

AAS-100

AC 150/5300-13B, Airport Design, **Taxiway Fillet Design Tool**

User's Guide

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1 INTRODUCTION

1.1 Purpose of this Guide.

This User's Guide provides the steps for operating the Taxiway Fillet Design Tool. If you have suggestions for improving this User's Guide or the Taxiway Fillet Design Tool, you may use the <u>Feedback Form</u> at the end of this document.

1.2 Tool Overview.

The Advisory Circular (AC) <u>150/5300-13</u>, *Airport Design*, provides dimensions necessary to lay out taxiway turns of what we call "common" angles (deltas). These angles are 30, 45, 60, 90, 120, 135, and 150 degrees. But in many cases, a turn of a different delta may be upgraded to the new standards based on Taxiway Design Group (TDG), or it may be necessary to build a new taxiway turn with a different delta.

To help in those situations, the Office of Airport Safety and Standards, Engineering Division (AAS-100) has developed computer software that calculates the minimum recommended centerline radius. For deltas of 90 degrees or more, the centerline radius is calculated to limit the nose gear steering angle to 50 degrees. For lesser deltas, the centerline radius is chosen to maintain taxiing speed. In all cases, the tool calculates the pavement dimensions to ensure the required Taxiway Edge Safety Margin (TESM) and minimize excess pavement, and the locations of taxiway centerline and edge lights.

The FAA Taxiway Fillet Design Tool can be used to design the centerline radius and fillets for turns comprising all deltas between 5 and 175 degrees including centerline lights and, optionally, edge lights. With thousands of calculations running in the background, the Taxiway Fillet Design Tool accomplishes in minutes what would ordinarily take hours to achieve by hand.

Dimensions used in this tool, illustrated below, are keyed to AC 150/5300-13.



In addition to displaying pavement dimensions on the user's computer screen, the program creates a computer-aided design (CAD) drawing in DXF format that can be imported by virtually any CAD software.

1.3 Tool Accuracy.

This tool is accurate only when the airplane is aligned with the taxiway centerline when entering the turn. The design of closely spaced turns, where the airplane is not aligned with the taxiway centerline when entering the second turn, requires the use of more sophisticated modeling software. An example of this situation often occurs at runway entrance taxiways, shown below.



Note: Because suggested centerline and edge lighting placement are calculated in the tool, the tool must also adhere to the guidance in <u>AC 150/5340-30</u>, *Design and Installation Details for Airport Visual Aids*. Calculations may be more accurate, or cover more scenarios, than the values listed in <u>AC 150/5300-13</u> or <u>AC 150/5340-30</u>. Where the tool shows edge lights very close to one another, contact the appropriate FAA Airports office for guidance.

1.4 Terminology.

1. Cockpit to Main Gear Distance (CMG)

The distance from the pilot's eye to the main gear turn center.

2. Main Gear Width (MGW)

The distance from outer edge to outer edge of the widest set of main gear tires.

3. Taxiway Edge Safety Margin (TESM)

The distance between the outer edge of the landing gear of an airplane with its nose gear on the taxiway centerline and the edge of the taxiway pavement.

- 4. R-Fillet Radius of fillet
- 5. R-CL Radius of centerline
- 6. RVR Runway Visual Range
- 7. R-Outer Radius of outer edge
- 8. L-1, W-0, W-1 At the start of the turn, the taxiway is widened on the inside of the turn for a length L-1, with the distance from the taxiway centerline to the pavement edge tapering from W-0 to W-1.
- 9. L-2, L-3, W-2 As the airplane continues, the distance from the taxiway centerline to the pavement edge taper must be increased further, for a length L-2, from W-1 to W-2, ending at a distance L-3 from the point of intersection.

2 USING THE TOOL

2.1 **Prior to Using the Tool.**

The Taxiway Fillet Design Tool is EXCEL-based and runs offline from the hard drive on individual computers. The tool produces an output file located in the default folder designated in EXCEL.

Prior to operating the tool, verify the default folder location by opening any EXCEL file, selecting the Options menu from the File tab, then the Save menu where the "Default local file location" is listed (as shown in the following figure). A typical default file location, replacing "Username" with the actual username, is C:\Users\Username\Documents.

	Excel Options ? ×
General Formulas Proofing	Customize how workbooks are saved. Save workbooks
Save Language Ease of Access Advanced Customize Ribbon Quick Access Toolbar Add-ins Trust Center	Save files in this format: Excel Workbook (*.xlsx) Save AutoRecover information every 10 minutes Keep the last AutoRecovered version if I close without saving AutoRecover file location: C:\Users\Username\AppData\Roaming\Microsoft\Excel\ Don't show the Backstage when opening or saving files Show additional places for saving, even if sign-in may be required. Save to Computer by default Default local file location: C:\Users\Username\Documents Default personal templates location: Show data loss warning when editing comma delimited files (*.csv) AutoRecover exceptions for: Book1 Disable AutoRecover for this workbook only:
	Save checked-out files to: ① O The server drafts location on this computer • The Office Document Cache Server drafts location: C:\Users\Username\Documents\SharePoint Drafts\ Browse Preserve visual appearance of the workbook Choose what colors will be seen in previous versions of Excel: ①

2.2 Getting Started.

The Taxiway Fillet Design Tool is designed to work on Windows-based computers when input is entered in the order intended (TDG, Delta, R-Fillet, and R-CL).

2.2.1 General Notes.

- Follow on-screen instructions, alerts, and progress information.
- Edge lighting locations may appear strange at very low deltas. The layouts should, however, conform to the standards in <u>AC 150/5340-30</u>. In such cases, engineering

judgment must be used, just as it would be in the absence of this program. Contact the appropriate FAA Airports office for guidance

• Leaving the "edge light offset" field blank will result in no edge lights being plotted. Centerline lights, however, are always plotted. If centerline lights are not to be installed, turn off the drawing layer of the DXF file in your CAD software.

2.2.2 Opening the Tool.

- 1. Save the tool to your hard drive.
- 2. Click to open the tool.
 - a. The "Opening Tool..." screen appears.
 - b. If prompted, click Enable Content.



c. The following dialog box displays. Click the button to continue to the tool.

	AC 150/5300-13B, Airport Design
	Taxiway Fillet Design Tool
The T	axiway Fillet Design Tool generates DXF files which may be
input	scenarios. Some combinations may require engineering
judge not be	ment to sort out scenarios that may fit the AC guidance but may practical in the field.
Close	all other active EXCEL sessions prior to using this tool. Click the
form	1 below to continue with the design tool initialization process. The will appear in a few moments
Engi	noor will review results and adapt to site-specific requirements

d. The user form appears after the initialization process is complete. Grayed-out boxes indicate calculated display-only fields. The Status information box, in the upper right corner of the form, steps you through the process and provides informative alert information when appropriate. Perform the steps in order, as indicated. Wait for each step to complete before proceeding.

kiway Fillet Design Tool	Select TDG
Select TDG then <enter></enter>	▼ Reference 150/5300-13, Airport Design, for additional information
СМБ	Enter edge light offset then <enter> (Blank for no edge lights)</enter>
MGW	□ RVR < 1200?
TESM	X coordinate of R-FILLET center
Taxiway Width	Y coordinate of R-FILLET center
Enter delta then <enter></enter>	R-OUTER
R-Fillet (default)	L-1 W-0
R-Fillet (if not using default)	L-2 W-1
hen <enter> Minimum recommended R-Cl</enter>	L-3 W-2
Enter R-CL then <enter></enter>	Enter DXF file name: enter file name
	,
Design	Create

2.2.3 Tool Features.

- The button under the Status information box, top right, contains a hyperlink to the most current version of the Airport Design AC, for reference.
- Each field on the form displays a tip when hovered over.

axiway Fillet Design Tool X					
Taxiway Fillet Design Tool Select TDG					
Select TDG then <enter></enter>	•	Reference 150/5300-13, A	irport Design, for additional infor	mation	
СМС		Enter edge light offset t (Blank for no edge light	then <enter></enter>		
MGW		□ RVR < 1200?	_,		
TESM		X coordinate of R-FILLE	T center		
Taxiway Width		Y coordinate of R-FILLE	T center		
Enter delta then <enter></enter>	73		R-OUTER		
R-Fillet (default)	Enter value from 5 to 175 (deg	ees) and <enter></enter>	w-o		
R-Fillet (if not using default)		L-2	W-1		
then <enter> Minimum</enter>		L-3	W-2		
recommended R-CL Enter R-CL then <enter></enter>		Enter DXF file name:			
		enter me name			
Tool Notes	Design Curve	Create DXF File	Exit		

The "Tool Notes" button, lower left, provides a multi-page help file.



2.2.4 Status Messages.

Status messages, including any noted parameters outside the capabilities of the program, are displayed in the Status information box in the upper right corner of the form. Blue text is informational, and red text indicates a warning or error message.

2.3 Steps for Using the Tool.

2.3.1 TDG.

To use the tool, select the desired TDG from the pull-down list and click <enter>.

Taxiway Fillet Design Tool X				
Taxiway Fillet Design Tool Select TDG				
Select TDG then <enter></enter>		Reference 150/5300-13, Ai	rport Design, for additional information	
СМС	14	Enter edge light offset t (Blank for no edge light	hen <enter>s)</enter>	
MGW	1B 2A	□ RVR < 1200?		
TESM	2B 3	X coordinate of R-FILLE	T center	
Taxiway Width	4 5 -	Y coordinate of R-FILLE	T center	
Enter delta then <enter></enter>			R-OUTER	
R-Fillet (default)		L-1	W-0	
R-Fillet (if not using default) then <enter></enter>		L-2	W-1	
Minimum recommended R-CL		L-3	W-2	
Enter R-CL then <enter></enter>		enter file name		
Tool Notes	Design Curve	Create DXF File	Exit	

The CMG, MGW, TESM, and Taxiway Width are then displayed and shown. Notice the next step is mentioned in the Status information box, top right.

Taxiway Fillet Design Tool X					
Taxiway Fillet Design	ΤοοΙ	after entering delta value, click <enter> to proceed</enter>			
Select TDG then <enter></enter>	5 🗸	Reference 150/5300-13, Airport Design, for additional information			
СМG	100	Enter edge light offset then <enter> (Blank for no edge lights)</enter>			
MGW	47	□ RVR < 1200?			
TESM	14	X coordinate of R-FILLET center			
Taxiway Width	75	Y coordinate of R-FILLET center			
Enter delta then <enter></enter>		R-OUTER			
R-Fillet (default)		L-1 W-0			
R-Fillet (if not using default)		L-2 W-1			
Minimum		L-3 W-2			
Enter R-CL then <enter></enter>		Enter DXF fle name:	-		
Tool Notes	Design Curve	Create DXF File Exit			

2.3.2 Delta.

Enter the delta value. Click <enter>.

Taxiway Fillet Design Tool		×
Taxiway Fillet Design	Tool	after entering delta value, click <enter> to proceed</enter>
Select TDG then <enter> 5</enter>		Reference 150/5300-13, Airport Design, for additional information
СМБ	100	Enter edge light offset then <enter> (Blank for no edge lights)</enter>
MGW	47	□ RVR < 1200?
TESM	14	X coordinate of R-FILLET center
Taxiway Width	75	Y coordinate of R-FILLET center
Enter delta then <enter></enter>	115	R-OUTER
R-Fillet (default)		L-1 W-0
R-Fillet (if not using default)		L-2 W-1
Minimum		L-3 W-2
Enter R-CL then <enter></enter>		Enter DXF fle name:
Tool Notes	Design Curve	Create DXF File Exit

2.3.3 Minimum Recommended R-CL and R-Fillet.

After entering the delta value and clicking <enter>, the "Minimum recommended R-CL" and "R-Fillet (default)" automatically calculate and display.

faxiway Fillet Design Tool		
Taxiway Fillet Design	Tool	
Select TDG then <enter></enter>	5 🗸	Reference 150/5300-13, Airport Design, for additional information
СМБ	100	Enter edge light offset then <enter> (Blank for no edge lights)</enter>
MGW	47	□ RVR < 1200?
TESM	14	X coordinate of R-FILLET center
Taxiway Width	75	Y coordinate of R-FILLET center
Enter delta then <enter></enter>	115	R-OUTER
R-Fillet (default)	50	L-1 W-0
R-Fillet (if not using default)		L-2 W-1
Minimum recommended R-Cl	109	L-3 W-2
Enter R-CL then <enter></enter>		Enter DXF file name:
Tool Notes	Design Curve	Create DXF File Exit

You may enter R-Fillet and/or R-CL, or leave one or both of these fields blank to use the default values. Using a value for R-CL lower than the minimum recommended value will result in a nose gear steering angle of more than the recommended maximum 50 degrees. In such a case, the maximum nose gear steering angle display in the Status information box in the upper right corner. In the example, R-CL has been entered, rounded up to 110 feet by the user.

Taxiway Fillet Design Tool		:
Taxiway Fillet Design	ΓοοΙ	if using non-default R-CL, enter value then click <enter> to proceed</enter>
Select TDG then <enter></enter>	5 -	Reference 150/5300-13, Airport Design, for additional information
СМБ	100	Enter edge light offset then <enter> (Blank for no edge lights)</enter>
MGW	47	□ RVR < 1200?
TESM	14	X coordinate of R-FILLET center
Taxiway Width	75	Y coordinate of R-FILLET center
Enter delta then <enter></enter>	115	R-OUTER
R-Fillet (default)	50	L-1 W-0
R-Fillet (if not using default)		L-2 W-1
Minimum recommended R-CI	109	L-3 W-2
Enter R-CL then <enter></enter>	110	Enter DXF file name: enter file name
Tool Notes	Design Curve	Create DXF File Exit

2.3.4 Edge Light Offset.

Enter an edge light offset value of 2-10 ft. Click <enter>. Leave the field blank for no edge lights.

Taxiway Fillet Design Tool			×
Taxiway Fillet Design Tool		if using an edge light offset, enter value and click <enter> t proceed</enter>	0
Select TDG then <enter> 5</enter>		Reference 150/5300-13, Airport Design, for additional information	
CMG	100	Enter edge light offset then <enter> 10 (Blank for no edge lights)</enter>	
MGW	47	□ RVR < 1200?	
TESM	14	X coordinate of R-FILLET center	
Taxiway Width	75	Y coordinate of R-FILLET center	
Enter delta then <enter></enter>	115	R-OUTER	
R-Fillet (default)	50	L-1 W-0	
R-Fillet (if not using default)		L-2 W-1	
Minimum	109	L-3 W-2	
Enter R-CL then <enter></enter>	110	Enter DXF file name:	_
	Design	Create	
Tool Notes	Curve	DXF File Exit	

2.3.5 RVR.

For RVR values less than 1200 ft, click the checkbox.

Taxiway Fillet Design Tool		×
Taxiway Fillet Design	ΤοοΙ	
Select TDG then <enter></enter>	5 🗸	Reference 150/5300-13, Airport Design, for additional information
СМС	100	Enter edge light offset then <enter> 10 10</enter>
MGW	47	F RVR < 1200?
TESM	14	X coordinate of R-FILLET center
Taxiway Width	75	Y coordinate of R-FILLET center
Enter delta then <enter></enter>	115	R-OUTER
R-Fillet (default)	50	L-1 W-0
R-Fillet (if not using default)		L-2 W-1
Minimum recommended R-Cl	109	L-3 W-2
Enter R-CL then <enter></enter>	110	Enter DXF file name: enter file name
Tool Notes	Design Curve	Create DXF File Exit

2.3.6 Design Curve.

Click Design Curve. A message box stating the user that the calculations may take a few moments. Click ok to continue.

Microsoft Excel	×
Curve design calculations may take a few moments. Click OK to continue	
ОК	

A Status information appears while calculation of the necessary dimensions to define the fillets is in progress.

Taxiway Fillet Design Tool		×
Taxiway Fillet Design	Tool	Designing Curve
Select TDG then <enter></enter>	5 🗸	Reference 150/5300-13, Airport Design, for additional information
СМБ	100	Enter edge light offset then <enter> 10 10</enter>
MGW	47	✓ RVR < 1200?
TESM	14	X coordinate of R-FILLET center
Taxiway Width	75	Y coordinate of R-FILLET center
Enter delta then <enter></enter>	115	R-OUTER
R-Fillet (default)	50	L-1 W-0
R-Fillet (if not using default)		L-2 W-1
Minimum recommended R -Cl	109	L-3 W-2
Enter R-CL then <enter></enter>	110	Enter DXF file name:
Tool Notes	Design Curve	Create Exit

X and Y coordinates are based on the origin at the Point of Intersection of the curve. The resulting maximum steering angle appears in the Status information box when the design curve calculations are complete.

Taxiway Fillet Design Tool					×
Taxiway Fillet Design	ΤοοΙ	The R-0	CL selected will result	in a maximum s degrees	steering angle of 49.6
Select TDG then <enter></enter>	5 🗸	Ref	erence 150/5300-13, Airp	ort Design, for add	ditional information
СМС	100	Enter e (Blank f	dge light offset th for no edge lights)	en <enter>)</enter>	10
MGW	47		✓ RVR < 1200?		
TESM	14	X coord	linate of R-FILLET	center	191.59
Taxiway Width	75	Y coord	linate of R-FILLET	center	122.05
Enter delta then <enter></enter>	115		R	OUTER	147.5
R-Fillet (default)	50	L-1	281.59	W-0	37.50
R-Fillet (if not using default)		L-2	131.76	W-1	45.98
Minimum	109	L-3	181.51	W-2	73.08
Enter R-CL then <enter></enter>	110	Enter DXF fi	e name: le name		
Tool Notes	Design Curve		Create XF File		Exit

2.3.7 Create DXF File.

Enter a file name in the file name box to output a DXF file of that name. Click Create DXF File. The output file location is listed in the Status information box.

Taxiway Fillet Design Tool					×
Taxiway Fillet Design	Tool		DXF file crea C:Users\jdoe\Docu	ited and located ments\Demo-c	d at output.DXF
Select TDG then <enter></enter>	5 🗸	Refe	erence 150/5300-13, Airp	ort Design, for add	itional information
СМС	100	Enter eo (Blank f	lge light offset the	en <enter></enter>	10
MGW	47	(2.0	✓ RVR < 1200?		
TESM	14	X coord	inate of R-FILLET	center	191.59
Taxiway Width	75	Y coordinate of R-FILLET center 122.05			
Enter delta then <enter></enter>	115	R-OUTER			147.5
R-Fillet (default)	50	L-1	281.59	W-0	37.50
R-Fillet (if not using default)		L-2	131.76	W-1	45.98
Minimum	109	L-3	181.51	W-2	73.08
Enter R-CL then <enter></enter>	110	Enter DXF file	e name: ew file name		
	,	1			
Tool Notes	Design Curve	C D	Create XF File		Exit

The DXF file includes the taxiway centerline and taxiway edges with associated dimensions. It also shows the path taken by the main landing gear adjusted for the TESM. This file is placed in your default documents directory.

2.3.8 Exiting the Tool.

Use the exit button, lower right, to exit the tool. It is programmed to reset the tool and will take a moment to complete. Because of this, the user is provided the option to return to the tool rather than exit.

Exit	×
Are you sure you w	ant to exit?
Yes	No

•						<u> </u>				
An	"exifina	message	appears	brietly in	the	Status	information	box as	the tool of	closes
/	overender over	. moooago	appould	Silony in		olalao	monnadon	DON GO		00000.

Taxiway Fillet Design Tool		×
Taxiway Fillet Design	ΓοοΙ	exiting
Select TDG then <enter></enter>	2A 🗸	Reference 150/5300-13, Airport Design, for additional information
СМБ	40	Enter edge light offset then <enter> (Blank for no edge lights)</enter>
MGW	20	□ RVR < 1200?
TESM	7.5	X coordinate of R-FILLET center
Taxiway Width	35	Y coordinate of R-FILLET center
Enter delta then <enter></enter>		R-OUTER
R-Fillet (default)		L-1 W-0
R-Fillet (if not using default)		L-2 W-1
Minimum		L-3 W-2
recommended R-CL		Enter DXF file name:
		enter nie name
Tool Notes	Design Curve	Create DXF File Exit

2.3.9 Viewing the DXF File.

DXF files may be imported into most CAD software. In addition, websites are available to upload DXF files into for viewing or to download free viewer software. AutoCAD has a free viewer (DWG TrueView available online at

https://www.autodesk.com/products/dwg/viewers# (select DWG TrueView).

AutoDesk DWG TrueView Tips:

- The "Extents" option on the Extents/Zoom button will display and center the entire diagram in the TrueView window. Zoom options are in the pull-down menu for that button.
- The "pan" tool allows you to reposition the drawing. It resembles a hand, located to the right of the zoom button.
- The features of the output drawing display best on a white background. To change the background color to white in TrueView:
 - Click the big green/blue "D" at the top left
 - Choose "Options", bottom of the box next to Exit
 - Click "Display" tab
 - Click "Colors..." button
 - Click "Color:" button
 - Select "white" from the pull-down menu
 - Click "Apply and Close" button

Using CAD or viewer software, the layout designed by this tool may be scaled and adjusted for constructability and/or placement of lighting. When making such

adjustments, locate the L1/L2 intersection point along the red "wheel track + TESM" curve to ensure meeting TESM requirements.

The tool produces a fixed-format DXF file readable in AutoCAD or downloadable DXF viewers. Layering is structured as follows:

- Centerline (orange)
- Centerline lights (green)
- Dimensions (blue)
- Edge (black)
- Edge lights (blue)
- Wheel track (magenta)
- Wheel track + TESM (red)

A sample output.



Enlarged detail.



2.4 Sample Scenarios.

2.4.1 Example One.

The first example is an angle of less than 90 degrees.

- 1. Select TDG-5. Click <enter>. This results in a display of the CMG, MGW, TESM, and standard taxiway width. These cannot be overridden, since taxiways should always be designed for a specific TDG.
- 2. Enter Delta of 50 degrees. Click <enter>. Notice that the calculated fillet radius is zero, and the minimum recommended centerline radius is 110 feet. In fact, the fillet radius for all deltas of 90 degrees or less is always zero. Either of these values can be overridden. For now, accept the defaults.
- 3. Enter a value between 2 and 10 feet for edge light offset. If this field is left blank, then edge lights will not be shown in the output drawing. For this example, enter an edge light offset of 10 feet.
- 4. Leave RVR checkbox unchecked. Leave the check box for RVR less than 1200 blank.
- 5. Click "Design Curve". Click "ok". The design can take a while, so a pop-up message appears for the user to acknowledge. The long calculation time is because of the program determining the optimum location of the inflection point between the "L-1" taper and the "L-2" taper.
- 6. The pavement between the Wheel Track Plus TESM curve and the pavement edge is technically unnecessary. Straight pavement edges are specified for ease of construction. The program determines the location of the inflection point where the total area of unnecessary pavement is a minimum. But since constructability is the goal, it is perfectly acceptable to adjust this point, say, to accommodate the size of

way Fillet Design Tool					
axiway Fillet Design To	ool	The R-	CL selected will result	in a maximum s degree s	steering angle of 32.
Select TDG then <enter></enter>	5 🗸	Ref	erence 150/5300-13, Airp	ort Design, for add	litional information
СМБ	100	Enter e (Blank	dge light offset th for no edge lights)	en <enter>)</enter>	10
MGW	47		□ RVR < 1200?		
TESM	14	X coord	linate of R-FILLET	center	30.83
Taxiway Width	75	Y coord	linate of R-FILLET	center	66.12
Enter delta then <enter></enter>	50		R	OUTER	147.5
R-Fillet (default)	0	L-1	265.22	W-0	37.50
R-Fillet (if not using default)		L-2	132.43	W-1	44.62
then <enter> Minimum recommended R-CL</enter>	110	L-3	30.83	W-2	66.12
Enter R-CL then <enter></enter>		Enter DXF fi	e name: ile name		
			1		
Tool Notes	Design Curve	C D	Create XF File		Exit

concrete panels. Just be sure the adjusted point is on or outside the Wheel Track Plus TESM curve.

- 7. Review the displayed dimensions. All the dimensions necessary to lay out the curve display. But note that the maximum nose gear steering angle is considerably less than 50 degrees. This is because for angles less than 90 degrees, a large centerline radius is selected to allow a greater speed through the turn.
- 8. Enter the DXF filename. The DXF file will be placed in the user's EXCEL default local file folder.
- 9. Click Create DXF File. The location of the file that has been generated is shown in the Status box, top right.

Taxiway Fillet Design Tool					×
Taxiway Fillet Design	ΤοοΙ		DXF file cre C:Users\jdoe\D	ated and locate locuments\Sam	ed at 1ple.DXF
Select TDG then <enter></enter>	5 🗸	Refe	erence 150/5300-13, Airp	ort Design, for add	itional information
СМС	100	Enter e (Blank i	dge light offset the for no edge lights)	en <enter></enter>	10
MGW	47	(□ RVR < 1200?		
TESM	14	X coord	linate of R-FILLET	center	30.83
Taxiway Width	75	Y coord	inate of R-FILLET	center	66.12
Enter delta then <enter></enter>	50		R-	OUTER	147.5
R-Fillet (default)	0	L-1	265.22	W-0	37.50
R-Fillet (if not using default)		L-2	132.43	W-1	44.62
Minimum recommended R-Cl	110	L-3	30.83	W-2	66.12
Enter R-CL then <enter></enter>		Enter DXF file	e name: ew file name		
Tool Notes	Design Curve		Create XF File		Exit

10. View the entire drawing.



11. Zoom in to view various details.



2.4.2 Example Two.

In some cases, it may be necessary to use a centerline radius lower than the minimum recommended. The second example generates a warning message.

- 1. Select TDG-6. Click <enter>.
- 2. Enter delta 100. Click <enter>. The default radius of the fillet is 50 feet, and the minimum centerline radius is calculated to be 135 feet.
- 3. After defaults appear, enter R-CL 120. Click <enter>.
- 4. A pop-up warning message appears stating that entering an R-CL value less than the minimum recommended R-CL will result in a steering angle of more than 50 degrees.

