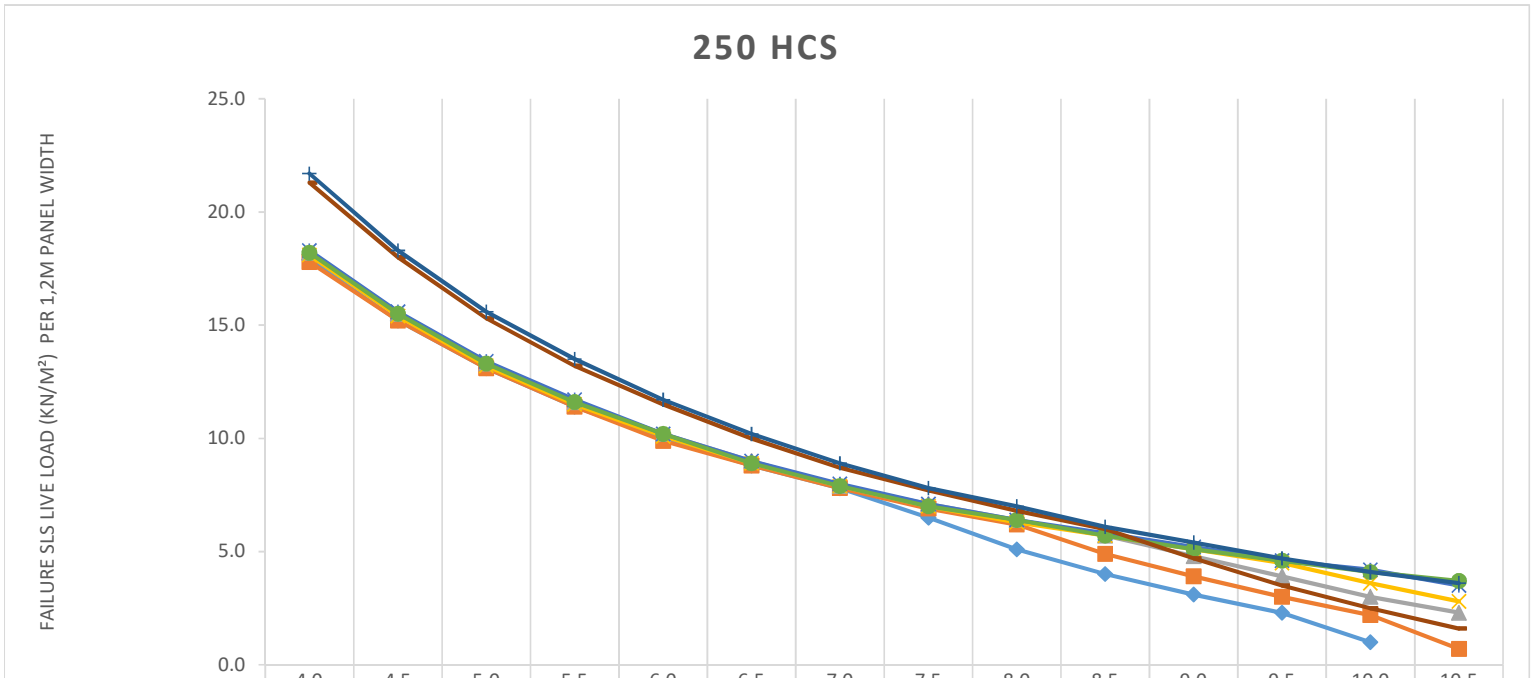
Failure loading to HCS's

Design programme: EliSlab version 1.0.6
Design standard: BS8110
Dead Load = 1.5kPa added as standard to tables
Slab own weight included in calculations
Shear resistance enhancement (i.e. filling of slab cores) not included in these calculations
Slab width = 1.2m
Slab bearing width = 100mm [i.e. clear span = L (as per table below) less 100mm]
SLS Live Load as per tables below
ULS = 1.4xDL + 1.6xLL (ULS moment indicated below is for screed and LL as provided; slab own weight not incl.)
Failure criteria:

- ULS ultimate moment OR shear resistance failure
- SLS failure: deflection more than L/250

This information is based on a uniformly distributed loading. Forward Engineering / Architectural drawings to *info@elmaticsa.co.za* for a budget quotation.

250 HCS Failure Live Load (SLS)



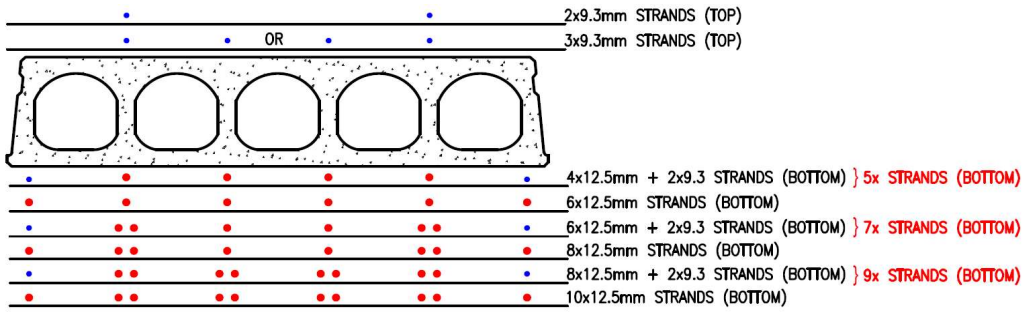
SPAN L (M)	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5
4x12.5 + 2x9.3 dia	17.9	15.2	13.1	11.4	10.0	8.8	7.8	6.5	5.1	4.0	3.1	2.3	1.0	
6x12.5 dia	17.8	15.2	13.1	11.4	9.9	8.8	7.8	6.9	6.2	4.9	3.9	3.0	2.2	0.70
6x12.5 + 2x9.3 dia	18.2	15.5	13.3	11.6	10.2	9.0	7.9	7.1	6.4	5.7	4.8	3.9	3.0	2.3
8x12.5 dia	18.1	15.4	13.2	11.5	10.1	8.9	7.9	7.0	6.3	5.7	5.1	4.5	3.6	2.8
8x12.5 + 2x9.3 dia	18.3	15.6	13.4	11.7	10.2	9.0	8.0	7.1	6.4	5.8	5.2	4.6	4.2	3.5
10x12.5 dia	18.2	15.5	13.3	11.6	10.2	8.9	7.9	7.0	6.4	5.7	5.1	4.6	4.1	3.7
6x12.5 dia + 50mm topping	21.3	18.0	15.3	13.2	11.5	10	8.7	7.7	6.8	6.0	4.7	3.5	2.5	1.6
10x12.5 dia + 50mm topping	21.7	18.3	15.6	13.5	11.7	10.2	8.9	7.8	7.0	6.1	5.4	4.7	4.1	3.6

(m)
(kN/m² per 1.2m width)

Notes:

1. Design tables to be used as indicative only
2. Loads as listed are distributed Live Loads ONLY
3. Structural topping must be 30 MPa concrete
4. Structural toppings are not recommended due to practical installation implications
5. Higher loads can be resisted with a thicker structural topping / thicker slab thickness
6. Although L/250 is used as a failure criteria above; deflection in excess of 20mm is not recommended and must be verified by ESA
7. Slab strand weight quantities:
   a) 4x12.5 + 2x9.3 dia: 4.20kg/m²
   b) 6x12.5 dia: 3.90kg/m²
   c) 6x12.5 + 2x9.3 dia: 4.70kg/m²
   d) 8x12.5 dia: 5.20kg/m²
   e) 8x12.5 + 2x9.3 dia: 6.00kg/m²
   f) 10x12.5 dia: 6.50kg/m²

   if top strands are present; add:
   i) 0.8kg/m² for 2x9.3 dia top strands
   ii) 1.2kg/m² for 3x9.3 dia top strands
   iii) 1.6kg/m² for 4x9.3 dia top strands
8. Strand Patterns:



Slab own weight = 3.5kN/m²