CAPACITY DESIGN STUDY

| | | |

CAPACITY DESIGN STUDY

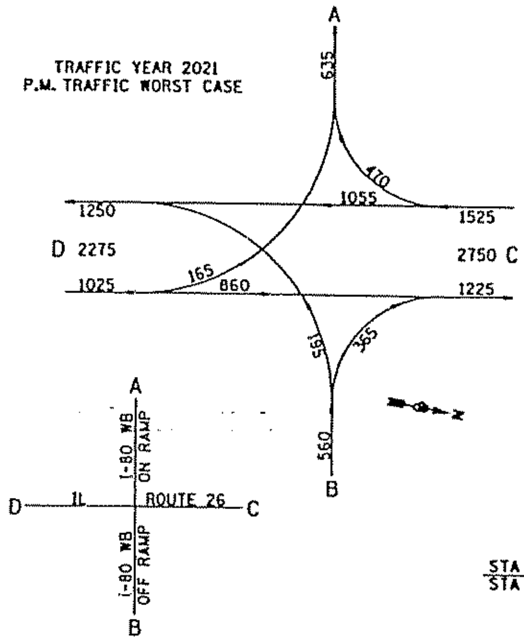
_____ PHASE
_____ SEC. CYCLE
SIGNAL TYPE _____

AREA _____
AVERAGE INTERSECTION DELAY
PROGRAM USED _____

PEAK HOUR FACTOR _____
A.M. ___ SEC. P.M. ___ SEC.
INTERSECTION LEVEL OF SERVICE A.M. ___ P.M. ___

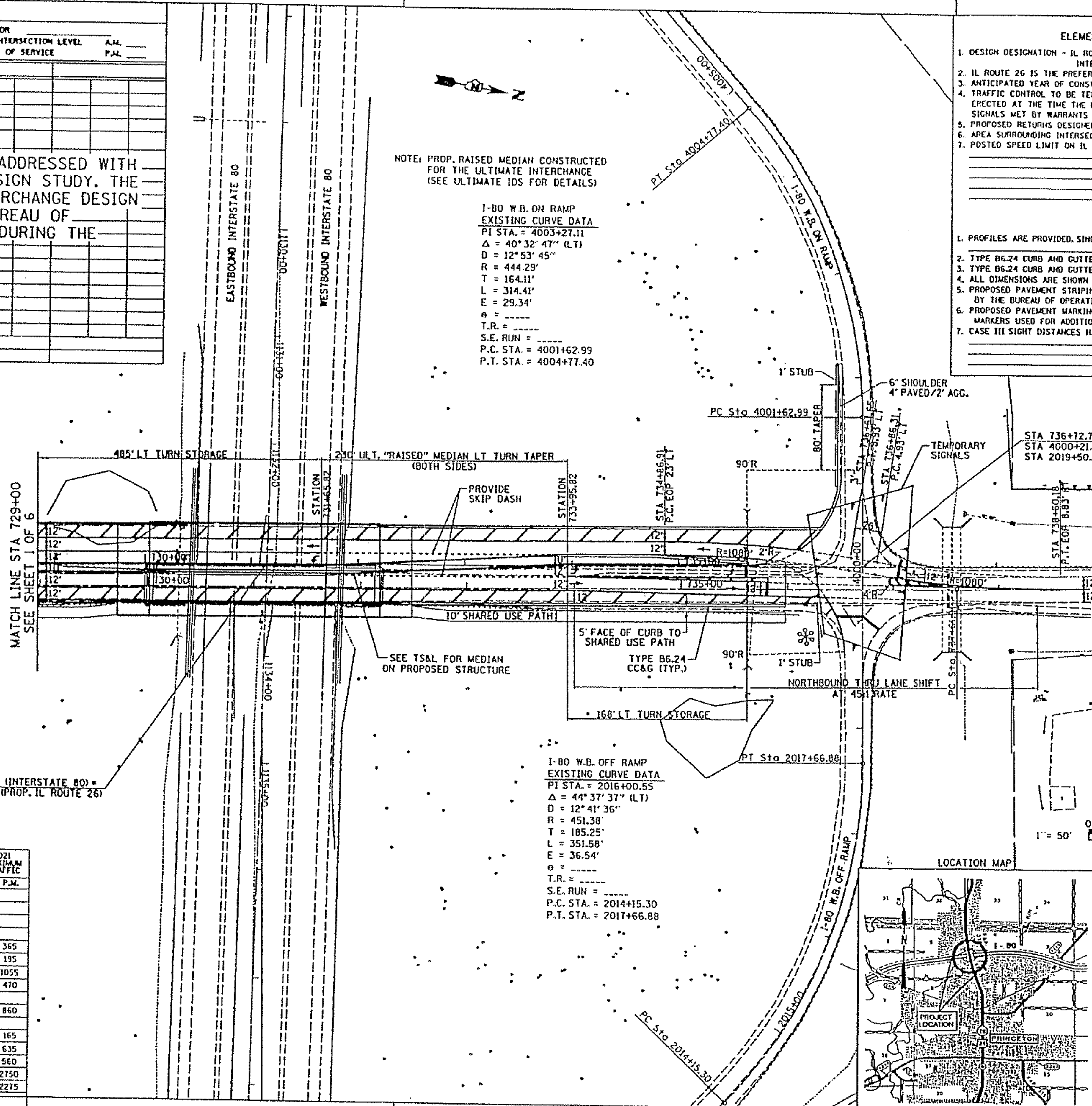
APPROACH		
BUS STOP CONDITION		
PARKING MANEUVER/HR.		
PEDESTRIANS		
ARRIVAL TYPE		
THROUGH LANE UTILIZATION FACTOR		
BASE SATURATION FLOW		
D - DISTANCE		
LANE GROUP		
LANE WIDTHS		
GREEN TIME (SECONDS)	A.M.	
	P.M.	
LANE GROUP DELAY (SECONDS)	A.M.	
	P.M.	
LEVEL OF SERVICE	A.M.	
	P.M.	
V/C RATIO	A.M.	
	P.M.	
20__ 30TH MAX. HOUR TRAFFIC	A.M.	
	P.M.	
19__ 8TH MAX. HOURLY TRAFFIC	A.M.	
	P.M.	

CAPACITY AND PHASING TO BE ADDRESSED WITH THE ULTIMATE INTERCHANGE DESIGN STUDY. THE PHASING FOR THE INTERIM INTERCHANGE DESIGN TO BE COORDINATED BY THE BUREAU OF OPERATION'S TRAFFIC SECTION DURING THE TIME OF CONSTRUCTION.



TRAFFIC DATA

MOVEMENT	YEAR 2001 30TH MAXIMUM HOUR TRAFFIC A.M.	YEAR 2001 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 2021 30th MAXIMUM HOUR TRAFFIC A.M.	YEAR 2021 30th MAXIMUM HOUR TRAFFIC P.M.
AB									
AD									
AC									
BA									
BC		210	23%				GENERATION AND DEVELOPMENT		365
BD		130	23%						195
CD		495	18%						1055
CA		165	9%						470
CB									
DC		535	18%						860
DB									
DA		105	9%						165
TOTAL A		270							635
TOTAL B		340							560
TOTAL C		1405							2750
TOTAL D		1265							2275



ELEMENTS CONTROLLING DESIGN

1. DESIGN DESIGNATION - IL ROUTE 26 : 2750-OPA-45 (N) ; 2275-OPA-45 (S)
   INTERSTATE 80 WESTBOUND OFF RAMP : 560-INTERSTATE-50 (E)
2. IL ROUTE 26 IS THE PREFERENCE ROUTE.
3. ANTICIPATED YEAR OF CONSTRUCTION IS 2003.
4. TRAFFIC CONTROL TO BE TEMPORARY TRAFFIC SIGNALS. ULTIMATE TRAFFIC SIGNALS TO BE ERECTED AT THE TIME THE ULTIMATE INTERCHANGE DESIGN IS CONSTRUCTED. SIGNALS MET BY WARRANTS NO. 1 & 2.
5. PROPOSED RETURNS DESIGNED TO ACCOMMODATE A WB-65 DESIGN VEHICLE.
6. AREA SURROUNDING INTERSECTION IS URBAN/COMMERCIAL IN NATURE.
7. POSTED SPEED LIMIT ON IL ROUTE 26 - 45mph.

GENERAL NOTES

1. PROFILES ARE PROVIDED, SINCE APPROACH GRADES ARE ON PROPOSED VERTICAL ALIGNMENT.
2. TYPE B6.24 CURB AND GUTTER TO BE USED ON OUTER EDGES OF PAVEMENT.
3. TYPE B6.24 CURB AND GUTTER TO BE USED ON CHANNELIZING ISLAND.
4. ALL DIMENSIONS ARE SHOWN E-E OF PAVEMENT UNLESS OTHERWISE NOTED.
5. PROPOSED PAVEMENT STRIPING TO BE IN ACCORDANCE WITH THE M.U.T.C.D. AND AS DIRECTED BY THE BUREAU OF OPERATION'S TRAFFIC SECTION.
6. PROPOSED PAVEMENT MARKING TO BE THERMOPLASTIC WITH RAISED REFLECTIVE PAVEMENT MARKERS USED FOR ADDITIONAL DELINEATION OF FLUSH CHANNELIZATION.
7. CASE III SIGHT DISTANCES HAVE BEEN CHECKED AND MEET CURRENT POLICY.

IL ROUTE 26
EXISTING CURVE DATA
PI STA. = 740+23.68
Δ = 3° 20' 09" (LT)
D = 0° 38' 14"
R = 8,989.57'
T = 261.77'
L = 523.38'
E = 3.81'
e = _____
T.R. = _____
S.E. RUN = _____
P.C. STA. = 737+61.91
P.T. STA. = 742+85.30

1" = 50' 0 50' 100'

INTERIM INTERCHANGE DESIGN STUDY

IL ROUTE 26
WITH
INTERSTATE 80 NORTH RAMP TERMINAL

SEC. NO. 116R PROJ. NO. _____
SCALE 1"=50' COUNTY BUREAU
SJN : P92-098-93 REV. NO. ___

DESIGNED BY DISTRICT 2 DATE FEB. 2003
SATISFACTORY Patrick F Washin 02/18/03 DISTRICT GEOMETRICS ENGINEER DATE
SATISFACTORY [signature] 02/20/03 DISTRICT PROGRAM DEVELOPMENT ENGINEER DATE
SATISFACTORY [signature] 3-3-03 DISTRICT OPERATIONS ENGINEER DATE
SUBMITTED Gregory L Mounts 3-7-03 DISTRICT ENGINEER DATE

I.D.S. SHEET 2 OF 6

FIGURE 2B
SHEET 2 OF 6

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Mon Feb 17 07:43:57 2003
*REF-
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CAPACITY DESIGN STUDY

3 PHASE
75 SEC. CYCLE
SIGNAL TYPE ACTUATED

AREA NON-CBD
AVERAGE INTERSECTION DELAY
PROGRAM USED HCS 2000

PEAK HOUR FACTOR 0.95
A.M. ___ SEC.
P.M. 24.7 SEC.
INTERSECTION LEVEL OF SERVICE
A.M. ___
P.M. C

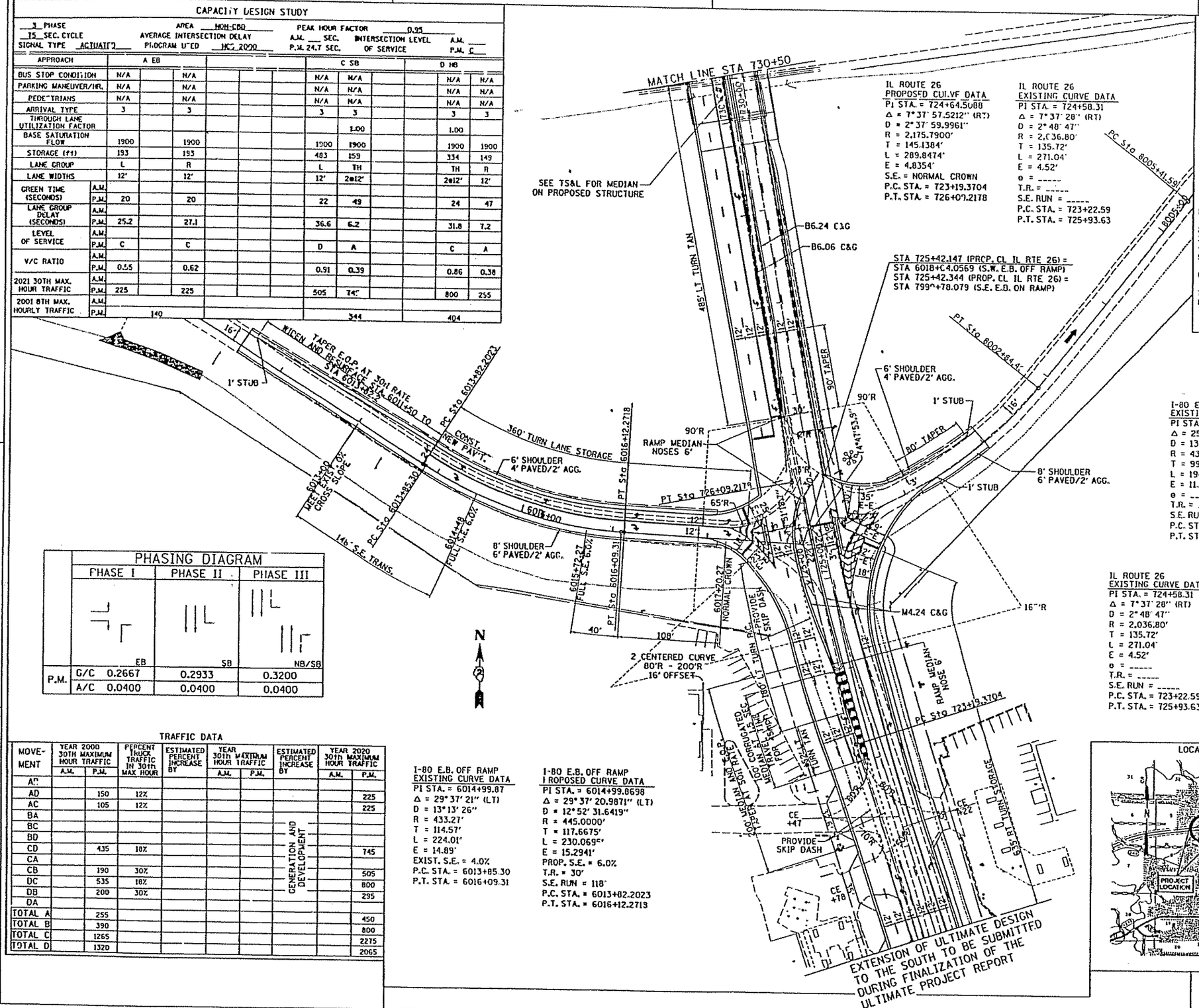
APPROACH		A EB						C SB				D NB	
BUS STOP CONDITION		N/A		N/A				N/A	N/A			N/A	N/A
PARKING MANEUVER/HR.		N/A		N/A				N/A	N/A			N/A	N/A
PEDESTRIANS		N/A		N/A				N/A	N/A			N/A	N/A
ARRIVAL TYPE		3		3				3	3			3	3
THROUGH LANE UTILIZATION FACTOR									1.00			1.00	
BASE SATURATION FLOW		1900		1900				1900	1900			1900	1900
STORAGE (ft)		193		193				483	159			334	149
LANE GROUP		L		R				L	TH			TH	R
LANE WIDTHS		12'		12'				12'	2@12'			2@12'	12'
GREEN TIME (SECONDS)	A.M.												
	P.M.	20		20				22	49			24	47
LANE GROUP DELAY (SECONDS)	A.M.												
	P.M.	25.2		27.1				36.6	6.2			31.8	7.2
LEVEL OF SERVICE	A.M.												
	P.M.	C		C				D	A			C	A
V/C RATIO	A.M.												
	P.M.	0.55		0.62				0.91	0.39			0.86	0.38
2021 30TH MAX. HOUR TRAFFIC	A.M.												
	P.M.	225		225				505	745			800	255
2001 8TH MAX. HOURLY TRAFFIC	A.M.												
	P.M.	140						344				404	

ELEMENTS CONTROLLING DESIGN

1. DESIGN DESIGNATION - IL ROUTE 26 (2275-OPA-45 (N) (2065-OPA-45 (S)
   INTERSTATE 80 EASTBOUND OFF RAMP (450-INTERSTATE-50 (W)
2. IL ROUTE 26 IS THE (REFERENCE ROUTE.
3. ANTICIPATED YEAR OF CONSTRUCTION IS 2003.
4. TRAFFIC CONTROL TO BE PROPOSED TRAFFIC SIGNALS.
5. PROPOSED RETURNS DESIGNED TO ACCOMMODATE A WB-65 DESIGN VEHICLE.
6. AREA SURROUNDING INTERSECTION IS SUBURBAN WITH SOME COMMERCIAL DEVELOPMENT.
7. POSTED SPEED LIMIT ON IL ROUTE 26 - 45mph.

GENERAL NOTES

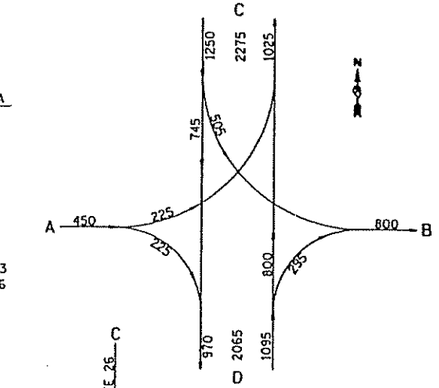
1. PROFILES ARE PROVIDED, SINCE APPROACH GRADES ARE ON PROPOSED VERTICAL ALIGNMENT.
2. TYPE B6.24 CURB AND GUTTER TO BE USED ON OUTER EDGES OF PAVEMENT.
3. TYPE B6.24 CURB AND GUTTER TO BE USED ON CHANNELIZING ISLAND.
4. ALL DIMENSIONS ARE SHOWN E-E OF PAVEMENT UNLESS OTHERWISE NOTED.
5. PROPOSED PAVEMENT STRIPING TO BE IN ACCORDANCE WITH THE M.U.T.C.D. AND AS DIRECTED BY THE BUREAU OF OPERATIONS TRAFFIC SECTION.
6. PROPOSED PAVEMENT MARKING TO BE THERMOPLASTIC WITH RAISED REFLECTIVE PAVEMENT MARKERS USED FOR ADDITIONAL DELINEATION OF FLUSH CHANNELIZATION.
7. ALL ENTRANCES SHALL CONFORM TO STATE POLICY FOR "ACCESS TO STATE HIGHWAYS".
8. ALL CASE III SIGHT DISTANCES HAVE BEEN CHECKED AND MEET CURRENT POLICY.



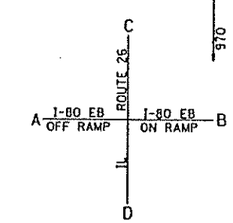
IL ROUTE 26
PROPOSED CULVE DATA
PI STA. = 724+64.5088
Δ = 7°37' 57.5212" (RT)
D = 2°37' 59.9961"
R = 2,175.7900'
T = 145.1384'
L = 289.8474'
E = 4.8354'
S.E. = NORMAL CROWN
P.C. STA. = 723+19.3704
P.T. STA. = 726+09.2178

IL ROUTE 26
EXISTING CURVE DATA
PI STA. = 724+58.31
Δ = 7°37' 28" (RT)
D = 2°48' 47"
R = 2,036.80'
T = 135.72'
L = 271.04'
E = 4.52'
θ = _____
T.R. = _____
S.E. RUN = _____
P.C. STA. = 723+22.59
P.T. STA. = 725+93.63

I-80 E.B. ON RAMP
EXISTING CURVE DATA
PI STA. = 8001+88.69
Δ = 25°31' 23" (LT)
D = 13°06' 00"
R = 437.37'
T = 99.06'
L = 194.83'
E = 11.08'
θ = _____
T.R. = _____
S.E. RUN = _____
P.C. STA. = 8000+89.63
P.T. STA. = 8002+84.46



IL ROUTE 26
EXISTING CURVE DATA
PI STA. = 724+58.31
Δ = 7°37' 28" (RT)
D = 2°48' 47"
R = 2,036.80'
T = 135.72'
L = 271.04'
E = 4.52'
θ = _____
T.R. = _____
S.E. RUN = _____
P.C. STA. = 723+22.59
P.T. STA. = 725+93.63



TRAFFIC YEAR 2021
P.M. TRAFFIC WORST CASE

1" = 50' 0 50' 100'

PHASING DIAGRAM

	PHASE I	PHASE II	PHASE III
	EB	SB	NB/SB
P.M. G/C	0.2667	0.2933	0.3200
P.M. A/C	0.0400	0.0400	0.0400

TRAFFIC DATA

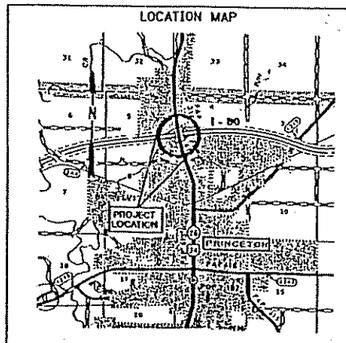
MOVEMENT	YEAR 2000 30TH MAXIMUM HOUR TRAFFIC A.M.	P.M.	PERCENT TRUCK TRAFFIC IN 30th MAX HOUR	ESTIMATED PERCENT INCREASE BY	YEAR 30th MAXIMUM HOUR TRAFFIC A.M.	P.M.	ESTIMATED PERCENT INCREASE BY	YEAR 2020 30th MAXIMUM HOUR TRAFFIC A.M.	P.M.
AD									
AD		150	12%						225
AC		105	12%						225
BA									
BC									
BD									
CD		435	18%				GENERATION AND DEVELOPMENT		745
CA									
CB		190	30%						505
DC		535	18%						800
DB		200	30%						295
DA									
TOTAL A		255							450
TOTAL B		390							800
TOTAL C		1265							2275
TOTAL D		1320							2065

I-80 E.B. OFF RAMP
EXISTING CURVE DATA
PI STA. = 6014+99.87
Δ = 29°37' 21" (LT)
D = 13°13' 26"
R = 433.27'
T = 114.57'
L = 224.01'
E = 14.89'
EXIST. S.E. = 4.0%
P.C. STA. = 6013+85.30
P.T. STA. = 6016+09.31

I-80 E.B. OFF RAMP
PROPOSED CURVE DATA
PI STA. = 6014+99.8698
Δ = 29°37' 20.9871" (LT)
D = 12°52' 31.6419"
R = 445.0000'
T = 117.6675'
L = 230.0695'
E = 15.2941'
PROP. S.E. = 6.0%
T.R. = 30'
S.E. RUN = 118'
P.C. STA. = 6013+82.2023
P.T. STA. = 6016+12.2718

EXTENSION OF ULTIMATE DESIGN TO THE SOUTH TO BE SUBMITTED DURING FINALIZATION OF THE ULTIMATE PROJECT REPORT

LOCATION MAP



ULTIMATE INTERCHANGE DESIGN STUDY

IL ROUTE 26
WITH
INTERSTATE 80 SOUTH RAMP TERMINAL

SEC. NO. 116R PROJ. NO. _____
SCALE 1"=50' COUNTY BUREAU
SJN P92-098-93 REV. NO. ___

DESIGNED BY DISTRICT 2 DATE FEB. 2003
SATISFACTORY — DISTRICT GEOMETRICS ENGINEER — DATE 02/05/03
SATISFACTORY — DISTRICT PROGRAM DEVELOPMENT ENGINEER — DATE 02/05/03
SATISFACTORY — DISTRICT OPERATIONS ENGINEER — DATE 2/10/03
SUBMITTED — DISTRICT ENGINEER — DATE 2-13-03

I.D.S. SHEET 3 OF 6

FIGURE 2B
SHEET 3 OF 6

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CAPACITY DESIGN STUDY

3 PHASE
TS SEC. CYCLE
SIGNAL TY. E ACTUATED

AREA NON-CBD
AVERAGE INTERSECTION DELAY
PROGRAM USED HCS 2000

PEAK HOUR FACTOR 0.95
A.M. ___ SEC.
P.M. 17.1 SEC.
INTERSECTION LEVEL OF SERVICE
A.M. ___
P.M. B

APPROACH					B WB		C SB		D NB		
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)					163	306	372	100	167	226	
LANE GROUP					L	R	TH	R	L	TH	
LANE WIDTHS					12'	12'	2@12'	12'	12'	2@12'	
GREEN TIME (SECONDS)	A.M.										
	P.M.				26	26	32	61	8	43	
LANE GROUP DELAY (SECONDS)	A.M.										
	P.M.				19.1	36.2	25.0	2.2	12.9	10.0	
LEVEL OF SERVICE	A.M.										
	P.M.				B	D	C	A	B	A	
V/C RATIO	A.M.										
	P.M.				0.40	0.84	0.85	0.41	0.51	0.52	
2021 30TH MAX. HOUR TRAFFIC	A.M.										
	P.M.				195	365	1055	470	165	860	
2001 8TH MAX. HOURLY TRAFFIC	A.M.										
	P.M.				187		363		352		

PHASING DIAGRAM

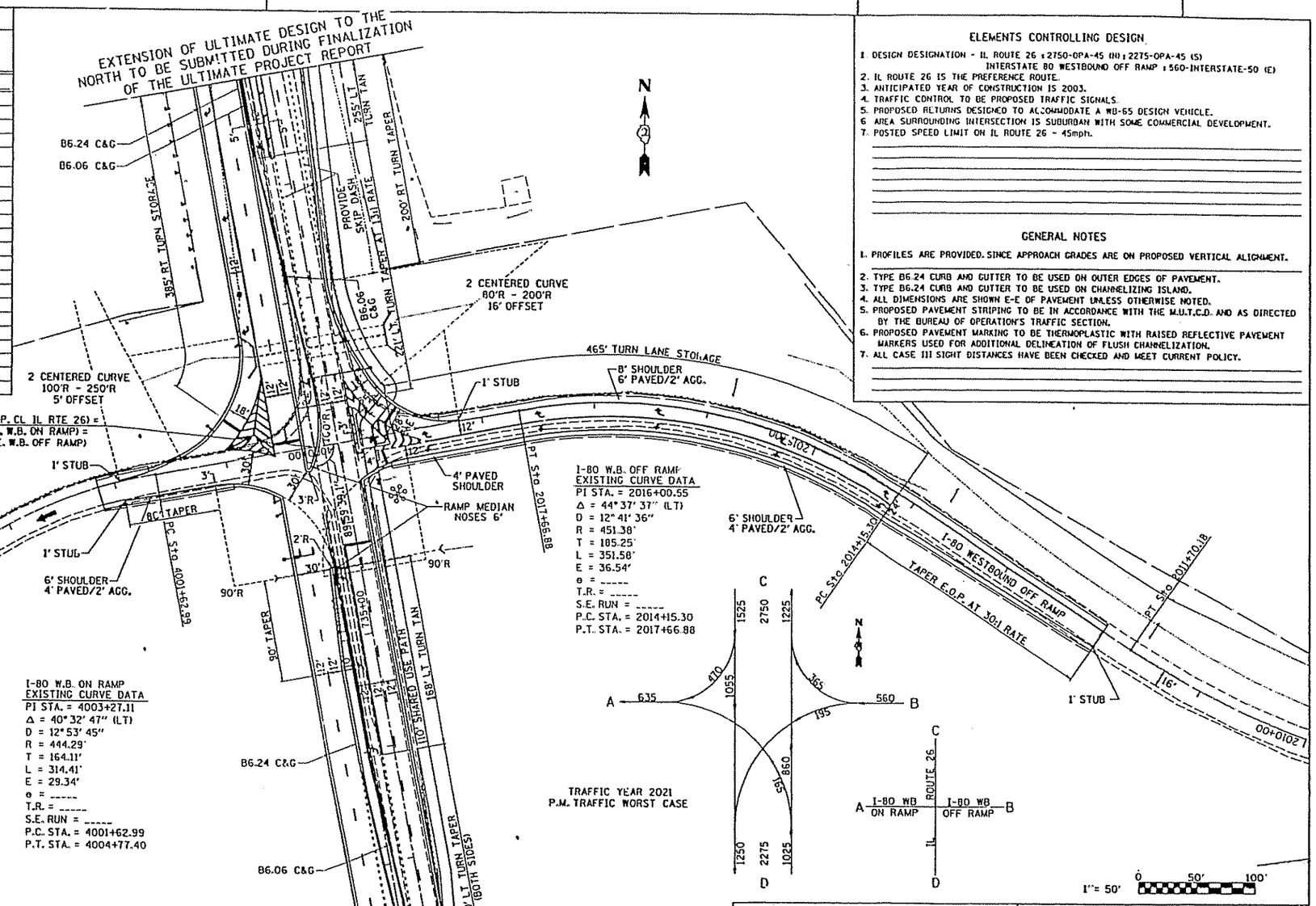
	PHASE I	PHASE II	PHASE III
	WB	NB	NB/SB
P.M. G/C	0.3467	0.1066	0.4267
P.M. A/C	0.0400	0.0400	0.0400

ELEMENTS CONTROLLING DESIGN

1. DESIGN DESIGNATION - IL ROUTE 26 : 2750-OPA-45 (N) : 2275-OPA-45 (S)
   INTERSTATE 80 WESTBOUND OFF RAMP : 560-INTERSTATE-50 (E)
2. IL ROUTE 26 IS THE PREFERENCE ROUTE.
3. ANTICIPATED YEAR OF CONSTRUCTION IS 2003.
4. TRAFFIC CONTROL TO BE PROPOSED TRAFFIC SIGNALS.
5. PROPOSED RETURNS DESIGNED TO ACCOMODATE A WB-65 DESIGN VEHICLE.
6. AREA SURROUNDING INTERSECTION IS SUBURBAN WITH SOME COMMERCIAL DEVELOPMENT.
7. POSTED SPEED LIMIT ON IL ROUTE 26 - 45mph.

GENERAL NOTES

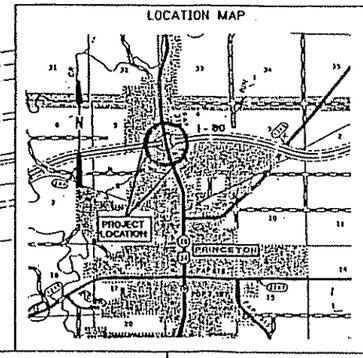
1. PROFILES ARE PROVIDED. SINCE APPROACH GRADES ARE ON PROPOSED VERTICAL ALIGNMENT.
2. TYPE B6.24 CURB AND GUTTER TO BE USED ON OUTER EDGES OF PAVEMENT.
3. TYPE B6.24 CURB AND GUTTER TO BE USED ON CHANNELIZING ISLAND.
4. ALL DIMENSIONS ARE SHOWN E-E OF PAVEMENT UNLESS OTHERWISE NOTED.
5. PROPOSED PAVEMENT STRIPING TO BE IN ACCORDANCE WITH THE M.U.T.C.D. AND AS DIRECTED BY THE BUREAU OF OPERATION'S TRAFFIC SECTION.
6. PROPOSED PAVEMENT MARKING TO BE THERMOPLASTIC WITH RAISED REFLECTIVE PAVEMENT MARKERS USED FOR ADDITIONAL DELINEATION OF FLUSH CHANNELIZATION.
7. ALL CASE III SIGHT DISTANCES HAVE BEEN CHECKED AND MEET CURRENT POLICY.



TRAFFIC DATA

MOVEMENT	YEAR 2001 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 2021 30th MAXIMUM HOUR TRAFFIC A.M.	P.M.
AB									
AD									
AC									
BA									
BC		210	23%				GENERATION AND DEVELOPMENT		365
BD		130	23%						195
CD		495	18%						1055
CA		165	9%						470
CB									
DC		535	18%						860
DB									
DA		105	9%						165
TOTAL A		270							635
TOTAL B		340							560
TOTAL C		1405							2750
TOTAL D		1265							2275

LOCATION MAP



ULTIMATE INTERCHANGE DESIGN STUDY

IL ROUTE 26
WITH
INTERSTATE 80 NORTH RAMP TERMINAL

SEC. NO. 116R — PROJ. NO. _____
SCALE 1"=50' — COUNTY BUREAU
SJN P92-098-93 — REV. NO. ___
DESIGNED BY DISTRICT 2 — DATE FEB. 2003

SATISFACTORY — DISTRICT GEOMETRICS ENGINEER — DATE 02/03/03
SATISFACTORY — DISTRICT PROGRAM DEVELOPMENT ENGINEER — DATE 2/11/03
SATISFACTORY — DISTRICT OPERATIONS ENGINEER — DATE 2-11-03
SUBMITTED — DISTRICT ENGINEER — DATE 2-12-03

I.D.S. SHEET 4 OF 6

FIGURE 2B
SHEET 4 OF 6

PROPOSED PROFILE IL ROUTE 26

SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
116R	BUREAU	6	5

STA. TO STA.

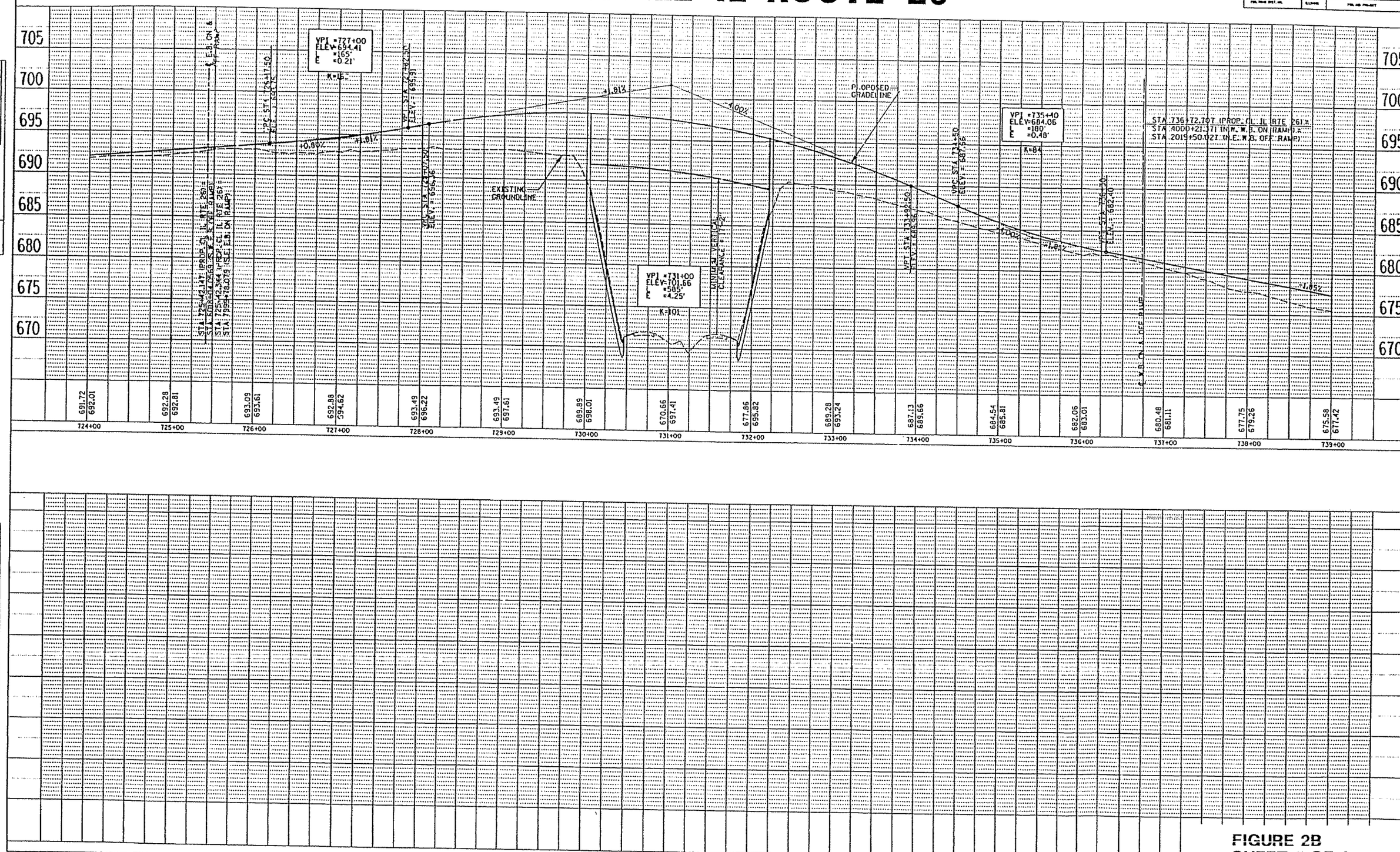
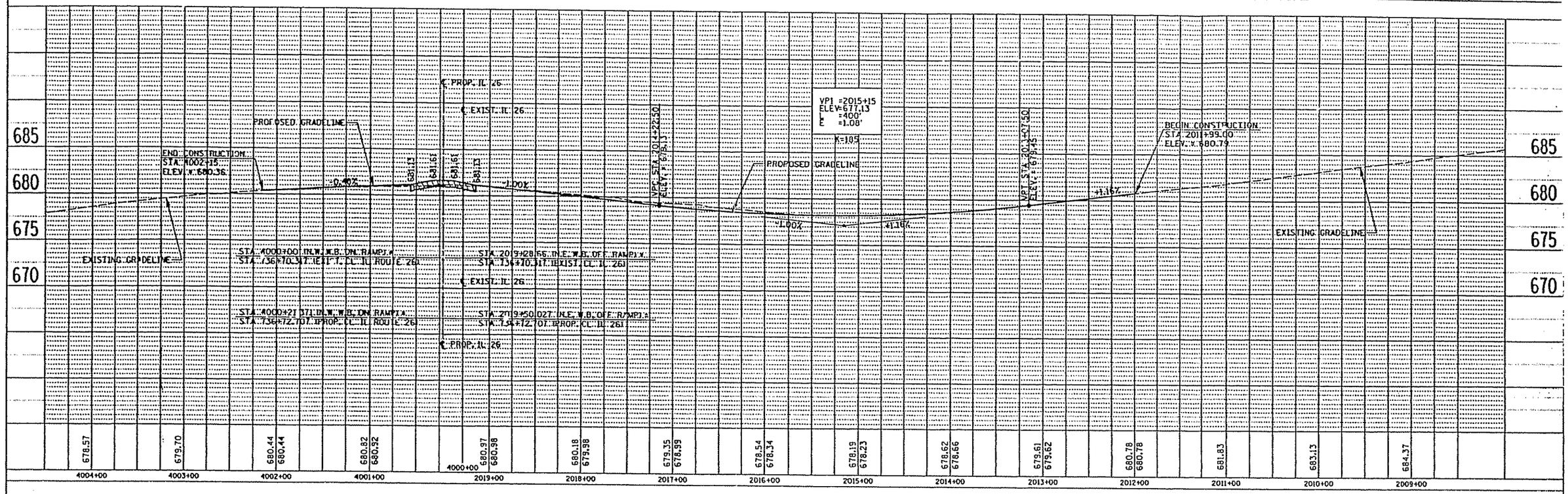


FIGURE 2B
SHEET 5 OF 6

PROPOSED PROFILE I–80 WESTBOUND ON & OFF RAMP



PROPOSED PROFILE I–80 EASTBOUND ON & OFF RAMP

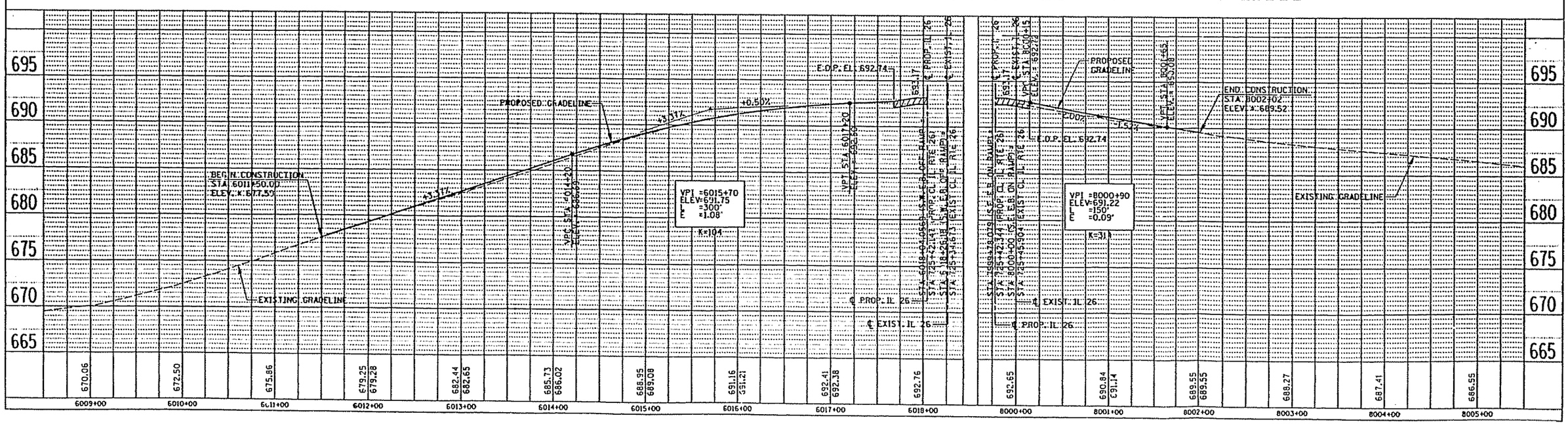


FIGURE 2B
SHEET 6 OF 6