CAPACITY DESIGN STUDY

INTERSECTION TYPE: URBAN SINGLE LANE ROUNDABOUT

AREA NON-CBD (OTHER)

AVERAGE INTERSECTION DELAY — PROGRAM USED VISSIM V5.1 — A.M. 15.3 SEC. P.M. 24.0 SEC.

PEAK HOUR FACTOR 0.92

INTERSECTION LEVEL OF SERVICE YEAR 2031 — A.M. C — P.M. C

APPROACH		(A) EASTBOUND APPROACH			(B) WESTBOUND APPROACH			(C) SOUTHBOUND APPROACH			(D) NORTHBOUND APPROACH		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
STOP RATE	A.M.	0.75	1.06	0.81	3.91	4.50	4.99	1.40	1.01	0.42	1.46	3.64	3.67
	P.M.	3.91	4.40	0.07	1.04	1.25	1.31	5.95	6.00	6.70	1.46	0.81	1.02
MAXIMUM QUEUE (FEET)	A.M.	256	256	6	357	357	357	28	28	28	66	66	66
	P.M.	187	187	6	504	504	504	236	236	236	84	84	84
AVERAGE QUEUE (FEET)	A.M.	16	16	0	64	64	64	0	0	0	6	6	6
	P.M.	31	31	0	125	125	125	43	43	43	5	5	5
AVERAGE DELAY (SECONDS)	A.M.	10.2	11.1	3.6	21.9	24.8	24.5	5.0	4.7	3.0	8.9	10.0	10.9
	P.M.	18.0	17.7	1.5	29.8	33.5	33.5	23.1	21.7	22.7	10.0	6.1	7.5
V/C RATIO	A.M.	0.80	0.80		0.60	0.60	0.60	0.08	0.08	0.08	0.30	0.30	0.30
	P.M.	0.44	0.44		0.81	0.81	0.81	0.75	0.75	0.75	0.36	0.36	0.36
LEVEL OF SERVICE	A.M.	B	B	A	C	C	C	A	A	A	A	A	B
	P.M.	C	C	A	D	D	D	C	C	C	B	A	A

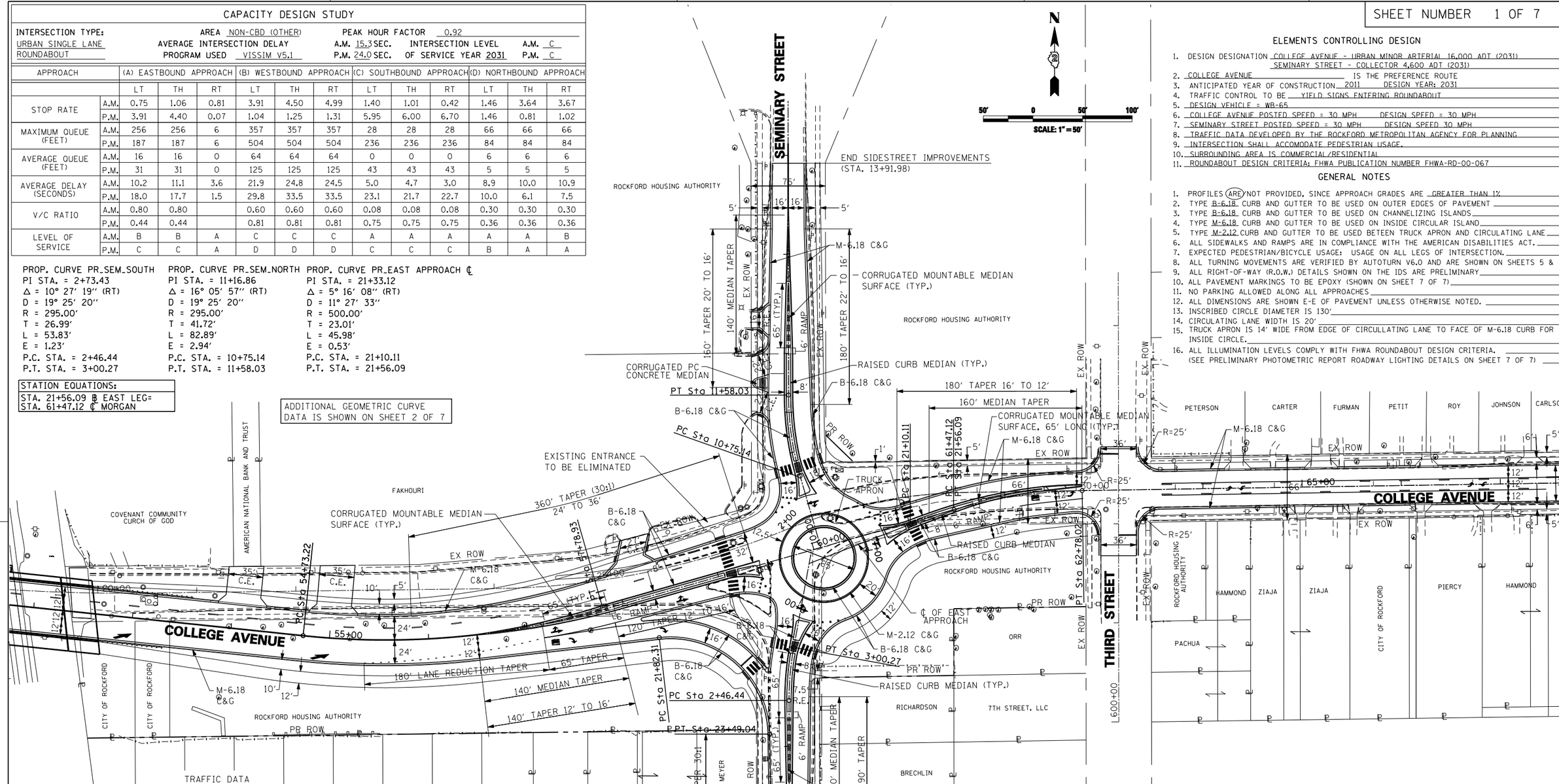
PROP. CURVE PR_SEM_SOUTH
PI STA. = 2+73.43
Δ = 10° 27′ 19″ (RT)
D = 19° 25′ 20″
R = 295.00′
T = 26.99′
L = 53.83′
E = 1.23′
P.C. STA. = 2+46.44
P.T. STA. = 3+00.27

PROP. CURVE PR_SEM_NORTH
PI STA. = 11+16.86
Δ = 16° 05′ 57″ (RT)
D = 19° 25′ 20″
R = 295.00′
T = 41.72′
L = 82.89′
E = 2.94′
P.C. STA. = 10+75.14
P.T. STA. = 11+58.03

PROP. CURVE PR_EAST APPROACH ℄
PI STA. = 21+33.12
Δ = 5° 16′ 08″ (RT)
D = 11° 27′ 33″
R = 500.00′
T = 23.01′
L = 45.98′
E = 0.53′
P.C. STA. = 21+10.11
P.T. STA. = 21+56.09

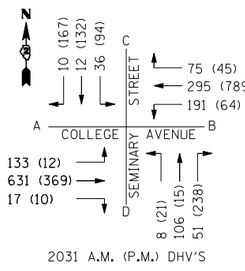
STATION EQUATIONS:
STA. 21+56.09 ℄ EAST LEG=
STA. 61+47.12 ℄ MORGAN

ADDITIONAL GEOMETRIC CURVE DATA IS SHOWN ON SHEET 2 OF 7



TRAFFIC DATA

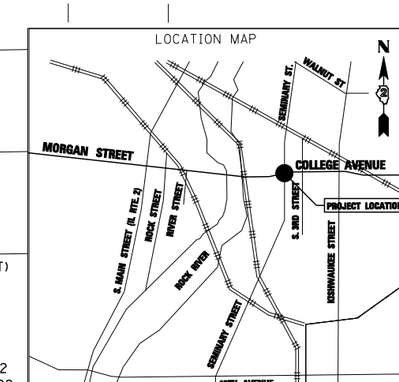
MOVEMENT	YEAR 2000 30th MAXIMUM HOUR TRAFFIC A.M.	YEAR 2000 30th MAXIMUM HOUR TRAFFIC P.M.	PERCENT TRUCK TRAFFIC IN 30th MAX HOUR A.M.	PERCENT TRUCK TRAFFIC IN 30th MAX HOUR P.M.	ESTIMATED PERCENT INCREASE	YEAR 2021 30th MAXIMUM HOUR TRAFFIC A.M.	YEAR 2021 30th MAXIMUM HOUR TRAFFIC P.M.	ESTIMATED PERCENT INCREASE	YEAR 2031 30th MAXIMUM HOUR TRAFFIC A.M.	YEAR 2031 30th MAXIMUM HOUR TRAFFIC P.M.
AB	278	184	10%	10%	TRAFFIC PROJECTIONS PROVIDED BY ROCKFORD METROPOLITAN AGENCY PLANNING	517	309	TRAFFIC PROJECTIONS PROVIDED BY ROCKFORD METROPOLITAN AGENCY PLANNING	631	369
AD	15	9	1.5%	1.5%		16	10		17	10
AC	226	14	1.5%	1.5%		120	10		133	12
BA	147	348	10%	10%		247	647		295	789
BC	285	41	1.5%	1.5%		67	43		75	45
BD	86	47	3%	1.5%		157	58		191	64
CD	9	379	1.5%	1.5%		11	119		12	132
CA	11	332	1.5%	1.5%		9	150		10	167
CB	33	356	1.5%	1.5%		35	84		36	94
DC	303	11	1.5%	1.5%		95	13		106	15
DB	38	108	1.5%	3%		47	196		51	238
DA	7	19	1.5%	1.5%		8	20		8	21
TOTAL A	684	906				917	1146		1094	1368
TOTAL B	867	1084				1070	1337		1279	1599
TOTAL C	867	1133				337	419		372	465
TOTAL D	458	573				334	416		385	480



2031 A.M. (P.M.) DHV'S

PROP. CURVE PR_1
PI STA. = 56+27.97
Δ = 21° 53′ 43″ (LT)
D = 7° 09′ 43″
R = 800.00′
T = 154.75′
L = 305.71′
E = 14.83′
P.C. STA. = 54+73.22
P.T. STA. = 57+78.93

PROP. CURVE PR_2
PI STA. = 62+12.94
Δ = 14° 59′ 59″ (RT)
D = 11° 27′ 33″
R = 500.00′
T = 65.83′
L = 130.90′
E = 4.31′
P.C. STA. = 61+47.12
P.T. STA. = 62+78.02



ELEMENTS CONTROLLING DESIGN

1. DESIGN DESIGNATION COLLEGE AVENUE - URBAN MINOR ARTERIAL 16,000 ADT (2031)
   SEMINARY STREET - COLLECTOR 4,600 ADT (2031)
2. COLLEGE AVENUE IS THE PREFERENCE ROUTE
3. ANTICIPATED YEAR OF CONSTRUCTION 2011 DESIGN YEAR: 2031
4. TRAFFIC CONTROL TO BE YIELD SIGNS ENTERING ROUNDABOUT
5. DESIGN VEHICLE = WB-65
6. COLLEGE AVENUE POSTED SPEED = 30 MPH DESIGN SPEED = 30 MPH
7. SEMINARY STREET POSTED SPEED = 30 MPH DESIGN SPEED 30 MPH
8. TRAFFIC DATA DEVELOPED BY THE ROCKFORD METROPOLITAN AGENCY FOR PLANNING
9. INTERSECTION SHALL ACCOMODATE PEDESTRIAN USAGE.
10. SURROUNDING AREA IS COMMERCIAL/RESIDENTIAL
11. ROUNDABOUT DESIGN CRITERIA: FHWA PUBLICATION NUMBER FHWA-RD-00-067

GENERAL NOTES

1. PROFILES (ARE) NOT PROVIDED, SINCE APPROACH GRADES ARE GREATER THAN 1%
2. TYPE B-6.18 CURB AND GUTTER TO BE USED ON OUTER EDGES OF PAVEMENT
3. TYPE B-6.18 CURB AND GUTTER TO BE USED ON CHANNELIZING ISLANDS
4. TYPE M-6.18 CURB AND GUTTER TO BE USED ON INSIDE CIRCULAR ISLAND
5. TYPE M-2.12 CURB AND GUTTER TO BE USED BETEEN TRUCK APRON AND CIRCULATING LANE
6. ALL SIDEWALKS AND RAMPS ARE IN COMPLIANCE WITH THE AMERICAN DISABILITIES ACT.
7. EXPECTED PEDESTRIAN/BICYCLE USAGE: USAGE ON ALL LEGS OF INTERSECTION.
8. ALL TURNING MOVEMENTS ARE VERIFIED BY AUTOTURN V6.0 AND ARE SHOWN ON SHEETS 5 & 6
9. ALL RIGHT-OF-WAY (R.O.W.) DETAILS SHOWN ON THE IDS ARE PRELIMINARY
10. ALL PAVEMENT MARKINGS TO BE EPOXY (SHOWN ON SHEET 7 OF 7)
11. NO PARKING ALLOWED ALONG ALL APPROACHES
12. ALL DIMENSIONS ARE SHOWN E-E OF PAVEMENT UNLESS OTHERWISE NOTED.
13. INSCRIBED CIRCLE DIAMETER IS 130′
14. CIRCULATING LANE WIDTH IS 20′
15. TRUCK APRON IS 14′ WIDE FROM EDGE OF CIRCULLATING LANE TO FACE OF M-6.18 CURB FOR INSIDE CIRCLE.
16. ALL ILLUMINATION LEVELS COMPLY WITH FHWA ROUNDABOUT DESIGN CRITERIA. (SEE PRELIMINARY PHOTOMETRIC REPORT ROADWAY LIGHTING DETAILS ON SHEET 7 OF 7)

INTERSECTION DESIGN STUDY

___ ROUTE ___ WITH COLLEGE AVE. / MORGAN ST.
___ ROUTE ___ SEMINARY STREET

SEC. NO. 99-00493-00-BR PROJ. NO. ___
SCALE 1″=50′ COUNTY WINNEBAGO
SJN : ___ REV. NO. ___

DESIGNED BY CMT DATE 02/12/10
SATISFACTORY ___ DISTRICT GEOMETRICS ENGINEER ___ DATE
SATISFACTORY ___ DISTRICT PROGRAM DEVELOPMENT ENGINEER ___ DATE
SATISFACTORY ___ DISTRICT OPERATIONS ENGINEER ___ DATE
APPROVED ___ DEPUTY DIRECTOR OF HIGHWAYS, REGION ENGINEER ___ DATE

CADD FILE NAME : PROP_SEMINARY IDS.DGN I.D.S. SHEET 1 OF 7

BDE-9908

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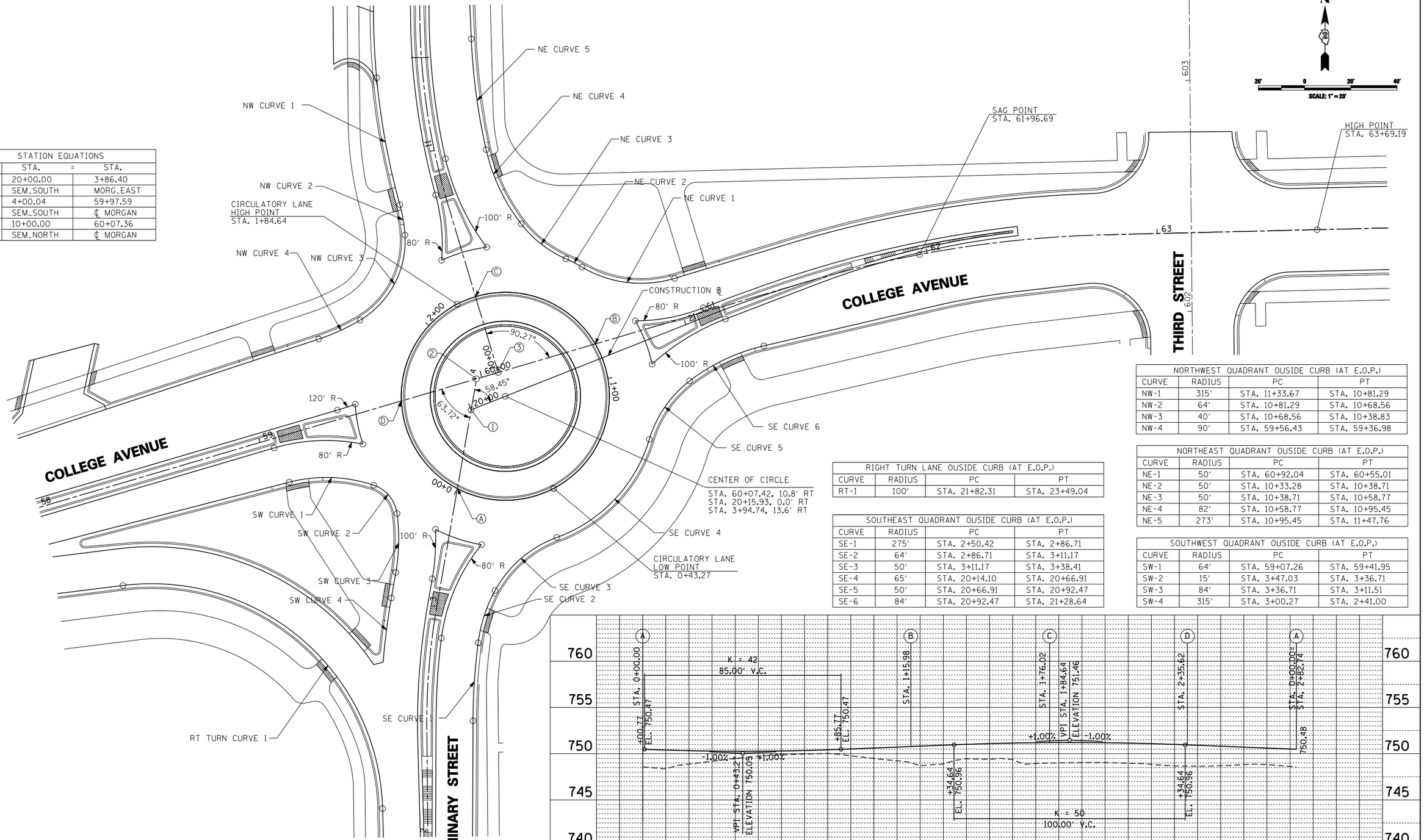
USER NAME = Matt Baldwin



STATION EQUATIONS			
NO.	STA.	=	STA.
1	20+00.00		3+86.40
	SEM_SOUTH		MORG_EAST
2	4+00.04		59+97.59
	SEM_SOUTH		℄ MORGAN
3	10+00.00		60+07.36
	SEM_NORTH		℄ MORGAN

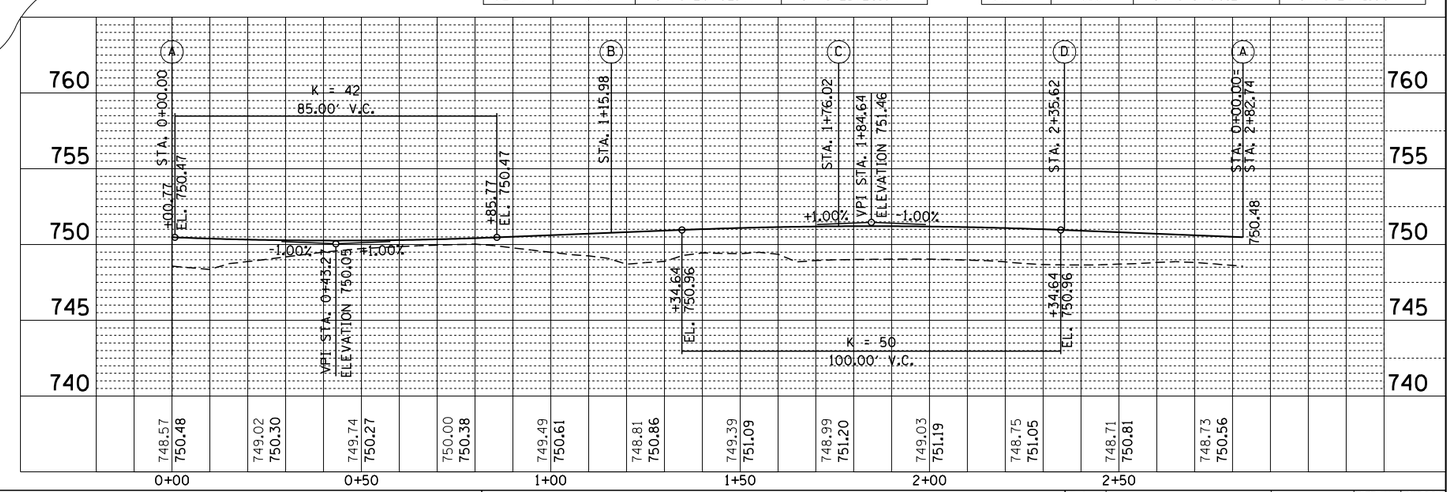
NORTHWEST QUADRANT OUSIDE CURB (AT E.O.P.)			
CURVE	RADIUS	PC	PT
NW-1	315'	STA. 11+33.67	STA. 10+81.29
NW-2	64'	STA. 10+81.29	STA. 10+68.56
NW-3	40'	STA. 10+68.56	STA. 10+38.83
NW-4	90'	STA. 59+56.43	STA. 59+36.98

NORTHEAST QUADRANT OUSIDE CURB (AT E.O.P.)			
CURVE	RADIUS	PC	PT
NE-1	50'	STA. 60+92.04	STA. 60+55.01
NE-2	50'	STA. 10+33.28	STA. 10+38.71
NE-3	50'	STA. 10+38.71	STA. 10+58.77
NE-4	82'	STA. 10+58.77	STA. 10+95.45
NE-5	273'	STA. 10+95.45	STA. 11+47.76

RIGHT TURN LANE OUSIDE CURB (AT E.O.P.)			
CURVE	RADIUS	PC	PT
RT-1	100'	STA. 21+82.31	STA. 23+49.04

SOUTHEAST QUADRANT OUSIDE CURB (AT E.O.P.)			
CURVE	RADIUS	PC	PT
SE-1	275'	STA. 2+50.42	STA. 2+86.71
SE-2	64'	STA. 2+86.71	STA. 3+11.17
SE-3	50'	STA. 3+11.17	STA. 3+38.41
SE-4	65'	STA. 20+14.10	STA. 20+66.91
SE-5	50'	STA. 20+66.91	STA. 20+92.47
SE-6	84'	STA. 20+92.47	STA. 21+28.64

SOUTHWEST QUADRANT OUSIDE CURB (AT E.O.P.)			
CURVE	RADIUS	PC	PT
SW-1	64'	STA. 59+07.26	STA. 59+41.95
SW-2	15'	STA. 3+47.03	STA. 3+36.71
SW-3	84'	STA. 3+36.71	STA. 3+11.51
SW-4	315'	STA. 3+00.27	STA. 2+41.00



PLAN		BY	DATE
NOTE BOOK NO. ____	SURVEYED		
	PLOTTED		
	ALIGNMENT CHECKED		
	RT. OF WAY CHECKED		
	CADD FILE NAME		

PROFILE		BY	DATE
NOTE BOOK NO. ____	SURVEYED		
	PLOTTED		
	GRADES CHECKED		
	BM. NOTED		
	STRUCTURE NOTATNS CHKD		

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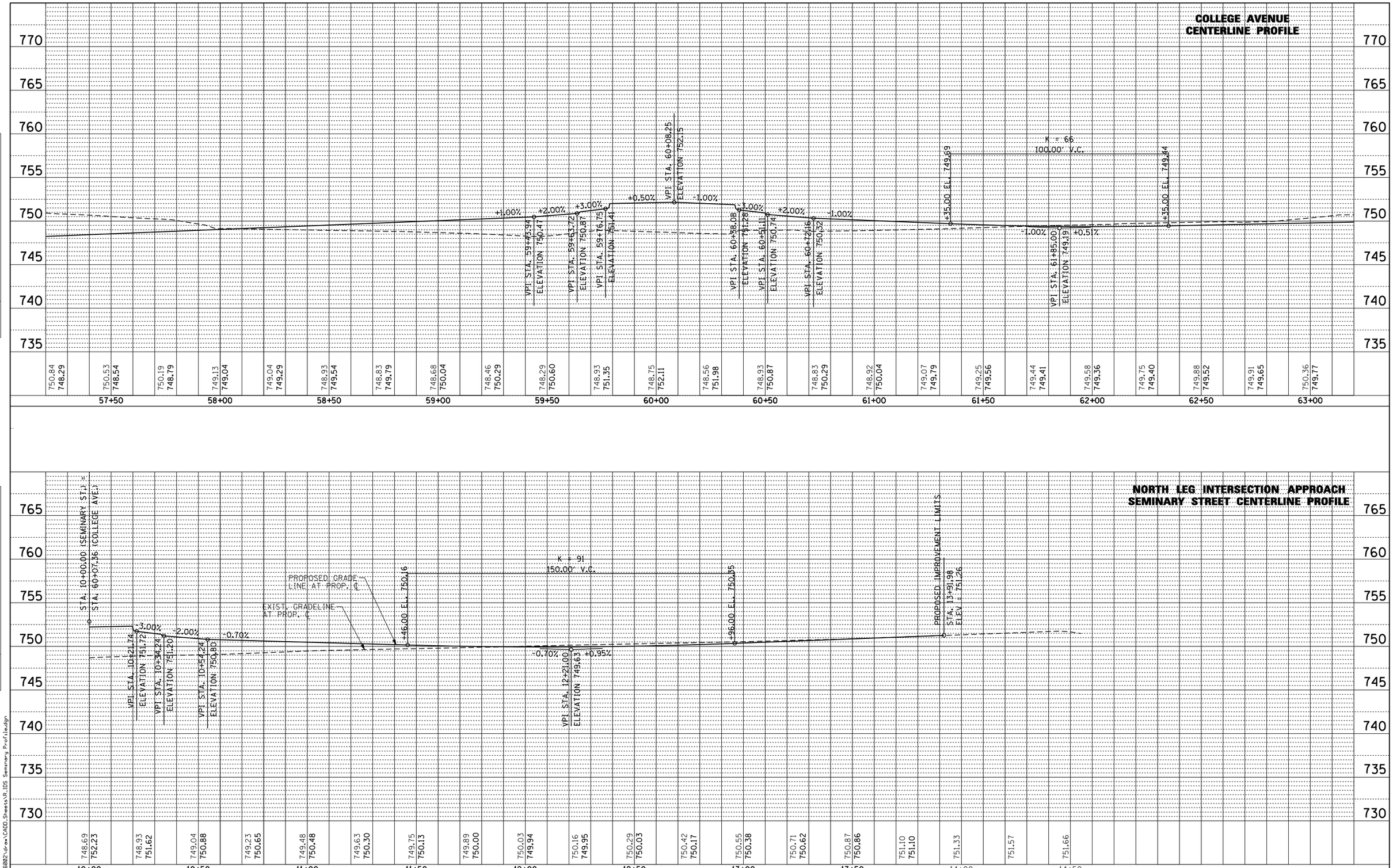
CITY OF ROCKFORD
MORGAN STREET BRIDGE

INTERSECTION DESIGN STUDY
COLLEGE AVENUE & SEMINARY STREET CIRCLE DETAILS

SCALE: 20:1 | SHEET NO. OF SHEETS | STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
5077	99-00493-00-BR	WINNEBAGO	7	2
		CONTRACT NO.		
		ILLINOIS FED. AID PROJECT		



PLAN
SURVEYED
PLOTTED
ALIGNMENT CHECKED
RT. OF WAY CHECKED
CADD FILE NAME
NOTE BOOK
NO.
BY
DATE

PROFILE
SURVEYED
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GRADES CHECKED
B.M. NOTED
STRUCTURE NOTAT'NS CH'KD
NOTE BOOK
NO.
BY
DATE

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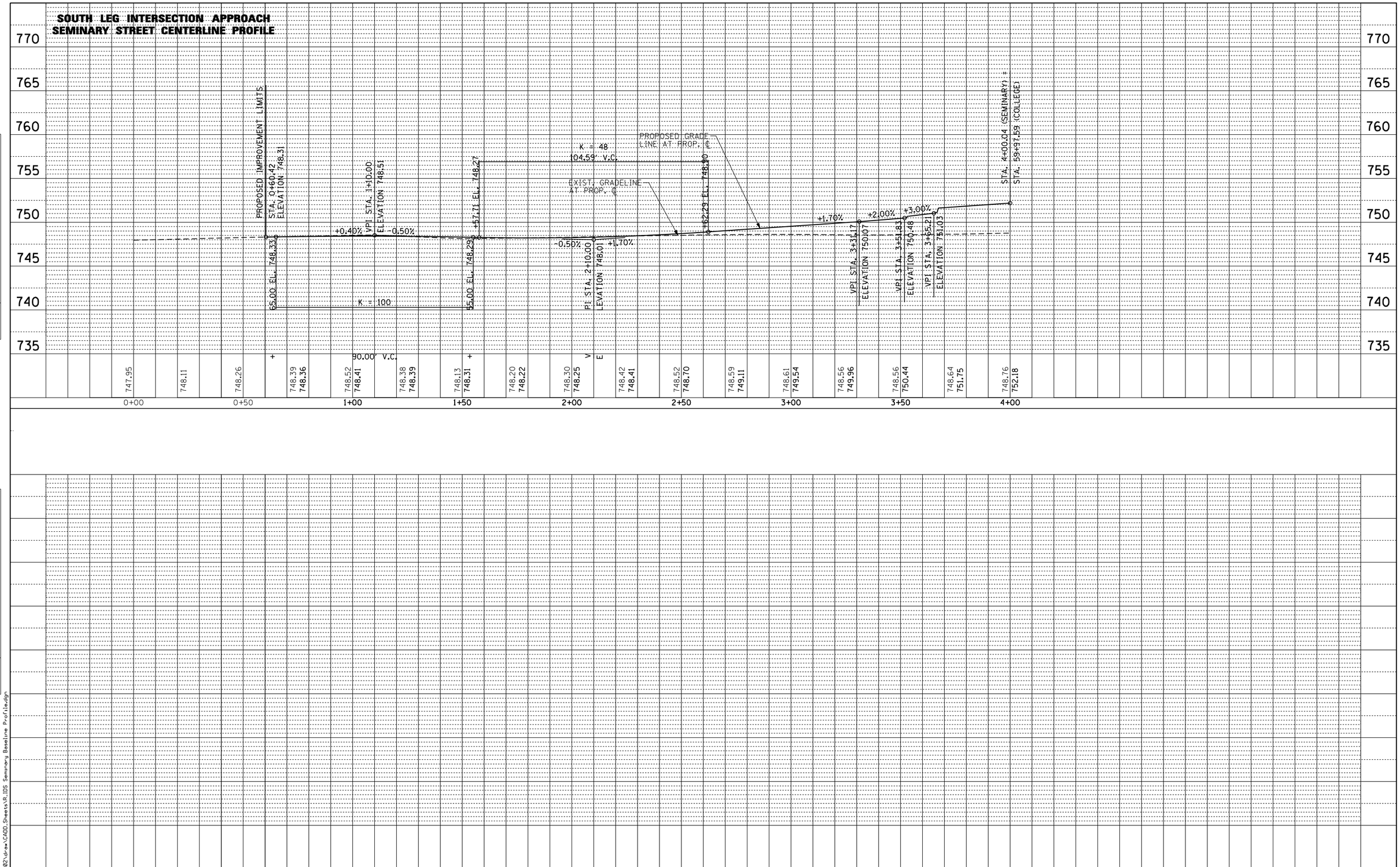
CITY OF ROCKFORD
MORGAN STREET BRIDGE

INTERSECTION DESIGN STUDY
COLLEGE AVENUE & SEMINARY STREET PROFILE

SCALE: 20H 5V | SHEET NO. OF SHEETS | STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
5077	99-00493-00-BR	WINNEBAGO	7	3
		CONTRACT NO.		
		ILLINOIS FED. AID PROJECT		



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PLOTTED
ALIGNMENT CHECKED
RT. OF WAY CHECKED
CADD FILE NAME
NOTE BOOK NO.
BY
DATE

PROFILE
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GRADES CHECKED
B.M. NOTED
STRUCTURE NOTAT'NS CHKD
NOTE BOOK NO.
BY
DATE

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CITY OF ROCKFORD
MORGAN STREET BRIDGE

INTERSECTION DESIGN STUDY
COLLEGE AVENUE & SEMINARY STREET PROFILE

SCALE: 20H 5V | SHEET NO. OF SHEETS | STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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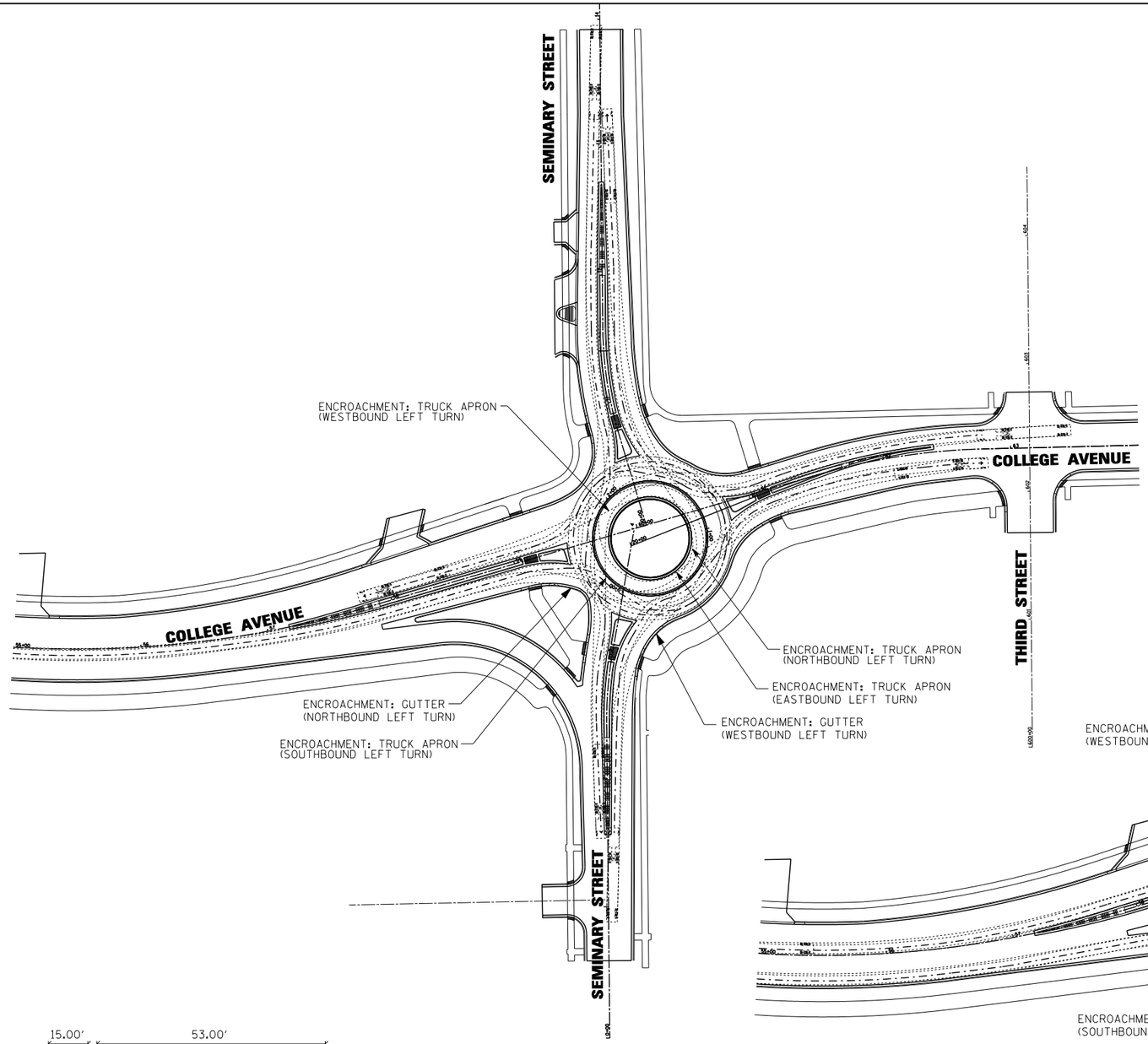
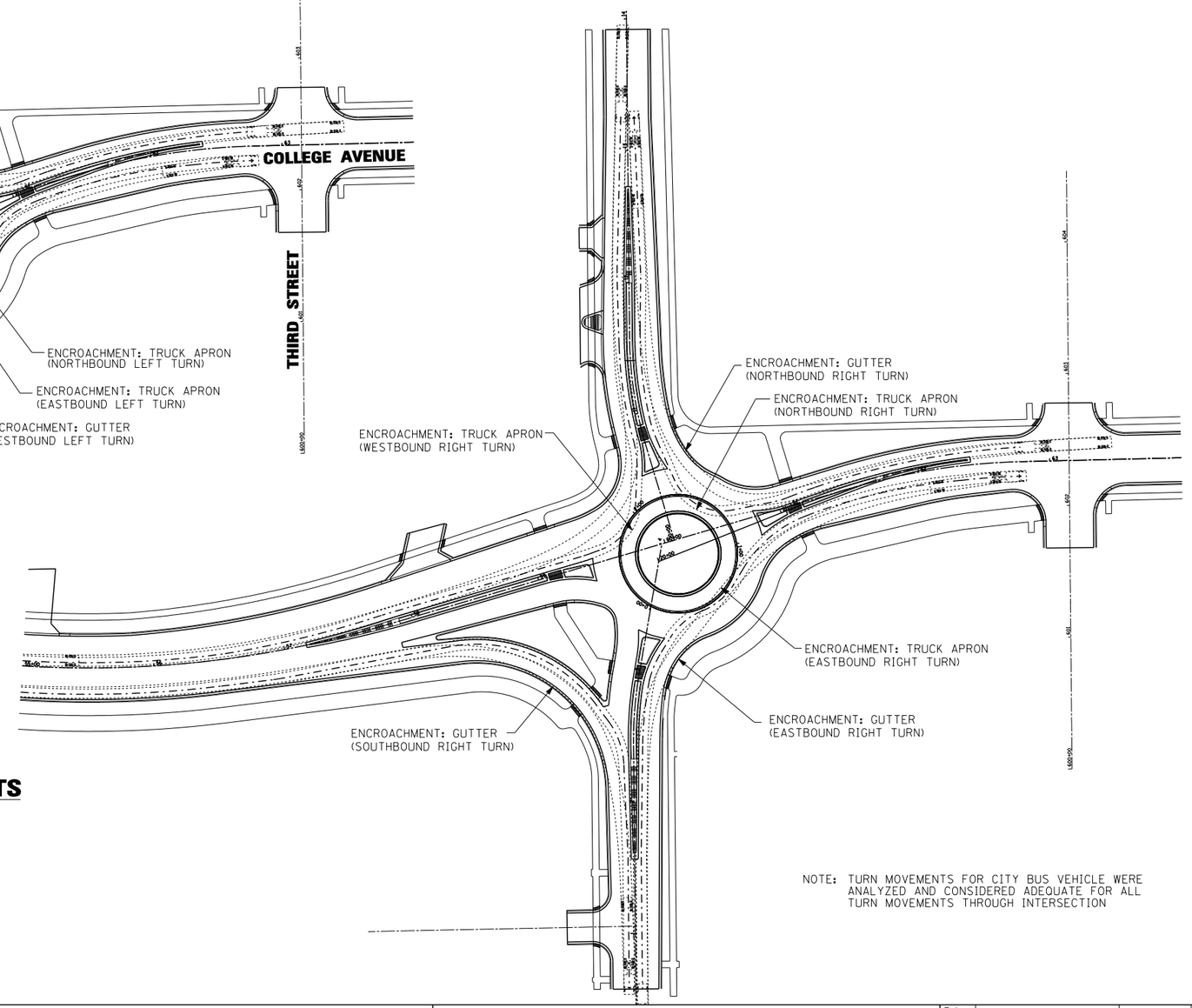
		CONTRACT NO.		
		ILLINOIS FED. AID PROJECT		



LEFT TURN MOVEMENTS

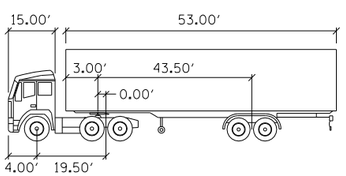


RIGHT TURN MOVEMENTS

N

50' 0 50' 100'

SCALE: 1" = 50'



WB-65	FEET		
TRACTOR WIDTH	: 8.00	LOCK TO LOCK TIME	: 6.00
TRAILER WIDTH	: 8.50	STEERING ANGLE	: 28.4
TRACTOR TRACK	: 8.00	ARTICULATING ANGLE	: 70.0
TRAILER TRACK	: 8.50		

NOTE: TURN MOVEMENTS FOR CITY BUS VEHICLE WERE ANALYZED AND CONSIDERED ADEQUATE FOR ALL TURN MOVEMENTS THROUGH INTERSECTION

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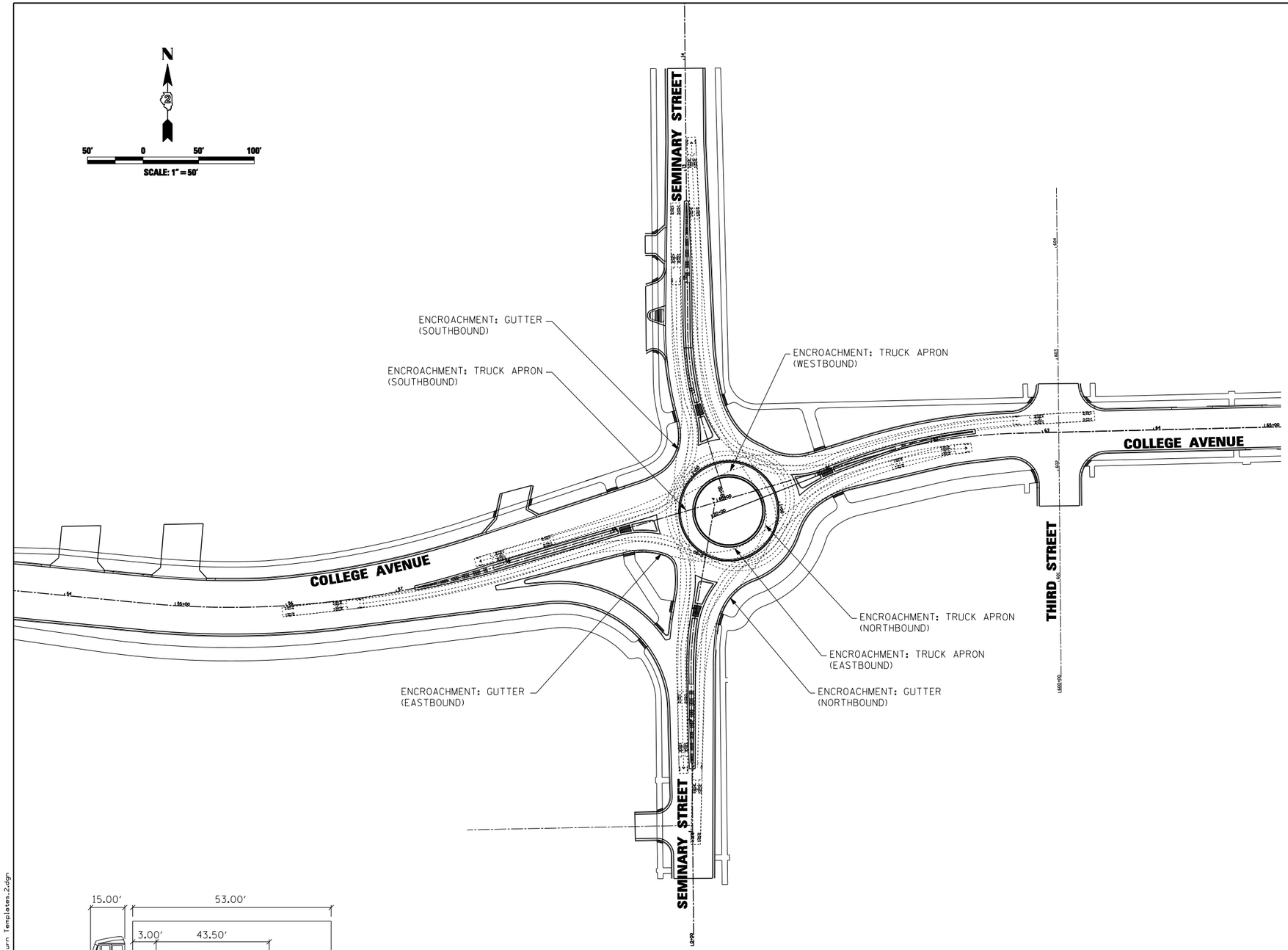
PLOT DATE = 01/26/10	DATE - 11/09/09	REVISED -	

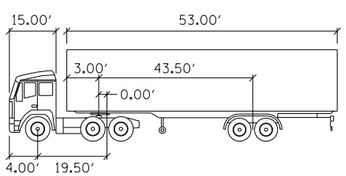
CITY OF ROCKFORD
MORGAN STREET BRIDGE

INTERSECTION DESIGN STUDY
COLLEGE AVENUE & SEMINARY STREET–TURN TEMPLATES

SCALE: 50:1 | SHEET NO. 5 OF 6 SHEETS | STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
5077	99-00493-00-BR	WINNEBAGO	7	5
		CONTRACT NO.		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		





THRU TURN MOVEMENTS

WB-65	FEET		
TRACTOR WIDTH	: 8.00	LOCK TO LOCK TIME	: 6.00
TRAILER WIDTH	: 8.50	STEERING ANGLE	: 28.4
TRACTOR TRACK	: 8.00	ARTICULATING ANGLE	: 70.0
TRAILER TRACK	: 8.50		

NOTE: TURN MOVEMENTS FOR CITY BUS VEHICLE WERE ANALYZED AND CONSIDERED ADEQUATE FOR ALL TURN MOVEMENTS THROUGH INTERSECTION

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	DRAWN - SJP	REVISED -	
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PLOT DATE = 01/26/10	DATE - 11/09/09	REVISED -	

CITY OF ROCKFORD
MORGAN STREET BRIDGE

INTERSECTION DESIGN STUDY
COLLEGE AVENUE & SEMINARY STREET--TURN TEMPLATES

SCALE: 50:1 | SHEET NO. OF SHEETS | STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
5077	99-00493-00-BR	WINNEBAGO	7	6
		CONTRACT NO.		

FED. ROAD DIST. NO. 2 | ILLINOIS | FED. AID PROJECT

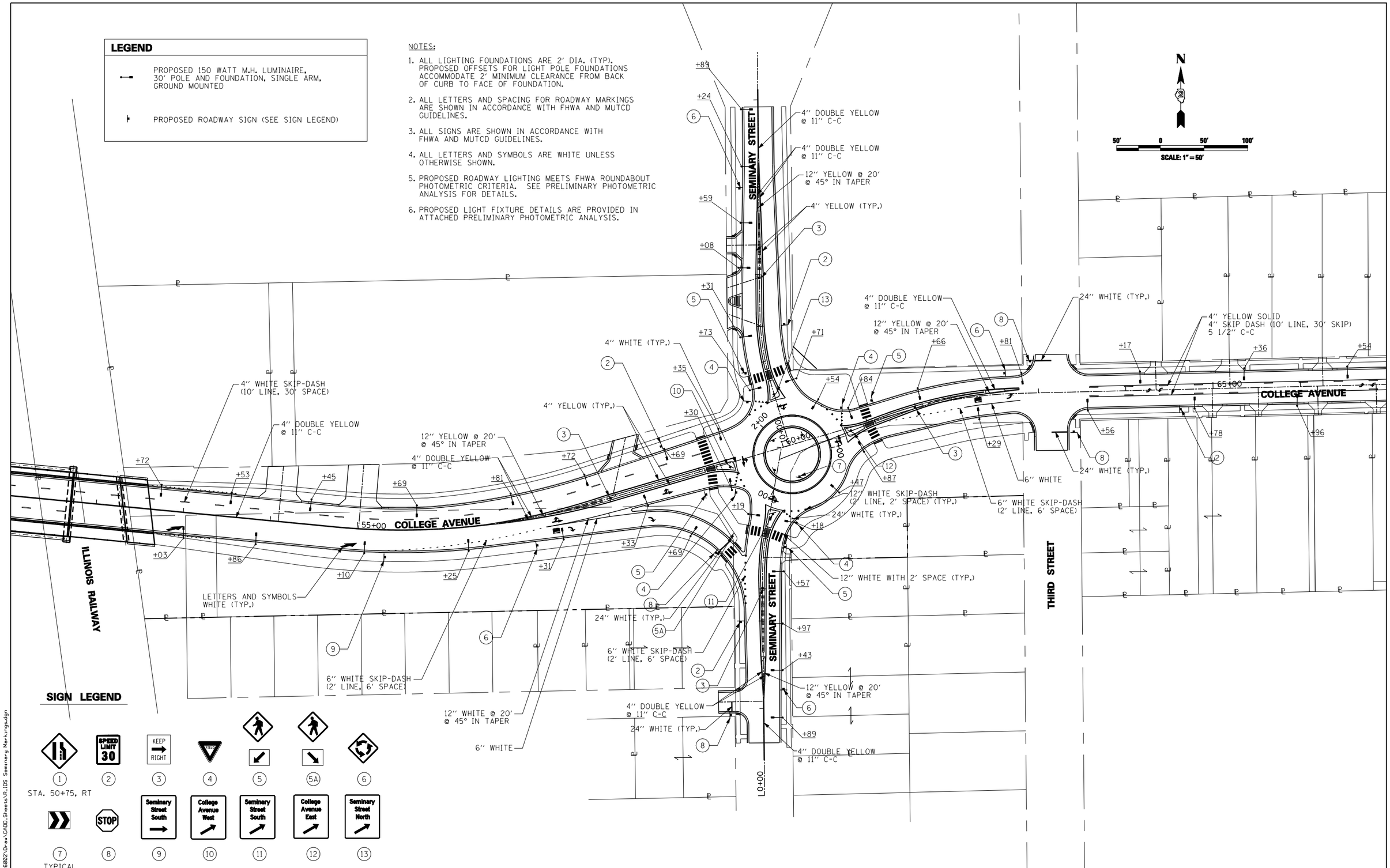
LEGEND

PROPOSED 150 WATT M.H. LUMINAIRE, 30' POLE AND FOUNDATION, SINGLE ARM, GROUND MOUNTED

PROPOSED ROADWAY SIGN (SEE SIGN LEGEND)

NOTES:

1. ALL LIGHTING FOUNDATIONS ARE 2' DIA. (TYP). PROPOSED OFFSETS FOR LIGHT POLE FOUNDATIONS ACCOMMODATE 2' MINIMUM CLEARANCE FROM BACK OF CURB TO FACE OF FOUNDATION.
2. ALL LETTERS AND SPACING FOR ROADWAY MARKINGS ARE SHOWN IN ACCORDANCE WITH FHWA AND MUTCD GUIDELINES.
3. ALL SIGNS ARE SHOWN IN ACCORDANCE WITH FHWA AND MUTCD GUIDELINES.
4. ALL LETTERS AND SYMBOLS ARE WHITE UNLESS OTHERWISE SHOWN.
5. PROPOSED ROADWAY LIGHTING MEETS FHWA ROUNDABOUT PHOTOMETRIC CRITERIA. SEE PRELIMINARY PHOTOMETRIC ANALYSIS FOR DETAILS.
6. PROPOSED LIGHT FIXTURE DETAILS ARE PROVIDED IN ATTACHED PRELIMINARY PHOTOMETRIC ANALYSIS.



SIGN LEGEND

1 STA. 50+75, RT
2
3
4
5
5A
6
7 TYPICAL
8
9
10
11
12
13

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CMT CRAWFORD, MURPHY & TILLY, INC. CONSULTING ENGINEERS License No. 184-000613 ©Copyright CMT, Inc.	USER NAME = Matt Baldwin	DESIGNED -	REVISED -	CITY OF ROCKFORD MORGAN STREET BRIDGE	INTERSECTION DESIGN STUDY COLLEGE AVENUE & SEMINARY STREET PAVEMENT MARKINGS, SIGNAGE, AND LIGHTING	F.A. RTE. 5077	SECTION 99-00493-00-BR	COUNTY WINNEBAGO	TOTAL SHEETS 7 / SHEET NO. 7
		DRAWN -	REVISED -					CONTRACT NO.	
	PLOT SCALE = 100.0000 ' / IN.	CHECKED -	REVISED -						
	PLOT DATE = 01/26/10	DATE -	REVISED -		SCALE: 50:1 SHEET NO. OF SHEETS STA. TO STA.	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT	