Illinois Department of Transportation

To:	John Fortmann	Attn: District One
From:	John D. Baranzelli	
Subject:	Pavement Design	
Date:	January 23, 2015	

FAP Route 337 (IL 22)
Lake County
From Quentin Road to west of IL 83

The project, submitted to BDE by memo dated January 6, 2015, will reconstruct IL 22 from Quentin Road to west of IL 83. Reconstruction of the following intersecting streets are all local jurisdiction: South Krueger Road/Corporate Drive; Creekside Drive; Old McHenry Road; and North Krueger Road/Blackhawk Lane. The LCCA favored a rigid design for IL 22 by greater than 10%. The project is not subject to alternate bidding, and did not need consideration by the Pavement Selection Committee.

The approved pavement design is as follows:

IL 22 (Pavement Reconstruction)

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

The following roadways are under local jurisdiction and included as informational purposes:

Old McHenry Road (Pavement Reconstruction)

8 inches of Full Depth HMA Pavement with HMA Shoulders
2 inches of HMA Surface Course, Mix "D", N70
6 inches of HMA Base Course, IL-19.0, N70
12 inches of Aggregate Subgrade Improvement

South Krueger Road; Creekside Drive; Salem Lake Drive; North Krueger Road/Blackhawk Lane (Pavement Reconstruction)

7 inches of Full Depth HMA Pavement with HMA Shoulders
2 inches of HMA Surface Course, Mix "D", N70
5 inches of HMA Base Course, IL-19.0, N70
12 inches of Aggregate Subgrade Improvement

Corporate Drive (Pavement Reconstruction)

7 inches of Full Depth HMA Pavement with PCC C&G
2 inches of HMA Surface Course, Mix "D", N70
5 inches of HMA Base Course, IL-19.0, N70
12 inches of Aggregate Subgrade Improvement

IL 22 (Temporary Pavement)

Option 1
10 inches of Full Depth Temporary HMA Pavement
2 inches of HMA Surface Course, Mix "D", N50
8 inches of HMA Binder Course, IL-19.0, N50
4 inches of Subgrade Granular Material Type B

Option 2
8 inches of Temporary PCC Pavement
4 inches of Subgrade Granular Material Type B

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: January 6, 2015

*Route: IL 22
Limits: Quentin Road to w/o IL 83
Section: 20-Y
Current target: 06CY17

County: Lake
Contract No.: 60N10
Job No.: D-91-236-11

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. NOTE: Review is only required for IL 22 as it is under IDOT jurisdiction. All other roadways are local jurisdiction and are being included for your information. The following is the scope of the project:

IL 22 – Reconstruction to provide a five lane section and an enclosed drainage system from Quentin Road to IL 83).

Reconstruction of the following intersecting streets (local jurisdiction): South Krueger Rd/Corporate Drive; Creekside Drive (off of Krueger Dr.); Old McHenry Road; North Krueger Rd/Blackhawk Lane

A 20-year pavement analysis was performed on the above segments. We recommend a mechanistic-rigid pavement design based on the life cycle cost analysis which favors PCC pavement by 16% for IL 22.

We recommend a mechanistic –flexible pavement design for all of the local segments above based on the life cycle cost analysis which generally favors HMA pavement as follows:

S. Krueger Rd & Creekside Dr.: HMA by 17.82%
Corporate Dr.: PCC by 4.5% (HMA to match existing Corporate Dr. to the north)
Old McHenry Rd: HMA by 17.3%
Salem Lake Rd: HMA by 18.3%
N. Krueger Rd/Blackhawk Ln.: HMA by 18.5%

IL 22
Reconstruction
PCC Curb and Gutter (Tied)
10" PCC Pavement[1]
12" Aggregate Subgrade Improvement[5]

Old McHenry Road
Reconstruction
HMA Shoulder[6]
8" Full Depth HMA[2, 4]
2" HMA Surface Course, Mix "D", N70
6" HMA Base Course, IL-19.0, N70
12" Aggregate Subgrade Improvement[5]

South Krueger Rd.; Creekside Drive; Corporate Drive; Salem Lake Drive; North Krueger Rd./Blackhawk Lane
Reconstruction
HMA Shoulder ; PCC Curb and Gutter for Corporate Drive[6]
7" Full Depth HMA[3, 4]
2" HMA Surface Course, Mix "D", N70
5" HMA Base Course, IL-19.0, N70
12" Aggregate Subgrade Improvement[5]

IL 22 (Temporary Pavement)
Option 1[7]
Temporary Pavement
10" Full Depth Temporary HMA Pavement[8]
2" HMA Surface Course, Mix "D", N50
8" HMA Binder Course, IL-19.0, N50
4" Subbase Granular Material Type B[9]

Option 2[7]
Temporary Pavement
8" Temporary PCC Pavement[8]
4" Subbase Granular Material Type B[9]

[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 **40701841, HOT-MIX ASPHALT PAVEMENT (FULL DEPTH), 8",** paid for in square yards.

[3]Designer Note 3: Use pay item **40701821, HOT-MIX ASPHALT PAVEMENT (FULL DEPTH), 7",** paid for in square yards.

[4]Designer Note 4: 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.

[5]Designer Note 5: Use pay item **30300112, AGGREGATE SUBGRADE IMPROVEMENT, 12",** paid in square yards.

[6] Designer Note 6: The designer shall utilize IDOT Highway Standards in conjunction with guidelines in BDE Manual 34-2.02 if necessary for shoulder thicknesses.

[7]Designer Note 7: The contractor shall have the option of constructing either material type if both Portland cement concrete and HMA are shown in the plans. For quantity estimation purposes, excavation quantities should be estimated assuming the thicker design if both options are shown in the plans.

[8]Designer Note 8: Use pay item **Z0062456, TEMPORARY PAVEMENT**, paid in square yards.

The HMA temporary pavement shall consist of two items, HMA binder course and HMA surface course. Include both items in the HMA mix table requirements.

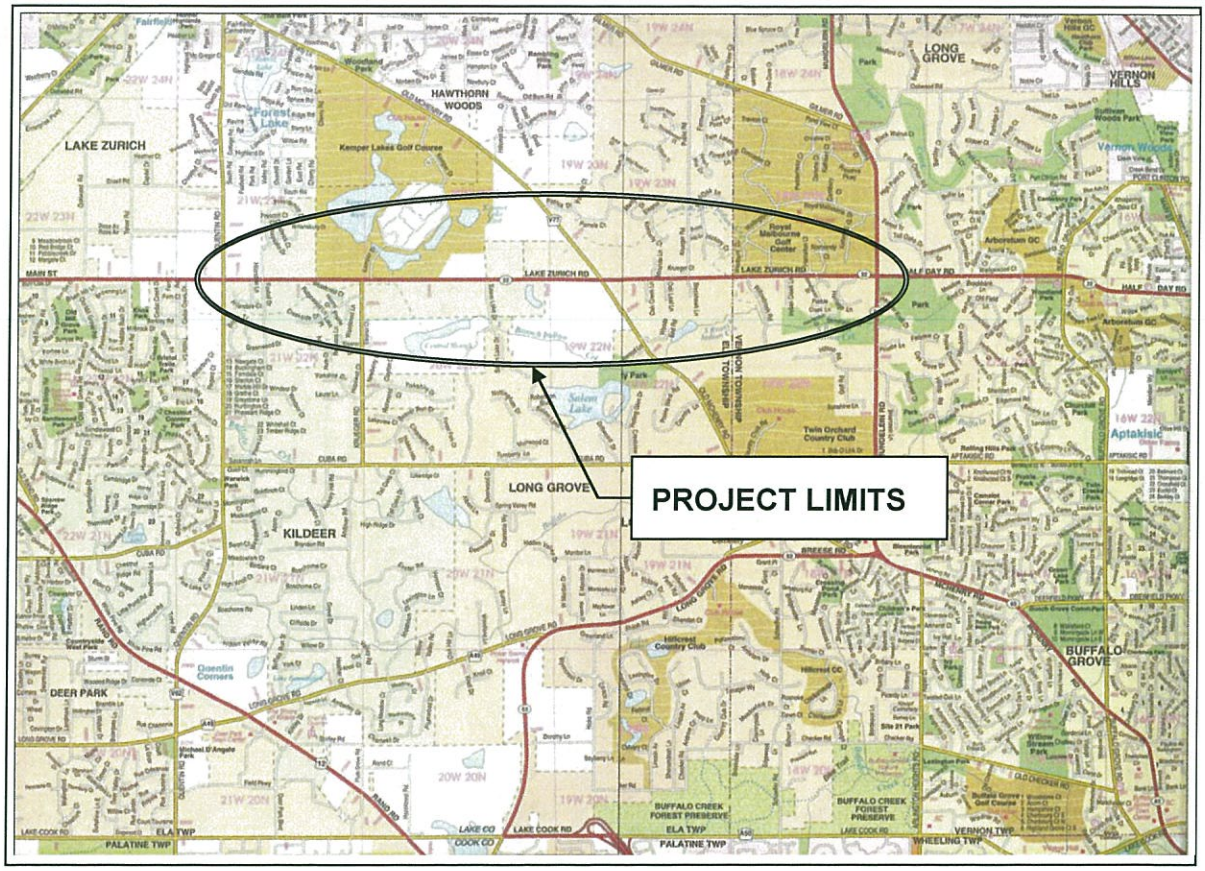
When PC Temp Pavement is used as an option, the following note shall appear on the plans adjacent to the HMA mix table: "PC Concrete temporary pavement shall consist of Class PV Concrete meeting the requirements of Art.1020 of the Standard Specifications. Temporary PCC pavement does not require dowel bars.

[9]Designer Note 9: Use pay item **31101200, SUBBASE GRANULAR MATERIAL, TYPE B 4",** paid in square yards

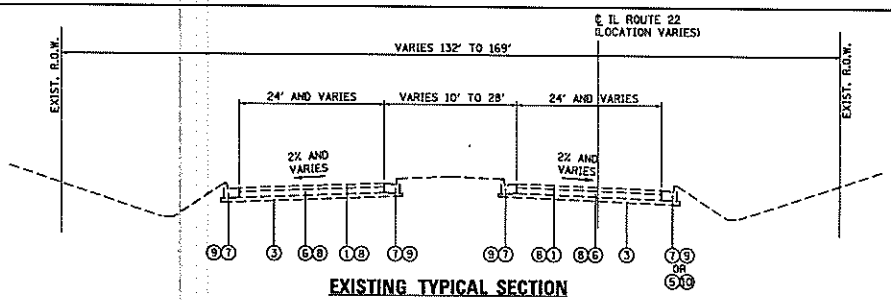
If you have any questions or need additional information, please contact Ojas Patel, Pavement Design Engineer, at (847)705-4550.

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

LOCATION MAP



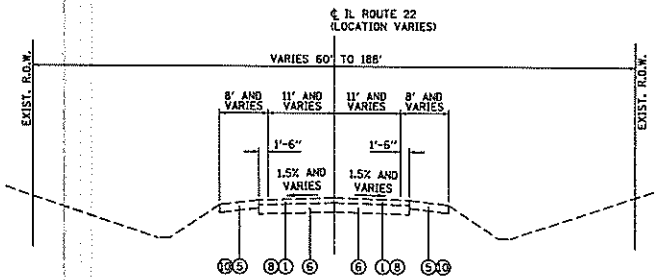
IDOT Contract No.: 60N10
IDOT Section No.: 20-Y
IDOT Job No.: C-91-236-11
FAP Route 337
(IL Route 22)
Quentin Road to IL Route 83
Lake County
Villages of Hawthorn Woods,
Kildeer, and Long Grove



EXISTING TYPICAL SECTION

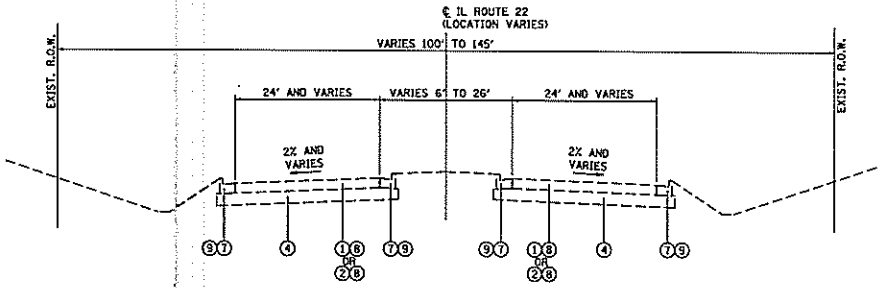
ILLINOIS ROUTE 22
** STA. 6+00 TO STA 17+69

** SECTION HAS SHOULDER ON SOUTH SIDE FROM STA. 15+20 TO STA. 17+68.



EXISTING TYPICAL SECTION

ILLINOIS ROUTE 22
STA. 17+69 TO STA 164+57



EXISTING TYPICAL SECTION

ILLINOIS ROUTE 22
** STA. 164+57 TO STA 185+44

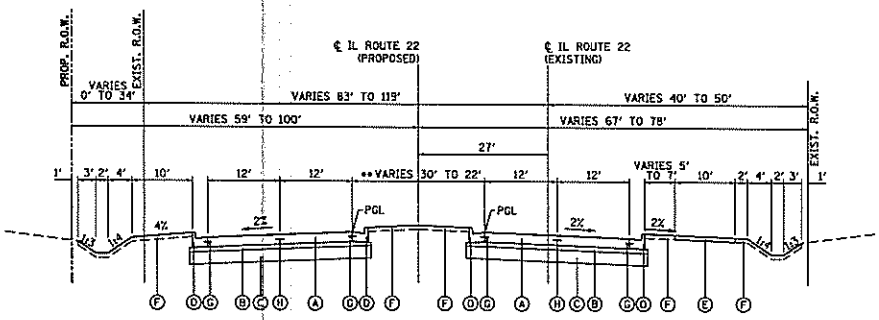
** SECTION HAS SHOULDER ON SOUTH SIDE FROM STA. 164+57 TO STA. 169+94.
SECTION HAS ASPHALT PAVEMENT FROM STA. 164+57 TO STA. 170+50.

EXISTING LEGEND

1. HMA SURFACE/BINDER, X" AND VARIES
2. PCC PAVEMENT, X"
3. GRANULAR SUB-BASE, X"
4. AGGREGATE SUBGRADE, X"
5. AGGREGATE SHOULDER
6. PCC BASE COURSE, X"
7. CONC. CURB & GUTTER, B-X.XX
8. PAVEMENT REMOVAL
9. CONC. CURB & GUTTER REMOVAL
10. EARTH EXCAVATION

VERIFY EXISTING CROSS SECTION WITH PAVEMENT CORES (TO BE RECEIVED).

FILE NAME ...\IDS0NEP-sht-typical.01.dgn 3/29/2012 4:49:49 PM	Primera	DESIGNED - MHL	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	IL ROUTE 22 FROM QUENTIN ROAD TO IL ROUTE 83 TYPICAL SECTIONS	F.A.P. RTE. 337	SECTION 20-Y	COUNTY LAKE	TOTAL SHEETS 290	SHEET NO. 10
		DRAWN - MHL	REVISED -					CONTRACT NO. 60N10		
		CHECKED - RJD	REVISED -							
		DATE - 03/21/2012	REVISED -		SCALE: N.T.S. SHEET NO. 1 OF 6 SHEETS STA. TO STA.			ILLINOIS FED. AID PROJECT		

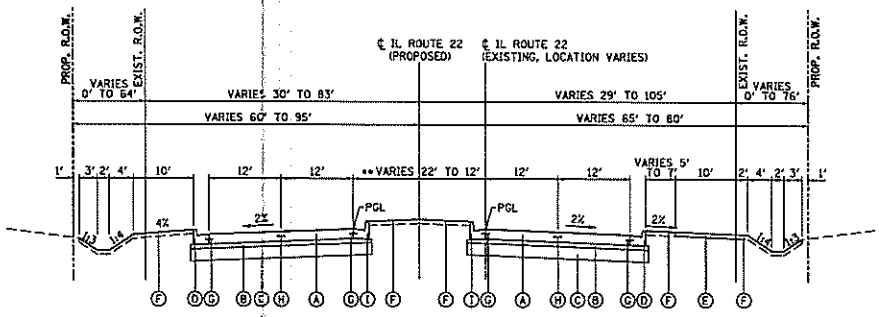


PROPOSED TYPICAL SECTION

ILLINOIS ROUTE 22
STA. 6+00 TO STA 20+92

** MEDIAN TAPERS FROM 30' TO 22' FROM STA. 18+92 TO STA. 20+92.
EASTBOUND SECTION HAS CONCRETE PAVEMENT FROM STA. 6+00 TO STA. 6+40.
WESTBOUND SECTION HAS CONCRETE PAVEMENT FROM STA. 6+00 TO STA. 7+30.

NOTE:
SEE RETAINING WALL TYPICAL SECTIONS FOR SECTION DETAILS.



PROPOSED TYPICAL SECTION

ILLINOIS ROUTE 22
STA. 20+92 TO STA 80+32

** MEDIAN TAPERS FROM 22' BARRIER TO 12' PAINTED FROM STA. 77+32 TO STA. 80+32.

NOTE:
SEE RETAINING WALL TYPICAL SECTIONS FOR SECTION DETAILS.

PROPOSED LEGEND

- (A) PCC PAVEMENT 9 3/4" (JOINTED) (EXTENDED LIFE PAVEMENT)
- (B) STABILIZED SUBBASE - HOT-MIX ASPHALT, 4 1/2" (EXTENDED LIFE PAVEMENT)
- (C) AGGREGATE SUBGRADE, IMPROVEMENT (12" THICKNESS, EXTENDED LIFE PAVEMENT)
- (D) COMB. CURB & GUTTER B-6.24 (FOR LOCATIONS OF DEPRESSED CURB AT TRAFFIC BARRIER TERMINALS TYPE 1A SPECIAL, SEE PLANS)
- (E) SIDEWALK/BIKEPATH 4" (HMA SURFACE COURSE, MIX "D", N50)
- (F) RESTORATION LANDSCAPING:
  - EROSION CONTROL BLANKET
  - SEEDING CLASS 2A, 4 OR 4B (SEE PLANS)
  - TOPSOIL 4" AND/OR COMPOST 2"
- (G) #6 TIE BARS, 24" LONG @ 24" C-C (INCIDENTAL)
- (H) #8 TIE BARS
- (I) COMB. CURB & GUTTER B-9.24
- (J) CONCRETE BARRIER, SINGLE FACE, 42 INCH HEIGHT
- (K) CONCRETE BARRIER FOUNDATION
- (L) PROPOSED PERMANENT RETAINING WALL (SEE STRUCTURAL PLANS)

NOTE IF THE CONTRACTOR CHOOSES TO USE CONCRETE FOR THE TEMPORARY PAVEMENT THE THICKNESS SHALL BE 10"

HOT-MIX ASPHALT MIXTURE REQUIREMENTS	
MIXTURE TYPE	AIR VOIDS
STABILIZED SUBBASE **	
STABILIZED SUBBASE - HOT-MIX ASPHALT, 4-1/2" (N50) (IL-19mm)	3% @ 50 Gyr.
DRIVEWAY PAVEMENT	
HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N50 2" (IL-9.5mm)	4% @ 50 Gyr.
HOT-MIX ASPHALT BASE COURSE (HMA BINDER IL-19mm), PE-8", CE-8"	4% @ 50 Gyr.
TEMPORARY PAVEMENT	
HMA SURFACE COURSE, MIX "D", N50 (IL-9.5mm) 2"	4% @ 50 Gyr.
HMA BINDER, IL-19mm, N50 8"	4% @ 50 Gyr.
MEDIAN	
HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N50 4" (IL-9.5mm)	4% @ 50 Gyr.

** SEE SPECIAL PROVISION

THE UNIT WEIGHT USED TO CALCULATE ALL HMA SURFACE MIXTURE QUANTITIES IS 112 LBS/SQ YD/IN.

The "AC Type" for Polymerized HMA Mixes SHALL BE "SBS/SBR PG 70 -22" AND

FOR NON-POLYMERIZED HMA THE "AC TYPE" shall be "PG 64 -22" UNLESS modified by District ONE Special Provisions.

FOR "PERCENT OF RAP" SEE DISTRICT ONE SPECIAL PROVISIONS.

FILE NAME: ...\12GENS-sht-typical_02.dgn
3/29/2012 4:49:08 PM

Primera

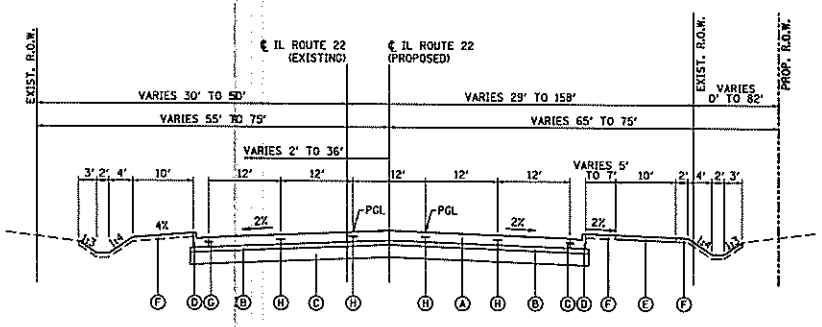
DESIGNED	- MR	REVISED -
DRAWN	- MR	REVISED -
CHECKED	- RJD	REVISED -
DATE	- 03/21/2012	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

IL ROUTE 22 FROM QUENTIN ROAD TO IL ROUTE 83
TYPICAL SECTIONS

SCALE: N.T.S. | SHEET NO. 2 OF 6 SHEETS | STA. | TO STA.

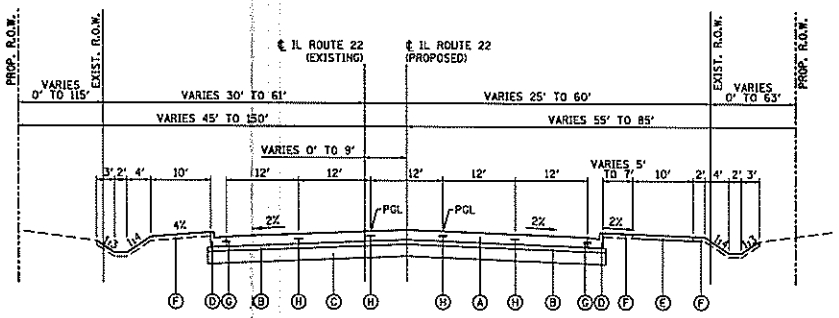
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
337	20-Y	LAKE	290	11
		CONTRACT NO. 60N10		
		ILLINOIS FED. AID PROJECT		



PROPOSED TYPICAL SECTION

ILLINOIS ROUTE 22
STA. 80+32 TO STA 107+49

NOTE:
SEE RETAINING WALL TYPICAL SECTIONS FOR SECTION DETAILS.



PROPOSED TYPICAL SECTION

ILLINOIS ROUTE 22
STA. 107+49 TO STA 169+10

NOTE:
SEE RETAINING WALL TYPICAL SECTIONS FOR SECTION DETAILS.

PROPOSED LEGEND

- (A) PCC PAVEMENT 9 3/4" (JOINTED) (EXTENDED LIFE PAVEMENT)
- (B) STABILIZED SUBBASE - HOT-MIX ASPHALT, 4 1/2" (EXTENDED LIFE PAVEMENT)
- (C) AGGREGATE SUBGRADE, IMPROVEMENT (12" THICKNESS, EXTENDED LIFE PAVEMENT)
- (D) COMB. CURB & GUTTER B-6.24 (FOR LOCATIONS OF DEPRESSED CURB AT TRAFFIC BARRIER TERMINALS TYPE 1A SPECIAL, SEE PLANS)
- (E) SIDEWALK/BIKEPATH 4" (HMA SURFACE COURSE, MIX "D", N50)
- (F) RESTORATION LANDSCAPING:
  - EROSION CONTROL BLANKET
  - SEEDING CLASS 2A, 4 OR 4B (SEE PLANS)
  - TOPSOIL 4" AND/OR COMPOST 2"
- (G) #6 TIE BARS, 24" LONG @ 24" C-C (INCIDENTAL)
- (H) #8 TIE BARS
- (I) COMB. CURB & GUTTER B-9.24
- (J) CONCRETE BARRIER, SINGLE FACE, 42 INCH HEIGHT
- (K) CONCRETE BARRIER FOUNDATION
- (L) PROPOSED PERMANENT RETAINING WALL (SEE STRUCTURAL PLANS)

FILE NAME: =\ADE8960-shtr\typical_03.dgn
3/29/2012 4:49:52 PM

Primera

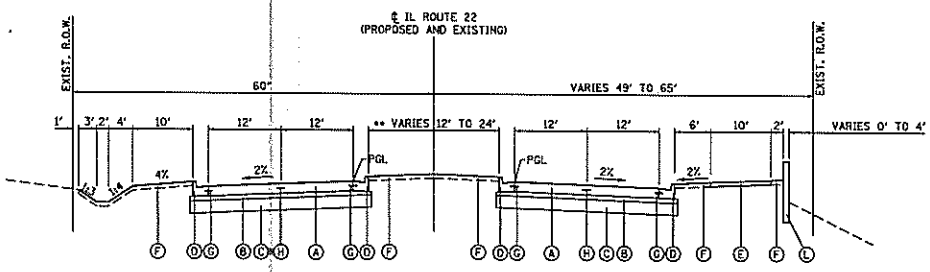
DESIGNED - MBL	REVISED -	
DRAWN - MBL	REVISED -	
CHECKED - RJD	REVISED -	
DATE - 03/21/2012	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

IL ROUTE 22 FROM QUENTIN ROAD TO IL ROUTE 83
TYPICAL SECTIONS

SCALE: N.T.S. | SHEET NO. 3 OF 6 SHEETS | STA. | TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
337	20-Y	LAKE	290	12
		CONTRACT NO. 60N10		
		ILLINOIS FED. AID PROJECT		



PROPOSED TYPICAL SECTION

ILLINOIS ROUTE 22
STA. 169+10 TO STA 178+90

** MEDIAN TRANSITIONS FROM 12' PAINTED TO 24' BARRIER AND WIDENS TO 30' BARRIER EAST OF PROJECT LIMITS.

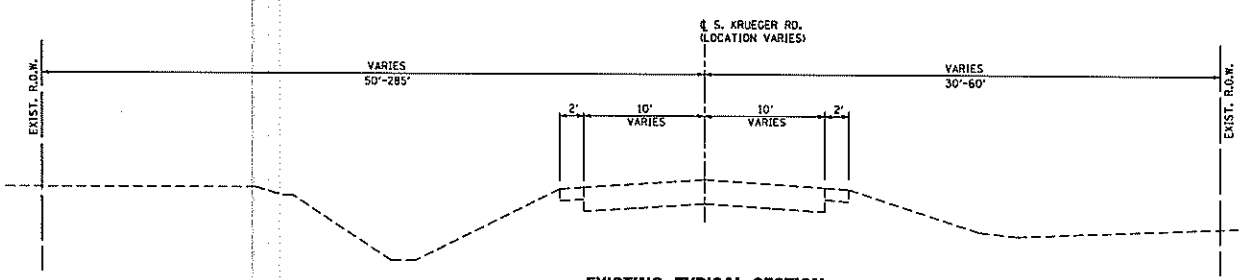
NOTE:

SEE RETAINING WALL TYPICAL SECTIONS FOR SECTION DETAILS.

PROPOSED LEGEND

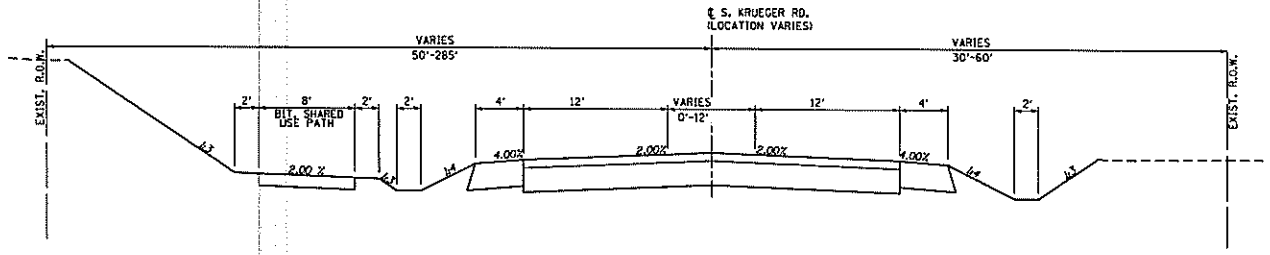
- (A) PCC PAVEMENT 9 3/4" (JOINTED) (EXTENDED LIFE PAVEMENT)
- (B) STABILIZED SUBBASE - HOT-MIX ASPHALT, 4 1/2" (EXTENDED LIFE PAVEMENT)
- (C) AGGREGATE SUBGRADE, IMPROVEMENT (12" THICKNESS, EXTENDED LIFE PAVEMENT)
- (D) COMB. CURB & GUTTER B-6.24 (FOR LOCATIONS OF DEPRESSED CURB AT TRAFFIC BARRIER TERMINALS TYPE 1A SPECIAL, SEE PLANS)
- (E) SIDEWALK/BIKEPATH 4" (HMA SURFACE COURSE, MIX "D", N50)
- (F) RESTORATION LANDSCAPING:
  - EROSION CONTROL BLANKET
  - SEEDING CLASS 2A, 4 OR 4B (SEE PLANS)
  - TOPSOIL 4" AND/OR COMPOST 2"
- (G) #6 TIE BARS, 24" LONG @ 24" C-C (INCIDENTAL)
- (H) #8 TIE BARS
- (I) COMB. CURB & GUTTER B-9.24
- (J) CONCRETE BARRIER, SINGLE FACE, 42 INCH HEIGHT
- (K) CONCRETE BARRIER FOUNDATION
- (L) PROPOSED PERMANENT RETAINING WALL (SEE STRUCTURAL PLANS)

FILE NAME ...\ILLINOIS-Ar-typical.84.dgn 3/29/2012 4:49:53 PM	Primera	DESIGNED - MHL	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	IL ROUTE 22 FROM QUENTIN ROAD TO IL ROUTE 83 TYPICAL SECTIONS	F.A.P. RTE. 337	SECTION 20-Y	COUNTY LAKE	TOTAL SHEETS 290	SHEET NO. 13
		DRAWN - MHL	REVISED -							
		CHECKED - RJD	REVISED -					CONTRACT NO. 60N10		
		DATE - 03/21/2012	REVISED -		SCALE: N.T.S. SHEET NO. 4 OF 6 SHEETS STA. TO STA.			ILLINOIS FED. AID PROJECT		



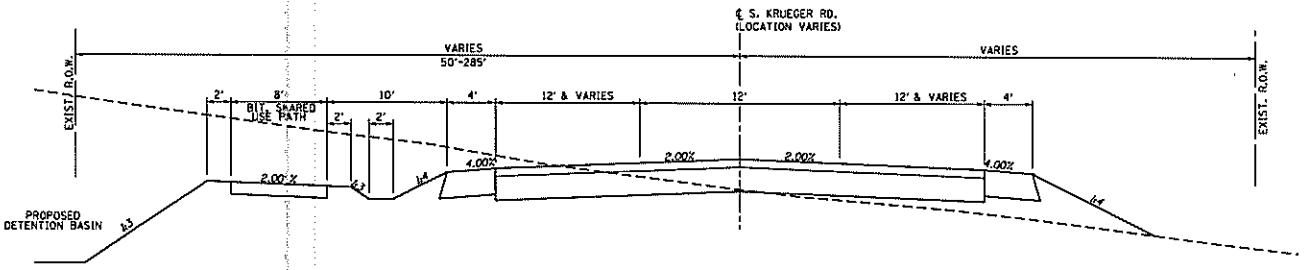
EXISTING TYPICAL SECTION

SOUTH KRUEGER RD.
STA. 306+67 TO STA 317+50
LOOKING NORTH



PROPOSED TYPICAL SECTION

SOUTH KRUEGER RD.
STA. 306+67 TO STA 313+00
LOOKING NORTH



PROPOSED TYPICAL SECTION

SOUTH KRUEGER RD.
STA. 313+00 TO STA 317+50
LOOKING NORTH

EXISTING LEGEND

1. HMA SURFACE/BINDER, X" AND VARIES
2. PCC PAVEMENT, X"
3. GRANULAR SUB-BASE, X"
4. AGGREGATE SUBGRADE, X"
5. AGGREGATE SHOULDER
6. PCC BASE COURSE, X"
7. CONC. CURB & GUTTER, B-X.XX
8. PAVEMENT REMOVAL
9. CONC. CURB & GUTTER REMOVAL
10. EARTH EXCAVATION

VERIFY EXISTING CROSS SECTION WITH PAVEMENT CORES (TO BE RECEIVED).

PROPOSED LEGEND

- (A) PCC PAVEMENT 9 3/4" (JOINTED) (EXTENDED LIFE PAVEMENT)
- (B) STABILIZED SUBBASE - HOT-MIX ASPHALT, 4 1/2" (EXTENDED LIFE PAVEMENT)
- (C) AGGREGATE SUBGRADE, SPECIAL (12" THICKNESS, EXTENDED LIFE PAVEMENT)
- (D) COMB. CURB & GUTTER B-6.24 (FOR LOCATIONS OF DEPRESSED CURB AT TRAFFIC BARRIER TERMINALS TYPE 1A SPECIAL, SEE PLANS)
- (E) SIDEWALK/BIKEPATH 4" (HMA SURFACE COURSE, MIX "D", N50)
- (F) RESTORATION LANDSCAPING:
  - EROSION CONTROL BLANKET
  - SEEDING CLASS 2A, 4 OR 4B (SEE PLANS)
  - TOPSOIL 4" AND/OR COMPOST 2"
- (G) #6 TIE BARS, 24" LONG @ 24" C-C (INCIDENTAL)
- (H) #8 TIE BARS
- (I) COMB. CURB & GUTTER B-9.24
- (J) CONCRETE BARRIER, SINGLE FACE, 42 INCH HEIGHT
- (K) CONCRETE BARRIER FOUNDATION
- (L) PROPOSED PERMANENT RETAINING WALL (SEE STRUCTURAL PLANS)

NOTE: IF THE CONTRACTOR CHOOSES TO USE CONCRETE FOR THE TEMPORARY PAVEMENT THE THICKNESS SHALL BE 10".

HOT-MIX ASPHALTMIXTURE REQUIREMENTS	
MIXTURE TYPE	AIR VOIDS
STABILIZED SUBBASE **	
STABILIZED SUBBASE - HOT-MIXASPHALT, ⅜" (N50) (IL-19mm)	3% @ 50 Gry.
DRIVEWAY PAVEMENT	
HOT-MIXASPHALT SURFACE COURSE, MIX "D", N50 2" (L-9.5mm)	4% @ 50 Gry.
HOT-MIXASPHALT BASE COURSE, (HMA BINDER IL-19mm; PE-6"; CE-8"	4% @ 50 Gry.
TEMPORARY PAVEMENT	
HMA SURFACE COURSE, MIX "D", N50 2" (L-9.5mm) 2"	4% @ 50 Gry.
(HMA BINDER, IL-19mm, N50 8"	4% @ 50 Gry.
MEDIAN	
HOT-MIXASPHALT SURFACE COURSE, MIX "D", N50 4" (L-9.5mm)	4% @ 50 Gry.

** SEE SPECIAL PROVISION

THE UNIT WEIGHT USED TO CALCULATE ALL HMA SURFACE MIXTURE QUANTITIES IS 112 LBS/SQ YD/IN

THE "AC TYPE" FOR POLYMERIZED HMA MIXES SHALL BE "SBS/SBR PG 70-22" AND FOR NON-POLYMERIZED HMA "AC TYPE" SHALL BE "PG 64-22" UNLESS MODIFIED BY DISTRICT ONE SPECIAL PROVISIONS.
FOR "PERCENT OF RAP" SEE DISTRICT ONE SPECIAL PROVISIONS.

FILE NAME = W:\1756\active\1756B001_2017_A_2\tuhrsa01\non projects\use_overrolled\1756B001-sht-typical_01.dgn

Stantec

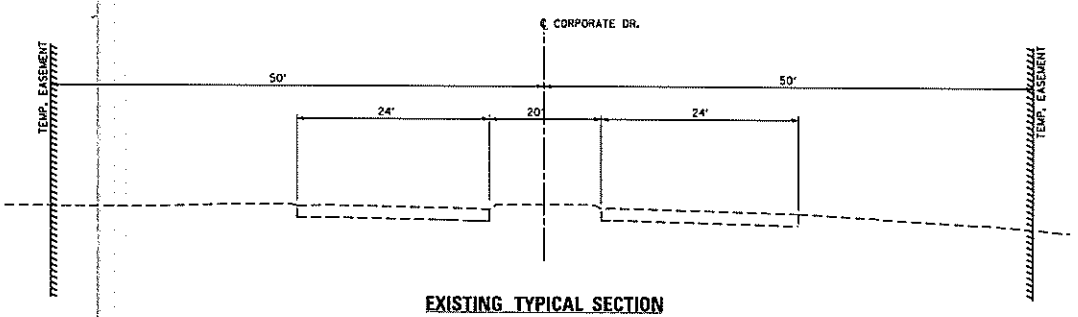
USER NAME = dbaah	DESIGNED - DLP	REVISED -
	DRAWN - STANTEC	REVISED -
PLOT SCALE = 50.000 ' / in.	CHECKED - TMH	REVISED -
PLOT DATE = 8/6/2014	DATE - 04/16/12	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SOUTH KRUEGER ROAD
TYPICAL SECTIONS

SCALE: 50.000 ' / in. | SHEET 1 OF 4 SHEETS | STA. | TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
337	20-Y	LAKE	#TOT	5
		CONTRACT NO. 60N10		
FED. ROAD DIST. NO. 1	ILLINOIS	FED. AID PROJECT		



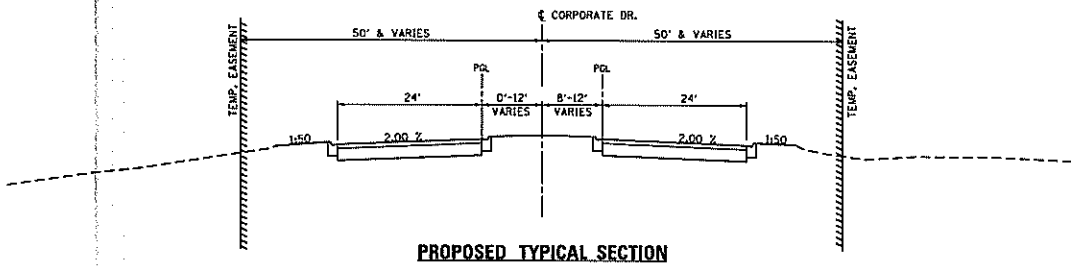
EXISTING TYPICAL SECTION

CORPORATE DR.
STA. 320+50 TO STA 324+00
LOOKING NORTH

EXISTING LEGEND

1. HMA SURFACE/BINDER, X" AND VARIES
2. PCC PAVEMENT, X"
3. GRANULAR SUB-BASE, X"
4. AGGREGATE SUBGRADE, X"
5. AGGREGATE SHOULDER
6. PCC BASE COURSE, X"
7. CONC. CURB & GUTTER, B-X.XX
8. PAVEMENT REMOVAL
9. CONC. CURB & GUTTER REMOVAL
10. EARTH EXCAVATION

VERIFY EXISTING CROSS SECTION WITH PAVEMENT CORES (TO BE RECEIVED).



PROPOSED TYPICAL SECTION

CORPORATE DR.
STA. 320+50 TO STA 324+00
LOOKING NORTH

PROPOSED LEGEND

- (A) PCC PAVEMENT 9 3/4" (JOINTED) (EXTENDED LIFE PAVEMENT)
- (B) STABILIZED SUBBASE - HOT-MIX ASPHALT, 4 1/2" (EXTENDED LIFE PAVEMENT)
- (C) AGGREGATE SUBGRADE, SPECIAL (12" THICKNESS, EXTENDED LIFE PAVEMENT)
- (D) COMB. CURB & GUTTER B-6.24 (FOR LOCATIONS OF DEPRESSED CURB AT TRAFFIC BARRIER TERMINALS TYPE 1A SPECIAL, SEE PLANS)
- (E) SIDEWALK/BIKEPATH 4" (HMA SURFACE COURSE, MIX "D", N50)
- (F) RESTORATION LANDSCAPING:
  - EROSION CONTROL BLANKET
  - SEEDING CLASS 2A, 4 OR 4B (SEE PLANS)
  - TOPSOIL 4" AND/OR COMPOST 2"
- (G) #6 TIE BARS, 24" LONG @ 24" C-C (INCIDENTAL)
- (H) #8 TIE BARS
- (I) COMB. CURB & GUTTER B-9.24
- (J) CONCRETE BARRIER, SINGLE FACE, 42 INCH HEIGHT
- (K) CONCRETE BARRIER FOUNDATION
- (L) PROPOSED PERMANENT RETAINING WALL (SEE STRUCTURAL PLANS)

FILE NAME = c:\...\corporate_typical.dgn

Stantec

USER NAME = dbaah	DESIGNED - DLP	REVISED -	
	DRAWN - STANTEC	REVISED -	
PLOT SCALE = 1.0000 ' / in.	CHECKED - TMH	REVISED -	
PLOT DATE = 8/6/2014	DATE - 04/16/12	REVISED -	

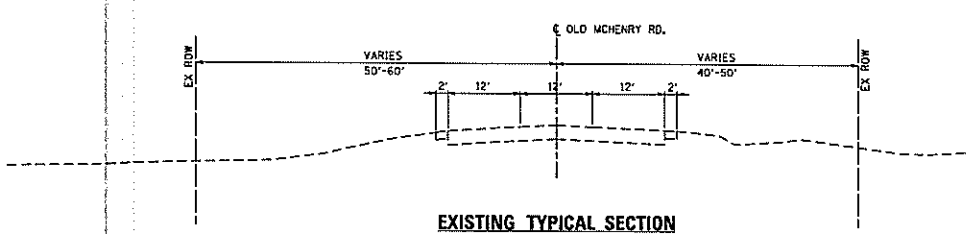
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

CORPORATE DRIVE
TYPICAL SECTIONS

SCALE: 1.0000 ' / in. | SHEET 2 OF 4 SHEETS | STA. | TO STA.

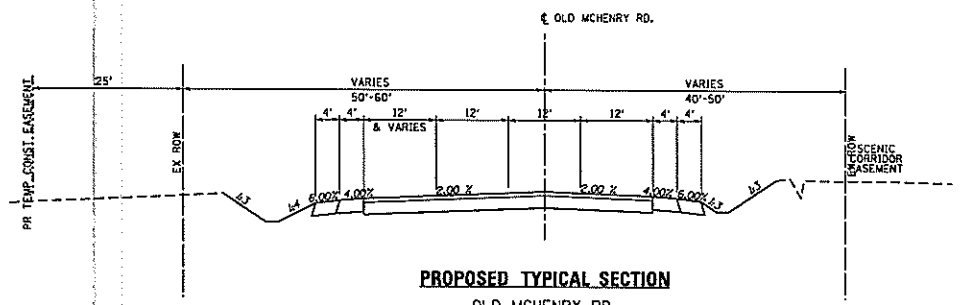
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
337	20-Y	LAKE	#TOT	6
		CONTRACT NO. 60N10		

FED. ROAD DIST. NO. 1 | ILLINOIS | FED. AID PROJECT



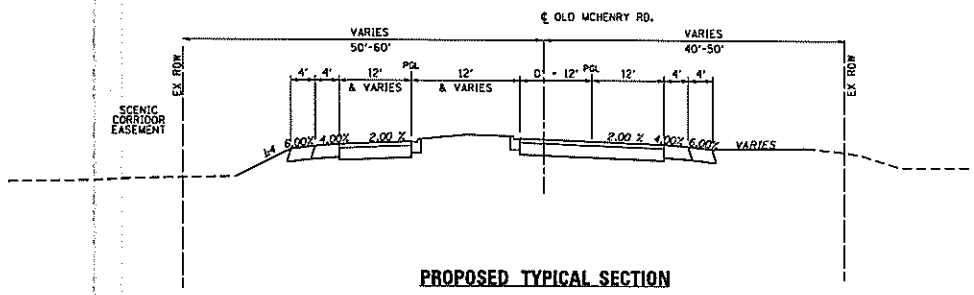
EXISTING TYPICAL SECTION

OLD MCHENRY RD.
STA. 101+50 TO STA. 125+75
LOOKING NORTH



PROPOSED TYPICAL SECTION

OLD MCHENRY RD.
STA. 101+50 TO STA. 105+50
STA. 121+00 TO STA. 125+75
LOOKING NORTH



PROPOSED TYPICAL SECTION

OLD MCHENRY RD.
STA. 113+00 TO STA. 121+00
LOOKING NORTH

EXISTING LEGEND

1. HMA SURFACE/BINDER, X" AND VARIES
2. PCC PAVEMENT, X"
3. GRANULAR SUB-BASE, X"
4. AGGREGATE SUBGRADE, X"
5. AGGREGATE SHOULDER
6. PCC BASE COURSE, X"
7. CONC. CURB & GUTTER, B-X.XX
8. PAVEMENT REMOVAL
9. CONC. CURB & GUTTER REMOVAL
10. EARTH EXCAVATION

VERIFY EXISTING CROSS SECTION WITH PAVEMENT CORES (TO BE RECEIVED).

PROPOSED LEGEND

- (A) PCC PAVEMENT 9 3/4" (JOINTED) (EXTENDED LIFE PAVEMENT)
- (B) STABILIZED SUBBASE - HOT-MIX ASPHALT, 4 1/2" (EXTENDED LIFE PAVEMENT)
- (C) AGGREGATE SUBGRADE, SPECIAL (12" THICKNESS, EXTENDED LIFE PAVEMENT)
- (D) COMB. CURB & GUTTER B-6.24 (FOR LOCATIONS OF DEPRESSED CURB AT TRAFFIC BARRIER TERMINALS TYPE 1A SPECIAL, SEE PLANS)
- (E) SIDEWALK/BIKEPATH 4" (HMA SURFACE COURSE, MIX "D", N50)
- (F) RESTORATION LANDSCAPING:
  - EROSION CONTROL BLANKET
  - SEEDING CLASS 2A, 4 OR 4B (SEE PLANS)
  - TOPSOIL 4" AND/OR COMPOST 2"
- (G) #6 TIE BARS, 24" LONG @ 24" C-C (INCIDENTAL)
- (H) #8 TIE BARS
- (I) COMB. CURB & GUTTER B-9.24
- (J) CONCRETE BARRIER, SINGLE FACE, 42 INCH HEIGHT
- (K) CONCRETE BARRIER FOUNDATION
- (L) PROPOSED PERMANENT RETAINING WALL (SEE STRUCTURAL PLANS)

FILE NAME = E:\IDOT\Projects\Lake\17R00001\Cad\Sheets\17R00001_SHT_TypicalSections.dgn

Stantec

USER NAME = dbough
PLOT SCALE = 50.000 ' / in.
PLOT DATE = 8/6/2014

DESIGNED - DLP
DRAWN - STANTEC
CHECKED - TMH
DATE - 04/16/12

REVISED -
REVISED -
REVISED -
REVISED -

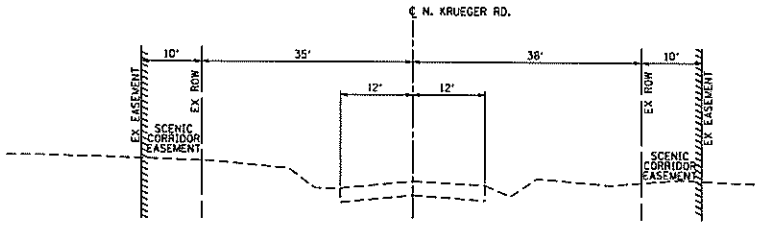
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

OLD McHENRY ROAD
TYPICAL SECTIONS

SCALE: 50.000 ' / in. | SHEET 3 OF 4 SHEETS | STA. TO STA.

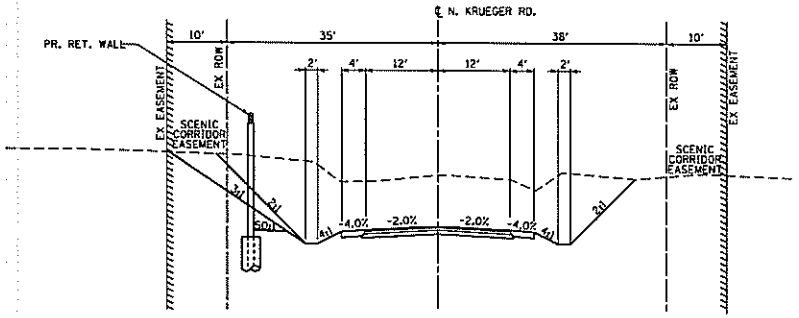
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
337	20-7	LAKE	9TOT	7
		CONTRACT NO. 60N10		

FED. ROAD DIST. NO. 1 | ILLINOIS | FED. AID PROJECT



EXISTING TYPICAL SECTION

NORTH KRUEGER RD.
STA. 601+00 TO STA. 605+15
LOOKING NORTH



PROPOSED TYPICAL SECTION

NORTH KRUEGER RD.
STA. 601+00 TO STA. 605+15
LOOKING NORTH

EXISTING LEGEND

1. HMA SURFACE/BINDER, X" AND VARIES
2. PCC PAVEMENT, X"
3. GRANULAR SUB-BASE, X"
4. AGGREGATE SUBGRADE, X"
5. AGGREGATE SHOULDER
6. PCC BASE COURSE, X"
7. CONC. CURB & GUTTER, B-X.XX
8. PAVEMENT REMOVAL
9. CONC. CURB & GUTTER REMOVAL
10. EARTH EXCAVATION

VERIFY EXISTING CROSS SECTION WITH PAVEMENT CORES (TO BE RECEIVED).

PROPOSED LEGEND

- (A) PCC PAVEMENT 9 3/4" (JOINTED) (EXTENDED LIFE PAVEMENT)
- (B) STABILIZED SUBBASE - HOT-MIX ASPHALT, 4 1/2" (EXTENDED LIFE PAVEMENT)
- (C) AGGREGATE SUBGRADE, SPECIAL (12" THICKNESS, EXTENDED LIFE PAVEMENT)
- (D) COMB. CURB & GUTTER B-6.24 (FOR LOCATIONS OF DEPRESSED CURB AT TRAFFIC BARRIER TERMINALS TYPE 1A SPECIAL, SEE PLANS)
- (E) SIDEWALK/BIKEPATH 4" (HMA SURFACE COURSE, MIX "D", N50)
- (F) RESTORATION LANDSCAPING:
  - EROSION CONTROL BLANKET
  - SEEDING CLASS 2A, 4 OR 4B (SEE PLANS)
  - TOPSOIL 4" AND/OR COMPOST 2"
- (G) #6 TIE BARS, 24" LONG @ 24" C-C (INCIDENTAL)
- (H) #8 TIE BARS
- (I) COMB. CURB & GUTTER B-9.24
- (J) CONCRETE BARRIER, SINGLE FACE, 42 INCH HEIGHT
- (K) CONCRETE BARRIER FOUNDATION
- (L) PROPOSED PERMANENT RETAINING WALL (SEE STRUCTURAL PLANS)

FILE NAME = N:\1785\active\178500824_2001.8.2\Plans\Cover\Cover Sheet.dgn

Stantec

USER NAME = dbook	DESIGNED - DLP	REVISED -	
	DRAWN - STANTEC	REVISED -	
PLOT SCALE = 50.00 ' / in.	CHECKED - TMH	REVISED -	
PLOT DATE = 8/6/2014	DATE - 04/16/12	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

NORTH KRUEGER ROAD
TYPICAL SECTIONS

SCALE: 50.00 ' / in. | SHEET 4 OF 4 SHEETS | STA. | TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
337	20-Y	LAKE	#TOT	8
		CONTRACT NO. 60N10		

FED. ROAD DIST. NO. 1 | ILLINOIS | FED. AID PROJECT

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

IDOT MECHANISTIC PAVEMENT DESIGN

Printed: 01/23/2015

PROJECT AND TRAFFIC INPUTS

(Enter Data in Gray Shaded Cells)

Route: IL 22
Section: 20-Y
County: Lake
Location: Quentin Rd to IL 83
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

Comments: IL 22 Reconstruction
Design Date: 12/15/2014 ONP <-- BY
Modify Date: <-- BY

	ADT	Year
Current:	23,300	2007
Future:	36,000	2040

	Structural Design Traffic			
	Minimum ADT	Actual ADT	Actual %of Total ADT	% of ADT in Design Lane
PV =	0	27,122	88.6%	P = 32%
SU =	250	2,327	7.6%	S = 45%
MU =	750	1,163	3.8%	M = 45%
		Struct. Design ADT =	30,612	(2026)

TRAFFIC FACTOR CALCULATION

FLEXIBLE PAVEMENT			RIGID PAVEMENT		
Cpv =	0.15		Cpv =	0.15	
Csu =	132.5		Csu =	143.81	
Cmu =	482.53		Cmu =	696.42	
TF flexible (Actual) =	7.85	(Actual ADT)	TF rigid (Actual) =	10.33	(Actual ADT)
TF flexible (Min) =	3.56	(Min ADT Fig. 54-2.C)	TF rigid (Min) =	5.02	(Min ADT Fig. 54-2.C)

NEW CONSTRUCTION / RECONSTRUCTION PAVEMENT DESIGN CALCULATIONS

Full-Depth HMA Pavement

Use TF flexible = 7.85
PG Grade Lower Binder Lifts = PG 64-22 (Fig. 53-4.R)
Goto Map
HMA Mixture Temp. = 73.5 deg. F (Fig. 54-5.C)
Design HMA Mixture Modulus (E_{HMA}) = 740 ksi (Fig. 54-5.D)
Design HMA Strain (ε_{HMA}) = 67 (Fig. 54-5.E)
Full Depth HMA Design Thickness = 11.25 in. (Fig. 54-5.F)
Goto Map
Limiting Strain Criterion Thickness = 14.25 in. (Fig. 54-5.I)

Use Full-Depth HMA Thickness = 11.25 inches

JPC Pavement

Use TF rigid = 10.33
Edge Support = Tied Shoulder or C.&G.

Rigid Pavt Thick. = 10.00 in. (Fig. 54-4.E)

CRC Pavement

Use TF rigid = 10.33
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 = 7.85
HMA Overlay Design Thickness = 8.75 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: 01/23/2015

LIFE-CYCLE COST ANALYSIS: NEW CONSTRUCTION / RECONSTRUCTION

FULL-DEPTH HMA PAVEMENT

Standard Design

ROUTE			IL 22	
SECTION			20-Y	
COUNTY			Lake	
LOCATION			Quentin Rd to IL 83	
FACILITY TYPE			NON-INTERSTATE	
PROJECT LENGTH			17290 FT	= = > 3.27 Miles
# OF CENTERLINES			4 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)	11.25 IN	14.25 IN MAX	
SHOULDER THICKNESS	8.00 IN		Standard Design
POLICY OVERLAY THICKNESS	2.25 IN		

FLEX PAVEMENT TRAFFIC FACTORS	MINIMUM	ACTUAL	USE
	3.56	7.85	7.85

Read Me!

HMA COST PER TON	UNIT PRICE
HMA SURFACE	$83.91 / TON
HMA TOP BINDER	$77.67 / TON
HMA LOWER BINDER	$69.74 / TON
HMA BINDER (LEVELING)	$77.67 / TON
HMA SHOULDER	$72.00 / TON

INITIAL COSTS

ITEM	THICKNESS	100% QUANTITY	UNIT		UNIT PRICE		COST	
HMA PAVEMENT (FULL-DEPTH)	(11.25")	92,213	SQ YD	*	$46.98	/ SQ YD	$4,332,182	~
HMA SURFACE COURSE	(2.00")	10,364	TONS		$83.91	/ TON	$0	
HMA TOP BINDER COURSE	(2.25")	11,745	TONS		$77.67	/ TON	$0	
HMA LOWER BINDER COURSE	(7.00")	37,120	TONS		$69.74	/ TON	$0	
HMA SHOULDER	(8.00")	0	TONS		$72.00	/ TON	$0	~
CURB & GUTTER		34,580	LIN FT	*	$30.00	/ LIN FT	$1,037,400	
SUBBASE GRAN MATL TY C (TONS)		315	TONS		$25.00	/ TON	$7,875	
IMPROVED SUBGRADE:	Aggregate	97,737	SQ YD		$7.00	/ SQ YD	$684,159	
Reserved For User Supplied Item		0	UNITS		$0.00	/ UNITS	$0	
Reserved For User Supplied Item		0	UNITS		$0.00	/ UNITS	$0	
PAVEMENT REMOVAL		92,213	SQ YD		$15.00	/ SQ YD	$1,383,195	
SHOULDER REMOVAL		0	SQ YD		$0.00	/ SQ YD	$0	

Note: * Denotes User Supplied Quantity

FLEXIBLE CONSTRUCTION INITIAL COST	$7,444,811
FLEXIBLE CONSTRUCTION ANNUAL COST PER MILE	$92,725

MAINTENANCE COSTS:

ITEM	THICKNESS	MATERIAL	UNIT COST	
ROUTINE MAINTENANCE ACTIVITY			$0.00	LANE-MILE / YEAR
HMA OVERLAY PVMT SURF	(2.00")	Surface Mix	$9.43	/ SQ YD
HMA OVERLAY PVMT	(2.25")		$10.35	/ SQ YD
HMA SURFACE MIX	(1.50")	Surface Mix	$7.07	/ SQ YD
HMA BINDER MIX	(0.75")	eling Binder Mix	$3.28	/ 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	$79.40	/ 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	$78.70	/ 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	$9,798,690
FLEXIBLE TOTAL ANNUAL COST PER MILE	$122,042

HMA_SD

MAINTENANCE AND REHABILITATION ACTIVITY SCHEDULE 01/23/15

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%	34,580	LIN FT	$2.00		$69,160	
	CNTR LINE JOINT R&S	100.00%	69,160	LIN FT	$2.00		$138,320	
	RNDM / THRM CRACK R&S	50.00%	38,038	LIN FT	$2.00		$76,076	
	PD PVMT PATCH M&F SURF	0.10%	92	SQ YD	$79.40		$7,305	
	PWFn =	0.8626		PW =	0.8626	X	$290,861	$250,899
YEAR 10								
	LONG SHLD JT R&S	100.00%	34,580	LIN FT	$2.00		$69,160	
	CNTR LINE JOINT R&S	100.00%	69,160	LIN FT	$2.00		$138,320	
	RNDM / THRM CRACK R&S	50.00%	38,038	LIN FT	$2.00		$76,076	
	PD PVMT PATCH M&F SURF	0.50%	461	SQ YD	$79.40		$36,602	
	PWFn =	0.7441		PW =	0.7441	X	$320,158	$238,228
YEAR 15								
	MILL PVMT & SHLD 2.00"	100.00%	92,213	SQ YD	$3.00		$276,639	
	PD PVMT PATCH M&F ADD'L 2.00"	1.00%	922	SQ YD	$78.70		$72,561	
	HMA OVERLAY PVMT 2.00"	100.00%	92,213	SQ YD	$9.43		$869,623	
	HMA OVERLAY SHLD 2.00 "	100.00%	0	SQ YD	$8.06		$0	
	PWFn =	0.6419		PW =	0.6419	X	$1,218,823	$782,316
YEAR 20								
	LONG SHLD JT R&S	100.00%	34,580	LIN FT	$2.00		$69,160	
	CNTR LINE JOINT R&S	100.00%	69,160	LIN FT	$2.00		$138,320	
	RNDM / THRM CRACK R&S	50.00%	38,038	LIN FT	$2.00		$76,076	
	PD PVMT PATCH M&F SURF	0.10%	92	SQ YD	$79.40		$7,305	
	PWFn =	0.5537		PW =	0.5537	X	$290,861	$161,043
YEAR 25								
	LONG SHLD JT R&S	100.00%	34,580	LIN FT	$2.00		$69,160	
	CNTR LINE JOINT R&S	100.00%	69,160	LIN FT	$2.00		$138,320	
	RNDM / THRM CRACK R&S	50.00%	38,038	LIN FT	$2.00		$76,076	
	PD PVMT PATCH M&F SURF	0.50%	461	SQ YD	$79.40		$36,602	
	PWFn =	0.4776		PW =	0.4776	X	$320,158	$152,909
HMA_SD								
YEAR 30	NON-INTERSTATE							
	MILL PVMT & SHLD 2.00"	100.00%	92,213	SQ YD	$3.00		$276,639	
	PD PVMT PATCH M&F ADD'L 2.00"	2.00%	1,844	SQ YD	$78.70		$145,121	
	PD SHLD PATCH M&F ADD'L 2.00"	1.00%	0	SQ YD	$78.06		$0	
	HMA OVERLAY PVMT 2.25 "	100.00%	92,213	SQ YD	$10.35		$954,424	
	HMA OVERLAY SHLD 2.25 "	100.00%	0	SQ YD	$9.07		$0	
	PWFn =	0.4120		PW =	0.4120	X	$1,376,184	$566,970
YEAR 35								
	LONG SHLD JT R&S	100.00%	34,580	LIN FT	$2.00		$69,160	
	CNTR LINE JOINT R&S	100.00%	69,160	LIN FT	$2.00		$138,320	
	RNDM / THRM CRACK R&S	50.00%	38,038	LIN FT	$2.00		$76,076	
	PD PVMT PATCH M&F SURF	0.10%	92	SQ YD	$79.40		$7,305	
	PWFn =	0.3554		PW =	0.3554	X	$290,861	$103,367
YEAR 40								
	LONG SHLD JT R&S	100.00%	34,580	LIN FT	$2.00		$69,160	
	CNTR LINE JOINT R&S	100.00%	69,160	LIN FT	$2.00		$138,320	
	RNDM / THRM CRACK R&S	50.00%	38,038	LIN FT	$2.00		$76,076	
	PD PVMT PATCH M&F SURF	0.50%	461	SQ YD	$79.40		$36,602	
	PWFn =	0.3066		PW =	0.3066	X	$320,158	$98,147
								$2,353,879
	ROUTINE MAINTENANCE ACTIVITY		13.10	Lane Miles	0.00		$0	$0
					MAINTENANCE LIFE-CYCLE COST			$2,353,879
45	YEAR LIFE CYCLE	CRFn = 0.0407852			MAINTENANCE ANNUAL COST PER MILE			$29,317

PCC PAVEMENT

JPCP

ROUTE		IL 22	
SECTION		20-Y	
COUNTY		Lake	
LOCATION		Quentin Rd to IL 83	
FACILITY TYPE		NON-INTERSTATE	
PROJECT LENGTH		17290 FT = = >	3.27 Miles
# OF CENTERLINES		4 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	10.33	10.33
Worksheet Construction Type is	Reconstruction		The Pavement Type is	JPCP

INITIAL COSTS

ITEM	THICKNESS	100% QUANTITY	UNIT		UNIT PRICE		COST
JPC PAVEMENT	(10.00")	92,213	SQ YD		$42.27	/ SQ YD	$3,897,844
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		34,580	LIN FT	*	$30.00	/ LIN FT	$1,037,400
SUBBASE GRAN MATL TY C	(0.00")	0	TONS		$25.00	/ TON	$0
IMPROVED SUBGRADE:	Aggregate	94,134	SQ YD		$7.00	/ SQ YD	$658,938
Reserved For User Supplied Item		0	UNITS		$0.00	/ UNITS	$0
Reserved For User Supplied Item		0	UNITS		$0.00	/ UNITS	$0
PAVEMENT REMOVAL		92,213	SQ YD		$15.00	/ SQ YD	$1,383,195
SHOULDER REMOVAL		0	SQ YD		$0.00	/ SQ YD	$0

Note: * Denotes User Supplied Quantity

RIGID CONSTRUCTION INITIAL COST	$6,977,377
RIGID CONSTRUCTION ANNUAL COST PER MILE	$86,903

MAINTENANCE COSTS:

ITEM	THICKNESS	MATERIAL	UNIT COST	
ROUTINE MAINTENANCE ACTIVITY			$0.00	/ LANE-MILE / YEAR
HMA POLICY OVERLAY	(2.50")			
HMA POLICY OVERLAY PVMT	(2.50")		$11.45	/ SQ YD
HMA SURFACE MIX	(1.50")	Surface Mix	$7.07	/ SQ YD
HMA BINDER MIX	(1.00")	Leveling Binder Mix	$4.38	/ SQ YD
HMA POLICY OVERLAY SHLD	(2.50")	Shoulder Mix	$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	$77.05	/ SQ YD
PARTIAL DEPTH PVMT PATCH (Mill & Fill HMA 2.50")		Surface Mix	$81.75	/ 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	$8,389,013
RIGID TOTAL ANNUAL COST PER MILE	$104,485

MAINTENANCE AND REHABILITATION ACTIVITY SCHEDULE 01/23/15

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%	92	SQ YD	$150.00		$13,800	
	PWFn =	0.7441		PW =	0.7441	X	$13,800	$10,268
YEAR 15								
	PAVEMENT PATCH CLASS B	0.20%	184	SQ YD	$150.00		$27,600	
	PWFn =	0.6419		PW =	0.6419	X	$27,600	$17,715
YEAR 20								
	PAVEMENT PATCH CLASS B	2.00%	1,844	SQ YD	$150.00		$276,600	
	SHOULDER PATCH CLASS C	0.50%	0	SQ YD	$145.00		$0	
	LONGITUDINAL SHLD JT R&S	100.00%	34,580	LIN FT	$2.00		$69,160	
	CENTERLINE JT R&S	100.00%	69,160	LIN FT	$2.00		$138,320	
	PWFn =	0.5537		PW =	0.5537	X	$484,080	$268,023
YEAR 25								
	PAVEMENT PATCH CLASS B	3.00%	2,766	SQ YD	$150.00		$414,900	
	SHOULDER PATCH CLASS C	1.00%	0	SQ YD	$145.00		$0	
	PWFn =	0.4776		PW =	0.4776	X	$414,900	$198,159
YEAR 30	NON-INTERSTATE							
	PAVEMENT PATCH CLASS B	4.00%	3,689	SQ YD	$150.00		$553,350	
	SHOULDER PATCH CLASS C	1.50%	0	SQ YD	$145.00		$0	
	HMA POLICY OVERLAY 2.5" (PVMT)	100.00%	92,213	SQ YD	$11.45		$1,055,522	
	HMA POLICY OVERLAY 2.5" (SHLD)	100.00%	0	SQ YD	$10.08		$0	
	PWFn =	0.4120		PW =	0.4120	X	$1,608,872	$662,834
YEAR 35	NON-INTERSTATE							
	LONGITUDINAL SHLD JT R&S	100.00%	34,580	LIN FT	$2.00		$69,160	
	CENTERLINE JT R&S	100.00%	69,160	LIN FT	$2.00		$138,320	
	RANDOM CRACK R&S	50.00%	34,580	LIN FT	$2.00		$69,160	
	REFLECTIVE TRANSVERSE CRACK R&S	40.00%	22,138	LIN FT	$2.00		$44,276	
	PD PVMT PATCH M&F HMA 2.50"	0.10%	92	SQ YD	$81.75		$7,521	
	PWFn =	0.3554		PW =	0.3554	X	$328,437	$116,721
YEAR 40	NON-INTERSTATE							
	PAVEMENT PATCH CLASS B	0.50%	461	SQ YD	$150.00		$69,150	
	LONGITUDINAL SHLD JT R&S	100.00%	34,580	LIN FT	$2.00		$69,160	
	CENTERLINE JT R&S	100.00%	69,160	LIN FT	$2.00		$138,320	
	REFLECTIVE TRANSVERSE CRACK R&S	60.00%	33,206	LIN FT	$2.00		$66,412	
	RANDOM CRACK R&S	50.00%	34,580	LIN FT	$2.00		$69,160	
	PD PVMT PATCH M&F HMA 2.50"	0.50%	461	SQ YD	$81.75		$37,686	
	PWFn =	0.3066		PW =	0.3066	X	$449,888	$137,916
								$1,411,636
	ROUTINE MAINTENANCE ACTIVITY		13.10	Lane Miles	$0.00		$0	$0
					MAINTENANCE LIFE-CYCLE COST			$1,411,636
45	YEAR LIFE CYCLE CRFn = 0.0407852				MAINTENANCE ANNUAL COST PER MILE			$17,582

LIFE-CYCLE COST ANALYSIS: NEW DESIGN

Calculated / Revised : **12/22/14 10:58 AM**

			JPCP	HMA
CONSTRUCTION	INITIAL COST	PRESENT WORTH	$6,977,377	$7,444,811
		ANNUAL COST PER MILE	$86,903	$92,725
MAINTENANCE	LIFE-CYCLE COST	PRESENT WORTH	$1,411,636	$2,353,879
		ANNUAL COST PER MILE	$17,582	$29,317
TOTAL	LIFE-CYCLE COST	PRESENT WORTH	$8,389,013	$9,798,690
		ANNUAL COST PER MILE	$104,485	$122,042

LIFE-CYCLE COST ANALYSIS: FINAL SUMMARY

LOWEST COST OPTION	==========>	**JPCP**	**$104,485**	
OTHER OPTIONS (LOWEST TO HIGHEST):	TYPE / PERCENTAGE	**HMA**	**$122,042**	**16.8%**

P:\Pavement Design Stuff\D-1\IL 22 from Quentin Road to IL 83\IL 22 from Quentin Road to IL 83 Pvmt Design Files\[IL 22 - Mechanistic Design LCCA 09-05-13.xls