

1. Project:
Al Moosa Specialist Hospital – North Tower
(September 2018)

2. Location:
Al Ahsa – Saudi Arabia.

3. Client(s):
Al Moosa specialist Hospital.
Consultant: Ahmed Al Moosa Engineering Consultants.
Contractor: Masah Specialized Construction



4. Concrete supplier:
Al Houssain & Al Afalio Ready Mix Company (HACO)



5. Tasks:
The task assigned for HACO RMC is to supply a high quality Green concrete using LEED approved components, as one of the main parts of this certificate was to supply concrete with 20% minimum replacement rate of **Micrasil**[®] which complies to the requirements set by LEED for that purpose:

- 1) 100% Natural product coming from recycled source.
- 2) Pure physical treatment with no chemical additives.
- 3) Total CO₂ footprint is 30 – 35 kg/MT (only contributed from production, shipping and final usage).

Technically, **Micrasil**[®] was tested several times in large scale batch plant trials and passed all the requirements set by the project mainly as workability, durability and compression strength.

One of the major advantages of **Micrasil**[®] was its consistency which enabled HACO to pour 5,000 cu.m as one shot in just 27 hours.

Micrasil[®] enabled producer to reduce total cement content to as low as 350 kg/cu.m (C-35) and 400 kg/cu.m (C-50) which was not possible with other alternative mineral additives without compromising the cost or quality or both.



The following mix details shows the components designed to fulfill the above requirements.

	C-35	C-50
Components	Quantity	Quantity
Cement	280 Kg.	320 kg.
Micrasil 20%	70 Kg.	80 kg.
Water/Cement ratio	0.4 Max.	0.4 Max.

6. Test results:

The following table summarizes the test results obtained from tests conducted on the continuously supplied concrete.

Structures	Flow (mm)	Temperature (C)
Raft and retaining walls (C-35)	550 - 750	< 32
Shear walls and columns (C-50)	550 - 750	< 32
Shear walls and columns (C-50)	160 – 200	< 32
Slab Ramps (C-35)	130 Max.	< 32
Slabs (C-35)	160 – 200	< 32

Compressive strength (MPa)	
28 days (C-35)	40.0 – 51.1
28 days (C-50)	58.0 – 64.0

7. Value of Micrasil to End user, client and owners of the project:

As with other SCMs when added to concrete the expected improvement of properties can be shortlisted with the following:

- Improved strength and other mechanical properties.
- Reduced permeability hence, increased durability of concrete.
- Reduced segregation and bleeding.

In addition to the above, **Micrasil®** has been capable of providing concrete producers with the following additional properties:

- Better workability.
- Better workability retention and travelling time.
- Slight reduction in admixture level.
- Better placeability of concrete and finishing.
- High Consistency enabling producer to pour big quantities in short period of time.

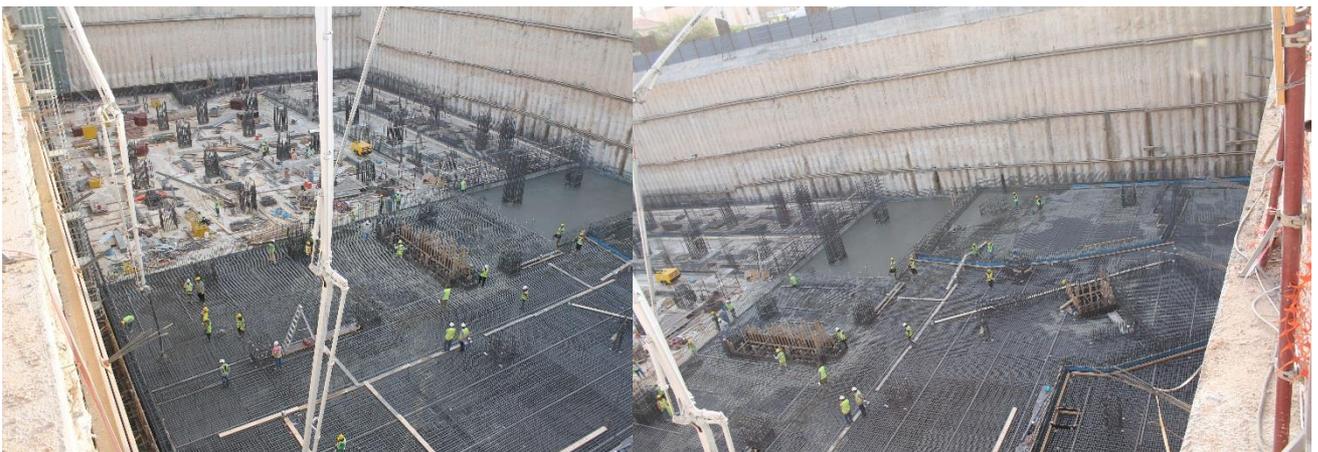
8. Conclusion:

Micrasil[®] has performed well in this project and all the parameters required for successful concreting job was achieved successfully using **Micrasil[®]**.

9. Photos taken from the project and showing the respective work achieved with concrete including Micrasil[®]



Up to the limits concrete supply



5,000 cu.m one shot consistent pouring aimed by Micrasil

