

**FEDERAL AVIATION ADMINISTRATION  
FLIGHT STANDARDS SERVICE  
RNAV (GPS) STANDARD INSTRUMENT APPROACH PROCEDURE  
TITLE 14 CFR PART 97.33**

Bearings, headings, courses, tracks and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated.  
Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or feet RVR.

<u>AIRPORT</u> ROCHESTER INTL	<u>AIRPORT ID</u> KRST	<u>PROCEDURE NAME</u> RNAV (GPS) RWY 31	<u>ORIGINAL/AMENDMENT</u> 2A	<u>CITY</u> ROCHESTER	<u>STATE</u> MN	
<u>AIRPORT ELEVATION</u> 1317	<u>TDZE</u> 1304	<u>SUPERSEDED</u> RNAV (GPS) RWY 31	<u>ORIGINAL/AMENDMENT</u> 2	<u>DATED</u> 01/03/2019	<u>MAG VAR</u> 1E	<u>EPOCH YEAR</u> 2005
<u>FACILITY</u> RNAV	<u>COORDINATES OF FACILITIES</u>	<u>ACTUAL EFFECTIVE DATE</u>	<u>REQUIRED EFFECTIVE DATE</u> ROUTINE	<u>CANCEL/SUSPEND</u>		

**TERMINAL ROUTES**

<u>FROM</u>	<u>FIX TYPE</u>	<u>TO</u>	<u>FIX TYPE</u>	<u>LEG TYPE</u>	<u>FO/FB</u>	<u>RNP</u>	<u>COURSE</u>	<u>DISTANCE</u>	<u>ALTITUDE</u>
DLANY	IAF	ZUTEL		TF	FB	1.00	247.14	10.34	2900
GABDE	IAF	ZUTEL		TF	FB	1.00	001.97	7.95	2900
EMORE	IAF	ZUTEL		TF	FB	1.00	311.35	6.59	2900
ZUTEL	IF	MINGO		TF	FB	1.00	311.27	6.55	2800
MINGO	FAF	JEDUG/2.33 NM TO RW31		TF	FB	0.30	311.20	2.19	
JEDUG/2.33 NM TO RW31		RW31	MAP	TF	FO	0.30	311.20	2.33	
RW31	MAP	1504 MSL		CA			311.20		
1504 MSL		CORDY		DF	FO	1.00			3000

**MISSED APPROACH**

**MAP:**

LPV: DA  
LNAV/VNAV: DA  
LNAV: RW31

**MISSED APPROACH INSTRUCTIONS:**

CLIMB TO 3000 DIRECT CORDY AND HOLD.

**ALTERNATE MISSED APPROACH INSTRUCTIONS:**

QUALITY  
18  
CHECKED

PROFILE:

1. PT      SIDE OF COURSE                      OUTBOUND                      FT WITHIN                      MILES OF (IAF)

2. PROFILE STARTS AT ZUTEL

3. FAC: 311.20      FAF: MINGO                      DIST FAF TO MAP: 4.52                      DIST FAF TO THLD: 4.52

4. MIN ALT:      ZUTEL 2900, MINGO 2800, JEDUG/2.33 NM TO RW31 2100\*

5. DIST TO THLD FROM OM:                      MM:                      IM:                      150 HAT:                      200 HAT: 0.45                      GS ANT:

6. MIN GP INCPT: 3000                      GP ALT AT FAF : MINGO 3000                      OM:                      MM:                      IM:

7. GP ANGLE: 3.00                      34:1: IS CLEAR                      20:1: IS CLEAR                      TCH: 56.1

8. MSA FROM: RW31 3900

PBN REQUIREMENTS NOTE:

RNP APCH.

NOTES:

CHART NOTE: FOR UNCOMPENSATED BARO-VNAV SYSTEMS, LNAV/VNAV NA BELOW -20°C OR ABOVE 54°C.  
CHART NOTE: FOR INOPERATIVE ALS, INCREASE LNAV/VNAV ALL CATS VISIBILITY TO RVR 4500, INCREASE LNAV CAT C/D VISIBILITY TO RVR 5500.

ADDITIONAL FLIGHT DATA:

CHART: ASR.  
CHART CIRCLING ICON.  
CHART VDP AT 1.01 NM TO RW31\*  
\*LNAV ONLY  
WAAS CHANNEL #49028  
REFERENCE PATH ID: W31A  
CHART FAS OBST: 1373 ANT 435447N/09222902W.  
1512 AAO 435036N/0922521W.  
HOLD SE, RT, 332.78 INBOUND  
LTP HAE: 367.5 M

MINIMUMS:

TAKEOFF: SEE FAA FORM 8260-15A FOR THIS AIRPORT

ALTERNATE: NA ☐ STANDARD

CATEGORY:	A			B			C			D			E		
FINAL TYPE	DA/MDA	VIS	HAT/HAA	DA/MDA	VIS	HAT/HAA	DA/MDA	VIS	HAT/HAA	DA/MDA	VIS	HAT/HAA	DA/MDA	VIS	HAT/HAA
LPV DA	1504	1800	200	1504	1800	200	1504	1800	200	1504	1800	200			
LNAV/VNAV DA	1554	2400	250	1554	2400	250	1554	2400	250	1554	2400	250			
LNAV MDA	1640	2400	336	1640	2400	336	1640	3500	336	1640	3500	336			
CIRCLING	1720	1	403	1780	1	463	1900	1 1/2	583	1900	2	583			



**CHANGES - REASONS**

- 1: CHART PLANVIEW: REMOVED NOTE " PROCEDURE NA FOR ARRIVALS AT EMORE ON V24 EASTBOUND." - LNR DECOMMISSION/ VOR MON.  
 2: CHART PLANVIEW: REMOVED NOTE " PROCEDURE NA FOR ARRIVALS AT GABDE ON V398-411 SOUTHEAST BOUND." - FUTURE DECOMMISSION OF UKN VOR.  
 3: CHART PLANVIEW: REMOVED NOTE " PROCEDURE NA FOR ARRIVALS AT DLANY ON V82-170 EASTBOUND AND V218 SOUTHEAST BOUND." - FUTURE DECOMMISSION OF UKN VOR.

11/26/2019: THIS IS A CORRECTED COPY OF THE FORM APPROVED ON 10/31/2019.  
 1: ADDED ROCHESTER TO CITY NAME ON -3 FORMS.

**COORDINATED WITH:**

**A4A** ☒ **ALPA** ☒ **AOPA** ☒ **APA** ☒ **HAI** ☐ **NBAA** ☒ **OTHER:** ZMP, PNM FSS, RST ATCT, STATE AERO

**FLIGHT CHECKED BY**

PROCESSED IAW AIRCRAFT OPERATIONS GROUP (AJW-33) MEMO, OCTOBER 3, 2018, SUBJECT:  
 FLIGHT INSPECTION REVIEW NOT REQUIRED

**OFFICE**

**DATE**

**DEVELOPED BY**

DONALD H. LANIER (MICAH HILLEY)

*Digitally signed by*

**DONALD H LANIER**

Nov 26, 2019

*Digitally signed by*

**DONALD H LANIER**

Nov 26, 2019

**OFFICE**

AJV-A431

**DATE**

08/14/2019

**APPROVED BY**

GEORGE DAVIS

*Digitally signed by*

**DONALD H LANIER**

Nov 26, 2019

**OFFICE**

AJV-A430

**DATE**

**TITLE**  
MANAGER

FAS DATA BLOCK INFORMATION

<u>DATA FIELD</u>	<u>DATA</u>
OPERATION TYPE	0
SBAS SERVICE PROVIDER IDENTIFIER	0
AIRPORT IDENTIFIER	KRST
RUNWAY	RW31
APPROACH PERFORMANCE DESIGNATOR	0
ROUTE INDICATOR	
REFERENCE PATH DATA SELECTOR	0
REFERENCE PATH IDENTIFIER (APPROACH ID)	W31A
LTP/FTP LATITUDE	435412.6945N
LTP/FTP LONGITUDE	0922912.1470W
LTP/FTP ELLIPSOIDAL HEIGHT	+03675
FPAP LATITUDE	435512.5400N
FPAP LONGITUDE	0923043.6600W
THRESHOLD CROSSING HEIGHT (TCH)	00056.1
TCH UNITS SELECTOR (METERS OR FEET USED)	F
GLIDEPATH ANGLE (GPA)	03.00
COURSE WIDTH AT THRESHOLD	106.75
LENGTH OFFSET	0000
HORIZONTAL ALERT LIMIT (HAL)	40.0
VERTICAL ALERT LIMIT (VAL)	35.0
CRC REMAINDER	C179B077

ADDITIONAL PATH POINT RECORD INFORMATION

ICAO CODE	K3
LTP ORTHOMETRIC HEIGHT	+03975
FPAP ORTHOMETRIC HEIGHT	+03975



FEDERAL AVIATION ADMINISTRATION  
FLIGHT STANDARDS SERVICE  
STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMDT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
ROCHESTER INTL	KRST	RNAV (GPS) RWY 31	2A	ROCHESTER	MN	1317	RNAV

PART A: OBSTRUCTION DATA SEGMENTS

INITIAL

FROM DLANY TO ZUTEL

RNP	DISTANCE 10.34	PAT	MAP	HAT	HMAS							
OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT	
1.AAO	434912.00N/0921815.00W	1565	164	98	4E	1000					2600	
2.TERRAIN	434912.00N/0921815.00W	1365 (1400)								AS1500	2900	

COMPUTATIONS

ALT KIAS KTAS HAA VKTW TR BA DTA COURSE CHANGE DVEB VEB OCS RF CENTER FIX/DISTANCE

SEGMENT REMARKS:

INITIAL

FROM GABDE TO ZUTEL

RNP	DISTANCE 7.95	PAT	MAP	HAT	HMAS							
OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT	
3.TWR (27-020458)	433933.59N/0921758.84W	1680	500	50	5D	1000					2700	
4.TERRAIN	434118.00N/0921809.00W	1398 (1400)								AS1500	2900	

COMPUTATIONS

ALT KIAS KTAS HAA VKTW TR BA DTA COURSE CHANGE DVEB VEB OCS RF CENTER FIX/DISTANCE

SEGMENT REMARKS:



INITIAL

FROM  
EMORE

TO  
ZUTEL

RNP	DISTANCE 6.59	PAT	MAP	HAT			HMAS					
OBSTRUCTION	COORDINATES		ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
5.AAO	434312.00N/0921415.00W		1559	164	98	4E	1000					2600
6.TERRAIN	434312.00N/0921415.00W		1359 (1400)								AS1500	2900

COMPUTATIONS

ALT

KIAS

KTAS

HAA

VKTW

TR

BA

DTA

COURSE CHANGE

DVEB

VEB OCS

RF CENTER FIX/DISTANCE

SEGMENT REMARKS:

INTERMEDIATE

FROM  
ZUTEL

TO  
MINGO

RNP	DISTANCE 6.55	PAT	MAP	HAT			HMAS					
OBSTRUCTION	COORDINATES		ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
7.AAO	434603.00N/0922136.00W		1569	164	98	4E	500				AC66 AT665	2800
8.TERRAIN	434603.00N/0922136.00W		1369 (1400)								AS1000	2400

COMPUTATIONS

ALT

KIAS

KTAS

HAA

VKTW

TR

BA

DTA

COURSE CHANGE

DVEB

VEB OCS

RF CENTER FIX/DISTANCE

SEGMENT REMARKS:



**FACILITY**  
RNAV

QUALITY  
18  
CHECKED

QUALITY  
18  
CHECKED



AIRPORT

ROCHESTER INTL

AIRPORT ID

KRST

PROCEDURE NAME

RNAV (GPS) RWY 31

AMDT NO.

2A

CITY

ROCHESTER

STATE

MN

AIRPORT ELEVATION

1317

FACILITY

RNAV

MISSED APPROACH : LPV

FROM

DA

TO

CORDY

RNP

DISTANCE

PAT

MAP

HAT

HMAS

1336

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
							ASC				3000
11.TWR (27-001292)	440550.00N/0924752.90W	1678	50	20	2C	1000					2700
12.TERRAIN	440012.00N/0924327.00W	1346 (1300)								AS1500	2800

COMPUTATIONS

ALT

KIAS

KTAS

HAA

VKTW

TR

BA

DTA

COURSE CHANGE

DVEB

VEB OCS

RF CENTER FIX/DISTANCE

SEGMENT REMARKS:

MISSED APPROACH : LNAV/VNAV

FROM

DA

TO

CORDY

RNP

DISTANCE

PAT

MAP

HAT

HMAS

1423

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
							ASC				3000
11.TWR (27-001292)	440550.00N/0924752.90W	1678	50	20	2C	1000					2700
12.TERRAIN	440012.00N/0924327.00W	1346 (1300)								AS1500	2800

COMPUTATIONS

ALT

KIAS

KTAS

HAA

VKTW

TR

BA

DTA

COURSE CHANGE

DVEB

VEB OCS

RF CENTER FIX/DISTANCE

SEGMENT REMARKS:

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AIRPORT

ROCHESTER INTL

AIRPORT ID

KRST

PROCEDURE NAME

RNAV (GPS) RWY 31

AMDT NO.

2A

CITY

ROCHESTER

STATE

MN

AIRPORT ELEVATION

1317

FACILITY

RNAV

MISSED APPROACH : LNAV

FROM

RW31

TO

CORDY

RNP

DISTANCE

PAT

MAP

HAT

HMAS

1540

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
							ASC				3000
11.TWR (27-001292)	440550.00N/0924752.90W	1678	50	20	2C	1000					2700
12.TERRAIN	440012.00N/0924327.00W	1346 (1300)								AS1500	2800

COMPUTATIONS

ALT

KIAS

KTAS

HAA

VKTW

TR

BA

DTA

COURSE CHANGE

DVEB

VEB OCS

RF CENTER FIX/DISTANCE

SEGMENT REMARKS:

CIRCLING

☐ ALL CATS

☒ CAT A

☒ CAT B

☒ CAT C

☒ CAT D

☐ CAT E

☐ NOT AUTHORIZED

OBSTRUCTION	COORDINATES	RADIUS	HAA	ELEV MSL	HORZ	VERT	AC	ROC	OCS	ADJUSTMENTS	MIN ALT
CATEGORY A											
13.TANK (27-026583)	435513.81N/0922844.33W	1.31	403	1419	20	3	1A	300			1720
CATEGORY B											
14.TANK (27-001544)	435211.00N/0922953.00W	1.85	463	1428	50	20	2C	300		HAA	1780
CATEGORY C											
15.TWR (27-000694)	435050.87N/0922935.63W	2.91	583	1538	250	50	4D	300		AC50	1900
CATEGORY D											
15.TWR (27-000694)	435050.87N/0922935.63W	3.81	583	1538	250	50	4D	300		AC50	1900

<u>AIRPORT</u> ROCHESTER INTL	<u>AIRPORT ID</u> KRST	<u>PROCEDURE NAME</u> RNAV (GPS) RWY 31	<u>AMDT NO.</u> 2A	<u>CITY</u> ROCHESTER	<u>STATE</u> MN	<u>AIRPORT ELEVATION</u> 1317	<u>FACILITY</u> RNAV
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MSA

CENTER  
RW31

RADIUS  
25

<u>SECTOR</u>	<u>OBSTRUCTION</u>	<u>COORDINATES</u>	<u>BEARING</u>	<u>DISTANCE</u>	<u>ELEV MSL</u>	<u>HORZ</u>	<u>VERT</u>	<u>AC</u>	<u>ROC</u>	<u>OCS</u>	<u>ADJUSTMENTS</u>	<u>MIN ALT</u>
360-360	TWR (19-020063)	432832.00N/0924230.00W	200	27.4	2828	500	50	5D	1000			3900

MSA REMARKS:

NOTES/EXPLANATIONS FROM PROCEDURE SEGMENTS:  
TAA NOT USED DUE TO AIR TRAFFIC RESTRICTIONS.

QUALITY  
18  
CHECKED

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PART B: SUPPLEMENTAL DATA

COMMUNICATIONS WITH

RST TOWER, ZMP ARTCC, RST APP CON

<u>WX SERVICE</u> ASOS	<u>LOCATION</u> KRST	<u>HRS OPERATION</u> 24	<u>ALTIMETER SOURCE</u> KRST	<u>DISTANCE</u> 0	<u>SERVICE-A</u> Y	<u>ADJUSTMENTS</u> 0
<u>BACK-UP WX SERVICE</u>	<u>LOCATION</u>	<u>HRS OPERATION</u>	<u>ALTIMETER SOURCE</u>	<u>DISTANCE</u>	<u>SERVICE-A</u>	<u>ADJUSTMENTS</u>

WX REMARKS:

BACKUP ALTIMETER NOT REQUIRED, AIRPORT HAS REDUNDANT ALTIMETER SOURCES.

<u>PRIMARY NAVAID</u>	<u>MONITOR POINT</u>	<u>HRS OPERATION</u>	<u>CAT</u>
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<u>APPROACH AND RUNWAY LIGHTING SYSTEM</u>	<u>RUNWAY MARKINGS</u>	<u>RUNWAY VISUAL RANGE</u>
RW02 - MIRL (PCL), REIL, VASI-4L	NPI-G	
RW20 - MIRL (PCL), REIL, PAPI-4L	NPI-G	
RW13 - TDZ, MALSR (PCL), HIRL (PCL), C/LINE, PAPI-4L	PIR-G	APPROACH
RW31 - TDZ, MALSR (PCL), HIRL (PCL), C/LINE, PAPI-4L	PIR-G	APPROACH

<u>GLIDESLOPE ANGLE</u> 3.00	<u>ELEV RWY THRESHOLD</u> 1304.1	<u>TCH</u> 56.1	<u>ELEV GS ANTENNA</u>	<u>DISTANCE FROM RWY</u>	<u>VGSI ANGLE</u> 3.00	<u>TCH</u> 54.9
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FINAL APPROACH COURSE AIMING

RUNWAY THRESHOLD	<input checked="" type="checkbox"/>	FT FROM THRESHOLD	DISPLACED THRESHOLD DISTANCE
ON CENTERLINE	<input checked="" type="checkbox"/>	FT FROM CENTERLINE	

CRITICAL TEMPERATURES

<u>CRITICAL LOW</u> -20C	<u>CRITICAL HIGH</u> +54C	<u>ACT</u> -27.66C	<u>APT ISA</u> -21C
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CRITICAL TEMPERATURE REMARKS:

AVERAGE COLD TEMPERATURE DERIVED FROM 5-YEAR HISTORY (2013-2107). CRITICAL LOW TEMPERATURE BASED ON ACT. DESCENT RATE (FPM): STANDARD TEMP 971 HIGH TEMP 1134.

"VISUAL PORTION OF FINAL" PENETRATIONS

HELICOPTER 'VISUAL PORTION OF FINAL' PENETRATIONS





AIRPORT	AIRPORT ID	PROCEDURE NAME	AMDT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
ROCHESTER INTL	KRST	RNAV (GPS) RWY 31	2A	ROCHESTER	MN	1317	RNAV

PART D: AIRSPACE

DOCKET #

ALL DISTANCES TO 1/100NM; ELEVATION TO NEAREST 100 FEET; COORDINATES TO 1/100 SECOND; DEG TO 1/100 DEGREE

DISTANCE FROM	THLD	TO 1000FT POINT	2.95
WIDTH OF	FINAL	SEGMENT AT 1000FT POINT	1.20
TRUE COURSE OF	FINAL	SEGMENT CONTAINING 1000FT POINT	312.20
HIGH TERRAIN IN	FINAL	SEGMENT CONTAINING 1000FT POINT	1310
DISTANCE FROM	THLD	TO 1500FT POINT	10.01
WIDTH OF	INTERMEDIATE	SEGMENT AT 1500FT POINT	4.00
TRUE COURSE OF	INTERMEDIATE	SEGMENT CONTAINING 1500FT POINT	312.20
HIGH TERRAIN IN	INTERMEDIATE	SEGMENT CONTAINING 1500FT POINT	1369

THRESHOLD  
COORDINATES  
(IF STR-IN)

435412.69N/0922912.15W

ARP COORDINATES

435429.80N/0923000.10W

RUNWAY APCH END  
AND DIST FURTHEST  
FROM ARP

RUNWAY 13 DISTANCE 0.88 NM

FAF  
COORDINATES

435110.57N/0922434.16W

FIX NAME  
COORDINATES

REMARKS

QUALITY  
18  
CHECKED

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PART E: PREPARED BY

<u>NAME</u> DONALD H. LANIER (MICAH HILLEY)	<u>OFFICE</u> AJV-A431	<u>DATE</u> 08/14/2019	<u>TITLE</u> AERONAUTICAL INFORMATION SPECIALIST
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18  
CHECKED

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