

**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> MUSKEGON COUNTY	<u>AIRPORT ID</u> KMKG	<u>PROCEDURE NAME</u> RNAV (GPS) RWY 24	<u>ORIGINAL/AMENDMENT</u> 2A	<u>CITY</u> MUSKEGON	<u>STATE</u> MI	
<u>AIRPORT ELEVATION</u> 629	<u>TDZE</u> 627	<u>SUPERSEDED</u> RNAV (GPS) RWY 24	<u>ORIGINAL/AMENDMENT</u> 2	<u>DATED</u> 05/24/2018	<u>MAG VAR</u> 4W	<u>EPOCH YEAR</u> 1995
<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>
BULLY		GUTPE		TF	FO	1.00	062.60	26.63	3000
GUTPE	IF/IAF	ONTUE		TF	FB	1.00	240.55	5.99	2700
ONTUE	FAF	RW24	MAP	TF	FO	0.30	240.47	6.34	
RW24	MAP	827 MSL		CA			240.47		
827 MSL		HITPO		DF	FO	1.00			3000

MISSED APPROACH

MAP:

LPV: DA
LNAV/VNAV: DA
LNAV: RW24

MISSED APPROACH INSTRUCTIONS:

CLIMB TO 3000 DIRECT HITPO AND HOLD.

ALTERNATE MISSED APPROACH INSTRUCTIONS:



PROFILE:

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

2. HOLD NE GUTPE, RT, 240.55 INBOUND, 3000 FT. IN LIEU OF PT (IAF), MAX 10000.

3. FAC: 240.47 FAF: ONTUE DIST FAF TO MAP: 6.34 DIST FAF TO THLD: 6.34

4. MIN ALT: GUTPE 3000, ONTUE 2700

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

6. MIN GP INCPT: 2700 GP ALT AT FAF : ONTUE 2700 OM: MM: IM:

7. GP ANGLE: 3.00 34:1: IS CLEAR 20:1: IS CLEAR TCH: 55.9

8. MSA FROM: RW24 2900

PBN REQUIREMENTS NOTE:

RNP APCH.

NOTES:

CHART NOTE: FOR UNCOMPENSATED BARO-VNAV SYSTEMS, LNAV/VNAV NA BELOW -18°C OR ABOVE 54°C.
CHART NOTE: FOR INOPERATIVE ALS, INCREASE LPV VISIBILITY ALL CATS TO 3/4 SM, LNAV/VNAV VISIBILITY ALL CATS TO 1 3/8 SM, LNAV CATS A/B TO 1 SM AND LNAV CATS C/D TO 1 3/8 SM.

ADDITIONAL FLIGHT DATA:

CHART: ASR
CHART CIRCLING ICON.
CHART VDP AT 1.24 NM TO RW24*
*LNAV ONLY
WAAS CHANNEL #42918
REFERENCE PATH ID: W24A
CHART FAS OBST: 750 POLE 431022N/0861227W.
874 AAO 431357N/0860647W.
HOLD SW, RT, 060.24 INBOUND
LTP HAE: 157.2 M

MINIMUMS:

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

ALTERNATE: NA ☐ STANDARD - NA WHEN LOCAL WEATHER NOT AVAILABLE.

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	827	1/2	200	827	1/2	200	827	1/2	200	827	1/2	200			
LNAV/VNAV DA	1092	1	465	1092	1	465	1092	1	465	1092	1	465			
LNAV MDA	1080	1/2	453	1080	1/2	453	1080	7/8	453	1080	7/8	453			
CIRCLING	1080	1	451	1180	1	551	1200	1 1/2	571	1200	2	571			



CHANGES - REASONS

1. CHANGED CHART NOTE FROM "FOR UNCOMPENSATED BARO-VNAV SYSTEMS, LNAV/VNAV NA BELOW -18 C (0 F) OR ABOVE 54 C (130 F)" TO "FOR UNCOMPENSATED BARO-VNAV SYSTEMS, LNAV/VNAV NA BELOW -18 C OR ABOVE 54 C" - 8260.19H 8-6-9.S.
2. REMOVED CHART NOTE: DME/DME RNP-0.3 NA AND ADDED RNP APCH TO PBN REQUIREMENTS NOTES - CURRENT NOTATION PER 8260.19H.
3. REMOVED CHART NOTE: BARO-VNAV AND VDP NA WHEN USING FREMONT ALTIMETER SETTING - MOVED TO PART C REMARKS FOR CONTINGENCY PURPOSES.
4. CHANGED CHART NOTE FROM "FOR INOPERATIVE ALS, INCREASE LNAV/VNAV ALL CATS VISIBILITY TO 1 3/8 SM" TO "FOR INOPERATIVE ALS, INCREASE LPV VISIBILITY ALL CATS TO 3/4 SM, LNAV/VNAV VISIBILITY ALL CATS TO 1 3/8 SM, LNAV CAT A/B TO 1 SM AND LNAV CAT C/D TO 1 3/8 SM" - 8260.3D TABLES 3-3-1, 3-3-3, AND 3-3-4.
5. ADDED "MAX 10000" TO LINE 2 - 8260.19H 8-6-7.B.
6. CHANGED ALTERNATE MINIMUMS FROM "STANDARD" TO "STANDARD - NA WHEN LOCAL WEATHER NOT AVAILABLE" - PROCEDURE UTILIZES BACKUP ALTIMETER; IMPLEMENTATION OF FAA ORDER 8260.19H CHANGE 1, ATTACHMENT 4.

COORDINATED WITH:

A4A☒ALPA☒AOPA☒APA☐HAI☐NBAA☒OTHER: ZAU, MKG APP CON, MKG ATCT, AMGR

FLIGHT CHECKED BY

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

OFFICE

Digitally signed by

DATE

JOHN BORDY

Mar 24, 2020

DEVELOPED BY

ALLAN WILL (ANTHONY CAPPABIANCO)

Digitally signed by

JOHN BORDY

Mar 24, 2020

OFFICE

AJV-A423

DATE

08/27/2019

APPROVED BY

MARLON ROBINSON

Digitally signed by

JOHN BORDY

Mar 24, 2020

OFFICE

AJV-A420

DATE

TITLE

MANAGER



FAS DATA BLOCK INFORMATION

<u>DATA FIELD</u>	<u>DATA</u>
OPERATION TYPE	0
SBAS SERVICE PROVIDER IDENTIFIER	0
AIRPORT IDENTIFIER	KMKG
RUNWAY	RW24
APPROACH PERFORMANCE DESIGNATOR	0
ROUTE INDICATOR	
REFERENCE PATH DATA SELECTOR	0
REFERENCE PATH IDENTIFIER (APPROACH ID)	W24A
LTP/FTP LATITUDE	431017.4120N
LTP/FTP LONGITUDE	0861350.1630W
LTP/FTP ELLIPSOIDAL HEIGHT	+01572
FPAP LATITUDE	430928.0690N
FPAP LONGITUDE	0861531.5450W
THRESHOLD CROSSING HEIGHT (TCH)	00055.9
TCH UNITS SELECTOR (METERS OR FEET USED)	F
GLIDEPATH ANGLE (GPA)	03.00
COURSE WIDTH AT THRESHOLD	106.50
LENGTH OFFSET	0768
HORIZONTAL ALERT LIMIT (HAL)	40.0
VERTICAL ALERT LIMIT (VAL)	35.0
CRC REMAINDER	A6F450B0

ADDITIONAL PATH POINT RECORD INFORMATION

ICAO CODE	K5
LTP ORTHOMETRIC HEIGHT	+01910
FPAP ORTHOMETRIC HEIGHT	+01910



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

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMDT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
MUSKEGON COUNTY	KMKG	RNAV (GPS) RWY 24	2A	MUSKEGON	MI	629	RNAV

PART A: OBSTRUCTION DATA SEGMENTS

FEEDER

FROM TO
BULLY GUTPE

<u>RNP</u>	<u>DISTANCE</u>	<u>PAT</u>	<u>MAP</u>	<u>HAT</u>			<u>HMAS</u>				
	26.63										
<u>OBSTRUCTION</u>	<u>COORDINATES</u>	<u>ELEV MSL</u>	<u>HORZ</u>	<u>VERT</u>	<u>AC</u>	<u>ROC</u>	<u>OCS</u>	<u>CG</u>	<u>CGTA</u>	<u>ADJUSTMENTS</u>	<u>MIN ALT</u>
1.TOWER (26-002154)	431538.00N/0860437.00W	1179	500	50	5D	1000				AT821	3000
2.TERRAIN	431457.00N/0860024.00W	726 (700)								AS1500	2200

COMPUTATIONS

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

SEGMENT REMARKS:

INTERMEDIATE

FROM TO
GUTPE (IF/IAF) ONTUE

<u>RNP</u>	<u>DISTANCE</u>	<u>PAT</u>	<u>MAP</u>	<u>HAT</u>			<u>HMAS</u>					
	5.99											
<u>OBSTRUCTION</u>	<u>COORDINATES</u>		<u>ELEV MSL</u>	<u>HORZ</u>	<u>VERT</u>	<u>AC</u>	<u>ROC</u>	<u>OCS</u>	<u>CG</u>	<u>CGTA</u>	<u>ADJUSTMENTS</u>	<u>MIN ALT</u>
1.TOWER (26-002154)	431538.00N/0860437.00W		1179	500	50	5D	500				AT1021	2700
2.TERRAIN	431457.00N/0860024.00W		726 (700)								AS1500	2200

COMPUTATIONS

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

SEGMENT REMARKS:



QUALITY
30
CHECKED



MISSED APPROACH : LPV

FROM

DA

TO

HITPO

RNP	DISTANCE	PAT	MAP	HAT			HMAS 658					
OBSTRUCTION	COORDINATES		ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
								ASC				3000
7.ANTENNA (26-029571)	430802.37N/0861537.50W		867	40	2	2A	1000					1900
8.TERRAIN	430800.00N/0861624.00W		725 (700)								AS1500	2200

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

HITPO

RNP	DISTANCE	PAT	MAP	HAT			HMAS 931					
OBSTRUCTION	COORDINATES		ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
								ASC				3000
7.ANTENNA (26-029571)	430802.37N/0861537.50W		867	40	2	2A	1000					1900
8.TERRAIN	430800.00N/0861624.00W		725 (700)								AS1500	2200

COMPUTATIONS

ALT

KIAS

KTAS

HAA

VKTW

TR

BA

DTA

COURSE CHANGE

DVEB

VEB OCS

RF CENTER FIX/DISTANCE

SEGMENT REMARKS:



MISSED APPROACH : LNAV

FROM
RW24

TO
HITPO

RNP	DISTANCE	PAT	MAP	HAT			HMAS 980					
OBSTRUCTION	COORDINATES		ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
								ASC				3000
7.ANTENNA (26-029571)	430802.37N/0861537.50W		867	40	2	2A	1000					1900
8.TERRAIN	430800.00N/0861624.00W		725 (700)								AS1500	2200

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											
9.TANK (26-001279)	431129.19N/0861333.71W	1.30	451	779	20	10	1B	300			1080
CATEGORY B											
7.ANTENNA (26-029571)	430802.37N/0861537.50W	1.83	551	867	40	2	2A	300			1180
CATEGORY C											
10.TOWER (26-001902)	431241.12N/0861224.93W	2.87	571	899	20	3	1A	300			1200
CATEGORY D											
10.TOWER (26-001902)	431241.12N/0861224.93W	3.75	571	899	20	3	1A	300			1200

CIRCLING REMARKS:



<u>AIRPORT</u> MUSKEGON COUNTY	<u>AIRPORT ID</u> KMKG	<u>PROCEDURE NAME</u> RNAV (GPS) RWY 24	<u>AMDT NO.</u> 2A	<u>CITY</u> MUSKEGON	<u>STATE</u> MI	<u>AIRPORT ELEVATION</u> 629	<u>FACILITY</u> RNAV
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MSA

CENTER
RW24

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	TOWER (26-002926)	431835.40N/0855444.80W	063	16.2	1847	500	50	5D	1000			2900

MSA REMARKS:

NOTES/EXPLANATIONS FROM PROCEDURE SEGMENTS:



PART B: SUPPLEMENTAL DATA

COMMUNICATIONS WITH

ZAU ARTCC, MKG APP CON, MKG TOWER

<u>WX SERVICE</u> ASOS	<u>LOCATION</u> KMKG	<u>HRS OPERATION</u> 24	<u>ALTIMETER SOURCE</u> KMKG	<u>DISTANCE</u> 0	<u>SERVICE-A</u> Y	<u>ADJUSTMENTS</u> 0
<u>BACK-UP WX SERVICE</u> AWOS	<u>LOCATION</u> KFFX	<u>HRS OPERATION</u> 24	<u>ALTIMETER SOURCE</u> KFFX	<u>DISTANCE</u> 19.4	<u>SERVICE-A</u> Y	<u>ADJUSTMENTS</u> 60

WX REMARKS:

RASS PRESSURE PATTERNS SAME
KMKG 629, KFFX 733
RA = 59.7

<u>PRIMARY NAVAID</u>	<u>MONITOR POINT</u>	<u>HRS OPERATION</u>	<u>CAT</u>
<u>APPROACH AND RUNWAY LIGHTING SYSTEM</u>		<u>RUNWAY MARKINGS</u>	<u>RUNWAY VISUAL RANGE</u>
RW06 - HIRL (PCL), REIL (PCL), VASI-4L		PIR-F	
RW14 - HIRL (PCL), REIL (PCL), PAPI-4L		PIR-F	ROLL OUT
RW24 - MALSR (PCL), HIRL (PCL), VASI-4L		PIR-F	
RW32 - MALSR (PCL), HIRL (PCL)		PIR-F	APPROACH

<u>GLIDESLOPE ANGLE</u> 3.00	<u>ELEV RWY THRESHOLD</u> 626.5	<u>TCH</u> 55.9	<u>ELEV GS ANTENNA</u>	<u>DISTANCE FROM RWY</u>	<u>VGSI ANGLE</u> 3.00	<u>TCH</u> 58.1
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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> -18C	<u>CRITICAL HIGH</u> +54C	<u>ACT</u> -18C	<u>APT ISA</u> +13.76C
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CRITICAL TEMPERATURE REMARKS:

AVERAGE COLD TEMPERATURE DERIVED FROM 5-YEAR HISTORY (2012-2016).
CRITICAL LOW TEMPERATURE BASED ON ACT.
DESCENT RATE (FPM): STANDARD TEMP 964 HIGH TEMP 1271.

"VISUAL PORTION OF FINAL" PENETRATIONS



HELICOPTER 'VISUAL PORTION OF FINAL' PENETRATIONS

and/or

5280-FT "PROCEED VFR" SEGMENT LEVEL SURFACE AREA PENETRATIONS

PART C: GENERAL REMARKS:

PRECIPITOUS TERRAIN EVALUATION COMPLETED.

ORDER 8260.3 CHAPTER 2 APPLIED TO 874 AAO 431357N/0860647W.

FOR CONTINGENCY PURPOSES:

WHEN LOCAL ALTIMETER SETTING NOT RECEIVED, USE FREMONT ALTIMETER SETTING AND INCREASE LPV DA TO 887 FT, LNAV/VNAV DA TO 1152 FT, AND ALL MDA 60 FT; INCREASE LNAV VISIBILITY CATS C/D TO 1 SM, AND CIRCLING VISIBILITY CAT C TO 1 3/4 SM.

FOR INOPERATIVE ALS, WHEN USING FREMONT ALTIMETER SETTING, INCREASE LPV VISIBILITY ALL CATS TO 3/4 SM, LNAV/VNAV VISIBILITY ALL CATS TO 1 1/2 SM, LNAV CATS A/B TO 1 SM AND LNAV CATS C/D TO 1 3/8 SM.

BARO-VNAV AND VDP NA WHEN USING FREMONT ALTIMETER SETTING.

VEGETATION HEIGHT: 100FT PER CHECKLIST.

ORDER 8260.3, CHAPTER 2, NEW CIRCLING CRITERIA APPLIED.



<u>AIRPORT</u> MUSKEGON COUNTY	<u>AIRPORT ID</u> KMKG	<u>PROCEDURE NAME</u> RNAV (GPS) RWY 24	<u>AMDT NO.</u> 2A	<u>CITY</u> MUSKEGON	<u>STATE</u> MI	<u>AIRPORT ELEVATION</u> 629	<u>FACILITY</u> RNAV
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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	3.20
WIDTH OF	FINAL	SEGMENT AT 1000FT POINT	1.20
TRUE COURSE OF	FINAL	SEGMENT CONTAINING 1000FT POINT	236.47
HIGH TERRAIN IN	FINAL	SEGMENT CONTAINING 1000FT POINT	700
DISTANCE FROM	THLD	TO 1500FT POINT	5.34
WIDTH OF	FINAL	SEGMENT AT 1500FT POINT	1.20
TRUE COURSE OF	FINAL	SEGMENT CONTAINING 1500FT POINT	236.47
HIGH TERRAIN IN	FINAL	SEGMENT CONTAINING 1500FT POINT	700

THRESHOLD
COORDINATES
(IF STR-IN)

431017.41N/0861350.16W

ARP COORDINATES

431003.62N/0861407.58W

RUNWAY APCH END
AND DIST FURTHEST
FROM ARP

RUNWAY 6 DISTANCE 0.77 NM

FAF
COORDINATES

431347.64N/0860637.14W

FIX NAME
COORDINATES

REMARKS

NO ADDITIONAL AIRSPACE REQUIRED

QUALITY
30
CHECKED

FAA Form 8260-9 / (11/16) Supersedes Previous Edition

Electronic Version

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AIRPORT

AIRPORT ID

PROCEDURE NAME

AMDT NO.

CITY

STATE

AIRPORT ELEVATIONFACILITY

PART E: PREPARED BY

NAME
ALLAN WILL (ANTHONY CAPPABIANCO)

OFFICE
AJV-A423

DATE
08/27/2019

TITLE
AERONAUTICAL INFORMATION SPECIALIST

