

TECHNICAL INFORMATION AND PHOTOS

NEW CONSTRUCTION TECHNOLOGIES

SEMI CONTINUOUS CONCRETE

AND

CONCRETE SLAB FOUNDATION SYSTEM

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SOME WORKS DONE USING OUR TWO CURRENT TECHNOLOGIES AND DIFFERENT PARTS OF THE SAME WITH PHOTOS INCLUDED

Question - On which construction projects the current IS.COM technologies has already been implemented in and what the corresponding experiences are?

TECHNOLOGY – SEMI-CONTINUOUS CONCRETE

1.1 – Using Steel Load Transfer Plates without any joint inductor nor EPS

1.1.1 Without any base at all – construction directly over the top soil

<u>Designation</u>	Road at Valença (North board of Portugal)
<u>Loads</u>	Truck with 13.000 kg per axel
<u>Dimensions</u>	Slabs 8 x 4 m - thickness of de 16 cm
<u>Length</u>	12 km
<u>Year of Construction</u>	1989
<u>Traffic Intensity</u>	1989 – 1997 Middle High 1998 – 2012 Middle Low 2013 – 2020 Reduced
<u>Conditions at the present time</u>	At the end of 31 years the pavement is quite good with any maintenance works at all. <u>To pay attention and be aware that the road is at least every two years flooded with water from the river Minho nearby and at such times it continues to be used whenever is possible. . Nevertheless the farmers have dug holes under the slabs to pass water pipes for irrigation thus breaking some slabs due to lack of support</u>

Photos – Construction 1989



[Photos 1991 – Road in use](#)





[Photos 2016-2018](#)









Crossing the concrete & piping water by the farmers – farmers responsibility



NO BASE AT ALL WAS CONSTRUCTED – CONSTRUCTION OVER THE TOPSOIL



Using Steel Load Transfer Plates without joint inductor and using a conventional base

<u>Designation</u>	Road at Vila Nova de Cerveira
<u>Loads</u>	Truck with 13.000 kg per axel
<u>Dimensions</u>	Slabs 8 x 4 m - thickness of de 16 cm
<u>Length</u>	7 km
<u>Year of Construction</u>	1993
<u>Traffic Intensity</u>	1993 – 2008 Intensive 2009 – 2014 Middle High 2015 2020 Middle Low
<u>Conditions at the present time</u>	At the end of 27 years –Quite good, no maintenance works

<u>Designation</u>	Lipor – Waste treatment plant
<u>Loads</u>	Truck with 13.000 kg per axel
<u>Dimensions</u>	Slabs 20 x 6 m - thickness of de 16 cm
<u>Length</u>	20.000 m2
<u>Year of Construction</u>	1994
<u>Traffic Intensity</u>	1994 – 2020 Middle High
<u>Conditions at the present time</u>	At the end of 26 years –Very good with no maintenance works whatsoever

Photos – Construction 1994



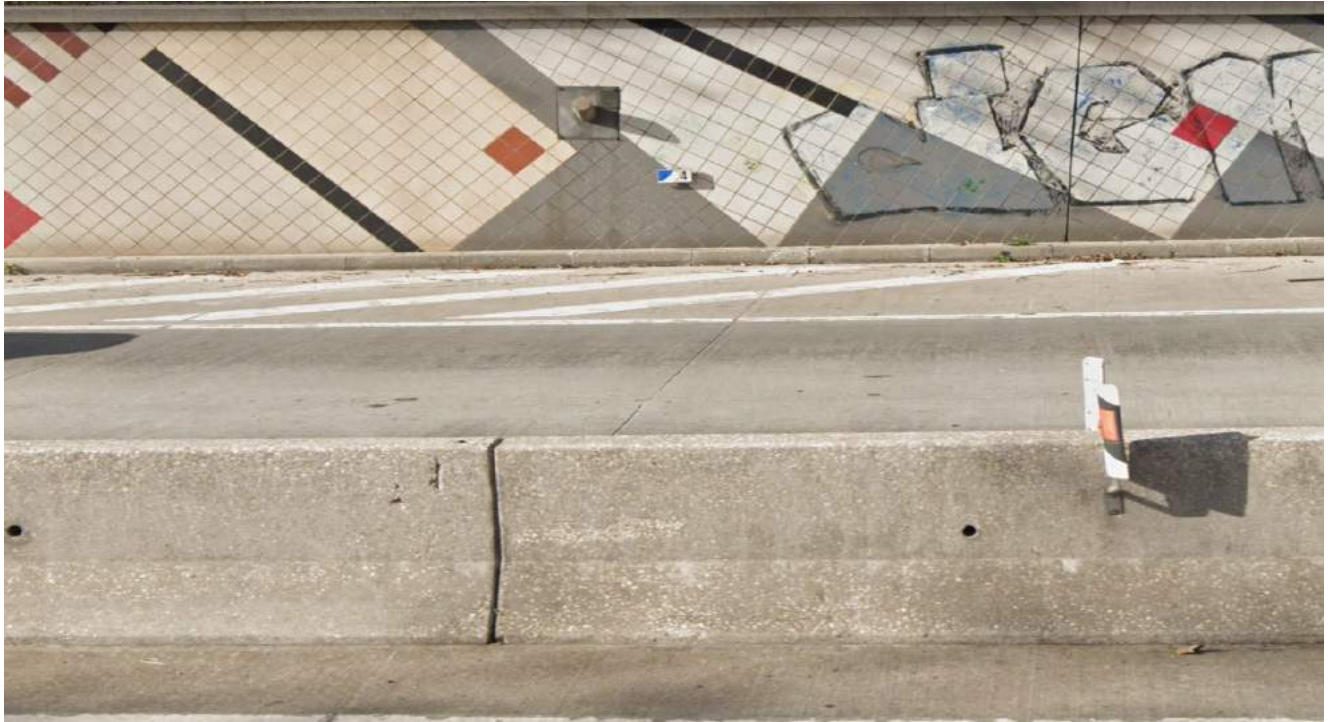
Photos 2017



<u>Designation</u>	Inferior passage of A 28 in Oporto (Highway)
<u>Loads</u>	Truck with 13.000 kg per axel
<u>Dimensions</u>	Slabs 8 x 5 m - thickness of de 16 cm
<u>Length</u>	2 km
<u>Year of Construction</u>	1994
<u>Traffic Intensity</u>	1994 – 2020 Very Intensive
<u>Conditions at the present time</u>	At the end of 16 years –Very good, no maintenance works whatsoever

Photos 2018





<u>Designation</u>	Cimpor Road at Azores Islands– Cimpor Cement factory
<u>Loads</u>	Truck with 13.000 kg per axel
<u>Dimensions</u>	Slabs 8 x 4 m - thickness of de 16 cm
<u>Length</u>	5 Km
<u>Year of Construction</u>	1998
<u>Traffic Intensity</u>	1998 – 2020 Middle High
<u>Conditions at the present time</u>	At the end of 22 years – Very good with no maintenance works whatsoever Kindly note that in Azores the island is subjected to several earthquakes – Cimpor is the major cement producer in Portugal.

Photos – Construction 1998



[Photos 2018 - In Azores Islands earthquakes happen often sometimes more than once a year](#)



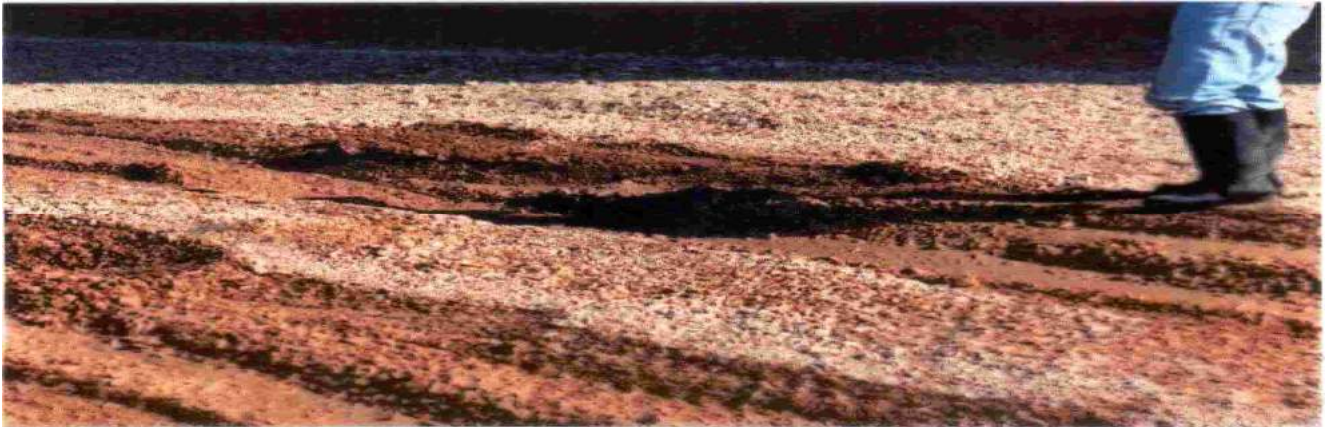




<u>Designation</u>	Alverca Warehouse - Unloading and parking place and warehouse
<u>Loads</u>	Truck with 13.000 kg per axel
<u>Dimensions</u>	Slabs 8 x 4 m - thickness of de 16 cm
<u>Length</u>	<u>200.000 m2</u>
<u>Year of Construction</u>	1990
<u>Traffic Intensity</u>	1990 – 2014 Intensive 2014 – 2020 Reduced
<u>Conditions at the present time</u>	At the end of 30 years <ul style="list-style-type: none"> • Excellent in the interior of the warehouse with any maintenance works • Reasonable in the exterior (parking lot for trucks). • Notwithstanding the pavement have been subjected to several and cyclic floods of river Tejo and no maintenance works have been made - Constructed for SONAE a Portuguese major company that abandon/sold the premises in 2014

Construction phase 1990





In use 1994



Warehouse Rear 1994





[Photos 2018](#)







[Warehouse interior floor 2018](#)





1.1.2. Using Steel Load Transfer Plates and joint inductor with conventional base

<u>Designation</u>	Highway A8
<u>Loads</u>	Truck with 13.000 kg per axel
<u>Dimensions</u>	Slabs 5 x 6m - thickness of de 20 cm
<u>Length</u>	16 Km (repair of a section of concrete construction that in the original construction was built using dowel bars)
<u>Year of Construction</u>	2000
<u>Traffic Intensity</u>	2000 – 2020 Very Intensive
<u>Conditions at the present time</u>	At the end of 20 years <ul style="list-style-type: none"> • Good without any maintenance works –in 2018 it was covered with asphalt once Brisa is covering all sections made with concrete

Construction 2000





[In use - photos 2017](#)





<u>Designation</u>	Maritime Port at Vitória (Brazil) / Pirelli Cables – (Hochtief as general contractor)
<u>Loads</u>	Punctual loads of 25.000 kg
<u>Dimensions</u>	Slabs 5x 5 m - thickness of de 25 cm
<u>Length</u>	8.000 m ²
<u>Year of Construction</u>	2011
<u>Traffic Intensity</u>	2011 – 2020 Very intensive use
<u>Conditions at the present time</u>	At the end of 10 years <ul style="list-style-type: none">• Very good, any maintenance works were carried out.

Photos - Construction 2011







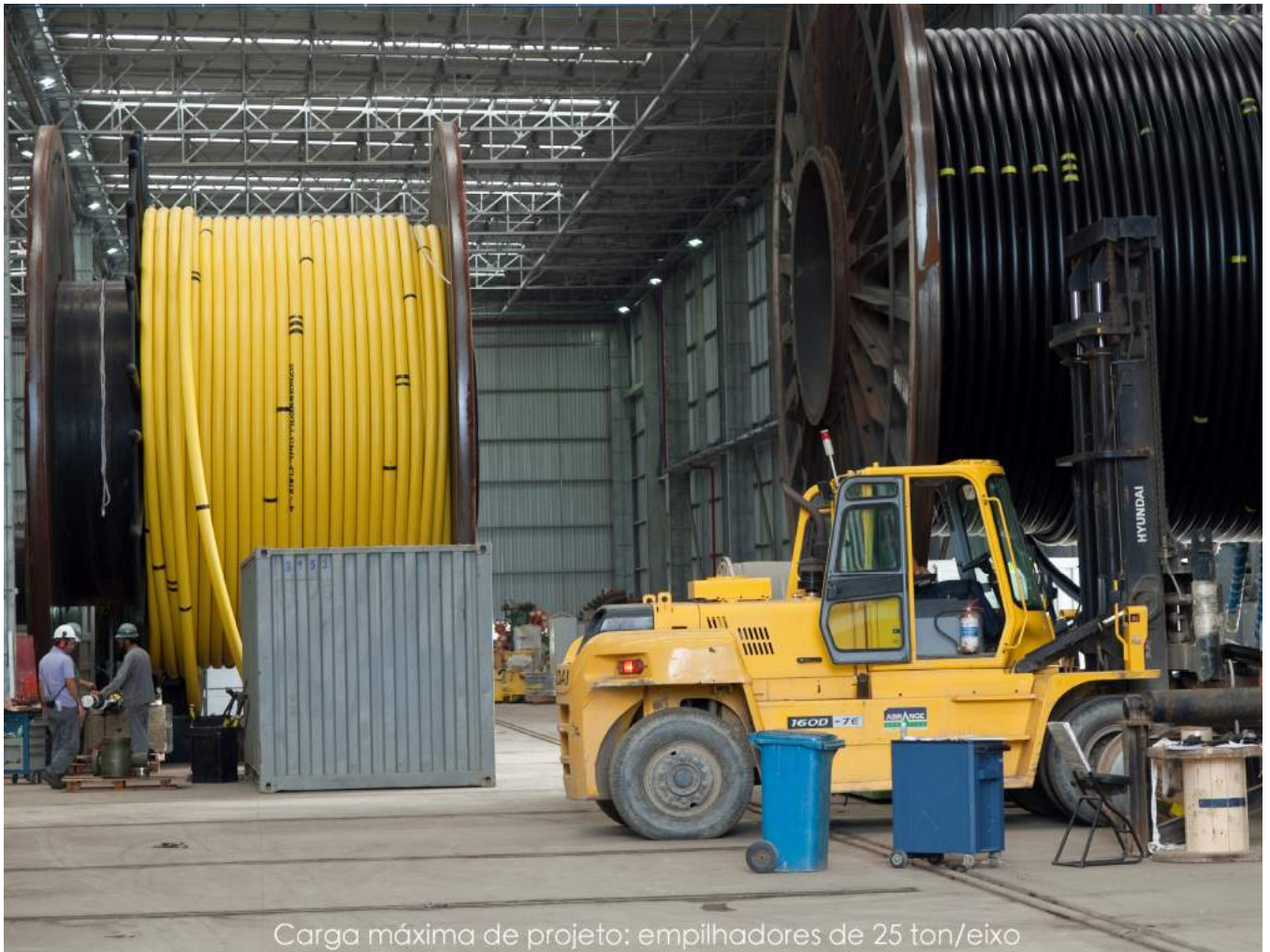




Recalque diferencial da fundação após 10 meses



In use – Photos 2014



Carga máxima de projeto: empilhadores de 25 ton/eixo



In use – Photos 2014







1.2. Some other works done

1.2.1. Nestlé at Avanca Portugal – 1993 - Photos 2019





1.2.2. Factory Biancogres at Vitória Brazil 2013



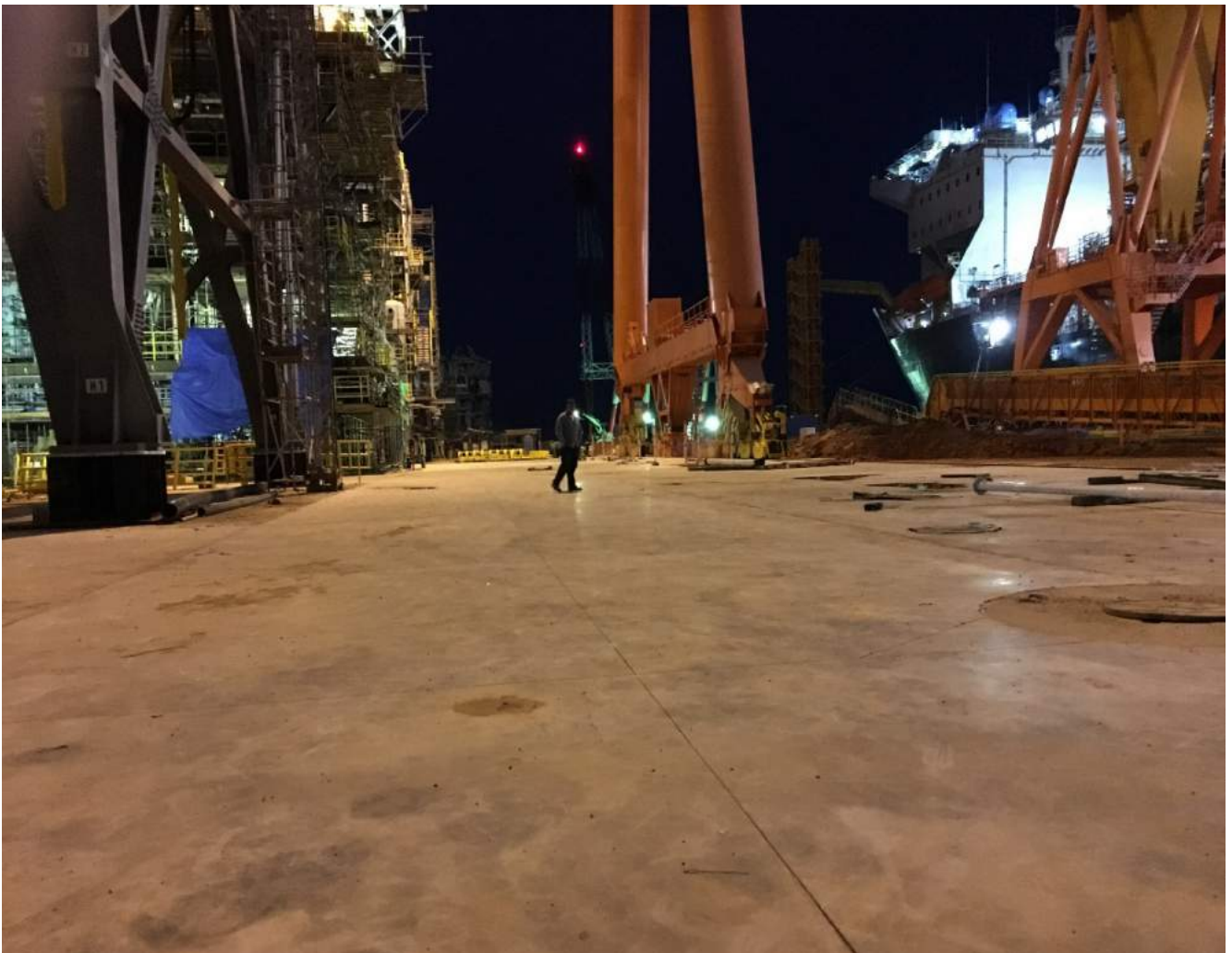


1.2.3. Warehouse at Vitória Brazil 2012





1.2.4. Jurong Port at Aracruz Brazil 2015



TECHNOLOGY OF MONOLITHICALLY FOUNDATION

1.3. Using Steel Load Transfer Plates with joint inductor and EPS High Density (30 Kg) as a base

<u>Designation</u>	Factory Metal-mecânica – Vitória (Brazil)
<u>Loads</u>	Truck with 13.000 kg per axel
<u>Dimensions</u>	Slabs 5 x 5 m - thickness of de 16 cm
<u>Length</u>	900 m2
<u>Year of Construction</u>	2011
<u>Traffic Intensity</u>	2011 – 2020 Very intensive
<u>Conditions at the present time</u>	<p>At the end of 9 years</p> <ul style="list-style-type: none"> • Very good, any maintenance works were carried out. • Trucks entering and leaving the premises loaded with steel. • Steel cutting machine exercising impacts of 200 tones without any vibration transmission at all into the contiguous slabs that support the steel cutting machines and bending machines for steel sheets.





Our **Steel Load Transfer Plates** are **unique** and they make all the difference when constructing in concrete highways, roads, maritime ports, airports, factories, warehouses, refrigerated warehouses, parking lots, railways, etc.

These **unique Steel Load Transfer Plates** **allow soil settlements of 3 cm** without breaking the slabs and **always ensuring the structural continuity of the pavement.**

Dowel Bars allow only 2 mm (0.2 cm) of soil settlement. More than 0.2 cm of any soil settlement the slabs break when made with the Dowell bars.

Our **unique Steel Load Transfer Plates** also allow the slabs to slide on the base either **vertically to the joint or horizontally** without any stresses due to expansion / or shrinkage/or retraction.

Also our **unique Joint Inductor** allows the **joint opening** without any mechanical intervention at the exact location intended.

It also prevents all liquid infiltration into the and from the base, being **watertight**, and therefore **joint sealing is completely unnecessary.**

A conventional base with several layers may be used or we can substitute the entire base by using **E.P.S (high density expanded polystyrene)** or using any other inert materials or again using compacted sand wrapped in geotextil fabrics to prevent any displacement of such base.

All the concrete mix, for all the works carried out in Portugal, were made by the **Professor Engineer Ana Maria Proença (Oporto Engineering Faculty)** who always gives us the greatest guarantees of appropriate resistance of concrete required for our projects, as she is a world authority in materials resistance. An excellent composition of the concrete is completely indispensable to ensure the longest duration of the works.

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