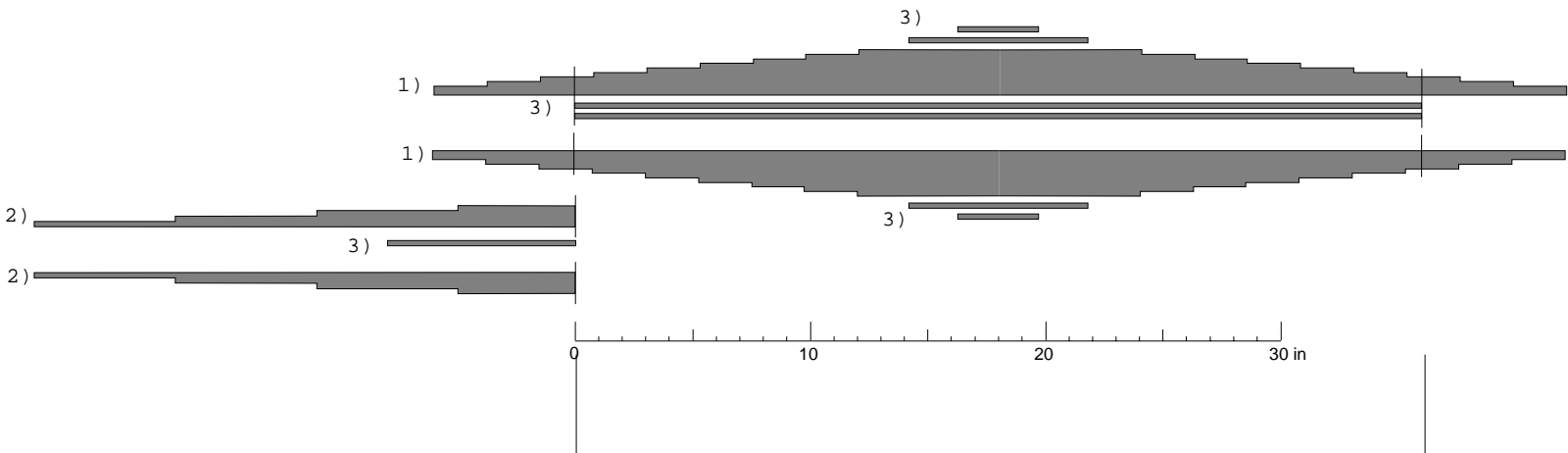


Aegea

Wing Spar Materials



Composite Structures Technology

Pre-cured prepreg strips

1)	16.90	cent	1/2" x 48" x 0.060" -> 0.014" dbl taper	C1952
2)	9.30	tips	3/8" x 48" x 0.030" -> 0.007" dbl taper	C1914
3)	8.40	fill	3" x 48" x 0.007" constant	C1004
	6.80	joiner	0.315" x 36" hollow carbon rod	T523-4
	5.45	joiner	0.230" x 36" hollow carbon rod	T519-4
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	\$46.85			

Wing spar weights

caps	64 g	(prepreg uni CF)
core	16 g	(6 lb endgrain balsa)
wrap	15 g	(2 oz glass/epoxy)
join	20 g	(0.315" CF rod)
tubes	3 g	(Kevlar/epoxy tube)
boxes	8 g	(plywood, glass cloth)
glue	6 g	
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	140 g	

Design Loads

wing lift	150 lb @ 50 m/s
root bend.mom.	1400 lb-in
root cap load	3300 lb
root cap area	0.040 in^2 top
	0.034 in^2 bot
cap stress	82 ksi top
	97 ksi bot
wrap stress	12 ksi (shear)
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root EI	64000 lb-in^2
root curv.	0.022 1/in
tip defl.	

root torsion	25 lb-in
root skin th.	0.015 in
wing skin shear	290 psi