



## Dramix® Pro:

Steel Fiber Slab-on-Ground Design Note

### 1. Project Info

**Project:** Industrial floor - warehouse

**Surface:** 12.000m<sup>2</sup>

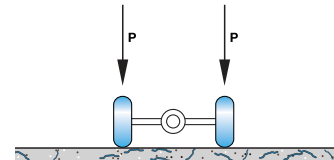
**Name:** Vermaelen Heatings

**Country:** Belgium

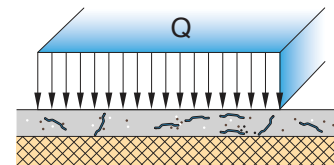
## 2. Input Data

### a. Load Cases

TWO WHEEL LOADS			
	Load	Contact pressure	Distance
P	40 kN	4.00 N/mm <sup>2</sup>	1500 mm



UNIFORMLY DISTRIBUTED LOAD	
	Load
Q	40 kN/m <sup>2</sup>



### b. Concrete Characteristics

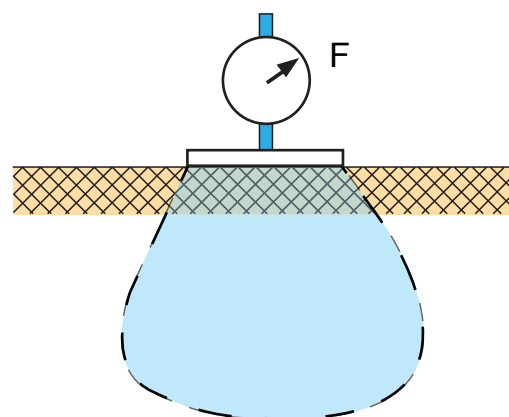
Following concrete characteristics have been applied in this design.

CONCRETE CHARACTERISTICS		
Compressive strength		C25/30
Flexural strength	$f_{ctk}$	3.40 N/mm <sup>2</sup>
E-modulus	$E_c$	30.500 N/mm <sup>2</sup>
Poisson Coefficient	$\nu_c$	0.15
Shrinkage factor (‰)	$\epsilon'_c$	0.40

### c. Sub-base

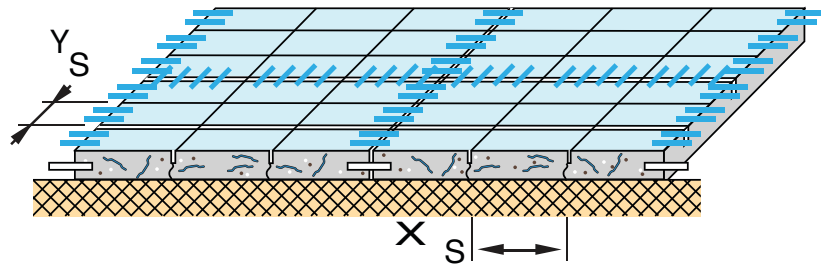
The sub-base constant  $k$  is being measured with a round plate of 760 mm (30 inch). If another diameter is used the obtained value has to be adjusted to the standard test.

$$k_s = 0.030 \text{ N/mm}^3$$



## d. Joint spacing

$X_s = 6000 \text{ mm}$   
 $Y_s = 6000 \text{ mm}$



## 3. Safety Factors

Material Factors		
Concrete	$\gamma_c$	1.50
Steel fiber concrete	$\gamma_{SF}$	1.20
Load Factors		
Variable Loads	$\gamma_Q$	1.20
Dynamic Factor (module loads)	$\gamma_{Qd}$	1.20

## 4. Design cases - Overview

Load case	Internal	Saw-Cut	Edge
Two Wheel loads	X	X	X
Uniform Distributed load	X		

## 5. Results

Equivalent flexural strength ( $F_{fct, eq, 150}$ )

$$f_{SF} = \left( \frac{6(m + m')}{h^2} - \frac{f_{fctk}}{y_c} \right) * y_{SF} : 2.31 \text{ N/mm}^2$$

## 6. Dramix® Solution

Subbase k-value	0.030 N/mm <sup>3</sup>
Concrete compressive strength, f' c	C25/30
Max joint spacing	6000 mm * 6000 mm
Floor thickness	150 mm
Dosage	24 kg/m <sup>3</sup>
Fiber type	RC-65/60-BN

## 7. Control

	Ultimate limit state	Serviceability Limit state
Loads	✓	✓
Shrinkage		✓
Temperature		✓

See at [www.bekaert.com/building](http://www.bekaert.com/building):

- product data sheet
- recommendations for dosing, handling and mixing
- standard specification text