



Illinois Department of Transportation

To: Jeffery P. Meyers Attn: Greg Jamerson
From: Jack A. Elston By: Mike Brand *Mike Brand*
Subject: Pavement Design Approval
Date: October 26, 2020

Route: I-72 Job No.:
Section: (58,74-66)R Contract No.: 74757
County: Macon Target Letting: January 2021
Limits: Cemetery Road to the IL 48 Interchange

The Pavement Selection Committee reviewed the pavement design for the above referenced project which was most recently submitted on October 15, 2020. The scope of the project is to replace the existing pavement.

The design resulted in four options: 14" full-depth HMA, 10.5" JPCP, 11" HMA over Rubblized PCC, and 10" PCC Unbonded Overlay. The LCCA showed the HMA over Rubblized option to be 5.8% less expensive than the PCC Unbonded Overlay, and more than 20% less expensive than either of the pavement replacement options. Due to the very poor condition of the existing concrete pavement, presence of ASR, and the \$2 million savings in construction costs, the Committee agreed with the District's selection of the HMA over Rubblized.

In summary, the approved pavement design is:

I-72 Pavement Replacement

11" HMA over Rubblized PCC w/ HMA Shoulders

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



Illinois Department of Transportation

To: Mike Brand
From: Brian Lewis District 7
Subject: Pavement Design
Date: October 15, 2020

I-72
Section (58,74-66)R
Macon County (District 7)
Contract number 74757

Enclosed for your review and approval are the pavement design, location map, and typical section for I-72 from Cemetery Road to the IL 48 interchange near Cisco. The pavement design process and life cycle cost analysis resulted in selection of 11.0" HMA over rubblized pavement.

Life cycle cost analysis compared rubblization and overlay with pavement removal and 10.5" JRCP, pavement removal and 14" full-depth HMA, and PCC unbonded overlay over existing pavement.

1:6 foreslopes will be constructed with soil.

There is one overhead structure that will require pavement removal and replacement to maintain vertical clearance. That area will be 14" HMA on 12" lime modified soil.

Work on the rest area ramps consists of patching and overlaying.

The geotechnical report included in the pavement design pdf file contains a location map and the subgrade stability chart.

ESCA Consultants is currently working on the plans. The project is scheduled for the January 2021 letting.

Please contact me at 217-342-8360 if you have any questions.

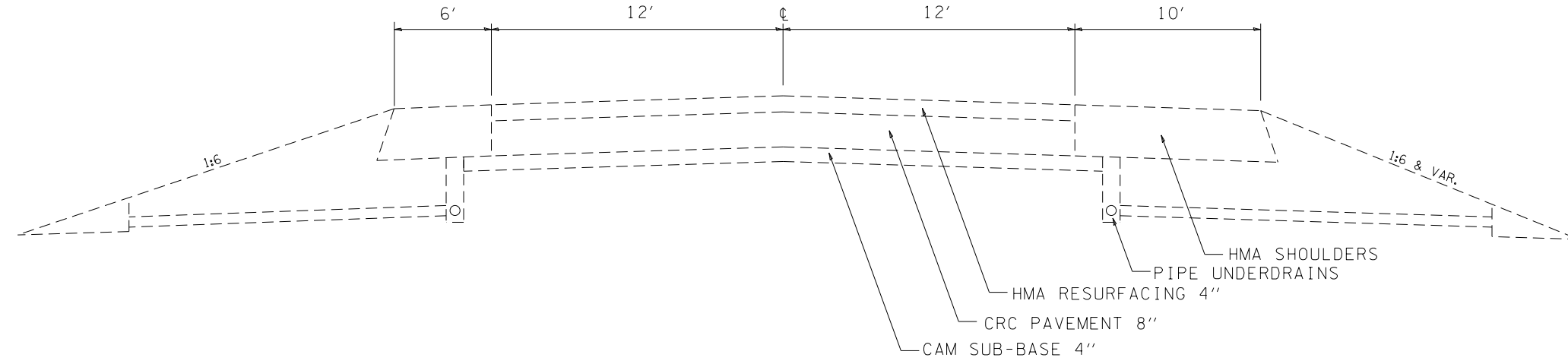
Thank you.

LOCATION MAP

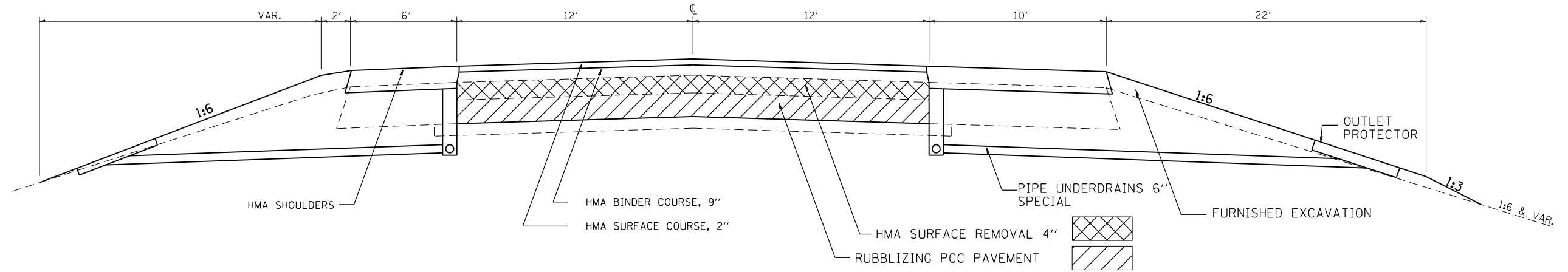
I-72 (FAI 72)

4.4 Mi W of Piatt Co Line to 0.3 Mi W of Piatt Co Line
Macon County





EXISTING TYPICAL SECTION
EASTBOUND AND WESTBOUND



PROPOSED TYPICAL RUBBLIZATION
EASTBOUND SHOWN, WESTBOUND MIRRORED

MODEL NUMBER: MAMES
FILE NAME: 811215

USER NAME = SUSERS	DESIGNED -	REVISED -
	DRAWN -	REVISED -
PLOT SCALE = 5/8"=1'	CHECKED -	REVISED -
PLOT DATE = 5/20/15	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS

SCALE: SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
72	(58,74-66)R	MACON		
CONTRACT NO. 74757				
ILLINOIS FED. AID PROJECT				

PROJECT AND TRAFFIC INPUTS

(Enter Data in Gray Shaded Cells)

Route: I-72	Comments:	
Section: (58,74-66)R	Design Date: 07/14/2020	BLL
County: Macon	Modify Date:	
Location: 4.4 mi W to 0.3 mi W of Piatt Co. Line		
Facility Type: Interstate or Freeway	# of Lanes = 4	
Road Class: I	Subgrade Support Rating (SSR): Poor	
Construction Year: 2021	Design Period (DP) = 20 years	

	<-- BY			
	<-- BY	ADT	Year	
Current:	12,900	2021		
Future:	16,800	2041		

Structural Design Traffic				
	Minimum ADT	Actual ADT	Actual % of Total ADT	
PV =	0	10,959	73.8%	P = 32%
SU =	500	535	3.6%	S = 45%
MU =	1500	3,356	22.6%	M = 45%
Struct. Design ADT =		14,850	(2031)	

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) =	15.22 (Actual ADT)	TF rigid (Actual) =	21.74 (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 = 15.22	Use TF rigid = 21.74
PG Grade Lower Binder Lifts = PG 64-22 (Fig. 53-4.O)	Edge Support = Tied Shoulder or C&G
HMA Mixture Temp. = 77.5 deg. F (Fig. 54-5.C)	Rigid Pavt Thick. = 10.50 in. (Fig. 54-4.E)
Design HMA Mixture Modulus (E _{HMA}) = 620 ksi (Fig. 54-5.D)	
Design HMA Strain (ε _{HMA}) = 55 (Fig. 54-5.E)	CRCP Pavement
Full Depth HMA Design Thickness = 14.00 in. (Fig. 54-5.F)	Use TF rigid = 21.74
Limiting Strain Criterion Thickness = 15.75 in. (Fig. 54-5.I)	IBR value = 3
Use Full-Depth HMA Thickness = 14.00 inches	CRCP Thickness = 10.00 in. (Fig. 54-4.M)

TF MUST BE > 60 FOR CRCP

RECONSTRUCTION ONLY (SUPPLEMENTAL) PAVEMENT DESIGN CALCULATIONS

HMA Pavement Over Rubblized PCC	Unbonded Concrete Overlay
Use TF flexible = 15.22	Review 54-4.03 for limitations and special considerations.
HMA Overlay Design Thickness = 11.00 in. (Fig. 54-5.U)	
Limiting Strain Criterion Thickness = 11.25 in. (Fig. 54-5.V)	
Use HMA Overlay Thickness = 11.00 inches	JPCP Thickness = NA inches

CONTACT RESEARCH FOR ASSISTANCE

DESIGN TABLES FROM BDE MANUAL CHAPTER 54 - PAVEMENT DESIGN

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

FULL-DEPTH HMA PAVEMENT

Standard Design

ROUTE I-72
 SECTION (58,74-66)R
 COUNTY Macon
 LOCATION 4.4 mi W to 0.3 mi W of Piatt Co. Line

FACILITY TYPE INTERSTATE

PROJECT LENGTH 20860 FT ==> 3.95 Miles
 # OF CENTERLINES 2 CL
 # OF LANES 4 LANES
 # OF EDGES 4 EP
 LANE WIDTH - AVERAGE 12 FT
 SHOULDER WIDTH HMA Inside 6 FT
 HMA Outside 10 FT
 Total Width of Paved Shoulders 32 FT

PAVEMENT THICKNESS (FLEXIBLE) 14.00 IN 15.75 IN MAX
 SHOULDER THICKNESS 8.00 IN HMA_SD Standard Design
 HMA OVERLAY THICKNESS 3.75 IN

FLEX PAVEMENT TRAFFIC FACTORS MINIMUM ACTUAL USE
 7.11 15.22 15.22

Read Me!

HMA COST PER TON UNIT PRICE
 HMA SURFACE \$104.26 / TON
 HMA TOP BINDER \$88.62 / TON
 HMA LOWER BINDER \$85.14 / TON
 HMA BINDER (IL-9.5FG or IL-4.75) \$85.00 / TON
 HMA SHOULDER \$86.52 / TON

INITIAL COSTS ITEM	THICKNESS	100% QUAI UNIT	UNIT PRICE	COST
HMA PAVEMENT (FULL-DEPTH)	(14.00")	111253 111,253 SQ YD	\$72.60 / SQ YD	\$8,076,864 ~
HMA SURFACE COURSE	(2.00")	1.0069 12,547 TONS	\$104.26 / TON	\$0
HMA TOP BINDER COURSE	(2.25")	1.0217 14,322 TONS	\$88.62 / TON	\$0
HMA LOWER BINDER COURSE	(9.75")	1.0634 64,594 TONS	\$85.14 / TON	\$0
HMA SHOULDER CURB & GUTTER	(8.00")	74169 33,228 TONS 0 LIN FT	\$86.52 / TON \$30.00 / LIN FT	\$2,874,857 ~ \$0
SUBBASE GRAN MATL TY C (TONS) IMPROVED SUBGRADE:	Modified Soil Width = 86.7	19,139 TONS 200,874 SQ YD	\$26.90 / TON \$3.75 / SQ YD	\$514,839 \$753,278
Reserved For User Supplied Item		0 UNITS	\$0.00 / UNITS	\$0
Reserved For User Supplied Item		0 UNITS	\$0.00 / UNITS	\$0
PAVEMENT REMOVAL		111,253 SQ YD	\$11.00 / SQ YD	\$1,223,783
SHOULDER REMOVAL		74,169 SQ YD	\$10.00 / SQ YD	\$741,690

Note: * Denotes User Supplied Quantity

FLEXIBLE CONSTRUCT \$14,185,311
 FLEXIBLE CONSTRUCT \$146,440

MAINTENANCE COSTS: ITEM	THICKNESS	MATERIAL T	UNIT COST
ROUTINE MAINTENANCE ACTIVITY			\$0.00 LANE-MILE / YEAR
HMA OVERLAY PVMT SURF	(2.00")	1.0069 Surface Iv 2.00	\$11.76 / SQ YD
HMA OVERLAY PVMT	(3.75")	1.0130 3.75	\$20.17 / SQ YD
HMA SURFACE MIX	(1.50")	1.0052 Surface Iv 1.50	\$8.80 / SQ YD
HMA BINDER MIX	(2.25")	1.0182 Top Binder Iv 2.25	\$11.37 / SQ YD
HMA OVERLAY SHLD (Year 30)	(1.75")	Shoulder Iv 1.75	\$8.48 / SQ YD
HMA OVERLAY SHLD	(2.00")	Shoulder Iv 2.00	\$9.69 / SQ YD
MILLING (2.00 IN)		2.00	\$3.00 / SQ YD
PARTIAL DEPTH PVMT PATCH	(Mill & Fill Surf)	Surface Iv 2.00	\$81.68 / SQ YD
PARTIAL DEPTH SHLD PATCH	(Mill & Fill Surf)	Shoulder Iv 2.00	\$79.69 / SQ YD
PARTIAL DEPTH PVMT PATCH	(Mill & Fill +2.00 ")	Binder Mix 2.00	\$79.52 / SQ YD
PARTIAL DEPTH SHLD PATCH	(Mill & Fill +2.00 ")	Shoulder Iv 2.00	\$79.69 / SQ YD

LONGITUDINAL SHOULDER JOINT ROUT & SEAL
CENTERLINE JOINT ROUT & SEAL
RANDOM / THERMAL CRACK ROUT & SEAL

(100% Ref \$2.00 / LIN FT
\$2.00 / LIN FT
\$2.00 / LIN FT

FLEXIBLE TOTAL LIFE- \$18,532,986
FLEXIBLE TOTAL ANNI \$191,323

PCC PAVEMENT

JPCP

ROUTE I-72
 SECTION (58,74-66)R
 COUNTY Macon
 LOCATION 4.4 mi W to 0.3 mi W of Piatt Co. Line

FACILITY TYPE INTERSTATE

PROJECT LENGTH 20860 FT == > 3.95 Miles
 # OF CENTERLINES 2 CL
 # OF LANES 4 LANES
 # OF EDGES 4 EP
 LANE WIDTH - AVERAGE 12 FT
 SHOULDER WIDTH PCC Inside 6 FT
 PCC Outside 10 FT
 Total Width of Paved Shoulders 32 FT

PAVEMENT THICKNESS (RIGID) JPCP 10.50 IN TIED SHLD
 SHOULDER THICKNESS 10.50 IN

HMA OVERLAY THICKNESS 3.75 IN

RIGID PAVEMENT TRAFFIC FACTORS MINIMUM ACTUAL USE
 10.05 21.74 21.74
 Worksheet Construction Type is Reconstruction The Pavement Type is JPCP

INITIAL COSTS ITEM	THICKNESS	100% QUA UNIT	UNIT PRICE	COST
JPC PAVEMENT	(10.50")	111,253 SQ YD	\$53.69 / SQ YD	\$5,973,174
PAVEMENT REINFORCEMENT		0 SQ YD	\$22.00 / SQ YD	\$0
STABILIZED SUBBASE	(4.00")	125,160 SQ YD	\$19.36 / SQ YD	\$2,423,098
PCC SHOULDERS	(10.50" to 10.50")	74,169 SQ YD	\$52.40 / SQ YD	\$3,886,456
CURB & GUTTER		0 LIN FT	\$30.00 / LIN FT	\$0
SUBBASE GRAN MATL TY C	(~ 3.48")	8,727 TONS	\$26.88 / TON	\$234,582
IMPROVED SUBGRADE:	Modified Soil Width = 82.0	190,058 SQ YD	\$4.82 / SQ YD	\$916,080
Reserved For User Supplied Item		0 UNITS	\$0.00 / UNITS	\$0
Reserved For User Supplied Item		0 UNITS	\$0.00 / UNITS	\$0
PAVEMENT REMOVAL		111,253 SQ YD	\$11.00 / SQ YD	\$1,223,783
SHOULDER REMOVAL		74,169 SQ YD	\$10.00 / SQ YD	\$741,690

Note: * Denotes User Supplied Quantity
 RIGID CONSTRUCTION \$15,398,863
 RIGID CONSTRUCTION \$158,968

MAINTENANCE COSTS: ITEM	THICKNESS	MATERIAL	T	UNIT COST
ROUTINE MAINTENANCE ACTIVITY				\$0.00 / LANE-MILE / YEAR
HMA OVERLAY	(3.75")		3.75	
HMA OVERLAY PAVEMENT	(3.75")	1.0130	3.75	\$20.17 / SQ YD
HMA SURFACE MIX	(1.50")	1.0052	Surface M 1.50	\$8.80 / SQ YD
HMA BINDER MIX	(2.25")	1.0182	Top Binder M 2.25	\$11.37 / SQ YD
HMA OVERLAY SHOULDER	(3.75")		Shoulder 3.75	\$18.17 / SQ YD
CLASS A PAVEMENT PATCHING				\$195.00 / SQ YD
CLASS B PAVEMENT PATCHING				\$180.00 / SQ YD
CLASS C SHOULDER PATCHING				\$160.00 / SQ YD
PARTIAL DEPTH PVMT PATCH (Mill & Fill HMA Surf)		Surface M	1.50	\$78.76 / SQ YD
PARTIAL DEPTH PVMT PATCH (Mill & Fill HMA 1.50")		Surface M	1.50	\$78.76 / 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' /		\$2.00 / LIN FT

RIGID TOTAL LIFE-C \$18,371,243
 RIGID TOTAL ANNUAL \$189,653

RECONSTRUCTION - HMA OVER RUBBLIZED PAVEMENT

PAVEMENT OVERLAY THICKNESS (FLEXIBLE) 11.00 IN 11.25 IN MAX HMA_SD Maintenance Schedule
 SHOULDER OVERLAY THICKNESS 7.00 IN

INITIAL COSTS ITEM	THICKNESS		100% QUA UNIT	UNIT PRICE	COST
HMA OVERLAY REMOVAL	4.00		111,253 SQ YD	\$5.00 / SQ YD	\$556,265
RUBBLIZING PCC PAVEMENT			111,253 SQ YD	\$2.50 / SQ YD	\$278,133
HMA OVERLAY (TOTAL)	11.00		111,253 SQ YD	\$57.05 / SQ YD	\$6,347,414 ~
HMA SURFACE COURSE	2.00	1.0069	111,253 SQ YD	\$11.76 / SQ YD	\$0
HMA TOP BINDER COURSE	2.25	1.0217	111,253 SQ YD	\$11.41 / SQ YD	\$0
HMA LOWER BINDER COURSE	6.75	1.0530	111,253 SQ YD	\$33.89 / SQ YD	\$0
HMA SHOULDER	7.00		29,074 TONS	\$86.52 / TON	\$2,515,500 ~
			0		\$0
			0		\$0
EARTHWORK			50,330 CU YD *	\$9.77 / CU YD	\$491,724
Note: * Denotes User Supplied Quantity				RUBBLIZED CONSTRU	\$10,189,036
				RUBBLIZED CONSTRU	\$105,185
				RUBBLIZED MAINTEN/	\$4,347,675
				RUBBLIZED MAINTEN/	\$44,883
				RUBBLIZED TOTAL	\$14,536,711
				RUBBLIZED TOTAL AN	\$150,068

RECONSTRUCTION - PCC UNBONDED OVERLAY

PAVEMENT THICKNESS (PCC) 10.00 IN Paveme JPCP
 SHOULDER THICKNESS 10.00 IN

INITIAL COSTS ITEM	THICKNESS		100% QUA UNIT	UNIT PRICE	COST
MILLING of EXISTING HMA OVERLAY	(Pvmt & Shld)		185,422 SQ YD	\$5.00 / SQ YD	\$927,110
HMA BINDER COURSE	(Pvmt & Shld)		185,422 SQ YD	\$6.00 / SQ YD	\$1,112,532
JPC PAVEMENT	10.00		111,253 SQ YD	\$51.56 / SQ YD	\$5,736,205
PAVEMENT REINFORCEMENT			0 SQ YD	\$22.00 / SQ YD	\$0
PCC SHOULDERS	10.00	10.00	74,169 SQ YD	\$49.62 / SQ YD	\$3,680,266
RUBBLIZING PCC PAVEMENT			185,422 SQ YD *	\$2.50 / SQ YD	\$463,555
			0		\$0
EARTHWORK			50,330 CU YD *	\$9.77 / CU YD	\$491,724
Note: * Denotes User Supplied Quantity				UNBONDED CONSTR	\$12,411,392
				UNBONDED CONSTR	\$128,128
				UNBONDED MAINTEN/	\$2,972,380
				UNBONDED MAINTEN/	\$30,685
				UNBONDED TOTAL	\$15,383,772
				UNBONDED TOTAL AN	\$158,813

LIFE-CYCLE COST ANALYSIS: NEW DESIGN

Calculated / Re #####

		JPCP	HMA
CONSTRUCTION	INITIAL COST	PRESENT ' \$15,398,863	\$14,185,311
		ANNUAL C \$158,968	\$146,440
MAINTENANCE	LIFE-CYCLE COST	PRESENT ' \$2,972,380	\$4,347,675
		ANNUAL C \$30,685	\$44,883
TOTAL	LIFE-CYCLE COST	PRESENT ' \$18,371,243	\$18,532,986
		ANNUAL C \$189,653	\$191,323

LIFE-CYCLE COST ANALYSIS: SUPPLEMENTAL DESIGNS

		PCC Unbonded	Rubblized
CONSTRUCTION	INITIAL COST	PRESENT ' \$12,411,392	\$10,189,036
		ANNUAL C \$128,128	\$105,185
MAINTENANCE	LIFE-CYCLE COST	PRESENT ' \$2,972,380	\$4,347,675
		ANNUAL C \$30,685	\$44,883
TOTAL	LIFE-CYCLE COST	PRESENT ' \$15,383,772	\$14,536,711
		ANNUAL C \$158,813	\$150,068

LIFE-CYCLE COST ANALYSIS: FINAL SUMMARY

LOWEST COST OPTION	===== Rubblized	\$150,068	
OTHER OPTIONS (LOWEST TO HIGHEST):	TYPE / PE PCC Unbonded	\$158,813	5.8%
	TYPE / PE JPCP	\$189,653	26.4%
	TYPE / PE HMA	\$191,323	27.5%

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

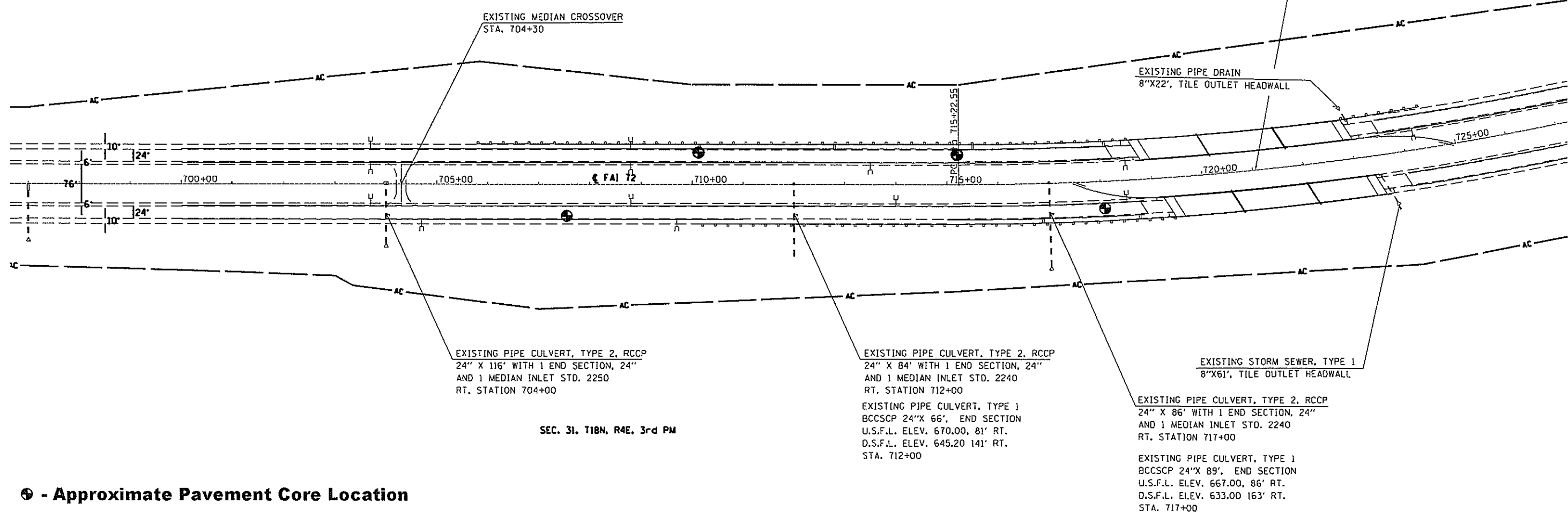
MAINTENANCE ITEM	%	QUANTITY	UNIT	UNIT COST	COST	PRESENT WORTH
YEAR 5						
LONG SHLD JT R&S	100.00%	83,440	LIN FT	\$2.00	\$166,880	
CNTR LINE JOINT R&S	100.00%	41,720	LIN FT	\$2.00	\$83,440	
RNDM / THRM CRACK R&S	50.00%	45,892	LIN FT	\$2.00	\$91,784	
PD PVMT PATCH M&F SURF	0.10%	111	SQ YD	\$81.68	\$9,066	
PWFn =	0.8626		PW =	0.8626 X	\$351,170	\$302,922
YEAR 10						
LONG SHLD JT R&S	100.00%	83,440	LIN FT	\$2.00	\$166,880	
CNTR LINE JOINT R&S	100.00%	41,720	LIN FT	\$2.00	\$83,440	
RNDM / THRM CRACK R&S	50.00%	45,892	LIN FT	\$2.00	\$91,784	
PD PVMT PATCH M&F SURF	0.50%	556	SQ YD	\$81.68	\$45,412	
PWFn =	0.7441		PW =	0.7441 X	\$387,516	\$288,348
YEAR 15						
MILL PVMT & SHLD 2.00"	100.00%	185,422	SQ YD	\$3.00	\$556,266	
PD PVMT PATCH M&F ADD'L 2.00"	1.00%	1,113	SQ YD	\$79.52	\$88,506	
HMA OVERLAY PVMT 2.00"	100.00%	111,253	SQ YD	\$11.76	\$1,308,140	
HMA OVERLAY SHLD 2.00 "	100.00%	74,169	SQ YD	\$9.69	\$718,714	
PWFn =	0.6419		PW =	0.6419 X	\$2,671,626	\$1,714,815
YEAR 20						
LONG SHLD JT R&S	100.00%	83,440	LIN FT	\$2.00	\$166,880	
CNTR LINE JOINT R&S	100.00%	41,720	LIN FT	\$2.00	\$83,440	
RNDM / THRM CRACK R&S	50.00%	45,892	LIN FT	\$2.00	\$91,784	
PD PVMT PATCH M&F SURF	0.10%	111	SQ YD	\$81.68	\$9,066	
PWFn =	0.5537		PW =	0.5537 X	\$351,170	\$194,434
YEAR 25						
LONG SHLD JT R&S	100.00%	83,440	LIN FT	\$2.00	\$166,880	
CNTR LINE JOINT R&S	100.00%	41,720	LIN FT	\$2.00	\$83,440	
RNDM / THRM CRACK R&S	50.00%	45,892	LIN FT	\$2.00	\$91,784	
PD PVMT PATCH M&F SURF	0.50%	556	SQ YD	\$81.68	\$45,412	
PWFn =	0.4776		PW =	0.4776 X	\$387,516	\$185,080
YEAR 30 INTERSTATE						
MILL PVMT ONLY 2.00"	100.00%	111,253	SQ YD	\$3.00	\$333,759	
PD PVMT PATCH M&F ADD'L 2.00"	2.00%	2,225	SQ YD	\$79.52	\$176,932	
PD SHLD PATCH M&F SURF 2.00"	1.00%	742	SQ YD	\$79.69	\$59,130	
HMA OVERLAY PVMT 3.75 "	100.00%	111,253	SQ YD	\$20.17	\$2,244,327	
HMA OVERLAY SHLD 1.75 "	100.00%	74,169	SQ YD	\$8.48	\$628,875	
PWFn =	0.4120		PW =	0.4120 X	\$3,443,023	\$1,418,480
YEAR 35						
LONG SHLD JT R&S	100.00%	83,440	LIN FT	\$2.00	\$166,880	
CNTR LINE JOINT R&S	100.00%	41,720	LIN FT	\$2.00	\$83,440	
RNDM / THRM CRACK R&S	50.00%	45,892	LIN FT	\$2.00	\$91,784	
PD PVMT PATCH M&F SURF	0.10%	111	SQ YD	\$81.68	\$9,066	
PWFn =	0.3554		PW =	0.3554 X	\$351,170	\$124,800
YEAR 40						
LONG SHLD JT R&S	100.00%	83,440	LIN FT	\$2.00	\$166,880	
CNTR LINE JOINT R&S	100.00%	41,720	LIN FT	\$2.00	\$83,440	
RNDM / THRM CRACK R&S	50.00%	45,892	LIN FT	\$2.00	\$91,784	
PD PVMT PATCH M&F SURF	0.50%	556	SQ YD	\$81.68	\$45,412	
PWFn =	0.3066		PW =	0.3066 X	\$387,516	\$118,796
						\$4,347,675
ROUTINE MAINTENANCE ACTIVITY		15.80	Lane Miles	0.00	\$0	\$0
45 YEAR LIFE CYCLE	CRFn = 0.0407852				MAINTENANCE MAINTENANCE	\$4,347,675 \$44,883

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

MAINTENANCE ITEM	%	QUANTITY	UNIT	UNIT COST	COST	PRESENT WORTH
YEAR 10						
PAVEMENT PATCH CLASS B	0.10%	111	SQ YD	\$180.00	\$19,980	
PWF _n =	0.7441		PW =	0.7441 X	\$19,980	\$14,867
YEAR 15						
PAVEMENT PATCH CLASS B	0.20%	223	SQ YD	\$180.00	\$40,140	
PWF _n =	0.6419		PW =	0.6419 X	\$40,140	\$25,764
YEAR 20						
PAVEMENT PATCH CLASS B	2.00%	2,225	SQ YD	\$180.00	\$400,500	
SHOULDER PATCH CLASS C	0.50%	371	SQ YD	\$160.00	\$59,360	
LONGITUDINAL SHLD JT R&S	100.00%	83,440	LIN FT	\$2.00	\$166,880	
CENTERLINE JT R&S	100.00%	41,720	LIN FT	\$2.00	\$83,440	
PWF _n =	0.5537		PW =	0.5537 X	\$710,180	\$393,209
YEAR 25						
PAVEMENT PATCH CLASS B	3.00%	3,338	SQ YD	\$180.00	\$600,840	
SHOULDER PATCH CLASS C	1.00%	742	SQ YD	\$160.00	\$118,720	
PWF _n =	0.4776		PW =	0.4776 X	\$719,560	\$343,666
YEAR 30 INTERSTATE						
PAVEMENT PATCH CLASS B	4.00%	4,450	SQ YD	\$180.00	\$801,000	
SHOULDER PATCH CLASS C	1.50%	1,113	SQ YD	\$160.00	\$178,080	
HMA OVERLAY 3.75" (PVMT)	100.00%	111,253	SQ YD	\$20.17	\$2,244,327	
HMA OVERLAY 3.75" (SHLD)	100.00%	74,169	SQ YD	\$18.17	\$1,347,589	
PWF _n =	0.4120		PW =	0.4120 X	\$4,570,996	\$1,883,190
YEAR 35 INTERSTATE						
LONGITUDINAL SHLD JT R&S	100.00%	83,440	LIN FT	\$2.00	\$166,880	
CENTERLINE JT R&S	100.00%	41,720	LIN FT	\$2.00	\$83,440	
RANDOM CRACK R&S	50.00%	41,720	LIN FT	\$2.00	\$83,440	
REFLECTIVE TRANSVERSE CRACK R&S	40.00%	26,707	LIN FT	\$2.00	\$53,414	
PD PVMT PATCH M&F HMA SURF 1.50"	0.10%	111	SQ YD	\$78.76	\$8,742	
PWF _n =	0.3554		PW =	0.3554 X	\$395,916	\$140,702
YEAR 40 INTERSTATE						
PAVEMENT PATCH CLASS B	0.50%	556	SQ YD	\$180.00	\$100,080	
LONGITUDINAL SHLD JT R&S	100.00%	83,440	LIN FT	\$2.00	\$166,880	
CENTERLINE JT R&S	100.00%	41,720	LIN FT	\$2.00	\$83,440	
REFLECTIVE TRANSVERSE CRACK R&S	60.00%	40,061	LIN FT	\$2.00	\$80,122	
RANDOM CRACK R&S	50.00%	41,720	LIN FT	\$2.00	\$83,440	
PD PVMT PATCH M&F HMA SURF 1.50"	0.50%	556	SQ YD	\$78.76	\$43,789	
PWF _n =	0.3066		PW =	0.3066 X	\$557,751	\$170,982
						\$2,972,380
ROUTINE MAINTENANCE ACTIVITY		15.80	Lane Miles	\$0.00	\$0	\$0
45 YEAR LIFE CYCLE	CRF _n = 0.0407852				MAINTENANCE	\$2,972,380
					MAINTENANCE	\$30,685



EXISTING STRUCTURE DATA
 (C) STATION 721+12.00 (F.A.I. ROUTE 72)
 SKEW 26°-30' RT. FOR.
 APPROX. LENGTH 418'-0"
 (BK.-BK. APPR. BENTS)
 APPROX. HORIZ. CLEARANCE 42'-0"
 CONSTRUCTED AS SECTION 58-66 B
 STRUCTURE No. 058-0093 (E.B.)
 STRUCTURE No. 058-0094 (W.B.)
 DATA OBTAINED FROM OLD PLANS



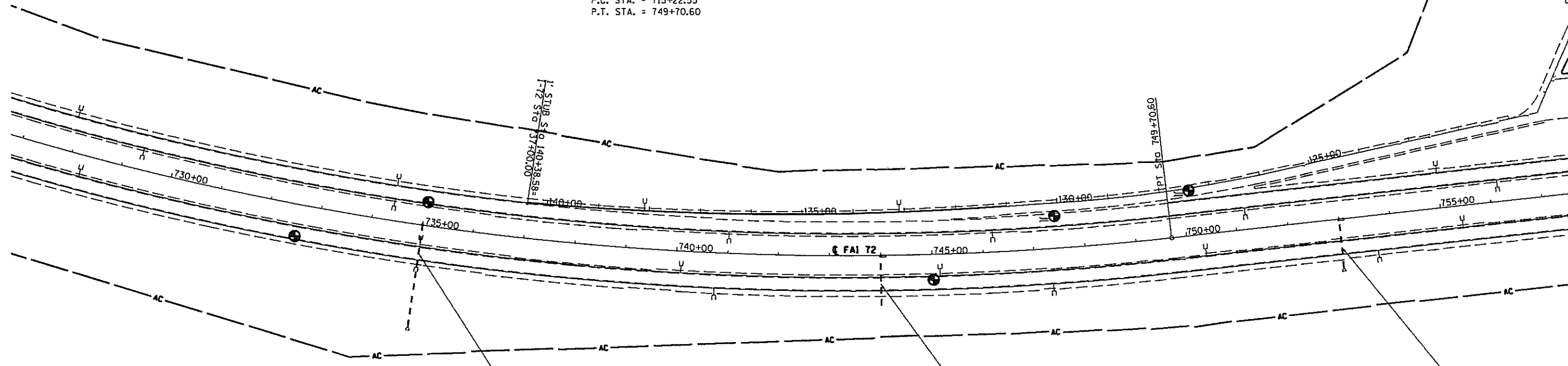
SEC. 31, T18N, R4E, 3rd PM

⊕ - Approximate Pavement Core Location

FILE NAME *	USER NAME = kosselso	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PLAN SHEET	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS
p:\planroom\dac\illinois\gov\PI\DOT\Docu	ments\DOT Offices\District 7\Projects\74757	DRAWN\Geotechnical\shplan.74171.dgn	REVISED -			72	58.74-66R	MACON	
	PLOT SCALE = 201.2239' / in.	CHECKED -	REVISED -			CONTRACT NO. 7			
	PLOT DATE = 6/18/2028	DATE -	REVISED -			SCALE: 100	SHEET NO. 1 OF 8 SHEETS	STA. 700+98.00 TO STA. 727+00.00	FED. ROAD DIST. NO.



PROP. CURVE 13
 PI STA. = 733+00.56
 $\Delta = 34^\circ 28' 49''$ (LT)
 $D = 1^\circ 00' 00''$
 $R = 5,729.61'$
 $T = 1,778.01'$
 $L = 3,448.05'$
 $E = 269.54'$
 $e = \text{-----}$
 $T.R. = \text{-----}$
 $S.E. \text{ RUN} = \text{-----}$
 P.C. STA. = 715+22.55
 P.T. STA. = 749+70.60



EXISTING PIPE CULVERT, TYPE 2, RCCP
 24" X 98' WITH 1 END SECTION, 24"
 AND 1 MEDIAN INLET STD. 2240
 RT. STATION 735+00

EXISTING PIPE CULVERT, TYPE 2, RCCP
 24" X 94' WITH 1 MEDIAN INLET STD. 2243
 RT. STATION 744+00

EXISTING PIPE CULVERT, TYPE 2, RCCP
 24" X 98' WITH 1 END SECTION, 24"
 AND 1 MEDIAN INLET STD. 2243
 RT. STATION 753+00

⊕ - Approximate Pavement Core Location

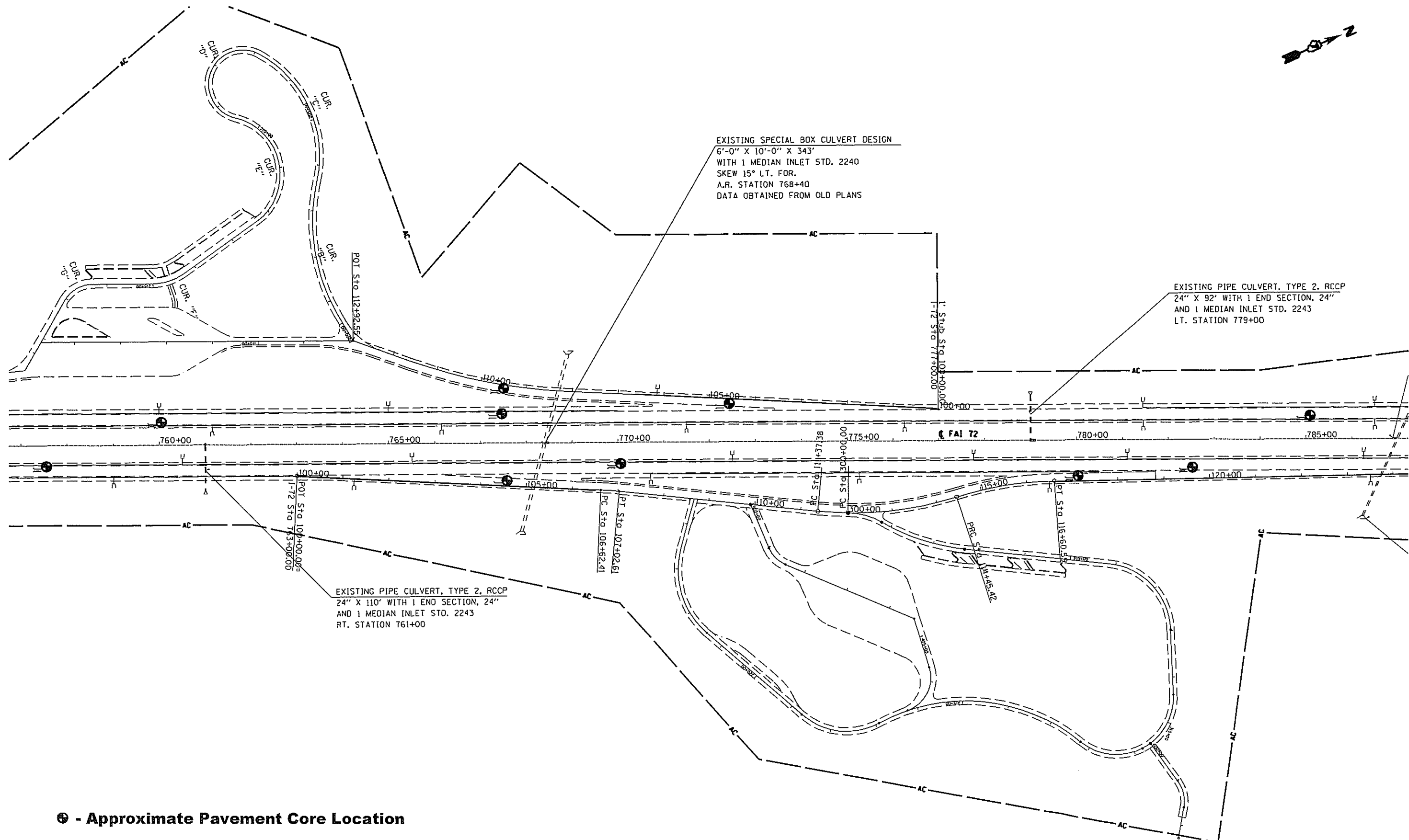
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	WENT TO DOT OFFICES\District 7\Projects\74757	DRAWN\Geotechnical\shiplan.74171.dgn	REVISED -					REVISED -	SCALE: 100	SHEET NO. 2 OF 8 SHEETS	STA. 727+00.00 TO STA. 757+00.00
	PLOT SCALE = 1/8" = 100'	CHECKED -	REVISED -								
	PLOT DATE = 6/10/2020	DATE -	REVISED -								



EXISTING SPECIAL BOX CULVERT DESIGN
 6'-0" X 10'-0" X 343'
 WITH 1 MEDIAN INLET STD. 2240
 SKEW 15° LT. FOR.
 A.R. STATION 768+40
 DATA OBTAINED FROM OLD PLANS

EXISTING PIPE CULVERT, TYPE 2, RCCP
 24" X 92' WITH 1 END SECTION, 24"
 AND 1 MEDIAN INLET STD. 2243
 LT. STATION 779+00

EXISTING PIPE CULVERT, TYPE 2, RCCP
 24" X 110' WITH 1 END SECTION, 24"
 AND 1 MEDIAN INLET STD. 2243
 RT. STATION 761+00

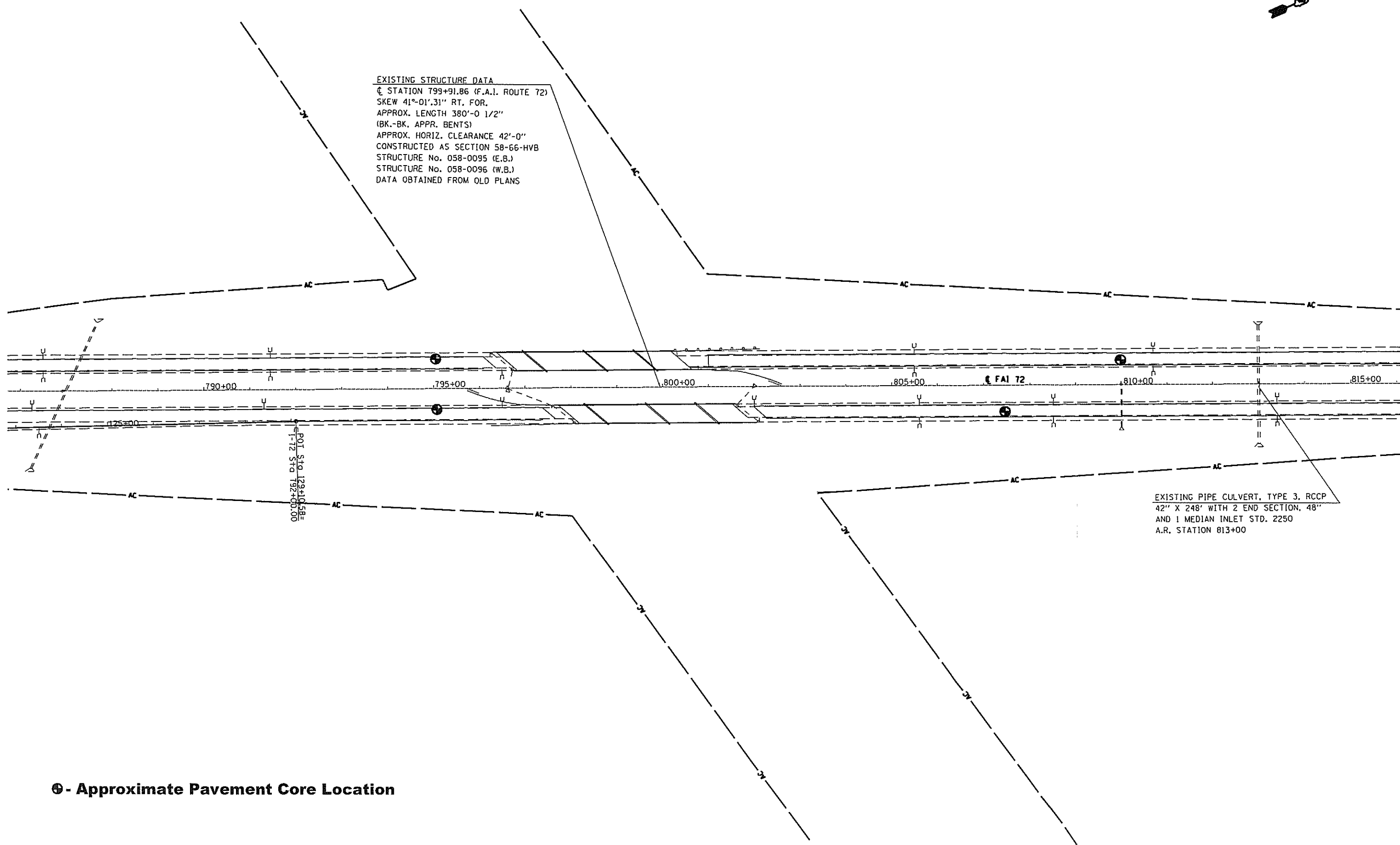


⊕ - Approximate Pavement Core Location

FILE NAME =	USER NAME = kasselsa	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PLAN SHEET	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS
pe:\planroom\dos\illinois.gov\PWIDOT\Documents\IDOT Offices\District 7\Projects\74757\Drawings\Geotechnical\shp\plan_74171.dgn	DRAWN -	REVISED -	72			158,74-66R	MACON		
PLOT SCALE = 288:1294 1/4" = 1"	CHECKED -	REVISED -	SCALE: 100			SHEET NO. 3 OF 8 SHEETS	STA. 757+00.00 TO STA. 787+00.00	CONTRACT NO. 74	
PLOT DATE = 6/18/2020	DATE -	REVISED -	FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT						



EXISTING STRUCTURE DATA
 C STATION 799+91.86 (F.A.I. ROUTE 72)
 SKEW 41°-01'.31" RT. FOR.
 APPROX. LENGTH 380'-0 1/2"
 (BK.-BK. APPR. BENTS)
 APPROX. HORIZ. CLEARANCE 42'-0"
 CONSTRUCTED AS SECTION 58-66-HVB
 STRUCTURE No. 058-0095 (E.B.)
 STRUCTURE No. 058-0096 (W.B.)
 DATA OBTAINED FROM OLD PLANS



EXISTING PIPE CULVERT, TYPE 3, RCCP
 42" X 248" WITH 2 END SECTION, 48"
 AND 1 MEDIAN INLET STD. 2250
 A.R. STATION 813+00

⊙ - Approximate Pavement Core Location

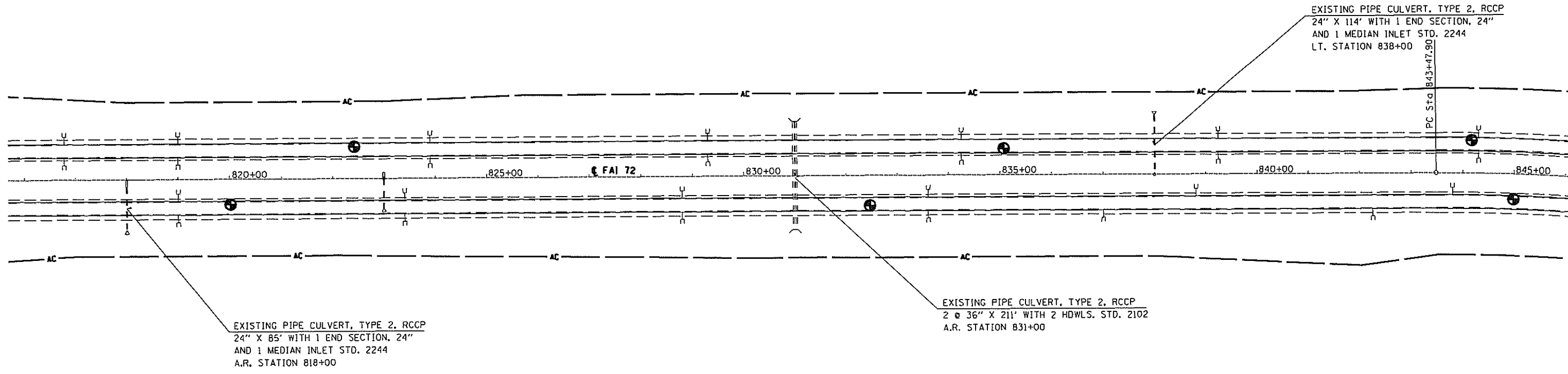
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pc:\planroom\dotillinois.gov\PI00T\Documents\NIDOT Offices\District 7\Projects\74757\DRAMM\Geotechnical\stplan.74171.dgn		CHECKED -	REVISED -
		DATE -	REVISED -

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

PLAN SHEET

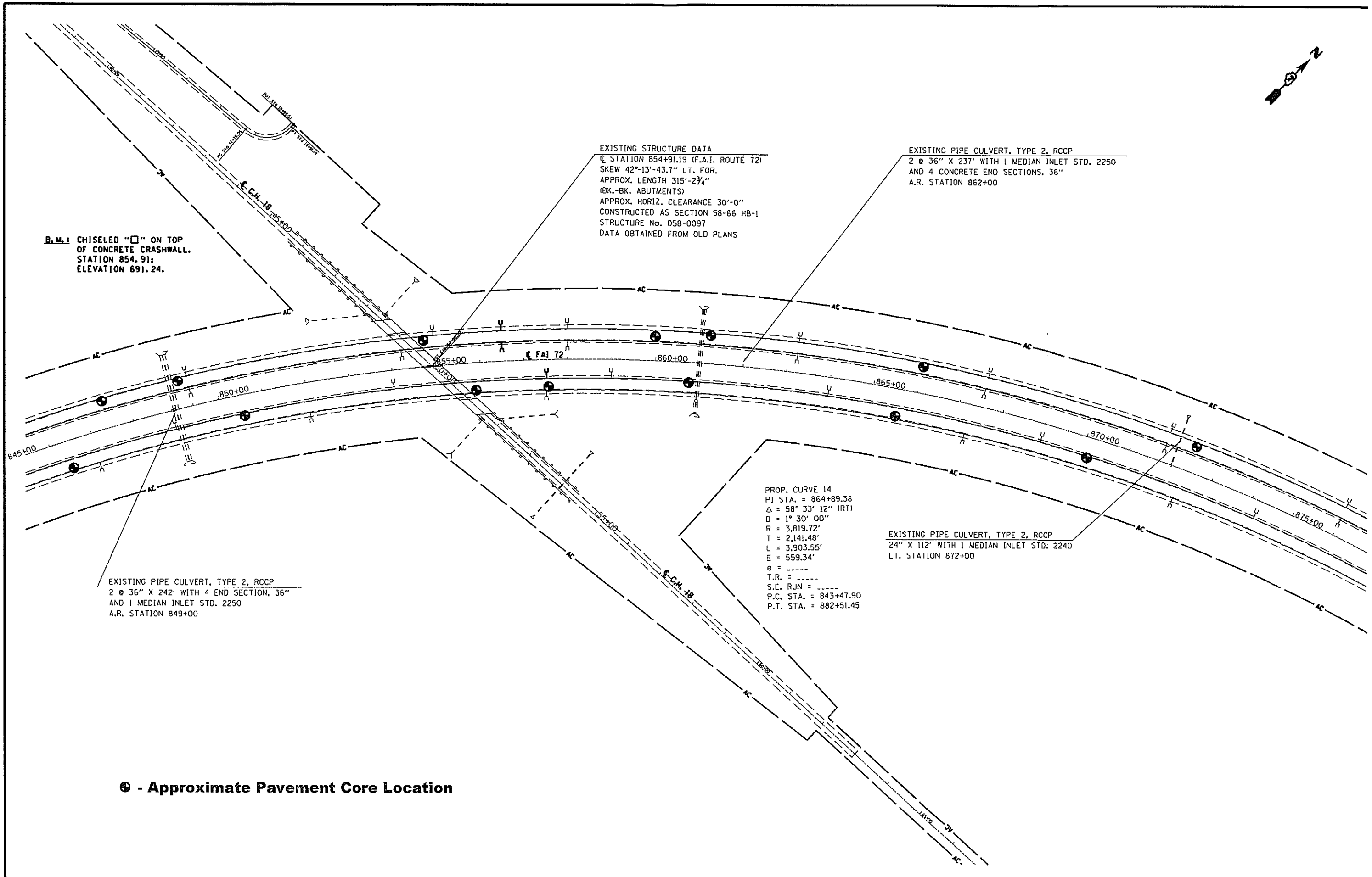
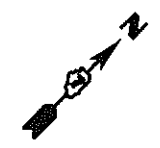
SCALE: 100 SHEET NO. 4 OF 8 SHEETS STA. 786+00.00 TO STA. 816+00.00

F.A.I. RTE. 72	SECTION 58.74-66R	COUNTY MACON	TOTAL SHEETS
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT			CONTRACT NO. 74



⊗ - Approximate Pavement Core Location

FILE NAME =	USER NAME = kosselso	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PLAN SHEET	F.A.I. RTE. 72	SECTION 158,74-66R	COUNTY MACON	TOTAL SHEETS	
p:\planroom\dts\illinois.gov\FWIDOT\Documents\DOT Offices\District 7\Projects\74757\DRAWING\Geotechnical\shiplan_74171.dgn		CHECKED -	REVISED -			SCALE: 100	SHEET NO. 5 OF 8 SHEETS	FED. ROAD DIST. NO.	ILLINOIS FED. AID PROJECT	CONTRACT NO. 74
PLOT SCALE = 280.8168' / in.		DATE -	REVISED -			STA. 816+00.00 TO STA. 846+00.00				
PLOT DATE = 6/18/2020										



B.M.: CHISELED "□" ON TOP OF CONCRETE CRASHWALL. STATION 854.91; ELEVATION 691.24.

EXISTING STRUCTURE DATA
 C STATION 854+91.19 (F.A.I. ROUTE 72)
 SKEW 42°-13'-43.7" LT. FOR.
 APPROX. LENGTH 315'-2 3/4"
 (BK.-BK. ABUTMENTS)
 APPROX. HORIZ. CLEARANCE 30'-0"
 CONSTRUCTED AS SECTION 58-66 HB-1
 STRUCTURE No. 058-0097
 DATA OBTAINED FROM OLD PLANS

EXISTING PIPE CULVERT, TYPE 2, RCCP
 2 @ 36" X 237' WITH 1 MEDIAN INLET STD. 2250
 AND 4 CONCRETE END SECTIONS, 36"
 A.R. STATION 862+00

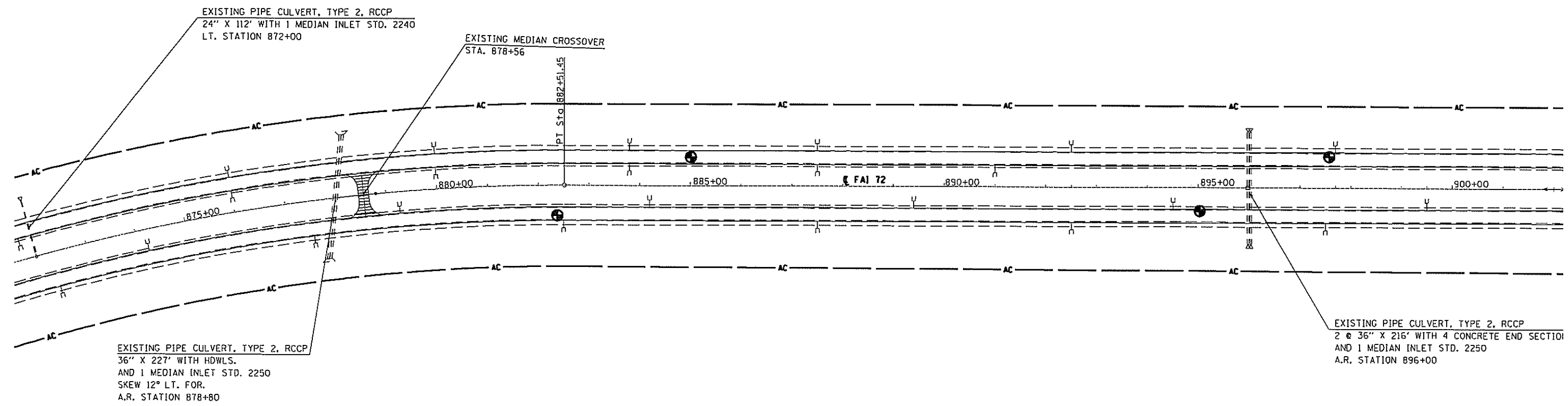
EXISTING PIPE CULVERT, TYPE 2, RCCP
 2 @ 36" X 242' WITH 4 END SECTION, 36"
 AND 1 MEDIAN INLET STD. 2250
 A.R. STATION 849+00

PROP. CURVE 14
 P.I. STA. = 864+89.38
 $\Delta = 58^\circ 33' 12''$ (RT)
 $D = 1^\circ 30' 00''$
 $R = 3,819.72'$
 $T = 2,141.48'$
 $L = 3,903.55'$
 $E = 559.34'$
 $\theta = \text{-----}$
 $T.R. = \text{-----}$
 $S.E. \text{ RUN} = \text{-----}$
 $P.C. \text{ STA.} = 843+47.90$
 $P.T. \text{ STA.} = 882+51.45$

EXISTING PIPE CULVERT, TYPE 2, RCCP
 24" X 112' WITH 1 MEDIAN INLET STD. 2240
 LT. STATION 872+00

C - Approximate Pavement Core Location

FILE NAME =	USER NAME = kossulso	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PLAN SHEET	F.A.I. RTE. 72	SECTION 158.74-66R	COUNTY MACON	TOTAL SHEETS		
p:\planroom.dot\illinois.gov\FWIDOT\Docu	ments\DOT Offices\District 7\Projects\74757	DRAWN\Geotechnical\shiplan.74171.dgn	REVISED -			SCALE: 100	SHEET NO. 6 OF 8 SHEETS	STA. 846+00.00 TO STA. 876+00.00	FED. ROAD DIST. NO.	ILLINOIS FED. AID PROJECT	CONTRACT NO. 74
		CHECKED -	REVISED -								
		DATE -	REVISED -								



⊕ - Approximate Pavement Core Location

FILE NAME =	USER NAME = kosselso	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PLAN SHEET		F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS
path: \\p1enroom.dosillinois.gov\PWIDOT\Documents\DDOT_Offices\District 7\Projects\74757\COMMON\Geotechnical\shplan_74171.dgn	DATE	CHECKED -	REVISED -				72	158,74-66R	MACON	CONTRACT NO. 74
PLOT SCALE = 200:1087 1/2 in.	DATE	CHECKED -	REVISED -		SCALE: 100		SHEET NO. 7 OF 8 SHEETS		STA. 872+00.00 TO STA. 902+00.00	
PLOT DATE = 6/18/2020	DATE	CHECKED -	REVISED -		SCALE: 100		SHEET NO. 7 OF 8 SHEETS		STA. 872+00.00 TO STA. 902+00.00	
						FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJECT		

