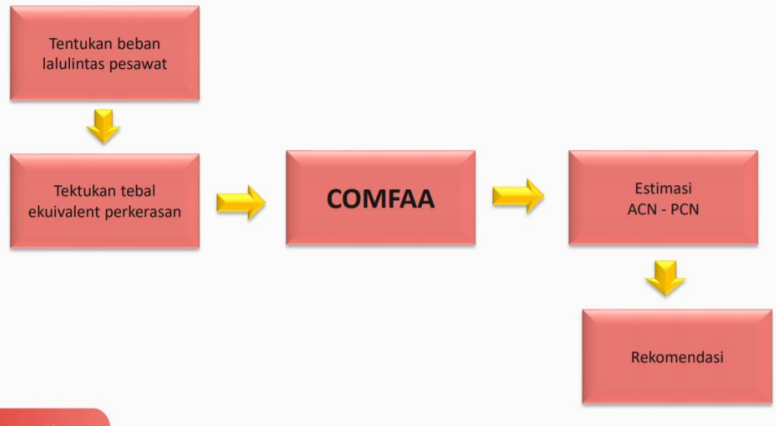
Perhitungan Estimasi nilai PCN Teoritis New Yogyakarta International Airport

Analisis ACN - PCN dengan COMFAA

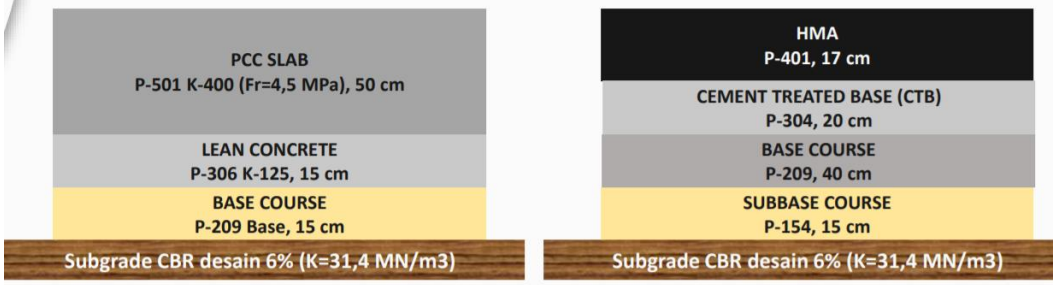


Input Traffic

No.	Name	Gross Wt.	Annual Departures
		tonnes	
1	A321-200 std	89,4	10
2	A320-100	68,4	10.047
3	B737-800	79,243	7.409
4	B737-900 ER	85,366	6.019
5	D-200	88,314	5.567
6	A330-300 std	230,9	119
7	B787-9 (Preliminary)	251,744	41
8	A350-900	272,904	1
9	B777-300 ER	352,441	400
10	B747-400	397,801	22
11	B747-400 Belly	397,801	22
12	A380	562	52
13	A380 Belly	562	52

Growth Kelas C: 3,3%
Growth Kelas E: 9,46%

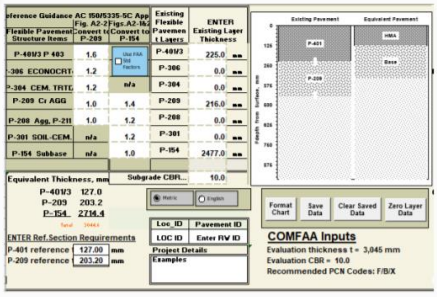
Typical Cross Section



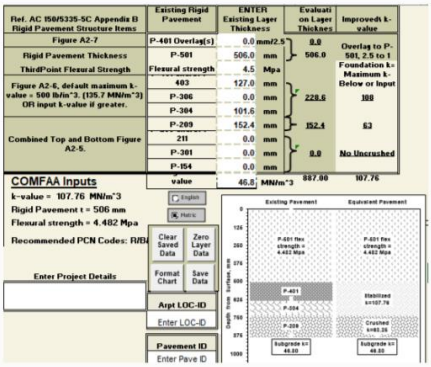
Reference Structural Layer Thickness

Reference Structural Layer Thickness (inches)	Less than Four Wheels on Main Gear	Four or More Wheels on Main Gear
Asphaltic Concrete (FAA Item P-401)	3	5
High Quality Granular Base (FAA Item P-209)	6	8

Support Spreadsheet Excel

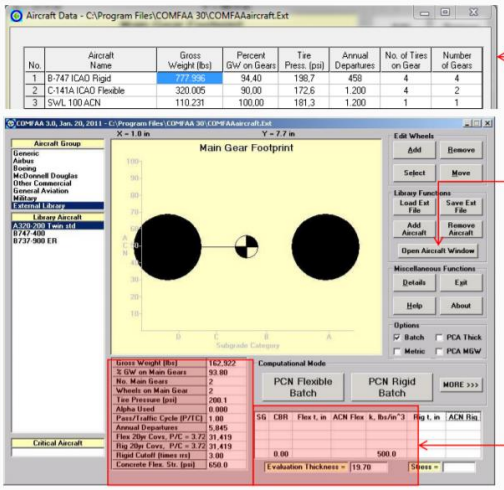


Flexible Pavement



Rigid Pavement

Input Data dalam Program COMFAA



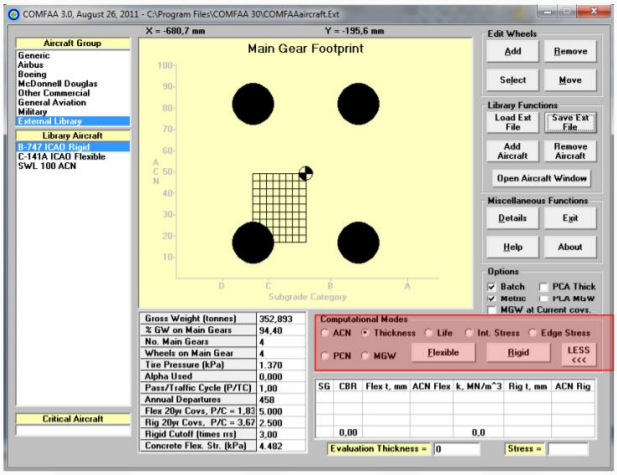
Aircraft Input Data

1. Aircraft type
2. MTOW
3. % GW on gears
4. Tipe dan tekanan roda
5. Annual departure
6. No. of Tires on gears
7. Number of gears

Karakteristik Perkerasan

1. Pass/traffic cylce (P/TC)
2. Nilai CBR Subgrade (Flexible Pavement)
3. Nilai k Subgrade (Rigid Pavement)
4. Equivalen Thickness

Output dalam Program COMFAA



1. Nilai ACN setiap jenis pesawat
2. Nilai PCN dari perkerasan
3. Total tebal equivalen perkerasan dari ACN pesawat terbesar
4. Umur sisa perkerasan dari jumlah lintasan selama umur rencana 20 tahun.

Estimasi nilai PCN Flexible pavement

Evaluation thickness-flexible

Reference Guidance AC 150/5335-5C App B			Existing Flexible Pavement Layers	ENTER Existing Layer Thickness	
Flexible Pavement Structure Items	Fig. A2-2 Convert to P-209	Figs.A2-1&2 Convert to P-154			
P-401/P 403	1.2	Use FAA Std Factors	P-401/3	170.0	mm
P-306 ECONOCRTE	1.2		P-306	0.0	mm
P-304 CEM. TRTD	1.2	n/a	P-304	200.0	mm
P-209 Cr AGG	1.0	1.3	P-209	400.0	mm
P-208 Agg. P-211	1.0	1.2	P-208	0.0	mm
P-301 SOIL-CEM.	n/a	1.2	P-301	0.0	mm
P-154 Subbase	n/a	1.0	P-154	150.0	mm
			Subgrade CBR...	6.0	

Equivalent Thickness, mm

P-401/3	127.0
P-209	203.2
P-154	784.9
Total	1115.1

Metric / English

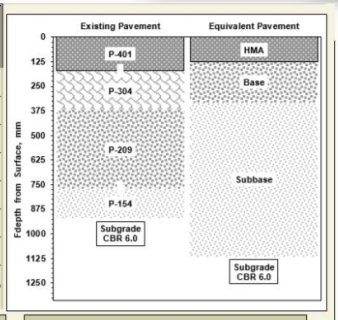
Loc_ID	Pavement ID
LOC ID	NSE NYIA

Project Details: AIRSIDE DESIGN NYIA

ENTER Ref.Section Requirements

P-401 reference t 127.00 mm

P-209 reference t 203.20 mm



Format Chart | Save Data | Clear Saved Data | Zero Layer Data

COMFAA Inputs

Evaluation thickness t = 1,115 mm

Evaluation CBR = 6.0

Recommended PCN Codes: F/C/X

PCN-Flexible

Results Table 2. PCN Values

No.	Aircraft Name	Critical Aircraft Total Equiv. Covs.	Thickness for Total Equiv. Covs.	Maximum Allowable Gross Weight	ACN Thick at Max. Allowable Gross Weight	CDF	PCN on C(6)
1	A321-200 std	1,056,573	1,096.6	91.982	893.61	0.0000	59.7
2	A320-100	>5,000,000	1,109.1	69.029	738.77	0.0000	40.8
3	B737-800	>5,000,000	1,102.3	80.846	830.12	0.0022	51.5
4	B737-900 ER	1,946,275	1,098.4	87.638	880.04	0.0147	57.9
5	D-200	590,587	1,095.3	93.594	915.90	0.0486	62.7
6	A330-300 std	80,431	1,091.4	237.351	1005.57	0.0273	75.6
7	B787-9 (Preliminary)	9,361	1,076.9	262.434	1120.07	0.0742	93.8
8	A350-900 Preliminary	31,187	1,088.5	277.932	1051.29	0.0005	82.6
9	B777-300 ER	9,208	1,088.6	363.113	1119.33	0.3901	93.7
10	B747-400	72,730	1,091.7	409.161	1007.37	0.0060	75.9
11	A380 (WLG) 562t	42,111	1,088.0	579.771	1028.94	0.0223	79.1
					Total CDF =	0.5860	

Results Table 3. Flexible ACN at Indicated Gross Weight and Strength

No.	Aircraft Name	Gross Weight	% GW on Main Gear	Tire Pressure	ACN Thick	ACN on C(6)
1	A321-200 std	89,400	95,00	1.460	877,9	57,6
2	A320-100	68,400	94,00	1.380	734,5	40,3
3	B737-800	79,243	93,56	1.413	820,3	50,3
4	B737-900 ER	85,366	94,58	1.517	866,0	56,0
5	D-200	90,718	95,00	1.379	898,9	60,4
6	A330-300 std	230,900	95,74	1.420	985,6	72,6
7	B787-9 (Preliminary)	251,744	93,55	1.544	1.081,6	87,5
8	A350-900 Preliminary	268,900	93,68	1.660	1.027,3	78,9
9	B777-300 ER	352,441	92,44	1.524	1.092,9	89,3
10	B747-400	397,801	93,32	1.379	985,8	72,6
11	A380 (WLG) 562t	562,000	38,05	1.500	1.004,7	75,5

PCN-Flexible 93 F/C/X/T

Estimasi nilai PCN Rigid pavement

Evaluation thickness - rigid

Ref. AC 150/5335-5C Appendix B Rigid Pavement Structure Items	Existing Rigid Pavement Layers	ENTER Existing Layer Thickness		Evaluation Layer Thickness	Improved k-value
Figure A2-7	P-401 Overlay(s)	0.0	mm2.5	0.0	Overlay to P-501, 2.5 to 1
Rigid Pavement Thickness	P-501	500.0	mm	500.0	
ThirdPoint Flexural Strength	Flexural strength	4.5	Mpa		Foundation k= Maximum k- Below or Input k
Figure A2-6, default maximum k-value = 500 lb/in^3. (135.7 MN/m^3) OR input k-value if greater.	P-401 and/or P-403	0.0	mm		
	P-306	150.0	mm	150.0	80
	P-304	0.0	mm		
	P-209	150.0	mm	150.0	48
Combined Top and Bottom Figure A2-5.	P-208 and/or P-211	0.0	mm		
	P-301	0.0	mm	0.0	No Uncrushed
	P-154	0.0	mm		
	Subgrade k-value	31.4	MN/m^3	800.00	79.81

COMFAA Inputs

k-value = 79.81 MN/m^3

Rigid Pavement t = 500 mm

Flexural strength = 4.482 Mpa

Recommended PCN Codes: R/B/W

Enter Project Details

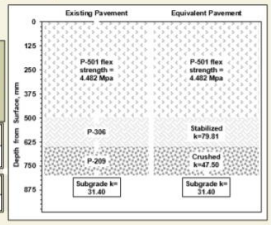
AIRSIDE PAVEMENT NYIA

English / Metric

Clear Saved Data | Zero Layer Data | Format Chart | Save Data

Arpt LOC-ID: NSE NYIA

Pavement ID: APRON



PCN Rigid

Results Table 2. PCN Values

No.	Aircraft Name	Critical Aircraft Total Equiv. Covs.	Thickness for Total Equiv. Covs.	Maximum Allowable Gross Weight	ACN Thick at Max. Allowable Gross Weight	CDF	PCN on B(80)
1	A321-200 std	117.535	445,0	112,031	387,75	0,0001	77,7
2	A320-100	3.390.518	452,9	82,468	323,66	0,0024	52,5
3	B737-800	455.282	448,5	97,543	360,29	0,0144	66,2
4	B737-900 ER	146.956	445,7	105,592	381,49	0,0365	75,0
5	D-200	99.247	444,6	112,839	392,72	0,0541	79,8
6	A330-300 std	660.992	449,4	279,694	393,83	0,0006	80,3
7	B787-9 (Preliminary)	86.300	444,2	302,038	431,93	0,0008	98,1
8	A350-900 Preliminary	150.689	445,7	330,959	419,21	0,0000	92,0
9	B777-300 ER	526.551	448,9	403,376	449,75	0,0004	107,1
10	B747-400	788.997	449,8	469,925	393,06	0,0001	80,0
11	A380 (WLG) 562t	389.108	448,1	677,251	405,72	0,0002	85,7
					Total CDF =	0,1095	

Results Table 3. Rigid ACN at Indicated Gross Weight and Strength

No.	Aircraft Name	Gross Weight	% GW on Main Gear	Tire Pressure	ACN Thick	ACN on B(80)
1	A321-200 std	89,400	95,00	1.460	342,5	59,4
2	A320-100	68,400	94,00	1.380	292,1	42,1
3	B737-800	79,243	93,56	1.413	321,4	51,7
4	B737-900 ER	85,366	94,58	1.517	339,4	58,2
5	D-200	90,718	95,00	1.379	348,2	61,5
6	A330-300 std	230,900	95,74	1.420	349,4	62,0
7	B787-9 (Preliminary)	251,744	93,55	1.544	383,8	75,9
8	A350-900 Preliminary	268,900	93,68	1.660	370,0	70,2
9	B777-300 ER	352,441	92,44	1.524	405,8	85,7
10	B747-400	397,801	93,32	1.379	351,9	63,0
11	A380 (WLG) 562t	562,000	38,05	1.500	359,8	66,0

PCN-Rigid 107 R/C/X/T