

Project:

Egyptian Refining Co.

Location: Mostorod

Qalyoubia

Project Management:

Worley Parsons

Consultant:

KBC

Period of Construction:

3 Years (2015-2017)

Main Contractors:

consortium consisting of GS Engineering & Construction of South Korea and Mitsui & Co. of Japan for the construction

Sub-Contractors

Orascom for Construction

Hassan Allam Sons

PetroJet

SIAC

Egyptian Refining Co



Project Description:

(ERC) plans to begin construction this month on its grassroots refining upgrade project to be built within the existing Mostorod Petroleum Complex (MPC), 20 km northeast of Cairo in Qalyoubia Govern ate, Egypt

Construction on the \$3.7 billion project, which is designed to address Egypt's demand for petroleum products and reduce the country's dependence on imports, is scheduled to begin on Apr. 15 with piling work and some site

preparation work related to underground obstacles like foundations, ERC's Chief Executive Tom Thomason told OGJ.

One of Master Builders Solutions Technical Solutions Master Builders Solutions Cementitious & Epoxy Grout

- . MasterFlow 524
- . MasterFlow 980
- . MasterFlow 648

Project Requirement:

- . It is required to fill the gap under all base plates of all steel structures, Pipe Racks, small / big generators, cooling fans, cook Tower & feeding machines with Non-Shrinkage Cementitious grout with compressive Strength 40 N/mm2 after 28 days. & With Epoxy grout with Compressive Strength reached 100 N/mm2 after 24 Hours.

Special Requirement:

- . To fill the gaps with one type of Cementitious grout starting from 2cm till 8cm
- . To fill big Anchor pockets with big dimensions 30cm*30cm*90cm for both types Cementitious & Epoxy Grout.
- . To fill with cementitious grout under static cooling fans / big generators with dimension 8.5m*4m*0.07m.
- . To fill with Epoxy Grout under high dynamic / vibrated machine like: cook tower located On a height reached 40m high.

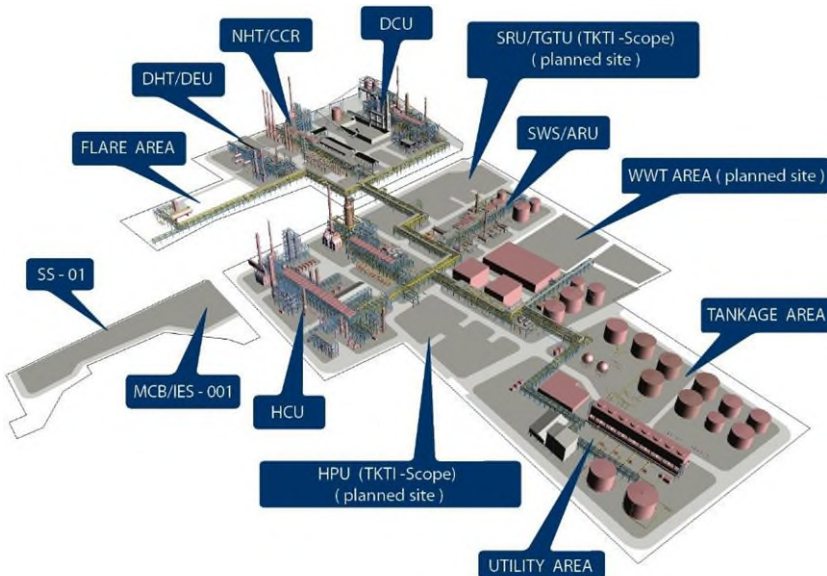


Master Builders Solutions used

- Master Builders Solutions recommended it's Cementitious Grout **MasterFlow 524** which is a high strength Non-Shrinkage construction grout under all steel pipe racks & big static cooling Fan for it's proven & predictable performance with high bond strength to steel and Concrete with early strength development .
- Master Builders Solutions Recommend it's epoxy Grout **MasterFlow 648** which is a high strength foundation , epoxy grouting for support & precision of heavy equipment to ensure the proper transmission of static and dynamic loads to the equipment foundation .

Places for casting these Special Grouts

- HCU Area
- DCU Area
- Ss-01
- Cook Tower
- All Pipe Racks
- Under huge Turbines
- Feeding machines



Product used:

MasterFlow 524
MasterFlow 980
MasterFlow 648

MasterFlow 524
MasterFlow 980
MasterFlow 648
MasterFlow 524 (140 Tons)

Customers Satisfaction & Benefit

- The Client was satisfied with the performance of Master Builders Solutions products, usual Master Builders Solutions Technical Support mainly with all contractors work in the project.
- The Client & Consultant asked for a technical training for all contractors work in the project , Master Builders Solutions trained more than 2 crews for every contractor for casting Cementitious & Epoxy grout .
- Master Builders Solutions supported in casting MasterFlow 524 under one of the largest cooling fan at the project with Orascom for Construction (Contractor) & finally obtained excellent results .





Master Builders Solutions by MBCC Group

The Master Builders Solutions brand expresses MBCC's expertise in providing customized chemical solutions for new construction, maintenance, repair and restoration of structures.

Master Builders Solutions is built on the experience gained from more than a century in the construction industry. At the core of the Master Builders Solutions brand is the combined know-how and experience of a global community of MBCC construction experts, who connect with you to solve all of your construction challenges.

Further information is available at:

<https://www.master-builders-solutions.com/en-eg>

® registered trademark of a MBCC Group
member in many countries of the world

MBS Construction Chemicals Egypt (S.A.E), Business Park A, Building A1, Cairo Festival City,
Ring Road, New Cairo, Egypt
Hotline: 15560, Phone: +202 2128 7800, Fax: +202 2128 7801
Website: <https://www.master-builders-solutions.com/en-eg>

A brand of
MBCC GROUP



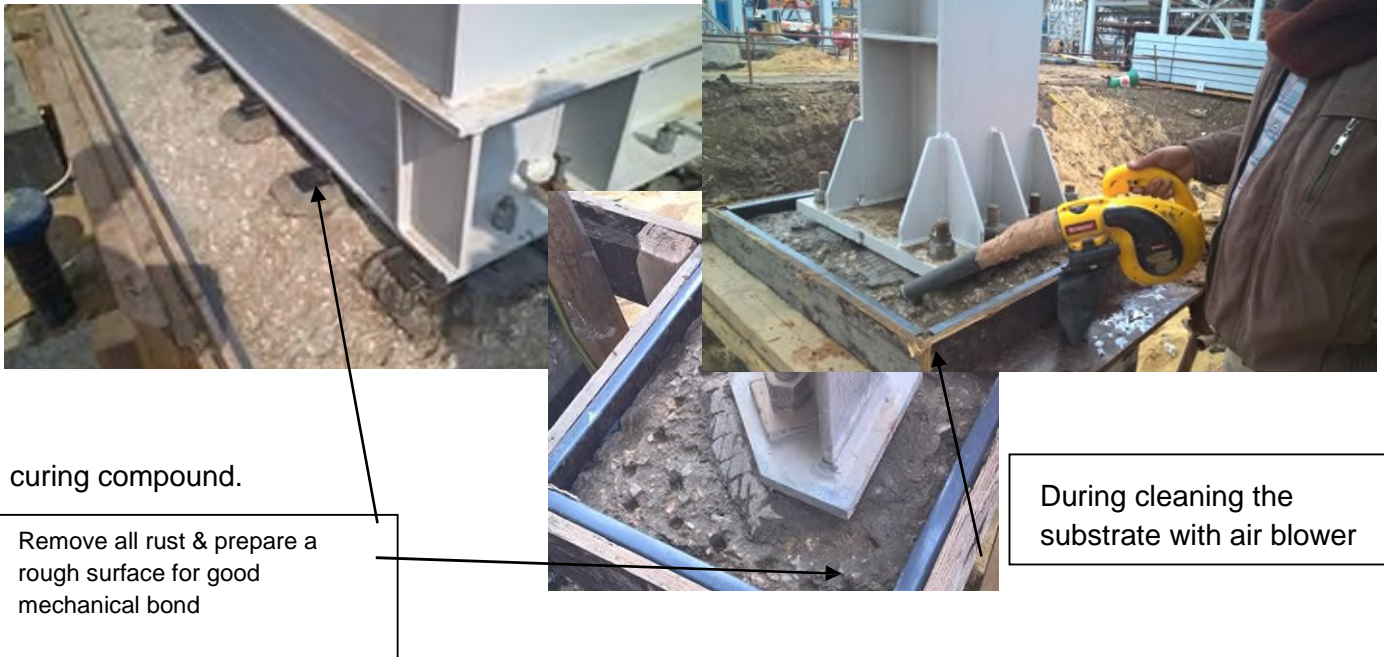
15560

Method of Application in Casting MasterFlow 524 under Static

Machines & Pipe Racks in ERC Project which covers the preparation & Installation

Foundation Preparation:

- 1- Preparation of the concrete surface to which the grout will bond should be carried out before the base plate is installed.
- 2- Prepare the concrete surface using a chipping hammer, grit blasting or high pressure water jetting, to leave a roughly textured, clean surface, free from all forms of contamination. Bush hammering or similar method which can fracture aggregate, but leave it in place is not permitted.
- 3- Preparation should cover the full extent of the surface which is intended to be in contact with the grout.
- 4- All surfaces and bolt pockets to receive grout must be clean and free of oil, dust, dirt, paint and residual



Form Work :

- 1- Formwork fitted around the base plate to contain the grout must be as watertight as is practical, to prevent grout loss .
- 2- The top of the formwork should be a minimum of 2.5cm above the underside of the base plate.
- 3- For large base plate pours or when the gap between base plate and foundation concrete is of less than 2.5cm depth, the formwork should be higher to allow a pressure head to build up
- 4- On the pouring side, which should be the shortest distance across the base plate, a 'hopper' should be constructed to allow a pressure head sufficient to enable grout to flow to the full width of the pour. The form should be fixed with the top sloping away from the base plate at a 45° angle to form a slope down which the grout can be poured
- 5- The formwork should be fixed to allow easy stripping without causing damage or stress to the grout, if the formwork is to be removed when the grout is still green.



Fitted / tight wooden form work around the shoulders to prevent grout loss.

The form should be fixed with the top sloping away from the base plate at a 45° angle to form a slope down which the grout can be poured

For Long Pours, you could use dividers to divide the length of the pour for controlling the way of the grout.



Preparation for Grouting:

1. Before final fixing of the formwork, remove all dirt and debris from within the area to be grouted.
2. Saturate the concrete within the formwork with water for 24 hours prior to grouting to ensure a saturated but surface dry condition at the time of grouting
3. Ensure sufficient grout is available on hand to complete the intended pour in a continuous process.
4. Prior to the grout installation mixing equipment must be demonstrated to be suitable and in good working order. Back up mixing equipment should always be available in case of breakdown.
5. Ensure adequate potable water is available for mixing

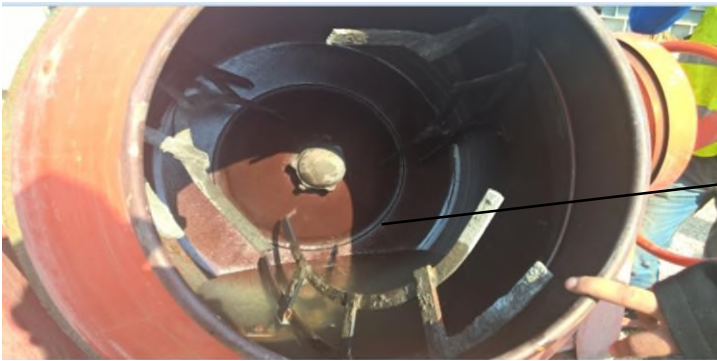


Saturate the concrete within the formwork with water for 24 hours





Adding 90% water at the beginning & then add the powder grout then mix for 1 minute then add 10% rest of water to have a good



Flowable grout MasterFlow 524 will obtain that will pour through the upstand shutter with 45 degree that form the desired slope for grouting under this big machine



Placing the Grout (MasterFlow 524):

- 1- All bolt pockets must be filled with grout before pouring the rest of the under plate grout, to prevent voids being formed.
- 2- Start at one end of the base plate, pouring grout down the slope of the formwork. When the grout reaches the far side formwork and rises above the bottom of the base plate, move the pouring point slowly along the length of the base plate, always ensuring that the grout has risen up on the opposite side of the base plate before moving along.
- 3- Pour the grout steadily down the slope of the formwork to reduce the possibility of entrapping air.
- 4- Do not pour from different sides of the base plate as this can cause voids which reduce the effective bearing area.



Start from one end of the base plate with many points but on the

Curing :

- 1- Immediately the grout is placed, cover exposed edges with wet rags (cloth retains moisture more effectively than hessian) keeping them wet for 24 hours. After 24 hours remove the formwork
- 2- After removing the formwork, brush on **MasterKure 101** curing membrane (2 coats), brushing the curing membrane onto the concrete for at least 25 mm from the edge of the grout. Allow the curing membrane to dry, then cover the exposed edges of grout with cloth and keep wet for a minimum of 7 days.

Shoulders:

- 1- If finishing work is required on shoulders, it should be kept to a minimum to avoid increasing the risk of cracks forming.
- 2- When finishing work is complete, the curing regime must be reinstated.





During finishing the shoulder

MasterFlow 524 passed
successfully to the shortest
side



Final appearance for the
casted grout before having
curing with MasterKure 101

