYCLE COST	PRESENT WORTH	$106,711	$177,156
		ANNUAL COST PER MILE	$18,023	$29,921
TOTAL	LIFE-CYCLE COST	PRESENT WORTH	$679,041	$765,948
		ANNUAL COST PER MILE	$114,689	$129,368

LIFE-CYCLE COST ANALYSIS: FINAL SUMMARY

LOWEST COST OPTION	==========>	**JPCP**	**$114,689**	
OTHER OPTIONS (LOWEST TO HIGHEST):	TYPE / PERCENTAGE	**HMA**	**$129,368**	**12.8%**

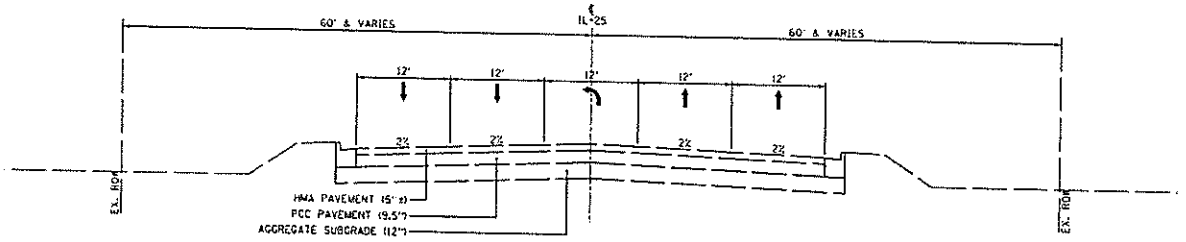
P:\Pavement Design Stuff\D-1\IL 25 - IL 62 at Longmeadow Parkway\[IL 25 - Mechanistic Design LCCA 09-05-13.xlsm]LifeCycleCost



EXISTING IL ROUTE 25
STATIONS 605+25.00 TO 606+86.90

NOTES:

1. EXISTING PAVEMENT COMPOSITION AND DEPTHS INTERPRETED FROM RECORD DRAWINGS AND PAVEMENT CORES PCC-04 AND PCC-05



EXISTING IL ROUTE 25
STATIONS 606+86.90 TO 611+00.00

NOTES:

1. EXISTING PAVEMENT COMPOSITION AND DEPTHS INTERPRETED FROM RECORD DRAWINGS AND PAVEMENT CORES PCC-04 AND PCC-05

ILLINOIS ROUTE 25 — PCC

STRUCTURAL DESIGN TRAFFIC	DESIGN YR	2025
	PV	23,747 VPD
	SU	2,457 VPD
	MU	1,092 VPD
ROAD/STREET CLASSIFICATION		CLASS I
PERCENT OF STRUCTURE TRAFFIC IN DESIGN LANE	R	32%
	U	45%
	M	45%
TRAFFIC FACTOR	ACTUAL	10.05
	MINIMUM	5.38
PCC THICKNESS		10.0"
SUBGRADE SUPPORT RATING (SSR)		POOR

LEGEND

PCC PAVEMENT

- (A) PORTLAND CEMENT CONCRETE PAVEMENT 10" (JOINTED) (ALL REQUIRED JOINTS INCLUDED IN COST)
- (B) TIE BARS (INCLUDED IN CONCRETE CURB & GUTTER OR CONCRETE MEDIAN COSTS)
- (C) SAWED LONGITUDINAL JOINT (INCLUDED IN COST OF PCC PVT 10 JOINTED)
- (D) LONGITUDINAL CONSTRUCTION JOINT (INCLUDED IN COST OF PCC PVT 10 JOINTED)
- (E) COMBINATION CONCRETE CURB & GUTTER TYPE B-6.12
- (F) COMBINATION CONCRETE CURB & GUTTER TYPE B-6.24
- (G) CONCRETE MEDIAN TYPE SB-6.12
- (H) CONCRETE MEDIAN SURFACE, 4"

HMA PAVEMENT

- (I) HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N70 2"
- (J) HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N70 10"
- (K) HOT-MIX ASPHALT SURFACE REMOVAL 2"
  HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N70 2"
- (L) HOT-MIX ASPHALT SHOULDERS 6"
- (M) STRIP REFLECTIVE CRACK CONTROL TREATMENT
- (N) BITUMINOUS MATERIALS, PRIME COAT
- (O) HMA SURFACE COURSE, MIX "D", N50 3"
- (P) HMA SURFACE COURSE, MIX "D", N50 2"
- (Q) HMA BASE COURSE (HMA BINDER IL-19MM) 10"

AGGREGATES & ROADSIDE

- (R) AGGREGATE SUBGRADE IMPROVEMENT 12"
- (S) REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL (UNDERCUT) & AGGREGATE SUBGRADE IMPROVEMENT (SEE CROSS SECTIONS FOR DEPTH)
- (T) GRANULAR EMBANKMENT SPECIAL (MSE WALL SUPPORT)
- (U) AGGREGATE SHOULDERS, TYPE B 6"
- (V) AGGREGATE BASE COURSE, TYPE B 6"
- (W) STEEL PLATE BEAM GUARDRAILS OR TRAFFIC BARRIER TERMINALS
- (X) TOPSOIL 6", SEEDING & EROSION CONTROL (SEE PLAN SHEETS)
- (Y) EMBANKMENT FOR CLAY LINING 12"

CMT

USER NAME = Pasan Rana	DESIGNED - JMS/PFR	REVISED -	
	DRAWN - PFR	REVISED -	
PLOT SCALE = 10.0000 ' / in.	CHECKED - KDF	REVISED -	
PLOT DATE = 3/4/2015	DATE - 3/5/2015	REVISED -	

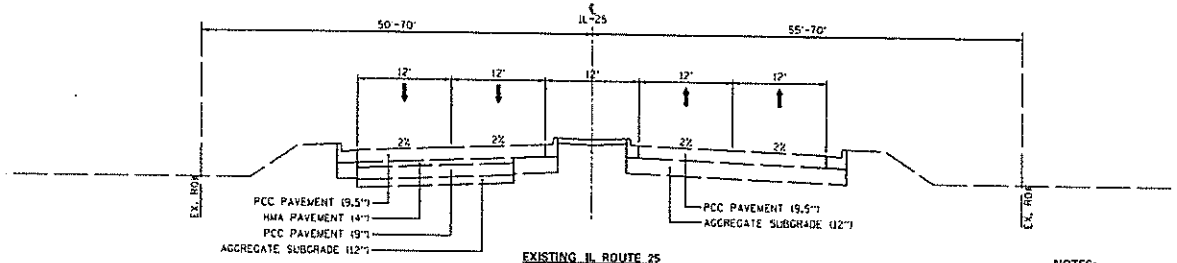
KANE COUNTY
DIVISION OF TRANSPORTATION
LONGMEADOW PARKWAY

TYPICAL SECTIONS
ILLINOIS ROUTE 25

SCALE: NTS | SHEET 1 OF 6 SHEETS | STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
361	13-00015-20-BR	KANE	636	27

CONTRACT NO.
ILLINOIS FED. AID PROJECT DPC-M-00190004

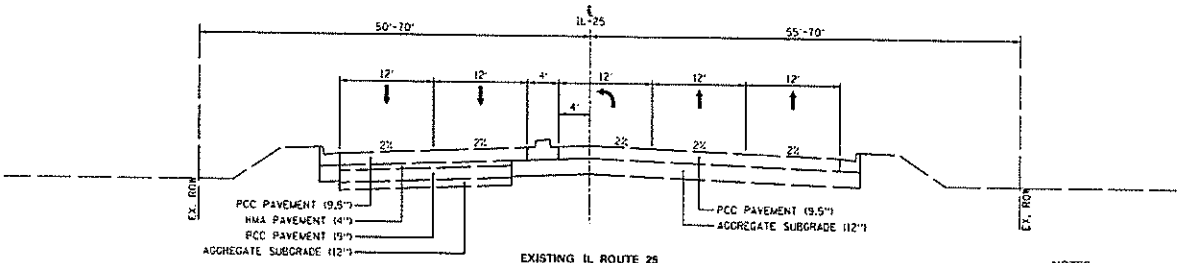


EXISTING IL ROUTE 25

STATIONS 611+98.57 TO 617+32.41

NOTES:

1. EXISTING PAVEMENT COMPOSITION AND DEPTHS INTERPRETED FROM RECORD DRAWINGS AND PAVEMENT CORES PCC-06 AND PCC-07



EXISTING IL ROUTE 25

STATIONS 617+32.41 TO 619+25.59

NOTES:

1. EXISTING PAVEMENT COMPOSITION AND DEPTHS INTERPRETED FROM RECORD DRAWINGS AND PAVEMENT CORES PCC-06 AND PCC-07

LEGEND

PCC PAVEMENT

- (A) PORTLAND CEMENT CONCRETE PAVEMENT 10" (JOINTED) (ALL REQUIRED JOINTS INCLUDED IN COST)
- (B) TIE BARS (INCLUDED IN CONCRETE CURB & GUTTER OR CONCRETE MEDIAN COSTS)
- (C) SAWED LONGITUDINAL JOINT (INCLUDED IN COST OF PCC PVT 10 JOINTED)
- (D) LONGITUDINAL CONSTRUCTION JOINT (INCLUDED IN COST OF PCC PVT 10 JOINTED)
- (E) COMBINATION CONCRETE CURB & GUTTER TYPE B-6.12
- (F) COMBINATION CONCRETE CURB & GUTTER TYPE B-6.24
- (G) CONCRETE MEDIAN TYPE SB-6.12
- (H) CONCRETE MEDIAN SURFACE, 4"

HMA PAVEMENT

- (I) HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N70 2"
- (J) HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N70 10"
- (K) HOT-MIX ASPHALT SURFACE REMOVAL 2"
  HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N70 2"
- (L) HOT-MIX ASPHALT SHOULDERS 6"
- (M) STRIP REFLECTIVE CRACK CONTROL TREATMENT
- (N) BITUMINOUS MATERIALS, PRIME COAT
- (O) HMA SURFACE COURSE, MIX "D", N50 3"
- (P) HMA SURFACE COURSE, MIX "D", N50 2"
- (Q) HMA BASE COURSE (HMA BINDER IL-19MM) 10"

AGGREGATES & ROADSIDE

- (R) AGGREGATE SUBGRADE IMPROVEMENT 12"
- (S) REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL (UNDERCUT) & AGGREGATE SUBGRADE IMPROVEMENT (SEE CROSS SECTIONS FOR DEPTH)
- (T) GRANULAR EMBANKMENT SPECIAL (USE WALL SUPPORT)
- (U) AGGREGATE SHOULDERS, TYPE B 6"
- (V) AGGREGATE BASE COURSE, TYPE B 6"
- (W) STEEL PLATE BEAM GUARDRAILS OR TRAFFIC BARRIER TERMINALS
- (X) TOPSOIL 6", SEEDING & EROSION CONTROL (SEE PLAN SHEETS)
- (Y) EMBANKMENT FOR CLAY LINING 12"

CMT

USER NAME = Peter Ross	DESIGNED - JMS/PER	REVISED -
	DRAWN - PER	REVISED -
PLOT SCALE = 10.0000' / in.	CHECKED - KDF	REVISED -
PLOT DATE = 3/4/2015	DATE - 3/5/2015	REVISED -

KANE COUNTY
DIVISION OF TRANSPORTATION
LONGMEADOW PARKWAY

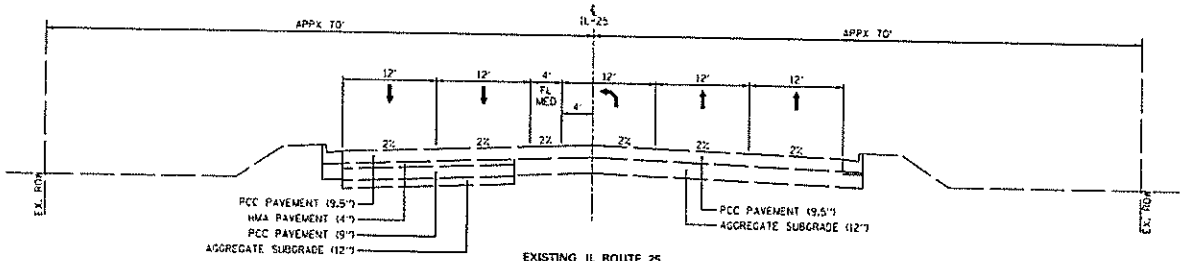
TYPICAL SECTIONS
ILLINOIS ROUTE 25

SCALE: NTS | SHEET 2 OF 6 SHEETS | STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
361	13-00216-00-BR	KANE	636	28

CONTRACT NO.

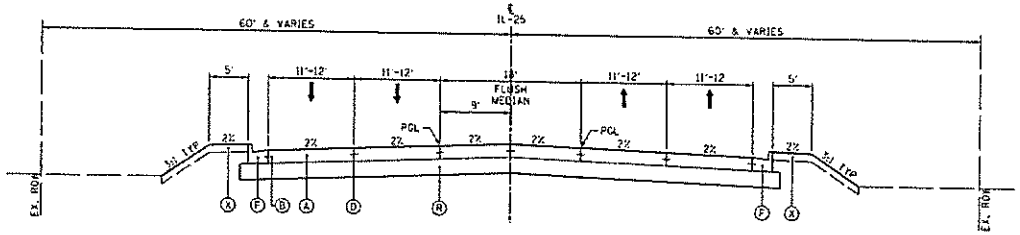
INTERSECTION PROJECT



EXISTING IL ROUTE 25
STATIONS 619+25.59 TO 623+18.17

NOTES:

1. EXISTING PAVEMENT COMPOSITION AND DEPTHS INTERPRETED FROM RECORD DRAWINGS AND PAVEMENT CORES PCC-06 AND PCC-07



PROPOSED IL ROUTE 25
STATIONS 605+25.00 TO 608+57.10

LEGEND

PCC PAVEMENT

- (A) PORTLAND CEMENT CONCRETE PAVEMENT 10" (JOINTED) (ALL REQUIRED JOINTS INCLUDED IN COST)
- (B) TIE BARS (INCLUDED IN CONCRETE CURB & GUTTER OR CONCRETE MEDIAN COSTS)
- (C) SAWED LONGITUDINAL JOINT (INCLUDED IN COST OF PCC PVT 10 JOINTED)
- (D) LONGITUDINAL CONSTRUCTION JOINT (INCLUDED IN COST OF PCC PVT 10 JOINTED)
- (E) COMBINATION CONCRETE CURB & GUTTER TYPE B-6.12
- (F) COMBINATION CONCRETE CURB & GUTTER TYPE B-6.24
- (G) CONCRETE MEDIAN TYPE SB-6.12
- (H) CONCRETE MEDIAN SURFACE, 4"

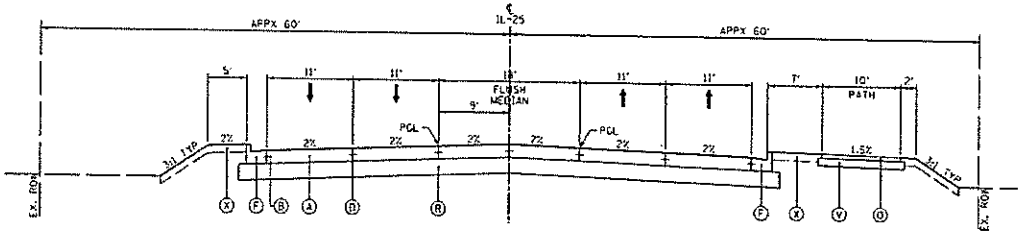
HMA PAVEMENT

- (I) HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N70 2"
- (J) HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N70 10"
- (K) HOT-MIX ASPHALT SURFACE REMOVAL 2"
  HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N70 2"
- (L) HOT-MIX ASPHALT SHOULDERS 6"
- (M) STRIP REFLECTIVE CRACK CONTROL TREATMENT
- (N) BITUMINOUS MATERIALS, PRIME COAT
- (O) HMA SURFACE COURSE, MIX "D", N50 3"
- (P) HMA SURFACE COURSE, MIX "D", N50 2"
- (Q) HMA BASE COURSE (HMA BINDER IL-19MM) 10'

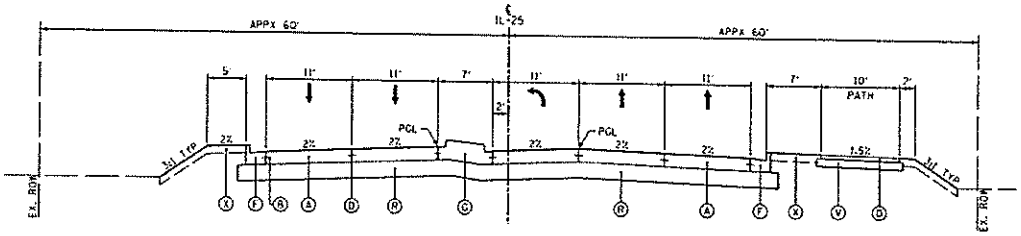
AGGREGATES & ROADSIDE

- (R) AGGREGATE SUBGRADE IMPROVEMENT 12"
- (S) REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL (UNDERCUT) & AGGREGATE SUBGRADE IMPROVEMENT (SEE CROSS SECTIONS FOR DEPTH)
- (T) GRANULAR EMBANKMENT SPECIAL (MSE WALL SUPPORT)
- (U) AGGREGATE SHOULDERS, TYPE B 6"
- (V) AGGREGATE BASE COURSE, TYPE B 6"
- (W) STEEL PLATE BEAM GUARDRAILS OR TRAFFIC BARRIER TERMINALS
- (X) TOPSOIL 6", SEEDING & EROSION CONTROL (SEE PLAN SHEETS)
- (Y) EMBANKMENT FOR CLAY LINING 12"

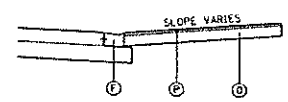
CMT	USER NAME = Parker Rene	DESIGNED - JWS/PFR	REVISED -	KANE COUNTY DIVISION OF TRANSPORTATION LONGMEADOW PARKWAY	TYPICAL SECTIONS ILLINOIS ROUTE 25	F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		DRAWN - PFR	REVISED -			361	13-00215-20-BR	KANE	636	29
	PLOT SCALE = 10.0000 ' / in.	CHECKED - KDF	REVISED -					CONTRACT NO.		
	PLOT DATE = 3/4/2015	DATE - 3/5/2015	REVISED -		SCALE: NTS / SHEET 3 OF 6 SHEETS / STA. TO STA.			ILLINOIS FED. AID PROJECT DPC-06-00190000		



PROPOSED IL ROUTE 25
STATIONS 608+57.10 TO 609+74.24



PROPOSED IL ROUTE 25
STATIONS 609+74.24 TO 611+89.18



DRIVEWAY DETAIL

LEGEND

PCC PAVEMENT

- (A) PORTLAND CEMENT CONCRETE PAVEMENT 10" (JOINTED) (ALL REQUIRED JOINTS INCLUDED IN COST)
- (B) TIE BARS (INCLUDED IN CONCRETE CURB & GUTTER OR CONCRETE MEDIAN COSTS)
- (C) SAWED LONGITUDINAL JOINT (INCLUDED IN COST OF PCC PVT 10 JOINTED)
- (D) LONGITUDINAL CONSTRUCTION JOINT (INCLUDED IN COST OF PCC PVT 10 JOINTED)
- (E) COMBINATION CONCRETE CURB & GUTTER TYPE B-6.12
- (F) COMBINATION CONCRETE CURB & GUTTER TYPE B-6.24
- (G) CONCRETE MEDIAN TYPE SB-6.12
- (H) CONCRETE MEDIAN SURFACE, 4"

HMA PAVEMENT

- (I) HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N70 2"
- (J) HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N70 10"
- (K) HOT-MIX ASPHALT SURFACE REMOVAL 2"
  HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N70 2"
- (L) HOT-MIX ASPHALT SHOULDERS 6"
- (M) STRIP REFLECTIVE CRACK CONTROL TREATMENT
- (N) BITUMINOUS MATERIALS, PRIME COAT
- (O) HMA SURFACE COURSE, MIX "D", N50 3"
- (P) HMA SURFACE COURSE, MIX "D", N50 2"
- (Q) HMA BASE COURSE (HMA BINDER IL-19MM) 10"

AGGREGATES & ROADSIDE

- (R) AGGREGATE SUBGRADE IMPROVEMENT 12"
- (S) REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL (UNDERCUT) & AGGREGATE SUBGRADE IMPROVEMENT (SEE CROSS SECTIONS FOR DEPTH)
- (T) GRANULAR EMBANKMENT SPECIAL (MSE WALL SUPPORT)
- (U) AGGREGATE SHOULDERS, TYPE B 6"
- (V) AGGREGATE BASE COURSE, TYPE B 6"
- (W) STEEL PLATE BEAM GUARDRAILS OR TRAFFIC BARRIER TERMINALS
- (X) TOPSOIL 6", SEEDING & EROSION CONTROL (SEE PLAN SHEETS)
- (Y) EMBANKMENT FOR CLAY LINING 12"

CMT	USER NAME = Parker Ross	DESIGNED - JMS/PFR	REVISED -
		DRAWN - PFR	REVISED -
	PLOT SCALE = 15.0000 ' / in.	CHECKED - KDF	REVISED -
	PLOT DATE = 3/4/2015	DATE - 3/5/2015	REVISED -

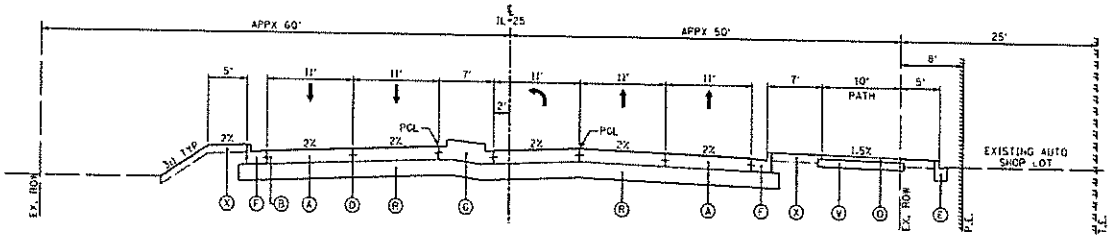
KANE COUNTY
DIVISION OF TRANSPORTATION
LONGMEADOW PARKWAY

TYPICAL SECTIONS
ILLINOIS ROUTE 25

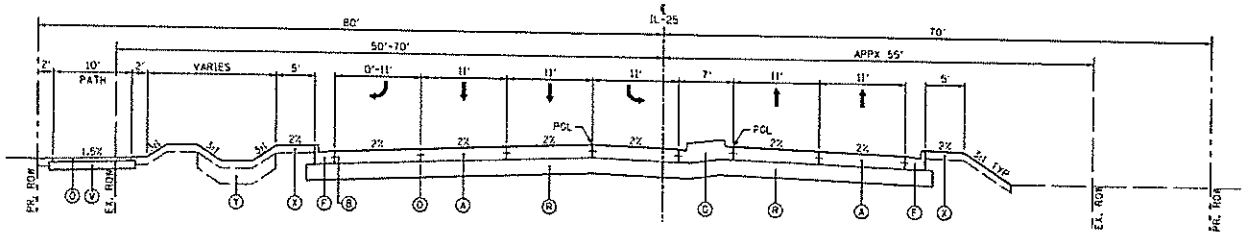
SCALE: NTS | SHEET 4 OF 6 SHEETS | STA. | TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
361	13-00215-20-BR	KANE	636	30

CONTRACT NO.
ILLINOIS FED. AID PROJECT



PROPOSED IL ROUTE 25
STATIONS 609+74.24 TO 611+89.18



PROPOSED IL ROUTE 25
STATIONS 613+53.39 TO 616+89.05

LEGEND

PCC PAVEMENT

- (A) PORTLAND CEMENT CONCRETE PAVEMENT 10" (JOINTED) (ALL REQUIRED JOINTS INCLUDED IN COST)
- (B) TIE BARS (INCLUDED IN CONCRETE CURB & GUTTER OR CONCRETE MEDIAN COSTS)
- (C) SAWED LONGITUDINAL JOINT (INCLUDED IN COST OF PCC PVT 10 JOINTED)
- (D) LONGITUDINAL CONSTRUCTION JOINT (INCLUDED IN COST OF PCC PVT 10 JOINTED)
- (E) COMBINATION CONCRETE CURB & GUTTER TYPE B-6.12
- (F) COMBINATION CONCRETE CURB & GUTTER TYPE B-6.24
- (G) CONCRETE MEDIAN TYPE SB-6.12
- (H) CONCRETE MEDIAN SURFACE, 4"

HMA PAVEMENT

- (I) HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N70 2"
- (J) HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N70 10"
- (K) HOT-MIX ASPHALT SURFACE REMOVAL 2"
  HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N70 2"
- (L) HOT-MIX ASPHALT SHOULDERS 6"
- (M) STRIP REFLECTIVE CRACK CONTROL TREATMENT
- (N) BITUMINOUS MATERIALS, PRIME COAT
- (O) HMA SURFACE COURSE, MIX "D", N50 3"
- (P) HMA SURFACE COURSE, MIX "D", N50 2"
- (Q) HMA BASE COURSE (HMA BINDER IL-19MM) 10"

AGGREGATES & ROADSIDE

- (R) AGGREGATE SUBGRADE IMPROVEMENT 12"
- (S) REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL (UNDERCUT) & AGGREGATE SUBGRADE IMPROVEMENT (SEE CROSS SECTIONS FOR DEPTH)
- (T) GRANULAR EMBANKMENT SPECIAL (MSE WALL SUPPORT)
- (U) AGGREGATE SHOULDERS, TYPE B 6"
- (V) AGGREGATE BASE COURSE, TYPE B 6"
- (W) STEEL PLATE BEAM GUARDRAILS OR TRAFFIC BARRIER TERMINALS
- (X) TOPSOIL 6", SEEDING & EROSION CONTROL (SEE PLAN SHEETS)
- (Y) EMBANKMENT FOR CLAY LINING 12"

CMT	USER NAME = Peter Ross	DESIGNED - JMS/PFR	REVISED -
		DRAWN - PFR	REVISED -
	PLOT SCALE = 10.0000 ' / in.	CHECKED - RDF	REVISED -
	PLOT DATE = 3/4/2015	DATE - 3/5/2015	REVISED -

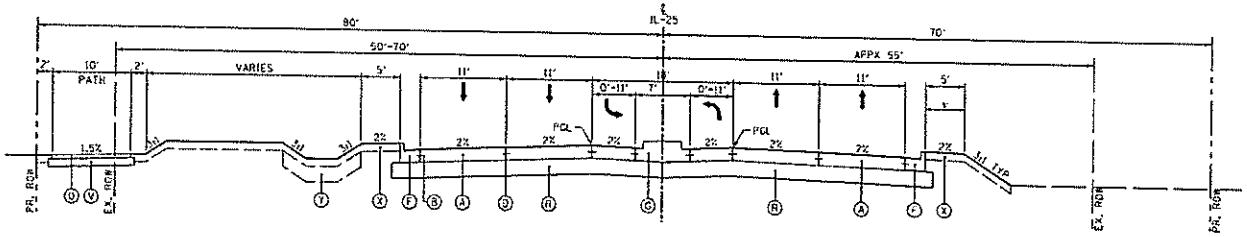
KANE COUNTY
DIVISION OF TRANSPORTATION
LONGMEADOW PARKWAY

TYPICAL SECTIONS
ILLINOIS ROUTE 25

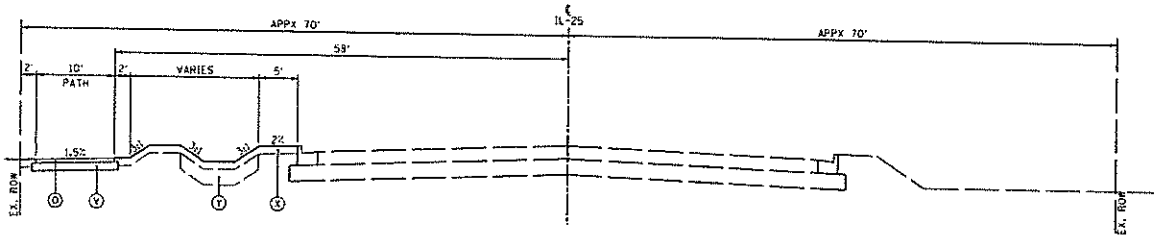
SCALE: NTS | SHEET 5 OF 6 SHEETS | STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
341	13-00215-20-WR	KANE	636	31

CONTRACT NO.
ILLINOIS FED. AID PROJECT



PROPOSED IL ROUTE 25
STATIONS 616+99.05 TO 617+98.33



PROPOSED IL ROUTE 25
STATIONS 617+98.33 TO 623+18.17

LEGEND

PCC PAVEMENT

- (A) PORTLAND CEMENT CONCRETE PAVEMENT 10" (JOINTED) (ALL REQUIRED JOINTS INCLUDED IN COST)
- (B) TIE BARS (INCLUDED IN CONCRETE CURB & GUTTER OR CONCRETE MEDIAN COSTS)
- (C) SAWED LONGITUDINAL JOINT (INCLUDED IN COST OF PCC PVT TO JOINTED)
- (D) LONGITUDINAL CONSTRUCTION JOINT (INCLUDED IN COST OF PCC PVT TO JOINTED)
- (E) COMBINATION CONCRETE CURB & GUTTER TYPE B-6.12
- (F) COMBINATION CONCRETE CURB & GUTTER TYPE B-6.24
- (G) CONCRETE MEDIAN TYPE SB-6.12
- (H) CONCRETE MEDIAN SURFACE, 4"

HMA PAVEMENT

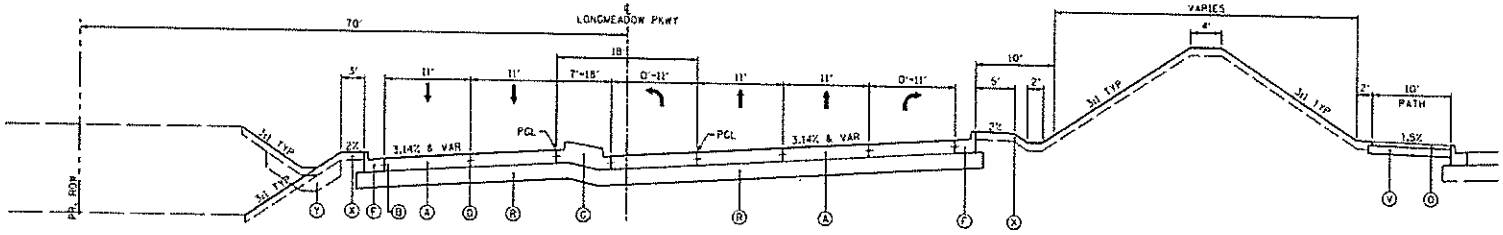
- (I) HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N70 2"
- (J) HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N70 10"
- (K) HOT-MIX ASPHALT SURFACE REMOVAL 2"
  HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N70 2"
- (L) HOT-MIX ASPHALT SHOULDERS 6"
- (M) STRIP REFLECTIVE CRACK CONTROL TREATMENT
- (N) BITUMINOUS MATERIALS, PRIME COAT
- (O) HMA SURFACE COURSE, MIX "D", N50 3"
- (P) HMA SURFACE COURSE, MIX "D", N50 2"
- (Q) HMA BASE COURSE (HMA BINDER IL-19MM) 10"

AGGREGATES & ROADSIDE

- (R) AGGREGATE SUBGRADE IMPROVEMENT 12"
- (S) REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL (UNDERCUT) & AGGREGATE SUBGRADE IMPROVEMENT (SEE CROSS SECTIONS FOR DEPTH)
- (T) GRANULAR EMBANKMENT SPECIAL (NSE WALL SUPPORT)
- (U) AGGREGATE SHOULDERS, TYPE B 6"
- (V) AGGREGATE BASE COURSE, TYPE B 6"
- (W) STEEL PLATE BEAM GUARDRAILS OR TRAFFIC BARRIER TERMINALS
- (X) TOPSOIL 6", SEEDING & EROSION CONTROL (SEE PLAN SHEETS)
- (Y) EMBANKMENT FOR CLAY LINING 12"

CMT	USER NAME = Peter Ross	DESIGNED - JNS/PFR	REVISED -	KANE COUNTY DIVISION OF TRANSPORTATION LONGMEADOW PARKWAY	TYPICAL SECTIONS ILLINOIS ROUTE 25
	PLOT SCALE = 10.0000 ' / in.	DRAWN - PFR	REVISED -		
	PLOT DATE = 3/4/2015	CHECKED - RDF	REVISED -		
		DATE - 3/5/2015	REVISED -		SCALE: NTS SHEET 6 OF 6 SHEETS STA. TO STA.

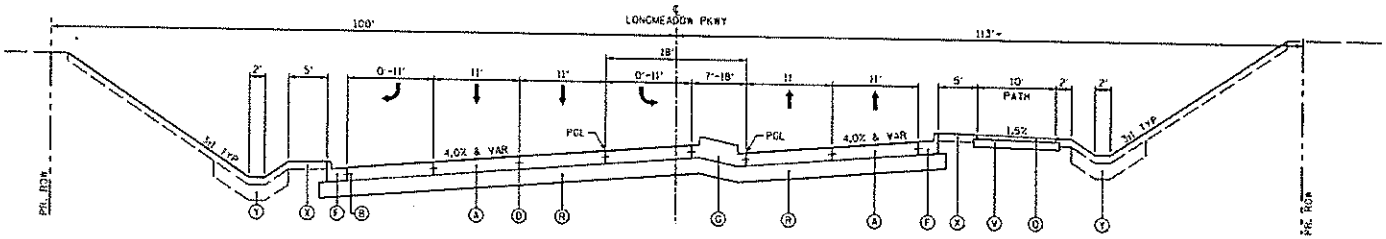
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
341	13-00215-20-GM	KANE	630	32
		CONTRACT NO.		
		ILLINOIS FED. AID PROJECT DPC-M-3013(068)		



PROPOSED LONGMEADOW PARKWAY
STATIONS 2263+74.00 TO 2269+75.00

NOTES:

1. ILLINOIS ROUTE 25 INTERSECTION OMMISSION STATION 2269+75.00 TO 2271+58.00
2. SUPERELEVATION TO MATCH THE INTERSECTION WITH ILLINOIS ROUTE 25 LOCATED BETWEEN 2268+69.46 TO 2270+39.46. SEE TABLE ON SHEET 34



PROPOSED LONGMEADOW PARKWAY
STATIONS 2271+59.00 TO 2276+79.00

NOTES:

1. SUPERELEVATION FOR CURVE LONG-13 AND TO MATCH THE INTERSECTION WITH ILLINOIS ROUTE 25 LOCATED BETWEEN 2271+04.13 TO 2279+14.01. SEE TABLE ON SHEET 34

LEGEND

PCC PAVEMENT

- (A) PORTLAND CEMENT CONCRETE PAVEMENT 10" (JOINTED) (ALL REQUIRED JOINTS INCLUDED IN COST)
- (B) TIE BARS (INCLUDED IN CONCRETE CURB & GUTTER OR CONCRETE MEDIAN COSTS)
- (C) SAWED LONGITUDINAL JOINT (INCLUDED IN COST OF PCC PVT 10 JOINTED)
- (D) LONGITUDINAL CONSTRUCTION JOINT (INCLUDED IN COST OF PCC PVT 10 JOINTED)
- (E) COMBINATION CONCRETE CURB & GUTTER TYPE B-6.12
- (F) COMBINATION CONCRETE CURB & GUTTER TYPE B-6.24
- (G) CONCRETE MEDIAN TYPE SB-6.12
- (H) CONCRETE MEDIAN SURFACE, 4"

HMA PAVEMENT

- (I) HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N70 2"
- (J) HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N70 10"
- (K) HOT-MIX ASPHALT SURFACE REMOVAL 2"
  HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N70 2"
- (L) HOT-MIX ASPHALT SHOULDERS 6"
- (M) STRIP REFLECTIVE CRACK CONTROL TREATMENT
- (N) BITUMINOUS MATERIALS, PRIME COAT
- (O) HMA SURFACE COURSE, MIX "D", N50 3"
- (P) HMA SURFACE COURSE, MIX "D", N50 2"
- (Q) HMA BASE COURSE (HMA BINDER IL-19MM) 10"

AGGREGATES & ROADSIDE

- (R) AGGREGATE SUBGRADE IMPROVEMENT 12"
- (S) REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL (UNDERCUT) & AGGREGATE SUBGRADE IMPROVEMENT (SEE CROSS SECTIONS FOR DEPTH)
- (T) GRANULAR EMBANKMENT SPECIAL (MSE WALL SUPPORT)
- (U) AGGREGATE SHOULDERS, TYPE B 6"
- (V) AGGREGATE BASE COURSE, TYPE B 6"
- (W) STEEL PLATE BEAM GUARDRAILS OR TRAFFIC BARRIER TERMINALS
- (X) TOPSOIL 6", SEEDING & EROSION CONTROL (SEE PLAN SHEETS)
- (Y) EMBANKMENT FOR CLAY LINING 12"

CMT	DESIGNED - JMS/PFR	REVISED -	KANE COUNTY DIVISION OF TRANSPORTATION LONGMEADOW PARKWAY
	DRAWN - PFR	REVISED -	
	CHECKED - KDF	REVISED -	
	DATE - 3/5/2015	REVISED -	

TYPICAL SECTIONS
LONGMEADOW PARKWAY

SCALE: NTS | SHEET 4 OF 5 SHEETS | STA. | TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
341	13-00215-20-BR	KANE	636	18

CONTRACT NO.

BDE 5401 Template (Rev. 09/05/2013)

IDOT MECHANISTIC PAVEMENT DESIGN

Printed: 06/11/2015

PROJECT AND TRAFFIC INPUTS

(Enter Data in Gray Shaded Cells)

Route: IL 62
Section: 13-00215-30-PV
County: Kane
Location: at Longmeadow Parkway

Comments: Local Roads - Longmeadow Parkway (New Construction)

Design Date: 04/28/2015 ONP <-- BY
Modify Date: <-- BY

	ADT	Year
Current:	21,700	2013
Future:	31,000	2040

Facility Type: Other Marked State Route

# of Lanes = 4

Road Class: I

Subgrade Support Rating (SSR): Poor
Construction Year: 2016
Design Period (DP) = 20 years

	Minimum ADT	Structural Design Traffic: Actual ADT	Actual %of Total ADT	% of ADT in Design Lane	
PV =	0	24,764	94.6%	P =	32%
SU =	250	733	2.8%	S =	45%
MU =	750	681	2.6%	M =	45%
Struct. Design ADT =		26,178	(2026)		

TRAFFIC FACTOR CALCULATION

FLEXIBLE PAVEMENT

Cpv = 0.15
Csu = 132.5
Cmu = 482.53
TF flexible (Actual) = 3.85 (Actual ADT)
TF flexible (Min) = 3.56 (Min ADT Fig. 54-2.C)

RIGID PAVEMENT

Cpv = 0.15
Csu = 143.81
Cmu = 696.42
TF rigid (Actual) = 5.24 (Actual ADT)
TF rigid (Min) = 5.02 (Min ADT Fig. 54-2.C)

NEW CONSTRUCTION / RECONSTRUCTION PAVEMENT DESIGN CALCULATIONS

Full-Depth HMA Pavement

Use TF flexible = 3.85
PG Grade Lower Binder Lifts = PG 64-22 (Fig. 53-4.R)
Goto Map
HMA Mixture Temp. = 74.0 deg. F (Fig. 54-5.C)
Design HMA Mixture Modulus (E_{HMA}) = 720 ksi (Fig. 54-5.D)
Design HMA Strain (ε_{HMA}) = 82 (Fig. 54-5.E)
Goto Map
Full Depth HMA Design Thickness = 10.25 in. (Fig. 54-5.F)
Limiting Strain Criterion Thickness = 14.50 in. (Fig. 54-5.I)

Use Full-Depth HMA Thickness = 10.25 inches

JPC Pavement

Use TF rigid = 5.24
Edge Support = Tied Shoulder or C.&G.

Rigid Pavt Thick. = 9.00 in. (Fig. 54-4.E)

CRC Pavement

Use TF rigid = 5.24
IBR value = 3

CRCP Thickness = 8.00 in. (Fig. 54-4.M)

TF MUST BE > 60 FOR CRCP

RECONSTRUCTION ONLY (SUPPLEMENTAL) PAVEMENT DESIGN CALCULATIONS

HMA Overlay of Rubblized PCC

Use TF flexible = 3.85
HMA Overlay Design Thickness = 7.50 in. (Fig. 54-5.U)
Goto Map
Limiting Strain Criterion Thickness = in. (Fig. 54-5.V)

Use HMA Overlay Thickness = 999.00 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)

	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	No Min	No Min	No Min

Class Table for One-Way Streets

ADT	Class
0 - 3500	II
>3501	I

	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 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%

BDE 5401 Template (Rev. 09/05/2013) Printed: 06/11/2015

LIFE-CYCLE COST ANALYSIS: NEW CONSTRUCTION / RECONSTRUCTION

FULL-DEPTH HMA PAVEMENT

Standard Design

ROUTE	IL 62
SECTION	13-00215-30-PV
COUNTY	Kane
LOCATION	at Longmeadow Parkway
FACILITY TYPE	NON-INTERSTATE

PROJECT LENGTH		2753 FT	= = >	0.52 Miles
# OF CENTERLINES		4 CL		
# OF LANES		4 LANES		
# OF EDGES		2 EP		
LANE WIDTH - AVERAGE		12 FT		
SHOULDER WIDTH	HMA Left	10 FT		
	HMA Right	10 FT		
	Total Width of Paved Shoulders	20 FT		

PAVEMENT THICKNESS (FLEXIBLE)	10.25 IN	14.50 IN MAX	
SHOULDER THICKNESS	8.00 IN		Standard Design
POLICY OVERLAY THICKNESS	2.25 IN		

FLEX PAVEMENT TRAFFIC FACTORS	MINIMUM	ACTUAL	USE
	3.56	3.85	3.85

Read Me!

HMA COST PER TON	UNIT PRICE
HMA SURFACE	$92.27 / TON
HMA TOP BINDER	$93.39 / TON
HMA LOWER BINDER	$72.53 / TON
HMA BINDER (LEVELING)	$92.27 / TON
HMA SHOULDER	$72.00 / TON

INITIAL COSTS

ITEM	THICKNESS	100% QUANTITY	UNIT		UNIT PRICE		COST	
HMA PAVEMENT (FULL-DEPTH)	(10.25")	14,683	SQ YD	*	$46.94	/ SQ YD	$689,204	~
HMA SURFACE COURSE	(2.00")	1,650	TONS		$92.27	/ TON	$0	
HMA TOP BINDER COURSE	(2.25")	1,870	TONS		$93.39	/ TON	$0	
HMA LOWER BINDER COURSE	(6.00")	5,058	TONS		$72.53	/ TON	$0	
HMA SHOULDER	(8.00")	2,741	TONS		$72.00	/ TON	$197,335	~
CURB & GUTTER		5,506	LIN FT	*	$30.00	/ LIN FT	$165,180	
SUBBASE GRAN MATL TY C (TONS)		140	TONS		$25.00	/ TON	$3,500	
IMPROVED SUBGRADE:	Aggregate	21,629	SQ YD		$7.00	/ SQ YD	$151,403	
Reserved For User Supplied Item		0	UNITS		$0.00	/ UNITS	$0	
Reserved For User Supplied Item		0	UNITS		$0.00	/ UNITS	$0	
PAVEMENT REMOVAL		14,683	SQ YD		$15.00	/ SQ YD	$220,245	
SHOULDER REMOVAL		6,118	SQ YD		$10.00	/ SQ YD	$61,180	

Note: * Denotes User Supplied Quantity

FLEXIBLE CONSTRUCTION INITIAL COST	$1,488,047
FLEXIBLE CONSTRUCTION ANNUAL COST PER MILE	$116,398

MAINTENANCE COSTS:

ITEM	THICKNESS	MATERIAL	UNIT COST	
ROUTINE MAINTENANCE ACTIVITY			$0.00	LANE-MILE / YEAR
HMA OVERLAY PVMT SURF	(2.00")	Surface Mix	$10.37	/ SQ YD
HMA OVERLAY PVMT	(2.25")		$11.67	/ SQ YD
HMA SURFACE MIX	(1.50")	Surface Mix	$7.77	/ SQ YD
HMA BINDER MIX	(0.75")	eling Binder Mix	$3.90	/ SQ YD
HMA OVERLAY SHLD (Year 30)	(2.25")	Shoulder Mix	$9.07	/ SQ YD
HMA OVERLAY SHLD	(2.00")	Shoulder Mix	$8.06	/ SQ YD
MILLING (2.00 IN)			$3.00	/ SQ YD
PARTIAL DEPTH PVMT PATCH	(Mill & Fill Surf)	Surface Mix	$80.33	/ SQ YD
PARTIAL DEPTH SHLD PATCH	(Mill & Fill Surf)	Shoulder Mix	$78.06	/ SQ YD
PARTIAL DEPTH PVMT PATCH	(Mill & Fill +2.00 ")	Leveling Binder Mix	$80.33	/ SQ YD
PARTIAL DEPTH SHLD PATCH	(Mill & Fill +2.00 ")	Shoulder Mix	$78.06	/ 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	$1,956,031
FLEXIBLE TOTAL ANNUAL COST PER MILE	$153,005

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%	5,506	LIN FT	$2.00		$11,012	
	CNTR LINE JOINT R&S	100.00%	11,012	LIN FT	$2.00		$22,024	
	RNDM / THRM CRACK R&S	50.00%	6,057	LIN FT	$2.00		$12,114	
	PD PVMT PATCH M&F SURF	0.10%	15	SQ YD	$80.33		$1,205	
	PWFn =	0.8626		PW =	0.8626	X	$46,355	$39,986
YEAR 10								
	LONG SHLD JT R&S	100.00%	5,506	LIN FT	$2.00		$11,012	
	CNTR LINE JOINT R&S	100.00%	11,012	LIN FT	$2.00		$22,024	
	RNDM / THRM CRACK R&S	50.00%	6,057	LIN FT	$2.00		$12,114	
	PD PVMT PATCH M&F SURF	0.50%	73	SQ YD	$80.33		$5,864	
	PWFn =	0.7441		PW =	0.7441	X	$51,014	$37,959
YEAR 15								
	MILL PVMT & SHLD 2.00"	100.00%	20,800	SQ YD	$3.00		$62,400	
	PD PVMT PATCH M&F ADD'L 2.00"	1.00%	147	SQ YD	$80.33		$11,809	
	HMA OVERLAY PVMT 2.00"	100.00%	14,683	SQ YD	$10.37		$152,261	
	HMA OVERLAY SHLD 2.00 "	100.00%	6,118	SQ YD	$8.06		$49,334	
	PWFn =	0.6419		PW =	0.6419	X	$275,804	$177,028
YEAR 20								
	LONG SHLD JT R&S	100.00%	5,506	LIN FT	$2.00		$11,012	
	CNTR LINE JOINT R&S	100.00%	11,012	LIN FT	$2.00		$22,024	
	RNDM / THRM CRACK R&S	50.00%	6,057	LIN FT	$2.00		$12,114	
	PD PVMT PATCH M&F SURF	0.10%	15	SQ YD	$80.33		$1,205	
	PWFn =	0.5537		PW =	0.5537	X	$46,355	$25,666
YEAR 25								
	LONG SHLD JT R&S	100.00%	5,506	LIN FT	$2.00		$11,012	
	CNTR LINE JOINT R&S	100.00%	11,012	LIN FT	$2.00		$22,024	
	RNDM / THRM CRACK R&S	50.00%	6,057	LIN FT	$2.00		$12,114	
	PD PVMT PATCH M&F SURF	0.50%	73	SQ YD	$80.33		$5,864	
	PWFn =	0.4776		PW =	0.4776	X	$51,014	$24,365
	HMA_SD							
YEAR 30	NON-INTERSTATE							
	MILL PVMT & SHLD 2.00"	100.00%	20,800	SQ YD	$3.00		$62,400	
	PD PVMT PATCH M&F ADD'L 2.00"	2.00%	294	SQ YD	$80.33		$23,618	
	PD SHLD PATCH M&F ADD'L 2.00"	1.00%	61	SQ YD	$78.06		$4,762	
	HMA OVERLAY PVMT 2.25 "	100.00%	14,683	SQ YD	$11.67		$171,368	
	HMA OVERLAY SHLD 2.25 "	100.00%	6,118	SQ YD	$9.07		$55,500	
	PWFn =	0.4120		PW =	0.4120	X	$317,648	$130,867
YEAR 35								
	LONG SHLD JT R&S	100.00%	5,506	LIN FT	$2.00		$11,012	
	CNTR LINE JOINT R&S	100.00%	11,012	LIN FT	$2.00		$22,024	
	RNDM / THRM CRACK R&S	50.00%	6,057	LIN FT	$2.00		$12,114	
	PD PVMT PATCH M&F SURF	0.10%	15	SQ YD	$80.33		$1,205	
	PWFn =	0.3554		PW =	0.3554	X	$46,355	$16,474
YEAR 40								
	LONG SHLD JT R&S	100.00%	5,506	LIN FT	$2.00		$11,012	
	CNTR LINE JOINT R&S	100.00%	11,012	LIN FT	$2.00		$22,024	
	RNDM / THRM CRACK R&S	50.00%	6,057	LIN FT	$2.00		$12,114	
	PD PVMT PATCH M&F SURF	0.50%	73	SQ YD	$80.33		$5,864	
	PWFn =	0.3066		PW =	0.3066	X	$51,014	$15,639
								$467,984
	ROUTINE MAINTENANCE ACTIVITY		2.09	Lane Miles	0.00		$0	$0
					MAINTENANCE LIFE-CYCLE COST			$467,984
45	YEAR LIFE CYCLE	CRFn = 0.0407852			MAINTENANCE ANNUAL COST PER MILE			$36,607

PCC PAVEMENT

JPCP

ROUTE	IL 62
SECTION	13-00215-30-PV
COUNTY	Kane
LOCATION	at Longmeadow Parkway
FACILITY TYPE	NON-INTERSTATE

PROJECT LENGTH			2753 FT	==> 0.52 Miles
# OF CENTERLINES			4 CL	
# OF LANES			4 LANES	
# OF EDGES			2 EP	
LANE WIDTH - AVERAGE			12 FT	
SHOULDER WIDTH	PCC	Left	10 FT	
	PCC	Right	10 FT	
	Total Width of Paved Shoulders		20 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
	5.02	5.24	5.24
Worksheet Construction Type is Reconstruction		The Pavement Type is	JPCP

INITIAL COSTS

ITEM	THICKNESS	100% QUANTITY	UNIT	UNIT PRICE		COST
JPC PAVEMENT	(9.00")	14,683	SQ YD	$50.21	/ SQ YD	$737,233
PAVEMENT REINFORCEMENT		0	SQ YD	$22.00	/ SQ YD	$0
STABILIZED SUBBASE	(4.00")	15,600	SQ YD	$19.00	/ SQ YD	$296,400
PCC SHOULDERS	(9.00" to 9.00")	6,118	SQ YD	$40.00	/ SQ YD	$244,720
CURB & GUTTER		5,506	LIN FT *	$30.00	/ LIN FT	$165,180
SUBBASE GRAN MATL TY C	(~ 1.66")	667	TONS	$25.00	/ TON	$16,675
IMPROVED SUBGRADE:	Aggregate	21,106	SQ YD	$7.00	/ SQ YD	$147,742
Reserved For User Supplied Item		0	UNITS	$0.00	/ UNITS	$0
Reserved For User Supplied Item		0	UNITS	$0.00	/ UNITS	$0
PAVEMENT REMOVAL		14,683	SQ YD	$15.00	/ SQ YD	$220,245
SHOULDER REMOVAL		6,118	SQ YD	$10.00	/ SQ YD	$61,180

Note: * Denotes User Supplied Quantity

RIGID CONSTRUCTION INITIAL COST	$1,889,375
RIGID CONSTRUCTION ANNUAL COST PER MILE	$147,791

MAINTENANCE COSTS:

ITEM	THICKNESS	MATERIAL	T	UNIT COST	
ROUTINE MAINTENANCE ACTIVITY				$0.00	/ LANE-MILE / YEAR
HMA POLICY OVERLAY	(2.50")		2.50		
HMA POLICY OVERLAY PVMT	(2.50")		2.50	$12.97	/ SQ YD
HMA SURFACE MIX	(1.50")	Surface Mix	1.50	$7.77	/ SQ YD
HMA BINDER MIX	(1.00")	ding Binder Mix	1.00	$5.20	/ SQ YD
HMA POLICY OVERLAY SHLD	(2.50")	Shoulder Mix	2.50	$10.08	/ 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	$77.75	/ SQ YD
PARTIAL DEPTH PVMT PATCH (Mill & Fill HMA 2.50")		Surface Mix	2.50	$82.92	/ 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	$2,161,012
RIGID TOTAL ANNUAL COST PER MILE	$169,039

MAINTENANCE AND REHABILITATION ACTIVITY SCHEDULE 06/11/15

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%	15	SQ YD	$150.00		$2,250	
	PWFn =	0.7441		PW =	0.7441	X	$2,250	$1,674
YEAR 15								
	PAVEMENT PATCH CLASS B	0.20%	29	SQ YD	$150.00		$4,350	
	PWFn =	0.6419		PW =	0.6419	X	$4,350	$2,792
YEAR 20								
	PAVEMENT PATCH CLASS B	2.00%	294	SQ YD	$150.00		$44,100	
	SHOULDER PATCH CLASS C	0.50%	31	SQ YD	$145.00		$4,495	
	LONGITUDINAL SHLD JT R&S	100.00%	5,506	LIN FT	$2.00		$11,012	
	CENTERLINE JT R&S	100.00%	11,012	LIN FT	$2.00		$22,024	
	PWFn =	0.5537		PW =	0.5537	X	$81,631	$45,197
YEAR 25								
	PAVEMENT PATCH CLASS B	3.00%	440	SQ YD	$150.00		$66,000	
	SHOULDER PATCH CLASS C	1.00%	61	SQ YD	$145.00		$8,845	
	PWFn =	0.4776		PW =	0.4776	X	$74,845	$35,746
YEAR 30	NON-INTERSTATE							
	PAVEMENT PATCH CLASS B	4.00%	587	SQ YD	$150.00		$88,050	
	SHOULDER PATCH CLASS C	1.50%	92	SQ YD	$145.00		$13,340	
	HMA POLICY OVERLAY 2.5" (PVMT)	100.00%	14,683	SQ YD	$12.97		$190,491	
	HMA POLICY OVERLAY 2.5" (SHLD)	100.00%	6,118	SQ YD	$10.08		$61,667	
	PWFn =	0.4120		PW =	0.4120	X	$353,548	$145,657
YEAR 35	NON-INTERSTATE							
	LONGITUDINAL SHLD JT R&S	100.00%	5,506	LIN FT	$2.00		$11,012	
	CENTERLINE JT R&S	100.00%	11,012	LIN FT	$2.00		$22,024	
	RANDOM CRACK R&S	50.00%	5,506	LIN FT	$2.00		$11,012	
	REFLECTIVE TRANSVERSE CRACK R&S	40.00%	3,533	LIN FT	$2.00		$7,066	
	PD PVMT PATCH M&F HMA 2.50"	0.10%	15	SQ YD	$82.92		$1,244	
	PWFn =	0.3554		PW =	0.3554	X	$52,358	$18,607
YEAR 40	NON-INTERSTATE							
	PAVEMENT PATCH CLASS B	0.50%	73	SQ YD	$150.00		$10,950	
	LONGITUDINAL SHLD JT R&S	100.00%	5,506	LIN FT	$2.00		$11,012	
	CENTERLINE JT R&S	100.00%	11,012	LIN FT	$2.00		$22,024	
	REFLECTIVE TRANSVERSE CRACK R&S	60.00%	5,299	LIN FT	$2.00		$10,598	
	RANDOM CRACK R&S	50.00%	5,506	LIN FT	$2.00		$11,012	
	PD PVMT PATCH M&F HMA 2.50"	0.50%	73	SQ YD	$82.92		$6,053	
	PWFn =	0.3066		PW =	0.3066	X	$71,649	$21,964
								$271,637
	ROUTINE MAINTENANCE ACTIVITY		2.09	Lane Miles	$0.00		$0	$0
					MAINTENANCE LIFE-CYCLE COST			$271,637
45	YEAR LIFE CYCLE	CRFn = 0.0407852			MAINTENANCE ANNUAL COST PER MILE			$21,248

LIFE-CYCLE COST ANALYSIS: NEW DESIGN

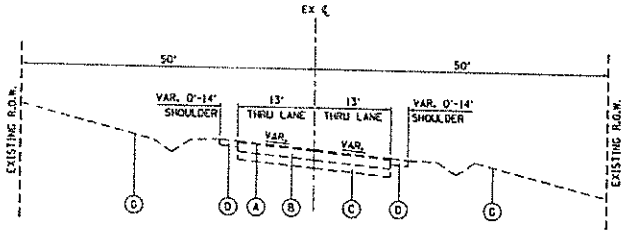
Calculated / Revised : 5/26/15 10:10 AM

			JPCP	HMA
CONSTRUCTION	INITIAL COST	PRESENT WORTH	$1,889,375	$1,488,047
		ANNUAL COST PER MILE	$147,791	$116,398
MAINTENANCE	LIFE-CYCLE COST	PRESENT WORTH	$271,637	$467,984
		ANNUAL COST PER MILE	$21,248	$36,607
TOTAL	LIFE-CYCLE COST	PRESENT WORTH	$2,161,012	$1,956,031
		ANNUAL COST PER MILE	$169,039	$153,005

LIFE-CYCLE COST ANALYSIS: FINAL SUMMARY

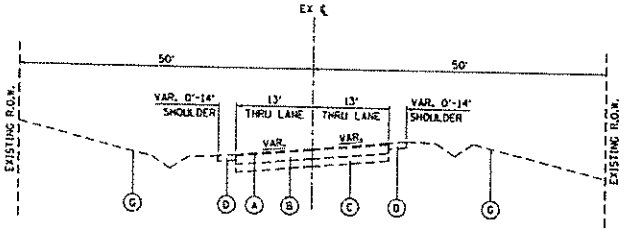
LOWEST COST OPTION	==========>	**HMA**	**$153,005**	
OTHER OPTIONS (LOWEST TO HIGHEST):	TYPE / PERCENTAGE	**JPCP**	**$169,039**	**10.5%**

P:\Pavement Design Stuff\D-1\IL 25 - IL 62 at Longmeadow Parkway\[IL 62 - Mechanistic Design LCCA 09-05-13.xlsm]LifeCycleCost



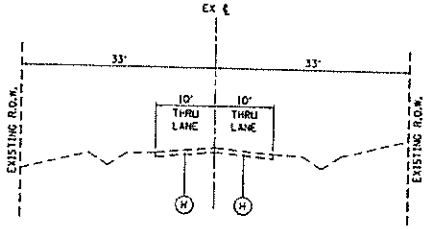
IL ROUTE 62
EXISTING TYPICAL SECTION #1

STA 802+50.00 TO STA 817+51.74



IL ROUTE 62
EXISTING TYPICAL SECTION #2

STA 817+51.74 TO STA 830+02.95



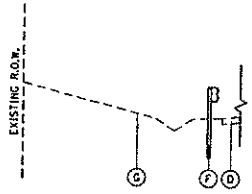
AUTUMN TRAIL
EXISTING TYPICAL SECTION

LEGEND

EXISTING

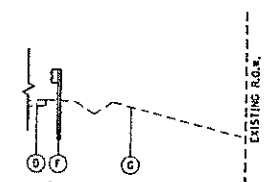
- (A) HOT-MIX ASPHALT SURFACE COURSE, 1.5"
- (B) HOT-MIX ASPHALT BINDER COURSE, 9"
- (C) PORTLAND CEMENT CONCRETE BASE COURSE 9"
- (D) HOT-MIX ASPHALT SHOULDERS, 8"
- (E) CONCRETE GUTTER, TYPE B
- (F) GUARDRAIL
- (G) GRASS AREA
- (H) HOT-MIX ASPHALT SURFACE COURSE, 1"

NOTE: PAVEMENT THICKNESSES ARE TAKEN FROM PAVEMENT CORES AND SOIL BORINGS.



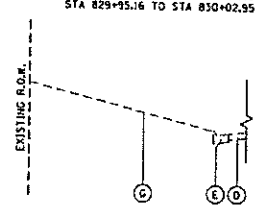
IL ROUTE 62
TYPICAL SECTION

STA 807+92.67 TO STA 812+26.83
STA 829+95.16 TO STA 830+02.95



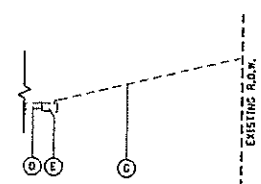
IL ROUTE 62
TYPICAL SECTION

STA 807+84.04 TO STA 812+14.07
STA 828+74.65 TO STA 830+02.95



IL ROUTE 62
TYPICAL SECTION

STA 821+32.27 TO STA 829+95.61



IL ROUTE 62
TYPICAL SECTION

STA 824+33.95 TO STA 828+74.18

BURNS McDONNELL

USER NAME = [illegible]	DESIGNED - RGJ	REVISED -	
	DRAWN - RGJ	REVISED -	
PLOT SCALE = 10.0000 ' / in.	CHECKED - RMG	REVISED -	
PLOT DATE = 3/5/2015	DATE - 03/06/2015	REVISED -	

KANE COUNTY
DIVISION OF TRANSPORTATION
LONGMEADOW PARKWAY

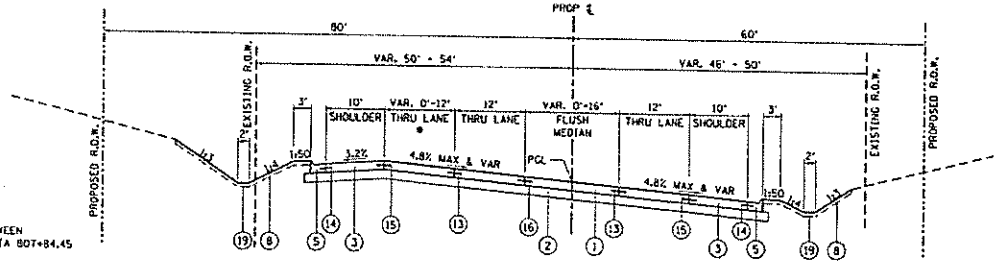
EXISTING TYPICAL SECTIONS

SCALE: | SHEET 1 OF 5 SHEETS | STA. 802+50.00 TO STA. 830+02.95

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
361	13-00215-20-BR	KANE	160	13

CONTRACT NO.

ILLINOIS FED. AID PROJECT



* VARIES 0' TO 12' BETWEEN STA 802+50.00 AND STA 807+84.45

IL ROUTE 62
PROPOSED TYPICAL SECTION #1

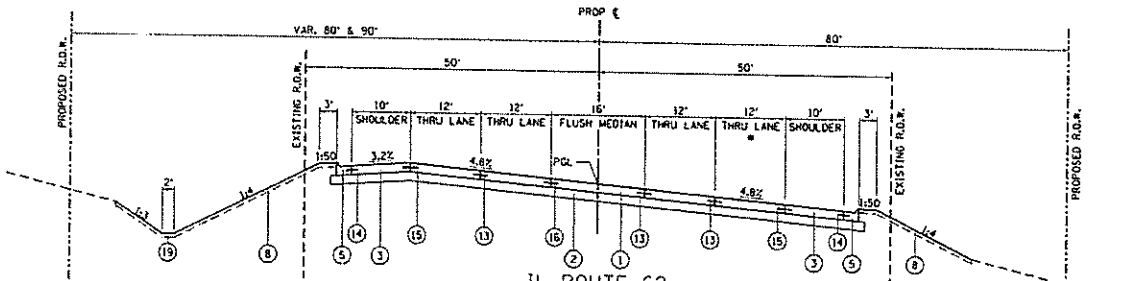
STA 802+50.00 TO STA 807+84.45

SB SUPERELEVATION TRANSITIONS

STA	SLOPE
802+50.00 TO 803+38.00	TRANSITION FROM EXISTING AT CONST. LIMIT
803+38.00 TO 807+84.45	4.8%

NB SUPERELEVATION TRANSITIONS

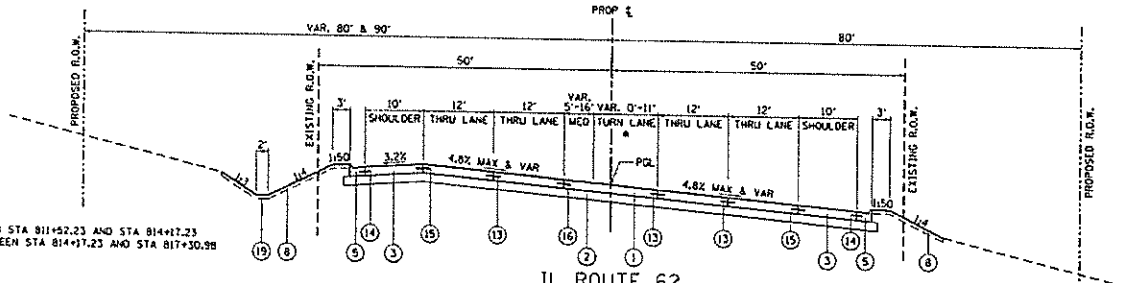
STA	SLOPE
802+50.00 TO 802+56.00	TRANSITION FROM EXISTING AT CONST. LIMIT
802+56.00 TO 807+84.45	4.8%



IL ROUTE 62
PROPOSED TYPICAL SECTION #2

STA 807+84.45 TO STA 811+52.23

* VARIES 0' TO 12' BETWEEN STA 807+84.45 AND STA 810+65.87



* VARIES 0' TO 11' BETWEEN STA 811+52.23 AND STA 814+17.23
CONSTANT 11' WIDTH BETWEEN STA 814+17.23 AND STA 817+30.98

IL ROUTE 62
PROPOSED TYPICAL SECTION #3

STA 811+52.23 TO STA 817+30.98

NB/SB SUPERELEVATION TRANSITIONS

STA	SLOPE
811+52.23 TO 815+21.62	4.8% RIGHT
815+21.62 TO 817+30.98	TRANSITION TO 0.2% RIGHT

LEGEND

PROPOSED

1. PORTLAND CEMENT CONCRETE PAVEMENT 10" (JOINTED)
2. AGGREGATE SUBGRADE IMPROVEMENT 12"
3. PORTLAND CEMENT CONCRETE SHOULDERS 10"
4. LANDSCAPED MEDIAN
5. COMB. CONC. CURB AND GUTTER, TYPE M-4.24
6. COMB. CONC. CURB AND GUTTER, TYPE B-6.12
7. COMB. CONC. CURB AND GUTTER, TYPE B-6.24
8. TOPSOIL FURNISH AND PLACE, 4"
9. HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N50 (3")
10. AGGREGATE SUBGRADE IMPROVEMENT 6"
11. CONCRETE MEDIAN, TYPE SB-6.12
12. GUARDRAIL
13. LONGITUDINAL SAWED JOINT OR CONSTRUCTION JOINT, FOR LONGITUDINAL SAWED JOINT, POUR IN PLACE NO. 6 DEFORMED EPOXY TIE BARS 30" LONG AT 30" C-C. FOR LONGITUDINAL CONSTRUCTION JOINT, DRILL AND GROUT NO. 8 DEFORMED EPOXY TIE BARS 24" LONG AT 24" C-C. (SHALL BE INCLUDED IN THE COST OF PORTLAND CEMENT CONCRETE PAVEMENT 10" (JOINTED))
14. LONGITUDINAL CONSTRUCTION JOINT. DRILL AND GROUT NO. 6 DEFORMED EPOXY TIE BARS 24" LONG AT 24" C-C. (SHALL BE INCLUDED IN THE COST OF THE APPLICABLE COMB. CONC. CURB AND GUTTER TYPE)
15. LONGITUDINAL CONSTRUCTION JOINT. DRILL AND GROUT NO. 8 DEFORMED EPOXY TIE BARS 30" LONG AT 24" C-C. (SHALL BE INCLUDED IN THE COST OF THE APPLICABLE P.C.C. SHOULDERS TYPE)
16. LONGITUDINAL CONSTRUCTION JOINT. DRILL AND GROUT NO. 8 DEFORMED EPOXY TIE BARS 24" LONG AT 24" C-C. (SHALL BE INCLUDED IN THE COST OF PORTLAND CEMENT CONCRETE PAVEMENT 10" (JOINTED))
17. RETAINING WALL
18. CONCRETE MEDIAN SURFACE, 4"
19. CLAY LINED SWALE (SHALL BE PAID FOR AS EARTH EXCAVATION)

HOT-MIX ASPHALT MIXTURE REQUIREMENTS

ITEM	VOIDS
AUTUMN TRAIL	
HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N50, (IL-9.5mm) 2"	4% @ 50 GYR.
HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N50, 2-1/2"	4% @ 50 GYR.
PRIVATE ENTRANCES	
HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N50, (IL-9.5mm) 2"	4% @ 50 GYR.
HOT-MIX ASPHALT BASE COURSE, (HMA BINDER IL-19 mm) 6"	4% @ 50 GYR.
PARK DISTRICT ROAD	
HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N50, (IL-9.5mm) 2"	4% @ 50 GYR.
HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N50, 8"	4% @ 50 GYR.
MULTI-USE PATH	
HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N50 (IL-9.5mm) 3"	4% @ 50 GYR.
TEMPORARY PAVEMENT	
HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N50, (IL-9.5mm) 2"	4% @ 50 GYR.
HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N50, X"	4% @ 50 GYR.

THE UNIT WEIGHT USED TO CALCULATE ALL HOT-MIX ASPHALT SURFACE MIXTURE QUANTITIES IS 112 LB/SY-IN.

FOR PERCENT OF RAP, SEE DISTRICT ONE SPECIAL PROVISIONS.

BURNS McDONNELL

USER NAME = [illegible]	DESIGNED - MAP	REVISED -
	DRAWN - RGJ	REVISED -
PLOT SCALE = 50.0000 / in.	CHECKED - RMG	REVISED -
PLOT DATE = 3/5/2015	DATE - 03/06/2015	REVISED -

KANE COUNTY
DIVISION OF TRANSPORTATION
LONGMEADOW PARKWAY

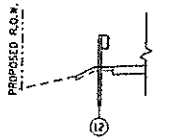
PROPOSED TYPICAL SECTIONS
ILLINOIS ROUTE 62

SCALE: | SHEET 4 OF 5 SHEETS | STA. 802+50.00 TO STA. 817+30.98

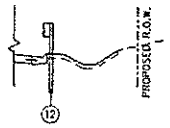
F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
341	13-00215-20-BR	KANE	160	16

CONTRACT NO.
ILLINOIS FED. AID PROJECT

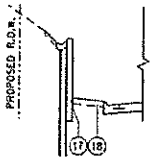
FILE NAME = 24294 sht-typicalsl.dgn



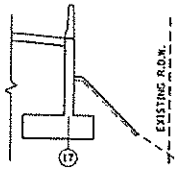
STA 829+68.16 TO STA 830+02.95



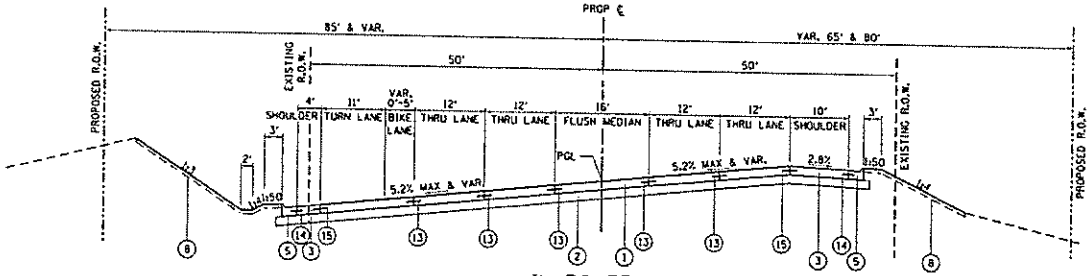
STA 827+16.85 TO STA 829+20.00



STA 826+00.00 TO STA 829+60.00



STA 829+20.00 TO STA 830+00.00

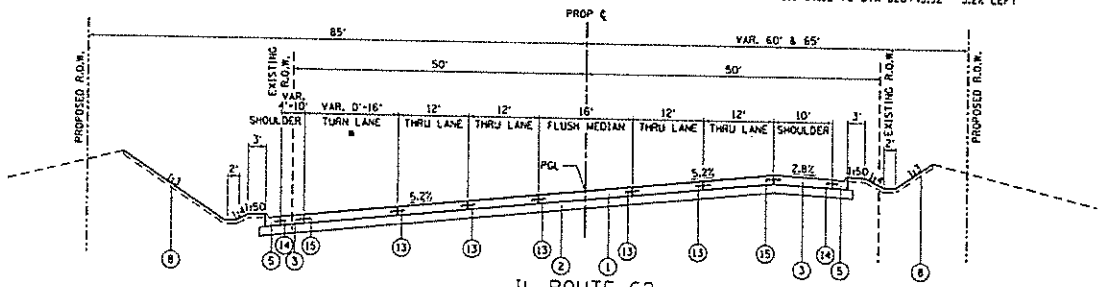


IL ROUTE 62
PROPOSED TYPICAL SECTION #4

STA 817+30.98 TO STA 820+45.92

NB/SB SUPERELEVATION TRANSITIONS

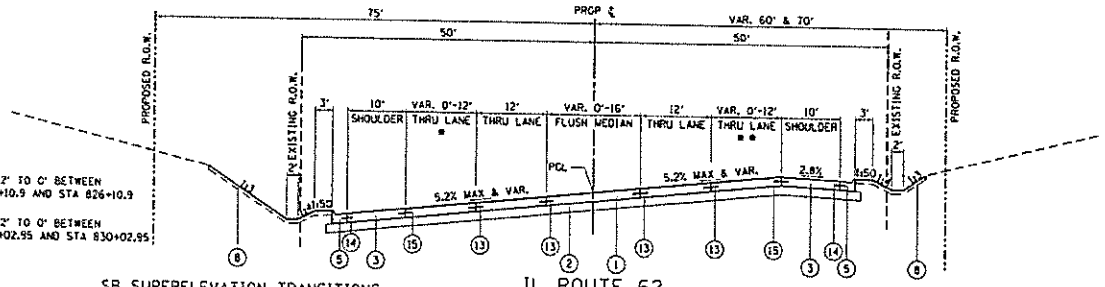
STA	SLOPE
817+30.98 TO 817+45.39	TRANSITION TO 0.0%
817+45.39 TO 819+87.82	TRANSITION TO 5.2% LEFT
819+87.82 TO STA 820+45.92	5.2% LEFT



* VARIES 16' TO 0' BETWEEN STA 820+45.9 AND STA 823+10.9

IL ROUTE 62
PROPOSED TYPICAL SECTION #5

STA 820+45.92 TO STA 823+10.92 (SB) / 824+02.95 (NB)



* VARIES 12' TO 0' BETWEEN STA 823+10.9 AND STA 826+10.9

** VARIES 12' TO 0' BETWEEN STA 824+02.95 AND STA 830+02.95

SB SUPERELEVATION TRANSITIONS

STA	SLOPE
823+10.92 TO 829+96.95	5.2% LEFT
829+96.95 TO 830+02.95	TRANSITION TO EXISTING AT CONST. LIMIT

IL ROUTE 62
PROPOSED TYPICAL SECTION #6

STA 823+10.92 (SB) / 824+02.95 (NB) TO STA 830+02.95

NB SUPERELEVATION TRANSITIONS

STA	SLOPE
824+02.95 TO 829+11.95	5.2% LEFT
829+11.95 TO 830+02.95	TRANSITION TO EXISTING AT CONST. LIMIT

LEGEND

PROPOSED

1. PORTLAND CEMENT CONCRETE PAVEMENT 10" (JOINTED)
2. AGGREGATE SUBGRADE IMPROVEMENT 12"
3. PORTLAND CEMENT CONCRETE SHOULDERS 10"
4. LANDSCAPED MEDIAN
5. COMB. CONC. CURB AND GUTTER, TYPE M-4.24
6. COMB. CONC. CURB AND GUTTER, TYPE B-6.12
7. COMB. CONC. CURB AND GUTTER, TYPE B-6.24
8. TOPSOIL FURNISH AND PLACE, 4"
9. HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N50 (3")
10. AGGREGATE SUBGRADE IMPROVEMENT 6"
11. CONCRETE MEDIAN, TYPE SB-6.12
12. GUARDRAIL
13. LONGITUDINAL SAWED JOINT OR CONSTRUCTION JOINT. FOR LONGITUDINAL SAWED JOINT, POUR IN PLACE NO. 6 DEFORMED EPOXY TIE BARS 30" LONG AT 30" C-C. FOR LONGITUDINAL CONSTRUCTION JOINT, DRILL AND GROUT NO. 8 DEFORMED EPOXY TIE BARS 24" LONG AT 24" C-C. (SHALL BE INCLUDED IN THE COST OF PORTLAND CEMENT CONCRETE PAVEMENT 10" (JOINTED))
14. LONGITUDINAL CONSTRUCTION JOINT. DRILL AND GROUT NO. 6 DEFORMED EPOXY TIE BARS 24" LONG AT 24" C-C. (SHALL BE INCLUDED IN THE COST OF THE APPLICABLE COMB. CONC. CURB AND GUTTER TYPE)
15. LONGITUDINAL CONSTRUCTION JOINT. DRILL AND GROUT NO. 8 DEFORMED EPOXY TIE BARS 30" LONG AT 24" C-C. (SHALL BE INCLUDED IN THE COST OF THE APPLICABLE P.C.C. SHOULDERS TYPE)
16. LONGITUDINAL CONSTRUCTION JOINT. DRILL AND GROUT NO. 8 DEFORMED EPOXY TIE BARS 24" LONG AT 24" C-C. (SHALL BE INCLUDED IN THE COST OF PORTLAND CEMENT CONCRETE PAVEMENT 10" (JOINTED))
17. RETAINING WALL
18. CONCRETE MEDIAN SURFACE, 4"
19. CLAY LINED SWALE (SHALL BE PAID FOR AS EARTH EXCAVATION)

HOT-MIX ASPHALT MIXTURE REQUIREMENTS

ITEM	VOIDS
AUTUMN TRAIL	
HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N50, (IL-9.5mm) 2"	4% @ 50 GYR.
HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N50, 2-1/2"	4% @ 50 GYR.
PRIVATE ENTRANCES	
HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N50, (IL-9.5mm) 2"	4% @ 50 GYR.
HOT-MIX ASPHALT BASE COURSE, BMA BINDER IL-19 mm) 6"	4% @ 50 GYR.
PARK DISTRICT ROAD	
HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N50, (IL-9.5mm) 2"	4% @ 50 GYR.
HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N50, 8"	4% @ 50 GYR.
MULTI-USE PATH	
HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N50 (IL-9.5mm) 3"	4% @ 50 GYR.
TEMPORARY PAVEMENT	
HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N50, (IL-9.5mm) 2"	4% @ 50 GYR.
HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N50, 3"	4% @ 50 GYR.

THE UNIT WEIGHT USED TO CALCULATE ALL HOT-MIX ASPHALT SURFACE MIXTURE QUANTITIES IS 112 LB/SY-IN.

FOR PERCENT OF RAP, SEE DISTRICT ONE SPECIAL PROVISIONS.

BURNS McDONNELL

USER NAME = Y.Y.WANG	DESIGNED - MAP	REVISED -	
	DRAWN - RGJ	REVISED -	
PLOT SCALE = 10.0000 ' / in.	CHECKED - RMC	REVISED -	
PLOT DATE = 3/5/2015	DATE - 03/06/2015	REVISED -	

KANE COUNTY
DIVISION OF TRANSPORTATION
LONGMEADOW PARKWAY

PROPOSED TYPICAL SECTIONS
ILLINOIS ROUTE 62

SCALE: | SHEET 5 OF 5 SHEETS | STA. 817+30.98 TO STA. 830+02.95

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
361	13-00215-00-BR	KANE	160	5F

CONTRACT NO.

ILLINOIS FED. AID PROJECT