

# FAARFIELD 2.0

## Beta Overview

Presented to: REDAC Subcommittee for Airports

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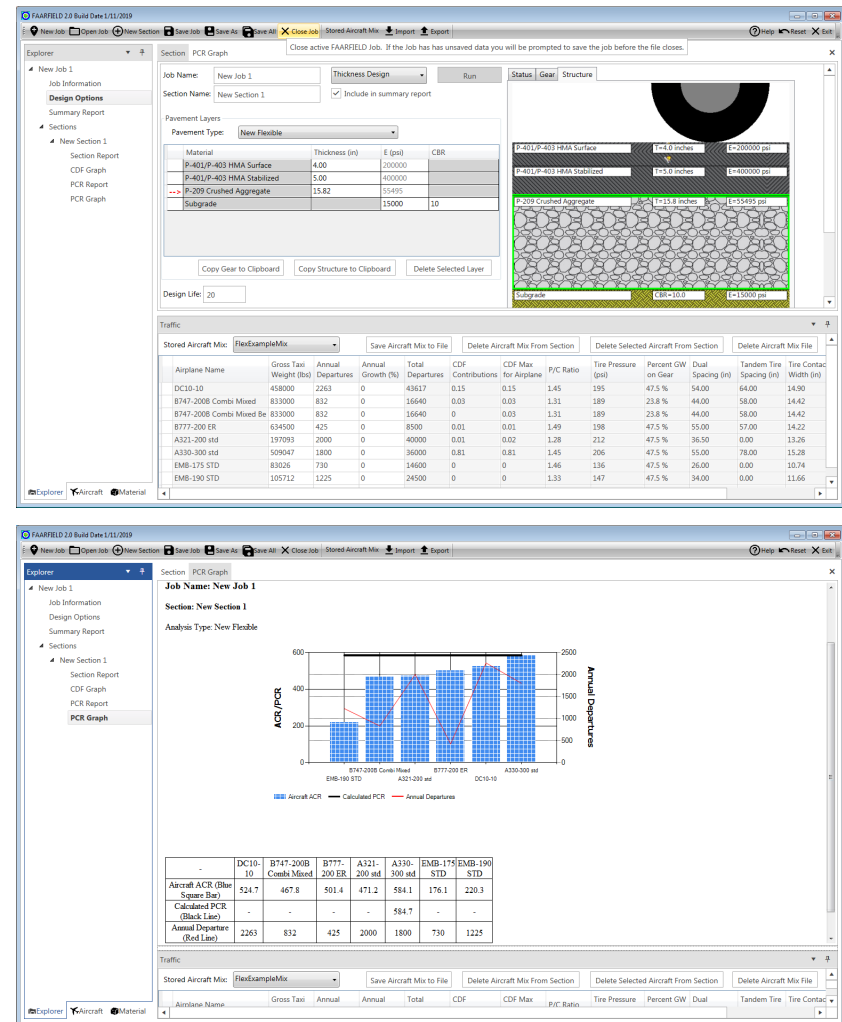


Federal Aviation  
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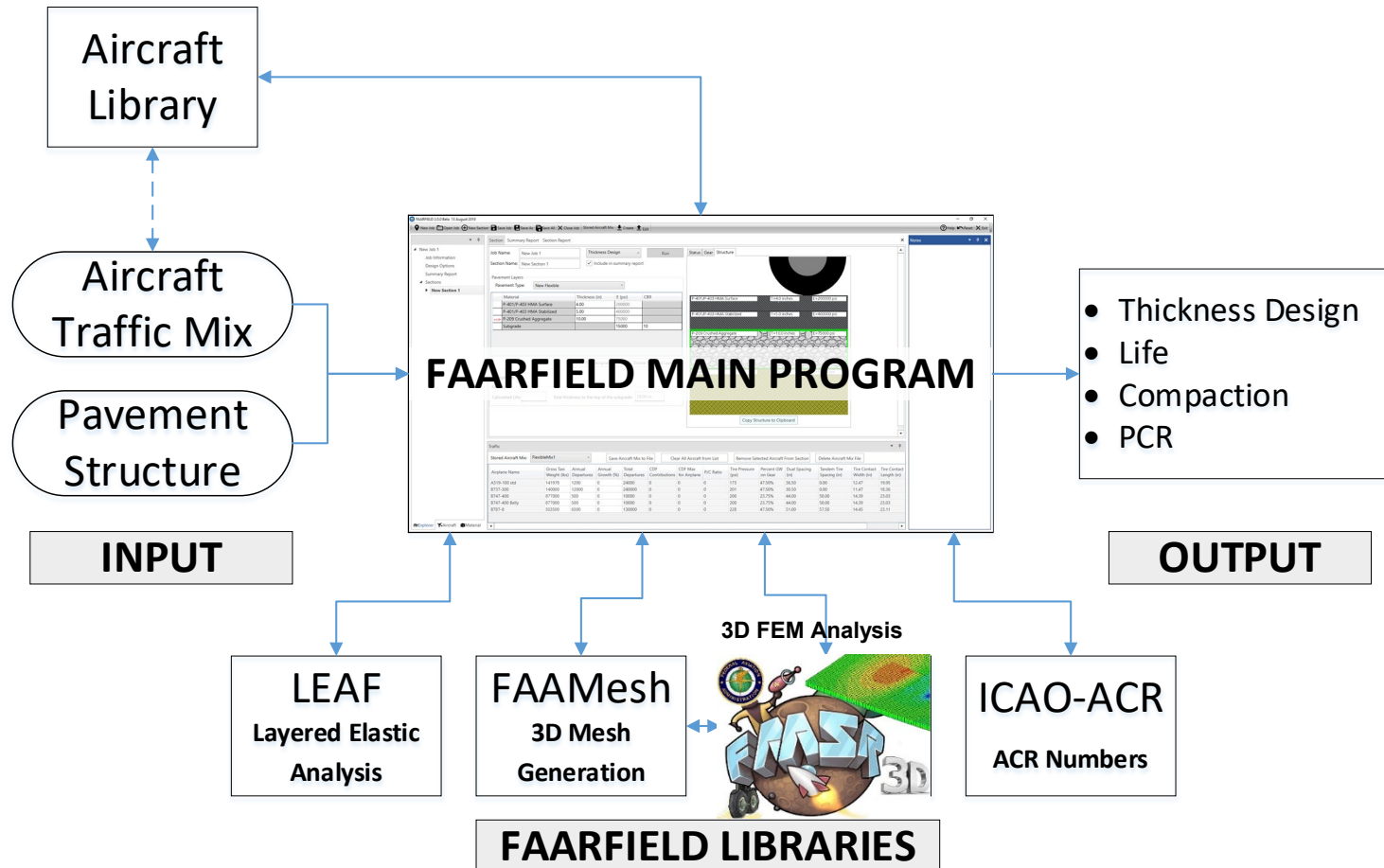


# New! FAARFIELD 2.0 Beta

- Support for ACR-PCR.
- Release with next update of AC 150/5320-6.
- Modernized graphical user interface (GUI).
  - Job and section entry.
  - Improved start-up screen.
  - Explorer-based navigation.
  - Improved flow between screens.
- All .NET compatible.
- Rational data file structure.
- On-demand report generation.
- No change to thickness design requirements at this time.



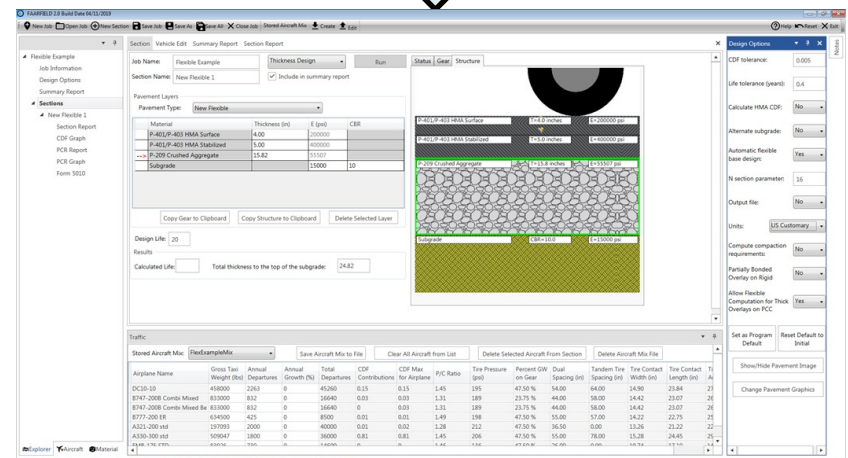
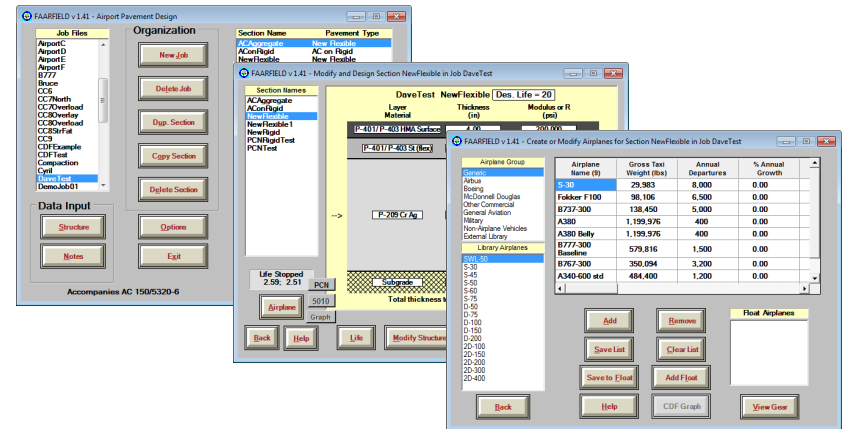
# FAARFIELD 2.0 Organization



# GUI Modernization

## Major improvements:

- **Easier job and section entry.**
- **Explorer-based navigation.**
- **Improved screen re-sizing and appearance.**
- **Improved flow between screens.**
- **Ability to store traffic mixes.**
- **Rationalized data file structure.**
- **On-demand report generation.**
- **Remove program logic from GUI controls.**
- **Etc.**



# FAARFIELD 2.0 GUI Layout

**EXPLORER**

**TOOLBAR**

**FUNCTION SELECTION**

**RUN**

**OPTIONS**

**HELP**

**PAVEMENT TYPE SELECTION**

**STRUCTURE TABLE**

**STRUCTURE IMAGE**

**MATERIAL LIBRARY TAB**

**TRAFFIC TABLE**

**AIRCRAFT LIBRARY TAB**

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New Job Open Job New Section Save Job Save As Save All Close Job Stored Aircraft Mix Create Edit

Section

Job Name: New Job 1 Thickness Design Run Status Gear Structure

Section Name: New Section 1 Include in summary report

Pavement Layers

Pavement Type: New Flexible

Material	Thickness (in)	E (psi)	CBR
P-401/P-403 HMA Surface	4.0	200000	
P-401/P-403 HMA Stabilized	5.0	400000	
P-209 Crushed Aggregate	10.0	75000	
Subgrade		15000	10

Design Life: 20

Results

Calculated Life: Total thickness to the top of the subgrade: 19.00 in.

Copy Structure to Clipboard

Design Options

Calculate HMA CDF: No

Automatic flexible base design: Yes

Output file: No

Units: US Customary

Allow Flexible Computation for Thick Overlays on PCC: Yes

Set as Program Default Reset Default to Initial

Show/Hide Pavement Image

Change Pavement Graphics

Traffic

Stored Aircraft Mix: FlexibleMix1 Save Aircraft Mix to File Clear All Aircraft from List Remove Selected Aircraft From Section Delete Aircraft Mix File

Airplane Name	Gross Taxi Weight (lbs)	Annual Departures	Annual Growth (%)	Total Departures	CDF Contributions	CDF Max for Airplane	P/C Ratio	Tire Pressure (psi)	Percent GW on Gear	Dual Spacing (in)	Tandem Tire Spacing (in)	Tire Contact Width (in)	Tire Contact Length (in)
A319-100 std	141978	1200	0	24000	0	0	0	173	47.50%	36.5	0.0	12.5	19.9
B737-300	140000	12000	0	240000	0	0	0	201	47.50%	30.5	0.0	11.5	18.4
B747-400	877000	500	0	10000	0	0	0	200	23.75%	44.0	58.0	14.4	23.0
B747-400 Belly	877000	500	0	10000	0	0	0	200	23.75%	44.0	58.0	14.4	23.0
B787-8	503500	6500	0	130000	0	0	0	228	47.50%	51.0	57.5	14.4	23.1

Explorer Aircraft Material

Design Options Notes

# Features of Modernized GUI

- **Multi-display interface.**
- **Highly configurable process flow.**
  - Consolidated data entry to single screen.
  - Open, resize, move, dock/undock, close screens independently.
  - Makes use of right-click context menus.
- **Resizable screens.**
- **Allows working with multiple jobs & sections.**
  - Switch between jobs/sections/pavement types with 1 click.
  - Cut and paste between jobs.
- **Standard Windows file management.**
  - Built-in Windows tools for saving/opening jobs.
  - Section and job names follow Windows standards.
- **Built-in standard pavement section library accessible from menu.**

# Explorer Navigation

- **FAARFIELD 2.0** supports multiple jobs open at the same time.
- Use the Explorer to navigate between jobs, and display:
  - Sections
  - Section Reports
  - PCR Reports/Graphs
  - 5010 Reports
  - Summary Reports (All sections in a job)

The screenshot displays the FAARFIELD 2.0.0 Beta software interface. On the left, the Explorer panel shows a tree structure with 'Airport A' and 'Airport B' highlighted in red boxes. Under 'Airport B', 'Rigid Taxiway A' is also highlighted. The main area shows the design details for 'Rigid Taxiway A'. The 'Pavement Layers' table is as follows:

Material	Thickness (in)	E (psi)	k (pci)	R (psi)
P-501 PCC Surface	14.0	4000000		650
P-401/P-403 HMA Stabilized	5.0	400000		
P-209 Crushed Aggregate	6.0	75000		
Subgrade		15000	172.4	

Below the table, the 'Design Life' is set to 20. The 'Results' section shows 'Calculated Life' and 'Total thickness to the top of the subgrade: 25.00 in.' At the bottom, the 'Traffic' section shows a table of aircraft mix data:

Airplane Name	Gross Taxi Weight (lbs)	Annual Departures	Annual Growth (%)	Total Departures	CDF Contributions	CDF Max for Airplane	P/C
DC10-10	458000	2263	0	45260	0	0	0
B747-200B Combi Mixed	833000	832	0	16640	0	0	0
B747-200B Combi Mixed Be	833000	832	0	16640	0	0	0
B777-200 ER	634500	425	0	8500	0	0	0



# User-Defined Aircraft Mode

Create, edit and save user-defined aircraft within the program.

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New Job Open Job New Section Save Job Save As Save All Close Job Stored Aircraft Mix Create Edit Help Reset Exit

Aircraft Section **Vehicle Edit**

FAARFIELD Aircraft Group

- Generic
- Airbus
- Boeing
- McDonnell Douglas
- Other Commercial
- General Aviation
- Military
- Non-Airplane Vehicles
- External Library

FAARFIELD Aircraft Library

- C-141A ICAO Flexible
- 2D-400 Ext1 (UDA)
- B737-900xt (UDA)
- B737-9ext (UDA)
- B767 ER Growth (UDA)
- Test3D (UDA)

User Defined Aircraft Info

Select Aircraft: B767 ER Growth (UDA)

Gross Taxi Weight (lbs): 413000

Percent Gross Weight On Whole Main Gear: 0.95

PCR Percent Gross Weight On Gear: 0.924

Tire Pressure (psi): 200

User Defined Gear

Design Options

Calculate HMA CDF: No

Automatic flexible base design: Yes

Output file: No

Units: US Customary

Allow Flexible Computation for Thick Overlays on PCC: Yes

Set as Program Default Reset Default to Initial

Show/Hide Pavement Image

Change Pavement Graphics

Tires

X Coord. (in)	Y Coord. (in)
-224.3	28.0
-179.3	28.0
-224.3	-28.0
-179.3	-28.0

Evaluation Points

X Coord. (in)	X Coord. (in)
-201.8	0.0
-201.8	-8.8
-201.8	-17.5
-197.3	-19.6
-192.8	-21.7
-188.3	-23.8

Delete Tire Delete Eval. Point Update Gear Image Update User Defined Aircraft

Traffic

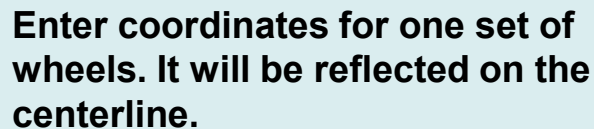
Stored Aircraft Mix: Save Aircraft Mix to File Clear All Aircraft from List Remove Selected Aircraft From Section Delete Aircraft Mix File

Airplane Name	Gross Taxi Weight (lbs)	Annual Departures	Annual Growth (%)	Total Departures	CDF Contributions	CDF Max for Airplane	P/C Ratio	Tire Pressure (psi)	Percent GW on Gear	Dual Spacing (in)	Tandem Tire Spacing (in)	Tire Contact Width (in)	Tire Cont. Length (in)
A320-100	150796	600	0	12000	0	0	0	200	47.50%	36.5	0.0	11.9	19.1
A340-600 std	807333	1000	0	20000	0	0	0	234	35.98%	55.0	78.0	15.7	25.2
A340-600 std Belly	807333	1000	0	20000	0	0	0	222	23.04%	46.3	77.9	12.9	20.7
A380	1238998	300	0	6000	0	0	0	218	19.00%	53.1	66.9	14.7	23.5
A380 Belly	1238998	300	0	6000	0	0	0	218	28.50%	0.0	0.0	14.7	23.5
B737-800	174700	2000	0	40000	0	0	0	204	47.50%	34.0	0.0	12.7	20.4

Design Options Notes



- Fill in the data fields. The aircraft gear will display in the grid at right.
- Click “Save New User Defined Aircraft”



# Create a User-Defined Aircraft (UDA)

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New Job Open Job New Section Save Job Save As Save All Close Job Stored Aircraft Mix Create Edit Help Reset Exit

Aircraft Section **Vehicle Edit**

FAARFIELD Aircraft Group

- Generic
- Airbus
- Boeing
- McDonnell Douglas
- Other Commercial
- General Aviation
- Military
- Non-Airplane Vehicles
- External Library

FAARFIELD Aircraft Library

- C-141A ICAO Flexible
- 2D-400 Ext1 (UDA)
- B737-900xt (UDA)
- B737-9ext (UDA)
- B767 ER Growth (UDA)
- Test3D (UDA)
- B739 (UDA)

User Defined Aircraft Info

**New User Defined Aircraft:**

Gross Taxi Weight (lbs)

Percent Gross Weight On Whole Main Gear

PCR Percent Gross Weight On Gear

Tire Pressure (psi)

User Defined Gear

Tires

X Coord. (in)	Y Coord. (in)

Evaluation Points

X Coord. (in)	X Coord. (in)

Update Gear Image Save New User Defined Aircraft

Design Options

Calculate HMA CDF:

Automatic flexible base design:

Output file:

Units:

Allow Flexible Computation for Thick Overlays on PCC

Set as Program Default Reset Default to Initial

Show/Hide Pavement Image

Change Pavement Graphics

Traffic

Stored Aircraft Mix:  Save Aircraft Mix to File Clear All Aircraft from List Remove Selected Aircraft From Section Delete Aircraft Mix File

Airplane Name	Gross Taxi Weight (lbs)	Annual Departures	Annual Growth (%)	Total Departures	CDF Contributions	CDF Max for Airplane	P/C Ratio	Tire Pressure (psi)	Percent GW on Gear	Dual Spacing (in)	Tandem Tire Spacing (in)	Tire Contact Width (in)	Tire Cont. Length (in)
A320-100	150796	600	0	12000	0	0	0	200	47.50%	36.5	0.0	11.9	19.1
A340-600 std	807333	1000	0	20000	0	0	0	234	35.98%	55.0	78.0	15.7	25.2
A340-600 std Belly	807333	1000	0	20000	0	0	0	222	23.04%	46.3	77.9	12.9	20.7
A380	1238998	300	0	6000	0	0	0	218	19.00%	53.1	66.9	14.7	23.5
A380 Belly	1238998	300	0	6000	0	0	0	218	28.50%	0.0	0.0	14.7	23.5
B737-800	174700	2000	0	40000	0	0	0	204	47.50%	34.0	0.0	12.7	20.4
B777-300 ER	277000	1000	0	20000	0	0	0	231	47.50%	55.0	57.5	14.0	22.0

Design Options Notes

**The new UDA appears in the aircraft library under the "External Library" group.**

# FAARFIELD 2.0 Beta Test

- **Beta test started January 29.**
  - Select group of testers from consultants, government, academia and international.
  - Issues, suggestions and comments have been requested by February 28.
- **Next steps:**
  - Preparing revised FAARFIELD 2.0 based on beta review comments.
  - Updated draft AC 150/5320-6G. Internal FAA review planned starting mid- to late March.

# Questions?

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## Acknowledgments:

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