

**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> TOLEDO EXPRESS	<u>AIRPORT ID</u> KTOL	<u>PROCEDURE NAME</u> RNAV (GPS) RWY 25	<u>ORIGINAL/AMENDMENT</u> 2C	<u>CITY</u> TOLEDO	<u>STATE</u> OH	
<u>AIRPORT ELEVATION</u> 683	<u>TDZE</u> 678	<u>SUPERSEDED</u> RNAV (GPS) RWY 25	<u>ORIGINAL/AMENDMENT</u> 2B	<u>DATED</u> 02/01/2018	<u>MAG VAR</u> 5W	<u>EPOCH YEAR</u> 1990
<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>
CRL VOR/DME		VELXE		TF	FB	1.00	205.20	19.55	3000
VELXE	IAF	AKEPE	NOPT	TF	FB	1.00	162.30	5.00	3000
SEFOJ	IAF	AKEPE	NOPT	TF	FB	1.00	342.36	5.00	3000
AKEPE	IF/IAF	VUGCO		TF	FB	1.00	252.33	6.01	2400
VUGCO	FAF	RIYOS/1.80 NM TO RW25		TF	FB	0.30	252.25	3.41	
RIYOS/1.80 NM TO RW25		RW25	MAP	TF	FO	0.30	252.25	1.80	
RW25	MAP	878 MSL		CA			252.25		
878 MSL		ATVIY		DF	FO	1.00			3000

MISSED APPROACH

MAP:

LPV: DA
LNAV/VNAV: DA
LNAV: RW25

MISSED APPROACH INSTRUCTIONS:

CLIMB TO 3000 DIRECT ATVIY AND HOLD.

ALTERNATE MISSED APPROACH INSTRUCTIONS:



PROFILE:

1. PT

SIDE OF COURSE

OUTBOUND

FT WITHIN

MILES OF (IAF)
2. HOLD E AKEPE, RT, 252.33 INBOUND, 3000 FT. IN LIEU OF PT (IAF), MAX 10000.
3. FAC: 252.25 FAF: VUGCO DIST FAF TO MAP: 5.21 DIST FAF TO THLD: 5.21
4. MIN ALT: AKEPE 3000, VUGCO 2400, RIYOS/1.80 NM TO RW25 1280*
5. DIST TO THLD FROM OM: MM: IM: 150 HAT: 200 HAT: 0.51 GS ANT: MM: IM:
6. MIN GP INCPT: 2400 GP ALT AT FAF : VUGCO 2400 OM:
7. GP ANGLE: 3.00 34:1: IS CLEAR 20:1: IS CLEAR TCH: 51.6
8. MSA FROM: RW25 3100

PBN REQUIREMENTS NOTE:

RNP APCH.

NOTES:

CHART NOTE: FOR UNCOMPENSATED BARO-VNAV SYSTEMS, LNAV/VNAV NA BELOW -17°C OR ABOVE 52°C.
CHART PROFILE NOTE: VGSI AND RNAV GLIDEPATH NOT COINCIDENT (VGSI ANGLE {ANGLE}/TCH {FEET}).
CHART NOTE: **RVR 1800 AUTHORIZED WITH THE USE OF FD OR AP OR HUD TO DA.
CHART NOTE: FOR INOPERATIVE ALS, INCREASE LPV CAT E VISIBILITY TO RVR 4000, LNAV/VNAV CAT E VISIBILITY TO 1 1/2 SM, LNAV CAT D/E VISIBILITY TO RVR 6000.

ADDITIONAL FLIGHT DATA:

CHART: ASR
CHART CIRCLING ICON.
CHART VDP AT 1.01 NM TO RW25*
*LNAV ONLY
WAAS CHANNEL #48899
REFERENCE PATH ID: W25A
CHART FAS OBST: 786 TOWER 413529N/0834654W.
HOLD W, RT, 072.02 INBOUND
LTP HAE: 167.4 M

MINIMUMS:

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

ALTERNATE: NA ☐ STANDARD - CAT D 800-2 1/4, CAT E 800-2 1/2



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**	878	2400	200	878	2400	200	878	2400	200	878	2400	200	878	2400	200
LNAV/VNAV DA	1065	5000	387	1065	5000	387	1065	5000	387	1065	5000	387	1065	5000	387
LNAV MDA	1040	2400	362	1040	2400	362	1040	2400	362	1040	5000	362	1040	5000	362
CIRCLING	1200	1	517	1200	1	517	1300	1 3/4	617	1360	2 1/4	677	1360	2 1/2	677

CHANGES - REASONS

1. CHANGED UNCOMPENSATED BARO-VNAV NOTE FROM, "FOR UNCOMPENSATED BARO-VNAV SYSTEMS, LNAV/VNAV NA BELOW -17C (2F) OR ABOVE 54C (130F)" TO "FOR UNCOMPENSATED BARO-VNAV SYSTEMS, LNAV/VNAV NA BELOW -17C OR ABOVE 52C. - IAW 8260.19H 8-6-9 S.
2. ADDED PBN REQUIREMENTS NOTE: RNP APCH AND REMOVED DME/DME RNP-0.3 NA - IAW 8260.19H PARA 8-6-8 B(1).
3. REMOVED FEEDER ROUTE FROM WATERVILLE (VWV) TO SEFOJ. - VORMON PROJECT, VWV DECOMMISSION.
4. CIRCLING CHANGED FROM MDA CAT C 1360, CAT D/E 1400 TO CAT C 1300, CAT D/E 1360. - TO MATCH THE ALREADY FLIGHT CHECKED ILS OR LOC RWY 7 CIRCLING MINIMUMS.

COORDINATED WITH:

A4A ☒ **ALPA** ☒ **AOPA** ☒ **APA** ☒ **HAI** ☐ **NBAA** ☒ **OTHER:** ZOB, TOL APP CON, AMGR, TOL APP CON

FLIGHT CHECKED BY

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

OFFICE**DATE***Digitally signed by***ALLAN WILL**

Nov 01, 2019

DEVELOPED BY

TOMMY BYRNS

*Digitally signed by***TOMMY BYRNS**

Oct 31, 2019

OFFICE

AJV-A423

DATE

08/02/2019

APPROVED BY

MARLON ROBINSON

OFFICE

AJV-A420

DATE*Digitally signed by***ALLAN WILL**

Nov 01, 2019

TITLE

MANAGER



FAS DATA BLOCK INFORMATION

<u>DATA FIELD</u>	<u>DATA</u>
OPERATION TYPE	0
SBAS SERVICE PROVIDER IDENTIFIER	0
AIRPORT IDENTIFIER	KTOL
RUNWAY	RW25
APPROACH PERFORMANCE DESIGNATOR	0
ROUTE INDICATOR	
REFERENCE PATH DATA SELECTOR	0
REFERENCE PATH IDENTIFIER (APPROACH ID)	W25A
LTP/FTP LATITUDE	413533.6200N
LTP/FTP LONGITUDE	0834741.9665W
LTP/FTP ELLIPSOIDAL HEIGHT	+01674
FPAP LATITUDE	413452.9915N
FPAP LONGITUDE	0834950.5230W
THRESHOLD CROSSING HEIGHT (TCH)	00051.6
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	C8FB4FA6

ADDITIONAL PATH POINT RECORD INFORMATION

ICAO CODE	K5
LTP ORTHOMETRIC HEIGHT	+02026
FPAP ORTHOMETRIC HEIGHT	+02026



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

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMDT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
TOLEDO EXPRESS	KTOL	RNAV (GPS) RWY 25	2C	TOLEDO	OH	683	RNAV

PART A: OBSTRUCTION DATA SEGMENTS

FEEDER

FROM
CRL VOR/DME

TO
VELXE

<u>RNP</u>	<u>DISTANCE</u> 19.55	<u>PAT</u>	<u>MAP</u>	<u>HAT</u>			<u>HMAS</u>					
<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 (26-001333)	415044.00N/0832750.00W		1058	100	20	3C	1000				AT942	3000
2.TERRAIN	414445.00N/0833942.00W		699 (700)								AS1500	2200

COMPUTATIONS

ALT

KIAS

KTAS

HAA

VKTW

TR

BA

DTA

COURSE CHANGE

DVEB

VEB OCS

RF CENTER FIX/DISTANCE

SEGMENT REMARKS:

INITIAL

FROM
VELXE

TO
AKEPE

<u>RNP</u>	<u>DISTANCE</u> 5.00	<u>PAT</u>	<u>MAP</u>	<u>HAT</u>			<u>HMAS</u>					
<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>
5.TOWER (39-002110)	413912.00N/0833253.00W		1058	500	50	5D	1000				AT942	3000
6.TERRAIN	413912.00N/0833253.00W		683 (700)								AS1500	2200

COMPUTATIONS

ALT

KIAS

KTAS

HAA

VKTW

TR

BA

DTA

COURSE CHANGE

DVEB

VEB OCS

RF CENTER FIX/DISTANCE

SEGMENT REMARKS:



HMASRF CENTER FIX/DISTANCEHMASRF CENTER FIX/DISTANCE

FACILITY
RNAV

QUALITY
25
CHECKER

TO
RIYOS/1.80 NM TO RW25

HMAS

COMPUTATIONS

RF CENTER FIX/DISTANCE**SEGMENT REMARKS:**

FINAL: LNAV STEPDOWN

FROM
RIYOS/1.80 NM TO RW25

TO
RW25

HMAS

COMPUTATIONS

RF CENTER FIX/DISTANCE**SEGMENT REMARKS:**

HOLD-IN-LIEU OF PT

FROM
AKEPE

TO
P-4

RNP	DISTANCE	PAT P-4	MAP	HAT			HMAS					
OBSTRUCTION	COORDINATES		ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
11.TOWER (39-001418)	413922.00N/0832645.00W		1848	250	50	5D	1000				AT152	3000
8.TERRAIN	413943.00N/0833909.00W		745 (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 : LPV

FROM
DA

TO
ATVIY

RNP	DISTANCE	PAT	MAP	HAT			HMAS 706					
OBSTRUCTION	COORDINATES		ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
								ASC				3000
12.TOWER (39-003822)	413603.21N/0835426.40W		1057	50	20	2C	1000					2100
13.TERRAIN	413345.00N/0840327.00W		739 (700)								AS1500	2200

COMPUTATIONS

ALT

KIAS

KTAS

HAA

VKTW

TR

BA

DTA

COURSE CHANGE

DVEB

VEB OCS

RF CENTER FIX/DISTANCE

SEGMENT REMARKS:



AIRPORT

TOLEDO EXPRESS

AIRPORT ID

KTOL

PROCEDURE NAME

RNAV (GPS) RWY 25

AMDT NO.

2C

CITY

TOLEDO

STATE

OH

AIRPORT ELEVATION

683

FACILITY

RNAV

MISSED APPROACH : LNAV/VNAV

FROM

DA

TO

ATVIY

RNP

DISTANCE

PAT

MAP

HAT

HMAS

788

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
9.TOWER (39-020986)	413528.58N/0834654.09W	786	20	3	1A		ASC				3000
12.TOWER (39-003822)	413603.21N/0835426.40W	1057	50	20	2C	1000					2100
13.TERRAIN	413345.00N/0840327.00W	739 (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

RW25

TO

ATVIY

RNP

DISTANCE

PAT

MAP

HAT

HMAS

790

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
9.TOWER (39-020986)	413528.58N/0834654.09W	786	20	3	1A		ASC				3000
12.TOWER (39-003822)	413603.21N/0835426.40W	1057	50	20	2C	1000					2100
13.TERRAIN	413345.00N/0840327.00W	739 (700)								AS1500	2200

COMPUTATIONS

ALT

KIAS

KTAS

HAA

VKTW

TR

BA

DTA

COURSE CHANGE

DVEB

VEB OCS

RF CENTER FIX/DISTANCE

SEGMENT REMARKS:



AIRPORT

TOLEDO EXPRESS

AIRPORT ID

KTOL

PROCEDURE NAME

RNAV (GPS) RWY 25

AMDT NO.

2C

CITY

TOLEDO

STATE

OH

AIRPORT ELEVATION

683

FACILITY

RNAV

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											
14.TOWER (39-000149)	413333.87N/0834926.89W	1.30	517	884	20	3	1A	300			1200
CATEGORY B											
14.TOWER (39-000149)	413333.87N/0834926.89W	1.83	517	884	20	3	1A	300			1200
CATEGORY C											
15.TOWER (39-000157)	413602.65N/0835301.90W	2.88	617	981	50	20	2C	300			1300
CATEGORY D											
12.TOWER (39-003822)	413603.21N/0835426.40W	3.76	677	1057	50	20	2C	300			1360
CATEGORY E											
12.TOWER (39-003822)	413603.21N/0835426.40W	4.70	677	1057	50	20	2C	300			1360

CIRCLING REMARKS:

MSA

CENTER

RW25

RADIUS

25

SECTOR	OBSTRUCTION	COORDINATES	BEARING	DISTANCE	ELEV MSL	HORZ	VERT	AC	ROC	OCS	ADJUSTMENTS	MIN ALT
360-360	TWR (39-000350)	414003.00N/0832122.00W	082	20.3	2015	500	50	5D	1000			3100

MSA REMARKS:

NOTES/EXPLANATIONS FROM PROCEDURE SEGMENTS:

LPV, LNAV/VNAV AND LNAV INTERMEDIATE USE SAME OBSTACLE.

QUALITY
25
CHECKED

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PART B: SUPPLEMENTAL DATA

COMMUNICATIONS WITH

ZOB ARTCC, TOL TOWER, TOL APP CON

<u>WX SERVICE</u> ASOS	<u>LOCATION</u> KTOL	<u>HRS OPERATION</u> 24	<u>ALTIMETER SOURCE</u> KTOL	<u>DISTANCE</u> 0	<u>SERVICE-A</u> Y	<u>ADJUSTMENTS</u> 0
<u>BACK-UP WX SERVICE</u> AWOS 3	<u>LOCATION</u> KDUH	<u>HRS OPERATION</u> 24	<u>ALTIMETER SOURCE</u> KDUH	<u>DISTANCE</u> 11.25	<u>SERVICE-A</u> Y	<u>ADJUSTMENTS</u> 28

WX REMARKS:

RASS PRESSURE PATTERNS THE SAME KTOL 683, DKUH 669 RA = 27.9.

<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>
RW16 - MIRL, REIL, PAPI-4L		NPI-F	
RW34 - MIRL, REIL, PAPI-4L		NPI-F	
RW07 - TDZ, ALSF-2, HIRL, C/LINE		PIR-G	APPROACH, ROLL OUT
RW25 - MALSR, HIRL, C/LINE, PAPI-4L		PIR-G	APPROACH, ROLL OUT

<u>GLIDESLOPE ANGLE</u> 3.00	<u>ELEV RWY THRESHOLD</u> 664.8	<u>TCH</u> 51.6	<u>ELEV GS ANTENNA</u>	<u>DISTANCE FROM RWY</u>	<u>VGSI ANGLE</u> 3.00	<u>TCH</u> 68.7
<u>FINAL APPROACH COURSE AIMING</u>						
RUNWAY THRESHOLD	<input checked="" type="checkbox"/>	FT FROM THRESHOLD	DISPLACED THRESHOLD DISTANCE			
ON CENTERLINE	<input checked="" type="checkbox"/>	FT FROM CENTERLINE				
<u>CRITICAL TEMPERATURES</u>						
<u>CRITICAL LOW</u> -17C	<u>CRITICAL HIGH</u> +52C	<u>ACT</u> -17C	<u>APT ISA</u> +13.65C			

CRITICAL TEMPERATURE REMARKS:

AVERAGE COLD TEMPERATURE DERIVED FROM 5-YEAR HISTORY. CRITICAL LOW TEMPERATURE BASED ON ACT. DESCENT RATE (FPM): STANDARD TEMP 977 HIGH TEMP 1271.

"VISUAL PORTION OF FINAL" PENETRATIONS

HELICOPTER 'VISUAL PORTION OF FINAL' PENETRATIONS



<u>AIRPORT</u> TOLEDO EXPRESS	<u>AIRPORT ID</u> KTOL	<u>PROCEDURE NAME</u> RNAV (GPS) RWY 25	<u>AMDT NO.</u> 2C	<u>CITY</u> TOLEDO	<u>STATE</u> OH	<u>AIRPORT ELEVATION</u> 683	<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	3.09
WIDTH OF	FINAL	SEGMENT AT 1000FT POINT	1.20
TRUE COURSE OF	FINAL	SEGMENT CONTAINING 1000FT POINT	247.25
HIGH TERRAIN IN	FINAL	SEGMENT CONTAINING 1000FT POINT	700
DISTANCE FROM	THLD	TO 1500FT POINT	9.62
WIDTH OF	INTERMEDIATE	SEGMENT AT 1500FT POINT	4.00
TRUE COURSE OF	INTERMEDIATE	SEGMENT CONTAINING 1500FT POINT	247.33
HIGH TERRAIN IN	INTERMEDIATE	SEGMENT CONTAINING 1500FT POINT	700
THRESHOLD COORDINATES (IF STR-IN)	413533.62N/0834741.97W		
ARP COORDINATES	413512.50N/0834828.20W		
RUNWAY APCH END AND DIST FURTHEST FROM ARP	RUNWAY 7 DISTANCE 1.08 NM		
FAF COORDINATES	413734.76N/0834117.69W		
FIX NAME COORDINATES			
REMARKS			
NO ADDITIONAL AIRSPACE REQUIRED			

QUALITY
25
CHECKED

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<u>AIRPORT</u> TOLEDO EXPRESS	<u>AIRPORT ID</u> KTOL	<u>PROCEDURE NAME</u> RNAV (GPS) RWY 25	<u>AMDT NO.</u> 2C	<u>CITY</u> TOLEDO	<u>STATE</u> OH	<u>AIRPORT ELEVATION</u> 683	<u>FACILITY</u> RNAV
PART E: PREPARED BY							
<u>NAME</u> TOMMY BYRNS			<u>OFFICE</u> AJV-A423	<u>DATE</u> 08/02/2019	<u>TITLE</u> AERONAUTICAL INFORMATION SPECIALIST		

QUALITY
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