CAPACITY DESIGN STUDY

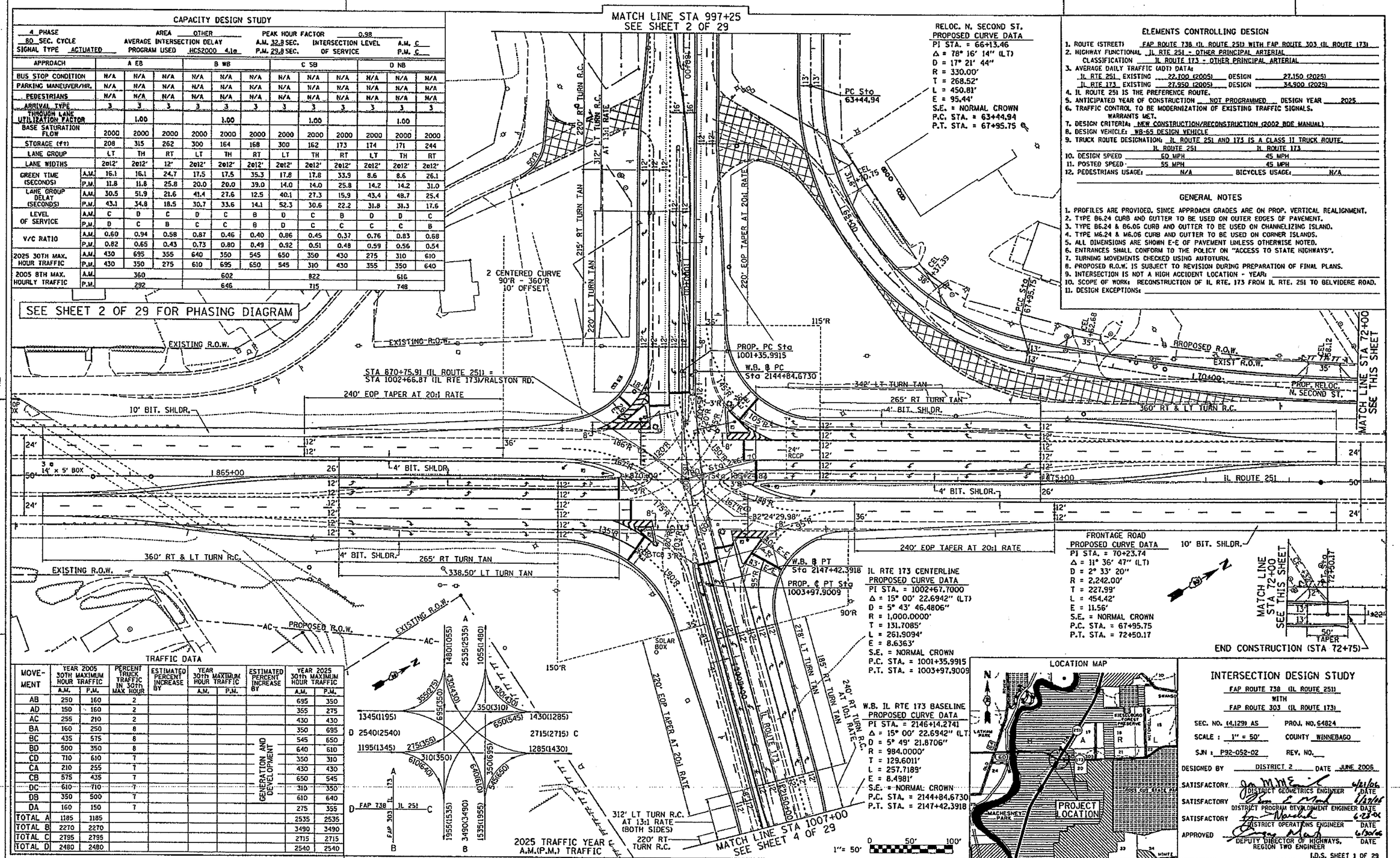
4 PHASE
80 SEC. CYCLE
SIGNAL TYPE ACTUATED

AREA OTHER
AVERAGE INTERSECTION DELAY
PROGRAM USED HCS2000 4.1e

PEAK HOUR FACTOR 0.98
A.M. 32.8 SEC. P.M. 29.8 SEC.
INTERSECTION LEVEL OF SERVICE A.M. C P.M. C

APPROACH		A EB			B WB			C SB			D NB		
BUS STOP CONDITION		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PARKING MANEUVER/HR.		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PEDESTRIANS		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ARRIVAL TYPE		3	3	3	3	3	3	3	3	3	3	3	3
THROUGH LANE UTILIZATION FACTOR			1.00			1.00			1.00			1.00	
BASE SATURATION FLOW		2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
STORAGE (ft)		208	315	262	300	164	168	300	162	173	174	171	244
LANE GROUP		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
LANE WIDTHS		2@12'	2@12'	12'	2@12'	2@12'	2@12'	2@12'	2@12'	2@12'	2@12'	2@12'	2@12'
GREEN TIME (SECONDS)	A.M.	16.1	16.1	24.7	17.5	17.5	35.3	17.8	17.8	33.9	8.6	8.6	26.1
	P.M.	11.8	11.8	25.8	20.0	20.0	39.0	14.0	14.0	25.8	14.2	14.2	31.0
LANE GROUP DELAY (SECONDS)	A.M.	30.5	51.9	21.6	41.4	27.6	12.5	40.1	27.3	15.9	43.4	48.7	25.4
	P.M.	43.1	34.8	18.5	30.7	33.6	14.1	52.3	30.6	22.2	31.8	31.3	17.6
LEVEL OF SERVICE	A.M.	C	D	C	D	C	B	D	C	B	D	D	C
	P.M.	D	C	B	C	C	B	D	C	C	C	C	B
V/C RATIO	A.M.	0.60	0.94	0.58	0.87	0.46	0.40	0.86	0.45	0.37	0.76	0.83	0.68
	P.M.	0.82	0.65	0.43	0.73	0.80	0.49	0.92	0.51	0.48	0.59	0.56	0.54
2025 30TH MAX. HOUR TRAFFIC	A.M.	430	695	355	640	350	545	650	350	430	275	310	610
	P.M.	430	350	275	610	695	650	545	310	430	355	350	640
2005 8TH MAX. HOURLY TRAFFIC	A.M.	360			602			822			616		
	P.M.	292			646			715			748		

SEE SHEET 2 OF 29 FOR PHASING DIAGRAM



ELEMENTS CONTROLLING DESIGN

1. ROUTE (STREET) FAP ROUTE 738 (IL ROUTE 251) WITH FAP ROUTE 303 (IL ROUTE 173)
2. HIGHWAY FUNCTIONAL CLASSIFICATION IL RTE 251 - OTHER PRINCIPAL ARTERIAL; IL ROUTE 173 - OTHER PRINCIPAL ARTERIAL
3. AVERAGE DAILY TRAFFIC (ADT) DATA:
   IL RTE 251 EXISTING 22,100 (2005) DESIGN 27,150 (2025)
   IL RTE 173 EXISTING 27,950 (2005) DESIGN 34,900 (2025)
4. IL ROUTE 251 IS THE PREFERENCE ROUTE.
5. ANTICIPATED YEAR OF CONSTRUCTION NOT PROGRAMMED DESIGN YEAR 2025
6. TRAFFIC CONTROL TO BE MODERNIZATION OF EXISTING TRAFFIC SIGNALS. WARRANTS MET.
7. DESIGN CRITERIA: NEW CONSTRUCTION/RECONSTRUCTION (2002 BDE MANUAL)
8. DESIGN VEHICLE: WB-65 DESIGN VEHICLE
9. TRUCK ROUTE DESIGNATION: IL ROUTE 251 AND 173 IS A CLASS II TRUCK ROUTE.
10. DESIGN SPEED IL ROUTE 251: 60 MPH; IL ROUTE 173: 45 MPH
11. POSTED SPEED IL ROUTE 251: 55 MPH; IL ROUTE 173: 45 MPH
12. PEDESTRIANS USAGE: N/A BICYCLES USAGE: N/A

GENERAL NOTES

1. PROFILES ARE PROVIDED. SINCE APPROACH GRADES ARE ON PROP. VERTICAL REALIGNMENT.
2. TYPE B6.24 CURB AND GUTTER TO BE USED ON OUTER EDGES OF PAVEMENT.
3. TYPE B6.24 & B6.06 CURB AND GUTTER TO BE USED ON CHANNELIZING ISLAND.
4. TYPE M6.24 & M6.06 CURB AND GUTTER TO BE USED ON CORNER ISLANDS.
5. ALL DIMENSIONS ARE SHOWN E-E OF PAVEMENT UNLESS OTHERWISE NOTED.
6. ENTRANCES SHALL CONFORM TO THE POLICY ON "ACCESS TO STATE HIGHWAYS".
7. TURNING MOVEMENTS CHECKED USING AUTOTURN.
8. PROPOSED R.O.W. IS SUBJECT TO REVISION DURING PREPARATION OF FINAL PLANS.
9. INTERSECTION IS NOT A HIGH ACCIDENT LOCATION - YEAR:
10. SCOPE OF WORK: RECONSTRUCTION OF IL RTE. 173 FROM IL RTE. 251 TO BELVIDERE ROAD.
11. DESIGN EXCEPTIONS:

TRAFFIC DATA

MOVEMENT	YEAR 2005 30TH MAXIMUM HOUR TRAFFIC A.M.	P.M.	PERCENT TRUCK TRAFFIC IN 30TH MAX HOUR	ESTIMATED PERCENT INCREASE BY	YEAR 30TH MAXIMUM HOUR TRAFFIC A.M.	P.M.	ESTIMATED PERCENT INCREASE BY	YEAR 2025 30TH MAXIMUM HOUR TRAFFIC A.M.	P.M.
AB	250	160	2				GENERATION AND DEVELOPMENT	695	350
AD	150	160	2					355	275
AC	255	210	2					430	430
BA	160	250	8					350	695
BC	435	575	8					545	650
BD	500	350	8					640	610
CD	710	610	7					350	310
CA	210	255	7					430	430
CB	575	435	7					650	545
DC	610	710	7					310	350
DB	350	500	7					610	640
DA	160	150	7					275	355
TOTAL A	1185	1185						2535	2535
TOTAL B	2270	2270						3490	3490
TOTAL C	2795	2795						2715	2715
TOTAL D	2480	2480						2540	2540

INTERSECTION DESIGN STUDY

FAP ROUTE 738 (IL ROUTE 251)
WITH
FAP ROUTE 303 (IL ROUTE 173)

SEC. NO. (4,1,29) AS — PROJ. NO. 64824
SCALE : 1" = 50' — COUNTY WINNEBAGO
SJN : P92-052-02 — REV. NO.

DESIGNED BY DISTRICT 2 DATE JUNE 2006
SATISFACTORY — DISTRICT GEOMETRICS ENGINEER — DATE 6/21/06
SATISFACTORY — DISTRICT PROGRAM DEVELOPMENT ENGINEER — DATE 6/27/06
SATISFACTORY — DISTRICT OPERATIONS ENGINEER — DATE 6/23/06
APPROVED — DEPUTY DIRECTOR OF HIGHWAYS, REGION TWO ENGINEER — DATE 6/30/06

I.D.S. SHEET 1 OF 29

BDE-9409

FIGURE 4
SHEET 1

PHASING DIAGRAM

	PHASE I	PHASE II	PHASE III	PHASE IV
	IL 173 EB	IL 173 WB	IL 251 SB	IL 251 NB
A.M. G/C	0.21	0.22	0.22	0.11
A.M. A/C	0.06	0.06	0.06	0.06
P.M. G/C	0.15	0.25	0.17	0.19
P.M. A/C	0.06	0.06	0.06	0.06

IL ROUTE 251 WITH IL ROUTE 173

W.B. RALSTON RD. BASELINE PROPOSED CURVE DATA
PI STA. = 2127+68.1949
Δ = 4° 02' 27.3717" (RT)
D = 3° 49' 10.9871"
R = 1,500.00'
T = 52.9177'
L = 105.7915'
E = 0.9331'
S.E. = NORMAL CROWN
P.C.C. STA. = 2127+15.2772
P.C.C. STA. = 2128+21.0687

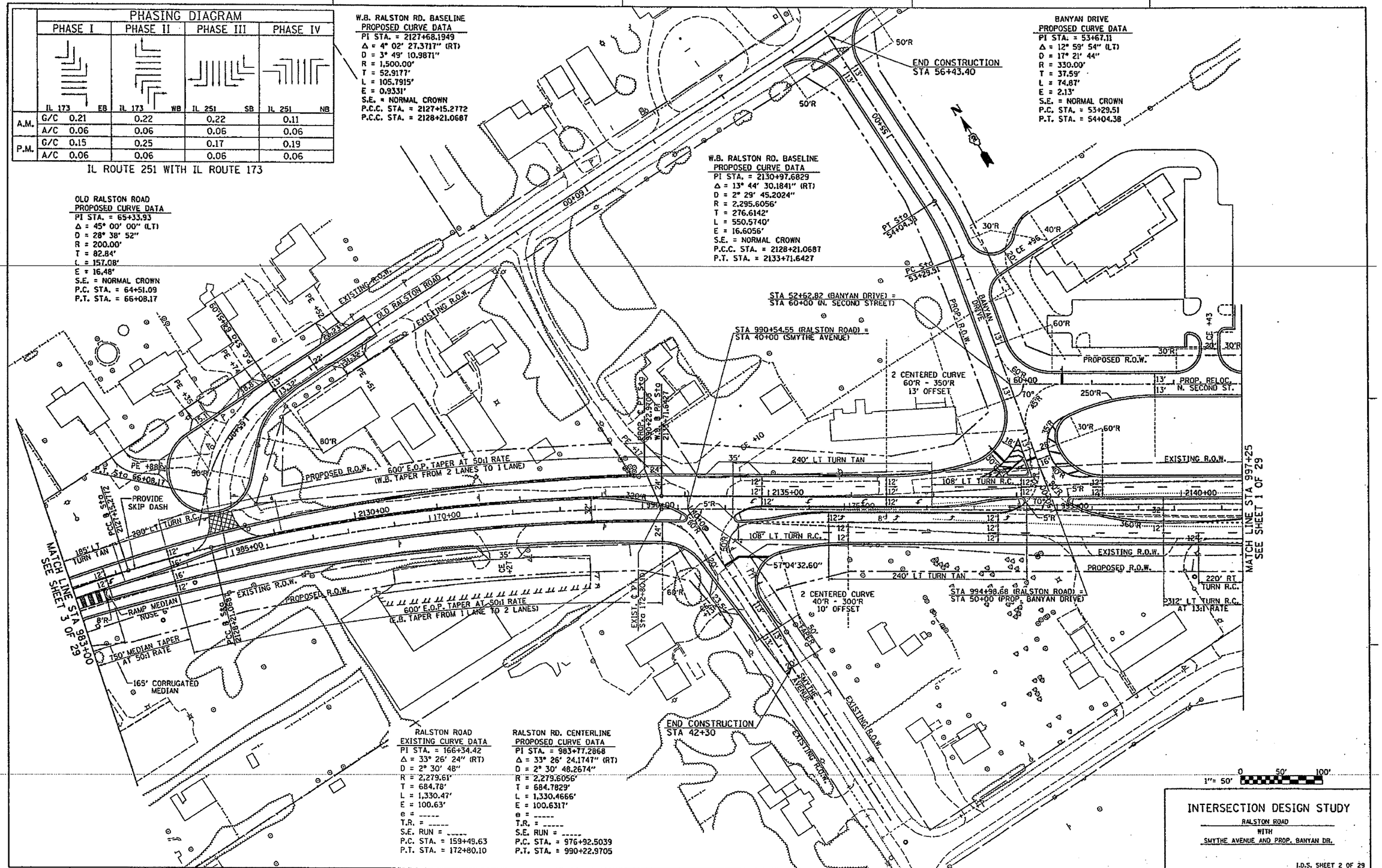
OLD RALSTON ROAD PROPOSED CURVE DATA
PI STA. = 65+33.93
Δ = 45° 00' 00" (LT)
D = 28° 38' 52"
R = 200.00'
T = 82.84'
L = 157.08'
E = 16.48'
S.E. = NORMAL CROWN
P.C. STA. = 64+51.09
P.T. STA. = 66+08.17

W.B. RALSTON RD. BASELINE PROPOSED CURVE DATA
PI STA. = 2130+97.6829
Δ = 13° 44' 30.1841" (RT)
D = 2° 29' 45.2024"
R = 2,295.6056'
T = 276.6142'
L = 550.5740'
E = 16.6056'
S.E. = NORMAL CROWN
P.C.C. STA. = 2128+21.0687
P.T. STA. = 2133+71.6427

BANYAN DRIVE PROPOSED CURVE DATA
PI STA. = 53+67.11
Δ = 12° 59' 54" (LT)
D = 17° 21' 44"
R = 330.00'
T = 37.59'
L = 74.87'
E = 2.13'
S.E. = NORMAL CROWN
P.C. STA. = 53+29.51
P.T. STA. = 54+04.38

RALSTON ROAD EXISTING CURVE DATA
PI STA. = 166+34.42
Δ = 33° 26' 24" (RT)
D = 2° 30' 48"
R = 2,279.61'
T = 684.78'
L = 1,330.47'
E = 100.63'
e = _____
T.R. = _____
S.E. RUN = _____
P.C. STA. = 159+49.63
P.T. STA. = 172+80.10

RALSTON RD. CENTERLINE PROPOSED CURVE DATA
PI STA. = 983+77.2868
Δ = 33° 26' 24.1747" (RT)
D = 2° 30' 48.2674"
R = 2,279.6056'
T = 684.7829'
L = 1,330.4666'
E = 100.6317'
e = _____
T.R. = _____
S.E. RUN = _____
P.C. STA. = 976+92.5039
P.T. STA. = 990+22.9705



INTERSECTION DESIGN STUDY
RALSTON ROAD
WITH
SMYTHE AVENUE AND PROP. BANYAN DR.

I.D.S. SHEET 2 OF 29

FIGURE 4
SHEET 2

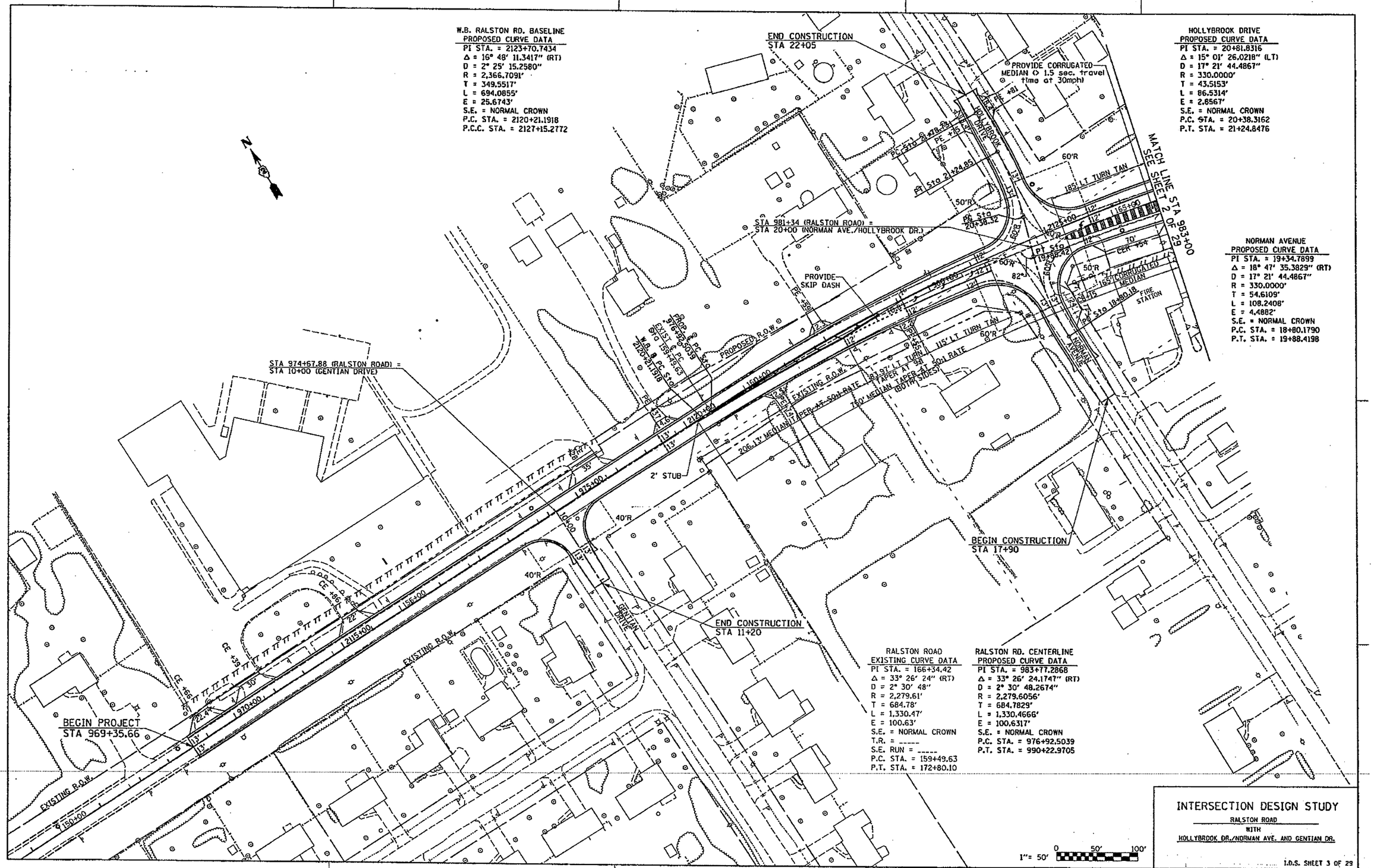


FIGURE 4
SHEET 3

CAPACITY DESIGN STUDY

4 PHASE — AREA OTHER — PEAK HOUR FACTOR 1.00
AM 85/(PM) 90 SEC. CYCLE — AVERAGE INTERSECTION DELAY — A.M. 39.1 SEC. — INTERSECTION LEVEL OF SERVICE — A.M. D
SIGNAL TYPE ACTUATED — PROGRAM USED HCS 2000 4.1e — P.M. 40.8 SEC. — P.M. D

APPROACH		A EB			B WB			C SB			D NB	
BUS STOP CONDITION		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PARKING MANEUVER/HR.		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PEDESTRIANS		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ARRIVAL TYPE		3	3	3	3	3	3	3	3	3	3	3
THROUGH LANE UTILIZATION FACTOR			1.00			1.00			1.00			1.00
BASE SATURATION FLOW		2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
STORAGE (ft)		138'	539'	41'	136'	573'	101'	211'	27'	240'	81'	160'
LANE GROUP		LT	TH	RT	LT	TH	RT	LT	TH/R	RT	LT	TH/R
LANE WIDTHS		2@12'	2@12'	12'	12'	2@12'	12'	12'	12'	12'	12'	12'
GREEN TIME (SECONDS)	A.M.	8.0	33.5	47.5	8.0	33.5	47.5	9.0	14.5	14.5	9.0	14.5
	P.M.	8.6	35.2	51.8	8.6	35.2	51.8	11.6	14.6	14.6	11.6	14.6
LANE GROUP DELAY (SECONDS)	A.M.	38.6	50.8	8.6	50.3	25.3	9.4	52.9	29.7	54.5	36.6	32.3
	P.M.	45.3	27.1	8.5	41.9	54.5	9.0	54.4	32.1	42.6	35.7	36.7
LEVEL OF SERVICE	A.M.	D	D	A	D	C	A	D	C	D	D	C
	P.M.	D	C	A	D	D	A	D	C	D	D	D
V/C RATIO	A.M.	0.54	1.00	0.06	0.71	0.78	0.20	0.75	0.07	0.85	0.38	0.41
	P.M.	0.69	0.78	0.08	0.53	1.01	0.16	0.79	0.08	0.69	0.23	0.54
2013 30TH MAX. HOUR TRAFFIC	A.M.	185	1395	55	125	1080	190	150	25	240	75	120
	P.M.	240	1080	75	95	1395	150	190	25	185	55	150
2005 8TH MAX. HOURLY TRAFFIC	A.M.	655			655			176			88	
	P.M.	655			655			176			88	

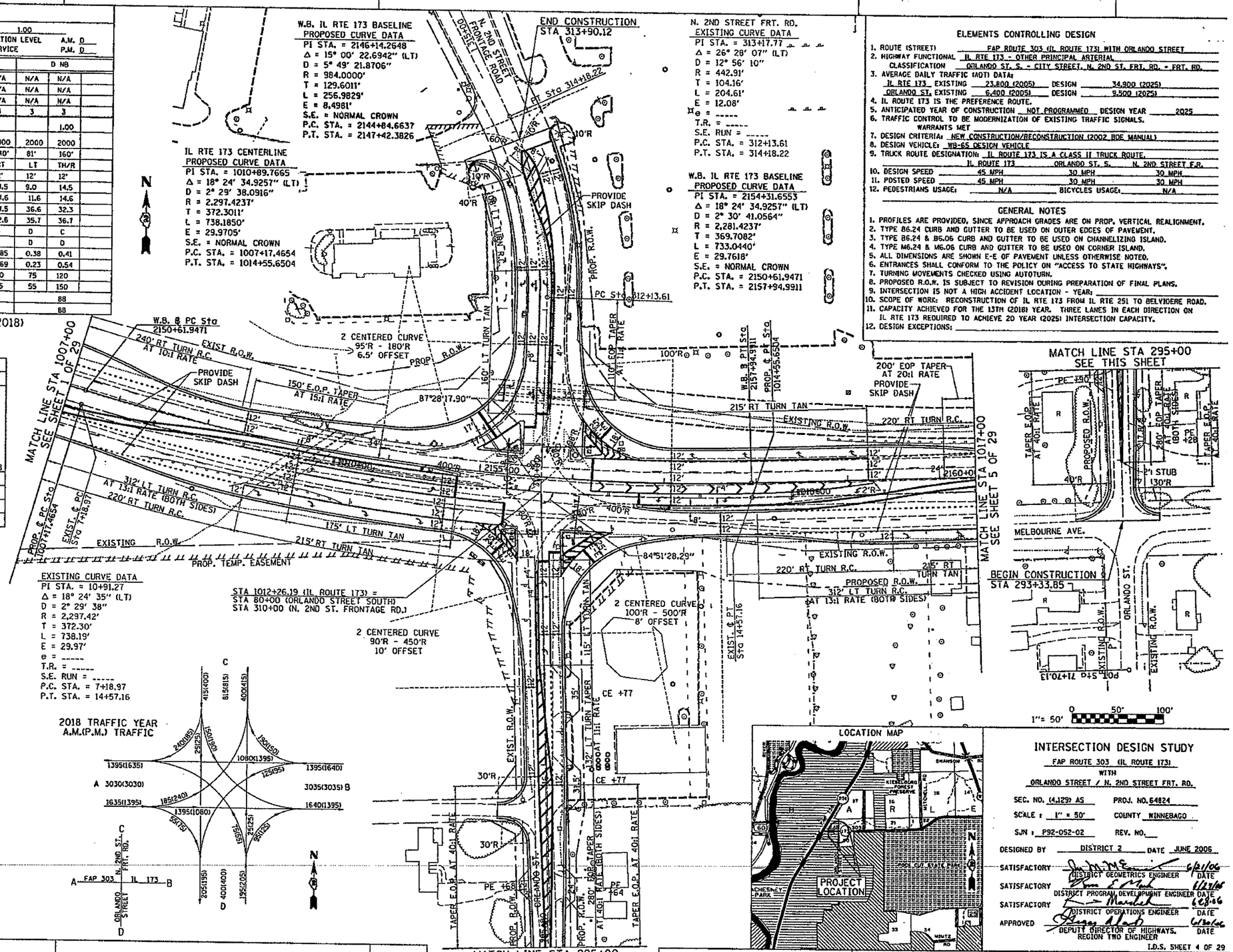
NOTE: CAPACITY ACHIEVED FOR 13 YEARS (2018)

PHASING DIAGRAM

		PHASE I	PHASE II	PHASE III	PHASE IV
		EB/WB	EB/WB	NB/SB	NB/SB
A.M.	G/C	0.094	0.394	0.105	0.171
	A/C	0.059	0.059	0.059	0.059
P.M.	G/C	0.095	0.391	0.128	0.162
	A/C	0.056	0.056	0.056	0.056

TRAFFIC DATA

MOVEMENT	YEAR 2005 30TH MAXIMUM HOUR TRAFFIC A.M.	YEAR 2005 30TH MAXIMUM HOUR TRAFFIC P.M.	PERCENT TRUCK TRAFFIC IN 30th MAX HOUR	ESTIMATED PERCENT INCREASE BY	YEAR 2018 30th MAXIMUM HOUR TRAFFIC A.M.	YEAR 2018 30th MAXIMUM HOUR TRAFFIC P.M.	ESTIMATED PERCENT INCREASE BY	YEAR 2025 30th MAXIMUM HOUR TRAFFIC A.M.	YEAR 2025 30th MAXIMUM HOUR TRAFFIC P.M.
AB	970	970	8		1395	1080		1695	1145
AD	70	70	2		55	75		50	80
AC	150	150	2		185	240		210	310
BA	970	970	8		1080	1395		1145	1695
BC	150	150	2		190	150	GENERATION AND DEVELOPMENT	220	150
BD	70	70	2		125	95		170	110
CD	20	20	2		25	25		30	30
CA	150	150	2		240	185		310	210
CB	150	150	2		150	190		150	220
DC	20	20	2		25	25		30	30
DB	70	70	2		95	125		110	170
DA	70	70	2		75	55		80	50
TOTAL A	2380	2380			3030	3030		3490	3490
TOTAL B	2380	2380			3035	3035		3490	3490
TOTAL C	640	640			815	815		950	950
TOTAL D	320	320			400	400		470	470



ELEMENTS CONTROLLING DESIGN

1. ROUTE (STREET) FAP ROUTE 303 (IL ROUTE 173) WITH ORLANDO STREET
2. HIGHWAY FUNCTIONAL CLASSIFICATION IL RTE 173 - OTHER PRINCIPAL ARTERIAL; ORLANDO ST. S. - CITY STREET, N. 2ND ST. FRT. RD. - FRT. RD.
3. AVERAGE DAILY TRAFFIC (ADT) DATA:
   IL RTE 173 EXISTING 23,800 (2005) DESIGN 34,900 (2025)
   ORLANDO ST. EXISTING 6,400 (2005) DESIGN 9,500 (2025)
4. IL ROUTE 173 IS THE PREFERENCE ROUTE.
5. ANTICIPATED YEAR OF CONSTRUCTION NOT PROGRAMMED DESIGN YEAR 2025
6. TRAFFIC CONTROL TO BE MODERNIZATION OF EXISTING TRAFFIC SIGNALS. WARRANTS MET
7. DESIGN CRITERIA: NEW CONSTRUCTION/RECONSTRUCTION (2002 BDE MANUAL)
8. DESIGN VEHICLE: WB-65 DESIGN VEHICLE
9. TRUCK ROUTE DESIGNATION: IL ROUTE 173 IS A CLASS II TRUCK ROUTE.

	IL ROUTE 173	ORLANDO ST. S.	N. 2ND STREET F.R.
10. DESIGN SPEED	45 MPH	30 MPH	30 MPH
11. POSTED SPEED	45 MPH	30 MPH	30 MPH

12. PEDESTRIANS USAGE: N/A BICYCLES USAGE: N/A

GENERAL NOTES

1. PROFILES ARE PROVIDED, SINCE APPROACH GRADES ARE ON PROP. VERTICAL REALIGNMENT.
2. TYPE B6.24 CURB AND GUTTER TO BE USED ON OUTER EDGES OF PAVEMENT.
3. TYPE B6.24 & B6.06 CURB AND GUTTER TO BE USED ON CHANNELIZING ISLAND.
4. TYPE M6.24 & M6.06 CURB AND GUTTER TO BE USED ON CORNER ISLAND.
5. ALL DIMENSIONS ARE SHOWN E-E OF PAVEMENT UNLESS OTHERWISE NOTED.
6. ENTRANCES SHALL CONFORM TO THE POLICY ON "ACCESS TO STATE HIGHWAYS".
7. TURNING MOVEMENTS CHECKED USING AUTOTURN.
8. PROPOSED R.O.W. IS SUBJECT TO REVISION DURING PREPARATION OF FINAL PLANS.
9. INTERSECTION IS NOT A HIGH ACCIDENT LOCATION - YEAR:
10. SCOPE OF WORK: RECONSTRUCTION OF IL RTE 173 FROM IL RTE 251 TO BELVIDERE ROAD.
11. CAPACITY ACHIEVED FOR THE 13TH (2018) YEAR. THREE LANES IN EACH DIRECTION ON IL RTE 173 REQUIRED TO ACHIEVE 20 YEAR (2025) INTERSECTION CAPACITY.
12. DESIGN EXCEPTIONS:

FIGURE 4
SHEET 4

CAPACITY DESIGN STUDY

4 PHASE
90 SEC. CYCLE
SIGNAL TYPE ACTUATED

AREA OTHER
AVERAGE INTERSECTION DELAY
PROGRAM USED HCS 2000 4.1c

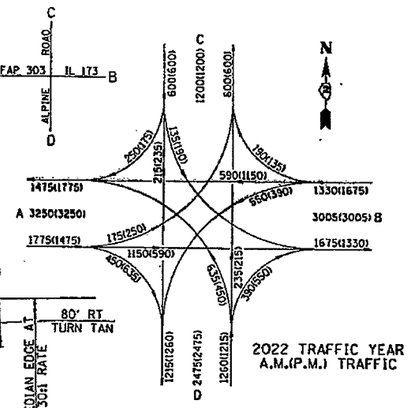
PEAK HOUR FACTOR 1.00
A.M. 39.3 SEC. INTERSECTION LEVEL A.M. D
P.M. 36.9 SEC. OF SERVICE P.M. D

APPROACH		A EB			B WB			C SB			D NB		
BUS STOP CONDITION		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PARKING MANEUVER/HR.		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PEDESTRIANS		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ARRIVAL TYPE		3	3	3	3	3	3	3	3	3	3	3	3
THROUGH LANE UTILIZATION FACTOR			1.00			1.00			1.00			1.00	
BASE SATURATION FLOW		2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
STORAGE (FT)		136'	520'	372'	325'	511'	101'	104'	128'	221'	325'	138'	345'
LANE GROUP		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
LANE WIDTHS		2@12'	2@12'	12'	2@12'	2@12'	12'	2@12'	2@12'	12'	2@12'	2@12'	12'
GREEN TIME (SECONDS)	A.M.	15.3	29.7	52.5	15.3	29.7	52.5	17.8	7.2	27.5	17.8	7.2	27.5
	P.M.	13.2	30.8	48.6	13.2	30.8	48.6	12.8	13.2	31.4	12.8	13.2	31.4
LANE GROUP DELAY (SECONDS)	A.M.	32.8	53.4	11.1	52.1	24.6	8.9	30.2	48.5	26.3	48.2	53.6	35.2
	P.M.	35.9	23.7	17.9	42.1	44.8	10.4	35.4	35.5	21.6	53.4	35.2	52.9
LEVEL OF SERVICE	A.M.	C	D	B	D	C	A	C	D	C	D	D	D
	P.M.	D	C	B	D	D	B	D	D	C	D	D	D
V/C RATIO	A.M.	0.28	0.99	0.46	0.89	0.51	0.20	0.19	0.72	0.49	0.89	0.79	0.77
	P.M.	0.47	0.49	0.71	0.74	0.95	0.15	0.37	0.43	0.30	0.88	0.39	0.95
2022 30TH MAX. HOUR TRAFFIC	A.M.	175	1150	450	550	1150	135	135	215	250	635	235	390
	P.M.	250	590	635	390	1150	135	190	235	175	450	215	550
2005 8TH MAX. HOURLY TRAFFIC	A.M.	655			391			171			435		
	P.M.	655			391			171			435		

NOTE: CAPACITY ACHIEVED FOR 17 YEARS (2022)

PHASING DIAGRAM

	PHASE I	PHASE II	PHASE III	PHASE IV
	EB/WB	EB/WB	NB/SB	NB/SB
A.M. G/C	0.170	0.330	0.200	0.080
A.M. A/C	0.055	0.055	0.055	0.055
P.M. G/C	0.148	0.342	0.142	0.148
P.M. A/C	0.055	0.055	0.055	0.055



ELEMENTS CONTROLLING DESIGN

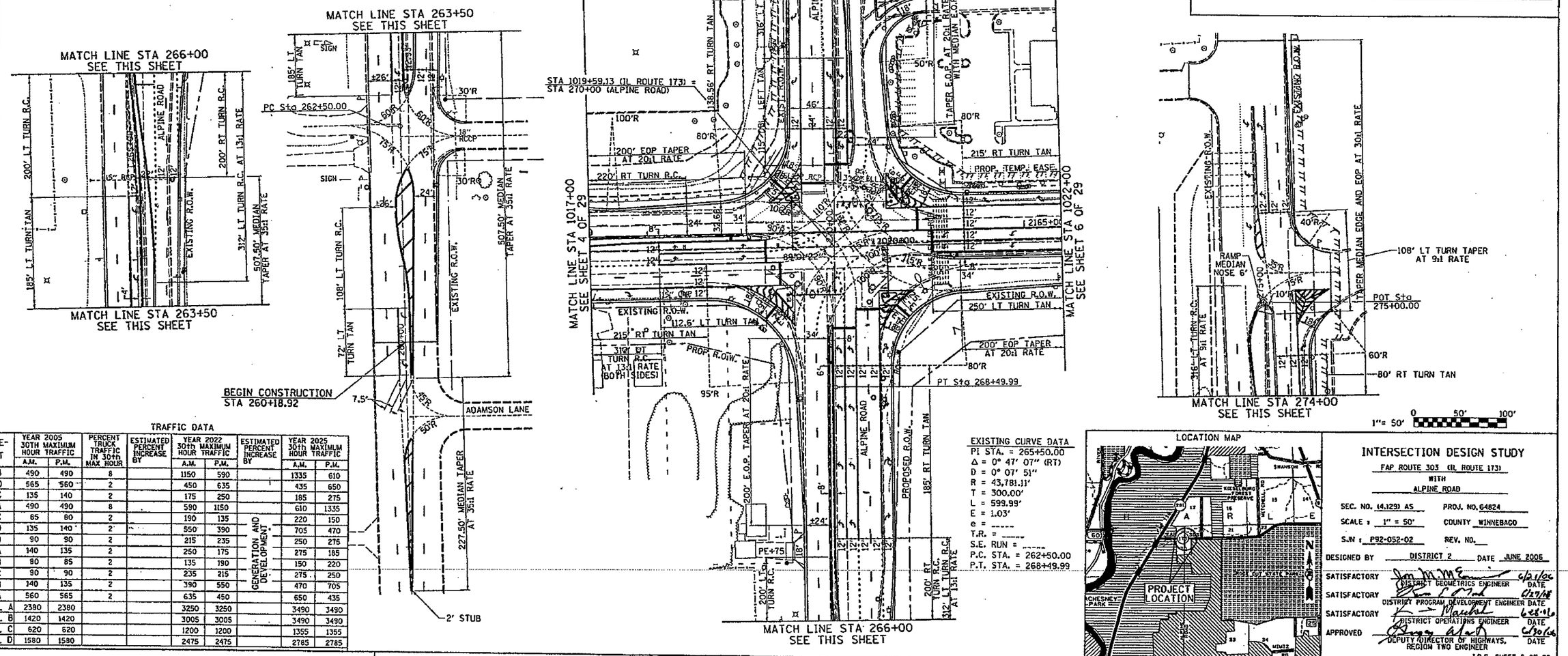
1. ROUTE (STREET) FAP ROUTE 303 (IL ROUTE 173) WITH ALPINE ROAD
2. HIGHWAY FUNCTIONAL CLASSIFICATION IL RTE 173 - OTHER PRINCIPAL ARTERIAL; S. ALPINE RD. - OTHER PRIN. ARTERIAL, N. ALPINE RD. - COLLECTOR
3. AVERAGE DAILY TRAFFIC (ADT) DATA:
   IL RTE 173 EXISTING 23,800 (2005) DESIGN 34,900 (2025)
   ALPINE RD. EXISTING 15,800 (2005) DESIGN 27,850 (2025)
4. IL ROUTE 173 IS THE PREFERENCE ROUTE.
5. ANTICIPATED YEAR OF CONSTRUCTION NOT PROGRAMMED DESIGN YEAR 2025
6. TRAFFIC CONTROL TO BE MODERNIZATION OF EXISTING TRAFFIC SIGNALS. WARRANTS MET
7. DESIGN CRITERIA: NEW CONSTRUCTION/RECONSTRUCTION (2002 BDE MANUAL)
8. DESIGN VEHICLE: WB-65 DESIGN VEHICLE
9. TRUCK ROUTE DESIGNATION: IL ROUTE 173 IS A CLASS II TRUCK ROUTE.

	IL ROUTE 173	N. ALPINE ROAD	S. ALPINE ROAD
10. DESIGN SPEED	45 MPH	35 MPH	45 MPH
11. POSTED SPEED	45 MPH	35 MPH	45 MPH

12. PEDESTRIANS USAGE: N/A BICYCLES USAGE: N/A

GENERAL NOTES

1. PROFILES ARE PROVIDED. SINCE APPROACH GRADES ARE ON PROP. VERTICAL REALIGNMENT.
2. TYPE B6.18 & B6.24 CURB AND GUTTER TO BE USED ON OUTER EDGES OF PAVEMENT.
3. TYPE B6.24 & B6.06 CURB AND GUTTER TO BE USED ON CHANNELIZING ISLAND.
4. TYPE M6.24 & M6.06 CURB AND GUTTER TO BE USED ON CORNER ISLANDS.
5. ALL DIMENSIONS ARE SHOWN E-E OF PAVEMENT UNLESS OTHERWISE NOTED.
6. ENTRANCES SHALL CONFORM TO THE POLICY ON "ACCESS TO STATE HIGHWAYS".
7. TURNING MOVEMENTS CHECKED USING AUTOTURN.
8. PROPOSED R.O.W. IS SUBJECT TO REVISION DURING PREPARATION OF FINAL PLANS.
9. INTERSECTION IS NOT A HIGH ACCIDENT LOCATION - YEAR:
10. SCOPE OF WORK: RECONSTRUCTION OF IL RTE 173 FROM IL RTE 251 TO BELVIDERE ROAD.
11. CAPACITY ACHIEVED FOR THE 17TH (2022) YEAR. THREE LANES IN EACH DIRECTION ON IL RTE 173 ALONG WITH A NORTHBOUND DUAL RIGHT REQUIRED TO ACHIEVE 20 YEAR (2025) INTERSECTION CAPACITY.
12. DESIGN EXCEPTIONS:



TRAFFIC DATA

MOVEMENT	YEAR 2005 30TH MAXIMUM HOUR TRAFFIC A.M.	P.M.	PERCENT TRUCK TRAFFIC IN 30th MAX HOUR	ESTIMATED PERCENT INCREASE BY	YEAR 2022 30th MAXIMUM HOUR TRAFFIC A.M.	P.M.	ESTIMATED PERCENT INCREASE BY	YEAR 2025 30th MAXIMUM HOUR TRAFFIC A.M.	P.M.
AB	490	490	8		1150	590		1335	610
AD	565	560	2		450	635		435	650
AC	135	140	2		175	250		185	275
BA	490	490	8		590	1150		610	1335
BC	65	80	2		190	135	GENERATION AND DEVELOPMENT	220	150
BD	135	140	2		550	390		705	470
CD	90	90	2		215	235		250	275
CA	140	135	2		250	175		275	185
CB	80	85	2		135	190		150	220
DC	90	90	2		235	215		275	250
DB	140	135	2		390	550		470	705
DA	560	565	2		635	450		650	435
TOTAL A	2380	2380			3250	3250		3490	3490
TOTAL B	1420	1420			3005	3005		3490	3490
TOTAL C	620	620			1200	1200		1355	1355
TOTAL D	1580	1580			2475	2475		2785	2785

EXISTING CURVE DATA

PI STA. = 265+50.00
Δ = 0° 47' 07" (RT)
D = 0° 07' 51"
R = 43,781.11'
T = 300.00'
L = 599.99'
E = 1.03'
e = -----
T.R. = -----
S.E. RUN = -----
P.C. STA. = 262+50.00
P.T. STA. = 268+49.99

LOCATION MAP

INTERSECTION DESIGN STUDY

FAP ROUTE 303 (IL ROUTE 173)
WITH
ALPINE ROAD

SEC. NO. (4,129) AS PROJ. NO. G4824
SCALE : 1" = 50' COUNTY WINNEBAGO
SJN : P92-052-02 REV. NO.
DESIGNED BY DISTRICT 2 DATE JUNE 2005

SATISFACTORY — DISTRICT GEOMETRICS ENGINEER — DATE 6/21/06
SATISFACTORY — DISTRICT PROGRAM DEVELOPMENT ENGINEER — DATE 6/27/06
SATISFACTORY — DISTRICT OPERATIONS ENGINEER — DATE 6/28/06
APPROVED — DEPUTY DIRECTOR OF HIGHWAYS, REGION TWO ENGINEER — DATE 6/30/06

I.D.S. SHEET 5 OF 29

BDE-9409

FIGURE 4
SHEET 5

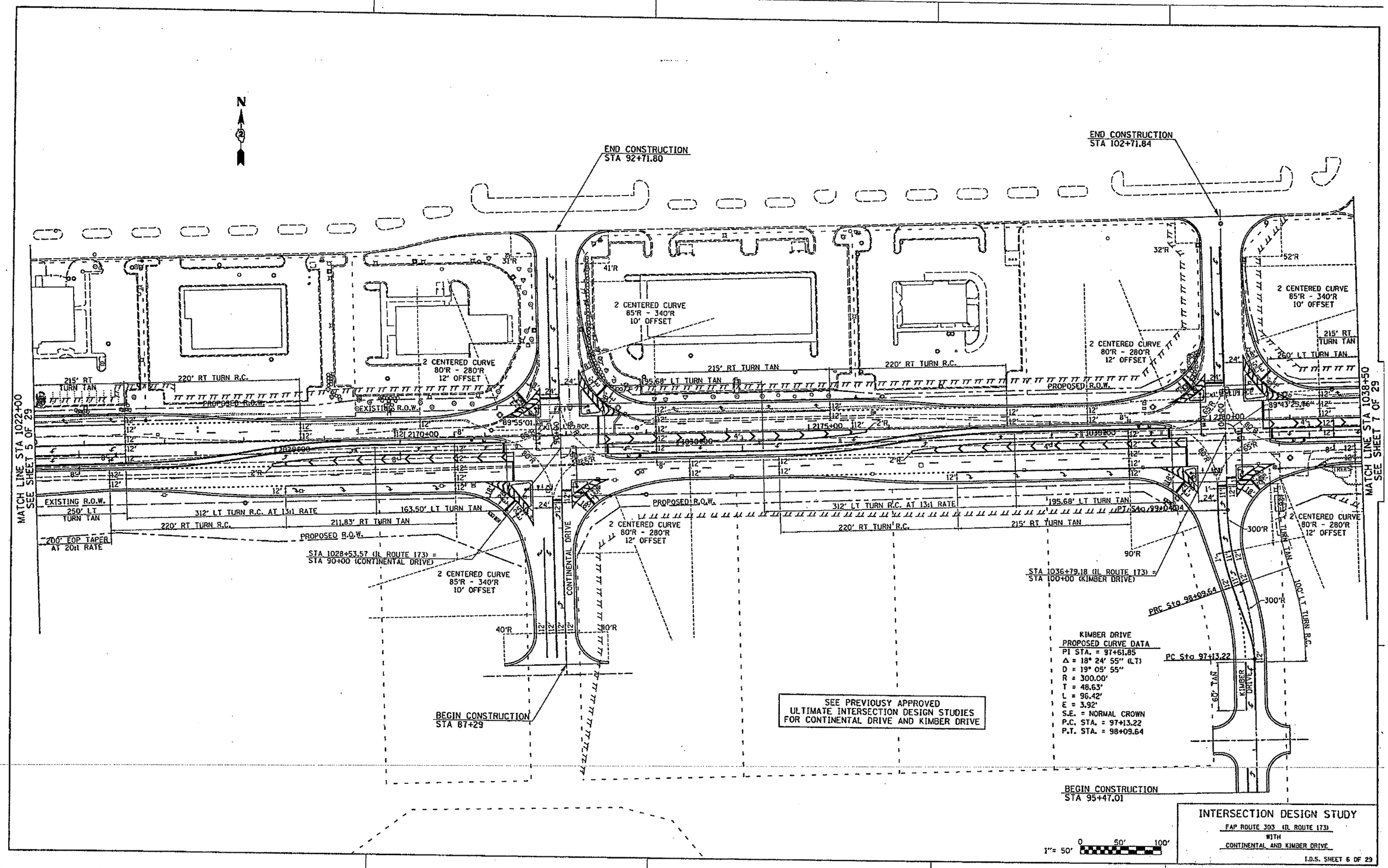


FIGURE 4
SHEET 6

CAPACITY DESIGN STUDY

4 PHASE
AM 93/(PM) 95 SEC. CYCLE
SIGNAL TYPE ACTUATED

AREA OTHER
AVERAGE INTERSECTION DELAY
PROGRAM USED HCS 2000 4.1a

PEAK HOUR FACTOR 0.95
A.M. 34.9 SEC. INTERSECTION LEVEL
P.M. 38.0 SEC. OF SERVICE

A.M. C
P.M. D

APPROACH		A EB		B WB			C SB		D NB	
BUS STOP CONDITION		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
PARKING MANEUVER/HR.		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
PEDESTRIANS		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
ARRIVAL TYPE		3	3	3	3	3	3	3	3	
THROUGH LANE UTILIZATION FACTOR			1.00		1.00		1.00		1.00	
BASE SATURATION FLOW		1900	1900	1900	1900	1900	1900		1900	
STORAGE (ft)		247	570	20	581	87	260	177	20	
LANE GROUP		L	TH/R	L	TH	R	L/TH	R	LTR	
LANE WIDTHS		12'	2@12'	12'	2@12'	12'	12'	12'	12'	
GREEN TIME (SECONDS)	A.M.	10.0	51.0	0.0	51.0	63.0	7.0	32.0	5.0	
	P.M.	10.0	52.0	0.0	52.0	64.7	7.7	33.0	5.3	
LANE GROUP DELAY (SECONDS)	A.M.	13.0	52.6	18.7	18.1	5.7	37.5	23.6	46.8	
	P.M.	46.6	18.8	9.1	51.6	5.4	54.6	22.6	47.0	
LEVEL OF SERVICE	A.M.	B	D	B	B	A	D	C	D	
	P.M.	D	B	A	D	A	D	C	D	
V/C RATIO	A.M.	0.49	1.04	0.06	0.76	0.20	0.57	0.40	0.44	
	P.M.	0.82	0.77	0.04	1.03	0.14	0.82	0.27	0.42	
2025 30TH MAX. HOUR TRAFFIC	A.M.	140	1810	15	1320	205	145	205	30	
	P.M.	90	1335	10	1800	140	210	140	30	
2005 8TH MAX. HOURLY TRAFFIC	A.M.	391		391			50		17	
	P.M.	391		391			50		17	

PHASING DIAGRAM

	PHASE I	PHASE II	PHASE III	PHASE IV
	EB/WB	EB/WB	NB/SB	NB/SB
A.M. G/C	0.110	0.550	0.080	0.060
A.M. A/C	0.050	0.050	0.050	0.050
P.M. G/C	0.110	0.550	0.080	0.060
P.M. A/C	0.050	0.050	0.050	0.050

END CONSTRUCTION
STA 219+58.50

SEE PREVIOUSLY APPROVED IDS BY THE DEVELOPER FOR BURDEN RD. PROP. GEOMETRICS

SEE PREVIOUSLY APPROVED IDS BY THE DEVELOPER FOR RT IN/RT OUT PROP. GEOMETRICS

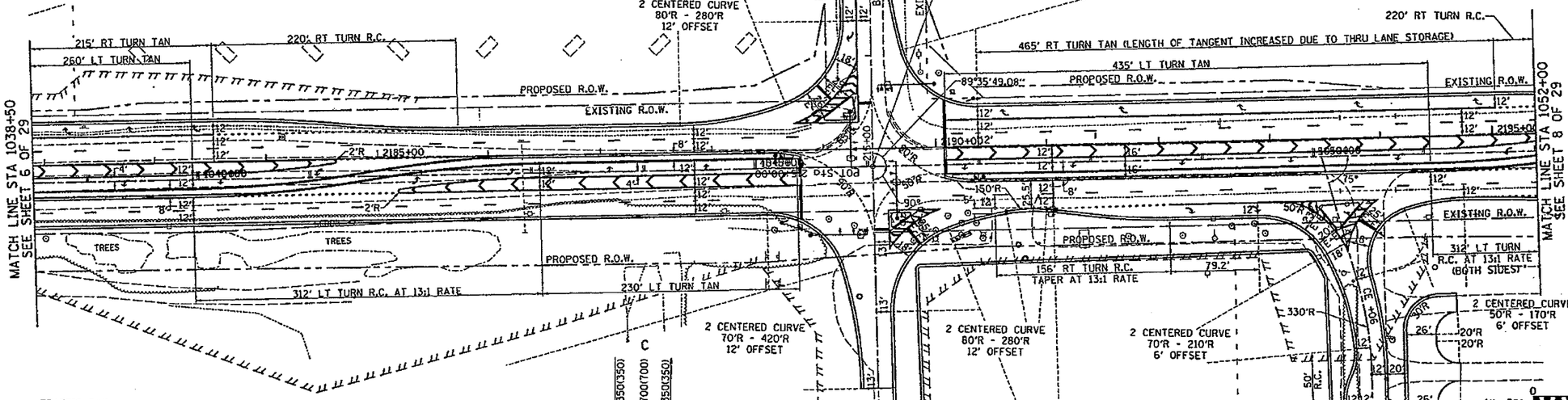
STA 1046+04.05 (IL ROUTE 173) = STA 215+00 (BURDEN ROAD)

ELEMENTS CONTROLLING DESIGN

1. ROUTE (STREET) FAP ROUTE 303 (IL ROUTE 173) WITH BURDEN ROAD
2. HIGHWAY FUNCTIONAL CLASSIFICATION IL RTE 173 - OTHER PRINCIPAL ARTERIAL; BURDEN ROAD - URBAN COLLECTOR
3. AVERAGE DAILY TRAFFIC (ADT) DATA:
   IL RTE 173 EXISTING 14,200 (2005) DESIGN 34,900 (2025)
   BURDEN RD. EXISTING 1,800 (2005) DESIGN 7,000 (2025)
4. IL ROUTE 173 IS THE PREFERENCE ROUTE.
5. ANTICIPATED YEAR OF CONSTRUCTION NOT PROGRAMMED DESIGN YEAR 2025
6. TRAFFIC CONTROL TO BE PROPOSED TRAFFIC SIGNALS. WARRANTS MET IN THE SECOND YEAR FOLLOWING INITIAL CONSTRUCTION.
7. DESIGN CRITERIA: NEW CONSTRUCTION/RECONSTRUCTION (2002 BDE MANUAL)
8. DESIGN VEHICLE: WB-65 DESIGN VEHICLE
9. TRUCK ROUTE DESIGNATION: IL ROUTE 173 IS A CLASS II TRUCK ROUTE.
10. DESIGN SPEED IL ROUTE 173: 45 MPH; BURDEN RD.: 45 MPH
11. POSTED SPEED IL ROUTE 173: 45 MPH; BURDEN RD.: 45 MPH
12. PEDESTRIANS USAGE: N/A BICYCLES USAGE: N/A

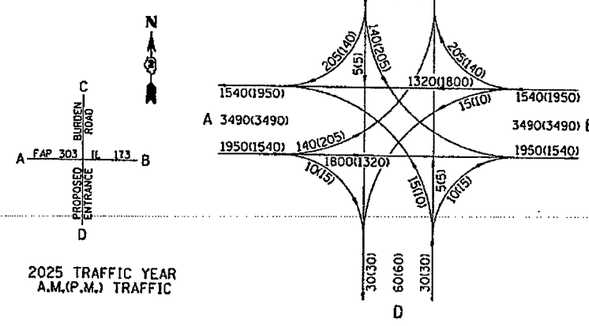
GENERAL NOTES

1. PROFILES ARE PROVIDED, SINCE APPROACH GRADES ARE ON PROP. VERTICAL REALIGNMENT.
2. TYPE B6.24 CURB AND GUTTER TO BE USED ON OUTER EDGES OF PAVEMENT.
3. TYPE B6.24 & B6.06 CURB AND GUTTER TO BE USED ON CHANNELIZING ISLAND.
4. TYPE M6.24 & M6.06 CURB AND GUTTER TO BE USED ON CORNER ISLANDS.
5. ALL DIMENSIONS ARE SHOWN E-E OF PAVEMENT UNLESS OTHERWISE NOTED.
6. ENTRANCES SHALL CONFORM TO THE POLICY ON "ACCESS TO STATE HIGHWAYS".
7. TURNING MOVEMENTS CHECKED USING AUTOTURN.
8. PROPOSED R.O.W. IS SUBJECT TO REVISION DURING PREPARATION OF FINAL PLANS.
9. INTERSECTION IS NOT A HIGH ACCIDENT LOCATION - YEAR:
10. SCOPE OF WORK: RECONSTRUCTION OF IL RTE 173 FROM IL RTE 251 TO BELVIDERE ROAD.
11. DESIGN EXCEPTIONS:

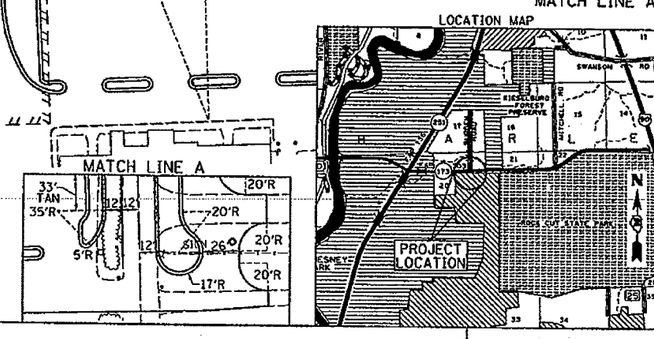


TRAFFIC DATA

MOVEMENT	YEAR 2005 30TH MAXIMUM HOUR TRAFFIC A.M.	P.M.	PERCENT TRUCK TRAFFIC IN 30th MAX HOUR	ESTIMATED PERCENT INCREASE BY	YEAR 30th MAXIMUM HOUR TRAFFIC A.M.	P.M.	ESTIMATED PERCENT INCREASE BY	YEAR 2025 30th MAXIMUM HOUR TRAFFIC A.M.	P.M.
AB	655	655	8					1800	1320
AD	10	15						10	15
AC	45	40	2					140	205
BA	655	655	8					1320	1800
BC	40	45	2					205	140
BD	15	10					GENERATION AND DEVELOPMENT	15	10
CD	5	5						5	5
CA	40	45	2					205	140
CB	45	40	2					140	205
DC	5	5						5	5
DB	10	15						10	15
DA	15	10						15	10
TOTAL A	1420	1420						3490	3490
TOTAL B	1420	1420						3490	3490
TOTAL C	180	180						700	700
TOTAL D	60	60						60	60



2025 TRAFFIC YEAR
A.M.(P.M.) TRAFFIC



INTERSECTION DESIGN STUDY

FAP ROUTE 303 (IL ROUTE 173)
WITH
BURDEN ROAD

SEC. NO. (4,129) AS — PROJ. NO. 64824
SCALE: 1" = 50' — COUNTY WINNEBAGO
SJN: P92-052-02 — REV. NO.
DESIGNED BY DISTRICT 2 — DATE JUNE 2006

SATISFACTORY — DISTRICT GEOMETRICS ENGINEER — DATE 6/21/06
SATISFACTORY — DISTRICT PROGRAM DEVELOPMENT ENGINEER — DATE 6/29/06
SATISFACTORY — DISTRICT OPERATIONS ENGINEER — DATE 6/29/06
APPROVED — DEPUTY DIRECTOR OF HIGHWAYS, REGION TWO ENGINEER — DATE 6/30/06

I.D.S. SHEET 7 OF 29

BDE-9409

•DGN-SPEC• •DATE-TIME• •REF- •REF- •REF-

FIGURE 4
SHEET 7

CAPACITY DESIGN STUDY

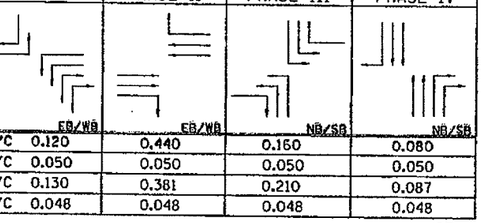
4 PHASE
AM 100/(PM) 105 SEC. CYCLE
SIGNAL TYPE ACTUATED

AREA OTHER
AVERAGE INTERSECTION DELAY
PROGRAM USED HCS 2000 4.1e

PEAK HOUR FACTOR 1.00
A.M. 28.5 SEC. INTERSECTION LEVEL A.M. C
P.M. 34.5 SEC. OF SERVICE P.M. C

APPROACH		A EB			B WB			C SB			D NB		
BUS STOP CONDITION		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PARKING MANEUVER/HR.		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PEDESTRIANS		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ARRIVAL TYPE		3	3	3	3	3	3	3	3	3	3	3	3
THROUGH LANE UTILIZATION FACTOR			0.48			0.85			1.00			1.00	
BASE SATURATION FLOW		1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
STORAGE (ft)		175'	551'	320'	236'	583'	257'	288'	130'	153'	358'	136'	194'
LANE GROUP		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
LANE WIDTHS		12'	2@12'	12'	2@12'	2@12'	12'	2@12'	2@12'	12'	2@12'	2@12'	2@12'
GREEN TIME (SECONDS)	A.M.	12.0	44.0	65.0	12.0	44.0	65.0	16.0	8.0	25.0	16.0	8.0	25.0
	P.M.	13.8	40.0	67.1	13.8	40.0	67.1	22.1	9.1	27.9	22.1	9.1	27.9
LANE GROUP DELAY (SECONDS)	A.M.	45.7	26.1	10.4	42.9	25.8	9.2	49.4	52.5	30.1	40.7	43.6	33.0
	P.M.	42.3	32.4	4.2	51.3	37.8	4.7	40.7	45.1	31.5	48.8	51.3	31.1
LEVEL OF SERVICE	A.M.	D	C	B	D	C	A	D	D	C	D	D	C
	P.M.	D	C	A	D	D	A	D	D	C	D	D	C
V/C RATIO	A.M.	0.66	0.81	0.59	0.56	0.77	0.48	0.81	0.70	0.23	0.59	0.25	0.52
	P.M.	0.39	0.89	0.32	0.81	0.94	0.44	0.68	0.23	0.33	0.84	0.65	0.31
2025 30TH MAX. HOUR TRAFFIC	A.M.	140	1195	610	230	1130	490	445	200	90	325	70	365
	P.M.	90	1130	325	365	1195	445	490	70	140	610	200	230
2005 8TH MAX. HOURLY TRAFFIC	A.M.		248			503			300			536	
	P.M.		281			459			281			567	

PHASING DIAGRAM



		PHASE I	PHASE II	PHASE III	PHASE IV
A.M.	G/C	0.120	0.440	0.160	0.080
	A/C	0.050	0.050	0.050	0.050
P.M.	G/C	0.130	0.381	0.210	0.087
	A/C	0.048	0.048	0.048	0.048

W.B. IL RTE 173 BASELINE
PROPOSED CURVE DATA
PI STA. = 2206+54.4119
Δ = 2° 09' 11.5593" (LT)
D = 0° 17' 21.0411"
R = 19,813.3210'
T = 372.3423'
L = 744.5531'
E = 3.4983'
S.E. = NORMAL CROWN
P.C. STA. = 2202+82.0697
P.R.C. STA. = 2210+26.6665

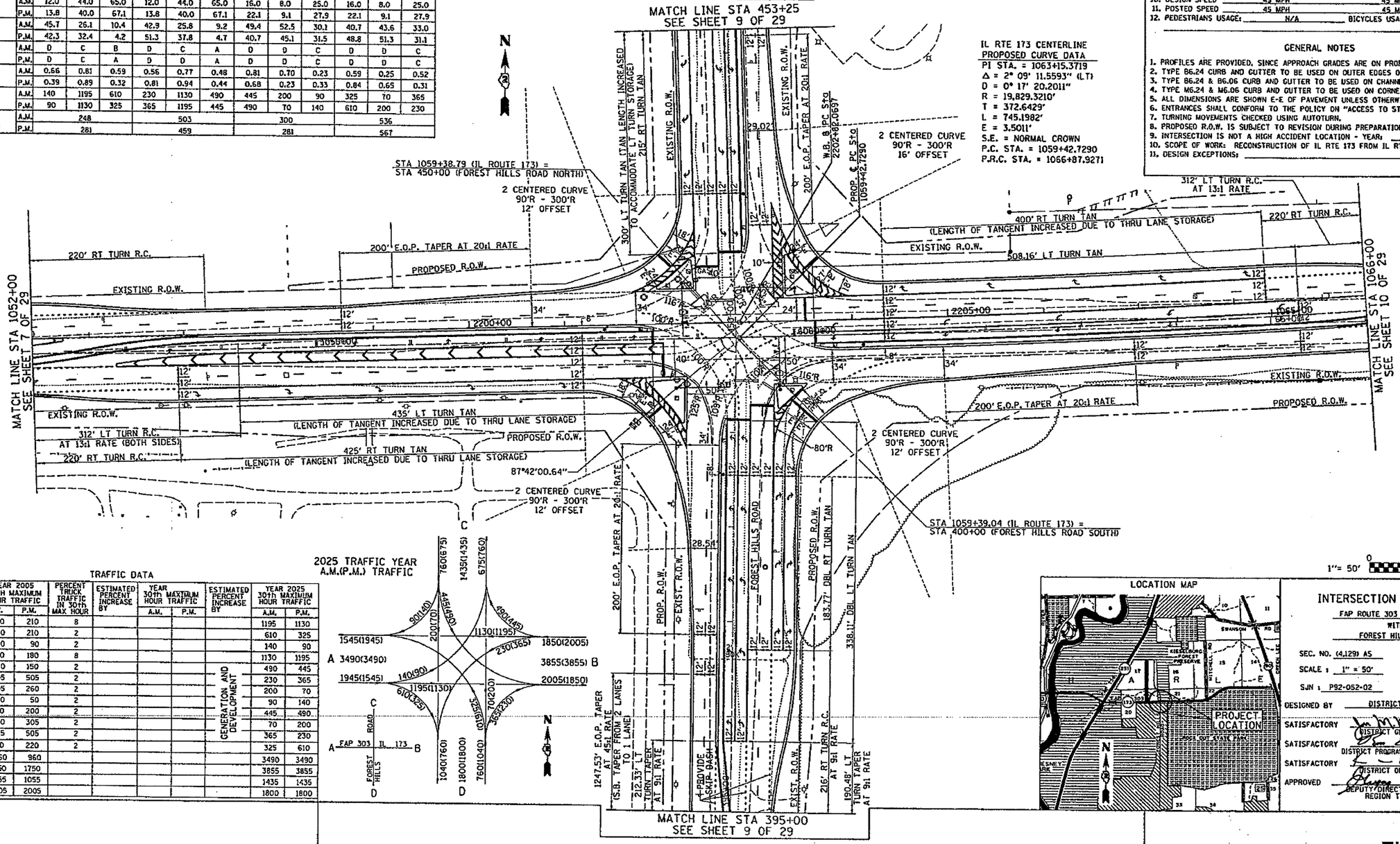
IL RTE 173 CENTERLINE
PROPOSED CURVE DATA
PI STA. = 1063+15.3719
Δ = 2° 09' 11.5593" (LT)
D = 0° 17' 20.2011"
R = 19,829.3210'
T = 372.6429'
L = 745.1982'
E = 3.5011'
S.E. = NORMAL CROWN
P.C. STA. = 1059+42.7290
P.R.C. STA. = 1066+87.9271

ELEMENTS CONTROLLING DESIGN

1. ROUTE (STREET) FAP ROUTE 303 (IL ROUTE 173) WITH FOREST HILLS ROAD
2. HIGHWAY FUNCTIONAL CLASSIFICATION IL RTE 173 - OTHER PRINCIPAL ARTERIAL; FOREST HILLS ROAD - URBAN MINOR ARTERIAL
3. AVERAGE DAILY TRAFFIC (ADT) DATA:
   IL RTE 173 EXISTING 17,500 (2005) DESIGN 38,550 (2025)
   FOREST HILLS RD. EXISTING 20,050 (2005) DESIGN 18,000 (2025)
4. IL ROUTE 173 IS THE PREFERENCE ROUTE.
5. ANTICIPATED YEAR OF CONSTRUCTION NOT PROGRAMMED DESIGN YEAR 2025
6. TRAFFIC CONTROL TO BE MODERNIZATION OF EXISTING TRAFFIC SIGNALS. WARRANTS MET
7. DESIGN CRITERIA: NEW CONSTRUCTION/RECONSTRUCTION (2002 BDE MANUAL)
8. DESIGN VEHICLE: WB-65 DESIGN VEHICLE
9. TRUCK ROUTE DESIGNATION IL ROUTE 173 IS A CLASS II TRUCK ROUTE.
10. DESIGN SPEED 45 MPH (IL ROUTE 173); 45 MPH (FOREST HILLS RD.)
11. POSTED SPEED 45 MPH (IL ROUTE 173); 45 MPH (FOREST HILLS RD.)
12. PEDESTRIANS USAGE: N/A BICYCLES USAGE: N/A

GENERAL NOTES

1. PROFILES ARE PROVIDED, SINCE APPROACH GRADES ARE ON PROP. VERTICAL REALIGNMENT.
2. TYPE B6.24 CURB AND GUTTER TO BE USED ON OUTER EDGES OF PAVEMENT.
3. TYPE B6.24 & B6.06 CURB AND GUTTER TO BE USED ON CHANNELIZING ISLAND.
4. TYPE M6.24 & M6.06 CURB AND GUTTER TO BE USED ON CORNER ISLANDS.
5. ALL DIMENSIONS ARE SHOWN E-E OF PAVEMENT UNLESS OTHERWISE NOTED.
6. ENTRANCES SHALL CONFORM TO THE POLICY ON "ACCESS TO STATE HIGHWAYS".
7. TURNING MOVEMENTS CHECKED USING AUTOTURN.
8. PROPOSED R.O.W. IS SUBJECT TO REVISION DURING PREPARATION OF FINAL PLANS.
9. INTERSECTION IS NOT A HIGH ACCIDENT LOCATION - YEAR:
10. SCOPE OF WORK: RECONSTRUCTION OF IL RTE 173 FROM IL RTE 251 TO BELVIDERE ROAD.
11. DESIGN EXCEPTIONS:



TRAFFIC DATA

MOVEMENT	YEAR 2005 30TH MAXIMUM HOUR TRAFFIC A.M.	YEAR 2005 30TH MAXIMUM HOUR TRAFFIC P.M.	PERCENT TRUCK TRAFFIC IN 30th MAX HOUR	ESTIMATED PERCENT INCREASE BY	YEAR 30th MAXIMUM HOUR TRAFFIC A.M.	YEAR 30th MAXIMUM HOUR TRAFFIC P.M.	ESTIMATED PERCENT INCREASE BY	YEAR 2025 30th MAXIMUM HOUR TRAFFIC A.M.	YEAR 2025 30th MAXIMUM HOUR TRAFFIC P.M.
AB	180	210	8					1195	1130
AD	220	210	2					610	325
AC	50	90	2					140	90
BA	210	180	8					1130	1195
BC	200	150	2					490	445
BD	505	505	2				GENERATION AND DEVELOPMENT	230	365
CD	305	260	2					200	70
CA	90	50	2					90	140
CB	150	200	2					445	490
DC	260	305	2					70	200
DB	505	505	2					365	230
DA	210	220	2					325	610
TOTAL A	960	960						3490	3490
TOTAL B	1750	1750						3855	3855
TOTAL C	1055	1055						1435	1435
TOTAL D	2005	2005						1800	1800

2025 TRAFFIC YEAR
A.M.(P.M.) TRAFFIC

LOCATION MAP

INTERSECTION DESIGN STUDY

FAP ROUTE 303 (IL ROUTE 173)
WITH
FOREST HILLS ROAD

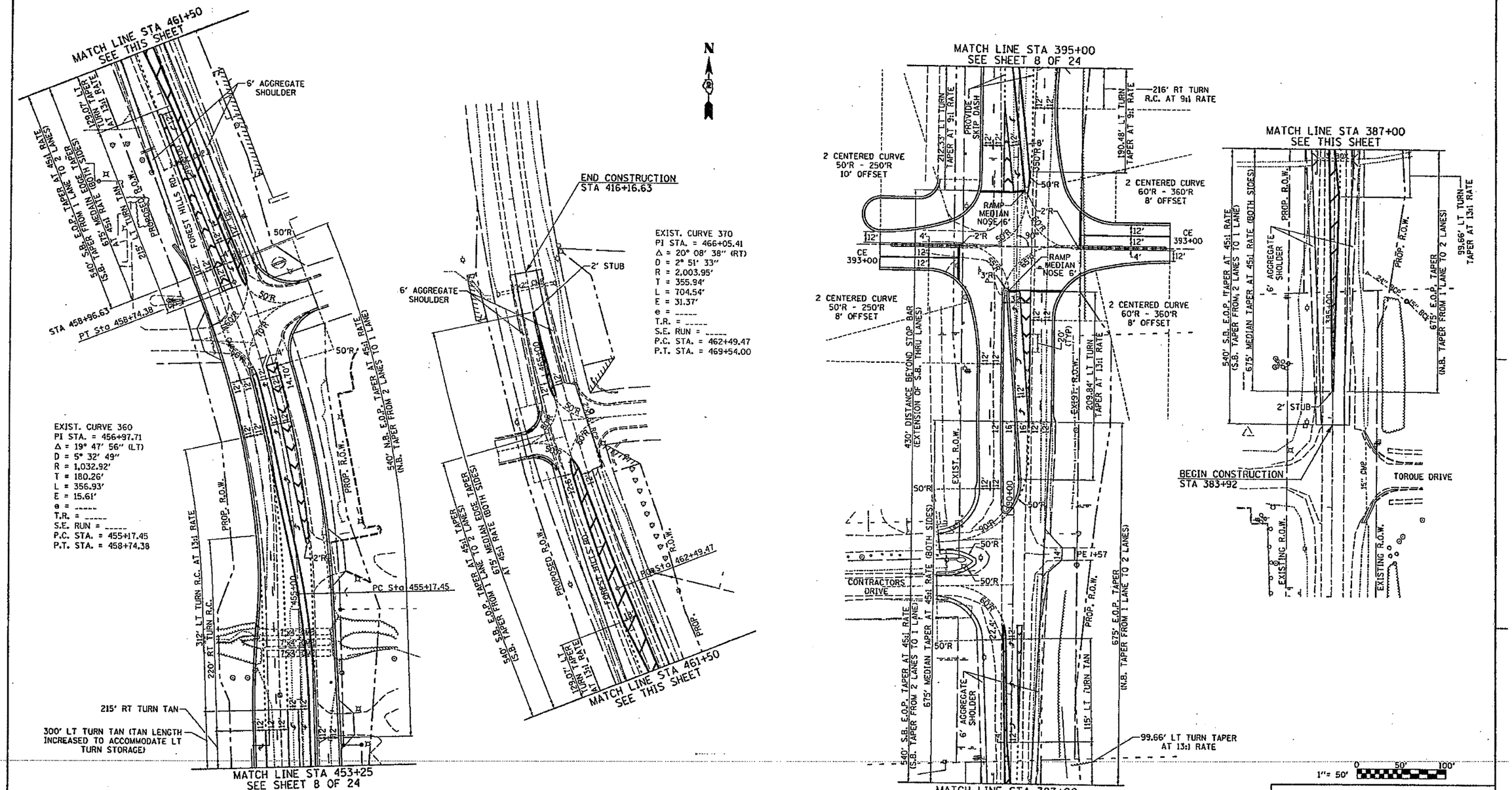
SEC. NO. (4,129) A5 PROJ. NO. 64824
SCALE : 1" = 50' COUNTY WINNEBAGO
SJN : P92-052-02 REV. NO.

DESIGNED BY DISTRICT 2 DATE JUNE 2006
SATISFACTORY — DISTRICT GEOMETRICS ENGINEER — DATE 6/21/06
SATISFACTORY — DISTRICT PROGRAM DEVELOPMENT ENGINEER — DATE 6/21/06
SATISFACTORY — DISTRICT OPERATIONS ENGINEER — DATE 6/21/06
APPROVED — DEPUTY DIRECTOR OF HIGHWAYS, REGION TWO ENGINEER — DATE 6/21/06

I.D.S. SHEET 8 OF 29

BDE-9409

FIGURE 4
SHEET 8



INTERSECTION DESIGN STUDY

FAP ROUTE 303 (IL ROUTE 173)

WITH

FOREST HILLS ROAD

I.D.S. SHEET 9 OF 29

FIGURE 4
SHEET 9

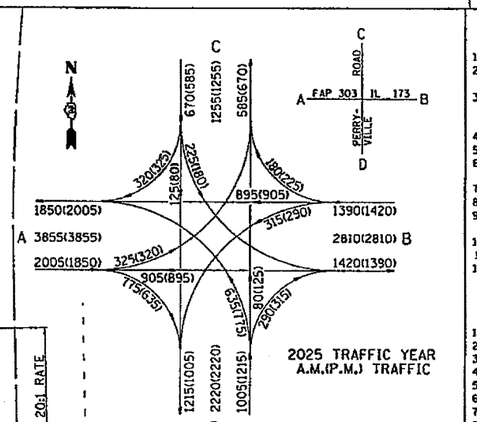
CAPACITY DESIGN STUDY

4 PHASE — AREA OTHER — PEAK HOUR FACTOR 0.95
110A.M./90(P.M.) SEC. CYCLE — AVERAGE INTERSECTION DELAY — A.M. 36.2 SEC. — INTERSECTION LEVEL OF SERVICE — A.M. D
SIGNAL TYPE ACTUATED — PROGRAM USED HCS 2000 4.1e — P.M. 36.1 SEC. — P.M. D

APPROACH		A EB			B WB			C SB			D NB		
BUS STOP CONDITION		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PARKING MANEUVER/HR.		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PEDESTRIANS		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ARRIVAL TYPE		3	3	3	3	3	3	3	3	3	3	3	3
THROUGH LANE UTILIZATION FACTOR			1.00			1.00			1.00			1.00	
BASE SATURATION FLOW		1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
STORAGE (ft)		216'	462'	417'	210'	456'	105'	135'	91'	372'	382'	74'	337'
LANE GROUP		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
LANE WIDTHS		2@12'	2@12'	12'	2@12'	2@12'	12'	2@12'	2@12'	12'	2@12'	2@12'	12'
GREEN TIME (SECONDS)	A.M.	16	42	72	16	42	72	25	7	28	25	7	28
	P.M.	12	29	57	12	29	57	23	6	23	23	6	23
LANE GROUP DELAY (SECONDS)	A.M.	48.4	31.8	17.7	47.8	31.5	7.5	35.5	53.9	53.1	50.0	50.4	45.9
	P.M.	43.6	36.8	12.2	40.8	37.7	7.2	28.6	41.1	46.8	48.7	43.7	44.1
LEVEL OF SERVICE	A.M.	D	C	B	D	C	A	D	D	D	D	D	D
	P.M.	D	D	B	D	D	A	C	D	D	D	D	D
V/C RATIO	A.M.	0.68	0.75	0.79	0.66	0.74	0.18	0.30	0.58	0.84	0.86	0.37	0.76
	P.M.	0.74	0.87	0.67	0.67	0.88	0.24	0.42	0.36	0.84	0.93	0.56	0.82
2025 30TH MAX. HOUR TRAFFIC	A.M.	325	905	775	315	895	180	225	125	320	635	90	290
	P.M.	320	895	635	290	905	225	180	80	325	775	125	315
2005 8TH MAX. HOURLY TRAFFIC	A.M.		459			545			0			206	
	P.M.		503			462			0			245	

PHASING DIAGRAM

	PHASE I	PHASE II	PHASE III	PHASE IV
	EB/WB	EB/WB	NB/SB	NB/SB
A.M. G/C	0.133	0.322	0.255	0.066
A.M. A/C	0.056	0.056	0.056	0.056
P.M. G/C	0.134	0.323	0.256	0.067
P.M. A/C	0.045	0.045	0.045	0.045



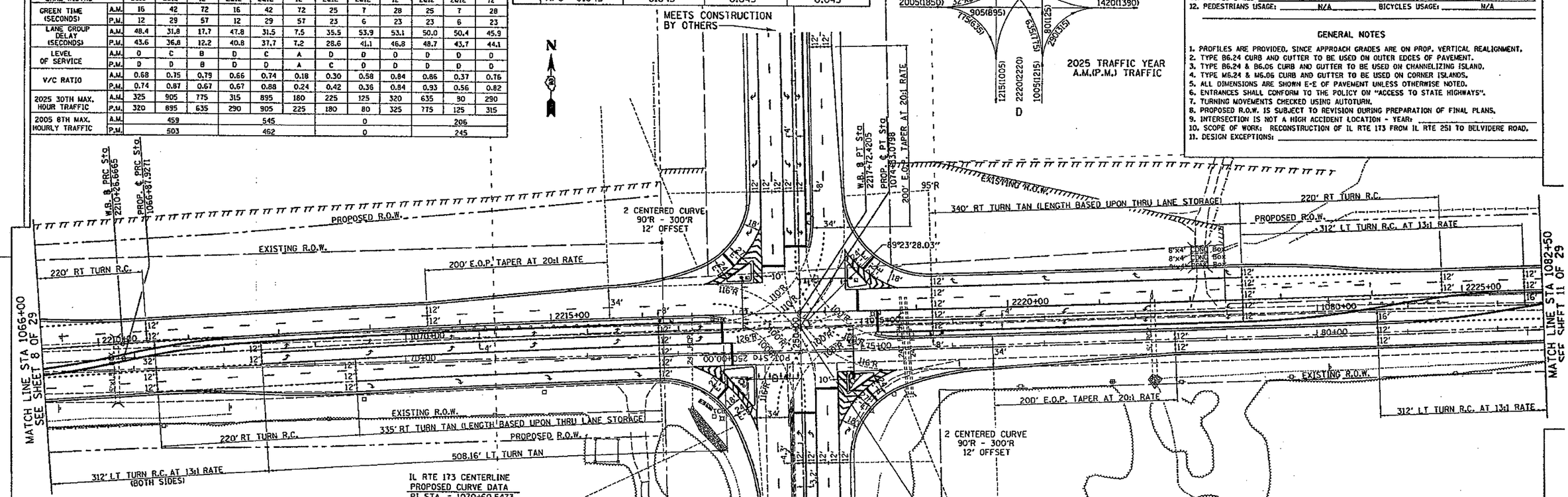
2025 TRAFFIC YEAR
A.M.(P.M.) TRAFFIC

ELEMENTS CONTROLLING DESIGN

1. ROUTE (STREET) FAP ROUTE 303 (IL ROUTE 173) WITH PERRYVILLE ROAD
2. HIGHWAY FUNCTIONAL CLASSIFICATION IL RTE 173 - OTHER PRINCIPAL ARTERIAL; PERRYVILLE ROAD - OTHER PRINCIPAL ARTERIAL
3. AVERAGE DAILY TRAFFIC (ADT) DATA:
   IL RTE 173 EXISTING 18,300 (2005) DESIGN 38,550 (2025)
   PERRYVILLE RD. EXISTING 8,200 (2005) DESIGN 22,200 (2025)
4. IL ROUTE 173 IS THE PREFERENCE ROUTE.
5. ANTICIPATED YEAR OF CONSTRUCTION NOT PROGRAMMED DESIGN YEAR 2025
6. TRAFFIC CONTROL TO BE MODERNIZATION OF EXISTING TRAFFIC SIGNALS. WARRANTS MET
7. DESIGN CRITERIA: NEW CONSTRUCTION/RECONSTRUCTION (2002 BDE MANUAL)
8. DESIGN VEHICLE: WB-65 DESIGN VEHICLE
9. TRUCK ROUTE DESIGNATION: IL ROUTE 173 IS A CLASS II TRUCK ROUTE.
   IL ROUTE 173 PERRYVILLE RD.
10. DESIGN SPEED 45 MPH 45 MPH
11. POSTED SPEED 45 MPH 45 MPH
12. PEDESTRIANS USAGE: N/A BICYCLES USAGE: N/A

GENERAL NOTES

1. PROFILES ARE PROVIDED. SINCE APPROACH GRADES ARE ON PROP. VERTICAL REALIGNMENT.
2. TYPE B6.24 CURB AND GUTTER TO BE USED ON OUTER EDGES OF PAVEMENT.
3. TYPE B6.24 & B6.06 CURB AND GUTTER TO BE USED ON CHANNELIZING ISLAND.
4. TYPE M6.24 & M6.06 CURB AND GUTTER TO BE USED ON CORNER ISLANDS.
5. ALL DIMENSIONS ARE SHOWN E-E OF PAVEMENT UNLESS OTHERWISE NOTED.
6. ENTRANCES SHALL CONFORM TO THE POLICY ON "ACCESS TO STATE HIGHWAYS".
7. TURNING MOVEMENTS CHECKED USING AUTOTURN.
8. PROPOSED R.O.W. IS SUBJECT TO REVISION DURING PREPARATION OF FINAL PLANS.
9. INTERSECTION IS NOT A HIGH ACCIDENT LOCATION - YEAR:
10. SCOPE OF WORK: RECONSTRUCTION OF IL RTE 173 FROM IL RTE 251 TO BELVIDERE ROAD.
11. DESIGN EXCEPTIONS:



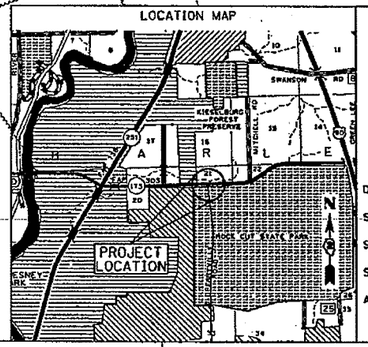
IL RTE 173 CENTERLINE PROPOSED CURVE DATA
PI STA. = 1070+60.5473
Δ = 2° 09' 11.5939" (RT)
D = 0° 17' 20.2692"
R = 19,828.0216'
T = 372.6202'
L = 745.1527'
E = 3.5009'
S.E. = NORMAL CROWN
P.R.C. STA. = 1066+87.9271
P.T. STA. = 1074+33.0798

W.B. IL RTE 173 BASELINE PROPOSED CURVE DATA
PI STA. = 2213+99.5874
Δ = 2° 09' 11.5939" (RT)
D = 0° 17' 19.4305"
R = 19,844.0216'
T = 372.9209'
L = 745.7540'
E = 3.5038'
S.E. = NORMAL CROWN
P.R.C. STA. = 2210+26.6665
P.T. STA. = 2217+72.4205

TRAFFIC DATA

MOVEMENT	YEAR 2005 30TH MAXIMUM HOUR TRAFFIC A.M.	P.M.	PERCENT TRUCK TRAFFIC IN 30TH MAX HOUR	ESTIMATED PERCENT INCREASE BY	YEAR 30TH MAXIMUM HOUR TRAFFIC A.M.	P.M.	ESTIMATED PERCENT INCREASE BY	YEAR 2025 30TH MAXIMUM HOUR TRAFFIC A.M.	P.M.
AB	590	790	8					905	895
AD	245	125	2					775	635
AC								325	320
BA	790	590	8					895	905
BC							GENERATION AND DEVELOPMENT	180	225
BD	200	250	2					315	290
CD								125	80
CA								320	325
CB								225	180
DC								80	125
DB	250	200	2					290	315
DA	125	245	2					635	775
TOTAL A	1750	1750						3855	3855
TOTAL B	1830	1830						2810	2810
TOTAL C	0	0						1255	1255
TOTAL D	820	820						2220	2220

LOCATION MAP



INTERSECTION DESIGN STUDY

FAP ROUTE 303 (IL ROUTE 173)
WITH
PERRYVILLE ROAD

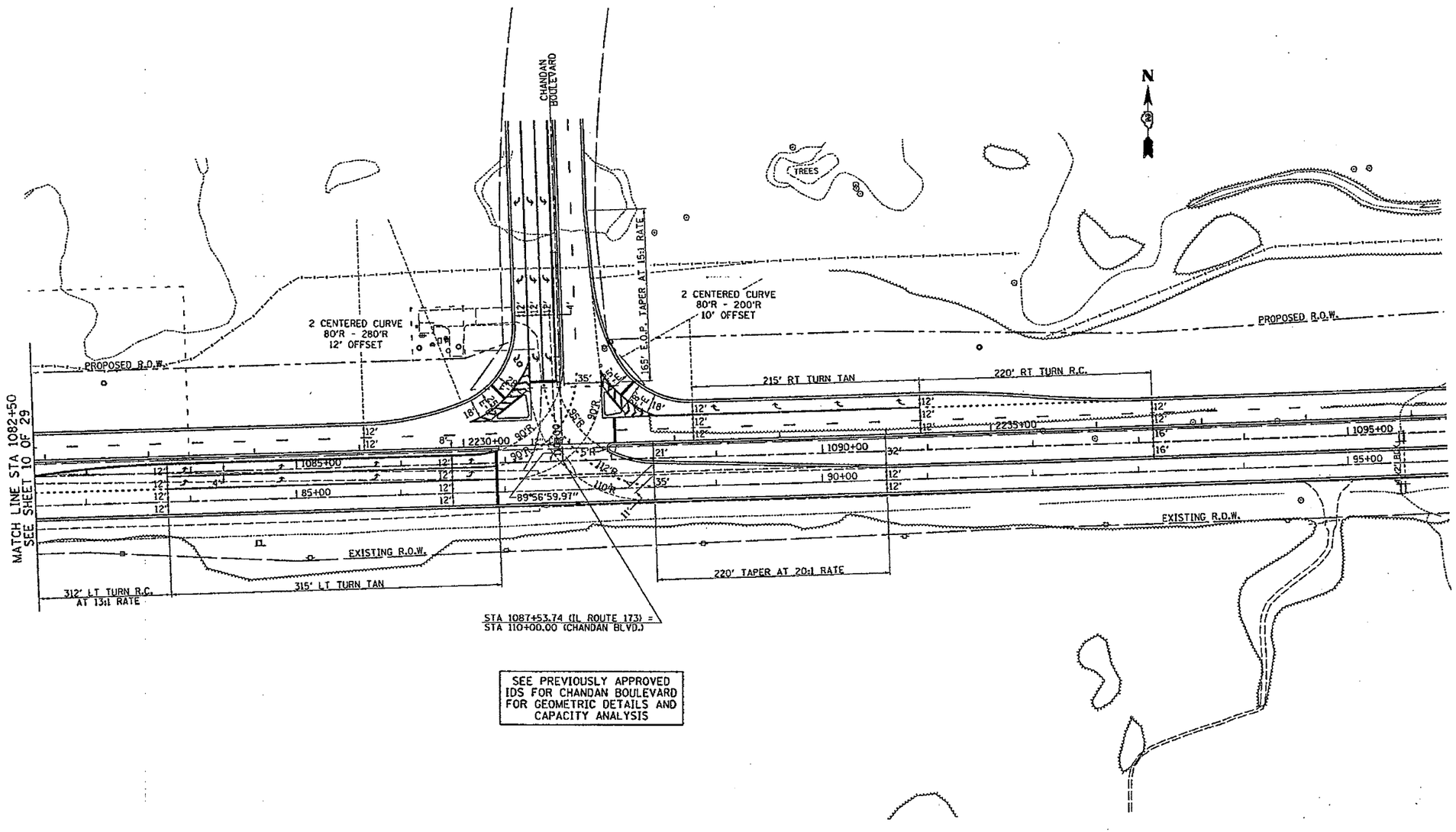
SEC. NO. (4,129) AS — PROJ. NO. 64824
SCALE: 1" = 50' — COUNTY WINNEBAGO
SJN: P92-052-02 — REV. NO.
DESIGNED BY DISTRICT 2 — DATE JUNE 2006

SATISFACTORY — DISTRICT GEOMETRICS ENGINEER — DATE 6/21/06
SATISFACTORY — DISTRICT PROGRAM DEVELOPMENT ENGINEER — DATE 6/27/06
SATISFACTORY — DISTRICT OPERATIONS ENGINEER — DATE 6-27-06
APPROVED — DEPUTY DIRECTOR OF HIGHWAYS, REGION TWO ENGINEER — DATE 6/30/06

I.D.S. SHEET 10 OF 29

BDE-9409

FIGURE 4
SHEET 10



SEE PREVIOUSLY APPROVED IDS FOR CHANDAN BOULEVARD FOR GEOMETRIC DETAILS AND CAPACITY ANALYSIS

1"= 50' 0 50' 100'

INTERSECTION DESIGN STUDY

FAP ROUTE 303 (IL ROUTE 173)

WITH

CHANDAN BOULEVARD

I.D.S. SHEET 11 OF 29

FIGURE 4
SHEET 11

CAPACITY DESIGN STUDY

4 PHASE
60 SEC. CYCLE
SIGNAL TYPE ACTUATED

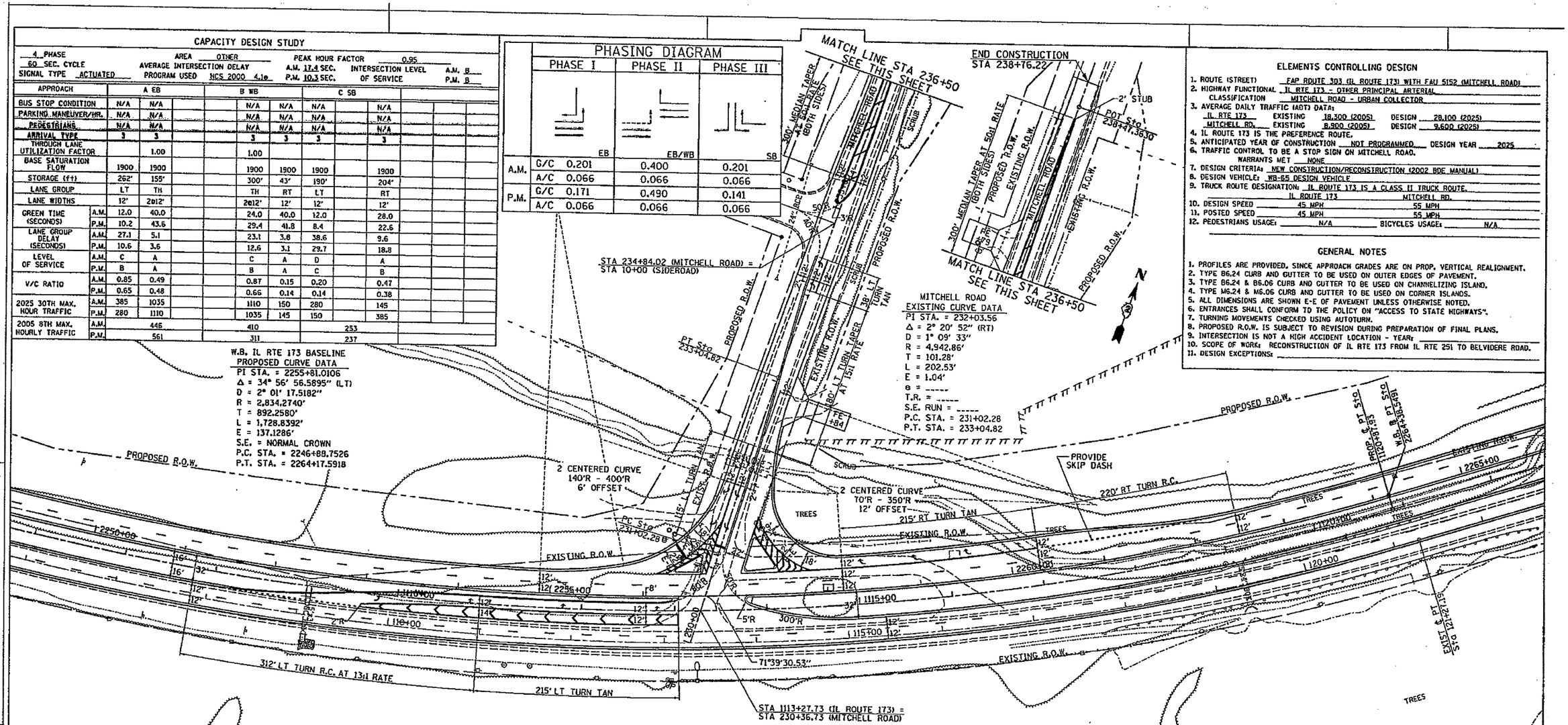
AREA OTHER
AVERAGE INTERSECTION DELAY
PROGRAM USED HCS 2000 4.1e

PEAK HOUR FACTOR 0.95
A.M. 17.4 SEC. P.M. 10.3 SEC.
INTERSECTION LEVEL OF SERVICE A.M. B P.M. B

APPROACH		A EB			B WB		C SB					
BUS STOP CONDITION		N/A	N/A		N/A	N/A	N/A		N/A			
PARKING MANEUVER/HR.		N/A	N/A		N/A	N/A	N/A		N/A			
PEDESTRIANS		N/A	N/A		N/A	N/A	N/A		N/A			
ARRIVAL TYPE		3	3		3	3	3		3			
THROUGH LANE UTILIZATION FACTOR			1.00		1.00							
BASE SATURATION FLOW		1900	1900		1900	1900	1900		1900			
STORAGE (ft)		262'	155'		300'	43'	190'		204'			
LANE GROUP		LT	TH		TH	RT	LT		RT			
LANE WIDTHS		12'	2@12'		2@12'	12'	12'		12'			
GREEN TIME (SECONDS)	A.M.	12.0	40.0		24.0	40.0	12.0		28.0			
	P.M.	10.2	43.6		29.4	41.8	8.4		22.6			
LANE GROUP DELAY (SECONDS)	A.M.	27.1	5.1		23.1	3.6	38.6		9.6			
	P.M.	10.6	3.6		12.6	3.1	29.7		18.8			
LEVEL OF SERVICE	A.M.	C	A		C	A	D		A			
	P.M.	B	A		B	A	C		B			
V/C RATIO	A.M.	0.85	0.49		0.87	0.15	0.20		0.47			
	P.M.	0.65	0.48		0.66	0.14	0.14		0.38			
2025 30TH MAX. HOUR TRAFFIC	A.M.	385	1035		1110	150	280		145			
	P.M.	280	1110		1035	145	150		385			
2005 8TH MAX. HOURLY TRAFFIC	A.M.	446			410		253					
	P.M.	561			311		237					

PHASING DIAGRAM

	PHASE I	PHASE II	PHASE III
	EB	EB/WB	SB
A.M. G/C	0.201	0.400	0.201
A.M. A/C	0.066	0.066	0.066
P.M. G/C	0.171	0.490	0.141
P.M. A/C	0.066	0.066	0.066



W.B. IL RTE 173 BASELINE
PROPOSED CURVE DATA
PI STA. = 2255+81.0106
Δ = 34° 56' 56.5895" (LT)
D = 2° 01' 17.5182"
R = 2,834.2740'
T = 892.2580'
L = 1,728.8392'
E = 137.1286'
S.E. = NORMAL CROWN
P.C. STA. = 2246+88.7526
P.T. STA. = 2264+17.5918

MITCHELL ROAD
EXISTING CURVE DATA
PI STA. = 232+03.56
Δ = 2° 20' 52" (RT)
D = 1° 09' 33"
R = 4,942.86'
T = 101.28'
L = 202.53'
E = 1.04'
e = -----
T.R. = -----
S.E. RUN = -----
P.C. STA. = 231+02.28
P.T. STA. = 233+04.82

ELEMENTS CONTROLLING DESIGN

1. ROUTE (STREET) FAP ROUTE 303 (IL ROUTE 173) WITH FAU 5152 (MITCHELL ROAD)
2. HIGHWAY FUNCTIONAL CLASSIFICATION IL RTE 173 - OTHER PRINCIPAL ARTERIAL; MITCHELL ROAD - URBAN COLLECTOR
3. AVERAGE DAILY TRAFFIC (ADT) DATA:
   IL RTE 173 EXISTING 18,300 (2005) DESIGN 28,100 (2025)
   MITCHELL RD. EXISTING 8,900 (2005) DESIGN 9,600 (2025)
4. IL ROUTE 173 IS THE PREFERENCE ROUTE.
5. ANTICIPATED YEAR OF CONSTRUCTION NOT PROGRAMMED DESIGN YEAR 2025
6. TRAFFIC CONTROL TO BE A STOP SIGN ON MITCHELL ROAD.
   WARRANTS MET NONE
7. DESIGN CRITERIA: NEW CONSTRUCTION/RECONSTRUCTION (2002 BDE MANUAL)
8. DESIGN VEHICLE: WB-65 DESIGN VEHICLE
9. TRUCK ROUTE DESIGNATION: IL ROUTE 173 IS A CLASS II TRUCK ROUTE.
10. DESIGN SPEED 45 MPH (IL ROUTE 173); 55 MPH (MITCHELL RD.)
11. POSTED SPEED 45 MPH (IL ROUTE 173); 55 MPH (MITCHELL RD.)
12. PEDESTRIANS USAGE: N/A BICYCLES USAGE: N/A

GENERAL NOTES

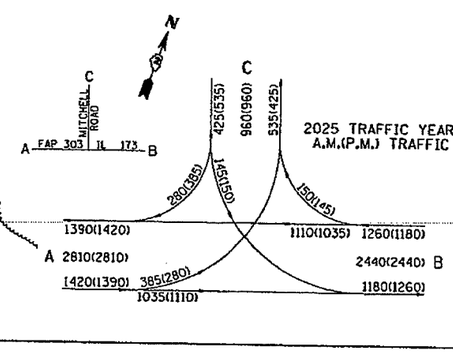
1. PROFILES ARE PROVIDED. SINCE APPROACH GRADES ARE ON PROP. VERTICAL REALIGNMENT.
2. TYPE B6.24 CURB AND GUTTER TO BE USED ON OUTER EDGES OF PAVEMENT.
3. TYPE B6.24 & B6.06 CURB AND GUTTER TO BE USED ON CHANNELIZING ISLAND.
4. TYPE M6.24 & M6.06 CURB AND GUTTER TO BE USED ON CORNER ISLANDS.
5. ALL DIMENSIONS ARE SHOWN E-E OF PAVEMENT UNLESS OTHERWISE NOTED.
6. ENTRANCES SHALL CONFORM TO THE POLICY ON "ACCESS TO STATE HIGHWAYS".
7. TURNING MOVEMENTS CHECKED USING AUTOTURN.
8. PROPOSED R.O.W. IS SUBJECT TO REVISION DURING PREPARATION OF FINAL PLANS.
9. INTERSECTION IS NOT A HIGH ACCIDENT LOCATION - YEAR:
10. SCOPE OF WORK: RECONSTRUCTION OF IL RTE 173 FROM IL RTE 251 TO BELVIDERE RD.
11. DESIGN EXCEPTIONS:

TRAFFIC DATA

MOVEMENT	YEAR 2005 30TH MAXIMUM HOUR TRAFFIC A.M.	P.M.	PERCENT TRUCK TRAFFIC IN 30th MAX HOUR	ESTIMATED PERCENT INCREASE BY	YEAR 30th MAXIMUM HOUR TRAFFIC A.M.	P.M.	ESTIMATED PERCENT INCREASE BY	YEAR 2025 30th MAXIMUM HOUR TRAFFIC A.M.	P.M.
AB	515	610	8					1035	1110
AD									
AC	295	410	2					385	280
BA	610	515	8					1110	1035
BC	135	50	2				GENERATION AND DEVELOPMENT	150	145
BD									
CD									
CA	410	295	2					280	385
CB	50	135	2					145	150
DC									
DB									
DA									
TOTAL A	1830	1630						2810	2810
TOTAL B	1310	1310						2440	2440
TOTAL C	890	890						960	960
TOTAL D									

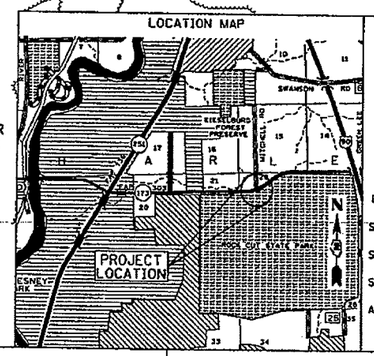
EXISTING CURVE DATA
PI STA. = 112+77.63
Δ = 34° 56' 57" (LT)
D = 1° 59' 26"
R = 2,878.27'
T = 906.11'
L = 1,755.68'
E = 139.26'
e = -----
T.R. = -----
S.E. RUN = -----
P.C. STA. = 103+71.52
P.T. STA. = 121+27.19

IL RTE 173 CENTERLINE
PROPOSED CURVE DATA
PI STA. = 1112+46.71
Δ = 34° 56' 57" (LT)
D = 2° 00' 37"
R = 2,850.00'
T = 897.21'
L = 1,738.43'
E = 137.89'
S.E. = NORMAL CROWN
P.C. STA. = 1103+49.50
P.T. STA. = 1120+87.93



2025 TRAFFIC YEAR A.M.(P.M.) TRAFFIC

LOCATION MAP



INTERSECTION DESIGN STUDY

FAP ROUTE 303 (IL ROUTE 173)
WITH
FAU 5152 (MITCHELL ROAD)

SEC. NO. (4,129) AS — PROJ. NO. 64824
SCALE : 1" = 50' — COUNTY WINNEBAGO
S.N : P92-052-02 — REV. NO.

DESIGNED BY DISTRICT 2 DATE JUNE 2006
SATISFACTORY — DISTRICT GEOMETRICS ENGINEER — DATE 6/21/06
SATISFACTORY — DISTRICT PROGRAM DEVELOPMENT ENGINEER — DATE 6/27/06
SATISFACTORY — DISTRICT OPERATIONS ENGINEER — DATE 6-27-06
APPROVED — DEPUTY DIRECTOR OF HIGHWAYS, REGION TWO ENGINEER — DATE 6/30/06

I.D.S. SHEET 12 OF 29

BDE-5409

FIGURE 4
SHEET 12

CAPACITY DESIGN STUDY

4 PHASE
60 SEC. CYCLE
SIGNAL TYPE ACTUATED

AREA OTHER
AVERAGE INTERSECTION DELAY
PROGRAM USED HCS2000 V4.1e

PEAK HOUR FACTOR 0.95
A.M. 16.7 SEC. P.M. 16.6 SEC.
INTERSECTION LEVEL OF SERVICE A.M. B P.M. B

APPROACH		A EB			B WB			C SB			D NB	
BUS STOP CONDITION		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A
PARKING MANEUVER/HR.		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A
PEDESTRIANS		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A
ARRIVAL TYPE		3	3	3	3	3	3	3	3		3	3
THROUGH LANE UTILIZATION FACTOR			1.00			1.00			1.00			1.00
BASE SATURATION FLOW		1900	1900	1900	1900	1900	1900	1900	1900		1900	1900
STORAGE (ft)		81'	83'	156'	89'	82'	32'	48'	130'		232'	141'
LANE GROUP		L	TH	R	L	TH	R	L	TH/R		L	TH/R
LANE WIDTHS		12'	2@12'	12'	12'	2@12'	12'	12'	12'		12'	12'
GREEN TIME (SECONDS)	A.M.	5.4	13.7	26.7	5.4	13.7	26.7	8.0	12.9		8.0	12.9
	P.M.	5.2	11.0	25.0	5.2	11.0	25.0	9.0	14.8		9.0	14.8
LANE GROUP DELAY (SECONDS)	A.M.	12.0	19.4	12.2	12.1	19.5	9.7	10.5	21.9		16.5	22.8
	P.M.	14.0	21.9	13.5	14.3	21.9	10.7	8.8	20.0		12.3	20.2
LEVEL OF SERVICE	A.M.	B	B	B	B	B	A	B	C		B	C
	P.M.	B	C	B	B	C	B	A	B		B	C
V/C RATIO	A.M.	0.27	0.30	0.47	0.29	0.31	0.09	0.15	0.51		0.69	0.56
	P.M.	0.29	0.39	0.50	0.34	0.38	0.10	0.12	0.46		0.61	0.48
2025 30TH MAX. HOUR TRAFFIC	A.M.	105	220	315	115	225	60	65	180		315	195
	P.M.	100	225	315	115	220	65	60	185		315	195
2005 8TH MAX. HOURLY TRAFFIC	A.M.		179			151			69			140
	P.M.		179			151			69			140

PHASING DIAGRAM

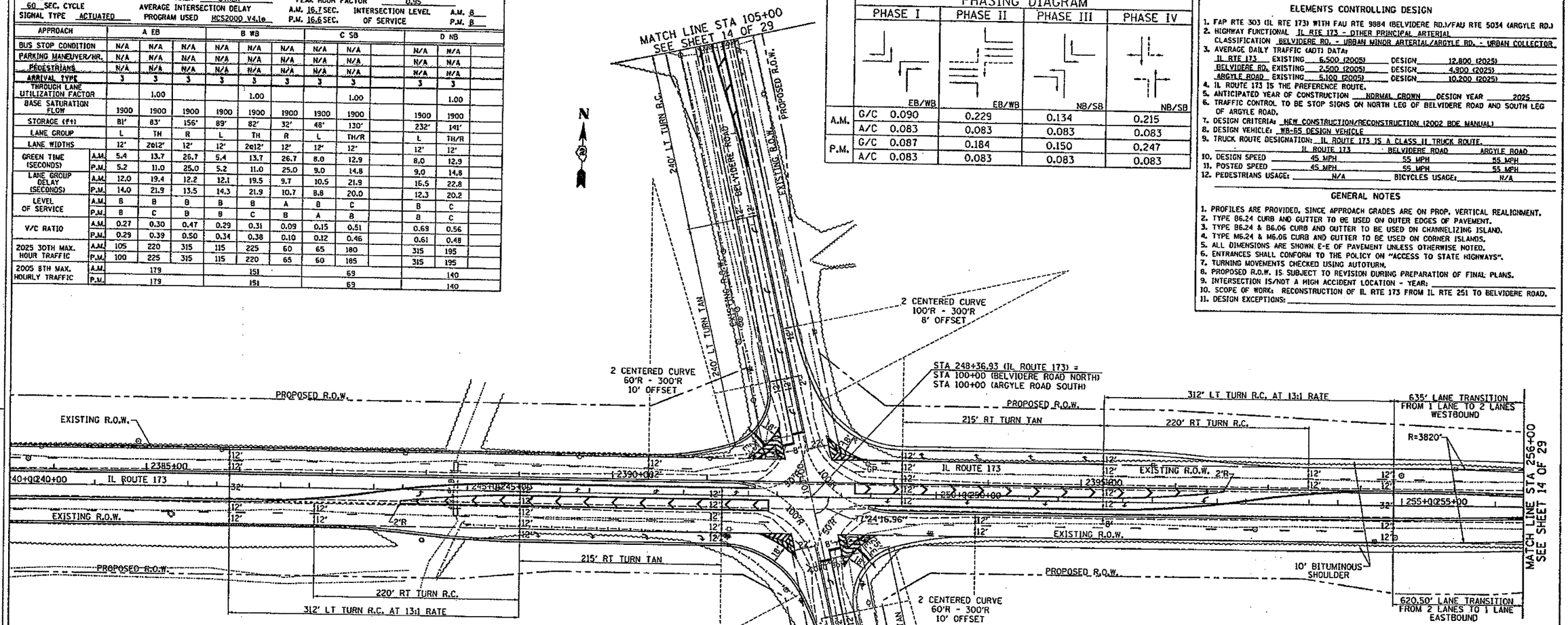
	PHASE I	PHASE II	PHASE III	PHASE IV
	EB/WB	EB/WB	NB/SB	NB/SB
A.M. G/C	0.090	0.229	0.134	0.215
A.M. A/C	0.083	0.083	0.083	0.083
P.M. G/C	0.087	0.184	0.150	0.247
P.M. A/C	0.083	0.083	0.083	0.083

ELEMENTS CONTROLLING DESIGN

1. FAP RTE 303 (IL RTE 173) WITH FAU RTE 9884 (BELVIDERE RD.)/FAU RTE 5034 (ARGYLE RD.)
2. HIGHWAY FUNCTIONAL CLASSIFICATION IL RTE 173 - OTHER PRINCIPAL ARTERIAL; BELVIDERE RD. - URBAN MINOR ARTERIAL/ARGYLE RD. - URBAN COLLECTOR
3. AVERAGE DAILY TRAFFIC (ADT) DATA:
   IL RTE 173 EXISTING 6,500 (2005) DESIGN 12,800 (2025)
   BELVIDERE RD. EXISTING 2,500 (2005) DESIGN 4,900 (2025)
   ARGYLE ROAD EXISTING 5,100 (2005) DESIGN 10,200 (2025)
4. IL ROUTE 173 IS THE PREFERENCE ROUTE.
5. ANTICIPATED YEAR OF CONSTRUCTION NORMAL CROWN DESIGN YEAR 2025
6. TRAFFIC CONTROL TO BE STOP SIGNS ON NORTH LEG OF BELVIDERE ROAD AND SOUTH LEG OF ARGYLE ROAD.
7. DESIGN CRITERIA: NEW CONSTRUCTION/RECONSTRUCTION (2002 BDE MANUAL)
8. DESIGN VEHICLE: WB-65 DESIGN VEHICLE
9. TRUCK ROUTE DESIGNATION: IL ROUTE 173 IS A CLASS II TRUCK ROUTE.
10. DESIGN SPEED 45 MPH (IL ROUTE 173); 55 MPH (BELVIDERE ROAD); 55 MPH (ARGYLE ROAD)
11. POSTED SPEED 45 MPH (IL ROUTE 173); 55 MPH (BELVIDERE ROAD); 55 MPH (ARGYLE ROAD)
12. PEDESTRIANS USAGE: N/A BICYCLES USAGE: N/A

GENERAL NOTES

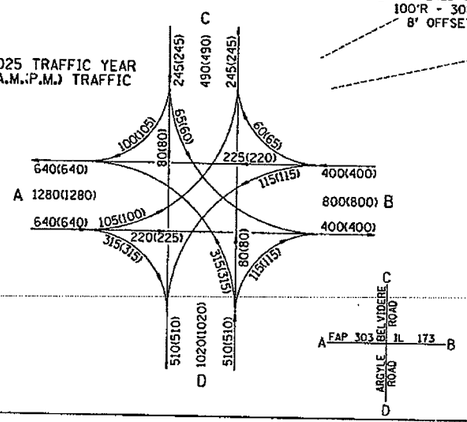
1. PROFILES ARE PROVIDED. SINCE APPROACH GRADES ARE ON PROP. VERTICAL REALIGNMENT.
2. TYPE B6.24 CURB AND GUTTER TO BE USED ON OUTER EDGES OF PAVEMENT.
3. TYPE B6.24 & B6.06 CURB AND GUTTER TO BE USED ON CHANNELIZING ISLAND.
4. TYPE M6.24 & M6.06 CURB AND GUTTER TO BE USED ON CORNER ISLANDS.
5. ALL DIMENSIONS ARE SHOWN E-E OF PAVEMENT UNLESS OTHERWISE NOTED.
6. ENTRANCES SHALL CONFORM TO THE POLICY ON "ACCESS TO STATE HIGHWAYS".
7. TURNING MOVEMENTS CHECKED USING AUTOTURN.
8. PROPOSED R.O.W. IS SUBJECT TO REVISION DURING PREPARATION OF FINAL PLANS.
9. INTERSECTION IS/NOT A HIGH ACCIDENT LOCATION - YEAR: ____
10. SCOPE OF WORK: RECONSTRUCTION OF IL RTE 173 FROM IL RTE 251 TO BELVIDERE ROAD.
11. DESIGN EXCEPTIONS: ____



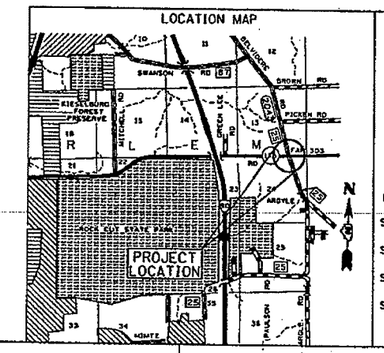
TRAFFIC DATA

MOVEMENT	YEAR 2005 30TH MAXIMUM HOUR TRAFFIC A.M.	P.M.	PERCENT TRUCK TRAFFIC IN 30th MAX HOUR	ESTIMATED PERCENT INCREASE BY	YEAR 2015 30th MAXIMUM HOUR TRAFFIC A.M.	P.M.	ESTIMATED PERCENT INCREASE BY	YEAR 2025 30th MAXIMUM HOUR TRAFFIC A.M.	P.M.
AB	145	150	7.5		165	170		220	225
AD	130	130	2.0		215	215		315	315
AC	50	45	2.0		75	70		105	100
BA	150	145	9.0		170	165		225	220
BC	40	40	2.0		50	50	GENERATION AND DEVELOPMENT	60	65
BD	85	90	2.0		110	110		115	115
CD	40	35	2.0		60	60		80	80
CA	45	50	2.0		70	75		100	105
CB	40	40	2.0		50	50		65	60
DC	35	40	2.0		60	60		80	80
DB	90	85	2.0		110	110		115	115
DA	130	130	2.0		215	215		315	315
TOTAL A	650	650			910	910		1280	1280
TOTAL B	550	550			660	660		800	800
TOTAL C	250	250			370	370		490	490
TOTAL D	510	510			770	770		1020	1020

2025 TRAFFIC YEAR A.M.(P.M.) TRAFFIC



LOCATION MAP



INTERSECTION DESIGN STUDY

FAP ROUTE 303 (IL ROUTE 173)
WITH
FAU RTE 9884 (BELVIDERE RD. N.)
/FAU RTE 5034 (ARGYLE RD. S.)

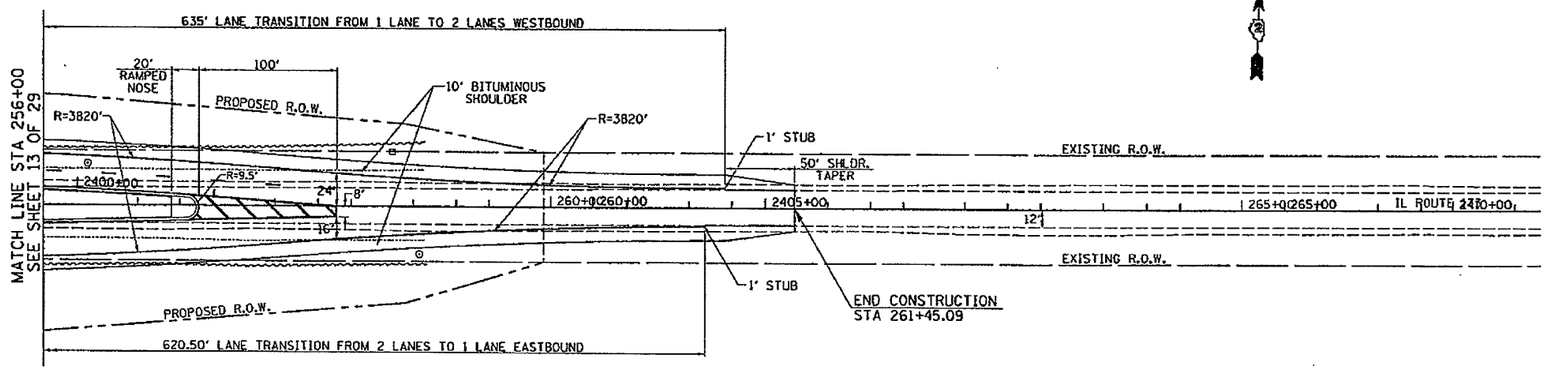
SEC. NO. (4,129) AS — PROJ. NO. 64824
SCALE : 1" = 50' — COUNTY WINNEBAGO
SJN : P92-052-02 — REV. NO. ____
DESIGNED BY DISTRICT 2 — DATE JUNE 2006

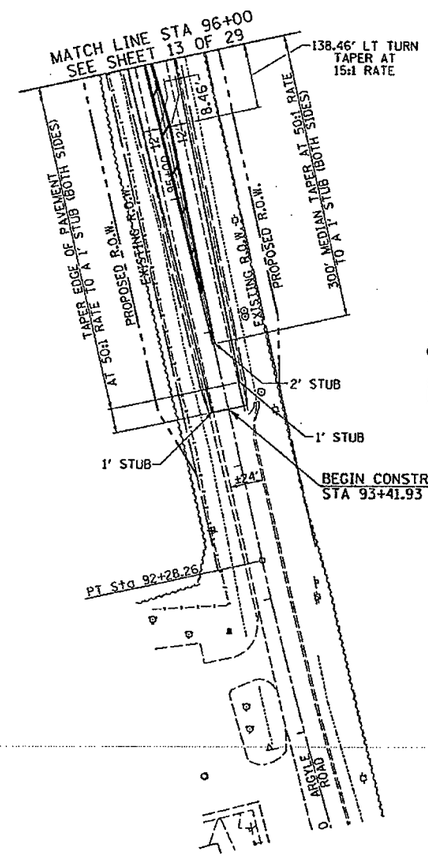
SATISFACTORY — DISTRICT GEOMETRICS ENGINEER — DATE 6/21/06
SATISFACTORY — DISTRICT PROGRAM DEVELOPMENT ENGINEER — DATE 6/27/06
SATISFACTORY — DISTRICT OPERATIONS ENGINEER — DATE 6-28-06
SUBMITTED — DEPUTY DIRECTOR OF HIGHWAYS, REGION TWO ENGINEER — DATE 6/30/06

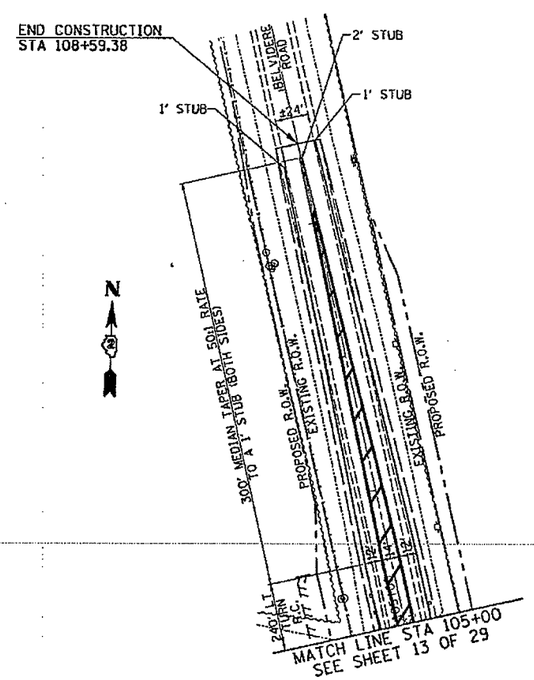
I.D.S. SHEET 13 OF 29

306-8409

FIGURE 4
SHEET 13







ARGYLE ROAD
EXISTING CURVE DATA

PI STA. = 90+05.94
Δ = 8° 30' 28" (RT)
D = 1° 54' 35"
R = 3,000.00'
T = 223.14'
L = 445.47'
E = 8.29'
e = -----
T.R. = -----
S.E. RUN = -----
P.C. STA. = 87+82.79
P.T. STA. = 92+28.26

1"= 50' 0 50' 100'

INTERSECTION DESIGN STUDY

FAP ROUTE 303 (IL ROUTE 173)
WITH
FAU RTE 3884 (BELVIDERE RD. N.)
/FAU RTE 5034 (ARGYLE RD. S.)

I.D.S. SHEET 14 OF 29

FIGURE 4
SHEET 14