XX. Straßenbau- und Baustoffsymposium Universität Weimar

- **STUDY OF PAVEMENTS WITH WARM ASPHALT FOR AIRCRAFT PARKING IN SOFT SOIL REGION**

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WHY RESERACH? MOTIVATION

1) THE PROBLEM

- In many areas for aircraft parking, we can find low values of CBR for subgrade
- Asphalt mix permanent deformation and Subgrade permanent deformation – Higher than the existent field pavement
- TECHNICAL STANDARDS IN TERMS OF DESIGN OF AIRPORT PAVEMENT TO ORIENTATE THE SOLUTION OF THE PROBLEM. The document FAA AC 150 5320 6F is applicable for taxiway and airfield where the aircraft is running, not stopped.

2) THE PROPOSAL

- Study, in first step, in terms of theoric model and after the test in field.

3) FINALLY

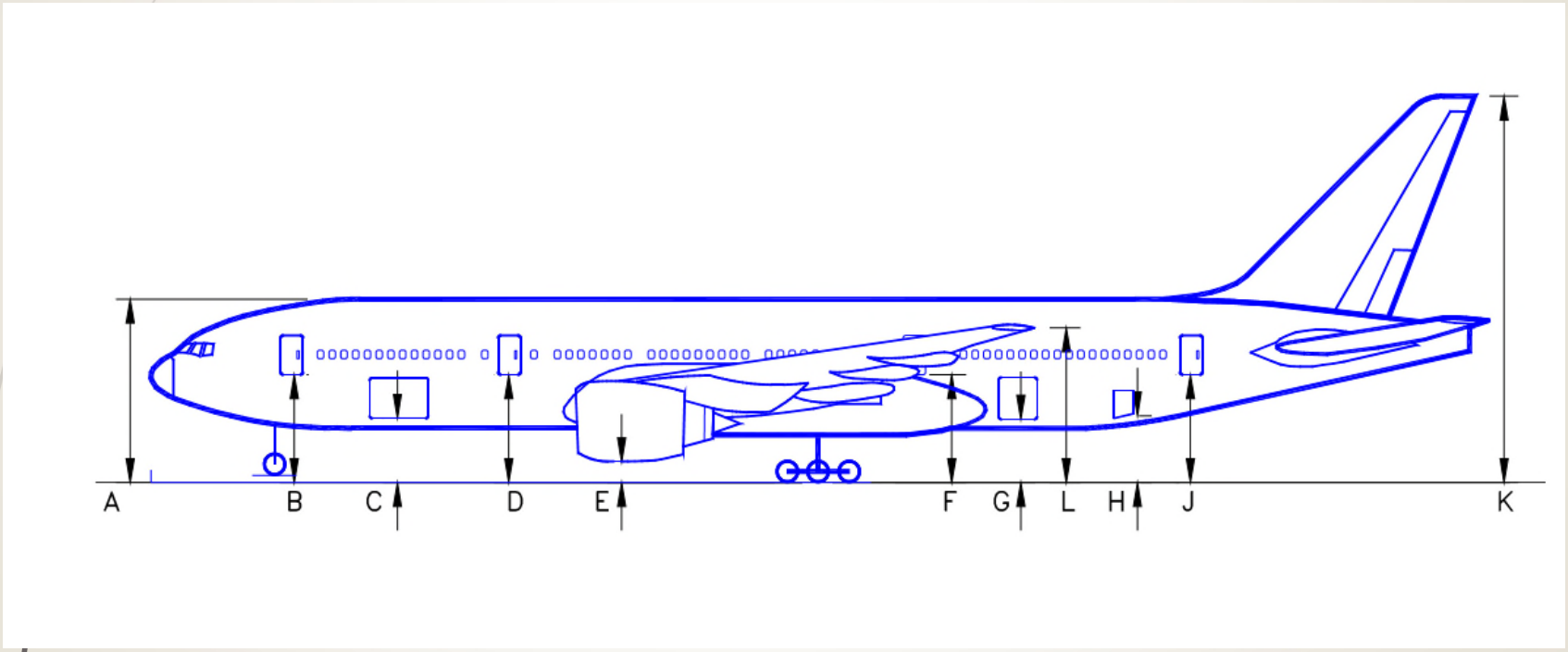
Ffind partners for this research

1- THE CHALLENGERS

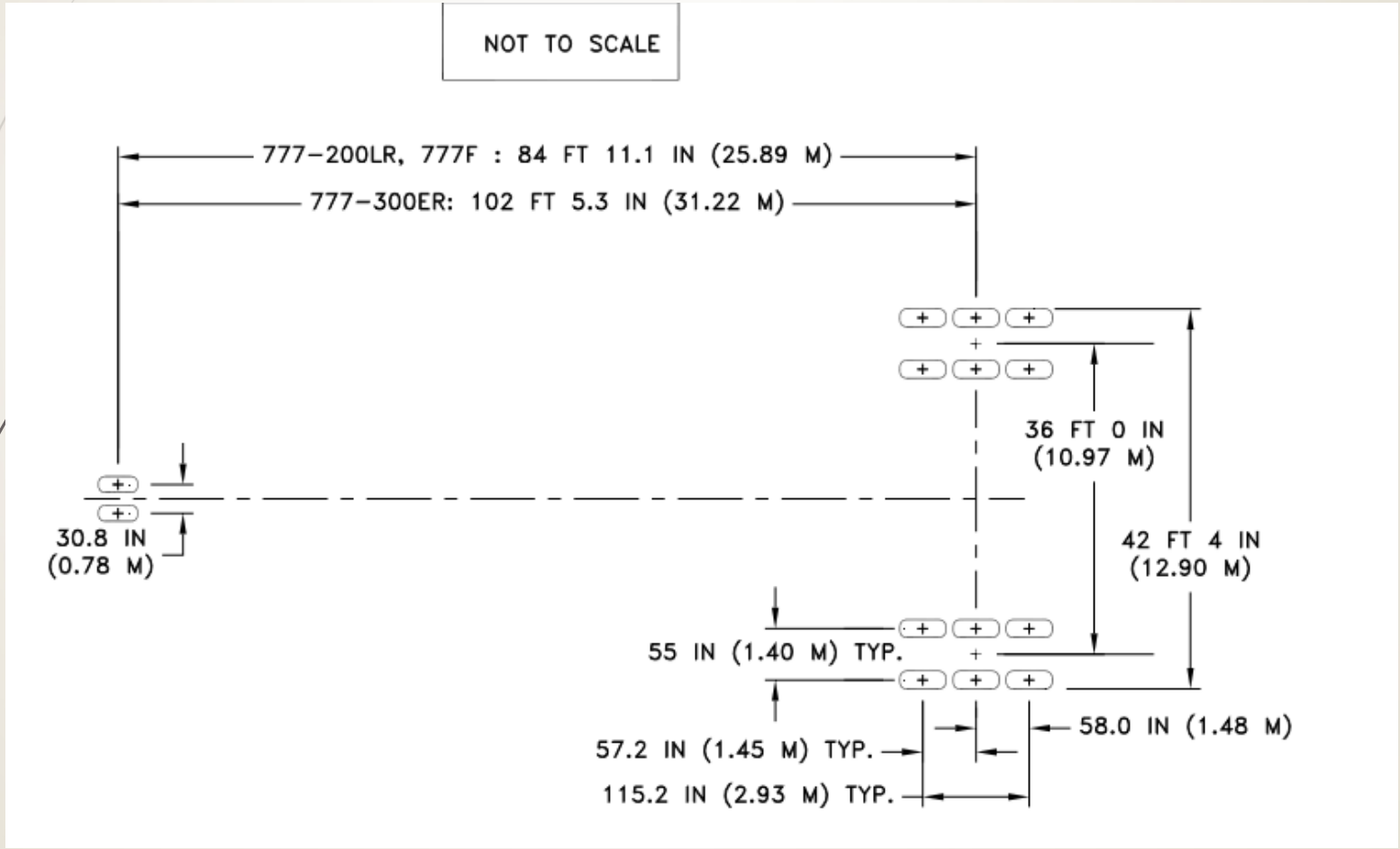
- FIRST, IN OUR OPINION ALL AIRPORT IN ANY PART OF THE PLANET IS A INTERNACIONAL. WHY?? BECAUSE EVERYTIME, WE FIND A FOREIGN PASSENGER USING THE FLIGHT SERVICE.
- SO THAT, TODAY, THE ENGINEERING SOLUTIONS HAVE AS A CHALLENGE TO SERVE THE MOST RICH NATIONS AND ALSO THE POOREST. THIS IS THE GREAT CHALLENGE OF THE CENTURY: TECHNOLOGICAL EQUALITY

MOTIVATION
AIRCRAFT PARKING GUARULHOS AIRPORT – SÃO PAULO

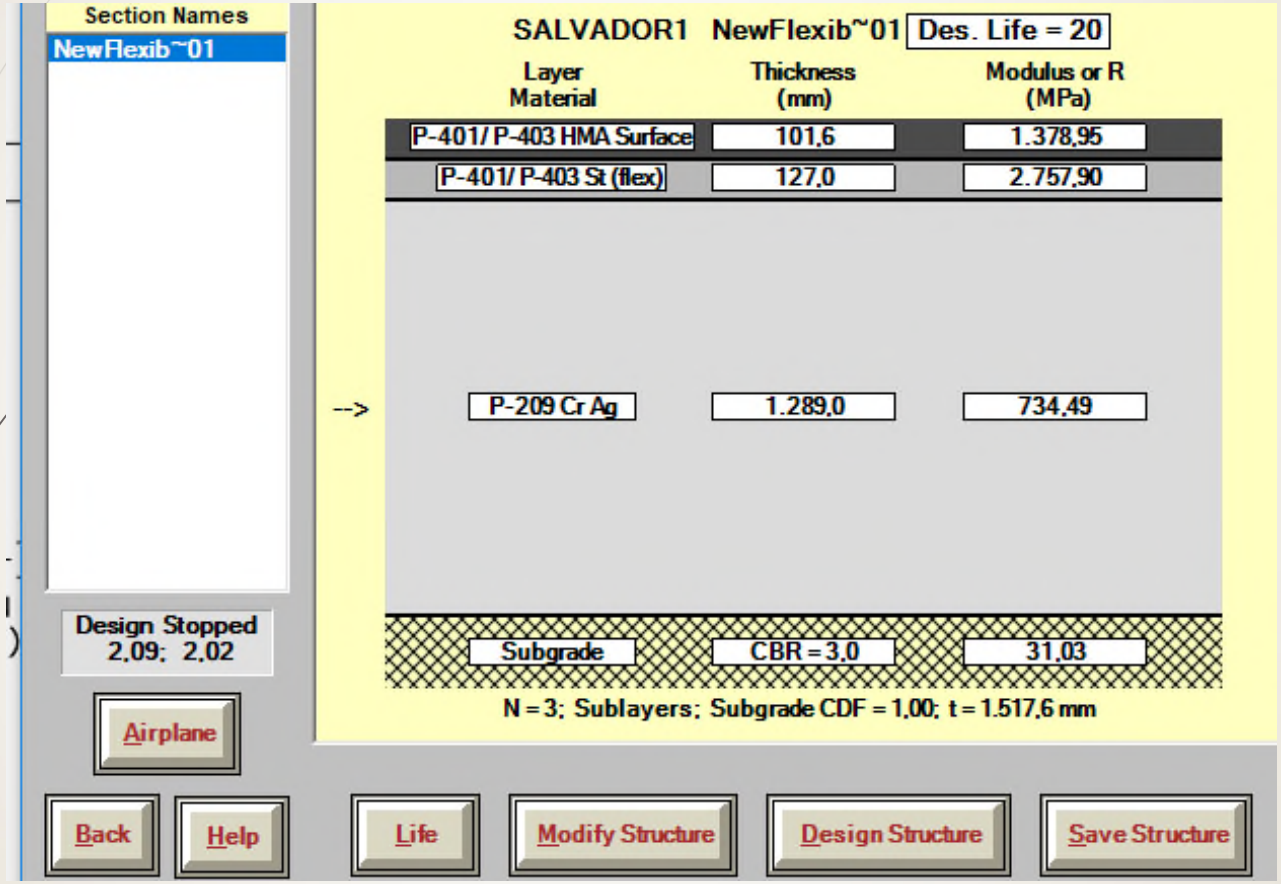
CRITICAL AIRCRAFT
BOEING 777



CRITICAL AIRCRAFT
BOEING 777

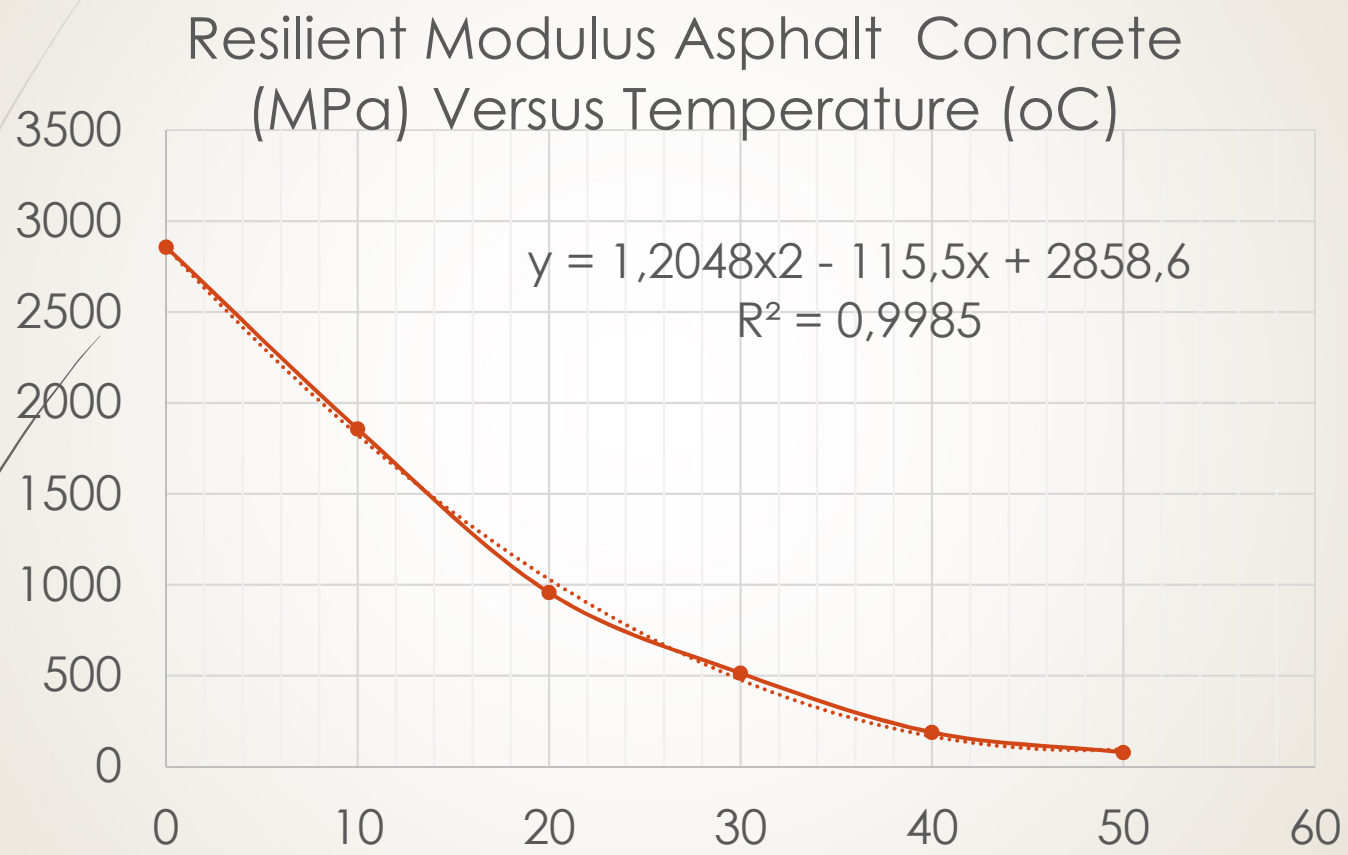


CRITICAL AIRCRAFT
BOEING 777 FAA SOFTWARE



24 CM HOT MIX ASPHALT
130 CM CRUSHED AGREGATE

2- Effect of Temperature in Resilient Modulus of the Asphalt Concrete (Crovetti and Hall)



COMPRESSION STRESS IN THE TOP OF SUBGRADE IN FUNCTION OF THE VARIATION OF THE RESILIENCE MODULE AND HE THICKNESS OF THE ASPHALT LAYER

Asphat layer	Resiliente Modulus (MPa)						Compression Stress
tickness	Surface	Base	subgrade	Tensile stress	Displacement (mm)		(MPa)
(cm)	(MPa)	(MPa)	(MPa)	(MPa)	Asphalt	Subgrade	Subgrade
24	2000	200	20	0,54	9,08E-01	8,70E-01	0,043
24	3000	200	20	2,10	9,18E-01	8,81E-01	0,042
24	5000	200	20	2,72	9,59E-01	9,11E-01	0,046
30	2000	200	20	1,28	9,08E-01	8,51E-01	0,032
30	3000	200	20	1,67	8,92E-01	8,31E-01	0,035
30	5000	200	20	2,18	8,71E-01	8,08E-01	0,033
40	2000	200	20	0,97	8,64E-01	8,03E-01	0,033
40	3000	200	20	1,24	8,44E-01	7,81E-01	0,031
40	5000	200	20	1,65	8,18E-01	7,16E-01	0,029

DRUCKSPANNUNG IN DER OBERSEITE DES UNTERGRUNDS IN ABHÄNGIGKEIT VON DER VARIATION DES ELASTIZITÄTSMODULS UND DER DICKE DER ASPHALTSCHICHT

Asphat layer	Resiliente Modulus (MPa)						Compression Stress
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(cm)	(MPa)	(MPa)	(MPa)	(MPa)	Asphalt	Subgrade	Subgrade
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PRELIMINARY CONSIDERATIONS

- Remembering, the CBR of the subgrade adopted, was 3%
- There was a 30% reduction in the compression stress at the top of the subgrade when the asphalt layer thickness was doubled. Consequently, it is possible to reduce the deformability of the subgrade
- This preliminary result is encouraging to continue the research, searching for an asphalt concrete with high permanent deformation resistance and, reducing the pressure of compression at the top of the subgrade, seeking the effect of slab

VORÜBERLEGUNGEN

- Zur Erinnerung, CBR angenommen: 3%;
- Bei Verdopplung der Asphaltschichtdicke kam es zu einer 30% -igen Verringerung der Druckspannung an der Oberseite des Untergrundes. Folglich ist es möglich, die Verformbarkeit des Untergrundes zu reduzieren;
- Dieses vorläufige Ergebnis ermutigt, die Forschung fortzusetzen, auf der Suche nach einem Asphaltbeton mit hoher dauerhafter Verformungsbeständigkeit, und reduziertem Druck der Kompression an der Oberseite des Untergrundes, um den Platteneffekt zu suchen.

DANKE FÜR IHRE AUFMERKSAMKEIT

SPEZIELLEN DANK AN DR. JÜRGEN, DER MEINEN VORTRAG ERMÖGLCHTE