



Illinois Department of Transportation

To: Anthony J. Quigley Attn: John Baczek
From: Jack A. Elston By: Michael Brand *MJB*
Subject: Pavement Design Approval
Date: October 10, 2018

Route: US 20 Job No.:
Section: 14-00446-00-CH Contract No.:
County: Kane Target Letting: March 2019
Limits: Interchange with Randall Road

We have reviewed the pavement design for the above referenced project which was submitted on September 17, 2018. The scope of this local roads project involves construction a new "Ramp E" at the interchange, widening of eastbound US 20 to provide an auxiliary lane for the new ramp, and widening/resurfacing of Ramps C and D to improve the corner radii.

Widening of US 20: This part of the design explored several widening options and analyzed them based upon first costs which resulted in a mechanistic Full-Depth HMA pavement being the preferred option.

Construction of Ramp E: This part of the design resulted in a mechanistic Full-Depth HMA pavement being the preferred option to match the US 20 mainline pavement.

Widening/Resurfacing of Ramps C and D: This part of the design resulted in a mechanistic HMA design being the preferred option to match existing pavement and for ease of construction.

In summary, the approved pavement designs are as follows:

<u>US 20 Widening</u>	<u>Ramp E Construction</u>
11.75" Full-Depth HMA	10.25" Full-Depth HMA
HMA Shoulder	HMA Shoulders
12" Agg. Subgrade Improvement	12" Agg. Subgrade Improvement

Ramps C and D Widening/Resurfacing
10.25" Full-Depth HMA with HMA Shoulders
12" Agg. Subgrade Improvement

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



Illinois Department of Transportation

Memorandum

To: Jack Elston

Attn: Michael Brand

From: Jose A. Dominguez

By: Ojas Patel

Subject: Pavement Analysis*

Date: September 17, 2018

*Route: US Route 20

County: Kane

Limits: at Randall Road

Contract No.: N/A (Local Roads)

Section: 14-00446-00-CH

Job No.: N/A

Current target: 03CY19

We have completed the pavement analysis for the above captioned location. Review by the Central Office is required since the total pavement area for widening and new construction on IDOT routes exceed 4,750 Square Yards. The following is the scope of the project:

Bureau of Local Roads project to construct a new Ramp E at the Randall Road at US 20 interchange. Widening of eastbound US 20 to provide and auxiliary lane due to the addition of Ramp E. Widening and resurfacing of Ramp C/D to improve the corner radii.

A 20-year pavement analysis was performed for the above roadway segments. Our recommendation for the widening of US 20 for the auxiliary lane is a mechanistic flexible pavement design procedure using a first cost analysis. Reconstruction of Ramp E will match the pavement type for mainline US 20 utilizing a mechanistic flexible pavement design as per BDE 54-1.06. The widening of Ramp C/D is a small segment and as such, this pavement design will be classified as a "Special Design" per BDE Figure 54-1.A. A mechanistic-flexible pavement design is recommended for ease of construction and to match the existing pavement type. The recommended pavement is:

US 20 (Auxiliary Lane)

Widening⁵

HMA Shoulder

11 ¾" Full Depth HMA

2" HMA Surface Course, Mix "D", N70¹

9 ¾" HMA Binder Course, IL-19.0, N90²

12" Aggregate Subgrade Improvement⁴

Ramp E

New Construction⁵

HMA Shoulder

10 ¼" Full Depth HMA

2" HMA Surface Course, Mix "D", N70¹

8 ¼" HMA Binder Course, IL-19.0, N90³

12" Aggregate Subgrade Improvement⁴

Ramp C/D

Widening⁵

HMA Shoulder

10 ¼" Full Depth HMA

2" HMA Surface Course, Mix "D", N70¹

8 ¼" HMA Binder Course, IL-19.0, N90³

12" Aggregate Subgrade Improvement⁴

Pavement Resurfacing⁵

Cold Milling of HMA Pavement

2" minimum (more if necessary)

2" HMA Surface Course, Mix "D", N70¹

¹**Designer Note 1:** Use pay item **40603340, HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N70** paid for in tons.

²**Designer Note 2:** For widening of six feet or less use pay item **35600715, Hot-Mix Asphalt Base Course Widening, 9 ¾"**, paid for in square yards. For widening of greater than six feet use pay item **35501323, Hot-Mix Asphalt Base Course, 9 ¾"**, paid for in square yards.

³**Designer Note 3:** For widening of six feet or less use pay item **35600709, Hot-Mix Asphalt Base Course Widening, 8 ¼"**, paid for in square yards. For reconstruction or widening of greater than six feet use pay item **35501317, Hot-Mix Asphalt Base Course, 8 ¼"**, paid for in square yards.

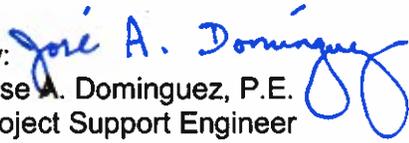
J. Elston
September 17, 2018
Page Three

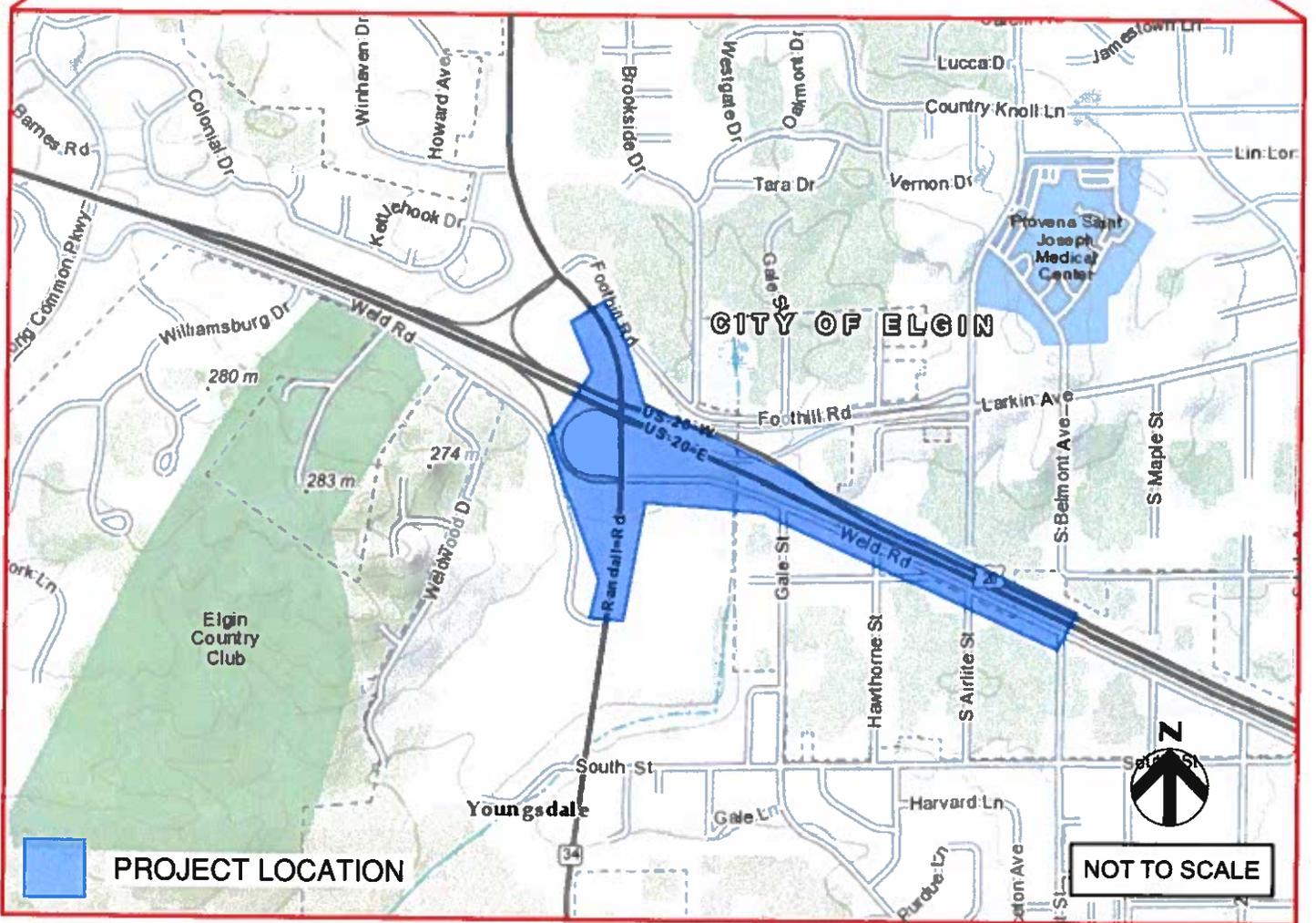
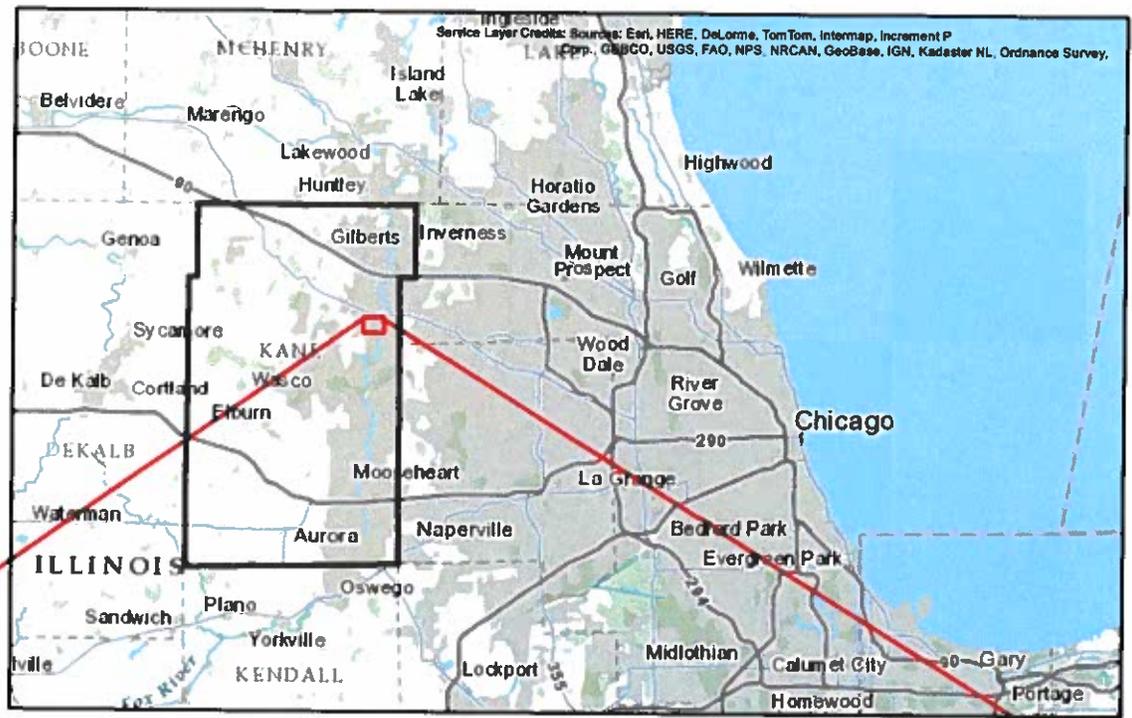
⁴Designer Note 4: Use pay item **30300112, AGGREGATE SUBGRADE IMPROVEMENT, 12"**, paid in square yards.

⁵Designer Note 5: 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.

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

By:


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



PROJECT LOCATION MAP

RANDALL ROAD AT US ROUTE 20/WELD ROAD INTERSECTION IMPROVEMENTS



USER NAME	RODGERS
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PLOT DATE	6/14/2018

DESIGNED	AKS
CHECKED	DWH
DATE	06/15/18

REVISED	
REVISED	
REVISED	

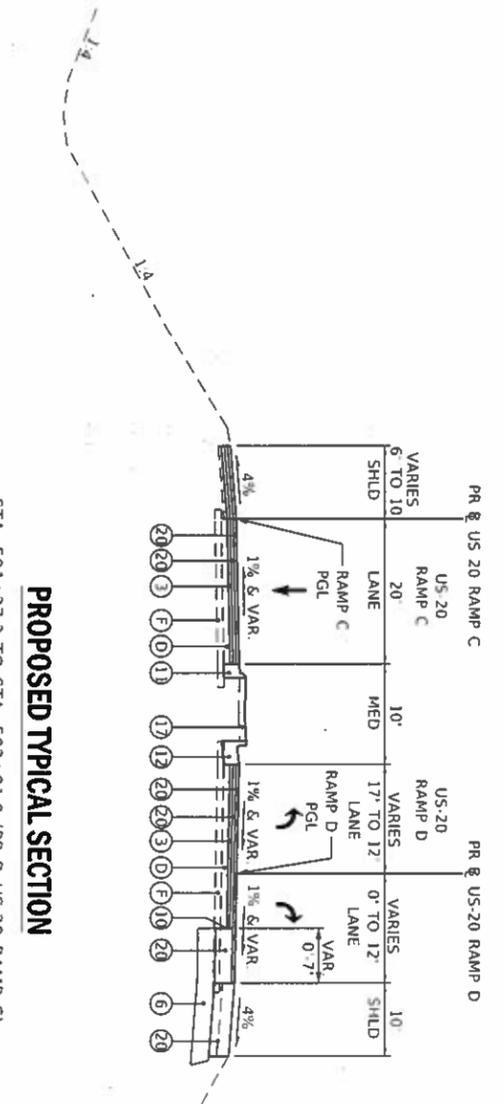
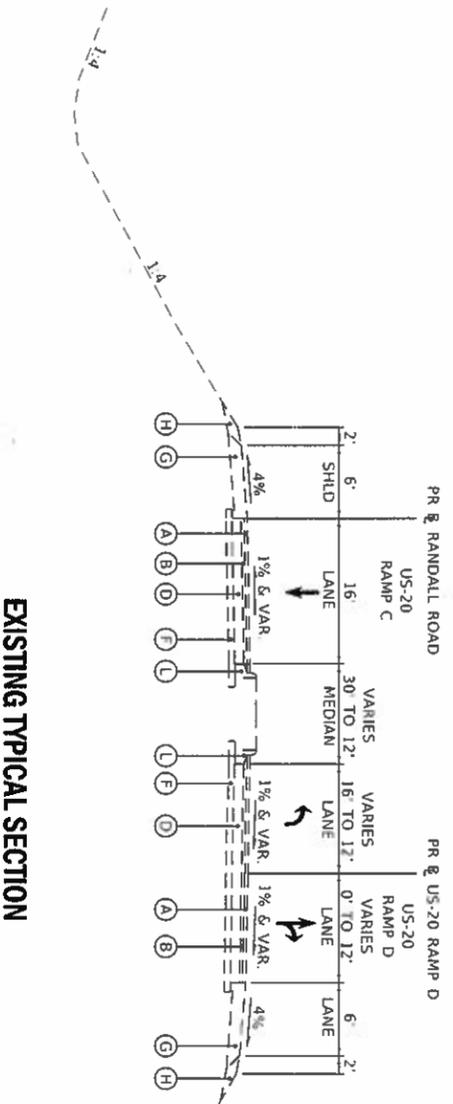
KANE COUNTY
DIVISION OF TRANSPORTATION

SCALE NTS

SHEET 4 OF 7 SHEETS STA. N/A

TYPICAL SECTIONS
US-20 RAMP C & D

F&E	SECTION	COUNTY	TOTAL SHEET
336	14-00446-00-CH	KANE	92
			16
FED ROAD DIST NO. 1	BLVD/DR	FED AID PROJECT	CONTRACT NO. XXXXX



EXISTING LEGEND

- Ⓐ HMA SURFACE COURSE 1 1/2"
- Ⓑ HMA BINDER COURSE 2 1/2"
- Ⓒ PCC PAVEMENT 6" TO 10"
- Ⓓ HMA BASE COURSE 8" TO 12"
- Ⓔ AGGREGATE SUBGRADE 12"
- Ⓕ SUB-BASE GRANULAR MATERIAL 4"
- Ⓖ HMA SHOULDER 8"
- Ⓗ AGGREGATE SHOULDER
- Ⓛ CONCRETE MEDIAN, TYPE SM-2.12
- Ⓜ CONCRETE MEDIAN, TYPE SB-6.12
- Ⓨ COMBINATION CONCRETE CURB AND GUTTER, TYPE M-2.12
- Ⓩ COMBINATION CONCRETE CURB AND GUTTER, TYPE B-6.06
- ⓐ COMBINATION CONCRETE CURB AND GUTTER, TYPE B-6.12
- ⓑ COMBINATION CONCRETE CURB AND GUTTER, TYPE B-6.24
- Ⓒ STEEL PLATE BEAM GUARDRAIL

PROPOSED LEGEND

- ① POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE, MIX "E", N70, 2" (40603565)
- ② POLYMERIZED HOT-MIX ASPHALT BINDER COURSE, IL 19.0, N90, 2 1/4" (40603240)
- ③ LEVELING BINDER (MACHINE METHOD), N70, 0" TO 2 1/4" (40600635)
- ④ HOT-MIX ASPHALT BASE COURSE WIDENING, 6 3/4" (35600703) OR HOT-MIX ASPHALT BASE COURSE, 6 3/4" (35501311)
- ⑤ HOT-MIX ASPHALT SHOULDERS, 9" (48203033)
- ⑥ AGGREGATE SUBGRADE IMPROVEMENT 12" (30300112)
- ⑦ CONCRETE MEDIAN SURFACE, 4 INCH (60618300)
- ⑧ COMBINATION CONCRETE CURB AND GUTTER, TYPE B-6.24 (60605000)
- ⑨ COMBINATION CONCRETE CURB AND GUTTER, TYPE B-6.12 (60603800)
- ⑩ STRIP REFLECTIVE CRACK CONTROL TREATMENT (44300200)
- ⑪ COMBINATION CONCRETE CURB AND GUTTER, TYPE M-6.06 (60608600)
- ⑫ COMBINATION CONCRETE CURB AND GUTTER, TYPE M-6.24 (60610400)
- ⑬ SHOULDER RUMBLE STRIPS, 16 INCH (64200116)
- ⑭ RETAINING WALL
- ⑮ CONCRETE BARRIER, DOUBLE FACE, 32 INCH HEIGHT (63700255)
- ⑯ STEEL PLATE BEAM GUARDRAIL, TYPE A, 6 FOOT POSTS (63000001)
- ⑰ TOPSOIL FURNISH AND PLACE, 4" (21101615)
- ⑱ CONCRETE MEDIAN, TYPE SB-6.12 (60619600)
- ⑲ HOT-MIX ASPHALT STABILIZATION 6" AT STEEL PLATE BEAM GUARD RAIL (20005216)
- ⑳ TO BE DETERMINED BY IDOT

NOTES

- 1) SEE PLANS FOR MEDIAN LIMITS
- 2) IN SUPERELEVATED SECTIONS THE GUTTER WILL BE BACKCRITCHED
- 3) SEE CROSS SECTIONS FOR PAVEMENT CROSS SLOPES.



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 PLOT DATE: 6/12/2018

DESIGNED: AKS
 DRAWN: DHAWN
 CHECKED: DWY
 DATE: 06.15.18

REVISED: -
 REVISED: -
 REVISED: -

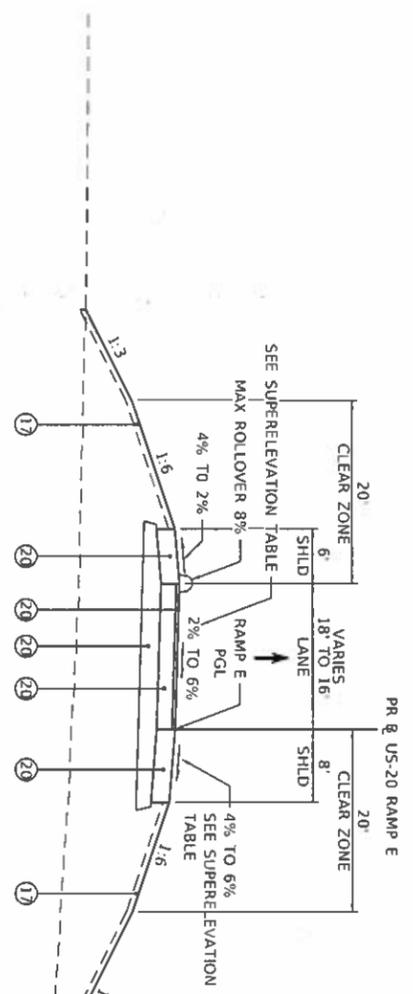
KANE COUNTY
 DIVISION OF TRANSPORTATION

SCALE: NTS

SHEET 5 OF 7 SHEETS STA. N/A

TYPICAL SECTIONS
 US-20 & US-20 RAMP E

F&P RATE: 336 SECTION: 1400446-00-CH COUNTY: KANE TOTAL SHEET SHEETS: 92 NO: 17
 FED ROAD DIST NO: 1 ILLINOIS FED AID PROJECT CONTRACT NO: XXXXX



STATION	US 20 RAMP E SUPERELEVATION TABLE	LT SHOULDER	RAMP PAVEMENT	RT SHOULDER
1104+68.15	-4.0%	1.5%	2.0%	-4.0%
1104+82.66	-4.0%	1.5%	2.0%	-4.0%
1105+40.73	-4.0%	1.5%	2.0%	-4.0%
1105+98.79	-2.0%	6.0%	6.0%	-6.0%
1110+03.02	-2.0%	6.0%	6.0%	-6.0%
1110+33.36	0.6%	VARIES (GORE)	VARIES (GORE)	0.6%
1110+63.02	VARIES (GORE)	VARIES (GORE)	VARIES (GORE)	VARIES (GORE)
1111+23.02	VARIES (GORE)	2.0%	2.0%	-4.0%

GROSS SLOPE TRANSITION NOTES:
 1. NEGATIVE SIGN INDICATES PAVEMENT/SHOULDER SLOPING AWAY FROM PGL.
 2. POSITIVE SIGN INDICATES SLOPING TOWARD PGL.

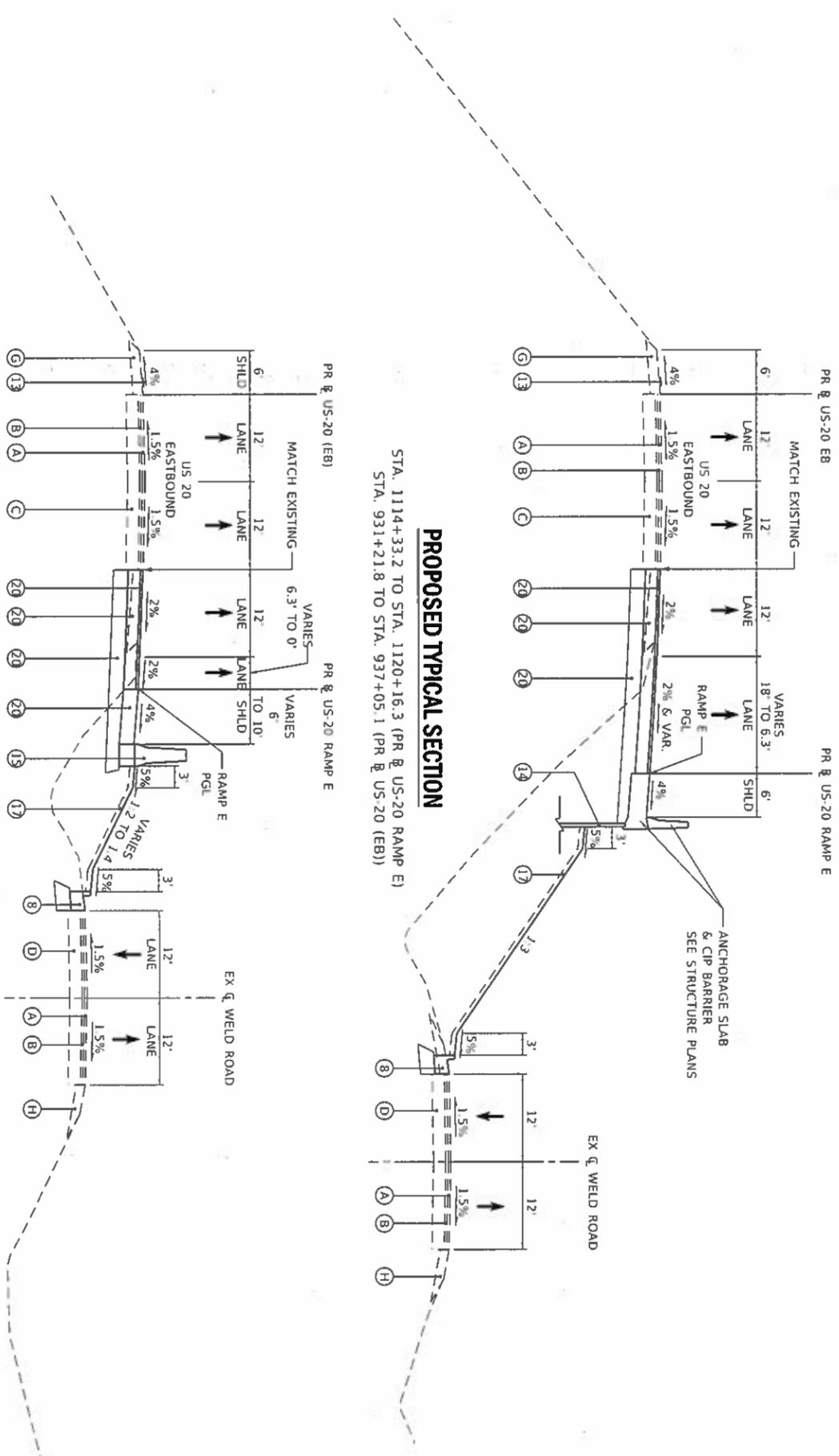
EXISTING LEGEND

- ① HMA SURFACE COURSE 1 1/2"
- ② HMA BINDER COURSE 2 1/2"
- ③ PCC PAVEMENT 6" TO 10"
- ④ HMA BASE COURSE, 8" TO 12"
- ⑤ AGGREGATE SUBGRADE, 12"
- ⑥ SUB-BASE GRANULAR MATERIAL, 4"
- ⑦ HMA SHOULDER, 8"
- ⑧ AGGREGATE SHOULDER
- ⑨ CONCRETE MEDIAN, TYPE SM-2.12
- ⑩ CONCRETE MEDIAN, TYPE SB-6.12
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- ⑭ COMBINATION CONCRETE CURB AND GUTTER, TYPE B-6.24
- ⑮ STEEL PLATE BEAM GUARDRAIL

PROPOSED LEGEND

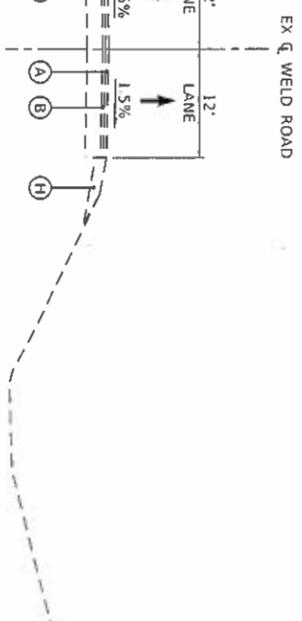
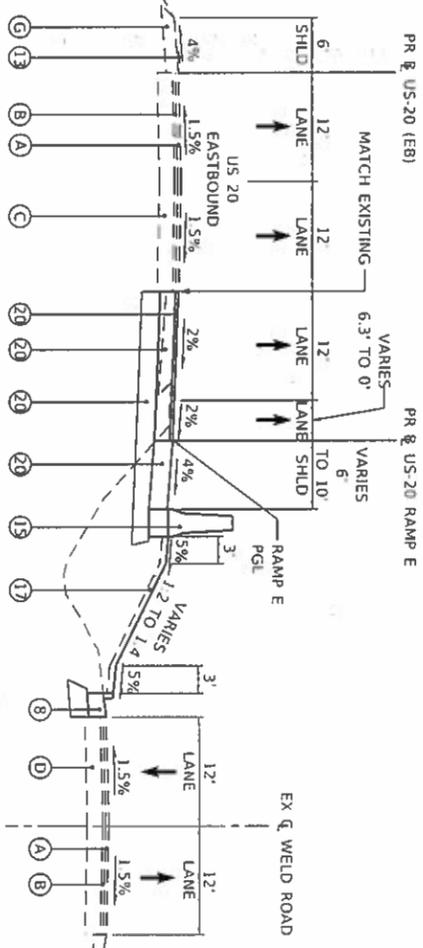
- ① POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE, MIX "E", N70, 2" (40603565)
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NOTES:
 1) SEE PLANS FOR MEDIAN LIMITS
 2) IN SUPERELEVATED SECTIONS THE GUTTER WILL BE BACKPITCHED.
 3) SEE CROSS SECTIONS FOR PAVEMENT SLOPES.



PROPOSED TYPICAL SECTION

STA. 1120+16.3 TO STA. 1123+33.3 (PR & US-20 RAMP E)
 STA. 937+05.1 TO STA. 949+72.0 (PR & US-20 (EBI))





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PLOT DATE	= 6/15/2018

DESIGNED	- AKS
DRAWN	- AKS
CHECKED	- DWV
DATE	- 06 15 18

REVISED	
REVISED	
REVISED	

KANE COUNTY
DIVISION OF TRANSPORTATION

SCALE: NTS

TYPICAL SECTIONS
HMA MIXTURE REQUIREMENTS

F.A.P. RATE	336
SECTION	14 00446 00 CH
COUNTY	KANE
TOTAL SHEETS	92
SHEET NO.	19
CONTRACT NO.	XXXXXX

HOT MIX ASPHALT MIXTURE REQUIREMENTS

MIXTURE TYPE	AIR VOIDS @ MDES	QUALITY MANAGEMENT PROGRAM (QMP)
PAVEMENT RECONSTRUCTION - RANDALL ROAD		
HOT-MIX ASPHALT PAVEMENT (FULL-DEPTH) 11"		
POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE, MIX "E", N70, 2"	4% @ 70 GYR	
POLYMERIZED HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N90, 2 1/4"	4% @ 90 GYR	
HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N90, 6 3/4"	4% @ 90 GYR (IN 2 LIFTS)	
PAVEMENT RESURFACING - RANDALL ROAD		
POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE, MIX "E", N70, 2"	4% @ 70 GYR	
POLYMERIZED HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N90, 2 1/4"	4% @ 90 GYR	
LEVELING BINDER (MACHINE METHOD), N70, 0" TO 2 1/4"	4% @ 70 GYR	
PAVEMENT WIDENING - RANDALL ROAD		
POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE, MIX "E", N70, 2"	4% @ 70 GYR	
POLYMERIZED HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N90, 2 1/4"	4% @ 90 GYR	
HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N90, 6 3/4"	4% @ 90 GYR (IN 2 LIFTS)	
HOT-MIX ASPHALT BASE COURSE, 6.75" (FOR WIDENING WIDTH > 6 FT)	4% @ 90 GYR (IN 2 LIFTS)	
HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N90, 6 3/4"	4% @ 90 GYR (IN 2 LIFTS)	
HMA SHOULDER RECONSTRUCTION - RANDALL ROAD		
POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE, MIX "E", N70, 2"	4% @ 70 GYR	
HOT-MIX ASPHALT SHOULDERS, 9"	4% @ 50 GYR (IN 3 LIFTS)	
HMA SHOULDER RESURFACING - RANDALL ROAD		
POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE, MIX "E", N70, 2"	4% @ 70 GYR	
POLYMERIZED HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N90, 2 1/4" & VARIES	4% @ 90 GYR	
PAVEMENT PATCHING		
CLASS D PATCHES, 12"		
HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N70, 12"	4% @ 70 GYR	
PAVEMENT WIDENING / RECONSTRUCTION - US-20 MAINLINE AND RAMPS		
TO BE DETERMINED BY IDOT	TBD	
PAVEMENT RESURFACING - US-20 MAINLINE AND RAMPS		
TO BE DETERMINED BY IDOT	TBD	
HMA SHOULDER RECONSTRUCTION - US-20 MAINLINE AND RAMPS		
TO BE DETERMINED BY IDOT	TBD	
HMA SHOULDER RESURFACING - US-20 MAINLINE AND RAMPS		
TO BE DETERMINED BY IDOT	TBD	
PAVEMENT WIDENING / RECONSTRUCTION - WELD ROAD		
TO BE DETERMINED BY IDOT	TBD	
PAVEMENT RESURFACING - WELD ROAD		
TO BE DETERMINED BY IDOT	TBD	

NOTES FOR HMA MIXTURE REQUIREMENTS:

- 1 THE UNIT WEIGHT USED TO CALCULATE ALL HOT-MIX ASPHALT SURFACE MIXTURES IS 112 LBS/SQ YD/M.
- 2 THE "AC TYPE" FOR POLYMERIZED HMA MIXES SHALL BE "SBS/5BR PG 76-22" AND FOR NON-POLYMERIZED HMA THE "AC TYPE" SHALL BE "PG 64-22" UNLESS MODIFIED BY DISTRICT ONE SPECIAL PROVISIONS.
- 3 FOR USE OF RECYCLED MATERIALS SEE SPECIAL PROVISIONS.
- 4 QUALITY MANAGEMENT PROGRAM (QMP) IDENTIFIES THE PARTICULAR QUALITY CONTROL SPECIFICATION THAT APPLIES TO THE HMA MIXTURE
- 5 BITUMINOUS MATERIALS (PRIME COAT) SHALL BE PLACED ON MILLED SURFACE AND BETWEEN LIFTS OF PROPOSED HMA AT THE RATES GIVEN IN THE STANDARD SPECIFICATIONS.

First Cost Analysis of Widening Project

Date: 9/14/2018
 Quantities by: ONP
 Unit prices by:

Checked by:
 Checked by:
 Net Length 3000

Route US 20
 Section 14-00446-00-CH
 Count Kane
 Project US20 at Randall Rd
 Contract Local Roads

Mechanistic Flexible							
Area (Sq. Yd.)	Height (inches)	Weight (Tons)	Material		Unit Cost	Total	ITEM #
		0	HMA Surface Course, MIX "D" N50	@		\$0.00	40603335
3420	2	383	HMA Surface Course, MIX "D" N70	@	\$84	\$32,175.36	40603340
		0	Poly HMA Surface Course, MIX "E" N70	@		\$0.00	40603565
		0	Poly HMA Surface Course, SMA N80	@		\$0.00	X406000_
		0	Poly Leveling Binder, IL-4.75, N50	@		\$0.00	40600827
		0	Leveling Binder (MM), N70	@		\$0.00	40600635
		0	HMA Binder course, IL-19, N50	@		\$0.00	40603080
		0	HMA Binder course, IL-19, N70	@		\$0.00	40603085
3420	9.75	1867	HMA Binder course, IL-19, N90	@	\$76	\$141,916.32	40603090
		0	HMA Binder course, SMA, N80	@		\$0.00	40603148
	NA	NA	12" Aggregate Subgrade	@		\$0.00	30300112
Total						\$174,091.68	

Modified AASHTO							
Area (Sq. Yd.)	Height (inches)	Weight (Tons)	Material		Unit Cost	Total	ITEM #
		0	HMA Surface Course, MIX "D" N50	@		\$0.00	40603335
3420	2	383	HMA Surface Course, MIX "D" N70	@	\$84	\$32,175.36	40603340
		0	Poly HMA Surface Course, MIX "E" N70	@		\$0.00	40603565
		0	Poly HMA Surface Course, SMA N80	@		\$0.00	X406000_
		0	Poly Leveling Binder, IL-4.75, N50	@		\$0.00	40600827
		0	Leveling Binder (MM), N70	@		\$0.00	40600635
		0	HMA Binder course, IL-19, N50	@		\$0.00	40603080
		0	HMA Binder course, IL-19, N70	@		\$0.00	40603085
3420	12.75	2442	HMA Binder course, IL-19, N90	@	\$80	\$195,350.40	40603090
		0	HMA Binder course, SMA, N80	@		\$0.00	40603148
	NA	NA	12" Aggregate Subgrade	@		\$0.00	30300112
Total						\$227,525.76	

Composite							
Area (Sq. Yd.)	Height (inches)	Weight (Tons)	Material		Unit Cost	Total	ITEM #
		0	HMA Surface Course, MIX "D" N50	@		\$0.00	40603335
3420	2	383	HMA Surface Course, MIX "D" N70	@	\$84	\$32,175.36	40603340
		0	Poly HMA Surface Course, MIX "E" N70	@		\$0.00	40603565
		0	Poly HMA Surface Course, SMA N80	@		\$0.00	X406000_
		0	Poly Leveling Binder, IL-4.75, N50	@		\$0.00	40600827
		0	Leveling Binder (MM), N70	@		\$0.00	40600635
3420	11	NA	PCC Base Course	@	\$75	\$256,500.00	35300600
	NA	NA	12" Aggregate Subgrade	@		\$0.00	30300112
Total						\$288,675.36	

PROJECT AND TRAFFIC INPUTS (Enter Data in Gray Shaded Cells)

Route: **US 20** Comments: **US 20 at Randall Road (Bureau of Local Roads)**
 Section: **14-00446-00-CH**
 County: **Kane** Design Date: **09/11/2018** ONP <-- BY
 Location: **at Randall** Modify Date: <-- BY

	ADT	Year
Current:	31,700	2017
Future:	34,000	2040

Facility Type: **Interstate or Freeway** # of Lanes = **4**

Road Class: **I**

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

Structural Design Traffic			
	Minimum ADT	Actual ADT	Actual % of Total ADT
PV =	0	29,775	90.5%
SU =	500	1,645	5.0%
MU =	1500	1,481	4.5%
Struct. Design ADT =	32,900 (2029)		

		% of ADT in Design Lane	
P =	32%	S =	45%
M =	45%		

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) =	8.42 (Actual ADT)	TF rigid (Actual) =	11.44 (Actual ADT)
TF flexible (Min) =	7.11 (Min ADT Fig. 54-2.C)	TF rigid (Min) =	10.05 (Min ADT Fig. 54-2.C)

NEW CONSTRUCTION / RECONSTRUCTION PAVEMENT DESIGN CALCULATIONS

Full-Depth HMA Pavement	JPC Pavement
Use TF flexible = 8.42	Use TF rigid = 11.44
PG Grade Lower Binder Lifts = PG 84-22 (Fig. 53-4.R)	Edge Support = Tied Shoulder or C.&G.
HMA Mixture Temp. = 74.0 deg F (Fig. 54-5.C)	Rigid Pavt Thck. = 10.00 in. (Fig. 54-4.E)
Design HMA Mixture Modulus (E _{HMA}) = 720 ksi (Fig. 54-5.D)	
Design HMA Strain (ε _{HMA}) = 65 (Fig. 54-5.E)	
Full Depth HMA Design Thickness = 11.75 in. (Fig. 54-5.F)	CRC Pavement
Limiting Strain Criterion Thickness = 14.50 in. (Fig. 54-5.I)	Use TF rigid = 11.44
Use Full-Depth HMA Thickness = 11.75 inches	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	Unbonded Concrete Overlay
Use TF flexible = 8.42	Review 54-4.03 for limitations and special considerations.
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	JPCP Thickness = NA inches

CONTACT BMPR FOR ASSISTANCE

DESIGN TABLES FROM BDE MANUAL CHAPTER 54 - PAVEMENT DESIGN

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

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

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

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

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

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

