METAL FORMS CORPORATION SINCE 1909

GRANITE AND MFC HELP OSPREYS FLY AT MIRAMAR

OSPREYS FLY WITH HELP FROM GRANITE CONSTRUCTION AND METAL FORMS CORPORATION

Several concrete forming and finishing challenges were part of the Design/Build MV-22 (Osprey) taxiway expansion, parking apron additions and hanger construction at the Marine Corps Air Station (MCAS), Miramar, CA. The project is a $85,000,000 joint venture between Hensel Phelps Construction and Granite Construction with the concrete paving portion being the responsibility of Granite.

The Osprey MV-22 is an innovative Short Take-Off and Vertical Landing (STOVL) aircraft that generates high exhaust temperatures. In fact, the heat produced is so great that conventional portland cement concrete (PCC) can not withstand the extreme thermal loads. The problem with deteriorating PCC pavements caused by STOVL aircraft was solved with the development of “high temperature concrete.” The high temperature concrete used by Granite on the Miramar project incorporated an aggregate by the name of trap rock. Trap rock is naturally fire resistant and combines firmness with an ability to bend, instead of breaking when under pressure. Thanks to its hardness and durability, trap rock has become a preferred aggregate for builders in heavy construction with specific long lasting, temperature-resistant requirements.

Extremely tight specifications for the high temperature concrete slabs at Miramar led to a project decision by Granite to use steel forms rather than slipforming. According to Granite engineer Justin Seichter: “The slump was around 2” for the project and the specs require a 0 (zero) edge slump. With this special mix, there were concerns about meeting that spec while slipforming, so we set steel forms to control and assure a vertical edge.” Approximately 6,000 lineal feet of ¼” DUAL Paving Forms (14” x 12” and 14” x 11”) were provided by Metal Forms Corporation (MFC) Milwaukee, WI to place the 14” thick MV-22 Osprey pavements. The 11” and 12” sides (depths) were not used at Miramar, but were ordered by Granite with an eye toward future projects.

The use of forms did not prevent Granite from using their slipform crews and equipment. A G & Z slipform paver was first used to place the high temperature concrete by straddling the forms and placing separate pavements that were either 30’ or 34’ apart. Once the original slabs were set and cured, the slipformer traveled on the existing pavements to place and finish the 30’ and 34’ gap sections.

Besides the slipform paver, Granite also purchased a Speed Screed® Heavy-Duty™ from MFC to place and finish the Miramar pavements. The screed was used on all full width pours under 30’ wide and also on smaller irregular areas and sections. Since the Speed Screed® Heavy-Duty™ is specifically designed for low slump, high production applications, it was ideally suited for the Miramar project. Mark Bare, Construction Manager for Granite, had high praise for both the forms and screed: “The Speed Screed® handled the high temperature mix with ease. I’ve had plenty of previous experience with the MFC forms and screeds and know they can be relied upon to get tough jobs done on time.”

The entire Miramar project is due for completion in two years and Granite is proud that the effort is planned to be a Leadership in Energy & Environment Design (Gold Certified). Some of the most sustainable features include: 1.3 million square feet of recycled concrete and asphalt which will generate 73,000 tons of aggregate used in the base support of the new high temperature concrete aprons.

The collaboration between Granite Construction and MFC on the Miramar project is but the most recent example of business between two historic companies. The history of Granite can be traced back to California Construction License #89 issued in 1929. Since that time, Granite has grown to be one of the largest diversified heavy civil contractors and construction material producers in the U.S.A. Established in 1909, MFC has progressed to be a leading and respected manufacturer and supplier of forms, finishing machines and material handling equipment for the concrete construction industry.

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